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Preface

In the 1980s when the need for surveillance of behavioral risk factors was first recognized in the public health arena, a system for conducting such surveillance was formally conceived at the then Centers for Disease Control in Atlanta, Georgia. Since then, the Behavioral Risk Factor Surveillance System (BRFSS) has grown from a proposal to conduct pilot surveys in a handful of states to a nationwide system with all 50 states, the District of Columbia, Guam, Puerto Rico, and the U.S. Virgin Islands conducting surveillance.

When the states first began collecting data, microcomputers were a scarcity. Computer-assisted telephone interviewing (CATI) was someone's dream, and states employed the popular paper-and-pencil methods of data collection. Today, nearly all states use high-speed computers and CATI systems on local area networks. Whereas, initially, states conducted in-house data collection, over time there arose the need to contract out these operations and focus in-house activities on developing strategies to conduct analysis, dissemination, interventions, and evaluations.

The ongoing nature of the surveillance system has created a wealth of data. However, the steady recruitment and expansion of BRFSS projects will not compare to the explosion of data analysis and application that will be witnessed in the next decade. Continual refinement of methodologies and the persistence of a stringent data collection protocol heralded the emergence of the BRFSS as a reputable and valid tool for states and researchers. Coupled with the enormous flexibility, sensitivity, and unique timeliness of the BRFSS, a resounding success has been achieved. Consequently, the popularity of the BRFSS as a vehicle for collecting valid, personal risk-factor data has spread as far as China and Australia and has been adopted by branches of the Armed Services in their health care assessment initiatives. Many states have led the way in setting examples for BRFSS data application in health promotion and legislation support and initiatives, and even more states have followed that example.

The first edition of a BRFSS user's guide was not so much titled as it was referred to as the "BRFSS Operations Manual." Distributed in 1987, it was a thorough and comprehensive guide for putting into place a local, in-house behavioral risk factor surveillance system using paper-and-pencil methods. Eight years later, it was recognized that numerous and significant changes had occurred within the system, and there was a need to update the guide.

The task was begun two years ago. Within that time, states have become even more innovative in developing their BRFSS projects. The Centers for Disease Control and Prevention, Behavioral Surveillance Branch, has become much more instrumental in calling for and establishing uniformity among BRFSS projects. Therefore, the tasks surrounding text composition, the compilation of various pieces of the user's guide, and the general production of the guide were constantly changing. The result, we hope, is a versatile document that reflects the same sensitivity and flexibility found within the surveillance system that it represents.

Evidence of the flexible nature of this user's guide is the three-ring binding that allows for replacement pages and system updates. To enhance the guide's flexibility, a modular design was adopted so that sections could be used independent of the remaining text. For example,

Chapter 6: Guide for BRFSS Interviewers can be a stand-alone document for reference and used for training purposes. Consequently, you will see the design quality of duplicated text throughout the user's guide. Using numbered memoranda issued by the Behavioral Surveillance Branch offers flexibility and sensitivity to the document. These memoranda provide the necessary link between policy and procedural changes and the unfixed nature of the guide. A section in the user's guide has been provided to house these documents for ready reference.

Higher technology and the demand for increased information has generated a great deal of interest in the validity and integrity of survey research. Therefore, ongoing effort is made to question and document survey research. Throughout this guide are citations for suggested reading. We strongly encourage you to expand your knowledge and inquiries through these publications and the widening pool of others.

Despite the time and effort that has been devoted to developing and producing this user's guide, we recognize that it is incomplete. As pointed out earlier, this circumstance is largely because of rapid growth and increasing sophistication of the surveillance system, but due equally to the decreasing resources available to support various activities associated with data processing and analysis. Because of the increasing demands being placed on the BRFSS to collect useful and reliable data, closer scrutiny is being taken of the system in the scientific community. As a result, the BRFSS is becoming more efficient and more useful. It is necessary that clear and thorough documentation and instructions be made available not only to those administering the system but also to those incorporating the results of the system for research, policy development, and program direction. We welcome your comments and suggestions for improving the clarity and comprehension of the document. It is, after all, intended to bring clarity and support to your own activities.

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Terms, Abbreviations, and Acronyms

Terms

Calling occasion. One of the following four-hour work shifts when potential survey respondents are called:

Weekdays	1:00–5:00 P.M.	Weekends:	
Weeknights	5:00–9:00 P.M.	Saturdays	10:00 A.M.–2:00 P.M.
		Sundays	1:00–5:00 P.M.
			5:00–9:00 P.M.

Calling protocol. The maximum number of call attempts (15) has been made, an interview has been completed or refused, or the pending status of a telephone number or respondent has been otherwise resolved.

CATI. Computer-assisted telephone interviewing systems manage the sample for each interviewer and collect the respondent's data from the interviewer's direct entry into electronic files.

Cluster sampling. A type of sampling method in which the sampling unit is at some point a group rather than an individual.

Cluster size. In cluster sample designs, the prespecified number of interviews to be completed for each cluster.

Defining number. The first telephone number in the block of 100 randomly ordered telephone numbers that constitute a primary sampling unit (PSU). This number defines the PSU by its area code, prefix, and first two digits of the suffix. Also, the telephone number on the cluster contact sheets printed just to the right of the PSU number.

Design effect. The ratio of the observed standard error to the expected standard error if simple random sampling is used.

Disposition. The final resolution of each telephone number in a sample, which is represented by a two-digit numeric code. For example, 04 indicates that the telephone rang but was not answered.

Disproportionate stratified random sample. On the basis of information from previous surveys or telephone listings, blocks of telephone numbers are stratified into groups that are "likely" or "unlikely" to contain residential numbers. Individual members (telephone numbers) in the likely stratum are then sampled at a higher rate than numbers in the unlikely stratum.

Measurement. The process of obtaining the qualitative or quantitative values needed to meet research objectives.

Nonresponse error. The inability to obtain data for all questionnaire items from persons in the sample population.

Poststratification. The method used to adjust the distribution of the sample data so that it reflects the total population of the sampled area. The poststratification factor is calculated by computing the ratio of the age, race, and sex distribution of the state population divided by that of the sample. This factor is then multiplied by the raw weight to compute an adjusted, final-weight variable. The weighting adjusts not only for variation in selection and sampling probability but also for demographic characteristics so that projections can be made from the sample to the general population. Weighting of the sample also adjusts for nonresponse and noncoverage (failure of some elements to be included in the sampling frame).

Prefix. The first three digits of a telephone number that follow the area code. For example, in the telephone number (906) 444-5666, the prefix is 444.

Project officer. Public health advisors on the Behavioral Surveillance Branch staff who serve as the primary point of contact to individual states and serve as the liaison between the states and the branch providing general oversight and guidance on all aspects of the project.

Probability sample. A sample in which each member of the population has a known, nonzero probability of selection.

PSU. Primary sampling unit; as used in the BRFSS, a PSU is

1. Any block of 100 telephone numbers that have the same area code, prefix, and first two digits of the suffix (e.g., 404-329-30 _ _). Together, these blocks of 100 numbers construct a cluster sample in the Mitofsky-Waksberg three-stage cluster sample design.
2. A unique number used to identify each piece of the sample in simple random and disproportionate stratified random sample designs.

Raw data. Coded reflections of actual responses received from survey respondents.

Reliability. A measure of the extent to which observations of a study are repeatable, or produce the same answers. Measurement unreliability may be inherent in the instrument itself (e.g., the wording of a question) or come from differences in procedure (e.g., the interviewer's tone of voice when asking the question). A question is reliable if it evokes consistent responses.

Rules of Replacement. The rules governing the replacement of telephone numbers used in the sample and the assignment of final disposition codes to interviews.

Sample. A small group selected to represent a larger population.

Sampling fraction. The number of elements selected in a stratum divided by the number of elements considered for selection in some stage of sampling.

Sampling ratio. The ratio of two sampling fractions.

Sampling unit. One of a set of elements considered for selection in some stage of sampling.

Simple random sample. A sample in which every member of the surveillance population has an equal chance of being selected to participate in the survey.

Stratified random sample. The overall population, in advance, is divided (stratified) into a specified number of subpopulations (e.g., age groups), or strata. Separate random samples are then selected from within each stratum, and overall estimates are based on combined data across all strata.

Stratum. A subset of sampling units treated as a single group in the selection of a sample.

Stratum code. A code assigned to each stratum to differentiate it from other strata.

Suffix. The last four digits of a telephone number. For example, in the telephone number (906) 444-5666, the suffix is 5666.

Validity. The extent to which survey questions actually measure what they intend to measure.

Wind-down. A procedure used in the BRFSS that enables the surveillance team to complete data collection by the end of the recommended interviewing period. During wind-down, the standard Rules of Replacement are suspended.

Abbreviations and Acronyms

ASA American Statistical Association

BRFSS Behavioral Risk Factor Surveillance System

BSB Behavioral Surveillance Branch in DACH

CATI Computer-assisted telephone interviewing

CDC Centers for Disease Control and Prevention (formerly the National Communicable Disease Center, then the Centers for Disease Control until 1992)

CSA Cluster size adjustment

DACH Division of Adult and Community Health in NCCDPHP

DENWT Density weight

DSS	Disproportionate stratified sample
FINALWT	Final weight
FIPS	Federal Information Processing System
GEOWT	Geographic weight
HIRS	Health Information Retrieval System
1/NPH	The number 1 divided by the number of telephones
LAN	Local area network
LMA	Labor Market Area codes
MMWR	*Morbidity and Mortality Weekly Report*
NAD	Number of adults
NCCDPHP	National Center for Chronic Disease Prevention and Health Promotion in CDC
NHANES	National Health and Nutrition Examination Survey
NHIS	National Health Interview Survey
POSTSTRAT	Poststratification weight
PSU	Primary sampling unit
PUMA	Public Use Micro data Area codes
SSRM	Section on Survey Research Methods (of the ASA)
WONDER	Wide Ranging Online Data [for] Epidemiologic Research (also CDC WONDER, the principal means of electronic communications between CDC and state departments of health in the 1990s)

Introduction

The Behavioral Risk Factor Surveillance System (BRFSS) is an ongoing, state-based telephone surveillance system supported by the Centers for Disease Control and Prevention (CDC). Through a series of monthly telephone interviews conducted according to the data collection protocol set forth in this user's guide, states uniformly collect data on the behaviors and conditions that place adults at risk for the chronic diseases, injuries, and preventable infectious diseases that are the leading causes of morbidity and mortality in the United States.

Uniform data collection procedures ensure the comparability of data from one point in time to another, as well as over a given period of time. Additionally, uniform procedures provide for comparability of data across selected populations and geographic areas. The results are used by public health officials to determine the problem areas in their states, to develop prevention policies and intervention strategies, and to evaluate success in reducing the prevalence of behaviors that endanger public health.

This *Behavioral Risk Factor Surveillance System User's Guide* provides guidance for anyone who will be coordinating, administering, or otherwise participating in the BRFSS. The user's guide has nine sections, each can stand alone or be used with the others for orientation, training, or personal reference. Supplementary materials include more detailed information on selected topics related to the surveillance system and its operation and use. The user's guide provides an essential resource for administering the BRFSS and using the data derived from the monthly interviews.

The BRFSS is coordinated by the Behavioral Surveillance Branch (BSB) in the Division of Adult and Community Health (DACH), National Center for Chronic Disease Prevention and Health Promotion, CDC. States are encouraged to contact BSB for provision of training, technical support for surveillance planning and data collection, and guidance and referrals for data analysis. Comments or requests for assistance should be directed to the

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Chapter One
Understanding the BRFSS

History of the BRFSS

In the 1970s, with the growing evidence that personal behaviors can influence health, both the public health community and the general public became increasingly interested in how behavior change can reduce the risk for chronic diseases, injuries, and preventable infectious diseases.

Because major disease prevention initiatives are traditionally carried out at the state level, state health departments began to assess ways to promote healthy behaviors. They found, however, that the behavioral data needed to plan and guide risk-reduction efforts either were not available or were obtained from specialized household surveys or estimates derived from national surveys. Because household surveys are expensive and data from national surveys may not be applicable to a given state, health officials looked for alternate methods of collecting data on risk behaviors.

By the early 1980s, telephone surveys had emerged as a reliable and affordable way to determine the prevalence of risk behaviors in the population, and the Centers for Disease Control and Prevention (CDC) started working with state health departments to develop a rapid, low-cost telephone surveillance system using random-digit dialing. The goal was for states to collect, analyze, and interpret locally relevant data on risk behaviors and preventive health practices for use in planning, implementing, and measuring the progress of their risk-reduction programs and for developing appropriate policies and legislation.

Health departments started by conducting point-in-time telephone surveys in 29 states and the District of Columbia from 1981 to 1983. The surveys were supported in part by funds provided through CDC's Health Education and Risk Reduction grants. CDC also provided training, coordination, and standardized methods.

With the success of these surveys, CDC initiated the more comprehensive Behavioral Risk Factor Surveillance System (BRFSS) in 1984, with 15 states collecting data on risk behaviors through a series of monthly telephone interviews. Along with training, coordination, and standardized methods, CDC provided funds directly to participating health departments via cooperative agreements. The surveillance system continued to grow, and, by 1996, participants included 50 states, the District of Columbia, Puerto Rico, Guam, and the U.S. Virgin Islands. BRFSS models were even being developed internationally, as far away as Scotland, China, and Australia.

The BRFSS is an integral part of CDC surveillance systems. Coordination of the BRFSS is provided by the Behavioral Surveillance Branch (BSB) with guidance from two working groups: the BRFSS Working Group and the BRFSS Survey Methods Working Group. The BRFSS Working Group consists of five BRFSS state coordinators, BSB staff, appropriate state-based organizations, and representatives from other divisions and centers that deal with the topic areas

covered by the BRFSS. The BRFSS Survey Methods Working Group, formed within the American Statistical Association's Section on Survey Research Methods, consists of five section members plus affiliates designated by BSB.

BRFSS Overview

The BRFSS is one of several public health surveillance systems supported by CDC.

- The purpose of the BRFSS is to collect uniform, state-based data on preventive health practices and risk behaviors that are linked to chronic diseases, injuries, and preventable infectious diseases in the U.S. population.
- Data are collected through monthly telephone interviews conducted among a sample of each state's adult population. When aggregated, the data show the prevalence of risk behaviors and preventive health practices on an annual basis.
- Respondents' participation is voluntary, and personal identifiers such as names and addresses are not used. Individual-level data are pooled to provide information about the health practices of state residents.

States collect behavioral risk data via telephone interviews.

- Telephone interviews are an efficient method to collect data. In one hour, an experienced telephone interviewer can handle busy numbers, calls not answered, and refusals to participate and still successfully complete one or more interviews. In contrast, many miles of travel may be required for one day of in-person interviewing, and few interviews may be completed.
- Telephone interviews are a cost-efficient method to collect data. In 1996, more than 120,000 BRFSS interviews were completed at an average cost of about $30 each (CDC, unpublished data). In-person interviews are much more costly.
- Telephone interviews are easy to administer and monitor. All calls can be made from one location, and interviews are usually entered directly into a data file by use of computer-assisted methods. A supervisor can monitor interviews in progress more easily and in a shorter period of time than with in-person interviewing. This enhances quality control efforts.

Telephone interviews have some limitations:

- Noncoverage of persons in households without telephones.
- Interviews that are shorter than in-person interviews.
- Collected data that cannot be verified by physical measurement or visual means.

Based on the 1990 census, a total of 95% of households in the United States have telephones. There is variation by state, as telephone coverage ranged from 87% in Mississippi to 98% in Massachusetts.

The BRFSS consists of ongoing data collection during a recommended 14-day period each month.

- Distributing data collection evenly throughout the year minimizes seasonal bias that may affect some risk behaviors, such as drinking during major holiday periods or exercising during inclement weather.
- Monthly data aggregated for an entire year yield results that are comparable to results from large point-in-time surveys. After several years of data collection, surveillance information can indicate trends or changes in behaviors that have occurred within a population.
- Monthly data collection allows for flexibility in trend analysis by allowing investigators to aggregate any group of months that is of particular interest.

Variance of BRFSS methodologies is discussed in Appendix A: Point-in-Time Surveys and Appendix B: Paper-Administered BRFSS Methodology.

BRFSS Sample

Because interviewing every person is not economically feasible, the BRFSS uses a scientifically selected telephone sample. The information obtained from the sample can be used to generalize results to the total population. Representative telephone samples can be produced in many ways.

One method is to draw a random sample from the set of all possible telephone numbers based on area codes and prefixes. At a relatively low cost, this method yields a representative sample of households with telephones in a state. For the BRFSS, most states use either a disproportionate stratified sample or a Mitofsky-Waksberg-type sample design, both of which are based on this method. Remaining states use other sample designs, but all yield representative samples of households with telephones. Although different sample designs are used, the results from all states can be compared or combined because their populations do not overlap.

Sample sizes vary from state to state, depending on data needs and the availability of funds. In all states, however, sample sizes are adequate to provide reasonable estimates of the prevalence of risk behaviors and preventive health practices among state residents.

A more detailed discussion of sampling designs and methodologies is found in Chapter 3: Survey Samples and Sampling Methods.

Monthly Data Collection

States conduct BRFSS interviews each month according to specified procedures, each of which is described in detail elsewhere in this user's guide.

- Interviews are conducted in each state among noninstitutionalized civilian adults (18 years of age or older) living in households with a telephone.
- After a household is contacted, an adult is randomly selected to be interviewed. The selected respondent is interviewed by using a standardized questionnaire. If the selected respondent is not available at the time of the first call, the interview is attempted during follow-up calls according to the stringent protocol described throughout this user's guide.
- At the completion of the interviewing cycle each month, the states use software provided by BSB to edit their data. They then send their data to BSB for a final edit. Results are compiled at the end of the year. BSB provides each state with an aggregated dataset as well as cross-tabulations of selected measures by demographic variables.

Protecting the confidentiality of respondents is a fundamental principle in the BRFSS. To assure confidentiality, no respondent identifiers are retained in the interview record. Even the last two digits of the telephone number are eliminated from the final data to assure that a respondent's answers cannot be connected to a specific person or telephone number. All personnel involved with the BRFSS must respect confidentiality. Although discussion of respondent information among BRFSS staff is a necessary part of conducting the survey, staff must be careful not to discuss details of specific interviews outside the work environment. Monitoring interviews does not violate the principle of confidentiality as long as individuals who monitor interviews are subject to the same confidentiality standards as other members of the BRFSS staff.

BRFSS Questionnaire

The BRFSS questionnaire is designed to give states the flexibility to study areas of local concern while also providing annual data on topics of interest to all states and to CDC. The questionnaire has three parts: (1) the core component, consisting of the fixed core, the rotating core, and emerging issues questions, (2) optional modules, and (3) state-added questions.

Core component

These questions are asked by all states. The fixed core is a standard set of questions asked each year. The rotating core is two separate sets of standardized questions, each asked in alternating years. In the years that rotating topics are not used in the core, they are supported as optional modules. Emerging issues questions are up to five questions that can be asked each year on one or more issues not included in the fixed or rotating core or in optional modules. After one year, these questions are discontinued. If they have proved valuable, they may be

considered for permanent addition to the core. (The complete set of core questions is presented in Appendix D: Questionnaire Development.)

Optional modules These are sets of questions on specific topics that the states may choose to include or not include on their questionnaires. (See Appendix H: Questionnaire Inventory.)

State-added questions These are questions that are developed or acquired and are used by the individual states.

Each year, the states and CDC agree on the content of the core component and optional modules. For comparability, many of the questions are taken from established national surveys, such as the National Health Interview Survey (NHIS) and the National Health and Nutrition Examination Survey (NHANES). This practice allows states to compare their data with those from other surveys. The state-added questions are conceived, acquired, and used at the discretion of each state.

Although CDC supports as many as 21 optional modules annually, it is not feasible for a state to use them all. States should be selective in their choices of modules and state-specific questions to keep the questionnaire at a reasonable length. New questionnaires are implemented in January and usually remain unchanged throughout the year. However, the flexibility of state-added questions does permit additions, changes, and deletions at any time during the year.

Options for BRFSS Administration

The BRFSS can be conducted by use of a paper-administered or a computer-assisted system.

Paper-Administered System

The BRFSS was originally conducted using paper-and-pencil methods exclusively, and a few states continue to use this method to collect their data. The paper-administered method requires interviewers to enter questionnaire responses onto paper during the telephone interview and later to enter them into a computer. The status of each piece of the sample is also tracked manually.

Computer-Assisted System

Nearly all states conduct the BRFSS using a computer-assisted telephone interviewing (CATI) software program.

- CATI programs use interactive computing systems to help the states perform the basic data-collection tasks of telephone interviewing. As questions are displayed, the interviewer reads

them to the respondent and keys in the responses. This procedure avoids potential errors that can be created in a paper-based system that requires responses to be recorded first on paper and later transferred to a computer program.

- CATI programs can automatically skip inappropriate questions and check for the acceptability of responses. They can also track the status of each piece of the sample, making it available at appropriate times. This capability saves the labor involved in manually tracking the status of each telephone number and also ensures adherence to the rules for recontacting sample elements.
- CATI programs vary in the amount and type of assistance they provide to telephone data collection operations. Some merely supply a blank on-line questionnaire to display questions and accept entries; sample management and call scheduling are handled by off-line procedures. Other programs automate virtually all interviewing, supervisory, and management functions.

A state's resources and interest in collecting data in-house determine the practical need for a CATI system, several of which are applicable for use in the BRFSS. BSB provides support for the Ci3 CATI system. This support consists of technical consultation during the initial installation of the software, training in the use of the software for data collection, annual programming of the BRFSS questionnaire, technical support during the data collection period, and assistance in reformatting the data for monthly editing.

Importance of BRFSS Data

Although national information on the risks associated with major preventable health problems is available from several sources (e.g., CDC's National Center for Health Statistics, the National Institutes of Health, and the Agency for Health Care Policy and Research), states depend mainly on the BRFSS for state and often local-level population-based information. With similar collection methods used from state to state and from year to year, health departments can compare their risk-factor prevalence with the results from other areas. Because methods are consistent among states, health officials can assess geographic patterns of risk-behavior prevalence. They can also apply the BRFSS telephone surveillance techniques to other disease-prevention efforts.

BRFSS data have stimulated changes in many areas. States have used BRFSS data for the following activities.

Track progress The BRFSS provides baseline data for planning intervention projects and measuring progress toward goals and objectives, such as decreased smoking and increased use of safety belts.

Support initiatives BRFSS data have been used to initiate and demonstrate the impact of health-related legislation (e.g., drunk driving, safety-belt, and clean-indoor-air laws), health promotion efforts (e.g., smoking cessation programs), and health-related public policies (e.g., increase state cigarette taxes).

Target services The BRFSS has enabled states to identify relationships and patterns, such as the association between education and smoking, the association between income and physical activity, the demographic characteristics of persons most at risk for not having their blood pressure measured, the age groups most associated with drinking and driving and lack of safety-belt use, the groups that do not take advantage of mammograms and colorectal cancer examinations, and the groups that visit a physician on a regular basis.

Document geographic variation BRFSS data have been used to identify regions of the country where cigarette smoking and smokeless tobacco use are most common, identify states where mammography use is below national objectives, and demonstrate the effect of safety-belt laws on safety-belt use. BRFSS data have also been used to identify regional variations in a given state.

Obtain HIV/AIDS information BRFSS-derived information on state-specific measures of HIV/AIDS knowledge and attitudes has been important for guiding education and prevention activities.

Track trends BRFSS data have allowed states to track the long-term decline in cigarette smoking, show the impact of enforcement of laws concerning alcohol-impaired driving, and demonstrate the impact of educational programs for cholesterol screening and mammography.

Prepare applications BRFSS data have been used in the preparation of grant applications for funding special programs, such as those for cardiovascular risk reduction, diabetes prevention, and breast and cervical cancer screening projects.

Produce reports All states produce periodic reports for legislators, other health agencies, the media, or academic institutions. These documents educate the public about risk behaviors and preventive health practices and provide current information on trends and prevention opportunities.

CDC periodically publishes articles based on BRFSS data. These articles, which have appeared in the *Morbidity and Mortality Weekly*

Report (*MMWR*) and other medical and scientific journals, make BRFSS data available to an even broader audience.

Conduct research BRFSS data have become an important resource for conducting research. Because an extensive amount of health risk behavior and demographic data are obtained from respondents, this has stimulated more intensive research beyond basic descriptive analyses. Examples include the discovery of characteristics associated with failure to receive HIV testing and the risk factors for living in households with loaded and unlocked firearms.

Develop surveys The BRFSS also serves as a model for development of point-in-time surveys to collect more in-depth data on specific topics or to target specific areas or populations.

Suggested Reading

Bureau of the Census. *Statistical Brief: Phoneless in America*. Washington, DC: Bureau of the Census, 1994.

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Chapter Two
BRFSS Roles and Responsibilities

The Centers for Disease Control and Prevention (CDC) provides partial funding to the states for the Behavioral Risk Factor Surveillance System (BRFSS). Funding agreements specify tasks and responsibilities of CDC and the state health department grantees.

CDC Support Activities

The Behavioral Surveillance Branch (BSB) in CDC's Division of Adult and Community Health (DACH) supports the BRFSS activities through training, technical assistance, and data management and analysis. States are encouraged to use this expertise to initiate other data collection activities so they may respond to health emergencies and meet public health needs. BSB has the following responsibilities.

Coordination

- Provides standard protocol for conducting the BRFSS.
- Coordinates the BRFSS Working Group.
- Coordinates with the American Statistical Association through the Section on Survey Research Methods.

Questionnaire Development

- Coordinates provision of the core questionnaire.
- Provides the optional modules.
- Pilots the annual questionnaire.
- Scripts the interview lead-in and screening tool.

Sampling Strategies

- Provides telephone samples.
- Consults on and holds approval authority on alternative sampling designs.

Technical Support

- Provides consultation and referral for question design, questionnaire administration, and data analysis.
- Reviews reports of data analysis.

Training and Monitoring

- Provides or consults on training of supervisors and interviewing staff.
- Facilitates use of quality assurance methods.
- Produces the annual conference.

Data Management

- Provides programming for state-based editing.
- Edits data files.
- Processes data.
- Provides standard tabulations to states.
- Provides programming for state-based quality assurance reports.
- Provides Ci3 CATI programming.

Materials

- Provides the *Behavioral Risk Factor Surveillance System User's Guide*.
- Provides data layout, editing criteria, and data submission requirements.
- Issues numbered memoranda as policy, procedures, or protocol are introduced or modified.

State Responsibilities

Regardless of any contract arrangements for data collection or analysis outside the health department, the states are responsible for ensuring adherence to the BRFSS protocol (see the box on the next page). Each state has the following responsibilities.

Planning

- Formulates a plan for carrying out the BRFSS in conformance with prescribed standards.
- Develops procedures for ongoing analysis of data on risk behaviors.
- Follows updated guidelines communicated via official CDC channels.

Management and Staffing

- Maintains a staff with the expertise needed to carry out and supervise BRFSS activities.
- Monitors and evaluates the activities and performance of in-house staff and contractors, as appropriate.
- Provides training materials, trains new staff, and provides retraining.

Questionnaire Use and Development

- Develops state-added questions, as needed.
- Chooses optional components in preparing the new instrument.
- Administers core component and optional module questions without modification.

Data Collection

- Collects data through telephone interviews.
- Edits data.
- Submits data electronically to CDC within 30 days after the end of the survey month.

Quality Assurance

- Ensures that data are accurate and valid and that response rates are optimal.
- Monitors quality control reports, response rates, and other quality assurance indicators.

Data Analysis and Use

- Analyzes data and publishes results.
- Ensures that BRFSS data are used to direct policy development and program planning and to evaluate programs, set priorities, design interventions, assess trends, and target risk groups.

Protocol for the Behavioral Risk Factor Surveillance System
—BRFSS—

1. All states must ask the core component questions without modification. States may choose to add any, all, or none of the optional modules and state-added questions after the core component. Inserting related state-added questions into the core may be agreed upon in consultation with the Behavioral Surveillance Branch.

2. Samples used in the BRFSS must be state-based probability samples in which all households with telephones have a known, nonzero chance of inclusion.

3. Systematic, unobtrusive electronic monitoring will be a routine and integral part of monthly survey procedures for all interviewers.

4. For the Mitofsky-Waksberg sampling design, the predetermined cluster size for the BRFSS is three completed interviews for each accepted primary sampling unit, or PSU.

5. An eligible household is a housing unit that has a separate entrance, where occupants eat separately from other persons on the property, and that is occupied by its members as their principal or secondary place of residence.

   Noneligible households are (1) vacation homes not occupied by household members for more than 30 days per year, (2) group homes, and (3) institutions.

   Household members include all related adults (aged 18 or older), unrelated adults, roomers, and domestic workers who consider the household their home, even though they may not be home at the time of the call.

   Household members do not include adult family members who are currently living elsewhere.

6. Proxy interviews are not conducted within the BRFSS. Individual respondents are randomly selected from all adults aged 18 and older living in a household and are interviewed in accordance with BRFSS protocol.

7. An interview is considered complete if data are collected for age, race, and sex. If values on age or race are not entered, imputed values will be generated and used only to assign poststratification weights. (The dataset will not contain imputed values for these records.)

8. No less than a 5% random sample of each month's interviews must be called back to verify selected responses for quality assurance.

9. With the exception of verbally abusive respondents, eligible persons who initially refuse to be interviewed will be contacted at least one additional time and given the opportunity to be interviewed. Preferably, this second contact will be made by a supervisor or a different interviewer.

10. All previously screened calls for a given month's survey are to be completed within that month. A given month's survey may not commence before the first day of the month, and may not extend beyond the last day of the month.

BRFSS Working Group Responsibilities

The BRFSS Working Group provides consultation on the surveillance system's maintenance and development. The members, convened periodically by conference call, at on-site meetings, during the annual conference, and via electronic communication represent the following groups.

BSB staff — The branch chief, deputy branch chief, and section chiefs convene the working group, determine meeting agendas, and provide administrative and staff support.

State representatives — BRFSS participants from five states are selected from their applications to serve a two-year term. The terms overlap by one year for two and three members, respectively, for purposes of continuity (i.e., one year two members depart; the following year three members depart; the following year two members depart). The representatives provide a collective voice for all states.

CDC representatives — A representative from each division of the National Center for Chronic Disease Prevention and Health Promotion and representatives from other CDC centers and programs with an interest in behavioral risks provide input on data needs in their areas of public health expertise.

The members have these main responsibilities:

- Represent state and CDC viewpoints in an ongoing review of BRFSS questionnaires and other significant documents.
- Participate in the planning process for the annual BRFSS conference.
- Provide general guidance and advice on conducting the BRFSS.

Survey Methods Working Group Responsibilities

To provide guidance on statistical and methodological issues related to the BRFSS, the Survey Methods Working Group was formed in 1996 within the American Statistical Association's Section on Survey Research Methods. This working group operates solely under the guidance established by the association and is convened at least once, and not more than twice, each year. Participants include five section members, plus affiliates designated by CDC. To establish continuity, initial members were asked to serve one-, two-, or three-year terms. A BSB representative serves as liaison to the group to ensure the provision of necessary coordination, management, and support.

A critical function of this working group is to review conceptual, operational, and analytic issues requiring further research and evaluation, with the goal of improving standards for quantifying and evaluating the quality of BRFSS data. The group focuses on the following areas:

- Sample design.
- Weighting and estimation.

- Questionnaire development and validation.
- Data collection methods.
- Standards for processing and monitoring the quality of BRFSS data.

As advances in survey methodologies, practices, and technologies occur, the working group fosters continuous improvement in the collection, management, and analysis of BRFSS data.

BRFSS Project Officer

The project officer is the public health advisor on the Behavioral Surveillance Branch (BSB) staff who serves as the primary point of contact to individual states and serves as the liaison between the states and the BSB providing general oversight and guidance on all aspects of the cooperative agreement between CDC and the state. The project officer represents the state's needs and goals to the BSB and represents the protocols, resources, and long-term goals of the BSB to the states. Therefore, the project officer is knowledgeable of all aspects of work conducted within the BSB, and knowledgeable of all aspects of the BRFSS in each of the states she or he represents.

To represent the BSB, the project officer receives and implements standing and evolving protocols and procedures, general and specific guidelines by which the BRFSS is conducted and the data are processed. Project officers provide assistance in meeting BSB guidelines that govern sampling design, weighting issues, survey administration, and question and questionnaire development. The project officer has the responsibility of ensuring that states meet BSB protocols and submit their data on time and in such a way as not to interfere with the overall operation of data processing within the BSB. The project officer also has the responsibility of ensuring that states' data are processed and returned in a timely manner.

To adequately represent states, individually and collectively, each project officer is assigned a complement of states and territories (each state or territory is considered a project). For each of these projects, the project officer must satisfy the requirements of CDC that are stated in the cooperative agreement document. Generally, these requirements include monitoring data collection techniques and data quality, providing training, assisting in the development of program intervention and evaluation strategies, coordinating program activities among states and relevant agencies to achieve the *Healthy People 2000* objectives, and coordinating the interchange of information among states. These requirements are met in diverse ways including teleconferences, in-person meetings, and via E-mail.

Specifically, the requirements of the project officers include identifying and resolving in each state those issues that need to be addressed for successful collection, processing, analysis, dissemination, and application of high quality data. Project officers are responsible for promoting data analysis, dissemination, and tracking the use of BRFSS data in each state. The project officer must ensure that each of these activities is as described in the cooperative agreement application for which the project was funded.

Through closely monitoring data collection procedures and techniques and quality assurance indicators, the project officer ensures that standard BRFSS protocols and procedures for data collection and submission are observed. This often requires that the project officer assist states in identifying and obtaining funding and other resources necessary to properly conduct the survey and process data. Based on the availability of funding and the project officer's knowledge of each

state's BRFSS application, award and ongoing activities, it is the responsibility of the project officer to recommend funding levels within the cooperative agreement and to recommend approval or not of states' requests to amend program activities, proposals to reallocate funds, and changes in state coordinator assignments.

Project officers respond to requests for assistance and to requests for data not only from their projects, but from other agencies and private individuals. In support of the position that BRFSS data ownership resides with the state, whenever possible, these requests will be directed back to the state for which data are being requested or to the state in which the person requesting it resides. When a data request affects numerous states, the request is coordinated among those states by the project officer.

The federal job classification of a BRFSS project officer is public health advisor or public health analyst; however, they often are referred to as technical advisors.

Numbered Memoranda

In recognizing the need to uniformly disseminate policy and procedure guidelines or modifications to all BRFSS projects, BSB employs a system of numbered memoranda that are issued on an as-needed basis. Each memorandum remains in effect unless superseded by a subsequent one. Each is numbered for reference.

Numbered memoranda are distributed via electronic mail (E-mail; with attachments in WordPerfect® format, when necessary) to BRFSS coordinators. It is the responsibility of coordinators who have contractors to assure that their contractor receives each memorandum. (For more information on CDC E-mail, see Appendix F: Electronic Submission of BRFSS Data and Appendix I: CDC WONDER.)

Numbered memoranda issued into 1998 appear in the section behind the Bibliography. We recommend that all numbered memoranda be reviewed carefully with interviewers and maintained in a readily accessible way for reference, as needed.

Annual BRFSS Conference

The annual BRFSS conference is held each spring and, traditionally, lasts two and a half days. The conference welcomes a broad audience of BRFSS coordinators, survey supervisors, contractors, interviewers, statisticians, and epidemiologists, as well as a wide variety of data users and other scientists.

Aside from bringing all the projects together to share and compare their methodologies and research, the conference provides a convenient forum to present and refine techniques for uniform data collection and an opportunity to discuss effective methods of data analysis, application, and dissemination. A constant on the conference agenda is the upcoming year's draft questionnaire, modules, emerging questions, and other questionnaire issues governing the use of the instrument and the surveillance system. The conference provides an excellent opportunity to receive feedback and input on the instrument and the process.

Because the state representatives in the BRFSS Working Group are selected early in the spring, the conference has also proved to be a timely opportunity for the state representatives to meet.

The service terms of state representatives overlap by one year so that as some members depart the group, others begin their terms. This meeting affords operational continuity, as well as an opportunity for new members to familiarize themselves with ongoing issues in the presence of those departing members who have already served their two-year terms.

For general information concerning the conference or for registration information, contact BSB:

Centers for Disease Control and Prevention
National Center for Chronic Disease Prevention and Health Promotion
DACH, BSB (Mail Stop K–30)
4770 Buford Highway, NE
Atlanta, GA 30341-3717
E-mail: eep1@cdc.gov
Telephone: (770) 488-5302 Fax: (770) 488-5974

Suggested Reading

Centers for Disease Control and Prevention. *Health Risks in America: Gaining Insight from the Behavioral Risk Factor Surveillance System.* Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, 1997.

Chapter Three
Survey Samples and Sampling Methods

Because interviewing every person is not economically feasible, the Behavioral Risk Factor Surveillance System (BRFSS) uses a scientifically selected telephone sample. The information obtained from the sample can be used to generalize results for the total population. Representative telephone samples can be produced in many ways.

Probability Sampling for Telephone Surveillance

Most sampling designs used for telephone surveillance are based on the principles of probability sampling—a method of random sampling in which each member of the population has a known, nonzero probability of being included.

> BRFSS PROTOCOL SPECIFIES THAT samples used in the BRFSS must be state-based probability samples in which all households with telephones have a chance of inclusion in the study.

Several types of sampling designs will yield a probability sample. Telephone surveillance systems usually use one of the following:

- Simple random sampling.
- Stratified random sampling.
- Disproportionate stratified random sampling.
- Cluster sampling.

Simple random sampling

In a simple random sample, each telephone number in the surveillance population has an equal probability of being called. The telephone sample is created by appending randomly selected digits to the known working telephone prefixes in the surveillance area.

Stratified random sampling

In stratified random sampling, the population is divided into a specified number of subpopulations, or strata (e.g., north/south, urban/rural), and a sample is drawn independently from each stratum. In concept, stratified random sampling is comparable to conducting a number of independent surveys of subpopulations, then combining data from these separate surveys (strata) to produce an overall estimate. The use of stratified random sampling requires knowledge about the composition of subpopulations; because telephone prefixes generally follow geographic boundaries,

stratified random sampling can be used in telephone surveys to generate probability samples within geographic areas.

Disproportionate stratified random sampling

In disproportionate stratified random sampling (which is a variation of cluster sampling), information obtained from previous surveys is used to classify 100-number blocks of telephone numbers into strata that are either likely or unlikely to yield residential numbers. Telephone numbers in the likely stratum are sampled at a higher rate than numbers in the unlikely stratum.

Cluster sampling

In a cluster sample, the sampling unit is at some point a group, or cluster, rather than an individual. The clusters are usually of equal size. Cluster sampling of households reduces the number of telephone numbers that must be called to complete the sample. Cluster sampling is easier and less expensive but often results in increased variance for measurements.

Note: Both cluster sampling and disproportionate stratified random sampling improve sampling efficiency, but at a cost of decreased precision of estimates (design effect). To compensate for this, a larger sample size is necessary to achieve the same degree of statistical power.

BRFSS Sampling Designs

Mitofsky-Waksberg Three-Stage Cluster Design

States conducting statewide monthly data collection for the BRFSS use a cluster sampling technique—a three-stage procedure based on the Mitofsky-Waksberg method of random-digit dialing. In the Mitofsky-Waksberg sampling design, as implemented in the BRFSS, telephone numbers are randomly selected from blocks of 100 telephone numbers generated from the set of all existing area codes and prefixes in the state. Then, sampling is carried out in three stages. In the first stage, selected blocks of 100 randomly ordered numbers are screened to determine the household status of the first (i.e., defining[1]) number in each block. Blocks remain in the sample only if a residence is reached. In the second stage, the 100 numbers in the accepted block are randomly dialed to identify additional households. In the third stage, individual respondents are randomly selected from all adults aged 18 and older living in a household and are interviewed in accordance with the BRFSS protocol until the target number of interviews is completed. The successful interviewing of this target number constitutes a cluster.

Sample Provision

[1]The first telephone number of the 100 randomly ordered telephone numbers is referred to as "the defining number" because it defines the PSU through the common elements of area code, prefix, and first two digits of the suffix.

On request, the Behavioral Surveillance Branch (BSB) will provide samples of telephone numbers for states to use in conducting the BRFSS. These samples are purchased from a commercial sample provider. In 1998, the first year in which samples were purchased, BSB provided samples based on either the Mitofsky-Waksberg or a disproportionate stratified sampling design. Beginning in 1999, BSB will provide only samples based on the latter design.

The Mitofsky-Waksberg sample consists of blocks of 100 telephone numbers, each with the same area code, prefix, and first two digits of the suffix (e.g., [404] 329-30). This block of 100 numbers is called a primary sampling unit (PSU). The group of any three telephone numbers that are drawn from a PSU and successfully called (i.e., an interview was completed) compose a cluster. For example, (404) 329-3075, (404) 329-3087, and (404) 329-3000, having been called successfully, compose the cluster in the PSU beginning with (404) 329-30.

Each PSU is identified by a six-digit identification number—the combined and record PSU numbers. This numbering system facilitates the tracking of records throughout the data collection and editing processes without compromising the respondents' confidentiality. After the data are edited and tabulated, the last two digits of the telephone number are dropped from the interview record. The entire telephone number is dropped from the final dataset, and the anonymity of the respondent is preserved.

Currently, BSB provides the telephone sample in either a paper or an electronic format.

Paper Sample

A paper sample is a batch of single pages called cluster contact sheets that are numbered consecutively by PSU number (beginning with 00001). Each sheet contains the defining number and 99 additional randomly ordered numbers related to the defining number. (See the sample in Appendix B: BRFSS Paper-Administered Methodology). The sheet is marked with the name of the state, the time zone, and the date that it is printed. Although the paper sample is drawn only once for the interviewing year, portions of it will often be printed and made available to the state at two or three different times throughout the year. This "parceling" minimizes the paper load and facilitates storage.

One section of the cluster contact sheet is used to record the results of screening attempts. Listed below this screening section are the first 15 telephone numbers, including the defining number, that will be called in an attempt to conduct interviews and complete the cluster. Record-keeping spaces for coding the interview attempts for those numbers are also in this section. Directly beneath the 15 numbers is a randomly ordered listing of the remaining 85 numbers in the PSU. At the bottom of the cluster contact sheet is a list of all of the disposition codes with a brief explanation of each code, as well as codes used to indicate the calling occasion.[2]

Based on the sample size, the BRFSS coordinator determines how many PSUs will be needed each month (i.e., the sample size divided by 12 [for 12 months], divided by 3 [the cluster size]) for screening. The cluster contact sheets are then made available to interviewers until the necessary number of PSUs have been screened for the month. The accepted PSUs are set aside for data collection. The rejected PSUs are saved for up to one year for efficiency evaluations that are conducted on paper samples.

[2]Weekdays 1–5 P.M., weeknights 5–9 P.M., Saturdays 10 A.M.–2 P.M., Sundays 1–5 P.M. and 5–9 P.M.

Electronic File

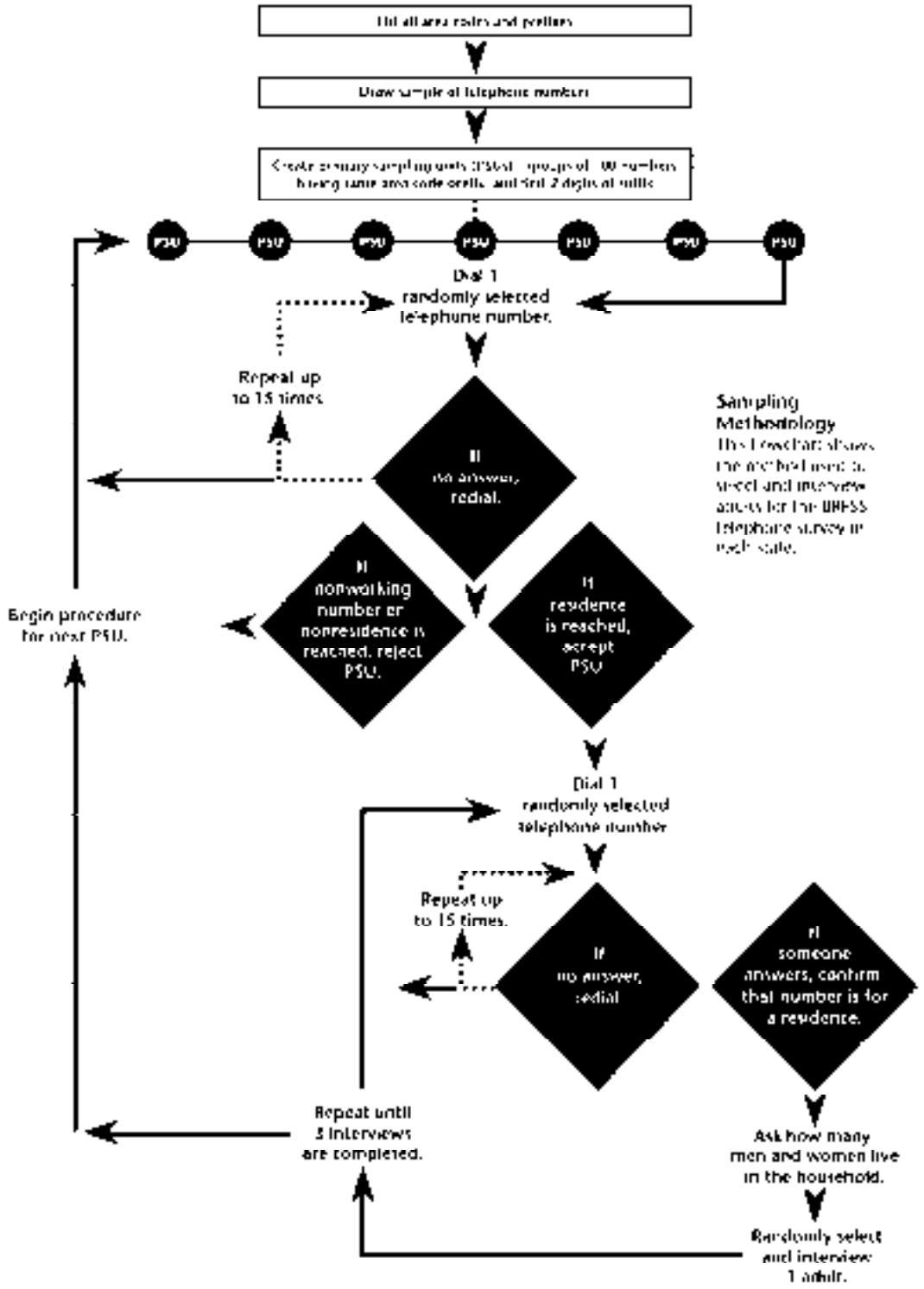
States using computer-assisted telephone interviewing (CATI) systems receive an electronic file containing the telephone sample of defining numbers for screening. Each record contains a 5-digit PSU number and a 10-digit telephone number. The defining number is screened for residential status by using a procedure similar to that used for paper samples. After the residential numbers are identified, the monthly sample for data collection is generated by the CATI system from the defining numbers selected during screening. (For additional instructions on the use of Ci3 CATI, see Appendix E in the *Supervisor's Handbook for Ci3 System and Ci3 CATI*, which appears as Appendix J in this user's guide.)

Three-Stage Cluster Sampling Procedure

Stage 1: Screening of Telephone Clusters

In the first stage, after the PSUs are generated, they are sent for screening. States that use a CATI system receive PSUs in electronic data files. States conducting data collection on paper receive their numbers on cluster contact sheets. (See the flowchart of the sampling methodology on the next page.)

Before each month's interviewing, the states systematically screen the defining number in each PSU to identify the PSUs to be included in the sample. If the call reaches a private residence, the PSU is accepted. If the number called is a nonworking number, a business, an institution, any other nonresidential status, repeatedly busy, or repeatedly not answered, the entire PSU is rejected; no number in that PSU is used in the sample. PSUs are not rejected until 3 call attempts during each of 5 calling occasions (for a total of 15 attempts)—over weekdays, weeknights, and weekends—have been made to determine residential status of the defining number.


Dial 1 randomly selected telephone number.
Repeat up to 15 times.
If no answer, redial.
If nonworking number or nonresidence is reached, reject PSU.
If residence is reached, accept PSU.
Begin procedure for next PSU.
Dial 1 randomly selected telephone number
Repeat up to 15 times.
If no answer, redial
If someone answers, confirm that number is for a residence.
Repeat until 5 interviews are completed.
Ask how many men and women live in the household.
Randomly select and interview 1 adult.
Sampling Methodology

For CATI systems, 99 additional randomly ordered and unique telephone numbers are generated at this point for each of the accepted defining numbers in the first month's sample and placed in a data file. For paper-administered systems, the 99 additional numbers for each accepted defining number were previously generated and printed on the cluster contact sheets. Because all PSUs are not accepted, the final set will have gaps in the sequence of PSU numbers. No more than three telephone numbers in a PSU can be available to be called at any one time. Telephone numbers are replaced according to the BRFSS Rules of Replacement (see the box on page 3–7). The methods for following these rules depend on the particular CATI system being used.

Stage 2: Household Selection

In the second stage, additional households are identified within each PSU. Interviewers call the previously dialed defining number and other subsequent numbers from each PSU accepted into the sample. If someone answers the telephone and confirms that the call has reached a residence, the interviewer proceeds to the respondent selection stage of sampling (described next). The telephone numbers that do not result in a completed interview are replaced according to the Rules of Replacement. The telephone numbers that do result in a completed interview are not replaced.

Note: Within any active PSU, the number of completed interviews plus the number of telephone numbers being pursued will always equal three.

Stage 3: Respondent Selection

In the third stage, one adult (aged 18 or older) is randomly selected to be interviewed from each selected household. To facilitate the process, a list of the adults from the oldest to the youngest male and then oldest to youngest female is constructed. A respondent is randomly selected from the ordered list of adults. This selection process is the same for all sampling methods. The process continues until (1) the predetermined cluster size is reached, (2) all the numbers in the PSU have been used, (3) the supervisor determines that a selected PSU is unsatisfactory and should be replaced,[3] or (4) the interviewing period ends.

BRFSS PROTOCOL SPECIFIES THAT proxy interviews are not conducted within the BRFSS. Individual respondents are randomly selected from all adults aged 18 and older living in a household and are interviewed in accordance with BRFSS protocol.

BRFSS Rules of Replacement

Code	Disposition	Rule

[3]See "Removing an Unproductive PSU from the Sample" in Chapter 5, on page 5–7.

01	Completed interview (questions asked include age, race, and sex)	Do not replace.
02	Refused interview	Replace after second refusal or when a first-time refusal will not be called a second time.
03	Nonworking number	Usually recognized by a recording of a fast-busy signal. Includes “number changed” recordings and numbers that “bridge.” Call operator or repair service when in doubt. Replace.
04	Ring no answer	A normal telephone ring that no one answers (answering machines do not count as an answer) after (1) five calling occasions (each consisting of three attempts) and (2) the five occasions have a mixture of weekday, weeknight, and weekend calls. If possible, contact the telephone company repair service to verify the number is in service. Replace.
05	Not a private residence	The person answering identifies the telephone number as a business or says “no” when asked “Is this a private residence?” Also use this disposition for institutions (government offices, educational facilities, dormitories, nursing homes, hospitals, prisons, etc.), group homes (fraternities and sororities, half-way houses, shelters, etc.), pagers, fax machines, and computer modems. Replace.
06	No eligible respondent at this number	The household does not include anyone 18 years of age or older (this does not mean the adults are away temporarily). Replace.
07	Selected respondent not available during the interviewing period	The selected respondent will not be available or could not be reached during the time you have allotted for the month’s interviewing. Replace.
08	Language barrier	The selected respondent does not speak English well enough to be interviewed, and no interviewers speak the respondent’s language. Replace.
09	Interview terminated within questionnaire	A “hang up” at some point after the first questions has been asked (this does not mean the respondent refused a particular question). Make another attempt to complete the questionnaire. Replace if second attempt is unsuccessful. If after a second attempt the respondent has completed the interview at least through the age, race, and sex questions, recode as a completed interview.
10	Line busy	To be coded only after (1) five calling occasions (each consisting of three attempts at ≥ 10 minute intervals) and (2) the five occasions have a mixture of weekday, weeknight, and weekend calls. If possible, contact the telephone company repair service to verify the number is in service. Replace.
11	Respondent unable to communicate due to physical or mental impairment	For example, the respondent is deaf. Replace.

> BRFSS PROTOCOL SPECIFIES THAT the predetermined cluster size is three completed interviews for each accepted PSU.

Within a cluster, which comprises three completed interviews, each completed interview is assigned a record number from 1 to 3. (Record numbers are assigned only to completed interviews.) Each record is numbered as it is completed to satisfy the cluster requirement. Telephone numbers called that do not result in completed interviews are considered incomplete interviews, but the records are included with the completed interviews in the final data file.

As with all cluster sampling designs, the Mitofsky-Waksberg design generally produces estimates that are less precise than estimates obtained by use of simple random sampling. However, because each block of 100 telephone numbers is screened to exclude business and nonworking numbers, the Mitofsky-Waksberg design when compared with simple random sampling reduces the total number of calls to be made during the surveillance process. The improved efficiency made the Mitofsky-Waksberg design a good choice for large telephone surveys.

Other Sampling Designs

Some states find that the Mitofsky-Waksberg design, although much more efficient in identifying households than simple random sampling, is still not as efficient as other telephone surveillance designs, such as disproportionate stratified sampling.

> BRFSS PROTOCOL SPECIFIES THAT samples used in the BRFSS must be state-based probability samples in which all households with telephones have a chance of inclusion in the study.

Given this protocol:

- Purchased samples must include telephone numbers selected from all working blocks of 100 telephone numbers that might contain household numbers, not just those containing 1, 2, 3, or more listed household numbers.
- The sampling frame for purchased samples must include telephone numbers from the entire state and thus must include counties and other geographic areas with a small number of residences.
- States are permitted to sample telephone numbers from different blocks or different parts of a state at different rates, provided that the sampling ratio is reported to BSB.

Sample Size

The following factors must be considered when determining the size of a state's BRFSS sample:

- Cost and available resources.
- Surveillance system objectives.
- Number and size of populations for which estimates are desired.
- Desired level of confidence in estimates.
- Effect of the sampling design on the estimates.

Cost considerations are of utmost importance when determining sample size, as collecting and processing survey data is expensive. The objectives of the surveillance system—that is, the subject areas in which data are desired—must be carefully evaluated. If the behavior of interest is uncommon in the general population (e.g., <10%), the overall sample size will have to be large enough to include a sufficient number of respondents.

Often there is interest in obtaining estimates for subpopulations within states, such as racial or ethnic minority groups or persons aged 65 years or older. This interest must be considered when determining sample size to ensure an adequate number of respondents within these subpopulations to produce estimates with an acceptable level of precision.

The tolerable range of error of estimates must be identified. For example, estimates with a range of error of ± 3% will require a much larger sample size than a range of error of ±10%. Also, the desired level of confidence that the true value is within the tolerable range of error has to be established. Typically, the 95% confidence level is used, although levels can be selected; the higher the required confidence level, the greater the sample size requirement.

Finally, for those states that do not use simple random sampling, some adjustment is needed for the estimated sample design effect. As mentioned previously, if cluster sampling is used (e.g., Mitofsky-Waksberg or disproportionate stratified sampling designs), the precision of the estimates will be lower than would be obtained through simple random sampling. This means that a larger sample size must be obtained than would be required with simple random sampling. This adjustment factor is called a design effect (DEFF). This effect cannot be determined until after the data are collected, but it must be estimated in advance to determine sample size. In general, a reasonable DEFF estimate for the BRFSS is 1.3.

The following formula can be used to estimate sample size for the BRFSS:

$$N = [\ 1.96^2\ (0.25) \ / \ (\text{tolerable range})^2\ ]\ \text{DEFF}$$

Note: This calculation assumes a 95% confidence level; if the tolerable range was ±0.05 (±5%) and the estimated design effect was 1.3, then $N = [1.96^2\ (0.25) / (0.05)^2] * 1.3$, or 499 respondents.

Sources of Error

The BRFSS relies on surveillance methods and self-reports to collect data on health risks, which present opportunities for error. For example, response accuracy depends on how well respondents understand the questions and recall the information needed to answer the questions. Response accuracy may also depend on norms associated with telephone conversations, perceptions of

interviewers, or concerns about self-protection and self-presentation. Measurement error and response inaccuracy may occur if respondents interpret questions in unexpected ways or if they cannot recall the information needed to answer a question.

Measurement errors decrease under surveillance procedures that encourage interviewers to conform to established data collection practices and procedures. Interviewer training and supervision are particularly important in ensuring compliance with surveillance protocols. Four sources of error are described next.

Noncoverage Error

Noncoverage error occurs because not all members of the general population are capable of being included in the sample. Population groups typically excluded from most general population surveys include persons living in nonresidential settings, such as hospitals, nursing homes, prisons, military bases, and college dormitories. Compared with the size of the adult population of the state as a whole, the number of persons within the above-mentioned groups is generally small.

> **Note:** Household members include all related adults, unrelated adults, roomers, and domestic workers who consider the household their home, even though they may not be home at the time of the call.
>
> Household members do not include adult family members who are currently living elsewhere.

Because the BRFSS uses telephone surveys, households without telephones are not included, making this a larger source of noncoverage error. Telephone coverage is generally high in the United States, so the effect of noncoverage on statewide estimates is small. However, for some populations (e.g., American Indians, rural blacks in some southern states), telephone noncoverage is much higher. Persons without telephones tend to have lower household incomes, and low income is associated with certain health risk behaviors. This means that the BRFSS and other estimates based on telephone surveys may result in underestimates of risk behavior for subpopulations in certain states.

There is no easy solution to the problem of noncoverage error in the BRFSS. Although data can be weighted to account for households without telephones, state-specific estimates of telephone noncoverage are only available once every 10 years. Data could be obtained through in-person household interviews for persons without telephones, but this is very costly.

Sampling Error

Sampling error occurs because estimates are based on only a sample of the population rather than on the entire population. This type of error can occur in even the most sophisticated sampling design with an adequate sample size. Strict adherence to correct surveillance procedures, however, can eliminate some causes of sampling error.

In the BRFSS, one avoidable cause of sampling error is associated with the selection of residential telephone numbers. When the Mitofsky-Waksberg sampling design is strictly

followed, the targeted number of households interviewed in each cluster should be the same: always three telephone numbers from each PSU—never more and never less. For purposes of survey efficiency, the BRFSS has adopted a policy to replace largely unproductive PSUs; however, the more the cluster size is allowed to vary, the greater is the potential for the probability design to be compromised.

A second avoidable cause of sampling error occurs when the random selection process for household members is disregarded and the person who first answers the telephone is interviewed. Poststratification, the method used to adjust the distribution of the sample data so that it reflects the total population of the sampled area, can compensate for this type of error. Poststratification is the final adjustment made to the weighting factor. This adjustment forces the weighted totals within categories of age and race to be distributed consistent with some external population estimate, such as Bureau of the Census data. Poststratification is performed to reduce potential bias due to lower response levels and lack of telephone coverage in some groups, thereby providing more precise estimates that are consistent with other statistics.

Nonresponse Error

Nonresponse error—the inability to obtain data for all questionnaire items from persons in the sample population—is a common problem in surveillance work. There are two levels of nonresponse: unit nonresponse and item nonresponse.

Unit nonresponse occurs when an eligible sampling unit (i.e., a household, a person) does not respond or a respondent refuses to participate in the survey. Some persons may never be located after multiple call attempts have been made; others may be willing but unable to respond because of a language barrier, hearing problem, or other cause.

Item nonresponse occurs when useful data are not obtained for a questionnaire item for three reasons:

1. The respondent believes a question is too sensitive.
2. The respondent does not know or cannot recall the answer to a question.
3. The interviewer overlooks a question or neglects to record the answer on the questionnaire.

> BRFSS PROTOCOL SPECIFIES THAT an interview is considered complete if data are collected for age, race, and sex. If values on age or race are not entered, imputed values will be generated and used only to assign poststratification weights. (The dataset will not contain imputed values for these records.)

Nonresponse can create biased estimates. Because nonresponse bias is inversely related to response rate, surveys with higher response rates will generally have lower nonresponse bias.

Measurement Error

Measurement refers to the process of obtaining the qualitative or quantitative values needed to meet the study's research objectives. The quality of measurements can be enhanced or diminished by several factors. Responses to questions can be influenced by

- Wording, format, and order of questions.
- Characteristics of the respondent, such as socioeconomic background and attitude toward interviews.
- Adherence to wording.
- Interviewer's tone of voice, interviewing pace, and ability to maintain scientific objectivity when helping to clarify respondents' answers.

Staff members involved in editing and coding the data also contribute to the measurement process and, thereby, are a source of measurement error.

Measurement errors can be decreased if the questions are phrased properly on the questionnaire, read properly by the interviewer, understood and answered truthfully by the respondent, and checked for errors by data processors. The box on the next page lists some potential sources of measurement error that can affect the quality of BRFSS data.

Common Sources of Measurement Error

Type	Description	Source
Question wording	Ambiguous or complex wording may be interpreted differently than intended.	Questionnaire
Question order	Answers to some questions (especially those asking for opinions) may be affected depending on where in the questionnaire they are asked.	Questionnaire
Response-code precision	Possible answers may not have an appropriate response code, or codes may not be mutually exclusive.	Questionnaire
Length of interview	In a lengthy interview, the respondent may tire and put less serious thought into his or her responses near the end of the interview than at the beginning.	Questionnaire
Recall error	The respondent may be unable to recall factual items accurately.	Respondent
Interviewer clarifications to respondent	Lack of thorough training and interviewing experience could cause the interviewer to mislead the respondent on questions that may not be clear.	Interviewer
Coding error	The interviewer may misinterpret the respondent's answer, mark an incorrect response code, or make an inaccurate data entry on the questionnaire.	Interviewer

Common Sources of Measurement Error

Sloppy questionnaire administration	The interviewer may ask a question incorrectly, record an incorrect response, or fail to follow skip instructions.	Interviewer
Data entry error	In paper-administered systems, the person entering the data codes into computer files may inadvertently key in the wrong value.	Data processing

Suggested Reading

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Chapter Four
Guide for BRFSS Coordinators

BRFSS Overview

In 1984, the Centers for Disease Control and Prevention (CDC) initiated the state-based Behavioral Risk Factor Surveillance System (BRFSS) to collect prevalence data on risk behaviors and preventive health practices that affect health status. States conduct monthly telephone surveillance by using a standardized questionnaire to determine the distribution of risk behaviors and health practices among adults. Responses are forwarded to CDC, where the monthly data are aggregated for each state, returned with standard tabulations, and published at year's end by each state.

Coordinator Roles and Responsibilities

Successful administration of the BRFSS depends on advance planning, careful staffing, and skillful administration. These are the responsibilities of the BRFSS coordinator, regardless of whether data collection or analysis is contracted outside the health department. The coordinator's job spans three main roles and involves the following principal activities, most of which occur before data collection.

Staffing and Training

- Determines personnel needs.
- Recruits, screens, and hires staff.
- Determines training needs and conducts training.

Facilities and Supplies

- Ensures availability of safe, comfortable facilities for training and data collection.
- Ensures availability and implementation of adequate equipment and supplies.

Management and Administration

- Ensures adherence to BRFSS protocol.
- Collaborates with the Behavioral Surveillance Branch (BSB) on annual questionnaire content.
- Determines sample design and size and obtains the surveillance sample.
- Schedules data collection activities.
- Coordinates data management and analysis.
- Ensures appropriate distribution and dissemination of BRFSS data.
- Promotes use of the data.

Personnel Needs

The personnel needed to administer the BRFSS are the coordinator, supervisors, interviewers, and data managers.

Coordinator The coordinator has overall responsibility for planning and conducting the BRFSS within the state health department. If the state contracts with a survey research firm or laboratory, the coordinator is then responsible for selecting the contractor, overseeing the contractor's performance, and ensuring that the contractor conforms to the prescribed protocol.

Supervisors Supervisors are responsible for implementing the surveillance system, training and supervising the interviewers, assigning and tracking telephone numbers, monitoring interviews, performing verification callbacks, and editing data files.

Interviewers Interviewers form the core of the BRFSS staff. It is their responsibility to ensure that data are collected accurately.

Data managers Regardless of the method of data collection, a data manager is needed to prepare the data for submission to CDC by applying the formatting, editing, and correction programming provided by BSB and to generate quality assurance reports. Supervisors can also be trained to perform this role. Computer-assisted telephone interviewing (CATI) systems require someone with experience in operating applications software to perform the set-up and output procedures. Supervisors can also do this job.

In paper-administered systems, data entry staff are needed to (1) code completed questionnaire responses into computer files and (2) enter telephone numbers that did not result in completed interviews.

Statistical assistance is also required for both paper-administered and CATI systems. BSB staff are available to help determine sample size and precision and confidence levels, generate telephone numbers, and provide overall weighting of results. Health departments should enlist the aid of their own statisticians and analysts for occasional consultation throughout the surveillance process, particularly during the data analysis stage.

Personnel Recruitment and Screening

An adequate number of trained, competent staff is the key to ensuring accurate BRFSS data collection. The number of interviewers can be calculated on the basis of the sample size and the total time during which data collection will take place. Taking into account busy signals, refusals, callbacks, and other call attempt outcomes, interviewers can complete an average of approximately 1.5 interviews per hour. An additional two to three interviewers beyond the

estimated number should be recruited and trained to provide backup support for illness or dropouts.

Most states will also need several supervisors. One supervisor should be in charge of the overall BRFSS operation; additional supervisors should be trained to monitor interviews for consistency and accuracy. Supervisors are often recruited from the pool of experienced interviewers. Generally, one supervisor should be retained for every 7 to 10 interviewers. In states with small interview teams, one person can be identified as the lead interviewer; this person assumes supervisory functions but also conducts interviews as time permits.

Recruiting Interviewers

BRFSS interviewing is usually part-time or temporary work. Depending on the sample size, each interviewer can be expected to work about 10 to 30 hours each month, usually on nights and weekends. Finding reliable temporary staff to work these hours can be challenging, but it is possible and worth the effort. Low staff turnover is always desirable, as performance improves with experience.

Interviewers can be recruited from several resources and among several groups in the community:

- Community organizations with commitments to placing people in jobs.
- Temporary service agencies.
- Local marketing research firms that might subcontract interviewers.
- Health department personnel working for extra pay.
- College students.
- Retired persons.

If a significant portion of the surveillance population does not speak English, states may also want to recruit interviewers who are fluent in other languages.

Screening and Selecting Interviewers

Whenever possible, applicants should be screened through personal interviews. The interview should be structured to describe the job and assess certain characteristics of the applicant.

Job description Clarify job responsibilities right away. Applicants should be asked to describe the characteristics and skills they ascribe to a good interviewer. Questions of this type can be used to identify misconceptions about the job.

Applicant's skills	Determine the applicant's clerical and computer skills and ability to follow detailed instructions. The applicant's ability to read the questionnaire and follow a sequence of questioning should also be examined.
Applicant's aptitude	Assess the applicant's level of comfort in asking highly sensitive questions to persons over the telephone (e.g., sexual behavior module questions).
Applicant's experience	Explain the stringent expectations of the BRFSS protocol and point out any differences in the applicant's experience.
Voice quality rating	Listen to the applicant's voice on the telephone. Experience has shown that neutral, even tones generate the most promising reactions from survey respondents.
Applicant's demeanor	Assess the applicant's attitude and motivation. Successful applicants are likely to be conscientious, courteous, friendly, and self-confident; these skills are good predictors of whether the person will remain on the job.

Working with a Contractor

Using a contractor to collect BRFSS data is an approved option for states, with the understanding that the contractor will comply with BRFSS protocol in representing the health department; administering the surveillance system; and collecting, editing, and submitting the data. Although contracting out this activity frees the coordinator from the day-to-day responsibilities of BRFSS administration, the coordinator remains responsible for ensuring compliance with BRFSS protocol and for enforcing the contract. These responsibilities can be ameliorated to some extent through the careful and thorough development of contract specifications. (See Appendix G: Sample Contractor Specifications.)

Contracting the data collection activity has disadvantages:

- Significant lead time is needed to develop and advertise the request for proposals, evaluate and process bids, and grant the award. The process can be impeded by many factors beyond the health department's control. Contract renewal processes may result in a change in contractor at the expiration of the contract.
- In many circumstances, contracting the data collection activity will restrict the in-house capability to incorporate state-added questions to or delete them from the questionnaire throughout the year. With some forethought, however, this restriction can be addressed within the contract, although negotiations can be troublesome and expensive.

The benefits of contracting data collection activities accrue from the unique attributes of a professional survey research firm, which offers the following benefits:

- Provides specific education and training to oversee scientific survey operations.
- Offers experience in recruiting and managing a productive and thoughtfully selected staff.
- Assumes the responsibility for hiring, training, and dismissing personnel.
- Provides training to motivate interviewers, and monitors interviewers for performance.
- Provides facilities and supplies often superior to those of an in-house operation.
- Understands what resources are needed to provide unobtrusive electronic monitoring services to ensure that quality data are collected.
- Provides knowledge and means to conduct ongoing monitoring of quality assurance indicators.
- Provides resources to perform data analyses and analytical projects.

Another consideration in contracting data collection is how it may affect the coordinator's job. In some cases, contracting can expand the coordinator's job responsibilities to include contract oversight and data analysis and dissemination. In other cases, contracting can jeopardize the coordinator's job. The decision to contract data collection should, therefore, be undertaken in consultation with all necessary health department staff and the BSB project officer. Any such decisions can be amended, altered, or rescinded. The project officer is the BSB staff member who serves as liaison between a given state and the BSB by providing general oversight and guidance on all aspects of the project and the funding mechanism.

Training Needs

The quality of BRFSS staff training influences the quality of data collection. To ensure that the surveillance data produce reliable estimates, all interviewers must be trained to do their jobs in a standardized way. Ideally, all interviewers should be able to elicit the same answers from each respondent.

During training, coordinators discuss resources, start-up, screening, data collection, and quality assurance. Sample training agendas and selected instructional materials used in the CDC training sessions are included in Appendix C: BRFSS Training and address

- Initial training of new supervisors and interviewers.
- Training prior to each new interviewing period.

- Retraining.
- Training of contractors.

More extensive training to avoid and convert refusals should be provided subsequent to the initial training and after the interviewer has some experience conducting interviews. Audio tapes are very effective in this setting.

Confidentiality

Protecting the respondent's confidentiality is a fundamental principle in the BRFSS. Respondents are frequently concerned about confidentiality, and interviewers must be able to assure the respondents that their confidentiality is protected. When confidentiality has been stressed with the interviewers, they will sound sincere when they tell respondents that all answers are confidential.

To ensure confidentiality, no respondent identifiers are retained in the interview records. Even the last two digits of the telephone number are eliminated from the final data to ensure that responses cannot be connected to a specific person. Information is further protected because the data are combined, and reports cite only aggregate figures (e.g., 10% of the population had a household income of less than $10,000). In the rare case when a respondent is known to the interviewer, the interview should be terminated and coded as terminated within the questionnaire (code 09).

All BRFSS personnel must respect confidentiality. Although discussion of respondent information among BRFSS staff is a necessary part of the surveillance process, staff must not discuss details of specific interviews outside the work environment. A good mechanism to establish respect for confidentiality is to ask all staff who are involved in the interviewing process to sign forms stating that (1) "I have been informed that interview information is confidential" and (2) "I agree not to divulge interview information outside the job" (a sample of a confidentiality agreement appears on the next page). Interview monitoring does not violate the principle of confidentiality as long as the monitors are subject to the same confidentiality standards as the rest of the BRFSS staff.

SAMPLE CONFIDENTIALITY AGREEMENT

Participating Laboratory
100 Main Street, City, State Zip Code

Confidentiality Agreement

The _____ Laboratory provides an essential and valuable community service through the research of public information on a broad range of topics. Our projects often involve sensitive and confidential information from our clients and from our respondents. Truthful and accurate respondent and sponsor information is critical to the accuracy of the survey results and procedures.

As a result, the nature of the information surveyed requires a commitment of confidentiality to protect clients' and respondents' rights to privacy. Frequently, a commitment of confidentiality is a prerequisite to facilitate participation by respondents. Therefore, a commitment of confidentiality to its respondents and survey sponsors is important. Because unauthorized breaches of that confidentiality would violate assurances that are essential to obtaining truthful and accurate information, thereby impinging on our ability to produce accurate and reliable products, unauthorized disclosure of research information would result in a greater harm than benefit to the public interest. As a result, we request that each employee read and sign the following confidentiality agreement as a condition of employment.

I HEREBY AGREE NOT TO RELEASE THE FOLLOWING PRIVILEGED INFORMATION TO ANY PERSONNEL WITHOUT PROPER AUTHORIZATION FROM A DULY AUTHORIZED EMPLOYEE OR AGENT:

1. Information leading to the identification of a survey respondent,
2. Survey schedules, questions, and materials,
3. Individual survey responses and survey results, and
4. Unpublished tabulations of survey results.

_____ _____
Signature Date

Facilities

The BRFSS coordinator is responsible for ensuring safe, comfortable facilities for data collection, training, and storage.

Work Space

Whether monthly data collection is done in the health department office or the office of a contracting agency, work-space requirements are the same. Interviewing should take place in a centralized facility for cost-efficiency, safety, monitoring ease, troubleshooting, and quality assurance. Each interviewer should have an office or cubicle with a clear desk from which to conduct interviews. Interviewers should be separated as much as necessary so that telephone conversations do not interfere with each other. Headsets should be made available for interviewers' use.

Training Space

A classroom or conference room is needed for interviewer training before the survey is begun. During the survey, a nearby conference room is convenient for group meetings, briefings, and problem-solving sessions. Regular meetings can help to ensure that interviewers are consistent in their data collection strategies and are comfortable with the responses being given. For CATI operations, hands-on training at the computer is most effective and highly advised. Training provided at the computer reduces boredom and increases familiarity with and confidence in the job.

Storage Space

A safe storage area should be available where surveillance materials can be left when interviewing is not being conducted. In addition, there should be a central area, or headquarters, to house necessary supplies and any extra materials needed for editing, monitoring, reviewing, and assigning daily work, callbacks, and appointments.

Security

Most interviewing takes place during off-hours, so arrangements should be made for adequate building security and appropriate heating and air conditioning, lighting, and ventilation. Interviewers may need building passes during evening or weekend shifts and security escorts to and from parking areas.

Computer Needs

The computer software and hardware needed to support the BRFSS depend on the needs of the state. The following recommendations are directed to BRFSS operations located in state health departments. Requirements for other situations should be discussed with BSB staff.

Communications, Data Editing, and Data Analysis Systems

Communications systems

States can communicate with BSB via CDC WONDER (see Appendix I: CDC WONDER). Health department-based BRFSS staff can use CDC WONDER to (1) send and receive updates directly from BSB, (2) submit data from monthly surveillance, and (3) communicate with other BRFSS coordinators.

Using CDC WONDER software on a computer requires a modem (recommended 9600 baud or higher) installed with a dedicated telephone line available for data transmission. Documents and attachments are in either ASCII format or WordPerfect® files. The CDC WONDER software, documentation, and support line is available during normal business hours at (888) 496-8347.

Data editing systems

States can edit monthly surveillance data by using software furnished by the Survey Operations Section of BSB**.** PC-EDITS software is used to check for inconsistencies and out-of-range responses in monthly surveillance data. MS-DOS-based programs to correct errors (PC-EDITS) and produce quality-control reports (PC-QC) are also available. Support for PC-EDITS and PC-QC is provided by the Survey Operations Section of BSB by calling (770) 488-5292.

Data analysis systems

Several different software packages can be used to analyze BRFSS data. The basic requirement for a statistical package is its ability to process the complex three-stage probability sample used in most states. PC-oriented software options include SAS™, SPSS™, Minitab™, QuickTab™, EpiInfo (v.6.0+), and SUDAAN™. States should consult with a statistician or research epidemiologist to discuss the best package for their needs. Consultations are available from BSB on request. Questions about a specific software package can be answered by the manufacturer's support technicians.

CATI Systems

A CATI system provides for electronic data collection by managing the telephone sample for each interviewer and receiving the respondent's data from the interviewer's direct entry. The programmed questionnaire ensures correct skip patterns and checks for invalid data entry during

the interview. Although several CATI systems are available, BSB cannot provide support for each one. Support is provided only for the Ci3 CATI system.

The entire CATI software system, as recommended, consists of the Ci3 programs and a local area network (LAN) remote-control software package.

- The Ci3 programs have three components: questionnaire construction, sample management (supervisor), and a separate Mitofsky-Waksberg sampling module.
- The LAN remote-control software package allows the supervisor or other designated person to monitor the screens of the interviewers in conjunction with audio monitoring through the telephone system. Several packages are available, any of which should work with Ci3 CATI.

Other Equipment and Supplies

In addition to computer equipment, the BRFSS coordinator must ensure that other equipment and supplies are available.

Telephones

Each interviewer will need a telephone with a separate outside line. Supervisors should also have access to their own telephones to receive incoming calls. A toll-free 800-line can be useful for respondents' verification purposes and for leaving messages. A state WATS system offers a more cost-effective way to make calls than private long-distance companies. *Up to 6,000 calls may be necessary to complete 1,200 interviews.*

Monitoring Equipment

Whether inherent in the telecommunications system or as an add-on, the capability to monitor interviews must be available to survey supervisors. Monitoring has these principal objectives:

- Increase data quality.
- Validate the interview.
- Enhance training.
- Provide support and recognition to interviewers who conduct their work well.

> BRFSS PROTOCOL SPECIFIES THAT systematic, unobtrusive electronic monitoring will be a routine and integral part of monthly survey procedures for all interviewers.

Unobtrusive monitoring systems have overcome the tell-tale clicks that would alert interviewers to the system's being turned on or to their being switched from one interview station to another. The systems usually come with a headset, whereas built-in speakers for group monitoring and a record output for recording the conversation can be ordered. These features are very useful for training purposes and providing feedback to individual interviewers.

During training, new interviewers use monitoring systems to listen to experienced interviewers, which, aside from providing good examples, often serves to boost their confidence as they begin to do the work themselves. These systems also provide supervisors with excellent conditions for monitoring new trainees. In addition, the systems can be used to improve existing levels of performance by providing feedback on an interviewer's best work and by pinpointing the specific areas that can benefit from different interviewing technique.

Available but not advisable are monitoring units that allow supervisors to enter the conversation and offer immediate assistance, when necessary. This intrusion could inhibit the respondent and perhaps jeopardize his or her participation in the survey.

Ideally, in addition to the monitoring aspects recommended above, the capability for simultaneous video monitoring should be available. Simultaneous video monitoring allows the supervisor to upload an interviewer's work in progress onto a computer screen and watch the entries being made while listening to the survey being conducted. The supervisor observes that the interviewer not only reads each question but also properly enters accurate responses into the computer.

State regulations govern to what extent parties on the telephone need to be informed that another person is listening. Generally, however, as long as one party (in the case of telephone surveillance, the interviewer) is aware that monitoring may take place, it is not necessary to inform the interviewer or the respondent at the time an interview is actually being monitored.

Office Equipment

An overhead and a slide projector will be needed for training sessions. There should also be access to a copying machine during the interview sessions.

Supplies

Miscellaneous supplies include training packets, diskettes, the *Behavioral Risk Factor Surveillance System User's Guide*, pencils and sharpeners, stapler and staples, clips and bands, and an easel with paper and markers. Water must be available for the interviewers; other drinks and refreshments, as well as a microwave and refrigerator, may be desirable.

BRFSS Process

The coordinator has to be familiar with all nine steps in the BRFSS process.

Annual questionnaire construction and distribution

1. At the annual BRFSS conference, states provide input and feedback on the content of the core components and optional modules.
2. BSB designs and produces the core components, optional modules, and data processing layouts and sends them to the states. States add questions that they have designed or acquired.

Sample selection and screening

3. BSB obtains samples of telephone numbers and distributes them to the states. Some states purchase samples from private vendors.
4. On a monthly basis, states screen telephone numbers to exclude nonresidential PSUs from the survey sample. Screening is conducted according to the same protocol as that used for data collection. This step is generally omitted by states not using the Mitofsky-Waksberg sampling design.

Monthly data collection

5. States conduct interviews during each month in accordance with a prescribed protocol. States review and edit all completed interviews each month. Surveillance results are entered into computer files during interviewing by states that use a CATI system. Data entry is completed subsequent to the survey by states that collect data manually.

Data management and reporting

6. States submit data to BSB for further editing each month.
7. BSB weights data annually according to state-specific population estimates provided by the Bureau of the Census.
8. BSB produces and distributes yearly, state-specific, standard cross-tabulations of responses and risk-factor prevalence estimates for core and optional module questions, nationwide summaries of state-specific risk-factor prevalence estimates, and nationwide summaries of state-specific response rates.
9. BSB and the states publish analyses of data.

Annual Questionnaire Development

The BRFSS is conducted by using a standardized questionnaire with three parts:

1. Core component, which comprises fixed core questions, rotating core questions, and emerging issues questions asked by all states.

2. Optional modules, any, all, or none of which may be used by the states.
3. Optional state-added questions, which are developed or acquired and used by the individual states.

Each year, the core components and the optional modules are determined by CDC and the states and are used *without modification*. BSB supports these questions with Ci3 CATI programming, PC-EDITS programming, and state-specific annual data tables. States are free to ask questions on additional topics through the use of state-added questions. States may develop their own questions for these topics or select questions used in other survey research. *BSB does not routinely provide states with PC-EDITS programming or printed tables for state-added questions*. (See Appendix D: Questionnaire Development for additional information on questionnaire development.)

Determining the Content of the Questionnaire

Before the beginning of the calendar year, BSB provides the states with the text of the core component and the optional modules that will be supported for that year. States select their optional modules and choose any state-added question(s) they want to use. Each state then constructs its questionnaire. The core component is asked first, optional modules are asked next, and state-added questions are asked last. This ordering ensures that a comparable questionnaire, with the exception of the state-added questions, is administered in all states.

The BRFSS coordinator is responsible for determining or having a determination made of which, if any, optional elements or state-added questions will be added to the core. The coordinator should develop a process for obtaining recommendations from programs that would benefit from data derived from these optional components. Criteria can be established for selecting questions during this process (see Appendix D: Questionnaire Development), and an advisory committee of health policy experts can help to establish state priorities. The questionnaire content must be finalized by **November 1** of each year.

The total length of the questionnaire is a key factor in deciding on the number of questions to add. Although there is no absolute time limit for a telephone interview, lengthy interviews increase the cost of data collection and the risk that respondents will terminate an interview before the last question. Consequently, requests by programs for optional modules or state-added questions should be carefully considered to avoid a too lengthy questionnaire. Programs should be expected to support the inclusion of their questions by providing funding to defray the increased costs of interviewing and analysis, unless they have the resources and plan to undertake analysis within their own programs.

Producing the Questionnaire

Soon after the content of the forthcoming year's questionnaire is determined, BSB distributes a camera-ready copy of the core components and the optional modules to each state. States then

append any desired state-added questions to that document to create a state-specific master. A paper version of the state's questionnaire must be constructed and a copy sent to BSB for reference and documentation.

States using CATI systems will use this paper copy for CATI programming and general reference. If their CATI questionnaires are programmed by BSB, the states must send a paper copy to BSB by **November 1** prior to the interviewing year. If their CATI questionnaires are programmed by a contractor, the states must send a paper copy to BSB by **February 15** of the interviewing year.

States using manual systems will use the paper copy as a prototype for a camera-ready master. This prototype should be completed no later than **December 1** of each year to allow time for reproduction of sufficient copies for the survey. A general rule is to print 100 more questionnaires than the intended sample size, plus 5 per interviewer for use in training. About four times the sample size of extra questionnaire face sheets will also be needed to replace those used for incomplete interviews. Even with CATI systems, 25 to 50 paper questionnaires should be available in the event of computer failure during data collection.

If a significant portion of the surveillance population does not speak English, states may also want to have the questionnaire translated into other languages. BSB can provide a Spanish version of the core questionnaire and optional modules. To identify states that may have completed translations into other languages, coordinators should contact their project officer.

Sampling Design and Sample Selection

The BRFSS coordinator is responsible for determining the sampling methodology and sample size.

Selecting the Sampling Design and Sample Size

The first step is to consult with statisticians in BSB and in the health department. By skipping these preliminary consultations, states may have data that either cannot be analyzed or cannot provide the answers to their questions. It is difficult—often impossible—to fix sample selection problems after the fact.

In the past, the BRFSS has promoted the exclusive use of the Mitofsky-Waksberg sampling design; the principles of the BRFSS protocol are founded on this design. In light of current scientific thought, however, BSB recommends that states use either the disproportionate stratified random sample or the Mitofsky-Waksberg cluster sampling design. Before making a final decision, states should consult with statistical staff in the health department and in BSB. The sample size should be determined by a statistical consultant who is familiar with the

objectives of the study and its methods. Additional considerations in the selection process are discussed in Chapter 3: Survey Samples and Sampling Methods.

Obtaining the Sample

After the sampling design and sample size have been determined, the states have to obtain a randomized listing of telephone numbers.

- On request, BSB will provide a sample of randomized telephone numbers based on the area codes and prefixes of the surveillance area. Samples are usually generated by BSB in November for data collection for the next calendar year. When requesting a sample, states should be prepared to inform BSB of any blocks of numbers with a common area code and prefixes that should be excluded from the sample because they are numbers known to be exclusively nonresidential (e.g., for cellular telephones, government offices, universities). Area code and prefix combinations for these numbers should be provided to BSB by **October 1**.
- States may also purchase their samples of telephone numbers. Any purchased sample must be a random sample of all available area code and prefix combinations in the state.

States that want to stratify or oversample targeted areas or populations will require more extensive preparation and will have to consult with BSB before obtaining their sample.

Scheduling Monthly Data Collection Activities

Scheduling Interviewing Sessions

CDC provides a schedule and recommends a two-week interviewing period for each month. This period generally begins on the second Wednesday of the month but varies occasionally to accommodate holidays or special events. Depending on circumstances, states that want to start earlier or later than the recommended first day should consult their project officer about the change. States are expected to complete all calls for a given survey month within that particular month. States may not extend interviewing for any given month into the following calendar month.

> BRFSS PROTOCOL SPECIFIES THAT all previously screened calls for a given month's survey are to be completed within that month. A given month's survey may not commence prior to the first day of the month and may not extend beyond the last day of the month.

Scheduling Interviewers

To increase efficiency in contacting all respondents, interviewers should be scheduled during weekdays, weeknights, and on weekends to ensure that each telephone number can be called at different times on different days. Daily analysis of data collection activities will indicate the most productive pattern of scheduling. *Experience has demonstrated that, generally, about 20% of the interviews should be conducted during weekdays and 80% during weeknights, weekend days, and Sunday nights*. Whenever possible, schedules should accommodate holidays and important special events. The survey research literature and other unpublished research support that calls made on weekdays just after the dinner hour offer the highest yield.

In addition, scheduling can be guided by both the effect of assigning the screened (defining) numbers first and the desired number of completed interviews for the first day of the interviewing period. Because the defining numbers are called first, a large proportion of the sample is often completed during the first few sessions. The final sessions become increasingly less productive, and supervisors may find it useful to progressively reduce the number of interviewers per shift. When scheduling interviewers for the first day of the interviewing period, supervisors using the Mitofsky-Waksberg sampling design can follow the general rule of assigning enough staff to complete one-third of the monthly sample size on that day.

Occasionally, someone will have to make appointment callbacks during nonscheduled hours, generally during weekdays. Health department staff who have participated in BRFSS training may be enlisted to make these calls.

Work breaks should be scheduled every 1.5 hours. Interviewers should be allowed to take breaks together, but the entire interviewing staff should not take a break at the same time.

Reformatting and Editing

At the conclusion of the monthly interviewing period, a staff member with computer skills will reformat the data file to match the specified layout and run the PC-EDITS program provided by BSB to produce an error report. PC-Editfix, also provided by BSB, is then used to correct errors identified by PC-EDITS. These procedures must be carried out promptly in case an error is discovered that requires a respondent’s being called again to ascertain his or her actual response. (See "Data Reports" in Chapter 8, on page 8–8.)

Quality Assurance

A supervisor or lead interviewer should be scheduled to monitor interviews. The time involved in monitoring interviews will depend on the experience of the interviewing staff. If all interviewers are experienced, time to monitor at least one full interview for each interviewer should be scheduled. (See "Interviewer Monitoring" in Chapter 7, on page 7–1.)

A supervisor or lead interviewer also should be scheduled to make verification callbacks after the interviewing is completed. Five percent of the sample will be called back, but the time needed to contact the respondents and to interview them will only be about five minutes per selected interview. (See "Verification Callbacks" in Chapter 7, on page 7–2.)

PC-QC is another program provided by BSB that should be run promptly at the conclusion of the monthly interviewing period. Unexpected changes in response rates or in the distribution of final dispositions need to be investigated as part of finalizing the monthly data. (See "Assessing Quality Assurance Indicators" in Chapter 7, on page 7–8, and "Data Reports" in Chapter 8, on page 8–8.)

Submitting Data

Once a monthly file is clean, it is submitted to BSB via E-mail. It is due in BSB no later than 30 days after the end of each interview month. (See Appendix F: Electronic Submission of BRFSS Data.)

Budget Management

Once the questionnaire length and sample size have been determined, resource requirements will become apparent. These requirements will determine the number of interviewers and their work hours and the number of calls to be made. It is then a matter of attaching local costs to these needs. The budget should include training sessions before the interviewing period for new interviewers, periodic meeting time with interviewers for performance review, and monitoring time for supervisors.

Suggested Reading

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Gentry EM, Kalsbeek WD, Hogelin GC, Jones JT, Gaines KL, Forman MR, Marks JS, Trowbridge FL. The behavioral risk factor surveys: II. Design, methods, and estimates from combined state data. *Am J Prev Med* 1985;1:9–14.

Remington PL, Smith MY, Williamson DF, Anda RF, Gentry EM, Hogelin GC. Design, characteristics, and usefulness of state-based behavioral risk factor surveillance 1981–1986. *Public Health Rep* 1988;103:366–375.

Siegel PZ, Frazier EL, Mariolis P, Brackbill RM, Smith C. Behavioral risk factor surveillance, 1991: monitoring progress toward the nation's year 2000 health objectives. *MMWR* 1993;42(SS-4):1–22.

Singer E, Presser S (ed). *Survey Research Methods.* Chicago, IL: University of Chicago Press, 1989.

Weinberg E. *Community Surveys with Local Talent: A Handbook*. National Opinion Research Center Report No. 123. Chicago, IL: National Opinion Research Center, 1971.

Chapter Five
Guide for BRFSS Supervisors

BRFSS Overview

In 1984, the Centers for Disease Control and Prevention (CDC) initiated the state-based Behavioral Risk Factor Surveillance System (BRFSS) to collect prevalence data on risk behaviors and preventive health practices that affect health status. States conduct monthly telephone surveillance by using a standardized questionnaire to determine the distribution of risk behaviors and health practices among adults. Responses are forwarded to CDC, where the monthly data are aggregated for each state, returned with standard tabulations, and published at year's end by each state.

The three-part BRFSS questionnaire was developed jointly by the Behavioral Surveillance Branch (BSB) and the states. Data derived from the questionnaire provide health departments and other interested parties with health status information that is unique to their populations. When combined with mortality and morbidity statistics, these data enable public health officials to establish policies and priorities and to initiate and assess health promotion strategies.

Supervisor Roles and Responsibilities

The survey supervisor generally assumes responsibility for the day-to-day operations involved in survey administration. In an operation with little turnover, these responsibilities may be shared among the interviewing staff. The supervisor is responsible for daily administration, quality assurance, monitoring, and data handling.

Survey Supervision

- Ensures adherence to prescribed procedures.
- When collecting data with a computer-assisted telephone interviewing (CATI) system, performs necessary computer tasks before and after the interviewing periods.
- Attempts to complete refused interviews or assigns them to different interviewers for refusal conversion.
- Makes decisions on unusual responses or coding problems.
- Initiates wind-down procedures, if necessary.

Quality Assurance

- Monitors interviews and evaluates interviewer performance.
- Performs verification callbacks.
- Edits and corrects data files.
- Assesses interviewing statistics.

Data Management

- Submits data files to BSB.
- Maintains backup copies of all data files and CATI files.

BRFSS Process

The supervisor must be familiar with all nine steps in the BRFSS process.

Annual questionnaire construction and distribution

1. At the annual BRFSS conference, states provide input and feedback on the content of the core components and optional modules.
2. BSB designs and produces the core components, optional modules, and data processing layouts and sends them to the states. States add questions that they have designed or acquired.

Sample selection and screening

3. BSB obtains samples of telephone numbers and sends them to the states. Some states purchase samples from private vendors.
4. On a monthly basis, states screen telephone numbers to exclude nonresidential primary sampling units (PSUs) from the survey sample. Screening is conducted according to the same protocol as that used for data collection. This step is generally omitted by states not using the Mitofsky-Waksberg sampling design.

Monthly data collection

5. States conduct interviews during each month in accordance with a prescribed protocol. States review and edit all completed interviews each month. Surveillance results are entered into computer files during interviewing by states that use a CATI system. Data entry is completed subsequent to the survey by states that collect data manually.

Data management and reporting

6. States submit data to BSB for further editing each month.
7. BSB weights data annually according to state-specific population estimates provided by the Bureau of the Census.
8. BSB produces and distributes yearly, state-specific, standard cross-tabulations of responses and risk-factor prevalence estimates for core and optional module questions, nationwide summaries of state-specific risk-factor prevalence estimates, and nationwide summaries of state-specific response rates.
9. BSB and the states publish analyses of data.

Confidentiality

Protecting the confidentiality of respondents is a fundamental principle in the BRFSS. Respondents are frequently concerned about confidentiality, and interviewers must be able to assure the respondents that their confidentiality is protected.

To ensure confidentiality, no respondent identifiers are retained in the interview record. Even the last two digits of the telephone number are eliminated from final data to ensure that a respondent's answers cannot be connected to a specific person or telephone number. Individual information is further protected because data are combined, and reports cite only aggregate figures (e.g., 10% of the population had a household income of less than $10,000).

All BRFSS personnel must respect confidentiality. Although discussion of respondent information among staff is a necessary part of the surveillance process, staff must not discuss details of specific interviews outside the work environment. It is recommended that, as a part of training, interviewers be given a confidentiality agreement to sign (a sample appears on the next page). Monitoring interviews does not violate the principle of confidentiality as long as monitors are subject to the same confidentiality standards as the rest of the BRFSS staff.

Questionnaire Content

The BRFSS is conducted by using a standardized questionnaire with three parts:

1. Core component, which comprises fixed core questions, rotating core questions, and emerging issues questions asked by all states.
2. Optional modules, any, all, or none of which may be used by the states.
3. Optional state-added questions, which are developed or acquired and used by the individual states.

Each year, the core components and optional modules are determined by CDC and the states and are used *without modification*. States are free to ask questions about additional topics by using state-added questions. They may develop their own questions for these topics or select questions used in other survey research.

This system results in some changes in the questionnaire each year. New questionnaires are implemented in January. Thus, before the start of each January interviewing period, interviewers need time to familiarize themselves with the new questionnaire (see Appendix C: BRFSS Training).

SAMPLE CONFIDENTIALITY AGREEMENT

Participating Laboratory
100 Main Street, City, State Zip Code

Confidentiality Agreement

The _____ Laboratory provides an essential and valuable community service through the research of public information on a broad range of topics. Our projects often involve sensitive and confidential information from our clients and from our respondents. Truthful and accurate respondent and sponsor information is critical to the accuracy of the survey results and procedures.

As a result, the nature of the information surveyed requires a commitment of confidentiality to protect clients' and respondents' rights to privacy. Frequently, a commitment of confidentiality is a prerequisite to facilitate participation by respondents. Therefore, a commitment of confidentiality to its respondents and survey sponsors is important. Because unauthorized breaches of that confidentiality would violate assurances that are essential to obtaining truthful and accurate information, thereby impinging on our ability to produce accurate and reliable products, unauthorized disclosure of research information would result in a greater harm than benefit to the public interest. As a result, we request that each employee read and sign the following confidentiality agreement as a condition of employment.

I HEREBY AGREE NOT TO RELEASE THE FOLLOWING PRIVILEGED INFORMATION TO ANY PERSONNEL WITHOUT PROPER AUTHORIZATION FROM A DULY AUTHORIZED EMPLOYEE OR AGENT:

1. Information leading to the identification of a survey respondent,
2. Survey schedules, questions, and materials,
3. Individual survey responses and survey results, and
4. Unpublished tabulations of survey results.

_____ _____
Signature Date

Sampling Design

Although the main purpose of the BRFSS is to estimate the prevalence of risk behaviors and preventive health practices in a state's adult population, interviewing each person in the general population is not feasible. Thus, a probability sample is selected in which each member of the population has a known, nonzero chance of being included.

Probability Sampling Designs

Telephone surveillance systems usually use one of the following types of probability sampling:

- Simple random sampling.
- Stratified random sampling.
- Disproportionate stratified random sampling.
- Cluster sampling.

Some states conducting statewide monthly data collection for the BRFSS use cluster sampling techniques. The most common of these, and the sampling method described in this user's guide, is a three-stage cluster sampling procedure based on the Mitofsky-Waksberg method of random-digit dialing (see Chapter 3: Survey Samples and Sampling Methods). Some states, especially those that purchase their telephone samples, use disproportionate stratified random sampling.

Mitofsky-Waksberg Design

In this cluster sampling design, telephone numbers are randomly selected from the set of all existing area codes and prefixes in the state. On request, BSB will provide a sample of telephone numbers for a state to use in conducting the BRFSS. The sample consists of a block of 100 telephone numbers, each with the same area code, prefix, and first two digits of the suffix (e.g., [404] 329-30). This block of 100 numbers is the PSU. The group of any three telephone numbers drawn from a given PSU and successfully called (i.e., three interviews were completed) composes a cluster. For example, (404) 329-3075, (404) 329-3097, and (404) 329-3000, having been successfully called, compose the cluster from the PSU starting with (404) 329-30.

BSB assigns each PSU a five-digit identification number—the PSU number. This numbering system facilitates tracking PSUs throughout the data collection and editing processes without compromising the respondents' confidentiality. As mentioned earlier, protecting respondent's confidentiality is a fundamental principle in BRFSS; therefore, no respondent identifiers are retained in the interview record. Even the last two digits of the telephone number are eliminated from the final data to ensure that a respondent's answers cannot be connected to a specific person or telephone number.

Sampling then proceeds in three stages: screening of telephone clusters, household selection, and respondent selection.

Stage 1: Screening of Telephone Clusters

In the first stage, BSB sends the PSUs to the states for screening to exclude nonresidential numbers. Interviewers call the defining (first) number[1] in the selected PSUs to identify the PSUs to be included in the household sample. If the number called is a nonworking number, a business, an institution, any other nonresidential status, repeatedly busy, or repeatedly not answered, the entire PSU is rejected; no numbers in that group are used in the sample. If the call reaches a residence, then the PSU is accepted into the sample.

Stage 2: Household Selection

In the second stage, additional households are identified within each PSU. Interviewers dial the previously accepted defining number followed by other numbers within each PSU accepted into the sample, according to prescribed rules. If someone answers the telephone and confirms that the call has reached a residence, the interviewer proceeds to the respondent selection stage of sampling.

Stage 3: Respondent Selection

In the third stage, one adult from each selected household is randomly selected and interviewed.

> BRFSS PROTOCOL SPECIFIES THAT proxy interviews are not conducted within the BRFSS. Individual respondents are randomly selected from all adults aged 18 and older living in a household and are interviewed in accordance with BRFSS protocol.

This process continues until (1) the predetermined cluster size, three completed interviews for each accepted PSU, is reached, (2) all the numbers in the PSU have been used, (3) the supervisor determines that a selected PSU is unproductive and should be replaced, or (4) the interviewing period ends.

Removing an Unproductive PSU from the Sample[2]

The success of the Mitofsky-Waksberg sampling design in providing a representative sample for the BRFSS depends on incorporating all potential residential telephone numbers within the state. To achieve this, area codes and telephone prefixes statewide are subjected to a computer program

[1]The first telephone number of the 100 randomly ordered telephone numbers is referred to as "the defining number" because it defines the PSU through the common elements of area code, prefix, and first two digits of the suffix.

[2]This departure from earlier BRFSS practice is based on cost and efficiency considerations. Until further conclusive data are available, the guidelines presented here are recommended for discarding an unproductive PSU.

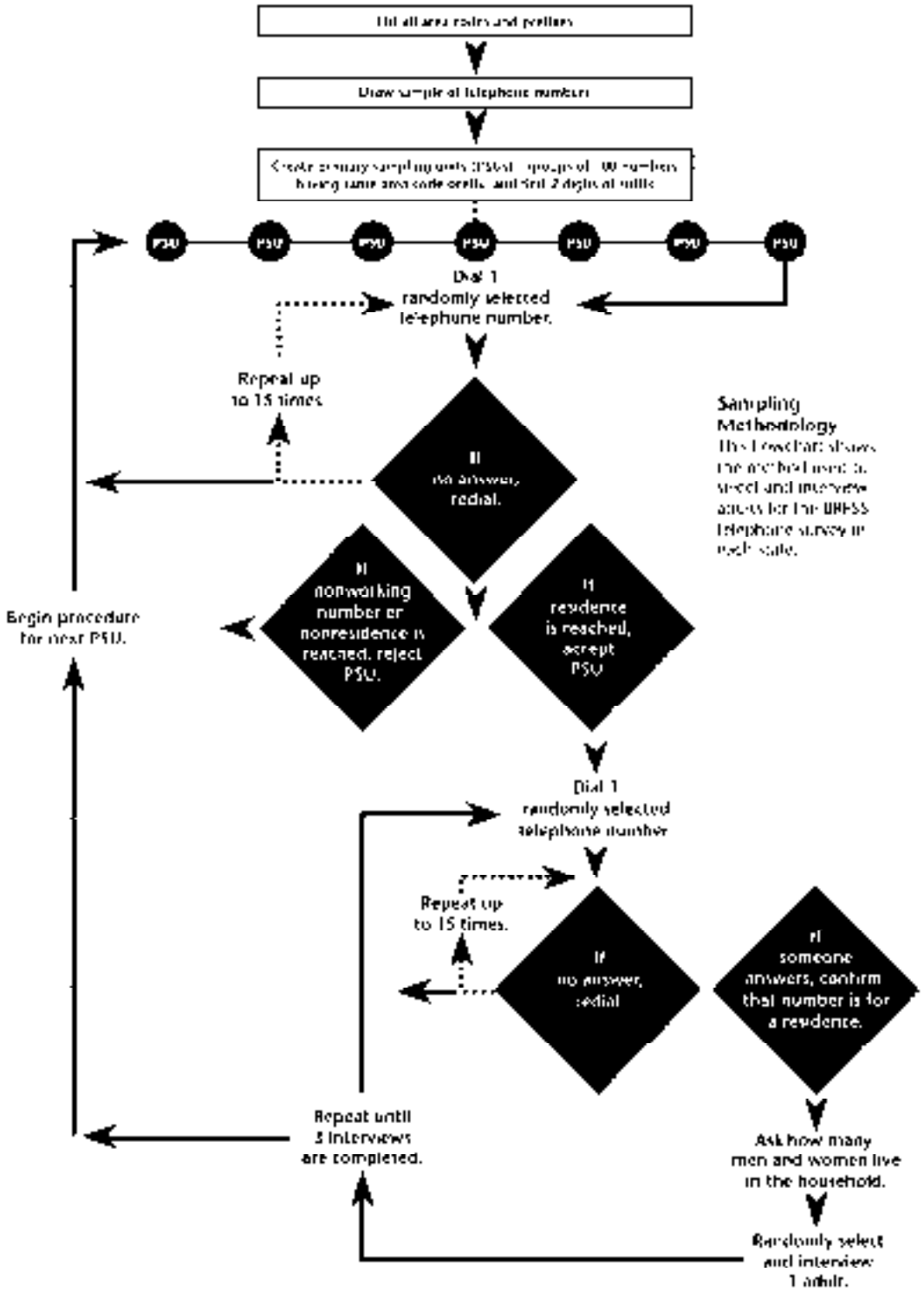
that generates a randomized listing of all possible numbers within every area code and prefix combination in the state. This listing is broken down into blocks of 100 numbers with the area code, prefix, and first two digits of the suffix being common factors (see "Sample Provision" in Chapter 3, on page 3–3).

To increase survey efficiency, the Mitofsky-Waksberg sampling design uses a screening process wherein the defining number in the PSU is called before the survey period begins. If this number is found to be other than a residential number, the entire PSU is discarded. If the number is found to be a residential number, the PSU is retained for use in the upcoming interview period.

On some occasions, the defining number may not be representative of a predominately residential prefix. For example, the number may be a residential number at a university and the majority of the remaining numbers in the PSU are offices or dormitories. The defining number may be the only one or one of only a few working numbers within that prefix, such as in remote or highly rural areas. Sometimes, the defining number gets disconnected before the survey begins.

In the strictest Mitofsky-Waksberg sampling design, all 100 PSU numbers will be exhausted unless a cluster of three interviews is completed; however, on these and similar occasions, to further enhance survey efficiency, BSB has instituted a policy to discard and replace unproductive PSUs. This policy relies on a rule of 15 (see the flowchart on the next page). After the defining number has been called and given a disposition code (see the disposition codes on page 5–11), up to 15 consecutive additional telephone numbers must be coded as nonresidential, nonworking, or nonproductive before the PSU can be replaced. To reach a final disposition of nonproductive for a number, at least 15 calls must be made among the three calling occasions and not produce a definitive residential status. A calling occasion is a workshift, as follows:

Weekdays	1:00–5:00 P.M.
Weeknights	5:00–9:00 P.M.
Weekends:	
Saturdays	10:00 A.M.–2:00 P.M.
Sundays	1:00–5:00 P.M.
	5:00–9:00 P.M.


PSU
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PSU
Dial 1 randomly selected telephone number.
Repeat up to 15 times
If no answer, redial.
If nonworking number or nonresidence is reached, reject PSU.
If residence is reached, accept PSU
Begin procedure for next PSU.
Sampling Methodology
Dial 1 randomly selected telephone number
Repeat up to 15 times.
If no answer, redial
If someone answers, confirm that number is for a residence.
Repeat until 3 interviews are completed.
Ask how many men and women live in the household.
Randomly select and interview 1 adult.

In the event that a completed interview is obtained within the 15 telephone numbers, up to an additional 15 consecutive numbers must be called and coded. If within these 15 telephone numbers another interview is completed, 15 more telephone numbers must be called and coded before the PSU can be replaced. *When a PSU is replaced, any completed interviews are retained for submission and analysis.*

> **Note:** The decision to replace a PSU before completing the cluster is the supervisor's; however, these are the guidelines that govern such replacement. The 15 intervening telephone numbers worked between either the defining PSU number or any subsequently completed interview(s) and replacing the PSU must be determined to be nonworking or nonresidential numbers and not merely be inaccessible respondents or unobtainable interviews. If a series of telephone numbers prove to include some variety of residential dispositions (e.g., ring-no-answer, appointments made, selected respondent not available during the interview period, no eligible respondent at the number), the PSU should not be discarded and replaced but worked through as many numbers as are needed to complete the cluster or exhaust the PSU. A PSU with an unbroken string of line-busies or ring-no-answers should first be checked for its operational status with the telephone company before being replaced. A PSU containing an unbroken string of 16 business numbers, however, should be immediately replaced. (See the flowchart on page 5–8.)

Screening of Telephone Clusters: Mitofsky-Waksberg Design

Screening of telephone clusters—stage 1 of the three-stage sampling process—should be scheduled during the three to four weeks just before monthly data collection. Interviewers should be screening to identify acceptable PSUs for the next month's survey at the same time that they are interviewing for the current month. The screening process is explained below.

- BSB provides the initial random-sample blocks of telephone numbers for use in monthly data collection. These numbers are copied to a data file for use with CATI systems and sent for screening to the states that use a CATI system. (See Appendix J: *Supervisor's Handbook for Ci3 System and Ci3 CATI*.) States that conduct interviews on paper receive their sample on printed cluster contact sheets. (Using the cluster contact sheet is explained in Appendix B: Paper-Administered BRFSS Methodology.)
- The cluster contact sheets contain blocks of 100 telephone numbers—the defining number followed by 99 unique, randomly ordered numbers for each PSU. Data files used in CATI systems include only the defining number; the system generates the additional 99 numbers. During screening, the interviewers systematically screen the defining numbers to determine their residential status until the prespecified number of PSUs is reached. For the BRFSS, this is the projected number of completed interviews, divided by 3, plus 10%.

- *The same procedures and Rules of Replacement are used in screening to identify eligible PSUs as are used in selecting eligible households* (see the box on the next page). The validity of the Mitofsky-Waksberg sampling method depends on using the same sampling procedures and Rules of Replacement at both the screening of telephone clusters and the household selection stages. A procedure that several states have found convenient is to screen PSUs for the next month's sample at the same time that they conduct household interviews for the current month.
- During screening, interviewers in states that use the Mitofsky-Waksberg sampling design are *not to identify* themselves or the purpose of the survey unless they can conduct the interview immediately. Such self-identification biases the survey by giving potential respondents a month to think about the survey topic and their willingness to cooperate (Waksberg 1978).
- Screening (about 80%) should be conducted during weekdays because most nonresidential numbers can be ruled out during that time. The remainder of the screening should be conducted during evenings and weekends (Waksberg 1978).

States using a sample design other than Mitofsky-Waksberg must devise a systematic method of drawing sample telephone numbers each month. One method is to add samples in blocks corresponding to pages in the sample or any other number that remains constant. For example, to complete 150 interviews a month, interviewers might start with 300 telephone numbers. If it appears that this number is insufficient to complete 150 interviews by the end of the 2-week period, additional numbers can be added in multiples of 25. With this sampling method, the total number of completed interviews will not be constant each month because once telephone numbers are added to the sample, they must all be called to adhere to the Rules of Replacement.

BRFSS Rules of Replacement

Code	Disposition	Rule
01	Completed interview (questions asked include age, race, and sex)	Do not replace.
02	Refused interview	Replace after second refusal or when a first-time refusal will not be called a second time.
03	Nonworking number	Usually recognized by a recording of a fast-busy signal. Includes "number changed" recordings and numbers that "bridge." Call operator or repair service when in doubt. Replace.
04	Ring no answer	A normal telephone ring that no one answers (answering machines do not count as an answer) after (1) five calling occasions (each consisting of three attempts) and (2) the five occasions have a mixture of weekday, weeknight, and weekend calls. If possible, contact the telephone company repair service to verify the number is in service. Replace.
05	Not a private residence	The person answering identifies the telephone number as a business or says "no" when asked "Is this a private residence?" Also use this disposition for institutions (government offices, educational facilities, dormitories, nursing homes, hospitals, prisons, etc.), group homes (fraternities and sororities, half-way houses, shelters, etc.), pagers, fax machines, and computer modems. Replace.
06	No eligible respondent at this number	The household does not include anyone 18 years of age or older (this does not mean the adults are away temporarily). Replace.
07	Selected respondent not available during the interviewing period	The selected respondent will not be available or could not be reached during the time you have allotted for the month's interviewing. Replace.
08	Language barrier	The selected respondent does not speak English well enough to be interviewed, and no interviewers speak the respondent's language. Replace.
09	Interview terminated within questionnaire	A "hang up" at some point after the first questions has been asked (this does not mean the respondent refused a particular question). Make another attempt to complete the questionnaire. Replace if second attempt is unsuccessful. If after a second attempt the respondent has completed the interview at least through the age, race, and sex questions, recode as a completed interview.
10	Line busy	To be coded only after (1) five calling occasions (each consisting of three attempts at ≥ 10 minute intervals) and (2) the five occasions have a mixture of weekday, weeknight, and weekend calls. If possible, contact the telephone company repair service to verify the number is in service. Replace.
11	Respondent unable to communicate due to physical or mental impairment	For example, the respondent is deaf. Replace.

Disposition Codes and Calling Rules

Each telephone number in the sample must be called until the Rules of Replacement have been satisfied. Once the calling rules are satisfied, the telephone number is given a final disposition code. Although different CATI systems use different disposition code numbers, they all are converted to the following set of final disposition codes.

Call Disposition Codes

01 Completed interview
02 Refused interview
03 Nonworking number
04 Ring-no-answer
05 Not a private residence
06 No eligible respondent at this number
07 Selected respondent not available during the interviewing period
08 Language barrier
09 Interview terminated within questionnaire
10 Line busy
11 Respondent unable to communicate due to physical or mental impairment

Assigning the correct code for the final disposition depends on whether an eligible respondent was selected. When a household has been contacted and an eligible respondent selected, the final disposition must reflect the respondent selection status; that is, completed interview (01), refused interview (02), selected respondent not available during the interviewing period (07), or interview terminated within questionnaire (09). The final disposition cannot be ring-no-answer (04) or line busy (10). Final ring-no-answer and line-busy dispositions indicate that it is unknown if an eligible respondent was at the sampled telephone number.

The following guidelines for assigning the appropriate disposition codes are based on the identification of an eligible respondent.

Respondent Selected

- A selected respondent who is not available at the time of selection and who is not reached on subsequent dialings is coded as selected respondent not available during the interviewing period (07).
- A selected respondent who initially refuses to participate in the survey and is not spoken to on subsequent calls is coded as refused (02).
- A selected respondent who begins the interview but stops before being asked the age, race, and sex questions should be coded as terminated within questionnaire (09) if the respondent is not reached on subsequent calls.

No Respondent Selected

- Telephone calls that are answered but are terminated without an eligible respondent having been selected are respectively coded as refused interview (02), not a private residence (05), no eligible respondent at this number (06), language barrier (08), and respondent unable to communicate due to physical or mental impairment (11). A hang up that does not result in enough information on subsequent calls to choose one of these dispositions requires supervisory review. If, in the supervisor's judgment, there is sufficient basis to believe the sampled telephone number was a private residence, refused interview is the appropriate disposition. A hang up for which there is no information about residential status can be given a final ring-no-answer disposition.
- If an answering machine is reached and the message clearly indicates that the telephone is not in a private residence, the call is coded as not a private residence (05). If the recorded message (1) does not provide enough information to determine the residential status of the telephone number and is never answered by a person or (2) indicates that the number is for a residence but is never answered by a person, the number may be given a final ring-no-answer (04) disposition once the Rules of Replacement are satisfied.

The BRFSS does not have a specific policy on leaving messages on answering machines. It is the responsibility of each state, however, to notify BSB if messages can be left on answering machines. If messages can be left, the state must provide a copy of any scripts used for these messages.

Interviewing Procedures

Interviewing is performed monthly, according to a recommended schedule. Completed interviews and call attempts are reviewed and edited locally each month.

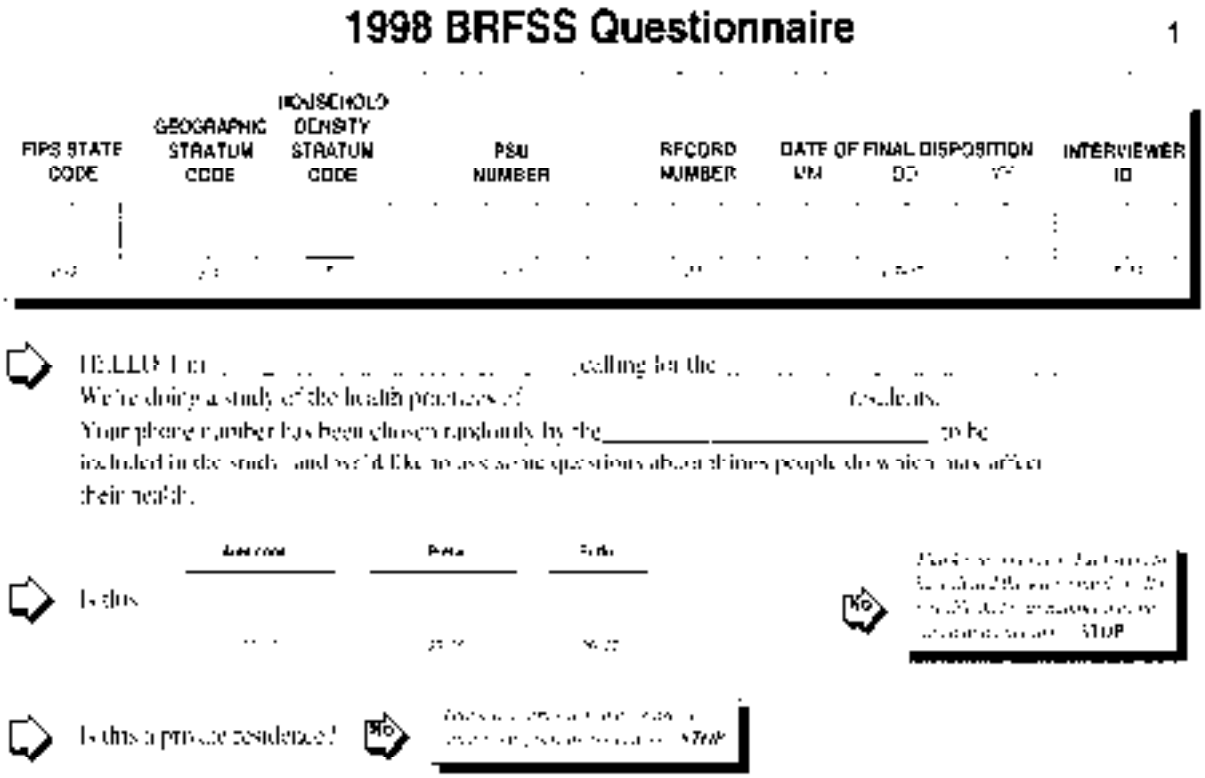
> BRFSS PROTOCOL SPECIFIES THAT all previously screened calls for a given month's survey are to be completed within that month. A given month's survey may not commence prior to the first day of the month and may not extend beyond the last day of the month.

Surveillance results are entered into computer files. Data entry is performed during interviewing by states that use CATI systems and after interviewing by states that use manual systems.

Instructions for setting up and implementing a BRFSS study using a paper-administered system are included in Appendix B. Instructions for data collection with a CATI system are dependent on the system in use. Instructions for implementing the BRFSS data collection protocol in Ci3 CATI are included in Appendix J. Whichever CATI system is used, however, the details of questionnaire administration should follow the specifications for manual data collection.

Call Record

The procedures for administering the questionnaire follow.


1998 BRFSS Questionnaire

1

FIPS STATE CODE	GEOGRAPHIC STRATUM CODE	HOUSEHOLD DENSITY STRATUM CODE	PSU NUMBER	RECORD NUMBER	DATE OF FINAL DISPOSITION MM	DD	YY	INTERVIEWER ID

Is this

Is this a private residence?

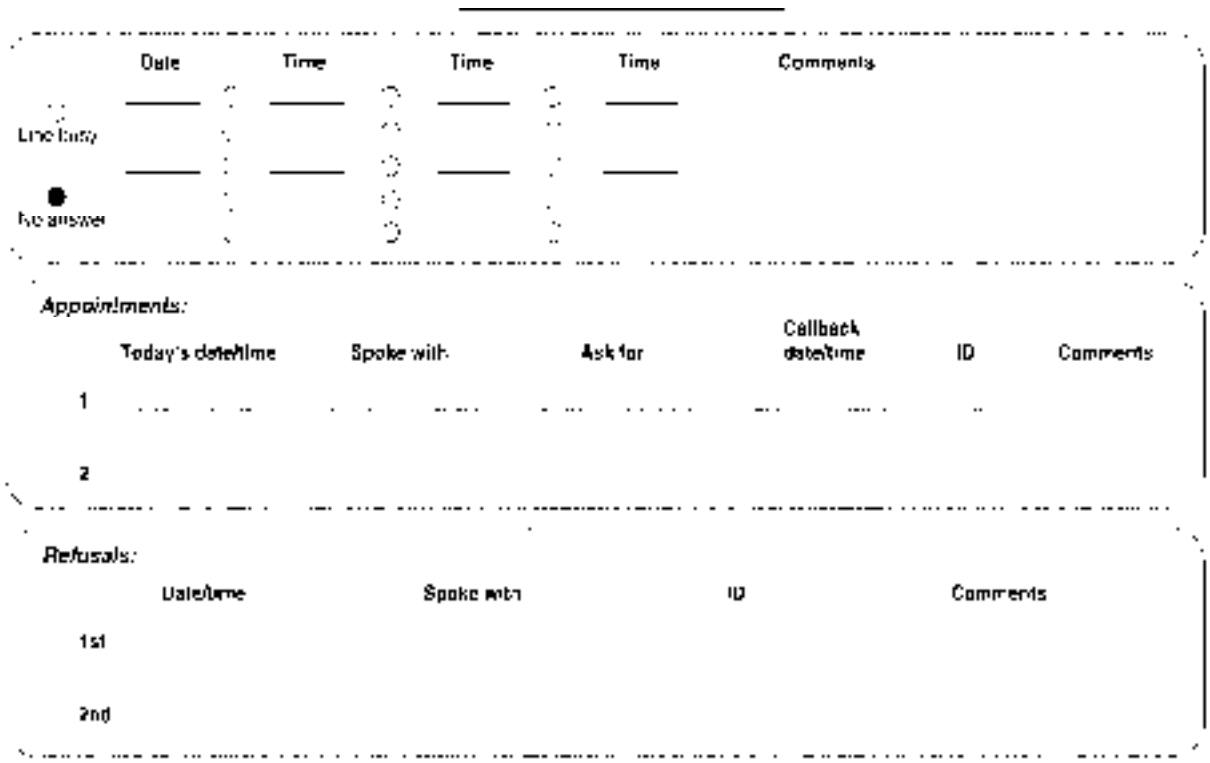
1. Each state has a Federal Information Processing Standards (FIPS) state code (see Appendix L: FIPS Codes). Depending on the type of sampling design, the stratum code may vary from "1" to another number. The stratum code is "1" if the sample is not stratified. If the sample is stratified, the stratum code will increase according to the number of strata.
2. Indicate a geographic stratum code on each record. States with no internal geographic stratification will enter the number 1. States with internal geographic stratification will enter a number ranging from 1 to the number of geographic strata.
3. Indicate a household density stratum code. States with no density stratification will enter the number 1. States with density stratification will enter a number ranging from 1 to the number of density strata.
4. Each coversheet should have a PSU number. This is a five-digit sequential number starting with 00001 and continuing up to 99999.

5. The record number is a one-digit number—1, 2, or 3—that represents the number of completed interviews in the cluster. It is filled in after an interview has been completed.

> **Note:** The record number is "1" for samples other than Mitofsky-Waksberg samples.

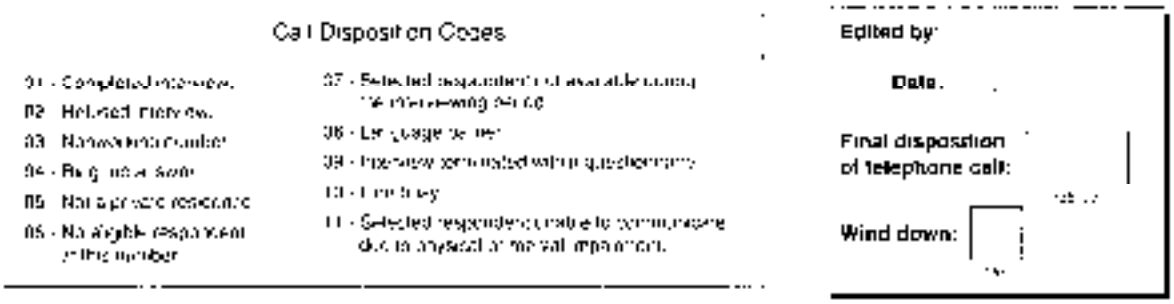
6. The date of final disposition is filled in only when the record is provided a final disposition, such as completed interview, not a private residence, and nonworking number.
7. The interviewer ID is also filled in at the time of final disposition. The interviewer inserts his or her initials or another two-digit ID code in these two boxes.
8. The area code and telephone number will already be filled in by the supervisor before the questionnaires are distributed.
9. The interviewer reads the introductory paragraph, verifies the telephone number, and determines if the number is for a private residence. When this is the case, the interviewer continues to obtain the household information.

The following is the call history section.



1. The interviewer fills in the appropriate blanks (date, time, initials), and indicates if the call is a "line busy" or "no answer" (fill in circle as indicated) or reached an answering machine (write "X" in the circle). There is additional space for comments.
2. The next box is for appointments. The interviewer fills in the date/time, to whom she or he spoke, the selected respondent (if known), callback date and time (morning, afternoon, evening, or specific appointment time), and the interviewer's initials. There is space for comments.
3. The next box is for refusals. The interviewer fills in the date/time, to whom she or he spoke, and the interviewer's initials. In the comments area, the interviewer briefly describes the reason for the refusal (e.g., no time, doesn't do surveys, busy now).

The following is the call disposition section.



1. At the bottom of the coversheet is a list of call disposition codes with a brief description of each and a box for final disposition coding. When a final disposition is obtained, the interviewer fills in the final disposition code. Space is provided for the initials or identification number of the person editing the record and the date the record is edited. The interviewer's initials should be included at the top of the page.
2. If the survey is in wind-down (a procedure sometimes necessary to complete the survey when using cluster sampling; see page 5–22), the interviewer puts "9" in the box marked "Wind-down." Otherwise, the box is left blank.

Household Selection

The next section takes the interviewer through stage 2, the household selection process.

BRFSS PROTOCOL SPECIFIES THAT an eligible household is a housing unit that has a separate entrance, where occupants eat separately from other persons on the property, and that is occupied by its members as their principal or secondary place of residence.

Noneligible households are (1) vacation homes not occupied by household members for more than 30 days per year, (2) group homes (sororities and fraternities, halfway houses, shelters, etc.), and (3) institutions (nursing homes, college dormitories, etc.).

Household members include all related adults (age 18 or older), unrelated adults, roomers, and domestic workers who consider the household their home, even though they may not be home at the time of the call.

Household members do not include adult family members who are currently living elsewhere (at college, a military base, a nursing home, a correctional facility, etc.).

2

One study requires that we randomly select one adult who lives in your household to be interviewed. How many members of your household, including yourself, are 18 years of age or older? ____

If "1" ⇨ Are you the adult?

If "yes" ⇨ Then you are the person I need to speak with. Go to page 3

If "no" ⇨ May I speak with him or her? Go to "current respondent" at bottom of page

	Men	Women
How many of these adults are men and how many are women?		

Who is the oldest man who presently lives in this household?
Who is the next oldest man who presently lives in this household?
Etc

Who is the oldest woman who presently lives in this household?
Who is the next oldest woman who presently lives in this household?
Etc.

1. The first question asks how many members in the household are 18 years of age or older. If the response indicates there are five or more adults, the interviewer should probe to ensure that they all are 18 years of age or older, that all are currently living in the household, and that the household is not a group home or institution. If the answer is "one" and the person on the telephone is that adult, the interviewer proceeds to the first question on the questionnaire.
2. The next question asks how many of the adults are men and how many are women. The interviewer fills in the appropriate answers. If there is only one adult in the household, the interviewer puts "1" in the appropriate box and leaves the other box blank.

Respondent Selection

Suffix: ___ ___ ___ ___

		Last digit of phone number										
	Name or Relationship	0	1	2	3	4	5	6	7	8	9	
1.		1	1	1	1	1	1	1	1	1	1	1.
2.	_____	2	1	2	1	2	1	2	1	2	1	2.
3.		3	1	2	3	1	2	3	1	2	X	3.
4.	_____	1	2	3	4	1	2	3	4	X	X	4.
Total adults 5.	_____	2	3	4	5	1	2	3	4	5	1	5. Total adults
6.		5	6	1	2	3	4	X	X	X	X	6.
7.	_____	2	3	4	5	6	7	1	X	X	X	7.
8.		8	1	2	3	4	5	6	7	X	X	8.

The person in your household that I need to speak with is _____

If "you," go to page 3

In this section, the interviewer randomly selects one adult in the household to be interviewed. Two methods are used to select the household member to be interviewed: (1) a manual technique using the Kish table, which is based on a matrix of the telephone number suffix and a household roster, or (2) automated selection by a CATI program. Random selection avoids bias associated with the person answering the telephone and the time of the call.

The following are instructions for manual random selection of a respondent using the Kish table:

1. Before dialing the telephone number, the interviewer fills in the suffix (the last four digits of the telephone number) on the blanks above the chart.

2. The interviewer lists the adult members of the household down the left side of the chart. (If there is only one adult, the interviewer does not need to fill this in.) The interviewer may use the two questions above the chart if necessary. In most households, because there is only one man and one woman, it is not necessary to use these two questions (e.g., man and woman, husband and wife).

   The interviewer lists all men first, oldest to youngest, and then all women, oldest to youngest. List by relationship or initials (e.g., husband, wife, father, mother, son #1, son #2, oldest woman, woman—age 43). The interviewer should not ask for names, but, if a name is given, it can be used.

3. The interviewer finds the column in the chart that is headed by the last digit of the suffix. The interviewer finds where the row containing the last listed name intersects that column. The number where the column and the row intersect is the number of the selected respondent. If the intersection contains the number "2," for example, the second person on the list is interviewed.

4. The interviewer identifies the correct respondent in the space provided, using the name as it is written it on the chart (e.g., husband, daughter).

5. If the correct respondent is the person to whom the interviewer is speaking, the interviewer goes to the first question on the questionnaire. Otherwise, the interviewer asks to speak to the selected respondent. When that person comes on the line, the interviewer introduces himself or herself by using the words printed at the bottom of the chart and begins the questionnaire.

> **Note:** In a two-person household with one male and one female, the male is selected if the telephone number is odd; the female is selected if the telephone number is even.

In CATI systems, household members are entered at computer prompts. The computer makes a random selection, and the appropriate text appears on the screen.

Questionnaire Administration

Questions about the administration of the paper questionnaire should be resolved during training. Interviewers should refer any unusual problems to the supervisor. An overview of the steps in conducting an interview by using the Ci3 CATI system is included in Appendix J.

Sample Management

Sample management refers to controlling the release of telephone numbers to interviewers, tracking appointments made to complete the survey, and assigning proper disposition codes to interviews.

Calling Sequence

On the first day of interviewing, the defining telephone numbers—the first number in each PSU—are assigned first. These screened numbers are the confirmed residential telephone numbers and, if used first, generally yield high rates of completed interviews on the first day of interviewing. The second and third elements of each PSU have the next priority.

The final outcome of a telephone number is often not determined until after several calling occasions (defined on page 5–7). When the final outcome is determined, the number is given a disposition code. If the final result is other than a completed interview, a new telephone number is activated until three interviews are completed in the cluster. No more than three telephone numbers per PSU are made available or coded as a completed interview at a time.

> **Note:** The sum of the completed interviews plus the active numbers must always equal three.

New telephone numbers should be assigned to interviewers according to a prespecified ratio, at the supervisor's discretion. For example, a 5:1 ratio means that an interviewer is assigned five previously called telephone numbers for every one new telephone number. The ability of the supervisor to assign varying ratios of previously called to new telephone numbers is critical to survey efficiency, particularly as the end of the interviewing period approaches.

When necessary, a PSU may be terminated before the required number of interviews is completed. In such cases, it is removed from the active pool of residential PSUs and replaced with a new PSU. PSUs are usually removed because they contain an insufficient number of working residential numbers. Completed interviews from such unusable PSUs, however, are kept as part of the dataset. A PSU is removed according to rules and at the discretion of the supervisor.

Reassigning Telephone Numbers

Telephone numbers must be reassigned according to the BRFSS Rules of Replacement (see Appendix E: Coding, Dispositions, and Rules of Replacement and Appendix B: Paper-Administered BRFSS Methodology). Some CATI systems replace numbers automatically. Others may require manual replacement using the Rules of Replacement.

Tracking Appointments and Call Reports

An appointment should be scheduled if the selected household member is not available at the time the interviewer calls or if the selected respondent does not have time to conduct the interview when called. Appointments should be recorded on the face sheet of the questionnaire in paper-administered systems or through the CATI system. The following information should be included:

- Selected respondent.
- Person with whom the interviewer spoke (e.g., oldest male, third-oldest female).
- Date, day of week, and time of appointment.
- Reason for callback.
- If appropriate, where to resume interview.

For paper-administered systems, appointment records should be maintained in a tickler file by date and time to be called back. Once an appointment has been made, it should remain in the appointment files until it is completed or replaced. The supervisor should keep track of the appointments that interviewers have made for callbacks and assign them at the appropriate time. CATI systems automatically manage the scheduling and release of appointments.

Converting Refused Interviews to Completed Interviews

Supervisors should make a strong attempt to convert first-time refused interviews to completed interviews; not doing so may bias the study.

> BRFSS PROTOCOL SPECIFIES THAT with the exception of verbally abusive respondents, eligible persons who initially refuse to be interviewed will be contacted at least one additional time and given the opportunity to be interviewed. Preferably, this second contact will be made by a supervisor or a different interviewer.

Supervisors should either contact the person and encourage him or her to participate in the survey or assign a different interviewer to call back on another day at a different time. The next interviewer may reach another person on the telephone, or the previous respondent may be more amenable on the second try. The following are recommended approaches for converting refused interviews to completed interviews:

- Use the information reported about the first refused interview to prepare specific responses for the next call (see Chapter 6, page 6–28).
- Be certain that interviewers are not reporting possible callback appointments as refusals. An interviewer may interpret the response *I don't have time to talk right now* as a refusal. The interviewer should apologize for having called at a bad time and ask, *When is a better time to call?* and obtain a specific day and time to call back.
- Interviewers should not call back when the respondent has been extremely hostile and has made it clear that he or she does not want to participate under any circumstances.

Wind-Down Procedures

Wind-down is an optional procedure in cluster sampling that is usually necessary only for the Mitofsky-Waksberg sampling design. Wind-down enables the interviewers to complete data collection by the end of the monthly interviewing period. During wind-down, the standard Rules of Replacement are suspended. New numbers within a PSU are dialed once; if a completed interview is not obtained, the following numbers are dialed in the order presented until a cluster is completed.

> **Note:** Wind-down procedures are implemented only when necessary to complete the interviewing on time and only after 95% of the interviews required for the month have been completed.

When the Rules of Replacement are disregarded, only respondents who are easiest to reach are interviewed. The health behaviors of these respondents may differ significantly from those of persons who are more difficult to reach; therefore, the remaining sample may not reflect the population from which it was drawn.

Wind-down should be implemented during the evening hours, when most people can be expected to be at home. The supervisor makes the decision to begin wind-down.

- When wind-down is begun, all telephone numbers coded as pending appointments and initial refusals should be called once and replaced if a completed interview is not obtained. Telephone numbers that produced busy signals, no answers, and refused interviews are all replaced without further attempts to complete the interview.
- The respondent selection procedure remains intact; that is, interviewers still have to speak to the properly selected respondent. If this respondent is not available, the interviewer should not make an appointment. Instead, the interviewer should assign the proper disposition to the number and try another household.
- The final disposition for a telephone number that has been previously called must reflect whether an eligible respondent was selected. For example, when a number is called, a

respondent is selected, an appointment is made, and the number is called again during wind-down but there is no answer, the final disposition is selected respondent not available during the interviewing period (07) rather than ring-no-answer (04).

- The 07 disposition code is used most often in wind-down and therefore reflects the proportion of calling done during wind-down, as well as the diligence of efforts to contact respondents whose availability is limited. The objective for code 07 is 3%[3] or less of numbers called. States that exceed this percentage should start earlier or extend their normal interviewing period even to the end of the month, if they are not already doing so.
- If more than 5% of the required interviews remain at the end of the allotted time period, the survey for that month will be cut short. If this happens routinely, the BRFSS coordinator should review and adjust the total number of hours invested in interviewing and the scheduling structure for these hours. This adjustment should eliminate the problem. If not, states should consult their BSB project officer.
- Each interview completed during wind-down must be coded as such. If the percentage of wind-down interviews is more than 5%, wind-down is being implemented too soon.

The prescribed procedure used for completing interviews during wind-down by CATI systems is conceptually identical to that followed in paper-administered surveys—an interviewer is assigned a PSU and calls numbers from that PSU until the cluster is completed. Instructions for wind-down in Ci3 CATI can be found in Appendix J.

Quality Assurance

Ensuring the quality and consistency of BRFSS data is important to the accuracy and credibility of results. The supervisor is responsible for the following quality assurance activities:

- Monitoring interviews in progress (see the Interviewer's Monitoring Form on the next page).
- Evaluating interviewer statistics.
- Evaluating question-response frequencies.
- Performing verification callbacks.
- Assessing quality assurance indicators.
- Editing data files.

Each of these is discussed in detail in Chapter 7: Quality Assurance.

[3]Because this percentage is affected by the efficiency of the sampling methodology—that is, the number of (03) nonworking and (05) nonresidential dispositions in the denominator—comparisons among surveys with different sampling methods may not be meaningful. For a particular survey, however, month-to-month and year-to-year changes in this percentage are important to monitor.

RETURN TO SUPERVISOR

Interviewer's Monitoring Form

Interviewer ID _____

Date _____ Monitor _____

State/Community _____

Instruction: After one hour, rate each interviewer's characteristics on a scale from 1 to 5, 1 being the lowest rating and 5 being the highest rating.

Attitude						
Is courteous and polite	•	1	2	3	4	5
Sounds confident	•	1	2	3	4	5
Does not sound bored	•	1	2	3	4	5
Knows pronunciations	•	1	2	3	4	5
Speech is clear	•	1	2	3	4	5
Does not hurry interviewee	•	1	2	3	4	5
Does not sound sarcastic	•	1	2	3	4	5
Sounds interested in responses	•	1	2	3	4	5
Interviewing Techniques						
Attempts to make appointments with appropriate respondents	•	1	2	3	4	5
Executes respondent selection process smoothly	•	1	2	3	4	5
Reads verbatim	•	1	2	3	4	5
Has good interviewing pace	•	1	2	3	4	5
Allows respondent to ramble	•	1	2	3	4	5
Interview flows well	•	1	2	3	4	5
Verifies telephone number	•	1	2	3	4	5
Goes from introduction directly into first questions	•	1	2	3	4	5
Persuades respondent to continue	•	1	2	3	4	5
Follows skip patterns smoothly	•	1	2	3	4	5
Answers respondent's questions	•	1	2	3	4	5
Smooth closing of the interview	•	1	2	3	4	5
Probing						
Probes for more accurate information	•	1	2	3	4	5
Knows when to probe	•	1	2	3	4	5
Uses neutral probes	•	1	2	3	4	5
Uses multiple probes	•	1	2	3	4	5
Encourages responses when respondent seems reluctant	•	1	2	3	4	5

Would you want to be interviewed by this person on this survey? YES NO

Comments:

Data Management

At the completion of the interviewing cycle each month, the data must be entered into computer files (in paper-administered systems) and then checked for inconsistencies with editing software provided by BSB. States then send the edited data to BSB for a final edit and production of a quality control report. If data discrepancies are found, files are returned to the states for additional corrections.

Results are compiled at the end of the year. BSB provides each state with an aggregated dataset and cross-tabulations of selected measures by demographic variables (see Chapter 8: Data Management).

For the results to be available in a timely manner, each monthly data file must be completed, edited, and corrected as quickly as possible. Edited data are expected to be submitted to BSB within 30 days of the end of each interview month. States should submit their edited data electronically to BSB (see Appendix F: Electronic Submission of BRFSS Data).

Suggested Reading

Centers for Disease Control and Prevention. *Health Risks in America: Gaining Insight from the Behavioral Risk Factor Surveillance System.* Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, 1997.

Fowler FJ Jr. *Survey Research Methods.* Newbury Park, CA: Sage Publications, 1988.

Frey JH. *Survey Research by Telephone.* Beverly Hills, CA: Sage Publications, 1983.

Mariolis P. *Supervisor's Handbook for Ci3 System and Ci3 CATI.* Atlanta, GA: Centers for Disease Control and Prevention, 1994.

Siegel PZ, Frazier EL, Mariolis P, Brackbill RM, Smith C. Behavioral risk factor surveillance, 1991: monitoring progress toward the nation's year 2000 health objectives. *MMWR* 1993;42(SS-4):1–22.

Waksberg J. Sampling methods for random digit dialing. *J Am Stat Assn* 1978;73(361):40–46.

Weinberg E. *Community Surveys with Local Talent: A Handbook.* National Opinion Research Center Report No. 123. Chicago, IL: National Opinion Research Center, 1971.

Chapter Six
Guide for BRFSS Interviewers

BRFSS Overview

In 1984, the Centers for Disease Control and Prevention (CDC) initiated the state-based Behavioral Risk Factor Surveillance System (BRFSS) to collect prevalence data on risk behaviors and preventive health practices that affect health status. The states conduct monthly telephone surveillance through the use of a standardized questionnaire to determine the distribution of risk behaviors and health practices among adults. Responses are forwarded to CDC's Behavioral Surveillance Branch (BSB), where monthly data are aggregated for each state, returned to states with standard cross-tabulations, and published at year's end.

The three-part BRFSS questionnaire was developed jointly by BSB and the states. Data derived from the questionnaire provide health departments and other interested parties with health status information that is unique to their populations. When combined with mortality and morbidity statistics, these data enable public health officials to establish policies and priorities and to initiate and assess health promotion strategies.

Role of the Interviewer

Interviewers are an essential part of survey research.

BRFSS interviewers are the only link between the persons being surveyed and the researchers who are conducting the study. It is the interviewer who is actually in contact with the people about whom public health officials need information. Every interviewer has an integral and pivotal role in ensuring high-quality data for the study. Without competent interviewers, scientists could not trust the data they compile.

Interviewers ask specific questions that provide useful information on the distribution of risk behaviors in a population.

Although indirect measures, such as sales volume, can be used to indicate overall consumption levels of alcohol and cigarettes, these are gross estimates that provide no information about the specific subpopulations that are at risk. Moreover, indirect measures are not available for some risk behaviors, such as physical inactivity. Thus, because the risk behaviors involve personal activities, respondents must be asked personal questions, such as "Do you smoke cigarettes?" and "How often do you exercise?"

Interviewers obtain and record reliable and accurate information.

After an interview is completed, the only available record is what the interviewer recorded. Answers not recorded cannot be analyzed; answers recorded incorrectly cannot be correctly analyzed. The burden of obtaining solid research data lies solely with the interviewers. The

importance of monitoring interviewer performance and survey administration cannot be overemphasized for ensuring quality execution of the questionnaire and data accuracy (see Chapter 7: Quality Assurance for information on monitoring).

Interviewers strive to successfully interview a wide variety of respondents.

Interviewing strangers is not an easy task. BRFSS respondents may be unlike anyone with whom an interviewer has ever dealt. Respondents span the range of the state's population. Some people are anxious to give their opinions and are flattered to be called; some will talk because they are lonely. Others will hang up before the interviewer has a chance to explain the reason for the call. Still others will be sincerely interested in the issues and will answer the questions frankly. The best interviewers are those who do not take personally the respondent's refusal to participate in the survey and who enjoy the wide variety of respondent personalities. A good interviewer is committed to obtaining the best possible results with each and every interview and will repeatedly rise to the challenge of a difficult interview.

Responsibilities of the Interviewer

Interviewers screen telephone numbers for monthly data collection and collect monthly data through interviews with household respondents by using the BRFSS questionnaire. The interviewer's job is to complete interviews honestly and accurately according to the instructions received during training. The interviewer has the following responsibilities:

- Understands the nature and content of the questions.
- Ensures respondents' confidentiality.
- Understands how to record responses, code questionnaires, and edit interviews.
- Ensures that the correct respondents are interviewed.
- Makes quality a priority in all aspects of interviewing.
- Records a true picture.
- Executes the work clearly and accurately.
- Strives for maximum efficiency without sacrificing quality.
- Is courteous and friendly.
- Is prepared to deal with problem situations that may arise during interviews.
- Is persuasive and minimizes the number of selected households and respondents who refuse to participate.

BRFSS Process

Although interviewers are involved only in the screening and data collection parts of the surveillance study, they should be familiar with all of the steps in the BRFSS process.

Each year, the content and structure of the survey instrument are determined by CDC and the states and are used without modification. The states are free to ask questions about additional topics by using state-added questions. They may develop their own questions for these topics or select questions used in other survey research. This system results in some changes in the questionnaire each year. New questionnaires are implemented in January. Thus, before each January interviewing period begins, interviewers need time to familiarize themselves with the new questionnaire (see Appendix C: BRFSS Training).

The interviewer has to be familiar with all nine steps in the BRFSS process.

Annual questionnaire development

1. At the annual BRFSS conference, states provide input and feedback on the content of the core components and optional modules.
2. BSB designs and produces the core components, optional modules, and data processing layouts and sends them to the states. States add questions that they have designed or acquired.

Sample selection and screening

3. BSB obtains samples of telephone numbers and sends them to the states. Some states purchase samples from private vendors.
4. On a monthly basis, states screen telephone numbers to exclude nonresidential primary sampling units (PSUs) from the survey sample. Screening is conducted according to the same protocol as that used for data collection. This step is generally omitted by states not using the Mitofsky-Waksberg sampling design.

Monthly data collection

5. States conduct interviews during each month in accordance with a prescribed protocol. States review and edit all completed interviews and call attempts each month. Surveillance results are collected into computer files during interviewing by states using a computer-assisted telephone interviewing (CATI) system. Data entry is completed subsequent to the survey by states that collect data manually.

Data management and reporting

6. States submit data to BSB for further editing each month.
7. BSB weights data yearly according to state-specific population estimates provided by the Bureau of the Census.

8. BSB produces and distributes yearly, state-specific, standard cross-tabulations of responses and risk-factor prevalence estimates for core and optional module questions, nationwide summaries of state-specific risk-factor prevalence estimates, and nationwide summaries of state-specific response rates.
9. BSB and the states publish analyses of data.

Confidentiality

Protecting the confidentiality of the respondents is a fundamental principle in the BRFSS. Respondents are frequently concerned about confidentiality, and interviewers must be able to assure them that their confidentiality is protected.

To ensure confidentiality, no respondent identifiers are retained in the interview record. Even the last two digits of the telephone number are eliminated from the final data to ensure that a respondent's answers cannot be connected to a specific person or telephone number. Individual information is further protected because the data are combined and reports include only aggregate figures (e.g., 10% of the population had a household income of less than $10,000).

All BRFSS personnel must respect confidentiality. Although discussion of respondent information among BRFSS staff is a necessary part of the surveillance process, staff must not discuss details of specific interviews outside the work environment. As a part of training, interviewers should sign a confidentiality agreement (a sample appears on the next page). Monitoring interviews does not violate the principle of confidentiality as long as the monitors are subject to the same confidentiality standards as the other BRFSS staff.

BRFSS Questionnaire

The BRFSS is conducted by using a standardized questionnaire with three parts:

1. Core component, which comprises fixed core questions, rotating core questions, and emerging issues questions asked by all states.
2. Optional modules, any, all, or none of which may be included.
3. Optional state-added questions, which are developed or acquired and used by the individual states.

SAMPLE CONFIDENTIALITY AGREEMENT

Participating Laboratory
100 Main Street, City, State Zip Code

Confidentiality Agreement

The _____ Laboratory provides an essential and valuable community service through the research of public information on a broad range of topics. Our projects often involve sensitive and confidential information from our clients and from our respondents. Truthful and accurate respondent and sponsor information is critical to the accuracy of the survey results and procedures.

As a result, the nature of the information surveyed requires a commitment of confidentiality to protect clients' and respondents' rights to privacy. Frequently, a commitment of confidentiality is a prerequisite to facilitate participation by respondents. Therefore, a commitment of confidentiality to its respondents and survey sponsors is important. Because unauthorized breaches of that confidentiality would violate assurances that are essential to obtaining truthful and accurate information, thereby impinging on our ability to produce accurate and reliable products, unauthorized disclosure of research information would result in a greater harm than benefit to the public interest. As a result, we request that each employee read and sign the following confidentiality agreement as a condition of employment.

I HEREBY AGREE NOT TO RELEASE THE FOLLOWING PRIVILEGED INFORMATION TO ANY PERSONNEL WITHOUT PROPER AUTHORIZATION FROM A DULY AUTHORIZED EMPLOYEE OR AGENT:

1. Information leading to the identification of a survey respondent,
2. Survey schedules, questions, and materials,
3. Individual survey responses and survey results, and
4. Unpublished tabulations of survey results.

_____ _____
Signature Date

The core components and optional modules are determined by BSB and the states and are used *without modification*. States can ask about additional topics using state-added questions. The questionnaire includes two types of questions: open-ended questions and closed-ended questions.

Open-ended questions allow individualized answers from the respondent. These questions are not precoded and require only brief responses. One of the most important open-ended questions is on age. The interviewer should make every reasonable effort to obtain this information; however, if the respondent refuses to divulge his or her age, it can be imputed during the final data processing and weighting process.

Closed-ended questions provide several choices for the respondent and are of two types. In the first type, the responses are included in the question text. The interviewer reads the options along with the question, and the respondent picks one option. In the second type, the responses are listed but are not read as part of the question text. This is done to let the respondent react to the question without being given choices.

Sampling Design

Although the main purpose of the BRFSS is to estimate the prevalence of risk behaviors and preventive health practices in a state's adult population, interviewing each person in the general population is not feasible. Thus, a probability sample is selected in which each member of the population has a known, nonzero chance of being included.

Probability Sampling Designs

Telephone surveys usually use one of the following types of probability sampling:

- Simple random sampling.
- Stratified random sampling.
- Disproportionate stratified random sampling.
- Cluster sampling.

Some states conducting statewide monthly data collection for the BRFSS use cluster sampling techniques. The most common of these, and the sampling method described in this user's guide, is a three-stage cluster sampling procedure based on the Mitofsky-Waksberg method of random-digit dialing. (See Chapter 3: Survey Samples and Sampling Methods.) Most states use disproportionate stratified random sampling techniques.

Mitofsky-Waksberg Design

In this cluster sampling design, numbers are randomly selected from the set of all existing area code and prefix combinations in the state. On request, BSB will provide a sample of telephone numbers for a state to use in conducting the BRFSS. The sample consists of a block of 100 telephone numbers, each with the same area code, prefix, and first two digits of the suffix (e.g., [404] 329-30). This block of 100 numbers is the PSU. The group of any three telephone numbers drawn from a given PSU and successfully called (i.e., three interviews were completed) compose a cluster. For example, (404) 329-3075, (404) 329-3097, and (404) 329-3000, having been successfully called, compose the cluster from the PSU beginning with (404) 329-30.

BSB assigns each PSU a five-digit identification number—the PSU number. This numbering system allows the PSUs to be tracked throughout the data collection and editing processes without compromising the respondents' confidentiality. After the data are edited and tabulated, the last two digits of each telephone number are dropped from the interview record, thereby preserving the respondent's anonymity.

Sampling then proceeds in three stages: screening of telephone clusters, household selection, and respondent selection (see the flowchart on page 6–10).

Stage 1: Screening of Telephone Clusters

In the first stage, BSB sends the PSUs to the states for screening to exclude nonresidential telephone numbers. Interviewers call the defining number[4] to identify the PSUs that will be included in the survey sample. If the number called is a nonworking number, a business, an institution, any other nonresidential status, repeatedly busy, or repeatedly not answered, the entire PSU is rejected; no numbers in that group of 100 are used in the sample. If the call reaches a residence, the PSU is accepted into the sample.

Stage 2: Household Selection

In the second stage, additional households are identified within each PSU. Interviewers call the previously accepted defining number and successive numbers from that PSU according to prescribed rules. If someone answers the telephone and confirms that the call has reached a residence, the interviewer proceeds to the next stage of sampling.

Stage 3: Respondent Selection

In the third stage, one adult (aged 18 or older) from each selected household is randomly selected and interviewed. This process continues until one of the following occurs:

[4]The first telephone number of the 100 randomly ordered telephone numbers is referred to as "the defining number" because it defines the PSU through the common elements of area code, prefix, and first two digits of its suffix.

1. The predetermined cluster size, three completed interviews for each accepted PSU, is reached.
2. All the numbers in the PSU have been used.
3. The supervisor determines that a PSU is unproductive and should be replaced.
4. The interviewing period ends.

BRFSS PROTOCOL SPECIFIES THAT proxy interviews are not conducted within the BRFSS. Individual respondents are randomly selected from all adults aged 18 and older living in a household and are interviewed in accordance with BRFSS protocol.

Removing an Unproductive PSU from the Sample[5]

The success of the Mitofsky-Waksberg sampling design in providing a representative BRFSS sample depends on incorporating all potential residential telephone numbers within the state. To achieve this, area codes and telephone prefixes statewide are subjected to a computer program that generates a random listing of all possible residential numbers statewide. This listing is broken down into blocks of 100 numbers, the PSUs.

To increase survey efficiency, the defining number in the PSU is screened before or simultaneously with the survey. If the number is found to be other than a residential number, the entire PSU is discarded. If the number is found to be a residential number, the PSU is retained for use in the upcoming interview period.

On some occasions, the defining number may not represent a predominately residential prefix. For example, the number may be a residential number at a university, and the majority of the remaining numbers in the PSU are offices or dormitories. The number may be the only one or one of only a few working numbers within that prefix, such as in remote or highly rural areas. Often, the defining number simply gets disconnected before the survey begins.

In the strictest Mitofsky-Waksberg sampling designs, all 100 PSU numbers would be pursued unless a cluster of three interviews is completed. However, on these and similar occasions, to further enhance survey efficiency, a policy to discard and replace unproductive PSUs has been adopted. This policy relies on a rule of 15 (see the flowchart on the next page). After the defining number has been screened and given a disposition code (see the disposition codes on page 6–11), up to 15 additional telephone numbers must be resolved and coded as nonresidential or

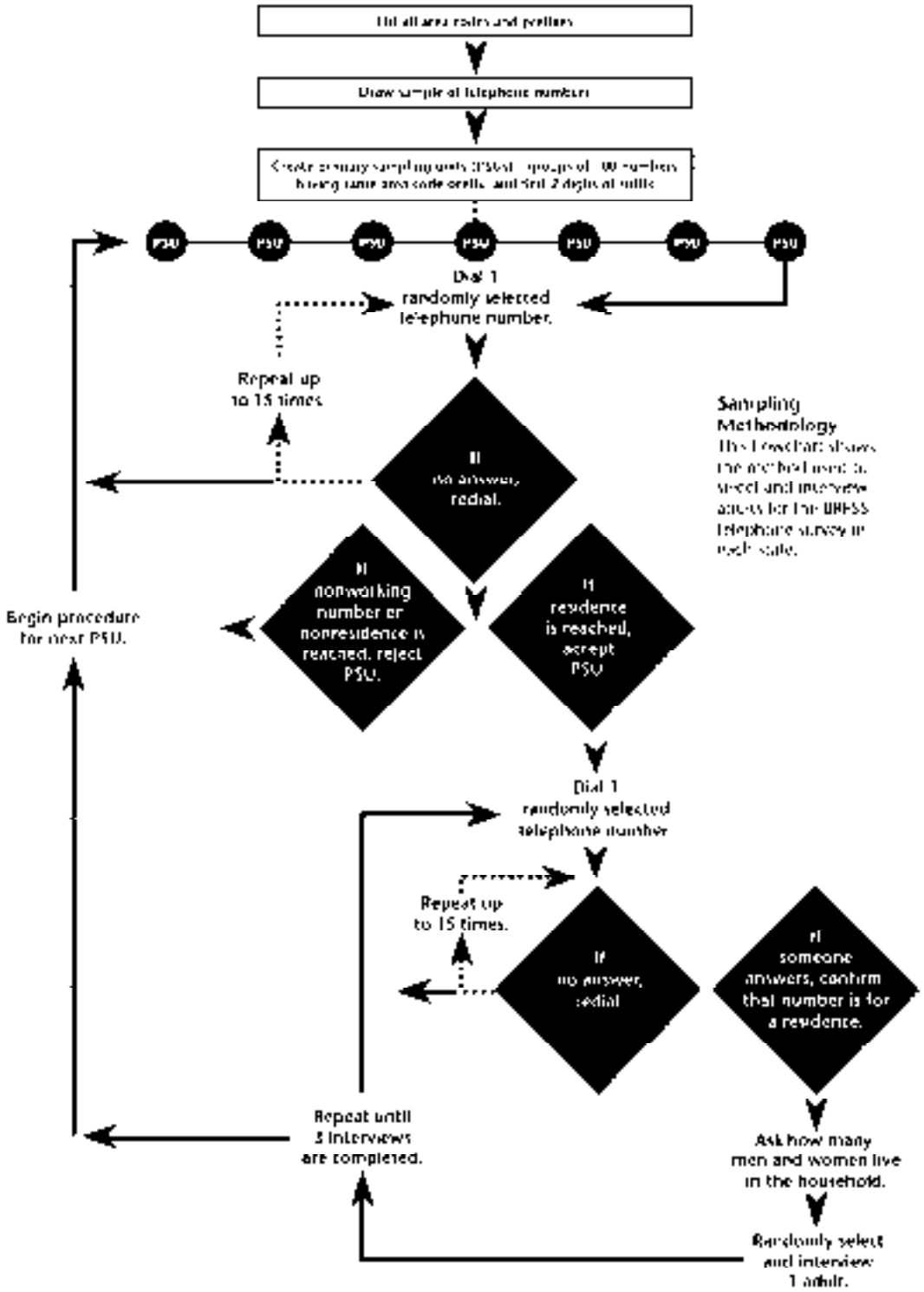
[5]This departure from earlier BRFSS practice is based on cost and efficiency considerations. Until further, conclusive data are available, the guidelines presented here are recommended for discarding an unproductive PSU.

nonworking before the PSU can be replaced. To reach a final disposition on a number, at least 15 calls must be made among all three calling occasions and not produce a definitive residential status. A calling occasion is a workshift, as follows:

Weekdays	1:00–5:00 P.M.
Weeknights	5:00–9:00 P.M.
Weekends:	
Saturdays	10:00 A.M.–2:00 P.M.
Sundays	1:00–5:00 P.M.
	5:00–9:00 P.M.

In the event a completed interview is obtained within the 15 numbers, up to an additional 15 successive numbers must be called and coded. If within the 15 telephone numbers another interview is completed, 15 more telephone numbers must be called and coded before the PSU can be replaced. *When a PSU is replaced, any completed interviews are retained for submission and analysis.*

Note: The decision to replace a PSU before completing the cluster is the supervisor's; however, these are the guidelines that govern such replacement. The 15 intervening telephone numbers worked between either the defining PSU number or any subsequently completed interview(s) and replacing the PSU must be resolved as nonworking or nonresidential numbers and not merely be inaccessible respondents or unobtainable interviews. If a series of telephone numbers prove to include some variety of residential dispositions (e.g., ring-no-answer, refused interview, appointment made, selected respondent not available during the interview period), the PSU should not be discarded and replaced but worked through as many numbers as are needed to complete the cluster or exhaust the PSU. A PSU with an unbroken string of line-busies or ring-no-answers should first be checked for its operational status with the telephone company before replacing it. A PSU containing an unbroken string of 16 business numbers, however, should be immediately replaced. (See the flowchart.)


PSU
PSU
PSU
PSU
PSU
PSU
PSU
Dial 1 randomly selected telephone number.
Repeat up to 15 times.
If no answer, redial.
If nonworking number or nonresidence is reached, reject PSU.
If residence is reached, accept PSU.
Begin procedure for next PSU.
Sampling Methodology
Dial 1 randomly selected telephone number
Repeat up to 15 times.
If no answer, redial
If someone answers, confirm that number is for a residence.
Repeat until 3 interviews are completed.
Ask how many men and women live in the household.
Randomly select and interview 1 adult.

Screening of Telephone Clusters: Mitofsky-Waksberg Design

Screening of clusters—stage 1 of the three-stage sampling process—generally takes place during the three to four weeks just before monthly data collection. Interviewers screen for the next month at the same time that they interview for the current month. However, they sometimes conduct screening simultaneously with the current month's survey.

BSB provides the initial random-sample blocks of telephone numbers for use in monthly data collection. These are copied to a data file for use with CATI systems and sent to states that use a CATI system for screening. (Appendix J: *Supervisor's Handbook for Ci3 System and Ci3 CATI* details the procedures needed to implement the BRFSS screening protocol in Ci3 CATI.) States that conduct interviews on paper receive their sample clusters on printed cluster contact sheets. (Using the cluster contact sheet is explained in Appendix B: Paper-Administered BRFSS Methodology.)

The cluster contact sheets contain blocks of 100 telephone numbers—the defining number followed by 99 additional randomly ordered and unique numbers for each PSU. Data files used in CATI systems include only the primary number; the system generates the additional 99 numbers. During screening, the interviewers systematically screen these numbers to determine their residential status until the prespecified number of PSUs is reached.

Disposition Codes and Calling Rules

Each telephone number in the sample must be called until a set of rules has been met. After each call, telephone numbers are given an interim disposition code. Once the calling rules are satisfied, the telephone number is given a final disposition code. Different CATI systems use different disposition codes.

Call Disposition Codes

01 Completed interview
02 Refused interview
03 Nonworking number
04 Ring-no-answer
05 Not a private residence
06 No eligible respondent at this number
07 Selected respondent not available during the interviewing period
08 Language barrier
09 Interview terminated within questionnaire
10 Line busy
11 Respondent unable to communicate due to physical or mental impairment

In the Mitofsky-Waksberg sampling design, a telephone number is replaced with another number from the PSU until three interviews are completed or the PSU is deemed by the supervisor to be unsatisfactory. Thus, in this design, the calling rules are referred to as the Rules of Replacement (see the box on the next page).

Interviewing Procedures

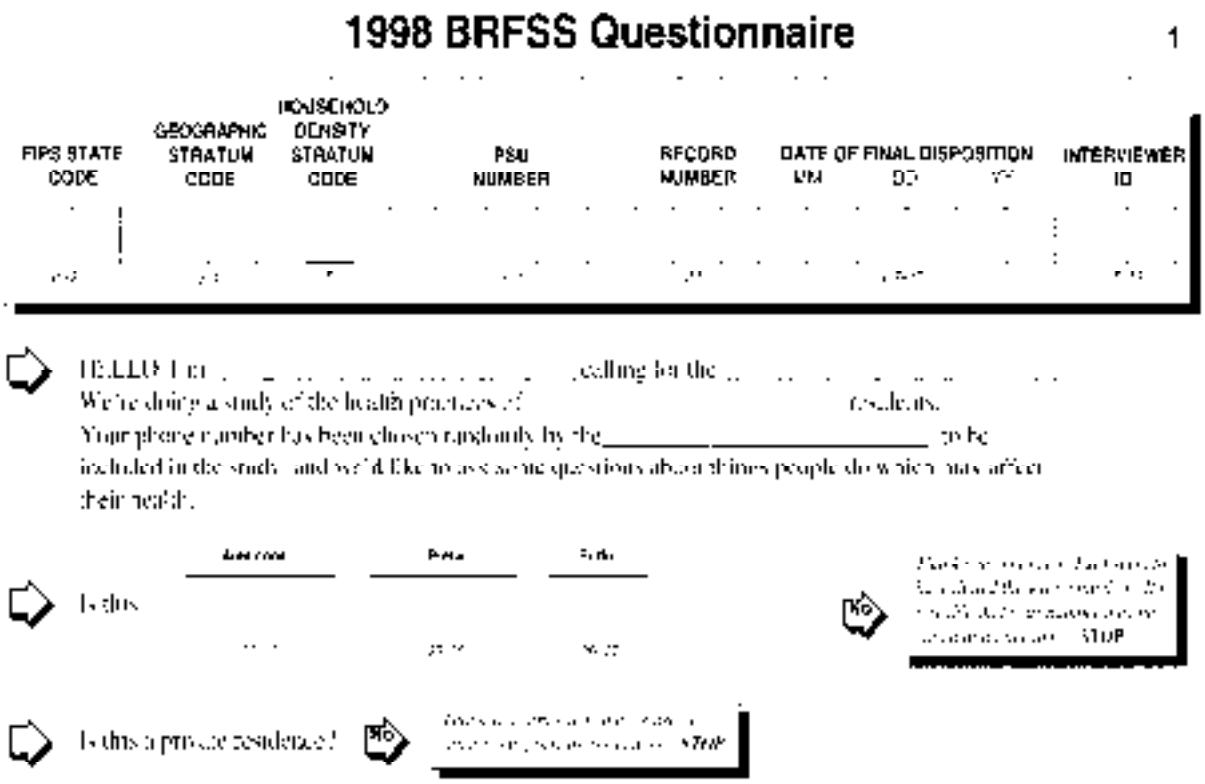
Interviewing is usually conducted during a 14-day period each month, but may begin on the first day of the month and extend through the last day of the month. All completed interviews and call attempts are reviewed and edited locally each month. Surveillance results are entered into computer files. Data entry is done during interviewing by states using CATI systems and after interviewing by states using manual systems.

Instructions for setting up and implementing a BRFSS study using a paper-administered system are included in Appendix B. Instructions for data collection with a CATI system are dependent on the system being used by a particular state. Instructions for implementing the BRFSS data collection protocol in Ci3 CATI are included in Appendix J. Whichever CATI system is used, however, the details of questionnaire administration should follow the specifications for manual data collection. The procedures follow the Rules of Replacement.

BRFSS Rules of Replacement

Code	Disposition	Rule
01	Completed interview (questions asked include age, race, and sex)	Do not replace.
02	Refused interview	Replace after second refusal or when a first-time refusal will not be called a second time.
03	Nonworking number	Usually recognized by a recording of a fast-busy signal. Includes "number changed" recordings and numbers that "bridge." Call operator or repair service when in doubt. Replace.
04	Ring no answer	A normal telephone ring that no one answers (answering machines do not count as an answer) after (1) five calling occasions (each consisting of three attempts) and (2) the five occasions have a mixture of weekday, weeknight, and weekend calls. If possible, contact the telephone company repair service to verify the number is in service. Replace.
05	Not a private residence	The person answering identifies the telephone number as a business or says "no" when asked "Is this a private residence?" Also use this disposition for institutions (government offices, educational facilities, dormitories, nursing homes, hospitals, prisons, etc.), group homes (fraternities and sororities, half-way houses, shelters, etc.), pagers, fax machines, and computer modems. Replace.
06	No eligible respondent at this number	The household does not include anyone 18 years of age or older (this does not mean the adults are away temporarily). Replace.
07	Selected respondent not available during the interviewing period	The selected respondent will not be available or could not be reached during the time you have allotted for the month's interviewing. Replace.
08	Language barrier	The selected respondent does not speak English well enough to be interviewed, and no interviewers speak the respondent's language. Replace.
09	Interview terminated within questionnaire	A "hang up" at some point after the first questions has been asked (this does not mean the respondent refused a particular question). Make another attempt to complete the questionnaire. Replace if second attempt is unsuccessful. If after a second attempt the respondent has completed the interview at least through the age, race, and sex questions, recode as a completed interview.
10	Line busy	To be coded only after (1) five calling occasions (each consisting of three attempts at ≥ 10 minute intervals) and (2) the five occasions have a mixture of weekday, weeknight, and weekend calls. If possible, contact the telephone company repair service to verify the number is in service. Replace.
11	Respondent unable to communicate due to physical or mental impairment	For example, the respondent is deaf. Replace.

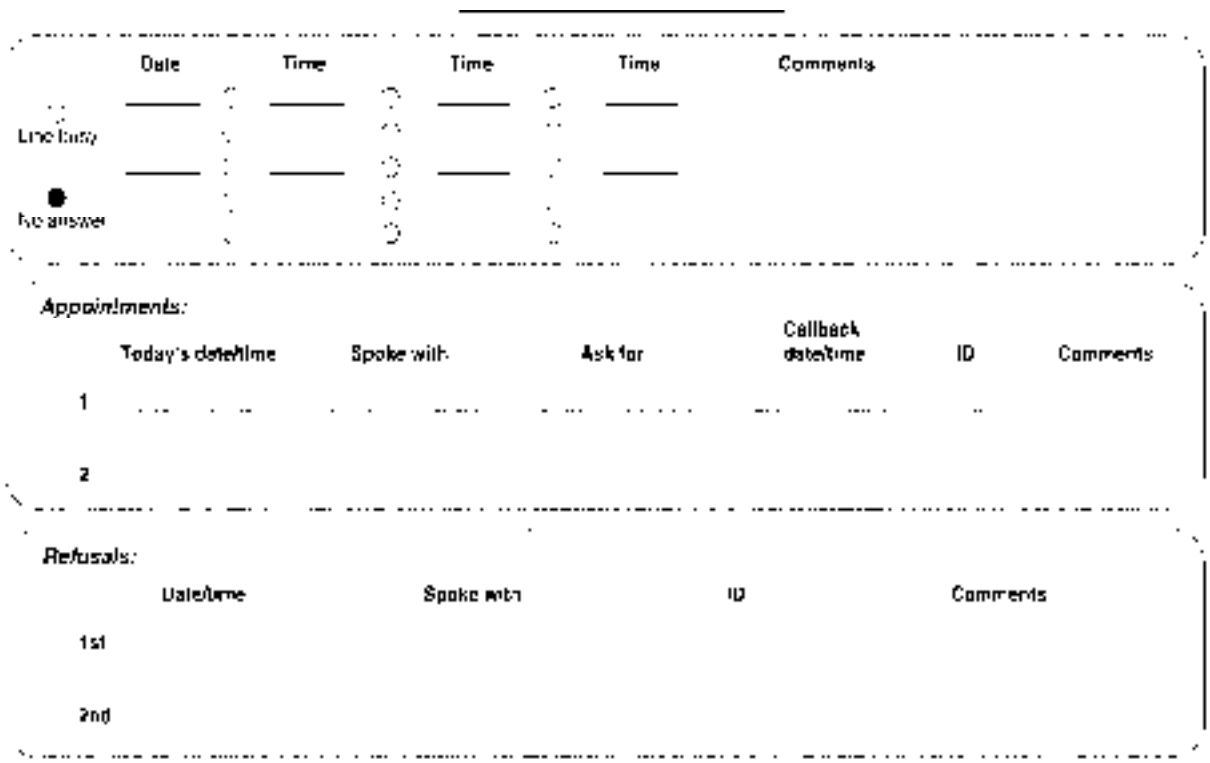
Call Record



1. Each state has a FIPS state code (see Appendix L: FIPS Codes). Depending on the type of design, the stratum code may vary from "1" to another number.
2. Indicate a geographic stratum code on each record. States with no internal geographic stratification will enter the number 1. States with internal geographic stratification will enter a number ranging from 1 to the number of geographic strata.
3. Indicate a household density stratum code. States with no density stratification will enter the number 1. States with density stratification will enter a number ranging from 1 to the number of density strata.
4. Each coversheet should have a PSU number listed. This is a five-digit sequential number starting with 00001 and continuing up to 99999.
5. The record number is a one-digit number—1, 2, or 3—that represents the number of completed interviews in the cluster. It is filled in after an interview has been completed. If a cluster design is not used, "1" is entered on every completed interview.
6. The date of final disposition is filled in only when the record can be given a final disposition code (completed interview, not a private residence, nonworking number, etc.).

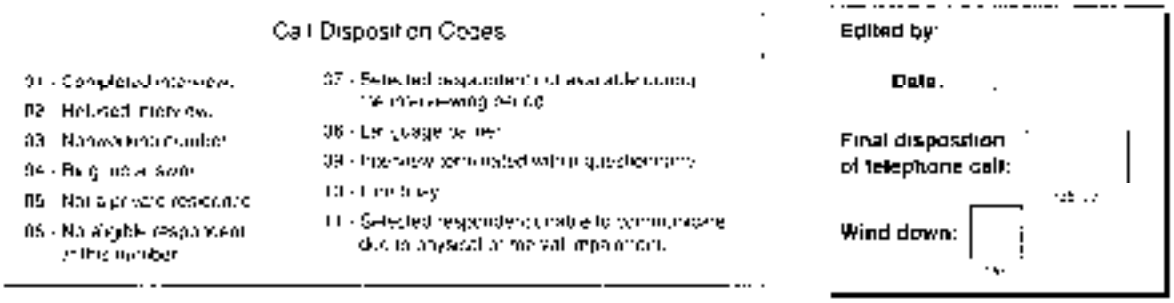
7. The interviewer ID is filled in when a final disposition code is given. The interviewer inserts his or her initials or another two-digit ID code in these two boxes.
8. The area code and telephone number will already be filled in. If not, the interviewer should check with the supervisor.
9. The interviewer reads the introductory paragraph, verifies the telephone number, and determines that the number is for a private residence. When the interviewer has reached a private residence, he or she continues on to obtain the household information.

This is the call history section.



1. The interviewer fills in the appropriate blanks (date, time, and initials) and indicates "line busy" or "no answer" (fill in circle as indicated) or answering machine (put an "X" in the circle). Space for comments is provided.
2. The next box is for appointments. The interviewer fills in the date and time, to whom he or she spoke, the selected respondent (if known), the callback date and time (morning, afternoon, evening, or at a specific appointment time), and the interviewer's initials. Space for comments is provided.
3. The next box is for refusals. The interviewer fills in the date and time, to whom he or she spoke, and the interviewer's initials. In the comments area, the interviewer briefly describes the reason for the refusal (no time, doesn't do surveys, busy now, etc.).

This is the call disposition section.



1. At the bottom of the coversheet is a list of call disposition codes with a brief description of each and a box for final disposition coding. When the interviewer obtains a final disposition, he or she fills in the final disposition code. Space is provided for the initials or identification number of the person editing the record and the date the record is edited.
2. If the study is in wind-down (a survey status sometimes necessary when using cluster sampling to complete the last 5% of interviews for the month), the interviewer puts "9" in the box marked "Wind-down" (described later in this chapter); otherwise, the box is left blank.

Household Selection

The next section takes the interviewer through the household selection process, stage 2 in the three-stage sampling process.

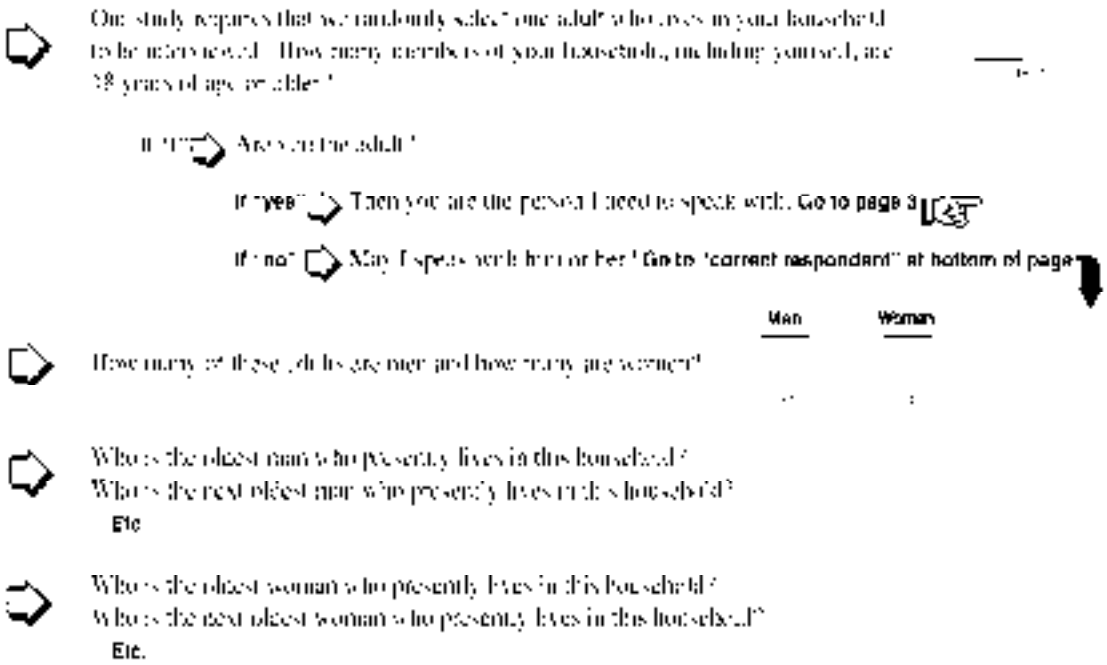
BRFSS PROTOCOL SPECIFIES THAT an eligible household is a housing unit that has a separate entrance, where occupants eat separately from other persons on the property, and that is occupied by its members as their principal or secondary place of residence.

Noneligible households are (1) vacation homes not occupied by household members for more than 30 days per year, (2) group homes (sororities and fraternities, halfway houses, shelters, etc.); and (3) institutions (nursing homes, college dormitories, etc.

Household members include all related adults (age 18 or older), unrelated adults, roomers, and domestic workers who consider the household their home, even though they may not be home at the time of the call.

Household members do not include adult family members who are currently living elsewhere (at college, a military base, a nursing home, a correctional facility, etc.)

2



1. The first question asks how many members in the household are 18 years of age or older. If the response is five or more adults, the interviewer should probe to ensure that all are 18 years of age or older, that all currently live in the household, and that the household is not a group home or institution. If the response is one adult and the interviewer is speaking to that person, the interviewer proceeds to the first question on the questionnaire.
2. The next question asks how many of the adults are men and how many are women. The interviewer fills in the appropriate answers. If there is only one adult in the household, the interviewer puts "1" in the appropriate box and leaves the other box blank.

Respondent Selection

Suffix: ___ ___ ___ ___

Last digit of phone number

	Name or Relationship	0	1	2	3	4	5	6	7	8	9	
1.		1	1	1	1	1	1	1	1	1	1	1.
2.	_____	2	1	2	1	2	1	2	1	2	1	2.
3.		3	1	2	3	1	2	3	1	2	X	3.
4.	_____	1	2	3	4	1	2	3	4	X	X	4.
5.	_____	2	3	4	5	1	2	3	4	5	1	5.
6.		5	6	1	2	3	4	X	X	X	X	6.
7.	_____	2	3	4	5	6	7	1	X	X	X	7.
8.		8	1	2	3	4	5	6	7	X	X	8.

Total adults

Total adults

The person in your household that I need to speak with is _____

If "you," go to page 3

In this section, the interviewer randomly selects one adult in the household to be interviewed. Two methods are used to randomly select the person to be interviewed within a selected household:

1. A pencil and paper technique using the Kish table shown here, which is based on a matrix of the telephone number and a household roster.
2. Random selection by a CATI program, which avoids bias associated with the person who answers the telephone and the time of day when the call is placed.

When the Kish table is used, the interviewer performs the following activities:

1. Before dialing the telephone number, the interviewer fills in the suffix (the last four digits of the telephone number) on the blanks above the chart.
2. The interviewer lists the adult members of the household down the left side of the chart. (If there is only one adult, the interviewer does not need to fill this in.) The interviewer may use the two questions above the chart if necessary. In most households, because there is only one man and one woman, it is not necessary to use these two questions.

The interviewer lists all men first, oldest to youngest, and then all women, oldest to youngest, by relationship or initials (e.g., husband, wife, father, mother, son #1, son #2, oldest woman, woman—age 43). The interviewer should not ask for names, but if a name is given, it can be used.

3. The interviewer then finds the column in the chart that is headed by the last digit of the suffix. Next, the interviewer finds where the row containing the last listed name intersects that column. The number where the column and row intersect is the number of the selected respondent. If the intersection contains the number "2," for example, the second person on the list is interviewed.

   If the intersection of the column and row reflects an "X," the interviewer must refer to the column corresponding to the last digit of the prefix and select the number of the respondent represented at the intersection of that column and row intersect. Likewise, if that recalculation results in another "X," the process is repeated using the middle digit of the prefix and continues backwards through the entire telephone number, including the area code, if necessary.

4. The interviewer indicates the correct respondent in the space provided, using the name as it is written on the chart (e.g., husband, daughter).

5. If the correct respondent is the person to whom the interviewer is speaking, the interviewer asks the first question on the paper questionnaire. Otherwise, the interviewer asks to speak to the selected respondent. When that person comes on the line, the interviewer introduces himself or herself using the words printed at the bottom of the chart and begins the interview.

> **Note:** In a two-person household with one male and one female, the male is selected if the telephone number is odd; the female is selected if the telephone number is even.

In a CATI system, household members are entered at computer prompts. The computer makes a random selection, and the appropriate introductory text appears on the screen.

Questionnaire Administration

Questions about administering the paper questionnaire should be resolved during training. Interviewers should refer any unusual problems to the supervisor. (See Appendix J for an overview of the steps in conducting an interview by use of the Ci3 CATI system.)

Wind-Down Procedures

Wind-down is an optional procedure in cluster sampling. Wind-down enables the interviewers to complete data collection by the end of the specified monthly interviewing period. During wind-down, the standard Rules of Replacement are suspended. New numbers within a PSU are dialed

once; if a completed interview is not obtained, the following numbers are dialed in order until a cluster is completed.

The supervisor makes the decision to begin wind-down, which is implemented only when necessary and only after 95% of the interviews required for the month have been completed. When the Rules of Replacement are disregarded, only respondents who are easiest to reach are interviewed. The health behaviors of these respondents may differ significantly from those of persons who are more difficult to reach; therefore, the remaining sample may not truly reflect the population from which it was drawn.

Wind-down is usually initiated during the evening hours, when most people can be expected to be at home.

- When wind-down begins, all telephone numbers coded as pending appointments and initial refusals are called once and replaced if a completed interview is not obtained. Telephone numbers that produced busy signals, no answers, and refused interviews are all replaced without further attempts to complete the interview.
- The respondent selection procedure remains intact. That is, interviewers may not bypass the respondent selection process; they must speak to the properly selected respondent. If this respondent is not available, the interviewer does not make an appointment. Instead, the interviewer gives the telephone number a final disposition and tries a new telephone number.
- The final disposition for a number that has been previously called must reflect whether the household has been determined to be eligible. For example, if a number is called, a respondent is selected, an appointment is made, and the number is called again during wind-down and there is no answer, the final disposition would be respondent not available during interviewing period (07) rather than ring-no-answer (04).
- Each interview completed during wind-down must be coded as such.

The prescribed procedure for completing wind-down interviews in Ci3 CATI is identical to that followed in paper-administered surveys—an interviewer is assigned a PSU and calls numbers from that PSU until the cluster is complete (see Appendix J).

Interviewing Principles and Techniques

The following guidelines will help the interviewers conduct successful interviews. Also, see the box on page 6–25, "Tips for Telephone Interviewing."

Rapport, Pace, and Flow

- To establish rapport, the interviewer introduces himself or herself and emphasizes that the call is from a health department and not from a firm soliciting sales.

- If the respondent seems hesitant, the interviewer should assure the person of the anonymity of the responses, take time to convince the respondent of the importance of the study, and communicate understanding to elicit a favorable reaction to the interview.
- The first question should be asked without pausing. A pause gives the impression that the interviewer is waiting for approval or disapproval. It also allows the respondent time to refuse the interview. The interviewer should not say, *Would you mind answering some questions*? or *Do you have some time now*?
- The interviewer should strive for thoroughness and accuracy, not speed. Rushing, especially at the introduction, suggests a lack of confidence and may also cause the listener to misunderstand. Questions should be read at a pace that allows them to be readily understood but that moves the interview along at an efficient rate.
- The interviewer must make every effort not to influence the respondent's opinions, suggest answers, or lead the respondent toward a specific answer. The goal is to maintain neutrality. The interviewer should be direct and answer the respondent's concerns while also actively moving the respondent toward answering the questions.
- Interviewers should be nonjudgmental, noncommittal, and objective. The approach should be neutral so that the respondent feels comfortable answering the questions truthfully and completely. The questionnaire is designed to elicit a free flow of ideas and opinions. Respondents need the freedom to say what they feel and think, without being influenced by anything the interviewers might say.
- Nothing in the interviewer's words or manner should imply criticism, surprise, approval, or disapproval of either the questions or the answers. Even a slight gasp will clue a respondent to a reaction.

Voice Personality

- An interviewer's tone of voice, attentiveness, and receptive manner can make the difference between a complete interview and a hang up. Interviewers can put respondents at ease by reading the questions in a friendly, natural manner; speaking at a moderate rate of speed; and sounding interested.
- Interviewers should strive for a low-pitched voice. Elevating the voice tends to result in an irritating, sing-song delivery that seems to increase refusals. Lowering one's head can help to lower the pitch.
- Interviewers should speak in a clear, even tone and pause occasionally for emphasis. They should speak deliberately and distinctly, without letting their voice trail off at the end of a sentence.

Adherence to the Questionnaire

- Interviewers are to use the exact wording provided for each question. The questionnaire has been carefully prepared, and each question has a specific purpose. Interviewers must not change or substitute any words. Even slight changes in wording can affect the answers given in a survey. The questionnaire should be thought of as a script, and the questions should be read exactly as they appear.
- Interviewers must ask every question on the questionnaire that is appropriate for the respondent. In answering one question, a respondent may sometimes also answer another question that appears later in the interview. If this happens, the interviewer must still ask the partially answered question. It can be prefaced with a remark that shows that the interviewer has not forgotten what was said earlier and has not rejected the earlier answer, for example, *We have touched on this before, but I need to ask this next question.*
- Questions must be read in the exact order in which they appear. The questions are ordered to achieve a desired effect. A question asked out of order can influence replies to the questions that follow.
- Interviewers must not skip questions, even if an answer seems obvious. The question may be intended to verify information. Also, an answer received in the context of one line of questioning may not be the same as an answer received in another group of questions.

Reinforcements

Reinforcements help to establish rapport. *Thank you*, *I see*, and *This is helpful information* are good reinforcements. Reinforcements should be varied, however, and used only when appropriate. Overuse sounds contrived and insincere. More important, reinforcements should not be judgmental. For example:

Interviewer: Have you smoked 100 cigarettes or more in your life?
Respondent: No.
Interviewer: Good!

Responses such as this are not reinforcements and may influence the respondent to answer questions in such a way as to meet the approval of the interviewer rather than in an honest way.

Probes

Probing—using words and techniques to obtain more information—is one of the most challenging and important aspects of interviewing. Probes are used when an answer is inadequate and requires the interviewer to seek more information. Probes are also used when a respondent is unsure of an answer and is having trouble making a choice.

Effective probing requires that interviewers understand a question's rationale. For example, women are sometimes not sure how to answer the question, *Was your last mammogram done as part of a routine checkup, because of a breast problem other than cancer, or because you've*

already had breast cancer? A woman may have had a mammogram as part of a special screening program; because it was not in the context of a general physical or gynecological exam, she may not view it as part of a routine checkup. The rationale for the question is to differentiate mammograms done in response to symptoms from those done for screening. Thus, any mammogram done for screening purposes in the absence of symptoms would be part of a routine checkup.

- Neutral questions or statements can encourage a respondent to clarify a response or elaborate on an inadequate response. Examples of neutral probes are

  Can you explain what you mean?
  How do you mean that?
  Tell me what you have in mind.
  I have space for only one answer; could you be more specific?
  Which choice would you like me to use?

Interviewers should, however, take care not to appear to challenge the respondent.

- When the respondent is unable to decide on an answer, does not seem to understand the question, or misinterprets it, the entire question should be repeated. This helps the respondent realize the kind of answer needed. The respondent may not have heard the question fully the first time or might have missed the question's emphasis.
- The silent probe is also useful. Pausing or hesitating indicates that more or better information is needed. This is a good probe to use after the respondent's response pattern has been determined.
- Respondents often dodge questions with "*I don't know*" answers. An initial *I don't know* should be probed. If the respondent knows but doesn't want to say for some reason, a little time and patience by the interviewer can often yield an answer. If the respondent really doesn't know an answer, the question should be coded as such.

Tips for Telephone Interviewing

Voice Personality
Be courteous and polite.
Sound confident.
Do not sound bored.
Sound interested in the responses.
Put a smile in your voice.

Probing and Clarification
Probe for accurate information.
Know when to probe.
Use neutral probes.

Enunciation of Questionnaire
Speak clearly.
Pronounce words properly.

Handling Difficult Respondents
Answer respondents.
Alleviate confidentiality concerns.
Encourage responses from reluctant respondents.
Alleviate concerns about length of interview.

General Knowledge of the BRFSS
Recognize need for data quality.
Know survey objectives.
Know rationale for the questions.

Interviewing Techniques
Read questions verbatim.
Verify telephone number.
Follow skip patterns smoothly.
Go from introduction to questions smoothly.
Close interview smoothly.
Make appointments properly.
Provide neutral feedback.

Appointment Procedures

An interviewer must schedule an appointment if the selected household member is not available at the time of the call or if the selected person does not have time to do the interview. The interviewer should ask when a convenient time to call back would be (preferably during this calling occasion), agree on a specific day and time, and try to get the first name of the person to be interviewed. If the respondent will not provide a time to call, the appointment should be scheduled for the next calling occasion until the Rules of Replacement are satisfied.

If the person who answers the telephone initially says that he or she does not have time now, the interviewer should try to get the person to answer the household information questions so that the selection can be made. The selected person might be home and able to complete the interview, or the interviewer might be able to get a name and a time to call back. If the person absolutely will not take the time to answer any questions now, an appointment should be scheduled for the next calling occasion. The interviewer should note that household contact was made but that no selection was made.

Appointments are recorded on the face sheet of the questionnaire in paper-administered systems or through the CATI system. The following information is included:

- Selected respondent.
- Person with whom the interviewer spoke.
- Date, day of week, and time of appointment.
- Reason for callback.

Appointment records are filed by date and time to be called back. Once an appointment has been made, it remains in the appointment file until it is completed or replaced.

If an interviewer calls an appointment and there is no answer or the line is busy, that number must be called at least two more times during that calling occasion. Additional calls are made according to the Rules of Replacement during subsequent calling occasions until a total of 15 calls are made or a final disposition is recorded.

Refused Interview

Regardless of how well trained and prepared an interviewer is, there will be times when respondents will refuse to complete an interview. Many factors can cause a refusal at the time of the initial call, and few have anything to do with the interviewer. The best defense against becoming discouraged is to realize that the refusal is usually an expression of the respondent's own fear or resistance, not a negative judgment of the interviewer's competence.

> BRFSS PROTOCOL SPECIFIES THAT with the exception of verbally abusive respondents, eligible persons who initially refuse to be interviewed will be contacted at least one additional time to give them an opportunity to complete the interview. Preferably, this second contact will be made by a supervisor or a different interviewer.

Respondents are sometimes rude and even hostile. Rather than taking this reaction personally, the interviewer should try to address the respondent's objections.

- Project a confident and reassuring manner while conveying a genuine interest in the respondent. For example, if the respondent is in the middle of cooking dinner, apologize for calling at an inconvenient time and offer to call back later. This will convey the interviewer's willingness to accommodate the respondent and an understanding of the importance of the respondent's time. This attitude could turn a refused interview into a completed interview.
- Do not be afraid to be assertive with hesitant respondents; use all of your powers of persuasion to get the interview. Remember that now is better than later. Research has shown that the highest completion rates occur at the initial contact and decline with each successive

call. Unless it is clearly a bad time, the interviewer should always try to convince the respondent to do the interview at that time.

- If a person hangs up, call back in a couple of minutes and apologize by saying, *I'm sorry, but somehow we were disconnected, and at this time I would like to continue.* Emphasize the importance of the survey and that the interview will take only a few minutes.
- If a respondent seems willing to participate in the interview but is concerned about its legitimacy, empathize and explain the purpose of the survey. If that still does not work, offer the telephone number of the office and indicate that the respondent can call back during regular working hours to verify the number. The number given should be the central number or the number of someone who serves in a management capacity.
- *When a respondent says to call back some other time, code that attempt as an appointment.*

If the respondent refuses to participate in the survey, his or her telephone number is called back at a later time, preferably by a supervisor or another interviewer. It is very important to document on the coversheet the reason for the initial refusal because this information may help convert a refused interview into a completed interview.

Talking to Reluctant Respondents

The following statement can be used when calling a respondent who has been called before and refused to participate at that time.

> *I realize we have called you already from the State Health Department, but I would like to give you a little more information because we want everyone to have a chance to participate. The survey is designed to determine the number of people who are at risk for the leading causes of premature deaths and disabilities, such as cardiovascular disease, cancer, and motor vehicle crashes. The data will be used to improve programs that promote the reduction of these conditions.*

Some suggested responses to refusals follow.

I'm not interested.

> *I can understand with all the surveys being taken, but I'm from the State Health Department, not a political group or business. I'm not selling anything. This study is designed to see how the health habits of the residents of our state affect their chances of getting long-term illnesses like cancer, heart disease, or high blood pressure. Your input is important so we can make better decisions in planning health programs. The interview will take a short time.*

Still not interested.

I'm sorry to inconvenience you, but we must give each household an opportunity to participate, and there is a good chance that someone other than yourself is the person I need to interview.

I don't have time/I'm busy/It's not a good time.

I understand. Let's make an appointment for another time. Someone can call you later ____. [If the same calling occasion is not possible, try to schedule an appointment for as soon as possible. Have the respondent specify a time.]

There is no convenient time to call back.

We will be making calls for the next few days. What day is best for you?

I don't do telephone surveys. Mail it to me.

Unfortunately, we can only conduct this survey over the telephone. The survey will only take a few minutes, and most people find the questions interesting. Let me start, and you can see what they are like. If you do not want to answer a specific question, let me know and I'll proceed to the next question. [Ask the first question immediately.]

I don't like to do surveys. Why don't you call someone else?

The survey will only take a few minutes, and it's very important that we include everyone we call so our results will be scientifically accurate.

I was just interviewed last week. Try someone else.

That sounds like a different survey. This is the State Health Department. This is a survey of health practices and will take a few minutes. It's very important that we include everyone we call, so we can make better decisions about how tax dollars and programs can be used to benefit our state's residents.

I don't have anything to do with public programs/I get my health care from my private doctor/ HMO/military.

All health care providers, public or private, can use the information to improve services and plan better programs.

I just moved to this state; I don't qualify as a resident yet.

If you are now living in this state and you plan to live here, the Department of Health considers you a resident.

Correct respondent is in and out, works odd hours or ***call me back next week***.

[These statements might be excuses and will probably be repeated at a subsequent call. Try to retain control by establishing an appointment. If the respondent does not provide a specific date and time, explain again the purpose of the survey and the reason it is important to interview the correct respondent. The availability of a toll-free number for the respondent to use in these circumstances can be helpful, if possible.]

Handling spouse when you need to interview the other spouse.

[Read the introduction again and explain] *We are conducting a statewide study in which we need an equal number of men and women to participate. It is important that we speak to your husband/wife*. [If necessary, explain further by saying] *I will be asking a few questions about health conditions and lifestyle, such as hypertension, exercise, cholesterol, etc. This information is very important to improve the programs of the State Health Department.*

[Don't accept the following: *He wouldn't be interested in that* or *He hates telephone surveys.* Explain that because he was selected, it is very important to speak to him directly. If the person still resists, ask him or her to be the spokesperson for the study. Have him or her explain to the spouse the purpose of the study and the importance of the spouse's participation. Go over this information again, if necessary, and make an appointment for a more convenient time. If the correct respondent comes to the telephone, read the introduction, and, without pausing, ask the first question.]

I told you the other day that we are not interested.

I apologize for my persistence, but our study requires that we call everyone back so that we can provide you with more information about the purpose of our study, how we are going to use this information, and answer any questions or concerns that you may have about the study. [Explain the purpose of the study and immediately go to the next question. Do not pause.]

Responses to Common Questions and Comments

From time to time, respondents may make comments or ask questions about the BRFSS. Interviewers are expected to use their ingenuity and express themselves clearly when requesting participation in the survey. Some of the questions most frequently asked or comments most often made are listed below with suggested replies.

What is this survey about?

We are interviewing adults about lifestyle risk behaviors associated with the major causes of death and disability. I will be asking a few questions about health conditions and lifestyle, such as hypertension, exercise, cholesterol, etc. Such information is very important for effective planning.

I don't know anything about health and medicine.

Let me assure you that this is not a test. We only want to ask you about your personal health practices.

I never exercise, smoke, or drink.

That's OK. We need to talk to people who never exercise, smoke, or drink, as well as those who may exercise, smoke, or drink a lot.

How are you going to use this information?

Everyone's responses will be combined to give us information on the health practices of people in our state. Once collected, this information will be used for planning purposes at all levels of government to develop more effective and appropriate health programs.

What's in it for me?

The data will be used to improve programs to reduce diseases.

Who will see this information?

After the survey information is collected, it is sent to the Centers for Disease Control and Prevention in Atlanta, Georgia. The results will be analyzed and used by the State Health Department to plan programs and activities directly related to the health problems identified by this survey. The survey results will be published in local pamphlets, local and statewide newspapers, and national health journals.

I'm not interested in this sort of thing and I don't do surveys on the telephone.

I'm sorry. It's a very interesting study. [If a specific reason is not identified, choose an issue to discuss; for example, the time it takes to complete the interview or the importance of the study.]

How did you get my telephone number? It is unlisted.

Scientific procedures were used to select a random sample of telephone numbers within our state. All telephone numbers were generated by a computer program that uses a

mathematical formula to generate a random set of telephone numbers. We have no way of knowing whose number we are calling or if it is a business or residential number.

Why do you need to know how many adults live in this household?

Our survey protocol requires that we select one adult from your household. One of your adult household members will be randomly selected. This is done so that we can be sure that our study results represent all adults in our state. Also, we can be sure that we have good representation of men and women and of different age groups.

Why can't you interview me?

I would like to, but our survey protocol calls for us to do the interview with a randomly selected adult member of your household. This is done so that we can be sure that our study results represent all adults in our state. Also, this way, we can be sure that we have good representation of men and women, as well as different age groups.

How do I know the survey is legitimate?

[Repeat appropriate parts of the introduction, empathize with the respondent, and explain] *The survey is an important effort of the Department of Health and the Centers for Disease Control and Prevention in Atlanta, Georgia, to learn more about the health behavior risks of our state's adults so that certain policies and health promotion programs can be more effectively developed. If you want to verify that this is a legitimate survey, you may call the Department of Health* [give telephone number].

How do I know that you are really an interviewer for this survey?

You may call the Department of Health [give telephone number] *and verify.*

I don't want to buy anything.

I am not selling anything. This is an important survey sponsored by the Centers for Disease Control and Prevention, for the State of ____.

How long is this going to take? I don't have much time.

[There are two schools of thought on this. In general, the recommended response is to say] *The interview will only take a few minutes, and I'll move through the interview as quickly as I can to save you time. Let me start, and you tell me if I'm going too fast.* [Ask the first question immediately and continue at a brisk pace. However, use your own judgment. It may be better to be as honest as possible and make an appointment to complete the interview, if necessary.]

Doesn't the government have better things to do with our tax dollars, etc.?

[Do not argue or justify; make short, neutral comments such as] *Your opinions are very interesting and your answers will help the government spend tax dollars more wisely. The survey will only take a few minutes.* [Ask the first question.]

I don't give my age over the telephone.

I understand, but it's very important because some of the programs planned from this information will be for people in certain age groups. All the information obtained in this study is strictly confidential and used for research purposes. [If respondent is still hesitant, offer a range of ages. Example: *Are you between 20 and 30, 30 and 40,* etc.? Then record the middle of the range given. If the respondent says between 30 and 40, record 35.]

[Income] ***I think this is very personal*** or ***Why do you need this information?***

I only need the range within which your total household income falls. I do not need to know the actual income. All of this information will be used for statistical purposes only to identify how the risks are distributed among people of different income groups.

Release of information

A report summarizing this information will be published. If you would like, you may call us or write to us at the central location for a copy. Or, if you'd like to leave your name and address, we can send you a copy of an already published report from earlier surveys.

Quality Assurance

The BRFSS is a scientific survey. Therefore, everyone on the surveillance team must be meticulous in consistently following the specified procedures. Otherwise, the process is compromised, and the credibility of the results is undermined. If procedures vary among the states, the results cannot be compared. Interviewers who are not sure about a procedure or about how to handle a problem should ask a supervisor. To ensure the quality of the data, BRFSS staff monitor certain statistics and the performance of the interviewers.

Quality Assurance Indicators

Various statistics are used to monitor the quality of the BRFSS process. These statistics provide feedback to interviewers on problems that need to be addressed. Response rates, which measure the extent to which selected households participated, are particularly important. Low response rates cast doubt on the survey results because the households not included may have reported very different behaviors from the behaviors reported by the households that cooperated.

Although persuading reluctant respondents to participate is perhaps the most difficult challenge that interviewers face, it is essential that all interviewers try their best to include every selected household in the survey.

Interview Monitoring and Verification Callbacks

Procedures to maximize the quality of the study include interview monitoring and verification callbacks. These activities should not be viewed as policing the interviewer's work. Rather, they should be viewed as a coaching mechanism to improve performance. In addition, the use of these activities enhances the scientific integrity of the surveillance process and the credibility of the results.

Monitoring of, or listening to, interviews is done by supervisors and sometimes other interviewers. This process is intended to provide interviewers with feedback on how they are doing, both individually and as a group. Sometimes everyone is having a problem dealing with certain responses to certain questions. Monitoring can identify such problems so they can be resolved.

Verification callbacks are done each month in support of the quality control procedures for the BRFSS. (See the box on page 6–35 for more information on verification callbacks.) The supervisor will choose some completed interviews at random from each interviewer and call back the respondent. Items routinely used for interview verification include the number of male and female adults in the household, the age and sex of the respondent, and questions on smoking. The topics should be changed periodically, however, to enhance the purpose and concept of verification.

> BRFSS PROTOCOL SPECIFIES THAT no less than a 5% random sample of each month's interviews must be called back to verify selected responses for quality assurance.

Verification callbacks usually take four to seven minutes per telephone number. They are made to ensure that

- An interview was conducted and in an acceptable manner.
- The household roster was completed correctly.
- The responses were recorded correctly.
- The interviewer used good techniques.

This process is used to enhance the scientific reliability of questions, the comparability of the study, and the high quality of the data collected. (See the sample verification callback form on page 6–37.)

Suggested Reading

Centers for Disease Control and Prevention. *Health Risks in America: Gaining Insight from the Behavioral Risk Factor Surveillance System.* Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, 1994.

Mariolis P. *Supervisor's Handbook for Ci3 System and Ci3 CATI*. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, 1994.

Siegel PZ, Frazier EL, Mariolis P, Brackbill RM, Smith C. Behavioral risk factor surveillance, 1991: monitoring progress toward the nation's year 2000 health objectives. *MMWR* 1993;42(SS-4):1–22.

Verification Callbacks

Callbacks are done to ensure that the information collected is valid and reliable, not to monitor the interviewer's performance. However, verification should also be used to monitor the respondent's perception of the interviewer's courtesy and professional demeanor. Monitoring and verification are separate activities, and neither should be conducted in place of the other. BRFSS coordinators are encouraged to maintain records of verification to support and document the scientific rigor under which the survey is conducted.

Instructions

From the pool of completed interviews, randomly select only those records that were completed in full and were not refusal conversions. When making the selection, include interviews from all interviewers. If using a paper sample, check the respondent selection prior to making the call. An equal number of completed interviews for verification should be selected from each interviewer.

Verification calls should be made within a few days of the original call. Although BSB recommends that verification be performed by survey supervisors or coordinators, the calls can be conducted by interviewers as long as doing so does not create peer conflict and interviewers do not verify their own interviews. Using appropriate discretion, share the results with the entire group. Apply the same callback procedures for verification calls as are employed in normal interviewing (i.e., three calls per calling occasion on the various calling occasions). Follow-up calls on completed interviews to confirm extreme values or otherwise clarify responses are part of the editing process and should not be included in your verification calls.

Generally, the responses from the original interview will be consistent with those obtained from the verification call. In the event that responses do not agree on those two occasions, however, further verification is required of additional interviews conducted by the same interviewer. When it is determined that the source of error resides within the household, the interview data will be retained without modification. Conversely, when it has been determined that the source of error resides in survey operations (e.g., interviewer skills, respondent selection, faulty dialing, or improper reading of questions), the erroneous interview is discarded without replacement.

When significant discrepancies are found between the original and verification interviews, the survey supervisor must be notified immediately to decide on the most prudent course of action. In the event of minor discrepancies (e.g., seatbelt is used "sometimes" as opposed to "seldom"), the supervisor will exercise judgment in the best course to follow.

Verification is considered **VALID** when it has been determined that the properly identified respondent completed the survey. This is true regardless of any response inconsistencies on the part of the respondent and of whether the respondent was, in fact, the proper respondent. If the source of interview errors and inconsistencies resides within the respondent or the household, but the interview was conducted according to proper protocol, the verification is considered to be valid.

Verification is considered **INVALID** and the record removed when it reveals that

- The respondent was not properly selected, or significant response inconsistencies are identified.
- The source of error or inconsistency is found to reside within the survey operations.

The interview record must be removed from the dataset, and an investigation into the cause of the error must be undertaken and resolved. The interview will not be conducted again under any circumstances as a result of verification.

The interview is **NOT VERIFIABLE** and should not be counted as a verified interview if

- The respondent cannot be contacted during the verification interview time period.
- The respondent refuses to complete the verification interview.

In these cases, the interview to be verified is replaced to satisfy the 5% requirement.

Note: Before each new surveillance year, the Behavioral Surveillance Branch will provide states with four specific core questions to be verified.

Survey Verification Callback Form

_____	_____	_____
Interviewer ID	Date of Interview	PSU Number

Script AS APPROPRIATE, CIRCLE OR WRITE IN RESPONSES. WHEN THESE RESPONSES ARE COMPARED TO THE ORIGINAL INTERVIEW, IN THE SPACE PROVIDED PUT A CHECKMARK WHEN THE RESPONSES ARE CONFIRMED.

✓ if Confirmed

Hello. I'm calling from the [state] department of health. Is this [telephone number]? _____
If no, redial more carefully.
If yes, continue.

One of our interviewers called your home [time frame: earlier today, yesterday, this week, last week, etc.] and interviewed [respondent ID: oldest male, mother, etc]. I'm calling back to confirm that the interview was conducted in an acceptable manner and to verify four questions for quality assurance. Before I continue, please tell me how many members of your household, including yourself [if an adult], are 18 years of age or older? _____
How many of these are adults are male? _____ _____

The interview was conducted with [respondent ID]. May I speak to [that person]?
If not available, set up an appointment to call back.
If available, when they come to the telephone, greet them, identify yourself and your affiliation with the state health department, and continue.
If it is the person to whom you are speaking, continue.

Our records indicate that you recently participated in a health behavior survey for [State of xx]. Our quality control procedures require that we recontact you to verify that the survey was completed in an acceptable manner. Were you interviewed for our survey? _____
If no, thank the person for their time and terminate the call.
If yes, continue.

This is strictly a follow-up to verify the collected data and to evaluate the interviewer. Your comments will be used to improve the quality of the survey process. I have only seven questions to ask you, which will take only two or three minutes.

1. Was your interviewer courteous and polite? Y N _____

2. Was your interviewer easily understandable? Y N _____
(Clear pronunciations and speech)
Notes:

3. Was your interviewer pleasant to deal with? Y N _____
(Moved at a steady pace, clarified questions)
Notes:

Finally, I have four questions from the survey itself to verify that your earlier responses were correctly recorded by the interviewer.

✓ if Confirmed

1. How often do you use seatbelts when you drive or ride in a car? _____
   - Always
   - Nearly always
   - Sometimes
   - Seldom
   - Never
   - Don't know
   - Never drive or ride in a car
   - Refused

2. Have you smoked at least 100 cigarettes in your entire life? _____
   - Yes
   - No
   - Don't know
   - Refused

3. During the past month, did you participate in any physical activities or exercises such as running, calisthenics, golf, gardening, or walking for exercise? _____
   - Yes
   - No
   - Don't know
   - Refused

4. And finally, [ask any missing demographics questions—age, race, income, education, or verify the number of telephone numbers in the household]. _____
   - Age _____
   - Weight _____
   - Race _____
   - Education _____
   - Income _____
   - Telephone numbers _____

That's my last question. Thank you for taking the time to answer these questions. As I stated earlier, the information we get from you will be used to improve the quality of the survey.

Verified by: _____ Date: _____

Chapter Seven
Quality Assurance

An essential aspect of the job for everyone involved with the Behavioral Risk Factor Surveillance System (BRFSS) is quality assurance. This topic should be discussed regularly among the entire staff. Professional attitudes need to be encouraged and individual efforts supported to improve performance through monitoring, verification callbacks, and periodic review of quality assurance measures. Ensuring that BRFSS data are collected with scientific rigor and consistency is important not only to provide the most accurate data possible but also to ensure the integrity of the data. Without adequate quality assurance activities, surveillance data may be less valid and will certainly be less credible.

Interviewer Monitoring

BRFSS supervisors must routinely monitor interviews in progress. The concept of monitoring should be introduced to interviewers early in their training. They must understand that listening to interviews is a valuable tool for training and for achieving uniform questionnaire administration.

> BRFSS PROTOCOL SPECIFIES THAT systematic, unobtrusive electronic monitoring will be a routine and integral part of monthly survey procedures for all interviewers.

The following points should be considered in setting up a monitoring system:

- Monitoring should take place during every monthly interviewing period. All interviewers should be monitored periodically—from one or more times per shift for new interviewers to once every month for experienced interviewers.
- The monitoring system should allow monitoring without the interviewers' awareness of when it is taking place (e.g., through line noise or because they can see someone at a workstation reserved for monitoring). Otherwise, they may consciously or unconsciously make changes in their interviewing style or technique.
- The ideal monitoring system allows supervisors to hear both the interviewer and the respondent and to observe the interviewer's coding of responses at the same time. Telephone equipment for the audio requirements is readily available, and, with a computer-assisted telephone interviewing (CATI) system and appropriate software, a duplicate of the interviewer's CATI display can be observed at a separate terminal.
- State regulations govern to what extent parties on the telephone need to be informed that another person is listening. Generally, as long as one party (in the case of telephone surveillance, the interviewer) is aware that monitoring may be taking place, it is not

necessary to inform the interviewer or the respondent at the time an interview is actually being monitored. Because all BRFSS staff are subject to the same confidentiality requirements, monitoring is not a breach of confidentiality.

- Monitoring need not be limited to the interview itself. The introduction and respondent selection sections and callbacks on initial refusals can also be monitored to identify interviewers' weaknesses in persuading respondents to participate.
- Although supervisors usually do the routine monitoring, interviewers may also do some monitoring. They can gain a great deal from listening to other interviewers.
- Observations should be documented and discussed with the interviewers as soon after monitoring as possible. An evaluation sheet (for examples, see Appendix C: BRFSS Training) can be used to rate interviewers on verbatim reading, coding accuracy, probing, refusal avoidance and conversions, diction, pace, and courtesy. Results should be filed for use in future performance evaluations.

Verification Callbacks

Verification callbacks identify different errors from those detected by interview monitoring. The two activities are complementary, not duplicative. Although significant discrepancies between the initial and the verification interviews are uncommon, the reliability and credibility of the surveillance data are further ensured when verification is conducted.

A 5% random sample of completed interviews is called back each month to verify that interviews were properly conducted and that responses were correctly coded. These truncated reinterviews support overall quality assurance. They also serve to ensure the integrity of collected data, as well as to further monitor interviewer performance. Often overlooked as a significant attribute of verification is the service it provides in testing the reliability of questions. This is of particular value as it pertains to state-added questions.

> BRFSS PROTOCOL SPECIFIES THAT no less than a 5% random sample of each month's interviews must be called back to verify selected responses for quality assurance.

Monthly verification enables the timely detection of faulty data collection and a heightened ability to prevent future problems. Ideally, verification callbacks are conducted within a week after completion of the original interview and are customarily made by the supervisor. These reinterviews normally require less than 10 minutes to perform.

If large numbers of errors or significant discrepancies are found, more interviews conducted by the interviewer in question must be verified. If the discrepancies are due to coding errors, all

interviews completed by that interviewer must be reviewed with care and handled appropriately. Additional training should be provided to the interviewer, as well as close future monitoring until the problem is overcome.

If data have been intentionally falsified, all interviews by that interviewer must be reviewed for authenticity, and determinations must be made regarding whether the interviews are salvageable. Any suspect interviews must be removed from the dataset (but retained as documentation for disciplinary action). No reinterviews are to be done; those data are lost.

During the verification interview, selected questions from the questionnaire are asked again to confirm the initial results. Recommended questions are

- Number of adults.
- Respondent's age and gender.
- Sample questions from sections such as smoking, in which the interview can be shortened by falsely recording a "no" answer to the first question.
- Questions regarding the professional posture and disposition of the interviewer, such as diction and courtesy.

The responses should be recorded and discussed with the respective interviewers. In addition, the responses can be tallied on a monthly report of reinterviews that is made and filed for reference and use in future performance ratings. (See the box on the next page for more information on verification callbacks and the sample verification callback form on page 7–6.)

Verification Callbacks

Callbacks are done to ensure that the information collected is valid and reliable, not to monitor the interviewer's performance. However, verification should also be used to monitor the respondent's perception of the interviewer's courtesy and professional demeanor. Monitoring and verification are separate activities, and neither should be conducted in place of the other. BRFSS coordinators are encouraged to maintain records of verification to support and document the scientific rigor under which the survey is conducted.

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From the pool of completed interviews, randomly select only those records that were completed in full and were not refusal conversions. When making the selection, include interviews from all interviewers. If using a paper sample, check the respondent selection prior to making the call. An equal number of completed interviews for verification should be selected from each interviewer.

Verification calls should be made within a few days of the original call. Although BSB recommends that verification be performed by survey supervisors or coordinators, the calls can be conducted by interviewers as long as doing so does not create peer conflict and interviewers do not verify their own interviews. Using appropriate discretion, share the results with the entire group. Apply the same callback procedures for verification calls as are employed in normal interviewing (i.e., three calls per calling occasion on the various calling occasions). Follow-up calls on completed interviews to confirm extreme values or otherwise clarify responses are part of the editing process and should not be included in your verification calls.

Generally, the responses from the original interview will be consistent with those obtained from the verification call. In the event that responses do not agree on those two occasions, however, further verification is required of additional interviews conducted by the same interviewer. When it is determined that the source of error resides within the household, the interview data will be retained without modification. Conversely, when it has been determined that the source of error resides in survey operations (e.g., interviewer skills, respondent selection, faulty dialing, or improper reading of questions), the erroneous interview is discarded without replacement.

When significant discrepancies are found between the original and verification interviews, the survey supervisor must be notified immediately to decide on the most prudent course of action. In the event of minor discrepancies (e.g., seatbelt is used "sometimes" as opposed to "seldom"), the supervisor will exercise judgment in the best course to follow.

Verification is considered **VALID** when it has been determined that the properly identified respondent completed the survey. This is true regardless of any response inconsistencies on the part of the respondent and of whether the respondent was, in fact, the proper respondent. If the source of interview errors and inconsistencies resides within the respondent or the household, but the interview was conducted according to proper protocol, the verification is considered to be valid.

Verification is considered **INVALID** and the record removed when it reveals that

- The respondent was not properly selected, or significant response inconsistencies are identified.
- The source of error or inconsistency is found to reside within the survey operations.

The interview record must be removed from the dataset, and an investigation into the cause of the error must be undertaken and resolved. The interview will not be conducted again under any circumstances as a result of verification.

The interview is **NOT VERIFIABLE** and should not be counted as a verified interview if

- The respondent cannot be contacted during the verification interview time period.
- The respondent refuses to complete the verification interview.

In these cases, the interview to be verified is replaced to satisfy the 5% requirement.

Note: Before each new surveillance year, the Behavioral Surveillance Branch will provide states with four specific core questions to be verified.

Survey Verification Callback Form

_____	_____	_____
Interviewer ID	Date of Interview	PSU Number

Script AS APPROPRIATE, CIRCLE OR WRITE IN RESPONSES. WHEN THESE RESPONSES ARE COMPARED TO THE ORIGINAL INTERVIEW, IN THE SPACE PROVIDED PUT A CHECKMARK WHEN THE RESPONSES ARE CONFIRMED.

✓ if Confirmed

Hello. I'm calling from the [state] department of health. Is this [telephone number]? _____
If no, redial more carefully.
If yes, continue.

One of our interviewers called your home [time frame: earlier today, yesterday, this week, last week, etc.] and interviewed [respondent ID: oldest male, mother, etc]. I'm calling back to confirm that the interview was conducted in an acceptable manner and to verify four questions for quality assurance. Before I continue, please tell me how many members of your household, including yourself [if an adult], are 18 years of age or older? _____
How many of these are adults are male? _____ _____

The interview was conducted with [respondent ID]. May I speak to [that person]?
If not available, set up an appointment to call back.
If available, when they come to the telephone, greet them, identify yourself and your affiliation with the state health department, and continue.
If it is the person to whom you are speaking, continue.

Our records indicate that you recently participated in a health behavior survey for [State of xx]. Our quality control procedures require that we recontact you to verify that the survey was completed in an acceptable manner. Were you interviewed for our survey? _____
If no, thank the person for their time and terminate the call.
If yes, continue.

This is strictly a follow-up to verify the collected data and to evaluate the interviewer. Your comments will be used to improve the quality of the survey process. I have only seven questions to ask you, which will take only two or three minutes.

1. Was your interviewer courteous and polite? Y N _____

2. Was your interviewer easily understandable? Y N _____
(Clear pronunciations and speech)
Notes:

3. Was your interviewer pleasant to deal with? Y N _____
(Moved at a steady pace, clarified questions)
Notes:

Finally, I have four questions from the survey itself to verify that your earlier responses were correctly recorded by the interviewer.

✓ if Confirmed

1. How often do you use seatbelts when you drive or ride in a car? _____
   - Always
   - Nearly always
   - Sometimes
   - Seldom
   - Never
   - Don't know
   - Never drive or ride in a car
   - Refused

2. Have you smoked at least 100 cigarettes in your entire life? _____
   - Yes
   - No
   - Don't know
   - Refused

3. During the past month, did you participate in any physical activities or exercises such as running, calisthenics, golf, gardening, or walking for exercise? _____
   - Yes
   - No
   - Don't know
   - Refused

4. And finally, [ask any missing demographics questions—age, race, income, education, or verify the number of telephone numbers in the household]. _____
   - Age _____
   - Weight _____
   - Race _____
   - Education _____
   - Income _____
   - Telephone numbers _____

That's my last question. Thank you for taking the time to answer these questions. As I stated earlier, the information we get from you will be used to improve the quality of the survey.

Verified by: _____ Date: _____

Assessing Quality Assurance Indicators

The states should compile and review selected statistics at the end of each month's data collection. Although the Behavioral Surveillance Branch (BSB) provides final statistics during the year and with each year's final dataset, the states should generate preliminary statistics by using the PC-QC program (provided by BSB) or by other means. It is important to identify data collection problems promptly so that corrective action can be taken before the next and successive months' interviewing begins. (See Appendix K: PC-Based Program Documentation for the States.)

Objectives have been established for the BRFSS for a number of quality assurance indicators. These objectives should not be regarded as minimal performance levels but as benchmarks. If an objective is not met consistently, ways to improve performance in this area should be tried. If the objective is still not being met, the indicator should be monitored for change over time rather than the absolute level that is achieved.

The quality assurance indicators that are routinely assembled and assessed follow.

Interviewer Statistics

Many statistics are available from CATI systems, and supervisors should keep some additional statistics on the performance of each interviewer. BSB recommends the following, at a minimum:

- Ratio of refused interviews to completed interviews.
- Frequency distribution of disposition codes (included in PC-QC reports).
- Number of completed interviews per hour of interviewing time (not appropriate if interviewer is focusing on refusals or working with an exhausted sample).

When routine indicators suggest that an interviewer is having performance problems, a frequency distribution of dispositions for each interviewer can be useful.

Two additional statistics will be appropriate depending on how responsibilities are distributed among the interviewers:

- Number of dialings per hour.
- Number of completed interviews obtained on calling back respondents who initially refused to be interviewed.

Question-Response Frequencies

Question-response frequencies (marginals) are tables showing the percentages of each of the answers to each question. These tables should be reviewed to spot unreasonable results, particularly for a new questionnaire at the beginning of the year. If some response percentages appear to be unusual, interview monitoring can be used to determine if the question is being asked correctly. Marginals for each interviewer may be useful to narrow the investigation.

For example, if the percentage of respondents with health insurance has been 85% but then abruptly changes to 75%, monitoring might reveal that some interviewers are not reading the entire question on health insurance (which ends with the phrase ". . . or government plans such as Medicare"). Thus, many respondents over age 65 who have Medicare are answering that they do not have health insurance. The interviewers can then be reminded of the need to read the entire question.

Frequency Distribution of Dispositions

PC-QC provides a table of the number and percentage of the final dispositions cumulatively and for each month. The table should be reviewed soon after the end of each month's interviewing cycle to detect changes in the frequency that dispositions occur. Although most dispositions fluctuate, abnormally large changes—either abrupt or gradual—suggest a problem. Comparing the current year's monthly mean for a disposition against the previous year's monthly mean is the best way to detect changes. For example, if the monthly mean for refusals the previous year was 25 and the current year's average is 35, a review of efforts to avoid and convert initial refusals is indicated.

Call Disposition Codes

01 Completed interview
02 Refused interview
03 Nonworking number
04 Ring-no-answer
05 Not a private residence
06 No eligible respondent at this number
07 Selected respondent not available during the interviewing period
08 Language barrier
09 Interview terminated within questionnaire
10 Line busy
11 Respondent unable to communicate due to physical or mental impairment

Response Rate

The response rate measures the extent to which interviews were completed from among the telephone numbers selected for the sample. The higher the response rate, the lower the potential for bias in the data. There is no definitive formula for estimating response rates. The two estimates that are used for the BRFSS provide a combination of monitoring information that is

useful for program management. The formulas for each, translated into BRFSS call disposition codes, are as follows:

1. CASRO formula

   This response-rate formula, developed by the Council of American Survey Research Organizations (CASRO), apportions dispositions with unknown eligibility status (e.g., ring-no-answer [04] and line busy [10]) to dispositions representing eligible respondents in the same proportion as exists among all calls of known status (all other BRFSS call dispositions). The resulting estimate reflects the efficiency of telephone sampling, as well as the degree of cooperation among the eligible respondents contacted.

   Note: The objective[6] for the BRFSS is 75.

$$\frac{01}{(01+02+07+09) + \left[\frac{(01+02+07+09)}{(01+02+07+09) + (03+05+06+08+11)}\right] \times (04+10)}$$

2. Upper-bound formula

   The most liberal of response-rate formulas, the upper-bound calculation includes only refused interview (02), terminated within questionnaire (09), and completed interview (01). The resulting estimate reflects the cooperation of eligible respondents contacted and is not affected by differences in telephone sampling efficiency.

   Note: The objective for the BRFSS is 90.

$$\frac{01}{01+02+09}$$

Because the Rules of Replacement are disregarded during wind-down, total response rates for an interviewing period will not accurately reflect performance under the Rules of Replacement during regular interviewing. Therefore, response-rate estimates should also be calculated with wind-down records excluded.

Survey Efficiency

The efficiency rate used for the BRFSS is the percentage of all numbers called (excluding numbers rejected during screening in the Mitofsky-Waksberg sampling design) that resulted in

[6]The specific numeric objectives observed by the BRFSS have been established as goals, creating a tool to help reduce errors in data processing.

completed interviews. This indicator is directly related to the percentage of telephone numbers in the surveillance area that are assigned to households. The degree to which interviewers adhere to surveillance procedures and gain respondent cooperation also affects efficiency. This percentage should remain static unless there is a change in the telephone company's assignment of telephone numbers in the surveillance area, a change in sampling design, or a substantial change in interviewer performance.

Note: The objective for the BRFSS is 40.

$$\frac{01}{\text{Total Telephone Numbers Used}}$$

Percentage of Completed Interviews on First Day

In the Mitofsky-Waksberg cluster sampling design, 33% of the telephone numbers have been identified as private residences through screening.

> **Note:** Consequently, the objective for completed interviews on the first day of the interviewing period is 33% of the total sample.

This percentage is important because finishing data collection within the interviewing period is a function of how early in the period unproductive numbers are replaced. If a different sample design is used, a different objective for the first day may be appropriate. A broader objective is to strive to call all available numbers at least once on each calling occasion, including the first.

Percentage of Wind-Down Interviews

To terminate data collection activities within the allotted time each month, wind-down procedures (suspension of the Rules of Replacement) may be necessary when the Mitofsky-Waksberg sampling design is used.

> **Note:** Wind-down is permitted only when necessary to complete the survey and only when 95% of the month's sample has been completed.

Each interview completed during wind-down must be coded as such. If the percentage of wind-down interviews is more than 5%, wind-down is being implemented too soon. The greater the proportion of interviews completed in wind-down, the greater the potential for bias in the survey results. This is because data collected during wind-down reflect the health behaviors of respondents who are easiest to reach and may differ significantly from those of respondents who are more difficult to reach.

Respondent Gender Distribution

The expected gender distribution in a population is approximately 52% female and 48% male. Samples with a distribution that differs substantially from the norm may produce biased estimates of the prevalence of risk behaviors and preventive health practices. Substantially skewed gender distributions suggest that interviewers may not be interviewing randomly selected respondents.

Percentage of Refused Interview Dispositions

The percentage of refused interviews (02) in a given interviewing period is an indicator of both the interviewer's performance and the degree of potential bias in the surveillance data. A refusal rate of 10% or less is a generally accepted standard.

Percentage of Ring-No-Answer Dispositions

The percentage of ring-no-answers (04) reflects how many attempts are made and with what time variation on unanswered telephone numbers. The objective for this disposition is 10% or less of total numbers called. A higher percentage may indicate that proper callback procedures are not being followed or that this disposition is being used inappropriately as a final disposition for a selected respondent who was not interviewed.

Percentage of Selected-Respondent-Not-Available Dispositions

This disposition (07) is used most often in wind-down and therefore reflects the proportion of calling done during wind-down. The disposition also reflects the diligence of efforts to contact respondents whose availability is limited. The objective for the disposition is 3% or less of numbers called. States that exceed this percentage may have to extend the normal 14-day interviewing period, if they are not already doing so.

Percentage of Line-Busy Dispositions

This disposition (10) should occur infrequently. The objective is 0.3%[7] or less. A higher percentage may indicate that callback procedures are not being carefully followed or that this disposition is being used inappropriately as a final disposition for a selected respondent who was not interviewed.

Variation in Cluster Size

[7]Because this percentage is affected by the efficiency of the sampling methodology—that is, the number of (03) nonworking and (05) nonresidential dispositions in the denominator—comparisons among surveys with different sampling methods may not be meaningful. For a particular survey, however, month-to-month and year-to-year changes in this percentage are important to monitor.

Variation in size of clusters in Mitofsky-Waksberg sampling designs is an indirect indicator of how the design was implemented. Percentages of records with a cluster size of three are shown in the Quality Control Report for states using Mitofsky-Waksberg designs.

Monitoring Capability

BRFSS protocol specifies that systematic, unobtrusive electronic monitoring be a routine and integral part of monthly survey procedures for all interviewers. Monitoring is considered a valuable tool for training and achieving uniform questionnaire administration, resulting in less bias in the dataset. Monitoring of interviewers can provide quick information on features of the respondent recruitment and questioning process that need improvement. Monitoring capability information is shown in the Quality Control Report for all states as of December 1996.

Respondent Sex Distribution

Survey samples with a respondent sex distribution that differs substantially from the population distribution in the survey area may produce biased estimates of risk factor prevalences. A distribution substantially skewed toward females relative to the population surveyed (after adjusting for probability of selection due to the number of telephones and number of adults in households) suggests that interviewers may not be interviewing randomly selected respondents.

Respondent Race Distribution

Survey samples with a respondent race distribution that differs substantially from the population distribution in the survey area may produce biased estimates of risk factor prevalences. The discrepancy between the percentage of nonwhite in the sample and the percentage of nonwhite in the population is an indicator of racial bias of the sample. The percentage of nonwhite in the sample is, however, affected by large interstate differences in the protocol for the coding of Hispanics.

Respondent Age Distribution

The discrepancy between the percentage in specific age groups in the sample and the corresponding percentage in the population is an indicator of the age bias of the sample. An age distribution that differs substantially from the population distribution in the survey area may produce biased estimates of risk factor prevalences, particularly because many characteristics of individuals are substantially affected by age. For example, younger persons tend to be healthier than those who are older. Such a discrepancy also suggests that interviewers may not be interviewing randomly selected respondents.

Item Nonresponse

Item nonresponse rates from completed interviews for selected items from the core questions are calculated by state. The assumption is that these measures are an indication of overall

interviewing or coding quality or both. The resultant percentages are based on the number of responses coded as missing or refused. On the questionnaire, the disposition code 09 is generally listed as refused, but this code may capture some responses that were supposed to be answered, but for some reason were not, and appeared as a blank or other missing value symbol. These cases are coded as 9 to meet the constraints of processing CATI and editing programs. Any survey will have natural variation over sample sites; therefore, some variation between states is to be expected. In evaluating possible measurement error stemming from variation in item missing data rates across states, the goal is to identify outliers in the distribution of the indicators.

Data Editing

Another part of the supervisor's quality assurance role is to check the accuracy of data entry to minimize errors. This includes checking for coding errors and editing data files.

Checking for Coding Errors

In manual systems, there is potential for keystroke errors when data are transferred from paper questionnaires to computer files. Data entry programs with question-specific, response-range checks can reduce these errors. The optimal way to ensure the quality of data entry is to enter the data twice and compare the completed records for discrepancies.

CATI systems greatly reduce coding errors. Data entry is completed on-site by the interviewers, and automated question-skips and internal range-checks minimize errors.

Editing Data Files

Whether data are collected on paper or by CATI, the data files have to be checked with computer edit programs to verify that appropriate values appear in each data column. BSB prepares computer edit programming for each year's BRFSS questionnaire. A PC-based version of the program (PC-EDITS) is provided to states to allow data to be edited before submitting them to BSB for final editing (see Appendix K).

> **Note:** PC-EDITS does not edit state-added questions. Depending on the number and complexity of such questions, states may have to check their data with programming they develop on their own.

Errors identified by edit programs must be corrected quickly because trying to evaluate error messages months after the fact is difficult. Using PC-EDITS provides immediate feedback. In addition, using electronic transmission to BSB for the final edits reduces the time between data collection and data correction.

Edit reports also provide the opportunity to look for patterns in errors. Are errors occurring consistently for the same questions? Do some interviewers have more frequent errors than other interviewers? If so, the supervisor must determine if interviewers need further training to eliminate the errors or if the data processing procedures are faulty.

The specific numerical objectives observed by the BRFSS have been established as goals. They provide an extremely useful approach that survey supervisors can use to help reduce the number of errors in the data-editing process. Objectives failing to be met should prompt a review of the process, to identify the causes of failure to meet objectives and provide an opportunity to improve performance and data quality.

Finally, it must be remembered that quality assurance is complex and is affected by many factors. For example, the impact that sampling has on quality assurance is critical. If sampling is not done appropriately, proper data editing can not compensate for this, and the quality of data will be poor. Careful attention to all aspects of survey operations is critical to ensure that data of the highest quality are obtained.

Suggested Reading

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Chapter Eight
Data Management

Each year, the states complete more than 120,000 interviews using the Behavioral Risk Factor Surveillance System (BRFSS) questionnaire, generating substantial data for processing, tabulation, and analysis. Raw data are edited by the states and sent monthly to the Behavioral Surveillance Branch (BSB) for further quality control checks. For each state, BSB provides an aggregated dataset and a cross-tabulation by demographic variables. In late spring, the states receive a summary of the previous year's data, which they can then use to determine problem areas and evaluate success in health promotion efforts. In early fall, the states receive a national summary prevalence report of risk factor measures for the previous year.

Preparing for the New Surveillance Year

To prepare for each new year of data collection, the BSB staff program a new questionnaire, prepare supporting documents, generate telephone samples, and prepare for monthly data collection.

Programming a New Questionnaire

The BRFSS questionnaire consists of a core component of fixed and rotating core questions, emerging issues questions, optional modules from the Centers for Disease Control and Prevention (CDC), and optional state-added questions. Each year, the content of the core component and the optional modules is determined by BSB and the states. BSB supports all but the state-added questions with programming for Ci3 computer-assisted telephone interviewing (CATI) systems, PC-EDITS programming, and state-specific annual data tables.

States are encouraged to ask about additional topics related to their specific health priorities through the use of state-added questions. States may develop their own questions for these topics or select questions used previously in survey research. *BSB does not provide PC-EDITS programming for state-added questions*. BSB does provide Ci3 CATI programming for state-added questions to states conducting the BRFSS in-house. Data tables containing cross-tabulations of specific state-added questions by demographic variables are available by special request from the state.

Before the beginning of the calendar year, BSB sends the states a desktop-published version of the core BRFSS questionnaire and optional modules that will be supported for that year. States select their optional modules and choose any state-added questions. Each state then constructs its questionnaire. All states need a paper copy of their questionnaire. States that use a CATI system use the paper copy for reference and in cases of computer system failure during the survey period. States that use a paper-administered system use the paper copy to produce a master to duplicate for interviewing.

States whose CATI questionnaires are programmed by BSB must submit their final questionnaires to BSB by **November 1** for programming in Ci3 CATI. States whose CATI questionnaires are programmed by a contractor must send a paper copy to BSB by **February 15**.

Preparing Supporting Documents

BSB also prepares supporting documents for each year's questionnaire to ensure uniformity in data collection, editing of monthly data, and submission of data to BSB. In addition to copies of the core questionnaire and optional modules, BSB sends the states hard copies of the following documents in early **December**:

- Data layout for the core questionnaire and standard modules—this describes the column locations and column content.
- Editing criteria and item-by-item coding instructions—these specify the valid responses for each column in the data record and what will be flagged as an error for each question.
- Recommended monthly interviewing schedule.
- Instructions for data submission—these explain how data should be submitted to BSB.

Providing Telephone Samples

Many states obtain samples of randomly generated telephone numbers from BSB. Currently, BSB contracts with a commercial vendor for BRFSS samples. For data collection in 1998, BSB provided samples using either a Mitofsky-Waksberg or a disproportionate stratified sampling design. For data collection in 1999 and subsequent years, BSB will provide only samples using a disproportionate stratified sampling design. States are free to use any design that results in a probability sample of all households with telephones.

- The sampling frame for the BRFSS samples contains all possible telephone numbers in all active area code and prefix combinations that could contain a household number in the state or territory being sampled.
- Before the beginning of the data collection year, states request from BSB the number of monthly sample records that they estimate will allow them to complete their target number of interviews.
- Three monthly samples at a time are provided quarterly, either in an ASCII computer file or on paper forms, as specified by the state.
- To determine the number of primary sampling units (PSUs) to be generated, BSB uses the expression 200 m/p, where m = 1/3 the desired number of completed interviews, and p = the percentage of residential numbers among all possible telephone numbers in the population (on average, p = 20%). For example, if the annual sample size = 1,188 and the cluster size =3, then the number of clusters to be completed over a year is 1,188/3, or 396. Then, 200 m/p = 3,960 [200(396)/20 = 3,960]. Thus, in this example, 3,960 PSUs need to be generated.

To guard against the percentage of residential numbers being less than 20%, the decision is sometimes made to add *x* number of clusters to the number calculated from the formula above. For small communities or sparsely populated states that are likely to have less than 20% residential telephone numbers, knowing the actual percentage of residential numbers for a given area improves selection probability and should be part of the formula.

- After the numbers are generated, BSB copies them to either a data file or to cluster contact sheets to be sent to the states for screening.

Preparing for Monthly Data Collection

BSB prepares several PC-based programs for use in the monthly data collection process. Software programs are designed to

- Reformat data collected with the Ci3 CATI system.
- Edit and check for discrepancies in the monthly data files.
- Correct individual records in the monthly data files.
- Generate quality assurance statistics from the monthly data file.

BSB mails these programs to BRFSS coordinators and contractors in the first quarter of the new survey year. BSB also provides technical support to the states that use these programs.

Data Editing and Quality Assurance

After the interviewing cycle is completed for each month, states edit their raw data—the actual responses of each respondent—and send the corrected data files to BSB for quality assurance checks and future aggregation for tabulation.

- Initial editing of the raw data is the responsibility of the states. After completing the interviewing cycle each month, the states edit their data for inconsistencies and other errors. The PC-EDITS software furnished by BSB checks the data against the specifications in the item-by-item coding instructions and editing criteria (sent to states at the beginning of the year).
- Corrections to individual records can be made by using EDITFIX software furnished by BSB. States use the outfile produced by PC-EDITS to identify records that need attention. Appropriate changes are made, and a new data file is generated. This procedure is repeated until a clean edit report and data file are produced.
- Once a data file has been verified as error free, states send the file to BSB electronically according to the specifications for electronic data submission. *Edited data are expected to be submitted to BSB within 30 days of the end of each interview month.*

- BSB provides additional support to the states that collect data by using the Ci3 CATI system in-house. The questionnaire programming is used to generate a conversion file for producing a system file containing all complete interviews. A reformatting program is provided to generate the monthly fixed-length data file from system files specific to the CATI system. The data file is then ready for editing with the PC-EDITS software.
- Quality assurance statistics can be produced from the monthly data file by using PC-QC software furnished by BSB. These reports are available to the user after the data file is determined to be error free. BSB generates the reports quarterly for review by the project officers.
- BSB generates a midyear assessment of the first half-year of data received from the states. The reports are cross-tabulations of variables that are likely to produce errors or inconsistencies not included in the editing criteria. Inconsistencies are documented, and recommendations are made to correct the data as necessary. This assessment of a portion of a state's data is helpful in preparing for end-of-year data processing.

End-of-Year Data Processing

Data from the states are submitted to BSB on a monthly basis throughout the year. To produce final datasets and to prepare annual tabulations and reports, BSB runs a series of programs on each state's data. These programs aggregate the monthly datasets into an annual file, run edits a final time, and produce the tabulations needed for calculating weighting factors. States that are unable to submit the entire previous year's data may not be included in these end-of-year reports.

Survey data are combined with population estimates to produce weighting factors, and standard risk factor variables are computed. The states' data are added to the CDC SAS file of all states. One set of basic tabulations, as well as an annual quality-control report, are run for each state.

BSB uses SUDAAN™ software to prepare a report indicating confidence intervals and statistical tests of difference (standard tests to determine whether two estimates are different from each other, based on specific statistical criteria and assumptions) that take into account the complex sample design. The final state dataset is copied to a diskette and sent to the state, along with copies of documentation and the state tabulations.

Combining Monthly Data Files

As data are received by BSB from the states, each month's data are combined with data from all other months into an annual data file for each state.

Final Editing of Data

Although each state edits its data before submitting it, a final data edit is run by BSB to assure data quality. If, as a result of this final edit, data questions and problems remain, additional

information and checking may be requested from the state. Again, a final edit will be run on this new information to provide the highest quality data possible.

Weighting

BSB adds weighting factors to each record to provide unbiased, representative prevalence estimates. Weighting compensates for unequal selection probabilities and nonresponse differences (i.e., their overrepresentation or underrepresentation) in the study sample. Final weighting adjusts for several factors:

- Number of telephone numbers per household.
- Number of adults per household.
- Number of interviews completed per cluster (e.g., three in the Mitofsky-Waksberg sampling design).
- Poststratification by the state population distribution according to age, race, and sex.

The first three factors address the problem of unequal selection probability, which could result in a biased sample (i.e., one that does not fairly represent the population). For example, a respondent in a one-adult household has four times the chance of being selected for an interview as does a respondent in a four-adult household. A household with two telephone numbers has twice the chance of being dialed as a household with one telephone number. In the Mitofsky-Waksberg sampling design, if three interviews per primary sampling unit (PSU) are not completed, compensation must also be made for the missing interviews. The first three factors are combined to compute a raw (or unadjusted) weight.

BSB calculates raw weight by multiplying the quotient of the number of adults in the household divided by the number of telephone numbers in the household by the quotient of the expected cluster size (three) divided by the actual cluster size (the number of completed interviews in the cluster). This calculation is reflected in the following formula:

$$\frac{\text{\# adults in the household}}{\text{\# telephones in household}} * \frac{\text{cluster size}}{\text{\# completes in cluster}} = \text{raw weight}$$

Data are then weighted further. Overrepresentation or underrepresentation of any single record is addressed through poststratification. This method adjusts the distribution of the sample data so that, collectively, it reflects the total population of the sampled area. The poststratification factor is calculated by computing the ratio of the age, race, and sex distribution of the state population divided by that of the sample. The factor is then multiplied by the raw weight to compute an adjusted, or final-weight, variable. Weighting of the sample adjusts not only for variation in selection and sampling probability but also for demographic characteristics so that projections can be made from the sample to the general population. Weighting also adjusts for nonresponse

and noncoverage (i.e., failure of some elements to be included in the sampling frame). (See "Additional Weighting Protocol" discussed below.)

Calculating Risk Factor Variables

BSB combines the responses to the BRFSS questions to create a set of standardized risk factors that form the basis of the BRFSS tabulations. Examples of these risk factors are self-reported fair or poor health, no leisure-time physical activity, current smoker, overweight based on body mass index, has ever been told has high blood pressure, does not always use seat belt, and receipt of a Pap test within the past two years.

Producing Frequencies for Variables

After the files have been combined and the data have been edited and weighted, BSB generates frequencies for the major health risk and demographic variables.

Combining Data From Each State

After the major health risk and demographic variables have been cross-calculated, BSB combines data from each state to create a dataset containing data from all states.

Preparing State Reports

All the aforementioned tasks culminate in the production of three reports for each state: (1) standard cross-tabulations of variables in the core and modules by demographics, (2) state prevalence report of selected risk factors, and (3) a Summary Prevalence Report. All of these reports are produced in table format. Both the state prevalence report and the summary prevalence report contain a SUDAAN™ analysis with standard error estimates (a measure of the amount of variability that exists in the calculation of the prevalence estimate) and 95% confidence intervals (a range that contains the true population prevalence estimate 95% of the time, if repeated sampling of the population is performed).

Additional Weighting Protocol

When data are used without weights, each record counts the same as any other record. Implicit in such use are the assumptions that each record has an equal probability of selection and that noncoverage and nonresponse are equal among all segments of the population. When the sample design results in records with different probabilities of selection and when noncoverage and nonresponse are not equal among all segments of a population, then weighting each record differently can adjust for these factors. A conceptually unrelated reason for weighting is to make the total number of cases equal to some desired number. In the BRFSS, poststratification serves as a blanket adjustment for noncoverage and nonresponse and forces the total number of cases to equal the population estimates for each geographic stratum.

Following is a general formula that reflects all the factors taken into account in weighting the BRFSS data. Where a factor does not apply, its value is set to 1.

$$FINALWT = GEOWT * DENWT * \frac{1}{NPH} * NAD * CSA * POSTSTRAT$$

FINALWT is the final weight assigned to each record.

GEOWT is the inverse of the ratio of the estimated sampling fraction of each area code/prefix combination subset to the area code/prefix combination subset with the largest estimated sampling fraction. This factor weights for the unequal probability of selection by area code/prefix combinations intended to cover specified geographic regions, while also adjusting for nonresponse by region. Almost always, the regions are discrete subsets of counties, and the boundaries of the area code/prefix combinations do not correspond exactly to the boundaries of the specified geographic regions.

DENWT is the inverse of the ratio of the sampling fraction of each subset of hundred blocks (sets of telephone numbers with identical first eight digits and all possible final two digits) sampled at a given rate to the hundred-block subset with the largest sampling fraction. This factor weights for the unequal probability of selection by presumed household density of hundred block. DENWT is usually used in a design in which telephone numbers from hundred blocks with one or more listed residential numbers (one-plus blocks) are sampled at a higher rate than telephone numbers from hundred blocks with no listed residential numbers (zero blocks).

1/NPH is the inverse of the number of residential telephone numbers in the respondent's household.

NAD is the number of adults in the respondent's household.

CSA is the ratio of the expected cluster size to the actual cluster size.

POSTSTRAT is the number of people in an age-by-sex or age-by-race-by-sex category in the population of a region or a state divided by the sum of the preceding weights for the respondents in that same age-by-sex or age-by-race-by-sex category. This factor adjusts for noncoverage and nonresponse and, before 1995, also adjusts for different probabilities of selection by region, where applicable.

Data Reports

BSB supplies the states with several types of reports derived from the BRFSS data.

Edit Report

The edit report generated by the PC-EDITS software consists of up to four sections:

1. Inconsistencies found in incomplete records.
2. Inconsistencies found in complete records.
3. Listing of PSUs not equal to three records and PSUs with varying telephone numbers; listing of PSUs with misnumbered record numbers (i.e., not numbered 1, 2, and 3).
4. Examination of optional modules and state-added questions.

> **Note:** All module(s) producing data stored in predefined columns are edited in the report; state-added questions are not edited.

States correct the ASCII file and return it to BSB. Any edit messages indicating extreme data values should be verified for accuracy. If the data are correct, no change is necessary. A "C" should be noted on the correct value line of the error report, and the annotated report should be returned with the corrected file to the BRFSS DATA MANAGEMENT mailbox.

Missing data values flagged in the edit report should be filled in with "9(s)", meaning the data value cannot be ascertained (the only exception to this is a missing age, columns 78–79; "09" should be inserted instead). Missing data values should not be left blank; blank fields will be continuously flagged as errors. The report contains a multiline format for error reporting in Sections 1 and 2.

	OBSERV			DAY OF	INTV	
Header -->	NUMBER	PSU	REC	MONTH	ID	EDIT
Line 1 -->	0000997	00322	3	16	DP	Q21/SMOKE100
Line 2 -->	Allowed values are 1, 2, 7 or 9					
Line 3 -->	Fields: Q21/SMOKE100(57)=8/_					

Line 1 contains identifying information about the record being edited, including Observation Number (0000997); PSU (00322); Record within PSU (3); Day of Month (16); Interviewer ID (DP); and a new field, the Edit Name (Q21/SMOKE100). The Observation Number represents the line number the record occupies within the data file.

Line 2 contains an error message of the cause of edit failure or warning. Error messages will usually reference a field or question by its variable name (e.g., SMOKE100). Allowed values are 1, 2, 7, or 9.

Line 3 contains a list of all fields or questions involved in the edit. Each field listed contains the question name (Q21), variable name (SMOKE100), record column numbers (57), and current value of the field (8). Space is provided to substitute new values for each field involved.

The report lists all inconsistencies and errors found in the monthly data file. The report is read by the EDITFIX software to assist in making corrections to the data file. The final edit report that is run against the error-free data file should be submitted to BSB with the data file. This copy allows the BSB staff to confirm any verifications of extreme data values and determine if the data file may have been damaged during transmission.

At the end of the survey year, BSB combines the final monthly data files from all states into a single file. The edit report from this file is generated for inclusion in the end-of-year processing documents. States that are not able to submit all of the previous year's data by February 20 of the subsequent year may not be included in the end-of-year reports.

Quality Control Report

This report is available to the states after BSB completes the monthly editing process. The PC-QC software provides four tables for states to assess quality assurance indicators from the data collected. Quality assurance statistics reflecting response rates, frequency distribution of disposition codes, interviewing dates, and cross-tabulations of age by race and sex are included in the monthly report. The tables of response rates and frequency distribution of disposition codes incorporate previous months' data from the current survey year.

Monthly quality control reports can be displayed on-screen, printed on paper, or written to a file. The following text files are generated:

QCCASRO.TXT	Table for response rates, efficiency, and wind-down percentage.
QCDISPFQ.TXT	Table for frequency distribution of disposition codes.
QCDISPID.TXT	Table for frequency distribution of disposition codes by Interviewer ID. (This will be copied only if the option for this table is selected from the report menu.)
QCINTVW.TXT	Table listing the interview dates and counts and percentage of completed interviews.
QCSEXRC.TXT	Table listing respondents' age by sex and race.

At the end of the survey year, the quality control report is generated by BSB from the combined months of data. This report is included with the end-of-year processing documents, and a copy is mailed to the state with the final dataset.

Annual State-Specific Tabulations

States usually receive three types of state-specific tabulations during the spring:

- *Standard Tabulations of Core Risk Behavior Measures by Demographic Variables*

This report presents the prevalence of risk behavior variables by demographic characteristics. Because weighted data are presented in the report, projections can be made to the general population.

- *Standard Tabulations of Optional Modules by Demographic Variables*

  Tables for each module are presented by demographic categories—age, sex, race, marital status, employment, income, and education.

- *Analysis of Selected Risk Behavior Measures by Race and Sex*

  The State Prevalence Report of Risk Factors compares males with females and whites with nonwhites for each risk behavior. Prevalence is displayed first by sex and race and then for combined race and sex groups. The top half of the report allows for comparisons, and the bottom half summarizes differences among groups.

Summary Prevalence Report

This report compares prevalence measures among states. Data are provided along with survey median rates on the core questions, optional modules, and women's health issues. The report is usually available to states in the fall of the year after data collection.

Summary Quality Control Report

This report provides data on quality control measures for all states. It is usually available to states at the annual BRFSS conference after the data collection year.

Suggested Reading

Centers for Disease Control and Prevention. *Health Risks in America: Gaining Insight from the Behavioral Risk Factor Surveillance System.* Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, 1997.

Chapter Nine
Data Use

How the data are disseminated and used is an important aspect of the Behavioral Risk Factor Surveillance System (BRFSS). The BRFSS data have three main uses:

Instrumental They influence health program decisions.

Conceptual They increase the understanding of the relationship between health behavior and health status.

Persuasive They support health policy positions.

Many data derived from the BRFSS are linked to objectives in the *Healthy People 2000* initiative. Assessment of progress toward meeting these objectives is carried out at both the state and the national level. Such use of the BRFSS findings provides policymakers with informed options for making decisions on public health policy. Although use of the BRFSS for decision making is central, it is not the exclusive function. At the state level, the BRFSS findings assist planners in designing public health intervention strategies and evaluating their impact.

Disseminating the BRFSS findings is also an integral function of the surveillance system. All states prepare reports and fact sheets to educate the public, health professional community, and legislators about current status and trends in lifestyle patterns in the state. Each state's BRFSS coordinator can answer specific questions about how data from the surveillance system have been used in that state.

Persons interested in analyzing the BRFSS data should consult statisticians and epidemiologists who have expertise in the analysis of complex survey data. A useful reference for using the BRFSS data and other chronic disease data is *Using Chronic Disease Data: A Handbook for Public Health Practitioners* (Centers for Disease Control [CDC], 1992). Consultations are available with staff epidemiologists in the Behavioral Surveillance Branch (BSB) on request. Questions about a specific software package can be answered by the manufacturer's support technicians.

The basic requirement for an acceptable statistical analysis software package is its ability to produce frequencies and allow for weighting of data. Commonly used PC-based software programs include, but are not limited to, SAS™, SPSS™, Epi Info, and Epistat; however, most statistical software packages assume that survey data are obtained using simple random sampling. This results in standard errors for prevalence estimates and 95% confidence limits for odds ratios that are incorrect (too small) for the states using any design other than simple random sampling. To calculate standard error and 95% confidence limits for odds ratios correctly, software packages must be used that account for the complex BRFSS sample design. PC-oriented software that meet this requirement are Epi Info (version 6.0+), SUDAAN™, and Stata.

Data Requests

BSB provides timely access to the BRFSS data to as diverse an array of public health professionals as possible, while ensuring data quality and respecting the needs of participating states. *In general, the states receive their data between March and June of the year after data collection if they submit their data files to BSB by February 20 of that year*. Other users can request data that are either fully processed (standard request) or not fully processed (early access request).

Standard Requests

BSB provides the BRFSS data that have been edited and fully processed and are ready for statistical analysis with weights and uniform variable formats. Priority is given to the states. Approximately eight months after the data have been collected, a public use data file is made available to the requesting public. All potential users must submit a completed data request form before the data can be released. Data request forms can be obtained by contacting BSB.

Early Access Request

Access may also be available to BRFSS data that have not necessarily been edited and prepared with sampling weights and uniform variable formats. Such data might be used by a state to test the wording, format, or placement of new and emerging issues questions or to address public health concerns requiring immediate attention that can be examined through analysis of the data. Persons requesting early access to the BRFSS data must also complete a data request form obtained from BSB.

BSB will evaluate all requests on a case-by-case basis and make every effort to solicit approval from relevant states before early release of their data. The early access policy also stipulates that all users agree not to publish results from preliminary analyses without specific permission from BSB and the relevant states.

CD-ROM

Because of the growing interest in the BRFSS data, and the limited ability of BSB to respond to special requests, BSB has developed CD-ROMs that contain all available BRFSS data from 1984 forward (see the form on the next page). The data files for analysis are classified into two categories: historical files and analytical files.

Behavioral Risk Factor Surveillance System
Request for Data

To receive a BRFSS CD-ROM (1984–1995), please complete and return this form.

Name: _____

Your Position: _____

Organization: _____

Street: _____

City: _____

State: _____ Zip Code: _____

E-Mail: _____

Telephone no. _____/_____ Fax no. _____/_____

Please check the box which best describes your organization:

- ☐ Federal government
- ☐ State or local government
- ☐ Health provider
- ☐ Insurance company
- ☐ Other commercial
- ☐ College or university
- ☐ Media
- ☐ Library
- ☐ Congress
- ☐ Other: _____

How do you plan to use the data?

_____

_____

Please return form to:
Centers for Disease Control and Prevention
Attention: Behavioral Surveillance Branch, MS K–30
4770 Buford Highway, NE
Atlanta, Georgia 30341-3717
or fax 770/488-5974

Historical files contain all data collected by the participating states (except state-specific questions). Telephone numbers, area codes, prefixes, and suffixes have been removed to ensure respondent confidentiality. The historical files have original values for 40 variables recoded for the analytical files. These variables were reformatted for the analytical files, because the coding changed over the 12-year period and the variables were not comparable from year to year as a result. The data in the historical files are provided for point-in-time research only. The file name format is data##h.dbf. The "##" in the file name refers to the data year, and the letter "h" after the year denotes a historical file that contains original coding. For example, the file named "data90h.dbf" contains historical data for 1990; the final named "data95h.dbf" contains historical data for 1995.

Analytical files contain 40 calculated, uniformly coded variables to allow for trend analyses of the data. The 1992, 1993, and 1994 analytical files also contain Public Use Micro data Area Codes (PUMA codes) and Labor Market Area Codes (LMA codes) to allow for substate analyses of the data. The analytical files include all survey responses plus some recoded and constructed variables. These files are the primary files used for analyses; they are the only files that can be used for longitudinal analyses. The file name format is data##a.dbf. The "##" in the name refers to the data year, and the letter "a" after the year denotes an analytical file. For example, the file named "data90a.dbf" contains data for 1990; the file named "data95a.dbf" contains data for 1995.

Both categories of files are in a dBASE IV™ format. They can be accessed using SAS™ (Access), HIRS, Epi Info, SPSS™, Excel™ and other packages that will read dBASE IV™ files.

The new CD-ROM and Internet products will present prevalence data in a table format. Data in the tables are drawn from the 1995 and 1996 BRFSS surveys and include weighted frequencies for each variable along with SUDAAN™ confidence intervals and cell size. With the mouse, the user can select a variety of options to see the nationwide prevalence, prevalence by state, or the same data broken down by gender, race/ethnicity, age, education, and income. Both products are designed to be user friendly, providing prevalence information without the need for analytic software or programming skills.

CD-ROMs currently available and planned for release are the following CDs with data files for analysis:

- 1984–1995 data files, Series 1, No. 1, 2nd Edition
- 1996 data file, Series 1, No. 2
- 1997 data file, Series 1, No. 3 (target release date: April 15, 1999)

BRFSS point-and-click products:

- CD, Series 2, No. 1, with tables of 1995 and 1996 data broken down by gender, race, education, income, and age.

- Internet site with tables of 1995 and 1996 data broken down by gender, race, education, income, and age.

*The Internet site will eventually replace this product

These products can be ordered through the Government Printing Office by accessing the Web page: http://www.access.gpo.gov/
Click on: Access to Government Information Products
Click on: Find Products for Sale by GPO
Enter search term: Behavioral Risk Factor

These products can also be ordered by telephone at (202) 512-1800 or by fax at (202) 512-1650.

Request Procedure

Public requests for state-specific data always should be submitted first to the state BRFSS coordinator. Data requests other than the CD-ROMs should be made to the chief, Survey Operations Section, BSB, through

Internet	BRFSSDATA@cdc.gov
Facsimile	(770) 488-5974
Mail	Centers for Disease Control and Prevention Attn: BRFSS, DACH (Mail Stop K–30) 4770 Buford Highway, NE Atlanta, GA 30341-3717

- Requests should be in writing on the form reproduced on the Behavioral Risk Factor Surveillance System Request for Data (see page 9–3).
- To keep states apprised and prepared for subsequent inquiries, CDC requests that researchers send drafts of any publications reporting results from broadly aggregated BRFSS data to the state BRFSS coordinators and to the chief of BSB prior to publication.

Names of state BRFSS coordinators, as well as telephone numbers and addresses, are available from BSB.

Using BRFSS Data for Policy Development and Program Applications

The extent to which BRFSS data are used in policy and program development depends on (1) the relevance of the data to the needs of the potential users and (2) the credibility of the data. The relevance of the BRFSS data is ensured by selecting questions that are of interest to public health programs or that measure established health objectives. The credibility of the BRFSS data is a

function of the validity of the questions and the degree to which sampled adults agree to be interviewed.

The validity of many BRFSS questions has been assessed by comparing results among surveys that ask similar questions of comparable populations. Estimates derived from the BRFSS compare favorably with those derived from in-person or observational surveys. For some questions, comparisons with medical records have been done to assess validity. Based on the response rates achieved by most BRFSS projects, the potential for bias because of selected respondents refusing to be interviewed is low.

The use of the BRFSS data for policy development and program applications varies from state to state. Some examples follow.

- **Control of Tobacco Use—**The BRFSS data have been used to support tobacco control legislation in most states. In California, the data were influential in supporting the passage of Proposition 99 Tobacco Tax legislation, which generated millions of dollars in state funds to support health education and chronic disease prevention programs. The BRFSS data have also been used as an evaluation tool by states participating in the Rocky Mountain Tobacco-Free Challenge.
- **Prevention of Breast and Cervical Cancer—**With passage of the National Breast and Cervical Cancer Mortality Prevention Act by Congress in 1990, state funds became available for development of breast and cervical cancer control programs. The BRFSS data on mammographies and Pap tests provide critical information about baseline cancer-screening levels and a means to monitor the effects of breast and cervical cancer control programs. At the national level, data on mammographies and Pap tests can be used to evaluate the impact of breast and cervical cancer control programs in a 12-state federally funded project.
- **Prevention of Cardiovascular Disease—**Cardiovascular disease continues to be the focus of state health promotion and risk-reduction efforts because of its tremendous morbidity and mortality burden. The BRFSS data provide a continuous way to monitor changes in cardiovascular-related health behaviors in the population and to assess the effectiveness of risk-reduction initiatives.
- **Injury Control—**After passage of a bicycle helmet law in Oregon, the state used the BRFSS questionnaire to evaluate the effect of the legislation on safety helmet use.

The BRFSS has also been used to study the following special populations and regional issues of public health importance:

- **BRFSS/HMO Project—**In fall 1993, a joint BRFSS/HMO (health maintenance organization) project was implemented in one state. The 1994 BRFSS questionnaire was administered by telephone to randomly selected HMO members in a western city. The purpose was to compare health risk behaviors of HMO members with those of the state population, plan the provision of chronic disease prevention services by the HMO, and evaluate use of clinical

services in relation to health risk behaviors. Other medical care organizations have done similar telephone surveys using selected BRFSS questions to compare health risk behaviors of their populations with those of the BRFSS state populations.

- **Montana BRFSS Project—**During 1994, the Montana BRFSS project did a point-in-time BRFSS survey of Native Americans living on reservations. The data were compared with the statewide BRFSS results and with data on adolescents living on reservations that were collected through the Youth Risk Behavior Survey.
- **Missouri BRFSS Project—**The project conducted a point-in-time survey during 1994 to assess the social impact of the severe floods that inundated the state.
- **Hantavirus Project—**The BRFSS projects in Arizona, New Mexico, Utah, and Colorado are jointly using a set of questions to assess knowledge of hantavirus risk behaviors.

Determining How to Use BRFSS Data

Staff in state health departments can follow five steps in determining how to use BRFSS data:

Step 1: Formulate the question.

Analysts must first decide on the question to be answered by the BRFSS data. For example, a state might want to know the number and ages of residents who are current smokers and are overweight.

Step 2: Review existing data tabulations.

Before performing any analyses, analysts should review the standard reports prepared by CDC, all of which are available from the state BRFSS coordinator. These reports answer many questions and often suggest strategies for further research and application of data. Even without additional analyses, many states have been able to use results from CDC reports for implementing health promotion activities and establishing future priorities.

Step 3: Develop a plan.

If additional analyses are proposed, states should first develop a plan that

- Specifies the purpose of the analysis.
- Indicates the specific BRFSS variables and years of data needed for analysis.
- Projects outcomes and suggests how the data will be used in specific activities, such as intervention or screening programs.

Step 4: Conduct the analysis.

Analysts should consult with a statistician or the BRFSS coordinator about the software needed for the analysis. Data from most states require a statistical package capable of analyzing weighted data (e.g., Epi Info v.6+ or SUDAAN™). Calculating confidence intervals around estimates requires use of SUDAAN™, Epi Info, or another software package that can account for the complex survey design of the BRFSS.

Step 5: Use the data for decision making.

Once the data have been analyzed, states can consider how the results will be applied and disseminated.

Publications and Reports

Numerous reports and articles citing BRFSS data have been published by CDC staff since 1983. These publications have been used by states to assess the health status of their adult populations in relation to other states and to the nation. Many of these publications also illustrate how the data may be used to guide policy and program decisions. Examples of these articles appear in the Bibliography.

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Numbered Memoranda

This section contains numbered memoranda from 1993 through spring 1998.

Number	Memorandum Title
93.1	BRFSS Rules of Replacement
93.2	BRFSS Rules of Replacement
93.3	Policy on the Modification of the Annual Core Instrument
94.1	Instructions for HIV/AIDS Questions
94.1	Erratum
94.2	Coding Instructions for Diabetes Module Questions
94.3	Sampling and Waksberg Prescreening Standards
94.4	Rules of Replacement
95.1	Definitions of Eligible Household and Household Member
95.2	Disposition Codes and Rules of Replacement
97.1	Cognitive Testing
97.2	Instructions for HIV/AIDS Questions
97.3	Final Disposition Rules for Eligible Respondents
97.4	Preliminary Release of the CD-ROM Distribution Policy
97.5	Probing "Hispanic" Responses to Race question
97.6	CDC Processing and Publication of Data
97.7	Annual Data Submission Deadline
98.1	Provision of State Reports

BRFSS POLICY MEMO 93.1

Per the June 24, 1992 version of the "BRFSS Rules of Replacement" (transmitted as BRFSS Numbered Memo #93.1), a completed interview is defined as follows:

> If a respondent terminates at some point after the first question, another attempt must be made to ask the respondent the remaining questions. If after a second attempt the respondent still has not been asked every question, the interview can be considered complete if all questions through age, race, and sex (if necessary) have been asked.

BRFSS POLICY MEMO 93.2

Attached is a WordPerfect file (REPRUL.DOC) which contains a revised list of the "BRFSS Rules of Replacement" dated June 24, 1992. This document supersedes the existing one in Appendix C of the BRFSS Operations Manual.

BRFSS RULES OF REPLACEMENT
June 24, 1992

CODE	RULE
01 Completed interview (questions answered through age, race, and sex)	Do not replace
02 Refused interview	Replace after second refusal or when a first-time refusal will not be called a second time.
03 Nonworking number	Usually recognized by a recording or fast, busy signal. Call operator or repair service when in doubt. Replace when determined to be a nonworking number.
04 Ring no answer	A normal telephone ring which no person answers (answering machines do not count as an answer) after (1) 5 calling occasions (each consisting of four attempts) and (2) the 5 occasions have a mixture of weekday, weeknight, and weekend calls. Replace when the rules have been met and the phone company verifies it is a working number.
05 Business	The person answering identifies the telephone number as a business or says "no" when asked "Is this a residence?" Replace.
06 No eligible respondent at this number	The household does not have anyone 18 years of age or older (this does not mean the adults are away temporarily). Replace.
07 No eligible respondent could be reached during the interviewing period	The selected respondent will not be available during the time you have allotted for the month's interviewing. Replace.
08 Language barrier	The selected respondent does not speak English well enough to be interviewed and there are no interviewers who speak their language. Replace.
09 Terminated within questionnaire	A "hang up" at some point after the first question has been asked (this does not mean the respondent refused a particular question). Make another attempt to complete questionnaire. Replace when second attempt fails. If after a second attempt the respondent has completed the interview at least through the age, race, and sex questions, recode as a completed interview.
10 Line busy	To be coded only after (1) 5 calling occasions (each consisting of 4 attempts at ≥10 minute intervals) and (2) the 5 occasions have a mixture of weekday, weeknight, and weekend calls. Replace when the rules have been met and the phone company verifies it is a working number.
11 Respondent unable to communicate	Example: respondent is deaf. Replace.

TO: BRFSS State Coordinators

DATE: 12-03-93
TIME: 14:36
CC:
SUBJECT: BRFSS POLICY MEMO 93.3
PRIORITY:
ATTACHMENTS:

****
BRFSS POLICY MEMO 93.3
****

POLICY ON THE MODIFICATION OF THE ANNUAL CORE INSTRUMENT

The fixed/rotating core instrument distributed for each year is to be used as provided. Substantial change (e.g., changing the wording or the placement of questions, or inserting numerous state-added questions in the core) must be (1) supported by solid scientific evidence (from current survey literature or from an experimental trial) that demonstrates the changes do not affect the quality of core data nor increase total survey error, and (2) agreed upon in consultation with BSB.

Exceptions are allowable for the limited insertion of state-added questions in the core. These exceptions should be agreed upon in consultation with BSB based upon the following criteria:

A. The topic of the state-added question(s) is directly related to a question topic in the fixed/rotating core.

B. The nature or number of state-added questions is such that they would not be functional as a set of follow-up questions asked after the core and modules.

C. It is reasonably likely that the quality of the data obtained from the state-added question(s) will be lower if the question(s) are not inserted in the core.

D. It is reasonably unlikely that the quality of the data obtained from core questions will be lower due to the insertion of the state-added question(s).

TO: BRFSS State Coordinators
DATE: 01-03-94
TIME: 13:49
CC:
SUBJECT: BRFSS POLICY MEMO 94.1
PRIORITY:
ATTACHMENTS:

****
BRFSS POLICY MEMO 94.1INSTRUCTIONS FOR HIV/AIDS QUESTIONS
****

1. Instruction for Q. 64, 1994 (If you had a child in school would you allow him or her to be in the same classroom with another child who is infected with the AIDS virus?):

If respondent indicates they have more than one child in school and would answer differently for each child, probe for a single response.

2. Instruction for Q. 66, 1994 (If you had a teenager who was sexually active, would you encourage him or her to use a condom?):

Respondents who say they would advise their teenager to abstain should be probed once for a "Yes" or "No" answer. If they still insist that their answer is "abstain" after probing, their response should be coded in the category "Would give other advice."

3. Coding of Q. 67, 1994 (What are your chances of getting the AIDS virus?):

The response "Not applicable" is to be used exclusively for respondents who volunteer that they already have HIV or AIDS. Selecting this response category skips to Q. 70 (When was your last AIDS blood test?), because questions 68-71a do not apply to someone with HIV or AIDS. All other respondents must be coded in category a-d, Dk/Ns, or Refused so that Q. 68 is the next question they are asked.

4. Coding of Q. 70, 1994 (When was your last AIDS blood test?):

If the respondent remembers the year of the last test, but cannot remember the month, code the first two digits 77 and the last two for the year.

TO: BRFSS State Coordinators
DATE: 01-25-94
TIME: 10:27
CC:
SUBJECT: Erratum, Numbered Memo 94.1
PRIORITY:
ATTACHMENTS:

Item 1 in Numbered Memo 94.1, 1/3/94, contained an incorrect question number. Item 1 should read "Instruction for Q. 64, 1994 (If you had a child in school would you allow him or her to be in the same classroom with another child who is infected with the AIDS virus?):" Please make this correction.

David McQueen

TO: BRFSS State Coordinators
DATE: 01-03-94
TIME: 13:52
CC:
SUBJECT: BRFSS POLICY MEMO 94.2
PRIORITY:
ATTACHMENTS:

****

BRFSS POLICY MEMO 94.2CODING INSTRUCTIONS FOR DIABETES MODULE QUESTIONS

****

Instruction for coding 1994 Diabetes Module Q. 7 (About how many times in the last year has a doctor, nurse, or other health professional checked you for glycosylated hemoglobin or hemoglobin "A one C"?) and Q. 8 (About how many times in the last year has a health professional checked your feet for any sores or irritations?):

If respondent answers one or more for "Number of times," code 1 - 6; 6 = 6 or more.

TO: BRFSS State Coordinators
DATE: 04-26-94
TIME: 08:53
CC:
SUBJECT: BRFSS POLICY MEMO 94.3
PRIORITY:
ATTACHMENTS:
****

BRFSS POLICY MEMO 94.3 SAMPLING AND WAKSBERG PRESCREENING STANDARDS

****

This memorandum stipulates three sampling standards to be followed in the conduct of the BRFSS survey.

First, the sample used should be justifiable as a probability sample from a sampling frame consisting of all households with telephones. One implication of this standard is that purchased samples must include telephone numbers selected from all working banks of 100 telephone numbers that may contain household numbers, not just those containing 1, 2, 3, or more listed household numbers. A further implication of this standard is that the sampling frame for purchased samples must include telephone numbers from the entire state and thus must include counties and other geographical areas with a small number of residences. It is permissible, however, to sample telephone numbers from different working banks or different parts of a state at different rates, provided that the sampling ratio is reported to BSB.

Second, states using the Mitofsky-Waksberg sampling method should use the same procedures and rules of replacement in conducting pre-screening to identify eligible clusters, or primary sampling units, as they do in selecting households within clusters. The validity of the Mitofsky-Waksberg sampling method depends upon using the exact same sampling procedures and rules of replacement at both the cluster and household selection stages. A satisfactory procedure that several states have found convenient is to conduct pre-screening for the following month's sample at the same time that they conduct the household interviews for the current month.

Third, it is recommended that states using the Mitofsky-Waksberg sampling method not identify themselves or the purpose of the survey during pre-screening, unless they interview the respondent immediately. Such self-identification biases the survey by giving potential respondents a month to think about the survey topic and their willingness to cooperate when they are contacted the following month.

****

BRFSS POLICY MEMO 94.4
Rules of Replacement

****

Attached is a WordPerfect file (REPRUL.DOC) which contains a revised list of the "BRFSS Rules of Replacement." This document supersedes the existing one transmitted March 24, 1993, as BRFSS Policy Memo 93.1.

The new rules reduce the expected number of attempts for each phone number during each calling occasion from 4 to 3. Thus the maximum number of calls required before a phone number is replaced will now be 15 instead of 20. Prescreening of phone numbers for Waksberg sampling is also subject to this change.

The call history section on page 1 of the printed 1995 questionnaire that we will be sending to you in early December will be revised accordingly. Ci3 and CASS CATI programming will also conform to this change. The new rules should be implemented beginning with January 1995 surveillance, i.e., January 1995 interviewing including Waksberg prescreening done in December 1994.

k:\share\bsb\cll1\numem944.doc

BRFSS RULES OF REPLACEMENT
November 9, 1994

CODE	RULE
01 Completed interview (questions answered through age, race, and sex)	Do not replace
02 Refused interview	Replace after second refusal or when a first-time refusal will not be called a second time.
03 Nonworking number	Usually recognized by a recording or fast, busy signal. Call operator or repair service when in doubt. Replace when determined to be a nonworking number.
04 Ring no answer	A normal telephone ring which no person answers (answering machines do not count as an answer) after (1) 5 calling occasions (each consisting of 3 attempts) and (2) the 5 occasions have a mixture of weekday, weeknight, and weekend calls. Replace when the rules have been met and the phone company verifies it is a working number.
05 Business	The person answering identifies the telephone number as a business or says "no" when asked "Is this a residence?" Replace.
06 No eligible respondent at this number	The household does not have anyone 18 years of age or older (this does not mean the adults are away temporarily). Replace.
07 No eligible respondent could be reached during the interviewing period	The selected respondent will not be available during the time you have allotted for the month's interviewing. Replace.
08 Language barrier	The selected respondent does not speak English well enough to be interviewed and there are no interviewers who speak their language. Replace.
09 Terminated within questionnaire	A "hang up" at some point after the first question has been asked (this does not mean the respondent refused a particular question). Make another attempt to complete questionnaire. Replace when second attempt fails. If after a second attempt the respondent has completed the interview at least through the age, race, and sex questions, recode as a completed interview.
10 Line busy	To be coded only after (1) 5 calling occasions (each consisting of 3 attempts at $\geq$ 10 minute intervals) and (2) the 5 occasions have a mixture of weekday, weeknight, and weekend calls. Replace when the rules have been met and the phone company verifies it is a working number.
11 Respondent unable to communicate	Example: respondent is deaf. Replace.

****

BRFSS POLICY MEMO 95.1

Definitions of Eligible Household and Household Member

****

The following definitions are to be employed to determine eligibility for BRFSS interviewing:

Eligible Household

A housing unit which has a separate entrance, where occupants eat separately from other persons on the property, and which is occupied by its members as their principal or secondary place of residence.

Excluded are:

1. Vacation homes occupied by household members for less than 30 days per year
2. Group homes (sororities and fraternities, half-way houses, shelters, etc.)
3. Institutions (nursing homes, college dormitories, etc.)

Household Member

All related adults (age 18 or older), unrelated adults, roomers, and servants who consider the household their home, even though they are not home at the time of the call, are considered household members. However, an adult family member who is currently living elsewhere at college, a military base, a nursing home, a jail, etc. is not considered a member of the household.

****

BRFSS POLICY MEMO 95.2

Disposition Codes and Rules of Replacement

****

Attached is a revised list (DISPOS.DOC) of BRFSS call disposition codes. The definition of code 05 has been changed from "business" to "not a private residence" to clarify the use of the 05 code for the following call results:

1. The person answering identifies the telephone number as a business, an institution (government office, educational facility, dormitory, nursing home, hospital, prison, etc.), or a group home (fraternity, sorority, half-way house, shelter, etc.).
2. The person answering says "no" when asked "Is this a private residence?"
3. Phone sounds indicate a pager, a fax machine, or a computer modem.

This list of disposition codes supersedes all previous lists.

Also attached is a revised list (REPRUL.DOC) of the "BRFSS Rules of Replacement" which incorporates the change to code 05. This revised list supersedes the existing one transmitted November 28, 1994, as BRFSS Policy Memo 94.4.

BRFSS CALL DISPOSITION CODES

01 Completed interview

02 Refused interview

03 Nonworking number

04 Ring-no-answer

05 Not a private residence

06 No eligible respondent at this number

07 Selected respondent not available during the interviewing period

08 Language barrier

09 Interview terminated within questionnaire

10 Busy

11 Respondent unable to communicate due to physical or mental impairment

CDC/NCCDPHP/OSA/BSB February 10, 1995

BRFSS RULES OF REPLACEMENT
February 23, 1995

CODE	RULE
01 Completed interview (questions asked through age, race, and sex)	Do not replace
02 Refused interview	Replace after second refusal or when a first-time refusal will not be called a second time.
03 Nonworking number	Usually recognized by a recording or fast-busy signal. Includes "number changed" recordings and numbers that "bridge." Call operator or repair service when in doubt. Replace.
04 Ring no answer	A normal telephone ring which no one answers (answering machines do not count as an answer) after (1) 5 calling occasions (each consisting of 3 attempts) and (2) the 5 occasions have a mixture of weekday, weeknight, and weekend calls. If possible, contact the phone company repair service to verify the number is in service. Replace.
05 Not a private residence	The person answering identifies the telephone number as a business or says "no" when asked "Is this a private residence?" Also use this disposition for institutions (government offices, educational facilities, dormitories, nursing homes, hospitals, prisons, etc.), group homes (fraternities and sororities, half-way houses, shelters, etc.), pagers, fax machines, and computer modems. Replace.
06 No eligible respondent at this number	The household does not include anyone 18 years of age or older (this does not mean the adults are away temporarily). Replace.
07 Selected respondent not available during the interviewing period	The selected respondent will not be available or could not be reached during the time you have allotted for the month's interviewing. Replace.
08 Language barrier	The selected respondent does not speak English well enough to be interviewed and there are no interviewers who speak their language. Replace.
09 Interview terminated within questionnaire	A "hang up" at some point after the first question has been asked (this does not mean the respondent refused a particular question). Make another attempt to complete questionnaire. Replace if second attempt unsuccessful. If after a second attempt the respondent has completed the interview at least through the age, race, and sex questions, recode as a completed interview.
10 Line busy	To be coded only after (1) 5 calling occasions (each consisting of 3 attempts at $\geq$ 10 minute intervals) and (2) the 5 occasions have a mixture of weekday, weeknight, and weekend calls. If possible, contact the phone company repair service to verify the number is in service. Replace.
11 Respondent unable to communicate due to physical or mental impairment	Example: respondent is deaf. Replace.

****

BRFSS POLICY MEMO 97.1
COGNITIVE TESTING

****

The BRFSS survey instrument is revised annually based on input from states and CDC programs. The American Statistical Association (ASA) working group was consulted about ways that the process of developing wording for new questions or modifying the wording of existing questions to the survey could be improved.

Beginning with the 1998 questionnaire, all new or substantially revised questions to be included in the instrument must undergo formal testing at a cognitive laboratory approved by the Behavioral Surveillance Branch (BSB). This policy applies to questions from the core, rotating core, emerging core, and optional modules, but not to state-added questions. If a proposed new question or revision to an existing question has previously been tested at a cognitive laboratory, this will generally constitute compliance with this policy. However, BSB will make the final decision regarding the adequacy of cognitive testing.

Information from cognitive testing will be used by BSB and states to decide whether to accept the questions, what the final wording should be, and to document issues relevant to data interpretation.

The costs for cognitive testing are to be absorbed by the program or other entity proposing new questions or substantial revisions to existing questions.

****

BRFSS POLICY MEMO 97.2

Instructions for HIV/AIDS Questions

****

1. Instruction for 1997 Q. 77 (Did you make any of the following changes in the past 12 months? a. Did you decrease the number of your sexual partners or become abstinent? b. Do you now have sexual intercourse with only the same partner? c. Do you now always use condoms for protection?)

   If the respondent says "abstinent" when asked 77a, code the response "1" (yes) and probe "Are you abstinent now?" If the respondent answers "yes" to the probe, do not read 77b or 77c and code both "7" to indicate "not applicable." If the respondent answers "no" to the probe, read questions 77b and 77c and code as appropriate.

2. Instruction for 1997 Q. 68 (If you had a teenager who was sexually active, would you encourage him or her to use a condom?):

   Respondents who say they would advise their teenager to abstain should be probed once for a "Yes" or "No" answer. If they still insist that their answer is "abstain" after probing, their response should be coded in the category "Would give other advice."

3. Coding of 1997 Q. 69 (What are your chances of getting infected with HIV, the virus that causes AIDS?):

   The response "Not applicable" is to be used exclusively for respondents who volunteer that they already have HIV or AIDS. Selecting this response category skips to Q. 71 (When was your last blood test for HIV?), because questions 70, 71a, and 72a are not pertinent for someone with HIV or AIDS. All other respondents must be coded in category a-d, Dk/Ns, or Refused so that Q. 70 is the next question they are asked.

4. Coding of 1997 questions 72a (When did you last donate blood) and 71 (When was your last blood test for HIV?):

   If the respondent remembers the year but cannot remember the month, code the first two digits 77 and the last two for the year.

Note: Instructions 2, 3, and 4 above were contained in numbered memo 94.1 issued 1/3/94. They are repeated here to emphasize that they remain in effect for 1997 and will remain in effect for future years unless superseded by a subsequent numbered memo or the questions are changed.

****

BRFSS POLICY MEMO 97.3

Final Disposition Rules for Eligible Respondents

****

When a household has been contacted and an eligible* respondent has been selected, the final disposition must reflect the identification of an eligible respondent (i.e., "complete" [01**], "refused" [02], "selected respondent not available during the interviewing period" [07], or "terminated within questionnaire" [09]). The final disposition cannot be a "ring-no-answer" (04) or "line-busy" (10). Final "ring-no-answer" and "line-busy" dispositions indicate that it is unknown whether there was an eligible respondent at the sampled phone number.

Following are guidelines for assigning the appropriate disposition depending on the identification of an eligible respondent:

RESPONDENT SELECTED

1. A selected respondent who is not available when selected and is not reached on subsequent dialings should be dispositioned as "selected respondent not available during the interviewing period."

2. A selected respondent who refuses initially and is not spoken to on subsequent calls should be dispositioned "refused."

3. A selected respondent who begins the interview but terminates before being asked the age, race, and sex questions should be dispositioned "terminated within questionnaire" if they are not reached on subsequent calls.

NO RESPONDENT SELECTED

1. The choices of disposition for calls that are answered but are terminated without an eligible respondent being selected are "refused," "not a private residence (05)," "no eligible respondent at this number (06)," "language barrier (08)," and "respondent unable to communicate due to physical or mental impairment (11)". A hang-up that does not result in enough information on subsequent calls to choose one of these dispositions requires supervisory review. If in the supervisor’s judgment there is sufficient basis to believe the sampled phone number was a private residence, "refused" would be the appropriate disposition. However, a hang-up for which there is no information on whether a phone is in a private residence may be given a final "ring-no-answer" disposition.

2. If a sampled phone number reaches an answering machine, it may be dispositioned "not a private residence" if the message clearly indicates that the phone is not in a private residence. If the recorded message (1) does not provide enough information to determine the residential status of the phone number and is

never answered by a person, or (2) indicates it is a residence but is never answered by a person, then the number may be given a final "ring-no-answer" disposition once the rules of replacement are satisfied.

Implementing these guidelines for CATI systems will require that final "ring-no-answer" and "busy" dispositions be converted to the appropriate codes when an eligible respondent was selected. For Ci3 CATI, the CLEANALL.EXE program has been revised to do these conversions.

*If the selected respondent is unable to communicate due to language barrier (08) or physical or mental impairment (11), they are not eligible and the phone number should be dispositioned with the respective code.

**All disposition codes referenced are final BRFSS disposition codes per Numbered Memo 95.2 (2/27/95). During data collection, CATI systems utilize different codes that are converted to the final code set.

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BRFSS POLICY MEMO 97.4
Preliminary Release of the CD-ROM
Distribution Policy

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In May 1997 a preliminary version of the CD-ROM containing BRFSS data files from 1984-1995 will be released. This preliminary version is being released now because of strong interest in making BRFSS data to users in a timely manner, and the lack of available resources within the Behavioral Surveillance Branch (BSB) to finish documentation on the CD-ROM for all years. BSB is currently working on another CD-ROM that will be made available to the general public.

The CD-ROM will provide two basic functions for users. First, it will facilitate simple analyses of small data sets (e.g., single states). Second, it will provide experienced researchers with data files for use with other software packages such as SAS or SPSS. The CD-ROM is designed for use by experienced researchers, and therefore, distribution will be limited to state health departments, academic institutions, and other organizations with strong research support.

Individuals requesting the CD-ROM will need to complete a request form which can be obtained by calling the Behavioral Surveillance Branch main number (770-488-5292). Incomplete request forms will not be processed. Requests for data from an individual state will be referred to the respective state BRFSS coordinator. Individuals who have a history of working with BRFSS data will be given priority in the distribution process.

Complete instructions on how to access data are included in the CD-ROM electronic files. A written copy of these instructions is included in the CD-ROM insert. The Behavioral Surveillance Branch will not provide any direct technical, analytical, or data management support to users. However, users can ask questions and provide feedback through the comment form on the BRFSS web site at http//:www.cdc.gov/nccdphp/brfss.

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BRFSS Policy Memo 97.5

Probing "Hispanic" Responses to Race Question

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When a respondent replies "Hispanic" to the question "What is your race?", interviewers are to probe for one of the listed race categories. An appropriate probe is "Are you white-Hispanic, black-Hispanic, Asian or Pacific Islander and Hispanic, American Indian or Alaska Native and Hispanic, or other race and Hispanic?" Only if they reply "other race and Hispanic" after probing should they be coded "other" race.

When a respondent replies "Hispanic" to the race question, the following question "Are you of Spanish or Hispanic origin?" may be coded "yes" without reading the question.

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BRFSS POLICY MEMO 97.6
CDC Processing and Publication of Data

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BRFSS Policy Memo 94.3 describes criteria for acceptable sampling designs to insure that data are obtained from a random sample of states' populations. Additionally, it has long been a requirement that states use wording of questions on the Core, Rotating Core, Emerging Core, and Optional Modules without modification (BRFSS Policy Memo 93.3).

Increasingly, BRFSS data are being utilized by a variety of groups. The Behavioral Surveillance Branch (BSB) is fully supportive of more widespread distribution and use of these data. One of the most important responsiblilities of the branch is to ensure that BRFSS data are collected in a manner that enables comparison across states. Thus, it is essential that samples are scientifically drawn in all participating states, and that no changes (either in wording or sequence) are made to the questions provided by the branch on the core, rotating core, and optional modules.

Based upon recommendations from the American Statistical Association (ASA) BRFSS Survey Methods working group, data from states that do not conform to Memo 94.3 may not be included in BSB publications such as the annual *BRFSS Summary Prevalence Report* and *MMWR Surveillance Summaries*, and such data may not be included in the final CDC mainframe BRFSS computer file or other electronic formats such as CD-ROM (i.e., they may not be made available to researchers at CDC or elsewhere for analysis). However, data from states that use nonprobability sampling, that do not provide information on each record that reflect the sample design, or that do not include all possible household numbers in its sampling frame will continue to be processed, cleaned, edited, and weighted (if appropriate) and returned to states that submit them. Because of the changing nature of survey sampling, BSB staff annually will review the state of the art on acceptable sampling methods and notify states as changes occur.

States must provide BSB written copies of their questionnaires by February 15th of each data collection year, and notify BSB if any changes are made to questionnaires during the course of the year. Core, Rotating Core, Emerging Core, and Optional Module questions must not be modified by states. Again, based upon recommendations from the American Statistical Association (ASA) working group, if such modifications occur, data on modified questions will not be included in BSB publications such as annual *BRFSS Summary Prevalence Report* and *MMWR Surveillance Summaries*, nor will data from these questions be included on the CDC mainframe BRFSS computer file or other electronic formats such as CD-ROM (i.e., they will not be made available researchers at CDC or elsewhere for analysis).

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BRFSS POLICY MEMO 97.7
Annual data submission deadline

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The *Summary Prevalence Report* needs to be released by the end of summer of each data year. Many state and federal users need the report to develop their own specific reports and publications. The Summary Prevalence Report cannot be produced until the annual master file of BRFSS data is finalized.

The *BRFSS User's Guide* specifies that edited data are expected to be submitted to BSB within 30 days of the end of each interview month. Monthly data are used to generate mid-year assessments of data for participating areas. In addition, monthly data are combined to produce an annual data file for each state. This annual file is used to produce year-end products, including state tables, state summary reports, and the annual Summary Prevalence Report of risk factors for all participating areas.

Beginning with BRFSS data collected in 1997, all twelve months of initial BRFSS data must be submitted no later than March 20, 1998. For 1998 and subsequent data years, twelve months of initial data must be received no later than February 20, following the year of collection.

States that do not meet the submission deadline may not be included in the annual *Summary Prevalence Report* and production of state tables and risk reports may also be delayed. Late submitted data will be processed, weighted, and used for state table production, but timing of these events will depend upon the resources available in the *Survey Operations Section* at the time all data are received. Although products such as the Summary Prevalence Report will not be revised to include reporting areas that do not meet the submission deadline, data for these areas will be added to the annual BRFSS data file.

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BRFSS POLICY MEMO 98.1
Provision of State Reports

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Effective with data year 1996, States will receive one State Prevalence Report of Risk Factors and one Statewide Survey Data Report. The number of region/strata specific tables requested has grown exponentially during the past several years, while the Survey Operations Section programming resources have declined. Currently, 16 states use more than one geographic stratum, resulting in a total of 115 geographic strata. Such large numbers of multiple strata state reports cannot be provided without jeopardizing the provision of one timely report for each of the 54 BRFSS reporting areas.

States needing strata-specific risk measures and descriptive reports may request copies of the SAS code used to produce their state report. These programs can be modified by the State to produce additional tables. The Survey Operations Section can offer only limited support for programs modified by States.

Appendix A
Point-in-Time Surveys

A point-in-time (PIT) survey is initially designed to be conducted just once. Its purpose is to reflect current conditions at a given "point in time." However, the survey might be conducted at a future point in time so as to compare given conditions between or among specific points in time. Usually, PIT surveys are conducted only once and are conducted most often to rapidly gather current data or to provide baseline information on given conditions or certain defined populations. Sometimes, as with the BRFSS, the surveys can lead to long-term surveillance activities.

With experienced researchers and surveyors, PIT surveys can be developed quickly to meet rapidly emerging issues and to assess crisis conditions (e.g., the 1995 Oklahoma bombing and 1993 midwest floods). PIT surveys are often linked to particular public health initiatives (e.g., mandatory seat-belt use legislation and tobacco legislation). These surveys are especially useful for obtaining current information on populations believed to be at risk for particular health problems and for providing additional data, such as on minority populations who may be difficult to capture in major surveys. Data from PIT surveys readily supplement existing data, whether related to ongoing surveillance or to other one-time studies.

Methodology

PIT surveys are distinguished from ongoing surveillance primarily by the time frame in which they are conducted. In the BRFSS, surveillance activities are conducted monthly during a recommended two-week period. In a PIT survey, work is usually a sustained effort over several weeks, depending on the number of respondents surveyed and available resources. However, PIT surveys in the BRFSS can be conducted monthly during the two-week period, for less than the entire year, unlike surveillance. Both surveillance and PIT surveys in the BRFSS are conducted according to the same stringent protocol.

A minimum number of respondents must be interviewed for valid data analysis. Consequently, PIT surveys must be driven by the number of respondents necessary for meaningful data analysis, including the need to capture specific subpopulations and necessary demographic breakdowns (e.g., male and female, race/ethnicity groups, and types of employment). The estimated number of respondents must also then be considered in terms of necessary resources, such as the number of interviewers available for data collection, the hours they are available, and the telephone stations available for interviewing. Ultimately, the determining factor in the feasibility of a PIT survey will be the amount of resources needed.

The same sampling procedures used in surveillance can be used in PIT surveys. Therefore, to optimize available resources, state programs considering PIT surveys should consider employing the same sampling strategy in their PIT survey as they do in their surveillance activities.

Preparation and Guidelines

Before preparing a PIT survey, cost, question and pretest development, and sample size must be considered.

- How much will it cost to prepare the BRFSS question(s) and pretest? What additional survey time is required to collect, weigh, process, and analyze the data and produce hard-copy printouts of the data?
- If questions are not readily available on topics to be addressed in the survey, what questions may be available from other BRFSS projects as state-added questions that can be adapted to your data needs? Also, batteries of questions are available from a variety of sources within the Centers for Disease Control and Prevention from optional modules, past surveys, or other agencies (e.g., National Institutes of Health). If the topic is localized enough that no validated questions can be found, assistance can be provided through your technical advisor.
- Pretests are generally conducted across the geographic area that will ultimately be used for gathering data, conducted without random respondent selection, and will usually require at least 150 completed surveys. (See Appendix D: Questionnaire Development for additional guidelines for pretesting questionnaires.)
- The sample size will be determined by your budget and analytical needs. In a well-populated area where geographic or demographic subgroups are desired, the recommended sample size would be 600–1000, with a minimum of 400 participants.

Main Advantages of Point-In-Time Surveys

- Quickly provide desired data.
- Provide baseline data for comparison with future studies.
- Allow more in-depth study of selected topics.
- Incorporate a larger sample in a shorter time frame.
- Can be tailored for special populations.
- Are less expensive for the same sample size, as compared with ongoing surveillance activities.

Main Disadvantages of Point-In-Time Surveys

- Cannot be used to track trends.
- Incur start-up costs not associated with ongoing operations.

- Overlook any seasonal variations.
- Questionnaire development (i.e., question selection, acquisition or modeling, and pretesting) that is not normally encountered in surveillance activities.
- Pilot tests often are not feasible because of the relatively short time frame. (Otherwise, any problems with the newly developed survey instrument would not be detected until after the data were collected.)
- Potential problematic differences between census and telephone households (group living situations) with local area surveying.

Appendix B
Paper-Administered BRFSS Methodology

The paper and pencil method of administering the Behavioral Risk Factor Surveillance System (BRFSS) requires interviewers to enter questionnaire responses onto paper during the telephone interviews and later to manually transfer the responses into an electronic format for computer processing.

Preliminary Considerations

- Determine content of the annual questionnaire and reproduce the survey instrument.
- Determine sample design and size and procure surveillance sample.
- Ensure adherence to BRFSS protocol through training.
- Schedule and conduct data collection activities.
- Practice sound quality assurance.
- Develop a clean dataset.

The Behavioral Surveillance Branch (BSB) distributes a camera-ready copy of the core components and the optional modules to which state-added questions may be appended. Once the state's questionnaire is constructed, a paper version of the questionnaire must be prepared and a copy sent to BSB by **December 1** of each year. Using the prototype as a master for printing copies, a general rule is to print 100 more questionnaires than the intended sample size, plus 5 per interviewer for use in training. About four times the sample size of extra questionnaire face sheets will also be needed to replace those used for incomplete interviews. If a significant portion of the surveillance population does not speak English, the states may also want to have the questionnaire translated into other languages. BSB can provide a Spanish version of the core questionnaire and optional modules.

Each year, agreement is reached on the content of the core component and optional modules, and they are used *without modification*. The states are free to ask questions on additional topics by using state-added questions, which they develop on their own or select from questions used in other survey research. This system results in some changes in the questionnaire each year. New questionnaires are implemented in January. Thus, before the start of each January interviewing period, interviewers need time to familiarize themselves with the new questionnaire.

Comparable training and supervision across project sites are particularly important in ensuring compliance to surveillance protocols. The quality of the BRFSS staff training influences the

quality of data collection. To ensure that the surveillance data produce reliable estimates, all interviewers must be trained to do their jobs in standardized ways. Ideally, all interviewers should be able to elicit uniform responses from each respondent. The interviewer's job is to complete the interviews honestly and accurately according to the instructions received during training.

BRFSS supervisors should routinely monitor interviews in progress. The concept of monitoring should be introduced to interviewers early in their training to help them understand that listening to interviews is a valuable tool for training and for achieving uniform questionnaire administration. Additionally, verification callbacks are used to identify different errors than can be detected by interview monitoring. The two activities are complementary, not duplicative. Although significant discrepancies between the initial and the verification interviews are uncommon, the reliability and credibility of the surveillance data are further ensured when verification is conducted.

The most common BRFSS sampling method, and the one described in this user's guide, is a three-stage cluster sampling procedure based on the Mitofsky-Waksberg method of random-digit dialing. BSB can provide samples when given appropriate area codes and prefixes for each state.

BRFSS Questionnaire

The BRFSS is conducted by using a standardized questionnaire with three parts:

1. Core component, which comprises fixed core questions, rotating core questions, and emerging issues questions asked by all states.
2. Optional CDC modules, any, all, or none of which may be included.
3. Optional state-added questions, which are developed or acquired and used by the individual states.

> BRFSS PROTOCOL SPECIFIES THAT all states must ask the core component questions without modification. States may choose to add any, all, or none of the optional modules and state-added questions after the core component. Inserting related state-added questions into the core must be agreed upon in consultation with BSB.

The questionnaire includes two types of questions: open-ended and close-ended.

Open-ended questions allow individualized answers from the respondent. These questions are not precoded.

Closed-ended questions provide several choices for the respondent and are of two types. In the first type, the responses are included in the question text. The interviewer reads the options along with the question, and the respondent picks one option. In the second type, the responses are listed but are not included in the question text. This is done to let the respondent react to the question without being given choices.

Sampling Design

Although the main purpose of the BRFSS is to estimate the prevalence of risk behaviors and preventive health practices in a state's adult population, interviewing each person in the general population is not feasible.

> BRFSS PROTOCOL SPECIFIES THAT samples used in the BRFSS must be state-based probability samples in which all households with telephones have a known, nonzero chance of inclusion.

The paper and pencil techniques employed in the BRFSS are generally based on the Mitofsky-Waksberg sampling design, which meets the BRFSS protocol. Telephone numbers are randomly selected from the set of all existing area code and prefix combinations in the state. On request, BSB will provide a sample of telephone numbers for a state to use in conducting the BRFSS. The sample consists of blocks of 100 telephone numbers, each block having the same area code, prefix, and first two digits of the suffix (e.g., [404] 329-30). This block of 100 numbers is called a primary sampling unit (PSU). The group of any three telephone numbers drawn from a given PSU and successfully called (i.e., an interview was completed) composes a cluster. For example, (404) 329-3075, (404) 329-3097, and (404) 329-3000 compose the cluster from the PSU defined by (404) 329-30.

BSB assigns each PSU a five-digit identification number—the PSU number. This numbering system facilitates the tracking of PSUs, a critical factor in managing the sample throughout data collection activities and the editing process without compromising the respondents' confidentiality. After the data are edited and tabulated, the last two digits of each telephone number are dropped from the interview record, and the anonymity of the respondent is preserved.

BRFSS Process

The following nine steps describe the BRFSS process.

Annual questionnaire construction and distribution

1. At the annual BRFSS conference, states provide input and feedback on the content of the core components and optional modules.
2. BSB designs and produces the core components, optional modules, and data processing layouts and sends them to the states. States add questions that they have designed or acquired.

Sample selection and screening

3. BSB obtains samples of telephone numbers and distributes them to the states. Some states purchase samples from private vendors.
4. On a monthly basis, states screen telephone numbers to exclude nonresidential PSUs from the survey sample. Screening is conducted according to the same protocol as that used for data collection. This step is generally omitted by states not using the Mitofsky-Waksberg sampling design.

Monthly data collection

5. States conduct interviews during each month in accordance with a prescribed protocol. States review and edit all completed interviews each month. Surveillance results are entered into computer files during interviewing by states that use a CATI system. Data entry is completed subsequent to the survey by states that collect data manually.

Data management and reporting

6. States submit data to BSB for further editing each month.
7. BSB weights data annually according to state-specific population estimates provided by the Bureau of the Census.
8. BSB produces and distributes yearly, state-specific, standard cross-tabulations of responses and risk-factor prevalence estimates for core and optional module questions, nationwide summaries of state-specific risk-factor prevalence estimates, and nationwide summaries of state-specific response rates.
9. BSB and the states publish analyses of data.

Screening Telephone Clusters

Interviewers use a script developed by BSB to screen telephone numbers so that the bulk of nonresidential PSUs can be excluded from the sample. The Rules of Replacement are observed in screening just as in monthly data collection.

Screening requires a cluster contact sheet (see sample on the next page), which contains a PSU consisting of a block of 100 telephone numbers listed in random order. Each PSU has a unique five-digit identification number located in the upper left corner of the sheet. All of the telephone numbers in the PSU are identical except for the last two digits of the suffix. The first 15

telephone numbers are printed in full; the next 85 are represented only by their last two digits (the last two digits of the suffix). The random order of the last 85 telephone numbers is from left to right and top to bottom.

Each cluster contact sheet has two worksheet sections. The Record of Screening Attempts section has an "accepted/rejected" check-off and a single row of blank spaces to be filled in during screening. Below that is the Summary of Interview Attempts section, to be used by the interviewers during monthly data collection.

Interviewers are provided approximately five times the number of PSUs they need. There is no way of predetermining which PSUs contain working residential numbers. The interviewers must screen the PSUs until they have the number necessary for data collection. Because they will complete a cluster of three interviews per PSU, the number of PSUs needed is one-third the sample size, plus 10% for spares.

Interviewers will also need the following list of codes, dispositions, and Rules of Replacement (see page B–7). These rules should be followed in processing telephone numbers.

Call Disposition Codes

01 Completed interview
02 Refused interview
03 Nonworking number
04 Ring-no-answer
05 Not a private residence
06 No eligible respondent at this number
07 Selected respondent not available during the interviewing period
08 Language barrier
09 Interview terminated within questionnaire
10 Line busy
11 Respondent unable to communicate due to physical or mental impairment

BRFSS, 1996 RDD CLUSTER SAMPLE FORM CENTRAL TIME ZONE March 27, 1996

RECORD OF SCREENING ATTEMPTS

PSU # 02001 205-290-3210

( ) ACCEPTED
( ) REJECTED

		CALL #1				CALL #2			CALL #3		
		DATE	TIME	DISPO	WKTM	TIME	DISPO	WKTM	TIME	DISPO	WKTM
OCCASION 1		____	____	____	____	____	____	____	____	____	____
OCCATION 2		____	____	____	____	____	____	____	____	____	____
OCCASION 3		____	____	____	____	____	____	____	____	____	____
OCCASION 4		____	____	____	____	____	____	____	____	____	____
OCCASION 5		____	____	____	____	____	____	____	____	____	____

SUMMARY OF INTERVIEW ATTEMPTS

	OCCASION #1			OCCASION #2			OCCASION #3			OCCASION #4			OCCASION #5		
	DATE	DISPO	WKTM	DATE	DISPO	WKTM	DATE	DISPO	WKTM	DATE	DISPO	WKTM	DATE	DISPO	WKTM
1. 205-290-3210	____	____	____	____	____	____	____	____	____	____	____	____	____	____	____
2. 205-290-3242	____	____	____	____	____	____	____	____	____	____	____	____	____	____	____
3. 205-290-3264	____	____	____	____	____	____	____	____	____	____	____	____	____	____	____
4. 205-290-3289	____	____	____	____	____	____	____	____	____	____	____	____	____	____	____
5. 205-290-3209	____	____	____	____	____	____	____	____	____	____	____	____	____	____	____
6. 205-290-3246	____	____	____	____	____	____	____	____	____	____	____	____	____	____	____
7. 205-290-3227	____	____	____	____	____	____	____	____	____	____	____	____	____	____	____
8. 205-290-3250	____	____	____	____	____	____	____	____	____	____	____	____	____	____	____
9. 205-290-3206	____	____	____	____	____	____	____	____	____	____	____	____	____	____	____
10. 205-290-3290	____	____	____	____	____	____	____	____	____	____	____	____	____	____	____
11. 205-290-3269	____	____	____	____	____	____	____	____	____	____	____	____	____	____	____
12. 205-290-3285	____	____	____	____	____	____	____	____	____	____	____	____	____	____	____
13. 205-290-3297	____	____	____	____	____	____	____	____	____	____	____	____	____	____	____
14. 205-290-3231	____	____	____	____	____	____	____	____	____	____	____	____	____	____	____
15. 205-290-3207	____	____	____	____	____	____	____	____	____	____	____	____	____	____	____

22 67 70 11 54 74 68 80 79 81 99 63 78 39 08 36 51 05 61 65 15 83 96 28 47 76 52 72 19 45
44 23 40 43 95 33 38 62 55 87 02 04 84 29 82 86 24 77 16 20 93 17 66 94 00 14 18 26
34 30 53 25 59 60 75 35 37 01 03 32 91 49 58 12 88 73 21 57 13 41 48 56 92 71 98

DISPO CODES

(01) COMPLETED INTERVIEW
(02) REFUSED INTERVIEW
(03) NONWORKING NUMBER
(04) RING NO ANSWER
(05) NOT PRIVATE RESIDENCE
(06) NO ELIGIBLE RESPONDENT AT NUMBER
(07) SELECTED RESPONDENT NOT AVAILABLE
(08) LANGUAGE BARRIER
(09) TERMINATED WITHIN QUESTIONNAIRE
(10) BUSY
(11) UNABLE TO RESPOND DUE TO IMPAIRMENT
(XX) APPOINTMENT MADE

WKTM CODES: D = WEEKDAY E = WEEKEND N = WEEK NIGHT

BRFSS Rules of Replacement

Code	Disposition	Rule
01	Completed interview (questions asked include age, race, and sex)	Do not replace.
02	Refused interview	Replace after second refusal or when a first-time refusal will not be called a second time.
03	Nonworking number	Usually recognized by a recording of a fast-busy signal. Includes "number changed" recordings and numbers that "bridge." Call operator or repair service when in doubt. Replace.
04	Ring no answer	A normal telephone ring which no one answers (answering machines do not count as an answer) after (1) five calling occasions (each consisting of three attempts) and (2) the five occasions have a mixture of weekday, weeknight, and weekend calls. If possible, contact the telephone company repair service to verify the number is in service. Replace.
05	Not a private residence	The person answering identifies the telephone number as a business or says "no" when asked "Is this a private residence?" Also use this disposition for institutions (government offices, educational facilities, dormitories, nursing homes, hospitals, prisons, etc.), group homes (fraternities and sororities, half-way houses, shelters, etc.), pagers, fax machines, and computer modems. Replace.
06	No eligible respondent at this number	The household does not include anyone 18 years of age or older (this does not mean the adults are away temporarily). Replace.
07	Selected respondent not available during the interviewing period	The selected respondent will not be available or could not be reached during the time you have allotted for the month's interviewing. Replace.
08	Language barrier	The selected respondent does not speak English well enough to be interviewed and there are no interviewers who speak their language. Replace.
09	Interview terminated within questionnaire	A "hang up" at some point after the first questions has been asked (this does not mean the respondent refused a particular question). Make another attempt to complete questionnaire. Replace if second attempt unsuccessful. If after a second attempt the respondent has completed the interview at least through the age, race, and sex questions, recode as a completed interview.
10	Line busy	To be coded only after (1) five calling occasions (each consisting of three attempts at ≥ 10 minute intervals) and (2) the five occasions have a mixture of weekday, weeknight, and weekend calls. If possible, contact the telephone company repair service to verify the number is in service. Replace.
11	Respondent unable to communicate due to physical or mental impairment	Example: respondent is deaf. Replace.

The process for screening telephone clusters is as follows:

1. The interviewer begins with PSU #00001 and screens sequentially. The interviewer calls the telephone number printed just to the right of the PSU number. This number is referred to as the "defining number."
2. After dialing the number and reaching a respondent, the interviewer says, *Hello. Is this (area code-telephone number)?*

   If the respondent replies that the interviewer has not reached that number, the interviewer says, *Thank you. I seem to have dialed the wrong number.* The interviewer disconnects the line and dials the number again. If the same respondent is reached on the second call, the interviewer assigns the disposition code 03 (nonworking number).
3. If the respondent confirms the number, the interviewer says, *Is this a business?*

   If the answer is yes, the interviewer checks the Rejected box and assigns the code 05 (not a private residence) in the result column.

   If the answer is no, the interviewer checks the Accepted box.
4. Interviewers will make a minimum of 15 attempts, to include weekdays, weeknights, and weekends, before rejecting codes 04 (no answer) or 10 (line busy) for a specific telephone number during screening.

   The Rules of Replacement are followed in screening just as they are in the household selection stage.
5. The supervisor files the sheets with accepted PSUs for use during monthly data collection. The supervisor keeps rejected PSUs in a separate file. All cluster contact sheets—accepted and rejected, used and unused—should be retained for quality control review until production of the annual summaries.
6. The supervisor keeps track of PSU numbers from month to month to ensure that the same PSU number is not used more than once.

Preparing for Data Collection

The steps to set up a study in a paper-administered system are as follows:

1. The supervisor prepares the face sheets of three questionnaires for each PSU intended for use during the month’s interviewing period. The five-digit PSU identification number is transferred from the cluster contact sheet to the face sheets.

   The last two digits of the telephone numbers are written on lines rather than in boxes so that these numbers are not entered into the computer files by the data entry staff. This procedure ensures confidentiality because data in the files cannot be linked to a particular telephone number.

2. The supervisor groups the work for the interviewing period together with each cluster contact sheet followed by the three questionnaires associated with it.
3. The supervisor assigns each interviewer a two-character ID symbol or number that should remain the same throughout the data collection process.
4. The supervisor provides each interviewer a telephone work station.
5. The supervisor distributes the packets among the interviewers and keeps a list indicating to whom each packet is assigned.

Interviewing Period

Interviewing is performed monthly during a recommended 14-day period. All completed interviews and call attempts are reviewed and edited locally each month. Surveillance results are entered into electronic files after interviewing. Quality assurance measures are practiced during and after the survey period.

Interview Monitoring

Monitoring must take place during every monthly interviewing period. All interviewers should be monitored periodically—from one or more times per shift for new interviewers to once every month for experienced interviewers.

> BRFSS PROTOCOL SPECIFIES THAT systematic, unobtrusive electronic monitoring will be a routine and integral part of monthly survey procedures for all interviewers.

Unobtrusive monitoring systems have overcome the tell-tale clicks that would alert interviewers to the system's being turned on or to being switched from one interview station to another, resulting in their consciously or unconsciously making changes in their interviewing style or techniques. These monitoring systems are very useful for training purposes and improving existing levels of performance. They provide feedback on an individual interviewer's best work and pinpoint specific areas that can benefit from different technique.

State regulations govern to what extent parties on the telephone need to be informed that another person is listening. Generally, as long as one party (in the case of telephone surveillance, the interviewer) is aware that monitoring may be taking place, it is not necessary to inform the interviewer or the respondent at the time an interview is actually being monitored. Because all BRFSS staff are subject to the same confidentiality requirements, monitoring is not a breach of confidentiality.

Although supervisors usually do the routine monitoring, interviewers may also do some monitoring. They can benefit from listening to other interviewers.

Supervisors must document their observations and discuss them with the interviewers as soon after monitoring as possible. An evaluation sheet (see Appendix C: BRFSS Training for examples) can be used to rate interviewers on verbatim reading, coding accuracy, probing, refusal avoidance and conversions, diction, pace, and courtesy. Results should be filed for use in future performance evaluations.

Appointments

Sometimes a respondent will be unable to participate or continue with an interview when called. In those instances, an appointment is made for a day and time when the respondent can more conveniently continue with the interview. A tracking system must be in place so that arrangements can be confidently made for that appointment to be kept. Occasionally, appointment callbacks will be made for nonscheduled hours, generally during weekdays. When possible, an interviewer should be scheduled to work so that the appointment may be kept. If an interviewer is unable to be present, any health department staff who have participated in the BRFSS training may be enlisted to return these calls.

Confidentiality

Protecting the confidentiality of respondents is a fundamental principle in the BRFSS. To ensure confidentiality, no respondent identifiers are retained in the interview record. Even the last two digits of the telephone number are eliminated from the final data to ensure that a respondent's answers cannot be connected to a specific person or telephone number. Individual information is further protected because data are combined and the reports include only aggregate figures (e.g., 10% of the population had a household income of less than $10,000).

Although discussion of respondent information among the BRFSS staff is a necessary part of the surveillance process, staff must not discuss details of specific interviews outside the work environment. Monitoring interviews does not violate the principle of confidentiality as long as monitors are subject to the same confidentiality standards as the other members of the BRFSS staff.

Refused Interviews

Regardless of how well trained and prepared an interviewer is, there will be times when respondents will refuse to complete an interview. *If a respondent says to call back some other time, code that attempt as an appointment.*

> BRFSS PROTOCOL SPECIFIES THAT with the exception of verbally abusive respondents, eligible persons who initially refuse to be interviewed will be contacted at least one more time to give them an opportunity to complete the interview. Preferably, this second contact will be made by a supervisor or a different interviewer.

Many factors can cause a refusal at the time of the initial call; few have anything to do with the interviewer. The best defense against becoming discouraged is to realize that the rejection is usually an expression of the respondent's own fear or resistance, not a negative judgment of the interviewer's competence.

Respondents are sometimes rude and even hostile. Rather than taking the refusal personally, the interviewer should address the respondent's objections.

When a respondent refuses to participate in the survey, his or her telephone number is called back at a later time, preferably by a supervisor or another interviewer. It is very important to document on the coversheet the reason for the initial refusal because this information may help convert a refused interview into a completed interview. Some suggested responses to refusals can be found on pages 6-27–6-29.

Removing an Unproductive PSU from the Sample

The Mitofsky-Waksberg process of screening increases survey efficiency by identifying the residential status of a number before the survey begins. On some occasions, although the screened number (i.e., the first, or defining, number in the PSU) is a residence, it is not representative of a predominately residential block of numbers, and, in the strictest Mitofsky-Waksberg sampling designs, all 100 PSU numbers would be exhausted unless a cluster of three interviews was completed. To further enhance survey efficiency, in these circumstances, there is a policy to discard and replace unproductive PSUs.

After the screened number has been called and given a disposition code, up to 15 additional telephone numbers must be called and coded as nonresidential or nonworking before the PSU can be replaced. To reach a final disposition on a number, the proprietary 15 calls must be made among the three calling occasions and not produce a definitive residence.

A calling occasion is defined as a workshift, a block of four hours during these times:

Weekdays	1:00–5:00 P.M.
Weeknights	5:00–9:00 P.M.
Weekends:	
Saturdays	10:00 A.M.–2:00 P.M.
Sundays	1:00–5:00 P.M.
	5:00–9:00 P.M.

When a completed interview is obtained within the 15 telephone numbers, up to an additional 15 telephone numbers must be called and coded. If within these 15 telephone numbers another interview is completed, an additional 15 telephone numbers must be called and coded before the PSU can be replaced. When a PSU is replaced, any completed interviews are retained for submission and analysis.

Note: The 15 intervening telephone numbers worked between either the defining number or any subsequently completed interview(s) and replacing the PSU must be identified as nonworking or nonresidential numbers and not be inaccessible respondents or unobtainable interviews. If a series of telephone numbers prove to include some variety of residential dispositions, such as line busy, refused interview, appointment made, and selected respondents not available during the interview, the PSU is not discarded or replaced but worked through as many numbers as are needed to complete the cluster or exhaust the PSU. A PSU with an unbroken string of line-busies or ring-no-answers should first be checked for its operational status with the telephone company before replacing it. However, a PSU containing an unbroken string of 15 business numbers should be immediately replaced. The decision to replace a PSU before completing the cluster is the supervisor's; however, these are the guidelines that govern such replacement.

Wind-Down Procedures

Wind-down is an optional procedure in cluster sampling that enables the interviewers to complete data collection by the end of the specified monthly interviewing period. The supervisor makes the decision to begin wind-down. During wind-down, the standard Rules of Replacement are suspended. New numbers within a PSU are dialed once; if a completed interview is not obtained, the succeeding numbers are dialed in order until a cluster is completed.

Wind-down procedures should be implemented only when necessary and only after 95% of the interviews required for the month have been completed. When the Rules of Replacement are disregarded, only respondents who are easiest to reach are interviewed. The health behaviors of

these respondents may differ significantly from those of persons who are more difficult to reach. Therefore, the remaining sample may not truly reflect the population from which it was drawn.

Wind-down is usually initiated during the evening hours, when most people can be expected to be at home.

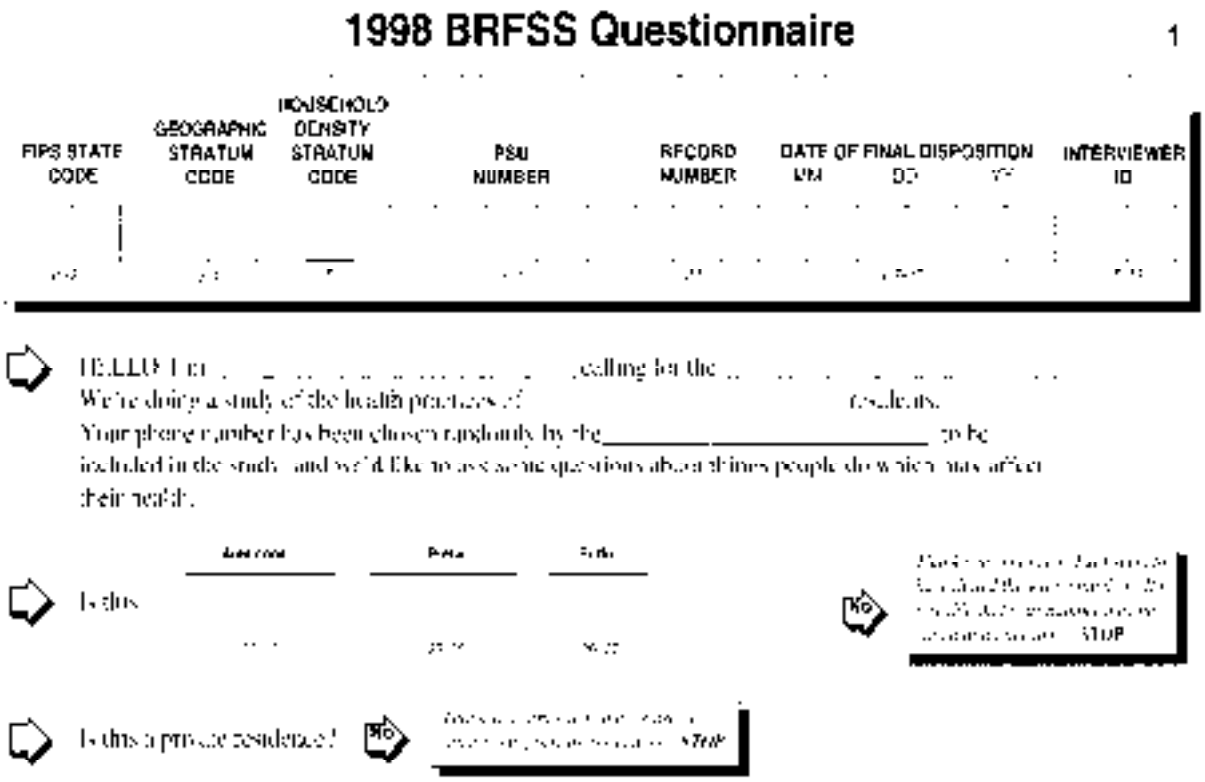
- When wind-down begins, all telephone numbers that were previously called and coded as pending appointments and initial refusals should be called once and replaced if a completed interview is not obtained. Telephone numbers coded as busy, ring-no-answer, and refused interview are all replaced without further attempts to complete the interview.
- The respondent selection procedure remains intact. That is, interviewers may not bypass the respondent selection process; they must speak to the properly selected respondent. If this respondent is not available, the interviewer does not make an appointment. Instead, the interviewer assigns the record a final disposition and tries a new telephone number.
- The final disposition for a number that has been previously called must reflect whether the household has been determined to be acceptable. For example, if a number is called, a respondent is selected, an appointment is made, and the number is called again during wind-down and there is no answer, the final disposition would be selected respondent not available during interviewing period (07) rather than ring no answer (04).
- Each interview completed during wind-down must be coded as such.

Managing the Sample

Each telephone number in the sample must be called until the Rules of Replacement have been met. After each call attempt, telephone numbers are given an interim disposition code. At this time, the BRFSS does not have a specific policy about messages being left on answering machines; however, it is the responsibility of each state to notify BSB whether they do or do not leave messages. If states do leave messages, they must provide a copy of any scripts for messages left on answering machines.

Once the calling rules are satisfied, the telephone number is given a final disposition code. In the Mitofsky-Waksberg sampling design, this telephone number is then replaced with another number from the PSU. This process continues until (1) the predetermined cluster size—three completed interviews for each accepted PSU—is reached, (2) the PSU is deemed by the supervisor to be unsatisfactory according to the policy for replacing an unproductive PSU and is replaced, or (3) the interviewing period ends.

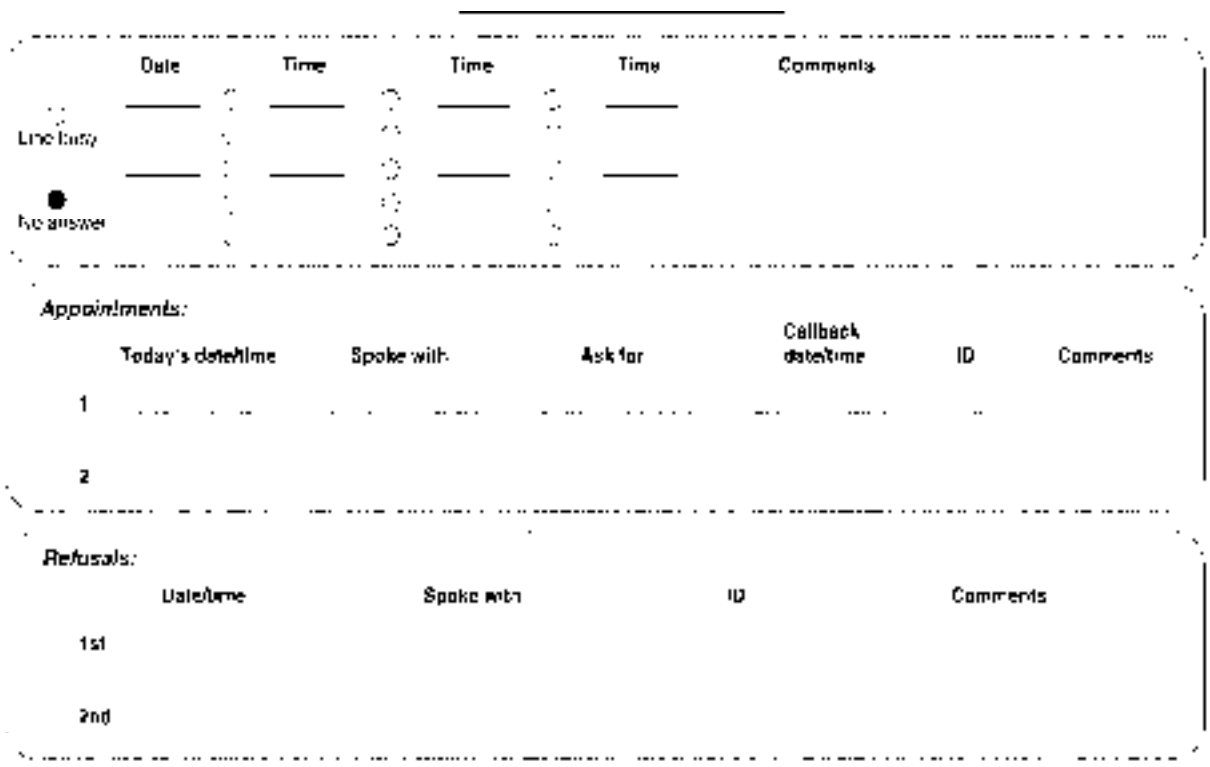
Call Record



1. Each state has its own FIPS state code. Depending on the type of design, the stratum code may vary from "1" to another number.
2. Indicate a geographic stratum code on each record. States with no internal geographic stratification will enter the number 1. States with internal geographic stratification will enter a number ranging from 1 to the number of geographic strata.
3. Indicate a household density stratum code. States with no density stratification will enter the number 1. States with density stratification will enter a number ranging from 1 to the number of density strata.
4. Each coversheet should have a PSU number listed. This is a five-digit sequential number starting with 00001 and continuing up to 99999.
5. The record number is a one-digit number—1, 2, or 3—that represents the number of completed interviews in the cluster. It is filled in after an interview has been completed. If a cluster design is not used, "1" is entered on every completed interview.
6. The date of final disposition is filled in only when the interview can be given a final disposition code (completed interview, not a private residence, nonworking number, etc.).

7. The interviewer ID is filled in when a final disposition code is given. The interviewer inserts his or her initials or other two-digit ID code in these two boxes.
8. The area code and telephone number will already be filled in. If not, the interviewer should check with the supervisor.
9. The interviewer reads the introductory paragraph, verifies the telephone number, and determines that the number is for a private residence. If the interviewer has reached a private residence, he or she continues on to obtain the household information.

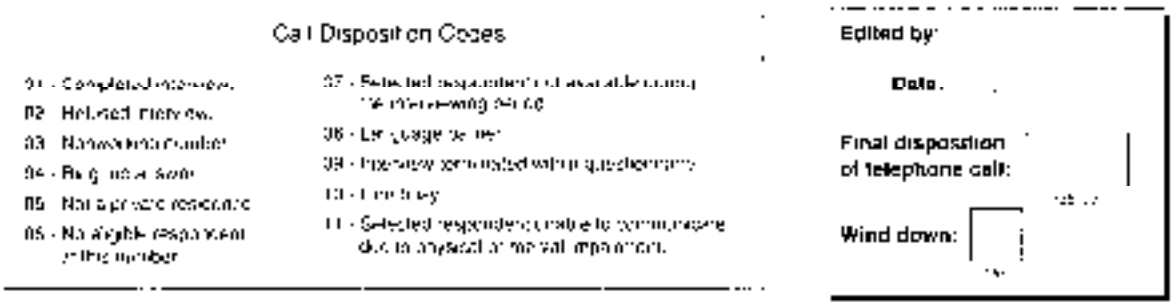
This is the call history section.



1. The interviewer fills in the appropriate blanks (date, time, and initials) and indicates "line busy," "no answer" (fill in circle as indicated), or answering machine (put an "X" in the circle). Space for comments is provided.
2. The next box is for scheduling appointments. The interviewer fills in the date and time, to whom he or she spoke, the selected respondent (if known), the callback date and time (morning, afternoon, evening, or at a specific appointment time), and the interviewer's initials. Space for comments is provided.

3. The next box is for refusals. The interviewer fills in the date and time, to whom he or she spoke, and the interviewer's initials. In the comments area, the interviewer briefly describes the reason for the refusal (no time, doesn't do surveys, busy now, etc.).

This is the call disposition section.



1. At the bottom of the coversheet is a list of call disposition codes with a brief description of each and a box for final disposition coding. When the interviewer obtains a final disposition, he or she fills in the final disposition code. Space is provided for the initials or identification number of the person editing the record, and the date the record is edited.
2. If the study is in wind-down (a survey status in cluster sampling sometimes necessary to complete the last 5% of interviews for the month), the interviewer puts "9" in the box marked "Wind-down"; otherwise, the box is left blank.

Household Selection

The next section takes the interviewer through the household selection process—stage 2 in the three-stage sampling process.

BRFSS PROTOCOL SPECIFIES THAT an eligible household is a housing unit that has a separate entrance, where occupants eat separately from other persons on the property, and that is occupied by its members as their principal or secondary place of residence. Noneligible households are (1) vacation homes not occupied by household members for more than 30 days per year, (2) group homes (sororities and fraternities, halfway houses, shelters, etc.), and (3) institutions (nursing homes, college dormitories, etc.).

Household members include all related adults (aged 18 or older), unrelated adults, roomers, and domestic workers who consider the household their home, even though they may not be home at the time of the call. Household members do not include adult family members who are currently living elsewhere (at college, a military base, a nursing home, or a correctional facility, etc.).

2

One study requires that we randomly select one adult who lives in your household to be interviewed. How many members of your household, including yourself, are 18 years of age or older? ____

If "1" → Are you the adult?

If "yes" → Then you are the person I need to speak with. Go to page 3

If "no" → May I speak with him or her? Go to "current respondent" at bottom of page

	Men	Women
How many of these adults are men and how many are women?		

Who is the oldest man who presently lives in this household?
Who is the next oldest man who presently lives in this household?
Etc

Who is the oldest woman who presently lives in this household?
Who is the next oldest woman who presently lives in this household?
Etc.

1. The first question asks how many members in the household are 18 years of age or older. If the response is five or more adults, the interviewer should probe to ensure that all are 18 years of age or older, that all currently live in the household, and that the household is not a group home or institution. If the answer is one adult and the interviewer is speaking to that person, the interviewer proceeds to the first question on the questionnaire.
2. The next question asks how many of the adults are men and how many are women. The interviewer fills in the appropriate answers. If there is only one adult in the household, the interviewer puts "1" in the appropriate box and leaves the other box blank.

Respondent Selection

Suffix: ___ ___ ___ ___

		Last digit of phone number											
	Name or Relationship	0	1	2	3	4	5	6	7	8	9		
	1.	1	1	1	1	1	1	1	1	1	1	1.	
	2. _____	2	1	2	1	2	1	2	1	2	1	2.	
	3.	3	1	2	3	1	2	3	1	2	X	3.	
	4. _____	1	2	3	4	1	2	3	4	X	X	4.	
Total adults	5. _____	2	3	4	5	1	2	3	4	5	1	5.	Total adults
	6.	5	6	1	2	3	4	X	X	X	X	6.	
	7. _____	2	3	4	5	6	7	1	X	X	X	7.	
	8.	8	1	2	3	4	5	6	7	X	X	8.	

The person in your household that I need to speak with is _____

If "you," go to page 3

In this section, the interviewer randomly selects one adult in the household to be interviewed. The Kish table is used to randomly select the adult to be interviewed within a selected household; the table is a matrix of the telephone number and a household roster. Random selection avoids bias associated with the person who answers the telephone and the time of day when the call is placed.

1. Before dialing the telephone number, the interviewer fills in the suffix (the last four digits of the telephone number) on the blanks above the chart.

2. The interviewer lists the adult members of the household down the left side of the chart. (If there is only one adult, the interviewer does not need to fill this in.) The interviewer may use the two questions above the chart if necessary. In most households, because there is only one man and one woman, it is not necessary to use these two questions.

   The interviewer lists all men first, oldest to youngest, and then all women, oldest to youngest, by relationship or initials (e.g., husband, wife, father, mother, son #1, son #2, oldest woman, or woman—age 43). The interviewer should not ask for names, but, if a name is given, it can be used.

3. The interviewer then finds the column in the chart that is headed by the last digit of the suffix. Next, the interviewer finds where the row containing the last listed name intersects

that column. The number where the column and row intersect is the number of the selected respondent. If the intersection contains the number "2," for example, the second person on the list is interviewed.

If the intersection of the column and row reflects an "X," the interviewer must refer to the column corresponding to the last digit of the prefix and select the number of the respondent represented at the intersection of that column and row intersect. Likewise, if that recalculation results in another "X," the process is repeated using the middle digit of the prefix, and continues backward through the entire telephone number, including the area code, if necessary.

4. The interviewer identifies the correct respondent in the space provided, using the name as it is written on the chart (e.g., husband, daughter).

5. If the correct respondent is the person to whom the interviewer is speaking, the interviewer asks the first question on the paper questionnaire. Otherwise, the interviewer asks to speak to the selected respondent. When that person comes on the line, the interviewer introduces himself or herself by using the words printed at the bottom of the chart and begins the questionnaire.

Note: In a two-person household with one male and one female, the male is selected if the telephone number is odd; the female is selected if the telephone number is even.

After the Interviewing Period

A number of activities occur after the interviewing period to make data accessible, reliable, and useful.

Data Editing

Quality assurance continues beyond monitoring through the process of checking for coding errors and correcting data files. There is potential for keystroke errors when data are transferred from paper questionnaires to computer files. Data entry programs with question-specific, response-range checks can reduce these errors. The optimal way to ensure the quality of data entry is to enter the data twice and compare the completed records for discrepancies.

The data files have to be checked by computer edit programs to verify that appropriate values appear in each data column. BSB prepares computer edit programming for each year’s BRFSS questionnaire. A PC-based version of the program (PC-EDITS) is provided to states to allow the data to be edited before submission to BSB for final editing.

Note: PC-EDITS does not edit state-added questions. Depending on the number and complexity of such questions, the states may have to check their data by using programming they develop on their own. Errors identified by edit programs should be corrected in the shortest time possible. Trying to evaluate error messages months after the fact is difficult.

Edit reports also provide the opportunity to look for patterns in errors. Are there errors occurring consistently with the same questions? Do some interviewers have more frequent errors than others? If so, the supervisor must determine if interviewers need further training to eliminate the errors or if the data processing procedures are faulty.

Verification Callbacks

A 5% random sample of completed interviews are called back each month to verify that interviews were conducted properly and that responses were coded correctly. These truncated interviews are a function of overall quality assurance. They also serve to ensure the integrity of collected data, as well as to further monitor interviewer performance. Often overlooked as a significant attribute of verification is the service it provides in testing the reliability of questions. This is of particular value as it pertains to state-added questions.

BRFSS PROTOCOL SPECIFIES THAT a 5% random sample of each month's interviews must be called back to verify selected responses for quality assurance.

Monthly verification enables the timely detection of faulty data collection and a heightened ability to prevent future problems. Ideally, verification callbacks are conducted within a week after completion of the original interview and are customarily made by the supervisor. These reinterviews usually require less than 10 minutes to perform. Selected questions from the questionnaire are asked again to verify the initial results. Recommended questions are

- Number of adults.
- Respondent's age and sex.
- Sample questions from sections such as "Smoking," in which the interview can be shortened by falsely recording a "no" answer to the first question.
- Questions regarding the professional posture and disposition of the interviewer, such as diction and courtesy.

Results of the verification callbacks should be recorded and discussed with the respective interviewers. They can be tallied on a monthly report of reinterviews made and filed for reference and used in future performance ratings.

If large numbers or significant discrepancies are found, more interviews conducted by the interviewer in question must be verified. If the discrepancies are due to coding errors, all interviews completed by that interviewer must be reviewed with care and handled appropriately. Additional training should be provided to the interviewer, as well as close future monitoring until the problem is overcome. A sample verification form can be found on pages 6–36 to 6–39.

If data have been intentionally falsified, all interviews by that interviewer must be reviewed for authenticity, and determinations must be made regarding whether the interviews are salvageable. Any suspect interviews must be removed from the dataset (but retained as documentation for disciplinary action). Reinterviews are not to be conducted, and the data are lost.

Quality Assurance

Careful attention to all aspects of survey operations is critical to ensure that data of the highest quality are obtained. Selected statistics should be compiled and reviewed at the end of each month's data collection. Although BSB provides final statistics during the year and with each year's final dataset, preliminary statistics should be generated using the PC-QC program (provided by BSB) or by other means. Data collection problems should be identified promptly so that corrective action can be taken before the next and successive months' interviewing begins.

Objectives have been established for the BRFSS for a number of quality indicators. These objectives should not be regarded as minimal performance levels but rather as benchmarks. If an objective is not met consistently, ways to improve performance in this area should be tried. If the objective is still not being met, the indicator should be monitored for change over time rather than the absolute level that is achieved.

Quality assurance indicators that are routinely assembled and assessed include certain statistics related to the interviewer. Supervisors must keep statistics on the performance of each interviewer and BSB recommends the following, at a minimum:

- Ratio of refused interviews to completed interviews.
- Number of completed interviews per hour of interviewing time.
- Frequency distribution of dispositions (included in PC-QC reports). When routine indicators suggest that an interviewer is having performance problems, a frequency distribution of dispositions for each interviewer can be useful.

The following statistics will be appropriate depending on how responsibilities are distributed among the interviewers:

- Number of dialings per hour.
- Completed interviews on callbacks of initial refusals.

Other useful statistics for quality assurance are

- Question-response frequencies.
- Frequency distribution of dispositions.
- Response rate (CASRO and upper bound).
- Survey efficiency.
- Percent of completed interviews on the first day.
- Percent of wind-down interviews.
- Respondent sex distribution.
- Percent of refused interviews.
- Percent of ring-no-answer dispositions.
- Percent of selected respondent not available dispositions.
- Percent of line-busy dispositions.

Data Submission

Clean, edited data are to be submitted to BSB within 30 days of the end of the interviewing month. The use of electronic transmission to BSB via the Internet or WONDER for the final edits reduces the time between data collection and data correction. Electronic transmission also reduces the potential for future data collection errors.

Appendix C
BRFSS Training

The training of supervisory and interviewing staff for the Behavioral Risk Factor Surveillance System (BRFSS) is to be conducted comparably across states with the BRFSS coordinator and all other personnel involved in the data collection. This Appendix on "Training" focuses principally on data collection activities implementing the paper-pencil techniques and using the Waksberg-Mitofsky sampling design. Several types of training are conducted:

- Initial training of supervisors.
- Initial training of interviewers.
- Training in the use of the computer-assisted interviewing (CATI) system.
- Training for the new surveillance year.
- Refresher training.
- Training of contractors.

Initial Supervisor Training

Initial training of supervisors requires approximately four hours, plus time for computer and CATI instruction. Supervisor training should precede interviewer training so that supervisors can assist in training interviewers. Supervisory training generally includes the following topics:

- Overview of the BRFSS.
- Description of roles in a surveillance system.
- Review of the questionnaire, respondent selection procedures, Rules of Replacement, and wind-down.
- Assignment of clusters, refusals, appointment assignments, and tracking.
- Quality assurance.
- Computer training.

Because supervisors participate in the more detailed interviewer training, much of the supervisory training is in written summary form. Each supervisor should reference Chapter 5: Guide for BRFSS Supervisors in the user’s guide.

SAMPLE AGENDA FOR SUPERVISOR TRAINING

Topic	Discussion Points
Overview	Surveillance overview States participating in the BRFSS Average sample size Average budget Review of roles Supervisor responsibilities
Questionnaire	Review of the questionnaire Pronunciation of unfamiliar and medical terms Respondent selection Coding and Rules of Replacement Wind-down
Administration	Telephone terminology Cluster contact sheet Refusal and appointment assignments Tracking surveillance status Central work space
Quality Assurance	Editing Monitoring Calculating quality control and performance indicators Post data collection procedures

Initial Interviewer Training

Initial training of interviewers requires approximately seven hours. Training can be completed in one day, but distributing the training over two to three days will yield better results. Interviewers should be trained as a group. They need to get to know one another, and they benefit from group learning; a group approach is also more time efficient.

The training approach is based on an assessment of the skills and knowledge that an interviewer needs before dialing the first number. Respondents are often interested in learning more about the survey than is routinely explained in the introduction to the interview. Most often it is a matter of general curiosity. At other times, whether respondents agree to be interviewed depends on the answers they receive to their questions. Thus, from the standpoint of public relations, as well as successful interviewing, the interviewing staff need to know more about the survey and the surveillance process than only what questions are included and how to ask them. As part of their training, interviewers should be given considerable background on survey objectives and other likely respondent concerns.

Interviewer training should include the following topics:

- Work schedules, pay procedures, and workstation locations.
- Behavioral risks and their relationship to the leading causes of death.
- Surveillance overview.
- BRFSS overview.
- Interviewing roles and techniques.
- Respondent selection procedures.
- BRFSS questionnaire, common response problems, and procedures.
- Telephone operation and CATI demonstration.

After the questionnaire has been reviewed, coding procedures and dispositions are explained, and pointers are given on how to convert a refused interview to a complete interview, trainees pair off and practice interviewing each other. Trainers observe and coach the interviewers, paying special attention to each interviewer's ability to follow instructions, maintain an even interviewing pace with a pleasant tone of voice, and probe for information when necessary. The trainee then goes through a simulation of interviewing friends, relatives, and numbers taken from the local telephone directory.

The final session, generally scheduled for the evening before the start of data collection, is a mock interview exercise. Trainees call residential numbers selected from the telephone book. The respondent selection chart is not used. Instead, the trainees attempt to interview any adult in the household. This practice session should last several hours to ensure that the supervisors have opportunities to listen using the monitoring system, and to provide feedback to each interviewer.

In addition to mock interviewing, the entire interviewing staff should review the questionnaire as a group. This should be done before any "real time" interviewing is done. Ample time spent in advance of the actual calls will yield a well-trained, committed staff.

Each interviewer should have a copy of Chapter 6: Guide for BRFSS Interviewers in this user's guide for reference. The chapter includes suggested answers to respondents' questions about the BRFSS and an inventory of frequently offered reasons why respondents refuse to participate and ways to counteract them.

SAMPLE AGENDA FOR INTERVIEWER TRAINING

Topic	Discussion Points
Administrative Issues	Introductions Work schedules, comfort items, breaks Building access, parking, security
Overview	Behavioral risks, leading causes of death: national, state Why do surveillance Surveillance methods BRFSS overview Sample designs
Role Description	Review of roles Interviewer responsibilities Interviewing rules Voice personality Relating to the supervisor Confidentiality/anonymity Bias
Questionnaire	Review of the questions Definition of a household Respondent selection Pacing and probing Recording responses
Codes and Dispositions	Review of codes and dispositions Rules of Replacement Refusal procedures Other procedures
Surveillance Follow-up	Recording call attempts Reviewing completed work
Telephone Operation and Computer Instruction Practice Sessions	Mock interviewing Live interviewing

CATI Training

The Behavioral Surveillance Branch (BSB) provides training in Ci3 CATI as needed. States should contact their technical advisor for information on training.

Training for the New Surveillance Year

Each year, prior to the interviewing period in January, the BRFSS coordinator reviews the new questionnaire with supervisors and interviewers. Additional training is also recommended whenever there is a change of staff.

Refresher Training

Refresher training is a shortened version of initial training and should emphasize a train-the-trainer approach. Although exceptions have been made, BSB staff are often not in a position to retrain state staff. Retraining should be worked out in advance to combine the efforts of all staff within the state and at CDC. The guidelines used for retraining should follow the initial training agenda and should include any addition and updates regarding sample design, assignment of codes, etc.

Training of Contractors

BSB staff will train contractors in data collection according to the BRFSS protocol. Health department staff should determine the level of training required for contractors.

Motivation and Support of Interviewers

As in most work, it is desirable to have low staff turnover in survey work. However, keeping trained, talented interviewers happy and productive on the job is a difficult task. Survey supervisors who have little turnover invariably have been successful only after numerous trial-and-error attempts at discovering the balance between acknowledging commendable work and patronizing mediocre performance.

Interviewers have simple, practical objectives that should not be overlooked, such as having a proper work environment, being treated with respect, knowing what is expected of them, and being recognized for producing acceptable or above-average work. Most often, this involves allowing them to make mistakes and giving them the necessary training and opportunities to correct honest errors. This level of concern is often in itself a powerful motivator.

It is important to try a variety of methods to motivate the interviewers and keep them interested in their work. Following are some approaches that have been tried and can be considered attempts to motivate and support an interviewer. Do not hesitate to put a new spin on some old standards.

Rewards and Incentives

Time away from the job is regularly used as a motivator for doing good work. Break "points" or "bucks"—small increments of time that can be used for an extended break or to shorten a calling shift—are a common reward for good performance.

Other rewards or incentives to motivate may be seen as nice little extras, such as consumable goods. For example, one supervisor buys soda or a candy bar for an interviewer who completes a difficult call or converts a refusal. Another supervisor purchased pizza for the entire work shift that completed the most surveys during their shift. Clearly, there would be numerous examples of rewards of this type. These types of rewards also build camaraderie within the survey group.

One state has initiated a program to honor the employee of the month based on the number of completed interviews or refusal conversions from the previous month's survey. Another project has a survey center newsletter with a column devoted each quarter to an outstanding BRFSS interviewer. Seeing your picture or name in a printed medium often produces a lasting effect on sustained high performance. Any "highlighting" of this type can bring the interviewing staff together in a special way.

An example of incentives is the cash award, whereby an interviewer can gain extra money for the number of surveys completed during a shift. Because of the heightened potential for mismanagement and falsification and loss of data, a cash award is not a motivational technique used by many survey laboratories. For this kind of incentive to have positive results, it must only be undertaken with close and continued monitoring.

Consider the Group

Cohesiveness and camaraderie among interviewers can be accomplished a number of ways. The underlining factor is their sharing in the work and in the rewards of accomplishing the task. The task can be related to the survey itself or to another kind of activity that brings the staff together for a common purpose.

An example of this is establishing the projected quota of work at the start of the work shift. By having a group effort satisfy the quota, all join in any reward. For example, the reward could be extra time away from the job or banked and used later. A reinforcing aspect of this approach is having the interviewers decide in advance, in concert with the supervisor, what the benefits will be for meeting the established quota. Also, the interviewers could contribute toward the purchase of a group meal to be delivered and enjoyed together during a break when scheduling conflicts prevent an evening meal. Finally, if time is perceived as more valuable, the interviewers could earn time away from the telephone.

One state conducted contests in which all interviewers participated equally. For example, in one contest, staff members entered their designs or a logo for the survey lab. This type of activity also has potential for motivating and supporting staff.

Routinely gathering staff together before a shift begins to solicit their opinion, ask for advice, or just receive special feedback creates the opportunity for group learning that can be highly supportive and motivational. These short discussions allow the interviewers to participate in reaching decisions that affect them. It won't happen often, but what may be even more supportive for an interviewer is to have been asked how a question could be worded better and then see the wording changed on future survey instruments.

Performance Issues Need Special Handling

All interviewers should be given the same opportunities for recognition and to enhance their skills. Their performance must be closely monitored, and any type of special recognition should always be tied to solid performance evaluations. (See the Interviewer's Monitoring Form on the next page.) This process serves to significantly boost self-esteem and sustain continued pride in personal work.

Because the supervisor may work with many interviewers whose skills and level of performance vary, he or she must guard against rewarding the same individuals again and again and overlooking the performance of other individuals. Rewarding those who perform the best makes sense, except when the special recognition begins to isolate these individuals from the group. Also, if the same person is repeatedly rewarded to the exclusion of other staff, the supervisor must be sensitive to how this is perceived by other interviewers. Such awards can be demeaning to staff who are working just as hard but, for any variety of reasons, are not able to conduct as many interviews. The supervisor should consider that rewards frequently made to the same individuals can rob them of their incentive to perform better or instill in them the greater desire to receive the reward by creating fraudulent interviews and faulty data. Some survey labs simply prefer not to be involved in any material incentive programs. They provide their interviewers with an enjoyable place to work, a challenging job, and an adequate paycheck.

Very often, an interviewer will be promoted to a different area as a result of exemplary job performance. Being chosen to do something else (e.g., monitor or assist in survey administration) can be seen as a reward for a job well done and carries the expectation that the person will perform as well in the new position as in the previous position.

Overall, the supervisor should strive to provide an environment and incentives that are good for everyone. The supervisor must also be alert and ensure that all interviewers are considered individually and treated according to their particular needs and that their contributions are not overlooked.

RETURN TO SUPERVISOR

Interviewer's Monitoring Form

Interviewer ID _____

Date _____ Monitor _____

State/Community _____

Instruction: After one hour, rate each interviewer's characteristics on a scale from 1 to 5, 1 being the lowest rating and 5 being the highest rating.

Attitude						
Is courteous and polite	•	1	2	3	4	5
Sounds confident	•	1	2	3	4	5
Does not sound bored	•	1	2	3	4	5
Knows pronunciations	•	1	2	3	4	5
Speech is clear	•	1	2	3	4	5
Does not hurry interviewee	•	1	2	3	4	5
Does not sound sarcastic	•	1	2	3	4	5
Sounds interested in responses	•	1	2	3	4	5
Interviewing Techniques						
Attempts to make appointments with appropriate respondents	•	1	2	3	4	5
Executes respondent selection process smoothly	•	1	2	3	4	5
Reads verbatim	•	1	2	3	4	5
Has good interviewing pace	•	1	2	3	4	5
Allows respondent to ramble	•	1	2	3	4	5
Interview flows well	•	1	2	3	4	5
Verifies telephone number	•	1	2	3	4	5
Goes from introduction directly into first questions	•	1	2	3	4	5
Persuades respondent to continue	•	1	2	3	4	5
Follows skip patterns smoothly	•	1	2	3	4	5
Answers respondent's questions	•	1	2	3	4	5
Smooth closing of the interview	•	1	2	3	4	5
Probing						
Probes for more accurate information	•	1	2	3	4	5
Knows when to probe	•	1	2	3	4	5
Uses neutral probes	•	1	2	3	4	5
Uses multiple probes	•	1	2	3	4	5
Encourages responses when respondent seems reluctant	•	1	2	3	4	5

Would you want to be interviewed by this person on this survey? YES NO

Comments:

Appendix D
Questionnaire Development

Designing a surveillance questionnaire is as much a craft as it is a science and is an ongoing process that is complex and time consuming. Although there is considerable academic literature on the design of survey instruments, good questionnaires are the product of years of experience in asking questions. Despite this, many people involved in the development of questionnaires feel capable of "improving" or criticizing a questionnaire. The result is that the questionnaires used in many surveys are a mixture of compromise and necessity. The questionnaire for the Behavioral Risk Factor Surveillance System (BRFSS) strives to be the best instrument that can be derived from this process.

Validity and Reliability

The usefulness of any survey data depends on the accuracy of the data collected. In turn, accuracy of survey data is dependent on the validity and reliability of the survey instrument.

A means of determining validity is to compare the results from different surveys that ask similar questions of comparable people. Estimates from the BRFSS for selected health-related behaviors compare favorably with similar data from in-person and observational surveys. See summary tables of Methodologic Studies beginning on page D–12; reprints are available from BSB.

Reliability refers to the degree to which a person will give the same answer to a question if asked twice on different occasions. Studies have been done that show many BRFSS questions are reliable.

To obtain valid and reliable responses to state-added questions, the states can use questions from existing instruments that have already been tested. If appropriate questions do not exist or have not been tested, states are encouraged to pretest questions before using them on the BRFSS. For more detailed information on validity and reliability of the BRFSS, see the Bibliography.

Questionnaire Rationale

The following points outline the rationale used in the design of the BRFSS questionnaire:

- The core questionnaire is brief enough to allow the states to add their own questions at the end without creating an unwieldy data collection instrument.
- Questions are designed to yield information on the personal behaviors of respondents rather than those of other household members.

- Questions relate to health behaviors. Nonbehavioral question items, such as demographic characteristics, knowledge, attitudes, and opinions, should explain, enhance, or otherwise provide more in-depth understanding of health-related behaviors.
- Questions that relate to the leading causes of premature death and disability in the United States have priority.
- The subject matter of the questions is not so sensitive as to seriously distort responses.
- Questions are relevant to *Healthy People 2000* objectives.
- There is a need for state-specific measurement of questionnaire items.
- There is a need to measure questionnaire items over time.

Questionnaire Components and Content

The BRFSS questionnaire consists of three components:

- Core component, which comprises fixed core questions, rotating core questions, and emerging issues questions asked by all states.
- Optional CDC-supported modules, any, all, or none of which may be included.
- Optional state-added questions developed or acquired and used by the individual states.

The core components are used without modification in either question wording or ordering.

> BRFSS PROTOCOL SPECIFIES THAT all states must ask the core component questions without modification. States may choose to add any, all, or none of the optional modules. States may add any additional question(s) of their choice at the end of the questionnaire.

Limited insertion of relevant state-added questions into the core component is occasionally allowed. Such exceptions must be agreed upon in consultation with the Behavioral Surveillance Branch (BSB). States that want to request an exception must submit their proposed modifications to their technical advisor. BSB will review the request and notify the state of the decision.

BSB supports core component questions with Ci3 CATI programming, PC-EDITS programming, and state-specific annual data tables.

States are encouraged to gather data on additional topics related to their specific health priorities through the use of state-added questions. States may develop their own questions for these topics

or select questions previously used in survey research. BSB does not provide CATI programming, PC-EDITS programming, or standard tabulations for state-added questions.

The questionnaire is used without changes for one year (January–December). Before 1993, the contents of the core and optional components of the questionnaire were determined annually by BSB and the states. Each year, changes were proposed, debated, and agreed upon. A long-term plan for the content of the questionnaire was adopted in 1992 and implemented in 1993.

The plan divided the core into a fixed section and a rotating section. The latter section contains different topics that are rotated into the core according to the following annual schedule.

Fixed Core			**Rotating Core I (odd years)**		**Rotating Core II (even years)**	
Topic		No. Ques.	Topic	No. Ques.	Topic	No. Ques.
Health status		4	Hypertension	3	Physical activity	10
Health insurance		3	Injury	5	Fruits & vegetables	6
Routine checkup		1	Alcohol	5	Weight control	6
Diabetes		1	Immunizations	2		
Smoking		5	Colorectal screening	4		
Pregnancy		1	Cholesterol	3		
Women's health		10				
HIV/AIDS		14				
Demographics		14				
Total	Women	53	Total	22	Total	22
	Men	42				

In the years that rotating core components are not used in the core, they are supported as optional modules through CDC's provision of Ci3 CATI programming, PC-EDITS programming, and printed data tables to states that use them.

There is also a special category of core questions, *emerging issues*. Up to five questions can be asked each year on one or more issues not included in the fixed or rotating core or the optional modules. After one year, these questions are discontinued. If they have proved valuable, they may be considered for permanent addition to the fixed core, rotating core, and optional module.

The long-term questionnaire plan, the content of the core, and the optional modules are reviewed annually by BSB and the BRFSS Working Group. Based on recommendations from the working group, a draft questionnaire and proposed optional modules are prepared for review and discussion by all BRFSS coordinators at the annual BRFSS conference. BSB reviews input

received during the annual conference, consults with the working group, arranges for cognitive testing of proposed new elements, field tests a prototype questionnaire, and, by September of each year, releases to the states the final draft of the core and optional modules that will be supported for the next calendar year. States then select their optional modules and choose any state-added questions that they desire. Each state constructs a paper version of its questionnaire. The core components are asked first, optional modules are next, and state-added questions are last. This ordering ensures that a comparable questionnaire, with the exception of state-added questions, is administered to respondents in all states.

The core and the optional module questions that have been used each year since 1989 are contained in Appendix H: Questionnaire Inventory.

Modifications to the Core Components

Historically, questions for the core and modules were modeled or copied from other health surveys. As needs for data grew, the scope of the BRFSS questionnaire necessarily expanded. In the wake of that expansion, modifications to the core components were introduced by states or other programs at CDC. The BRFSS Working Group has greatly facilitated the process of considering those changes. A procedure has not been formally established for introducing elements into the core component from outside sources and has only recently been recognized as a shortcoming. However, with increasing frequency, requests are made from sources outside of CDC and state departments of health for adding elements into the core component. Whatever means of processing these requests ultimately evolves, it must be fluid to accommodate requests being received at different times from different sources and with differing levels of financial and political support.

Currently, requests external to CDC are received by calls and letters either to BSB, the Division of Adult and Community Health, or to other components within CDC. The requests are reviewed within BSB.

Requests from states, from within CDC, and from programs outside CDC are reviewed and considered by the program within CDC that is most involved in the subject area. A decision is made by the program at that point as to whether a formal proposal will be made to BSB to consider adding questions to or modifying existing questions in the core or optional modules. After consideration within BSB, and after any appropriate discussion with the originating program, a decision is made as to whether a formal presentation will be made to the BRFSS Working Group to consider presenting the proposal at the annual conference. Either within the program or within BSB, if the decision is made to forego addition or modification, the requester is notified of the decision in person or by telephone or E-mail message.

If the proposal is carried forward to the BRFSS Working Group, it is presented to the full assembly of the working group and discussed within the structure of that meeting. Program representatives provide support for the proposal and state representatives provide input and

consideration on behalf of the states they represent. Subsequent to the working group presentation and discussion, final review is conducted within BSB and a decision is made whether the proposal should be made to states during the annual conference. The requester is notified when a decision is made to forego addition or modification.

If the proposal is accepted at this point, input from the originating program and feedback from the working group are incorporated into a formal presentation to all state coordinators in attendance at the annual conference. The conference presentation is similar to that made to the working group. Afterwards, quantitative measures of state reaction are gathered from the conference sessions and reviewed in the context of all preceding presentations and discussion and any other available feedback from programs and states. A decision is made at this point in BSB regarding the acceptance or rejection of the proposal. The requesting program representative is notified of the decision.

If the proposal is accepted, it is then subjected to cognitive and field testing. Recommendations from these processes are considered within BSB along with input from the supporting program, if available. Decisions are made regarding the final form of the new question or proposed modification, and it is included in the new questionnaire for at least one year.

Adding State-Specific Questions

New questionnaires are implemented in January and usually remain unchanged throughout the year. However, the flexibility of state-added questions permits additions, changes, and deletions at any time during the year. States are encouraged to ask about additional topics related to their specific health priorities through the use of state-added questions, and most states have added questions to the basic BRFSS questionnaire.

States may develop their own questions for these topics or avoid question design problems by using standardized questions that have been previously used in survey research.

States must be judicious when selecting state-specific questions to keep the questionnaire at a reasonable length. The total length of the questionnaire is a key factor in deciding on the number of questions to add. Although there is no absolute time limit for a telephone interview, lengthy interviews increase the cost of data collection and the risk that respondents will terminate an interview before the last question. Consequently, requests by programs for optional modules or state-added questions should be carefully considered to avoid a lengthy questionnaire.

An additional consideration in this process is analysis of data. Programs should be expected to support the inclusion of their questions by providing funding to defray the increased costs of interviewing and analysis, unless they have the resources to undertake analysis within their own programs. BSB supports core and module questions with Ci3 CATI programming, PC-EDITS programming, and state-specific annual data tables, but it does not routinely provide states with PC-EDITS programming or printed tables for state-added questions. BSB does provide Ci3

CATI programming of state-added questions for states conducting the BRFSS in-house. Data tables containing cross-tabulations of specific state-added questions by demographic variables are available by special request from the state.

> **Note:** PC-EDITS does not edit state-added questions. Depending on the number and complexity of such questions, the states may have to check their data by using programming they develop on their own.

Basic Question Design

Questions already used on other surveys are often available for the chosen topics, and states are encouraged to use existing standardized questions. Still, states frequently have to develop their own questions. The following are some principles of basic question design:

- Questions should have a specific objective that relates directly to the purpose of the study.
- Questions should be reliable and valid. A question is reliable if it evokes consistent responses. It is valid if it actually measures what it intends to measure.
- Questions should be phrased and structured to avoid bias. If a question has been worded without bias, it should be as easy to give one response as to give another. The language should be simple and clear, with no ambiguous terms.
- Each question should be restricted to one issue. Complex concepts should be broken down into more than one question.
- Aided recall combats the problem of underreporting by including memory cues within the body of the question. For example, a question about exercise habits could include the mention of several different types of physical activities.

The following box contains information that may be useful in developing a state's own criteria for including state-specific questions to the annual BRFSS questionnaire:

Suggested Criteria for Including State-Specific Questions in the BRFSS Questionnaire

- Relationship of the variable to personal behaviors linked to promoting health, preventing disease, and reducing health risks.
- The question should be suitable for telephone interviewing.
- Pertinence of the variable to *Healthy People 2000* objectives or priority health issues.
- Need to measure the variable over time.
- Need to have state-specific data.
- Degree to which alternative data sources are unsatisfactory.
- Degree to which the prevalence of the variable will be adequate for planned analyses.
- Relationship of the variable to other questionnaire topics.
- Expected validity of the question.
- Financial and technical resources available for support of the question.
- Effect on questionnaire length, considering both the total number of questions and the proportion of respondents to be queried.
- Benefit to the state.

Questions that are read over the telephone cannot be as long as those that might be included in a mail survey or face-to-face interview. Longer questions can easily become complicated questions. Questions should be limited to one issue and should use simple wording.

When asking for recall of past events, it is important to consider the significance of the event to the respondent. If the activity is of moderate personal significance (e.g., drinking alcoholic beverages, physical checkups), the recall period should be restricted to within one month. For activities of greater personal significance (e.g., quitting smoking, income), the recall period can be lengthened.

If the question is threatening to the respondent (i.e., about socially undesirable behavior), several techniques can be used to reduce underreporting of behavior. One technique is to imply, without leading, that the activity is a common practice (e.g., driving after drinking). Another is to embed the threatening topic in a list of topics that are relatively less threatening (e.g., violence questions).

To avoid the opposite problem—the overreporting of socially desirable behavior—it is more effective to ask about practices taking place now than those over an extended period of time. The time frame would be dependent on the behavior.

Interview questions are generally either open or closed, or some variation of the two. Open questions allow the respondent to provide any answer (e.g., "What did you eat for breakfast this morning?"). The responses to open questions are difficult to code or even summarize in a study of any size.

Closed questions provide the respondent with a limited number of alternative answers from which to choose (e.g., "How often do you add salt to your food at the table? Would you say most

of the time, sometimes, rarely or never?"). The most common form of closed interview question has an answer of either "yes" or "no."

Answer categories should not overlap. The questionnaire should provide for all possible responses to closed questions, including "refused" and "don't know" as response options that are not read to the respondent.

Questions should differ in structure. Variability helps maintain respondent's and interviewer's interest and alertness.

Questions also have to be acceptable to several groups of people besides those who are called during data collection.

- Public health planners. Potential users of data should be involved in question development. Assistance should be sought from other groups who have gathered the same information. Standardized questions should be used if available.
- Interviewers. Because interviewers read each question aloud, the questions must sound like normal speech. They should be direct and clear, with no jargon or unfamiliar technical terms. Response categories must be easy to code.
- Data processors. Data processors can ensure that the response-coding scheme is consistent and based on clear, logical distinctions among possible answers.
- Data analysts and research epidemiologists. These analysts can provide advice on the kinds of data needed to meet study objectives and help determine the appropriate sample size.

Use of Standardized Questions

Problems in question design can be avoided by using standardized questions, which have been developed, field-tested, and administered (usually many times) by others. In addition to these obvious advantages, the use of standardized questions permits comparisons among studies. One source of standardized questions is the optional modules used previously in the BRFSS. BSB also maintains a file, indexed by topic, of state-added questions used in past years.

Cognitive Testing of the Questionnaire

In 1997, the new elements of the BRFSS questionnaire began to be subjected to cognitive testing conducted at the survey research laboratories at the National Center for Health Statistics. Telephone interviews are conducted using a paper instrument and are not interrupted by "traditional cognitive probing." Instead, notes are made of any arising issues to be pursued in a debriefing that follows the actual testing. Interviewer instructions and debriefing suggestions appear in italics thoughout the questionnaire.

Ideally, respondents will provide answers to the survey questions during the initial interview. However, the interviewers involved in the cognitive testing try not to become fixated on getting responses that can be coded, because they also want to pick up clues about perceived difficulties the respondents have in understanding questions, selecting relevant responses, etc. As a general strategy, if respondents provide responses that cannot be coded, interviewers verbally acknowledge them and, if appropriate, follow up with a reorienting probe, such as repeating the question, asking if the respondent can put the answer in terms of the response categories, and other similar tactics.

Questions of particular interest are highlighted in some way on the questionnaire so as to be easily noted by the interviewer (e.g., preceded by an asterisk).

Questionnaire Pretesting

It is advisable and recommended that any new questions, questionnaires, or revised question wording be pretested at least once and then subjected to a dry run prior to using them in a survey. This would be in addition to, and subsequent to, first conducting a small pretest among your own staff.

If time and resources allow, capture at least 200 surveys. The larger pretest sample size provides a better sense of the stability of the instrument and of the distribution of responses. Being able to anticipate the distribution of responses can be very useful in designing analytic tables or identifying situations where analysis of the given data will not be possible. For example, look at the responses received, and then ask the question: "What can be done with this information?"

Unless otherwise called for, pretesting telephone numbers can be taken directly from a local telephone directory, thereby saving the time and energy associated with generating a list of numbers, as well as long-distance costs. The pretest is usually conducted over a two- to three-day period. Paper questionnaires are used so that interviewers can make as many notes as necessary during the interviews.

> **Note:** It is imperative that the question author(s) be accessible to answer questions and to clarify issues arising during the survey.

Go through the respondent selection exercise (for the practice and the stall time), but speak to whoever answers the telephone. If you see or sense that the pretesting is becoming entirely too gender dominant (interviewing mostly men or mostly women, to an extreme), when possible, ask for the other sex adult. This will allow you to more adequately test the instrument among both sexes, the objective being to test the questionnaire and not survey a population. Do not make successive attempts to reach any given number or respondent, rely on interviewing who is available. Allowing adequate time for pretesting is important.

Meet with interviewers at the end of work shifts, if necessary, and at the end of the pretest period to share notes and comments, and to provide feedback regarding their impressions of the instrument and any insights and suggestions they have to improve it.

When time and resources allow, ask respondents what they think about the issues you are pretesting. If you don't do this, people will answer only as they understood or interpreted the question. If questions are being perceived in widely different contexts, your efforts to collect data and pretest will be largely wasted. For example, after a question or short series of questions, ask the respondent

- What did you think about this question?
- What are your thoughts on the wording of this question?
- Do you think the question on XX should have been asked prior to the question on XX?
- What does (a certain) word mean to you?
- How did you interpret this question to formulate your response?
- What did this question mean to you?

Of course, this exercise can and should be conducted among your staff prior to the public pretest.

Although resources seldom allow for "think aloud" interviews or focus groups, but, when possible, they can be be enormously enlightening and productive in developing and testing new question(naire)s.

Usually there is no need to drastically change the instrument; however, if there is such a need, the instrument should be retested and then subjected to another simulated survey session. Simply because one, or even a few, respondent has a problem with a question does not necessarily mean the question needs to be changed. In the final analysis, common sense will be necessary to make these judgments.

Several issues may arise on the following characteristics of the instrument:

- Question ordering—use two instruments simultaneously (or whatever number is necessary to resolve such questions—or placement) and analyze your results afterwards.
- Question wording and clarity—are resolved through discussions among the interviewers and author(s) of the question(s).
- Question appropriateness—is resolved by the question(s) author(s).
- Skip patterns and the adequacy of response categories—are raised and most likely resolved through discussions among the interviewers and the author(s).

When time and resources do not allow for proper or even minimal pretesting of questions, using these same guidelines, consider conducting a pretest of a single question or even a small set of questions at the end of your normal BRFSS survey period.

Suggested Reading

U.S. Department of Health and Human Services. *Healthy People 2000: National Health Promotion and Disease Prevention Objectives.* Washington, DC: U.S. Department of Health and Human Services, Public Health Service, 1991. DHHS Publication No. (PHS) 91-50212.

METHODOLOGIC STUDIES OF THE BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM (BRFSS)

Author and Year	Location	Number of Respondents	Summary of Findings
General Methodologic Studies [see also Bowlin (1996) under Cardiovascular Disease]			
Shea (1991b)	New York	145	*Description:* 1989 study of reliability for demographic and risk factors among Blacks, Whites, and Hispanics in New York City. *Findings:* Prevalence estimates were highly consistent at both time periods. Individual level test-retest reliability measures were high (Kappa >0.60) for 19 demographic and risk factors, intermediate for food consumption measures (0.40–0.76), lowest for routine checkup and blood pressure check in past two years (Kappa = 0.54 and 0.23). Consistent reliability across all three ethnic groups.
Stein et al. (1993)	Massachusetts	210	*Description:* 1992 reliability study of multiple BRFSS questions from a statewide sample and an oversample of Blacks and Hispanics. *Findings:* No statistically significant differences for prevalence estimates for any demographic or risk factors. Individual level reliability for demographics slightly lower among minorities than among whites but still high (>0.60), but >0.70 for nearly all risk factors in all populations. Lowest individual level (but not group level) reliability for drinking and driving, 60+ drinks per month, and when last had blood pressure checked.
Brownson et al. (1994)	Missouri	222	*Description:* 1993 study of reliability of multiple BRFSS questions from a statewide sample. *Findings:* Individual level reliability estimates for demographics, chronic conditions, and risk factors were high (Kappa values 0.82–1.00). Addressed core BRFSS subjects of hypertension, diabetes, body mass index, smoking status, mammography, Pap tests, and digital rectal examination.

Author and Year	Location	Number of Respondents	Summary of Findings
Stein et al. (1995)	Massachusetts	448	*Description:* 1992 study of reliability of 7 demographic and 19 risk factors from a statewide sample. *Findings:* Median discordance in individual level risk estimates was 7.8% (range: 1.2%–21.8%), but was symmetrical (i.e., some estimates at second interviews were lower and some were higher). Median Kappa value across all questions was 0.75 (range: 0.38–0.90). Lowest individual concordances were recency of blood pressure examination (Kappa = 0.54), heavy alcohol consumption (Kappa = 0.31), and drinking and driving (0.30).
Stein et al. (1996)	Massachusetts	270	*Description:* 1992 study of reliability of women's health questions from a statewide sample. This study examined the reliability of BRFSS questions on mammography, clinical breast exam, Pap tests, hysterectomy, and pregnancy status. *Findings:* Based on Kappa statistics, concordance exceeded 80% for all areas (range: 81% for time interval since last mammogram to 97% for ever had a Pap test).
Pearson et al. (1994)	Montana	410	*Description:* 1987–1989 personal interviews of American Indians aged 18–49 living on or near three Montana reservations to examine characteristics of respondents with and without telephones. *Findings:* Persons without telephones were more likely to report not having cholesterol checked in past year (odds ratio [OR] = 2.1), chronic drinking (OR = 2.1), and binge drinking (OR=1.9) even after adjusting for demographic factors. Estimates based on telephone interviews underestimate prevalence for this population.

Author and Year	Location	Number of Respondents	Summary of Findings
Gentry et al. (1985)	29 states	22,236	*Description:* Comparison of pooled BRFSS estimates on alcohol consumption, smoking, overweight, hypertension, and seatbelt use with national estimates from a 1979 National Institute on Alcohol Abuse and Alcoholism study on alcohol consumption; a 1979 National Heart, Lung, and Blood Institute survey; the 1979 National Survey of Personal Health Practices and Consequences; and the 1980 National Health Interview Survey. *Findings:* BRFSS estimates very close to national estimates for all of these risk factors (within 1–2 percentage points) except for nonuse of safety belts (7 percentage-point difference).
Alcohol (including drinking and driving)			
Anda et al. (1989) [see also under Smoking]	Michigan	1,492 telephone interviews 2,802 in-person interviews	*Description:* 1982 and 1983 surveys in Michigan comparing BRFSS estimates with personal interviews for binge drinking (5+ drinks on one or more occasions). *Findings:* Estimates of binge drinking were 0.4 percentage points lower for men and 1.0 percentage points higher for women in the BRFSS.
Smith et al. (1990)	21 states	Median: 1,177 Range: 628–2,386	*Description:* Correlation of state self-reported alcohol prevalence with state alcohol consumption data for 1985. *Findings:* Correlation coefficients between BRFSS and alcohol consumption data were generally high (0.81 for per capita alcohol consumption, 0.74 for chronic drinking (60+ drinks/month), and 0.51 for drinking and driving).

Author and Year	Location	Number of Respondents	Summary of Findings
Robertson (1992) [see also under Safety Belt Use]	13 states	Not reported	*Description:* Comparison of 1988 BRFSS estimates for drinking and driving with percentage of fatally injured drivers from the Fatal Accident Reporting System (FARS) with any blood alcohol or illegal levels of blood alcohol. *Findings:* Low correlation between BRFSS estimates for drinking and driving and FARS data (r^2 = 0.20 for illegal alcohol levels and 0.16 for any blood alcohol).
Serdula et al. (in press)	33 states	213,842	*Description:* Comparison of 1987–1988 BRFSS alcohol questions, which included beverage-specific estimates (e.g., separate questions on beer, wine, liquor), with 1989–1990 alcohol questions, which included only grouped questions on alcohol consumption. *Findings:* The mean number of drinks per month consumed per month among drinkers was substantially lower for the grouped alcohol beverage estimates compared with the beverage-specific estimates (37.0 vs. 29.6 for men, 17.0 vs. 13.9 for women). Prevalence of heavy drinking (>2 drinks per day for men, >1 drink per day for women) was also lower using the grouped questions (17.9% vs.10.8% for men, 15.0% vs. 10.3% for women).

Cardiovascular Disease (includes obesity, cholesterol level, hypertension, diabetes, and obesity)

Author and Year	Location	Number of Respondents	Summary of Findings
Jackson et al. (1992)	California	1,588 BRFSS respondents 1,512 Stanford study respondents	*Description:* Comparison of 1987 BRFSS survey with 1986 Stanford Five-City in-person study (personal interviews and physiologic measures). *Findings:* BRFSS estimates were similar to Stanford study estimates for smoking prevalence, number of cigarettes per day, self-reported cholesterol level, ever told blood pressure (BP) high, having been prescribed medication for BP, and compliance with taking BP medications. BRFSS estimates were 30 percentage points higher for respondents with hypertension reporting BP under control and BRFSS estimates were 1.0–2.2 points lower for body mass index.
Bowlin et al. (1993)	New York	626	*Description:* 1989–1990 study of BRFSS male and female respondents in upstate New York who had physiologic measurements taken for smoking, obesity, hypertension, diabetes, and elevated cholesterol. *Findings:* Compared with physiologic measures, BRFSS smoking estimates were 6–10 percentage points lower, obesity estimates were 10 percentage points lower, and prevalence of hypertension (told on >1 occasion had hypertension) was 14–16 percentage points lower. Diabetes prevalence was similar. Among persons reporting hypertension, BRFSS estimates were 38–50 percentage points lower for uncontrolled hypertension. BRFSS estimates were 32–33 percentage points lower than physiologic measures for elevated cholesterol levels.

Author and Year	Location	Number of Respondents	Summary of Findings
Sharlin et al. (1993)	South Dakota	418	*Description:* 1986 BRFSS survey estimates for hypertension (obtained via in-person interviews) compared with physiologic measures for American Indians living on a South Dakota reservation. *Findings:* BRFSS survey definition was "ever told" had hypertension; physiologic definition was BP of 140/90. Prevalence of hypertension was 11% from the survey and 18% from measurements. Overall sensitivity was low (50%) but specificity was 92%; positive predictive value: 43%.
Giles (1995)	South Carolina	2,714	*Description:* 1987 survey comparing BRFSS estimates with physiologic measures from the same population for hypertension. *Findings:* Definition was "ever told" had hypertension. Overall sensitivity and specificity for BRFSS was high among black and white males and females (sensitivity: 79%–82%; specificity: 88%–91%), but sensitivity was lower among persons <40 (range: 42%–68%).
Bowlin et al. (1996)	New York	626	*Description:* Reliability and validity study using 1989–1990 BRFSS male and female respondents in upstate New York for cardiovascular disease risk factors (see previous Bowlin et al. 1993 citation). *Findings:* Reliability of estimates was high (Kappa >0.60) for ever told blood pressure high, current smoking, number of cigarettes per day, diabetes, ever had cholesterol checked, trying to lose weight, weight, height, and time since last checkup. Reliability was lower (Kappa <0.50) for hypertension under control and numeric values for blood pressure. Sensitivity and specificity for BRFSS estimates were high for smoking, obesity, and diabetes (range: 75%–99%) but much lower for hypertension and elevated cholesterol level (range: 47%–82%).

Mammography

Author and Year	Location	Number of Respondents	Summary of Findings
Degnan et al. (1992)	North Carolina	973	*Description:* Compared BRFSS question on receipt of a mammogram in the past year with estimates based on records from institutions doing mammography in New Hanover county, NC, in 1987 and 1989 (note: this was a special study). *Findings:* Telephone estimates were higher than estimates from institutional records by 15 percentage points in 1987 and by 19 percentage points in 1989. Among 164 telephone respondents whose mammograms were confirmed, telescoping (remembering that mammography occurred more recently than it did) accounted for much of this difference.

Author and Year	Location	Number of Respondents	Summary of Findings
Nutrition			
Serdula et al. (1993)	Arizona, Georgia, Illinois, Wisconsin	1,052	*Description:* Study conducted in four locations between 1985–1991 compared six fruit and vegetable items on the BRFSS questionnaire with data from food frequency questionnaires and diet recalls/multiple diet records. *Findings:* Spearman correlation coefficients between BRFSS questions and food-frequency questionnaires were generally high (range: 0.47–0.57) but were slightly lower when compared to diet recalls/records (range: 0.29–0.54).
Smith-Warner et al. (1997)	Minnesota	101	*Description:* 1991–1994 study was a three-way comparison between BRFSS fruit/vegetable questions, food frequency surveys, and diet records. *Findings:* The BRFSS underestimated average daily fruit/vegetable consumption compared with the other methods (average for BRFSS = 3.8, food frequency questionnaire = 6.5, diet recall = 6.3). Correlation between the BRFSS and the food frequency questionnaires was 0.63 and between the BRFSS and diet records was 0.56.
Shea (1991a)	New York	145	*Description:* Unpublished data in this article report the correlation between BRFSS dietary fat/cholesterol consumption and the Willett food-frequency questionnaire. *Findings:* Correlation coefficients were very high between the two methods, ranging from 0.82 to 0.97.

Author and Year	Location	Number of Respondents	Summary of Findings
Coates et al. (1995)	Arizona, Georgia, Illinois, Wisconsin	1,052	*Description:* Study conducted in four locations between 1985–1991 compared dietary fat items on the BRFSS questionnaire with data from food frequency questionnaires and diet recalls/multiple diet records. *Findings:* Spearman correlation coefficients between BRFSS questions and food frequency questionnaires and diet recalls were moderate (range: 0.33–0.60). Correlations were lower for the percentage of energy intake derived from dietary fat (range: 0.26–0.42).
Serdula et al. (1995)	21 states	231,852	*Description:* Study examined the effects of changing the order of questions on self-reported weight and trying to lose weight, using 1985–1992 BRFSS data. *Findings:* The prevalence of women reporting that they were trying to lose weight increased from 41% to 48%, whereas for men, prevalence increased from 26% to 29% when the self-reported weight question preceded the trying to lose weight question.
Quality of Life			
Verbrugge et al. (1995)	49 states	20,029	*Description:* Compared self-rated health with persons having one or more disability days in the past 30 days. *Findings:* Respondents with lower levels of self-reported health were more likely to report having had 1+ disability days, even after demographic and other characteristics were controlled for. Odds ratios ranged from 1.3 for those with "very good" health to 4.9 for those reporting "poor" health.
Hennessy et al. (1994)	6 states	2,961	*Description:* Compared self-reported health status with the number of poor physical or mental health days using 1993 data from six states. *Findings:* Persons with 1+ poor physical or mental health days were much more likely to have lower levels of self-reported health.

Author and Year	Location	Number of Respondents	Summary of Findings
Newschaeffer (1997)	Missouri	401	*Description:* Compared individual level data for BRFSS questions with the Medical Outcomes Short Form 36 (SF-36) in 1996. *Findings:* BRFSS questions, especially those on self-reported health status and poor physical health days, correlate very strongly with the SF-36 score.
Beatty et al. (in press)	Maryland	18	*Description:* Cognitive testing of the four BRFSS core instrument quality of life questions. *Findings:* Nearly all subjects had difficulty providing a "number of days" poor physical or mental health response. Generally, they described how they felt without quantification. It is likely that responses to these questions are highly dependent on prompting by interviewers.
Safety Belt Use			
Centers for Disease Control (1988)	15 states	Not reported	*Description:* Comparison between self-reported BRFSS data with state observational data for 15 states in 1987. *Findings:* Median BRFSS estimates were 8 percentage points higher than observation study estimates when safety belt use was defined as "always use" and 21.5 percentage points higher when defined as "always or nearly always use" seat belts.
Robertson (1992) [see also under Alcohol]	13 states	Not reported	*Description:* Comparison of 1988 BRFSS estimates for safety belt use with observational studies conducted in cities within 13 states. *Findings:* Median BRFSS estimates were 21.5 percentage points higher when use was defined as "always or nearly always use" seat belts.

Author and Year	Location	Number of Respondents	Summary of Findings
Nelson (1996)	49 states in 1992 50 states in 1993	Median sample size: 2,008	*Description:* Comparison between 1992 and 1993 BRFSS estimates with state observational surveys of safety belt use. *Findings:* Median BRFSS estimates (based on "always use" definition) were 5% higher in 1992 and 2% higher in 1993 than observational estimates of safety belt use. Correlation between self-reported and observational data was high (r^2 = 0.59 in 1992 and 0.67 in 1993).
Smoking			
Anda (1989) [see also under Alcohol]	Michigan	1,492 telephone interviews 2,802 in-person interviews	*Description:* 1982 and 1983 surveys in Michigan comparing personal interviews with BRFSS estimates on current smoking. *Findings:* Estimates of current smoking prevalence were 2.1 percentage points lower for men and 1.3 percentage points lower for women in the BRFSS.
Arday et al. (in press)	22 states in 1985 40 states in 1989 49 states in 1992–1993	1985 BRFSS: 25,192 CPS: 51,368 1989 BRFSS: 66,719 CPS: 97,534 1992-1993 BRFSS: 195,227 CPS: 269,750	*Description:* Comparison of BRFSS state estimates for current smoking with estimates from the Census Bureau's Current Population Surveys (CPS); these surveys are conducted by telephone and in person. *Findings:* Overall BRFSS median estimates were slightly lower than CPS estimates (range across years: 0.7–2.0 percentage points lower), and this finding was greater for males than for females. CPS and BRFSS estimates were very similar for blacks (range for median estimates: 1.1–2.9 percentage points lower) and Hispanics (range for median estimates: 0.5–1.4 percentage points higher).

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Appendix E
Coding, Dispositions, and Rules of Replacement

Code	Rule
01 Completed interview (questions asked through age, race, and sex)	Do not replace.
02 Refused interview	Replace after second refusal or when a first-time refusal will not be called a second time.
03 Nonworking number	Usually recognized by a recording or fast-busy signal. Includes "number changed" recordings and numbers that "bridge." Call operator or repair service when in doubt. Replace.
04 Ring no answer	A normal telephone ring that no one answers (answering machines do not count as an answer) after (1) five calling occasions (each consisting of three attempts) and (2) the five occasions have a mixture of weekday, weeknight, and weekend calls. If possible, contact the telephone company repair service to verify that the number is in service. Replace.
05 Not a private residence	The person answering identifies the telephone number as a business or says "no" when asked "Is this a private residence?" Also use this disposition for institutions (e.g., government offices, educational facilities, dormitories, nursing homes, hospitals, and prisons), group homes (e.g., fraternities and sororities, half-way houses, and shelters), pagers, fax machines, and computer modems. Replace.
06 No eligible respondent at this number	The household does not include anyone 18 years of age or older (this does not mean the adults are away temporarily). Replace.

07	Selected respondent not available during the interviewing period	The selected respondent will not be available or could not be reached during the time you have allotted for the month's interviewing. Replace.
08	Language barrier	The selected respondent does not speak English well enough to be interviewed, and there are no interviewers who speak the respondent's language. Replace.
09	Interview terminated within questionnaire	A "hang up" at some point after the first question has been asked (this does not mean the respondent refused a particular question). Make another attempt to complete the questionnaire. Replace if second attempt is unsuccessful. If after a second attempt the respondent has completed the interview at least through the age, race, and sex questions, recode as a completed interview.
10	Line busy	To be coded only after (1) five calling occasions (each consisting of three attempts at $\geq$ 10-minute intervals) and (2) the five occasions have a mixture of weekday, weeknight, and weekend calls. If possible, contact the telephone company repair service to verify the number is in service. Replace.
11	Respondent unable to communicate due to physical or mental impairment	For example, the respondent is deaf. Replace.

February 23, 1995

Appendix F
Electronic Submission of BRFSS Data

All monthly data files and final PC-EDITS reports should be sent to the BRFSS Data Management mailbox in CDC's Behavioral Surveillance Branch (BSB) via CDC WONDER or the Internet. The states should follow these procedures.

Naming Conventions for Data Files

States should use a standardized naming convention for BRFSS data files.

STMONYY.DAT	ST = State abbreviation MON = Month (e.g., JAN—not 01) YY = Year (e.g., 98)

Corrected data files should also be transmitted with a unique name.

STMONYY2.DAT	2 = Version 2 of original data file

Sending Data via CDC WONDER

Data may be transmitted to the BSB via CDC WONDER by using the instructions provided with that documentation. For some general information on CDC WONDER, see Appendix I: CDC WONDER.

Sending Data via the Internet

Data can also be submitted to the BSB via the Internet. The Internet address for the BRFSS Survey Operations mailbox is as follows.

BRFSSDATA@CCDOSA1.CDC.GOV

LHA Version 2.12 software is available from the BSB for use in making a compressed data file for electronic data transmission.

Appendix G
Sample Contractor Specifications

States considering hiring a contractor to collect the BRFSS data must consider several factors, each of which will affect the work being performed.

Awareness of Local Considerations

Before producing the specifications for a contract, become familiar with regulations and procedures in effect in your organization that govern the development of Requests for Proposals (RFPs) and contracts. Contact your contracts office to determine the following information:

- Does an RFP need to be prepared, or can sole source be obtained?
- How long will the process take?
- Is there an approval process and, if so, what is it?
- Can drafts be reviewed before the approval process is begun?
- Does the dollar amount of the contract make any difference?
- Does the state require certain addressees for or limit in any way the distribution of RFPs (e.g., minorities, small businesses, female-owned businesses)?
- Is there a minimum number of bids that must be received? If so, how do you proceed without a minimum number of bids?
- Can you include limitations or exclusions in the RFP (e.g., must have prior BRFSS experience, must use computer systems for data collection)?
- Can you include a clause in the RFP that reserves your right to reject proposals or to overlook errors or omissions if it is in the best interest of the state?
- Are there minimum and maximum time periods governing the RFP or the contract?
- Are letters of intent and support required?

In broadening your knowledge of your agency's contract policies, familiarize yourself with the means of receiving, logging in, and further tracking proposals. Have a full understanding of how the proposals may be evaluated and ranked; for example, are there qualifying requirements for evaluation panel members? Is there a minimum number of persons required to be on the evaluation panel? Will the panel's evaluation be based on anything other than what is specifically included in the proposal?

Because of the possibility that many questions may be directed to you or someone on your staff, have prior knowledge of how proposers' questions are to be answered; for example, must they be submitted in writing or will a facsimile be adequate?

Your contract office may not volunteer all of this information, or other important pieces of information, or shortcuts. Double check your information and your plan to proceed with other departments that frequently invoke contracts.

If your agency does not prohibit or already require one, it can be extremely useful to request that a cost proposal form be completed by each proposer with a bid for each year covered by the RFP. The form should include costs associated with developing the core questionnaire and a specific annual number of interviews, plus the additional costs for each 100 extra interviews (each year) above that number, and a separate bid for the additional cost per extra minute of interviewing (and how many questions that would include) for each year. For a three-year RFP, you would then have a table of nine cost estimates from which you could then determine the cost for any length questionnaire and any number of interviews. This allows you much greater ease in making cost comparisons among bidders.

Contract Specifications

Typical requests for proposals will include the following components.

Background Statement

The request should explain that [your state] is one of 50 states conducting the Behavioral Risk Factor Surveillance System (BRFSS) with financial and technical support from the Centers for Disease Control and Prevention (CDC).

The request should also explain that the BRFSS is a state-based telephone surveillance system designed to collect data on individual risk behaviors and preventive health practices that are related to the leading causes of mortality and morbidity in the United States. Information provided by the BRFSS is not available from other sources in the state. In addition, because it is part of a nationwide surveillance system, the BRFSS provides comparisons to other states.

Contract Objective

The purpose of the contract is to provide CDC and the state with machine-readable datasets containing a minimum number of responses to the BRFSS. BRFSS respondents must represent the state's population.

Contract Period

The contract period will vary from state to state depending on local restrictions and type of contractor (e.g., academic or private). The contract period is typically determined by the fiscal or other office charged with awarding the grants and contracts. All new contracts need to conform to previously established policies. In most cases, contract periods will coincide with the BRFSS surveillance period (calendar year, January–December), but some contracts span intervals, such

as the fiscal year, that coincide with other work activities. States should establish a mechanism to suspend or rectify contracts in the event of unacceptable performance.

Product and Service Requirements

The contractor will perform the activities necessary to fulfill the requirements of the BRFSS. The contractor's proposal will be made part of the contract and will incorporate references. The signed contract will be the controlling document relating to the scope of work provided by the contractor and will specify types and dates for deliverables, which in turn will form the basis for payment to the contractor.

The contractor will meet the following product and service requirements:

Contract

1. Sign a contract (effective at the start of the calendar year or fiscal year) for one year with an option to renew for four additional one-year periods. Include a statement that the state retains all rights to the completed interviews and datasets and that the contractor will not release any surveillance information or results without prior written approval from the state.

Questionnaire

2. Conduct interviews using the questionnaire provided by CDC for each calendar year. The total number of questions, including state-added questions, will not exceed XXX. There will be a maximum of XX open-ended questions for which coding lists will be provided.
3. Develop a process to accommodate annual changes and inclusion of state-added questions. The health department will serve as coordinator for developing state-added questions. Additional payments may be made for costs of extra programming and pretests of new questions. Separate billing will be required for add-on questions; the contractor will be responsible for detailing all costs.
4. Program all questions and response categories in a computer-assisted telephone interviewing (CATI) system by two weeks before the start of the interviewing year.

Sample/sampling design

5. Complete no fewer than [sample size] telephone interviews of state residents, aged 18 years or older, per month, for a total of no fewer than XXXX interviews during the 12-month period XXXX through XXXX. The targeted response rate must be at least 75%, as calculated by the Council of American Survey Research Organizations (CASRO) method.
6. Random selection procedure that is a probability sample from a sampling frame consisting of all possible state households with telephones may be proposed, subject to approval by the state and CDC.
7. By a predetermined date, provide a written description of the sample selection method to be used, and describe and justify any proposed variations from CDC specifications.

Interviewing methods

8. Conduct interviews among randomly selected adults aged 18 and older using the questionnaire and methodology specified by CDC in the *Behavioral Risk Factor Surveillance System User's Guide.* This includes, but is not limited to, conducting interviews each month in accordance with the scheduling guidelines provided by CDC, randomly selecting an adult respondent in each household, and providing the monthly raw data to the state in the format and time frame specified.

9. Contact selected telephone numbers for screening, if necessary, and subsequent interviewing until the minimum monthly requirement of completed interviews is met and all active sampled numbers have reached final disposition. Call at a variety of times during the day and week to ensure a representative cross section of the population. Calls are to be made during evening, daytime, and weekend hours.

10. Dial numbers not answering or busy a minimum of 15 times over 5 calling occasions, including at least one attempt during a weekend, one attempt during a weekday, and one attempt during a weekday evening. Approximately 80% of calls should be made during evenings and weekends, with the remaining 20% conducted during weekdays and weekends. Business establishments and residents of institutions and group quarters are not eligible for interview. When the selected respondent in the household is not available for interview at time of initial telephone contact, call back a minimum of three times during the workshift to attempt to interview. Eligible persons initially refusing to participate will be recontacted a minimum of one additional time for attempted conversion.

11. In addition to English, be prepared to conduct interviews in Spanish, if necessary.

Data management

12. Perform double data entry, error checking, and validating of entries to provide a single data file each month that is acceptable to both CDC and the state. Code data per CDC instructions. Edit and correct the resulting data file, including performance of data consistency checks, and submit [via CDC WONDER or Internet] a standard, reliable dataset for each month's interviewing period within 30 days of completing the interviewing period, as per CDC instructions.

13. The data file must contain information about all telephone numbers called, including complete and incomplete interviews. Computer programs for checking errors will be provided by CDC and state to assist in data editing. Data must be provided according to coding instructions (to be supplied) in ASCII format and sent electronically via CDC WONDER or the Internet.

Quality assurance and confidentiality

14. Implement procedures for assuring and documenting the interviewing process quality and the data management steps. Provide supervision and monitoring of interviewers. Monitoring is to be conducted through the use of unobtrusive, electronic two-way audio and video means. If possible, remote monitoring should be made possible.

15. Verify a 5% random sample of completed interviews each month, stratified by interviewer, to validate (1) respondent selection, (2) selected demographic characteristics, (3) selected behaviors, and (4) interviewer manner. On request, provide to the state the actual sample of telephone numbers for cross-checking and verification.

16. Develop and maintain procedures to ensure respondent's confidentiality.

Training

17. Ensure that interviewers have experience in conducting telephone interviews. Facilitate training of interviewers in the administration of the BRFSS questionnaire; include practice interviews. Ensure that interviewers are briefed on the new questionnaire and have opportunities to conduct practice interviews using the questionnaire before its implementation each January.

    Training to conduct BRFSS activities will be determined by the state BRFSS coordinator who will be overseeing the contractor. The coordinator will assess the contractor's capabilities and determine the type and level of technical assistance and consultation needed. The state BRFSS coordinator can request additional technical assistance from CDC to ensure that procedures and protocols for survey administration are uniformly followed.

Consultation

18. Attend national BRFSS conferences and regional BRFSS meetings and encourage CDC site visits to the Department of Health, as requested and required.

Records/operational procedures

19. Maintain adequate records to support costs associated with this agreement. Such records shall, at a minimum, include personnel time records signed and approved by supervisory personnel and additional records supporting computer time and equipment rental, telephone lines, supplies, and other costs.

20. In the event that a systematic, recurring error is discovered in the sampling or interviewing operations, immediately notify the state of this error, correct the error at no cost to the state, and provide documentation to the state of the occurrence and correction.

21. If the state finds problems in reviewing datasets, correct these to the state's satisfaction within [specify number] weeks of notification, at no cost to the state. The state may then require the contractor to implement additional data consistency checks.

Subcontracts

22. Assume all responsibility for contractual activities, whether performed directly or by another agency or agencies under subcontract. Serve as the sole point of contact with regard to contractual matters, including payment of any and all charges resulting from the contract. The only BRFSS activity that can be subcontracted under this agreement is the purchase of a list-assisted telephone sample. If any part of this function is to be subcontracted, the contractor's proposal should include a list of subcontractors, including firm name and address, contact person, complete description of work to be subcontracted, descriptive information about the subcontractor's organizational abilities, and estimated cost. The state reserves the right to approve subcontractors and to require the contractor to replace subcontractors found to be unacceptable. The contractor is totally responsible for adherence by the subcontractor to all provisions of the contract.

Deliverables

23. Send project deliverables to CDC on a monthly basis approximately two weeks after the last day of CDC's interviewing window. The contractor should have modem capability to use with CDC WONDER for electronic mail and data transmission.
24. Provide the state on a monthly basis with the reports generated by the quality control programming, PC-QC, provided by CDC approximately two weeks after the last day of CDC's interviewing schedule. The disposition report should consist of the count and percentage for each final disposition code as a minimum. A complete call history for each telephone number is preferable.
25. Provide the state a written report of the surveillance data on a quarterly basis. This report should consist of cross-tabulations of all questions by age, group, and sex (optional).
26. Maintain all written reference materials and interviewer instructions. Retain one copy of all deliverables for a period of one year after the end of the calendar year during which interviewing occurred.

Technical Assistance

Technical assistance provided to the contractor by BSB or CDC will be limited to the following activities:

- Programming of CATI questionnaire (core and optional modules) for Ci3 software.
- Provision of telephone sample.
- Provision of reformatting, editing, and quality control programs developed by CDC.

Restrictions Against Disclosure

The contractor agrees to keep information related to the identity of respondents confidential. Other than the reports submitted to CDC and the state, the contractor agrees not to publish, reproduce, or otherwise divulge such information in whole or in part or in any form, or authorize or permit others to do so. The contractor agrees to immediately notify, in writing, the state's authorized representative in the event there is reason to suspect a breach of this requirement.

Proposal Content and Format

To demonstrate the applicant's ability to conduct the BRFSS, the proposal should include the following components:

- Cover page. The page should indicate the contractor's name, address, telephone number, taxpayer's identification number, date of submission, authorized official and title, project period, and type of organization. The signature of the official with legal authority to bind the organization into a contractual agreement should also be included.
- Organizational capacity and structure. This section should include a brief history of the organization, focusing on experience relevant to the project. Describe the support staff, computer resources, and any other resources available to the project. Organizational structure should also include the number of available interviewers, foreign language interviewers, and licensed workstations.
- Narrative. In this section, the contractor should describe the products or services that will be provided in response to the requirements delineated above. The narrative should include the following:
  - A detailed history of telephone interview surveillance experience, specifying experience with the BRFSS or similar health-related surveys, bilingual interviewing, random-digit-dialing, and preparing results in an ASCII file.
  - A history of experience with random-digit-dialing sample technique. A description of the sampling technique that will be used, including a justification for its use as a probability sample in which all households have a known chance of being selected.
  - Evidence of acceptable performance on past surveys as measured by the following quality assurance indicators: CASRO or other response rate (indicate how calculated), refusal rate, refusal conversion, etc., and timeliness of providing data and corrections.
  - A description of the CATI system to be used and the contractor's experience with that system. The CATI system must permit data entry at time of interview, provide error and range checking, be programmed for skip patterns, and, if possible, manage the telephone sample.
  - A description of procedures used to monitor interviews and verify responses.

- A description of procedures for training interviewers, including annual plans for briefings on the new questionnaire.

- Workplan/schedule of activities. This section should describe the specific activities required to implement the proposed services, how these activities relate to project objectives, and the dates they will be completed. The persons responsible for each task should be specified.
- Staff. This section should include an organizational chart highlighting the persons or unit(s) responsible for the project. Describe the qualifications and relevant experience of the project supervisor and key interviewing staff. Specify the involvement of the project supervisor and the key interviewing staff in terms of hours/days to be spent on the project. Attach the resumes of the principal investigator, key supervisory staff, and all other persons involved in the project, detailing length of experience in survey projects, experience with telephone surveys, and experience with CATI software.
- Budget and budget justification. Contractors must submit a detailed budget proposal delineating major categories of cost (i.e., staffing, supplies and materials, travel, and other direct costs). Justification for each budget item must be included. The contractor must also provide a separate calculation for the cost of adding and processing questions to the questionnaire.

Application Process

The actual application and renewal processes observed in any state will be governed by the practices and mandates long observed within that state for soliciting bids, reviewing and ranking applications, and making contract awards. However, it is the responsibility of the BRFSS coordinator to be aware of this process and the normal lead and preparatory time frames involved in the process of awarding contracts and to be prepared well in advance. Identifying and becoming acquainted with key persons involved in the state’s contracting process, and their responsibilities and contributions to the process, can be very facilitative.

Evaluation Process

The state will normally commission a technical review committee to evaluate and score all proposals by using the following criteria.

Evaluation Criteria

1.	Understanding of the scope of the project	XX points
2.	Qualifications and capabilities to execute project	XX points
3.	Demonstration of past experience with similar health surveys	XX points
4.	Appropriateness of quality assurance and monitoring procedures, including records of past performance	XX points
5.	Technical approach	XX points
6.	Competitiveness of cost	XX points

Evaluation Review

Often, the highest ranking proposal will receive the award. In some cases, however, simply the highest technical score or the lowest bid will be awarded. Within the framework of the state's application process, very often a less than optimal candidate will receive the award unless very careful and meticulous attention is devoted to the announcement and evaluation criteria. BSB will review RFPs and participate in application reviews, when requested and when possible.

Appendix H
Questionnaire Inventory

This questionnaire inventory applies to the core and optional module questions that have been used each year since 1989.

The entries contain the question, variable name, coding, and years in which the item was used and use two abbreviations: DK for Don't know and W/in for Within.

How often do you usually add salt to your food at the table?
ADDSALT
1=Most of the time
2=Sometimes
3=Rarely
4=Never (1985 on)
7=DK/Not sure
9=Refused
YEARS USED: 84, 85, 86, 87, 88

How old were you on your last birthday?
AGE
Age in years 18-99
99=99+
7=DK/Not sure (1985 on)
8=DK/Not sure (1984)
9=Refused
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

How old were you on your last birthday?
AGEU (Recoded for CD-ROM)
Age in years 18-99
99=99+
7=Unknown
9=Refused
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

Age group codes used in poststratification. If cell sizes are too small, age categories may have been collapsed.
AGEGX
1=18-24

2=25-34
3=35-44
4=45-54
5=55-64
6=65+
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

Have you ever heard the AIDS virus called HIV? (90)
Have you ever heard the AIDS virus called by the name of HIV? (91,92)
AIDSHIV
1=Yes
2=No
7=DK/Not sure
9=Refused
90, 91, 92

Have you ever had your blood tested for the AIDS virus? (88, 89, 90)
Except for donating or giving blood, have you ever had your blood tested for the AIDS virus infection? (93)
Have you ever had your blood tested for the AIDS virus infection? (94)
AIDSTEST (Related items: DONATED, HIVTEST, HIVTEST95)
1=Yes
2=No
7=DK/Not sure
9=Refused
88, 89, 90, 93, 94

During the past month, how many days per week or per month did you drink any alcoholic beverages, on the average?
ALCOHOL
1__ __=Days per week
2__ __=Days per month
777=DK/Not sure
999=Refused
89, 90, 91, 92, 93, 94, 95

Is the ammunition stored in a locked or unlocked place?
AMMSTORG
1=Locked
2=Unlocked
7=DK/Not sure
9=Refused
95

Is the ammunition for any of those unloaded and unlocked firearms stored in the same room as the firearms or in closets in the same room?
AMMUNITN
1=Yes
2=No
8=Don't own any ammunition
7=DK/Not sure
9=Refused
95

Which, if any, of the following conditions do you think can be caused by prolonged radon exposure? Arthritis?
ARTHRIT
1=Yes
2=No
7=DK/Not sure
9=Refused
89, 90, 91, 92, 93, 94, 95

Which, if any, of the following conditions do you think can be caused by prolonged radon exposure? Asthma?
ASTHMA
1=Yes
2=No
7=DK/Not sure
9=Refused
89, 90, 91, 92, 93, 94, 95

How often do you eat bacon or sausage?
BACON
1__ __ = Per Day
2__ __ = Per Week
3__ __ = Per Month
4__ __ = Per Year
5 5 5=Never
7 7 7=DK/Not sure
9 9 9=Refused
90, 91, 92, 93, 94, 95

Are you currently taking birth control pills?
BCPILLS
1=Yes
2=No
7=DK/Not sure

9=Refused
88

How often do you eat beef other than hamburger, cheeseburger, or meat loaf?
BEEF
1__ __ = Per Day
2__ __ = Per Week
3__ __ = Per Month
4__ __ = Per Year
5 5 5 = Never
7 7 7 = DK/Not sure
9 9 9 = Refused
90, 91, 92, 93, 94, 95

About how old were you when you first started smoking cigarettes fairly regularly?
BEGSMOKE
Age in years
77=DK/Not sure
88=Never smoked regularly (92)
99=Refused
91, 92

During the past year, how often has the___year-old child worn a bicycle helment when riding a bicycle? Would you say:
BIKEHLMT
1=Always
2=Nearly always
3=Sometimes
4=Seldom
5=Never
7=DK/Not sure
8=Never rides a bicycle
9=Refused
95

A blood stool test is when the stool is examined to determine whether it contains blood. Have you ever heard of a blood stool test?
BLDSTOOL
1=Yes
2=No
7=DK/Not sure
9=Refused
88, 89, 90, 91, 92

About how often do you check your blood for glucose or sugar?
BLDSUGAR
1__ __times per day
2__ __times per week
3__ __times per month
4__ __times per yr
888=Never
777=DK/Not sure
999=Refused
94, 95

There has been a lot of talk about how you can and cannot get infected with the AIDS virus. Do you think you can get infected from: giving blood?
BLOODAID
1=Yes
2=No
7=DK/Not sure
9=Refused
90, 91, 92

Blood cholesterol is a fatty substance found in the blood. (93-95)
Have you ever had your blood cholesterol checked?
BLOODCHO
1=Yes
2=No
7=DK/Not sure
9=Refused
87, 88, 89, 90, 91, 92, 93, 94, 95

Body mass index
BMIX
##.# (1 decimal place)
99.9=Unknown
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

Have you ever been told by a doctor, nurse, or other health professional that you have high blood pressure?
BPHIGH
1=No
2=Yes, by doctor
3=Yes, by nurse
4=Yes, by other health professional
7=DK/Not sure
9=Refused

84, 85, 86, 87, 88, 89, 90, 91, 92

Have you ever been told by a doctor, nurse, or other health professional that you have high blood pressure?
BPHIGH
1=Yes
2=No
7=DK/Not sure
9=Refused
93, 94, 95

Have you ever been told by a doctor, nurse, or other health professional that you have high blood pressure?
BPHIGHU (Recoded for CD-ROM)
1=Yes
2=No
7=DK/Not sure
9=Refused

What was your blood pressure in numbers?
BPNUMBER
###/### Record the number
7 7 7 = DK/Not sure
9 9 9 = Refused
88

About how long has it been since you last had your blood pressure taken by a doctor, nurse, or other health professional?
BPTAKE
1=W/in past yr (pre-91)
1=W/in past 6 mos (91 on)
2=W/in 2 yrs (pre-91)
2=W/in past 1 yr (91 on)
3=W/in 5 yrs (pre-91)
3=W/in past 2 yrs (91 on)
4= > 5 yrs (pre-91)
4=W/in past 5 yrs (91 on)
5=More than 5 yrs (91 on)
7=DK/Not sure
8=Never
9=Refused
88, 91, 92, 93, 94, 95

Is any medicine currently prescribed for your high blood pressure?

BPTREAT
1=Yes
2=No
7=DK/Not sure
9=Refused
84, 85, 86, 87, 88, 89, 90, 91, 92

As far as you know, is your blood pressure presently normal-or under control-or is it still high?
BPUPNOW
1=Normal
2=Under control
3=Still high
7=DK/Not sure
9=Refused
84, 85, 86, 87, 88, 89

About how long has it been since you last had your blood pressure taken by a doctor or other health professional?
BPWHEN
1=W/in the past yr
2=W/in the past 2 yrs
3=W/in the past 5 yrs
4=More than 5 yrs ago
7=DK/Not sure
8=Never
9=Refused
88

When riding in a car, how often is the youngest child buckled in a car safety seat or seat belt? Would you say...
BUCKLEUP
1=All the time
2=Most of the time
3=Sometimes
4=Rarely
5=Never
7=DK/Not sure
9=Refused
88, 89, 90, 91, 92

How often do you usually add butter or margarine to bread, rolls, or vegetables?
BUTTER
1__ __ = Per Day
2__ __ = Per Week

3__ __ = Per Month
4__ __ = Per Yr
5 5 5 = Never
7 7 7 = DK/Not sure
9 9 9 = Refused
90, 91, 92, 93, 94, 95

How long have you been eating this many calories per day?
CALORIES
1__ __ = Per Day
2__ __ = Per Week
3__ __ = Per Month
4__ __ = Per Yr
7 7 7 = DK/Not sure
9 9 9 = Refused
89, 90

Do you think smokeless tobacco can cause any of the following: cancer of the mouth?
CANCER
1=Yes
2=No
7=DK/Not sure
9=Refused
86

Which, if any of the following conditions do you think can be caused by prolonged radon exposure? Other cancers?
CANCERS
1=Yes
2=No
7=DK/Not sure
9=Refused
89, 90, 91, 92, 93, 94, 95

How often do you eat carrots?
CARROTS
1__ __ = Per Day
2__ __ = Per Week
3__ __ = Per Month
4__ __ = Per Yr
5 5 5 = Never
7 7 7 = DK/Not sure
9 9 9 = Refused
90, 91, 92, 93, 94, 95

What are your chances of getting the AIDS virus? Would you say:
CHANCES (Related items: GTHIV, GETAIDS)
1=High
2=Medium
3=Low
4=None
5=Not applicable (94 on)
7=DK/Not sure
9=Refused
94

Some people visit a doctor for a routine checkup even though they are feeling well and have not been sick. About how long has it been since you last visited a doctor for a routine checkup? Was it:
CHECKUP
1=W/in past yr
2=W/in past 2 yrs
3=W/in past 5 yrs
4=More than 5 yrs ago
7=DK/Not sure
8=Never
9=Refused
87, 88, 89, 90, 91, 92, 93, 94, 95

About how long has it been since you last visited a doctor for a routine checkup? Was it:
CHECKUPU (Recoded for CD-ROM)
1=W/in past yr
2=W/in past 2 yrs
3=W/in past 5 yrs
4=More than 5 yrs ago
7=DK/Not sure
8=Never
9=Refused
87, 88, 89, 90, 91, 92, 93, 94, 95

How often do you eat cheese or cheese spreads, not including cottage cheese?
CHEESE
1__ __ = Per Day
2__ __ = Per Week
3__ __ = Per Month
4__ __ = Per Yr
5 5 5 = Never
7 7 7 = DK/Not sure
9 9 9 = Refused

90, 91, 92, 93, 94, 95

How many children less than 18 years of age live in your household?
CHILDREN
01-25=number of children
88=None
99=Refused
93

About how many times in the last year has a doctor, nurse, or other health professional checked you for glycosylated hemoglobin or hemoglobin "A one C"?
CHKHEMO
# Number of times
8=None
7=DK/Not sure
9=Refused
94, 95

How many children live in your household who are...less than 5 years old?
CHLD04
# Number of children
7=7 or more
8=None
9=Refused
94, 95

How many children live in your household who are... 5 through 12 years old?
CHLD0512
# Number of children
7=7 or more
8=None
9=Refused
94, 95

How many children live in you household who are...13 through 17 years old?
CHLD1317
# Number of children
7=7 or more
8=None
9=Refused
94, 95

How often does the oldest child (of children under age 15) in your household use a...
...car safety seat? (child under 5)

...seatbelt (child 5 or older) when they ride in a car? Would you say:
CHLDSFTY
1=Always
2=Nearly always
3=Sometimes
4=Seldom
5=Never
7=DK/Not sure
8=Never rides in car
9=Refused
93, 94

Has concern about AIDS changed your life in any way?
CHNGLIFE
1=Yes
2=No
7=DK/Not sure
9=Refused
88, 89

About how long has it been since you last had your blood cholesterol checked?
CHOLCHK
1=W/in past yr
2=W/in past 2 yrs
3=W/in past 5 yrs
4=More than 5 yrs ago
7=DK/Not sure
8=Never (91,92)
9=Refused
87, 88, 89, 90, 91, 92, 93, 94, 95

About how long has it been since you last had your blood cholesterol checked?
CHOLCHKU (Recoded for CD-ROM)
1=W/in past yr
2=W/in past 2 yrs
3=W/in past 5 yrs
4=More than 5 yrs ago
7=DK/Not sure
9=Refused
87, 88, 89, 90, 91, 92, 93, 94, 95

Did the doctor: provide you with a low fat or low cholesterol diet?
CHOLDIET
1=Yes

2=No
7=DK/Not sure
9=Refused
88, 89, 90

Did your doctor: refer you to a dietician, nutritionist, or nurse to help you reduce the fat or cholesterol in your diet?
CHOLHELP
1=Yes
2=No
7=DK/Not sure
9=Refused
88, 89, 90

Did the doctor: prescribe a medication to lower your blood cholesterol?
CHOLMED
1=Yes
2=No
7=DK/Not sure
9=Refused
88, 89, 90

Cholesterol risk
CHOLRSKX
1=At risk
0=Not at risk
9=Refused
88, 89, 90

Some people use condoms to keep from getting the AIDS virus through sexual activity. (90-94)
Some people use condoms to keep from getting infected with HIV through sexual activity. (95)
How effective do you think a properly used condom is for this purpose? Would you say:
CONDEFF
1=Very effective
2=Somewhat
3=Not at all
4=DK how effective
5=DK method
9=Refused
90, 91, 92, 93, 94, 95

Some people use condoms to keep from getting the AIDS virus through sexual activity. How effective do you think a properly used condom is for this purpose? Would you say:
CONDEFFU (Recoded for CD-ROM)

1=Very effective
2=Somewhat
3=Not at all
4=Don't know how effective
5=Don't know method
9=Refused
90, 91, 92, 93, 94, 95

If you had a teenager who was sexually active, would you encourage him or her to use a condom?
CONDUSE (Recoded as CONDUSEU for CD-ROM)
1=Yes
2=No
3=Would give other advice (94 on)
7=DK/Not sure
9=Refused
93, 94, 95

Do you now consider yourself to be overweight, underweight, or about average?
CONSIDWT
1=Overweight
2=Underweight
3=About average
7=DK/Not sure
9=Refused
89, 90

Would you eat in a restaurant where the cook is infected with the AIDS virus?
COOKAIDS
1=Yes
2=No
7=DK/Not sure
9=Refused
90, 91, 92

If you received the results of your last test, did you receive counseling or talk with a health care professional about how to lower your chances of becoming infected with the AIDS virus or how to avoid passing it on to another person?
COUNSEL
1=Yes (received results and was counseled)
2=No (received results and was not counseled)
3=Did not get results
7=DK/Not sure
9=Refused

93

If you received the results of your last test, did you receive counseling or talk with a health care professional about how to lower your chances of becoming infected with the AIDS virus or how to avoid passing it on to another person?
COUNSELU (93 values recoded)
1=Yes
2=No
7=DK/Not sure
9=Refused
93, 94, 95

Some people count calories. If you are counting calories, about how many calories are you eating per day?
COUNTCAL
Number of calories
7777=Don't count calories
9999=Refused
9997=10,000 or greater
89, 90

Cluster size adjustment (CSA) (Expected cluster size divided by actual cluster size)
CSAX
##.##
9999=Unknown
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

County of residence
CTYCODE (State created codes)
County code
777=DK/Not sure
999=Refused
88, 89, 90, 91, 92, 93, 94, 95

County of residence
CTYCODEU (State created codes)
County code
777=DK/Not sure
999=Refused
88, 89, 90, 91, 92, 93, 94, 95

County of residence
CTYCODEZ (See FIPSCODE.TXT file on CD-ROM for coding)
County code
777=DK/Not sure
999=Refused
88, 89, 90, 91, 92, 93, 94, 95

Are you doing any of the following to help control high blood pressure: cutting down or stopping smoking?
CUTSMOKE
1=Yes
2=No
4=Do not smoke
7=DK/Not Sure
9=Refused
84, 85, 86

Do you have any kind of insurance coverage that pays for some or all of your routine dental care, including dental insurance, prepaid plans such as HMOs, or government plans such as Medicaid?
DENTLINS
1=Yes
2=No
7=DK/Not sure
9=Refused
95

Is there a working smoke detector in your household?
DETECTOR
1=Yes
2=No
7=DK/Not sure
9=Refused
88, 89, 90, 91, 92

How old were you when you were told you have diabetes?
DIABAGE
##=Age in years
77=DK/Not sure
99=Refused
93, 94, 95

I'd like to ask you about diabetes, sometimes called sugar diabetes. (88-92)
Have you ever been told by a doctor that you have diabetes? (93-95)
DIABETES

1=Yes
2=Yes, but female told only during pregnancy (94, 95)
2=No (88, 93)
3=No (94, 95)
7=DK/Not sure
9=Refused
88, 89, 90, 91, 92, 93, 94, 95

Have you ever been told by a doctor that you have diabetes?
DIABETEU
1=Yes
2=No
7=DK/Not sure
9=Refused
88, 89, 90, 91, 92, 93

Have you ever been told by a doctor that you have diabetes?
DIABETEZ
1=Yes
2=Yes, but female told during pregnancy
3=No
7=DK/Not sure
9=Refused
94, 95

Are you now doing any of the following to lose weight or to keep from gaining weight: taking diet pills to decrease your appetite?
DIETPILL
1=Yes
2=No
7=DK/Not sure
9=Refused
89, 90

How often do you have trouble telling the difference between a one dollar bill and a five dollar bill? (This means when wearing glasses or contacts if needed.)
DIFFBILL
1=All of the time
2=Most of the time
3=Some of the time
4=A little bit of the time
5=None of the time
7=DK/Not sure
9=Refused

93, 94

Have you ever heard of a digital rectal exam?
DIGRECTL
1=Yes
2=No
7=DK/Not sure
9=Refused
88, 89, 90, 91, 92

Call Disposition
DISPCODE
1=Completed interview
9=Interview terminated within questionnaire
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

About how many times in the last year have you seen a doctor, nurse, or other health professional for you diabetes?
DOCTDIAB
Number of times
88=None
77=DK/Not sure
99=Refused
94, 95

Was it when you donated blood or was it some other time?
DONATED
1=When donated blood
2=Some other time
3=Both
7=DK/Not sure
9=Refused
88, 89

Have you donated blood since March 1985?
DONBLD85
1=Yes
2=No
7=DK/Not sure
9=Refused
94,95

How often do you eat doughnuts, cookies, cake, pastry, or pies?
DOUGHNUT
1__ __ = Per Day
2__ __ = Per Week
3__ __ = Per Month
4__ __ = Per Yr
5 5 5 = Never
7 7 7 = DK/Not sure
9 9 9 = Refused
90, 91, 92, 93, 94, 95

In the past 12 months, has a doctor, nurse or other health professional given you advice about your weight?
DRADVICE
1=Yes, lose weight
2=Yes, gain weight
3=Yes, maintain current weight
4=No
7=DK/Not sure
9=Refused

Have you been advised by a doctor or other health professional to reduce your weight?
DRADVICE
1=Yes, by doctor
2=Yes, by nurse/physician's assistant
3=Yes, by nutritionist/dietician
4=Yes, by other health professional
5=No
7=DK/Not sure
9=Refused
89, 90

Have you been advised by a doctor or other health professional to reduce your weight?
DRADVCEU
1=Yes, by doctor
2=Yes, by nurse/physician's assistant
3=Yes, by nutritionist/dietician
4=Yes, by other health professional
5=No
7=DK/Not sure
9=Refused
89, 90

In the past 12 months, has a doctor, nurse or other health professional given you advice about your weight?
DRADVCEZ
1=Yes, lose weight
2=Yes, gain weight
3=Yes, maintain current weight
4=No
7=DK/Not sure
9=Refused

Have you had any beer, wine, or liquor during the past month, that is, since _____?
DRINKANY
1=Yes
2=No
7=DK/Not sure (1993 on)
9=Refused
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

Considering all types of alcoholic beverages, that is beer, wine, wine coolers, cocktails, and liquor, as drinks, how many times during the past month did you have 5 or more drinks on an occasion?
DRINKGE5
Number of times
77=DK/Not sure
88=Never/None (88)
99=Refused
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

During the past month, how many times have you driven when you've had perhaps too much to drink?
DRINKDRI
Number of times
88=None
77=DK/Not sure
99=Refused
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

During the last month, how many days per week or per month did you drink any beer?
DRKBEER
1__ __=Days per week
2__ __=Days per month
888=Never or none
777=DK/Not sure
999=Refused

84, 85, 86, 87, 88

During the last month, how many days per week or per month did you have any liquor to drink, such as vodka, gin, rum, or whiskey?
DRKLIQR
1__ __=Days per week
2__ __=Days per month
888=Never or none
777=DK/Not sure
999=Refused
84, 85, 86, 87, 88

During the last month, how many days per week or per month did you drink any wine?
DRKWINE
1__ __=Days per week
2__ __=Days per month
8 8 8=Never or none
7 7 7=DK/Not sure
9 9 9=Refused
84, 85, 86, 87, 88

Have you had any beer, wine, or liquor during the past month, that is, since _____?
DRNKANYU (Recoded for CD-ROM)
1=Yes
2=No
9=Refused
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

Considering all types of alcoholic beverages, that is beer, wine, wine coolers, cocktails, and liquor, as drinks, how many times during the past month did you have 5 or more drinks on an occasion?
DRNKGE5U (Recoded for CD-ROM)
Number of times
77=DK/Not sure
88=Never/None (88)
99=Refused
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

Total number of alcoholic drinks per month.
DRNKMOX
Number of drinks
8888=Did not drink in past month
9999=Refused
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

What is the highest grade or year of school you completed?
EDUCA (pre-93)
1=<9th grade
2=Some high school
3=High school grad/GED
4=Some tech school
5=Tech school grad
6=Some college
7=College grad
8=Post grad/Prof degree
9=Refused
84, 85, 86, 87, 88, 89, 90, 91, 92

What is the highest grade or year of school you completed?
EDUCA (93 on)
1=Never attended school or kindergarten only
2=Grades 1 through 8 (Elementary)
3=Grades 9 through 11 (Some high school)
4=Grade 12 or GED (High school graduate)
5=College 1 yr to 3 yrs (Some college or tech school)
6=College 4 yrs or more (College graduate)
9=Refused
93, 94, 95

What is the highest grade or year of school you completed?
EDUCAU (Recoded for CD-ROM)
1=Never attended school
2=Elementary
3=Some high school
4=High school grad/GED
5=Some college or tech school
6=College grad
9=Refused
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

At what grade do you think your child should begin AIDS education in school?
EDUCAIDS
Grade level
55=Kindergarten (91 on)
88=Never
77=DK/Not sure
99=Refused
90, 91, 92

How many eggs do you usually eat?
EGGS
1__ __ = Per Day
2__ __ = Per Week
3__ __ = Per Month
4__ __ = Per Yr
5 5 5 = Never
7 7 7 = DK/Not sure
9 9 9 = Refused
90, 91, 92, 93, 94, 95

Are you currently employed for wages?
EMPLOY
1=Employed for wages
2=Self-employed
3=Out of work >1 yr
4=Out of work <1 yr
5=Homemaker
6=Student
7=Retired
8=Unable to work (added 93)
9=Refused
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

Are you currently employed for wages?
EMPLOYU (Recoded for CD-ROM)
1=Employed for wages
2=Self-employed
3=Out of work >1 yr
4=Out of work <1 yr
5=Homemaker
6=Student
7=Retired
9=Refused
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

Are you currently employed for wages?
EMPLOYZ (Recoded for CD-ROM)
1=Employed for wages
2=Self-employed
3=Out of work >1 yr
4=Out of work <1 yr
5=Homemaker
6=Student

7=Retired
8=Unable to work
9=Refused
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

Do you know how to examine your own breasts for lumps?
EXAMBRST
1=Yes
2=No
7=DK/Not sure
9=Refused
88

What type of physical activity or exercise did you spend the most time doing during the past month?
EXERACT1
See activity code page ***
99=Refused
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

What other type of physical activity gave you the next most exercise during the past month?
EXERACT2
See activity code page ***
77=DK/Not sure (84-86)
99=Refused
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

During the past month, did you participate in any physical activities or exercises such as running, calisthenics, golf, gardening, or walking for exercise?
EXERANY
1=Yes
2=No
7=DK/Not sure
9=Refused
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

How far did you usually walk/run/jog/swim?
EXERDIS1
##.# Coded in miles & tenths
777=DK/Not sure
999=Refused
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

How far did you usually walk/run/jog/swim?
EXERDIS2
##.# Coded in miles & tenths
777=DK/Not sure
999=Refused
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

When you took part in this activity (first), for how many minutes or hours did you usually keep at it?
EXERHMM1
#:## Coded in hours & minutes
777=DK
999=Refused
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

When you took part in this activity (second), for how many minutes or hours did you usually keep at it?
EXERHMM2
#:## Coded in hours & minutes
777=DK
999=Refused
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

How many times per week or per month did you take part in this activity during the past month?
EXEROFT1
1__ __ =Number of times/week
2__ __ =Number of times/month
7 7 7=DK
9 9 9=Refused
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

How many times per week or per month did you take part in this activity (second activity)?
EXEROFT2
1__ __ =Number of times/week
2__ __ =Number of times/month
7 7 7=DK
9 9 9=Refused
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

Were there other activities or exercises that you participated in during the last month besides running, calisthenics, golf, gardening, or walking for exercise?
EXEROTH
1=Yes
2=No

7=DK/Not sure
9=Refused
84, 85, 86

Was there another physical activity or exercise that you participated in during the last month?
EXEROTH2
1=Yes
2=No
7=DK/Not sure
9=Refused
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

Are you doing any of the following to help control high blood pressure: following an exercise program?
EXERPROG
1=Yes
2=No
7=DK/Not sure
9=Refused
84, 85, 86

When was the last time you had an eye exam in which the pupils were dilated?
EYEEXAM
1=W/in past month
2=W/in past yr
3=W/in past 2 yrs
4=2 or more yrs ago
8=Never
7=DK/Not sure
9=Refused
94, 95

What kind of place is it—a clinic, a health center, a hospital, a doctor's office, or some other place?
FACILITY
01=Doctor's office or private clinic
02=Company or school health clinic/center
03=Community/migrant/rural clinic/center
04=County/city/public hospital outpatient clinic
05=Private/other hospital outpatient clinic
06=Hospital emergency room
07=HMO/prepaid group
08=Psychiatric hospital or clinic
09=VA hospital or clinic

10=Military health care facility
11=Some other kind of place
77=DK/Not sure
99=Refused
95

Are you now doing any of the following to lose weight or to keep from gaining weight: fasting for 24 hours or longer as part of your diet?
FASTING
1=Yes
2=No
7=DK/Not sure
9=Refused
89, 90

Overall, would you say your diet is high, medium, or low in fat?
FAT
1=High
2=Medium
3=Low
7=DK/Not sure
9=Refused
88

About how many times in the last year has a health professional checked your feet for any sores or irritations?
FEETCHK
# Number of times
8=None
7=DK/Not sure
9=Refused
94, 95

Are you eating either fewer calories or less fat to lose weight?
FEWCAL
1=Yes, fewer calories
2=Yes, less fat
3=Yes, fewer calories and less fat
4=No
7=DK/Not sure
9=Refused
94, 95

Are you eating fewer calories to lose weight?

FEWCALU (Recoded for CD-ROM)
1=Yes
2=No
7=DK/Not sure
9=Refused
85, 86, 87, 88, 89, 91, 92, 93

Are you eating fewer calories to lose weight?
FEWCALZ (Recoded for CD-ROM)
1=Yes, fewer calories
2=Yes, less fat
3=Yes, fewer calories and less fat
4=No
7=DK/Not sure
9=Refused
85, 86, 87, 88, 89, 91, 92, 93, 94, 95

Overall, would you say your diet is high, medium, or low in fiber?
FIBER
1=High
2=Medium
3=Low
7=DK/Not sure
9=Refused
88

Final Weight (use this in weighted analyses)
FINALWTX
2 decimal places
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

Are there any loaded or unloaded firearms in your home or the car, van, or truck you usually drive? This includes firearms stored in the basement, garage, or any attached buildings.
FIREARMS
1=Yes
2=No
7=DK/Not sure
9=Refused
95

Do you have a specific plan for how you would escape from your house or apartment in case of fire?
FIREESCP
1=Yes

2=No
7=DK/Not sure
9=Refused
93, 94

Have you had a flu shot in the last 12 months?
FLUSHOT
1=Yes
2=No
7=DK/Not sure
9=Refused
87, 93, 94, 95

How often do you eat french fries or fried potatoes?
FRENCHFR
1__ __ = Per Day
2__ __ = Per Week
3__ __ = Per Month
4__ __ = Per Yr
5 5 5 = Never
7 7 7 = DK/Not sure
9 9 9 = Refused
90, 91, 92, 93, 94, 95

How often do you eat fried chicken?
FRIEDCHI
1__ __ = Per Day
2__ __ = Per Week
3__ __ = Per Month
4__ __ = Per Yr
5 5 5 = Never
7 7 7 = DK/Not sure
9 9 9 = Refused
90, 91, 92, 93, 94, 95

Not counting juice, how often do you eat fruit?
FRUIT
1__ __ = Per Day
2__ __ = Per Week
3__ __ = Per Month
4__ __ = Per Yr
5 5 5 = Never
7 7 7 = DK/Not sure
9 9 9 = Refused

90, 91, 92, 93, 94, 95

How often do you drink fruit juices such as orange, grapefruit, or tomato?
FRUITJUI
1__ __ = Per Day
2__ __ = Per Week
3__ __ = Per Month
4__ __ = Per Yr
5 5 5 = Never
7 7 7 = DK/Not sure
9 9 9 = Refused
90, 91, 92, 93, 94, 95

Would you say that in general your health is: excellent, very good, good, fair, or poor?
GENHLTH
1=Excellent
2=Very good
3=Good
4=Fair
5=Poor
7=DK/Not sure
9=Refused
93, 94, 95

What are your chances of getting the AIDS virus?
GETAIDS (Related items: CHANCES, GETHIV)
1=High
2=Medium
3=Low
4=None
7=DK/Not sure
9=Refused
88, 89, 93

What are your chances of getting the AIDS virus?
GETAIDSU
1=High
2=Medium
3=Low
4=None
9=Refused
88, 89, 93, 94, 95

In the past 5 years (since 1988), have your chances of getting the AIDS virus increased, decreased, or stayed the same?
GETAIDS5
1=Increased
2=Decreased
3=Stayed same
7=DK/Not sure
9=Refused
93

What are your chances of getting infected with HIV, the virus that causes AIDS?
GETHIV (Related items: CHANCES, GETAIDS)
1=High
2=Medium
3=Low
4=None
5=Not applicable
7=DK/Not sure
9=Refused
95

If you had a child in school, at what grade do you think he or she should begin AIDS education in school?
GRADE
Grade
55=Kindergarten
88=Never
77=DK/Not sure
99=Refused
94

If you had a child in school, at what grade do you think he or she should begin receiving education in school about HIV infection and AIDS?
GRADE95
Grade
55=Kindergarten
88=Never
77=DK/Not sure
99=Refused
95

How often do you eat green salad?
GREENSAL
1__ __ = Per Day

2__ __ = Per Week
3__ __ = Per Month
4__ __ = Per Yr
5 5 5 = Never
7 7 7 = DK/Not sure
9 9 9 = Refused
90, 91, 92, 93, 94, 95

Do you think smokeless tobacco can cause any of the following: gum disease or mouth sores?
GUMDIS
1=Yes
2=No
7=DK/Not sure
9=Refused
86

Are there any loaded firearms in the car, van, or truck you usually drive?
GUNSCAR
1=Yes
2=No
7=DK/Not sure
8=Don't drive
9=Refused
95

Not including firearms in a car, truck, or other vehicle, are there any loaded firearms in your home?
GUNSHOME
1=Yes
2=No
7=DK/Not sure
9=Refused
95

Have you ever had a blood stool test?
HADBSTES
1=Yes
2=No
7=DK/Not sure
9=Refused
88, 89, 90, 91, 92

Have you had a hysterectomy?
HADHYST

1=Yes
2=No
7=DK/Not sure
9=Refused
88, 89, 90, 91, 92, 93, 94, 95

These next questions are about mammograms, which are x-ray tests of the breast to look for cancer. (85-91)
A mammogram is an x-ray of the breast and involves pressing the breast between two plastic plates. (92)
A mammogram is an x-ray of each breast to look for cancer. (93)
A mammogram is an x-ray of each breast to look for breast cancer. (94-95)
Have you ever had a mammogram?
HADMAM
1=Yes
2=No
7=DK/Not sure
9=Refused
87, 88, 89, 90, 91, 92, 93, 94, 95

These next questions are about Pap smears, which test for cancer of the cervix or uterus. (91)
A Pap smear is a test where material is taken from the cervix, that is, the mouth of the womb, to see if any cancer cells are present. (92)
A Pap smear is a test for cancer of the cervix. (93 on)
Have you ever had a Pap smear?
HADPAP
1=Yes
2=No
7=DK/Not sure
9=Refused
88, 89, 91, 92, 93, 94, 95

A proctoscopic exam is when a tube is inserted in the rectum to check for cancer and other health problems. (93-95)
Have you ever had a proctoscopic exam?
HADPROCT
1=Yes
2=No
7=DK/Not sure
9=Refused
89, 91, 92, 93, 94, 95

A digital rectal exam is when a doctor or other health professional inserts a finger in the rectum to check for cancer or other health problems. (93-95)

Have you ever had a digital rectal exam?
HADRECTL
1=Yes
2=No
7=DK/Not sure
9=Refused
88, 89, 90, 91, 92, 93, 94, 95

How often do you eat hamburgers, cheeseburgers, or meat loaf?
HAMBURG
1__ __ = Per Day
2__ __ = Per Week
3__ __ = Per Month
4__ __ = Per Yr
5 5 5 = Never
7 7 7 = DK/Not sure
9 9 9 = Refused
90, 91, 92, 93, 94, 95

Can you tell by looking at a person if he or she has the AIDS virus?
HASAIDS
1=Yes
2=No
7=DK/Not sure
9=Refused
93

Which, if any of the following conditions do you think can be caused by prolonged radon exposure? Headache?
HEADACHE
1=Yes
2=No
7=DK/Not sure
9=Refused
89, 90, 91, 92, 93, 94, 95

About how tall are you without shoes?
HEIGHT
Feet & inches
777=DK/Not sure
999=Refused
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

Have you ever heard of glycosylated hemoglobin [gli-KOS-ilated he-mo-glo-bin] or hemoglobin "A one C?"
HEMOGLBN
1=Yes
2=No
7=DK/Not sure
9=Refused
94, 95

Have you been told on more than one occasion that your blood pressure was high or have you been told this only once?
HIGHGT1
1=More than once
2=Only once
7=DK/Not sure
9=Refused
84, 85, 86, 88, 89, 90, 91, 92, 93, 94, 95

Are you of Hispanic origin such as Mexican American, Latin American, Puerto Rican, or Cuban? (84-92)
Are you of Spanish/Hispanic origin? (93-95)
HISPANIC
1=Yes
2=No
7=DK/Not sure
9=Refused
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

Have you ever had your blood tested for HIV?
HIVTEST
1=Yes
2=No
7=DK/Not sure
9=Refused
95

Do you have any kind of health care plan?
HLTHPLAN
1=Yes
2=No
7=DK/Not sure
9=Refused
91, 92, 93, 94

What is the major impairment or health problem that limits your activities?
HLTHPROB
01=Arthritis/rheumatism
02=Back or neck problem
03=Fractures,bone/joint injury
04=Walking problem
05=Lung/breathing problem
06=Hearing problem
07=Eye or vision problem
08=Heart problem
09=Stroke problem
10=Hypertension/high blood pressure
11=Diabetes
12=Cancer
13=Depression/anxiety/ emotional problem
14=Other impairment/problem
77=DK/Not sure
99=Refused
95

Do you think a person who is infected with the AIDS virus can look and feel well and healthy?
HLTHYAID
1=Yes
2=No
7=DK/Not sure
9=Refused
90, 91, 92

For hospital bills, does your health care plan cover all, most, some, or none of your expenses?
HOSPBILL
1=All
2=Most
3=Some
4=None
7=DK/Not sure
9=Refused
91, 92

How often do you eat hot dogs or lunch meats such as ham or other cold cuts?
HOTDOGS
1__ __ = Per Day
2__ __ = Per Week
3__ __ = Per Month
4__ __ = Per Yr

5 5 5 = Never
7 7 7 = DK/Not sure
9 9 9 = Refused
90, 91, 92, 93, 94, 95

About how long has it been since you had your last mammogram?
HOWLONG
1=W/in past yr (pre-92; 94-95)
1=1 yr or less (92-93)
2=W/in past 2 yrs (pre-92; 94-95)
2= >1 yr & <= 2 yrs (92-93)
3=W/in past 3 yrs (94-95)
3=W/in past 5 yrs (pre-92)
3= >2 yrs & <=3 yrs (92-93)
4=W/in the past 5 yrs (94-95)
4=More than 5 yrs (pre-92)
4= >3yrs & <=5 yrs (92-93)
5= >5 yrs (92-93)
5=5 or more yrs (94-95)
7=DK/Not sure
8=Never (91, 92)
9=Refused
87, 88, 89, 90, 91, 92, 93, 94, 95

About how long has it been since you had your last mammogram?
HOWLONGU (Recoded for CD-ROM)
1=W/in past yr
2=W/in past 2 yrs
3=W/in past 5 yrs
4=More than 5 yrs
7=DK/Not sure
9=Refused
87, 88, 89, 90, 91, 92, 93, 94, 95

About how long has it been since you had your last mammogram?
HOWLONGZ (Recoded for CD-ROM)
1=W/in past yr
2=W/in past 2 yrs
3=W/in past 3 yrs
4=W/in past 5 yrs
5=More than 5 yrs
7=DK/Not sure
9=Refused
87, 88, 89, 90, 91, 92, 93, 94, 95

About how often do you examine your breasts for lumps?
HOWOFTEN
1__ __=Times per day
2__ __=Times per week
3__ __=Times per month
4__ __=Times per yr
8 8 8=Never
7 7 7=DK/Not sure
9 9 9=Refused
88

Do you know how to test your home for the presence of radon?
HOWTEST
1=Yes
2=No
7=DK/Not sure
9=Refused
89, 90, 91, 92, 93, 94

Date of interview
IDATE
MMDDYY
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

Which of the following categories best describes your annual household income from all sources?
INCOME
01=<$10,000
02=$10-15,000
03=$15-20,000
04=$20-25,000
05=$25-35,000
06=Over $35,000 (84 only)
06=$35,000-50,000 (85-93)
08=Over $50,000 (85-90)
07=Over $50,000 (91-93)
07=DK/Not sure
08=DK/Not sure (91-93)
09=Refused
84, 85, 86, 87, 88, 89, 90, 91, 92, 93

Which of the following categories best describes your annual household income from all sources?
INCOME (1994-1995 only)

1=<$10,000
2=$10-14,999
3=$15-19,999
4=$20-24,999
5=$25-34,999
6=$35-49,999
7=$50-75,000
8=Over $75,000
77=DK/Not sure
99=Refused
94, 95

Which of the following categories best describes your annual household income from all sources?
INCOMEU (Recoded for CD-ROM)
1=<$10,000
2=$10-14,999
3=$15-19,999
4=$20-24,999
5=$25-34,999
6=$35-50,000
7=Unknown
8=>$50,000
9=Refused
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

Currently, about how often do you use insulin?
INSLNFRQ
1 __ __ Times per day
2 __ __ Times per week
333=Use insulin pump
777=DK/Not sure
999=Refused

Are you now taking insulin?
INSULIN
1=Yes
2=No
9=Refused
93, 94, 95

Interviewer ID
INTVID
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

There is a medication called Ipecac Syrup which is sometimes taken to cause vomiting after something poisonous is swallowed. Do you now have any Ipecac Syrup in your household?
IPECAC
1=Yes
2=No
7=DK/Not sure
9=Refused
88, 89, 90, 91, 92

Year this survey was done.
IYEAR
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

Compared to most people, how much would you say you know about AIDS? Would you say:
KNOWAIDS
1=A lot
2=Some
3=A little
4=Nothing
7=DK/Not sure
9=Refused
88, 89

When did you have your last blood stool test?
LASTBST
1=W/in past yr
2=W/in past 2 yrs
3=W/in past 5 yrs
4=More than 5 yrs ago
7=DK/Not sure
8=Never
9=Refused
88, 89, 90, 91, 92

How long has it been since you last visited the dentist or a dental clinic?
LASTDENT
1=W/in past yr
2=W/in past 2 yrs
3=W/in past 5 yrs
4=5 or more yrs ago
7=DK/Not sure
8=Never
9=Refused
95

When did you last donate blood?
LASTDON
MMYY Month and yr
7777=DK/Not sure
9999=Refused
94, 95

When did you have your last digital rectal exam?
LASTEXMU
1=W/in past yr
2=W/in past 2 yrs
3=W/in past 5 yrs
4=More than 5 yrs ago
7=DK/Not sure
9=Refused
88, 89, 90, 91, 92, 93, 94, 95

When did you have your last Pap smear?
LASTPAP
1=W/in past yr (pre-92; 94-95)
1= <=1yr (92-93)
2=W/in past 2 yrs (pre-92; 94-95)
2= >1yr & <=2yrs (92-93)
3=W/in past 3 yrs (94-95)
3=W/in past 5 yrs (pre-92)
3= >2yrs & <=3yrs (92-93)
4=More than 5 yrs (pre-92)
4= >3yrs & <=5yrs (92-93)
4=W/in past 5 yrs (94-95)
5=5 or more yrs
5= >5 yrs (92-93)
7=DK/Not sure
8=Never (92)
9=Refused
88, 89, 90, 91, 92, 93, 94, 95

When did you have your last Pap smear?
LASTPAPU (Recoded for CD-ROM)
1=W/in past yr
2=W/in past 2 yrs
3=W/in past 5 yrs
4=More than 5 yrs ago
7=DK/Not sure
9=Refused

87, 88, 89, 90, 91, 92, 93, 94, 95

When did you have your last Pap smear?
LASTPAPZ (Recoded for CD-ROM)
1=W/in past yr
2=W/in past 2 yrs
3=W/in past 3 yrs
4=W/in past 5 yrs
5=More than 5 yrs ago
7=DK/Not sure
9=Refused
87, 88, 89, 90, 91, 92, 93, 94, 95

When did you have your last proctoscopic exam?
LASTPROC
1=W/in past yr
2=W/in past 2 yrs
3=W/in past 5 yrs
4=More than 5 yrs ago
7=DK/Not sure
9=Refused
88, 89, 90, 91, 92, 93, 94, 95

About how long has it been since you last smoked cigarettes regularly?
LASTSMOK
1=< 1 month
2=1 mo but < 3 mos
3=3 mos but < 6 mos
4=6 mos but < 1 yr
5=1 or more yrs (pre-91)
5=1 yr but < 5 yrs (91-93)
6=5 or more yrs (91-93)
7=DK/Not sure
8=Never smoked regularly (92,93)
9=Refused
91, 92, 93, 94, 95

About how long has it been since you last smoked cigarettes regularly?
LASTSMKU
1= < 1 month
2= 1 mo but < 3 mos
3= 3 mos but < 6 mos
4= 6 mos but < 1 yr
5= 1 or more yrs

7= DK/Not sure
9= Refused
91, 92, 93, 94, 95

About how long has it been since you last smoked cigarettes regularly?
LASTSMKU
1= < 1 month
2= 1 mo but < 3 mos
3= 3 mos but < 6 mos
4= 6 mos but < 1 yr
5= 1 but < 5 yrs
6= 5 yrs or more
7= DK/Not sure
8= Irregular smoker
9= Refused
91, 92, 93, 94, 95

When was your last test (for HIV)?
LASTTEST
MMYY month & yr
7777=DK/Not sure
9999=Refused
93

When was your last AIDS blood test?
LASTTEST
MMYY month & yr
7777=DK/Not sure
9999=Refused
94

About how long has it been since your last breast physical exam? (90, 91)
About how long has it been since your last breast exam? (92-95)
LENGEXAM
1=W/in past yr (pre-92)
1= <=1 yr (92-93)
2=W/in 2 yrs (pre-92)
2= >1 yr & <=2 yrs (92-93)
3=W/in 5 yrs (pre-92)
3= >2 yrs & <=3 yrs (92-93)
4=More than 5 yrs (pre-92)
4= >3 yrs & <=5 yrs (92-93)
5= >5 yrs (92-93)
7=DK/Not sure

8=Never (91, 92)
9=Refused
90, 91, 92, 93, 94, 95

About how long has it been since your last breast physical exam?
LENGEXMU (Recoded for CD-ROM)
1=W/in past yr
2=W/in 2 yrs
3=W/in 5 yrs
4=More than 5 yrs
7=DK/Not sure
9=Refused
90, 91, 92, 93, 94, 95

About how long has it been since your last breast physical exam?
LENGEXMZ (Recoded for CD-ROM)
1=W/in past yr
2=W/in 2 yrs
3=W/in past 3 yrs
4=W/in5 yrs
5=More than 5 yrs
7=DK/Not sure
9=Refused
90, 91, 92, 93, 94, 95

What is your blood cholesterol level?
LEVEL
Actual number
777=DK/Not sure
999=Refused
87, 88, 89, 90, 91, 92

While stopped in a vehicle at a traffic light, how often do you have trouble reading the license plate on the car in front of you? (This means when wearing glasses or contacts if needed.)
LICENSE
1=All of the time
2=Most of the time
3=Some of the time
4=A little bit of the time
5=None of the time
7=DK/Not sure
9=Refused
93

Would you like to stop smoking?
LIKESTOP
1=Yes
2=No
7=DK/Not sure
9=Refused
93

Are you limited in any way in any activities because of any impairment or health problem?
LMTD65
1=Yes
2=No
7=DK/Not sure
9=Refused
94, 95

Are you limited in any way in any activities because of any impairment or health problem? (Asked of respondents 70 and older.)
LMTD70
1=Yes
2=No
7=DK/Not sure
9=Refused
93

Are you limited in any way in any activities because of an impairment or health problem?
LMTDACT
1=Yes
2=No
7=DK/Not sure
9=Refused
93, 94, 95

Are you limited in the kind or amount of housework you can do because of any impairment or health problem?
LMTDHOUS
1=Yes
2=No
7=DK/Not sure
9=Refused
93, 94, 95

Are you limited in the kind or amount of work you can do because of any impairment or health problem?

LMTDWORK
1=Yes
2=No
7=DK/Not sure
9=Refused
93, 94, 95

Are you limited in the kind or amount of work you could do because of any impairment or health problem?
LMTDWORK
1=Yes
2=No
7=DK/Not sure
9=Refused
93, 94, 95

Are all of the loaded firearms in your home stored in a locked place that can only be opened with a key or combination, or with a trigger lock that can only be opened with a key or combination?
LOADLOCK
1=Yes
2=No
7=DK/Not sure
9=Refused
95

For how long have your activities been limited because of your major impairment or health problem?
LONGLMTD
1__ __ # of days
2__ __ # of weeks
3__ __ # of months
4__ __ # of yrs
777=DK/Not sure
999=Refused
95

How long did you actually stay off cigarettes that time?
LONGSTOP
1=<1 day
2=1 to 6 days
3=7 days to < 3 months
4=3 months to < 6 months
5=6 months to < 1 yr
6=1 or more yrs

7=DK/Not sure
9=Refused
90

Are you now trying to lose weight?
LOSEWT
1=Yes (91 on)
2=No (91 on)
3=No, trying to gain (89, 90)
7=DK/Not sure (89, 90)
9=Refused (91 on)
85, 86, 87, 88, 89, 91, 92, 93, 94, 95

Are you now trying to lose weight?
LOSEWTU
1=Yes
2=No
9=Refused
85, 86, 87, 88, 89, 91, 92, 93, 94, 95

Are you doing any of the following to help control your high blood pressure: following a low salt diet?
LOWSALT
1=Yes
2=No
7=DK/Not sure
9=Refused
84, 85, 86

When was your last blood test for HIV?
LSTTST95
MMYY Month and yr
7777= DK/Not sure
9999=Refused
95

Which, if any, of the following conditions do you think can be caused by prolonged radon exposure? Lung cancer?
LUNGCAN
1=Yes
2=No
7=DK/Not sure
9=Refused
89, 90, 91, 92, 93, 94, 95

Are you now trying to maintain your current weight, that is, to keep from gaining weight?
MAINTAIN
1=Yes
2=No
7=DK/Not sure
9=Refused
88, 89, 94, 95

About how many mammograms have you had in the last 5 years?
MAMM5YRS
Number of mammograms
88=None
77=DK/Not sure
99=Refused
95

Whose idea was it for you to have this last mammogram—was it your idea, your doctor's idea, or someone else's idea?
MAMMIDEA
1=Respondent's idea
2=Doctor's idea
3=Someone else's idea
7=DK/Not sure
9=Refused
89, 90, 91

These next questions are about mammograms, which are x-ray tests of the breast to look for cancer. (85-89)
Have you ever heard of a mammogram?
MAMMO
1=Yes
2=No
7=DK/Not sure
9=Refused
85, 86, 87, 88, 89

Are you: (marital status)
MARITAL
1=Married
2=Divorced
3=Widowed
4=Separated
5=Never married
6=Unmarried couple

9=Refused
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

Was there a time during the last 12 months when you needed to see a doctor but could not, due to the cost?
MEDCOST
1=Yes
2=No
7=DK/Not sure
9=Refused
91, 92, 93, 94, 95

To your knowledge is there medical treatment available that may help a person who is infected with the AIDS virus live longer?
MEDSAIDS
1=Yes
2=No
7=DK/Not sure
9=Refused
90, 91, 92

To your knowledge, are there drugs available which can lengthen the life of a person infected with the AIDS virus?
MEDSAIDS
1=Yes
2=No
7=DK/Not sure
9=Refused
90, 91, 92

Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?
MENTHLTH
1-30=Number of days
88=None
77=DK/Not sure
99=Refused
93, 94, 95

How many glasses (8 oz.) of whole milk do you usually drink? Remember to include drinks made with whole milk or milk on cereal. Do not include low-fat milk, such as skim milk or 2% milk.
MILK
1__ __ = Per Day

2__ __ = Per Week
3__ __ = Per Month
4__ __ = Per Yr
5 5 5 = Never
7 7 7 = DK/Not sure
9 9 9 = Refused
90, 91, 92, 93, 94, 95

There has been a lot of talk about how you can and cannot get infected with the AIDS virus. Do you think you can get infected from: mosquitos or other insects?
MOSQAIDS
1=Yes
2=No
7=DK/Not sure
9=Refused
90

Is there one of these places that you go to most often when you are sick or need advice about your health?
MOSTCARE
1=Yes
2=No
7=DK/Not sure
9=Refused
95

A drink is 1 can or bottle of beer, 1 glass of wine, 1 can or bottle of wine cooler, 1 cocktail, or 1 shot of liquor. On the days when you drank, about how many drinks did you drink on the average?
NALCOCC
Number of drinks
77=DK/Not sure
99=Refused
89, 90, 91, 92, 93, 94, 95

Number of beers drunk in past month.
NBEERMOX
1-766= Number of beers monthly
777=Not sure
888=Never or none
999=Refused
000=Didn’t drink in past month
84, 85, 86, 87, 88, 89

On the days when you drank beer, about how many beers did you drink on the average?
NBEEROCC
Number of beers
77=DK/Not sure
99=Refused
84, 85, 86, 87, 88

Number of drinks of liquor per month (not including beer and wine).
NLIQRMOX
1-766=number of drinks monthly
888=Never or none
777=Not sure
999=Refused
000=Didn't drink in past month
84, 85, 86, 87, 88, 89

On the days when you drank any liquor, about how many drinks did you drink on the average?
NLIQROCC
Number of drinks
77=DK/Not sure
99=Refused
84, 85, 86, 87, 88

On the days when you drank wine, about how many glasses of wine did you drink on the average?
NLIQROCC Number of beers __ __
77=DK/Not sure
99=Refused
84, 85, 86, 87, 88

Does any impairment or health problem now keep you from doing any housework at all?
NOHOUSWK
1=Yes
2=No
7=DK/Not sure
9=Refused
93, 94, 95

Does any impairment or health problem keep you from working at a job or business?
NOJOB
1=Yes
2=No
7=DK/Not sure
9=Refused

93, 94, 95

What is the main reason you do not have a usual source of medical care?
NOPRIMCR
01=Two or more usual places
02=Have not needed a doctor
03=Do not like/trust/believe in doctors
04=Do not know where to go
05=Previous doctor is not available/moved
06=No insurance/cannot afford
07=Speak a different language
08=No place is available/ close enough/convenient
09=Other
77=DK/Not sure
99=Refused
95

What is the most important reason that you did not have a mammogram in the last year or never had a mammogram?
NOTDONE
1=Not recommended by doctor/never said it was necessary
2=Not needed/not necessary
3=Never heard of mammogram
4=Cost
5=No insurance to pay for it
6=Other
7=DK/Not sure
9=Refused
89, 90

How many members of your household including yourself are 18 years of age or older?
NUMADULT
Number of adults
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

Do you have more than one telephone number in your household?
NUMHHOLD
1=Yes
2=No
9=Refused
93, 94, 95

Of the members of your household 18 years of age or older, how many are male?
NUMMEN

Number of men
85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

Total number of different telephone numbers for this residence.
NUMPHONS (Historical files only)
#
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

Total number of different telephone numbers for this residence.
NUMPHNSU (Recoded for CD-ROM)
#
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

Total number of different telephone numbers for this residence.
NUMPHNSZ (Recoded for CD-ROM)
#
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

Of the members of your household 18 years of age or older, how many are female?
NUMWOMEN
Number of women
85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

Number of glasses of wine per month.
NWINEMOX
1-766=Number of glasses monthly
888=Never or none
777=Not sure
999=Refused
000=Didn't drink in past month
84, 85, 86, 87, 88, 89

On the days when you drank wine, about how many glasses of wine did you drink on the average?
NWINEOCC
Number of glasses
77=DK/Not sure
99=Refused

For visits to a doctor's office when you are sick, does your health care plan cover all, most, some, or none of your expenses?
OFFVISIT
1=All
2=Most

3=Some
4=None
7=DK/Not sure
9=Refused
91, 92

What is the age of the oldest child in your household under the age of 15?
OLDCHLD
1-14=Age in yrs
88=No children <15
77=DK/Not sure
99=Refused
93

What is the age of the oldest child in your household under the age of 16?
OLDCHLD
1-15=Age in yrs
88=No children <16
77=DK/Not sure
99=Refused
94, 95

Are you now on a diet to lose weight?
ONDIET
1=Yes
2=No
9=Refused
84

Please indicate your agreement or disagreement with the following statement: Prolonged exposure to radon gas can be harmful to your health. Do you agree or disagree?
OPINION
1=Agree
2=Disagree
7=DK/Not sure
9=Refused
89, 90, 91, 92, 93, 94

What is your race?
ORACE
1=White
2=Black
3=Asian/PI
4=Native American

7=Unknown
9=Refused
84

What is your race?
ORACEU (Recoded for CD-ROM)
1=White
2=Black
3=Asian/PI
4=Native American
5=Other
7=Unknown
9=Refused
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

Are you doing any of the following to help control high blood pressure: Other, specified method?
OTHMETHD
1=Yes
2=No
7=DK/Not sure
9=Refused
84

During the past 30 days, for about how many days did pain make it hard for you to do your usual activities, such as self-care, work, or recreation?
PAINACTV
Number of days
88=None
77=DK/Not sure
99=Refused
95

These next questions are about Pap smears, which test for cancer of the cervix or uterus. (91)
Have you ever heard of a Pap smear test?
PAPTEST
1=Yes
2=No
7=DK/Not sure
9=Refused
88, 89, 90, 91

About how long has it been since you had health care coverage?
PASTPLAN
1= 1-6 months

2= 7-12 months (93)
2= 6-12 months (94 on)
3= 1-2 years
4= 2-5 years
5= >=5 years
7=DK/Not sure
8=Never
9=Refused
93, 94, 95

What were you doing MOST of the past 12 months?
PASTYEAR
1=Working at a job or business
2=Keeping house
3=Going to school
4=Something else
7= DK/Not sure
9 = Refused
93, 94, 95

Have you increased your physical activity to lose weight?
PHYACT
1=Yes
2=No
7=DK/Not sure
9=Refused
85, 86, 87, 88, 91, 92, 93

Are you using physical activity or exercise to lose weight or to keep from gaining weight?
PHYACT
1=Yes
2=No
7=DK/Not sure
9=Refused
89, 90, 94, 95

Now thinking about your physical health, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good?
PHYSHLTH
1-30=Number of days
88=None
77=DK/Not sure
99=Refused
93, 94, 95

Do you or does anyone in your home plan to have your household air tested for radon within the next year?
PLANTEST
1=Yes
2=No
7=DK/Not sure
9=Refused
89, 90, 91, 92, 93, 94

Have you ever had a pneumonia vaccination?
PNEUMVAC
1=Yes
2=No
7=DK/Not sure
9=Refused
93, 94, 95

Do you have the telephone number for a poison control center in your area?
POISON
1=Yes
2=No
7=DK/Not sure
9=Refused
88, 89, 90, 91, 92

During the past 30 days, for about how many days did poor physical or mental health keep you from doing your usual activities, such as self-care, work, or recreation?
POORHLTH
1-30=Number of days
88=None
77=DK/Not sure
99=Refused
93, 94, 95

How often do you eat pork other than ham, bacon, or sausage?
PORK
1__ __ = Per Day
2__ __ = Per Week
3__ __ = Per Month
4__ __ = Per Year
5 5 5 = Never
7 7 7 = DK/Not sure
9 9 9 = Refused
90, 91, 92, 93, 94, 95

Poststratification (frequency by age/race/sex distribution from census divided by the weighted sample frequency; CDC calculated—part of final weight calculation).
POSTSTRX
99999999.99=Unknown
(2 decimal places)
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

How often do you eat potatoes (not including french fries, fried potatoes, or potato chips)?
POTATOES
1__ __ = Per Day
2__ __ = Per Week
3__ __ = Per Month
4__ __ = Per Year
5 5 5 = Never
7 7 7 = DK/Not sure
9 9 9 = Refused
90, 91, 92, 93, 94, 95

Do you think a pregnant woman who has the AIDS virus can give it to her baby?
PREGAIDS
1=Yes
2=No
7=DK/Not sure
9=Refused
91, 92

To your knowledge, are you pregnant now?
PREGNANT
1=Yes
2=No
7=DK/Not sure
9=Refused
85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

When you are not sick, does your health care plan cover all, most, some, or none of your checkups or other preventive services?
PREVCARE
1=All
2=Most
3=Some
4=None
7=DK/Not sure
9=Refused
91, 92

Is there one particular clinic, health center, doctor's office, or other place that you usually go to if you are sick or need advice about your health?
PRIMCARE
1=Yes, one particular place
2=Yes, more than one particular place
3=No
7=DK/Not sure
9=Refused
93, 94, 95

A proctoscopic exam is when a tube is inserted in the rectum to check for problems. Have you ever heard of a proctoscopic exam?
PROCEXAM
1=Yes
2=No
7=DK/Not sure
9=Refused
88, 89, 90, 91, 92

Can you get infected with the AIDS virus from: being cared for by a nurse, doctor, dentist, or other health care worker who has the AIDS virus?
PROFAIDS
1=Yes
2=No
7=DK/Not sure
9=Refused
91, 92

A breast physical examination is when the breast is felt for lumps by a doctor or medical assistant. Have you ever had a breast physical exam by a doctor or a medical assistant? (90-91)
The next questions are about a clinical breast exam. During this exam, the breast is felt for lumps by a doctor, nurse, or other professional. Have you ever had a clinical breast exam? (92)
A clinical breast exam is when a doctor, nurse, or other health professional feels the breast for lumps. Have you ever had a clinical breast exam? (93-95)
PROFEXAM
1=Yes
2=No
7=DK/Not sure
9=Refused
90, 91, 92, 93, 94, 95

Are you now doing any of the following to lose weight or to keep from gaining weight: participating in an organized weight control program (such as Weight Watchers, TOPS, or Nutri-Systems)?

PROGRAM
1=Yes
2=No
7=DK/Not sure
9=Refused
89, 90

Excluding firearms you carry because of work, have you carried a loaded firearm on your person outside the home for protection during the past 30 days?
PROTECTN
1=Yes
2=No
7=DK/Not sure
9=Refused
95

Because of any impairment or health problem, do you need the help of other persons with your personal care needs, such as eating, bathing, dressing, or getting around the house?
PRSNL65
1=Yes
2=No
7=DK/Not sure
9=Refused
94, 95

Because of any impairment or health problem, do you need the help of other persons with your personal care needs, such as eating, bathing, dressing, or getting around the house?
PRSNL70
1=Yes
2=No
7=DK/Not sure
9=Refused
93

Because of any impairment or health problem, do you need the help of other persons with your personal care needs, such as eating, bathing, dressing, or getting around the house?
PRSNLCAR
1=Yes
2=No
7=DK/Not sure
9=Refused
93, 94, 95

PSU (Primary sampling unit)
Number
PSUX
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

Are you limited in any way in any activities because of any impairment or health problem?
QLACTLMT
1=Yes
2=No
7=DK/Not sure
9=Refused
95

During the past 30 days, for about how many days have you felt very healthy and full of energy?
QLHLTHY
Number of days
88=None
77=DK/Not sure
99=Refused
95

During the past 30 days, for about how many days have you felt sad, blue, or depressed?
QLMENTAL
Number of days
88=None
77=DK/Not sure
99=Refused
95

Because of any impairment or health problem, do you need the help of other persons with your personal care needs, such as eating, bathing, dressing, or getting around the house?
QLPERSNL
1=Yes
2=No
7=DK/Not sure
9=Refused
95

During the past 30 days, for about how many days have you felt you did not get enough rest or sleep?
QLREST
Number of days
88=None
77=DK/Not sure

99=Refused
95

Because of any impairment or health problem, do you need the help of other persons in handling your routine needs, such as everyday household chores, doing necessary business, shopping, or getting around for other purposes?
QLROUTIN
1=Yes
2=No
7=DK/Not sure
9=Refused
95

During the past 30 days, for about how many days have you felt worried, tense, or anxious?
QLSTRESS
Number number of days
88=None
77=DK/Not sure
99=Refused
95

New race code (race/ethnicity)
RACE
01=White, non-Hisp
02=Black, non-Hisp
03=Hisp, White
04=Hisp, Black
05=Other Hisp
06=Asian/PI
07=Native American
08=Other
99=Unknown/Refused
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

Race group codes used in poststratification.
RACEGRX
1=White
2=Nonwhite
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

Have you heard of radon, which is a radioactive gas that occurs in nature?
RADONGAS
1=Yes
2=No

7=DK/Not sure
9=Refused
89, 90, 91, 92, 93, 94

Raw weighting factor unequal selection probability weight (nbr adults in household divided by number of telephone nbrs reaching household).
RAWX
##.##
9999=Unknown
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

What is the main reason you have not visited the dentist in the last year?
REASDENT
01=Fear, apprehension, nervousness, pain, dislike going
02=Cost
03=Do not have/know a dentist
04=Cannot get to the office/clinic(too far away, no transportation, no appointments available)
05=No reason to go (no problems, no teeth)
06=Other priorities
07=Have not thought of it
08=Other
77=DK/Not sure
99=Refused
95

Was your last breast exam done as part of a routine checkup, because of a breast problem, or because you've already had breast cancer?
REASEXAM
1=Routine checkup
2=Breast problem (pre-93)
2=Breast problem other than cancer (93)
3=Had breast cancer
7=DK/Not sure
9=Refused
90, 91, 92, 93, 94, 95

What was the main reason you had your last AIDS blood test?
REASTEST (Related item RSNTST95)
01=Hospitalization or surgical procedure
02=To apply for health insurance
03=To apply for life insurance
04=For employment
05=To apply for a marriage license
06=For military induction or military service

07=For immigration
08=Just to find out if you were infected
09=Because of referral by a doctor
10=Because of referral by the health department (93)
10=Because of pregnancy (94, 95)
11=Referred by your sex partner
12=Because it was part of a blood donation process
13=For routine ckeckup
14=Because of occupational exposure
15=Because of illness
87=Other
77=DK/Not sure
99=Refused
93, 94

Record Number
RECORDX
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

Are you now under the advice of a doctor to reduce your cholesterol or blood fat level?
REDCHOL
1=Yes
2=No
7=DK/Not sure
9=Refused
87, 88, 89, 90

Including breakfast, lunch, and dinner, how many days per week, if any, do you eat red meat such as beef, pork, hamburger, or sausage but not including chicken or fish?
REDMEAT
Number of times per week
77=DK/Not sure
88=None or never
99=Refused
84

Which of the following best describes your residence?
RESIDE
1=Single family home, duplex, townhouse
2=Apartment or condominium at basement, 1st, or 2nd floor
3=Apartment or condominium above 2nd floor
4=Trailer or mobile home
5=Other
7= DK/Not sure

9 = Refused
89, 90, 91, 92, 93, 94

Did you receive the results of your last test (HIV)?
RESULTS
1=Yes
2=No
7=DK/Not sure
9=Refused
94, 95

At risk for acute drinking (reported having 5+ drinks at least once on an occasion)
RFDRACUX
1=At risk
0=Not at risk
9=Refused
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

At risk for chronic drinking (having 60+ drinks a month)?
RFDRCHRX
1=At risk
0=Not at risk
9=Refused
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

At risk for drinking and driving (reported having driven at least once when perhaps had too much to drink)?
RFDRDRIX
1=At risk
0=Not at risk
9=Refused
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

At risk for hypertension (2) (told blood pressure high)?
RFHYPE2X
1=At risk
0=Not at risk
9=Refused
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

At risk for hypertension (3) (told BP high or person told on more than one occasion BP high or person currently taking medication for hypertension)?
RFHYPE3X
1=At risk

0=Not at risk
9=Refused
84, 85, 86, 87, 88, 89, 90

At risk for hypertension (1) (told blood pressure high and blood pressure still high)?
RFHYPERX
1=At risk
0=Not at risk
9=Refused
84, 85, 86, 87, 88, 89

At risk for sedentary lifestyle (sedentary or irregular physical activity profile)?
RFLIFESX
1=At risk
0=Not at risk
9=Refused
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

At risk for obesity (> 120% of weight/height percent of median)?
RFOBESEX
1=At risk
0=Not at risk
9=Refused
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

At risk for riding with a drunk driver (reported having ridden at least once with a driver who perhaps had too much to drink)?
RFRDDRKX
1=At risk
0=Not at risk
9=Refused
93

At risk for seatbelt use (2) (sometimes, seldom, or never wear seatbelt)?
RFSEAT2X
1=At risk
0=Not at risk
9=Refused
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

At risk for seatbelt use (3) (nearly always, sometimes, seldom or never wear seatbelt)?
RFSEAT3X
1=At risk
0=Not at risk

9=Refused
91, 92, 93, 94, 95

At risk for seatbelt use (1) (seldom or never wear seatbelt)?
RFSEATBX
1=At risk
0=Not at risk
9=Refused
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

At risk for smoking (2) (current regular and irregular smokers)?
RFSMOK2X
1=At risk
0=Not at risk
9=Refused
93, 94, 95

At risk for smoking (current regular smokers only)?
RFSMOKEX
1=At risk
0=Not at risk
9=Refused
84, 85, 86, 87, 88, 89, 90, 91, 92, 93

At risk for smokeless tobacco use (current user)?
RFTOBACX
1=At risk
0=Not at risk
9=Refused
87, 88, 89, 90, 91, 92, 93, 94, 95

At risk for overweight based on BMI (risk defined as >=27.8 for males and >=27.3 for females)?
RFWHBMIX
1=At risk
0=Not at risk
9=Refused
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

During the past month, how many times have you ridden with a driver who has had perhaps too much to drink?
RIDEDRNK
Number of times
77=DK/Not sure
88=None

99=Refused
93

How many of your permanent teeth have been removed because of tooth decay or gum disease? Do not include teeth lost for other reasons, such as injury or orthodontics.
RMVTEETH
1=5 or fewer
2=6 or more but not all
3=All
8=None
7=DK/Not sure
9=Refused
95

Because of any impairment or health problem, do you need the help of other persons in handling your routine needs, such as everyday household chores, doing necessary business, shopping, or getting around for other purposes?
ROUT65
1=Yes
2=No
7=DK/Not sure
9=Refused
94, 95

Because of any impairment or health problem, do you need the help of other persons in handling your routine needs, such as everyday household chores, doing necessary business, shopping, or getting around for other purposes?
ROUT70
1=Yes
2=No
7=DK/Not sure
9=Refused
93

Because of any impairment or health problem, do you need the help of other persons in handling your ROUTINE needs, such as everyday household chores, doing necessary business, shopping, or getting around for other purposes?
ROUTNEED
1=Yes
2=No
7=DK/Not sure
9=Refused
93, 94, 95

What was the main reason you had your last blood test for HIV?
RSNTST95 (Related item REASTEST)
01=For hospitalization or sugical procedure
02=To appy for health insurance
03=To apply for life insurance
04=For employment
05=To apply for a marriage license
06=For military induction or military service
07=For immigration
08=Just to find out if you were infected
09=Because of referral by a doctor
10=Because of pregnancy
11=Referred by your sex partner
12=Because it was part of a blood donation process
13=For routine checkup
14=Because of occupational exposure
15=Because of illness
87=Other
77=DK/Not sure
99=Refused
95

If you had a child in school, would you allow him or her to be in the same classroom with another child who is infected with the AIDS virus?
SCHLAIDS
1=Yes
2=No
3=Don't have children
7=DK/Not sure
9=Refused
93

Would you allow your child to be in the same classroom with a child who is infected with the AIDS virus?
SCHLAIDU
1=Yes
2=No
7=DK/Not sure
9=Refused
90, 91, 92, 93, 94, 95

How often do you use seat belts when you drive or ride in a car?
SEATBELT
1=Always

2=Nearly always
3=Sometimes
4=Seldom
5=Never
7=DK/Not sure
8=(85 on) Never drive or ride in car
9=Refused
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

Have you: been more careful in selecting sexual partners?
SELCPTNR
1=Yes
2=No
7=DK/Not sure
9=Refused
95

Have you: had sexual intercourse with only one partner?
SEX1PTNR
1=Yes
2=No
7=DK/Not sure
9=Refused
95

Due to what you know about HIV, have you changed your sexual behavior in the last 12 months?
SEXBEHAV
1=Yes
2=No
7=DK/Not sure
9=Refused
95

Interviewer: Indicate sex of respondent (ask if necessary).
SEXT
1=Male
2=Female
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

Do you feel safer or less safe because there are firearms in your home or car, van, or truck?
SFTYLEVL
1=Safer
2=Less safe
3=Neither

7=DK/Not sure
9=Refused
95

How often does the___-year-old child in your household use a...car safety seat (child under 5), seatbelt (child 5 or older)... when he or she rides in a car?
SFTYLT16
1=Always
2=Nearly always
3=Sometimes
4=Seldom
5=Never
7=DK/Not sure
8=Never rides in a car
9=Refused
95

When was the last time you or someone else deliberately tested all of the smoke detectors in your home, either by pressing the test buttons or by holding a source of smoke near them?
SMKDETEC
1=W/in past month
2=W/in past 6 months
3=W/in past year
4=One or more years ago
5=Never
6=No smoke detectors in home
7=DK/Not sure
9=Refused
95

Computed smokeless status
SMKLESSX
1=Current user
2=Former user
3=Never used
9=Unknown
87, 88, 89, 90, 91, 92, 93, 94, 95

Have you smoked at least 100 cigarettes (5 packs) in your entire life?
SMOKE100
1=Yes
2=No
7=DK/Not sure
8=DK/Not sure (84, 85, 86)

9=Refused
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

On how many of the past 30 days did you smoke cigarettes?
SMOKE30
Number of days
88=None
77=DK/Not sure
99=Refused
94, 95

Do you smoke cigarettes now?
SMOKENOW
1=Yes
2=No
9=Refused
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

On the average, about how many cigarettes a day do you now smoke?
SMOKENUM (Recoded as SMOKENMU for the CD-ROM)
1-87=Number of cigarettes
88=Don’t smoke regularly (pre-93)
99=Refused
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

On the average, about how many cigarettes a day do you now smoke?
SMOKENUZ (Recoded for the CD-ROM)
1-87=Number of cigarettes
77=DK/Not sure
99=Refused
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

On the average, when you smoked during the past 30 days, about how many cigarettes did you smoke a day?
SMOKNM30
Number of cigarettes
77=DK/Not sure
99=Refused
94, 95

Have you stopped smoking for a week or more sometime during the past year?
SMOKQUIT
1=Yes
2=No

9=Refused
84, 85, 86, 87, 88, 89

How long has it been since you last smoked cigarettes fairly regularly?
SMOKREG
1=W/in past yr
2=W/in past 2 yrs
3=W/in past 5 yrs
4=More than 5 yrs
7=DK/Not sure
8=Never
9=Refused
87

How often do you usually eat snacks, such as chips or popcorn?
SNACKS
1__ __ = Per Day
2__ __ = Per Week
3__ __ = Per Month
4__ __ = Per Year
5 5 5 = Never
7 7 7 = DK/Not sure
9 9 9 = Refused
90, 91, 92, 93, 94, 95

How many residential telephone numbers do you have?
SPACE
# Total residential telephone numbers
9=Refused
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

FIPS State Code
STATEX
See file FIPSCODE.TXT" on CD-ROM.
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

Have you ever made a serious attempt to stop smoking cigarettes?
STOPSMOK***
1=Yes
2=No
9=Refused
90, 91, 92, 93, 94

During the past 12 months, have you quit smoking for 1 day or longer?

STOPSMOK
1=Yes
2=No
7=DK/Not sure
9=Refused
91, 92, 93, 94

Does any impairment or health problem NOW keep you from working at a job or business?
STOPWORK
1=Yes
2=No
7=DK/Not sure
9=Refused
93, 94, 95

Are you now doing any of the following to lose weight or to keep from gaining weight: taking special products such as canned or powdered supplements?
SUPPLEMT
1=Yes
2=No
7=DK/Not sure
9=Refused
89, 90

Can you swim or tread water for 5 minutes in water that is over your head?
SWIM5MIN
1=Yes
2=No
7=DK/Not sure
9=Refused
93, 94

Do you think smokeless tobacco can cause any of the following: stained teeth?
TEETHSTA
1=Yes
2=No
7=DK/Not sure
9=Refused
86

Where could you go to be tested for AIDS virus infection?
TEST1AID
01=Private doctor, HMO
02=Blood bank/plasma center/Red Cross

03=Health Dept
04=AIDS clinic, AIDS test site
05=Hosp/ER
06=Family planning clinic
07=STD clinic
08=Community health clinic/Primary care clinic
09=Company or industry clinic
10=Military induction or examination
87=Other
88=No place
77=DK/Not sure
99=Refused
90, 91, 92

Where else could you go (to be tested for AIDS)?
TEST2AID
01=Private doctor, HMO
02=Blood bank/plasma center/Red Cross
03=Health Dept
04=AIDS clinic, AIDS test site
05=Hosp/ER
06=Family planning clinic
07=STD clinic
08=Community health clinic/Primary care clinic
09=Company or industry clinic
10=Military induction or examination
87=Other
88=No place
77=DK/Not sure
99=Refused
90, 91, 92

Has your household air been tested for the presence of radon gas?
TESTAIR
1=Yes
2=No
7=DK/Not sure
9=Refused
89, 90, 91, 92, 93, 94

In the past 12 months have you (or has anyone in your household) used a thermometer to test the temperature of the hot water?
TESTH20
1=Yes

2=No
7=DK/Not sure
9=Refused
88, 89, 90, 91, 92

Were you told what your blood pressure was in numbers?
TOLDBPNR
1=Yes
2=No
7=DK/Not sure
9=Refused
88

Have you ever been told by a doctor or other health professional that your blood cholesterol is high?
TOLDHI
1=Yes
2=No
7=DK/Not sure
9=Refused
87, 88, 89, 90, 91, 92, 93, 94, 95

Have you ever been told your blood cholesterol level in numbers?
TOLDLEV
1=Yes
2=No
7=DK/Not sure
9=Refused
87, 88, 89, 90, 91, 92

Do you think smokeless tobacco can cause any of the following: tooth decay?
TOOTHDEC
1=Yes
2=No
7=DK/Not sure
9=Refused
86

About how long ago did you begin your current attempt to lose weight?
TRYLOSE
1__ __ = Number of days
2__ __ = Number of weeks
3__ __ = Number of months
4__ __ = Number of yrs

5 5 5=Always trying to lose weight
7 7 7=DK/Not sure
9 9 9=Refused
89, 90

What type of doctor did you see for your last routine checkup? Was it:
TYPEDR
1=Family or general practitioner
2=Internist
3=Special, heart/lung/stomach
4=Other
5=Ob/Gyn (for women only)
7=DK/Not sure
9=Refused
89, 90

Are all of the unloaded firearms in your home stored in a locked place that can only be opened with a key or combination, or with a trigger lock that can only be opened with a key or combination?
UNLDLOCK
1=Yes
2=No
7=DK/Not sure
9=Refused
95

Are there any unloaded firearms in your home?
UNLOADED
1=Yes
2=No
7=DK/Not sure
9=Refused
95

Have you: used condoms for protection?
USECONDM
1=Yes
2=No
7=DK/Not sure
9=Refused
95

Have you ever used or tried any smokeless tobacco products such as chewing tobacco or snuff?
USEEVER

1=Yes (86)
1=Yes, Chewing tobacco (87 on)
2=No (86)
2=Yes, Snuff (87 on)
3=Yes, Both (87 on)
4=No, Neither (87 on)
7=DK/Not sure
9=Refused
86, 87, 88, 89, 90, 91, 92, 93, 94, 95

Have you ever used or tried any smokeless tobacco products such as chewing tobacco or snuff?
USEEVERU
1=Yes, Chewing tobacco
2=Yes, Snuff
3=Yes, Both
4=No, Neither
7=DK/Not sure
9=Refused
86, 87, 88, 89, 90, 91, 92, 93, 94, 95

Do you currently use smokeless tobacco?
USENOW
1=Yes (86)
1=Yes, Chewing tobacco (87 on)
2=No (86)
2=Yes, Snuff (87 on)
3=Yes, Both (87 on)
4=No, Neither (87 on)
7=DK/Not sure
9=Refused
86, 87, 88, 89, 90, 91, 92, 93, 94, 95

Do you currently use smokeless tobacco?
USENOWU
1=Yes, Chewing tobacco
2=Yes, Snuff
3=Yes, Both
4=No, Neither
7=DK/Not sure
9=Refused
86, 87, 88, 89, 90, 91, 92, 93, 94, 95

Have you stopped using smokeless tobacco for a week or more sometime during the past year?
USEQUIT

1=Yes
2=No
3=Occasional use only
7=DK/Not sure
9=Refused
86

Are you currently taking medicine for your high blood pressure?
USETREAT
1=Yes, most of time
2=Yes, only occasionally
3=No
7=DK/Not sure
9=Refused
84, 85, 86, 87, 88, 89, 90

How long have you been using/did you use smokeless tobacco?
USEYRS
Number of yrs
87=<1 yr
89=Occasional
77=DK/Not sure
99=Refused
86

Not counting carrots, potatoes, or salad, how many servings of vegetables do you usually eat? (For example, a serving of vegetables at both lunch and dinner would be two servings.)
VEGETABL
1__ __ = Per Day
2__ __ = Per Week
3__ __ = Per Month
4__ __ = Per Yr
5 5 5 = Never
7 7 7 = DK/Not sure
9 9 9 = Refused
90, 91, 92, 93, 94, 95

In general, how would you rate you vision when wearing glasses or contacts if needed? Would you say:
VISION
1=Excellent
2=Very good
3=Good
4=Fair

5=Poor
7=DK/Not sure
9=Refused
93

How much of the time does your vision limit you in watching television?
VISIONTV
1=All of the time
2=Most of the time
3=Some of the time
4=A little bit of the time
5=None of the time
7=DK/Not sure
9=Refused
94, 95

How much of the time does your vision limit you in recognizing people or objects across the street?
VISNDIST
1=All of the time
2=Most of the time
3=Some of the time
4=A little bit of the time
5=None of the time
7=DK/Not sure
9=Refused
94, 95

How much of the time does your vision limit you in reading print in a newspaper, magazine, recipe, menu, or numbers on the telephone?
VISNREAD
1=All of the time
2=Most of the time
3=Some of the time
4=A little bit of the time
5=None of the time
7=DK/Not sure
9=Refused
94, 95

Are you doing any of the following to help control high blood pressure: avoiding stress, relaxing?
VOIDSTRS
1=Yes
2=No
7=DK/Not sure
9=Refused
84, 85, 86

Are you now doing any of the following to lose weight or to keep from gaining weight: causing yourself to vomit after you eat?
VOMIT
1=Yes
2=No
7=DK/Not sure
9=Refused
89, 90

About how much do you weigh without shoes?
WEIGHT
In pounds
777=DK/Not sure
999=Refused
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

About how much did you weigh when you began your current attempt to lose weight?
WHATWGT
In pounds
777=DK/Not sure
999=Refused
89, 90

During what month is your baby due?
WHENDUE
Month
77=DK/Not sure
99=Refused
88, 89, 90, 91, 92

When was the start of your most recent (smoking) quit attempt?
WHENSTOP
1=Past week
2=Past 2 weeks
3=Past month

4=Past 6 months
5=Past year
6=>1 year
7=DK/Not sure
9=Refused
90

Where did you have your last blood test for the AIDS virus?
WHERETST (Related item: WHRTST95)
01=Private doctor, HMO
02=Blood bank, plasma center, Red Cross
03=Health Dept
04=AIDS clinic, counseling, testing site
05=Hospital, emergency room, outpatient clinic
06=Family planning clinic
07=Prenatal clinic
8=Tuberculosis clinic
9=STD clinic
10=Community health clinic
11=Clinic run by employer
12=Insurance company clinic
13=Other public clinic
14=Drug treatment facility
15=Military induction or military service site
16=Immigration site
17=At home, home visit by nurse or health worker
87=Other
77=DK
99=Refused
93, 94

Where did you have your last blood test for HIV?
WHRTST95 (Related item: WHERETST)
01=Private doctor, HMO
02=Blood bank, plasma center, Red Cross
03=Health Department
04=AIDS clinic, counseling, testing site
05=Hospital, emergency room, outpatient clinic
06=Family planning clinic
07=Prenatal clinic
08=Tuberculosis clinic
09=STD clinic
10=Community health clinic
11=Clinic run by employer

12=Insurance company clinic
13=Other public clinic
14=Drug treatment facility
15=Military induction or military service site
16=Immigration site
17=At home, home visit by nurse or health worker
18=At home, using self-testing kit
87=Other
77=DK/Not sure
99=Refused
95

Was your last mammogram done as part of a routine checkup, because of a breast problem, or because you've already had breast cancer?
WHYDONE
1=Routine checkup
2=Breast problem (pre-93)
2=Breast problem other than cancer (93)
3=Had breast cancer
7=DK/Not sure
9=Refused
87, 88, 89, 90, 91, 92, 93, 94, 95

Was your last Pap smear done as part of a routine exam or to check a problem or for some other reason? (92)
Was your last Pap smear done as part of a routine exam or to check a current or previous problem? (93-95)
WHYPAP
1=Routine checkup
2=Check problem (pre-93)
2=Check current or previous problem (93 on)
3=Other
7=DK/Not sure
9=Refused
92, 93, 94, 95

Was your last Pap smear done as part of a routine exam or to check a problem or for some other reason?
WHYPAPU
1=Routine checkup
2=Check current or previous problem (93 on)
3=Other
7=DK/Not sure
9=Refused

92, 93, 94, 95

Winddown (was this survey done in the winddown period)
WINDDOWN
blank=regular
9=winddown mode
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

Have you ever personally known anyone with the AIDS virus infection or with AIDS?
WITHAIDS
1=Yes
2=No
7=DK/Not sure
9=Refused
88, 89

Would you be willing to work next to or near a person who you know is infected with the AIDS virus?
WORKAIDS
1=Yes
2=No
7=DK/Not sure
9=Refused
90, 91, 92, 93, 94, 95

WT1 (Raw * CSA) The product of unequal selection probability weight and cluster size adjustment
WT1X
99.99=Unknown
(2 decimal places)
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

How much would you like to weigh?
WTDESIRE
Number of pounds
7 7 7=DK/Not sure
9 9 9=Refused
89, 90

Weight for height percent of median.
WTFORHTX
###.##
999.99=Refused
(2 decimal places)

84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

How much weight, if any, have you lost since beginning your diet?
WTLOST
Number of pounds
77=DK/Not sure
99=Refused
84

Are you doing any of the following to help control high blood pressure: watching your weight?
WTWATCH
1=Yes
2=No
7=DK/Not sure
9=Refused
84, 85, 86

Sex-group codes used in poststratification.
XSEXGX
1=Male
2=Female
84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95

What is the age of the youngest child in your household?
YOUNGAGE
Age in yrs
88=No children in house
77=DK/Not sure
99=Refused
88, 89, 90, 91, 92

Do you have a child or children in kindergarten through 8th grade?
YOUNGCHLD
1=Yes
2=No
7=DK/Not sure
9=Refused
90, 91, 92

**********ACTIVITY CODE PAGE**********

The following is the list of activity codes and intensity factors used for common leisure activities.

Coding List A

Code	Description	Code	Description
01	Aerobics Class	28	Racquetball
02	Back Packing	29	Raking Lawn
03	Badminton	30	Running
04	Basketball	31	Rope Skipping
05	Bicycling for Pleasure	32	Scuba Diving
06	Boating (Canoeing, Rowing, Sailing for Pleasure or Camping)	33	Skating - Ice or Roller
		34	Sledding, Tobogganing
07	Bowling	35	Snorkeling
08	Boxing	36	Snow Shoeing
09	Calisthenics	37	Snow Shoveling by Hand
10	Canoeing/Rowing in Competition	38	Snow Blowing
11	Carpentry	39	Snow Skiing
12	Dancing - Aerobics/Ballet	40	Soccer
13	Fishing from River Bank or Boat	41	Softball
14	Gardening (Spading, Weeding, Digging, Filling)	42	Squash
		43	Stair Climbing
15	Golf	44	Stream Fishing in Waders
16	Handball	45	Surfing
17	Health Club Exercise	46	Swimming Laps
18	Hiking - Cross Country	47	Table Tennis
19	Home Exercise	48	Tennis
20	Horseback Riding	49	Touch Football
21	Hunting Large Game - Deer, Elk	50	Volleyball
22	Jogging	51	Walking
23	Judo/Karate	52	Water Skiing
24	Mountain Climbing	53	Weight Lifting
25	Mowing Lawn	54	Other _____
26	Paddleball	55	Bicycling Machine Exercise
27	Painting/Papering House	56	Rowing Machine

Coding List B

Lap Swimming

Pool Size	Laps
50 ft. pool	5 laps (10 lengths) = .1 mile
100 ft. pool	2-1/2 laps (5 lengths) = .1 mile
50 meter pool	1-1/2 laps (3 lengths) = .1 mile

Running/Jogging/Walking

1/2 mile	=	.5 mile
1/4 mile	=	.3 mile
1/8 mile	=	.1 mile
1 block	=	.1 mile

Appendix I
CDC WONDER

CDC WONDER is a general-purpose public health information system developed by the Centers for Disease Control and Prevention (CDC) that can be accessed via the World Wide Web. CDC WONDER provides query access to about 40 text-based and numeric databases. End user substate analyses can be developed by using Public Use Micro data Area (PUMA) codes and Labor Market Area (LMA) codes that are populated on the datasets. Users can request data for any disease and demographic group by submitting ad hoc queries against available datasets. CDC WONDER provides free-text search facilities and document retrieval for several important text datasets, including the *Morbidity and Mortality Weekly Report (MMWR)* from 1982 to the present and *CDC Prevention Guidelines*. Currently, CDC WONDER on the Web contains 26 public use datasets; other datasets, including the BRFSS, will be released as they are tested.

Due to the rapid emergence and utility of the Internet and associated technologies, many formerly proposed features of CDC WONDER have been transferred to the CDC web site at www.cdc.gov. Because the Internet is not yet universally accessible among some programs in state departments of health, CDC WONDER is currently the official communications vehicle between Behavioral Surveillance Branch and BRFSS projects in those departments of health.

All attachments to E-mails leaving CDC are encoded for Internet transmission by using UUencoding. Check with your E-mail system administrator to find out if your system decodes incoming transmissions using UUdecoding. If yes, you should initiate the forwarding of your WONDER E-mail to your SMTP E-mail address.

To forward WONDER E-mail to your SMTP E-mail address, perform these steps:

1. Perform a System Update in WONDER to ensure that the necessary request screen gets added to your CDC WONDER system.
2. Use the request entitled "Forward CDC WONDER E-mail" (from the main WONDER menu, select "Requests," "New," and then "Forward CDC WONDER E-mail").
3. Follow the instructions sent to you in the Response to your Request.

Notes: WONDER Support recommends that you make your request in the morning to allow plenty of time to verify the correctness of your forwarding address.

Forwarding will not take effect until approximately 12:30 A.M. the day following your request. Mail received the day of your request addressed to your CDC WONDER mailbox will only be retrievable via CDC WONDER.

If your incoming E-mail messages are not decoded using UUdecoding, request that your E-mail system administrator add UUdecoding to the E-mail system. Until your system has automatic UUdecoding, WinZip shareware for UUdecoding can be obtained from the Web site WinZip.com. You can save WinZip in a directory on your hard drive and install it from Windows. When you receive an E-mail with coded attachments that you cannot access, you can save the E-mail to a directory as an ASCII file by using "file/save as" on your E-mail menu. You then run WinZip and decode the file.

When you begin receiving E-mails in your office E-mail system, you will need to access the CDC global E-mail address list when you want to send an E-mail to a CDC or WONDER colleague. To do so, go to the CDC Web page (http://www.cdc.gov) and select "Data" and "Statistics/CDC WONDER/Who's Who at CDC." A search box will appear. Type in the person's last name. A list will appear with the SMTP addresses of people with the last name you searched. You may note the address of the person you want to E-mail and later enter it in your E-mail address book, or you can click on the person's name. An E-mail box will appear, from which you can compose and send your E-mail.

It is anticipated that the WONDER dial-in system will be eliminated in 1998.You are encouraged to take the appropriate steps to initiate delivery of your WONDER E-mails to your SMTP address. This will avoid interruption of your communications and accelerate the exchange of E-mails. Please call your technical advisor if you have questions.

Appendix J
Supervisors Handbook for Ci3 System and Ci3 CATI

The *Supervisor's Handbook for Ci3 System and Ci3 CATI* written by Peter Mariolis, Ph.D., for the Behavioral Surveillance Branch, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, is presented as Appendix J in its entirety and in its original format.

Behavioral Risk Factor Surveillance System

Supervisor's Handbook for Ci3 System and Ci3 CATI

For Use With Ci3 System 1.1 and
Ci3 CATI 3.2
January 6, 1997

Supervisor's Handbook for Ci3 System and Ci3 CATI

Behavioral Surveillance Branch
Office of Surveillance and Analysis
National Center for Chronic Disease Prevention
and Health Promotion
Centers for Disease Control and Prevention

For Use With Ci3 System Version 1.1 and
Ci3 CATI Version 3.2

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Claude Comeau contributed significantly to the entire handbook, especially the descriptions of Waksberg sampling logic, the discussions of the CLEANULL.EXE, CLEAN15.EXE, and CLEANALL.EXE programs, reports, and wind-down.

Preface

This version of the **BRFSS Supervisor's Handbook for Ci3 System and Ci3 CATI** is intended for states using Ci3 System 1.1 and versions of Ci3 CATI 3.2 dated January 10, 1995 or later. It supersedes all earlier versions in their entirety.

Please note that when you install Ci3 System 1.1, you must (re)compile your BRFSS questionnaire using Ci3 System 1.1. You should also make sure that QUE.EXE in both the Ci3 System and Ci3 CATI directories is dated January 12, 1995 or later.

There are four operational differences between this version of the *BRFSS Supervisor's Handbook* and the previous version, which is dated March 31, 1994:

(1) First and most importantly, this version contains instructions for pre-screening with Ci3 CATI. (Appendix E)

(2) Beginning with the January 10, 1995 release, Ci3 CATI has a data editor function that allows you to change individual data records, delete respondents, and change respondent numbers. (Page 9 - 5)

(3) We still recommend that you use field diskettes, rather than field directories, to store field disk information for the first few months of interviewing with Ci3 CATI. We now, however, take the position that after the first few months of interviewing with Ci3 CATI, you should decide between collecting field disk information on floppy diskettes or on field disk directories. The relative advantages and disadvantages of collecting field disk information on floppy diskettes compared to field directories, as we see them, are presented for your consideration. (Pages 1 - 5 to 1 - 6)

(4) We now use one program to handle the between-calling-occasion tasks covered by CLEAN15.EXE and CLEANULL.EXE. CLEANALL.EXE should now be run in place of the previous two programs.

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1. Introduction

This handbook is written for survey supervisors using Ci3 System and Ci3 CATI System from Sawtooth Technologies to conduct telephone surveys for the Behavioral Risk Factor Surveillance System (BRFSS). It takes the reader from the receipt of a BRFSS questionnaire in ASCII format and a file containing specifications for converting data in Ci3 to ASCII format from the Behavioral Surveillance Branch (BSB) to the creation of data files to be sent back to BSB.

You can receive support and information on different aspects of Ci3 System and Ci3 CATI from four different sources. For technical support on running Ci3 System and Ci3 CATI themselves, contact Sawtooth Technologies at 847-866-0870. For support or information on policies and procedures specific to the BRFSS contact Peter Mariolis at 770-488-5298. For assistance with using Ci3 System to modify the BRFSS questionnaire, contact Bill Garvin at 770-488-5301. For technical support on implementation, including configuration of hardware and system software, contact Claude Comeau at 603-673-9744 (voice) or 617-579-9183 (beeper). For general support on DOS, your LAN, or other aspects of your installation, you should contact your local computer support person.

Appendix B contains six Reference Guides to various aspects of using Ci3 System and Ci3 CATI System for the BRFSS. There are Reference Guides to setting up a BRFSS study in Ci3 System, setting up a BRFSS study in Ci3 CATI, performing routine between-calling-occasion tasks in Ci3 CATI, replacing a bad PSU, invoking wind-down, and converting files of sample records, completed interviews, and partially completed interviews into ASCII format for transmission to BSB. The Reference Guides are step-by-step guides to performing these tasks.

In order to use Ci3 System and Ci3 CATI System effectively, you will need to specify complete pathnames of files, rename, view, copy, and delete files, change directories, create and remove directories, and run programs from the DOS prompt (or a file manager). If you do not have the requisite knowledge, you should arrange for training to receive it. Appendix C contains a handout on DOS concepts and commands to help you carry out the tasks in DOS that are necessary to use Ci3 System and Ci3 CATI effectively.

Finally, please note that this handbook is not meant to replace the Sawtooth manuals: it tells you what to do to set up the Ci3 System and Ci3 CATI System software but does not always tell you how to do it. For the latter, you should read the indicated pages in the indicated Sawtooth manuals.

Conventions

It is important to distinguish between the two software packages from Sawtooth Technologies that make up the computer-assisted telephone interviewing system as a whole. **Ci3 System** provides a questionnaire construction capability, allows you to edit data, and converts data from

Ci3 to ASCII format. **Ci3 CATI System** contains the sample and call management capability for telephone interviewing. Sawtooth uses the term Ci3 as shorthand for Ci3 System and CATI for Ci3 CATI System. This handbook will use either the complete names or the terms Ci3 System and Ci3 CATI to refer to the two. There is no single name for the system as a whole.

Another convention that this handbook will follow is, when appropriate, to show the menu picks that are required to carry out a certain task. The menu picks are shown immediately after the heading that identifies a task with the first letter of each pick enlarged and bolded. Pressing the first letter of each menu pick is the fastest way to navigate the Sawtooth menus.

Also, when appropriate, the handbook shows the page numbers in the Sawtooth manuals where the topic under consideration is discussed. **Unless otherwise indicated, page numbers refer to the *Ci3 CATI System* manual** and (not the *Ci3 System* manual). The chapters, "Set-Up Procedures in Ci3 System," "Additional Back-End Procedures," and "Creating ASCII Files of Incompletes and Completes" contain references to the *Ci3 System* manual; these are identified as such.

The handbook uses redlined text to indicate items that you enter as a response to Ci3 System and Ci3 CATI prompts, at various entry screens in Ci3 CATI, or at the DOS prompt. The one exception is in the Reference Guides in Appendix C, where keystrokes are indicated in normal text.

A final convention pertains to the printing of pathnames, filenames, and study names. Names that should be entered as shown or that are examples are printed in UPPERCASE. (You can, of course, always enter them in lowercase.) Names that stand for different names that you must enter are printed in *UPPERCASE ITALICS*. Thus, an instruction to enter *SSYY*.ASC means that you should substitute your state's postal abbreviation and the last two digits of the current year for the first part of the filename and end with a .ASC extension.

BRFSS-Specific Executable Files

Before first using the BRFSS questionnaire, you will receive two executable files from BSB to be installed in the Ci3 CATI directory. One of the files, CLEANALL.EXE, is a program run from the DOS prompt between calling occasions. (See Chapter 7, "Routine, Between-Calling-Occasion Tasks.") The file, CHECK.EXE, is a public domain program that is used for checking the integrity of files transmitted via modem.

Pre-Screening

For the first few months of Ci3 CATI use, you should continue to pre-screen telephone numbers with your current method, whether CASS or paper. Once you have routinized household

sampling and interviewing with Ci3 CATI, you should start pre-screening with Ci3 CATI. See Appendix A, *Mitofsky-Waksberg Random Digit Three-Stage Cluster Design for the Behavioral Risk Factor Surveillance System*. You should follow the same rules (specified on page A - 6 of this handbook) in calling telephone numbers during pre-screening that you follow in calling telephone numbers in the household selection stage. Page A - 6 of Appendix A is the Ci3 CATI version of BRFSS Policy Memo 94.4, "Rules of Replacement," dated November 28, 1994, which states the rules that should be followed in processing telephone numbers.

The main part of this handbook assumes that you are performing pre-screening without Ci3 CATI. Appendix E, *Pre-Screening With Ci3 CATI*, specifies how to use Ci3 CATI to pre-screen.

It is important that you keep track of primary sampling unit (PSU) numbers from month to month and that no two PSU's receive the same number in a single study year. As you create the sample records for each month, you will need to give Ci3 CATI a starting PSU number. This number should always be larger than the largest number used the previous month. A convention used by California--which we recommend--is to number the PSUs in thousands by month. Thus, the January PSU's should start with 01001 and the December PSUs with 12001.

Creating an ASCII File of Screened Telephone Numbers

Pages 2-51 to 2-52

The Ci3 CATI manual calls the screened telephone numbers stage-one, or first-stage, numbers. When pre-screening without Ci3 CATI, once you have determined your stage-one telephone numbers, you must enter the numbers into an ASCII file. Typically, you will enter the numbers into the computer in a word processor, outside of Ci3 CATI.

For the BRFSS survey, the stage-one numbers should be in the format, *ddd-ddd-dddd*, where the first set of three digits is the area code, the second set of three digits is the exchange, and the set of four digits is the suffix. The telephone number should begin in column one. All lines, **specifically including the last line**, must end with a carriage return/line feed (CR/LF). (In WordPerfect terminology, a CR/LF is called a Hard Return. Thus, if you are using WordPerfect, all lines, **specifically including the last line**, must end with a Hard Return. This means that at the end of the file, the cursor will be on a line by itself and thus the last line will appear as a blank line. The file should end with only **one** Hard Return; thus there should be no other blank lines in the file.) In setting up your study, you will subsequently use the Waksberg feature of Ci3 CATI to further process these numbers and then import them into Ci3 CATI for interviewing.

Most word processors and text editors either can or normally do save files in ASCII format. Be aware that some word processors will save the file again as you exit--if you do so, the file may be saved in the default format and Ci3 CATI will not be able to read it.

A good place to put this file is in the study directory. When you first assign a study, Ci3 CATI creates two directories as sub-directories of the CATI directory, in which the Ci3 CATI programs

are located. One of these sub-directories is named S*XXX*, where *XXX* is a number that you assign to the study. Ci3 CATI uses this directory to store study specifications and data from completed interviews. (See pages 1-4 to 1-7 in the *Ci3 CATI Manual* for a more complete explanation of how Ci3 CATI organizes information on the file server.)

If the ASCII file of stage-one numbers is in the study directory, you will only need to know the name of the file in order to use it to generate the stage-two numbers. If the file is not in the study directory, you will need to know the full pathname of the stage-one file in order to generate the stage-two numbers.

Ci3 System Questionnaire and Specifications for Data Conversion Files

Before initial interviewing with Ci3 CATI and at the beginning of each calendar year, you will receive your BRFSS questionnaire in ASCII format as an attachment to a WONDER/PC message or on a diskette. The file name will be your state's two-character postal abbreviation followed by the last two characters of the questionnaire year with the extension .ASC, or *SSYY*.ASC. For example, the file name for Kentucky for the 1995 questionnaire would be KY95.ASC and for South Carolina, SC95.ASC.

In addition to the questionnaire file, you will receive a file that contains the specifications for copying the data from completed interviews to an ASCII file. The file name will follow the same convention as above with the extension .CON.

You should copy both files into the directory where the Ci3 System (**not** the Ci3 CATI System) program files are located. For example, if your Ci3 System programs are in a directory named CI3, which is often the case, to copy the questionnaire file from a floppy drive in drive A: to the Ci3 System directory, you would enter

F:\CI3 > COPY A:*SSYY*.ASC F:\CI3*SSYY*.ASC

and **not** F:\CI3 > COPY A:*SSYY*.ASC F:\CATI*SSYY*.ASC.

F1, End, Esc in Ci3 System and Ci3 CATI

The functions of three keys are especially useful to know when using Ci3 System or Ci3 CATI.

F1. At any first or second-level menu, pressing F1 will bring up one or more help screens for that menu option. The information presented varies in usefulness but in some cases can save several minutes of searching through the manual. When you are first learning Ci3 CATI, you should bring up the help screens often until you are familiar with them. This practice will help you learn Ci3 CATI more easily and help you identify the most useful help screens.

End. Within a menu choice, pressing End (almost always) saves the changes and exits to the menu.

Esc. Use Esc to exit something you start but no longer want to do. Within a menu choice, pressing Esc exits to the menu without saving any changes. At a menu choice, pressing Esc exits to the next higher menu level.

Field Diskettes and Field Directories

Ci3 CATI 3.2 allows the user to store field disk information either on floppy disks or on field directories, which may be either a local hard drive or on the network server. **We recommend that, at least for the first few months, you store field disk information on floppy disks.**

One advantage of storing field disk information on floppy disks is that you thereby create an archival backup. At the end of a study, you can simply collect the floppy disks and store them in a safe place on another site. If you store the field disk information on hard disks, you will still need to back up the hard disks to a tape or to floppy disks.

A second advantage of storing field disk information on floppy disks is that you can use the data examination features of Ci3 CATI on field disks but not on field directories. Ci3 CATI allows you to count the number of records in the completed interview file, look at the responses to a completed interview, and calculate marginals for questions only for field disk information that is stored on floppy disks. Occasionally, interview data that should be in a study directory on the file server is not there. Usually, that occurs because an interviewer did not log off properly. (Logging off the field disk or directory places the data in the study directory.) If this procedure fails and you are using field disks, Ci3 CATI allows you to verify that the data are on the field disk. If, however, you are using field directories, you will not be able to verify that the data are in the field directory.

A third advantage of storing field disk information on floppy disks is that you are not tied to a particular workstation. If a workstation crashes because of a hard disk failure or some other hardware problem, you no longer have access to the data on that workstation and it could be

permanently lost. By contrast, if you are storing field disk information on floppy disks and you experience a hardware malfunction on a workstation, you can put the field disk in another workstation and continue interviewing without any lost or temporarily inaccessible data.

The main disadvantage of storing field disk information on floppy disks is that the time between the end of one interview attempt and the beginning of another takes several more seconds than with field directories. Another disadvantage is that you do have to keep track of the floppy disks.

Whether the security and flexibility advantages of floppy disks outweigh their speed and convenience disadvantages is ultimately for you to decide. Because, however, you are likely to experience more problems the first few months than subsequently, we recommend that you store field disk information on floppy disks for at least the first few months of interviewing with Ci3 CATI.

2. Setup Procedures in Ci3 System

Ci3 System is the questionnaire construction part of Sawtooth's survey software. As mentioned, the BRFSS questionnaire is in ASCII format when you receive it. Ci3 System compiles the questionnaire into the format that Ci3 CATI requires.

For the BRFSS survey, you will perform the set-up procedures described in this chapter for this program annually or, in some cases, as the questionnaire changes. The one exception is enabling the memory saver, which you only perform once, unless you re-install Ci3 System.

Enabling the memory saver is required only if you are going to view or change the questionnaire and viewing or changing the questionnaire is not absolutely required for conducting the BRFSS survey. Since it seems likely, however, that you will want to do one or the other at some point, discussions of these topics are included in this handbook.

For step-by-step instructions, see "A Reference Guide to Setting Up a BRFSS Study in Ci3 System" in Appendix B, page B - 1.

Defining a Study

Study...**N**ew
Pages 3-1 to 3-2 in *Ci3 System 1.1* manual

Enter a name of up to 8 characters for the questionnaire. This action creates a new study by that name. You can also enter a longer description. If you have already received your questionnaire file from the Behavioral Surveillance Branch, you should enter *SSYY* as the study name. The study name must match the questionnaire file name up to but not including the extension. The questionnaire file name must have the extension .ASC.

Selecting a Study

Study...**S**elect

Select *SSYY* as the current study.

Enabling the Memory Saver

Options...**M**emory Saver
Pages 2-6 to 2-7 in *Ci3 System 1.1* manual

Enable the memory saver. Exit Ci3 System and then run Ci3 System again to ensure that the memory saver is activated.

Enabling the memory saver tells Ci3 to use extended or expanded memory or available hard disk space if there is not enough conventional memory to run the program. If you do not enable the memory saver, you will probably get a message when writing or compiling that says, "Not enough memory is available." If you do get this message, you should verify that the memory saver is enabled.

Viewing or Changing the Questionnaire

Options...**W**rite Command,
Compose...**W**rite, and
Compose...**T**est
Pages 2-1 to 2-3, 4-3 to 4-5, 4-26 to 4-30 in the *Ci3 System 1.1* manual

You tell Ci3 System which word processor to use in **O**ptions...**W**rite Command. Enter the full pathname and any appropriate options. If you bring up the questionnaire in a word processor, be very careful to save it as an ASCII file if you make changes or not save it at all if you don't.

In particular, if you are using WordPerfect, use Ctrl-F5 (Text In/Out) to save the questionnaire and **do not** subsequently save it as a regular WordPerfect file. This means that, upon exiting WordPerfect, **you must respond with a No** to **Save document? Y**es (**N**o).

You can look at or make changes to the questionnaire by calling up a word processor (or text editor) in **C**ompose...**W**rite. Once you select **C**ompose...**W**rite, Ci3 System will look for a file in the Ci3 System directory with the name of the currently selected study and the extension .ASC. If Ci3 System doesn't find one, it will create a file with that name; if it does find one it will load the file into your word processor. For example, if GEORGIA is the currently selected study, when you go into your word processor, Ci3 System will look for a file called GEORGIA.ASC. If it doesn't find it, Ci3 System will create a document called GEORGIA.ASC; if it does find it, Ci3 System will load it into your word processor.

If you make a change in the questionnaire, you will first have to (re)compile it and then test the changes using **C**ompose...**T**est. Once the questionnaire is working properly in Ci3 System, you will have to further test the changes in Ci3 CATI.

Compiling the Questionnaire

Compose...**C**ompile
Pages 4-22 to 4-26 in *Ci3 System 1.1* manual

When you compile the questionnaire, Ci3 System puts it in a format that it and Ci3 CATI can use for interviewing.

The BRFSS questionnaire contains many skips back to previous questions. For example, if the number of men and the number of women do not add to the total number of adults, the interviewer is taken back to the appropriate screen for corrections. Going back to an already answered question creates the possibility that the intervening answers will be lost. Although Ci3 System allows you to do that, it issues a warning message. Thus, when you compile the questionnaire, you will see many messages that look like this:

```
Warning:  SKIP/CNA/QAL refers to a previous question and could result in
       intervening data being inaccessible.  Refer to SKIP/CNA in the
       Ci3 manual for full warning.  Check instruction in Question: Closing.
       (Instruction:  SKP - #41)
```

The underlined items will change from warning to warning; the rest of the message will remain the same.

You may ignore messages like the one above. **You should not, however, ignore other warning or error messages.** If you do see other warning or error messages, you should determine the cause of the message and correct it.

If compilation is successful, the last two lines of the compilation message will say,

```
Compilation successful.
Questionnaire file will be created.
```

If you get this message and the only warning or error messages you get are like the one above, you have successfully compiled your questionnaire.

Once you have compiled the questionnaire, exit Ci3 System and run Ci3 CATI. Later on, in Ci3 CATI, you will copy the compiled questionnaire file that you have just created into Ci3 CATI, thus making it available to the interviewing stations when they log on. You will then use Ci3 CATI to create field disks that will run under Ci3 CATI.

Since you will define a new study in Ci3 CATI each month, you will need to copy the compiled questionnaire file each month into Ci3 CATI. Thus, you should keep the file in the Ci3 System directory until the questionnaire changes or a new calendar year begins, whichever comes first.

3. BRFSS Disposition Codes

The table on the following page shows the BRFSS disposition codes as implemented in Ci3 CATI. The table shows the name and type of each code, its abbreviation as it should be entered into Ci3 CATI, its code number, and the parameters which should be entered for it. For comparability, the table also shows the corresponding CASS and paper codes.

Please note that codes 11-15 are recommended and that all the others are required.

Among the interim codes, codes 01, 02, and 03 are required by Ci3 CATI. Codes 04-07 are reserved for possible use by Ci3 CATI. The code for a null attempt (08) must be pre-set to enable decrementing the number of call attempts. Codes 09 and 10 are reserved for possible BRFSS use. Codes 11-19 are available for your own interim codes. Requires Supervisor Attention (code 20) is at the end of the interim disposition codes because you will frequently want to treat it differently than the other interim codes. It is up to you to decide the circumstances, if any, under which interviewers should assign a disposition code of 20 to a call attempt. If you decide that you will never want interviewers to code a sample record for the supervisor's attention, you need not use this code.

(If you use interim codes in addition to or in place of the ones we recommend, please let Peter Mariolis (770-488-5298) know. We may want to change our recommendations.)

We require that the records you send to us contain only the codes specified on the next page. You may, however, use 32-35 for additional final incomplete codes for your own use. Similarly, while we require that all completed interviews contain a disposition code of 36, you may use 37-40 as additional completed interview codes for your own use.

The codes are grouped so as to facilitate searches of the sample records.

As explained more fully in the first footnote to the table, the first two Ci3 CATI parameters define a measure, which Sawtooth calls an incidence measure, that appears in several reports, and the last one groups the codes for appearance on the screen. We have defined the incidence measure so that it corresponds to the BRFSS upper bound response rate. You can change both it and the grouping of the dispositions to whatever you find most useful. Again, though, please let Peter Mariolis (770-488-5298) know so that if your changes are generally useful, we can change our recommendations.

The page after next shows the BRFSS final disposition codes and the Rules of Replacement for incomplete interviews. The major role that Ci3 CATI plays in the BRFSS is to implement these Rules of Replacement as much as possible automatically by computer. In order to maximize the scientific integrity and comparability of BRFSS data across states, you should ensure that all of your procedures are consistent with the BRFSS Rules of Replacement.

BRFSS Disposition Codes for Ci3 CATI
February 23, 1995

DISPOSITION NAME AND TYPE	CATI ABBREVIATION	CATI CODE	PARA-METERS*	CASS CODE	PAPER CODE
Interim (Required: 01-03,08,20 Recommended: 11-15)					
No Answer	No Answer	01	n/n/p	4	
Busy	Busy	02	n/n/p	10	
Answering Machine	Answering Machine	03	n/n/p	40	
Null Attempt	Null Attempt	08	n/n/c	15	
Definite Appointment	Appointment	11	n/n/c	13	
Initial Refused Interview (Refused before question 1)	Initial Refusal	12	n/n/c	2,14	
Initial Terminated within Questionnaire (Refused question 1 or later)	Initial Term in Ques	13	n/n/c	9	
Fast Busy or Strange Noise	Fast Busy or Noise	14	n/n/c	33	
Non-English Speaking Respondent	Non-English Speaking	15	n/n/c		
Requires Supervisor Attention	Supervisor Attention	20	n/n/c	12	
Final Incompletes (Required)					
Answering Machine**	Final Ans Mach	21	n/n/h	44	4
Refused interview	Refused Interview	22	n/y/i	22	2
Nonworking number	Nonworking Number	23	n/n/s	3	3
Ring no answer**	Final No Answer	24	n/n/h	44	4
Not a private residence	Not a Private Res	25	n/n/s	5	5
No eligible respondent at this number	No Elig Resp at Nmbr	26	n/n/s	6	6
Selected respondent not available during the interviewing period	Select Resp Not Aval	27	n/n/s	7	7
Language barrier	Language Barrier	28	n/n/s	8	8
Terminated within questionnaire	Final Term in Quest	29	n/y/i	99	9
Line busy**	Final Line Busy	30	n/n/h	50	10
Selected respondent unable to communicate due to physical or mental impairment	Resp Unable Commun	31	n/n/s	11	11
Completes (Required)					
Completed interview (questions asked through age, race, and sex)	Completed Interview	36	y/y/h	1	1

* Ci3 CATI allows users to define an incidence measure which appears in several reports. The first parameter excludes (n) or includes (y) records with the given code in the incidence numerator. The second parameter excludes (n) or includes (y) records with the given code in the incidence denominator. As defined, incidence is the BRFSS upper bound response rate--the number of completed interviews (36) divided by the sum of completed interviews (36), refused interviews (22), and terminations within the questionnaire (29). The third parameter determines whether or not the interviewer is initially sent to a screen at which s/he can schedule a callback, which codes are grouped together on the disposition screen, and which codes appear first depending on where the interview terminated, but all codes (except 21, 24, 30, and 36) are available to the interviewers at all times. The parameters for 01, 02, and 03 cannot be changed.

**Codes 21, 24, and 30 are assigned by CLEANALL.EXE, a separate program run between calling occasions. Nevertheless, enter them into Ci3 CATI when defining disposition codes so that they can be included in reports.

BRFSS Final Disposition Codes and Rules of Replacement for Ci3*
February 23, 1995

	Code	Rule for Replacement
21	Answering Machine	To be coded after (1) 5 calling occasions (each consisting of three attempts) and (2) the 5 occasions have a mixture of weekday, week night, and weekend calls. Replace when the rules have been met.
22	Refused interview	Replace after second refusal or when a first-time refusal will not be called a second time.
23	Nonworking number	Usually recognized by a recording or fast, busy signal. Includes "number changed" recordings and numbers that "bridge". Call operator or repair service when in doubt. Replace when determined to be a nonworking number.
24	Ring no answer	A normal telephone ring which no one answers (answering machines do not count as an answer) after (1) 5 calling occasions (each consisting of three attempts) and (2) the 5 occasions have a mixture of weekday, week night, and weekend calls. If possible, contact the phone company repair service to verify the number is in service. Replace when the rules have been met and the phone company verifies it is a working number.
25	Not a private residence	The person answering identifies the telephone number as a business or says "no" when asked "Is this a residence?" Also use this diposition for institutions (government offices, educational facilities, dormitories, nursing homes, hospitals, prisons, etc.), group homes (fraternities and sororities, half-way houses, shelters, etc.), pagers, fax machines, and computer modems. Replace.
26	No eligible respondent at this number	The household does not have anyone 18 years of age or older (this does not mean the adults are away temporarily). Replace.
27	Selected respondent not available during the interviewing period	The selected respondent will not be available or could not be reached during the time you have allotted for the month's interviewing. Replace.
28	Language barrier	The selected respondent does not speak English well enough to be interviewed and there are no interviewers who speak their language. Replace.
29	Interview terminated within questionnaire	A "hang up" at some point after the first question has been asked (this does not mean the respondent refused a particular question). Make another attempt to complete questionnaire. Replace if second attempt unsuccessful. If after a second attempt the respondent has completed the interview at least through the age, race, and sex questions, recode as a completed interview.
30	Line busy	To be coded only after (1) 5 calling occasions (each consisting of 3 attempts at $\geq$ 10 minute intervals) and (2) the 5 occasions have a mixture of weekday, weeknight, and weekend calls. If possible, contact the phone company repair service to verify the number is in service. Replace when the rules have been met and the phone company verifies it is a working number.
31	Selected respondent unable to communicate due to physical or mental impairment	Example: respondent is deaf. Replace.
36	Completed interview (questions asked through age, race, and sex)	Do not replace

* In pre-screening, telephone numbers receiving these codes should be retired but not replaced.

4. Ci3 CATI Status Codes

Ci3 CATI assigns a code, called a "status," to each sample record. This code exists as a field in DB.CON, the database of sample records. **Ci3 CATI relies exclusively on this code to determine how to treat a sample record.** Status codes are in addition to and separate from disposition codes. Status codes are assigned to sample records when they are created. Disposition codes are assigned after a first call attempt.

You will use status codes to give sample records whose last disposition was Busy a higher priority in the sample queue than sample records whose last disposition was No Answer or Answering Machine. You will also use status codes to monitor progress over the course of an interviewing cycle. You will conduct searches using status codes and view reports that display the frequency of sample records by status code in order to identify anomalous records.

Ci3 CATI recognizes 8 status codes, ranging from 0 to 7[1]:

Code	Meaning or Definition
0	Active, available for calling.
1	Active, definite appointment.
2	Active, general callback.
3	Active, busy.
4	Inactive, used.
5	Active, at interviewing station.
6	Inactive, held in DB.CON and not being released.
7	Inactive, quota cell full.

. Listed on pages 2-87 and 3-7 in the *Ci3 CATI System* manual. The *Ci3 CATI Technical Reference* manual lists a 9th code on page 1-58 but because the code is used only temporarily for internal CATI purposes and does not appear in any report, we are ignoring it here.

Ci3 CATI assigns status codes automatically. When DB.CON--the database of sample records--is first created in a study, each sample record is assigned a status of blank or, equivalently, 0. When (a copy of) a sample record is sent to an interviewing station, the record receives a status of 5. After a call attempt, definite appointments receive a 1, general callbacks a 2, busys a 3, attempts with no scheduled callback a 4, and records which fail to match an available quota cell (which should never occur with the BRFSS questionnaire) receive a 7. A sample record with a status of 4 may designate a completed interview with a disposition code of 36-40 or a record with a final incomplete disposition code of 21-35.

The Waksberg program, DBMGR.EXE, intervenes in this process. When it is called, it first changes the status of sample records in DB.CON that have a status of 0 and do not match its sample release rules to a status of 6, thus holding them in DB.CON. DBMGR.EXE then identifies sample records with incomplete final codes (21-35 for BRFSS), changes their status to 6, and then releases the next sample record from the first record's PSU. It also identifies records with 3 or more call attempts in the current calling occasion and changes their status to a 6. Finally, DBMGR.EXE uses status codes to control sample records in wind-down. Once a record has been called once in wind-down, DBMGR.EXE changes its status to 6 to keep it from being called again.

Ci3 CATI uses the status of a sample record according to the following logic to determine when a record with a definite appointment (01), general callback (02), or busy (03) status should be placed in the sample queue: First, it checks to see if the current date is equal to or later than the scheduled date. If it is, then it checks to see if the current time is equal to or later than the scheduled time. Both of these conditions must be met for a sample record to be put in the queue. **Thus, if a number is scheduled to be called back during an evening shift and it is not called back, it will not be placed in the sample queue again until after its scheduled time the following evening.** For example, if a number is scheduled to be called at 8:30 pm on April 3 and it is not called, the number will only come up at 8:30 pm on all subsequent days. **In order for that number to be eligible for the sample queue before its scheduled time on the next day, the supervisor has to reschedule it.**

5. Setup Procedures in Ci3 CATI System

Setting up a BRFSS study in Ci3 CATI involves 20 or 21 separate steps that must be performed monthly. This chapter takes you through each step in turn.

For step-by-step instructions, see "A Reference Guide to Setting Up a BRFSS Study in Ci3 CATI System" in Appendix B, page B - 2.

Defining a Study

Assign...**S**tudies
Pages 1-8 to 1-13

Each study must receive a number and a name. For the BRFSS you will define a new study each month.

A rule of thumb is that Ci3 CATI performance speed begins to slow down if the total number of sample records is much above 7000. Since Ci3 CATI holds 100 records per PSU, if your monthly sample size is much over 200 per month, you should probably split your sample into two studies.

You can assign any number (up to 3 digits) and name (up to 30 characters) that seem convenient but you should come up with conventions that allow you to readily identify studies. For example, if you are running one study a month, we recommend that you adopt the convention that your BRFSS study number is the last digit of the year followed by month in two digits. For example, with such a convention the study for December 1996 would receive the study number 612.

Unless you tell it otherwise, Ci3 CATI will release 20 sample records at a time to an interviewing station. You can, however, tell Ci3 CATI to release 19 or fewer records at a time instead. **You should specify that Ci3 CATI release 19 records at a time at the beginning of a study.** Ci3 CATI releases sample records in a different way when you tell it how many records to release rather than accepting the default number. This alternative method works better for the BRFSS survey and, therefore, we invoke it by telling Ci3 CATI to release 19 records at a time.

To define the study, at the Assign Studies screen, enter a line number (1-24) in the Number field, a three-digit code indicating the year and month (e.g., 404 for April 1994) in the Study Number field, and a study name in the Study Name field. To tell Ci3 CATI to release 19 records at a time, go back to the Number field and enter the line number you just entered and then go to the

Study Number field and enter *19. For example, if your line number is 1, your study number is 404, and your study name is BRFSS, your final, filled-in screen will look like Figure 5-1 below.

Figure 5-1. Assign Studies Input Screen

```
                          ENTER STUDY NUMBERS AND NAMES

 1 *19 404 BRFSS                          13
 2                                        14
 3                                        15
 4                                        16
 5                                        17
 6                                        18
 7                                        19
 8                                        20
 9                                        21
10                                        22
11                                        23
12                                        24

 Type line Number (1-24) and Study Number (1-999), press ENTER after each.
 Type Study Name, then ENTER.  To remove study, type line number, then ENTER
 twice.  (To limit sample, type * and sample amount (0-19) for Study Number;
 press * and ENTER to return to automatic control.)  Press END when finished.

 Number:              Study Number:
 Study Name:
```

Later on in the interviewing period, as the number of sample records becomes small, you may well return to this screen and have Ci3 CATI release 15 and perhaps even 10 records at a time to interviewing stations in order to distribute sample records to interviewers more evenly. This question is discussed further in the section below entitled, "Releasing Sample Records to the Interviewing Stations," page 5 - 19.

Selecting a Study

SetUp...**C**hoose Study
Pages 2-1 to 2-2

Select the appropriate study from the list of active studies.

Creating the Study Schedule

SetUp...**S**tudy Schedule
Page 2-3

Enter the dates and times when interviewing will take place. The information you enter here is for the use of the interviewers when scheduling callbacks. It is not used by Ci3 CATI for any system purpose. When Ci3 CATI begins polling, however, it does look for the file created by setting the study schedule. Thus, even if you do not intend to enter any values, you should enter this menu option and then press End to exit and save a blank file. This procedure will keep an error message from appearing when you begin polling.

Setting Attempt and Line Busy Parameters

Setup...**A**ttempts/Busy
Pages 2-4 to 2-6

Set Maximum attempts to 15, Save history for all attempts to Y, and Redial busy to 15.

Identifying Time Zones and Calling Hours

Setup...**T**ime Zones
Pages 2-7 to 2-11

This function lets you identify the time zone of your facility and the calling hours for each time zone which you will be calling.

You should always identify the time zone of your facility: this will create a file that Ci3 CATI looks for when polling and will prevent an error message from arising at that time.

You may optionally set the calling hours for the time zones which you will be calling. If you do so, sample will be available for each time zone only within the specified calling hours. If you do not set calling hours, sample will be available at all times. We recommend that you set calling hours for time zones only if you are calling more than one time zone and it is important to you to not call telephone numbers in one or more time zones during your normal interviewing hours.

Setting the Callback Schedule for No Answer and Answering Machine Disposition Codes

Setup...**N**o Answer
Pages 2-12 to 2-15

You will need to set a callback schedule for call attempts that result in No Answer or Answering Machine disposition codes. Figure 5-2 shows a filled-in callback schedule screen. Times are entered in military style.

Figure 5-2. Callback Schedule for No Answer and Answering Machine Dispositions.

Study: 404 SET SCHEDULE FOR NO ANSWERS

Type days (1=Sun, 2=Mon, etc.) and hours (using 24 hour clock and RESPONDENT time) when 'no answer' is recorded. Type days and hours to call back 'no-answer.' Press ENTER after each, DEL to erase an entry, END when finished.

	Day		No Answer		Day		Call Back	
	From	To	From	To	From	To	From	To
1	1	1	1200	1959	1			
2	1	1	2000	2200	2	2	800	801
3	2	6	800	1959	1			
4	2	2	2000	2200	3	3	800	801
5	3	3	2000	2200	4	4	800	801
6	4	4	2000	2200	5	5	800	801
7	5	5	2000	2200	6	6	800	801
8	6	6	2000	2200	7	7	900	901
9	7	7	900	1259	1			
10	7	7	1300	1500	1	1	1200	1201
11								
12								
13								
14								

The callback schedule assumes that interviewing hours are from 9 a.m. to 9 p.m., Monday through Friday, 10 a.m. to 2 p.m. on Saturday, and 1 p.m to 9 p.m. on Sunday. If your interviewing hours start after the indicated times, you will not need to adjust this schedule. If your interviewing hours, however, end after the indicated times, you will need to adjust the ending (To) times under No Answer. We have extended the starting and ending times one hour to allow for early starts and late finishes.

The callback schedule is as follows: Sample records that receive a No Answer or Answering Machine disposition code between noon and 7:59 p.m. (1959) on Sunday (1), between 8 a.m. and 7:59 p.m. on Monday (2) through Friday (6), or between 9 a.m. and 12:59 p.m on Saturday (7) become available to be called one hour afterwards. Sample records that receive a No Answer or Answering Machine disposition code between 8 p.m. and 10 p.m. on Sunday through Friday or between 1 p.m and 3 p.m on Saturday become available to be called at 8 a.m. the following day. The *Ci3 CATI System* manual explains in detail how to read and setup a callback schedule.

Waksberg Sampling: An Overview

Ci3 CATI requires that you set up a database of sample records which it names DB.CON. DB.CON contains the telephone number and up to 36 additional pieces of information, or fields. Ci3 CATI uses DB.CON to keep track of call attempt outcomes, dates and times to call, and other sample management information. You will use DB.CON extensively throughout a study to monitor the progress of the study and to change (or edit) sample records.

Creating a Ci3 file of sample records that can be used for Waksberg sampling from an ASCII file containing screened telephone numbers is a five-step procedure.

As previously noted, Ci3 CATI calls the screened telephone numbers stage-one or first-stage numbers. Associated with each stage-one number are up to 99 stage-two numbers, formed by varying the last two digits of the stage-one number.

The first step is to generate the stage-two numbers from the ASCII file of stage-one numbers by creating a new ASCII file that contains the telephone numbers generated by taking all possible combinations of the last two digits of the stage-one numbers and additional information that is used by the Waksberg portion of Ci3 CATI.

The second step is to verify that the file of stage-two numbers was properly generated.

The third step is to import the stage-two numbers into DB.CON, the Ci3 CATI sample record database.

The fourth step is to verify that the DB.CON file was properly generated.

Finally, the fifth step is to tell the Waksberg portion of Ci3 CATI which disposition codes to replace and that the target number of completed interviews per PSU is 3.

The next five sections of this chapter give more detailed information on each of these steps.

Generating Stage-Two Numbers From Stage-One Numbers

SetUp...**E**nter/View Sample...**W**aksberg...**G**enerate Numbers
Pages 2-51 to 2-54

This function takes stage-one numbers contained in an ASCII file and generates a new ASCII file which contains 100 numbers for each one in the stage-one ASCII file. The file of stage-two numbers also contains information which the Waksberg sampling portion of Ci3 CATI uses to control the release and replacement of sample records.

If you have not already done so, you should create an ASCII file that contains the stage-one telephone numbers. (See page 1 - 3 above.) This will be a list of one-third or a little more than one-third of your target number of completed interviews.

You will need to enter the file name or full pathname of the stage-one file in order to execute this feature. The stage-two file must have the extension .TXT. You will also need to enter a full pathname for the stage-two file that is created. Ci3 assumes that you want to include the stage-one numbers in the list of stage-two numbers, which you do.

This function adds a primary sampling unit (PSU) number and other information needed for Waksberg sampling for each telephone number. PSU numbers should be unique over an entire calendar year. The program asks you to specify a starting PSU number and then sequentially generates additional numbers. Thus, each month within a calendar year, you should enter a starting PSU number that is larger than the largest number used the previous month. A convention that we recommend is to start the January PSU numbers at 01001, the February at 02001, and so on to December at 12001.

Verifying That the Stage-Two File Was Properly Generated

SetUp...**E**nter/View Sample...**W**aksberg...**U**tilities...**C**ount lines & show length
Pages 2-59 to 2-61

This function provides information on the stage-two file. For the BRFSS the total number of lines with at least 7 characters in the file should equal 100 times the number of telephone numbers in the stage-one file. For example, if your stage-one file contains 60 telephone numbers, the stage-two file should contain 6000 lines with at least 7 characters. The length of the first line should be 77 characters. The column where the information needed for Waksberg sampling begins should be 14. This field is 28 characters long. If any of these are not the case, the stage-two file was not properly created. You will subsequently need to tell another part of

Ci3 CATI the length of a line, the first column number of the field that contains the information needed for Waksberg sampling, and the length of the Waksberg information field.

Importing Stage-Two Numbers into DB.CON

SetUp...**E**nter/View Sample...**I**mport...**A**nother database
Pages 2-35 to 2-41

You now need to import the stage-two numbers into DB.CON, the Ci3 CATI sample record database. Answer No to the question, "Do you want random numbers and listed numbers?" Ci3 will import the file without generating additional telephone numbers, which is what you want. Give the full pathname of the stage-two file.

At the record layout screen, enter 77 for the number of characters in one record. At Phone (part 1) enter 1 for position in record and 12 for length. Then press Enter until the cursor is at Firm Name and enter 28 for position in record and 5 for length. Next, press Enter once so that the cursor is at Open and enter 40 for position in record and 1 for length. Finally, move the cursor to Field 2 and enter 14 for position in record and 28 for length. Then press End.

Figure 5-3 shows a filled-out record layout screen. The Phone (part 1) field contains the telephone number. The Firm Name field contains the PSU number. You will use the information in this field to assign sample records to interviewers during wind-down. The Open field contains a 1 if the telephone number is a stage-one number or a 2 if the telephone number is a stage-two number. You will use the information in this field to set priorities for the release of stage-one and stage-two numbers. The Field 2 field contains information needed for Waksberg sampling.

Figure 5-3. Record Layout Screen

```
Study: 404      RECORD LAYOUT FOR THE DATABASE TO IMPORT FROM
               How many characters are there in one record? 77
               (Count special characters like CR and LF)

               Pos in          Max                        Pos in          Max
               Record  Length  Length                     Record  Length  Length
                ----     --      --                         ----     --      --
Phone (part 1)  1        12      20     Wave ..........                     1
Phone (part 2)                   |     Status ........                     1
Phone (part 3)                   |     Field  1.......                    32
Phone (part 4)                   |     Field  2....... 14       28        32
Phone (part 5)                   |     Field  3.......                    32
Phone (part 6)                   |     Field  4.......                    32
Time Zone .....                   2
Primary Cell ..                   3
Secondary Cell                    3
Contact Name ..                  28
Date to Call ..                   4
Time to Call ..                   4
Message .......                  40
Firm Name ..... 28       5       20
Open .......... 40       1       10

               Press:  END to save and continue.  ESC to exit.
```

Viewing Sample

SetUp...**E**nter/View Sample...**V**iew or Edit...**A**ll records and
SetUp...**E**nter/View Sample...**V**iew or **E**dit...**S**pecific Record
Pages 2-83 to 2-85

You should view DB.CON, the sample record file you just created, to make sure that it was created properly. We recommend that you look at several records at the beginning, middle, and end of the database. Selecting all records from the View or Edit menu will let you page through each record beginning with record one. Look through several records, then come back to View or Edit menu and choose Specific record. Enter a number just before the middle record; you can page down to subsequent records but will not be able to page up to records before the one you specified. Finally, return to the View or Edit menu and choose a specific record close to the end. You are looking to make sure that the phone numbers and other information are in the correct columns in each record. In particular, make sure that the information in Field 2 is not shifting as you look through the records. Each record should look like the sample record in Figure 5-4 below.

Note that Field 2 contains information needed for Waksberg sampling. Fields 3 and 4 are used to store information needed to implement the BRFSS Rules of Replacement. That information

appears in the sample record after the first attempt. Finally, Field 1 is used to store information if a record goes into wind-down.

Figure 5-4. Sample DB.CON Record With No Attempts.

```
Phone Number: 404-636-1072                    Record Number:          1
Time Zone:    +0                              Random:
Primary Cell:                                 Secondary Cell:
Contact Name:                                 Interviewer:
Next Contact Date:   /       Time:   :        A/P:         I/R:
Message:
Firm Name:                                    Open:
Field  1:                                     Wave:
Field  2: >r00000s00000p04001d00001_1*01      Status:                 0
Field  3:
Field  4:
Respondent #:                                 # of Attempts:
              Date: Time Start: Time Finish: Disposition: Interviewer:
1st  Attempt:   /        :  :         :  :
2nd  Attempt:   /        :  :         :  :
3rd  Attempt:   /        :  :         :  :
4th  Attempt:   /        :  :         :  :
5th  Attempt:   /        :  :         :  :
6th  Attempt:   /        :  :         :  :
7th  Attempt:   /        :  :         :  :
8th  Attempt:   /        :  :         :  :
9th  Attempt:   /        :  :         :  :
10th Attempt:   /        :  :         :  :
Last Attempt:   /        :  :         :  :
  Press:  PgDn for next/PgUp for previous.  END to save/exit.  ESC to exit.
```

Telling Waksberg the Disposition Codes to Replace and the Number of Completed Interviews per PSU

SetUp...**E**nter/View Sample...**W**aksberg...**S**et Up Rules...**S**ample
Pages 2-63 to 2-67

In this function you first specify the disposition codes on the occurrence of which Waksberg should replace the sample record. These are final disposition codes that indicate an incomplete interview. When the Waksberg program finds any of these codes, it will retire the current record and release a new record from the same PSU. For the BRFSS survey, the disposition codes that we want the Waksberg program to replace are 21 to 35.

Next, you specify rules that specify the target number of completed interviews by PSU. For the BRFSS, all PSUs have 3 as their target number of completed interviews. Thus, to start we need only one rule. This rule should say that for PSU numbers ranging from the minimum to the

maximum being used in the current month, the maximum household numbers (completed interviews) per PSU equals 3. **Be sure to check this value before leaving the Set Up Rules screen.** Figure 5-5 shows a filled out screen.

Figure 5-5. Waksberg Set Up Rules Screen

```
      New macro filename: G:\CATI\S404\S404.MCR
┌──────────────────────────────────────────────────────────────────┐
│   Non-target disposition codes (range 0, 4-40)  =   __ ,  __ ,  __
│                                in between:  From =   21 to 35
└──────────────────────────────────────────────────────────────────┘
┌──────────────────────────────────────────────────────────────────┐
│1 : PSU        4001  to 4070          Max. Household #'s per PSU = 3
│2 :
│3 :
│4 :
│5 :
│6 :
│7 :
│8 :
│9 :
│10:
│11:
│12:
│13:
└──────────────────────────────────────────────────────────────────┘
                                                  Use PgUp or PgDn keys
                ┌──────────────────────────────────────────────────────┐
                │  Type the letter r,s,p,k to define a replicate, stratum,
                │  psu or kill psu.  Use space bar to blank the row.
 End to Save    │     Use the Up & Dn arrow keys to move between rows.
 Esc to Quit    └──────────────────────────────────────────────────────┘
```

Verifying and Editing the Waksberg Set Up Rules

SetUp...**E**nter/View Sample...**W**aksberg...**D**isplay rules...**S**ample and
SetUp...**E**nter/View Sample...**W**aksberg...**E**dit rules...**S**ample
Pages 2-67 to 2-70

Because incorrectly specifying the Waksberg Set Up Rules can have very serious consequences for which sample records are released, it is very important that you verify that you have specified the correct rules and change them if you have not.

Defining Sample Priorities

SetUp...**E**nter/View Sample...**D**efine Priority
Pages 2-72 to 2-77

By default, Ci3 CATI assigns a priority of 1 for dialing to sample records with definite appointments, a priority of 2 to records with general callbacks, and a priority of 3 to records with a last disposition of busy as long as the records remain at the interviewing station. (When a sample record with a last disposition of Line Busy returns to DB.CON, it receives a status of 0 and loses its priority.) Two additional priority levels, 4 and 5, are available for user assignment. Records that are not assigned a priority, such as normal status 0 records, have no priority level and thus have a lower priority than any record with a priority of 1 to 5.

You should change the default priorities in two ways. First, you should assign a priority of 2 to stage-one numbers whose number of attempts equals 0. This ensures that stage-one numbers get called before the other numbers in a PSU. Second, you should give numbers that have already been called, other than those with a last disposition of definite appointment, a priority of 4. This will give numbers that have already been called, including Line Busys, a lower priority than stage-one numbers but a higher priority than stage-two numbers that have never been called. Figure 5-6 shows the Define Priorities screen as it should be filled out to make these two changes.

Figure 5-6. Define Priorities Screen

```
Study: 404                        DEFINE PRIORITIES
_____________________________________________________________________
   FN     EQ       VALUE          OR       FN     EQ       VALUE       1 = D
          NE                     AND              NE                   2 = C
          LE                                      LE                   3 = Busy
          GE                                      GE                   4,5
_F1 for Help_____________________________________________________________

1  15     EQ              0     AND       12     EQ              1      2

2  15     GE              1     AND       17     NE             11      4

3

4

5

FN
1 Record Number     7 Contact Name    13 Status             19 FLD  1  25 FLD  7
2 Area Code         8 Date to Call    14 Respondent #       20 FLD  2  26 FLD  8
3 Time Zone         9 Time to Call    15 # of Attempts      21 FLD  3  27 FLD  9
4 Wave             10 Message         16 Last Attempt Date  22 FLD  4  28 FLD 10
5 Primary Cell     11 Firm Name       17 Last Disposition   23 FLD  5  29 FLD 11
6 Secondary Cell   12 Open            18 Last Interviewer   24 FLD  6  30 FLD 12
```

Interviewer ID Numbers and Sample Assignment

SetUp...**E**nter/View Sample...**A**ssign
Pages 2-78 to 2-82

Ci3 CATI requires you to identify interviewers by an ID number of up to 3 digits. The BRFSS data record requires a two-digit interviewer code. We translate the three-digit Ci3 CATI code into a two-digit BRFSS code by ignoring the first digit of the Ci3 CATI code. **This means that in order for the BRFSS interviewer code to be unique, you must assign interviewers three-digit codes whose last two digits are unique.** For example, if you assign a code of 150 to a particular interviewer, you should not assign any three-digit codes whose last two digits are 50 to any other interviewer. You can, however, assign more than one three-digit code to an interviewer and still keep the same BRFSS code by varying the first digit. For example, you could have an interviewer log in as interviewer 150, log out, and then log in again as 250 to conduct additional interviews. The BRFSS would identify all the interviews as conducted by the same interviewer. This procedure is useful when you want to assign sample records of specified types--for example, Spanish-speaking interviews or refusal conversions--to particular interviewers. Thus, before any interviewing begins you should think through how to assign interviewer ID's based on classes of interviewers that you define.

Sample records are assigned to interviewers randomly except under three conditions: (1) Ci3 CATI attempts to assign definite appointments and callbacks to the interviewer who scheduled them. (2) You can assign a specific sample record to a specific interviewer by entering the interviewer's ID number in the interviewer field of the sample record. (3) You can use the **E**nter/View Sample...**A**ssign function to define up to five rules based on data in the sample record to assign records to classes of interviewers. Only this last function is supposed to guarantee that the assigned interviewer(s) will receive a particular sample record. Although we have not been able to get this function to always send particular sample records to assigned interviewers, it is currently our best recommendation. You will be notified when a better solution is identified. If you do use this function, please note that interviewer numbers assigned to sample records will receive only the specified type of sample records. They will not receive any other type. Thus, the interviewers who receive sample records under this function will need to log off when the assigned sample records have been exhausted and then log on again under another interviewer ID in order to receive more sample records.

Use the **S**etUp...**E**nter/View Sample...**A**ssign feature in Ci3 CATI to automatically assign sample records to interviewers with ID's between 100 and 599 based on the first digit of their ID's. For example, you can assign refusal conversion interviewers to the 200 series or foreign language interviewers ID's to the 300 series and have sample records automatically go to them based on rules you define.

You can combine the assignment of sample records to classes of interviewers with the use of three-digit interviewer codes whose last two digits are unique to ensure that sample records are assigned to appropriate interviewers. To continue the example above, suppose that initial refusals are assigned to interviewers with a first digit of 2 in their three-digit codes and that you want the interviewer whose last two digits are 50 to attempt all initial refusals. Ordinarily, that interviewer would log in as 150 to receive unassigned sample records. Periodically or when you knew you had a sample record with an initial refusal code, you could have that interviewer log in as interviewer 250 and s/he would be allocated all sample records with initial refusals. Since the BRFSS data record only contains the last two digits of the interviewer id, we would correctly identify all the interviews conducted by this interviewer. You should use this technique if you assign sample records to interviewers with the **E**nter/View Sample...**A**ssign function.

Defining Quotas

SetUp...**Q**uotas...**D**efine and
SetUp...**Q**uotas...**S**et Total
Pages 2-117 to 2-134

Ci3 CATI requires that you set at least 1 quota cell and a total quota for each study, even if you are not using quotas (which is the case with the BRFSS). The procedure for getting around this requirement is to set quotas at a number greater than you will ever need.

For the BRFSS, set quota cell number 1: Enter INTROQ for the question name and 1 and 6 as the low and high limits. Then set Quota Ck and Quota Stp to 32000. To set the total quota, set Cell Range Low and Cell Range High to 1 and Quota Ck and Quota Stp to the same number entered in quota cell number 1. Figures 5-7 and 5-8 show the Set Quota Cell and Set Total Quota screens as they should be filled out.

Figure 5-7. Set Quota Cell Screen

Study: 120 QUOTA CELLS (PgUp/PgDn/End)

Cell #	Ques-tion	Limits Low	Hi	and /or	Ques-tion	Limits Low	Hi	and /or	Ques-tion	Limits Low	Hi	Quota Chk	Stop	Pr Cd
F1 for Help														
1	INTROQ	1	6									32000	32000	1
2														1
3														1
4														1
5														1
6														1
7														1
8														1
9														1
10														1

Figure 5-8. Set Total Quota Screen

Study: 120 QUOTA GROUPS (PgUp/PgDn/End)

Cell Grp	Cell Range Low	Hi	and/or AND/OR	Cell Range Low	Hi	and/or AND/OR	Cell Range Low	Hi	MAC CON	Quota Chk	Stop	Pr Cd
F1 for Help												
291												1
292												1
293												1
294												1
295												1
296												1
297												1
298												1
299												1
TOTAL	1	1							C	32000	32000	1

Defining Disposition Codes

Setup...**D**ispositions...**D**efine
Pages 2-137 to 2-144

For the BRFSS Ci3 CATI survey, there are 12 final disposition codes. These are 21-31 and 36 and are listed in the table on page 3 - 2 of this document, titled "BRFSS Disposition Codes for Ci3 CATI." Enter the codes, their abbreviations, and the Ci3 CATI parameters as indicated in the disposition code table and Figure 5-9 below. You will have to fill in this screen every month. To get from Screen 1 to Screen 2, press Page-Down at Screen 1.

Figure 5-9. Define Disposition Codes Screens.

```
[Screen 1]

Study: 404                    ENTER DISPOSITION CODES

      1  No Answer             (n/n/p)       11  Appointment           (n/n/c)
      2  Busy                  (n/n/p)       12  Initial Refusal       (n/n/c)
      3  Answering Machine     (n/n/p)       13  Initial Term in Ques  (n/n/c)
      4                                      14  Fast Busy or Noise    (n/n/c)
      5                                      15  Non-English Speaking  (n/n/c)
      6                                      16
      7                                      17
      8  Null Attempt          (n/n/c)      18
      9                                      19
     10                                      20  Supervisor Attention  (n/n/c)

 Type disposition number, code description, whether to include this type of
 attempt when calculating incidence, and code type.  Press ENTER after each.
 To erase a code, type the number, then press ENTER twice.  Press PgDn and
 PgUp for additional codes.  Press END when finished.

     Number:
Description:
Include in Incidence Numerator   (y/n):
Include in Incidence Denominator (y/n):
Pre-screener, Screener, Interview, Callback, or Hidden Code (p/s/i/c/h):
```

```
[Screen 2]

Study: 404                    ENTER DISPOSITION CODES

     21  Final Ans Mach         (n/n/h)       31  Resp Unable Commun    (n/n/s)
     22  Refused Interview      (n/y/i)       32
     23  Nonworking Number      (n/n/s)       33
     24  Final No Answer        (n/n/h)       34
     25  Not a Private Res      (n/n/s)       35
     26  No Elig Resp at Nmbr   (n/n/s)       36  Completed Interview   (y/y/h)
     27  Select Resp Not Aval   (n/n/s)       37
     28  Language Barrier       (n/n/s)       38
     29  Final Term in Quest    (n/y/i)       39
     30  Line Busy              (n/n/h)       40

 Type disposition number, code description, whether to include this type of
 attempt when calculating incidence, and code type.  Press ENTER after each.
 To erase a code, type the number, then press ENTER twice.  Press PgDn and
 PgUp for additional codes.  Press END when finished.

     Number:
Description:
Include in Incidence Numerator   (y/n):
Include in Incidence Denominator (y/n):
Pre-screener, Screener, Interview, Callback, or Hidden Code (p/s/i/c/h):
```

Codes other than 1, 2 or 3 are considered by the CATI software as final unless the interviewer schedules a callback. Thus, codes for initial refusal, initial termination within interview, appointment, fast busy or strange noise on line, and any others you may add are treated by the software as final dispositions even though they are temporary dispositions from the point of view of the BRFSS survey. **Thus, an interviewer assigning an interim disposition code must schedule a callback date and time in order for that sample record to appear again.** By giving a disposition code a third parameter of C, you make Ci3 CATI go to the callback screen after an interviewer enters a disposition code that has received a third parameter of C.

Loading the Questionnaire

Setup...**L**oad Questionnaire
Pages 2-145 to 2-148

When you select this function, Ci3 CATI prompts you for the full pathname of the directory which contains the questionnaire file. Enter the name of the directory which contains Ci3 System, in most cases, F:\CI3. Ci3 CATI then brings up a list of the defined studies in Ci3 System. Choose *SSYY*. You must use this function to copy the questionnaire from Ci3 System to Ci3 CATI in order for Ci3 CATI to recognize the questionnaire.

Making Field Diskettes

Setup...**F**IELD DISKS
Pages 2-149 to 2-155

Create a field diskette for each interviewing station.

You will be asked to set the maximum number of completed interviews and a range of respondent numbers for each diskette. A conservative estimate for the BRFSS is 50 completed interviews for a 360 KB diskette and 200 for a 1.2 or 1.4 MB diskette. You will ordinarily need only one field diskette per interviewing station. You may, however, need more than one diskette for interviewing stations with only a 360 KB disk drive.

Assigning Interviewing Stations

Assign...**I**nterviewing Stations
Pages 1-14 to 1-17

It is useful to always use the same unique number for each physical interviewing station. This number should be displayed prominently on or above each machine.

When you are ready to begin interviewing, you must assign interviewing stations to the current study. Thus, you will assign interviewing stations at the beginning of each calling occasion and, at times, even during a calling occasion.

You can assign interviewing stations in an off status or in a standby status. Stations assigned in an off status do not receive definite appointments, callbacks, or interviews assigned to specific interviewer types until the interviewer has logged on and the station goes back to the server for additional sample. Stations assigned in a standby status do receive definite appointments, callbacks, and interviews assigned to specific interviewer types in their initial release of sample records. To assign an interviewing station on standby, you must specify the interviewer ID number that will be logging on to that station.

More importantly, when you limit the number of sample records going to an interviewing station (as you should) or assign sample to specific classes of interviewers (as you should if you go into wind-down and in some other situations), only interviewing stations assigned on stand-by status receive any sample records at all. **Thus, you should always assign interviewing stations on standby.**

If fewer than 10 sample records remain to be released, you must assign at least one interviewing station on standby in order for the sample records to be released.

To avoid having interviewers wait for sample records, we recommend that you use no more than two interviewing stations if the number of sample records to be released is below 60 and one interviewing station if the number is below 30.

To assign an interviewing station on stand-by status, enter the station number, the study number, and the interviewer number. Write down (or remember) these three numbers--the interviewer will need to enter them in order to log on to Ci3 CATI. Figure 5-10 shows a filled-out assign interviewing stations screen.

Figure 5-10. Assign Interviewing Stations Screen.

```
                    ASSIGN INTERVIEWING STATIONS TO STUDIES

  1 312 Samplci3 Test Run         101
  2
  3
  4
  5
  6

 Type Station # and Study #.  To erase, type Station # and press ENTER twice.
Station # :                 Study # :                Interviewer # :
```

How Ci3 CATI and Interviewing Stations Communicate

Pages 1-4 to 1-7

When you assign a study, Ci3 CATI creates two subdirectories under the Ci3 CATI directory. The first has the name, SXXX, where XXX stands for a study number of up to 3 digits. Ci3

CATI uses the SXXX directory, known as the study directory, to store study specifications and data. The second subdirectory has the name, RXXX. Ci3 CATI uses the RXXX directory to store partially completed interviews. For example, if Ci3 CATI is located in F:\CATI and you assign a study with a study number of 404, Ci3 CATI will create the directories, F:\CATI\S404 and F:\CATI\R404. Once Ci3 CATI creates these directories they remain on the file server until or unless you delete them from DOS; Ci3 CATI does not delete them.

When you assign an interviewing station to a study, Ci3 CATI creates a subdirectory under the study directory. This directory has the name, IXX, where XX stands for the number of the interviewing station. **Ci3 CATI uses this interviewing station directory to communicate with the interviewing stations.**

Ci3 CATI actually moves sample records between DB.CON and the interviewing station directories by use of the polling function. Thus, as discussed further below, it is necessary for the proper functioning of Ci3 CATI that the polling function run one complete cycle before the first interviewing station has logged on and one complete cycle after the last interviewing station has logged off.

When Ci3 CATI polls, it goes to each station directory in turn and puts sample records in the directory if the interviewing station needs them and takes used sample records and completed interview data to put in SXXX. For example, if you assign interviewing stations one and two to study 404 as above, Ci3 CATI will create the subdirectories, F:\CATI\S404\I01 and F:\CATI\S404\I02, with which to communicate with the interviewing stations. When you de-assign interviewing stations, Ci3 CATI deletes the interviewing station directories.

For partially completed interviews (which, in the BRFSS questionnaire, are interviews which get past the Is this a private residence? question but do not get to the last question), the interviewing stations put the data in the RXXX directory. **Thus, on interviews which are terminated after the age and sex questions but before the final question, interviewers must enter the Refused code for the rest of the questions in the questionnaire in order for that interview to be saved with the completed interviews.**

Releasing Sample Records to the Interviewing Stations

Pages 1-12 to 1-17, 5-13 to 5-14, 5-44 to 5-46

Ci3 CATI does not release sample records directly to the interviewing stations nor does it receive sample records directly from them. Instead, as noted above, Ci3 CATI releases sample records to, and returns them from, the interviewing station directories. Likewise, interviewing stations

receive their sample from, and return them to, the interviewing station directories. As also noted above, an interviewing station may be assigned to an off status, in which case its initial allocation of sample records will exclude definite appointments, callbacks, and assigned sample records, or it may be assigned on a standby status, in which case its initial allocation of sample records will include definite appointments, callbacks, and assigned sample records.

When an interviewing station logs on, it checks its interviewing station directory. If it finds sample records waiting for it, it downloads them to the RAM disk at the interviewing station (and puts a copy on the field disk). If no sample records are waiting for it, then the interviewer receives a No sample available message and the station is not allowed to log on.

As soon as an interviewing station downloads sample records to its RAM and field disks, Ci3 CATI releases an additional allocation to the interviewing station directory. The second and subsequent allocation will contain fewer sample records than the original if the number of sample records is getting low. As a result, the total number of records released at one time to an interviewing station and its directory can be as much as twice the nominal allocation. **Thus, you can easily run out of sample records to send to interviewers even though you may subjectively feel that you have a sufficient number of sample records available to be released for the number of interviewers you are using.**

If, as we have specified, you have limited the number of sample records to be allocated to an interviewing station, Ci3 CATI will allocate available sample records only to interviewing stations that are logged on or assigned on standby. Similarly, if you have assigned sample records to interviewers with specific ID numbers, you must assign an interviewing station on standby to one of the specified ID numbers for the assigned sample to be released.

In short, if you have limited the number of sample records that CATI should send to an interviewing station, as you should have, or have assigned sample records to interviewers with specified ID numbers, you must log the interviewing station you want an interviewer to use on standby in order for the interviewer to receive sample records.

As interviewing progresses, the interviewing station periodically returns sample records and data to its interviewing station directory and receives fresh sample from it. An interviewing station will exchange data and sample records with its interviewing station directory under three conditions.

First, if no sample is available to be dialed, the interviewing station will go back to the interviewing station directory in an attempt to get sample records that are eligible to be dialed.

Second, when an interviewer has completed an interview, the interviewing station checks to see if it has been at least 10 minutes since it has last exchanged sample or sent completed interview data to the interviewing station directory. If it has been 10 minutes or more since the last transaction, the interviewing station sends the data from the completed interviews and the used sample records to the interviewing station directory and receives additional sample records. If it has not been 10 minutes since the last transaction with the interviewing station directory, the interviewing station brings up another sample record to be called. (Note: The *Ci3 CATI System* manual does not mention the 10 minute requirement but Ci3 CATI does use it.)

Finally, when an interviewer has telephoned 10 sample records, the interviewing station checks to see if 10 minutes have passed since the last transaction with the interviewing station directory. If it has been 10 minutes or more since the last transaction, the interviewing station sends the data from the completed interviews and the used sample records to the interviewing station directory and receives additional sample records. If it has not been 10 minutes since the last transaction with the interviewing station directory, the interviewing station brings up another sample record to be called.

In all these cases, when an interviewing station does go back to the interviewing station directory for more sample records, all the sample records at both the interviewing station and the interviewing station directory are evaluated for priority level and the highest priority sample records are placed at the top of the calling queue.

Although this process makes higher priority sample records come up to be called sooner than lower priority sample records, a consequence of this process is that the time between when a sample record is released and when it is called and the time between when a sample record is called and when it returns to Ci3 CATI can be considerable and will vary significantly from sample record to sample record.

Ci3 CATI tries to compensate for the possible time lags in three ways. Definite appointments and callbacks are released one hour before the scheduled callback time, although they will not appear to an interviewer until their scheduled time. Also, if an interviewer schedules a definite appointment or a callback for within one hour of the current (computer) time, the sample record will remain at the interviewing station. Similarly, if the time to re-call Busy dispositions is less than one hour, the sample record will remain at the interviewing station.

Polling

Poll...**R**un
Pages 4-3 to 4-7

The polling function is the heart of CATI: It links the study-wide information on the file server with the interviewing stations. Although it can usually be interrupted for up to about ten minutes without harmful consequences, **you must run the polling function one full cycle before the first interviewing station has logged on and one full cycle again after the last interviewing station has logged off, and otherwise keep it running during the time that interviews are being conducted**. If you fail to do so, interviewers will not receive new sample records.

Polling is the test of the correctness of your setup. If you have performed all the tasks correctly, the polling function will cycle through the sample records quickly and your interviewing station will receive sample records. If you have not performed all of the tasks correctly, you may not be able to run the polling function, the polling function may cycle through the sample records slowly, or you may have no sample records at the interviewing station.

You can determine whether or not there are any sample records at the interviewing station by noting the column on the CATI Status (polling) screen labelled, "IRec." IRec shows the number of sample records at an interviewing station. Two common causes of no sample records at an interviewing station are incorrect Waksberg sample release rules or improperly set time zones.

During polling under Waksberg, as Ci3 CATI is processing sample records, you will see numbers indicating the total number of records processed and the number of matches. The number of matches is the number of records ever released. It equals the sum of active plus replaced plus completed records. Thus, this number should start out equal to the target number of completed interviews for a study and then move upwards as the study progresses.

Waksberg Sample Release Logic in Normal Mode

As stated earlier, in the terminology of the Waksberg program, the pre-screened numbers which define each PSU are called stage-one numbers. The numbers generated from the stage-one numbers are called stage-two numbers. The Waksberg program uses a random number algorithm based on microseconds of the computer's time to generate a seed value for the stage-two numbers from the stage-one numbers in a random sequence. As sample records are replaced during interviewing, additional numbers from a PSU are released in the order they were generated. The stage-one number is always the first number in the PSU.

As the telephone numbers in a PSU are generated, they are assigned a depth value, which indicates the rank of the number in the PSU. Stage-one numbers always are assigned a depth of 1. Depth values range from 1 to 100.

In normal (non-wind-down) mode, the Waksberg sample program reads the proper rules file and releases enough telephone numbers so that the target number of completed interviews per PSU can be meet. For the BRFSS survey, this value is three.

Thus, when sample records are originally released, three phone numbers per PSU, including the original stage-one number, are put in the active pool of phone numbers to be allocated to the interviewers. All other numbers in the PSU are marked as holding (status 6).

Then, as numbers are called, some will be given disposition codes that are defined as non-target (final incompletes in BRFSS terminology) in the rules file. If the program finds that a call record has a non-target disposition code in any call attempt position (1 - 15), it will release an extra number from the PSU. So if two non-target disposition codes have been entered for previous calls, then numbers up to depth five will be released.

Note that Ci3 CATI (and not the Waksberg sample module) assigns a status of 1 to a definite appointment and a status of 2 to a general callback when a sample record receives a disposition code of 04-40 and a callback is scheduled. The Waksberg sample module, on the other hand, looks only at the disposition code to determine whether or not to replace a sample record.

6. Interviewing

This chapter discusses interviewing as it pertains specifically to the BRFSS survey. Page 5-1 in the *Ci3 CATI System* manual provides a useful overview of the steps in conducting an interview.

Logging On

Pages 5-1 to 5-16

To log on to Ci3 CATI, interviewers must (re)boot their computer with an interviewing station boot diskette. They then insert a field diskette and enter interviewer, station, and study numbers, the dialing mode, and whether the session is for data collection or practice. After entering the interviewer number, the station number, and the study number, they should select Manual dialing of numbers already in the computer as the type of dialing (unless you are dialing the phone numbers by modem) and DATA COLLECTION as the type of session. If all goes well, they will then see the Call History screen. Figure 8 shows a Call History screen from the BRFSS questionnaire on the first attempt.

Figure 6-1. Call History Screen*

```
 Study  404                      CALL HISTORY                      Record       1
Phone Number      404-636-2208                      Callback Time
_____________________________________________________________________
Contact Name                                        Callback Date
Firm Name                                           Open
Message
Primary Cell
Secondary Cell                                      Resp #

Attempt Number    1                                 Start Time        2:23 PM
Last Disposition                                    Time Last Call
Interviewer                                         Date Last Call
 Call Status :   Definite Appointments = 0    Callbacks = 0    Busy's = 0



              Press 1 if you are going to continue with this attempt

              Press Ctrl-End to go to the disposition screen, schedule
                  a call back, and code this attempt as a null attempt
```

*Note: The redlined text on this screen denotes text in reverse video on the monitor and not text that you enter.

The Call History Screen

Pages 5-16 to 5-19

The call history screen gives the interviewer information about past attempts. Pages 5-18 to 5-19 in the Ci3 CATI manual identify the contents of each field.

Function Key Features

BSB has programmed the following function keys to perform the indicated functions:

F1 -- Help. Displays the function key features.

F2 -- Displays the telephone number and selected respondent in the current interview.

F4 -- Allows the interviewer to write notes or comments that are kept with the question at which they are answered and can be seen only at that question.

F6 -- Allows the interviewer to go directly to a previously answered question.

F7 -- Backs up one question at a time.

F8 -- Returns to the original question after having backed up to a previous one.

Terminating an Interview

Pages 5-34 to 5-39

The interviewer can terminate an interview at any time by pressing Ctrl-End. In addition, interviews terminate automatically for the No answer, Normal busy, and Answering machine selections at the question, IntroQ, and for Completed interview disposition codes assigned by answering the last question.

There is one situation, however, in which an interviewer should not press Ctrl-End immediately in order to end an interview. This situation occurs when the respondent refuses to continue the interview after s/he has been asked her or his age, race, and sex (if necessary) on a second or subsequent interview attempt.

If the respondent refuses to continue the interview after s/he has been asked her or his age, race, and sex (if necessary) on a second or subsequent attempt, BSB considers the interview

a completed interview. At this point, **the interviewer should enter the code for refused for each question through the last question of the questionnaire.** Ci3 recognizes an interview as complete only when the last question has been answered. Thus, following this procedure forces Ci3 to store the interview data with the completed interviews rather than with the partially completed interviews.

If an interviewer mistakenly presses Ctrl-End for a completed interview before getting to the last question, s/he should code the attempt as a null attempt and schedule an definite appointment for the current (computer) date and a minute before the current (computer) time in order to make the sample record come back immediately. When it returns, the interviewer should go to the last unanswered question and proceed as above.

If, on a first attempt, the respondent refuses to continue the interview after s/he has been asked her or his age, race, and sex (if necessary), BSB considers the interview an incomplete interview. The interviewer should press Ctrl-End immediately, schedule a callback, give the call attempt a code of 13, Initial Termination within Questionnaire or follow whatever other procedure you have set up.

Scheduling a Callback

Pages 5-40 to 5-41

When an interviewer terminates an interview by pressing Ctrl-End, s/he is taken to the disposition code screen. At the disposition code screen, the interviewer must enter a disposition code. If that disposition code has a third parameter of c, the callback scheduling screen will automatically appear. The interviewer should then enter a callback date and time. (The interviewer must enter at least a callback time to avoid re-cycling through the disposition code and callback scheduling screens. The date defaults to the current date.) The section, "Searching for Sample Records That Require Supervisor Attention" starting on page 8 - 4 of this handbook specifies a search that the supervisor can conduct to find sample records with a status of 4 (used or inactive) and an interim disposition code.

Figure 6-2 shows a filled-in callback scheduling screen. A/P stands for AM/PM; the default is PM. R/I stands for Respondent/Interviewer time; the default is Interviewer time. D/C stands for Definite appointment or general Callback; the default is Callback. Definite appointments get a higher priority in the calling queue than general Callbacks.

Figure 6-2. Callback Scheduling Screen

```
                          CALLBACK SCHEDULING

Interviewing Dates :

Interviewing Days  :

Interviewing Hours :
                                Today's Date : 11-28        Time : 5:52 PM

Callback Date  :    11-29

Callback Time  :     8:00          A/P A       R/I          D/C

Contact Name   :

Message        :


Press ESC to Cancel Callback
```

Interviewers have the 40-character Message field in which to type text that will appear on the first screen on a restarted interview. Text in the Message field appears over multiple attempts. An interviewer can add to or edit text in the Message field on subsequent attempts.

Restarting an Interview

Pages 5-42 to 5-43

Data are saved for all interviews in which the telephone number is identified as belonging to a private residence. If such interviews are terminated before the last question has been asked, the interviewer should assign an interim disposition code and schedule a callback. When that sample record goes back to an interviewer for another attempt, the interviewer first has the option of retrieving the data already saved and thus restarting the interview at the first unanswered question, or starting the interview from the beginning. **The interviewer should always choose to restart the interview at the first unanswered question. If the interviewer chooses to restart the interview from the beginning, the respondent will be re-selected and all data from previous attempts will be lost.**

The interviewer then sees a screen at which s/he can only press 1 to go to the first unanswered question. Before pressing 1, s/he should review the call history and note any messages. At the first unanswered question, the interviewer should press F2 to bring up the telephone number to

be called and the identity of the selected respondent, if one has been selected. S/He then follows a paper script, which you have prepared and distributed beforehand, to re-introduce him or herself and get the appropriate respondent on the phone.

Overriding the Call Status

Pages 5-27 to 5-30

By pressing Ctrl-Home at the Call History screen, an interviewer can select a sample record on which to make a call attempt by record number from all of DB.CON. More importantly, s/he can display the call status of all the sample records in his or her calling queue, including those in the interviewing directory as well as those at the interviewing station. At the Call Status display screen, the interviewer can then select a particular sample record to call or can transfer a sample record back to DB.CON. This feature will not work if the currently selected sample record has a partially completed interview associated with it.

When an interviewer gets a message that no more sample is available, s/he has the option of viewing the call status screen and selecting a sample record in the queue on which to make a call attempt. We recommend that you have interviewer select this function and then select the sample record with the closest scheduled callback time other than a definite appointment.

This function can also be used to transfer sample records from one interviewer to another. For example, an interviewer who speaks only English can use this option to transfer a record back to DB.CON and give a foreign-language interviewer the record number. The foreign language-interviewer can then use this function to retrieve the sample record by record number.

Logging Off

Pages 5-46 to 5-48

Interviewers can log off to standby or log off (completely). Sawtooth recommends that they log off to standby if they are going on breaks of less than one hour and log off completely if they are going to be away for longer periods.

It is very important that interviewers log off (completely) at the end of a shift and that the polling function continue to operate one full cycle after the last interviewer has logged off in order to get sample records returned to the DB.CON file on the file server. Returning sample records to DB.CON is a two-step process. When an interviewer logs off, sample records

are put in a temporary directory on the file server. The records remain in the temporary directory until the polling function comes through, moves them to DB.CON, and removes the directory.

7. Routine, Between-Calling-Occasion Tasks: An Overview

For step-by-step instructions, see "A Reference Guide to Routine Between-Calling-Occasion Tasks" in Appendix B, page B - 4.

It is very important that you conduct the routine, between-calling-occasion tasks specified below in the order given. You should de-assign interviewing stations at the end of a calling occasion, wait until the next calling occasion has begun and poll, run CLEANALL.EXE and then conduct the specified searches and take appropriate action, in that order. If you do not conduct the tasks or do not conduct them in the specified order, **your sample records may not be released at all and will not be released according to the BRFSS Rules of Replacement. You should run reports only after conducting the above tasks.**

De-assign interviewing stations. This ensures that all interviewing stations have logged off and that sample records from them have been returned to DB.CON. Ci3 CATI will not let you de-assign an interviewing station unless both of these conditions are met.

Wait until the next calling occasion has begun and then poll at least one complete cycle. Records that have been called three or more times in a calling occasion receive a status of 6 when they return to DB.CON in order to prevent them from being called again. This status is changed only when polling is conducted in a subsequent calling occasion. Since searches and reports will not show records with a status of 6 as active, their status should be changed before conducting searches or running reports. A new calling occasion begins at 5 p.m. Monday through Friday and at midnight Sunday through Saturday.

From the DOS prompt, run the CLEANALL.EXE program to adjust the sample records for null attempts. CLEANALL.EXE will eliminate information on call attempts with a disposition code of 08 (Null Attempt), move up any information on subsequent call attempts, and decrement the Number of attempts field in DB.CON by the number of null attempts. CLEANALL.EXE will also recode interim No Answer, Busy, and Answering Machine disposition codes to their corresponding final codes for the 15th attempt in a sample record. You should not run CLEANALL.EXE after you have inovoked wind-down.

Search for Sample Records Requiring Supervisor Action

The next task is to check for sample records that require action on your part. There are two pure strategies that you can use. One is to search through all records that are or have been active, checking the last disposition, the status code, and the call history for reasonableness and

consistency. The advantages of this strategy are that you have to perform only a small number of easy searches and that you become intimately familiar with the sample records. The disadvantage is that you are visually searching through a lot of records, most of which will not require any action on your part. If you are not vigilant, you can easily miss records that do require action on your part. The second strategy is to identify events that result in records requiring action on your part in determinate ways and searching specifically for such records. The advantage of this strategy is that you are only looking at records that require your attention. The disadvantage is that you have to perform several searches, some of which are of moderate complexity. Which of these strategies you adopt or how you mix the two strategies is ultimately up to you. Because, however, of the familiarity with the sample records that it engenders, we recommend that you use the few searches/many records strategy for the first few months. Both are outlined below.

Few Searches/Many Records Search Strategy

Two searches will divide all ever-active records into groups that are homogeneous in terms of the data elements you are looking at and the patterns you expect the elements to have. These searches are

(1) *A last disposition code of 01-20.* This search will find all sample records with an interim disposition code. With one exception, all these records should have status codes of 0, 1, or 2. The one exception is for records that have already been called during four occasions, none of which was a weekday, weeknight, or (usually) weekend. You should also check their call history and their scheduled callback date and time.

(2) *A last disposition code of 21-40.* This search will find all sample records with a final dispositon code, consisting of replaced records and records with completed interviews. All these records should have status codes of 4. As you get into the interviewing period, you may find it more convenient to search for the 21-35 (replaced) and the 36-40 (completed) disposition codes separately. Alternatively, if records with status codes of 21-35 turn out to be non-problematic for your installation, you may want to restrict your searches to records with a last disposition code of 36-40.

Even if you follow this search strategy, you should read through the following section because it identifies the ways that records requiring action on your part can be created and the specific actions that you should take with such records.

More Searches/Fewer Records Search Strategy

Uncalled callbacks, general callbacks with a first scheduled call near the end of a calling occasions, and records coded for supervisor's attention are sample records requiring supervisor's attention that result from the routine operations of Ci3 CATI. You should routinely find records that meet these criteria. Callbacks scheduled for after interviewing hours usually occur because of interviewer error and thus, hopefully, are rare. You should diligently search for them, however, because records scheduled for after interviewing hours will never be released unless you enter a new time during interviewing hours.

Reschedule uncalled callbacks. This task need be performed only at the beginning of each interviewing day and not between calling occasions on the same day. You should search for sample records with a Date to call between the first day of interviewing and yesterday and a last disposition code of 01-20. This search is necessary because, as noted earlier, both date and time requirements must be satisfied in order for Ci3 CATI to place a sample record with a scheduled callback into the calling queue. Thus, an uncalled callback scheduled late on one day will not be placed into the calling queue on following days until its scheduled time to call. Verify that each sample record has a status of 1, 2, or 3. Reschedule sample records with a status of 2 or 3 for the beginning of the next calling occasion. Reschedule sample records with a status of 1 as appropriate.

Reschedule general callbacks whose first scheduled call is near the end of a calling occasion. Search for sample records with a date and time to call within the last 2½ hours of the next calling occasion and a status of 2. Telephone numbers whose first scheduled callback is in the last 2½ hours of a calling occasion stand little chance of being called 3 times within that calling occasion. Thus, in order to give a general callback a reasonable chance of being called 3 times within a calling occasion, you should identify any general callbacks scheduled to be called within the last 2½ hours of the next calling occasion and reschedule them for the beginning of the calling occasion.

Search for sample records coded for supervisor's attention and take appropriate action. These are records to which an interviewer has given a last disposition code of 20. (You should have specified beforehand the circumstances under which interviewers should assign a disposition code of 20 to a call attempt. If you do not want interviewers to ever code a record for supervisor's attention, you should not define a disposition code for that purpose and this search would thus make no sense.)

Find callbacks scheduled for after interviewing hours. Search for sample records with a time to call after interviewing hours and a status in the range of 1 to 3. Callbacks inadvertently scheduled before interviewing hours will be released when interviewing begins on the specified day; **callbacks inadvertently scheduled after interviewing hours, however, will never be released unless you change the time**. For sample records with a status of 2 or 3, reschedule for

the beginning of the next calling occasion. For sample records with a status of 1, discuss the reason with the interviewer and take appropriate action.

Run reports. Ci3 has available 6 different types of reports--by status, all dispositions, last disposition, selected dispositions, primary sampling unit, and interviewer. Many of these reports come in more than one version, giving a total of 12. **The most important report for you to run from the beginning is the Waksberg PSU Status Report. You should also routinely run the Waksberg Status Report.** Once you are familiar with these reports, you should try the others to see how useful they are for you.

Three to four times during the interviewing period and again at the end of the interviewing period you should compare the number of completed interviews as indicated by DB.CON to the number of completed interviews in the Ci3 CATI completed interview file. To find the number of completed interviews as indicated in DB.CON, search DB.CON for sample records with a last disposition code of 36. To find the number of completed interviews in the completed interview file, use **R**eport...**R**espondent Numbers. See pages 9 - 1 to 9 - 3 for a detailed discussion of this procedure.

CLEANALL.EXE

CLEANALL.EXE is a stand-alone program written by Claude Comeau to perform tasks specific to the BRFSS Rules of Replacement.

CLEANULL.EXE identifies records which contain disposition codes for Null attempts (08), decrements their number of attempts counter, and changes their status to active (01).
The program also identifies records with 15 attempts and interim last disposition codes of No Answer (01), Busy (02), and Answering Machine (03) and recodes their last dispositions to the final disposition codes of Ring no answer (24), Line busy (30), or Answering Machine (21). If you do not run this program between calling occasions, the Waksberg program will not replace these sample records.

We will provide you with copies of CLEANULL.EXE and CLEAN15.EXE. To install the programs, copy them into your CATI directory (usually F:\CATI).

You should run CLEANULL.EXE before you run CLEAN15.EXE.

To run the programs, go to the DOS prompt and make the CATI directory the current directory. Then enter the program name followed by the full pathname of the DB.CON file to be cleaned.

For example, if your CATI directory is F:\CATI and your study number is 404, the full pathname of your study DB.CON file is F:\CATI\S404\DB.CON. Thus, your command line for running CLEAN15.EXE from the F:\CATI directory would be

F:\CATI > CLEANULL.EXE F:\CATI\S404\DB.CON

The command line for CLEAN15.EXE is identical except that you substitute CLEAN15.EXE for CLEANULL.EXE.

Before running CLEANULL.EXE or CLEAN15.EXE, you should be sure that you have de-assigned all interviewing stations. Both programs report the number of records viewed and the number of disposition codes converted. You should use the PrintScrn key to save a printed copy of their output screens for your records.

You should run these programs one final time before invoking wind-down, but you should not run either of them after you have invoked wind-down.

8. Manipulating Sample Records

One of the strongest features of Ci3 CATI is the ability it gives you to work with sample records. You can look at all the records, an individual record, or--most importantly--search for records that meet criteria you specify. The results of any search can be sent to the screen, a printer, or a file. You can copy, sort, delete, or globally edit (Ci3 CATI calls the latter, "masking") all or some of the sample records. Finally, Ci3 CATI provides you with a function that attempts to restore an erased or corrupted DB.CON (sample record) file.

In the five sections immediately following are references to the *Ci3 CATI System* manual where you will find general discussions and instructions on manipulating sample records. Of the features discussed, by far the most important and commonly used is entering search specifications. Following those sections are discussions of specific searches that you should perform as part of the BRFSS.

Entering Search Specifications

SetUp...**E**nter/View Sample...**V**iew or Edit...**E**nter search specification
Pages 2-86 to 2-92

Page 2-87 in the *Ci3 CATI System* manual identifies the allowable relations in searches and provides an explanation of each. You should make a copy of that page and keep it next to your supervisor station until you no longer need it.

Figure 8-1 shows the screens for search specifications in DB.CON. (You get to the second screen by pressing Page-Down at the first screen.) The logical relation between fields in a specification is an "AND." Thus, if you specify multiple criteria in a search specification **all** of those criteria must be met for a record to be selected. You specify an "OR" relation between fields by pressing End to exit a specification screen and then entering another search specification.

Please note the following four peculiarities of Ci3 CATI when entering search criteria: (1) Disposition codes 01 through 09 must be entered with a leading zero. (2) You must enter dates as four-digit codes, *mmdd*, where *mm* is the month and *dd* is the date. (3) You must enter time on a 24-hour clock. (4) A less-than relation in the search specification for a field will select records with blanks in that field (because for the computer, blanks have a lower value than any printed character).

Figure 8-1 shows each of these peculiarities in an example search specification. It specifies a search for records with a disposition code less than 9, which are scheduled to be called on April 3

before 2 pm. Note that because the less-than relation includes blanks, the search specifications for disposition code and time are written as ranges rather than as less-than relations.

Figure 8-1. DB.CON Search Specification Screens

```
[Screen 1]

 Study: 998           SAMPLE DATABASE SEARCH SPECIFICATION
                    Relation           Value                  Second Value
                    --------- ------------------------ ------------------------
Record Number ......
Phone Number .......
Time Zone ..........
Random .............
Primary Cell .......
Secondary Cell .....
Contact Name .......
Date to Call .......eq        0403
Time to Call .......ra        0000                     1359
Message ............
Firm Name ..........
Open ...............
Wave ...............
Status .............
Respondent # .......
# of Attempts ......
Last Attempt Date ..
Last Disposition ...ra        01                       09
Last Interviewer ...
           Valid relations: EQ, NE, GT, GE, LT, LE, RA, OR, ST, XS.
  Press: PgDn to view more fields, END to save and continue, ESC to exit.
```

```
[Screen 2]

 Study: 998           SAMPLE DATABASE SEARCH SPECIFICATION
                    Relation           Value                  Second Value
                    --------- ------------------------ ------------------------

Field  1 ...........
Field  2 ...........
Field  3 ...........
Field  4 ...........


          Valid relations: EQ, NE, GT, GE, LT, LE, RA, OR, ST, XS.
  Press: PgDn to view more fields, END to save and continue, ESC to exit.
```

Searching for sample records is one of the most common and most important tasks that a survey supervisor performs. It is the main way to perform required maintenance between calling occasions during a survey and to pinpoint and correct problems with sample records which are created by interviewers or other sources of errors. Thus, you should make a special effort to get up to speed on entering search specifications as quickly as possible.

When you have entered your search specification, press End. Then choose **B**egin search (unless you want to create search specifications with an "OR" relation). Note that CATI tells you how many records it has selected. Press (almost) any key. Upon completion of a search, you are presented with a menu that lets you

Display Records
Pages 2-93 to 2-94,

Copy Records to Another Ci3 Database
Pages 2-94 to 2-96, or

Mask Records [That is, change or edit records]
Pages 2-97 to 2-101.

Most of the times that you conduct searches you will want to look at all of the selected records and perhaps make changes in them one at a time. **D**isplay Records allows you to perform that task. You will use **C**opy Records to Another Ci3 Database monthly as a step in the procedure for converting your DB.CON file(s) into ASCII format for transmission to BSB. Finally, you can use **M**ask Records to make identical changes in groups of records--for example, changing the date and time to next call several sample records. If you do use the **M**ask Records feature, you should back up DB.CON beforehand in case your masking produces unexpected results.

Finding and Changing Sample Records That Require Supervisor Action

SetUp...**E**nter/View Sample...**V**iew or Edit...**E**nter search specification
and after a search, **D**isplay Records and **M**ask Records
Pages 2-86 to 2-94, 2-97 to 2-101

Few Searches/Many Records Search Strategy

If you do find sample records that require action on your part, check the section on the more searches/fewer records search strategy for ways that inappropriate records can be created and what you can do about them.

A last disposition code of 01-20. This search will produce all records with interim disposition codes. Almost all of the records should be active--the only possible exceptions being a few records that show a status of 6 because they are awaiting a particular type of calling occasion.

```
Last Disposition ...        ra                01                20
```

Check the status codes, call histories, and scheduled callback dates and times of the sample records for appropriateness and consistency. Determine the cause of any problem and take appropriate action.

A last disposition code of 21-40. This search will produce all records with final disposition codes. All of these records should be inactive with a status of 4.

```
Last Disposition ...        ra                01                20
```

Check the status codes.

More Searches/Fewer Records Search Strategy

The following task should be performed starting on the second day of interviewing only at the beginning of each interviewing day and not between calling occasions on the same day.

Uncalled callbacks. Search for sample records with a Date to call between the first day of interviewing and yesterday and a last disposition code between 01 and 20. (To avoid selecting records with blank dates, your search specifications for the date must specify a range of dates rather than simply a date before the next calling occasion.) For example, if today is April 23 and the survey started on April 14, your search specifications would be

```
Date to Call .......      ra              0413            0422
.
Last Disposition ...      ra              01              20
```

Note that "ra" stands for within the range of, or between the values of.

When you have conducted the search, you should display each record and verify that each sample record has a status of 1, 2, or 3.

For sample records with a status of 2 or 3, change the Next Contact Date to today and the Time to the beginning of the next calling occasion, specifying AM or PM. To continue the example above, if your next calling occasion starts today at 4 p.m., in the sample record, change Next Contact Date to April 23, Time to 4:00, and A/P to P.

A status of 1 indicates a missed definite appointment. You may want to schedule these for the same time today as they had previously. If uncalled callbacks with a status of 1 occur more than rarely and you suspect they are caused by Ci3 CATI, you should contact Claude Comeau.

If you have a lot of records to change, you can change them all at once with the *M*ask Records feature, although if you do so, be sure that you have backed up DB.CON beforehand. Alternatively, if there are a lot of records and you don't want them all to enter the calling queue at the same time, you can stagger them within the next calling occasion.

At the beginning of each new calling occasion, you should poll and then conduct the following searches. A new calling occasion begins at 5 p.m. Monday through Friday and at midnight Sunday through Saturday.

General callbacks scheduled near the end of a calling occasion. General callbacks next scheduled to be called near the end of a calling occasion stand little chance of being called 3 times within that calling occasion. Thus, you should search for sample records with a status of 2, a scheduled callback date on the date of the next calling occasion (usually today or tomorrow),

and a time within the last 2½ hours of the next calling occasion and reschedule them for the beginning of the next calling occasion. For example, suppose that your next calling occasion is from 9 am to 5 pm on April 23. Then you would search for records with a status of 2 scheduled to be called between 2:30 pm and 5 pm on April 23. In this example, your search specifications would be

```
Date to Call .......eq        0423
Time to Call .......ra        1430                    1700
.
Status .............eq        2
```

Schedule a Next Contact Date and Time for the beginning of the next calling occasion, specifying AM or PM and Interviewer or Respondent time.

Sample records with a last disposition code of 20. These are the sample records which the interviewers have coded for supervisor attention. The search specification is

```
Last Disposition ...       eq                20
```

Note that "eq" stands for equal.

You should have specified beforehand the circumstances, if any, under which interviewers should assign a code of 20. Take appropriate action, depending on why a record was coded for your attention.

Sample records with callbacks scheduled after interviewing hours. Since Ci3 CATI requires that **both** date and time criteria be met for a record to be put into the calling queue, these records will never be put into the queue unless you identify and reschedule them. Search for sample records with a time to call after interviewing hours and a status in the range of 1 to 3. In the example below, I assume that interviewing ends at 9 pm every day except Saturday and on 2 pm on Saturday. Under these assumptions, the search specification for Sunday through Friday is

```
Time to Call .......       ra                2100         2400
.
Status .............       ra                1            3
```

and the search specification for Saturdays is

```
Time to Call .......       ra                1400         2400
.
Status .............       ra                1            3
```

For sample records with a status of 2 or 3, schedule a Next Contact Date and Time for the beginning of the next calling occasion, specifying AM or PM and Interviewer or Respondent

time. For sample records with a status of 1, you may want to talk with the interviewer first and then take appropriate action.

Supervisor or System Error. You should conduct the following searches as you deem appropriate during an interviewing period or when you suspect a problem. Records that match the following criteria can only occur through system error (a bug in the software) or through the supervisor inappropriately changing status or disposition codes. They cannot be brought about by interviewer error.

Last Disposition Code = 01-20 and Status = 4 (Interim disposition code but inactive status.)

Last Disposition Code = 21-40 and Status <> 4 (Final disposition code but active status.)

Last Disposition Code = 2 (Busy) and Status <> 0.

Status = 1 (Definite Appointment) and No Scheduled Callback Date or Time.

Status = 0,6 (Not Attempted) and Number of Attempts > 0.

Status = 1-4 (Attempted) and Number of Attempts = 0.

Removing a Bad PSU and Adding a New One

SetUp...**E**nter/View Sample...**W**aksberg...**U**tilities...**E**dit Rules...**S**ample
Pages 2-68 to 2-70

For step-by-step instructions, see "A Reference Guide to Replacing a Bad PSU" in Appendix B, page B - 7.

If your state routinely encounters bad PSUs, we recommend that you add enough telephone numbers (normally 2 to 4) to your file of stage-one numbers to replace the expected number of bad PSUs. Then, you can merely not activate the extra PSUs by not including them in your Waksberg Set Up Rules.

You can remove a bad PSU (from the active sample records) by adding a rule under the Waksberg Edit Rules function to kill a PSU with a specified number. If you do so, however, you should re-write the Set Up Rules so that a single rule activates only sequentially numbered PSUs. For example, suppose that you originally activated 70 PSUs although you had 72 stage-one numbers and that you have determined that PSU number 42 is a bad PSU. Further assuming that the current month is April, then your Edit Set Up Rules specification would be that shown on

page 5 - 10 of this handbook. You would change your original specifications by activating PSUs 4001-4041, killing PSU 4042, and activating PSUs 4043-4071. You should always kill a PSU to a depth of 100. Thus, your new Set Up Rules would be those in Figure 8-2 below.

Figure 8-2. Waksberg Set Up Rules Screen With Bad PSU

```
            Macro filename: G:\CATI\S404\S404.MCR
┌──────────────────────────────────────────────────────────────────┐
│    Non-target disposition codes (range 0, 4-40)  =   __ ,  __ ,  __
│                                 in between:  From =   21 to 35
└──────────────────────────────────────────────────────────────────┘
┌──────────────────────────────────────────────────────────────────┐
│1 : PSU        4001  to 4041          Max. Household #'s per PSU = 3
│2 : Kill PSU   4042  to 4042          Max. Household #'s per PSU = 100
│3 : PSU        4043  to 4071          Max. Household #'s per PSU = 3
│4 :
│5 :
│6 :
│7 :
│8 :
│9 :
│10:
│11:
│12:
│13:
└──────────────────────────────────────────────────────────────────┘
                                                  Use PgUp or PgDn keys
            ╔══════════════════════════════════════════════════════╗
            ║  Type the letter r,s,p,k to define a replicate, stratum,
            ║  psu or kill psu.  Use space bar to blank the row.
 End to Save ║     Use the Up & Dn arrow keys to move between rows.
 Esc to Quit ╚══════════════════════════════════════════════════════╝
```

Killing a PSU merely deactivates its sample records--it deletes neither the sample records nor the data for any completed or partially completed interviews. Thus, data from interviews already conducted will still be part of your final data.

If you do not have any extra PSUs already loaded, you can add a new PSU to DB.CON. To do so, you would create a new ASCII file with one (or more) stage-one number and then generate and import new stage-two numbers as described beginning on page 5 - 5 in this handbook. You would then change the Waksberg Set Up Rules as above to exclude the bad PSU and include the new one.

Sorting Sample Records

SetUp...**E**nter/View Sample...**S**ort
Pages 2-102 to 2-104

Ci3 CATI lets you sort (and then view, print, or copy) the sample records on the basis of up to nine fields in DB.CON, although in ascending order only. We haven't found a use for this feature yet, but it's nice to know that it's there.

Printing Sample Records

SetUp...**E**nter/View Sample...**P**rint
Pages 2-105 to 2-108

Ci3 CATI lets you print all or some fields in all or selected records in sorted or unsorted order. Although you will probably use this feature only rarely, there will be times when you will want to print records in order to, for example, examine them carefully for anomalies or show them to someone else.

Deleting Sample Records

SetUp...**E**nter/View Sample...**I**mport...**D**elete records
Pages 2-41 to 2-43

Ci3 CATI lets you select all or some of your sample records and delete them with one command. One possible use of this function is to delete unused sample records from completed PSUs. Once a PSU has three completed interviews, there is no further need for the unused sample records to remain in the sample database. You can shorten the time of a polling cycle significantly by deleting the unused sample records. Because of the danger of inadvertently deleting the wrong records, however, we recommend that you try this only if the length of a polling cycle is unacceptably long. To delete unused sample records from completed PSUs, search for records that contain the target PSU numbers and that have Number of Attempts equal to 0. Then delete the selected records. **As with any function that could result in large numbers of unwanted changes, you should make a copy of DB.CON before deleting any records.**

Restoring an Erased or Corrupted Sample File (DB.CON)

Setup...**E**nter/View Sample...**R**estore
Pages 2-109 to 2-116

If your DB.CON file is inadvertently erased and you have no backup copy, this function will **not** help you. Similarly, if your DB.CON file is corrupted and you do not have an uncorrupted copy, this function will **not** help you. It takes a backup DB.CON file that was created at an earlier date and that is presumed to not be corrupted and uses the field disks to update it. **Thus, in order for**

this function to be helpful, you have to be backing up your DB.CON file and keeping your field disks.

Your first step, however, should you inadvertently erase a DB.CON file, should be to contact your LAN administrator immediately and see if s/he can't unerase the file using network utilities. Contacting your LAN administrator immediately is crucial because an erased file on a LAN can be overwritten very quickly.

If you suspect that your DB.CON file is corrupted, your first step should be to phone Sawtooth Technologies.

Finally, the manual suggests on pages 2-109 and 2-110 two simpler actions that you can take before trying this function that may restore the integrity of a corrupted DB.CON file. If you cannot contact anyone quickly enough, you should perform those actions first and then use this function if they are unsuccessful.

9. Additional Back-End Procedures

The most commonly used back-end procedures in this section are listed first. They are de-assigning interviewing stations, comparing the number of records in the completed interview file with the indicated number of completed interviews in DB.CON, and checking the status of field disks.

De-Assigning Interviewing Stations

Assign...**I**nterviewing Stations
Pages 1-16 to 1-17

You should de-assign interviewing stations at the end of each calling occasion.

Comparing the Number of Records in the Completed Interview File With the Indicated Number in DB.CON

Report...**R**espondent Numbers
Pages 3-65 to 3-68

You should perform this procedure three to four times during the interviewing period and again at the end of the interviewing period.

Ci3 CATI allows you to view the respondent numbers and disposition codes of completed interviews, either on the file server or on field disks. Figure 9-1 shows a sample Respondent Number Summary Screen. Before getting to this screen, you will see one or more screens that show the individual respondent numbers and disposition codes. Please note that the number of complete interviews will always equal the number of respondents and that the number of incomplete interviews will always be zero.

Figure 9-1. Respondent Numbers Summary Screen

```
Study: 404                              SUMMARY
 36:    127

The total number of complete interviews on this disk: 127
The total number of incomplete interviews on this disk: 0
The total number of respondents on this disk: 127

                Press ENTER to process another disk or ESC to cancel.
```

You can use this function to determine the number of completed interviews on a field disk or the file server, to identify duplicate respondent numbers (that were inadvertently assigned), and to verify that completed interviews all have an appropriate disposition code. Of the three purposes, in the BRFSS survey, the second should occur only rarely and the third should never occur. Although it is possible to assign duplicate respondent numbers to different field diskettes, with a small amount of attention and record-keeping on the part of the supervisor, such an occurrence will be rare. Since Ci3 CATI counts an interview as complete only when the last question is answered and then it automatically assigns a disposition code of 36, completed interviews should always have the appropriate disposition code.

The most frequent problem is that the number of completed interviews in the completed interview file, *F*:\CATI\S*XXX**SSYY*.DAT, differs (usually less by 1 or 2 or 3) from the indicated number of completed interviews in DB.CON. Thus, 3 to 4 times throughout and at the end of each interviewing period, you should determine the number of records in the completed interview file and compare that number with the result from a search for sample records with a disposition code of 36 in DB.CON. If the two numbers do not match, you should track down the "lost" interviews.

One reason that the two numbers could differ is that an interviewer did not log off or logged off improperly. In such a case the "lost" interview should be on the interviewer's field diskette.

A second reason that the two numbers could differ is that an interviewer assigned a code of 36 at the end of a call attempt without answering the final question. (This can only happen if, contrary to our recommendation, you make 36 a non-hidden code.) In such a case, the "lost" interview should be in the partially completed interview file, *F*:\CATI\R*XXX**SSYY*.DAT. To get that record into the completed interview file, you must complete the interview by answering the last question.

To get the "lost" interviews into the completed interview file, first compare the respondent numbers given by this function to the respondent numbers of the sample records with a disposition code of 36 in DB.CON. For those respondent numbers that are in DB.CON but not in the completed interview file, find the field disks to which they are assigned. Use the **R**eport...**F**IELD DISK Status function discussed in the next section to determine whether or not the field disks are properly logged off. If they are not, log them off and check the respondent numbers in the completed interview file again. If there is still a discrepancy, bring the "extra" records up in DB.CON, change their status to 1, give them a callback date and time for today's date and the current time, and log an interviewer on. The records in the partially completed interview file should come up. The interviewer should then restart the interview at the first unanswered question, enter the code for refused for each question up to the sex question (if the interview terminated before then), and then enter the code for refused through the last question of the questionnaire in order to get the interview data into the SXXX directory. If this procedure does not eliminate the discrepancy between the number of completed interviews in the completed interview file and the number of completed interviews indicated in DB.CON, you should contact Sawtooth Technologies.

Going to DOS

Assign...**G**o to DOS
Page 1-18

If you are using DOS 4.0 or later, Ci3 CATI allows you to go to DOS without exiting Ci3 CATI. If you use this function to go to DOS, you will only be able to run small programs, like CLEANULL.EXE or CLEAN15.EXE. You will not have enough memory to run substantial applications, such as WordPerfect. To get back to Ci3 CATI from DOS, enter exit at the Ci3 CATI directory. **The Ci3 CATI directory must be the default directory when you exit DOS in order for the menus to work when you re-enter Ci3 CATI.**

Checking Field Disk Status

Report...**F**IELD DISK Status
Pages 3-94 to 3-97

This function in Ci3 CATI tells you whether or not a field disk is properly logged off, the number of the study it is assigned to, the respondent numbers assigned to it, the maximum number of interviews allowed, and the number of remaining interviews.

Use this function to determine whether or not a field disk has been properly logged off or if you want any of the above information. If a field disk has not been properly logged off, you will need to log it off in order to transfer sample record information and data to DB.CON.

Unlocking Directories

Poll...**U**nlock
Pages 4-9 to 4-10

When an interviewing station is reading or writing to a file on the file server, the supervisor and the other interviewing stations are prevented from using the directory in which the file is located. If the interviewing station leaves the directory locked, for example, by being rebooted without logging off, Ci3 CATI will generate a network locked message. If you receive a network locked message at the supervisor's station, you can usually unlock the locked directory by pressing Ctrl-U. If this does not work, select **P**oll...**U**nlock from the CATI menu. Finally, you can type UNLOCK at the DOS prompt from the CATI directory.

Please note: An occasional and short-lived Network Locked message is normal. **You should be sure that you have allowed at least 60 seconds for a Network Locked message to clear before assuming that you have a problem.** The supervisor station and the interviewing stations will occasionally try to access the same file at the same time.

Setting the Time Between Polling

Poll...**S**et Delay
Pages 4-8 to 4-9

The more frequently Ci3 CATI polls the interviewing station directories the more likely that a workstation will receive a Network Locked message. At the same time, the less frequently the Ci3 CATI polls the interviewing stations, the more slowly do data and sample move between the file server and the interviewing stations. The default time interval between polling is 15 seconds.

If you are experiencing more network locked messages than you feel are appropriate, increase the time between polling. If you feel that interviewing stations are not receiving sample promptly enough or that reports from the supervisor stations are not up-to-date enough, decrease the time between polling.

Viewing Individual Data Records

Report...**V**iew Data
Pages 3-59 to 3-64

Ci3 CATI allows you to view individual data records, either on the file server or on field disks.

Editing Data Records

Report...**E**dit
Pages 3-78 to 3-93

Beginning with the January 10, 1995 release, Ci3 CATI has a data editor function that allows you to change individual data records, delete respondents, and change respondent numbers. **If you use the data editor, you should use it very carefully, backing up your data before you make any changes.** You will probably never need it to delete respondent data or change respondent numbers and you should **never** do so before the end of a study without consulting Sawtooth or BSB. Because the editor is powerful (and thus potentially destructive), complex, and functions somewhat differently from the rest of Ci3 CATI, it is important that you read the Sawtooth documentation about it before trying to use it.

Viewing Marginals

Report...**M**arginal Tabulation
Pages 3-69 to 3-77

Ci3 CATI lets you look at marginal distributions of questions and variables defined in the questionnaire. You can specify which questions or variables you want to look at, view data that is contingent on the value of another question or variable, and combine values of the question or variable you are viewing. Ci3 CATI also lets you save specifications in files for easy subsequent use.

CHECKDB.EXE

READTHIS.TXT in the Ci3 CATI Directory

The following is extracted (with some editing) from the READTHIS.TXT file in the Ci3 CATI directory.

CHECKDB is a utility program that checks the integrity of a Ci3 CATI sample database (DB.CON). CHECKDB checks for:

1. the correct file size,

2. the correct record count,

3. valid record numbers,

4. non-ASCII characters,

5. duplicate telephone numbers, and

6. duplicate respondent numbers.

The syntax for running CHECKDB is CHECKDB [drive:dir\db.con]. For example, if you want to check the sample database for Study 100 on the F drive, from the F:\CATI prompt, you would enter CHECKDB F:\CATI\S100\DB.CON.

If no parameter is specified, the utility displays a help message.

CHECKDB produces a report file in the study directory. The file is called CHECKDB.TXT and contains a detailed list of errors in DB.CON.

When records with duplicate phone numbers or respondent numbers are encountered, only the second occurrence, and beyond, are reported for each set of duplicate records. CHECKDB allows you to change the status of records containing duplicate phone numbers or respondent numbers to 9 so that you can easily search for them in the database.

READTHIS.TXT contains additional technical information. To print READTHIS.TXT, from the DOS prompt in the Ci3 CATI program directory, enter TYPE READTHIS.TXT >LPT1.

10. Reports

Ci3 CATI reports are either Waksberg or standard reports. The Waksberg reports can be used only with Waksberg samples and are found under **R**eport...**W**aksberg. The standard reports may be used with all samples and are found under **R**eport on the main menu.

Ci3 CATI produces Waksberg reports by status codes, all, latest, and filtered (selected) disposition codes, and primary sampling unit. It produces standard reports by status codes, all and latest disposition codes, and interviewer. (Ci3 CATI also produces a standard quota report which we do not use.) Because they draw their information from different files, the Standard Cumulative and Daily Disposition Code reports can legitimately give different results than the other standard and Waksberg reports. Differences between the standard and Waksberg Status Reports can, however, indicate the existence of anomalous sample and should be investigated further by searching for the appropriate records.

The Waksberg reports may be run using either "Sample" or "Report" rules. For the BRFSS survey, you should always use the "Sample" rules.

The standard reports by all or latest disposition and by interviewer may be based on either daily or cumulative data.

You should run these reports only after having completed your routine between-calling-occasion tasks. Performing these tasks eliminates discrepancies in some of the reports that would otherwise show up. Thus, by running the reports after completion of your routine between-calling-occasion tasks, you maximize the probability that discrepancies in reports actually reflect problem sample records rather than the routine operation of Ci3 CATI.

A discrepancy in or between reports may indicate a serious problem with the sample records or may just reflect a routine event. If you do see a discrepancy in a report, you should, however, always track it down. If it is a sign of a serious problem, it is important that you address the problem as early as possible.

The first reports you should learn to interpret are the Waksberg PSU report, the Waksberg Status report, and the Timetable of Callbacks Report. Once you can use these reports to identify potential problems, you can explore the usefulness of other reports.

Figure 10-1 shows a screen from a Waksberg PSU report. Please note that the columns in this report differ from those shown in the *Ci3 CATI System* manual.

Figure 10-1. A Waksberg PSU Status Report

First row is total for all PSU's. All other rows for individual PSUs.

PSU	Target used	Other used	Available in db.con	Call again	At inter-viewers	Not released	Total for PSU	Sample replaced
5	9	1	4	2	0	484	500	1
1001	3	0	0	0	0	97	100	0
1002	3	0	0	0	0	97	100	0
1003	2	0	1	0	0	97	100	0
1004	1	1	0	2	0	96	100	1
1005	0	0	3	0	0	97	100	0

Target used = Status 4 AND last disposition code >= 36
Other used = Status 4 AND last disposition code <= 35

PgUp = Up 1 screen
PgDn = Down 1 screen

ESC to quit

The "Target used" and "Other used" columns are explained above. "Available in db.con" is the number of records with a status of 0 (active, available for dialing but have not been called). "Call again" is the number of records with a status of 1 (definite appointment), 2 (general callback), or 3 (busy). "At interviewers" is the number of records with a status of 5. "Not released" is the number of records with a status of 6 (inactive, being held for possible release as replacement numbers). Finally, "Sample replaced" is the number of records with a disposition code between 21 and 35.

For both the totals row and each individual PSU, you should make sure that the number in the Other used column equals the number in the Sample replaced column. If the two numbers are not equal, it is likely that a sample record contains an interim last disposition code but has a status of 4 (inactive). This can happen if an interviewer enters an interim disposition code but does not schedule a callback.

You should also check to see if the numbers in the Target used, Available in db.con, Call again, and At interviewers columns add to 3 for an individual PSU and to three times the number of PSUs for the total sample. (If At interviewers is not 0, an interviewer has not logged off properly; you should log the interviewer off to return the sample to DB.CON.)

The most common reason that these columns do not add to 3 for a PSU and to three times the number of PSUs for the total sample is that CLEANULL.EXE and CLEAN15.EXE were not run before the report was produced.

Suppose, for example, that a sample record receives a last disposition of No Answer on a fifteenth call attempt. That record will then have a last disposition code of 01 and a status of 4 and will appear in the Other used column. A new sample record, however, will not be released because the original record does not have a last disposition code between 21 and 35. Thus, for that PSU the sum of the numbers in the Target used, Available in db.con, Call again, and At interviewers columns will add to 2 and for the total sample the sum of those columns will not equal three times the number of PSUs. Running CLEAN15.EXE before producing the report will eliminate this situation as a possible explanation for the discrepancy under discussion.

Similarly, not running CLEANULL.EXE can cause the Target used, Available in db.con, Call again, and At interviewers columns to not sum as indicated when a sample record has 3 attempts in the current calling occasion. If a sample record has an interim last disposition after a third attempt in a calling occasion, the Waksberg part of Ci3 assigns a status code of 6 to the record. The record will appear in the Other used column but an additional sample record will not be released because the original record does not have a last disposition code between 21 and 35.

As a general procedure, when you see an inconsistency in the numbers, you should identify the PSU in which the records occur and search for them by PSU. You can then examine each sample record in the PSU up to the depth value released. Records which have never been released will have a status of 6 and no attempts. Since records in a PSU are almost always released sequentially, once you encounter several unreleased records in a row, you can stop examining the records in the PSU.

See pages 3-42 to 3-44 in the *Ci3 CATI System* manual for more information on the characteristics and differences among the various reports. The *Ci3 CATI System* manual contains sample printouts of the various reports and discusses the information contained in them.

Rather than duplicate that effort here, the rest of this chapter indicates the specific types of reports that are available and refers you to the appropriate pages in the manual.

Timetable of Callbacks Report

Cumulative--**R**eport...**T**imetable of Callbacks
Pages 3-18 to 3-24

Status Reports

Waksberg, Cumulative--**R**eport...**W**aksberg...**S**tatus
Pages 3-46 to 3-47

Standard--**R**eport...**S**ample
Pages 3-5 to 3-17

Latest Disposition

Waksberg, Cumulative
Report...**W**aksberg...**L**atest Disposition
Pages 3-52 to 3-54

Waksberg, Cumulative
Report...**W**aksberg...**F**iltered Disposition
Pages 3-54 to 3-55

Standard, Daily and Cumulative
Report...**S**ample
Pages 3-5 to 3-17

All Dispositions

Waksberg, Cumulative
Report...**W**aksberg...**A**ll Dispositions
Pages 3-50 to 3-52

Standard, Daily and Cumulative
Report...**D**ispositions

Pages 3-31 to 3-35

Primary Sampling Unit

Waksberg, Cumulative
Report...**W**aksberg...**P**SU Status
Pages 3-48 to 3-49

Interviewer

Standard, Daily and Cumulative
Report...**I**nterviewer Productivity
Pages 3-36 to 3-41

11. Wind-Down

For step-by-step instructions on invoking wind-down, see "A Reference Guide to Invoking Wind-Down" in Appendix B, page B - 8.

After you have completed 95% of your target number of interviews for a month, you **may** complete the remaining interviews under wind-down. Under wind-down, the standard BRFSS Rules of Replacement are suspended. Within each PSU, telephone numbers are called only once and a final disposition code is given until the target number of interviews in that PSU are completed.

The prescribed procedure for completing interviews under wind-down in Ci3 CATI is conceptually identical to that followed in paper-administered surveys: An interviewer is assigned a PSU and s/he calls numbers from that PSU until the target number of interviews in that PSU are completed.

Preparing for Wind-Down

To prepare for wind-down, you should first de-assign the interviewing stations and then run CLEANULL.EXE and CLEAN15.EXE. Next, you should review and, as appropriate, re-schedule all sample records with last disposition code in the range of 1 to 20 and number of attempts greater than or equal to 1. Finally, you should make a paper copy of the numbers of the PSU's for which you have not completed three interviews. To do so, print the Waksberg PSU report using Print-Scrn to obtain a paper copy.

After you have released 53 sample records for the PSU's going into wind-down, initiated wind-down, and assigned particular PSU's to particular interviewers, as specified below, you will need to assign interviewing stations on stand-by and then begin polling.

Releasing Sample Records to a Depth of Fifty-Three and Initiating Wind-Down

SetUp...**E**nter/View Sample...**W**aksberg...**E**dit rules...**S**ample
Pages 2-68 to 2-70

You tell Ci3 CATI to release sample records (conventionally) up to a depth of 53 from a PSU and initiate wind-down by changing the maximum household numbers per PSU in the Waksberg Setup Rules screen from 3 to 153. Any number between 100 and 200 in this cell tells Ci3 CATI

to go into wind-down mode. Ci3 CATI subtracts 100 to determine the number of sample records per PSU to release at one time.

The PSU's going into wind-down must be indicated separately on the Waksberg Set Up Rules Screen and must not be included in the ranges for other PSU's. For example, suppose you have 70 PSU's numbered from 4001 to 4071, that you have killed PSU number 4042, and that you enter wind-down with one completed interview in PSU number 4012 and two completed interviews in PSU number 4050. In that case, you would tell the Waksberg software to complete 3 interviews for PSU's 4001 through 4011, 153 interviews for PSU 4012, 3 interviews for PSU's 4013 through 4041, 100 interviews for PSU 4042, 3 interviews for PSU's 4043 through 4049, 153 interviews for PSU 4050, and 3 interviews for PSU's 4051 through 4070. Figure 12-1 shows a filled out set up rules screen for wind-down.

Figure 12-1. A Waksberg Set Up Rules Screen for Wind-Down

```
          Macro filename: G:\CATI\S404\S404.MCR

    Non-target disposition codes (range 0, 4-40)  =   __ , __ ,  __
                            in between:  From =   21 to 35
                                                  Page = 1
1 : PSU         4001  to 4011          Max. Household #'s per PSU = 3
2 : PSU         4012  to 4012          Max. Household #'s per PSU = 153
3 : PSU         4013  to 4041          Max. Household #'s per PSU = 3
4 : Kill PSU    4042  to 4042          Max. Household #'s per PSU = 100
5 : PSU         4043  to 4049          Max. Household #'s per PSU = 3
6 : PSU         4050  to 4050          Max. Household #'s per PSU = 153
7 : PSU         4051  to 4070          Max. Household #'s per PSU = 3
8 :
9 :
10:
11:
12:
13:
                                             Use PgUp or PgDn keys

               Type the letter r,s,p,k to define a replicate, stratum,
               psu or kill psu.  Use space bar to blank the row.
 End to Save      Use the Up & Dn arrow keys to move between rows.
 Esc to Quit
```

Assigning Particular PSU's to Particular Interviewers

SetUp...**E**nter/View **S**ample...**A**ssign
Pages 2-78 to 2-82

After completing the supervisory tasks identified above, assign sample records to classes of interviewers by PSU, as discussed beginning on page 5 - 12, so that each interviewer gets numbers from a single PSU. (Although the feature allows multiple interviewers per class, for this procedure you use only one interviewer per class.) The interviewers call each number in turn until they complete the target number of interviews for that PSU. **Note: The interviewer has to manually keep track of the completed number of interviews to know when to stop.** Up to five PSU's may be assigned at any one time.

If you have more PSU's going into wind-down than you have interviewers, you must change the assignment of interviewer classes to PSU's in the course of wind-down. To change the assignment of an interviewer class, the interviewer must first logoff. You must then re-assign a new PSU to that interviewer class, at the **A**ssign...**I**nterviewing Stations screen, de-assign and then re-assign the interviewer on stand-by, and then poll. The interviewer may then log on to receive sample records from the newly assigned PSU.

Waksberg Logic in Wind-Down Mode

All call records are initially loaded with an '*' after the PSU label in field 2. During wind-down the program marks the records that are part of wind-down with an 'm' (for marked). All sample records that are considered pre-wind-down retain their '*' mark.

The 'm' marking works as follows: If a sample record has a status of 0, 2, or 3, then the record is still active and can be called, so it is marked with an 'm'. Sample records that are holding (waiting to be released, status 6) and have a pre-holding status of 0, 2, or 3 are also marked with an 'm'. (The pre-holding status is the number that replaces the '>' as the first character in field 2 when a sample record becomes a status 6 or 7.)

Note that pre-wind-down records that are inactive (status 4) or at an interviewing station (status 5) will keep their '*' mark. The pre-wind-down status 4 records (which are completes and non-target codes) keep their '*' mark forever. Status 5 records keep their '*' mark only until their status changes. (If you have, in fact, recalled all sample records from the interviewing stations, no sample record should have a status of 5.)

During wind-down, when an 'm' marked record has been called once since being marked 'm', it is marked again with a 'W' (instead of the 'm'). All call records marked with a 'W' are not called again.

Call records marked with a 'W' are treated in one of two ways. If they are a complete--disposition codes (36-40) in any call history location--then they are left with their status of 4 (inactive). But if they are anything other than a complete, they are marked as holding and

additional sample records (increased depth value) are released to replace them. This happens until the target number of completed interviews of 3 per PSU is fulfilled or all released numbers in a PSU have been called.

12. Creating ASCII Files of Sample and Data Records

For step-by-step instructions, see "A Reference Guide to Converting BRFSS Sample and Interview Files to ASCII Format" in Appendix B, starting on page B - 10.

Once you have collected all of the data for a study, you should create two ASCII files per study: one containing sample records for all telephone numbers with one or more attempts and one containing the data from completed interviews. (In order to speed processing, a state may choose to divide its sample in half and conduct two studies per month. A state choosing this option should create four ASCII files per month.) These ASCII files then become input for BSB's Data Management's PC re-formatting program. The output of the re-formatting program is used, in turn, by their editing and quality control programs. Once you have processed your data through those programs, you should then send the data to the BRFSS data mailbox as an attachment to a WONDER/PC e-mail message. BSB's Data Management Section provides separate documentation for use of the re-formatting, editing, and quality control programs.

The ASCII files that you create from Ci3 CATI and Ci3 System should have names of the form, *SSMMMYYN.EXT*, where

> *SS* is your state's two-character postal abbreviation,
>
> *MMM* is the three-character abbreviation of the study month,
>
> *YY* is last two digits of the study year,
>
> *N* is 1 or 2 depending on whether this is the first or second study for the month, and
>
> *.EXT* is .SAM for the file of sample records and .CMP for the file of completed interviews.

For example, following these conventions, files created by California, which conducts two studies per month, for January 1995 would have the names, CAJAN951.SAM, CAJAN951.CMP, CAJAN952.SAM, and CAJAN952.CMP.

Once you have created one of these ASCII files, you should view it to make sure it was created properly. If your DOS directory is on your path, you can view the *SSMMMYYN.EXT* file by going to the directory where the file is stored and typing TYPE *SSMMMYYN.EXT*|MORE at the DOS prompt. You may also be able to view it in your word processor or text editor. Note, however, that some word processors or text editors will truncate lines that are as long as the ones

in the file and you will thus not be able to read entire lines. Others, of which WordPerfect is one, will wrap lines that are as long as the ones in the file so that you will be able to read entire lines but not as one line. **If your word processor or text editor truncates or wraps single lines, you should not save any of these ASCII files with it.**

Sample Records

Enter/View Sample...**V**iew or Edit...**E**nter search specification,
Enter/View Sample...**V**iew or Edit...**C**opy records...**S**elected, and
Enter/View Sample...**I**mport...**E**xport text file
Pages 2-86 to 2-92, 2-94 to 2-96, and 2-43 to 2-44

To create an ASCII file of sample records, you will search for the appropriate records, then copy the records to a special Ci3 CATI study created for this purpose, and finally, export the copied records to an ASCII file.

If you do not have a special study to hold the sample records, create one using **A**ssign...**S**tudies. You may want to give the study a name like SAMPRECS, a number like 999, and make it study 24 to distinguish it from your other studies. Select the special study. Go into the **S**etUp...**A**ttempts/Busy's menu and set Number of attempts to 15 and Save history for all to Y.

If you have already created a special study to hold the sample records to send to BSB, make sure that the study contains no sample records. If the study does contain sample records, go to DOS and delete DB.CON from the special study directory. (Make absolutely sure you are in the special study directory, S999 if you followed the suggestion above--and not some other directory--when you delete DB.CON.) Go into the **S**etUp...**A**ttempts/Busy's menu and make sure that Number of attempts is set to 15 and Save history for all to Y.

Now, select the BRFSS study for which you want the incomplete sample records. Then, from the **E**nter/View Sample...**V**iew or Edit menu, pick **E**nter search specification. Select records with number of attempts greater than zero. Then pick **B**egin search.

Once the search is completed, you will see a menu that gives you a choice to display, copy, or mask records. Choose to copy the selected records. Enter the pathname of the target file--DB.CON in the special study directory, F:\CATI\S999\DB.CON if you have a standard set-up--and answer Yes to Copy all fields? This will create a file that contains all sample records on which at least one attempt was made.

Select the special study. Use **E**nter/View Sample...**V**iew or Edit...**E**nter search specification to enter a blank search specification and verify that you have the correct number of sample records. Then select **E**nter/View Sample...**I**mport...**E**xport to text file. Give *SSMMMYYN*.SAM as the ASCII file name.

Go to DOS and view *SSMMMYYN*.SAM. If *SSMMMYYN*.SAM was created correctly, make the special study directory the current directory and delete DB.CON.

Completed and Partially Completed Interviews

To create an ASCII file of completed interviews, you will first, copy the files containing the completed interviews to the Ci3 System program directory. Then, from Ci3 System (**not** Ci3 CATI System), you will use the Consolidate and then the Convert features to create the ASCII file.

Ci3 CATI creates two files that together contain the data for completed interviews for a study. The two files that contain the data for completed interviews are in the S*XXX* subdirectory of the Ci3 CATI System directory and are named *SSYY*.DAT and *SSYY*.IDX. (See Defining a Study in Chapter 2 for more information on the directories and the *SSYY* convention.)

To get the files containing the completed interview data into Ci3 System, go to the DOS prompt and change to the S*XXX* directory, the study directory where the completed interview files are stored. S*XXX* should contain *SSYY*.DAT and *SSYY*.IDX. Copy those two files to the Ci3 System directory.

Now, run Ci3 System. Next, select *SSYY* as the active study. Select **A**nalysis...**U**tilities... **C**onsolidate. When that is complete, choose **A**nalysis...**R**un Convert...**S**et conversion options. Set Conversion format to <u>ASCII; one record per respondent</u>, Missing value character to <u>blank</u>, Data to convert to <u>Questions</u>, and Respondents to convert to <u>All</u>. (Note: Press Enter to move from one option to the other.)

Then choose **E**dit conversion table...**E**dit. This will load the file, *SSYY*.CON, which contains the specifications for converting the data to ASCII format. Press F10. Press Esc to move up one menu level and choose Convert data to create an ASCII file for transmission to BSB. Enter *SSMMMYY*1.CMP or *SSMMMYY*2.CMP, as appropriate, as the filename of the ASCII file.

Exit Ci3 System and either go to DOS or load a word processor or text editor to view *SSMMMYYN*.CMP to make sure that it was properly created.

Use *SSMMMYY*1.CMP and *SSMMMYY*2.CMP as input to Data Management's PC re-formatting program, following the documentation provided with it.

13. Creating Interviewing Station Boot Diskettes

Pages xxiii to xxx

You can boot the interviewing station from either a floppy disk on drive A: or a hard disk on drive C:, although Ci3 CATI is designed for you to boot from a floppy disk. This discussion will focus on booting from a floppy disk; if you wish to set up your installation to boot from a hard disk, you should contact Claude Comeau at 508-881-5014. Each computer that will serve as an interviewing station should have its own boot diskette. Because Ci3 CATI uses information about the hardware setup of the interviewing station, you should use a boot diskette created on one machine only with identically configured machines.

Creating an interviewing station boot diskette is by far the most technical task you will need to perform in order to complete the test run. You will use the diskette to boot up DOS, log onto your LAN, and then log onto Ci3 CATI. Fortunately, you perform this procedure only once for each interviewing station before first using it with Ci3 CATI. Thus, once you have a boot diskette for each interviewing station, you will need to create new ones only for new interviewing stations that you add to your system.

In order to perform this task, you will most likely need the assistance of your LAN administrator or other technical computer support person. That person should also ensure that you have complete file reading, writing, creation, and deletion rights in the CATI directory and all of its subdirectories. Any attempt to restrict the interviewing station's access to the CATI directory or its file handling rights will prevent the station from logging onto Ci3 CATI.

You will first need to create appropriate CONFIG.SYS, AUTOEXEC.BAT, and perhaps other batch files (For example, here at CDC, we have by convention a LAN.BAT file that logs us onto the LAN.) to create a 640K RAM disk, allocate at least 20 buffers and 20 files, log you onto your LAN, and set the comspec parameter. Appendix D contains copies of CONFIG.SYS and AUTOEXEC.BAT files we use at CDC. They are meant only as a general guide. Your installation will have its own resources, conventions, and peculiarities that will keep you from using them as is. **Once you have created a bootable disk with your CONFIG.SYS, AUTOEXEC.BAT, and perhaps other batch files on it, you should put it in drive A: and press Ctrl-Alt-Del to test it and make sure that it will log you onto your LAN.**

Next, you will need to use the RUNMAK.EXE utility that comes with Ci3 CATI to create two additional batch files, START.BAT and RUN.BAT. You should run RUNMAK.EXE at each individual interviewing station (except for stations that you know have identical hardware)

because it takes the hardware characteristics of the computer on which it is running into account when creating START.BAT and RUN.BAT.

To run RUNMAK.EXE, from an interviewing station, change to the CATI program directory and enter RUNMAK. Place the boot diskette for that interviewing station in drive A: or B:.

RUNMAK.EXE asks you several questions regarding which disk drive letters you will use to perform certain functions or which will contain certain files. You should be prepared ahead of time to answer those questions. I will list each question that RUNMAK.EXE asks in turn and discuss the issues involved in answering it but you should be aware that your facility may have some idiosyncratic features that I cannot take into account. If in doubt, discuss the issues with your local computer support person or LAN administrator.

1. *Which disk drive would you like to have the batch files written to?* RUNMAK.EXE is asking you the letter of the drive to which it should write START.BAT and RUN.BAT. Tell it to put the files on the boot diskette by entering A or B as appropriate. The letter you should enter is the letter of the drive that contains the interviewing station boot diskette.

2. *Which drive will you use for the interviewing station RAM disk?* Press the letter after the letter of your last local disk drive. For example, if your interviewing station has two floppy disk drives and no hard drive, you should answer C. Alternatively, if your interviewing station has one hard drive defined, you should answer D. If it has two hard drives defined, you should answer E.

3. *Which letter will your interviewing stations use to access the file server?* Press the letter of the network drive where Ci3 CATI is installed. Usually, the correct answer is F, but you should definitely check with the person who wrote your batch files to determine which drive the CATI directory is being mapped to.

4. *Which drive will you use for your interviewing station boot diskette?* You should enter A because you are booting from a floppy disk drive.

5. *Which drive will you use for your questionnaire FIELD DISK (field directory)?* Some facilities use drive A: for both the boot diskettes and the field diskettes; others put the boot diskette in drive A: and the field diskette in drive B:. Enter the letter of the drive (A or B) which will contain your field diskette. If you enter a drive letter other than A or B, Ci3 CATI will create field directories on the specified drive when an interviewer first logs on.

6. *Would you like to speed up the call attempt cycle?* Answer No.

If you have correctly created your interviewing station boot diskette, when you start your computer with the diskette in drive A:, you will boot-up, log onto your LAN, and end up at a Ci3 CATI screen that says,

```
Please insert FIELD DISK,
unless you are using a Field Directory.
Press any key to continue.
(To exit, press END)
```

Once you have put START.BAT and RUN.BAT on an interviewing station boot diskette, you should test to make sure that your boot diskette brings you to the above screen before proceeding further.

Appendix A

Mitofsky-Waksberg Random Digit Three-Stage Cluster Design for the Behavioral Risk Factor Surveillance System

Mitofsky-Waksberg Random Digit Three-Stage Cluster Design for the Behavioral Risk Factor Surveillance System

The Mitofsky-Waksberg design for sample selection via random digit dialing for household telephone interviewing reduces the cost of telephone surveys compared to selecting numbers by simple random sampling. Simple random sampling is inefficient because, nationally, only about 22 percent of telephone numbers within existing telephone exchanges are actually assigned to households.

In the Mitofsky-Waksberg design, as implemented in the Behavioral Risk Factor Surveillance System (BRFSS), sampling is carried out in three stages. In the first stage, numbers are randomly selected in clusters of 100 from the set of all existing area codes and prefixes in the survey area. The selected clusters are screened based on the household status of a single number within each cluster. In the second stage, numbers in the accepted clusters are randomly dialed until a target number of interviews within each cluster are completed. In this way, Mitofsky-Waksberg cluster sampling eliminates non-working and business telephone numbers in blocks and can increase the proportion of household numbers among all numbers called to 40 percent. Finally, in the third stage, individual respondents are randomly selected from all adults 18 and over living in a household.

The three stages of the Mitofsky-Waksberg sampling design are

Stage I--Selection of Clusters:

> The Behavioral Surveillance Branch (BSB) selects an initial random sample of area code and prefix combinations from a bank of all existing area codes and prefixes in the survey area. The bank is obtained from the AT&T Bellcore tapes, which contain all active area code and prefix combinations in the United States. The area codes and prefixes in the bank are numerically ordered and randomly selected with replacement (allowing for combinations to be selected more than once).
>
> For each selected area code and prefix combination, BSB randomly selects a four-digit number to serve as the suffix. This yields a sample of ten-digit numbers, the first eight digits of which identify the cluster in which the number falls. Every selected area code and prefix combination receives a five-digit identification number, referred to variously as a PSU (primary sampling unit) or cluster number.
>
> Accepted clusters, from which the sample of telephone numbers called are generated, are thus identified by the 5-digit code assigned at this stage. Since, however, not all clusters are accepted, the final set of clusters will have gaps in the sequence of identifying numbers.

Note: This method of selecting the initial sample of telephone numbers is slightly different from the method suggested in Waksberg's paper (producing a list of all possible 8 digit combinations and randomly selecting a sample from the list), but the end results are the same.

To determine the number of clusters to be generated, BSB uses the expression 200m/p, where m = desired number of sample clusters to be completed, p = percentage of residential numbers among all possible telephone numbers in the population (on the average, p = 20%).

For example, if annual sample size = 1188 and cluster size = 3,[1] then the number of clusters to be completed over a year is 1188 / 3, or 396. Then, 200m/p = 3960 (200 (396) / 20 = 3960). Thus, in this example, 3960 clusters are to be generated. It is a good idea to generate a greater number of clusters than is calculated to guard against the percentage of residential numbers being less than 20%. The decision is sometimes made to add X number of clusters to the number calculated from the formula above (e.g., X = 300, or X = 500).

Some survey areas, particularly small communities and some of the northwestern states, will have less than 20% residential telephone numbers. Knowing the actual percent of residential telephone numbers for a given survey area improves selection probability and should be part of the formula.

The sample of telephone numbers is copied to a data file for use with CATI systems and sent to CATI states for further processing. States conducting surveys on paper receive printed Cluster Contact Forms. These forms consist of 100 telephone numbers--the primary number followed by 99 additional randomly ordered and unique numbers for each of the clusters.

Following the sequence in which the clusters to be screened are selected, the primary ten-digit numbers are systematically screened to determine their residential status until a pre-specified number of residential telephone numbers (m) are reached. Cluster screening involves the following: accept the cluster represented by the primary number if the number is for a private residence; reject the cluster if the ten-digit number is a non-working number, a business, an institution, a number for an address located outside of the survey population, any other non-residential location, repeatedly busy, or repeatedly not answered. Cluster screening is generally done a month in advance of each month's survey with a minimum of one week in advance.

. The BRFSS standard for the number of completed interviews per cluster is 3.

Primary numbers should not be rejected until three call attempts during each of four calling occasions have been made to determine residential status. At least one calling occasion must occur in each of three different calling periods--weekdays, week nights, and weekends. The calling periods are usually scheduled as follows:

Weekdays 1-5pm
Week nights 5-9pm
Weekends:
Saturday 10-2pm
Sunday . . . . . 1-5pm or 5-9pm.

The pre-specified number of residential clusters plus an additional 10% should be screened. The extra 10% are provided as a precaution should there be a decision to stop calling telephone numbers from an accepted cluster before the required number of interviews are completed. (As discussed further below, a cluster can be noted as a "bad" cluster and further telephoning of cluster numbers can be terminated at the survey supervisor's discretion when in his or her judgment the required number of interviews cannot be obtained from the cluster. Completed interviews from a bad cluster are included as part of the BRFSS data set.)

For CATI systems, 99 additional randomly ordered and unique telephone numbers are generated at this point for each of the accepted clusters in the first month's sample and placed in a data file. (For paper surveys, the 99 additional telephone numbers for each accepted cluster were previously generated and printed on the *Cluster Contact Forms*.)

Stage II--Selection of Households:

As with screening, the sequence of call attempts within a cluster must follow the same order in which the ten-digit numbers were generated, as listed on the *Cluster Contact Form* or in the data file. The first n numbers of each cluster are called first (n = cluster size, i.e., the pre-specified number of interviews to be completed for each cluster). A cluster size of 3 is used most often by the BRFSS participants.

The number of telephone numbers in a cluster that are actively being called plus the number of interviews completed from the cluster must always equal n. Thus, call attempts should not be made on any additional telephone numbers until a final outcome other than a completed interview (e.g., refusal, non-working number, not-at-home after repeated attempts, a business number) occurs with one of the first n numbers in accordance with the **BRFSS Rules of Replacement** (attached). In particular, note that a number receiving an Answering Machine, No Answer, or Line Busy disposition code should be called 3 times on each of 5 calling occasions, for a total number of 15 attempts. Subsequent telephone numbers are activated in the order in which they were generated.

When necessary, the calling of telephone numbers from a cluster may be terminated before the required number of interviews is completed. In such cases, a cluster is removed from the active pool of residential clusters and replaced with a new residential cluster. Completed interviews from such "bad" clusters are, however, kept as part of the data set.

The decision to remove a cluster is currently at the discretion of the survey supervisor, although BSB is developing specific guidelines. Clusters are usually removed because the caller is usually routed to a telephone number other than the one dialed or the cluster contains an insufficient number of working residential telephone numbers. Data collected from bad clusters are included in the data file sent to BSB by the states.

Stage III--Selection of Respondent:

One adult is randomly selected to be interviewed from each selected household. To facilitate the random selection process, a list of the adults from the oldest to youngest male followed by oldest to youngest female is constructed. A respondent is randomly selected from the ordered list of adults.

Within a cluster, each completed interview is assigned a record number. Record numbers are assigned only to completed interviews. They range in value from 1 to n (as noted previously, n is usually 3). A cluster is complete when the pre-specified number of interviews (n) are done. Phone numbers called that do not result in completed interviews are termed incomplete interviews and the records are included with the completed interviews in the final data file. Data files sent to CDC include all completes and incompletes. Incomplete records do not receive a record number but do include all other identifying information: FIPS state code, PSU number, date of interview, interviewer code, telephone number, disposition code, and wind-down code.

References:

Waksberg, J. "Sampling Methods for Random Digit Dialing." *Journal of American Statistical Association* 1978: 74:40-6.

Kish, L. *Survey Sampling*. New York: John Wiley and Sons, 1965.

Groves, R.M., Biemer, P.P., Lyberg, L.E., Massey, J.T., Nicholls, W.L. II, and Waksberg, J. (eds.) *Telephone Survey Methodology*. New York: John Wiley and Sons, 1988.

BRFSS Calling Sequence

On the first day of interviewing, the screened telephone numbers, which are the first element of each cluster, are the first numbers to be assigned to the interviewers. These are the confirmed residential telephone numbers and, if used first, generally yield high completion rates on the first day of the interviewing period. The second and third elements of each cluster have the next priority. When the final outcome of a telephone number is determined, it is given a final result code and, if the result is other than a completed interview, a new telephone number is activated.

BRFSS Wind-Down Procedure

When 95 percent of the number of interviews required for the month have been completed, wind-down **may** be initiated. During wind-down, the standard BRFSS rules of replacement are disregarded. New numbers within a PSU are dialed once; if a completed interview is not obtained, the next number is dialed until a PSU has 3 completes. When wind-down is started, all pending call-back appointments and pending initial refusals should be attempted one time and replaced if a completed interview is not obtained. The final disposition for a number that has been previously called must reflect whether the household has been determined to be eligible. For example, if a number is called, a respondent is selected, an appointment is made, and the number is called again during wind-down and there is no answer, the final disposition would be " No eligible respondent could be reached during the interviewing period" (27) rather than "Ring no answer" (24). As is the case in the standard mode of operation, all incompletes in wind-down must be included in the final data set submitted to BSB.

BRFSS Final Disposition Codes and Rules of Replacement for Ci3*
February 3, 1993

	Code	Rule for Replacement
21	Answering Machine	To be coded after (1) 5 calling occasions (each consisting of three attempts) and (2) the 5 occasions have a mixture of weekday, week night, and weekend calls. Replace when the rules have been met.
22	Refused interview	Replace after second refusal or when a first-time refusal will not be called a second time.
23	Nonworking number	Usually recognized by a recording or fast, busy signal. Call operator or repair service when in doubt. Replace when determined to be a nonworking number.
24	Ring no answer	A normal telephone ring which no person answers (answering machines do not count as an answer) after (1) 5 calling occasions (each consisting of three attempts) and (2) the 5 occasions have a mixture of weekday, week night, and weekend calls. Replace when the rules have been met and the phone company verifies it is a working number.
25	Business	The person answering identifies the telephone number as a business or says "no" when asked "Is this a residence?" Replace.
26	No eligible respondent at this number	The household does not have anyone 18 years of age or older (this does not mean the adults are away temporarily). Replace.
27	No eligible respondent could be reached during the interviewing period	The selected respondent will not be available during the time you have allotted for the month's interviewing. Replace.
28	Language barrier	The selected respondent does not speak English well enough to be interviewed and there are no interviewers who speak their language. Replace.
29	Terminated within questionnaire	A "hang up" at some point after the first question has been asked (this does not mean the respondent refused a particular question). Make another attempt to complete questionnaire. Replace when second attempt fails. If after a second attempt the respondent has completed the interview at least through the age, race, and sex questions, recode as a completed interview.
30	Line busy	To be coded only after (1) 5 calling occasions (each consisting of 3 attempts at $\geq$ 10 minute intervals) and (2) the 5 occasions have a mixture of weekday, weeknight, and weekend calls. Replace when the rules have been met and the phone company verifies it is a working number.
31	Selected respondent unable to communicate	Example: respondent is deaf. Replace.
36	Completed interview (questions asked through age, race, and sex)	Do not replace

* In pre-screening, telephone numbers receiving these codes should be retired but not replaced.

Appendix B

Reference Guides

A Reference Guide to Setting Up a BRFSS Study in Ci3 System

1. From the DOS prompt, copy *SSYY*.ASC and *SSYY*.CON, the two BRFSS Ci3 files which you have received from BSB, to the directory in which Ci3 System is located.

2. In Ci3 System define a new study called *SSYY* if it does not already exist. **S**tudy...**N**ew.

3. Select *SSYY* as the current study. **S**tudy...**S**elect.

4. If you have not already done so, enable the memory saver. **O**ptions...**M**emory Saver.

5. You may view or change the ASCII file which contains the questionnaire. See "Viewing or Changing the Questionnaire," page 2 - 2 in the BRFSS supervisor's handbook for information on how to do this.

6. Compile the questionnaire. **C**ompose...**C**ompile.

7. Exit Ci3 System.

A Reference Guide to Setting Up a BRFSS Study in Ci3 CATI System

1. In Ci3 CATI, define the study. Give it a number, a study number, and a name. Tell Ci3 CATI to release 19 records at a time to the interviewing stations by re-entering the number you just gave the study in the Number field and then entering *19 in the Study Number field. **A**ssign...**S**tudies.

2. Select the study. **S**etUp...**C**hoose Study.

3. Create the study schedule. **S**etUp...**S**tudy Schedule.

4. Set Maximum attempts to 15, Save history for all to Y, and Redial busy to 15. **S**etup...**A**ttempts/Busy.

5. Identify time zones. **S**etup...**T**ime Zones.

6. Set the callback schedule for No Answer and Answering Machine disposition codes. **S**etup...**N**o Answer. See page 5 - 4 for screen.

7. From an ASCII file of stage 1 (screened) telephone numbers in the form, *ddd-ddd-dddd*, create an ASCII file of stage 2 telephone numbers. **S**etUp...**E**nter/View Sample...**W**aksberg...**G**enerate Numbers.

8. Verify that the stage 2 numbers were properly created. **S**etUp...**E**nter/View Sample...**W**aksberg...**U**tilities...**C**ount lines & show length.

9. Import the stage 2 numbers into DB.CON. **S**etUp...**E**nter/View Sample...**I**mport...**A**nother database. See page 5 - 8.

10. View DB.CON to verify that the stage 2 numbers were properly imported. **S**etUp...**E**nter/View Sample...**V**iew or Edit...**A**ll records and **E**nter/View Sample...**V**iew or **E**dit...**S**pecific Record.

11. Define the Waksberg set up rules and the number of interviews per PSU. **S**etUp...**E**nter/View Sample...**W**aksberg...**S**et Up Rules...**S**ample. See page 5 - 10.

12. Verify that you have entered the correct Waksberg set up rules. **S**etUp...**E**nter/View Sample...**W**aksberg...**D**isplay Rules...**S**ample. If you need to, correct the set up rules. **S**etUp...**E**nter/View Sample...**W**aksberg...**E**dit Rules...**S**ample.

13. Give stage-one sample records with no call attempts a priority of 2 and all sample records with one or more call attempts (other than definite appointments) a priority of 4. **S**etUp...**E**nter/View Sample...**D**efine Priority. See page 5 - 11.

14. If you have decided to define special refusal conversion or other classes of interviewers to whom you want to send particular types of sample records, assign those sample records to the special classes of interviewers. **S**etUp...**E**nter/View Sample...**A**ssign.

15. Define quota cell 1. **S**etUp...**Q**uotas...**D**efine. See page 5 - 14.

16. Define the total quota. **S**etUp...**Q**uotas...**S**et Total. See page 5 - 14.

17. Define disposition codes. **S**etup...**D**ispositions...**D**efine. See page 5 - 15.

18. Load the questionnaire into Ci3 CATI. **S**etup...**L**oad Questionnaire.

19. Create field diskettes, one per interviewing station. **S**etup...**F**IELD DISKS.

20. Assign interviewing stations on stand-by status. **A**ssign...**I**nterviewing Stations. See page 5 - 18.

21. Poll. **P**oll...**R**un.

A Reference Guide to Routine Between-Calling-Occasion Tasks

1. In Ci3 CATI, de-assign interviewing stations.

2. From the DOS prompt, make the Ci3 CATI directory the default directory.

3. Run CLEANULL.EXE by entering CLEANULL.EXE followed by the full pathname of the DB.CON file to be cleaned. For example, if Ci3 CATI is in the F:\CATI directory and your current study is 404, you would enter

   CLEANULL.EXE F:\CATI\S404\DB.CON

   at the F:\CATI> DOS prompt. PrintScrn the output you receive from CLEANULL.EXE for your records.

4. Run CLEAN15.EXE by entering CLEAN15.EXE followed by the full pathname of the DB.CON file to be cleaned. For example, if Ci3 CATI is in the F:\CATI directory and your current study is 404, you would enter

   CLEAN15.EXE F:\CATI\S404\DB.CON

   at the F:\CATI> DOS prompt. PrintScrn the output you receive from CLEAN15.EXE for your records.

5. Wait until the next calling occasion begins and poll. A new calling occasion begins at 5 p.m. Monday through Friday and at midnight Sunday through Saturday.

6. If you are following the few searches/many records between-calling-occasion search strategy, continue with this step; otherwise go to the next step. Conduct the following searches between each calling occasion. **S**etUp...**E**nter/View Sample...**V**iew or Edit...**E**nter search specification. Use **D**isplay Records to look at and change each records individually. Search for sample records with:

   a. a last disposition code of 01 to 20. Look at the status code, date and time to call and call history of each record and take appropriate action.

   b. a last disposition code of 21 to 40. Make sure each record has a status code of 4. If it does not, determine why and take appropriate action.

   Continue to step 9.

7. Starting on the second day of interviewing at the beginning of each interviewing day only, in Ci3 CATI, reschedule uncalled callbacks. Use **S**etUp...**E**nter/View Sample...**V**iew or Edit...**E**nter search specification to search for sample records with a Date to call between the first day of interviewing and yesterday. Make sure that the status of each record is a 0, 1, or 2. Reschedule the sample records with a status of 0 or 2 for the beginning of the next calling occasion, giving any records with a status of 0 a status of 2, changing the Next Contact Date to today, the Time to the beginning of the next calling occasion, and specifying AM or PM. Reschedule sample records with a status of 1 as appropriate. You can use **D**isplay Records to change the records individually or **M**ask Records to change them in groups.

8. Conduct the following searches between each calling occasion. **S**etUp...**E**nter/View Sample...**V**iew or Edit...**E**nter search specification. You can use **D**isplay Records to change the records individually or **M**ask Records to change them all at once. Search for sample records with:

   a. a date and time to call within the last 2½ hours of the next calling occasion and status equal to 2 (general callbacks scheduled too late to be called 3 times within a calling occasion). Schedule a Next Contact Date and Time for the beginning of the next calling occasion, specifying AM or PM.

   b. a last disposition code of 20 (coded for supervisor attention). Take appropriate action depending on why a record was coded for your attention.

   c. a time to call after interviewing hours and status in the range of 1-3 (callbacks scheduled after interviewing hours). Specify time to call as a range from the close of interviewing to midnight (2400) in miliary time. For sample records with a status of 2 or 3, schedule a Next Contact Date and Time for the beginning of the next calling occasion, specifying AM or PM. For sample records with a status of 1, discuss the reason with the interviewer and take appropriate action.

   d. any of the anomalies listed on page 8 - 7 that you think are appropriate.

9. Run reports. You should run at least the Waksberg PSU report and the Waksberg status report. **R**eport...**W**aksberg...**P**SU Status. **R**eport...**W**aksberg...**S**tatus.

A Reference Guide to Replacing a Bad PSU

If you already have an "extra" PSU in DB.CON:

1. In Ci3 CATI, use **S**etUp...**E**nter/View Sample...**W**aksberg...**E**dit Rules...**S**ample to bring up the screen which contains the Waksberg disposition code replacement and depth rules. Revise rule 1 to activate PSU's up to, but not including the bad PSU.

2. Enter a new rule (Rule 2) to kill the bad PSU to a depth of 100.

3. Enter a new rule (Rule 3) to activate the rest of the PSU's. Your new upper limit should be one more than your old upper limit. For example, if you had originally activated PSU's 4001 to 4070 in Rule 1 and your bad PSU was PSU number 4042, then Rule 1 should activate PSU's 4001-4041, Rule 2 should kill PSU 4042, and Rule 3 should activate PSU's 4043-4071.

If you do not already have an "extra" PSU in DB.CON, then you will need to create an ASCII file with one (or more) stage-one telephone number, create a file of stage-two numbers from it, and import the stage-two numbers into DB.CON:

1. Outside of Ci3 CATI, probably in a word processor, create an ASCII file of one stage 1 (screened) telephone number in the form, *ddd-ddd-dddd*.

2. In Ci3 CATI, create an ASCII file of stage 2 telephone numbers. **S**etUp...**E**nter/View Sample...**W**aksberg...**U**tilities... **G**enerate Numbers.

3. Verify that the stage 2 numbers were properly created. **S**etUp...**E**nter/View Sample...**W**aksberg...**U**tilities...**C**ount lines & show length.

4. Import the stage 2 numbers into DB.CON. **S**etUp...**E**nter/View Sample...**I**mport...**A**nother database. See page 5 - 8.

5. View DB.CON to verify that the stage 2 numbers were properly imported. **E**nter/View Sample...**V**iew or **E**dit...**S**pecific Record.

6. Follow steps 1-3 above with an "extra" PSU.

A Reference Guide to Invoking Wind-Down

1. For the first two or three months of using Ci3 CATI, make a backup copy of all the files in the study directory before you start wind-down. From the DOS prompt, make the study directory (SXXX) the default directory and copy the directory files to another directory or disk drive.

2. In Ci3 CATI, de-assign interviewing stations.

3. From the DOS prompt, make the Ci3 CATI directory the default directory.

4. Run CLEANULL.EXE by entering CLEANULL.EXE followed by the full pathname of the DB.CON file to be cleaned. For example, if Ci3 CATI is in the F:\CATI directory and your current study is 404, you would enter

   CLEANULL.EXE F:\CATI\S404\DB.CON

   at the F:\CATI> DOS prompt. PrintScrn the output you receive from CLEANULL.EXE for your records.

5. Run CLEAN15.EXE by entering CLEAN15.EXE followed by the full pathname of the DB.CON file to be cleaned. For example, if Ci3 CATI is in the F:\CATI directory and your current study is 404, you would enter

   CLEAN15.EXE F:\CATI\S404\DB.CON

   at the F:\CATI> DOS prompt. PrintScrn the output you receive from CLEAN15.EXE for your records.

6. In Ci3 CATI, search for sample records with a last disposition code in the range of 1 to 20 and number of attempts greater than or equal to 1 and change their Next Contact Date, Time, A/P, and I/R fields as appropriate, usually the beginning of wind-down. **S**etUp...**E**nter/View Sample...**V**iew or Edit...**E**nter search specification, then **D**isplay Records.

7. Run the Waksberg PSU status report. **R**eport...**W**aksberg...**P**SU Status. Press Print-Scrn to make a paper copy of the numbers of the PSU's for which you have not completed 3 interviews.

8. Start wind-down from the Waksberg Edit rules screen in Ci3 CATI by putting 153 as the target number of completed interviews per PSU for the PSU's for which you have not completed 3 interviews. The PSU's going into wind-down must not be included in the ranges for the other PSU's. **S**etUp...**E**nter/View Sample...**W**aksberg...**E**dit rules...**S**ample. (If any defined line has a value greater than 100, then wind-down is automatically started for the whole sample.) See page 11 - 2.

9. Use **S**etUp...**E**nter/View Sample...**A**ssign to assign particular PSU's to particular interviewers. (The PSU numbers are located in the Firm Name field.) You can assign up to five interviewers at one time.

10. Assign interviewing stations on stand-by to the appropriate interviewers. **A**ssign...**I**nterviewing Stations.

A Reference Guide to Converting BRFSS Sample and Interview Files to ASCII Format

Sample Records

If you have not already defined a special Ci3 CATI study to hold the sample records that you will send to BSB:

1. In Ci3 CATI, select **A**ssign...**S**tudies to create a study to receive the sample records on which one or more call attempts have been made. Make the study number 24, give it the number 999, and name it SAMPRECS.

2. Select the study you have just created. **S**etUp...**C**hoose Study.

3. Set Number of attempts to 15 and make sure that Save history for all is set to Y. **S**etup...**A**ttempts/Busy.

If you have already defined a special Ci3 CATI study:

1. In Ci3 CATI, select the special study. **S**etUp...**C**hoose Study.

2. Use **S**etUp...**E**nter/View Sample...**V**iew or Edit...**A**ll records to view all records to make sure that there are none.

3. If you do have records, go to the DOS prompt, make the special study directory the current directory, and delete DB.CON. Make absolutely sure that you are in the special study directory, S999, when you delete DB.CON.

4. In Ci3 CATI, select the special study, and make sure that Number of Attempts is set to 15 and that Save history for all is set to Y. **S**etup...**A**ttempts/Busy.

Then:

1. Select the BRFSS study whose sample records you are getting ready to send to BSB. **S**etUp...**C**hoose Study.

2. From the **E**nter/View Sample...**V**iew or Edit menu, select **E**nter search specification. Select records with number of attempts greater than zero. Then pick **B**egin search.

3. Select **C**opy records. Enter the full pathname of the DB.CON file in the special study directory. Answer Yes to Copy all fields?

4. Select the special study. **S**etUp...**C**hoose Study.

5. Use **S**etUp...**E**nter/View Sample...**V**iew or Edit...**E**nter search specification to enter a blank search specification and verify that you have the correct number of sample records.

6. Use **E**nter/View Sample...**I**mport...**E**xport to create an ASCII file for use with Data Management's PC re-formatting program. Enter *SSMMMYYN*.SAM as the filename of the ASCII file.

7. Exit Ci3 CATI and either go to DOS or load a word processor or text editor to view *SSMMMYYN*.SAM to make sure that it was properly created. You can view the file from the DOS prompt by entering TYPE *SSMMMYYN*.SAM|MORE from the special study directory or in a word processor or text editor. (Note: Each line in this file is 512 characters long. Do not save this file in a word processor or text editor that truncates or wrap lines this long.)

8. In DOS, make the special study directory the current directory, and delete DB.CON. Make absolutely sure that you are in the special study directory, S999, when you delete DB.CON.

Completed Interview Records

1. At the DOS prompt, make the SXXX directory of the BRFSS study whose records you want to put into an ASCII file the current directory.

2. Copy *SSYY*.DAT and *SSYY*.IDX to the directory where Ci3 System is located.

3. In Ci3 System, select *SSYY* as the active study. **S**etUp...**C**hoose Study.

4. Select **A**nalysis...**U**tilities...**C**onsolidate to consolidate the data.

5. Set the conversion options: the Conversion format should be ASCII; one record per respondent, Missing value character should be blank, Data to convert should be Questions, and Respondents to convert should be All. Press Enter to move between options. **A**nalysis...**R**un Convert...**S**et conversion options.

6. Select **E**dit conversion table...**E**dit to load the *SSYY*.CON file, which contains the specifications for converting your BRFSS data to ASCII. Press F10 to accept the file without editing it.

7. Press Esc to move up one menu level and choose **C**onvert data to create an ASCII file for use with Data Management's PC re-formatting program. Enter *SSMMMYY*1.CMP or *SSMMMYY*2.CMP as the filename of the ASCII file.

8. Redo steps 1-7 if you need to create a second .CMP file. If you have created all the .CMP files necessary, proceed to step 9.

9. Exit Ci3 System and either go to DOS or load a word processor or text editor to view the .CMP file to make sure that it was properly created. You can view the file from the DOS prompt by entering TYPE *SSMMMYYN.CMP*|MORE from the special study directory or in a word processor or text editor. (Note: Each line in this file is 400 characters long. Do not save this file in a word processor or text editor that truncates or wrap lines this long.)

<u>For Both Sample Record and Completed Interview Files</u>

1. If the files look correct, use them as input to Data Management's re-formatting program, following the documentation provided with it.

Appendix C

Basic DOS Concepts and Commands

Basic DOS Concepts and Commands

Every computer has a set of programs--collectively called the **operating system** of the computer--that control its basic functions. Typical functions include controlling access to the keyboard, monitor, printers, disks, and files. The most visible part of an operating system for a user is its management of disks and files. The concepts and commands referenced in this document are common to a family of operating systems for IBM PC and PC compatible microcomputers known collectively as **DOS**.

DOS appears to the user as a set of commands. The major distinction is between internal, or resident, and external, or transient, commands.

When you start--or boot--a PC, the action automatically activates a set of permanent instructions (stored in ROM, or read only memory) that read yet more instructions into the temporary memory (RAM, or random access memory) of the machine. The most important of these instructions is a program called COMMAND.COM. COMMAND.COM contains the internal commands. The internal commands are thus present in RAM anytime you have booted up. You may execute at any time from the DOS prompt.

External commands are available only as separate files. In order to execute them, you must direct your PC to a disk or directory which contains them or have the directory which contains them listed in your path. (A path is a list of directories in which DOS looks for executable files--those with extensions .COM, .EXE, or .BAT.

Following is a list and description of the most necessary DOS file management concepts. After that is a list and description of basic DOS commands.

DOS File Management Concepts

disk--A physical object that can contain files. The most common disks in use on microcomputers are electromagnetic floppy diskettes and hard, or fixed, disks.

disk drive--A device that reads from and writes to disks. Disk drives are referred to by a letter followed by a colon. For example, a: refers to disk drive a and c: refers to disk drive c.

file--A means for storing information under a single name on a disk. It is useful to distinguish between <u>program files</u>, or programs, and <u>document files</u>, or documents. Under DOS, the names of files consist of two optional parts: a main part of up to eight characters, called (unfortunately) a <u>file name</u>, and a secondary part consisting of a period and up to three additional characters, called an <u>extension</u>. You can refer to groups of files by using the *

character as a wildcard. For example, c:abc*.* means all files in drive c: which have abc as their first three letters; similarly *.* means files with any file name and any extension.

directory--A means for grouping files on a disk. Technically, a file that contains other files. A directory should not be confused with the directory command, dir, which lists the files in a directory.

root directory--Every time DOS (2.0 or higher) formats a disk, it automatically creates a main directory, called the root directory. The backslash character, \, is used to refer to the root directory of a disk. For example, a:\ refers to the root directory of drive a: and c:\ refers to the root directory of drive c:.

parent directory--A directory which contains a second directory is the parent of the second. For example, if the root directory of drive c: contains the directories wp and admin, then the root directory of drive c: is the parent directory of both wp and admin.

subdirectory--A directory which is contained within another directory. For example, if the root directory of drive c: contains the directories wp and admin, then both wp and admin are subdirectories of the root directory of drive c:.

hierarchical directory structure, or tree--A directory structure in which all directories (except the root) have a single parent but may contain multiple subdirectories. Such a structure is said by mathematicians to resemble an upside-down tree.

pathname--A list of the directories, starting with the root directory, through which one must pass in order to get to a given directory. For example, \ refers to the root directory of a drive and the pathname \admin\comp refers to the directory comp, which is a subdirectory of the admin directory, which is in turn a subdirectory of the root directory. Pathnames are usually preceded by a disk drive designation, for example, c:\ or d:\admin\comp. In a pathname, leading backslashes always refer to a root directory; other backslashes, however, are <u>separators</u> and merely serve to separate one directory name from another.

file specification--The complete designation of a file, consisting of a drive name, pathname, and file name (including the extension). For example, c:\autoexec.bat is the file specification of a file named autoexec.bat located in the root directory of drive c:. Similarly, the file specification, c:\admin\comp, is the full designation of the file comp located in the directory admin, a subdirectory of the root directory of drive c:. Please note a possible ambiguity--depending on the context, c:\admin\comp could refer to the pathname of the directory comp or to the file specification of the non-directory file comp.

current (or default) drive or directory--There is always a disk drive and a directory to which DOS assumes you are referring unless you specify otherwise. Thus, if you are referring to a

directory or file on the current drive, you may omit the drive name from a file specification. Similarly, if you are referring to a file in the current drive and directory, you may omit the drive and directory names in a file specification.

ASCII--Stands for **A**merican **S**tandard **C**ode for **I**nformation **I**nterchange. ASCII is a **code** whereby letters of the alphabet and a few punctuation marks and data processing operations (such as a line feed) get coded into numbers so that a computer can understand them. For example, the code for "A" is 65 and for "a" is 97. Because it is simple to implement and was originally developed a long time ago most software on most computers can read files in ASCII format. For the same reasons, however, most formatting performed by word processors cannot be represented in ASCII format. Thus, ASCII serves as a lowest common denominator for transferring information between different programs.

Basic DOS Disk Drive and Directory Commands

A: or B: or C:, etc.--Makes the stated disk drive the current (or default) drive. Internal command.

CD (Change Directory)--Makes the stated directory the current directory. Should be followed by a pathname. Examples: cd c:\wp and cd d:\123\dat. The parent of any given directory may be referred to by two periods, .. . For example, if \123\dat is the current directory and you want to make \123 the current directory, you can enter either cd .. or cd \123. Similarly, the current directory may be referred to by a single period. Internal command.

CHKDSK--Checks the integrity of the disk and the files that are on it. External command.

CLS--Clears screen and gives the DOS prompt. Internal command.

COPY--Copies a file onto the same or another disk. Lets you change the name of a file as you copy it. Internal command.

DEL or ERASE--Deletes a file from a disk. Internal command.

DIR--Lists the names of the files on a disk. Internal command.

FORMAT--Prepares a disk for use. All disks must be formatted before they can be used. Adds the operating system to a disk if asked to. External command.

MD (Make Directory)--Creates a directory. Should be followed by a pathname. For example, md c:\wp creates a subdirectory called wp in the root directory of drive c:. Similarly, md d:\123\dat creates a subdirectory called dat in the d:\123 directory. Internal command.

PRINT--Prints an ASCII, or DOS text, file. Allows you to execute other DOS commands while printing. External command.

RD (Remove Directory)--Deletes a directory. The directory cannot contain any files--all files in that directory, including subdirectories, must already have been deleted. Also, the current directory cannot be the directory to be removed. Examples: rd c:\wp and rd d:\123\dat. Internal command

RENAME--Changes the name of an existing disk file. Internal command.

TYPE--Displays an ASCII, or DOS text, file on the screen. Can also print an ASCII file. Internal command.

TYPE [filename]|MORE--Displays an ASCII, or DOS text, file on the screen and stops at each screenful until the user presses a key. Useful for viewing files that are more than one screen long. TYPE is an internal command. MORE is an external command.

Appendix D

Sample CONFIG.SYS and AUTOEXEC.BAT Files for Interviewing Station Boot Diskettes

Sample CONFIG.SYS and AUTOEXEC.BAT Files for Interviewing Station Boot Diskettes

Sample CONFIG.SYS File

```
DOS=HIGH
shell=c:\command.com /e:800 /p
device=c:\cemm\cemm.exe ram on x=c800-cdff 512
device=c:\dos\vdisk.sys 640/e
files=50
buffers=20
```

Sample AUTOEXEC.BAT File

```
@echo off
set comspec=c:\command.com
prompt $P $G
path c:\dos;c:\office;c:\util1
set user=pxm1
a:\lan.bat
```

Appendix E

Pre-Screening With Ci3 CATI

by

Claude Comeau

Pre-Screening With Ci3 CATI
by Claude Comeau

This document explains how to do pre-screening using Sawtooth's Ci3 CATI. The purpose is to design one study that will be used every month for pre-screening. This pre-screening study can be used alone or while the regular BRFSS study is being dialed.

A Brief Overview of the Pre-screening System

The system starts with a BSB-provided electronic file of pre-screened numbers for the year. The format of this file is

```
00001. 617-555-1212
```

that is, cluster number (not used by this system), area code, exchange and suffix. This file is in ASCII text format.

This file will then be expanded using a special program called LABEL.EXE (described below). The LABEL.EXE program adds special markers (labels) to the phone numbers that are used to control the sample. This newly created file is then loaded into a specified study once at the beginning of the year. This will be a list of about 3,000 to 6,000 phone numbers. A special Ci3 pre-screening questionnaire (programmed by Bill Garvin) is also loaded. The study is set up in the usual BRFSS way (minor exceptions noted below).

Then each month the Rules of Replacement for that study are adjusted to match the amount of pre-screened numbers needed. Once the proper amount of numbers are completed the CPL program is used to make a list of screened numbers. This list of screened numbers is then used to set up the BRFSS study.

A Step by Step Guide

The first step is to create a file of phone numbers for importing into Ci3 CATI. The program LABEL.EXE is used to help make the proper importing file. This program adds markers to the list of pre-screened numbers provided by BSB. These PSU markers are used to release sample as it is needed. Note that in this study the PSU identifier is used to control the sample but that each PSU block is not really a PSU in the true sense of the term.

The program "LABEL.EXE" takes an import file such as

```
00001. 617-555-1212
00002. 508-432-9476
00003. 617-844-0421
....
....
```

and creates an export file like the following:

```
617-555-1212>r00000s00000p00001d00001_1*
508-432-9476>r00000s00000p00001d00002_1*
617-844-0421>r00000s00000p00001d00003_1*
....
....
```

The reason we need the markers is to obtain three functions that the DBMGR.EXE program provides for normal Waksberg studies. They are

- enforce the calls per calling occasion rules,
- record call attempts between 10 and 15, and
- the ability to dynamically release additional sample if necessary.

To use the program enter

```
LABEL.EXE CDC.PSU PRESCRN.TXT
```

at the DOS prompt where:

LABEL.EXE	=	the name of the program,
CDC.PSU	=	the year's worth of pre-screening numbers provided by BSB, and
PRESCRN.TXT	=	a user-provided name which is given to the newly created file.

The following main menu will then appear:

```
:-------------------------------------------------------:
:  Import file: cdc.psu                                 :
:                                                       :
:  Export file: prescrn.txt                             :
:-------------------------------------------------------:

          1.  change Filenames
          2.  Create export file
          3.  count lines in Import file
          4.  count lines in Export file
          5.  find Line # for a phone #
          6.  Program Information
          7.  eXit

.................................................................
```

Option 1 above is used to change the name of the import or export file. Option 2 is used to create a list for importing into Ci3 CATI. Option 3 and 4 are merely to help you confirm that the

import or export file are the correct size. Option 5 is used when the file you want to import into Ci3 CATI will not start at the beginning of the BSB pre-screened list (the import file). With option 5 you can find the last phone number that you used using an alternative method and get a line number to start the import process from there. Option 6 merely displays a screen with the program's version information.

The second menu choice generates the new list. Using the example described above this is done through the following screen:

```
:-------------------------------------------------------:
:  Import file: cdc.psu                                 :
:                                                       :
:  Export file: prescrn.txt                             :
:-------------------------------------------------------:

                 Enter PSU # to start with  __

               Line in import file to start: __

   Number of lines from import file to include: __

.....................................................................
```

The program allows you to start anywhere in the BSB-provided import file. You also have the option of only including as many numbers as you want in the new file.

For the first value "Enter PSU # to start with:" the number 1001 is suggested.

The second line "Line in import file to start:" will be 1 if you are going to start from the beginning of the BSB file. If you have already used some numbers from the list just put in the line number of BSB file to start with. For example if you have already used 100 numbers in the list this value would be 101. Note that option 5 from the Main Menu allows you to find the line number of the last phone number used if you are not starting from the beginning of BSB phone number file.

The final line "Number of lines from import file to include:" can be left at the default value of 32000. This will include all numbers from BSB (which should be about 2,000 to 8,000 depending upon the state).

A new file PRESCRN.TXT will now be created. This file will be imported into the Ci3 CATI DB.CON file.

A Ci3 CATI study should now be created to do one year's worth of pre-screening. It is suggested that study number 111 be used (for stage 1). This study will be setup as a Waksberg study with

two minor exceptions. These exceptions are in the import file used to make DB.CON and in the Rules of Replacement. These differences are described below.

In the Waksberg Rules of Replacement the only disposition code you should enter in the replacement section (the top part of the screen) is a code that will never appear in the questionnaire. The value 38 is suggested versus the BRFSS stage 2 values of 21 - 35. This will prevent any replacement.

So the top part of the Rules of Replacement screen should appear as follows:

```
 ------------------------------------------------------------
:  Non-target disposition codes (range 0, 4-40) = 38,  ,   :
:                                in between: From     to    :
 ------------------------------------------------------------
```

The file you created with LABEL.EXE will then be directly imported into Ci3 CATI's DB.CON file using the "Import" option. You will not need to do the step "Generate Numbers" for this study. Otherwise the study will be setup in the normal monthly BRFSS way. As usual make sure that the number of call attempts is set to 15 or more. You can use the BRFSS *Supervisor's Handbook* for directions in setting up a study.

When you set up a study according to the BRFSS *Supervisor's Handbook for Ci3 System and Ci3 CATI* using page B-2 'A Reference Guide to Setting Up a BRFSS Study in Ci3 CATI System' you will now skip step 7 (SetUp..Enter/View Sample...Waksberg...Generate Numbers) and step 8 (SetUp...Enter/View Sample...Waksberg... Utilities...Count lines & show length). Instead you will run the program LABEL.EXE. You will do this by putting the program in your CATI subdirectory and from the DOS prompt typing LABEL CDC.PSU *PRESCRN.TXT* (as previously described). In this example CDC.PSU is the name of pre-screened phone number file BSB sent and *PRESCRN.TXT* is a name you create that is used for the export file that is made. This export file, *PRESCRN.TXT*, will be used to import values into DB.CON (step 9 (SetUp...Enter/View Sample...Import...Another database)).

The above setup only needs to be done once a year. The following procedure must be followed each month.

A state must decide about how many numbers need to be released to get the appropriate number of screened phone numbers. In deciding how many numbers to release, you are trying to simultaneously satisfy two opposing criteria: On the one hand, you want to want to carry over as few numbers as possible from one month to the next and in no case any more than 15% of your monthly sample size. On the other hand, you want to release enough numbers at the beginning of pre-screening that you don't need to release any more after pre-screening starts in order to achieve your target number of screened telephone numbers.

The key here is to have a good estimate of how many numbers need to be released to get the appropriate number of screened phone numbers. This may be obtained from your previous months' efforts. For example, let's say that your state needs 50 screened household numbers per month (for a total of 150 completes a month) and that you typically screen 250 numbers to get the 50 numbers needed. The first month you start this pre-screening add 10% to the total number you want to screen. So given the above numbers you would then want to release 250 x 1.10 = 275 numbers. So the first month you would want to release 275 numbers thereby releasing an extra 10%.

The actual number of telephone numbers that you would need to call in order to reach your target of 50 screened household numbers will vary somewhat from month to month. If you consistently run out of pre-screening numbers, you should release more numbers initially. If you consistently carry over numbers from one month to the next, you should release fewer numbers initially. The goal is to fine-tune your release of numbers so that you almost never have to release numbers after pre-screening begins while, at the same time, you are carrying over a minimal number of numbers (and never more than 15% of your monthly sample) from month to month. Most states should be able to consistently have less than 5-10% carryover. Carrying over a substantial number of records from month-to-month is a more serious threat to the validity of the survey than adding numbers to pre-screen after pre-screening has begun.

It is important to remember that if you start calling a phone number you must complete it in the month that it is released or in the following month.

Now go to the Rules of Replacement and release the appropriate amount of numbers. Do this by using the PSU value and releasing the appropriate number in each PSU. For example, if the starting PSU number is 1001 and 275 numbers have to be released the following rule would be used:

```
PSU 1001 to 1002       Max. household #'s per PSU = 100
PSU 1003 to 1003       Max. household #'s per PSU = 75
```

The above would release 200 numbers in the first two PSU's (1001 and 1002) and an additional 75 in the next PSU (1003).

A search of the database looking for completes should indicate the progress of the dialings. Once the desired amount of completes are met you are done dialing for the month.

Once dialing is complete you then use the program CPL.EXE to extract a list of all the proper pre-screened numbers. What is created here is an ASCII file that is ready to be loaded into the next month's BRFSS study for stage 2 dialing.

To use the CPL.EXE program at the DOS prompt an example command line is:

```
CPL.EXE F:\CATI\S111\DB.CON JAN_SCRN.TXT 36
```

There are three parameters that are used with the CPL.EXE program. They are CPL XXXX YYYY ZZ, where

XXXX = location of the DB.CON file,
YYYY = name for output file of matching phone #'s, and
ZZ = disp. code (1-40) to include in the list.

This program has the following menu:

```
.............................................................
              Complete disposition code match: 36
                      Cati study subdirectory: f:\cati\s111
         New file to save completed phone #'s: jan_scrn.txt
                        Month screened (1-12): 1
            Screened completes wanted (1-299): 60
.............................................................
```

The 'Month screened' field is used to mark the DB.CON record with the completes that have been chosen. This should be the month that the actual BRFSS survey is run. So if you are screening in February for March this would be a 3.

The 'Pre-screened numbers wanted' field allows the user to ask for a specific amount of completed (screened) phone numbers to be placed in the list.

The program will display some messages while it is working. When it is done just press any key to exit to DOS. The file *JAN_SCRN.TXT* is now ready to be used for the BRFSS monthly study.

If you are are a little suspicious of computers (like I am) you may want to just double check a few phone numbers in the list it created. This is an optional step but I would usually check 3 or 4 phone numbers. You can easily do this by printing the created list then randomly selecting a few phone numbers. Then go into the CATI prescreening study and search for these phone numbers. Review the call history screen to make sure the last disposition is as expected and that the call was made during the time period that is appropriate.

Note that it also possible to add more screened numbers to a month at any time. If for example you originally requested 60 numbers but found 8 were 'bad' PSU's. You could then do more

pre-screening and run the CPL.EXE program again. This time use 8 in the 'Pre-screened numbers wanted' field instead of the previous 60. A new list with 8 phone numbers will then be made.

A pre-screening rule that you should enforce during this procedure is that once a number is started it must be completed with in 30 days (although a value can be started one month and then finished the following month). The goal is to have as few active noncompleted numbers from month to month.

The following month the next 250 numbers will be released. This means that the numbers up to 537 (250 + 287) need to be released. That is all there is to it. The Rules of Replacement would then be changed to:

```
PSU  1001 to 1005      Max. Households #'s per PSU = 100
PSU  1006 to 1006      Max. Households #'s per PSU = 37
```

Then when the screening is done the next month just run the CPL.EXE program again.

If you have any questions or comments please free to contact me at 603-673-9744. Your feedback is requested.

Revised Setup Procedures for DSS and Waksberg Samples: Addendum to *Supervisor's Handbook for Ci3 System and Ci3 CATI*

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Revised Setup Procedures in Ci3 CATI for DSS and Waksberg Samples: Addendum to *Supervisor's Handbook for Ci3 System and Ci3 CATI*

This document presents an update on setup procedures in Ci3 CATI for DSS and Waksberg samples. Although it also documents one minor change in setup procedures for all BRFSS samples using Ci3 CATI, it primarily addresses procedures to follow when starting with sample records from GENESYS Sampling Systems in the layout prescribed for the BRFSS by the Behavioral Surveillance Branch (hereafter called, "BSB layout"). It complements Chapter 5, "Setup Procedures in Ci3 CATI System" and Appendix E, "Pre-Screening With Ci3 CATI," in the February 9, 1995 version of the *Supervisor's Handbook for Ci3 System and Ci3 CATI.* For samples in the BSB layout, it replaces pages 5-5 to 5-11 in Chapter 5 of the *Supervisor's Handbook*. The setup procedures before and after these pages remain as documented in Chapter 5. Thus, you would start following the procedures in this Addendum only after you had followed the setup procedures in pages 5-1 to 5-4 of the *Supervisor's Manual*.

The functionality discussed in this document is a result of an update to STAGE2.EXE. STAGE2.EXE creates an ASCII file that contains sample control information, which will, in turn, be imported into DB.CON for use in Ci3 CATI. STAGE2.EXE runs from the **S**etUp...**E**nter/View Sample...**W**aksberg...**G**enerate Numbers menu. It replaces the earlier version of STAGE2.EXE, LABEL.EXE, a stand-alone program that adds PSU and Depth to a file of telephone numbers for Waksberg prescreening (stage-one sampling), and CPL.EXE, a stand-alone program that creates a list of accepted stage-one phone numbers for stage-two processing. Claude Comeau wrote STAGE2.EXE, LABEL.EXE, and CPL.EXE and updated STAGE2.EXE. The program has to be named STAGE2 in order to run under Ci3 CATI but it will prepare ASCII files for Waksberg stage one, Waksberg stage two, and DSS sampling for import into DB.CON.

Installing STAGE2.EXE

From the DOS prompt, copy the new STAGE2.EXE Version 4.9 program into your CATI subdirectory. This will copy the new program over the current one. The new STAGE2.EXE will run when you select the **S**etUp...**E**nter/View Sample...**W**aksberg... **G**enerate Numbers function in Ci3 CATI.

Creating an ASCII File to Import Into DB.CON

SetUp...**E**nter/View Sample...**W**aksberg... **G**enerate Numbers
Pages 2-51 to 2-54

Selecting this function in Ci3 CATI displays the following screen:

```
Figure 1.  Sample Processing Selections.
```

```
     Select one of the following tasks:

         1. create file for DSS sampling using BSB layout
         2. create file for Waksberg stage 1 sampling using BSB layout
         3. create file of identified household numbers from stage 1 dialing
         4. create file for waksberg Stage 2 sampling using BSB layout
         5. create file for waksberg stage 2 sampling using User defined layout
         6. Help on selecting tasks



       Use a BSB-defined layout for a DSS sample as the import file to
       create an export file that will be loaded into Ci3/CATI. The
       export file has special values in db.con field 2 after r,s,p & d.

  ESC to Quit
```

If you do not see this screen you may still have the older STAGE2.EXE program loaded in your CATI subdirectory. If that is the case, please try again to install STAG2.EXE, making sure that you have copied it into the correct subdirectory.

STAGE2.EXE creates ASCII files for DSS, Waksberg stage one, and Waksberg stage two sampling. DSS and Waksberg stage one files must be in BSB layout. Waksberg stage two files may be in any layout.

Selections 1, 2, 3, and 4 are new functions in STAGE2.EXE and are documented in this Addendum. Waksberg stage two sampling with a user-defined layout (selection 4) is documented in Chapter 5 of the February 9, 1995 version of the *Supervisor's Handbook for Ci3 System and Ci3 CATI*, "Setup Procedures in Ci3 CATI System," pages 5-5 to 5-11, except for this menu. Waksberg stage one sampling with a user-defined layout (not on the menu above) is documented in Appendix E, "Prescreening With Ci3 CATI." Thus, if you will be creating a study using Waksberg sampling with a data layout other than the BSB layout, you need not read any further.

Structure and Data Layout of Sample Records from GENESYS

Every three months, GENESYS distributes three monthly Waksberg stage one or DSS files per state, sorted by geographic stratum, replicate, and depth.

A replicate is a subsample which is representative of the entire sampling frame from which it is drawn. Telephone numbers from GENESYS are grouped in replicates of size fifty. In effect, your sample contains multiple samples of size fifty. The use of replicates guarantees (within sampling error) that subsamples consisting of groups of replicates are representative of the entire sampling frame from which the replicates are drawn. Without replicates, the representativeness of subsamples will vary from subsample to subsample. The operational disadvantage of replicates is that **you must release and complete the processing of numbers following the BRFSS callback rules (three calls per calling occasion over five calling occasions, at least one of which is a weekday, one a weeknight, and one a weekend) in blocks of fifty, that is, by replicate.**

The order of numbers within a replicate is randomized before assigment of depth numbers.

GENESYS can provide much more information about a telephone number than has been available from BSB. For this reason, we are taking this opportunity to add fields to the sample records that can be useful for sample management and methodological and substantive analyses.

Table 1. GENESYS Sample File Layout

Field Name	Size	Position	Format/Values/Explanation
Phone Number	19	1-19	9,1-*NNN-NNN-NNNN*v1(D or W)
Replicate Number	4	20-23	The first two digits, 01-12, represent months, the last two digits a sequential number starting with 01 each month.
Replicate Depth	2	24-25	A sequential number from 01-50 in each replicate.
GENESYS-ID Status	1	26	1=To be called, 3=Non-working Number, 5=Business phone.
Density Weight	5	27-31	Ratio of zero to one-plus block sampling intervals.
Density Stratum	1	32	1=One-plus block, 2=Zero block.
Block Size	3	33-35	Number of listed households in hundred block=000-100.

Field Name	Size	Position	Format/Values/Explanation
Metropolitan Statistical Area	5	36-40	Assigned by federal government. 00000=Not in an MSA.
Metropolitan Status Code	1	41	Assigned by GENESYS. 1=In the center city of an MSA, 2=Outside the center city of an MSA but inside the county containing the center city, 3=Inside a suburban county of the MSA, 4=In an MSA that has no center city, 5=Not in an MSA.
Proportion of Households Listed	5	42-46	Listed households in exchange divided by estimated total households.
State and County FIPS Codes	5	47-51	The first two digits represent the assigned state, the last three represent the assigned county.
Geographic Stratum	2	52-53	States with no geographic strata=01 in each record. Others according to numbers on form.

If you have been using Waksberg sampling and obtaining your files from BSB, you have received a single annual file of stage one telephone numbers for which you could create a single study in Ci3 CATI. **With the files from GENESYS, you will have to create a separate Waksberg stage one study for each month.**

Modifying the Predialing Numbers in the GENESYS File

The first four columns in the records from GENESYS contain a 9,1-. These are in the sample record file for states that need to enter predialing numbers before calling out on an auto-dialer. If you do not use an auto-dialer or use one with a 9 and a 1 or just a 1 as the pre-dialing numbers, you do not need to change the values in these four columns or read the next paragraph.

If you need to pre-dial some other digits before each phone number, you can change columns 1-4 by bringing the GENESYS file into a word processor and doing a search and replace. If you do so and replace the first four columns with either more or fewer columns, you will need to adjust

the record layout specifications in Figure 8 below accordingly. To avoid adjusting the entire record layout, if you need one to three columns for your pre-dialing characters we recommend that you pad your pre-dialing characters with spaces at the beginning to keep a total of four pre-dialing characters. Make sure that you save the file as an ASCII file.

DSS or Waksberg Stage One Sampling: Creating an Import File from GENESYS Sample Records in BSB Layout

As noted, you will receive a separate DSS or Waksberg stage one file from GENESYS for each month. The naming convention for the files is *SSNN*.SMP, where

SS = the two-character postal code abbreviation for your state,

NN = a two-digit month code, 01-12, and

.SMP = an extension that GENESYS conventionally adds to file names.

In this step, you will give STAGE2.EXE the name of the GENESYS file and the name of the import file which you will create. The import file will contain all the information in the GENESYS file and additional sample control information added by STAGE2.EXE. Selecting 1 or 2 from the above menu displays the following screen:

Figure 2. Filename Screen for Original File.

```
The filename that has the
phone numbers in BSB-defined layout:  nd01.smp

Enter the filename of the file with the BSB-defined layout.

Stage2 v4.8 Copyright 1988, 89, 92, 97 Claude Comeau.  All rights reserved.
ESC to Quit
```

Enter the name of the file for the appropriate month. It should be a normal text (ASCII) file. It is mandatory that this file follow the BSB defined layout. The file will not load if it does not follow the BSB defined layout. Press Enter.

You will now be asked to enter a filename for the file you are going to create. (Shown in Figure 3 below.) This is the file you will be importing into CATI. We suggest that you add a b after the two-digit month code, for example *ND*01B to *ND*01. You can, however, give it any valid DOS filename, except that an extension is not allowed. STAGE2.EXE will automatically add the extension, .TXT, to the end of the filename.

Once you have entered the new filename, the program will proceed to the following screen:

Figure 3. Filename Screen for Import File.

```
The filename that has the
phone numbers in BSB-defined layout: nd01.smp

The new filename for the
          file that will be created: nd01b.txt
Extension .txt is added to the name.

9,1-701-241-2530v1W01010110000100000252010.6253801701
---------+--↑↑↑↑---+---------+---------+---------+---------+---------+-----

   Are these the last 4 digits of the phone #?

                       Yes, selected digits are correct.
                       no, go Right
                       no, go Left
                       Quit return to previous menu

              The digits that are in reverse video (with blinking
              arrows over them) are the last four digits of a
              phone number.
ESC to Quit
```

If the selected digits are correct, select 'Yes, selected digits are correct.' The program will then create the new file. Once this is done you will return to the menu. From the menu press Esc until you get to the main menu. Now skip the next subsection and read the section entitled, "Importing Sample Records in DB.CON."

Waksberg Stage One Sampling: Creating a File of Identified Household Numbers From Stage One Dialing

Selection 3 on the STAGE2.EXE main menu creates a list of household numbers from stage one dialing (pre-screening). It takes those numbers from your stage one DB.CON file. You will use this list to tell STAGE2.EXE which telephone numbers to use when it creates your stage two import file, the file that contains all the information that will go into your stage two DB.CON file. Selection 4 on the STAGE2.EXE main menu, which is the next step, will create your stage two DB.CON file.

Selecting 3 from the STAGE2.EXE main menu in Figure 1 displays the following screen:

Figure 4. Filename Screen for File of Identified Household Numbers from Stage One Dialing.

```
Db.con file: f:\cati\s101\db.con

Export file: f:\sample\jan_stg1.txt


        Enter the name of the db.con file for the study you would like
        to use. For example a name could be 'f:\CATI\S101\db.con'.

        Be sure to use your proper drive letter and study number.
```

This screen asks, first, for the pathname of the DB.CON file that contains your stage one numbers. Then it will ask you for the pathname of the export file, the file that will contain the list of identified household numbers from stage one dialing. Once you enter the name of the export file, the program will ask you for additional information about your DB.CON file, as shown below:

Figure 5. Filename Screen for File of Identified Household Numbers from Stage One Dialing.

```
Db.con file:  d:\cati\s101\db.con

Export file:  d:\sample\jan_stg1.txt


        Enter the length of the phone number you
        imported into the db.con file.  This is normally 12
        characters long.  Enter a value 12 (the default) to 20:  12


            Enter the disposition code for a complete (5 - 40):  36
```

The screen above asks you for the length of the phone number that was imported into your DB.CON file. If you imported phone numbers with a format like 603-555-1212, then you should just accept the default value of 12. If you have pre-dialing characters in front of the phone number, you should enter a value equal to 12 plus the number of additional characters.

Next, you are asked to enter the disposition code that the program should treat as a complete in your stage one study. This is usually defined as a 36 when the questionnaire is setup and when you defined the disposition codes for the study.

At this point, you will have to decide how many identified stage one household numbers you will release. **You have to release or withhold all of the numbers in a given replicate but you don't have to release all of the replicates.** Since each replicate is an independent sample of the entire sampling frame (less technically, the population), you can hold back one or more of the replicates. This option gives you another opportunity to better control your sample size. You can choose to release that combination of replicates which comes closest to your target number of accepted clusters. **The decision of which replicates to release must be made separately for each geographic stratum.**

For example, suppose that you have two geographic strata with a target monthly sample size of 150 each and thus a target monthly number of accepted clusters of 50 each. Suppose further that you received six replicates (300 numbers) per stratum from GENESYS for a given month, say January. Finally, suppose that you had released all the replicates (that is, that you called all 600 numbers) and identified the following numbers of households per stratum and replicate:

Table 2. Identified Stage One Household Numbers by Stratum and Replicate

Stratum Number	Replicate Number	Number of Identified Stage One Household Numbers
1	0101	10
1	0102	12
1	0103	7
1	0104	14
1	0105	8
1	0106	11
2	0107	7

Stratum Number	Replicate Number	Number of Identified Stage One Household Numbers
2	0108	9
2	0109	6
2	0110	10
2	0111	7
2	0112	8

Thus, you have identified a total of 62 households for stratum one and 47 households for stratum two. **Since each replicate is an independent sample, you can choose which replicates to release for stage two dialing.** In this example, for stratum one, you would choose to release replicates 0101 and 0103 to 0106; this would give you exactly 50 clusters for January. For stratum two, you would release all of the replicates, setting yourself a target of 53 clusters for stratum two for February.

Fortunately, if you have qualified more stage one households (clusters) than you need, you do not have to make the calculations just illustrated yourself. You can tell STAGE2.EXE your target number of household numbers and it will determine the combination of replicates that comes closest to the target.

Once you have entered the information in Figure 5 above, STAGE2.EXE will take you to the screen below, which allows you to have it determine which replicates in the stage one file to release, by geographic stratum.

Figure 6. Households Wanted Screen

Stratum	Phone numbers	Households found	Households wanted
1	500	28	25
2	500	32	32
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			

```
|   17                                                                    |
└──────────────────────────────────────────────────── Page = 1 of 1 ──┘

        Enter the stratum number you would like to edit:
          Use F10 to continue once all changes are made.
```

The screen reports, by geographic stratum, the number of phone numbers in your stage one sample, the number of identified households (stage one completes), and the target number of identified households (=Households wanted=clusters) . The default target number of households is the number of stage one households actually identified. For stratum one in the example above, the user has changed the default value of 28 target household numbers to 25.

Edit the "Households wanted" column until it reflects the number of households you want exported in each stratum. For each stratum, enter the target number of qualified stage one households. (The number of replicates in each stratum equals the number of phone numbers divided by 50.) When you have finished editing the information, press F10 to continue.

STAGE2.EXE will export the identified household numbers from that combination of replicates that comes closest to the target number households without going under it. In the example above, the program will export between 26 and 28 household numbers if it cannot release 25 by releasing only entire replicates.

Once you have told STAGE2.EXE how many household numbers to release by geographic stratum, it creates a list of phone numbers that have been identified as household numbers in stage one in the following format:

603-555-1212
603-234-3292
603-421-5677
603-673-9744
603-781-3211
.....
.....
.....
603-982-7026

You should review the file to confirm that the telephone numbers it contains are, in fact, the ones that were identified as household numbers in stage one. In the next step, you will use this file to tell STAGE2.EXE which telephone numbers in the original file that you received from GENESYS were identified as household numbers in stage one.

Waksberg Stage Two Sampling: Creating an Import File for Sample Records in BSB Layout

Selecting 4 from the menu in Figure 1 displays the following screen:

Figure 7. Filename Screen for Import File.

```
The filename that has the
          first-stage phone numbers: f:jan.txt

The new filename that will have 99 new phone
    numbers for each stage 1 number: jan2.txt
Extension .txt is added to the name.
       The original BSB-layout file: nd01.smp

ESC to Quit
```

The first prompt is asking you for a list of phone numbers that have been identified as household numbers in the stage one process. It should be in the following format:

603-555-1212
603-234-3292
603-421-5677
603-673-9744
603-781-3211
.....
.....
.....
603-982-7026

The second prompt is asking you for a file name to name the new file it will create. Note that the program automatically adds the extension, .TXT.

The third prompt is the name of the original file from GENESYS that contains the stage one numbers. STAGE2.EXE automatically puts the additional data from the original GENESYS file for the matching phone records in the newly created file. This allows them to be brought into DB.CON and, eventually, the data record.

Once you have entered the proper information, the program will create the new file. Once this is done you will return to the Generate Numbers menu. From there, press Esc until you get to the main menu.

Importing Sample Records Into DB.CON

SetUp...**E**nter/View Sample...**I**mport...**A**nother database
Pages 2-35 to 2-41

You are now ready to import your telephone numbers into DB.CON, the Ci3 CATI sample record database. The record layout specifications you will enter are identical for all files in BSB layout--whether DSS, Waksberg stage one, or Waksberg stage two.

Answer No to the question, "Do you want random numbers and listed numbers?" Ci3 will import the file without generating additional telephone numbers, which is what you want. The program then asks for the file name 'Enter file name including path:'. Give the full pathname of the import file that you just created. For example, if you had just created ND01B.TXT, you would enter ND01B.TXT. For the prompt 'Listed numbers only correct?' accept the default 'Yes'.

If you are not using the pre-dialing numbers, enter the record layout as follows: At the record layout screen, enter 118 for the number of characters in one record. At Phone (part 1) enter 5 for position in record and 12 for length. Then press Enter until the cursor is at Firm Name and enter 32 for position in record and 20 for length. Next, press Enter twice so that the cursor is at Wave and enter 26 for position in record and 1 for length. Finally, move the cursor to Field 2 and enter 55 for position in record and 28 for length. Then press End.

Figure 8 below shows a filled-out record layout screen. The Phone (part 1) field contains the telephone number. Fill out the import screen as shown below:

Figure 8. Record Layout Screen.

```
 Study: 999      RECORD LAYOUT FOR THE DATABASE TO IMPORT FROM
                How many characters are there in one record? 118
                (Count special characters like CR and LF)

                Pos in          Max                     Pos in            Max
                Record  Length  Length                  Record  Length  Length
                 ----     --      --                     ----     --      --
Phone (part 1)  5        12      20     Wave .......... 26        1       1
Phone (part 2)                   |     Status ........                  1
Phone (part 3)                   |     Field  1.......                 32
Phone (part 4)                   |     Field  2....... 55       28     32
Phone (part 5)                   |     Field  3.......                 32
Phone (part 6)                   |     Field  4.......                 32
Time Zone .....                   2
Primary Cell ..                   3
Secondary Cell                    3
Contact Name ..                  28
Date to Call ..                   4
Time to Call ..                   4
Message .......                  40
Firm Name ..... 32       20      20
Open ..........                  10

                 Press:  END to save and continue.  ESC to exit.
```

If your import file contains four pre-dialing characters that you want to use (the 9,1- in the original file or some other four characters that you have changed them to), you can change the phone specifications to include them by entering a 1 under Pos in Record and a 16 under Length. If you have replaced the first four columns with either more or fewer columns, you will also need to adjust the rest of the specifications for the import file accordingly. **If you are using pre-dialing characters, you must contact Bill Garvin (770-488-5301 or wsg1@cdc.gov) before starting your 1998 interviews. He has to change some statements in your questionnaire in order to bring the phone number into the questionnaire properly.**

Viewing Sample

SetUp...**E**nter/View Sample...**V**iew or Edit...**A**ll records and
SetUp...**E**nter/View Sample...**V**iew or **E**dit...**S**pecific Record
Pages 2-83 to 2-85

You should view DB.CON, the sample record file you just created, to make sure that it was created properly. We recommend that you look at several records at the beginning, middle, and end of the database. Selecting all records from the View or Edit menu will let you page through each record beginning with record one. Look through several records, then come back to View or Edit menu and choose Specific record. Enter a number just before the middle record; you can page down to subsequent records but will not be able to page up to records before the one you specified. Finally, return to the View or Edit menu and choose a specific record close to the end. You are looking to make sure that the phone numbers and other information are in the correct columns in each record.

In particular, make sure that the information in Field 2 is not shifting as you look through the records. Each record should look like the sample record in Figure 9 below.

Note that Firm Name, Wave, and Field 2 contain information needed for managing the sample or that will be passed on to the complete and incomplete records. Fields 3 and 4 are used to store information needed to implement the BRFSS Callback Rules. That information appears in the sample record after the first attempt. Finally, Field 1 is used to record disposition codes for eleven or more attempts. **At no time should you place any other information in Firm Name, Wave, or Fields 1-4**.

Figure 9, below, shows a sample DB.CON record as it might appear from a Waksberg stage one sample. The only difference between it and a DSS or Waksberg stage two sample is that each type has its own pattern of values in Field 2. In all three files, the digits after the "s" contain a geographic stratum number. In a Waksberg stage one sample, the digits after the "r" and the "p" both contain the Replicate Number and the digits after the "d" the Replicate Depth from the GENESYS file. In a DSS sample, the digits after the "r" contain the Replicate Number, the digits after the "p" contain the Density Weight, and the digits after the "d" the Replicate Depth, all from the GENESYS file. In a Waksberg stage two sample, the digits after the "r" contain the last three digits of the Replicate Number and the Replicate Depth from the GENESYS file, the digits after the "p" a PSU number which you have assigned, and the digits after the "d" the PSU depth. **The important items to note are the Replicate Number and Replicate Depth for Waksberg stage one and DSS samples and the PSU number and PSU Depth for Waksberg stage two samples.** You will be releasing numbers by replicate for Waksberg stage one and DSS samples and by PSU for Waksberg stage two samples.

Figure 9. Sample DB.CON Record With No Attempts.

```
     Phone Number: 404-636-9486                    Record Number:          1
     Time Zone:    +0                              Random:
     Primary Cell:                                 Secondary Cell:
     Contact Name:                                 Interviewer:
     Next Contact Date:   /       Time:   :        A/P:         I/R:
     Message:
     Firm Name:    00000252010.62538017            Open:
     Field  1:                                     Wave:                   1
     Field  2: >r00101s00001p00101d00001_2*       Status:                 0
     Field  3:
     Field  4:
     Respondent #:                                 # of Attempts:
                   Date: Time Start: Time Finish: Disposition: Interviewer:
     1st  Attempt:   /        :  :         :  :
     2nd  Attempt:   /        :  :         :  :
     3rd  Attempt:   /        :  :         :  :
     4th  Attempt:   /        :  :         :  :
     5th  Attempt:   /        :  :         :  :
     6th  Attempt:   /        :  :         :  :
     7th  Attempt:   /        :  :         :  :
     8th  Attempt:   /        :  :         :  :
     9th  Attempt:   /        :  :         :  :
     10th Attempt:   /        :  :         :  :
     Last Attempt:   /        :  :         :  :
   Press:  PgDn for next/PgUp for previous.  END to save/exit.  ESC to exit.
```

Releasing Sample Records

SetUp...**E**nter/View Sample...**W**aksberg...**S**et Up Rules...**S**ample
Pages 2-63 to 2-67

You now need to determine how many numbers to release. The considerations that need to be taken into account and the procedures that need to be followed differ somewhat between DSS and Waksberg stage one sample, on the one hand, and Waksberg stage two samples, on the other, so we will address each type separately.

Releasing DSS and Waksberg Stage One Sample Records

As noted above, the sample records you receive from GENESYS will be sorted by stratum, replicate, and depth. This means that all your stratum one numbers will appear first, then all your stratum two numbers, etc. Then, within each stratum, the first fifty numbers will be from replicate one, the second fifty from replicate two, etc. Numbers can only be released (or held back) by replicate. **If you have more than one stratum, you will need to decide how many replicates to release by stratum.** For states with geographic stratification, GENESYS provides a list of which replicates go with which strata. You can also determine the geographic stratum of a telephone number or replicate by the values in columns 52-53 of the sample records.

For either Waksberg stage one or DSS sampling, we have identified two pure strategies that you can follow in deciding how many numbers to release. In addition, we have identified a third strategy that you can follow for Waksberg stage one sampling.

The first strategy, for either Waksberg stage one or DSS sampling, is to release a predetermined number of replicates at the beginning of a month that is your best guess for yielding your target number of completes that month. You would try to make up for a deviation from your target number of completes by releasing more or fewer replicates the following month. (The number of completes you get from a fixed number of replicates will vary somewhat from month to month, so you would only make an adjustment if you were getting pretty far off.)

The second strategy, also for either Waksberg stage one or DSS sampling, is to, first, release the minimum number of replicates that you think could allow you to hit your target number of completes. Then, as interviewing proceeds, if you see that you will not obtain your target number of completes, you can release additional replicates as needed.

In principle, you can also follow any number of intermediate strategies, although if you have a small number of replicates per stratum, you will be limited in the strategies you can pursue.

The advantage of releasing a predetermined number of replicates at the beginning of a month and trying to make up for a deviation from the target number of completes by releasing more or fewer replicates the following month is that all the numbers are available for the full time of the survey; the disadvantages are that you might significantly deviate from your target and you have to keep good track of how far off your target you are to determine how much to compensate the following month. The advantage of initially releasing the minimum number of replicates than you think you will need to reach your target number of completes and then releasing more if you need them to reach your target is that you will likely get closer to your target; the disadvantages are the increased administrative complexity of having to release additional numbers and that not all the numbers will be available for the full time of the survey.

If you decide to follow strategy two and release numbers incrementally, you will need to keep a good record of the replicates that you have released in each stratum. As noted above, the GENESYS file is sorted by stratum, replicate, and depth. For example, suppose you have 20 strata (1,000 numbers total), with 600 numbers in the stratum one and 400 numbers in stratum two. Replicates 1 to 12 would contain stratum one numbers and replicates 13 to 20 would contain stratum two numbers. If you wanted to start by releasing 500 numbers in stratum one and 350 numbers in stratum two, you would release replicates 1 to 10 and 13 to 19. If you then wanted to release one more replicate in each stratum, you would release replicates 11 and 20.

The third strategy is for Waksberg stage one sampling only and its attractiveness will depend on your estimation of the cost involved in deliberately qualifying more stage one numbers than you think you will need. You can also switch to this strategy if you were following strategy one above

and your Waksberg stage one sample yielded more qualified stage one numbers than was your target. This strategy is to release enough stage one numbers that you are certain will get you at least your target number of stage one household numbers. Then, when you create your stage two DB.CON file, you can decide to release only those replicates which get you closest to your target number of clusters. The reason you can do this is that each replicate is an independent sample from your sampling frame. Determining which stage one replicates to use to create your Waksberg stage two file is described in the section above entitled, "Waksberg Stage Two Sampling: Creating an Import File from Waksberg Stage One GENESYS Sample Records in BSB Layout."

Figure 10 below shows a record layout screen for both DSS and Waksberg stage one sampling. You should release all of the fifty numbers in each replicate released and, thus, no replacement needs to occur. In the example below, replicates 0101 to 0110 and 0113 to 0119 are released to a depth of 50. Identifying 40 as a non-target disposition code is just a simple way of saying you do not want any replacement based on disposition codes. We are assuming that none of the records will ever receive a disposition of 40. The rules of replacement would then look like this:

Figure 10. Record Layout Screen

```
        New macro filename: C:\CATI\S709\S709.MCR
┌──────────────────────────────────────────────────────────────────────┐
│    Non-target disposition codes (range 0, 4-40)  =   40 ,  __ ,  __
│                                 in between:  From =   __ to __
└──────────────────────────────────────────────────── Page = 1 ────────┐
│1 : REP       0101   to 0110           Max. Household #'s per REP = 50
│2 : REP       0113   to 0119           Max. Household #'s per REP = 50
│3 :
│4 :
│5 :
│6 :
│7 :
│8 :
│9 :
│10:
│11:
│12:
│13:
└──────────────────────────────────────────────── Use PgUp or PgDn keys ─┘
                ╔══════════════════════════════════════════════════╗
                ║  Type the letter r,s,p,k to define a replicate, stratum,      ║
                ║  psu or kill psu.  Use space bar to blank the row.            ║
End to Save     ║     Use the ↑ & ↓ arrow keys to move between rows.            ║
Esc to Quit     ╚══════════════════════════════════════════════════╝
```

Releasing Waksberg Stage Two Sample Records

The procedure for identifying which Waksberg stage two numbers to release is unchanged from that specified on pages 5-9 to 5-10 of the February 9, 1995 version of the *Supervisor's Handbook for Ci3 System and Ci3 CATI.*

The major difference is that you should not hold back any PSU's (although, as noted above, you don't need to put into the stage two file all the clusters you qualified). **Unlike the practice with BSB samples from previous years, if you are setting up a Waksberg stage two study, you must release all of the identified household numbers in DB.CON. In other words, you must try to complete three interviews from every PSU in your sample dataset.** The purpose of this rule is to maintain the statistical integrity and representatives of your sample. **You can make up an excess only by releasing fewer stage one numbers in a subsequent month.**

Keeping Non-Working and Business Phone Numbers From Being Called in Waksberg Stage One and DSS Sample Files

SetUp...**E**nter/View Sample...**V**iew or Edit...**E**nter search specification
Pages 2-86 to 2-92

Your files from GENESYS contain identified non-working and business phone numbers. An explanation for why that is the case seems in order, since it seems easier to exclude them from the sample altogether and that is, indeed, the most common practice. There are two basic reasons: The operational reason is that excluding them would result in replicates of different sizes and thus would require you to enter individually the number of each released replicate and the number of records in the replicate. The statistical reason is that those numbers are part of your initial sample and thus should be included in the determination of dispositions and response rates. The inclusion of non-working and business numbers in the sample record allows us to create a(n incomplete) data record for each one and thus to include them, at least for DSS states, in the determination of dispositions and response rates. (I'm hoping that this is a first step in creating comparable disposition records and response rates and that in 1999, all states will be reporting dispositions on all sample records generated for their sample, including Waksberg stage one records.--Peter Mariolis)

GENESYS-ID is GENESYS's name for their processes of using an auto-dialer on the numbers to detect non-working number tones and checking sample telephone numbers against a database of business numbers. GENESYS-ID is able to detect about half of the non-working numbers in a sample. You should definitely not release the non-working numbers. You may optionally not release the marked business numbers.

Some states call the identified business numbers because they find that some of those numbers are not business numbers. The business numbers are taken from published telephone directories and then put on a computer file, which GENESYS buys. The time between the number was assigned to business and the time you are calling it can be considerable. The prudent course of action would seem to be to call them, at least initially. If you do call them, we identify a procedure below whereby you can give them priority on a weekday so that you can identify the true business numbers quickly. A substantial proportion of the identified business numbers will, in fact, be business

numbers. If you do call the business numbers, please let Peter Mariolis (pxm1@cdc.gov) know how many you called and what proportion of them were actually business numbers.

The GENESYS-ID Status field on the sample record, column 26, has a value of 3 for an identified non-working number, 5 for an identified business number, and 1 otherwise. The values of this field were put in the Wave field in DB.CON during the import process you did earlier. This enables you to select the non-working or non-working and business numbers and change the status of those records to a 4, preventing them from being released.

To select the non-working numbers only, bring up the DB.CON search specification screen and enter the relation, RA, a value of 3, and a second value of 4 in the Wave field, as shown in Figure 11.

Figure 11. DB.CON Search Specification Screen for Non-Working Numbers Only

```
998           SAMPLE DATABASE SEARCH SPECIFICATION
                    Relation           Value                 Second Value
                    --------- ------------------------ ------------------------
Record Number ......
Phone Number .......
Time Zone ..........
Random .............
Primary Cell .......
Secondary Cell .....
Contact Name .......
Date to Call .......
Time to Call .......
Message ............
Firm Name ..........
Open ...............
Wave ...............RA        3                        4
Status .............

Respondent # .......
# of Attempts ......
Last Attempt Date ..
Last Disposition ...
Last Interviewer ...
           Valid relations: EQ, NE, GT, GE, LT, LE, RA, OR, ST, XS.
  Press: PgDn to view more fields, END to save and continue, ESC to exit.
```

Next to the Wave field name put the relationship GE and the value 3.
To select both the non-working and business numbers, bring up the DB.CON search specification screen and enter the relation, GE and a value of 3 in the Wave field, as shown in Figure 12.

Figure 12. DB.CON Search Specification Screen for Non-Working and Business Numbers

```
998           SAMPLE DATABASE SEARCH SPECIFICATION
                    Relation           Value                  Second Value
                    --------- ------------------------ ------------------------
Record Number ......
Phone Number .......
Time Zone ..........
Random .............
Primary Cell .......
Secondary Cell .....
Contact Name .......
Date to Call .......
Time to Call .......
Message ............
Firm Name ..........
Open ...............
Wave ...............GE        3
Status .............
Respondent # .......
# of Attempts ......
Last Attempt Date ..
Last Disposition ...
Last Interviewer ...
           Valid relations: EQ, NE, GT, GE, LT, LE, RA, OR, ST, XS.
  Press: PgDn to view more fields, END to save and continue, ESC to exit.
```

Then press End and indicate that you want to 'Begin Search'. After the search is finished, select 'Mask Records', 'Selected'. Then, in the DB.CON masking screen (Figure 13 below), put a 4 in the Status field. When the prompt says 'Is this mask correct?' press Y.

Figure 13. DB.CON Masking Screen

```
 Study: 105                        SPECIFY MASK
       Please specify the mask to be copied to the selected records.
     Phone Number:
     Time Zone:
     Primary Cell:                                  Secondary Cell:
     Contact Name:                                  Interviewer:
     Next Contact Date:   /       Time:   :         A/P:         I/R:
     Message:
     Firm Name:                                     Open:
     Field  1:                                      Wave:
     Field  2:                                      Status:                4
     Field  3:
     Field  4:

                    Press the "\" key to represent a blank

                 Press: END to save,  ESC to erase and exit.
```

This will assign the selected sample records a status of 4 and will prevent them from coming up to be called. **You should mask the non-working or non-working or business numbers before you do any polling.**

Releasing Zero Block Numbers First

SetUp...**E**nter/View Sample...**D**efine Priority
Pages 2-72 to 2-77

An additional piece of information in the GENESYS sample record is whether a telephone number comes from a zero block or a one-plus block (Density Stratum field, column 32). A block (or, more precisely, a hundred block) is a group of 100 numbers with the same area code, prefix, and first two digits of the suffix. A zero block is a block with no listed household numbers. A one-plus block is a block with one or more listed household numbers.

The fact that blocks are defined identically as clusters in Waksberg sampling sometimes causes confusion. The identity of the two comes from the fact that it is useful to group numbers in groups of 100 for a variety of purposes but hundred blocks and clusters are used in very different ways. DSS sampling uses hundred blocks to distinguished between telephone numbers with a relatively low probability of being a household (zero block numbers) and telephone numbers with a relatively

high probability of being a household (one-plus block numbers) in order to create samples with a higher proportion of households than would otherwise be the case. Here we will make yet another use of zero and one-plus blocks: We will use the fact that numbers from zero-blocks are unlikely to be household numbers to call them first and get them out of our sample quickly. That will enable us to spend the rest of the study period concentrating on the numbers that are most likely to be households. This strategy is equally applicable to both Waksberg stage one and DSS samples.

The first character in the field Firm Name has a 1 for one-plus blocks and a 2 for zero blocks. You can therefore use the Define Priorities function, shown below, with a GE relationship and value of 2 in the Firm Name field to give zero block numbers a higher priority. The following screen would cause zero block numbers (that have not been called) to be started before one-plus block values. After a few days of starting the zero block numbers, you can then remove the Define Priorities statement.

Figure 14. Define Priorities Screen

```
Study: 101                        DEFINE PRIORITIES
_____________________________________________________________________
   FN     EQ       VALUE          OR       FN     EQ       VALUE       1 = D
          NE                     AND              NE                   2 = C
          LE                                      LE                   3 = Busy
          GE                                      GE                   4,5
_F1 for Help_____________________________________________________________

1  11     GE              2     AND       15     EQ              0      2

2

3

4

5

FN
1 Record Number     7 Contact Name    13 Status             19 FLD  1  25 FLD  7
2 Area Code         8 Date to Call    14 Respondent #       20 FLD  2  26 FLD  8
3 Time Zone         9 Time to Call    15 # of Attempts      21 FLD  3  27 FLD  9
4 Wave             10 Message         16 Last Attempt Date  22 FLD  4  28 FLD 10
5 Primary Cell     11 Firm Name       17 Last Disposition   23 FLD  5  29 FLD 11
6 Secondary Cell   12 Open            18 Last Interviewer   24 FLD  6  30 FLD 12
```

Releasing Identified Business Numbers in a Group

SetUp...**E**nter/View Sample...**D**efine Priority
Pages 2-72 to 2-77

If you have decided to call the identified business numbers, you can release them in a group using the following Define Priorities statement. You would want to do this to call them all during a weekday period, when you would be most likely to get a response from a business. If you combine the statement in Figure 14 above with Figure 15 below, you would be giving priority to both zero block and business numbers. You might want to combine the priorities for weekday calling at the beginning of the study because both sets of numbers should result in many quick final dispositions.

Figure 15. Define Priorities Screen

```
Study: 101                      DEFINE PRIORITIES
_____________________________________________________________________
   FN     EQ       VALUE         OR       FN     EQ       VALUE       1 = D
          NE                    AND              NE                   2 = C
          LE                                     LE                   3 = Busy
          GE                                     GE                   4,5
_F1 for Help_____________________________________________________________

1  4      EQ              3     AND       15     EQ              0      2

2

3

4

5

FN
1 Record Number    7 Contact Name    13 Status             19 FLD  1  25 FLD  7
2 Area Code        8 Date to Call    14 Respondent #       20 FLD  2  26 FLD  8
3 Time Zone        9 Time to Call    15 # of Attempts      21 FLD  3  27 FLD  9
4 Wave            10 Message         16 Last Attempt Date  22 FLD  4  28 FLD 10
5 Primary Cell    11 Firm Name       17 Last Disposition   23 FLD  5  29 FLD 11
6 Secondary Cell  12 Open            18 Last Interviewer   24 FLD  6  30 FLD 12
```

Conclusion

From this point, setting up a Waksberg stage one or DSS study follows the procedures from page 5-12 on in Chapter 5, "Setup Procedures in Ci3 CATI System" in the February 9, 1995 version of the *Supervisor's Handbook for Ci3 System and Ci3 CATI.*

Addition to Revised Setup Procedures in Ci3 CATI for DSS and Waksberg Samples: Addendum to *Supervisor's Handbook for Ci3 System and Ci3 CATI*

Importing Sample Records Into DB.CON for Waksberg Stage Two Sampling

SetUp...**E**nter/View Sample...**I**mport...**A**nother database
Pages 2-35 to 2-41

Figure 8A below shows the revised record layout specifications for importing records for Waksberg stage two sampling. The change from Figure 8 in the Addendum is that, for the Firm Name field, you enter 69 as the position in the record and 5 for the length.

Figure 8A. Record Layout Screen for Waksberg Stage Two Sample from GENESYS.

```
 Study: 101      RECORD LAYOUT FOR THE DATABASE TO IMPORT FROM
                How many characters are there in one record? 118
                (Count special characters like CR and LF)

                Pos in          Max                        Pos in          Max
                Record  Length  Length                     Record  Length  Length
                 ----     --      --                         ----     --      --
Phone (part 1)   5       12      20     Wave .......... 26       1        1
Phone (part 2)                   |     Status ........                    1
Phone (part 3)                   |     Field  1.......                   32
Phone (part 4)                   |     Field  2....... 55       28       32
Phone (part 5)                   |     Field  3.......                   32
Phone (part 6)                   |     Field  4.......                   32
Time Zone .....                   2
Primary Cell ..                   3
Secondary Cell                    3
Contact Name ..                  28
Date to Call ..                   4
Time to Call ..                   4
Message .......                  40
Firm Name ..... 69       5       20
Open ..........                  10

                Press:  END to save and continue.  ESC to exit.
```

Appendix K
PC-Based Program Documentation for BRFSS States Using Ci3 CATI

The Survey Operations Section has developed four PC-based programs. The BRFSS Reformatting Program was developed to merge and reformat Ci3 CATI files into a 575-column file in preparation for editing by the BRFSS PC-EDITS program. The second program, BRFSS PC-EDITS, produces an edit report of BRFSS data collected at the state level. The third program, PC-EditFix, is an editor which enables the user to make edit corrections and/or verifications based on the BRFSS PC-EDITS edit report. Finally, PC-QC, generates a monthly quality control report. These programs are part of CDC's Exchangeable Edits, Data Dictionary and Information Translation Standard project with the goal of promoting standardization of data.

System Requirements to Run BRFSS PC-EDITS and Related Programs

BRFSS PC-EDITS and related programs will run on any MS-DOS-based PC with hard disk. In case of difficulty, specific requirements and performance tips are described in the Performance Issues and Troubleshooting section.

Installation of BRFSS PC-EDITS and Related Programs

To install the programs, complete the following steps:

1. Insert the diskette labelled BRFSS PC-EDITS Disk 1 in drive A: (or drive B: depending on your installation). Note if using drive B: substitute B: in every occurrence of A: below.

2. Type:
   A:INSTALL
   This command will create a directory called \BRFSED98 (if not already present) on your C: drive (or another hard drive if selected). It will also copy 14 files to this directory.

The files that are installed into the \BRFSED98 directory on your hard drive are:

Installed Files Common to All Versions:

BRFSED98.RMF - A compiled file of edit algorithms and data layouts used by BRFSED98.EXE
EDITFIX.EXE - Edit Correction Program
EESETEST.EXE- Edit retest utility used by EDITFIX.EXE
DRIVER2.PLB - Foxpro Printer Driver utility (internal use)
FOXD250B.ESL - Foxpro runtime overlay file (internal use)
FOXD250B.ES0 - Foxpro runtime overlay file (internal use)

FOXSWAP.COM - Foxpro memory utility (internal use)
FOXUSER.DBF - Foxpro user preference database (internal use)
FOXUSER.FPT - Foxpro user preference database (internal use)
GENPD.APP - Foxpro Printer Driver utility (internal use)
QC98.EXE - The quality control report driver program
README.TXT - This help file

Additional Files for Ci3 CATI States:
BRFSED98.EXE - The batch edit driver program (PC-EDITS)
FORMAT98.EXE - BRFSS Ci3 CATI Reformatting Program

Use of BRFSS Reformatting Program (FORMAT98.EXE)

The BRFSS Reformatting program is installed with the BRFSS PC-EDITS software in \BRFSED98. If you need additional support in installing or running the BRFSS Reformatting Program, please contact Bill Garvin at (770) 488-5301.

Running the BRFSS Reformatting Program for CASS CATI:

1. Copy your Ci3 files to \BRFSED98 directory. The files copied to the \BRFSED98 directory should resemble the files listed below. (Substitute your 2-letter state abbreviation for 'St' and 3-letter month abbreviation for 'Mon' and the 1-digit study number if more than one was required.)

   StMon98Z.CMP
   StMon98Z.SAM

   Keep your Ci3 files for a minimum of 24 months.

2. Run the program by typing (from the C:\BRFSED98 prompt): FORMAT98

   a. The opening screen prompts for the file containing the complete interviews for the month. Move the highlight bar to the file name and press Enter to select the file.

3. Output is written to a file name created by combining State Name, Month, Year and study number with a .DAT extension:

   StMon98Z.DAT

This file is the same file that you would have received from CDC after our initial monthly processing. Please save this 500-column file as a record of your monthly BRFSS data file.

This file can now be edited using the BRFSS PC-EDITS program (BRFSED98.EXE). Instructions for the BRFSS PC-EDITS program can be found below.

Use of BRFSS PC-EDITS 1998 (BRFSED98.EXE)

The BRFSS PC-EDITS software should be installed in \BRFSED98. If you need additional support in installing or running BRFSS PC-EDITS, please contact Gloria Colclough at (404) 488-5293.

Running BRFSS PC-EDITS:

1. Go to the \BRFSED98 directory by typing:
   CD\BRFSED98

2. Type:
   DIR
   and verify that there are at least these 4 files in the directory. The 4 files are:
   BRFSED98.EXE
   BRFSED98.RMF
   README.TXT
   Your data file, such as SCFEB981.DAT

3. Run the BRFSED98 program like this:

   BRFSED98 input.dat messages.out /M1,4-7,9 (Put your module numbers here: ^^^^^^^)
   (required) input.dat = name of your 500-column data file (ex: NYFEB98.DAT)
   (required) messages.out = file to receive error messages (ex: NYFEB98.OUT)
   (optional) module numbers = /Mx where x is a list of module numbers.

   This parameter is optional; the module list can be entered or changed after starting. No spaces are allowed in the module list. Here are some valid ways to list modules:

   /M1
   /M2,3,4,5
   /M6-8
   /M1,3-6,10

   Examples:
   BRFSED98 SCJAN981.DAT SCJAN981.OUT /M1,3
   State=SC, Month=January, Year=98, Study Number=1, Modules 1 and 3

   BRFSST98 DEAUG98.DAT DEAUG98.OUT /M6
   State=DE, Month=August, Year=98, Module 6

   BRFSED98 MESEP98.DAT MESEP98.OUT /M1,4,7-8,10
   State=ME, Month=September, Year=98, Modules 1, 4, 7, 8, and 10

BRFSED98 ILOCT981.DAT ILOCT981.OUT
State=IL, Month=October, Year=98, Study Number=1, No Modules

NOTE: The ability to edit state added questions will follow after further testing.

Sample Output from BRFSS PC-EDITS:

Initially, BRFSED98.EXE will scan your data file to determine which modules have been answered. After scanning the file, it will display the first of 2 screens. The first screen will display the first 11 modules. Put the module numbers in the box at the bottom of the screen. To go to the next screen (displaying modules 12-22) press F-8.

First screen:

----------BRFSS PC-EDITS 1998 V1.0----------

Input: DEJAN98.DAT Output: DEJAN98.OUT

Module	Response	Blank	Expected
1 - Diabetes (Cols 171-190)	12	146	12
2 - Sexual Behavior (Cols 191-204)	0	158	0
3 - Family Planning (Cols 205-215)	158	0	158
4 - Health Care Coverage (Cols 216-223)	158	0	158
5 - Health Care Utiliz (Cols 224-234)	0	158	0
6 - Oral Health (Cols 235-239)	0	158	0
7 - Prev Counseling Svc (Cols 240-246)	158	0	158
8 - Hypertension Awareness (Cols 247-249)	158	0	158
9 - Cholesterol Awareness (Cols 250-252)	158	0	158
10 - Colorectal Cancer (Cols 253-256)	158	0	158
11 - Immunization (Cols 257-258)	158	0	158
STATE ADDED QUESTIONS (COLS. 370-550)		158	0

Records Read: 158 Complete, 335 Incomplete, 493 Total
‘**’ DENOTES MODULES WITH RESPONSE OTHER THAN EXPECTED

Esc-Cancel F8-[Next Screen] F7-[Previous Screen] F10-[Accept]

Selected Module List:

Pressing F-8 will take you to the second screen as follows:

----------BRFSS PC-EDITS 1998 V1.0----------

Input: DEJAN98.DAT Output: DEJAN98.OUT

Module	Response	Blank	Expected
12 - Injury Control (Cols 259-264)	158	0	158

13 - Alcohol Consumption (Cols 265-274)	0	158	0
14 - Cardiovascular Dis (Cols 275-293)	0	158	0
15 - Arthritis (Cols 294-300)	158	0	158
16 - Quality of Life (Cols 301-318)	0	158	0
17 - Folic Acid (Cols 319-325)	0	158	0
18 - Firearms (Cols 326-335)	0	158	0
19 - Social Context (Cols 336-340)	0	158	0
20 - Tobacco Use Prev (Cols 341-349)	0	158	0
21 - Smokeless Tobacco (Cols 350-351)	0	158	0
22 - Disability (Cols 510-532)	0	158	0
STATE ADDED QUESTIONS (COLS. 370-550)		158	0

Records Read: 158 Complete, 335 Incomplete, 493 Total
'**' DENOTES MODULES WITH RESPONSE OTHER THAN EXPECTED

Esc-Cancel F8-[Next Screen] F7-[Previous Screen] F10-[Accept]

Selected Module List:

Module numbers should be separated by commas, as in: 1,2,5,7

Press F10 to begin editing or Press Escape to cancel processing.

> The program will display error messages on the screen and write them to the output file as they are detected. The bottom line of the screen will show the percent completed and an estimate of time (in minutes:seconds) required to complete editing of the data file.
>
> Example: 12 % Time remaining 20:14
>
> You can abort processing at any time by pressing Ctrl+Break.

The Edit Report will have the name which you provided on the command-line (i.e., DEJAN98.OUT). You can examine the file with a file viewer or text editor; or you can send the report to your printer by typing:

PRINT <filename>
(ex: PRINT DEJAN98.OUT)

from the C:\BRFSED98 directory.

This file can now be corrected using the PC-EditFix program (EDITFIX.EXE). Instructions for the PC-EditFix program can be found below.

Use of PC-EditFix 1998 (EDITFIX.EXE)

Prior to running PC-EditFix, look up any errors listed on your BRFSS PC-EDITS edit report. This may require referencing Ci3 files or callbacks. Verifications listed on your BRFSS PC-EDITS edit report may be correct as is, especially if stated values are verified during the actual interview. (Verifications are listed primarily for states which collect data in a manner which does not allow for immediate verification during the interview process.)

Running PC-EditFix:

1. Go to the \BRFSED98 directory by typing:
   CD\BRFSED98

2. Type:
   DIR
   and verify that there are at least these 13 files in the directory. The 13 files are:
   BRFSED98.EXE
   BRFSED98.RMF
   EDITFIX.EXE
   EESETEST.EXE
   FORMAT98.EXE
   FOXSWAP.COM
   FOXD2600.ESL
   FOXD2600.ESO
   FOXUSER.DBF
   FOXUSER.FPT
   README.TXT
   Your data file, such as SCFEB98.DAT
   Your BRFSS PC-EDITS edit report, such as SCFEB98.OUT

3. Run the program by typing (from the C:\BRFSED98 prompt): EDITFIX

   a. Select the BRFSS PC-EDITS edit report file you want to correct (i.e., SCFEB98.OUT) and press <enter>. PC-EditFix will automatically load the data file (i.e., SCFEB98.DAT).

   b. Select the edit message you want to correct and press <enter>. Make your edit correction and press <enter> until <recheck edit> is highlighted. Press <enter>. The corrected value will be immediately reedited. A message will appear indicating whether or not the edit now passes. Press any key to continue. (You can also choose to correct your data by column location by selecting <edit by column> in the lower left hand corner of the screen. The ability to delete a record is also available here.)

      i. Press <F1> for help. The 1998 Item by Item Coding Instructions and Editing Criteria for each survey question is contained within the help screen. Press <Esc> to exit help.

c. Select save to save the corrected value. This does not affect the actual data file. A check mark will appear next to the edit message you have just corrected.

d. After all your edit corrections/verifications are completed, save your corrections to a new data file name: Use your tab or arrow keys to select save. Enter the new data file name for your corrected data file (i.e., SCFEB982.DAT). Select save to save your updated file. Press any key to continue.

4. Upon completion, rerun BRFSS PC-EDITS on the new data file (i.e., SCFEB982.DAT) to ensure the monthly data file is clean.

5. E-mail the Ci3 sample file, final data file and BRFSS PC-EDITS edit report to the BRFSS DATA MANAGEMENT mailbox via the Internet address BRFSSDATA@CDC.GOV (i.e., SCFEB98.SAM, SCFEB982.DAT and SCFEB982.OUT, respectively).

   ** For states with contractors:

   It is the responsibility of the contractors to cc the state coordinators with the sample file, data file, PC-EDITS edit report, and the PC-QC report (PC-QC report is discussed below) when sending the files to the BRFSS DATA MANAGEMENT mailbox via the Internet.

Use of PC-QC (QC98.EXE)

Running PC-QC:

1. Go to the \BRFSED98 directory by typing:
   CD\BRFSED98

2. Type:
   DIR
   and verify that there are at least these 16 files in the directory. The 16 files are:
   BRFSED98.EXE
   BRFSED98.RMF
   DRIVER2.PLB
   EDITFIX.EXE
   EESETEST.EXE
   FORMAT98.EXE
   FOXSWAP.COM
   FOXD2600.ESL
   FOXD2600.ESO
   FOXUSER.DBF
   FOXUSER.FPT
   GENPD.APP
   QC98.EXE

README.TXT
Your data file, such as WAFEB98.DAT
Your BRFSS PC-EDITS edit report, such as WAFEB98.OUT

If not already present, the following eight files will be initially created by QC98.EXE:

INTVDATE.DBF - Summary of interviews per day for each data file
INTVDATE.CDX - Index on above
QUALCONT.DBF - Quality control summary for each data file
QUALCONT.CDX - Index on above
INTVIDT.DBF - Quality control summary by Interviewer ID for each data file
INTVIDT.CDX - Index on above
INVNEW.DBF - Quality control summary by Interviewer ID and Disposition code for each data file
INVNEW.CDX - Index on above

The quality control reports are actually run off these files, after the original data files are imported.

3. Run the program by typing (from the C:\BRFSED98 prompt): QC98

a. Select import from the menu. Highlight the data file you wish to import (i.e., WAFEB98.DAT) and press <enter>. Press any key to continue. NOTE: If the data file has been imported in a prior run and changes have since been made to the file, be sure to reimport the data file.

b. Select report from the menu. Highlight the data file you imported (i.e., WAFEB98.DAT) and press <enter>. Using the arrow keys, choose either preview or printer or file. Press the spacebar to select. Using the arrow keys, choose whether you want to print the report, Disposition by Interviewer ID. Choose Yes or No. Press the spacebar to select. Highlight <start report> and press <enter>. The quality control report will be generated.

```
*******NOTE NOTE NOTE ************************************
*   THE ID FOR YOUR INTERVIEWERS WILL NEED TO BE UNIQUE. *
*   OTHERWISE, THE DISPOSITION BY INTERVIEWER ID TABLE    *
*   WILL NOT BE VERY USEFUL.                              *
*****NOTE NOTE NOTE *************************************
```

The following is an example of the new Disposition by Interviewer ID table. It is TABLE 2B. Because this table could be fairly long (depending on the number of interviewers and the number of months reported on), there is a selection on the menu to print this or not. The default on the menu is NO.

STATENAME FEBRUARY 1998 THURSDAY, FEBRUARY 02, 1998
BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM
TABLE 2B: FREQUENCY DISTRIBUTION OF DISPOSITION CODES BY INTERVIEWER

DISPOSITION CODE

	01		02		03		04		05		06		07		08		09		10		11		TOTAL	
ID	MON	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
00	JAN	47	37.3	17	13.5	31	24.6	4	3.2	19	15.1	3	2.4	1	0.8	2	1.6	0	0.0	1	0.8	1	0.8	126	100
00	FEB	47	37.3	17	13.5	31	24.6	4	3.2	19	15.1	3	2.4	1	0.8	2	1.6	0	0.0	1	0.8	1	0.8	126	100
ITOTAL		94	37.3	34	13.5	62	24.6	8	3.2	38	15.1	6	2.4	2	0.8	4	1.6	0	0.0	2	0.8	2	0.8	252	100
10	JAN	53	25.4	3	1.4	51	24.4	67	32.1	30	14.4	0	0.0	2	1.0	1	0.5	0	0.0	2	1.0	0	0.0	209	100
ITOTAL		53	25.4	3	1.4	51	24.4	67	32.1	30	14.4	0	0.0	2	1.0	1	0.5	0	0.0	2	1.0	0	0.0	209	100
20	JAN	32	29.6	23	21.3	41	38.0	2	1.9	8	7.4	1	0.9	0	0.0	0	0.0	0	0.0	1	0.9	0	0.0	108	100
20	FEB	151	28.5	62	11.7	161	30.4	88	16.6	58	10.9	1	0.2	2	0.4	2	0.4	0	0.0	3	0.5	2	0.4	530	100
ITOTAL		183	28.7	85	13.3	202	31.7	90	14.1	66	10.4	2	0.3	2	0.3	2	0.3	0	0.0	4	0.6	2	0.3	638	100
30	JAN	25	28.7	11	12.6	31	35.6	9	10.3	9	10.3	0	0.0	0	0.0	1	1.1	0	0.0	0	0.0	1	1.1	87	100
ITOTAL		25	28.7	11	12.6	31	35.6	9	10.3	9	10.3	0	0.0	0	0.0	1	1.1	0	0.0	0	0.0	1	1.1	87	100
40	JAN	8	42.1	1	5.3	4	21.1	2	10.5	4	21.1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	19	100
ITOTAL		8	42.1	1	5.3	4	21.1	2	10.5	4	21.1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	19	100
50	JAN	21	47.7	4	9.1	12	27.3	3	6.8	3	6.8	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	2.3	44	100
ITOTAL		21	47.7	4	9.1	12	27.3	3	6.8	3	6.8	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	2.3	44	100

80 JAN 12 19.7 18 29.5 22 36.1 5 8.2 4 6.6 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0
0.0 61 100
ITOTAL 12 19.7 18 29.5 22 36.1 5 8.2 4 6.6 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0
0.0 61 100

99 JAN 0 0.0 2 100.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0
0.0 2 100
ITOTAL 0 0.0 2 13.5 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0
0.0 2 100

TOTAL 396 30.2 158 12.0 384 29.3 184 14.0 154 11.7 8 0.6 6 0.5 8 0.6 0 0.0 8
0.6 6 0.5 1312 100

PROJECTED MONTHLY SAMPLE SIZE = 198

Abbreviated Code Legend:

01-Completed Interview
02-Refused Interview
03-Nonworking Number
04-No Answer (Multiple Times)
05-Business Phone
06-No Elig. Resp at Number
07-No Elig. Resp at Time
08-Language Barrier
09-Interview Terminated in Questionnaire
10-Line Busy (Multiple Tries)
11-Physical/Mental Impairment

ITOTAL-Total by Interviewer

---

c. If you chose to preview the quality control report, press <more> if there are several pages and you want to view them, press <done> after previewing each table.

d. If you chose to print the quality control report, you will receive a message indicating the report is complete and press any key to continue.

e. If you chose to file the quality control report - that is, copy the report to a flat, ASCII text file - the program will copy each table to a text file. You will receive a message indicating the copy is complete and press any key to continue.

These Text files will be created if you chose to file your report.

QCCASRO.TXT - The table for the survey efficiency and CASRO info.
QCDISPFQ.TXT - The table for frequency distribution of disposition codes.
QCDISPID.TXT - The table for frequency distribution of disposition codes by Interviewer ID. ** This will only be copied if you chose the option for this table from the report menu **.

QCINTVW.TXT - The table which lists the interview dates and counts and percentage of completed interviews.
QCSEXRC.TXT - Table listing the AGE BY SEX AND RACE.

You can choose to view/print these reports at another time via any editor/word processing software.

d. Press <exit> to discontinue the report program.

4. Select <exit> from the menu to exit the quality control program.

Performance Issues and Troubleshooting:

These are possible symptoms and solutions for problems you may encounter with BRFSS PC-EDITS. If you need further assistance, please contact Gloria Colclough at (770) 488-5293.

Recommended System Configuration:

1) IBM PC or compatible
2) DOS 3.1 or a later version.
3) 512KB memory minimum.
4) Hard disk required with at least 4 megabyte available space.
5) CONFIG.SYS Settings:
   FILES=40 (or greater)
   BUFFERS=20 (or greater)
   You can view these settings by typing:
   From DOS (C:\>)
   TYPE C:\CONFIG.SYS
   To change, please refer to your DOS manual.

Problem: Message - "No extended buffering enabled - only xxxxx available"
Extended buffering is used by BRFSS PC-EDITS to improve performance. This message may be seen if BRFSED98.EXE is used when available memory is less than 200K.

Problem: Computer locks up -
May occur if available memory is less than 150K.

Problem: Message - "Could not open message file xxx..."
The message file is where BRFSED98.EXE writes its output report to. Review the "FILES" setting in CONFIG.SYS for compliance with the Recommended System Configuration specified above.

Problem: Message - "Could not open buffer file xxx..."

The buffer file is your 500 column data file, such as "GAJUL98.DAT". Make sure this file is in the \BRFSED98 directory.

Problem: Message - "Could not open METAFILE"

METAFILE is an internal name for BRFSED98.RMF. Possible causes of this message:

A. Unable to locate - make sure \BRFSED98 is the current directory and that BRFSED98.EXE and BRFSED98.RMF are both present.

B. Review the "FILES" setting in CONFIG.SYS for compliance with the Recommended System Configuration specified above.

Problem: Message - "Error: Edit Engine Version is 0.09, Metafile Version is xxxx...."

The file BRFSED98.RMF is out of date or corrupted - please contact Gloria Colclough at (770) 488-5293 desk for assistance.

This is the Documentation and Instruction file for the BRFSS Reformatting Program, BRFSS PC-EDITS, a batch-mode data validation program, PC-EditFix, and PC-QC, developed by:

Centers for Disease Control and Prevention
National Center for Chronic Disease Prevention
and Health Promotion
Behaviorial Surveillance Branch
Surveillance Operations System

For more information on the BRFSS Reformatting Program, contact Bill Garvin at (770) 488-5301. For more information on BRFSS PC-EDITS, PC-EditFix, or PC-QC, contact Gloria Colclough at (770) 488-5293.

Appendix L
FIPS Codes

This appendix contains the Federal Information Processing Standards (FIPS) codes, which are recorded on the Behavioral Risk Factor Surveillance System (BRFSS) questionnaire. The National Bureau of Standards' *Federal Information Processing Standards Publication Series* is the official publication relating to standards, guidelines, and documents adopted and promulgated under the provisions of Public Law 89-306 (Brooks Act) and under Part 6 of Title 15, Code of Federal Regulations. These legislative and executive mandates have given the Secretary of Commerce important responsibilities for improving the use and management of computers and automated data processing in the federal government. To carry out the secretary's responsibilities, the Bureau, through its Institute for Computer Sciences and Technology, provides leadership, technical guidance, and coordination of government efforts in developing standards, guidelines, and documents in these areas.

County FIPS Codes (by State)

01 ALABAMA

001 AUTAUGA
003 BALDWIN
005 BARBOUR
007 BIBB
009 BLOUNT
011 BULLOCK
013 BUTLER
015 CALHOUN
017 CHAMBERS
019 CHEROKEE
021 CHILTON
023 CHOCTAW
025 CLARKE
027 CLAY
029 CLEBURNE
031 COFFEE
033 COLBERT
035 CONECUH
037 COOSA
039 COVINGTON
041 CRENSHAW
043 CULLMAN
045 DALE
047 DALLAS
049 DEKALB
051 ELMORE
053 ESCAMBIA
055 ETOWAH
057 FAYETTE
059 FRANKLIN
061 GENEVA
063 GREENE
065 HALE
067 HENRY
069 HOUSTON
071 JACKSON
073 JEFFERSON
075 LAMAR
077 LAUDERDALE
079 LAWRENCE
081 LEE
083 LIMESTONE
085 LOWNDES
087 MACON
089 MADISON
091 MARENGO
093 MARION
095 MARSHALL
097 MOBILE
099 MONROE
101 MONTGOMERY
103 MORGAN
105 PERRY
107 PICKENS
109 PIKE
111 RANDOLPH
113 RUSSELL
115 ST CLAIR
117 SHELBY
119 SUMTER
121 TALLADEGA
123 TALLAPOOSA
125 TUSCALOOSA
127 WALKER
129 WASHINGTON
131 WILCOX
133 WINSTON

02 ALASKA

- 013 ALEUTIANS EAST BOROUGH
- 016 ALEUTIANS WEST CENSUS AREA
- 020 ANCHORAGE BOROUGH
- 050 BETHEL CENSUS AREA
- 060 BRISTOL BAY BOROUGH
- 070 DILLINGHAM CENSUS AREA
- 090 FBNKS NORTH STAR BOROUGH
- 100 HAINES BOROUGH
- 110 JUNEAU BOROUGH
- 122 KENAI PENINSULA BOROUGH
- 130 KETCHIKAN GATEWAY BOROUGH
- 150 KODIAK ISLAND BOROUGH
- 164 LAKE AND PENINSULA BOROUGH
- 170 MATANUSKA-SUSITNA BOROUGH
- 180 NOME CENSUS AREA
- 185 NORTH SLOPE BOROUGH
- 188 NORTHWEST ARCTIC BOROUGH
- 201 PRINCE OF WALES - OUTER KETCHIKAN CENSUS AREA
- 220 SITKA BOROUGH
- 231 SKAGWAY-YAKUTAT-ANGOON CENSUS AREA
- 240 SOUTHEAST FAIRBANKS CENSUS AREA
- 261 VALDEZ-CORDOVA CENSUS AREA
- 270 WADE HAMPTON CENSUS AREA
- 280 WRANGELL-PETERSBURG CENSUS AREA
- 290 YUKON-KOYUKUK CENSUS AREA

04 ARIZONA

- 001 APACHE
- 003 COCHISE
- 005 COCONINO
- 007 GILA
- 009 GRAHAM
- 011 GREENLEE
- 012 LA PAZ
- 013 MARICOPA
- 015 MOHAVE
- 017 NAVAJO
- 019 PIMA
- 021 PINAL
- 023 SANTA CRUZ
- 025 YAVAPAI
- 027 YUMA

05 ARKANSAS

001 ARKANSAS
003 ASHLEY
005 BAXTER
007 BENTON
009 BOONE
011 BRADLEY
013 CALHOUN
015 CARROLL
017 CHICOT
019 CLARK
021 CLAY
023 CLEBURNE
025 CLEVELAND
027 COLUMBIA
029 CONWAY
031 CRAIGHEAD
033 CRAWFORD
035 CRITTENDEN
037 CROSS
039 DALLAS
041 DESHA
043 DREW
045 FAULKNER
047 FRANKLIN
049 FULTON
051 GARLAND
053 GRANT
055 GREENE
057 HEMPSTEAD
059 HOT SPRING
061 HOWARD
063 INDEPENDENCE
065 IZARD
067 JACKSON
069 JEFFERSON
071 JOHNSON
073 LAFAYETTE
075 LAWRENCE
077 LEE
079 LINCOLN
081 LITTLE RIVER
083 LOGAN
085 LONOKE
087 MADISON
089 MARION
091 MILLER
093 MISSISSIPPI
095 MONROE
097 MONTGOMERY
099 NEVADA
101 NEWTON
103 OUACHITA
105 PERRY
107 PHILLIPS
109 PIKE
111 POINSETT
113 POLK
115 POPE
117 PRAIRIE
119 PULASKI
121 RANDOLPH
123 ST FRANCIS
125 SALINE
127 SCOTT
129 SEARCY
131 SEBASTIAN
133 SEVIER
135 SHARP
137 STONE
139 UNION
141 VAN BUREN
143 WASHINGTON
145 WHITE
147 WOODRUFF
149 YELL

06 CALIFORNIA

001 ALAMEDA
003 ALPINE
005 AMADOR
007 BUTTE
009 CALAVERAS
011 COLUSA
013 CONTRA COSTA
015 DEL NORTE
017 EL DORADO
019 FRESNO
021 GLENN
023 HUMBOLDT
025 IMPERIAL
027 INYO
029 KERN
031 KINGS
033 LAKE
035 LASSEN
037 LOS ANGELES
039 MADERA
041 MARIN
043 MARIPOSA
045 MENDOCINO
047 MERCED
049 MODOC
051 MONO
053 MONTEREY
055 NAPA
057 NEVADA
059 ORANGE
061 PLACER
063 PLUMAS
065 RIVERSIDE
067 SACRAMENTO
069 SAN BENITO
071 SAN BERNARDINO
073 SAN DIEGO
075 SAN FRANCISCO
077 SAN JOAQUIN
079 SAN LUIS OBISPO
081 SAN MATEO
083 SANTA BARBARA
085 SANTA CLARA
087 SANTA CRUZ
089 SHASTA
091 SIERRA
093 SISKIYOU
095 SOLANO
097 SONOMA
099 STANISLAUS
101 SUTTER
103 TEHAMA
105 TRINITY
107 TULARE
109 TUOLUMNE
111 VENTURA
113 YOLO
115 YUBA

08 COLORADO

001 ADAMS	043 FREMONT	085 MONTROSE
003 ALAMOSA	045 GARFIELD	087 MORGAN
005 ARAPAHOE	047 GILPIN	089 OTERO
007 ARCHULETA	049 GRAN	091 OURAY
009 BACA	051 GUNNISON	093 PARK
011 BENT	053 HINSDALE	095 PHILLIPS
013 BOULDER	055 HUERFANO	097 PITKIN
015 CHAFFEE	057 JACKSON	099 PROWERS
017 CHEYENNE	059 JEFFERSON	101 PUEBLO
019 CLEAR CREEK	061 KIOWA	103 RIO BLANCO
021 CONEJOS	063 KIT CARSON	105 RIO GRANDE
023 COSTILLA	065 LAKE	107 ROUTT
025 CROWLEY	067 LA PLATA	109 SAGUACHE
027 CUSTER	069 LARIMER	111 SAN JUAN
029 DELTA	071 LAS ANIMAS	113 SAN MIGUEL
031 DENVER	073 LINCOLN	115 SEDGWICK
033 DOLORES	075 LOGAN	117 SUMMIT
035 DOUGLAS	077 MESA	119 TELLER
037 EAGLE	079 MINERAL	121 WASHINGTON
039 ELBERT	081 MOFFAT	123 WELD
041 EL PASO	083 MONTEZUMA	125 YUMA

09 CONNECTICUT

001 FAIRFIELD	007 MIDDLESEX	013 TOLLAND
003 HARTFORD	009 NEW HAVEN	015 WINDHAM
005 LITCHFIELD	011 NEW LONDON	

10 DELAWARE

001 KENT	003 NEW CASTLE	005 SUSSEX

11 DISTRICT OF COLUMBIA

001 DISTRICT OF COLUMBIA

11 = state designation
001 = county designation

12 FLORIDA

001 ALACHUA
003 BAKER
005 BAY
007 BRADFORD
009 BREVARD
011 BROWARD
013 CALHOUN
015 CHARLOTTE
017 CITRUS
019 CLAY
021 COLLIER
023 COLUMBIA
025 DADE
027 DE SOTO
029 DIXIE
031 DUVAL
033 ESCAMBIA
035 FLAGLER
037 FRANKLIN
039 GADSDEN
041 GILCHRIST
043 GLADES
045 GULF
047 HAMILTON
049 HARDEE
051 HENDRY
053 HERNANDO
055 HIGHLANDS
057 HILLSBOROUGH
059 HOLMES
061 INDIAN RIVER
063 JACKSON
065 JEFFERSON
067 LAFAYETTE
069 LAKE
071 LEE
073 LEON
075 LEVY
077 LIBERTY
079 MADISON
081 MANATEE
083 MARION
085 MARTIN
087 MONROE
089 NASSAU
091 OKALOOSA
093 OKEECHOBEE
095 ORANGE
097 OSCEOLA
099 PALM BEACH
101 PASCO
103 PINELLAS
105 POLK
107 PUTNAM
109 ST JOHNS
111 ST LUCIE
113 SANTA ROSA
115 SARASOTA
117 SEMINOLE
119 SUMTER
121 SUWANNEE
123 TAYLOR
125 UNION
127 VOLUSIA
129 WAKULLA
131 WALTON
133 WASHINGTON

13 GEORGIA

001 APPLING
003 ATKINSON
005 BACON
007 BAKER
009 BALDWIN
011 BANKS
013 BARROW
017 BEN HILL
019 BERRIEN
021 BIBB
023 BLECKLEY
025 BRANTLEY
027 BROOKS
029 BRYAN
031 BULLOCH
033 BURKE
035 BUTTS
037 CALHOUN
039 CAMDEN
043 CANDLER
045 CARROLL
047 CATOOSA
049 CHARLTON
051 CHATHAM
053 CHATTAHOOCHE
055 CHATTOOGA
057 CHEROKEE
059 CLARKE
061 CLAY
063 CLAYTON
065 CLINCH
067 COBB
069 COFFEE
071 COLQUITT
073 COLUMBIA
075 COOK
077 COWETA
079 CRAWFORD
081 CRISP
083 DADE
085 DAWSON
087 DECATUR
089 DE KALB
091 DODGE
093 DOOLY
095 DOUGHERTY
097 DOUGLAS
099 EARLY
101 ECHOLS
103 EFFINGHAM
105 ELBERT
107 EMANUEL
109 EVANS
111 FANNIN
113 FAYETTE
115 FLOYD
117 FORSYTH
119 FRANKLIN
123 GILMER
125 GLASCOCK
127 GLYNN
129 GORDON
131 GRADY
133 GREENE
135 GWINNETT
137 HABERSHAM
139 HALL
141 HANCOCK
143 HARALSON
145 HARRIS
147 HART
149 HEARD
151 HENRY
153 HOUSTON
155 IRWIN
157 JACKSON
159 JASPER
161 JEFF DAVIS
163 JEFFERSON
165 JENKINS
167 JOHNSON
169 JONES
171 LAMAR
173 LANIER
175 LAURENS
177 LEE
179 LIBERTY
181 LINCOLN
183 LONG
185 LOWNDES
187 LUMPKIN
189 MCDUFFIE
191 MCINTOSH
193 MACON
195 MADISON
197 MARION
199 MERIWETHER
201 MILLER
205 MITCHELL
207 MONROE
209 MONTGOMERY
211 MORGAN
213 MURRAY
215 MUSCOGEE
217 NEWTON
219 OCONEE
221 OGLETHORPE
223 PAULDING
225 PEACH
227 PICKENS
229 PIERCE
231 PIKE
233 POLK
235 PULASKI
237 PUTNAM
239 QUITMAN
241 RABUN
243 RANDOLPH
245 RICHMOND
247 ROCKDALE
249 SCHLEY
251 SCREVEN
253 SEMINOLE
255 SPALDING
257 STEPHENS
259 STEWART
261 SUMTER
263 TALBOT
265 TALIAFERRO
267 TATTNALL
269 TAYLOR
271 TELFAIR
273 TERRELL
275 THOMAS
277 TIFT
279 TOOMBS
281 TOWNS
283 TREUTLEN
285 TROUP
287 TURNER
289 TWIGGS
291 UNION
293 UPSON

15 HAWAII

001 HAWAII	005 KALAWAO	009 MAUI
003 HONOLULU	007 KAUAI	

16 IDAHO

001 ADA	031 CASSIA	061 LEWIS
003 ADAMS	033 CLARK	063 LINCOLN
005 BANNOCK	035 CLEARWATER	065 MADISON
007 BEAR LAKE	037 CUSTER	067 MINIDOKA
009 BENEWAH	039 ELMORE	069 NEZ PERCE
011 BINGHAM	041 FRANKLIN	071 ONEIDA
013 BLAINE	043 FREMONT	073 OWYHEE
015 BOISE	045 GEM	075 PAYETTE
017 BONNER	047 GOODING	077 POWER
019 BONNEVILLE	049 IDAHO	079 SHOSHONE
021 BOUNDARY	051 JEFFERSON	081 TETON
023 BUTTE	053 JEROME	083 TWIN FALLS
025 CAMAS	055 KOOTENAI	085 VALLEY
027 CANYON	057 LATAH	087 WASHINGTON
029 CARIBOU	059 LEMHI	

17 ILLINOIS

001 ADAMS
003 ALEXANDER
005 BOND
007 BOONE
009 BROWN
011 BUREAU
013 CALHOUN
015 CARROLL
017 CASS
019 CHAMPAIGN
021 CHRISTIAN
023 CLARK
025 CLAY
027 CLINTON
029 COLES
031 COOK
033 CRAWFORD
035 CUMBERLAND
037 DE KALB
039 DE WITT
041 DOUGLAS
043 DU PAGE
045 EDGAR
047 EDWARDS
049 EFFINGHAM
051 FAYETTE
053 FORD
055 FRANKLIN
057 FULTON
059 GALLATIN
061 GREENE
063 GRUNDY
065 HAMILTON
067 HANCOCK
069 HARDIN
071 HENDERSON
073 HENRY
075 IROQUOIS
077 JACKSON
079 JASPER
081 JEFFERSON
083 JERSEY
085 JO DAVIESS
087 JOHNSON
089 KANE
091 KANKAKEE
093 KENDALL
095 KNOX
097 LAKE
099 LA SALLE
101 LAWRENCE
103 LEE
105 LIVINGSTON
107 LOGAN
109 MCDONOUGH
111 MCHENRY
113 MCLEAN
115 MACON
117 MACOUPIN
119 MADISON
121 MARION
123 MARSHALL
125 MASON
127 MASSAC
129 MENARD
131 MERCER
133 MONROE
135 MONTGOMERY
137 MORGAN
139 MOULTRIE
141 OGLE
143 PEORIA
145 PERRY
147 PIATT
149 PIKE
151 POPE
153 PULASKI
155 PUTNAM
157 RANDOLPH
159 RICHLAND
161 ROCK ISLAND
163 ST CLAIR
165 SALINE
167 SANGAMON
169 SCHUYLER
171 SCOTT
173 SHELBY
175 STARK
177 STEPHENSON
179 TAZEWELL
181 UNION
183 VERMILION
185 WABASH
187 WARREN
189 WASHINGTON
191 WAYNE
193 WHITE
195 WHITESIDE
197 WILL
199 WILLIAMSON
201 WINNEBAGO
203 WOODFORD

18 INDIANA

001 ADAMS
003 ALLEN
005 BARTHOLOMEW
007 BENTON
009 BLACKFORD
011 BOONE
013 BROWN
015 CARROLL
017 CASS
019 CLARK
021 CLAY
023 CLINTON
025 CRAWFORD
027 DAVIESS
029 DEARBORN
031 DECATUR
033 DE KALB
035 DELAWARE
037 DUBOIS
039 ELKHART
041 FAYETTE
043 FLOYD
045 FOUNTAIN
047 FRANKLIN
049 FULTON
051 GIBSON
053 GRANT
055 GREENE
057 HAMILTON
059 HANCOCK
061 HARRISON
063 HENDRICKS
065 HENRY
067 HOWARD
069 HUNTINGTON
071 JACKSON
073 JASPER
075 JAY
077 JEFFERSON
079 JENNINGS
081 JOHNSON
083 KNOX
085 KOSCIUSKO
087 LAGRANGE
089 LAKE
091 LA PORTE
093 LAWRENCE
095 MADISON
097 MARION
099 MARSHALL
101 MARTIN
103 MIAMI
105 MONROE
107 MONTGOMERY
109 MORGAN
111 NEWTON
113 NOBLE
115 OHIO
117 ORANGE
119 OWEN
121 PARKE
123 PERRY
125 PIKE
127 PORTER
129 POSEY
131 PULASKI
133 PUTNAM
135 RANDOLPH
137 RIPLEY
139 RUSH
141 ST JOSEPH
143 SCOTT
145 SHELBY
147 SPENCER
149 STARKE
151 STEUBEN
153 SULLIVAN
155 SWITZERLAND
157 TIPPECANOE
159 TIPTON
161 UNION
163 VANDERBURGH
165 VERMILLION
167 VIGO
169 WABASH
171 WARREN
173 WARRICK
175 WASHINGTON
177 WAYNE
179 WELLS
181 WHITE
183 WHITLEY

19 IOWA

001 ADAIR
003 ADAMS
005 ALLAMAKEE
007 APPANOOSE
009 AUDUBON
011 BENTON
013 BLACK HAWK
015 BOONE
017 BREMER
019 BUCHANAN
021 BUENA VISTA
023 BUTLER
025 CALHOUN
027 CARROLL
029 CASS
031 CEDAR
033 CERRO GORDO
035 CHEROKEE
037 CHICKASAW
039 CLARKE
041 CLAY
043 CLAYTON
045 CLINTON
047 CRAWFORD
049 DALLAS
051 DAVIS
053 DECATUR
055 DELAWARE
057 DES MOINES
059 DICKINSON
061 DUBUQUE
063 EMMET
065 FAYETTE
067 FLOYD
069 FRANKLIN
071 FREMONT
073 GREENE
075 GRUNDY
077 GUTHRIE
079 HAMILTON
081 HANCOCK
083 HARDIN
085 HARRISON
087 HENRY
089 HOWARD
091 HUMBOLDT
093 IDA
095 IOWA
097 JACKSON
099 JASPER
101 JEFFERSON
103 JOHNSON
105 JONES
107 KEOKUK
109 KOSSUTH
111 LEE
113 LINN
115 LOUISA
117 LUCAS
119 LYON
121 MADISON
123 MAHASKA
125 MARION
127 MARSHALL
129 MILLS
131 MITCHELL
133 MONONA
135 MONROE
137 MONTGOMERY
139 MUSCATINE
141 O BRIEN
143 OSCEOLA
145 PAGE
147 PALO ALTO
149 PLYMOUTH
151 POCAHONTAS
153 POLK
155 POTTAWATTAM
157 POWESHIEK
159 RINGGOLD
161 SAC
163 SCOTT
165 SHELBY
167 SIOUX
169 STORY
171 TAMA
173 TAYLOR
175 UNION
177 VAN BUREN
179 WAPELLO
181 WARREN
183 WASHINGTON
185 WAYNE
187 WEBSTER
189 WINNEBAGO
191 WINNESHIEK
193 WOODBURY
195 WORTH
197 WRIGHT

20 KANSAS

001 ALLEN
003 ANDERSON
005 ATCHISON
007 BARBER
009 BARTON
011 BOURBON
013 BROWN
015 BUTLER
017 CHASE
019 CHAUTAUQUA
021 CHEROKEE
023 CHEYENNE
025 CLARK
027 CLAY
029 CLOUD
031 COFFEY
033 COMANCHE
035 COWLEY
037 CRAWFORD
039 DECATUR
041 DICKINSON
043 DONIPHAN
045 DOUGLAS
047 EDWARDS
049 ELK
051 ELLIS
053 ELLSWORTH
055 FINNEY
057 FORD
059 FRANKLIN
061 GEARY
063 GOVE
065 GRAHAM
067 GRANT
069 GRAY
071 GREELEY
073 GREENWOOD
075 HAMILTON
077 HARPER
079 HARVEY
081 HASKELL
083 HODGEMAN
085 JACKSON
087 JEFFERSON
089 JEWELL
091 JOHNSON
093 KEARNY
095 KINGMAN
097 KIOWA
099 LABETTE
101 LANE
103 LEAVENWORTH
105 LINCOLN
107 LINN
109 LOGAN
111 LYON
113 MCPHERSON
115 MARION
117 MARSHALL
119 MEADE
121 MIAMI
123 MITCHELL
125 MONTGOMERY
127 MORRIS
129 MORTON
131 NEMAHA
133 NEOSHO
135 NESS
137 NORTON
139 OSAGE
141 OSBORNE
143 OTTAWA
145 PAWNEE
147 PHILLIPS
149 POTTAWATOMIE
151 PRATT
153 RAWLINS
155 RENO
157 REPUBLIC
159 RICE
161 RILEY
163 ROOKS
165 RUSH
167 RUSSELL
169 SALINE
171 SCOTT
173 SEDGWICK
175 SEWARD
177 SHAWNEE
179 SHERIDAN
181 SHERMAN
183 SMITH
185 STAFFORD
187 STANTON
189 STEVENS
191 SUMNER
193 THOMAS
195 TREGO
197 WABAUNSEE
199 WALLACE
201 WASHINGTON
203 WICHITA
205 WILSON
207 WOODSON
209 WYANDOTTE

21 KENTUCKY

001 ADAIR
003 ALLEN
005 ANDERSON
007 BALLARD
009 BARREN
011 BATH
013 BELL
015 BOONE
017 BOURBON
019 BOYD
021 BOYLE
023 BRACKEN
025 BREATHITT
027 BRECKINRIDGE
029 BULLITT
031 BUTLER
033 CALDWELL
035 CALLOWAY
037 CAMPBELL
039 CARLISLE
041 CARROLL
043 CARTER
045 CASEY
047 CHRISTIAN
049 CLARK
051 CLAY
053 CLINTON
055 CRITTENDEN
057 CUMBERLAND
059 DAVIESS
061 EDMONSON
063 ELLIOTT
065 ESTILL
067 FAYETTE
069 FLEMING
071 FLOYD
073 FRANKLIN
075 FULTON
077 GALLATIN
079 GARRARD
081 GRANT
083 GRAVES
085 GRAYSON
087 GREEN
089 GREENUP
091 HANCOCK
093 HARDIN
095 HARLAN
097 HARRISON
099 HART
101 HENDERSON
103 HENRY
105 HICKMAN
107 HOPKINS
109 JACKSON
111 JEFFERSON
113 JESSAMINE
115 JOHNSON
117 KENTON
119 KNOTT
121 KNOX
123 LARUE
125 LAUREL
127 LAWRENCE
129 LEE
131 LESLIE
133 LETCHER
135 LEWIS
137 LINCOLN
139 LIVINGSTON
141 LOGAN
143 LYON
145 MCCRACKEN
147 MCCREARY
149 MCLEAN
151 MADISON
153 MAGOFFIN
155 MARION
157 MARSHALL
159 MARTIN
161 MASON
163 MEADE
165 MENIFEE
167 MERCER
169 METCALFE
171 MONROE
173 MONTGOMERY
175 MORGAN
177 MUHLENBERG
179 NELSON
181 NICHOLAS
183 OHIO
185 OLDHAM
187 OWEN
189 OWSLEY
191 PENDLETON
193 PERRY
195 PIKE
197 POWELL
199 PULASKI
201 ROBERTSON
203 ROCKCASTLE
205 ROWAN
207 RUSSELL
209 SCOTT
211 SHELBY
213 SIMPSON
215 SPENCER
217 TAYLOR
219 TODD
221 TRIGG
223 TRIMBLE
225 UNION
227 WARREN
229 WASHINGTON
231 WAYNE
233 WEBSTER
235 WHITLEY
237 WOLFE
239 WOODFORD

22 LOUISIANA

001 ACADIA
003 ALLEN
005 ASCENSION
007 ASSUMPTION
009 AVOYELLES
011 BEAUREGARD
013 BIENVILLE
015 BOSSIER
017 CADDO
019 CALCASIEU
021 CALDWELL
023 CAMERON
025 CATAHOULA
027 CLAIBORNE
029 CONCORDIA
031 DE SOTO
033 E BATON ROUGE
035 EAST CARROLL
037 E FELICIANA
039 EVANGELINE
041 FRANKLIN
043 GRANT
045 IBERIA
047 IBERVILLE
049 JACKSON
051 JEFFERSON
053 JEFFERSON DAVIS
055 LAFAYETTE
057 LAFOURCHE
059 LA SALLE
061 LINCOLN
063 LIVINGSTON
065 MADISON
067 MOREHOUSE
069 NATCHITOCHES
071 ORLEANS
073 OUACHITA
075 PLAQUEMINES
077 POINTE COUPEE
079 RAPIDES
081 RED RIVER
083 RICHLAND
085 SABINE
087 ST BERNARD
089 ST CHARLES
091 ST HELENA
093 ST JAMES
095 ST JOHN BAPT
097 ST LANDRY
099 ST MARTIN
101 ST MARY
103 ST TAMMANY
105 TANGIPAHOA
107 TENSAS
109 TERREBONNE
111 UNION
113 VERMILION
115 VERNON
117 WASHINGTON
119 WEBSTER
121 W BATON ROUGE
123 WEST CARROLL
125 WEST FELICIANA
127 WINN

23 MAINE

001 ANDROSCOGGIN
003 AROOSTOOK
005 CUMBERLAND
007 FRANKLIN
009 HANCOCK
011 KENNEBEC
013 KNOX
015 LINCOLN
017 OXFORD
019 PENOBSCOT
021 PISCATAQUIS
023 SAGADAHOC
025 SOMERSET
027 WALDO
029 WASHINGTON
031 YORK

24 MARYLAND

001 ALLEGANY	019 DORCHESTER	035 QUEEN ANNE'S
003 ANNE ARUNDEL	021 FREDERICK	037 ST. MARY'S
005 BALTIMORE	023 GARRETT	039 SOMERSET
009 CALVERT	025 HARFORD	041 TALBOT
011 CAROLINE	027 HOWARD	043 WASHINGTON
013 CARROLL	029 KENT	045 WICOMICO
015 CECIL	031 MONTGOMERY	047 WORCESTER
017 CHARLES	033 PRINCE GEORGE'S	510 BALTIMORE

25 MASSACHUSETTS

001 BARNSTABLE	011 FRANKLIN	021 NORFOLK
003 BERKSHIRE	013 HAMPDEN	023 PLYMOUTH
005 BRISTOL	015 HAMPSHIRE	025 SUFFOLK
007 DUKES	017 MIDDLESEX	027 WORCESTER
009 ESSEX	019 NANTUCKET	

26 MICHIGAN

001 ALCONA
003 ALGER
005 ALLEGAN
007 ALPENA
009 ANTRIM
011 ARENAC
013 BARAGA
015 BARRY
017 BAY
019 BENZIE
021 BERRIEN
023 BRANCH
025 CALHOUN
027 CASS
029 CHARLEVOIX
031 CHEBOYGAN
033 CHIPPEWA
035 CLARE
037 CLINTON
039 CRAWFORD
041 DELTA
043 DICKINSON
045 EATON
047 EMMET
049 GENESEE
051 GLADWIN
053 GOGEBIC
055 GRAND TRAVERSE
057 GRATIOT
059 HILLSDALE
061 HOUGHTON
063 HURON
065 INGHAM
067 IONIA
069 IOSCO
071 IRON
073 ISABELLA
075 JACKSON
077 KALAMAZOO
079 KALKASKA
081 KENT
083 KEWEENAW
085 LAKE
087 LAPEER
089 LEELANAU
091 LENAWEE
093 LIVINGSTON
095 LUCE
097 MACKINAC
099 MACOMB
101 MANISTEE
103 MARQUETTE
105 MASON
107 MECOSTA
109 MENOMINEE
111 MIDLAND
113 MISSAUKEE
115 MONROE
117 MONTCALM
119 MONTMORENCY
121 MUSKEGON
123 NEWAYGO
125 OAKLAND
127 OCEANA
129 OGEMAW
131 ONTONAGON
133 OSCEOLA
135 OSCODA
137 OTSEGO
139 OTTAWA
141 PRESQUE ISLE
143 ROSCOMMON
145 SAGINAW
147 ST CLAIR
149 ST JOSEPH
151 SANILAC
153 SCHOOLCRAFT
155 SHIAWASSEE
157 TUSCOLA
159 VAN BUREN
161 WASHTENAW
163 WAYNE
165 WEXFORD

27 MINNESOTA

001 AITKIN
003 ANOKA
005 BECKER
007 BELTRAMI
009 BENTON
011 BIG STONE
013 BLUE EARTH
015 BROWN
017 CARLTON
019 CARVER
021 CASS
023 CHIPPEWA
025 CHISAGO
027 CLAY
029 CLEARWATER
031 COOK
033 COTTONWOOD
035 CROW WING
037 DAKOTA
039 DODGE
041 DOUGLAS
043 FARIBAULT
045 FILLMORE
047 FREEBORN
049 GOODHUE
051 GRANT
053 HENNEPIN
055 HOUSTON
057 HUBBARD
059 ISANTI
061 ITASCA
063 JACKSON
065 KANABEC
067 KANDIYOHI
069 KITTSON
071 KOOCHICHING
073 LAC QUI PARLE
075 LAKE
077 LAKE OF THE WOODS
079 LE SUEUR
081 LINCOLN
083 LYON
085 MCLEOD
087 MAHNOMEN
089 MARSHALL
091 MARTIN
093 MEEKER
095 MILLE LACS
097 MORRISON
099 MOWER
101 MURRAY
103 NICOLLET
105 NOBLES
107 NORMAN
109 OLMSTED
111 OTTER TAIL
113 PENNINGTON
115 PINE
117 PIPESTONE
119 POLK
121 POPE
123 RAMSEY
125 RED LAKE
127 REDWOOD
129 RENVILLE
131 RICE
133 ROCK
135 ROSEAU
137 ST LOUIS
139 SCOTT
141 SHERBURNE
143 SIBLEY
145 STEARNS
147 STEELE
149 STEVENS
151 SWIFT
153 TODD
155 TRAVERSE
157 WABASHA
159 WADENA
161 WASECA
163 WASHINGTON
165 WATONWAN
167 WILKIN
169 WINONA
171 WRIGHT
173 YELLOW MEDICINE

28 MISSISSIPPI

001 ADAMS
003 ALCORN
005 AMITE
007 ATTALA
009 BENTON
011 BOLIVAR
013 CALHOUN
015 CARROLL
017 CHICKASAW
019 CHOCTAW
021 CLAIBORNE
023 CLARKE
025 CLAY
027 COAHOMA
029 COPIAH
031 COVINGTON
033 DE SOTO
035 FORREST
037 FRANKLIN
039 GEORGE
041 GREENE
043 GRENADA
045 HANCOCK
047 HARRISON
049 HINDS
051 HOLMES
053 HUMPHREYS
055 ISSAQUENA
057 ITAWAMBA
059 JACKSON
061 JASPER
063 JEFFERSON
065 JEFFERSON DAVIS
067 JONES
069 KEMPER
071 LAFAYETTE
073 LAMAR
075 LAUDERDALE
077 LAWRENCE
079 LEAKE
081 LEE
083 LEFLORE
085 LINCOLN
087 LOWNDES
089 MADISON
091 MARION
093 MARSHALL
095 MONROE
097 MONTGOMERY
099 NESHOBA
101 NEWTON
103 NOXUBEE
105 OKTIBBEHA
107 PANOLA
109 PEARL RIVER
111 PERRY
113 PIKE
115 PNTOTOC
117 PRENTISS
119 QUITMAN
121 RANKIN
123 SCOTT
125 SHARKEY
127 SIMPSON
129 SMITH
131 STONE
133 SUNFLOWER
135 TALLAHATCHIE
137 TATE
139 TIPPAH
141 TISHOMINGO
143 TUNICA
145 UNION
147 WALTHALL
149 WARREN
151 WASHINGTON
153 WAYNE
155 WEBSTER
157 WILKINSON
159 WINSTON
161 YALOBUSHA
163 YAZOO

29 MISSOURI

001 ADAIR
003 ANDREW
005 ATCHISON
007 AUDRAIN
009 BARRY
011 BARTON
013 BATES
015 BENTON
017 BOLLINGER
019 BOONE
021 BUCHANAN
023 BUTLER
025 CALDWELL
027 CALLAWAY
029 CAMDEN
031 CAPE GIRARDEAU
033 CARROLL
035 CARTER
037 CASS
039 CEDAR
041 CHARITON
043 CHRISTIAN
045 CLARK
047 CLAY
049 CLINTON
051 COLE
053 COOPER
055 CRAWFORD
057 DADE
059 DALLAS
061 DAVIESS
063 DE KALB
065 DENT
067 DOUGLAS
069 DUNKLIN
071 FRANKLIN
073 GASCONADE
075 GENTRY
079 GRUNDY
081 HARRISON
083 HENRY
085 HICKORY
087 HOLT
089 HOWARD
091 HOWELL
093 IRON
095 JACKSON
097 JASPER
099 JEFFERSON
101 JOHNSON
103 KNOX
105 LACLEDE
107 LAFAYETTE
109 LAWRENCE
111 LEWIS
113 LINCOLN
115 LINN
117 LIVINGSTON
119 MCDONALD
121 MACON
123 MADISON
125 MARIES
127 MARION
129 MERCER
131 MILLER
133 MISSISSIPPI
135 MONITEAU
137 MONROE
139 MONTGOMERY
141 MORGAN
143 NEW MADRID
145 NEWTON
147 NODAWAY
149 OREGON
151 OSAGE
153 OZARK
155 PEMISCOT
157 PERRY
159 PETTIS
161 PHELPS
163 PIKE
165 PLATTE
167 POLK
169 PULASKI
171 PUTNAM
173 RALLS
175 RANDOLPH
177 RAY
179 REYNOLDS
181 RIPLEY
183 ST CHARLES
185 ST CLAIR
186 ST GENEVIEVE
187 ST FRANCOIS
189 ST LOUIS
195 SALINE
197 SCHUYLER
199 SCOTLAND
201 SCOTT
203 SHANNON
205 SHELBY
207 STODDARD
209 STONE
211 SULLIVAN
213 TANEY
215 TEXAS
217 VERNON
219 WARREN
221 WASHINGTON
223 WAYNE
225 WEBSTER
227 WORTH
229 WRIGHT
510 ST LOUIS CITY

30 MONTANA

001 BEAVERHEAD
003 BIG HORN
005 BLAINE
007 BROADWATER
009 CARBON
011 CARTER
013 CASCADE
015 CHOUTEAU
017 CUSTER
019 DANIELS
021 DAWSON
023 DEER LODGE
025 FALLON
027 FERGUS
029 FLATHEAD
031 GALLATIN
033 GARFIELD
035 GLACIER
037 GOLDEN VALLEY
039 GRANITE
041 HILL
043 JEFFERSON
045 JUDITH BASIN
047 LAKE
049 LEWIS AND CLARK
051 LIBERTY
053 LINCOLN
055 MCCONE
057 MADISON
059 MEAGHER
061 MINERAL
063 MISSOULA
065 MUSSELSHELL
067 PARK
069 PETROLEUM
071 PHILLIPS
073 PONDERA
075 POWDER RIVER
077 POWELL
079 PRAIRIE
081 RAVALLI
083 RICHLAND
085 ROOSEVELT
087 ROSEBUD
089 SANDERS
091 SHERIDAN
093 SILVER BOW
095 STILLWATER
097 SWEET GRASS
099 TETON
101 TOOLE
103 TREASURE
105 VALLEY
107 WHEATLAND
109 WIBAUX
111 YELLOWSTONE
113 YELLOWSTONE NATIONAL PARK

31 NEBRASKA

001 ADAMS
003 ANTELOPE
005 ARTHUR
007 BANNER
009 BLAINE
011 BOONE
013 BOX BUTTE
015 BOYD
017 BROWN
019 BUFFALO
021 BURT
023 BUTLER
025 CASS
027 CEDAR
029 CHASE
031 CHERRY
033 CHEYENNE
035 CLAY
037 COLFAX
039 CUMING
041 CUSTER
043 DAKOTA
045 DAWES
047 DAWSON
049 DEUEL
051 DIXON
053 DODGE
055 DOUGLAS
057 DUNDY
059 FILLMORE
061 FRANKLIN
063 FRONTIER
065 FURNAS
067 GAGE
069 GARDEN
071 GARFIELD
073 GOSPER
075 GRANT
077 GREELEY
079 HALL
081 HAMILTON
083 HARLAN
085 HAYES
087 HITCHCOCK
089 HOLT
091 HOOKER
093 HOWARD
095 JEFFERSON
097 JOHNSON
099 KEARNEY
101 KEITH
103 KEYA PAHA
105 KIMBALL
107 KNOX
109 LANCASTER
111 LINCOLN
113 LOGAN
115 LOUP
117 MCPHERSON
119 MADISON
121 MERRICK
123 MORRILL
125 NANCE
127 NEMAHA
129 NUCKOLLS
131 OTOE
133 PAWNEE
135 PERKINS
137 PHELPS
139 PIERCE
141 PLATTE
143 POLK
145 RED WILLOW
147 RICHARDSON
149 ROCK
151 SALINE
153 SARPY
155 SAUNDERS
157 SCOTTS BLUFF
159 SEWARD
161 SHERIDAN
163 SHERMAN
165 SIOUX
167 STANTON
169 THAYER
171 THOMAS
173 THURSTON
175 VALLEY
177 WASHINGTON
179 WAYNE
181 WEBSTER
183 WHEELER
185 YORK

32 NEVADA

001 CHURCHILL	013 HUMBOLDT	027 PERSHING
003 CLARK	015 LANDER	029 STOREY
005 DOUGLAS	017 LINCOLN	031 WASHOE
007 ELKO	019 LYON	033 WHITE PINE
009 ESMERALDA	021 MINERAL	510 CARSON CITY
011 EUREKA	023 NYE	

33 NEW HAMPSHIRE

001 BELKNAP	009 GRAFTON	017 STRAFFORD
003 CARROLL	011 HILLSBOROUGH	019 SULLIVAN
005 CHESHIRE	013 MERRIMACK	
007 COOS	015 ROCKINGHAM	

34 NEW JERSEY

001 ATLANTIC	015 GLOUCESTER	029 OCEAN
003 BERGEN	017 HUDSON	031 PASSAIC
005 BURLINGTON	019 HUNTERDON	033 SALEM
007 CAMDEN	021 MERCER	035 SOMERSET
009 CAPE MAY	023 MIDDLESEX	037 SUSSEX
011 CUMBERLAND	025 MONMOUTH	039 UNION
013 ESSEX	027 MORRIS	041 WARREN

35 NEW MEXICO

001 BERNALILLO	021 HARDING	041 ROOSEVELT
003 CATRON	023 HIDALGO	043 SANDOVAL
005 CHAVES	025 LEA	045 SAN JUAN
006 CIBOLA	027 LINCOLN	047 SAN MIGUEL
007 COLFAX	028 LOS ALAMOS	049 SANTA FE
009 CURRY	029 LUNA	051 SIERRA
011 DE BACA	031 MCKINLEY	053 SOCORRO
013 DONA ANA	033 MORA	055 TAOS
015 EDDY	035 OTERO	057 TORRANCE
017 GRANT	037 QUAY	059 UNION
019 GUADALUPE	039 RIO ARRIBA	061 VALENCIA

36 NEW YORK

001 ALBANY
003 ALLEGANY
005 BRONX
007 BROOME
009 CATTARAUGUS
011 CAYUGA
013 CHAUTAUQUA
015 CHEMUNG
017 CHENANGO
019 CLINTON
021 COLUMBIA
023 CORTLAND
025 DELAWARE
027 DUTCHESS
029 ERIE
031 ESSEX
033 FRANKLIN
035 FULTON
037 GENESEE
039 GREENE
041 HAMILTON
043 HERKIMER
045 JEFFERSON
047 KINGS
049 LEWIS
051 LIVINGSTON
053 MADISON
055 MONROE
057 MONTGOMERY
059 NASSAU
061 NEW YORK
063 NIAGARA
065 ONEIDA
067 ONONDAGA
069 ONTARIO
071 ORANGE
073 ORLEANS
075 OSWEGO
077 OTSEGO
079 PUTNAM
081 QUEENS
083 RENSSELAER
085 RICHMOND
087 ROCKLAND
089 ST LAWRENCE
091 SARATOGA
093 SCHENECTADY
095 SCHOHARIE
097 SCHUYLER
099 SENECA
101 STEUBEN
103 SUFFOLK
105 SULLIVAN
107 TIOGA
109 TOMPKINS
111 ULSTER
113 WARREN
115 WASHINGTON
117 WAYNE
119 WESTCHESTER
121 WYOMING
123 YATES

37 NORTH CAROLINA

001 ALAMANCE
003 ALEXANDER
005 ALLEGHANY
007 ANSON
009 ASHE
011 AVERY
013 BEAUFORT
015 BERTIE
017 BLADEN
019 BRUNSWICK
021 BUNCOMBE
023 BURKE
025 CABARRUS
027 CALDWELL
029 CAMDEN
031 CARTERET
033 CASWELL
035 CATAWBA
037 CHATHAM
039 CHEROKEE
041 CHOWAN
043 CLAY
045 CLEVELAND
047 COLUMBUS
049 CRAVEN
051 CUMBERLAND
053 CURRITUCK
055 DARE
057 DAVIDSON
059 DAVIE
061 DUPLIN
063 DURHAM
065 EDGECOMBE
067 FORSYTH
069 FRANKLIN
071 GASTON
073 GATES
075 GRAHAM
077 GRANVILLE
079 GREENE
081 GUILFORD
083 HALIFAX
085 HARNETT
087 HAYWOOD
089 HENDERSON
091 HERTFORD
093 HOKE
095 HYDE
097 IREDELL
099 JACKSON
101 JOHNSTON
103 JONES
105 LEE
107 LENOIR
109 LINCOLN
111 MCDOWELL
113 MACON
115 MADISON
117 MARTIN
119 MECKLENBURG
121 MITCHELL
123 MONTGOMERY
125 MOORE
127 NASH
129 NEW HANOVER
131 NORTHAMPTON
133 ONSLOW
135 ORANGE
137 PAMLICO
139 PASQUOTANK
141 PENDER
143 PERQUIMANS
145 PERSON
147 PITT
149 POLK
151 RANDOLPH
153 RICHMOND
155 ROBESON
157 ROCKINGHAM
159 ROWAN
161 RUTHERFORD
163 SAMPSON
165 SCOTLAND
167 STANLY
169 STOKES
171 SURRY
173 SWAIN
175 TRANSYLVANIA
177 TYRRELL
179 UNION
181 VANCE
183 WAKE
185 WARREN
187 WASHINGTON
189 WATAUGA
191 WAYNE
193 WILKES
195 WILSON
197 YADKIN
199 YANCEY

38 NORTH DAKOTA

001 ADAMS
003 BARNES
005 BENSON
007 BILLINGS
009 BOTTINEAU
011 BOWMAN
013 BURKE
015 BURLEIGH
017 CASS
019 CAVALIER
021 DICKEY
023 DIVIDE
025 DUNN
027 EDDY
029 EMMONS
031 FOSTER
033 GOLDEN VALLEY
035 GRAND FORKS
037 GRANT
039 GRIGGS
041 HETTINGER
043 KIDDER
045 LA MOURE
047 LOGAN
049 MCHENRY
051 MCINTOSH
053 MCKENZIE
055 MCLEAN
057 MERCER
059 MORTON
061 MOUNTRAIL
063 NELSON
065 OLIVER
067 PEMBINA
069 PIERCE
071 RAMSEY
073 RANSOM
075 RENVILLE
077 RICHLAND
079 ROLETTE
081 SARGENT
083 SHERIDAN
085 SIOUX
087 SLOPE
089 STARK
091 STEELE
093 STUTSMAN
095 TOWNER
097 TRAILL
099 WALSH
101 WARD
103 WELLS
105 WILLIAMS

39 OHIO

001 ADAMS
003 ALLEN
005 ASHLAND
007 ASHTABULA
009 ATHENS
011 AUGLAIZE
013 BELMONT
015 BROWN
017 BUTLER
019 CARROLL
021 CHAMPAIGN
023 CLARK
025 CLERMONT
027 CLINTON
029 COLUMBIANA
031 COSHOCTON
033 CRAWFORD
035 CUYAHOGA
037 DARKE
039 DEFIANCE
041 DELAWARE
043 ERIE
045 FAIRFIELD
047 FAYETTE
049 FRANKLIN
051 FULTON
053 GALLIA
055 GEAUGA
057 GREENE
059 GUERNSEY
061 HAMILTON
063 HANCOCK
065 HARDIN
067 HARRISON
069 HENRY
071 HIGHLAND
073 HOCKING
075 HOLMES
077 HURON
079 JACKSON
081 JEFFERSON
083 KNOX
085 LAKE
087 LAWRENCE
089 LICKING
091 LOGAN
093 LORAIN
095 LUCAS
097 MADISON
099 MAHONING
101 MARION
103 MEDINA
105 MEIGS
107 MERCER
109 MIAMI
111 MONROE
113 MONTGOMERY
115 MORGAN
117 MORROW
119 MUSKINGUM
121 NOBLE
123 OTTAWA
125 PAULDING
127 PERRY
129 PICKAWAY
131 PIKE
133 PORTAGE
135 PREBLE
137 PUTNAM
139 RICHLAND
141 ROSS
143 SANDUSKY
145 SCIOTO
147 SENECA
149 SHELBY
151 STARK
153 SUMMIT
155 TRUMBULL
157 TUSCARAWAS
159 UNION
161 VAN WERT
163 VINTON
165 WARREN
167 WASHINGTON
169 WAYNE
171 WILLIAMS
173 WOOD
175 WYANDOT

40 OKLAHOMA

001 ADAIR
003 ALFALFA
005 ATOKA
007 BEAVER
009 BECKHAM
011 BLAINE
013 BRYAN
015 CADDO
017 CANADIAN
019 CARTER
021 CHEROKEE
023 CHOCTAW
025 CIMARRON
027 CLEVELAND
029 COAL
031 COMANCHE
033 COTTON
035 CRAIG
037 CREEK
039 CUSTER
041 DELAWARE
043 DEWEY
045 ELLIS
047 GARFIELD
049 GARVIN
051 GRADY
053 GRANT
055 GREER
057 HARMON
059 HARPER
061 HASKELL
063 HUGHES
065 JACKSON
067 JEFFERSON
069 JOHNSTON
071 KAY
073 KINGFISHER
075 KIOWA
077 LATIMER
079 LE FLORE
081 LINCOLN
083 LOGAN
085 LOVE
087 MCCLAIN
089 MCCURTAIN
091 MCINTOSH
093 MAJOR
095 MARSHALL
097 MAYES
099 MURRAY
101 MUSKOGEE
103 NOBLE
105 NOWATA
107 OKFUSKEE
109 OKLAHOMA
111 OKMULGEE
113 OSAGE
115 OTTAWA
117 PAWNEE
119 PAYNE
121 PITTSBURG
123 PONTOTOC
125 POTTAWATOMIE
127 PUSHMATAHA
129 ROGER MILLS
131 ROGERS
133 SEMINOLE
135 SEQUOYAH
137 STEPHENS
139 TEXAS
141 TILLMAN
143 TULSA
145 WAGONER
147 WASHINGTON
149 WASHITA
151 WOODS
153 WOODWARD

41 OREGON

001 BAKER
003 BENTON
005 CLACKAMAS
007 CLATSOP
009 COLUMBIA
011 COOS
013 CROOK
015 CURRY
017 DESCHUTES
019 DOUGLAS
021 GILLIAM
023 GRANT
025 HARNEY
027 HOOD RIVER
029 JACKSON
031 JEFFERSON
033 JOSEPHINE
035 KLAMATH
037 LAKE
039 LANE
041 LINCOLN
043 LINN
045 MALHEUR
047 MARION
049 MORROW
051 MULTNOMAH
053 POLK
055 SHERMAN
057 TILLAMOOK
059 UMATILLA
061 UNION
063 WALLOWA
065 WASCO
067 WASHINGTON
069 WHEELER
071 YAMHILL

42 PENNSYLVANIA

001 ADAMS
003 ALLEGHENY
005 ARMSTRONG
007 BEAVER
009 BEDFORD
011 BERKS
013 BLAIR
015 BRADFORD
017 BUCKS
019 BUTLER
021 CAMBRIA
023 CAMERON
025 CARBON
027 CENTRE
029 CHESTER
031 CLARION
033 CLEARFIELD
035 CLINTON
037 COLUMBIA
039 CRAWFORD
041 CUMBERLAND
043 DAUPHIN
045 DELAWARE
047 ELK
049 ERIE
051 FAYETTE
053 FOREST
055 FRANKLIN
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