# Community Assessment for Public Health Emergency Response (CASPER) Toolkit

*Second Edition*

**Centers for Disease Control and Prevention**

**National Center for Environmental Health**

**Environmental Hazards and Health Effects**

**Health Studies Branch**

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## Disclaimer

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

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## Common abbreviations

**CASPER**: Community Assessment for Public Health Emergency Response

**CDC**: Centers for Disease Control and Prevention

**EPI**: Expanded Program on Immunization

**FEMA**: Federal Emergency Management Agency

**GIS**: Geographic Information System

**GPS**: Global Positioning System

**HSB**: Health Studies Branch, Division of Environmental Hazards and Health Effects, National Center for Environmental Health, Centers for Disease Control and Prevention

**MMWR**: Morbidity and Mortality Weekly Report

**PDA**: Personal Digital Assistant

**WHO**: World Health Organization

## Glossary of terms

**Block**—a subdivision of a census tract (or, prior to 2000, a block numbering area). A block is the smallest geographic unit for which the Census Bureau tabulates 100% data. Many blocks correspond to individual city blocks bounded by streets, but, especially in rural areas, blocks may include many square miles and may have some boundaries that are not streets.

**Block group**—a subdivision of a census tract (or, prior to 2000, a block numbering area). A block group is the smallest geographic unit for which the Census Bureau tabulates sample data. A block group consists of all the blocks within a census tract with the same beginning number.

**CASPER**—**C**ommunity **As**sessment for **P**ublic Health **E**mergency **R**esponse: an epidemiologic tool designed to provide to decision-makers household-based information about an affected community's needs quickly and in a simple format.

**Census**—the enumeration of an entire population usually with details being recorded on residence, age, sex, occupation, ethnic group, and marital status. The United States conducts a census every 10 years; at the time of publication of this document, the most recent census was in 2010.

**Census tract**—a small, relatively permanent geographic entity within a county (or the statistical equivalent of a county) delineated by a committee of local data users. Generally, census tracts have between 2,500 and 8,000 residents and boundaries that follow visible features. When first established, census tracts are as homogeneous as possible with respect to population characteristics, economic status, and living conditions.

**Cluster**—for the purpose of CASPER, a cluster is a small group of households, or occupied housing units, within a geographic unit (e.g., a block or block group) that is within the sampling frame being assessed.

**Cluster sampling**—a form of probability sampling in which respondents are drawn from a sample of mutually exclusive groups (i.e., clusters) within a total population.

**Completion rate**—a type of response rate; the number of completed interviews, with reporting units divided by the goal number of completed interviews (for CASPER, this goal is usually 210). See *response rate.*

**Contact rate**—a type of response rate; the number of completed interviews divided by the total number of housing units at which contact was attempted. The denominator includes the number of completed interviews, incomplete interviews, refusals, and non-respondents (i.e., housing units in which no one was at home or that were unsafe to approach). See *response rate.*

**Confidence interval**—the range around a numeric statistical value obtained from a sample, within which the actual, corresponding value for the population is likely to fall, at a given level of probability (e.g., 95%).

**Confidence limit**—the minimum and maximum value of a confidence interval.

**Confidentiality**—condition or type of communication between two or more people in which the information is accessible only to those authorized to have access and may not be discussed or disclosed to third parties.

**Cooperation rate**—a type of response rate; the number of completed interviews divided by all eligible housing units that were contacted. The denominator includes the number of completed interviews, incomplete interviews, and refusals. See *response rate.*

**Disaster**—a serious disruption of the functioning of society, causing widespread human, material, or environmental losses and exceeding the local capacity to respond requiring external assistance.

**Disaster epidemiology**—use of epidemiology to assess the short- and long-term adverse health effects of disasters and to predict consequences of future disasters (See *epidemiology*).

**Disaster-related health effects**

*Direct*—health effects caused by the actual physical forces or essential elements of the disaster.

*Indirect*—health effects caused secondarily by anticipation of the disaster or by unsafe/unhealthy conditions that develop due to the effects of the disaster.

**Eligible household**—for the purposes of CASPER, a household within a selected cluster that is selected at random for interview and in which at least one adult (18 years or older) lives.

**Epidemiology**—the quantitative study of the distribution and determinants of health-related events in human populations.

**Epi Info™**—a statistical software package freely provided by CDC (http://wwwn.cdc.gov/epiinfo/7/index.htm) for entering and analyzing data.

**Health Impact Assessment**—a combination of procedures, methods, and tools by which a policy, program, or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population.

**Household**—a household includes all the individuals who occupy a housing unit as their usual place of residence.

**Housing unit**—a house, an apartment, a mobile home, a group of rooms, or a single room that is intended to be occupied as separate living quarters.

**Natural disaster**—ecological disruption causing human, material, or environmental losses that exceed the ability of the affected community to cope by using its own resources, often requiring outside assistance.

**Occupied housing unit**—a usual place of residence of the person or group of people living therein at the time of Census enumeration, even if the occupants are only temporarily absent.

**Probability weight**—a factor/value applied to each element in a sample in order to adjust for differences in the likelihood of selection. For CASPER, this is a value assigned to each household (i.e., each interview) that represents the inverse probability of its selection from the sampling frame, given the sampling design. Results calculated by use of the probability weight are representative of the entire sampling frame.

**Proportion**—a type of ratio in which the numerator is included in the denominator A proportion, or ratio of a part to the whole, is usually expressed as a decimal (e.g., 0.2), a fraction (e.g., 1/5), or a percentage (e.g., 20%).

**Random number**—a number selected by chance.

**Random sample**—probability sampling in which a subset of individuals (a sample) is chosen from a larger set (a population or sampling frame) randomly and entirely by chance, in such a way that each individual has the same probability of being chosen at any stage during the sampling process. See *sampling.*

**Representative sample**—a sub-group representing the total population, or sampling frame.

**Response rate**—the number of completed interviews divided by the total number of housing units sought or attempted. See *contact rate, completion rate, and cooperation rate.*

**Sampling**—the selection of a subset of individual observations within a population of individuals intended to yield some knowledge about the population of concern; sampling can be random or non-random, and representative or non-representative. See also *random sampling, stratified sampling, systematic sampling,* and *target sampling.*

**Sampling design**—the specification of the sampling frame, sample size, and the system for selecting and contacting individual respondents from the population.

**Sampling frame**—the entire population within the selected assessment area from which a sample is drawn. The *sample* is a subset of the larger *sampling frame*.

**Stratified sample**—a sample selected by grouping members of the population into relatively homogeneous subgroups and then applying random or systematic sampling within each stratum. See *sampling.*

**Systematic random sample**—a sample in which the target population is arranged according to an ordering scheme, with elements of it then selected at regular intervals through that ordered list. See *sampling.*

**Target sample**—a type of non-probability sample in which sample elements are chosen on the basis of some non-random characteristic (e.g., choosing the most severely damaged homes for interviews). See *sampling.*

**Weight**—the inverse of the probability that a given household will be included in the sample due to the sampling design. For the purpose of CASPER, the weight is the total number of housing units (HUs) in the sampling frame divided by the number of clusters selected (e.g., 30), multiplied by the number of interviews completed within the cluster.

$$\text{Weight} = \frac{\text{Total number of housing units in sampling frame}}{(\text{number of housing units interviewed within cluster})*(\text{number of clusters selected})}$$

## 1. Executive Summary

Following any type of disaster, public health and emergency management professionals must be prepared to respond to and meet the needs of the affected public. The Community Assessment for Public Health Emergency Response (CASPER) enables public health practitioners and emergency management officials to determine rapidly the health status and basic needs of the affected community. CASPER uses valid statistical methods to gather information about health and basic needs, allowing public health and emergency managers to prioritize their response and distribution of resources accurately. Without information on the community, public health officials may make decisions based on anecdotal information; such decisions may not accurately reflect the need of the entire community.

The Centers for Disease Control and Prevention (CDC), National Center for Environmental Health, Division of Environmental Hazards and Health Effects, Health Studies Branch (HSB) published the first edition of the CASPER toolkit in 2009 and widely distributed the toolkit to the public health community. HSB developed this second edition to address partner feedback on the first edition and include advancements in technology and refinements in the methodology. This second edition is an updated guideline for field staff conducting CASPER.

Public health department personnel, emergency management officials, academics, or other disaster responders who wish to assess household-level public health needs will find this toolkit useful for rapid data collection during a disaster response. CASPER may also be used for conducting Health Impact Assessments (HIAs) or other community-level surveys during non-emergency situations.

## 2. Background

Every U.S. state and territory is at risk for one or more natural disasters that can result in a serious disruption of the functioning of society and cause widespread human, material, or environmental losses that exceed the local capacity to respond, resulting in the need for external assistance (1). Disasters can occur without warning and cause significant infrastructure damage and devastating financial loss. They can pose health risks, including physical injuries, illnesses, potential disease outbreaks, short- and long-term psychological effects, and death. The destruction of homes, damage to such local infrastructure as the water supply, electricity, and health facilities, and the interruption of such services as garbage pickup and social support networks can affect the well-being of a community (2). These disruptions often require rapid action by public health and local officials to mitigate the resulting adverse health effects, prevent as much damage as possible, and restore delivery of public services. Responding appropriately and effectively to the public health threats of disasters, whether natural or man-made, requires timely and accurate information.

Epidemiology should be an important component during a disaster response because its methods can provide scientific situational awareness. Epidemiologic activities can be used to identify health problems, establish priorities for decision-makers, and evaluate the effectiveness of response activities. One epidemiologic strategy is the Rapid Needs Assessment (RNA), which dates back to the early 1970s when field personnel pioneered the adaptation of traditional techniques to develop more simplified sampling methods and disease surveillance systems (3). Scientists in the World Health Organization's (WHO's) Expanded Program on Immunization (EPI) and Smallpox Eradication Program experienced temporal and fiscal constraints while using traditional epidemiologic tools to identify needs and assess the immunization status of communities in developing countries (4). In the United States during the 1980s, the National Academy of Sciences' Advisory Committee on Health, Biomedical Research, and Development (ACHBRD) identified the EPI sampling techniques and surveillance methods

as ideal for providing reliable health information more quickly and at less cost than traditional epidemiologic methods (5). In 1999, WHO issued the book *Rapid Health Assessment Protocols for Emergencies* to address the need for common, standardized, technical tools for assessing damage, gauging health risks, and gathering information for decision-makers following a disaster (6). These protocols are designed to help those involved in RNA and to assist in planning appropriate responses. In recent years, RNA has been frequently used by emergency officials and public health responders to gather information about the status of an affected population, particularly during an emergency response (7). RNAs are a relatively inexpensive and practical public health tool. They represent a first line of epidemiologic response to most types of disasters (8).

CASPER is a specific set of tools designed to provide quick, inexpensive, accurate, and reliable household-based public health information about communities affected by natural or man-made disasters. It uses a validated sampling methodology to collect information at the household level on the health status and basic needs of a community affected by a disaster. HSB uses the acronym *CASPER* to distinguish it as a household-based needs assessment and to avoid confusion with other RNA methodologies, such as the Federal Emergency Management Agency's RNA (9). HSB is nationally recognized as a source of disaster epidemiology expertise in providing assistance to public health agencies conducting need assessments to minimize the health effects of disasters on communities. HSB's Disaster Epidemiology and Response Team provides epidemiology knowledge and leadership to local, state, tribal, territorial, federal, and international partners through all stages of the disaster cycle—preparedness, response, recovery, and prevention—to allow them to prepare for and respond to natural and man-made public health disasters. HSB developed the CASPER toolkit to assist in this process through standardization of the assessment procedures to determine the health status and basic needs of the affected community. This toolkit provides guidelines on the four major phases of CASPER: preparing for the CASPER, conducting the CASPER, analyzing the data, and writing the report.

### 2.1 CASPER objectives

The primary goals of CASPER are to obtain information rapidly about the needs of an affected community and to monitor changes of needs during the recovery period. In the disaster setting, the main objectives of CASPER are to

- determine the critical health needs and assess the impact of the disaster,
- characterize the population residing in the affected area,
- produce household-based information and estimates for decision-makers, and
- evaluate the effectiveness of relief efforts through conducting a follow-up CASPER.

To accomplish these objectives, responders need to employ a timely response by using a carefully constructed assessment design in a defined geographic area.

### 2.2 When to conduct a CASPER

A CASPER can be conducted any time that the public health needs of a community are not well known, whether during a disaster response or within a non-emergency setting. During a disaster, the local, state, or regional emergency managers or health department officials may decide to initiate a CASPER when

- the effect of the disaster on the population is unknown,
- the health status and basic needs of the affected population are unknown, or
- the response and recovery efforts need to be evaluated.

While CASPER is a quick, reliable, and accurate technique that provides household-based information about a community's needs, it is not intended to provide direct services to residents (such as cleanup or home repair) or to deliver food, medicine, medical services, or other resources to the affected area. However, some households in need of services might be identified by use of CASPER and referrals made

to the appropriate agencies. CASPER also cannot determine why people are not returning to their community, nor can it establish current population estimates.

Although traditionally used during an emergency, CASPER can also be applied in non-emergency situations of the disaster life cycle. For example, during the recovery phase of a disaster, a CASPER can be conducted as a follow-up to a previous CASPER to assess the effectiveness of the response or program and determine ongoing needs (if any) in the community. Additionally, during the preparedness phase, a CASPER can be conducted to determine preparedness among the community such as evacuation and/or personnel readiness plans. CASPER has also been used to assess public health perceptions, determine current health status, and estimate the needs of a community during a non-emergency setting. For example, a CASPER can be conducted as part of a Health Impact Assessment (HIA) to assess a community's awareness and opinions concerning the impact of a project (e.g., a new transportation route) on health in the community. Regardless of the setting and objectives, once the decision to conduct a CASPER has been made, it can be initiated within 72 hours.

### 2.3 Considerations prior to conducting a CASPER

Prior to conducting a CASPER, public health officials should obtain detailed information about the assessment and planned activities. It is important to know the purpose, setting, and availability of resources *before* making the decision to conduct a CASPER (Table 1).

Table 1. Items to consider prior to conducting a CASPER

| ***Know the purpose*** |
| --- |
| **Who requested the CASPER?**<br>Knowing who requested the CASPER is important for clarifying the purpose. |
| **How is the CASPER information going to be used?**<br>Prior to conducting the CASPER, response officials' understanding of how the information will be used will help create a clear vision and narrow the data scope. Clear goals are imperative to ensuring that the appropriate data are collected to generate useful information for public health action. |

**Who are the relevant stakeholders?**

Identify and include all relevant stakeholders in the beginning stages to ensure smooth partnerships throughout the CASPER planning, activities, and report distribution. Be sure the CASPER fits into the larger response activities during the emergency by working within the Incident Command Structure (ICS) or the Incident Management System (IMS).

**When should the assessment be conducted?**

A CASPER can be conducted any time that the public health needs of a community, and the magnitude of those needs, are not well known, whether during a disaster response or within a non-emergency setting (e.g., for a Health Impact Assessment). During a response, the most essential needs of a community can change quickly. Therefore, the objectives should match the timing of the CASPER.

***Know your setting***

**What geographical area does the assessment cover?**

When determining the assessment area(s), it is important for public health officials to determine what area of the state, city, or county is affected. Therefore, officials should acquire maps of the affected area (e.g., from the National Weather Service for areas affected by a hurricane) to gain a better understanding of the geographical location, boundaries, and landmarks of the affected community.

**What are the demographics of the population to be assessed?**

Obtain recent census information (http://factfinder2.census.gov) to identify the demographic characteristics of the affected population. Other important information to obtain includes the geographic location of vulnerable populations and the potential or actual environmental vulnerabilities in the community.

**What information has been obtained from other assessments?**

Obtain information from local responders or from other assessments conducted (e.g., flyovers and area damage assessments) because such information may be beneficial in determining your assessment area(s).

| *Know your resources* |
| --- |
| **What resources are needed?**<br>• Teams: determine how many interview teams are needed to cover the desired area in the desired amount of time.<br>• Expertise: determine any special expertise needed to conduct the CASPER (e.g., a data analyst, a Geographic Information System (GIS) expert, an environmental scientist, a mental health professional) and how many of each are necessary.<br>• Equipment: determine what type of equipment is necessary (e.g., Personal Digital Assistants [PDAs], GIS systems, vehicles, radios) and how many of each type are necessary. |
| **What resources are available?**<br>Determine what type and how many of the following resources are available locally: personnel, transportation, communication devices, Global Positioning System (GPS) devices, and computers with Internet access and Epi Info™ (or other statistical software). If the resources are not available locally, determine how many must be requested from other agencies (e.g., state agencies or federal agencies such as CDC) to conduct the CASPER successfully. |

### 2.4 Working with partners

Working relationships between local, state, and federal partners, private or nongovernmental organizations, and educational institutions are built and fostered during the preparedness stage. They form the backbone for strong communication and collaboration during a response effort. These partnerships are integral to the successful completion of a CASPER. The number and type of partners in CASPER depends on the nature of the assessment. All partners should be interested in conducting a CASPER and in being beneficiaries of the assessment results. During the first phase of CASPER (Preparing for the CASPER), the role of each partner should be defined in terms of what each will contribute to the assessment. These contributions may include subject matter expertise, analytical support, materials, or ground information about the affected area. Potential partners for conducting a CASPER include, but are not limited to, the following:

- Local health departments
- State health departments
- Local and/or state Emergency Management Agencies (EMAs),
- The Centers for Disease Control and Prevention (http://emergency.cdc.gov/disasters/surveillance/)
- The U.S. Department of Health and Human Services, Office of the Assistant Secretary for Preparedness and Response (http://www.phe.gov/preparedness/pages/default.aspx)
- The Federal Emergency Management Agency (FEMA) Emergency Support Functions (ESF)#6 http://www.fema.gov/pdf/emergency/nrf/nrf-esf-06.pdf
- Neighboring states through the Emergency Management Assistance Compact (EMAC) (http://www.emacweb.org/)
- Colleges and universities
- The American Red Cross (http://www.redcross.org/)
- The Council of State and Territorial Epidemiologists (http://www.cste.org/dnn/).

## 3. Phase I: Prepare for the CASPER

This toolkit provides a guideline for collecting information by use of a standardized assessment of housing units (HUs) in a specified area. Prior to conducting a CASPER, partners should decide if CASPER provides an appropriate sampling methodology on the basis of the objectives, timeframe, and available resources**.** The preferred sampling method for CASPER is the two-stage cluster sampling design in which 30 clusters are selected and then 7 interviews are completed in each of the 30 clusters. The goal is to complete 210 interviews within the assessment area, and the data collected are then analyzed to generate estimates. To provide the basis for valid estimates, the interviews must be conducted according to an appropriate sampling method. The following describes how to select the clusters and households for interviews.

### 3.1 The assessment area(s)

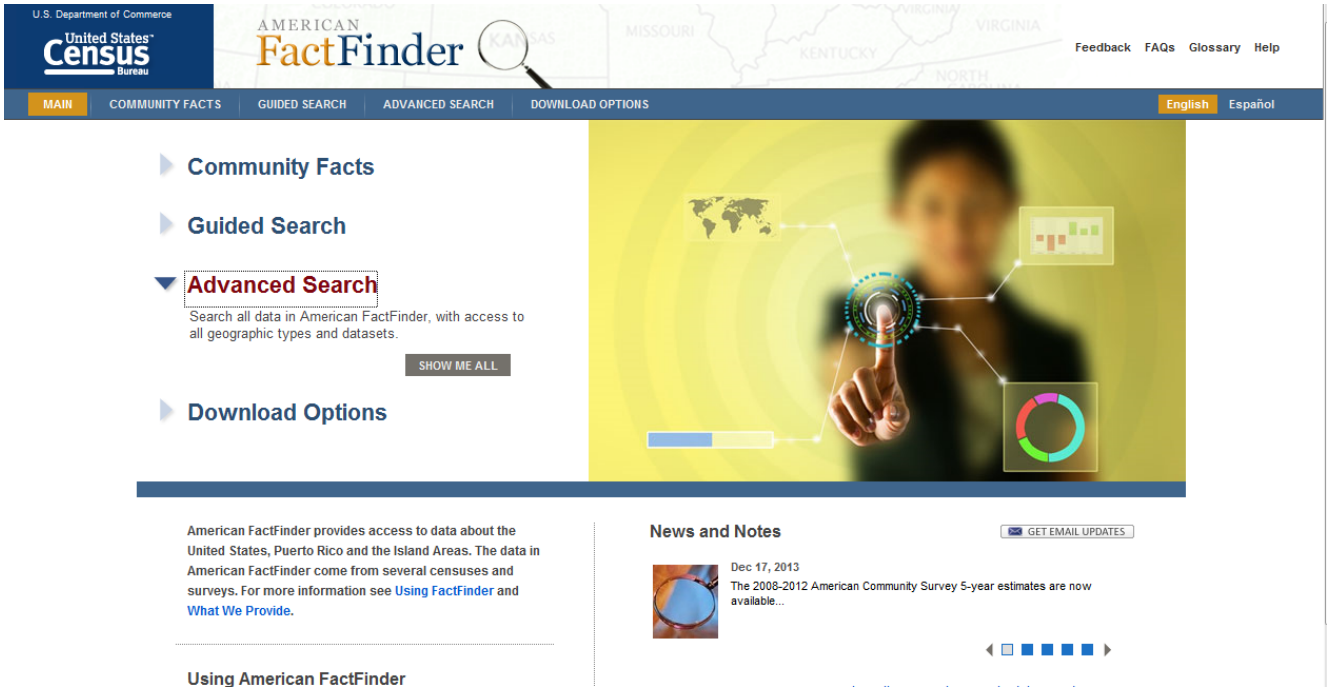
The assessment area(s) must be identified in the preparation phase. The assessment area(s) will serve as the "sampling frame" for CASPER—that is, the population from which the sample is drawn. At the completion of the CASPER, the results will be descriptive of the entire chosen sampling frame. The sampling frame can be defined by political boundaries (e.g., a county, a district, a city), by geographic boundaries (e.g., houses located in a specific direction from a landmark, such as a road or a river), or by selection of a specific community (e.g., the most affected area or a community without local health services). If areas that should be assessed differ drastically by the extent of damage, by social or geographic vulnerability, or by the nature of the jurisdictions responding to their needs, then separate sampling frames (i.e., separate CASPERs) for each specific area should be considered. As a general guide, a sampling frame should be no smaller than 800 housing units. For small sampling frames, consider attempting a full census or another non-clustered sampling method (e.g., simple random sampling or systematic random sampling).

Once the sampling frame has been defined, it must be divided into non-overlapping sections (referred to as *clusters*). U.S. census blocks are pre-defined and non-overlapping. Thus, census blocks are most commonly used as clusters in conducting a CASPER. For CASPER, selecting a sample requires a list of all clusters within the sampling frame, including the number of housing units within each cluster. This list can be obtained from the U.S. Census Website (http://factfinder2.census.gov) or by use of population-based shapefiles within such GIS software as ArcGIS, which was developed by the Environmental Systems Research Institute, Inc. (ESRI). Using GIS provides much more flexibility in the selection of a sampling frame by allowing the user to select portions of a county or counties to assess. If GIS capabilities are not available, then the sampling frame is restricted by the capabilities of the U.S. Census Website to entire county(ies) or zip code(s). Instructions for downloading the needed information from the Website are provided in section 3.1.1. Instructions for using GIS to select clusters are based on your specific GIS software, and therefore are not provided within this toolkit.

### 3.1.1 Obtaining sampling frame information by using U.S. Census Bureau data

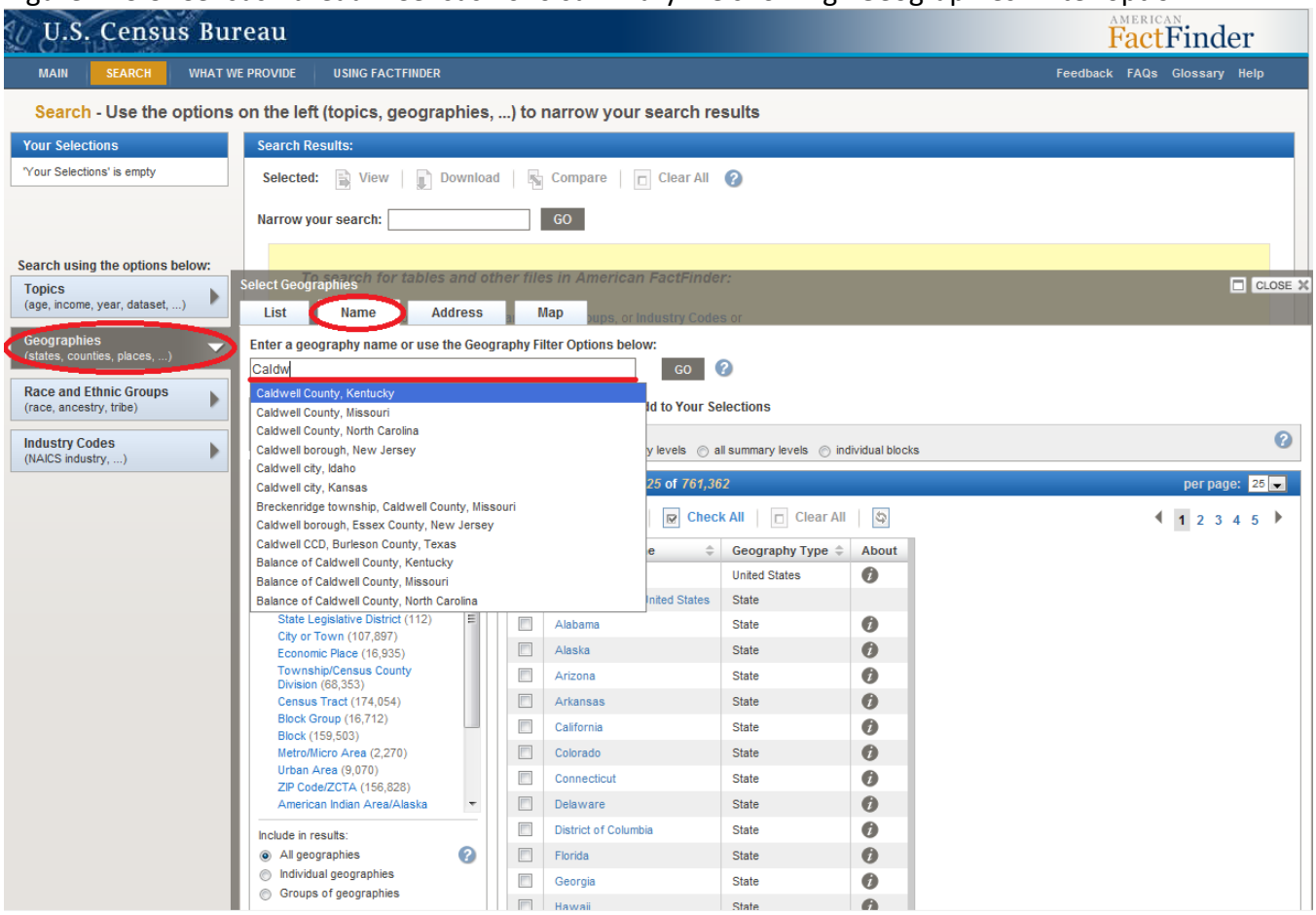
To obtain a list of all census blocks in a given county, proceed to the U.S. Census Website at http://factfinder2.census.gov (Figure 1).

Figure 1. U.S. Census Bureau—Census 2010 summary file Web page



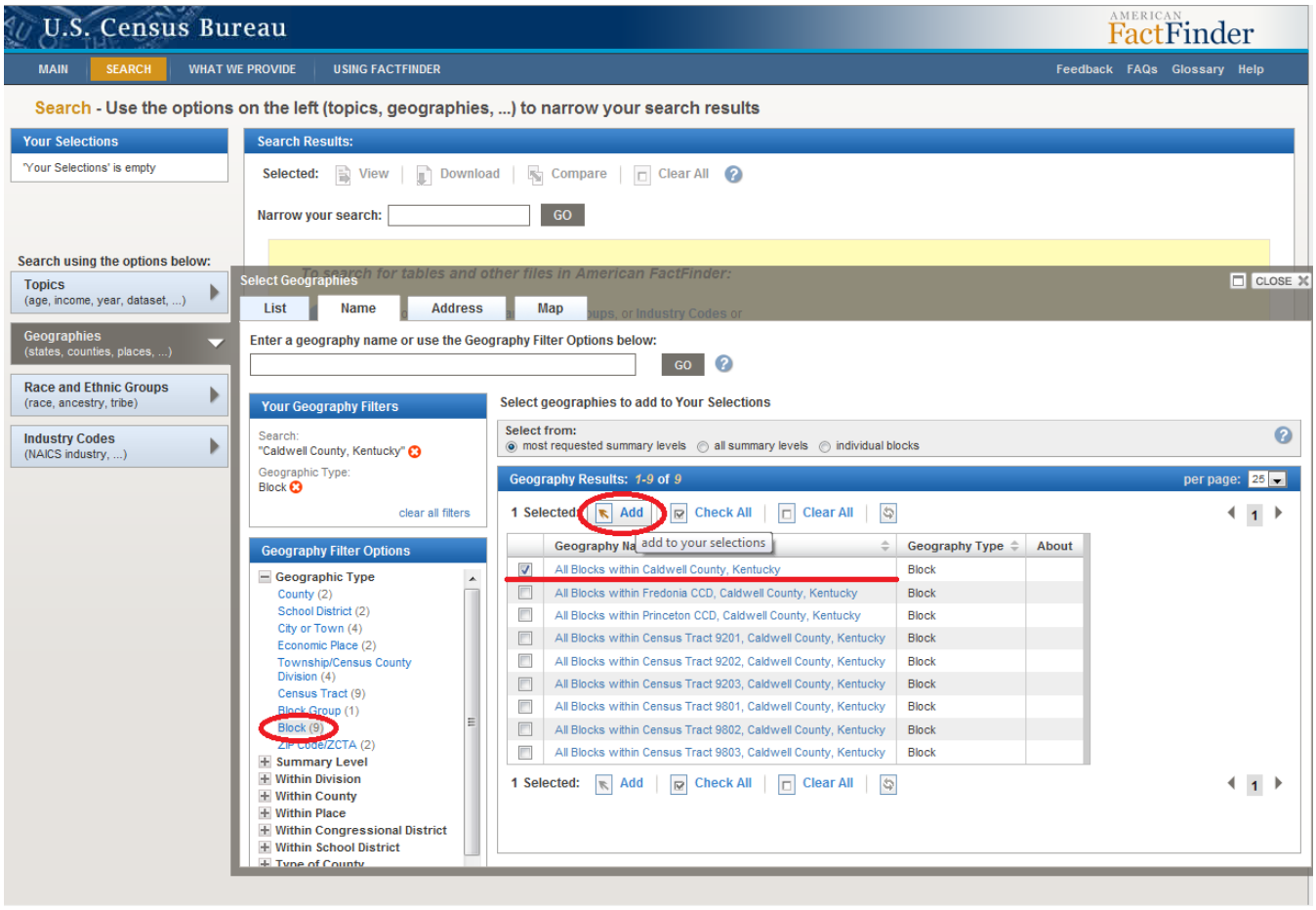
From this page, select “Advanced Search”, “Show me all” to navigate to the American Fact Finder data portal. Select “Geographies” from the left-hand column, click the “Name” tab (the second tab), type the name of the county and state that you have selected as the sampling frame in the space provided (e.g., Caldwell County, Kentucky), and click “Go” (Figure 2).

Figure 2. U.S. Census Bureau—Census 2010 summary file showing “Geographies” filter option



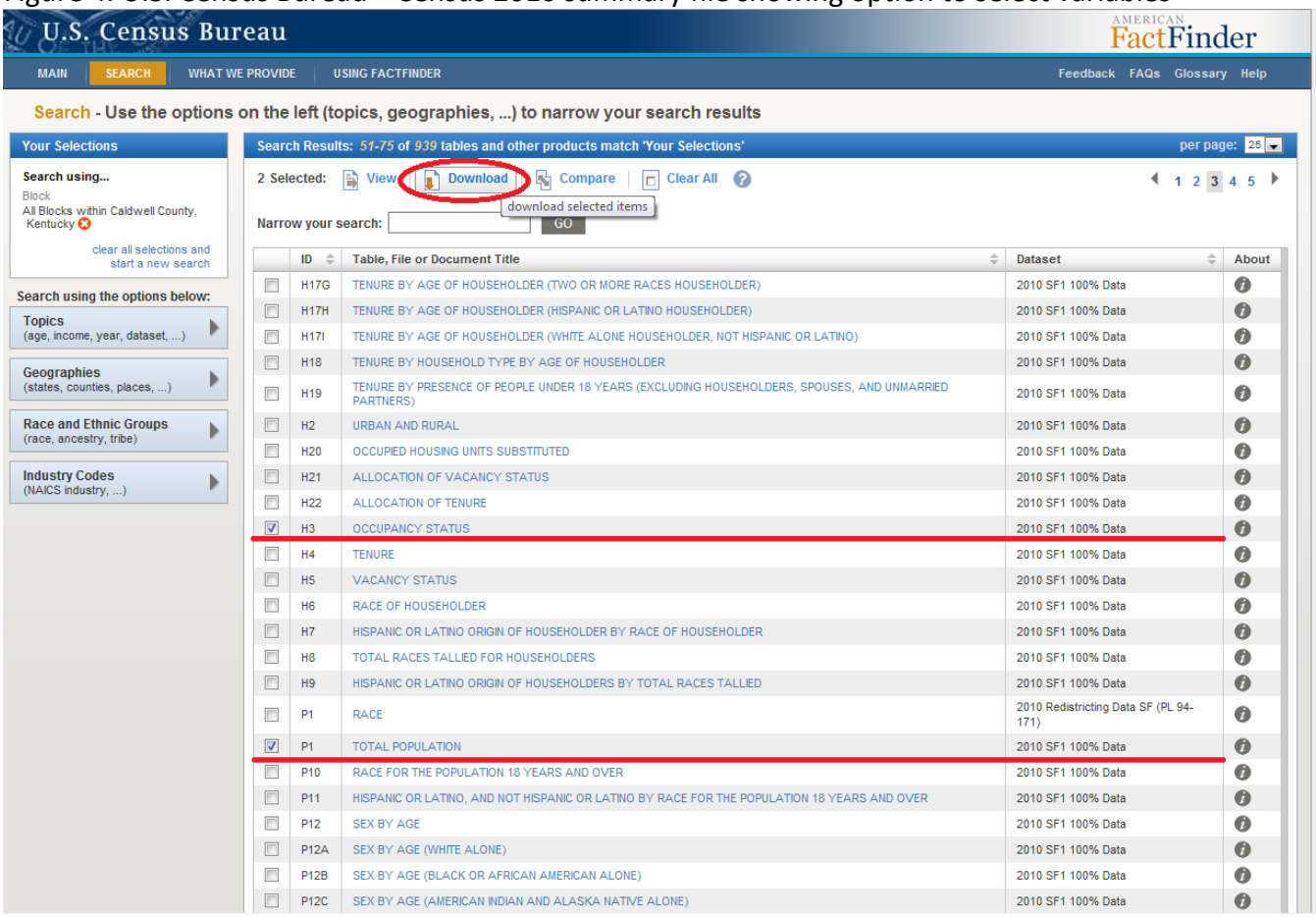
Under the “Geography Filter Options” column, expand the “Geographic Type” option and click on “Block”. Then, select the box next to the line that says “All Blocks within [your selected] County” (e.g., “All Blocks within Caldwell County, Kentucky”) and click “add”; close the pop-up “Select Geographies” window (Figure 3).

Figure 3. U.S. Census Bureau—Census 2010 summary file showing option to select geographic area



Select the relevant variables, which are “H3: occupancy status” and “P1: total population”, confirm that the selections are from the 2010 SF1 100% data file in the “Dataset” column, click “download” (it will take a few minutes for the Website to build the spreadsheet), and “save” (Figure 4).

Figure 4. U.S. Census Bureau—Census 2010 summary file showing option to select variables




This action will provide a zip folder, which, upon extraction, will contain a text file (.txt), a comma-delimited file (.csv), and an Excel file (.xls) that can be opened by use of most spreadsheet software. Merge (Appendix A) the single variable (“P1: population”) Excel file and the “H3: occupancy status” Excel file to create a dataset that shows all the selected variable information for each block (i.e., total population, as well as the occupied, vacant, and total housing units) (Figure 5).

### 3.1.2 The two-stage cluster sampling method

Including every house within a sampling frame in an assessment is expensive, time-intensive, and rare in the collection of detailed information from large populations. However, for smaller target populations, it may be more feasible to include every housing unit, in which case sampling is not necessary (10). Representative data can be collected more quickly by use of probability sampling methods. The data that are collected from a probability sample can be statistically weighted to extrapolate results that are reflective of the entire sampling frame. The following conditions will determine when sampling is necessary:

- the total number of housing units in the assessment area is large,
- the number of interview teams is limited, or
- the survey must be completed in a short amount of time (one or two days) because the results are needed quickly.

The preferred sampling method for CASPER is a two-stage cluster design. Other sampling methods, such as simple random sampling, systematic sampling, and stratified sampling, require a list of every housing unit in the affected area as well as size estimates for sample size calculations; such sampling may not be feasible during a disaster (10).

### 3.1.3 Stage one: Selecting 30 clusters and mapping

In the first stage of the CASPER sampling method, 30 clusters (i.e., census blocks) are selected, with their probability proportional to the estimated number of housing units (HUs) in each cluster. In the second stage, seven HUs are randomly selected in each of the 30 clusters for the purpose of conducting interviews (7–13).

Therefore, as discussed in Section 3.1.1, the CASPER sampling method requires a count of all eligible units divided into sections (i.e., clusters). The eligible unit for sampling can be occupied housing

units or total housing units (the latter category includes both occupied and vacant houses). Determining the eligible unit for sampling depends on the background information of the assessment area (e.g., a high number of vacant houses, rental condos, or recreational area, the amount of change since the last census) and the judgment of local authorities or leadership. If the assessment area is in a region known to have a high number of rental units, then it is recommended to use occupied HUs for sampling. Figure 5 shows an Excel spreadsheet with an excerpt from the list of all census blocks in Caldwell County, Kentucky, downloaded from the U.S. Census Website. Each row contains a census block and each column contains a different variable (e.g., Population, Occupied HUs, Total HUs) for each census block. In this example, total HUs is the sampling unit.

Figure 5. Excerpt from list of all census blocks in Caldwell County, Kentucky

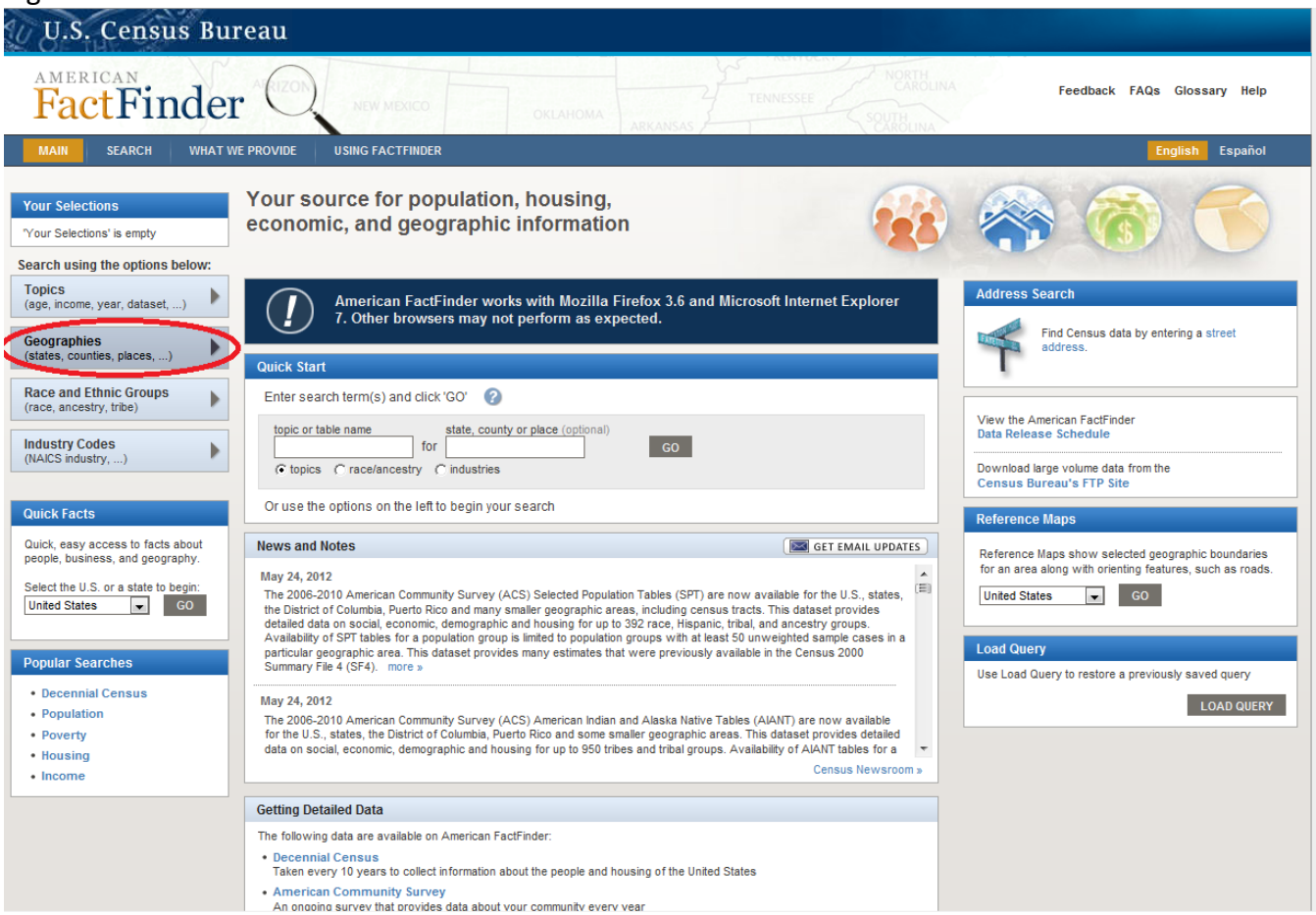
| A | B | C | D | E | F | G | H | I |
|---|---|---|---|---|---|---|---|---|
| GEO.id | GEO.id2 | GEO.display-label | Populatior | Occupied HU | Vacant HU | Total HUs | Cumulative HU | Random |
| 1000000US210339202004024 | 2.1E+14 | Block 4024, Block Group 4, Census Tract 9202, Caldwell County, | 4 | 3 | 1 | 4 | 2927 | |
| 1000000US210339202004025 | 2.1E+14 | Block 4025, Block Group 4, Census Tract 9202, Caldwell County, | 3 | 1 | 0 | 1 | 2928 | |
| 1000000US210339202004026 | 2.1E+14 | Block 4026, Block Group 4, Census Tract 9202, Caldwell County, | 17 | 9 | 3 | 12 | 2940 | 2933 |
| 1000000US210339202004027 | 2.1E+14 | Block 4027, Block Group 4, Census Tract 9202, Caldwell County, | 15 | 9 | 2 | 11 | 2951 | |
| 1000000US210339202004028 | 2.1E+14 | Block 4028, Block Group 4, Census Tract 9202, Caldwell County, | 16 | 7 | 3 | 10 | 2961 | |
| 1000000US210339202004029 | 2.1E+14 | Block 4029, Block Group 4, Census Tract 9202, Caldwell County, | 16 | 4 | 2 | 6 | 2967 | |
| 1000000US210339202004030 | 2.1E+14 | Block 4030, Block Group 4, Census Tract 9202, Caldwell County, | 10 | 2 | 0 | 2 | 2969 | |
| 1000000US210339202004031 | 2.1E+14 | Block 4031, Block Group 4, Census Tract 9202, Caldwell County, | 8 | 4 | 2 | 6 | 2975 | |
| 1000000US210339202004032 | 2.1E+14 | Block 4032, Block Group 4, Census Tract 9202, Caldwell County, | 6 | 4 | 0 | 4 | 2979 | |
| 1000000US210339202004033 | 2.1E+14 | Block 4033, Block Group 4, Census Tract 9202, Caldwell County, | 8 | 5 | 0 | 5 | 2984 | |
| 1000000US210339202004034 | 2.1E+14 | Block 4034, Block Group 4, Census Tract 9202, Caldwell County, | 6 | 3 | 2 | 5 | 2989 | |
| 1000000US210339202004035 | 2.1E+14 | Block 4035, Block Group 4, Census Tract 9202, Caldwell County, | 13 | 4 | 0 | 4 | 2993 | |
| 1000000US210339202004036 | 2.1E+14 | Block 4036, Block Group 4, Census Tract 9202, Caldwell County, | 6 | 2 | 0 | 2 | 2995 | |
| 1000000US210339202004037 | 2.1E+14 | Block 4037, Block Group 4, Census Tract 9202, Caldwell County, | 12 | 5 | 1 | 6 | 3001 | |
| 1000000US210339202004038 | 2.1E+14 | Block 4038, Block Group 4, Census Tract 9202, Caldwell County, | 34 | 14 | 2 | 16 | 3017 | 3011 |
| 1000000US210339202004039 | 2.1E+14 | Block 4039, Block Group 4, Census Tract 9202, Caldwell County, | 12 | 5 | 1 | 6 | 3023 | |
| 1000000US210339202004040 | 2.1E+14 | Block 4040, Block Group 4, Census Tract 9202, Caldwell County, | 17 | 9 | 2 | 11 | 3034 | |
| 1000000US210339202004041 | 2.1E+14 | Block 4041, Block Group 4, Census Tract 9202, Caldwell County, | 17 | 5 | 0 | 5 | 3039 | |
| 1000000US210339202004042 | 2.1E+14 | Block 4042, Block Group 4, Census Tract 9202, Caldwell County, | 2 | 2 | 0 | 2 | 3041 | |
| 1000000US210339202004043 | 2.1E+14 | Block 4043, Block Group 4, Census Tract 9202, Caldwell County, | 1 | 1 | 0 | 1 | 3042 | |
| 1000000US210339202004044 | 2.1E+14 | Block 4044, Block Group 4, Census Tract 9202, Caldwell County, | 0 | 0 | 1 | 1 | 3043 | |
| 1000000US210339202004045 | 2.1E+14 | Block 4045, Block Group 4, Census Tract 9202, Caldwell County, | 0 | 0 | 0 | 0 | 3043 | |
| 1000000US210339202004046 | 2.1E+14 | Block 4046, Block Group 4, Census Tract 9202, Caldwell County, | 0 | 0 | 0 | 0 | 3043 | |
| 1000000US210339202004047 | 2.1E+14 | Block 4047, Block Group 4, Census Tract 9202, Caldwell County, | 7 | 2 | 0 | 2 | 3045 | |
| 1000000US210339202004048 | 2.1E+14 | Block 4048, Block Group 4, Census Tract 9202, Caldwell County, | 11 | 5 | 0 | 5 | 3050 | |

The final two columns of Figure 5, “Cumulative HUs” and “Random”, are generated by the user to select the 30 census blocks. The column “Cumulative HUs” (highlighted in yellow) is equal to the cumulative sum of the column “Total HUs” and calculated in Microsoft Excel. To populate the column “Random”

(highlighted in blue), use a random number generator (such as http://www.random.org/integers/) to obtain 30 random numbers between 1 and the total sum of HUs (which is the last cell in the column "Cumulative HUs"). Each random number selected should be matched to a corresponding "Cumulative HUs" row. For example, if number 2933 was selected randomly, census block 4026 would be selected because 2933 is within the "Cumulative HUs" 2929 and 2940 (highlighted in green). Repeat the procedure until you have selected all 30 census blocks for your sample. If two or more selected random numbers are within the range of the corresponding census block cumulative number, then that particular census block will be selected more than once.

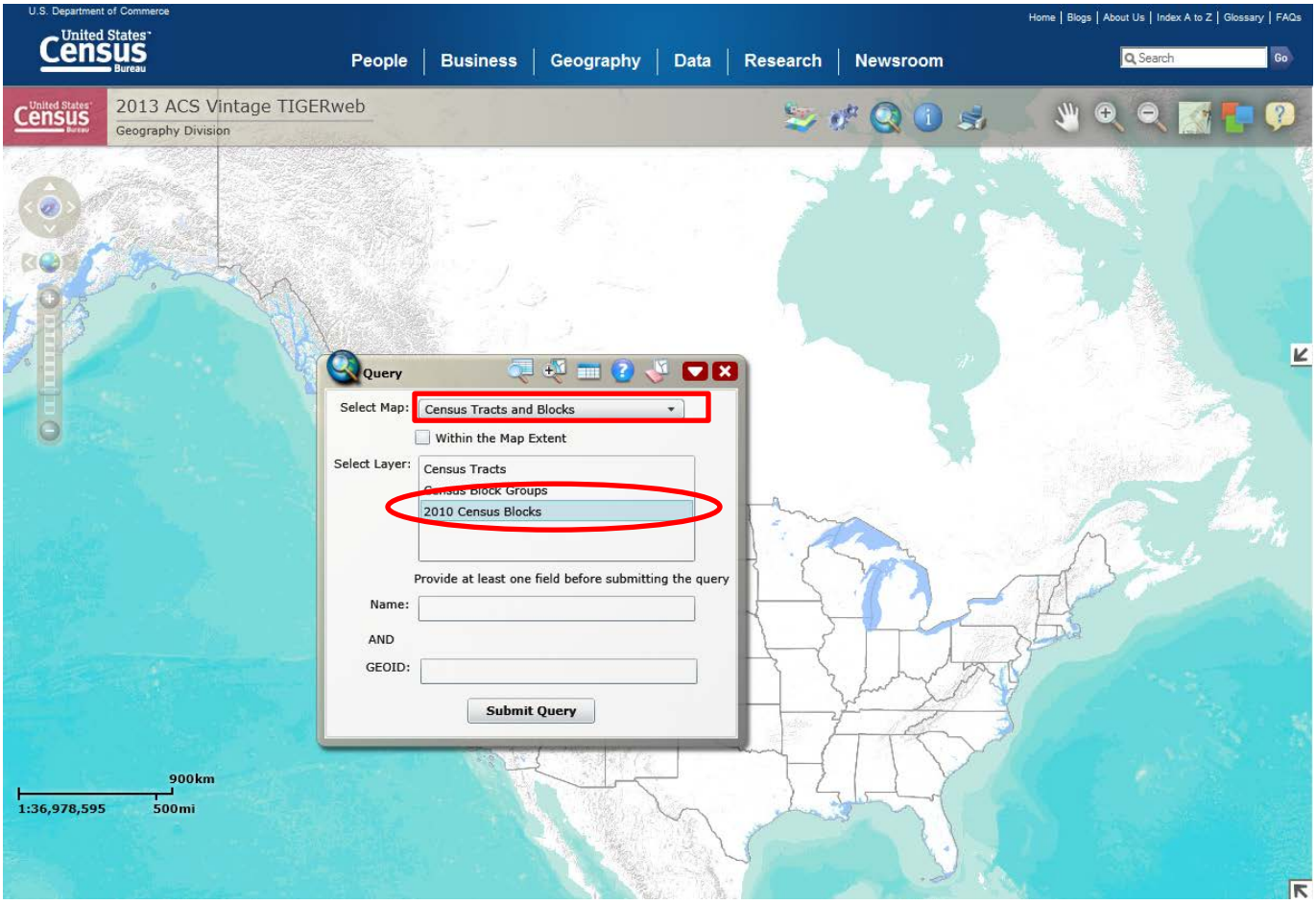
Once the 30 census blocks are selected, create the maps of the selected clusters, including road names and key landmarks. These maps can be created by use of the U.S. Census Website at http://tigerweb.geo.census/gov/tigerweb/ (Figure 6).

Figure 6. U.S. Census Bureau—TIGERweb



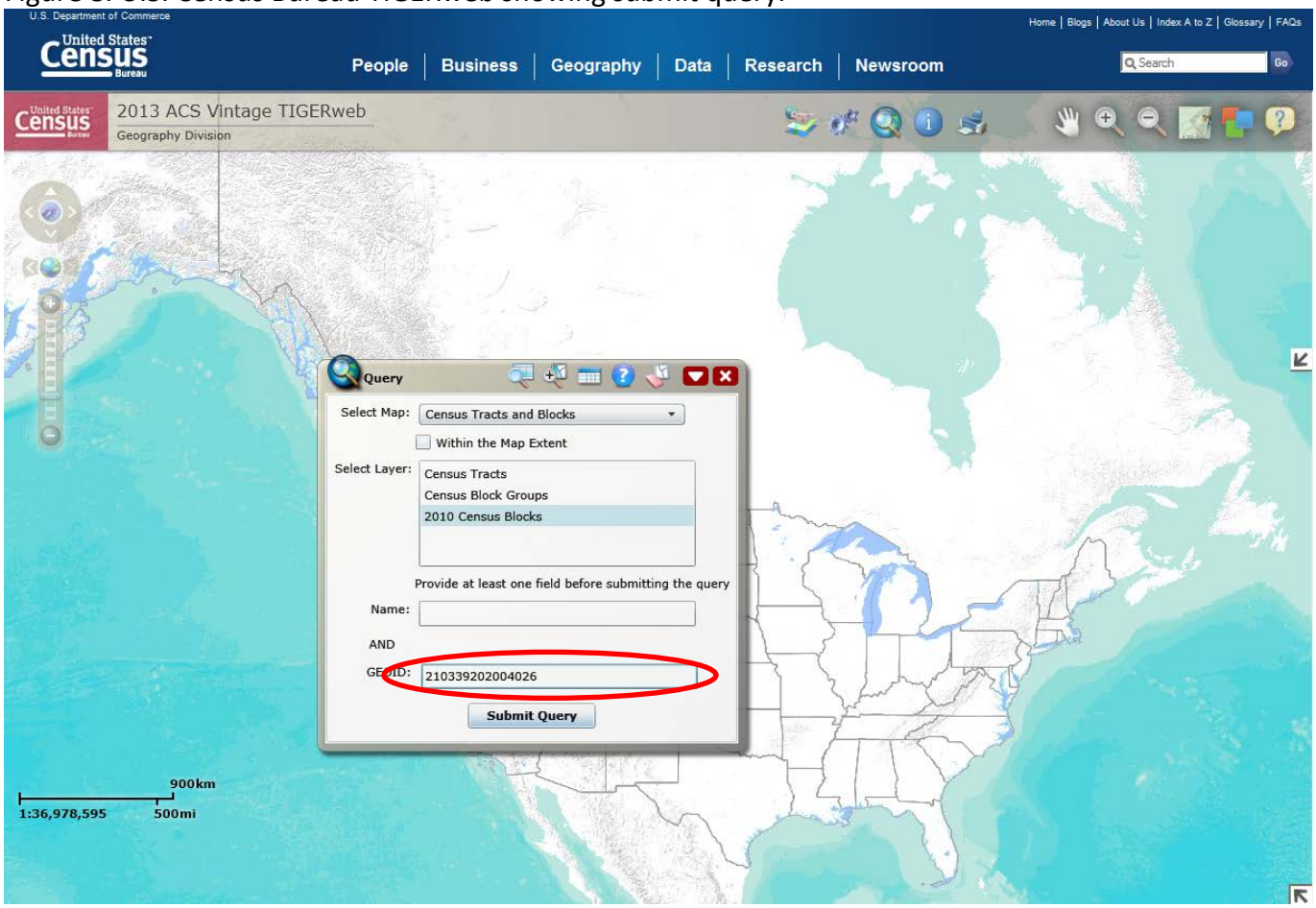
To create maps by using the U.S. Census TIGERweb, first check “Transportation” to ensure all roads are labeled. Click the “Query” globe located at the top in the grey toolbar. Select “Census Tracts and Blocks” and then highlight “2010 Census Blocks” under the Query tab (Figure 7).

Figure 7. U.S. Census Bureau TIGERweb – selecting census tracts and blocks



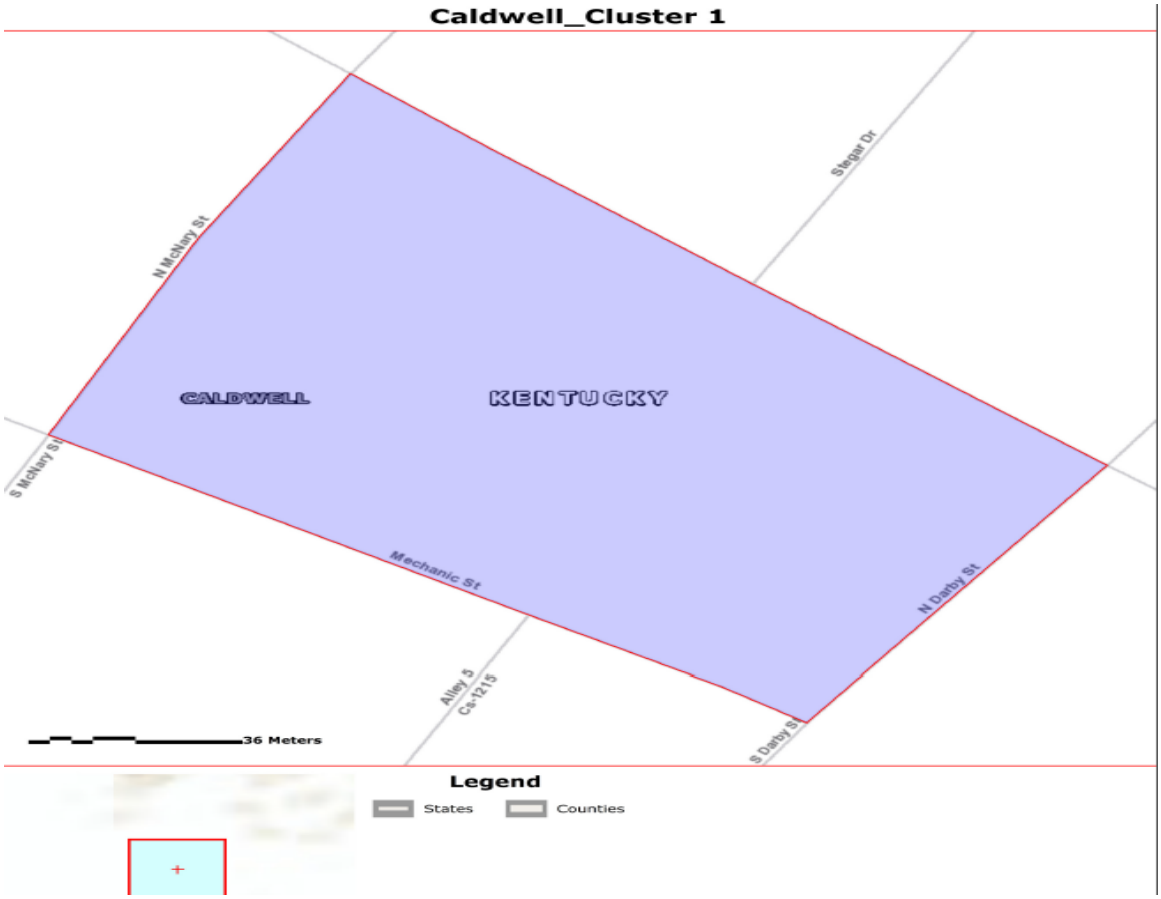
Locate the GEO.id from your excel file (Column A) of your first selected census block and copy the 15-digit number following the "US" (e.g., 210339202004026). Paste the 15-digit number into the "GEOID" box in the Query and click "Submit Query" (Figure 8).

Figure 8. U.S. Census Bureau TIGERweb showing submit query.



The selected block will now displayed. Click the "Print" icon at the top of the map. The print pop-up box will appear; title your map, and click "Print Map". Print the map and/or print to PDF (i.e., save a copy to your computer). Repeat the procedure until all 30 selected cluster (block) maps are saved or printed (Figure 9).

Figure 9. Sample map of a selected census block created with the U.S. Census TIGERweb.




**Note:**

Alternatively, maps can be created with ESRI's TIGER/Line data, which is available free of charge at http://arcdata.esri.com/data/tiger2000/tiger_download.cfm. Although the data are free and publicly available, you must purchase GIS software to manipulate the files. Google Earth images provide satellite detail of the selected cluster if they are overlaid on the ESRI TIGER files. Google Earth software is also available free of charge at http://www.google.com/earth/download/ge/agree.html

### 3.1.4 Stage two: Selecting seven households within each cluster

In the second stage of sampling, seven HUs within each of the 30 clusters are selected to be interviewed. It is very important that these seven housing units are selected *at random*. Typically, a single individual will conduct the first stage of sampling (choosing the 30 clusters), but it is the responsibility of the CASPER interview teams to randomly select the seven households within each cluster. Thus, when one is providing just-in-time training for the CASPER interview teams, it is essential to provide instruction on how to ensure that houses are selected at random.

The following two methods are suggested for selection of housing units from sampled clusters:

*1) Simple random sampling (SRS)*

Create a complete list of HUs within the cluster and use a random number generator to randomly select seven households. The steps for this method are as follows:

1. Upon arriving at the location, count all the HUs within the selected clusters by traveling around the cluster.
2. Number the housing units from 1 to *N*.
3. Using a random number table or random number generator provided to field teams, randomly select 7 households (see www.random.org for free tools).

While simple random sampling ensures that each household is chosen randomly and entirely by chance, this method may be less feasible and inefficient due to the difficulty of training volunteers and the time needed to count all HUs in a selected cluster.

*2) Systematic random sampling (recommended)*

Before arriving at a selected cluster, select a random starting point by using a printed map (see Figure 10 for an example of systematic random sampling).

1. Using a detailed map (e.g, a printout of a cluster viewed in GoogleEarth) or upon arriving at a given cluster, count or estimate the number of housing units within the cluster.

2. Divide that number by 7; this will be the *N*. (Note: Do not get preoccupied in choosing the "correct" *N*; any *N* is acceptable, so long as the number that is chosen is kept consistent throughout the cluster.)
3. Starting at the house nearest the randomly selected starting point, travel through the cluster in a serpentine method to select the *N*th house. That is, walk up one side of the street and then turn and walk down the other side in such a manner that every house within the selected cluster is passed.
4. Interview the *N*th house.
5. Continue traveling through the cluster in a serpentine fashion, selecting every *N*th house until seven interviews are complete. (Note: If seven houses are not selected by the end of the cluster, proceed through the cluster again, selecting every *N*th house).

Figure 10. Example of using systematic random sample to select seven housing units for interview. Starting with house #1, every 8th house is selected for interview.

Random selection of houses in the field is important in CASPER methodology. The most scientific and representative way would be to select only seven households and to continue returning to the selected seven households until an interview is complete at each one. If a housing unit is selected but no one answers the door, the interview team should plan on revisiting that housing unit later in the day in hopes of reaching someone at home. Having teams revisit housing units at which the door was unanswered will help keep the contact rates low and reduce the amount of interviewed housing units taken as a sample of convenience, thereby improving the representativeness of the sample to the sampling frame. However, it is important to balance what is scientifically ideal with the real-world disaster response situation. Because complete information needs to be gathered quickly, some replacement of households may be necessary. Teams should attempt to revisit previously sampled households up to three times, but it is understood that some replacement of selected households will occur. Regardless of the chosen sampling method to randomly select the eligible housing unit, there is no guarantee that the required number of housing units for interviews will be obtained (i.e., there may be fewer than seven completed interviews per cluster). This situation is adjusted for in the data analysis process through weighting (see Section 5.2). Overall, keeping the sample as complete and representative as possible requires sound judgment and quality training of interview teams.

### 3.2 Considerations in sampling to minimize bias

In the past, CASPER interview teams have had difficulty completing the goal of 210 interviews in 30 clusters. For example, teams have come across situations in which an entire cluster is inaccessible due to storm damage or restricted entries. In these situations, it is tempting to select a replacement cluster; however, this alternative is *not* recommended, and it negatively affects the representativeness of the data. Clusters should be chosen *without replacement*—meaning that the clusters originally selected are the clusters that are assessed—and this process may result in having fewer than 30 clusters interviewed due to inaccessibility. If CASPER planners are worried *a priori* that some clusters in a sampling frame may

not be accessible, they can increase the number of clusters selected. For example, CASPER leadership can decide to choose 35 census blocks, instead of the standard 30. If this method is chosen, it is essential that teams then visit *all 35 census blocks* and treat the design as 35x7 (sample size of 245) in data collection and analysis. In this situation, rather than choosing "replacement" clusters, you are oversampling clusters to get closer to the desired sample size of 210. (Note: Oversampling will not improve response rates but can increase sample size). It is also important to know that if a selected cluster is dropped because of accessibility or other issue during the assessment, then the survey will no longer be expected to be representative of the assessment area.

Another problem sometimes experienced in the field is that clusters may have fewer than seven households, making it impossible for interview teams to interview seven households from that cluster. Generally, this is not too much of an issue because smaller clusters have a lower probability of being selected and therefore those with fewer than seven houses will be kept to a minimum. If a sampling frame consists of a large proportion of small clusters (i.e., fewer than 10 households), interview teams will have difficulty finding seven households to interview in any cluster, resulting in a low completion rate. This may be particularly evident in rural areas, where there may be a large number of census blocks with fewer than 10 households. To avoid this situation, check the frequencies of housing units within the chosen sampling frame to identify this problem. If there appear to be many clusters with a small number of housing units, use the "block groups" census variable, instead of the "block", as the cluster, or adjoin census blocks to create larger clusters. While it is generally recommended to use census blocks as clusters, the requirement is only that clusters be all-inclusive and non-overlapping.

Finally, situations may occur in which the affected area contains a high proportion of second homes or vacation rental properties. For example, some coastlines contain high-rise apartments in which few people live, but many units are privately owned and rented out for short-term use by vacationers. In these special cases, it is recommended that the census variable "occupied housing unit"

be used to determine the size of the cumulative number of the housing units in the clusters, rather than the variable "housing unit." The Census Bureau defines a housing unit as a house, an apartment, a mobile home, a group of rooms, or a single room that is intended for occupancy as separate living quarters, whereas an occupied housing unit is defined as the usual place of residence of the person or group of people living in it at the time of enumeration, or if the occupants are only temporarily absent (14). Thus, vacation homes would be counted as a housing unit but not as an occupied housing unit. In the case of multiple family units (e.g., single high rise building), first randomly select a floor in the building by using a random number generator (e.g., in a 10 story building, randomly select a number between 1 and 10). Then proceed to that floor, enumerate the units on that floor, and randomly select the first unit to interview. Similarly in case of multiple apartment complexes (e.g., if there are units A, B, C, D, and E, assign the numbers 1–5 to the units and randomly choose a number between 1 and 5). Then proceed to that unit, randomly select a floor in that unit, enumerate the houses on that floor, randomly select the first house to interview and continue every Nth house until seven interviews are complete.

### 3.3 Data collection instrument

Local authorities, subject matter experts, and other key partners should agree on the scope and nature of the key questions that the CASPER will seek to answer. With input from these partners, the planning team should finalize the assessment questions and verify that the critical information needs will be met by the data collection instrument (questionnaire) as quickly as possible. CASPER sample questions and descriptions are provided in the question bank of this toolkit (Appendix B). HSB also has multiple questionnaires from previous CASPERs and templates available by request, including the preparedness template that can be used for disaster planning (Appendix C). The CASPER questionnaire should be simple and short, ideally limiting the interview to 10–15 minutes (generally, a two-page questionnaire). To decrease analysis time, avoid open-ended questions and request only information that will satisfy the objectives. In general, yes/no and multiple choice questions can capture the needed information more

efficiently. The following is a list of categories that should be covered in the questionnaire (see Appendix D for an example questionnaire):

- Location of the housing unit.
- Housing unit type and extent of damage to the dwelling.
- Household needs (i.e., first aid, food, water, ice, and medicine).
- Physical and behavioral health status of the household members.
- Greatest need.

Remember that all questions are asked of the respondent at the household level. This is often overlooked in those questions pertaining to health status and behavioral/mental health. While CASPER can address these concerns, these questions should be asked at the household, and not the individual, level (e.g., does anyone in the household have a cough?). While developing the questionnaire, consider the comfort level of both the interviewer and the respondent; asking questions that are too personal may result in a lower response rate. After developing the CASPER questionnaire, conduct a mock interview (e.g., with coworkers) to identify any confusing questions and to estimate the length of time it will take to complete the interview.

### 3.3.1 Data collection options

There are two options for collecting CASPER data: paper forms and handheld electronic devices. Both the paper and the electronic formats have their advantages and disadvantages; therefore, it is important to carefully consider the options prior to making a decision and producing the questionnaire. Generally, while the paper forms can be labor-intensive in the data entry process, the electronic media can be labor-intensive in the development stage. Additionally, the potential for error may be introduced at different times in the paper versus the electronic formats. Table 2 provides considerations for both options. Regardless of the data collection option chosen, test your questionnaire prior to deployment in the field.

Table 2. Considerations for planning: using paper forms versus electronic forms

| Paper Form | Electronic Form |
|---|---|
| • No technical training | • Technical training required<br>• Potential to be awkward or slow for those teams not accustomed to the technology |
| • Relatively cheap supplies | • May be expensive to purchase the hardware and software.<br>• May incur costly damage in the field if broken, dropped, or water-damaged |
| • Requires paper, pens, and clipboards in the field | • Requires data collection devices and battery chargers in the field |
| • No maintenance of supplies | • Necessitates maintenance and care of software and devices |
| • Can be labor-intensive to enter data into database after fieldwork | • Can be labor-intensive to develop electronic questionnaire prior to fieldwork |
| • Potential for error in manual transfer of data from paper to database | • Can provide real-time data quality checks |
| • Relatively slow data management processes: requires data entry after field work | • Data management process is quicker; no data entry required after the field work |
| • No limitation on the number of field teams (provided the necessary personnel are available) | • May limit the number of field teams due to availability of equipment |

### 3.4 Forms and handouts for the field

#### 3.4.1 Tracking form

In addition to the questionnaire, the interview teams should carry a tracking form to collect information about each housing unit selected, even those that are inaccessible (Appendix E). The tracking form is used to monitor the outcome of every interview attempt and it is the basis for calculating the response rates (Section 5.3). Interview teams should record each housing unit that is selected in the field and the interview outcome (e.g., completed interview, no answer). The second page (reverse side) of the tracking form should be used by the interview teams to take notes in the field on households that need to be revisited. Remember, when the CASPER is complete, there should be no way to link addresses to specific questionnaires.

Teams should use a separate tracking form in each cluster; some clusters may require use of more than one tracking form to include all the houses visited.

### 3.4.2 Confidential referral form

Field interview teams must be prepared to respond if they come across an urgent need that presents an immediate threat to life or health. Typically, teams that encounter a household with urgent needs should encourage or assist the household to call emergency services (911). In the event that calling 911 is not appropriate, the teams should complete a confidential referral form (Appendix F). This form is immediately communicated to the CASPER team coordinator for rapid follow-up and communication with previously identified health service providers in the area (e.g., mental health) or response agencies involved in addressing immediate needs during disasters, such as the American Red Cross or the Salvation Army.

### 3.4.3 Handouts

A handout should be prepared and provided to all interviewed households. This handout should provide a list of key contact names and numbers where people can get help and updated information about the disaster. This list could include the FEMA number to get insurance help or it could provide lists of shelters or places where members of the household can get medical care, etc.

Additional material may be distributed to households during data collection as a way to circulate public health information to the community (e.g., health education on carbon monoxide poisoning prevention, proper cleanup methods, and contact information for disaster services). This information should be given out regardless of participation status, and it should be given to interested community members who were not selected to be in the assessment.

### 3.4.4 Introduction and consent script

When interview teams arrive at a household, they should be prepared to give an introduction and obtain consent. The survey participant must give explicit verbal consent to participate in the CASPER interview.

It is helpful to have a script written for the interviewers to recite (Appendix G). The script can be memorized or read to potential respondents. Interviewers who are concerned about memorizing all the information should be instructed to begin with a brief introduction—ask "Do you mind if I read you a little more information about our survey here today?", and then read the script in its entirety. The script should be kept brief and include the following elements:

1. An introduction of the interview team members and the agency responsible for the CASPER (e.g., the local or state health department).
2. An explanation of the purpose of the CASPER and potential benefits to the community.
3. A description of the interview and the amount of time it will take.
4. A description of any anticipated discomfort or inconvenience for the respondent, particularly if some questions may be of a sensitive nature (such as those regarding mental health or risk-taking behaviors).
5. An explanation that the survey is anonymous and will not be linked to personally identifying information.
6. A statement that taking part in the study is voluntary and that there will be no penalty or loss of benefits if household members do not wish to participate and that they can stop participating at any time with no penalty.
7. Name and phone number or e-mail of the person(s) a resident can contact if he/she has any questions about the CASPER or would like to verify interview team identification.
8. A clear participation request or invitation that requires an explicit answer (e.g., "Are you willing to participate in this survey?").

Signed consent is typically not required for a CASPER because obtaining signatures leads to an increased confidentiality risk for the participant (i.e., the signed consent will be the only record linking the

participant to the questionnaire, and such linkage could result in a breach of confidentiality). Agencies should refer to their own Internal Review Board (IRB) for additional guidance on the consent document.

The script should be printed on official letterhead and given to each selected household, regardless of participation status, so that residents will have the information to refer to later. This form should include a phone number for the health department or agency responsible for the CASPER.

### 3.5 Supplies and assessment materials

Prior to conducting the CASPER in the field, gather all the supplies and assessment materials. As previously discussed, CASPER data collection can be performed by using paper or electronic forms, and different materials are required for each method (Section 3.4.1). Regardless of the data collection method, ensure that there are adequate supplies necessary to achieve the objectives (e.g., for paper questionnaires, there should be a minimum of 230 copies, and for electronic forms there should be at least one electronic device per field team). Most of the commonly used statistical software packages are sufficient for CASPER data entry and analysis. Epi Info™ is a software package that can be downloaded free of charge at http://wwwn.cdc.gov/epiInfo/.

In general, supplies for *field interview teams* should include

- ☐ Cluster map(s),
- ☐ Adequate data collection supplies,
  - o if paper collection, enough copies of the questionnaire with a minimum of three extra copies per team packet (e.g., if a team is assigned two clusters, the team should have 17–20 copies of the questionnaire) OR
  - o if electronic collection, enough devices so that each team has one, plus a few paper copies of the questionnaire in case of equipment failure
- ☐ Two tracking forms per cluster to document ALL housing units visited,
- ☐ Approximately 30 copies of the consent form,
- ☐ Five referral forms per team,
- ☐ Sufficient public health information materials to hand out to each contacted household, plus any community member interested in receiving information,

- ☐ GPS devices (ideally, one per field team) and/or a commercial map of the area to improve navigation to each cluster,
- ☐ Name tag, badge, or a document that provides identification/authorization from the local or state health department,
- ☐ Wireless communication devices (e.g., cell phone, satellite radio),
- ☐ Office supplies to facilitate field data collection (e.g., pens, pencils, clipboards),
- ☐ Transportation (ideally one vehicle per team), and
- ☐ Snacks, water, hand sanitizer and first aid supplies to ensure team safety.

Additionally, supplies for the *leadership staff* remaining at headquarters include

- ☐ computers,
- ☐ reliable Internet access,
- ☐ computer software for data entry, data cleaning, and data analysis (e.g., Epi Info™, SAS®, Microsoft® Excel),
- ☐ base communication station (i.e., cell phone, land line, or satellite radio that all teams will call with updates),
- ☐ large map of the entire sampling area to assist in directing teams with questions from the field, and
- ☐ access to a copy machine and printer.

**3.6 Field interview teams**

Approximately 20 to 30 people should be identified to conduct the CASPER in the field; these individuals should be divided into teams of two, a total of 10 to 15 teams. The number of teams necessary depends on the amount of time allotted to conduct the CASPER; fewer teams require a longer time to collect the data, while more teams allow for a shorter data collection period. Another consideration is the availability of equipment needed: larger numbers of field interview teams require more equipment, such as vehicles and electronic data collection devices (if necessary). Table 3 provides considerations for selecting the number of field teams.

Table 3. Considerations for the number of CASPER field interview teams

| Small Number of Field Teams (<10) | Large Number of Field Teams (≥10) |
|---|---|
| • May be easier to identify enough staff | • May be difficult to identify enough staff<br>• Can foster broad participation across participating organizations |
| • Data collection will take more time | • Data collection will be completed in less time |
| • Less equipment needed (e.g., vehicles, electronic devices, etc.) | • Requires more equipment (e.g., vehicles, electronic devices, etc.) |

Teams can include epidemiologists, state and local health department staff, students from local schools of public health or nursing schools, or other health professionals. Ideally, field interview teams should comprise a mix of individuals—males with females, state personnel with local personnel, experienced individuals with non-experienced individuals, and students with health professionals—for safety and for the purpose of ensuring an even distribution among the teams of local knowledge and field experience. Once the field interview teams are assembled, an initial meeting should be held to introduce members to one another so that they can exchange contact information and become familiar with each other's roles and skills and so that the coordinating agency can provide or arrange for training.

**3.7 Training**

Training the field interview teams is one of the most important aspects of conducting a CASPER. Inaccurately collecting or reporting data can jeopardize the results and misrepresent the prevalence of injuries or illnesses and the extent of resources needed in the affected community. Therefore, field teams must be well trained to conduct an accurate and precise CASPER.

A three- to six-hour just-in-time training should be conducted either one day in advance or the morning of the first day of data collection in the field. Training should provide the interview team members with an understanding of the objectives of the CASPER. Training should include the background of the event, an overview of the objectives and method of CASPER, the roles and responsibilities of team members, safety instructions, and a briefing on future meeting times and places (see Appendix H for a sample agenda). At the end of the training, each interviewer should be thoroughly

familiar with the data collection instrument and the information being elicited by each question. Each interviewer should also be aware of potential hazards that may be encountered, such as flood water, downed power lines, unattended animals, and other hazardous situations, as well as hazards to look for among the households (such as improper generator use).

### 3.8 Conducting the interview

#### 3.8.1 Selecting an individual to respond in each selected household

The information obtained through CASPER is obtained at the household level; one eligible household member (≥18 years of age) from the family is selected to speak for all household members. There is no specific formula for choosing the eligible individual to interview in selected housing units. The interview teams should use their judgment to determine the person to be interviewed. In general, any adult, regardless of gender, race, ethnicity, or religion, is eligible to participate in the assessment. If more than one adult person is present in the house, either can choose to serve as the respondent or an interviewer may randomly choose between them (e.g., choose the person with the birth date closest to the interview date). The selected respondent should understand that he/she is to report on the entire household—not just on himself or herself.

#### 3.8.2 Interview tips

Prior to going to the field, team members should be assigned to specific roles (e.g., driving, navigating, completing the tracking form, interviewing, or data recording); it is recommended that the local member conduct the actual interview and make the initial contact with the selected household. The assigned interviewer should practice the questionnaire with his/her partner so that both are familiar and comfortable with the questions (e.g., wording of the questions, intent of the questions, skip patterns). Once the team is at a selected household, the interview should be conducted in an area outside of the home, an area that is protected from hazards; however, entry into a household is at the discretion of the

respondent and interview team members, so that an interview may be conducted inside a home as well.

The following tips (Table 4) provide a general guideline for making the interview successful.

Table 4. Interview tips

| ***Building rapport*** |
| --- |
| **Professional and neutral appearance**<br>Field team members should dress appropriately (e.g., modest clothing, flat shoes, no excessive jewelry) and refrain from eating, drinking, or chewing gum during the interview. |
| **Establish legitimacy**<br>Introductions should be made according to the consent script, and identification badges should be visible at all times to the respondent. It is helpful to memorize your introduction, for doing so displays confidence and can set the tone for the interview. |
| **Show empathy and respect**<br>All team members should convey a sense of empathy and respect. Good eye contact, confidence, and an approachable demeanor are all ways to achieve a positive interview experience. Express interest in the respondent's answers and be an active listener while remaining patient if/when an interviewee is having a difficult time answering questions; remember, an interviewee is using his/her time to help ensure the success of the CASPER. |
| ***Minimizing response bias*** |
| **Standardize questions**<br>It is important for field team members to ask questions in the same manner for each interview. Read questions exactly as they are written. Team members should understand that attempts to "improve" a question by altering a few words or not reading it in its entirety may change the entire meaning of the question and response. Similarly, "pre-filling" answers to questions (e.g., if the respondent answered a question in another conversation), omitting questions (e.g., if the team member "knows" the answer or thought he/she heard it), and finishing sentences are all unacceptable. Responses should be recorded verbatim as well (i.e., instead of "he said money was concern," write "I would have to say my biggest concern is money"). |
| **Allow the participant to think**<br>Silence is one of the most effective devices for encouraging a respondent to talk. By an interviewer's finishing sentences or not allowing pauses in the interview, it is implied that the respondent's answer is transparent, obvious, or unimportant. Give the respondent time to express himself or herself while keeping the interview at a steady pace. |

| *Encouraging the respondent* |
| --- |
| **Clarification of questions**<br>If the respondent needs clarification of the information desired, repeat the question first, and then elaborate if needed. If the respondent is not fully satisfied with the answer choices, encourage the respondent to select the one that fits best (without leading). If any confusion remains, team members should write down exactly what was said so that the confusion can be addressed with the leadership staff. |
| **Probe, but DO NOT suggest an answer or lead the respondent**<br>A probe is a standardized way to obtain additional information from a respondent. If necessary, elicit a response by asking the respondent to elaborate. For example, an interview can ask, "Is there anything else you would like to add". When probing for questions, do not direct respondent toward an answer, use overt encouragement, or remind respondents of an earlier remark if the answers differ from what you expect. Remain neutral and, if necessary, repeat the interviewee's response, a technique that can lead to clarification or improve recall. |

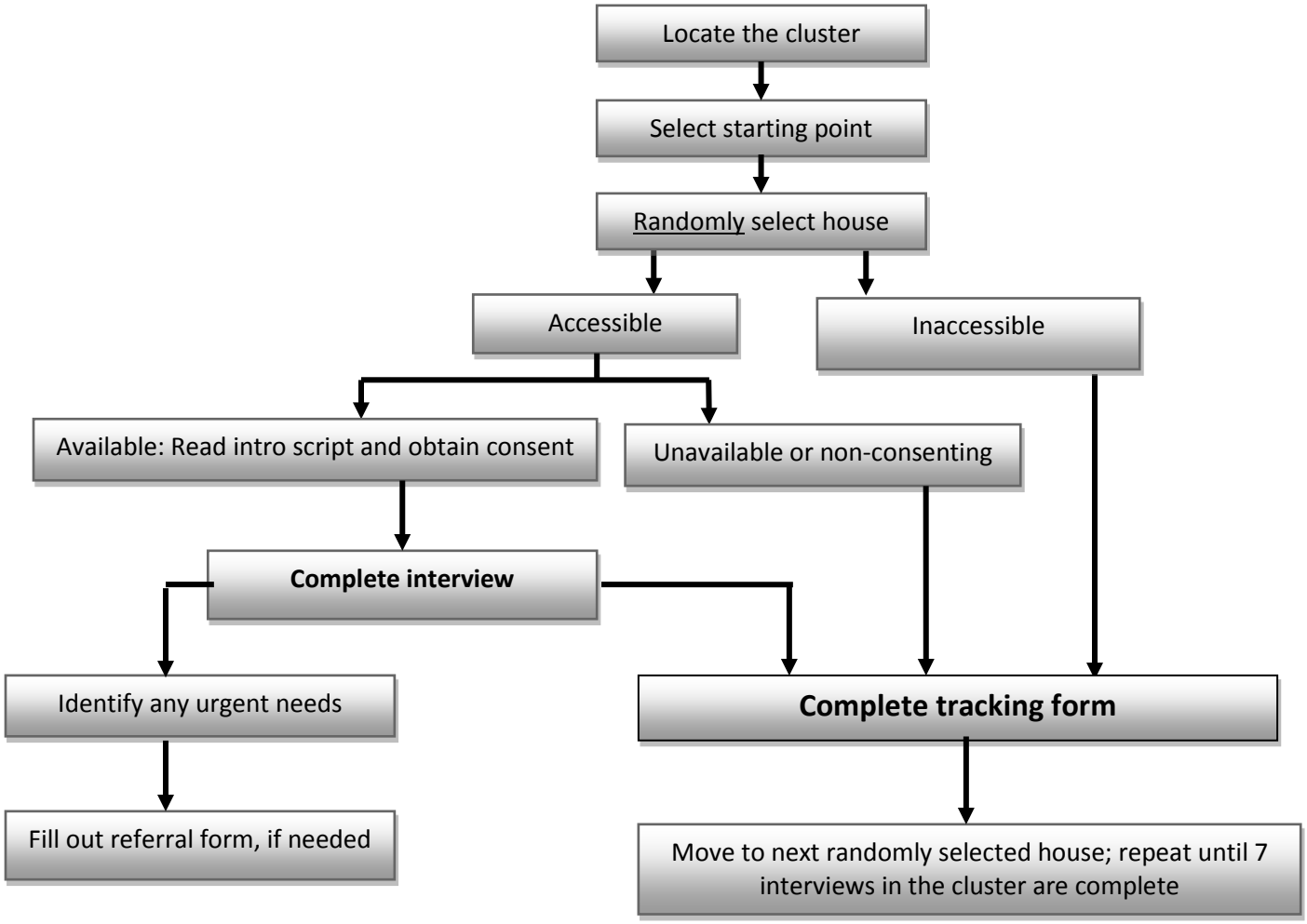
At the end of the interview, team members should review the entire questionnaire before leaving the household to ensure that all questions have been answered. The team members should record any confusion or concern about questions and share the confusion or concern with leadership staff. Remember to thank the respondent, leave information or any necessary referral forms, and refrain from leaving in haste. Immediately after leaving, review the questionnaire again for missing information and complete the tracking form.

## 4. Phase II: Conduct the Assessment

The face-to-face interview is the only feasible method for conducting a CASPER. Advantages of this method include a high response rate and the ability to distribute health information or other materials (such as resource lists) to the community. When teams are conducting a CASPER, the face-to-face interviews have the additional benefits of direct visual inspection of the disaster-affected area and allow some degree of connection between the affected community and local and/or federal staff who can assist them.

### 4.1 Steps in the field

Interview teams are required to follow several steps in the field. As a supplement to the just-in-time training, providing a written flowchart for teams to reference can prove helpful. The following flowchart shows the general steps in the field in conducting CASPER:



### 4.2 Considerations while in the field

Fieldwork often requires an astute awareness of the environment, the use of personal judgment, and a positive (and flexible!) outlook. Below are five considerations (Table 5) for team members to attend to in the field.

Table 5. Considerations for team members while in the field

| ***Think safety*** |
| --- |
| Despite all preparation prior to conducting CASPER in the field, unexpected problems might arise. Interview teams should be briefed about potential safety concerns, such as downed power lines, unsafe road blockages, unattended pets, and other potential hazards at all times. Team members should use personal judgment when assessing any safety concerns and contact the CASPER leadership for any concerns that may arise in the field. To ensure interview teams' safety, both the interview team and CASPER leadership should communicate frequently and record the timeline (Appendix I) throughout the process. |
| ***Remain flexible*** |
| As with all disaster relief efforts, it is important to remain flexible. As a field team member, there are various responsibilities that need to be shared, such as driving, interviewing, and tracking. Plans can always change; field interview teams may switch members, clusters may be swapped between teams, or a team may be asked to take on an additional cluster at the last minute. Keep a positive attitude and remain as flexible as possible. |
| ***Adhere to the methodology*** |
| To ensure data quality and representativeness, it is imperative to adhere to the CASPER method. Such adherence includes randomly selecting households within clusters and conducting interviews in a standard, structured manner. The just-in-time training will cover the guidelines, and all team members should adhere to the assessment procedure. |
| ***Be respectful*** |
| Field team members going into the community should remember to be respectful to the respondents and the community. Teams should be instructed to read the provided script in its entirety, answer any questions the household respondent may have, and allow the respondent to quit at any time if the respondent requests to do so. Cultural norms and practices should also be considered when one is selecting the time and day to conduct the interviews. Always remember that the respondent has just been affected by a disaster. |

| ***Understand personal limitations*** |
| --- |
| Finally, each field team member should understand and accept his/her own personal limitations, whether those limitations reside in one's comfort level of entering a household, the time limitations of being in the field, or physical condition. |

## 5. Phase III: Data Entry and Analyses

In Section 5.1, we describe how to handle the data from the questionnaire. Analysis of the tracking form is described in a later section (Section 5.4). We recommend using Epi Info™ software, which is user-friendly and available free of charge. For tutorials in creating the database, entering data, and running analyses, visit CDC's Epi Info™ Website at http://www.phconnect.org/group/epiinfo/forum/topics/epi-info-7-quick-start-guide and follow the "Epi Info™ 7 Quick Start Guide." However, any statistical software package that allows for statistically weighting data is acceptable.

### 5.1 Data handling

Electronic data handling requires basic skills in data entry, cleaning, and processing. Identifying individuals with these basic skills and considering the following items (Table 6) are both important to ensuring the quality of data collected during a CASPER.

Table 6. Considerations for data entry and analysis

| ***Data entry*** |
|---|
| **How will data entry be handled if a CASPER is using a paper questionnaire?** |
| Data collected by use of a paper questionnaire should be entered into an electronic dataset by using software that is familiar, easily accessible, and maintainable. For any software, build the data entry platform prior to conducting fieldwork. Provide training for data entry staff so that they can become familiar with the program and learn the proper techniques to promote quality and accuracy when entering data. |
| **How will data entry be handled if a CASPER is using electronic devices?** |
| Merge all collected data from the electronic devices into a single file that can be analyzed by use of Epi Info™ or other statistical software. |
| ***Data analysis*** |
| **How will analyses be adjusted to reflect the complex sampling design?** |
| CASPER uses weighted frequencies to account for the two-stage cluster sampling method. Analyses without weighting will not represent the entire target population (i.e., sampling frame). Each household for whom an interview is completed is assigned a weight that is based on the household's probability of being selected (Section 5.2). |

### 5.2 Weighted analyses

Households selected in cluster sampling have an unequal probability of selection. To avoid biased estimates, *all data analyses should include a mathematical weight for probability of selection*. Once all data are merged into a single electronic dataset, a weight variable must be added to each surveyed household by use of the formula below:

$$\text{Weight} = \frac{\text{Total number of housing units in sampling frame}}{(\text{number of housing units interviewed within cluster})*(\text{number of clusters selected})}$$

The sampling frame, referred to in the numerator, is defined as the entire assessment area in which CASPER is being conducted. The numerator is the total number of housing units in the sampling frame, and that number will be the same for every assessed household. To calculate the total number of houses in the sampling frame, follow the steps outlined in Section 3.1.3 and sum the "housing units" column (e.g., 6292 houses in Caldwell County, Kentucky).

If sampling has been 100% successful and information was obtained from exactly seven households in exactly 30 clusters, the denominator will be 7 * 30 = 210 for every housing unit. The sample, then, is self-weighting because all housing units in the sample had an equal probability of being selected. Likely, obtaining seven households in each of the 30 clusters will not be possible. When this occurs, the denominator will be different for each surveyed household, depending on the cluster from which the housing unit was selected. Households from the same cluster will have the same weight, but weights will differ between clusters. For example, if only five completed interviews occurred in a cluster, the denominator of the weight for each of the five surveyed households would be 5 * 30 = 150.

The "number of clusters selected" will be 30, even if there are some clusters with zero interviews. The only exception is if the decision to oversample clusters was made a priori (see Section 3.2).

The table depicted in Figure 11 displays the sampling weights for a CASPER conducted in Kentucky following the major ice storms in 2009. In stage one of sampling, 30 clusters were selected representing 19,370 housing units. The goal was to conduct 210 interviews, but only 187 were completed. For the purpose of calculating the "weight" column (highlighted in yellow), an additional column was added, "# interviews," to represent the number of housing units interviewed within a cluster (highlighted in blue).

Figure 11. Sample dataset showing the number of interviews per cluster and the assigned weight for each house interviewed.

Tables | Illustrations | Charts | Sparklines | Filter

D2 $f_x$ =(19370/(C2*30))

| | A | B | C | D | E | F | G | H | I | J | K | L | M | N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Date | Cluster_ID | # Interviews | Weight | Q2PeopleLi | Q3PeopleSl | aTwo | b3to17 | c18to64 | d65 | Q4safe | Q5secure | Q6Injured | N6aFall |
| 2 | 2/7/2009 | 2 | 6 | 107.61 | 4 | 6 | | 2 | 3 | 1 | yes | yes | no | no |
| 3 | 2/7/2009 | 2 | 6 | 107.61 | 3 | 2 | | | 2 | | yes | yes | no | no |
| 4 | 2/7/2009 | 2 | 6 | 107.61 | 1 | 1 | | | | 1 | yes | yes | no | no |
| 5 | 2/7/2009 | 3 | 6 | 107.61 | 2 | 2 | | | 1 | 1 | yes | yes | no | no |
| 6 | 2/7/2009 | 3 | 6 | 107.61 | 2 | 2 | | | 1 | 1 | yes | yes | no | no |
| 7 | 2/7/2009 | 3 | 6 | 107.61 | 2 | 1 | | | 1 | | yes | yes | no | no |
| 8 | 2/7/2009 | 4 | 7 | 92.24 | 2 | 2 | 0 | 0 | 0 | 2 | yes | yes | no | no |
| 9 | 2/7/2009 | 4 | 7 | 92.24 | 2 | 2 | 0 | 0 | 2 | 0 | yes | yes | no | no |
| 10 | 2/7/2009 | 4 | 7 | 92.24 | 2 | 2 | 0 | 0 | 2 | 0 | yes | yes | no | no |
| 11 | 2/7/2009 | 4 | 7 | 92.24 | 2 | 2 | 0 | 0 | 0 | 2 | yes | yes | no | no |
| 12 | 2/7/2009 | 4 | 7 | 92.24 | 5 | 6 | 0 | 2 | 4 | 0 | yes | yes | no | no |
| 13 | 2/7/2009 | 4 | 7 | 92.24 | 6 | 8 | 0 | 4 | 4 | 0 | yes | yes | yes | yes |
| 14 | 2/7/2009 | 4 | 7 | 92.24 | 4 | 7 | 0 | 0 | 7 | 0 | yes | yes | no | no |
| 15 | 2/7/2009 | 5 | 6 | 107.61 | 5 | 14 | 1 | 8 | 5 | | yes | yes | no | no |
| 16 | 2/7/2009 | 5 | 6 | 107.61 | 4 | 4 | | 2 | 3 | | yes | yes | no | no |
| 17 | 2/7/2009 | 5 | 6 | 107.61 | 8 | 8 | | 5 | 2 | 1 | yes | yes | no | no |
| 18 | 2/7/2009 | 5 | 6 | 107.61 | 3 | 3 | | | 3 | | yes | yes | no | no |
| 19 | 2/7/2009 | 5 | 6 | 107.61 | 2 | 2 | | | | 2 | yes | yes | no | no |
| 20 | 2/7/2009 | 5 | 6 | 107.61 | 2 | 2 | | | 1 | 1 | yes | yes | no | no |
| 21 | 2/7/2009 | 10 | 5 | 129.13 | 2 | 1 | 0 | 0 | 0 | 1 | yes | yes | no | no |
| 22 | 2/7/2009 | 10 | 5 | 129.13 | 2 | 2 | 0 | 0 | 0 | 2 | yes | yes | no | no |

Once weights are assigned, frequencies can be calculated for each of the interview questions. To calculate frequencies in Epi Info™ 7 "classic mode", read (import) the data file with the weight that was just created. Click on "Frequencies" along the left hand column. In the "frequency of" box, select each variable for which you would like results and, in the "weight" box, select the variable "WEIGHT" that was just created. Finally, click "OK" (Figure 12) and a report will be generated providing the estimates.

Figure 12. Epi Info™ 7 “classic mode” frequency analysis window showing selected variables and weight.

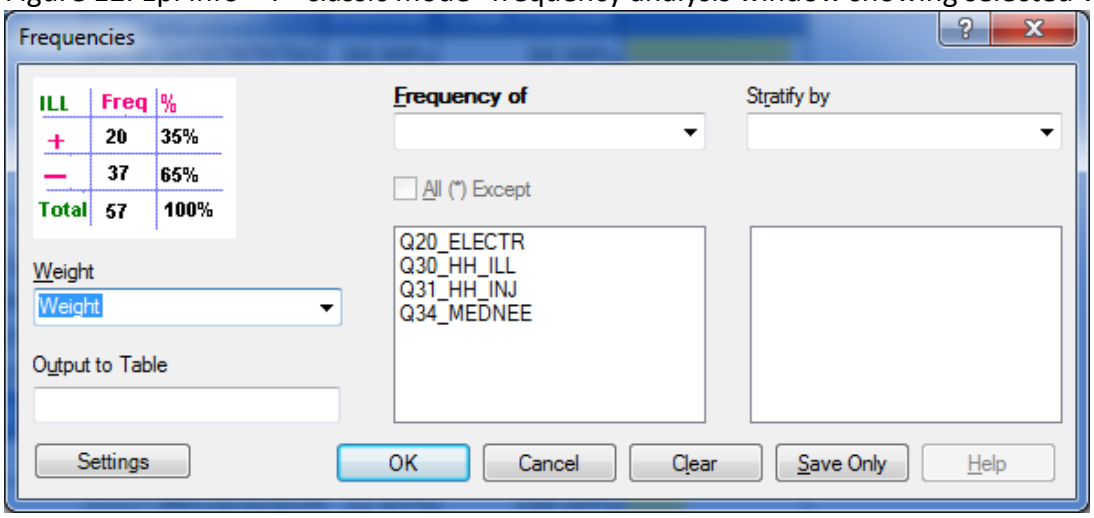
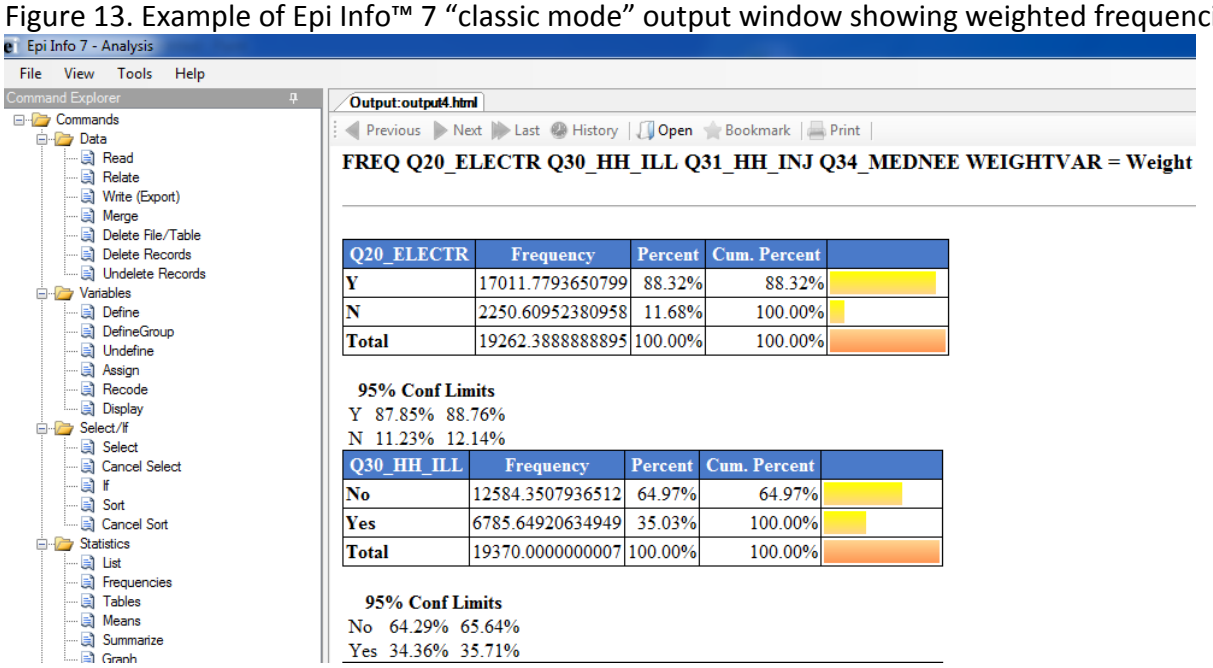



Figure 13 displays the Epi Info™ output window with the selected variables, followed by a table for each selection. These output tables should be saved for use in the report.

Figure 13. Example of Epi Info™ 7 “classic mode” output window showing weighted frequencies




To obtain unweighted estimates, follow the above instructions, but do not assign a variable in the “weight” box. Applying the weights provides projected estimates that can be generalized to every housing unit in the assessment area or sampling frame. Table 7 shows the unweighted and weighted frequencies for a specific question from the 2009 Kentucky Ice Storm CASPER.

Table 7. Unweighted and weighted frequencies of current source of electricity following the Ice Storms, Kentucky, 2009

| W i h d | *Unweighted* | | *Weighted* | | |
|---|---|---|---|---|---|
| *Characteristic* | *Frequency* | *Percent* | *Frequency* | *Percent* | *95% CI* |
| ***Source of Electricity*** | | | | | |
| *Power company* | 137 | 74.1 | 14190 | 74.0 | 61.9-86.0 |
| *Gasoline generator* | 29 | 15.7 | 3200 | 16.7 | 7.6-25.7 |
| *None* | 19 | 10.3 | 1789 | 9.3 | 3.8-14.8 |

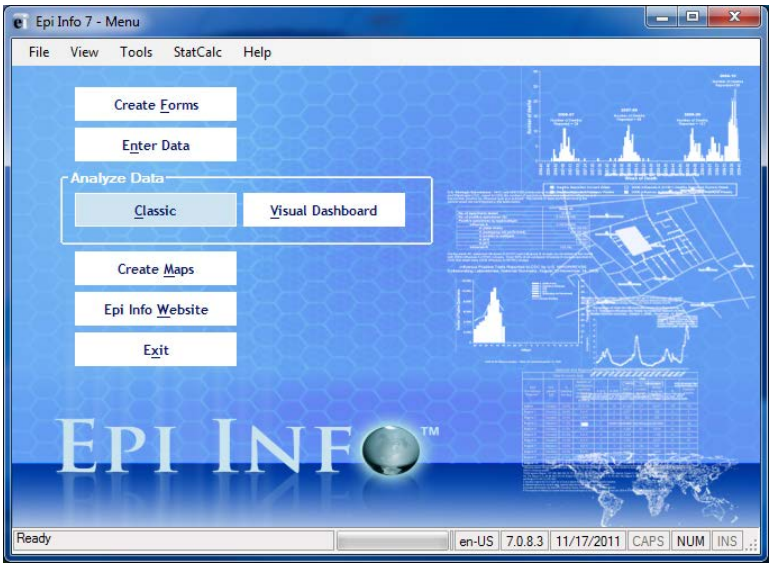
Remember that weighted analysis does not account for the changes that may occur in the number of households between the time of the census and the time of the assessment (e.g., the number of households per cluster may have changed between 2000, when the census was conducted, and 2009, when the CASPER was conducted). Therefore, despite attempts to present unbiased estimates, the frequencies reported might lack precision.

### 5.3 Calculation of 95% confidence intervals

The 95% confidence intervals (CIs) should be provided with the weighted estimates. These confidence intervals indicate the reliability of the weighted estimate. Follow these steps to calculate 95% confidence intervals in Epi Info™ 7:

1. Open Epi Info 7 in classic mode (Figure 14).

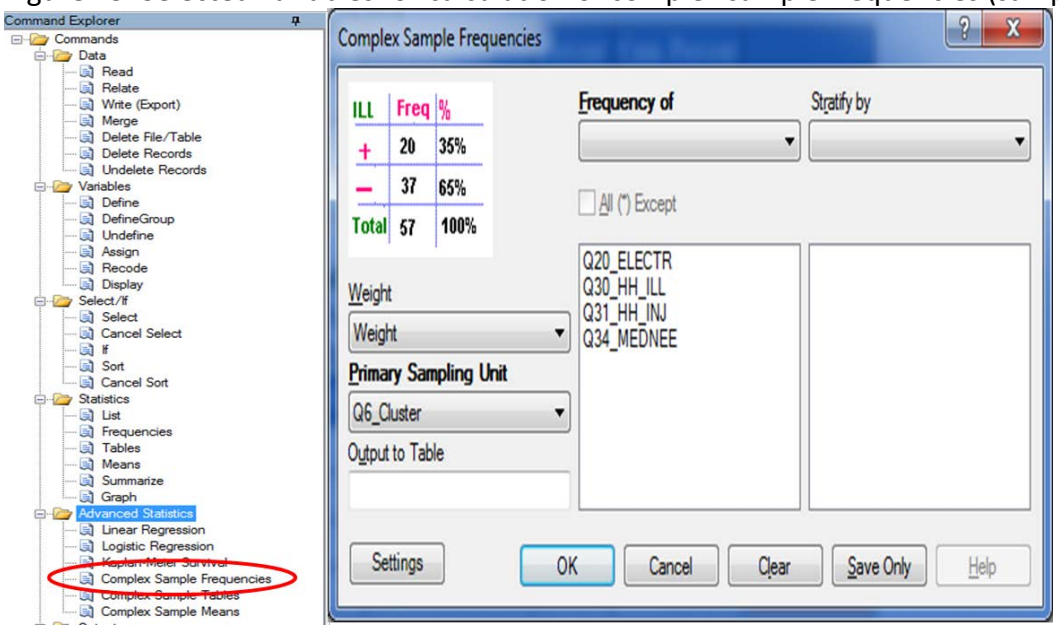
Figure 14. Classic mode of Epi Info 7



2. Read (import) the data file.

3. Select “Complex Sample Frequencies Command” under advanced statistics, and in the dialog box for Frequency, select the variable(s) in which you are interested (Figure 15).

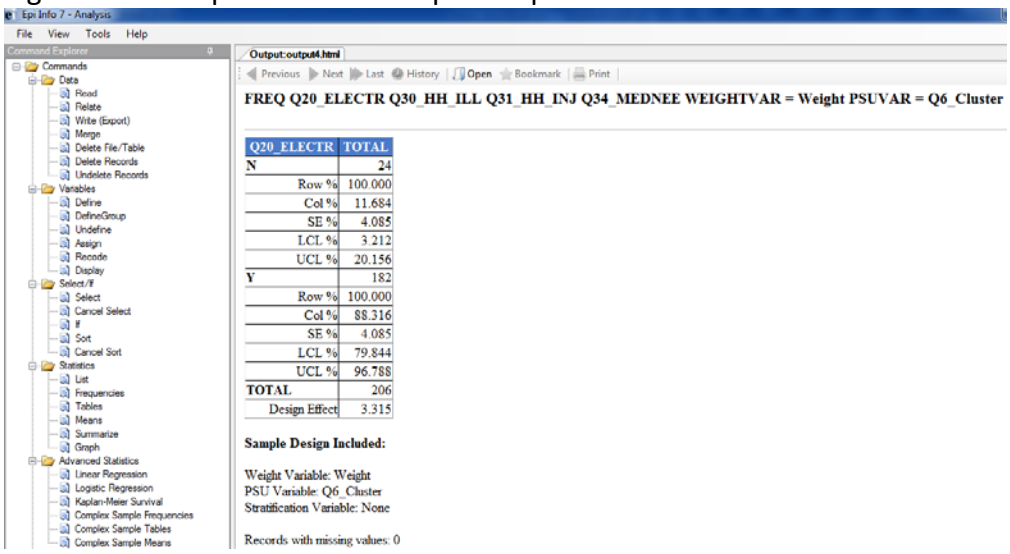
Figure 15. Selected variables for calculation of complex sample frequencies (sample data)




4. Under the Weight drop-down menu, select the “weight” variable for calculating the weighted CI.

5. Under PSU, select the “Cluster Number” variable and Click OK (Figure 16).

Figure 16. Example of 95% CI output in Epi Info™ 7 “classic mode”




6. Right-click on the table and select “Export to Microsoft Excel”.

### 5.4 Response rates

Calculating response rates helps determine the representativeness of the sample to the population within the sampling frame. All the information used to calculate response rates is collected by the field interview teams on the tracking form (Appendix E). Thus, teams should be well-trained in using the tracking form to track all housing units that were selected for interview, including those for which no interview was completed or no contact was made.

To compile the tracking form data, tally the responses to each row on the tracking form. In some sections, it may be necessary to reconcile discrepancies. For example, an interviewer may appropriately select both "no answer" and "door was answered" for a single housing unit, because the interviewer returned to a housing unit previously selected but no one answered the door. Select only the final designation ("door was answered") for tally and disregard the prior visits. These tallies can then be entered into a spreadsheet (Figure 17). Each column should represent a single cluster. If more than one tracking form was completed per cluster, consider forms for the same cluster cumulative and tally them onto the same column in the spreadsheet.

Figure 17. Sample tracking dataset showing attempted and completed interviews per cluster

| A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | County | Caldwell | Caldwell | Caldwell | Caldwell | Caldwell | Caldwell | Caldwell | Caldwell | Caldwell | Caldwell |
| | Cluster | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| | Interviwer | Team 11 | Team 11 | Team 7 | Team 7 | Team 7 | Team 6 | Team 11 | Team 6 | Team 2 | Team 8 |
| | Date of Interview | 10/26/2009 | 10/26/2009 | 10/26/2009 | 10/26/2009 | 10/25/2009 | 10/25/2009 | 10/25/2009 | 10/26/2009 | 10/25/2009 | 10/25/2009 |
| No Access | House Accessible | 7 | 9 | 12 | 19 | 21 | 10 | 14 | 9 | 19 | 8 |
| | House Inaccessible | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Front Door Inaccessible | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Type of Dwelling | No Housing Structure | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Mobile Home | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| | Single Family Home | 6 | 9 | 12 | 0 | 0 | 10 | 14 | 9 | 8 | 6 |
| | Apartment | 0 | 0 | 0 | 19 | 21 | 0 | 0 | 0 | 9 | 0 |
| Damage | None or Minimal | 7 | 9 | 12 | 19 | 21 | 9 | 14 | 9 | 17 | 6 |
| | Damaged | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 |
| | Destroyed | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| No Answer | Previously Vacant | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 1 | 0 | 0 |
| | Evacuated before Disaster | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Abandoned after Disaster | 0 | 0 | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 0 |
| | Nobody Home after 3rd Visit | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| Interview | Language Barrier | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Refused to Participate | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| | Interview begun, not finished | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Interview Completed | 5 | 7 | 4 | 7 | 7 | 7 | 7 | 7 | 6 | 7 |
| Total Number of Houses Sampled/Attempted | | 7 | 9 | 12 | 19 | 21 | 10 | 14 | 9 | 19 | 8 |

There are three separate response rates that are calculated for CASPER: the completion rate, the cooperation rate, and the contact rate (Table 8).

Table 8. Calculation of CASPER response rates

| | |
|---|---|
| **Completion rate =** | $\frac{\text{Number of completed Interviews}}{\text{Number of interviews goal (usually 210)}}$ |
| **Cooperation rate =** | $\frac{\text{Number of completed interviews}}{\text{All HUs where contact was } \textit{made}}$ (including completed interviews, incomplete interviews, and refusals) |
| **Contact rate =** | $\frac{\text{Number of completed interviews}}{\text{Number of HUs where contact was } \textit{attempted}}$ (including completed interviews, incomplete interviews, refusals, and non-respondents) |

The completion rate represents how close interview teams came to collecting the goal number of interviews (typically n=210). Completion rates below 80% (typically n=168) result in an unacceptably low number to represent the sampling frame. When planning a CASPER, you should allot enough time for teams to complete the 210 interviews. It is recommended to have a few field interview teams available if they need to return to low-responding clusters the following day(s) to finish data collection. See Section 3.2 for more tips on increasing sample size.

The cooperation rate is the proportion of households at which contact was made and the household agreed to complete an interview. It represents both the eligibility and the willingness of the community to complete the CASPER interview. It is calculated by dividing the number of completed interviews by the total number of households at which contact was made (i.e., completed interviews, incomplete interviews, and refusals). The lower the number of contacts made, the more the sample becomes one of convenience.

The contact rate is the proportion of all households at which contact was attempted and the household successfully completed an interview. Higher contact rates indicate better representativeness of the sample to the population. Lower contact rates indicate that field interview teams had to attempt interviews at many households (i.e., knock on many doors) in order to obtain the necessary number of interviews. The contact rate is calculated by dividing the number of completed interviews by the total number of households at which contact was attempted (i.e., non-response, completed interviews, incomplete interviews, and refusals). The lower the contact rate, the more the sample becomes one of convenience at the second stage.

## 6. Phase IV: Write the report

The final phase of CASPER is writing the report. This is an important phase because it is the delivery of the information collected from the CASPER. Several aspects of the report can be completed during the preparation phase of the CASPER—deciding who will write the report, gathering background information for the report, and creating table shells. Completing such aspects early will ensure a more timely report and enable the CASPER team to deliver a preliminary report within 72 hours. It is recommended that two reports be developed: (1) a preliminary report or presentation provided to key stakeholders within a day or two after data collection, and (2) a final report that may be more widely distributed at a later time. Both types of reports are detailed in this section.

### 6.1. Considerations prior to writing the report

An essential element is a plan for the report, including what data will be reported. Such a plan will help guide the type of data collected and ensure a quick turnaround of results (see Table 9).

Table 9. Considerations for writing the report

| |
|---|
| **Who will write the written report?**<br>Designate a person who will be in charge of the report(s). This should be someone familiar with the entire process and a person who was involved in the preliminary meetings, sampling, and analysis. Once designated, this individual can begin the writing process prior to completion of data collection (e.g., draft the background and methods and create table shells). |
| **To whom should the results be submitted?**<br>The target audience should always be considered when one is drafting a report. Will the report be sent to the state, to emergency managers, to epidemiologists, to politicians, and/or the media? Knowing your audience will determine the format to use, how much information to include, the report length, and the technical level. To ensure that partners have the results in a timely manner to make quick decisions to address any needs, a preliminary report should be provided within 72 hours of data collection. A more comprehensive report written after additional data cleaning and analysis should be provided within a few weeks. |

| |
|---|
| **How will you report the data?**<br>When determining the format for reporting the results, decide if summary bullets or a full written report with tables or charts is suitable. |
| **What action will be taken on the basis of the results?**<br>The results should be presented so that they prompt action. Actions are derived from the current health status or needs of the population presented in the results. Actions may include, but are not limited to, prioritization of resources, public health messaging, enhanced health surveillance, or public health interventions. |
| **How will field team experience in conducting the CASPER be included?**<br>A debriefing meeting (see Appendix J for sample debriefing agenda) with all of the team members will be useful for obtaining observational information, anecdotes, or concerns that were not captured on the questionnaire for inclusion in the report(s). |

Written summaries of the results of the CASPER require care and attention. Critically review the data and perform the necessary statistical calculations to produce estimates of the affected population. If appropriate, graph the results. This information will help partners better understand the needs and health status of the affected community. As with any report, results should be in a simple, easy-to-read format that reflects the original objectives.

### 6.2 Preliminary field report

The preliminary report is a draft version of the final report; it should contain initial results and recommendations to share with stakeholders. This report should note that results are in a preliminary or draft format, and the report should have limited distribution. The following information should be included:

- An *introduction,* which briefly describes the background of the disaster (e.g., date occurred, affected population) and details of the CASPER request (e.g., who requested, who conducted, timing of assessment) and the aims and objectives of the CASPER.
- A *methods* section, including a simple description of the sampling frame (i.e., target population), the two-stage cluster design, the unit of analysis, the questionnaire, the number and training of field interview teams, and the data analysis procedures.
- A *results* section, including the three response rates, the number of households represented by the sampling frame, and main findings.
- A *conclusion* section, discussing the main findings, the limitations of the CASPER, and preliminary recommendations based on the initial conclusions. Recommendations should be targeted and tangible so that they prompt action.

Other report types should be considered in conjunction with the preliminary report, such as a one-page bulleted list of highlights, a press release(s), and an oral presentation. It is strongly recommended that partners and stakeholders be informed of the preliminary results as soon as possible in order to ensure timely responses by other agencies and maximum transparency to the public. It is recommended that a presentation accompany the delivery of the preliminary report. All partners and, as appropriate, community organizations should be invited to the meeting. The meeting should mirror the preliminary report and include background, method, results, and conclusion sections. Consideration should be given to the best way to present the results in an oral presentation. This is a good opportunity to discuss implementation of the recommendations, next steps, and lessons learned.

### 6.3 Final report

The final report should be based on the preliminary report, but it should also contain additional, detailed information. It can be written several weeks after the preliminary report. This report will likely be more widely distributed. A final report will include the following:

- An *executive summary* that highlights the report.
- An *introduction* (likely copied from the preliminary report).
- A *method* section (likely copied from the preliminary report).
- A *results* section, including key findings from the preliminary report, as well as additional analyses not included in the preliminary report (i.e., qualitative data or analysis of open-ended questions). The results may include weighted and unweighted frequencies, weighted and unweighted percentages, and confidence intervals (correcting any inaccuracies from the preliminary report).
- A *conclusion* section, including the discussion from the preliminary report, as well as incorporating feedback received, additional information and final recommendations created in collaboration with partners, and any actions taken as a result of the CASPER (e.g., enhanced public health messaging). An acknowledgements section that includes all individuals and organizations who helped with each stage of the CASPER should be added to the final report.

Appendix K provides an example of a final report. The final report incorporates every phase of the CASPER and may be widely distributed. Copies should be provided to all interested parties, including state or local public health authorities, emergency operations centers, incident command staff, and other agencies.

## 7. CDC Support

HSB helps prepare agencies to respond to disasters and minimize the health effects of disasters on communities by providing disaster epidemiology (including CASPER) training throughout the year to state and local public health staff (e.g., emergency response staff, epidemiologists, public health advisors). Trainings typically occur over 2 days and are conducted to 1) increase local emergency response capacity, 2) improve disaster epidemiology skills, and 3) share lessons learned. If you represent a state or local health department and would like to be considered for a CDC-sponsored disaster epidemiology training, please consult your leadership and then contact HSB to request a training. Additionally, HSB is always available to provide technical assistance in

- CASPER experience in the field, including tips, how-to, and lessons learned,
- sampling methodology, including sampling strategies and sampling with GIS software,
- data analysis support, and
- in-field assistance for local CASPER teams.

If you would like technical assistance, please contact HSB. Technical assistance may take place as a field deployment (e.g., CDC Epi-Aids, FEMA Mission Assignments, in-kind travel) or remotely (e.g., conference calls, e-mails, Webinars).

To contact HSB, please mail, call, or fax

Centers for Disease Control and Prevention, National Center for Environmental Health,
Division of Environmental Hazards and Health Effects
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## 8. Conclusion

CASPER is an important tool for identifying the community needs, both in disaster and non-disaster situations. Assessments conducted by use of the cluster sampling methodology described above can have an important impact on prioritization of community needs. However, well-organized step-by-step procedures (Appendix L), standardized questionnaires, and training are necessary to ensure quality data and an appropriate use of the results. In addition, standardization of the CASPER procedure makes it possible to compare results across multiple jurisdictions.

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## Appendix A: Steps to merge the two Excel files downloaded from Census 2010 and to calculate cumulative housing units for selection of census blocks

1. Open H3: occupancy status Excel file
2. Delete the first two columns (A and B) and first two rows (1 and 2) of H3 Excel file
    **a.** *Note*: column "D" (Total Housing Units or Total HUs) will be labeled as column "B".
3. Open and delete the first two columns (A and B) and two rows (1 and 2) of P1: total population Excel file
4. Copy column "D" (total population) from P1 file and paste it into the H3 file (Note: First verify that the H3 and P1 files are sorted the same. That is, each census block is on the same row in both files.)
5. Label the columns in the H3 file and reorder accordingly (total population, occupied HUs, vacant HUs, and total HUs)
6. Add two new columns in the H3 file for cumulative housing units (cumulative HUs) and random number(random) and highlight both columns so that they are easy to identify
7. Click in cell "F2" under cumulative HUs and type in the first Total HUs number, which can be found in cell "E2".
8. In cell "F3", type the formula "=F2+E3" and press "Enter"
9. Copy the formula to all column "F" cells by clicking and holding in cell "F3" and dragging the cursor to the last row in the column. Then, let go of the click and select "Fill → Down", which is located in the Editing tools portion of the Home tab.

## Appendix B: Question bank

The purpose of this question bank is to provide potential questions that can be used in a CASPER questionnaire. Additional questions may need to be created to satisfy the purpose of the CASPER. The questions in this bank have been previously used in CASPER questionnaires and, in an effort to encourage standardization and the potential for meta-analysis across CASPERs, the following wording and response options are suggested. Further, this list is intended to serve as a bank of questions, not a template. Some of the questions solicit similar information; however, the wording is slightly different. For example, both questions D3 and D4 ascertain the number of people who slept at the home the previous night.

The questions are grouped in the following sections:

1. Identification and physical location.
2. Demographics and functional needs.
3. Damage and repair.
4. General utilities.
5. Carbon monoxide exposure.
6. Animal safety.
7. Supplies, relief, and emergency preparedness.
8. Health status.
9. Medical care and prescriptions.
10. Communication.

**General notes**

- All questions should have a response marked; therefore, always provide an option for "don't know" and "refused".
- When asking "Since the [*disaster*]", it is best to be as specific as possible (e.g., the actual disaster date, the date of evacuation, the date of return).
- Keep skip patterns to a minimum to avoid interviewer confusion.
- Limit lists to only what is necessary and analyzable; consider how data will be analyzed to help determine what variables are needed and thus, what questions should be included.
- The comprehension level should be appropriate for the community; giving examples increase comprehension (e.g., "10 sq ft is approximately the size of an infant's playpen").

1. **Identification and physical location**

| *General Information* | *Response Option* | *Variable Name* |
|---|---|---|
| **P1. Date** | MM/DD/YYYY | Date |
| **P2. Team ID** | Alphanumeric | ID |
| **P3. Interviewer initials** | Alphanumeric | Interviewer |
| **P4. City** | Alphanumeric/Prefilled | City |
| **P5. County** | Alphanumeric /Prefilled | County |
| **P6. Cluster number** | ## (1-30) | Cluster |
| **P7. Block number** | #### | Block |
| **P8. Number of households in cluster*** | #### | NumHH |
| **P9. Survey Number** | ### | Survey |
| **P10. Type of structure*** | 1=Single family<br>2=Multiple unit<br>3=Mobile home<br>4=Other, _____ | Structure |

*Captured on the tracking form but can also be captured in the questionnaire for analysis purposes.

2. **Demographics and functional Needs**

| *Question* | *Response Option** | *Variable Name* |
|---|---|---|
| **D1.** Is this your primary residence? | 0=No 1=Yes | PrimRes |
| **D2.** How many people lived in your household before the [*disaster*]?† | ## | ResBefore |
| **D3.** How many people slept in your home last night? | ## | ResAfter |
| **D3b.** If ***NONE***, where did you and members of your household sleep? | 1=Shelter<br>2=Special needs shelter<br>3=Hotel/motel<br>4=Family/friends home<br>5=Other, _____ | Stay<br><br><br><br>Stay_txt |
| **D4.** How many people from other households slept in your home last night? | ## | NumSlept |
| **D5.** How many people living in your household are<br>less than 2 years old?<br>2–17 years old?<br>18–64 years old?<br>more than 64 years old? | <br>##<br>##<br>##<br>## | <br>P_LT2<br>P_2to17<br>P_16to64<br>P_65 |
| **D6.** How many people living in your household are<br>male?<br>female? | <br>##<br>## | <br>Male<br>Female |
| **D7.** Is anyone in your household pregnant? | 0=No 1=Yes | Preg |
| **D7b.** If ***YES***, how many? | # | Preg# |
| **D8.** What is your race? (check all) | 1 = American Indian/Alaskan Native<br>2 = Asian<br>3 = Black or African American<br>4 = Native Hawaiian or Other Pacific Islander<br>5 = White | Race |
| **D9.** Are you Hispanic or Latino? | 0=No 1=Yes | Hispanic |
| **D10.** Is there an adult in your household who does not speak English? | 0=No 1=Yes | NonEnglish |
| **D11.** What is your current marital status | 1=Married/unmarried couple<br>2=Separated/divorced<br>3=Widowed<br>4=Never married | Marital |
| **D12.** Do you or does a member of your household have serious difficulty hearing? | 0=No 1=Yes | Deaf |
| **D13.** Are you or a member of your household blind or have serious difficulty seeing, even when wearing glasses? | 0=No 1=Yes | Blind |

| | | |
|---|---|---|
| **D14.** Because of a physical, mental, or emotional condition, do you or does a member of your household have serious difficulty concentrating, remembering, or making decisions? (5 years old or older) | 0=No 1=Yes | Concentrate |
| **D15.** Do you or does a member of your household have difficulty walking or climbing stairs? (5 years or older) | 0=No 1=Yes | Climbing |
| **D16.** Do you or does a member of your household have difficulty dressing or bathing? (5 years old or older) | 0=No 1=Yes | DifficultBathing |
| **D17.** Because of a physical, mental, or emotional condition, do you or does a member of your household have difficulty doing errands alone such as visiting a doctor's office or shopping? (15 years old or older) | 0=No 1=Yes | DifficultErrands |
| **D18.** How often in the past 12 months would your household say they were worried or stressed about having enough money to pay your rent/mortgage? Would you say you were worried or stressed – | 1=Always<br>2=Usually<br>3=Sometimes<br>4=Rarely<br>5=Never | Worried_Rent |
| **D19.** How often in the past 12 months would your household say they were worried or stressed about having enough to buy nutritious meals? Would you say you were worried or stressed – | 1=Always<br>2=Usually<br>3=Sometimes<br>4=Rarely<br>5=Never | Worried_Meal |
| **D20.** Do you own or rent this residence? | 1=Own<br>2=Rent<br>3=Other, _____ | Own<br><br>Own_txt |
| **D21.** Did your household evacuate your home any time during or before the [*disaster*]? | 0=No 1=Yes | Evacuate |
| **D21b.** If ***NO***, what prevented your household from evacuating? | 1=No need<br>2=No place to go<br>3=Lack of transportation<br>4=Stayed w/pet<br>5=Other,_____ | EvacNo |
| **D21c.** If ***YES*****,** where did your household evacuate to? | 1=Shelter<br>2=Hotel<br>3=Friend/Family home<br>4=Second home<br>5=Other,_____ | EvacLoc |
| **D21d.** If ***YES*****,** when date did your household evacuate? | MM/DD/YYYY | EvacDate |
| **D21e.** If ***YES*****,** on what date did your household return home to sleep? | MM/DD/YYYY | EvacRet |
| **D22.** Are you and members of your household currently in temporary housing? | 0=No 1=Yes | TempRes |

*In addition to the suggested response options, all questions should include ***88=Don't Know, 99=Refused***

†For non-emergency situations, may rephrase to "How many people live in your household?"

3. **Damage and repair***

| *Question* | *Response Option** | *Variable Name* |
|---|---|---|
| **DR1.** How would you describe the damage to your home? | 0=None or minimal<br>1=Damaged, but habitable<br>2=Damaged, uninhabitable<br>3=Destroyed | Damage |
| **DR1b**. If ***DAMAGED***, do you need a tarp?† | 0=No 1=Yes | Tarp |
| **DR2.** Do you feel your home is currently physically safe to live in? | 0=No 1=Yes | Safe |
| **DR2b.** If ***NO***, why not? *(check all that apply)* | | |
| Structural hazards | 0=No 1=Yes | _Struc |
| Surface dust | 0=No 1=Yes | _Dust |
| Air quality | 0=No 1=Yes | _Air |
| Fear of future [*disaster*] | 0=No 1=Yes | _Fear |
| Other, _____ | 0=No 1=Yes | _Other |
| **DR2c.** If ***NO***, when do you expect this home to be physically safe to live in? | 1=Less than 1 month<br>2=2-3 months<br>3=4-6 months<br>4=More than 6 months<br>5=Never | _WhnSafe |
| **DR3.** How high did the flood waters reach inside your home? | ## feet | FloodHgt |
| **DR4.** What is the condition of your home now? | 1=Home uninhabitable–not living at home<br>2=Clean up–not living at home<br>3=Clean up–living at home<br>4=Living in the home (no cleanup)<br>5=Home never damaged or finished clean-up<br>6=Other, _____ | Condition |
| **DR6.** Where does your household expect to be living in one month? | 1=In this residence<br>2=With family/friends<br>3=Buy/rent different residence in this state<br>4=Buy/rent different residence outside of state<br>5=Shelter<br>6=Other, _____ | Live1Mo |
| **DR7.** Do you see mold or smell a moldy/musty odor in your home? | 0=No 1=Yes | Mold |
| **DR8.** Is there 10 sq ft or more of water damage and/or mold anywhere inside your home?‡ | 0=No 1=Yes | MoldDam |
| **DR9.** Since the [*disaster*], have you had any significant loss to your crops? | 0=No loss<br>1=Yes, minor loss<br>2=Yes, significant loss<br>3=Not applicable | CropLoss |

| | | |
|---|---|---|
| **DR10.** Does your household have insurance to cover cleanup? | 0=No 1=Yes | InsClean |
| | | |
| **DR12.** Does your household need financial assistance for cleanup of your home?† | 0=No 1=Yes | FinClean |
| | | |
| **DR14.** Does your household have the means (e.g., financial, physical) to cleanup your home? | 0=No 1=Yes | MeanCln |
| financial, physical) to repair your home? | | |

*In addition to the suggested response options, all questions should include ***88=Don't Know, 99=Refused***

†It is recommended to only ask this question if supplies/funds are readily available

‡Consider providing an example, such as "10 sq ft is approximately the size of an infant's playpen"

4. **General utilities**

| *Question* | *Response Option** | *Variable Name* |
|---|---|---|
| **U1.** Do you currently have the following services in your home?† | | |
| Running water | 0=No 1=Yes 2=Never Had | Water |
| Electricity | 0=No 1=Yes 2=Never Had | Electric |
| Garbage pickup | 0=No 1=Yes 2=Never Had | Garbage |
| Natural gas | 0=No 1=Yes 2=Never Had | Gas |
| Sewage service | 0=No 1=Yes 2=Never Had | Sewage |
| Telephone (landline) | 0=No 1=Yes 2=Never Had | Phone |
| Cell phone | 0=No 1=Yes 2=Never Had | Cell |
| **U2.** What is your current source of electricity? | 0=No electricity<br>1=Generator<br>2=Power company<br>3=Never had | Electric |
| **U3.** What is your current source of heat? | 0=No heat<br>1=Electricity<br>2=Propane/gas<br>3=Wood<br>4=Coal/charcoal<br>5=Other,_____<br>6=Never had | Heat<br><br><br><br><br>Heat_txt |
| **U4.** Do you have a working indoor toilet? | 0=No 1=Yes 2=Never Had | Toilet |
| **U4b**. If ***NO***, do you have access to a working toilet? | 0=No 1=Yes 2=Never Had | _access |

*In addition to the suggested response options, all questions should include ***88=Don't Know, 99=Refused***

†It is not necessary to include all options; modify the list on the basis of the objectives of the CASPER.

5. **Carbon monoxide exposure**

| *Question* | *Response Option** | *Variable Name* |
|---|---|---|
| **E1.** Since the [*disaster*], have you used a generator? | 0=No 1=Yes | GenUse |
| **E1b.** If ***YES***, where is/was the generator located? | 1=Inside<br>2=Garage<br>3=Outside, <25 feet<br>4=Outside, ≥25 feet | GenLoc |
| **E1c**. If ***OUTSIDE***, is/was the generator near an open or broken window? | 0=No 1=Yes | GenWin |
| **E2.** Since the [*disaster*], have you used a charcoal or gas grill/camp stove? | 0=No<br>1=Inside w/windows open<br>2=Inside w/windows closed<br>3=Outside | Grill |
| **E2b.** If ***OUTSIDE***, is/was the grill/camp stove near an open or broken window? | 0=No 1=Yes | GrillWin |
| **E3.** Since the [*disaster*], have you used a pressure washer with the actual engine in the house/garage? | 0=No 1=Yes | PresWash |
| **E4.** Do you have a carbon monoxide detector? | 0=No 1=Yes | CODetect |
| **E4b.** If ***YES***, is it working? | 0=No 1=Yes | COWork |

*In addition to the suggested response options, all questions should include ***88=Don't Know, 99=Refused***

6. **Animal safety**

| *Question* | *Response Option** | *Variable Name* |
|---|---|---|
| **A1.** Since the [*disaster*], have you noticed an increase in mosquitoes around your home or neighborhood? | 0=No 1=Yes | Mosquito |
| **A2.** Are you or your household members doing anything to protect yourselves from mosquitoes? | 0=No 1=Yes | Protect |
| **A2b**. If ***YES***, what type of protective measures are you using? *(check all that apply)* | | |
| Wearing repellent | 0=No 1=Yes | Repellent |
| Eliminating standing water | 0=No 1=Yes | ElimWat |
| Wearing protective clothing (long shirt/pants) | 0=No 1=Yes | ProtClth |
| Other _____ | 0=No 1=Yes | ProtOth |
| **A3.** Since the [*disaster*], have you or anyone in your household noticed an increase in snakes around your home or neighborhood? | 0=No 1=Yes | Snakes |
| **A4.** Since the [*disaster*], have you or anyone in your household noticed an increase in alligators around your home or neighborhood? | 0=No 1=Yes | Alligators |
| **A5.** Since the [*disaster*], have you or anyone in your household been bitten by an animal or insect other than mosquitoes? | 0=No 1=Yes | Bitten |
| **A5b.** If ***YES***, what animal? | Text | _Animal |

*In addition to the suggested response options, all questions should include ***88=Don't Know, 99=Refused***

7. **Supplies, relief, and emergency preparedness**

| *Question* | *Response Option** | *Variable Name* |
|---|---|---|
| **S1.** Does your household have adequate drinking water (besides tap) for the next 3 days? (1 gallon/person/day) | 0=No 1=Yes | Water |
| **S2.** What was your households primary source of drinking water *before* the [*disaster*]? | 1=Well<br>2=Public/municipal (tap)<br>3=Bottled | WBefore |
| **S2b**. What is your households primary source of drinking water right now? | 0=No drinking water<br>1=Well<br>2=Public/municipal (tap)<br>3=Bottled | WNow |
| **S2c**. If using ***WELL*** *or* ***MUNICPAL*** water, is your household treating the water? | 0=No<br>1=Yes, boiling<br>2=Yes, chemical | WTreat |
| **S3**. Has your household received bottled water as part of the disaster relief effort? | 0=No 1=Yes | WatAid |
| **S4.** Do you have access to adequate food for everyone in your household for the next 3 days? | 0=No 1=Yes | Food |
| **S5.** Has your household prepared an Emergency Supply Kit with supplies like water, food, flashlights, and extra batteries that is kept in a designated place in your home? | 0=No 1=Yes | SupplyKit |
| **S6**. Has your HH prepared a first aid kit with emergency supplies to take with you if you had to leave quickly? | 0=No 1=Yes | FirstAidKit |
| **S7.** Does your household currently have a 7-day supply of medication for each person who takes prescribed meds? | 0=No<br>1=Yes<br>77=No prescriptions | SupplyMeds |
| **S8.** Does your household have any of the following emergency plans? | | |
| Emergency communication plan such as a list of numbers and designated out-of-town contact | 0=No 1=Yes | _commPlan |
| Designated meeting place immediately outside your home or close by in your neighborhood | 0=No 1=Yes 77=N/A | _meetHome |
| Designated meeting place outside of your neighborhood in case you cannot return home | 0=No 1=Yes 77 = N/A | _meetOut |
| Copies of important documents in a safe location (e.g., water proof container) | 0=No 1=Yes | _documents |
| Multiple routes away from your home in case evacuation is necessary | 0=No 1=Yes | _routes |
| **S9.** Has your household received food as part of the disaster relief effort? | 0=No 1=Yes | FoodAid |

| | | | | |
|---|---|---|---|---|
| **S10.** Have you or a member of your household received any type of aid as part of the relief effort? | 0=No | 1=Yes | | Aid |
| **S10b.** If ***NO***, why not? *(check all that apply)* | | | | |
| No aid needed | 0=No | 1=Yes | | _NoNeed |
| Did not know aid was available | 0=No | 1=Yes | | _Knowledge |
| No transportation to aid/relief location | 0=No | 1=Yes | | _NoTrans |
| Other, _____ | 0=No | 1=Yes | | _NoOth |
| **S10c.** If ***YES***, what type of aid? *(check all that apply)* | | | | |
| Food | 0=No | 1=Yes | | _Food |
| Water | 0=No | 1=Yes | | _Water |
| Shelter | 0=No | 1=Yes | | _Shelter |
| Clothing | 0=No | 1=Yes | | _Clothes |
| Financial assistance | 0=No | 1=Yes | | _Money |
| **S11.** Does your household currently have access to transportation if needed? | 0=No | 1=Yes | 2=Never Had | Transport |
| **S12.** Does your household have access to fuel†? | 0=No | 1=Yes | 2=N/A | Fuel |
| **S13.** Do you, or does anyone in your household, need clothes? | 0=No | 1=Yes | | Clothes |
| **S14.** What is your greatest need at this time?‡ | Text | | | GreatNeed |

*In addition to the suggested response options, all questions should include ***88=Don't Know, 99=Refused***

†Could specify "for your transportation", "for your generator", etc.

‡Typically the final question on the CASPER questionnaire and the only open-ended response

8. **Health status and disabilities**

| *Question* | *Response Option** | *Variable Name* |
|---|---|---|
| **H1.** Since the [*disaster*], have you or a member of your household been injured?† | 0=No 1=Yes | Injury |
| **H1b.** If ***YES***, what was/were the injury(s)?‡ | | |
| Animal bite | 0=No 1=Yes | _Bite |
| Abrasion/laceration | 0=No 1=Yes | _Cut |
| Broken bone | 0=No 1=Yes | _Broken |
| Fracture | 0=No 1=Yes | _Fracture |
| Head injury | 0=No 1=Yes | _HeadInj |
| Strain/sprain | 0=No 1=Yes | _Strain |
| Other, _____ | 0=No 1=Yes | _InjOth |
| **H1c.** If ***YES***, what part of the body was injured? | | |
| Arm(s) | 0=No 1=Yes | _Arm |
| Back | 0=No 1=Yes | _Back |
| Body/torso | 0=No 1=Yes | _Body |
| Foot/feet | 0=No 1=Yes | _Foot |
| Head | 0=No 1=Yes | _Head |
| Leg(s) | 0=No 1=Yes | _Leg |
| Neck | 0=No 1=Yes | _Neck |
| **H3d.** If ***YES***, were you or the member of your household injured while repairing the residence or retrieving items? | 0=No 1=Yes | InjRepair |
| **H3e.** If ***YES,*** what caused the injury?‡ | Check all or Open-ended | InjCause |
| **H2.** Has everybody in your household had a tetanus (DTaP/Tdap/Td) shot in the past 10 years? | 0=No 1=Yes | Tetanus |
| **H3.** Has any member of your household died as a result of the [*disaster*]? | 0=No 1=Yes | Died |
| **H3b.** If ***YES,*** how many? | # | Died# |
| **H3c.** If ***YES***, how did they die? | | |
| Burn injury | 0=No 1=Yes | _Burn |
| Carbon monoxide poisoning | 0=No 1=Yes | _CO |
| Concussion/brain injury | 0=No 1=Yes | _Head |
| Drowning | 0=No 1=Yes | _Drown |
| Electrical injury | 0=No 1=Yes | _Electro |
| Heart attack/heart disease | 0=No 1=Yes | _Heart |
| Motor vehicle-related accident | 0=No 1=Yes | _MVA |
| Other, _____ | 0=No 1=Yes | _DieOth |
| **H4.** Since the [*disaster*], has anybody in your household experienced‡ | | |
| Cough | 0=No 1=Yes | Cough |
| Fever | 0=No 1=Yes | Fever |
| Nausea/stomach ache/diarrhea | 0=No 1=Yes | Nausea |

| | | |
|---|---|---|
| Rash | 0=No 1=Yes | Rash |
| Severe headache w/dizziness | 0=No 1=Yes | Headache |
| Sore throat/cold | 0=No 1=Yes | SoreThrt |
| Worsening of chronic illness | 0=No 1=Yes | Chronic |
| If ***YES***, what type(s) of illness(es) | Text | Chr_txt |
| Other, _____ | 0=No 1=Yes | IllOth |
| | | |
| **H6.** Have you or a member of your household ever been told by a healthcare professional that he/she has‡ | | |
| Asthma | 0=No 1=Yes | Asthma |
| Diabetes | 0=No 1=Yes | Diabetes |
| Developmental disability | 0=No 1=Yes | DevDisable |
| Hypertension | 0=No 1=Yes | Hyperten |
| Immunosuppressed | 0=No 1=Yes | Immunosuppressed |
| Physical disability | 0=No 1=Yes | Disable |
| Psychosocial/mental illness | 0=No 1=Yes | Mental |
| Other,_____ | 0=No 1=Yes | ChronOth |
| | | |
| **H8.** Since the [*disaster*], have you or any member of your household been unable to perform your/their daily tasks? | 0=No 1=Yes | DailyTask |
| | | |

*In addition to the suggested response options, all questions should include ***88=Don't Know, 99=Refused***
†Question can be modified to include location; i.e., "…in or around your home?"
‡Some examples given; list all relevant concerns for specific disaster.

9. **Medical care and prescriptions**

| *Question* | *Response Option** | *Variable Name* |
|---|---|---|
| **M1.** Since the [*disaster*], have you or has anybody in your household required medical care? | 0=No 1=Yes | MedCare |
| **M2.** Since the [*disaster*], are you able to get the care you need for everyone in your household? | 0=No 1=Yes | CareNeed |
| **M2b.** If ***NO***, why not? | 0=No need<br>1=Clinic/physician closed<br>2=Pharmacy closed<br>3=No transportation<br>4=Money/cost<br>5=Other, _____ | _NoNeed<br>_NoClinic<br>_NoPharm<br>_NoTrans<br>_Cost<br>_NoOth |
| **M3.** Is there anyone in your household who currently requires urgent medical care? | 0=No 1=Yes | MedNow |
| **M4.** Since the [*disaster*], is everybody in your household getting the prescription medications they need? | 0=No 1=Yes 2=N/A | Prescript |
| **M4b.** If ***NO***, why not? | | |
| Clinic/physician closed | 0=No 1=Yes | _NoClinic |
| Pharmacy closed | 0=No 1=Yes | _NoPharm |
| No transportation | 0=No 1=Yes | _NoTrans |
| Money/cost | 0=No 1=Yes | _Cost |
| Medicare/Medicaid/Insurance problems | 0=No 1=Yes | _Insurance |
| Other, _____ | 0=No 1=Yes | _NoOth |
| **M5.** Do the people in your household who need prescribed medicine have enough for the next 3–7 days? | 0=No 1=Yes 2=N/A | Meds |
| **M6.** Do you or does any member of your household need | | |
| Daily medication (other than birth control or vitamins) | 0=No 1=Yes | DailyMeds |
| Dialysis | 0=No 1=Yes | Dialysis |
| Home health care | 0=No 1=Yes | HomeHlth |
| Oxygen supply | 0=No 1=Yes | Oxygen |
| Wheelchair/cane/walker | 0=No 1=Yes | Wheelchair |
| Other type of special care,_____ | 0=No 1=Yes | SpcCare |

*In addition to the suggested response options, all questions should include ***88=Don't Know, 99=Refused***

**10. Communication**

| *Question* | *Response Option** | *Variable Name* |
|---|---|---|
| **C1.** Since the [*disaster*], have you or members of your household received any information about boil water advisories in your area? | 0=No 1=Yes | Boil |
| **C1b.** If ***YES***, what was the PRIMARY source of information?† | 1=TV<br>2=Radio<br>3=Text message<br>4=Neighbor, word of mouth<br>5=Internet, _____<br>6=Flyer/poster<br>7=Local newspaper<br>8=Other,_____ | InfoSource<br><br><br><br>Web_txt<br><br><br>OthSource |
| **C2.** Have you or members of your household received warnings about [*specific concern, i.e., carbon monoxide*]?‡ | 0=No 1=Yes | [depends] |
| **C3.** Have you or members of your household looked for information or answers to questions regarding the [*disaster*] and its effects?‡ | 0=No 1=Yes | SearchInfo |
| **C4.** Where would you first look for reliable information regarding the [*disaster*] and cleaning up after the [*disaster*]? | 1=TV<br>2=Radio<br>3=Text message<br>4=Neighbor, word of mouth<br>5=Internet, _____<br>6=Flyer/poster<br>7=Local newspaper<br>8=Other,_____ | FindInfo |
| **C5.** Have you or members of your household received any other health advice, cleanup tips, or other information related to the [*disaster*]?‡ | 0=No 1=Yes | OthInfo |
| **C5b.** If ***YES*,** was the information received helpful? | 0=No 1=Yes | Helpful |
| **C6.** Are you aware of the following materials [*show materials, mention website/campaign, etc*] to better prepare you and your family for a natural disaster or other significant event? | 0=No 1=Yes | Campaign |
| **C6b.** If **YES,** was the information received helpful | 0=No 1=Yes | Helpful |

*In addition to the suggested response options, all questions should include ***88=Don't Know, 99=Refused***

†Can ask as "check all that apply"; consider what data would be most useful for future prevention messaging (primary source versus all sources checked).

‡Can ask Part B to question: "If ***YES***, what was the primary source?" – include all relevant/potential sources in answer (see C1b for example).

## Appendix C: CASPER Preparedness Template

| To be completed by team BEFORE the interview | | |
|---|---|---|
| **Q1**. Date (MM/DD/YY): | **Q3.** Cluster Number: | **Q5.**Team Number: |
| **Q2**. County Name: | Q4. Survey Number: | Q6: Interview Initials: |

**First, we are going to ask about basic household information**

**Q7.** Type of structure □ Single family □ Multiple unit □ Mobile home □ Other _____

**Q8**. How many people live in your household? _____

**Q9**. How many people living in your household are *(list number)*
Less than 2 years old? _#_ 2-17 years old? _#_
18-64 years old? _#_ More than 65 years _#_
□ DK □ Refused

**Q10.** Are you Hispanic or Latino?
□ Yes □ No □ DK □ Refused

**Q11**. What is your race? *(check all that apply)*
□ American Indian/Alaska Native □ Asian
□ Black or African American □ White
□ Native Hawaiian or Other Pacific Islander □ Refused

**Q12.** Is there any adult in your household who does not speak English? □ Yes □ No □ DK □ Refused

**Q13.** What is your current marital status?
□ Married/unmarried couple □ Separated/Divorced
□ Widowed □ Never married □ DK □ Refused

**Q14.** How often in the past 12 months would you say you were worried or stressed about having enough money to pay your rent/mortgage? Would you say you were worried or stressed—
□ Always □ Usually □ Sometimes □ Rarely □ Never □ DK □ Ref

**Q15.** How often in the past 12 months would you say you were worried or stressed about having enough to buy nutritious meals? Would you say you were worried or stressed—
□ Always □ Usually □ Sometimes □ Rarely □ Never □ DK □ Ref

**Q16.** Have you or a member of your household ever been told by a healthcare professional that he/she has

| | | | |
|---|---|---|---|
| Asthma/COPD/Emphysema | □ Yes | □ No | □ DK |
| Diabetes | □ Yes | □ No | □ DK |
| Developmental disability | □ Yes | □ No | □ DK |
| Hypertension/heart disease | □ Yes | □ No | □ DK |
| Immunosuppressed | □ Yes | □ No | □ DK |
| Physical disability | □ Yes | □ No | □ DK |
| Psychosocial/mental illness | □ Yes | □ No | □ DK |

**Q17.** Do you or does any member of your household need…

| | | | |
|---|---|---|---|
| Daily medication (other than birth control or vitamin | □ Yes | □ No | □ DK |
| Dialysis | □ Yes | □ No | □ DK |
| Home health care | □ Yes | □ No | □ DK |
| Oxygen supply | □ Yes | □ No | □ DK |
| Wheelchair/cane/walker | □ Yes | □ No | □ DK |
| Other type of special care | □ Yes | □ No | □ DK |

**Q18.** In the past 5 years, have you or anybody in your household taken training in first aid, CPR, or CERT? □ Yes □ No □ DK

**Now we would like to ask you about your households emergency and evacuation plans**

**Q19.** Does your household have any of the following emergency plans?

| | | | | |
|---|---|---|---|---|
| Emergency communication plan such as a list of numbers and designated out-of-town contact | □ Yes | □ No | □ DK | |
| Designated meeting place immediately outside your home or close by in your neighborhood | □ Yes | □ No | □ DK | □ N/A |
| Designated meeting place outside of your neighborhood in case you cannot return home | □ Yes | □ No | □ DK | □ N/A |
| Copies of important documents in a safe location (e.g., water proof container) | □ Yes | □ No | □ DK | |
| Multiple routes away from your home in case evacuation is necessary | □ Yes | □ No | □ DK | |

**Q20.** Has your household prepared an Emergency Supply Kit with supplies like water, food, flashlights, and extra batteries that is kept in a designated place in your home? □ Yes □ No □ DK

**Q21.** Has your HH prepared a first aid kit with emergency supplies to take with you if you had to leave quickly? □ Yes □ No □ DK

**Q22.** Does your household have adequate drinking water (besides tap) for the next 3 days? (1 gallon/person/day) □ Yes □ No □ DK

**Q23.** Does your household have adequate non-perishable food (e.g., protein bars, nuts) for the next 3 days? □ Yes □ No □ DK

**Q24.** Does your household currently have a 7-day supply of medication for each person who takes prescribed meds?
□ Yes □ No □ DK □ No prescriptions

**Q25.** If public authorities announced a mandatory evacuation from your community due to a large-scale disaster or emergency, would your household evacuate? □ Yes □ No □ DK

**Q26**. What would be the main reason that might prevent you from evacuating if asked to do so? *(choose one)*
□ Lack of transportation □ Lack of trust in public officials
□ Concern about leaving property □ Nowhere to go
□ Concern about personal safety □ Concern about leaving pets
□ Concern about traffic jams □ Inconvenient/expensive
□ Health problems (e.g., could not be moved)

**Q27.** If your household had to evacuate due to a large-scale disaster or emergency, where would you go?
□ Friends/family/2nd home outside your area
□ Hotel or motel
□ American Red Cross, church or community shelter
□ Would not evacuate
□ Other _____
□ DK □ Refused

**Q28**. Do you have a pet(s)? □ Yes □ No

**Q28b.** If ***YES***, in an emergency if your household was asked to evacuate, what would you do with your pet(s)?
□ take it/them with you
□ Find a safe place for it/them
□ leave behind with food and water
□ would not evacuate because of pets
□ would not evacuate □ DK □ Refused

*Continue on following page…*

| **Finally, we would like to ask you about your household communication methods** | |
|---|---|
| **Q26.** What is your households main source of information regarding disaster or emergency events? *(check only one)*<br>□ TV<br>□ Radio<br>□ Text message<br>□ Automated call (e.g., reverse 911)<br>□ Local newspaper<br>□ Neighbor/friend/family/word of mouth<br>□ Poster/flyer<br>□ Church or other groups<br>□ Internet<br>□ Other, _____ □ DK □ Refused | **Q31.** Are you aware of the following materials [*show materials, mention website/campaign, etc*] to better prepare you and your family for a natural disaster or other significant event?<br>□ Yes □ No □ DK<br><br>**Q31b**. If ***YES***, was the information received helpful?<br>□ Yes □ No □ DK<br><br>**Q31c.** If ***YES***, where did you learn about the information?<br>□ TV □ Radio □ Poster/flyer □ Newspaper<br>□ Internet, _____ □ Other, _____<br>□ DK □ Refused<br><br>*Thank you for your time!* |

# Appendix D: Example Questionnaire

| Date: | Cluster: | No of HUs in Cluster: | Survey No: | Interviewer initials: |
|---|---|---|---|---|

**County:**

**1.** Type of Structure: [ ] Single family house
[ ] Multiple unit (e.g., duplex, apartment)
[ ] Mobile home [ ] Other_____

**2.** How many people lived in your home before the storm? ____

**3.** How many people slept in your home last night? _____
a). How many 2 years of age or younger _____
b). How many 3-17 years of age? _____
c). How many 18-64 years of age? _____
d). How many are 65 years or older? _____

**4.** Since the storm, do you feel your house is safe to live in? Y N D/K
If no, why not? _____

**5.** Since the storm, do you feel secure in your area? Y N D/ K
If no, why not? _____

**6.** Was anyone in this house injured since the storm? Y (# of people: _____) N D/K

If yes, what is the age of the injured person(s)? ____ ____ ____

*If yes, specify below:*

| | | | |
|---|---|---|---|
| a). Fall injury | Y (# of people: _____) | N | D/K |
| b). Strain/sprain | Y (# of people: _____) | N | D/K |
| c). Broken bone | Y (# of people: _____) | N | D/K |
| d). Head injury | Y (# of people: _____) | N | D/K |
| e). Cuts, abrasions, puncture wounds requiring medical attention | Y (# of people: _____) | N | D/K |
| f). Burns | Y (# of people: _____) | N | D/K |
| g). CO poisoning | Y (# of people: _____) | N | D/K |
| h). Hypothermia/extreme cold injury | Y (# of people: _____) | N | D/K |
| i). Other: _____ | | | |

**7.** Has anyone in the house become ill since the storm? Y N D/K
*If yes, specify below?*

| | | | |
|---|---|---|---|
| a). Nausea/stomach ache/diarrhea | Y (# of people: _____) | N | D/K |
| b). Cough with fever | Y (# of people: _____) | N | D/K |
| c). Severe headache w/dizziness | Y (# of people: _____) | N | D/K |
| d). Worsened chronic illness | Y (# of people: _____) | N | D/K |
| e). Other: _____ | Y (# of people: _____) | N | D/K |

**8.** Since the storm, is everybody in this house getting the prescription medications they need? Y N D/K N/H
If no, why not? _____

**9.** Is there anyone in the home who needs:
[ ] oxygen supply [ ] dialysis [ ] home health care
[ ] other type of special care (specify: _____ )

**10.** Since the storm, are emotional concerns, anxiety, sleep problems, or memory problems preventing you from taking care of yourself or people depending on you?
Y N D/K

**11.** Do you have pets? Y N D/K
If yes, did having a pet prevent you from seeking alternative shelter or tending to your own health needs? Y N D/K

**Key:**
**Y**= Yes **D/K**= Don't Know
**N**= No **N/H**= Never Had

**12a.** Do you have adequate drinking water for everyone in the house for the next 3 days? Y N D/K
**12b.** What is your present source of drinking water?
Source: [ ] Well [ ] Public/municipal (tap)
[ ] Bottled [ ] No drinking water

**12c.** If using well or municipal (tap) water are you treating the water?
[ ] No [ ] Yes-Boiling [ ] Yes-chemical [ ] D/K

**13.** Do you have adequate food for everyone in the house for the next 3 days?
Y N D/K N/H

**14.** What is your current source of electricity?
[ ] no electricity [ ] gasoline generator [ ] power company [ ] N/H

**15.** What is your current source of heat? [ ] electricity [ ] propane/gas
[ ] wood [ ] coal/charcoal [ ] Other _____

**16.** Since the storm, have you used a generator?
Y N D/K
If yes, where and how do you use it?
[ ] Indoors [ ] In the garage
[ ] Outside: _____ feet away from home
If outside, near an open door/window? Y N D/K

**17.** Since the storm, have you cooked on a charcoal or gas grill/ camp stove?
Y N D/K
If yes, where and how do you use it?
[ ] Indoors with door/window open
[ ] Indoors with door/window closed
[ ] Outside: _____ feet away from home
If outside, near an open door/window? Y N D/K

**18**. Do you have a carbon monoxide detector? Y N D/K
If yes, is it working? Y N D/K

**19**. Do you have transportation available if needed? Y N D/K N/H

**20.** Do you have a working toilet or enough water to flush your toilet?
Y N D/K N/H

**21.** Do you have a working telephone? Y N D/K N/H

**22.** Did you get warning about the storm? Y N D/K
If yes, what was the source?
[ ] TV [ ] Neighbor, word of mouth
[ ] Radio [ ] Internet
[ ] Flyer/poster [ ] Newspaper [ ] Other: _____

**23.** Have you gotten health advice or information related to the storm?
Y N D/K
If yes, what was the source?
[ ] TV [ ] Neighbor, word of mouth
[ ] Radio [ ] Internet
[ ] Flyer/poster [ ] Newspaper [ ] Other: _____

**24**. Have you seen or heard warnings about CO poisoning?
Y N D/K

**25.** Does anyone in the home currently require urgent medical care?
Y N D/K

**26.** What is your greatest need at this moment?

## Appendix E: Community Assessment for Public Health Emergency Response Tracking Form

County: ……Cluster # (i.e., 1-30): ……. # of Houses in the Cluster……Interviewer: ……Date of Interview: ….. / ….. /….

**Instructions:** Use one tracking form per cluster. Check where appropriate, but try to choose only one best option for each of the five categories. Go as far down the list as possible for each site you visit. Use neighbors to find information if no resident is available.

| Sampled Housing Units | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1) ACCESS** | | | | | | | | | | | | | | | | | |
| House is Accessible | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| House is Inaccessible | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **2) TYPE OF DWELLING** | | | | | | | | | | | | | | | | | |
| No housing structure | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Mobile Home | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Single Family Home | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Apartment or Condo | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Other | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **3) DAMAGE** | | | | | | | | | | | | | | | | | |
| None or Minimal | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Damaged | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Destroyed | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **4) ANSWER** | | | | | | | | | | | | | | | | | |
| Door was answered | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Appears as though someone is home but no answer | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Appears vacant | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Nobody home after… 1st visit | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 2nd visit | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 3rd visit | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **5) INTERVIEW** | | | | | | | | | | | | | | | | | |
| Language Barrier | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Refused to Participate | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Interview begun, not finished | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Interview Completed | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Survey # (i.e., 1–7) from Completed Questionnaire: | | | | | | | | | | | | | | | | | |

**Community Assessment for Public Health Emergency Response Sample Tracking Form (reverse side)**

**Instruction**s: Use this page to keep notes on which houses may need return visits.

Sampled Housing Unit:

1.

2.

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## Appendix F: Confidential referral form (sample)

**Community Assessment for Public Health Emergency Response**
*[Disaster name]*

**Confidential Referral Form**

**Date: __/__/____ Time: __:__**

**Cluster No.: _____**

**Interviewer's Initials: _____**

Name: _____

Address: _____

Contact Information:

Home telephone: _____ - _____ - _____

Cell phone: _____ - ____ - _____

E-mail: _____

---

Summary of Need:

_____
_____
_____
_____
_____
_____
_____

Referral Made: Yes ☐ No ☐

Referred to: _____

## Appendix G: Introduction and consent script (sample)

**Community Assessment for Public Health Emergency Response**

Hello, we are _____and_____ with the [*insert name of local or state health department*]. We have some information we would like to leave with you related to *[topic of material (e.g., some health concerns, carbon monoxide, proper cleanup)]* following the recent [*disaster (e.g., hurricane, ice storm, tornado)*].

Also, we are talking to residents in *[name of county(s)]* county who have been affected by the *[disaster]* about their health and other needs so that we can get a better idea of what kind of help people need. Your house is one of many that have been randomly chosen to be in this survey. If you agree to participate, we will ask you some general questions about your house and the people who live there and questions about certain kinds of environmental hazards. The survey should take no more than *[time a mock interview using the final questionnaire and insert time here]* to complete. We will keep your answers private. You can refuse to take part in the survey or refuse to answer any of the questions. Nothing will happen to you or your household if you choose not to take part in the survey.

You may have questions about this survey. If so, you can ask anyone here right now. If you would like to confirm that we were sent by the [*insert name of local or state health department*], you can call [*insert contact person name, department, and phone number*].

Are you willing to participate in this survey?

*[WAIT FOR RESPONDENT TO CLEARLY ANSWER **YES** OR **NO**].*

Thank you very much for your time.

## Appendix H: Agenda for just-in-time training of field interview teams

**Community Assessment for Public Health Emergency Response**

1. Background of the disaster (or reason for CASPER)

2. Purpose of the CASPER
    a. Rapidly obtain data for decision-making efforts
    b. Specific goals of current CASPER

3. Brief methodology overview: What is CASPER?
    a. Two-stage cluster sample
    b. Importance of field teams in the success of CASPER

4. Organization of teams
    a. Introduction of all CASPER field team members (name, background, experience)
    b. Assign specific assessment areas and hand out packets
    c. Exchange phone numbers

5. Selecting households
    a. Introduce cluster maps
    b. Describe household selection process

6. Review questionnaire
    a. Interviewing tips
    b. Clarification of specific questions (e.g., intent of question, explanation of skip patterns)

7. Completing forms
    a. Tracking form review
        i. Ensure all personnel understand the need to fill out the tracking form for EVERY HOUSE where contact was attempted.
    b. Introduction and consent script review
    c. Review of public health materials/handouts
    d. Situations requiring immediate referral

8. Safety briefing

9. Logistics
    a. Meeting and/or call-in time(s) and place(s)
    b. Transportation
    c. Food and water
    d. Identification badges for all field team members
    e. Contact information/communication
    f. Instructions for potential media encounters
    g. Debriefing time/location

## Appendix I: Sample Interview teams tracking form

| Team ID (#) | Names | Cell phone # | Assigned Cluster(s) # | County/District | Dispatch time to cluster | Arrival time | Completion time | Dispatch time to base | Arrival time to base |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Helen Tamara, | 703-111-1515 | 10 | Webster | 9:15 am | 9:30 am | 11:00 am | 4:10 pm | 5:30 pm |
| | Carlos Garcia, | | 17 | Webster | 11:05 am | 11:15 am | 12:30 pm | | |
| | | | 30 | Union | 1:45 pm | 2:00 pm | 4:00 pm | | |
| | | | | | | | | | |
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| 9 | | | | | | | | | |
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| 10 | | | | | | | | | |
| | | | | | | | | | |

## Appendix J: CASPER field interview team evaluation

1. In your opinion, what went well? What did not go well?

2. To what extent do you think this assessment will be useful to your community in responding to this emergency?

3. Did you think you were prepared (e.g., training, food, safety, communications, supplies) for your assignment?

4. Would you want to participate on a team in the future?

5. If we were to do this assessment again, what improvements can be made?

6. Did you learn anything from this experience?

7. Were there specific situations that you encountered that you want to tell us about relating to
    a. Orientation of field teams?
    b. Assessment methods?
    c. Questionnaire?
    d. Supplies and equipment?
    e. Food?
    f. Safety?
    g. Communications?
    h. Transportation?

8. Please provide any additional comments

**THANK YOU FOR YOUR SERVICE TO YOUR COMMUNITY**

## Appendix K: Sample final report*

**Community Assessment for Public Health Emergency Response (CASPER) after the major ice storms, Kentucky 2009**

**BACKGROUND**

On January 26, 2009, a massive ice storm hit Kentucky causing 36 deaths and leaving 770,000 people without power across the state. The storm continued for three days with ice over an inch thick reported in many locations and snow accumulating across the state. Property damage was widespread and basic communication was drawn to a halt due to fallen trees and power lines weighed down by the ice. Public health officials were concerned of the health status and needs of the western portion of Kentucky where communication with the state health department was nonexistent due to the storm. To address these concerns, on February 2, 2009, the Kentucky Department for Public Health (KY DPH) requested assistance from the Centers for Disease Control and Prevention (CDC) in conducting a needs assessment in the severely affected areas in the Pennyrile District of Western Kentucky. The purpose of the CASPER was to determine health and safety needs of residents living in Western Kentucky who were severely impacted by the ice storm.

**METHODS AND MATERIALS**

CDC and KY DPH conducted a Community Assessment for Public Health Emergency Response (CASPER) along portions of western Kentucky that were severely affected by the ice storm. On the basis of regional and local information, the KY DPH leadership decided to conduct the assessment in four severely impacted counties in the Pennyrile District of Western Kentucky (i.e., Livingston, Caldwell, Lyon, and Crittenden counties) where communication had been severely hindered due to the storm. CASPER is an epidemiologic technique designed to provide household-based information about an affected community's needs following a disaster. CASPER rapidly obtains accurate and timely data in a relatively inexpensive manner through

*This is a sample report. While the information in this sample report is based on real events, it is not a complete account of the work conducted by the Kentucky Department of Health and the Centers for Disease Control and Prevention in response to the ice storms.

SAMPLE

precise analysis and interpretation. The information gained is then shared in a simple format with decision-makers to inform response efforts. CDC developed a one-page questionnaire in coordination with the KY DPH. The questionnaire was designed to capture 1) demographic information; 2) concerns about injuries and illnesses, including mental health concerns; 3) medication availability and access to care; 4) information about basic utilities, transportation, generator usage, and risky behaviors for carbon monoxide exposure; 5) supply needs, such as food and water; and 5) communication usage, including information on warnings and gathering health advice (see questionnaire: Appendix D).

A two-stage sampling method was used to select a representative sample of 210 households to be interviewed across the four selected counties. In the first stage, 30 clusters (census blocks) were selected with probability proportional to the number of housing units within the census block according to the 2000 Census. In the second stage, interview teams randomly selected seven households from each of the 30 clusters. The interview teams were provided with detailed maps of each selected cluster and instructed to select the housing units for the seven interviews by use of a standardized method for randomization.

A three-hour training session on interview techniques, safety issues, household selection, tracking methods, and referrals was given on February 5, 2009 to the 15 two-person interview teams. Teams consisted primarily of Kentucky public health staff from the local western Kentucky region and Epidemic Intelligence Service Officers from the Centers for Disease Control and Prevention. Each team attempted to conduct seven interviews in each of the 30 census blocks selected for the sample, with a goal of 210 total interviews. Residents of the selected households who were at least 18 years of age or older were considered eligible respondents. Additionally, the field team members distributed flyers provided by KY DPH, with information regarding kerosene and chainsaw safety, food safety, and carbon monoxide poisoning. Teams were instructed to complete confidential referral forms whenever they encountered urgent needs and to forward the forms to the KY DPH for immediate follow up.

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Epi Info™ 3.5.1, a free statistical software package produced by the CDC, was used for data entry and analysis. We conducted weighted cluster analysis to report the estimated number of households affected in the assessment area. To account for the probability that the responding household was selected, we created sampling weights based on the total number of occupied houses according to the 2000 Census, the number of clusters selected, and the number of interviews completed in each cluster. This weight was used to calculate all weighted frequencies and percentages presented in this report. The contact rate was calculated by dividing the completed interviews by the total number of households where contact was attempted; the cooperation rate was calculated by dividing completed interviews by the total number of households where contact was made; and the completion rate was calculated by dividing the number of completed interviews by 210 (i.e., the goal for completed interviews in this CASPER).

**RESULTS**

On February 7, 2009, the interview teams were able to conduct 187 interviews, yielding a completion rate of 89% (Table 1). The 187 interviewed households were a sample of the 19,497 total households in Livingston, Caldwell, Lyon, and Crittenden counties. Unweighted frequencies, percentages, and projected population estimates based on weighted analyses can be found in Table 2 through Table 5.

Household demographics, evacuation behaviors, and utilities are shown in Table 2 and Table 3. Twenty-two (22%) percent of households with pets claimed that owning a pet prevented them from seeking alternative shelter or tending to their own health needs. At the time of the CASPER, 12 days after the storm began, the majority of residents felt safe and secure in their homes (97%) and neighborhoods (92%). However, 9% of households did not have any source of electricity and 17% of households were using generators as their source of electricity. Approximately half (52%) of households were using bottled water as their source of drinking water. The remaining households were using well or municipal water, and 77% of those households were not treating their water. Additionally, 5% of households reported they did not have enough water or food for the next three days.

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An estimated 58% of households reported using a generator at some point since the ice storm (Table 4). Of those households, less than half (39%) had reported owning a carbon monoxide detector and only 73% of those with detectors reported it was currently working. In addition, approximately 1% of households were using their generator indoors, 3% in the garage, and 5% outdoors but near an open window. However, no severe headaches or dizziness was reported among these respondents (data not shown). Approximately 80% of households using a generator reported running them within 25 feet of their house. Additionally, of the 38% of households who had used a charcoal/gas grill since the storm, almost a third self-reported improper usage, with 21% using grills inside, and 9% of those using grills outside reported using them near an open window or a door.

Self-reported health status, current needs, and access to care are shown in Table 5. Since the ice storm, 5% of households reported at least one person who was injured and 17% reported at least one person in the household who experienced one or more illnesses. Nausea, stomach ache, or diarrhea were the most commonly reported illnesses, with 4% of households reporting at least one person experiencing symptoms (25% of households reported one or more illnesses), followed by 3% of households reporting at least one person with cough with fever (19% of households reported one or more illnesses), and 2% of households reporting at least one person with severe headache with dizziness (11% of households reported one or more illnesses). Three percent of households indicated that someone in their home needed supplemental oxygen, and 6% reported they were not getting needed medication. In addition to these injuries and illnesses, 15% of households reported at least one person with mental health concerns.

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**DISCUSSION**

The data presented here represent reports from the CASPER surveys conducted in Livingston, Caldwell, Lyon, and Crittenden counties on February 7, 2009. To create sampling weights, information from the 2000 Census was used to determine the household probability of being

selected. Some areas may have experienced significant population changes since 2000, and thus, Census data may not be representative of the current population in those areas. Changes in population since the previous census may result in less reliable generalizations of weight analyses to the sampling frame. The discrepancy between the 2000 Census and the current status would not, however, affect the unweighted frequencies presented in this report. Further, local knowledge of the Pennyrile District report relatively minor changes in population over the past decade. The contact rate, 54.4%, indicates that the field interview teams had to sample more households within the clusters to complete the necessary number of interviews, and this additional sampling might affect the representativeness of the results. In other words, interview teams completed, on average, one interview for every two houses selected. Additionally, there is no available information from a baseline or comparison group that can be used to interpret the percentages of illnesses reported.

This CASPER met the stated purpose of determining health and safety-related needs of residents living in the severely affected regions of Western Kentucky to inform KY DPH storm-response efforts based on the public health recommendations (see below). Although these communities were still recovering from the ice storm, overall, most residents felt safe and secure in their homes and neighborhoods and reported having enough food and water for the next three days. Additionally, most residents reported the capability to procure personal medication and transportation, if needed. As of the day they were interviewed (i.e., February 7, 2009), many residents in the Pennyrile District were still waiting for power to be restored by the electric company, but several of them were using generators to power their homes. More than half the residents had used a generator at some time since the ice storm. There were many reports of improper or unsafe generator use that should be addressed in public health messages to prevent carbon monoxide poisoning. Further, the majority of those using well or municipal water were not treating their water. Additional information is needed to determine which counties were under boil-water advisories at the time of the CASPER to assess the number of households who may have been unaware they were consuming water that should have been boiled.

SAMPLE

**RECOMMENDATIONS** On the basis of the results of the CASPER, the following actions are recommended:

**1. Emphasize carbon monoxide exposure risks and employ early communication of prevention messages by using appropriate media.**

Since a high percentage of households reported improper generator and/or charcoal grill usage, messaging about carbon monoxide exposure should be communicated to the affected area. These messages should be distributed through a variety of media because a lack of electricity, poor road conditions, and questionable telephone service might prevent people from accessing their usual sources of information. Therefore, carbon monoxide exposure prevention messages communicated after the storm should include radio announcements for those who have battery-powered radios and, if cellular service is available, providers should be contacted as soon as possible about the possibility of sending mass public service text messages. Ideally, these messages should be prepared or obtained in advance of the disaster and, for future events, should be communicated before the storm hits and as soon as possible after the storm.

**2. Emphasize safe generator use**

Safe generator location should be the main focus of these prevention messages. However, during the course of the CASPER, several people indicated that they were aware of recommendations to use generators away from the house but did not do so because they were afraid of having the generator stolen or ruined by rainfall. Also, short extension cords sometimes limit the user's ability to place the generator at a safe distance from the house. Therefore, in addition to specific information about unsafe generator placement behaviors (e.g., indoors, in a basement or a garage, near an open window), prevention messages should include specific advice, such as procuring a lock and chain, to secure the generator to a tree or other solid structure; placing the generator on a flat surface that is not subject to puddling; sheltering the generator under an outside table to prevent water damage and electrocution; obtaining a long extension cord rated for outdoor use; and obtaining a carbon monoxide detector that is either battery-powered or AC-powered with a battery back-up. Additionally, vendors should be encouraged to provide safety information at the point of sale and to advise

SAMPLE

customers to purchase locks, chains, long extension cords for outdoor use, and carbon monoxide detectors, along with the generator.

**3. Discuss other unsafe heating sources**

A number of unconventional heating sources (e.g., charcoal grills and gas stoves) were used during the power outages. Prevention messages should include specific information to the effect that these heating sources are unsafe.

**4. Consider establishing pet-friendly shelters**

Over 20% of respondents reported that they did not seek alternative shelter due to their pets. Future efforts to provide pet-friendly shelters are encouraged.

**5. Respond to the needs of oxygen-dependent people**

Kentucky has a high rate of lung disease; a noteworthy number of households indicated the immediate need for supplemental oxygen. State health officials should immediately respond to these needs and, in the future, should be prepared to respond to the needs of oxygen-dependent residents (e.g., ensuring enough oxygen canisters are available for those in need, providing a place with a source for charging oxygen devices, and developing a plan to identify and contact those in need).

**6. Communicate available mental health resources**

Sixteen percent of respondents in Livingston, Caldwell, Lyon, and Crittenden counties reported mental health concerns. It is unclear from these data what (if any) portion of these mental health concerns can be attributed to the ice storm specifically. Nonetheless, county officials should promote community awareness of available mental health resources.

SAMPLE

**TABLES**

**Table 1. Questionnaire response rates for the February 2009 Western KY CASPER**

| Questionnaire response | Percent | Rate |
|---|---|---|
| ***Completion**** | 89.0 | 187/210 |
| ***Contact**† | 54.4 | 187/344 |
| ***Cooperation**‡ | 97.9 | 187/191 |

* Percent of questionnaires completed in relation to the goal of 210
† Percent of questionnaires completed in relation to all households where contact was attempted
‡ Percent of questionnaires completed in relation to all households where contact was made

**Table 2. Self-reported housing type, perceived safety of respondents and pet ownership, Western KY CASPER, February 2009**

| Characteristic | Frequency (n=187) | % of households | Projected households | Projected % | 95% CI |
|---|---|---|---|---|---|
| ***Housing Structure*** | | | | | |
| Single family | 148 | 82.2 | 15451 | 82.6 | 74.4–90.8 |
| Multiple unit | 14 | 7.8 | 1336 | 7.1 | 0–15.0 |
| Mobile home | 18 | 10.0 | 1915 | 10.2 | 5.0–15.5 |
| ***Safety*** | | | | | |
| Feel safe in house | 181 | 96.8 | 18797 | 97.0 | 94.4–99.7 |
| Feel secure in area | 171 | 92.9 | 17629 | 92.4 | 87.4–97.4 |
| ***Pets*** | | | | | |
| Have pets | 114 | 61.0 | 11993 | 61.9 | 52.0–71.8 |
| Pet prevented from seeking shelter | 25 | 21.9%* | 2660 | 22.2%* | -- |

* Of households with pets (n=114)

SAMPLE

**Table 3. Self-reported basic utilities, Western KY CASPER, February 2009**

| Characteristic | Frequency (n=187) | % of households | Projected households | Projected % | 95% CI |
|---|---|---|---|---|---|
| ***Food and Water*** | | | | | |
| Inadequate drinking water | 9 | 4.8 | 923 | 4.8 | 1.0–8.5 |
| Inadequate food | 8 | 4.3 | 887 | 4.6 | 0–9.2 |
| ***Source of Drinking Water*** | | | | | |
| Bottled | 91 | 49.2 | 10000 | 52.1 | 41.3–62.9 |
| Well | 11 | 5.9 | 1050 | 5.5 | 1.5–9.5 |
| Public/municipal | 83 | 44.9 | 8110 | 42.4 | 32.1–52.6 |
| Not treating water | 70 | 74.5* | 7081 | 77.3* | -- |
| ***Current Source of Electricity*** | | | | | |
| Power company | 137 | 74.1 | 14190 | 74.0 | 61.9–86.0 |
| Gasoline generator | 29 | 15.7 | 3200 | 16.7 | 7.6–25.7 |
| None | 19 | 10.3 | 1789 | 9.3 | 3.8–14.8 |
| ***Current Source of Heat*** | | | | | |
| Electricity | 69 | 37.7 | 7066 | 37.2 | 27.7–46.7 |
| Propane/gas | 93 | 50.8 | 9939 | 52.4 | 43.2–61.5 |
| Wood | 11 | 6.0 | 1026 | 5.4 | 1.5–9.3 |
| Kerosene heater | 3 | 1.6 | 286 | 1.5 | -- |
| Other | 7 | 3.7 | 668 | 3.4 | -- |
| ***Had working toilet*** | 181 | 96.8 | 18809 | 97.1 | 94.9–99.3 |
| ***Had working phone*** | 174 | 93.5 | 17879 | 92.8 | 87.2–98.3 |

* Of households whose primary source of drinking water was well or public/municipal (n=94)

SAMPLE

**Table 4. Self-reported carbon monoxide exposure risk behaviors, Western KY CASPER, February 2009**

| Characteristic | Frequency (n=187) | % of households | Projected households | Projected % | 95% CI |
|---|---|---|---|---|---|
| ***Generator Use*** | **105** | **56.1** | **11248** | **58.1** | **47.8–68.3** |
| Inside | 1 | 1.0* | 95 | 0.9* | -- |
| Garage | 4 | 3.8* | 382 | 3.4* | -- |
| Outside | 97 | 92.4* | 10481 | 93.2* | -- |
| Near open window | 6 | 6.2† | 549 | 5.2† | -- |
| ***Charcoal Grill/Gas Grill/Camp Stove Use*** | **68** | **38.0** | **7300** | **38.3** | **30.0–46.5** |
| Inside w/window open | 7 | 10.4‡ | 922 | 12.6‡ | -- |
| Inside w/window closed | 7 | 10.4‡ | 922 | 12.6‡ | -- |
| Outside | 53 | 79.1‡ | 5487 | 75.2‡ | -- |
| Near open window | 5 | 9.0** | 465 | 8.5** | -- |
| ***Have CO detector*** | **69** | **36.9** | **7609** | **39.3** | **29.2–49.4** |
| Working CO detector | 49 | 71.0†† | 5557 | 73.0†† | -- |

* Of the households who reported using a generator (n=105)
†Of the households who reported using a generator outside (n=97)
‡Of the households who reported using a grill/stove (n=68)
**Of the households who reported using a grill/stove outside (n=53)
††Of the households with a CO detector (n=69)

SAMPLE

**Table 5. Self-reported health status, current needs and access to care, Western KY CASPER, February 2009**

| Characteristic | Frequency (n=187) | % of households | Projected households | Projected % | 95% CI |
|---|---|---|---|---|---|
| ***Injury*** | | | | | |
| Injured since storm | 9 | 4.8 | 885 | 4.6 | 1.5–7.6 |
| ***Illness*** | | | | | |
| Become ill since storm | 32 | 17.1 | 3372 | 17.4 | 10.4–24.3 |
| Nausea/stomach ache/diarrhea | 8 | 4.3 (25.0 of ill) | 817 | 4.2 (24.2 of ill) | -- |
| Cough with fever | 7 | 3.7 (22.0 of ill) | 668 | 3.4 (19.8 of ill) | -- |
| Severe headache w/dizziness | 4 | 2.1 (12.5 of ill) | 382 | 2.0 (11.3 of ill) | -- |
| Chronic illness worsened | 2 | 1.1 (6.3 of ill) | 191 | 1.0 (5.7 of ill) | -- |
| ***Mental Health*** | | | | | |
| Emotional concerns, anxiety, sleep problems, or memory problems | 30 | 16.0 | 2926 | 15.3 | 8.3–22.1 |
| ***Medication*** | | | | | |
| Not getting needed medication | 11 | 5.9 | 1102 | 5.7 | 1.7–9.7 |
| ***Special Needs*** | | | | | |
| Home health care | 1 | 0.5 | 95 | 0.5 | -- |
| Oxygen | 6 | 3.2 | 627 | 3.2 | -- |
| Dialysis | 1 | 0.5 | 95 | 0.5 | -- |
| CPAP | 1 | 0.5 | 95 | 0.5 | -- |
| Breathing treatment | 1 | 0.5 | 95 | 0.5 | -- |
| ***Transportation*** | | | | | |
| *Available if needed* | 185 | 99.5 | 19179 | 99.5 | 98.4–100.5 |

SAMPLE

## Appendix L: Summary of Community Assessment for Public Health Emergency Response (CASPER) Procedures

**Phase I**

- **Prepare for CASPER**
  - Define objectives
  - Sampling and Mapping
    - Define the geographic area
    - Secure required data for cluster sampling
    - Determine clusters' boundary (i.e., block group or block) and sampling unit (i.e., household or housing unit) for cluster selection
    - Randomly select 30 clusters
    - Generate cluster maps by using the Census Website or GIS software
  - Materials and logistics
    - Develop the data collection instrument and database
    - Develop data entry platform
    - Prepare the tracking form
    - Prepare the referral form
    - Prepare the consent form
    - Identify field coordination center (facility with phone, fax, and internet access)
    - Organize the assessment teams
    - Provide training for field teams
    - Prepare supplies and other assessment materials (e.g., public health messaging relevant to the disaster, contact list of relief and resource centers, etc.)

↓

**Phase II**

- **Conduct the Assessment**
  - Navigate to the cluster
  - Randomly choose the starting point
  - Count the houses in the cluster and divide by 7 to determine the sample interval
  - Select systematically the seven households and select the individuals to interview
  - Introduce the team and read the verbal consent
  - Conduct the interview
  - Complete the tracking form
  - If necessary, complete the referral form and send it to the designated person
  - Hand out public health materials

↓

**Phase III**

- **Analyze Data**
  - Enter data
  - Merge and clean entered data
  - Generate unweighted and weighted frequencies, percentages, and confidence intervals
  - Interpret the findings

↓

**Phase IV**

- **Write the Report**
  - Write preliminary report within 72 hrs of the assessment during disaster situations
  - Write the final report and disseminate the findings to the stakeholders