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Estimating the Prevalence of Uninsured Children: An Evaluation of Data From the National Survey of Children with Special Health Care Needs, 2001

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Centers for Disease Control and Prevention
National Center for Health Statistics

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Data Evaluation and Methods Research

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Centers for Disease Control and Prevention
National Center for Health Statistics

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Abstract

Objectives

The National Survey of Children with Special Health Care Needs revealed that 8.3% of children under 18 years of age were uninsured, a rate lower than the rate estimated by other national surveys. This report presents the results of an evaluation of the quality of this estimate, based on analyses of nonresponse, question design, interviewer and respondent effects, and the weighting and estimation process. National and State-level statistics on health insurance coverage for children with special health care needs (CSHCN) and for children without special needs are included in an appendix.

Source of Data

The National Survey of CSHCN is a survey module of the State and Local Area Integrated Telephone Survey. This survey of parents and guardians collected health insurance coverage information for a national sample of 215,162 children. Data were collected from October 2000 through April 2002.

Results

Compared with other surveys, weighted data from the National Survey of CSHCN describe a population with a slightly larger proportion of Hispanic children and children from households with higher incomes. The National Survey of CSHCN was also the only survey to use a child-level design: A randomized experiment that varied the health insurance questions found that repeating the coverage questions for each child produced lower uninsurance rates than household-level questions that first asked if anyone in the household was insured.

Conclusion

Question design differences explain much of the discrepancy between survey estimates of the uninsurance rate, but a definitive conclusion regarding the relative accuracy of the uninsurance rates is not possible.

Keywords: *Health insurance • health surveys • data quality*

Estimating the Prevalence of Uninsured Children: An Evaluation of Data From the National Survey of Children with Special Health Care Needs, 2001

by Stephen J. Blumberg, Ph.D., Centers for Disease Control and Prevention; Larry Osborn, M.P.H., Abt Associates Inc.; Julian V. Luke, Centers for Disease Control and Prevention; Lorayn Olson, Ph.D., Abt Associates Inc.; Martin R. Frankel, Ph.D., Baruch College, City University of New York and Abt Associates Inc.

Introduction

The National Survey of Children with Special Health Care Needs was designed to estimate the national and State-specific prevalence of children with special health care needs (CSHCN), describe the types of services that they need and use, and assess shortcomings in the system of care for CSHCN (1). The survey, fielded from October 2000 through April 2002, was sponsored by the Maternal and Child Health Bureau (MCHB) of the Health Resources and Services Administration.

The initial design of the National Survey of CSHCN called for collection of health insurance coverage data for CSHCN only. However, given that only 13% of children have special health care needs (2), a considerable number of children without special health care needs would also be identified during the screening process. MCHB and the Office of the Assistant Secretary for Planning and Evaluation (OASPE) in the Department of Health and Human Services (DHHS) recognized the benefit of collecting health insurance coverage data for the children without special needs. These data would facilitate the comparison of health insurance coverage estimates for children with and without special needs and would permit State-specific estimates of health insurance coverage for all children.

Health insurance data were collected for a total of 215,162 children—38,866 children with special needs and 176,296 children without special needs. Funding for the collection of data concerning children without special needs was provided by MCHB and OASPE. OASPE funds came, in part, from the Congressional allocation for the DHHS evaluation of the State Children's Health Insurance Program (SCHIP), as mandated in the Balanced Budget Refinement Act of 1999.

This report compares estimates of the prevalence of uninsured children from the National Survey of CSHCN with estimates from other surveys. Possible explanations for observed differences are explored with a focus on differences in survey design, potential demographic biases in the National Survey of CSHCN sample, and two experiments on the influence of questionnaire design.

Survey Methods

Details concerning the questionnaire and survey methods are available in a Vital and Health Statistics Series report entitled *Design and Operation of the National Survey of Children with Special Health Care Needs, 2001* (3). This section provides an overview of these topics.

Sample Design

The National Survey of CSHCN was conducted as a module of the State and Local Area Integrated Telephone Survey (SLAITS). The SLAITS program, sponsored by the Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS), is a broad-based, ongoing surveillance system available at the State and local levels for tracking and monitoring the health and well-being of children and adults. SLAITS uses the same sampling frame as the National Immunization Survey (NIS), which is conducted jointly by NCHS and the CDC's National Immunization Program (4). The NIS is a large-scale random-digit-dial telephone survey that screens for the presence of young children in sampled households and collects vaccination history information for eligible children (5). The size of the NIS sample provides an economical opportunity to survey other populations in addition to the rare population that eventually screens into the NIS itself.

The goal of the National Survey of CSHCN was to generate samples representative of the State populations of noninstitutionalized children with and without special health care needs. An additional goal of the National Survey of CSHCN was to obtain State-specific sample sizes that were sufficiently large to permit precise estimates of the characteristics of CSHCN in each State. To achieve these goals, State samples were designed to obtain 750 completed interviews concerning CSHCN. A target number of health insurance interviews for children without special needs was not set. Rather, for each contacted household with children, a health insurance interview for a child without special needs was done if at least one such child was identified.

The target population for the survey consisted of households with children under 18 years of age. Telephone households within each of the 50 States and the District of Columbia were identified via random-digit dialing. These households were screened for children within the eligible age range. If children were in the household, screening questions were asked about their health status and care needs. If any children in the household were identified as having special health care needs, one was randomly selected for a detailed interview. Similarly, if there were children without special needs, one was randomly selected for a brief health insurance interview. Therefore, eligible households with children could have either one or two children selected for an interview, depending on the care needs of the children in the household. The health insurance sections of the interviews for children with and without special needs were identical.

Response

Data collection and processing was conducted by Abt Associates Inc., under contract to NCHS. Health insurance interviews were completed with the parents and guardians of 215,162 children from 192,321 households. Of these children, 38,866 had special health care needs and 176,296 did not.

The respondent for the National Survey of CSHCN was the parent or guardian in the household who was most knowledgeable about the children's health and health care. The majority of respondents were mothers or female guardians of the children (78.9%). The remaining respondents were fathers or male guardians (17.2%), grandparents (2.4%), or other relatives or friends (1.5%).

A weighted response rate was calculated for the National Survey of CSHCN to reflect the potential for nonresponse bias in the sample of children for whom health insurance data were collected. This response rate, based on the Council of American Survey Research Organizations guidelines, was calculated in accordance with the American Association for Public Opinion Research's standard definitions (6) and using the assumptions for Response Rate #3 detailed by Ezzati-Rice and others (7). Nationally, the response rate was 61.8%.

Survey Content

The National Survey of CSHCN questionnaire included several questions regarding insurance coverage. These questions appear in table A. Questions asked separately about private coverage (defined as employer- or union-based or purchased directly), Medicaid, SCHIP, military coverage, and Title V. After the series of coverage-specific items, a catch-all question asked whether the child was covered by any other insurance not previously mentioned. If "other" insurance was reported, an open-ended item captured the name or type of insurance. When either private or "other" insurance was reported, a followup question to determine the comprehensiveness of the coverage asked whether the insurance covered doctor visits and hospital stays.

If the respondent answered negatively to coverage under all of the types mentioned, a confirmation question was asked. If a respondent indicated that the child was insured, the respondent was asked what kind of health insurance the child had. As with the initial series of insurance items, if "other" insurance was reported at this point, an open-ended item captured the name or type of insurance. When private or "other" insurance was reported, a followup question asked whether the reported insurance covered doctor visits and hospital stays.

No questions asked directly about single-service plans (e.g., dental or accident insurance) or health coverage plans for American Indians or Alaska Natives (e.g., Indian Health Service). When these types of coverage were reported (e.g., in the verbatim response following a report of "other" insurance), they were not considered to be a comprehensive type of insurance.

Table A. Health insurance questions used in the National Survey of Children with Special Health Care Needs

Stem question	Followup questions
1.	Now I have a few questions about health insurance and health care coverage for your child. At this time, is your child covered by health insurance that is provided through an employer or union or obtained directly from an insurance company? (IF YES TO #1) Does this health insurance help pay for both doctor visits and hospital stays?
2.	At this time, is your child covered by Medicaid, a health insurance program for persons with certain income levels and persons with disabilities? [IF APPLICABLE: In this State, the program is sometimes called _____.]
3.	At this time, is your child covered by the State Children's Health Insurance Program or SCHIP? [IF APPLICABLE: In this State, the program is sometimes called _____.]
4.	At this time, is your child covered by military health care, TRICARE, CHAMPUS, or CHAMP-VA?
5.	At this time, is your child enrolled in a Title Five program? [IF APPLICABLE: In this State, the program is sometimes called _____.]
6.	At this time, is your child covered by any other kind of health insurance or health care plan that pays for services obtained from hospitals, doctors, and other health professionals? (IF YES TO #6) What kind of health plan is it? (IF YES TO #6) Does this health insurance help pay for both doctor visits and hospital stays? (IF YES TO #6) Is this health insurance provided through an employer?
7.	(IF NO TO #1–#6) It appears that your child does not have any health insurance coverage to pay for services from both hospitals and doctors and other health professionals. Is that correct? (IF NO TO #7) What kind of health coverage does your child have? (IF PRIVATE/OTHER) Does this health insurance help pay for both doctor visits and hospital stays?

NOTE: See "Appendix I" for a list of States with applicable Medicaid and SCHIP program names. For more detail about interviewer instructions and response coding, see the specifications in the *Design and Operation of the National Survey of Children with Special Health Care Needs, 2001* (3).

The National Survey of CSHCN made a number of efforts to effectively capture the insurance status of the children. Careful attention was paid to wording of the introductory script and question text, appropriate use of followup questions to establish comprehensiveness of coverage reported, and development of help-screen text to guide interviewers and respondents in accurate reporting and coding. The following are a few examples:

- During pretesting, the introduction to the health insurance section of the interview referred to questions about health insurance that the sampled child "may have." To more clearly indicate that the questions pertained to coverage that the child did, in fact, have, the introductory script used in the main study was, "Now I have a few questions about health insurance and health care coverage for (CHILD)."
- To establish the fact that current point-in-time coverage was the focus of the insurance items, the words "at this time" were added to the beginning of each individual coverage question.
- Because the phrase "private insurance" may not have been familiar to all respondents, it was not used in the question about private coverage. Instead, the question asked specifically about coverage through an employer or union or purchased directly.
- The private coverage question was asked first in the series of insurance items. Because respondents often answered this question with a plan name, an on-screen instruction prompted interviewers to probe further in such cases so as to determine whether the plan was provided through an employer or union or was purchased directly.
- Because single-service plans were not considered to be comprehensive coverage, on-screen text for the private and "other" coverage items prompted the interviewers not to include dental, vision, school, or accident insurance in the answers.
- If only initials or a partial plan name were offered at the open-ended "other" insurance item, interviewers were instructed to probe for a full plan name.
- In the questions regarding Medicaid, SCHIP, and Title V coverage, the State-specific program names for each type of coverage were included in the question text, in case respondents recognized the State program name, but not the national program affiliation. The terms "Medicaid," "SCHIP," and "Title V" were also used, in case the reverse was true. These program names are included in "Appendix I."
- A followup question was used to determine the comprehensiveness of reported private or "other" insurance.
- Several help screens were developed for the individual insurance items. Each help screen provided a definition of the coverage in question. In addition, the help screen provided an explanation for the need to ask multiple questions regarding coverage to capture all types of coverage for the sampled child.
- Because it was important to ensure that comprehensiveness of each type of insurance was reported accurately, interviewer training emphasized the need to determine the type of

insurance and whether it was comprehensive. Reminders of this training were included in each help screen: "The two most important things to help respondents determine what type of insurance they have are (a) where it comes from, and (b) what it covers. If necessary, to help respondents determine what kind of insurance they have, probe, 'Did you get that insurance through an employer? Does it help pay for both doctor visits and hospital stays?' "

Weighting and Estimation

To produce population-based estimates, each child for whom complete insurance data were available was assigned a sampling weight. This weight combined the base weight, which reflects the probability of selection of a respondent's telephone number, with an adjustment for households that have multiple telephone numbers, an adjustment for households that have more than one child, and adjustments that compensate for nonresponse. Finally, weights were adjusted to match known population control estimates and to adjust for the noncoverage of nontelephone households. Further details about this adjustment are included in the *Design and Operation of the National Survey of Children with Special Health Care Needs, 2001* (3) and are also summarized in a later section of this report.

Prevalence of Uninsured Children

To establish insurance status, respondents were asked about various types of coverage. For each type, the respondent indicated whether the sampled child had that coverage. A negative response for each question was required for a child to be considered uninsured. Alternatively, a child could also be considered uninsured if the type of coverage was not reported to be comprehensive (e.g., if the respondent indicated that the insurance did not cover doctor visits and hospital stays or if the insurance only covered dental care, vision, or accident care) or if the insurance was not considered to be comprehensive (e.g., Indian Health Service and other health insurance plans specifically for American Indians and Alaska Natives).

The overall estimated prevalence of uninsured children from the National Survey of CSHCN is 8.3%. The uninsurance rates for each State and State-specific insurance estimates by type of insurance are presented in "Appendix II."

Comparison of Uninsurance Estimates With Other Data Sources

Estimated uninsurance rates for noninstitutionalized children 0–17 years of age from the National Survey of CSHCN, the 2001 National Health Interview Survey (NHIS), the 1999 National Survey of America's Families (NSAF), the 2002 Current Population Survey (CPS) Annual Demographic Supplement, and the 2001 Medical Expenditure Panel Survey (MEPS) are compared in table B. Public-use data were used to derive estimates for all surveys (8–12). The National Survey of CSHCN produced the lowest uninsurance estimate at 8.3%. The other surveys generated rates ranging from 11.0% in the 2001 NHIS to 14.6% in the 2001 MEPS. It should be noted, however, that these surveys differ in their methods of collecting health insurance data (e.g., by using a confirmation question to verify noncoverage). As table B indicates, the recall and data collection periods also vary considerably.

Survey-specific differences in the overall survey estimate of uninsurance could result from reporting differences for just one demographic subgroup. A comparison of the estimated uninsurance rates for specific demographic groups from the National Survey of CSHCN and the 2001 NHIS are presented in tables C and D. In general, trends in uninsurance rates among demographic subgroups were similar for both surveys. That is, for both surveys, rates of uninsurance were higher for older children, for Hispanic children, for children living in non-English-speaking households, and for children whose mothers had less education.

For nearly every demographic subcategory, however, uninsurance rates from the National Survey of CSHCN were lower than rates from the NHIS. This consistency in the direction of the differences was found for every demographic subcategory except for children living in households with an income below 50% of the Federal Poverty Level. For these very poor children, the uninsurance rate from the National Survey of CSHCN was greater than the rate from the NHIS (though this difference was not statistically significant, $p = .13$).

Despite the consistency in the direction of the differences, the magnitude of the difference between the National Survey of CSHCN and the NHIS uninsurance rates varied by demographic subcategory. For example, the differences for children living in households with an income between 50% and 199% of the Federal Poverty Level were statistically significant ($p < .05$) for Hispanic children, but were not statistically significant for non-Hispanic black children and for other non-Hispanic children. Overall, the magnitude of the difference between the uninsurance rates was greatest for non-Hispanic other than black children (32.7% lower, relative to the NHIS rate) and for children in households with an income between 150% and 199% of the Federal Poverty Level (29.6% lower).

Comparison of Demographic Distribution of Low-Income Uninsured Children

Given these differences in the uninsurance rate among specific demographic subgroups, there was reason to believe that the composition of the population of uninsured children described by the National Survey of CSHCN would differ from the population described by the other

Table B. Insurance coverage rates and survey design characteristics for five national surveys of children under 18 years of age

Characteristic	National Survey of CSHCN[1]	National Health Interview Survey	National Survey of America's Families	Current Population Survey Annual Demographic Supplement	Medical Expenditure Panel Survey
Insurance coverage rate:					
Insured	91.7	89.0	87.4	88.3	85.5
Uninsured	8.3	11.0	12.6	11.7	14.6
Survey design:					
Recall period for insurance coverage rate[2]	Time of interview	Time of interview	Time of interview	Prior calendar year	Varies from 3 to 5 months prior to interview
Dates of data collection	Oct. 2000–Apr. 2002	Jan. 2001–Dec. 2001	Feb. 1999–Oct. 1999	Feb. 2002–Apr. 2002	Jan. 2001–Jul. 2001
Mode of data collection	Telephone	In person	Telephone, with in-person supplement	In person and telephone	In person and telephone
Sample frame	Random-digit-dial	Area probability	Random-digit-dial for telephone households, and area probability for nontelephone households	Area probability	NHIS respondents
Uninsurance verification	Yes	Yes	Yes	Yes	No
Question design	Child-level	Family-level	Family-level	Family-level	Family-level
First insurance question	Private insurance	Any insurance	Employer-based insurance	Employer-based insurance	Medicare
Context	Health	Health	Employment, program participation, health care, and education	Employment and income	Health
Medicaid coverage may be assigned	No	No	Yes	Yes	Yes
"Other" verbatim responses permitted	Yes	Yes	Yes	No	Yes
Names of health plans obtained	No	Yes	No	No	Yes

[1]CSHCN is children with special health care needs.
[2]The National Survey of CSHCN, the National Health Interview Survey, and the National Survey of America's Families also include questions about coverage during the prior 12 months.

surveys. These differences were of particular concern for the National Survey of CSHCN because data from the survey would be used for the Congressionally mandated DHHS evaluation of SCHIP. Congress stipulated that the evaluation must include the collection of information about the reasons that many children eligible for SCHIP are not enrolled. Therefore, OASPE funded the Low-Income Uninsured Supplement to the National Survey of CSHCN. The goal for this supplement was to gather data on parents' knowledge and use of SCHIP and Medicaid programs for uninsured children from low-income households. Regardless of special-needs status, all sampled children who were uninsured and who resided in a household with an annual income below 200% of the DHHS Federal Poverty Guidelines received the Low-Income Uninsured Supplement. (Uninsured children whose parents could not or would not answer the income questions were also eligible for the supplement, but their data were not included in the analyses reported here.)

Tables E and F present the demographic characteristics of the population of low-income uninsured children as estimated by the National Survey of CSHCN, the 2001 NHIS, the 1999 NSAF, and the 2002 CPS. Consistent differences were observed for income and maternal education. The National Survey of CSHCN identified a smaller proportion of low-income uninsured children in the higher income brackets (e.g., 150%–199% of poverty) and in the higher education brackets (e.g., mother had post-high-school education).

Using data from the first 6 months of data collection, NCHS collaborated with The Urban Institute to investigate whether these differences in the composition of the low-income uninsured population would affect key estimates of familiarity with, perceptions of, and experiences with Medicaid and SCHIP programs (13). Sensitivity analyses were conducted by adjusting the sampling weights for income and/or education subgroups and then estimating key variables from the Low-Income Uninsured Supplement. The similarity was remarkable. The key estimates derived, using the various adjusted sampling weights, differed by less than 4 percentage points for both national estimates and for key subgroup differences. Thus, researchers can have confidence that results of analyses from the Low-Income Uninsured Supplement are robust and are unlikely to have been biased by the existing demographic differences in the composition of the low-income uninsured population.

Table C. Percent of children under 18 years of age without health insurance coverage by selected demographic characteristics and national survey

Selected demographic characteristic	National Survey of CSHCN[1] (2001)	National Health Interview Survey (2001)	National Survey of CSHCN (2001)	National Health Interview Survey (2001)
	Percent uninsured		Standard error of percent	
Age				
0–5 years	7.2	9.7	0.21	0.44
6–11 years	8.4	11.3	0.23	0.47
12–17 years	9.2	12.0	0.22	0.46
Sex				
Female	8.4	11.0	0.18	0.38
Male	8.2	11.0	0.18	0.40
Race/ethnicity				
Hispanic	19.2	24.6	0.53	0.88
Black non-Hispanic	7.3	10.6	0.31	0.90
White non-Hispanic and all others	5.8	7.8	0.11	0.37
Language of interview				
English	6.3	8.8	0.11	0.34
Spanish or other language	27.5	34.9	0.83	1.43
Household income				
Up to $9,999	17.0	14.5	0.76	1.43
$10,000–$19,999	17.7	18.8	0.58	1.48
$20,000–$39,999	14.0	17.0	0.40	0.90
$40,000–$59,999	6.7	8.6	0.30	0.71
$60,000 and over	2.5	2.4	0.12	0.26
Poverty status[2,3]				
Up to 49% of FPL	18.5	15.3	0.87	1.89
50%–99% of FPL	18.4	20.9	0.67	1.52
100%–149% of FPL	15.5	18.5	0.60	1.23
150%–199% of FPL	11.4	16.1	0.48	1.36
200% of FPL and over	3.8	4.5	0.11	0.25
Maternal education				
8th grade or less	28.3	34.8	1.15	2.10
Some high school	16.3	19.4	0.60	1.15
High school graduate or GED[4]	8.3	10.4	0.21	0.50
Some post-high school, but no college degree	5.5	7.1	0.19	0.44
4-year college degree or higher	2.8	3.2	0.10	0.37

[1]CSHCN is children with special health care needs.
[2]Poverty status is assessed at the household level in the National Survey of CSHCN and at the family level for the National Health Interview Survey.
[3]FPL is Federal poverty level.
[4]GED is General Educational Development high school equivalency diploma.

Comparison of State-Specific Prevalence Estimates for Low-Income Uninsured Children

The reported prevalence estimates have been estimates for the Nation, but State-level estimates can also be compared across data sources. Of the data sources considered (NHIS, NSAF, CPS, and MEPS), only the CPS permits State-specific estimates for all States. Table G presents the prevalence of low-income uninsured children by State for the National Survey of CSHCN and the CPS. CPS estimates were based on the average of 3 years of Annual Demographic Supplement estimates (2000–2002), as published by the U.S. Census Bureau (14). Three years of data were necessary to stabilize the estimates because of small annual sample sizes in some States. Low income was defined as an annual household income level below 200% of the Federal Poverty Level.

As expected based on the national estimates, the prevalence of low-income uninsured children was greater for the CPS than for the National Survey of CSHCN in 45 States and the District of Columbia. Surprisingly, perhaps, these differences were statistically significant ($p < .05$) for only 14 States. However, meaningful differences in other States may not have reached statistical significance due to the small CPS sample size, relatively large standard error, and the inclusion of 18-year-old children in the CPS estimates.

State rankings by prevalence were very similar across surveys. Spearman's rank-order correlation coefficient, adjusted for tied ranks, was 0.88, $p < .001$.

Table D. Percent of children under 18 years of age without health insurance coverage by race/ethnicity, household poverty status, and national survey

Race/ethnicity and poverty status[1]	National Survey of CSHCN[2] (2001)	National Health Interview Survey (2001)	National Survey of CSHCN[2] (2001)	National Health Interview Survey (2001)
	Percent uninsured		Standard error of percent	
Hispanic				
Up to 49% of FPL	29.2	27.1	1.80	3.12
50%–99% of FPL	27.5	33.6	1.41	2.32
100%–149% of FPL	22.8	31.4	1.53	2.25
150%–199% of FPL	15.7	23.7	1.50	2.28
200% of FPL and over	7.5	9.7	0.71	0.90
Black non-Hispanic				
Up to 49% of FPL	12.4	11.6	1.24	2.34
50%–99% of FPL	11.7	12.0	1.15	2.32
100%–149% of FPL	10.6	10.0	1.01	2.16
150%–199% of FPL	7.7	10.8	0.95	2.12
200% of FPL and over	3.2	4.7	0.31	0.79
White non-Hispanic and all others				
Up to 49% of FPL	10.9	12.0	1.01	3.34
50%–99% of FPL	13.5	16.2	0.75	2.48
100%–149% of FPL	13.4	14.1	0.67	1.62
150%–199% of FPL	10.9	14.8	0.52	1.99
200% of FPL and over	3.5	3.8	0.11	0.29

[1]Poverty status is assessed at the household level in the National Survey of CSHCN and at the family level for the National Health Interview Survey.
[2]CSHCN is children with special health care needs.

NOTE: FPL is Federal poverty level.

Evaluation of Prevalence Estimates

It is clear that the National Survey of CSHCN uninsurance rate differs from those of other surveys. The remainder of this report will examine three possible reasons for this difference.

National Survey of CSHCN Uninsurance Estimates May Be More Accurate

Although the uninsurance rate from the National Survey of CSHCN data is quite different than the rates calculated from other national survey data, the rates from these other surveys have historically disagreed with each other. Considerable investigation has been devoted to the challenge of disparate measures of the uninsured population (15–19). This body of literature addresses the insurance estimates and survey methodologies of national surveys, including the CPS, NHIS, and NSAF. In particular, the literature cites the following six areas as being potential sources for the differences observed among surveys and between surveys and administrative records: recall periods, determination of coverage, questionnaire design, undercounts of Medicaid enrollees, data editing procedures, and the estimation processes used to bring the demographic data from the surveys in line with established population totals.

Given the variation in data collection methodologies across surveys, it is possible that the National Survey of CSHCN method of gathering health insurance information results in more accurate reporting. The viability of this explanation will be explored in detail as the two other possible reasons for the observed differences are considered.

Uninsured Children May Be Missing From Sample

A comparison of uninsurance rates by subpopulation and by characteristics within subpopulation among surveys indicates that the National Survey of CSHCN uninsured group may be different from that of other surveys. If the National Survey of CSHCN sample excluded groups that were more likely to be uninsured, an uninsurance rate lower than that found in other surveys might be expected. To investigate this possibility, the demographic profile of the overall National Survey of CSHCN sample was compared with those of other surveys that produced differing uninsurance rates. This report explores the results of analyses of National Survey of CSHCN sample-related characteristics that examined this potential sample bias in more detail.

Parents May Be Misreporting Insurance Coverage

Given the methodological differences in the collection of insurance data among surveys, it may be that characteristics of the National Survey of CSHCN questionnaire design led parents

Table E. Percent of uninsured children under 18 years of age from low-income households (less than 200% of the Federal poverty level) with selected demographic characteristics by national survey

Selected demographic characteristic	National Survey of CSHCN[1] (2001)	National Health Interview Survey (2001)	National Survey of America's Families (1999)	Current Population Survey Annual Demographic Supplement (2002)
Age				
0–5 years	28.3	28.9	28.6	28.9
6–11 years	34.6	35.7	37.9	32.9
12–17 years	37.1	35.4	33.6	38.2
Sex				
Female	50.2	48.2	51.0	49.9
Male	49.8	51.9	49.0	50.1
Race/ethnicity				
Hispanic	47.1	45.8	35.8	42.3
Black non-Hispanic	14.6	13.5	19.7	19.3
White non-Hispanic and all others	38.3	40.7	44.5	38.4
Language of interview				
English	62.0	67.9	77.8	- - -
Spanish or other language	38.0	32.1	22.2	- - -
Income[2]				
Up to $9,999	16.4	12.9	18.7	30.0
$10,000–$19,999	28.9	29.1	33.2	27.5
$20,000–$39,999	49.2	49.8	41.9	35.4
$40,000–$59,999	5.5	7.5	4.5	6.2
$60,000 and over	0.0	0.7	1.7	0.8
Poverty status[2,3]				
Up to 49% of FPL	17.0	13.7	16.4	24.6
50%–99% of FPL	30.8	32.2	29.5	25.0
100%–149% of FPL	31.5	29.9	28.8	28.4
150%–199% of FPL	20.7	24.2	25.3	22.0
Maternal education				
8th grade or less	22.0	26.2	24.0	23.1
Some high school	26.1	23.5	16.3	22.6
High school graduate or GED[4]	32.1	27.4	31.2	30.0
Some post-high school, but no college degree	14.9	19.4	23.0	19.4
4-year college degree or higher	4.9	3.5	5.6	4.9

0.0 Quantity more than zero but less than 0.05.

- - - Category not available.

[1]CSHCN is children with special health care needs.

[2]Income and poverty status are assessed at the household level in the National Survey of CSHCN and at the family level for the National Health Interview Survey, National Survey of America's Families, and Current Population Survey.

[3]FPL is Federal poverty level.

[4]GED is General Educational Development high school equivalency diploma.

to misreport coverage for their children. A small error rate in the reporting of insurance can become a large error in the estimate of the uninsured. ''With the number of children insured at a point in time being eight to nine times the number without insurance...errors in the reporting of insurance coverage are multiplied many times in their impact on estimates of the uninsured'' (18).

To investigate the possible influence of question design on the overall uninsurance rate for children, two experimental studies are described. The first study, conducted by the U.S. Census Bureau, examined the effect of collecting insurance data using a person-level versus a household-level design. The second study, conducted by Abt Associates, investigated the effects of question design and context on reporting of insurance. This report also provides the results of analyses of other possible factors that might lead to misreporting, such as respondent fatigue and interviewer effects.

Survey Methodology and Health Insurance Coverage Estimates

As table B indicates, there are several methodological differences between the National Survey of CSHCN and the other national surveys that produced differing uninsurance estimates. This section discusses the potential impact of these

Table F. Standard errors for the percent of uninsured children under 18 years of age from low-income households (less than 200% of the Federal poverty level) with selected demographic characteristics by national survey

Selected demographic characteristic	National Survey of CSHCN[1] (2001)	National Health Interview Survey (2001)	National Survey of America's Families (1999)	Current Population Survey Annual Demographic Supplement (2002)
Age				
0–5 years	0.99	1.33	1.23	0.97
6–11 years	1.06	1.20	1.43	1.00
12–17 years	1.06	1.59	1.72	1.04
Sex				
Female	1.10	1.35	1.71	1.07
Male	1.10	1.35	1.71	1.07
Race/ethnicity				
Hispanic	1.15	2.55	1.91	1.13
Black non-Hispanic	0.75	1.45	1.38	0.90
White non-Hispanic and all others	1.04	2.73	2.33	1.04
Language of interview				
English	1.17	2.21	1.50	- - -
Spanish or other language	1.17	2.21	1.50	- - -
Income[2]				
Up to $9,999	0.77	1.16	1.45	0.98
$10,000–$19,999	0.95	2.17	1.92	0.95
$20,000–$39,999	1.14	2.15	1.94	1.02
$40,000–$59,999	0.62	1.32	0.99	0.52
$60,000 and over	0.02	0.46	0.94	0.19
Poverty status[2,3]				
Up to 49% of FPL	0.83	1.57	1.44	0.92
50%–99% of FPL	1.06	1.95	1.63	0.92
100%–149% of FPL	1.09	2.06	1.48	0.96
150%–199% of FPL	0.86	1.86	1.74	0.88
Maternal education				
8th grade or less	1.11	2.42	2.86	0.84
Some high school	1.07	1.74	1.35	0.84
High school graduate or GED[4]	1.02	2.01	1.89	0.93
Some post-high school, but no college degree	0.73	1.74	1.77	0.78
4-year college degree or higher	0.31	0.85	0.58	0.42

- - - Category not available.

[1]CSHCN is children with special health care needs.

[2]Income and poverty status are assessed at the household level in the National Survey of CSHCN and at the family level for the National Health Interview Survey, National Survey of America's Families, and Current Population Survey.

[3]FPL is Federal poverty level.

[4]GED is General Educational Development high school equivalency diploma.

methodological differences based on a review of the literature.

Recall Period

Although researchers tend to compare insurance rates among surveys, the recall periods used to produce those rates can differ dramatically. At least two issues related to a survey's recall period can lead to potential reporting differences. The first issue is the length of the recall period specified. The second issue is the possible disconnect between the recall period specified in a questionnaire and the period that respondents actually use to form their responses.

The NHIS, the NSAF, and the National Survey of CSHCN ask respondents about insurance coverage at the time of the interview. In contrast, the MEPS asks respondents to report whether they had various types of insurance coverage at any time during the preceding 3–6 months. Respondents are considered to be uninsured only if they lacked coverage for the entire recall period. The CPS is similar in that the respondent must be uninsured for the entire recall period to be considered uninsured. It differs in that the recall period is the full calendar year that ended 2–4 months prior to the interview. In effect, by considering coverage over time rather than at a point in time, the MEPS and the CPS questions are conceptually different than the questions from the other surveys.

However, the recall period specified by the interviewer is not necessarily the period that they use to form their

Table G. Percent of children without health insurance and with income below 200% of the Federal poverty level, by State and survey

State	National Survey of CSHCN[1] (2001)			Current Population Survey Annual Demographic Supplement (2000–2002)[2]		
	Prevalence	Standard error	Rank[3]	Prevalence	Standard error	Rank[3]
All States[4]	5.6	0.12	. . .	7.9	0.2	. . .
Alabama	5.6	0.53	35.0	6.4	1.2	26.0
Alaska	6.0	0.48	37.0	7.0	1.2	32.0
Arizona	9.8	0.66	48.0	12.9	1.7	48.0
Arkansas	7.5	0.64	42.0	8.7	1.5	41.0
California[4]	6.9	0.54	40.0	10.4	0.7	43.0
Colorado	6.2	0.48	38.0	8.6	1.3	40.0
Connecticut[4]	1.6	0.29	3.0	4.8	1.1	15.5
Delaware	3.3	0.47	16.0	4.0	1.1	12.0
District of Columbia	4.5	0.53	27.0	6.5	1.6	28.0
Florida[4]	8.4	0.70	43.0	11.3	1.0	46.0
Georgia	5.3	0.57	32.0	7.4	1.2	34.0
Hawaii[4]	1.8	0.27	4.0	5.0	1.1	17.5
Idaho	8.7	0.65	44.5	11.1	1.6	44.0
Illinois	4.8	0.59	28.0	6.7	0.8	29.0
Indiana[4]	3.3	0.45	17.0	6.4	1.1	26.0
Iowa	3.8	0.41	21.0	3.7	0.9	9.0
Kansas	4.9	0.49	29.0	7.1	1.3	33.0
Kentucky[4]	4.0	0.42	23.0	6.9	1.4	30.5
Louisiana	10.1	0.90	49.0	13.4	1.8	49.0
Maine	4.2	0.46	25.0	3.4	0.9	6.0
Maryland[4]	2.0	0.33	6.0	4.6	1.1	14.0
Massachusetts	2.0	0.36	5.0	3.6	0.8	7.5
Michigan	2.5	0.38	9.0	3.9	0.7	11.0
Minnesota	3.1	0.45	13.0	3.0	0.8	5.0
Mississippi	5.4	0.56	33.0	7.7	1.4	37.5
Missouri	2.1	0.30	7.0	2.6	0.7	3.0
Montana	10.8	0.71	50.0	10.2	1.7	42.0
Nebraska	3.0	0.36	12.0	5.0	1.1	17.5
Nevada	8.8	0.63	46.0	11.2	1.5	45.0
New Hampshire	4.0	0.53	22.0	2.5	0.7	2.0
New Jersey	4.1	0.49	24.0	5.4	0.8	19.0
New Mexico[4]	9.0	0.78	47.0	14.8	1.9	50.0
New York[4]	3.6	0.42	19.0	6.1	0.6	22.5
North Carolina	5.2	0.54	30.0	7.5	1.1	35.5
North Dakota	5.9	0.56	36.0	6.4	1.3	26.0
Ohio[4]	3.2	0.43	15.0	5.7	0.8	20.0
Oklahoma	8.7	0.70	44.5	11.7	1.7	47.0
Oregon	6.7	0.58	39.0	7.9	1.4	39.0
Pennsylvania	3.4	0.42	18.0	4.3	0.7	13.0
Rhode Island	1.6	0.29	2.0	2.9	0.9	4.0
South Carolina[4]	3.7	0.42	20.0	6.9	1.4	30.5
South Dakota	4.5	0.41	26.0	4.8	1.1	15.5
Tennessee	2.9	0.40	10.0	3.6	1.0	7.5
Texas[4]	13.2	0.80	51.0	15.9	1.0	51.0
Utah	5.2	0.43	31.0	5.8	1.0	21.0
Vermont	1.6	0.32	1.0	2.1	0.8	1.0
Virginia[4]	2.9	0.35	11.0	6.1	1.2	22.5
Washington[4]	3.2	0.38	14.0	6.2	1.2	24.0
West Virginia	5.6	0.56	34.0	7.7	1.5	37.5
Wisconsin	2.2	0.38	8.0	3.8	0.9	10.0
Wyoming	7.4	0.58	41.0	7.5	1.4	35.5

. . . Category not applicable.

[1]CSHCN is children with special health care needs.

[2]Current Population Survey prevalence estimates and standard errors were drawn from summary tables published by the U. S. Census Bureau (U. S. Census Bureau, Housing and Household Economic Statistics Division. Low-income uninsured children by State: 1999, 2000, and 2001. October 22, 2002. http://www.census.gov/hhes/hlthins/liuc01.html).

[3]Tied observations were assigned the average rank that would have been assigned without ties.

[4]The difference between the survey estimates of prevalence is statistically significant, $p < .05$.

NOTE: Poverty status is assessed at the household level in the National Survey of CSHCN and at the family level for the Current Population Survey. Prevalence estimates from the National Survey of CSHCN are for children under 18 years of age; prevalence estimates from the Current Population Survey are for children under 19 years of age.

responses. This may be particularly true for the CPS, which asks respondents about coverage during the preceding calendar year. Some analysts think that CPS respondents report current insurance coverage rather than insurance coverage during the preceding year (19–21). In 1994, several questions were added that asked about insurance coverage during the preceding week. The questions followed a series of questions that asked about coverage in the preceding year. The CPS uninsurance rates during the preceding week were twice the rate of those collected by NHIS for uninsurance during the preceding 30 days. The experimental CPS questions were discontinued in 1998. Researchers are still unclear about the reasons for the observed rate disparity. However, there seems to be general agreement that estimates from surveys that ask about current, point-in-time coverage (as did the National Survey of CSHCN) are more accurate than other estimates.

Verification of Uninsured Status

Prior to 2000, the CPS did not ask respondents to confirm their status regarding health insurance. If the respondents denied coverage for all types of insurance, the survey considered them to be uninsured. Experiments included in the NSAF found that a verification question lowered the estimated proportion of children who were uninsured, from about 15% to 11.9% (22). As a result of this research, the Annual Demographic Supplement of the CPS added a question in 2000 to verify the insurance status of a respondent. The addition of the verification question lowered rates of uninsurance among children under age 18 by over a full percentage point, from 13.9% to 12.6% (23).

Although the NSAF and the CPS observed a dramatic decrease in the overall uninsurance rate by including a verification question, the National Survey of CSHCN found almost no change. A total of 689 respondents reported comprehensive insurance coverage as a result of the verification question, decreasing the overall uninsurance rate from 8.5% to 8.3%.

Still, given the difficulties respondents have in understanding insurance coverage, the direct approach of verifying insurance coverage, rather than assuming lack of coverage, seems more prudent. This indicates that estimates of the uninsured population from the NHIS, NSAF, National Survey of CSHCN, and the CPS (2000 and beyond), which all use a verification question, may be more accurate.

Other Questionnaire Effects

The selection of a short recall period and the use of a verification question are two types of questionnaire design features that have been mentioned as potential sources of differences in uninsurance estimates. The magnitude of the effects of switching from one design feature to another is usually unclear, and it may differ depending on other features of the survey. For example, one reason for the more significant impact observed by the NSAF and CPS regarding the verification question could be the manner in which information on insurance status is collected. The NSAF first asks about insurance at the family level for all targeted persons in the family, and then assigns people to policies held by family members. In contrast, the National Survey of CSHCN asks about insurance at the person level. It is possible that the person-level structure of the National Survey of CSHCN is less conducive to initial response error than the family-focused questions of the NSAF. (For more discussion of this issue, see ‘‘Reporting Bias’’ in this report.)

Another questionnaire attribute that might affect estimates of insurance coverage is the order of presentation of the various types of insurance. The majority of surveys ask about employer-sponsored insurance first, and this includes the National Survey of CSHCN and the NSAF. The U.S. Census Bureau conducted an experiment that varied the order of presentation for some respondents under the age of 65 by presenting a question about Medicaid coverage first for half the households and presenting a question about employer-sponsored coverage first for the remaining households (24). The type of insurance presented first suffered from a higher rate of false-negative reporting than coverage types presented elsewhere. Because the concept of insurance may be cognitively demanding to some respondents, they may not grasp it until later in the series. However, because these respondents presumably do grasp the concept of insurance later in the series, the uninsurance rates did not differ as a result of changes in the order of presentation. Thus, while order of presentation may affect coverage estimates for specific types of insurance, this questionnaire attribute is unlikely to affect estimates of the prevalence of uninsured children.

Another possible questionnaire effect is survey context. Prior to asking about health insurance, the National Survey of CSHCN questionnaire contained a number of questions related to the health of the children in the household and special health care needs that they may have. Questioning respondents in such detail about the health of their children may predispose them to falsely report health insurance to avoid the stigma of having an uninsured child. Therefore, response error may be greater for the National Survey of CSHCN than for surveys with less attention devoted to health-related issues. (For more discussion of this issue, see ‘‘Context Effects’’ in this report.)

Underestimation of Medicaid Coverage

The number of people enrolled in Medicaid, as recorded in administrative records by the Centers for Medicare and Medicaid Services, is often greater than the number estimated by surveys of the population (15,17,25). For example, using questions similar to those used for the National Survey of CSHCN, a previous SLAITS module found that the prevalence of Medicaid enrollment among children should have been 13.8% to 20.5% greater than the survey-based estimate (25).

Although the administrative records may be incorrect, researchers have focused on reasons why the survey data may be inaccurate. For example, people may not report Medicaid coverage because of social desirability concerns (e.g., Medicaid may carry the stigma associated with welfare participation), lack of knowledge (e.g., respondents may not realize that the child was eligible because eligibility can vary from month to month), or misunderstanding (e.g., Medicaid-managed care programs may be mistaken for private coverage). Given that States have increased use of Medicaid-managed care plans and that some States have enrolled Medicaid-eligible persons in the same insurance used for State employees, enrollees may become less certain of the nature of their insurance. Therefore, this Medicaid undercount can be expected to increase. In fact, the size of the CPS undercount of Medicaid-enrolled children under 15 years of age grew by 3 million between 1994 and 1998 (18).

Surveys differ in their approach to ''correcting'' for this undercount. For example, the Census Bureau adjusts Medicaid coverage estimates from the CPS by assigning Medicaid coverage to children who receive Supplemental Security Income or other government benefits that would also include automatic Medicaid eligibility (17). A similar adjustment is used for NSAF estimates of Medicaid coverage and was used for NHIS estimates prior to 1997. No such adjustment has been used for the National Survey of CSHCN.

Adjustments that assign Medicaid coverage to reportedly uninsured children will reduce the estimated number of uninsured children in the population. There is evidence, however, to suggest that such an adjustment may not improve the accuracy of these estimates about the size of the uninsured population. Though people may not accurately report the type of insurance coverage they have, they may be generally accurate about whether they have coverage (26). For example, the 1999 Minnesota Health Access Survey estimates of the prevalence of uninsured persons decreased by less than three-tenths of a percentage point when all sources of Medicaid reporting biases were accounted for (27). The lack of adjustments on the National Survey of CSHCN may bias estimates of Medicaid coverage, but the lack of adjustments may not have reduced the accuracy of the uninsurance estimates from the survey.

Recoding of Verbatim Responses

Additional survey-specific differences in health insurance data adjustments can also impact estimates of uninsurance. For example, the NHIS adjusts the raw survey responses concerning health insurance coverage using the names of the private or public health insurance plans that were provided by the respondents. This recoding has the greatest impact on estimates of private health insurance coverage. More than 1,000 of the nearly 69,000 persons under 65 years of age reporting private health insurance in 1998 were reclassified, with the majority being classified as not having insurance. These data adjustments increased the uninsurance rate for this population from 15.6% to 16.8% (28). It is generally agreed that such recoding improves the validity of the insurance estimates. Yet, most surveys do not have the resources to permit such careful adjustments.

The National Survey of CSHCN did not capture the names of private or public health insurance plans when respondents identified their coverage as either private or public. However, for cases where a respondent reported ''other'' insurance, an open-ended item did capture the name or type of insurance. At the end of the data collection period, verbatim responses for this item were reviewed, and verbatim responses that could be recoded to an existing coverage type (i.e., private coverage, Medicaid, SCHIP, military coverage, or Title V) or to uninsured status were coded as such. Remaining verbatim responses were categorized according to whether the respondent identified the coverage as comprehensive. Coverage that was said to be comprehensive conferred insured status to the child. If the coverage was not said to be comprehensive, and this ''other'' insurance was the only insurance type reported, the child was considered to be uninsured. The thorough review and recoding of verbatim items increased the number of children considered to be uninsured by 1,474 and increased the uninsured rate from 7.7% to 8.3%. Because the National Survey of CSHCN did not follow the NHIS procedures and did not look for similar misreports when respondents identified private or public health insurance directly, the estimated uninsurance rate from the National Survey of CSHCN might still be lower than the true rate.

Weighting and Estimation

Random sampling error and nonrandom response biases can result in discrepancies between the characteristics of the survey's sample and the population of interest. Sampling weights are adjusted so that the survey's population totals for key demographic characteristics match totals that are obtained from an independent source such as the census or CPS. This process is called poststratification.

Surveys differ in the independent source used for this poststratification. The National Survey of CSHCN adjusted the weights to match the 2000 census count of children, projected to July 2001. The weights were further adjusted to match CPS estimates for certain demographic characteristics. In contrast, surveys such as the 1999 NSAF and the 2001 NHIS adjusted their weights to match the 1990 census count of children, projected to the relevant time period for the survey.

Surveys also differ in the demographic characteristics selected for this poststratification. For example, the NHIS adjusts for discrepancies by age, sex, and race/ethnicity. The NSAF adds home ownership (i.e., owning vs. renting) to the list of key demographic characteristics. For the National Survey of CSHCN, poststratification included several additional variables and was conducted in two stages. First, the weights for each household with children were adjusted to account for

discrepancies by household size, income, children's race, and resident mother's education. Second, after applying the household weight to each child and adjusting for the number of children in the household, the weights for each child were adjusted to match the census count stratified by age, sex, and race/ethnicity. The child weights were also adjusted to match CPS estimates of the population of children by household size, income, and mother's education.

Both stages of poststratification also compensated for the potential bias that may exist because the National Survey of CSHCN, as a telephone survey, could not select households without telephone service at the time of the survey. To make this adjustment, the total number of households with children—as projected from the census—was split, with one total for telephone households and one total for those without telephones or with an interruption in telephone service for at least 1 week during the prior 12 months. The proportion allocated to each of these two groups was based on CPS data for households with children but without telephone service and National Survey of CSHCN data for households with interrupted telephone service.

Households with interrupted telephone service were used in the weighting process because there is evidence to suggest that households with telephone service at the time of the survey, but with interruptions in telephone service during the year, are more similar to households with no telephone service at the time of the survey than are households with uninterrupted telephone service during the year (29–31). Therefore, noncoverage of households without a telephone can be somewhat compensated for by proportionately increasing the weights for those interviews that could be completed in households with interrupted service. In this way, households with interrupted service represent the households without telephone service at the time of the interview.

Given that the National Survey of CSHCN used a different source for its population control totals and used a greater number of demographic characteristics during poststratification, the final estimates from the survey would not be expected to perfectly match estimates from other surveys of the same population. Moreover, because the characteristics are estimated from sample surveys, there is also no conclusive way to determine which survey has most accurately described the population.

Nonresponse Bias

As previously demonstrated, surveys disagree about the number of uninsured children. However, because the survey methodology also varies considerably among these surveys, it becomes unclear whether rates should be compared among surveys. The literature seems clear on only one thing: There is no consensus in the research community on which rate is more accurate. Therefore, the National Survey of CSHCN must be examined to determine whether nonrandom response biases may be present and whether these biases raise doubts about the accuracy of the uninsurance rate.

Cooperation Rates by Demographic Characteristics

If parents whose children were more likely to be uninsured (e.g., parents in lower-income households) were less willing to participate in the National Survey of CSHCN, these systematic response biases would lead to an uninsurance rate that is lower than that found in other surveys. Direct determination of whether the survey sample missed children who were more likely to be uninsured is impossible because information on the individual characteristics of nonrespondents is not available. However, the characteristics of households in the same telephone exchange as nonrespondents can serve as a proxy for the individual characteristics of the nonrespondents.

The National Survey of CSHCN used the GENESYS Sampling System (a proprietary product of Marketing Systems Group) to obtain several sample variables derived from the 1990 census regarding demographic characteristics of the telephone exchange for each randomly generated telephone number. These variables included estimated race and ethnic composition, income, and educational characteristics for all households with that exchange. Using these exchange-level variables, analyses were performed to determine National Survey of CSHCN response rates by demographic composition at the telephone exchange level.

For these analyses, telephone exchanges in the National Survey of CSHCN sample were first divided into quartiles by exchange-level percentage of each demographic characteristic of interest. (Quartiles were chosen to facilitate comparisons within the sample.) Cooperation rates were calculated by quartile. The cooperation rate is the proportion of all telephone numbers (excluding those resolved as out-of-scope, such as businesses) that resulted in a completed screener or interview, as applicable. Unweighted cooperation rates were analyzed at the telephone exchange level by the exchange-level percentages of African-American and Hispanic persons, by the exchange-level percentage of households having an annual income below $25,000, and by the exchange-level percentage of persons with a 4-year college degree. Results are summarized in table H.

A negative relationship was found between the exchange-level percentages of African-American and Hispanic persons and cooperation rates; households in telephone exchanges having a higher percentage of Hispanic or African-American persons were less likely to participate in the National Survey of CSHCN. Because minority households, particularly Hispanic households, were more likely to have an uninsured child, the differential response in exchanges that were expected to include a greater proportion of minority persons may have decreased the estimated uninsurance rate from the National Survey of CSHCN.

Table H. Cooperation rates by expected distribution of selected demographic characteristics within telephone exchanges

Selected demographic characteristic and expected distribution	Unweighted household cooperation rate
African-American persons	
0.0–0.8 percent	69.2
0.9–3.7 percent	65.3
3.8 –13.5 percent	62.9
13.6 –100.0 percent	63.1
Hispanic persons	
0.0–1.2 percent	69.3
1.3–3.4 percent	66.1
3.5–11.3 percent	62.9
11.4–100.0 percent	62.2
Households with annual income above $25,000	
0.0–58.1 percent	68.8
58.2–66.4 percent	67.0
66.5–76.4 percent	64.9
76.5–100.0 percent	61.4
College graduates	
0.0–11.3 percent	68.9
11.4–17.4 percent	67.2
17.5–28.1 percent	64.7
28.2–100.0 percent	61.0

NOTE: Expected distribution within each telephone exchange is based on 1990 census data.

However, a negative relationship was also found between the exchange-level percentage of higher-income households and cooperation rates. Similarly, the exchange-level percentages of college graduates and cooperation rates were negatively correlated. That is, households in telephone exchanges having a higher percentage of higher-income households were less likely to participate, and households in telephone exchanges having a higher percentage of college graduates were less likely to participate. One would expect that higher levels of nonresponse by households with higher incomes and/or higher education levels would result in an increase (rather than a decrease) in the estimated uninsurance rate.

The analyses of cooperation rates suggest that the potential for nonresponse bias was greater among minority households, higher-income households, and households with a college graduate. These three groups may also be underrepresented in the National Survey of CSHCN. Whether or not the latter is true is the next question for discussion.

Representation of Telephone Population

To better understand the extent to which the National Survey of CSHCN—a telephone survey—is representative of the U.S. population of children in households with telephone service, weighted National Survey of CSHCN data were compared with weighted NHIS data for children living in households with telephone service. The weighting and estimation procedures for the National Survey of CSHCN include a poststratification step that adjusts for the potential bias due to the exclusion of nontelephone households from the sample. For purposes of comparison with the NHIS telephone population, weighted, but not poststratified, data from the National Survey of CSHCN were used.

Characteristics of the weighted, but not poststratified, National Survey of CSHCN telephone population are compared with those of the NHIS telephone population in table J. The telephone population described by the National Survey of CSHCN was more likely to be Hispanic (19.0% compared with 16.6%), but less likely to be non-Hispanic black (11.1% compared with 14.0%). In addition, the National Survey of CSHCN included more children with college-educated mothers (34.6% with a 4-year college degree or above compared with 24.8%). Otherwise, the two groups are demographically similar.

Higher-income households, minority households, and households with a college graduate were not under-represented in the National Survey of CSHCN sample. However, even if such demographic biases in the sample had been revealed, the effect of this differential response on the National Survey of CSHCN uninsurance rate would have been reduced during the National Survey of CSHCN weighting process. The poststratification process included adjustments based on household income, children's race, and children's ethnicity. The weighting process did not specifically include an adjustment for the presence of any college-educated household member. However, an adjustment for education of the sampled child's mother was included and can serve as a proxy measure for overall education in the household.

Representation If Poststratification Was Not Used

One may conclude from the previous discussion that the poststratification process was not necessary or that it should be limited to race, ethnicity, and educational attainment. Although the previous analysis provides an indication of the extent to which the sample of the National Survey of CSHCN is representative of the population of children in households with telephones, it does not reflect its relation to the overall U.S. population of noninstitutionalized children. Therefore, an additional comparison of demographic characteristics to those of population estimates from the 2002 CPS was performed. The results are shown in table K. As with the comparison presented in table J, the National Survey of CSHCN data were weighted, but not poststratified.

Table J. Composition of the population of households with children under 18 years of age and with telephone service, by selected demographic characteristics

Demographic characteristic of child	National Survey of CSHCN[1] (2001)		National Health Interview Survey (2001)	
	Percent	Standard error	Percent	Standard error
Insurance status				
Insured	91.7	0.11	89.4	0.34
Uninsured	8.3	0.11	10.6	0.34
Age				
0–5 years	32.0	0.17	32.5	0.38
6–11 years	35.6	0.17	33.8	0.35
12–17 years	32.4	0.17	33.8	0.40
Sex				
Female	48.6	0.18	48.8	0.34
Male	51.4	0.18	51.2	0.34
Race/ethnicity				
Hispanic	19.0	0.17	16.6	0.46
Black non-Hispanic	11.1	0.11	14.0	0.48
White non-Hispanic and all others	70.0	0.18	69.4	0.60
Language of interview				
English	89.6	0.14	92.3	0.33
Spanish or other language	10.4	0.14	7.7	0.33
Poverty status[2,3]				
0%–49% of FPL	5.9	0.12	5.4	0.29
50%–99% of FPL	10.6	0.14	9.9	0.39
100%–149% of FPL	11.8	0.14	10.7	0.38
150%–199% of FPL	10.9	0.12	10.1	0.38
At or above 200% of FPL	60.8	0.20	63.8	0.69
Maternal education				
8th grade or less	4.9	0.11	5.7	0.29
Some high school	7.8	0.11	10.0	0.33
High school graduate or GED[4]	28.4	0.17	27.8	0.51
Some post-high school, but no college degree	24.3	0.16	31.7	0.57
4-year college degree or higher	34.6	0.18	24.8	0.54

[1]CSHCN is children with special health care needs.

[2]Poverty status was assessed at the household level in the National Survey of CSHCN and at the family level for the National Health Interview Survey.

[3]FPL is Federal poverty level.

[4]GED is General Educational Development high school equivalency diploma.

NOTE: To approximate the population of households with children and with telephone service from the National Survey of CSHCN, sampling weights obtained prior to poststratification were used for this analysis.

The telephone population described by the National Survey of CSHCN was more likely than the U.S. population described by the CPS to be Hispanic (19.0% compared with 16.3%) and less likely to be non-Hispanic black (11.1% compared with 14.7%). The population described by the National Survey of CSHCN also tended to be younger (32.4% were 12–17 years of age compared with 37.4% in the CPS), and it included a smaller proportion of households with children in the lowest income range (6.3% with an income of $9,999 or less compared with 10.3% in the CPS).

Older children and children from households in the lowest income range were underrepresented in the National Survey of CSHCN sample when poststratification was not conducted. This result suggests not only that poststratification is required to produce more accurate estimates of the population, but also that poststratification should not be limited to race, ethnicity, and educational attainment. As indicated in table C, older children and children from households in the lowest income range are more likely to be uninsured. Uninsurance estimates calculated without the appropriate adjustments to the sampling weights would be too low.

Bias Following Poststratification by Demographic Characteristics

As noted with the comparison between the National Survey of CSHCN and NHIS telephone populations, any effect that slight variations between the National Survey of CSHCN telephone population of children and the CPS population of children samples may have on uninsurance rates should have been tempered by the poststratification adjustments during the National Survey of CSHCN weighting process. A look at

Table K. Composition of the population of households with children under 18 years of age by selected demographic characteristics

Demographic characteristic of child	National Survey of CSHCN[1] (2001: households with telephones)		Current Population Survey Annual Demographic Supplement (2002)	
	Percent	Standard error	Percent	Standard error
Age				
0–5 years	32.0	0.17	30.6	0.18
6–11 years	35.6	0.17	32.0	0.11
12–17 years	32.4	0.17	37.4	0.12
Sex				
Female	48.6	0.18	48.8	0.30
Male	51.4	0.18	51.2	0.30
Race/ethnicity				
Hispanic	19.0	0.17	16.3	0.28
Black non-Hispanic	11.1	0.11	14.7	0.24
White non-Hispanic and all others	70.0	0.18	69.0	0.30
Income[2]				
Up to $9,999	6.3	0.11	10.3	0.16
$10,000–$19,999	11.1	0.14	10.6	0.20
$20,000–$39,999	23.4	0.17	22.1	0.27
$40,000–$59,999	19.9	0.15	18.0	0.25
$60,000 and above	39.4	0.19	39.0	0.32

[1]CSHCN is children with special health care needs.

[2]Income was assessed at the household level in the National Survey of CSHCN and at the family level for the Current Population Survey.

NOTE: To approximate the population of households with children and with telephone service from the National Survey of CSHCN, sampling weights obtained prior to poststratification were used for this analysis.

table L raises questions about whether the weighting process sufficiently adjusted for variations in household income. Table L compared the estimated population demographics from the weighted and poststratified National Survey of CSHCN to those from the NHIS, NSAF, CPS, and MEPS. Despite poststratification, a greater proportion of households were still in the highest income range (44.0% with an income of $60,000 or more compared with 28.1% to 39.9% in the other surveys). The greater proportion of households in the highest income range may help explain the lower uninsurance rate for the National Survey of CSHCN relative to the other surveys.

The population estimated by the National Survey of CSHCN was also more likely to be Hispanic (17.3% compared with 16.3% to 16.7% in the other surveys). This difference, however, was expected given differences in the population control totals used during the preparation of the sampling weights. As noted previously, the National Survey of CSHCN used control totals based on the 2000 census, whereas the other surveys used control totals based on projections from the 1990 census. When the data from the March 2000 Annual Demographic Supplement to the CPS were reweighted to be consistent with the 2000 census, the proportion of Hispanic children in the United States increased from approximately 16.2% to 17.1% (32). If the data from the other surveys were similarly reweighted to be consistent with the 2000 census, the proportion of Hispanic children should increase and more closely approximate the proportion estimated by the National Survey of CSHCN. Nevertheless, because Hispanic children are more likely to be uninsured (see table C), the greater proportion of Hispanic children in the population estimated by the National Survey of CSHCN does not help explain the lower uninsurance rate relative to the other surveys.

Bias Following Poststratification by Service Interruption Status

The poststratification process for the National Survey of CSHCN also included an adjustment that somewhat compensated for the noncoverage of households without a telephone by proportionately increasing the weights for those interviews that could be completed in households with a telephone that had experienced an interruption in telephone service. In this way, households with interrupted service were used to represent households without telephone service at the time of the interview. To examine the potential effect of the nontelephone adjustment on the uninsurance rate, it is of interest to compare uninsurance rates in continuous- versus interrupted-service households. This comparison showed that among households with a telephone at the time of the survey, telephone service interruption within the past 12 months is related to uninsurance. Children in households with a telephone that had experienced an interruption in telephone service were more than twice as likely to be uninsured (table M). Because the weights of households with interrupted telephone service were increased to represent households without a telephone, and because children in interrupted-service households were more likely to be uninsured, the adjustment for those without telephones resulted in an increased National Survey of CSHCN uninsurance rate.

Table L. Percent of children under 18 years of age with selected demographic characteristics by national survey

Selected demographic characteristic	National Survey of CSHCN[1] (2001)	National Health Interview Survey (2001)	National Survey of America's Families (1999)	Current Population Survey Annual Demographic Supplement (2002)	Medical Expenditure Panel Survey (2001)
Age					
0–5 years	31.9	32.7	32.2	30.6	32.7
6–11 years	34.9	33.8	34.0	32.0	33.7
12–17 years	33.2	33.5	32.8	37.4	33.7
Sex					
Female	48.8	48.9	48.9	48.8	48.6
Male	51.2	51.1	51.1	51.2	51.4
Race/ethnicity					
Hispanic	17.3	16.7	16.3	16.3	16.6
Black non-Hispanic	14.0	14.4	15.5	14.7	15.4
White non-Hispanic and all others	68.6	68.8	68.2	69.0	68.0
Language of interview					
English	90.6	92.2	94.2	- - -	- - -
Spanish or other language	9.4	7.8	5.8	- - -	- - -
Income[2]					
Up to $9,999	5.4	6.1	9.5	10.3	2.3
$10,000–$19,999	9.2	10.3	13.1	10.6	14.6
$20,000–$39,999	22.0	23.3	26.1	22.1	32.9
$40,000–$59,999	19.4	20.3	21.1	18.0	22.0
$60,000 and over	44.0	39.9	30.2	39.0	28.1
Poverty status[2,3]					
Up to 49% of FPL	5.2	6.0	6.1	- - -	- - -
50%–99% of FPL	9.4	10.4	10.5	- - -	- - -
100%–149% of FPL	11.3	11.0	11.5	- - -	- - -
150%–199% of FPL	10.2	10.1	11.8	- - -	- - -
200% of FPL and over	63.9	62.5	60.2	- - -	- - -
Maternal education					
8th grade or less	5.7	5.9	5.7	- - -	- - -
Some high school	11.3	10.6	8.1	- - -	- - -
High school graduate or GED[4]	32.2	28.0	29.9	- - -	- - -
Some post-high school, but no college degree	28.0	31.4	31.3	- - -	- - -
4-year college degree or higher	22.8	24.2	25.1	- - -	- - -

- - - Category not available.

[1]CSHCN is children with special health care needs.

[2]Income and poverty status are assessed at the household level in the National Survey of CSHCN and at the family level for the National Health Interview Survey, National Survey of America's Families, and Current Population Survey.

[3]FPL is Federal poverty level.

[4]GED is General Educational Development high school equivalency diploma.

The adjustment is based on the assumption that characteristics of children in households without a telephone are more similar to children in households with interrupted telephone service in the past 12 months than to those with continuous telephone service. Because the NHIS gathers data in households without a telephone, and because the NHIS asks households with a telephone about interruptions in telephone service within the past 12 months, NHIS uninsurance rates for children in each type of household can be examined (table M). Children in households without telephone service or in households that had experienced an interruption in service in the past 12 months were much more likely to have an uninsured child. This examination supports the premise of the National Survey of CSHCN adjustment.

Although children in households without telephone service were more similar to children in households that experienced interrupted service than to those with continuous telephone service, these children did not have identical uninsurance rates. The difference in the uninsurance rates between children in households with no telephone service and children in households with interrupted telephone service did not reach the conventional level of statistical significance ($p < .05$), due perhaps to the small sample sizes in the NHIS. A simple comparison of the two rates, however, suggests that using children from households with interrupted

Table M. Uninsurance rates for children under 18 years of age by telephone service status

Household telephone service status	National Survey of CSHCN[1] (2001)			National Health Interview Survey (2001)		
	Sample size	Uninsurance rate	Standard error	Sample size	Uninsurance rate	Standard error
No telephone service at the time of the interview	. . .	. . .	. . .	936	24.4	3.15
Telephone service at the time of the interview, but an interruption in service during the past 12 months	11,323	16.8	0.69	805	17.4	1.96
Telephone service at the time of the interview, and continuous service during the past 12 months	202,734	7.2	0.11	26,571	10.4	0.34

. . . Category not applicable.

[1]CSHCN is children with special health care needs.

telephone service (17.4% uninsured) to represent children from households without telephone service (24.4% uninsured) resulted in estimated uninsurance rates that were still lower than the true rate.

This difference in uninsurance rates between households with no telephone service and households with interrupted telephone service was not sufficient, however, to fully account for the difference in uninsurance rates between the National Survey of CSHCN and the other surveys. If the uninsurance rate from households with no telephone service was artificially set at the NHIS rate of 24.4% (rather than being approximated based on data from telephone households with interrupted service), the overall uninsurance rate for the National Survey of CSHCN would have increased to only 8.7%. To achieve an overall uninsurance rate of 11.0% (the NHIS rate from table B) using the National Survey of CSHCN estimates presented in table M, the rate for uninsured children from households with no telephone service would need to have been set at 62.6%. An actual rate at this level is highly unlikely.

Reporting Bias

Surveys collect insurance data in various contexts and using different types of questions, and these differences could lead parents to misreport health insurance coverage for their children. For example, a recent Questionnaire Design Experimental Research Survey by the U.S. Census Bureau included a component comparing person-level and household-level versions of questionnaire items (33). The person-level interview asked questions for all eligible household members by repeating the entire question for each eligible household member. The alternative household-level approach used a screening question to determine whether anyone in the household had the characteristic of interest and then followed an affirmative response with a question determining which household members had the characteristic of interest. For most demographic characteristics and for receipt of income from government programs, the two versions produced estimates without clear or consistent differences. There was some evidence, however, that the household-level approach increased the risk of underreporting of functional limitations, coverage by employer- or union-based health insurance plans, and asset ownership.

For health insurance questions, when households included more than one person, the person-level approach produced more privately insured persons than did the household-level approach. Respondents were asked about various types of insurance plans (e.g., plans provided by employers/unions, plans purchased directly, plans obtained by nonhousehold members, Medicare, Medicaid, and plans provided by the military). Of these types, only the prevalence rate for employer- and union-based plans differed significantly ($p < .01$) by questionnaire version: 75.1% of persons of all ages had this type of insurance when the person-level questions were asked compared with 65.3% of persons when the household-level questions were asked.

There was also a statistically significant difference in the overall uninsurance rate as constructed from the questions about various insurance plan types. With the household-level questions, 12.6% of persons were considered uninsured compared with 6.6% using the person-level questions. Based on further reliability analyses, the authors concluded that the person-level approach produces more complete and accurate reporting for health insurance coverage.

Experimental Approach

To better understand the effect of question design on the uninsurance rates from the National Survey of CSHCN and other surveys, a randomized experiment was planned and implemented by Abt Associates, in collaboration with NCHS. Using the SLAITS mechanism, health insurance questions were fielded using either a child-level design or a household-level design. The child-level design was the approach implemented in the National Survey of CSHCN. Household-level or family-level designs were used for the NSAF, CPS, and the initial health insurance question of the NHIS.

Two-thirds of the sample was randomly assigned to the child-level design. Of this two-thirds, one-half was administered the questionnaire that was used for the National Survey of CSHCN. That is, demographic information was gathered on all children in the household, and then the CSHCN Screener (34) was administered for each child. The CSHCN Screener included five stem questions regarding health care consequences that might indicate a special health care need (e.g., limitation

in ability, need for prescription medication, need for special therapy). If a child had experienced one of the consequences, followup questions determined whether the consequence was due to a medical, behavioral, or other health condition that had lasted or was expected to last for 12 months or longer. Using these answers to determine the special-needs status of each child in the household, one child with special health care needs and one child without special health care needs were sampled. The questionnaire for sampled children with special needs included sections on health and functional status, access to care, care coordination, satisfaction with care, health insurance, adequacy of coverage, and the impact of the child's special needs on the family. The questionnaire for children without a special need consisted only of the health insurance section.

The other half of the sample receiving the child-level design received an abbreviated version of the National Survey of CSHCN questionnaire. Similar to that questionnaire, demographic information regarding all children in the household was collected. However, after the initial demographic questions, the CSHCN Screener was not administered. Instead, one child in the household was randomly sampled to receive the health insurance questions. The health insurance questions for this group were identical to those used for the National Survey of CSHCN.

The remaining third of the sample was randomly assigned to the household-level design. These households were administered a modified version of the 1999 NSAF questionnaire, up to and including the section on health insurance. Prior to the questions on health insurance, this questionnaire asked about the medical care, health status, and education of the children in the household and included household demographics and a detailed household roster. Following the household roster, a target group within the household was randomly selected for further questions on health insurance. Where possible, the target group consisted of one child between birth and 5 years of age, one child between 6 and 17 years of age, and the children's parents or guardians. For each type of insurance included in the questionnaire, an initial item asked whether any target group member was covered by that type of insurance. If an affirmative response was received, additional items asked which target group members were covered by the insurance type. Names of the policyholders were also obtained. The interview concluded with additional demographic items drawn from the National Survey of CSHCN questionnaire.

For the latter two groups, the introduction to the insurance questions included the following statement: ''I want to assure you that I am not selling anything. This is a government study on health care and other services in the State of (NAME).'' The questionnaires administered to these two groups included few questions prior to those about health insurance. This wording was added to prevent respondents from misinterpreting the call as a marketing approach to solicit the purchase of health insurance. This statement did not appear in the National Survey of CSHCN questionnaire.

Methods

Because the SLAITS program uses the sampling frame of the National Immunization Survey (NIS), it was necessary to identify NIS reporting areas that could provide a sufficient sample that was not already committed to the National Survey of CSHCN project. Fielding each of the experimental survey groups in the same NIS reporting areas was essential to ensure that the samples would be parallel. However, because of this restriction, the sample used for the experiment could not be used to produce national estimates. The sample was representative of selected NIS reporting areas, but levels of insurance cannot be projected nationally. Within the areas with a sufficient NIS sample, the telephone numbers randomly generated for NIS administration were randomly assigned to the question design conditions. The sample assigned to receive the original version of the National Survey of CSHCN questionnaire was included as part of the National Survey of CSHCN sample.

Regardless of the question design condition, the respondent was the adult in the household who was most knowledgeable about the health and health care of the children living there. To reduce the potential variability among the test groups, no interviews were conducted in households where the parent or guardian could not complete the interview in English. In addition, as was the case in the U.S. Census Bureau experiment described earlier, no callbacks or refusal-conversion attempts were made because of budgetary constraints. At the time this experiment was conducted, the NIS interview included health insurance questions. Because this experiment could not be conducted in these households, a decision was made to exclude all NIS-eligible households (i.e., those with a child 19–35 months of age) from the experiment.

Questionnaires were administered using a computer-assisted telephone interview (CATI) system. All questionnaires used in the experiment were programmed as modules of the NIS, integrating the NIS screener and each questionnaire into a single interview. Interviewers for the experiment received cases in the question design groups at random. Computer screens for each questionnaire were color-coded to alert the interviewers as to which design would be used for a particular call. Question-specific instructions and help screens used for the 1999 administration of the NSAF were incorporated into the household-level questionnaire.

A total of 138 interviewers were trained for the experiment. All had worked previously on the National Survey of CSHCN. The material covered in the training sessions included an overview of the project, introduction of CATI screens, review of question-specific instructions and help screens, and a review of refusal aversion techniques. Special emphasis was placed on the importance of gaining immediate cooperation from respondents, because neither callbacks nor refusal conversion would be attempted for the study.

Table N. Disposition of the experimental sample by question design group

Disposition	Child-level design (full National Survey of CSHCN[1] questionnaire)	Child-level design (abbreviated National Survey of CSHCN[1] questionnaire)	Household-level design (modified NSAF[2] questionnaire)
Initial telephone numbers	16,272	16,272	16,272
Residential status determined	13,620	13,805	13,732
Known households	4,980	5,005	4,979
Households screened for children	4,760	4,796	4,773
Households identified as having children	828	894	892
Children screened and selected for interview	476	472	534
Children with a completed interview	396	420	486

[1]CSHCN is children with special health care needs.
[2]NSAF is National Survey of America's Families.

Telephone center supervisors and project staff extensively monitored interviews via remote telephone and computer monitoring technology. This formal monitoring was conducted to ensure that project specifications were followed (i.e., that introductory materials were properly read, that item wording and sequence of the questionnaires were followed correctly, that respondent questions were answered properly, and that any vague responses were properly probed). Computer monitoring also allowed monitors to ensure that answers were entered into the CATI system accurately.

The number of initial telephone numbers, the number of telephone numbers where residential status was determined, the number of households identified, the number of households successfully screened for the presence of children, and the number of households with at least one child (excluding NIS-eligible households) are presented in table N. This table also shows the number of children selected for interview and the number of children for whom interviews were successfully completed. In the child-level design group that received the original National Survey of CSHCN questionnaire, a maximum of two interviews were possible: one for a randomly selected child with special health care needs (if present) and one for a randomly selected child without special health care needs (if present). In the child-level design group that received the abbreviated questionnaire, a single child was randomly selected from all the children in the household. In the household-level design group that received the NSAF questionnaire, information was obtained for one randomly selected child aged 5 years or younger (if present) and one randomly selected child over the age of 5 years (if present).

Because health insurance information was not obtained for all children within a household, it was necessary to apply weights reflecting the differential within-household selection probabilities. The weighting also adjusted for differences in the proportion of Hispanics among the groups. The effect of the differential weighting was incorporated into the hypothesis tests by reducing the overall sample size in proportion to the variance of the weights.

Results

The first analysis examined differences in insurance rates between the two child-level design groups. Because the prevalence of uninsured children was the same for the two groups, they were pooled to increase power for comparisons with the household-level design group. Details about this comparison are provided in the section titled ''Context Effects.''

The hypothesis of the experiment was that child-level questions about insurance would lead to higher rates of reported coverage than would household-level items. That is, it was anticipated that the combined child-level design group would produce a lower uninsurance rate than the household-level design group. Table O compares the rates of uninsurance and the prevalence of various insurance types for the two question design groups.

The results of this experiment suggest that the child-level design of the National Survey of CSHCN health insurance items will yield lower uninsurance rates than the household-level and family-level designs incorporated into the other national surveys. The child-level insurance questions produced an uninsurance rate of 4.8%, whereas the household-level insurance questions produced an uninsurance rate of 7.0%. This difference approached the conventional level of statistical significance, based on Fisher's Exact Test and a single-tailed distribution. (A one-sided significance

Table O. Insurance coverage rates by question design group

Type of insurance coverage	Question design group: Child-level design	Question design group: Household-level design	One-sided Fisher's Exact Test
Private insurance	78.1	72.4	0.013
Medicaid	17.4	14.4	0.090
SCHIP[1]	6.6	7.8	0.761
Uninsured	4.8	7.0	0.061

[1]SCHIP is State Children's Health Insurance Program.

NOTES: Data are from a randomized experiment with 1,302 completed interviews. Respondents could report more than one type of insurance. Thus, the total of the reported coverage rates exceeds 100%.

test was appropriate because the directionality of the difference was hypothesized prior to data collection and analysis, based on the previous U.S. Census Bureau results.) Differences in the expected direction were also found for private insurance and Medicaid.

The data collected during this experiment do not permit an analysis of the relative accuracy of the insurance coverage reported. The reliability results reported by the U.S. Census Bureau and the cognitive simplicity of the person-level questions provide reasons to believe that the child-level approach used for the National Survey of CSHCN yields more accurate data. However, social desirability demands may be greater for the child-level approach. That is, the desire to present oneself in a favorable light (to ''say the right thing'') may predispose parents of uninsured children to erroneously report health insurance coverage, but these parents may feel less pressure to fabricate insurance coverage for the child when reporting the uninsurance status of the entire family rather than the uninsurance status of just the individual child. This hypothesis would suggest that the child-level approach used for the National Survey of CSHCN can yield less accurate data, partially offsetting the aforementioned benefits of a child-level approach. Further research on question design in surveys that assess health insurance is clearly needed.

Tests for Other Biases

Aside from nonresponse bias, inadequate weight adjustments, and reporting bias due to question wording, other potential reasons for the difference in the uninsurance rate between the National Survey of CSHCN and other surveys include interviewer effects, respondent fatigue, and the context of the questions within the questionnaire. This section details several analyses performed to examine the effect of each of these potential reasons on the National Survey of CSHCN uninsurance rate.

Table P. Uninsurance rates by interviewer tenure at Abt Associates and by tenure on the National Survey of Children with Special Health Care Needs at the time of interview completion

Tenure	Sample size	Uninsurance rate	Standard error
Overall experience			
1 month or less	25,846	6.31	0.31
2–3 months	41,944	7.08	0.26
4–6 months	35,847	8.12	0.33
7–12 months	38,935	7.84	0.30
13 months or more	68,650	9.86	0.25
National Survey of CSHCN experience			
1 month or less	32,912	6.71	0.29
2–3 months	52,880	8.00	0.26
4–6 months	42,917	8.40	0.29
7–12 months	40,533	8.30	0.29
13 months or more	17,325	9.41	0.51

NOTE: CSHCN is children with special health care needs.

Interviewer Effects

Something specific to the National Survey of CSHCN interviewers or interviewing setting may have contributed to the observed difference in insurance reporting between the National Survey of CSHCN and other surveys. To address the possibility that interviewers affected insurance reporting, analyses of interviewer training, interviewer experience, and telephone center location were undertaken.

The National Survey of CSHCN interviewer training program was reviewed to determine whether this training could have encouraged interviewers to record insurance coverage when none was reported or to persuade parents of uninsured children to falsely report insurance coverage. The importance of the health insurance component of the study was strongly stressed in training, but the emphasis was on accurate recording of answers to help determine accurate coverage estimates. In addition, to ensure that training regarding the collection of insurance data was similar to that performed for outside surveys, training materials and question-specific instructions for the NSAF were obtained and incorporated into National Survey of CSHCN training sessions.

Interviewers with varying degrees of prior interviewing experience were trained for the National Survey of CSHCN. In addition, because the data collection period for the study spanned approximately 18 months and interviewers were recruited and trained for the study throughout data collection, interviewers accrued varying levels of experience working on the study. To determine whether interviewer experience might be correlated with rates of uninsurance, rates were examined by interviewer tenure at Abt Associates and by tenure on the National Survey of CSHCN at the time of interview completion (table P). A general increase in uninsurance rates by interviewer experience was observed, both overall and specifically on the National Survey of CSHCN. However, there are confounding reasons explaining such an increase. For example, experienced interviewers were more likely to serve as refusal converters. Children whose parents had refused the interview at some point, but had been converted, were slightly more likely to be uninsured (8.3% compared with 8.0%). Experienced interviewers also tended to staff daytime shifts; children whose parents had been interviewed before 5:00 p.m. were more likely to be uninsured (9.2% compared with 7.5%).

A logistic regression analysis was undertaken to determine whether the uninsurance rate was related to interviewer experience. The explanatory variables included interviewer experience, geographic location (i.e., census division) of sampled household, total number of calling attempts for the

case, time of day of the call resulting in a completed interview, race and ethnicity of interviewer, race and ethnicity of the child, interviewer-child race match status, special-needs status of the child, whether the household included a child with special health care needs, poverty level of the child's household, and maternal education. Adjusting for all other factors, the insurance status of the child was not predicted by interviewer experience (table Q).

Abt Associates employs telephone centers in Amherst, Massachusetts; Chicago, Illinois; and Las Vegas, Nevada. Any differences among the telephone centers are minimized by a case delivery system that delivers the next available case to the next available interviewer, regardless of the location of the telephone center. However, the telephone centers differ in the percentage of bilingual interviewers, the percentage of refusal converters, and the hours of operation. Therefore, variation in the uninsurance rates for interviews administered in Amherst, Chicago, and Las Vegas was expected. In particular, because the majority of bilingual interviewing and refusal-conversion activities occur in the Chicago telephone center, it is not surprising that the highest uninsurance rate was observed at that location (table R). Yet, as table Q illustrates, the association between the uninsurance rate and telephone center location was not statistically significant after adjusting for the other factors in the model. Although there are differences in uninsurance rates across telephone center locations, the regression analysis showed that they could be explained by other factors.

Table Q. Maximum-likelihood estimates and adjusted odds ratios from logistic regression predicting uninsurance rate from household, child, and interviewer characteristics

Characteristic	Logistic regression coefficient	Adjusted odds ratio	95% confidence limits
Household poverty status[1]			
0%–49% of FPL	1.66	5.25	[2](4.36, 6.31)
50%–99% of FPL	1.73	5.65	[2](4.78, 6.67)
100%–132% of FPL	1.73	5.64	[2](4.73, 6.73)
133%–149% of FPL	1.59	4.89	[2](3.98, 6.00)
150%–184% of FPL	1.53	4.61	[2](3.89, 5.47)
185%–199% of FPL	1.31	3.69	[2](2.91, 4.69)
200%–299% of FPL	1.05	2.85	[2](2.45, 3.30)
300%–399% of FPL	0.46	1.58	[2](1.32, 1.88)
At or above 400% of FPL	. . .	1.00	. . .
Education of respondent			
8th grade or less	0.43	1.54	[2](1.29, 1.84)
Some high school	0.31	1.36	[2](1.20, 1.54)
High school graduate	. . .	1.00	. . .
Some post-high school, but no degree	–0.15	0.86	[2](0.78, 0.95)
4-year college degree or higher	–0.50	0.61	[2](0.54, 0.68)
Race/ethnicity of child			
Hispanic	0.17	1.18	[2](1.05, 1.33)
Black non-Hispanic	–0.36	0.70	[2](0.61, 0.80)
Other, missing	0.22	1.24	[2](1.03, 1.50)
White non-Hispanic	. . .	1.00	. . .
Race/ethnicity of interviewer			
Hispanic	0.31	1.36	[2](1.13, 1.64)
Black, non-Hispanic	–0.01	1.00	(0.87, 1.14)
Other, missing	0.09	1.09	(0.86, 1.37)
White, non-Hispanic	. . .	1.00	. . .
Interviewer-child race match status			
Match	. . .	1.00	. . .
Non-match	0.01	1.01	(0.90, 1.13)
Insufficient information	0.13	1.13	(0.84, 1.53)
Child has special health care needs			
No	0.26	1.29	[2](1.15, 1.45)
Yes	. . .	1.00	. . .
Presence of at least one child with special health care needs in household			
No	0.70	2.01	[2](1.66, 2.44)
Yes	. . .	1.00	. . .

See footnotes at end of table.

Respondent Fatigue

The NIS interview was administered prior to the National Survey of CSHCN interview in NIS-eligible households. Therefore, these households were generally on the telephone considerably longer than were NIS-ineligible households before providing insurance information. Because of the administration time of the combined interview (approximately 20 minutes for the NIS interview and 10 to 15 minutes for the National Survey of CSHCN interview), NIS-eligible respondents might be more fatigued by the time that they reported insurance status for their child, leading to misreporting. To determine whether administration of the NIS interview had an effect on insurance reporting, rates of uninsurance for NIS-eligible and NIS-ineligible children were compared (table S). The uninsurance rate for NIS-eligible children was just over 1 percentage point higher than the rate for NIS-ineligible children.

To further examine the effect of administration time on uninsurance rates, rates by interview length were examined. (In these analyses, the interview length did not include the time to administer the NIS interview in NIS-eligible households, and the interview length did not include the time to administer the Low-Income Uninsured Supplement for eligible

Table Q. Maximum-likelihood estimates and adjusted odds ratios from logistic regression predicting uninsurance rate from household, child, and interviewer characteristics–Con.

Characteristic	Logistic regression coefficient	Adjusted odds ratio	95% confidence limits
Time of call resulting in completed interview			
Before noon	–0.04	0.96	(0.82, 1.12)
Noon–5 pm	–0.02	0.99	(0.88, 1.10)
5–7 pm	–0.11	0.90	(0.80, 1.00)
7–9 pm	. . .	1.00	. . .
Number of call attempts			
1–2 calls	0.00	1.00	(0.91, 1.11)
3–5 calls	0.05	1.05	(0.95, 1.17)
6 calls or more	. . .	1.00	. . .
Length of interview[3]			
5 minutes or less	–1.14	0.32	[2](0.27, 0.38)
6–10 minutes	–0.51	0.60	[2](0.54, 0.67)
11–20 minutes	. . .	1.00	. . .
21–30 minutes	0.03	1.03	(0.86, 1.24)
31–45 minutes	0.17	1.19	(0.92, 1.53)
46–60 minutes	0.13	1.14	(0.62, 2.09)
61 minutes or more	0.18	1.20	(0.40, 3.58)
Interviewer experience (overall)			
1 month or less	–0.06	0.97	(0.84, 1.07)
2–3 months	0.05	1.05	(0.92, 1.20)
4–6 months	0.12	1.13	(0.99, 1.29)
7–12 months	0.06	1.06	(0.94, 1.21)
13 months or more	. . .	1.00	. . .
U.S. Census division			
New England	–0.29	0.75	[2](0.62, 0.91)
Middle Atlantic	–0.03	0.97	(0.81, 1.17)
South Atlantic	0.36	1.43	[2](1.22, 1.67)
East South Central	0.16	1.17	(0.99, 1.38)
West South Central	0.87	2.38	[2](2.02, 2.82)
East North Central	0.05	1.05	(0.89, 1.25)
West North Central	–0.02	0.98	(0.83, 1.15)
Mountain	0.55	1.73	[2](1.50, 2.00)
Pacific	. . .	1.00	. . .
Telephone center location			
Amherst, Massachusetts	0.09	1.09	(0.91, 1.31)
Chicago, Illinois	0.03	1.03	(0.92, 1.15)
Las Vegas, Nevada	. . .	1.00	. . .

. . . Category not applicable.

[1]FPL is Federal poverty level.

[2]This confidence interval does not include 1.00 and indicates a statistically significant odds ratio, $p < .05$.

[3]The length of the interview did not include the time to administer the NIS interview in NIS-eligible households and did not include the time to administer the Low-Income Uninsured Supplement for eligible children.

NOTE: Sample size for this analysis was 170,522 due to missing data, particularly for household poverty status.

Table R. Uninsurance rates by telephone center location

Location	Sample size	Uninsurance rate	Standard error
Amherst, Massachusetts	12,261	6.56	0.46
Chicago, Illinois	119,360	9.23	0.19
Las Vegas, Nevada	83,533	7.11	0.19

Table S. Uninsurance rates by National Immunization Survey eligibility

Eligibility of child's household	Sample size	Uninsurance rate	Standard error
Eligible	24,135	9.25	0.42
Ineligible	191,026	8.13	0.14

NOTE: Households were eligible for the National Immunization Survey if they included a child 19–35 months of age.

children.) Rates of uninsurance generally increased as the administration time increased (table T). However, longer interviews were more likely in households with lower income and where the respondent was less educated (table U). Such respondents may not be familiar with research and survey questions and are, therefore, likely to take longer to respond overall. Thus, children from households with lower income and less education are more likely to be uninsured and are more likely to be the subject of a longer interview. In other words, the relationship between uninsurance and interview length may be due to income and education.

To determine whether the uninsurance rate was directly related to interview length, the logistic regression presented in table Q included interview length, poverty level of the child's household, and maternal education as predictors of the uninsurance rate. The regression analysis showed that the relationship between uninsurance and interview length could not be explained entirely by other factors. Shorter interviews still predicted lower uninsurance rates. Children without special needs were more likely to be the subject of a shorter interview. However, there are two reasons why this fact alone does not explain the relationship between uninsurance and interview length. First, the effect of a child's special-needs status was controlled by including the status as a separate predictor variable in the model. Second, children without special needs had higher (rather than lower) uninsurance rates (see table Q and "Appendix II").

These analyses demonstrated that longer administration time for the National Survey of CSHCN was related to greater uninsurance rates. For most children without special needs, the National Survey of CSHCN asked about health insurance coverage early in the interview, following only the initial demographics and the CSHCN Screener.

Table T. Uninsurance rates by length of National Survey of Children with Special Health Care Needs interview

Length of interview[1]	Sample size	Uninsurance rate	Standard error
5 minutes or less	31,277	3.56	0.20
6–10 minutes	94,761	7.32	0.17
11–20 minutes	41,411	13.19	0.37
21–30 minutes[2]	34,090	7.48	0.37
31–45 minutes	8,117	10.96	0.82
46–60 minutes	807	11.72	2.33
61 minutes or more	156	25.34	7.67

[1]The length of the interview did not include the time to administer the National Immunization Survey (NIS) interview in NIS-eligible households and did not include the time to administer the Low-Income Uninsured Supplement for eligible children.

[2]The majority of interviews in this category pertain to children with special health care needs. Because children with special health care needs were more likely to be insured than children without special needs, the lower uninsurance rate in this category was expected.

In contrast, the NHIS, NSAF, and CPS include the health insurance coverage questions later in the interview. Consistent with the results just described, the surveys with greater length prior to the insurance questions also yield greater uninsurance rates.

The relationship between interview length and reported uninsurance rates suggests that respondent fatigue may contribute to higher uninsurance rates. Assuming that respondent fatigue is more likely in the NHIS, NSAF, and CPS relative to the National Survey of CSHCN (especially for children without special needs), this fatigue could contribute to the observed differences in the uninsurance rate among the surveys. Assuming further that fatigue results in misreporting of insurance coverage, one could hypothesize that respondents' answers about their children's health insurance coverage on the National Survey of CSHCN are more accurate than the answers reported on other surveys. Further research on the potential influence of respondent fatigue on uninsurance rates is needed to confirm or refute these hypotheses.

Context Effects

The demands of a particular situation can lead respondents to give socially desirable responses rather than accurate responses. As noted previously, this desire to present oneself in a favorable light may predispose parents of uninsured children to erroneously report health insurance coverage. These demands may be especially strong if the health insurance questions follow a battery of other health-related questions. In the National Survey of CSHCN, health insurance questions for most children without special needs were administered after the CSHCN Screener, a set of five questions about consequences that children may experience due to special health care needs (34). For children with special needs, the health insurance questions followed questions about health status, care utilization, unmet needs, and satisfaction with care. In contrast, health insurance questions in the CPS follow questions about employment and income.

To examine whether context might influence reports of uninsurance, an abbreviated version of the National Survey of CSHCN questionnaire was used for half the sample that received the child-level health insurance questions in the randomized experiment described earlier. The abbreviated version omitted the CSHCN Screener prior to the health insurance questions. In other words, the health-related context was removed. As reported earlier, the uninsurance rate did not differ by the context of the insurance questions. Observed differences in the reported levels of private insurance, Medicaid, and SCHIP were not statistically significant (table W). Therefore, the context of the insurance questions within the questionnaire did not appear to be related to insurance reporting.

Table U. Length of National Survey of Children with Special Health Care Needs interview by household income and respondent education

Demographic characteristic	Sample size	Mean interview length (in minutes)	Standard deviation
Household income			
Up to $9,999	10,327	15.5	10.49
$10,000–$19,999	18,770	14.6	10.16
$20,000–$39,999	44,635	13.3	9.28
$40,000–$59,999	39,715	12.4	8.60
$60,000 and above	72,764	12.3	8.18
Education of respondent			
8th grade or less	5,570	15.4	10.82
Some high school	13,496	14.9	10.26
High school graduate	58,761	12.7	8.78
Some post-high school, but no degree	57,756	13.2	8.99
4-year college degree or higher	79,024	12.3	8.43

Summary and Conclusions

The National Survey of CSHCN revealed that 8.3% of children under 18 years of age were uninsured, a rate that is significantly lower than the uninsurance rates from other surveys. For example, the rate was one-quarter lower than the NHIS estimate (11.0%) and one-third lower than the NSAF estimate (12.6%). Considerable analyses and investigations have examined the difference between the National Survey of CSHCN uninsurance rate and the uninsurance rates calculated from other surveys. These have included an examination of potential nonresponse bias, effects arising from the survey's weighting and estimation process, respondent and interviewer effects, and question design.

Telephone exchange-level analyses using National Survey of CSHCN cooperation rates suggested that households were less likely to respond to the survey when they resided in geographic areas with a higher concentration of Hispanic and African-American persons, college-educated persons, and higher-income households. However, comparisons of the National Survey of CSHCN telephone population with the NHIS telephone population and with population estimates from the CPS revealed that the National Survey of CSHCN described a telephone population with a slightly larger proportion of Hispanic children, younger children, children from households with college-educated members, and children from households with higher incomes. Any effect that these response biases might have had on the National Survey of CSHCN uninsurance rate should have been reduced in the survey's poststratification process, which included controls based on ethnicity, age, mother's education, and household income.

Following poststratification, the National Survey of CSHCN still described a population with a slightly larger proportion of children from households with higher incomes relative to the populations described by other surveys. Differences in the estimated size of the Hispanic population of children also remained following poststratification (though it should be noted that the weighted data from the National Survey of CSHCN more closely approximate the 2000 census results). These demographic differences would have opposing effects on the uninsurance rate, suggesting that these demographic differences were unlikely to account for much of the discrepancy between the uninsurance rates.

A more likely explanation for the discrepancy comes from the results of a randomized experiment that varied the design of the health insurance questions. For items about private health insurance, household-level questions that first ask if anyone in the household is insured produced lower rates of coverage than did child-level questions that ask if each individual was insured. When this

Table W. Insurance coverage rates by context of health insurance questions

Type of insurance coverage	Context: Full National Survey of CSHCN[1] questionnaire	Context: Abbreviated National Survey of CSHCN[1] questionnaire	Two-sided Fisher's Exact Test
Private insurance	77.1	78.8	0.613
Medicaid	16.2	18.7	0.357
SCHIP[2]	7.6	5.6	0.148
Uninsured	4.8	4.8	1.000

[1]CSHCN is children with special health care needs.

[2]SCHIP is State Children's Health Insurance Program.

NOTES: Data are from a randomized experiment with 1,302 completed interviews. Respondents could report more than one type of insurance. Thus, the total of the reported coverage rates exceeds 100%.

difference was added to the smaller differences for other types of insurance, the uninsurance rate differed by 2.2 percentage points. That is, the uninsurance rate from child-level questions was 31% lower than the rate from household-level questions. The U.S. Census Bureau found substantially similar results for persons of all ages living in multiperson households: The uninsurance rate from person-level questions was 48% lower than the rate from household-level questions (33). Such great differences explain much of the discrepancy between the rate of uninsured children for the National Survey of CSHCN (with its child-level questions) and the rate for other surveys (with their household-level and family-level questions).

A key question remains unanswered: Which health insurance coverage estimates are the most accurate? As a telephone survey, the National Survey of CSHCN requires complex statistical adjustments to account for households without telephones and to best approximate the size of the uninsured population. It would ordinarily be folly to presume that these adjustments yield more accurate estimates than do surveys that directly interview households without telephones, especially when evidence from the NHIS shows that children in households without telephones may be more likely to be uninsured than other children (including children in households with interruption in telephone service). However, the analyses in this report demonstrated that the bias from these statistical adjustments was relatively small (only four-tenths of a percentage point).

This report also described several reasons why the data collected in the National Survey of CSHCN could be less prone to reporting errors than data from other national surveys. For example, the literature indicates that surveys asking about current point-in-time coverage and including a verification question to clarify lack of coverage are more likely to obtain accurate estimates of uninsurance. The National Survey of CSHCN included both of these features. More accurate estimates of uninsurance may also be obtained from the National Survey of CSHCN because its brevity—for children without special needs, in particular—reduced the likelihood of respondent fatigue.

Despite these suggestions that uninsurance estimates derived from the National Survey of CSHCN could be more accurate than those generated from other national surveys, a definitive conclusion regarding the relative accuracy of the uninsurance rates is not possible. Research on the relative accuracy of survey-based uninsurance rates requires a reliable external determination of a child's insurance status, which was not available for the children whose parents participated in the National Survey of CSHCN. Until research is conducted using an external standard with the sampling frames and questionnaire designs of the National Survey of CSHCN and the other national surveys, this key question will remain unanswered.

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Appendix I. Program Names Used for Medicaid and SCHIP Questions

For questions regarding the Medicaid and the State Children's Health Insurance Program (SCHIP), the State-specific program names for each type of coverage were included in the question text, in case respondents recognized the State program name but not the national program affiliation. These program names are shown in table I.

States could be divided into three classes depending on how they named the created or expanded programs that use Title XXI funds. In 2000, 29 States had distinct Medicaid and SCHIP programs and used different names for their SCHIP programs than for their Medicaid programs. For seven States and the District of Columbia, the SCHIP program was an expansion of the Medicaid program, but was given a name that differed from the original Medicaid program in that State. The remaining 14 States did not have a SCHIP program, used the same (or substantially similar) name for both the SCHIP and Medicaid programs, or used Title XXI funds to expand the Medicaid program without giving it a new name.

The use of State-specific program names was based on this classification. For States that either did not have a SCHIP program or had a SCHIP program with the same name as its Medicaid program, questions about the SCHIP program were not asked. For States that named their Medicaid expansion programs differently from their original Medicaid programs, the name of the Medicaid expansion program was used for questions regarding SCHIP. For all other States, the name of the Medicaid program was used for questions regarding Medicaid, and the name of the SCHIP program was used for questions regarding the SCHIP program. The classification of each State and the names used in the Medicaid and SCHIP questions are included in table I.

Because the names of Medicaid-expansion programs were used for questions regarding SCHIP in seven States and the District of Columbia, survey analysts may find it difficult to distinguish between Medicaid and SCHIP in these States. One possible approach is to take account of responses to the SCHIP questions when characterizing Medicaid in these States. This is the approach used by researchers at The Urban Institute (13). Alternatively, analysts may choose to avoid the Medicaid/SCHIP distinction by only reporting on ''public'' insurance. This approach has been used for this report.

Table I. State-specific insurance program names used for questions about Medicaid and the State Children's Health Insurance Program

State	Category[1]	Name used with Medicaid questions	Name used with SCHIP[2] questions
Alabama	A	Patient 1st Program	ALL Kids
Alaska	B	None	Denali KidCare
Arizona	A	AHCCCS	KidsCare
Arkansas	B	ConnectCare	ARKids First
California	A	Medi-Cal	Healthy Families Program
Colorado	A	Medicaid's Baby Care/Kids Care Program, Colorado Access, or the Primary Care Physician Program	Child Health Plan Plus
Connecticut	C	The HUSKY Plan	. . .
Delaware	A	Diamond State Health Plan	Delaware Healthy Children Program
District of Columbia	B	Medical Assistance Program	DC Healthy Families
Florida	A	None	Florida KidCare, which includes Healthy Kids and Medi-Kids
Georgia	A	Georgia Better Health Care Program	PeachCare for Kids
Hawaii	D	Hawaii-QUEST	. . .
Idaho	B	Healthy Connections	Children's Health Insurance Program (CHIP)
Illinois	A	None	KidCare
Indiana	C	The Hoosier Healthwise program	. . .
Iowa	A	MediPASS	HAWK-I (Healthy and Well Kids in Iowa)
Kansas	A	HealthConnect Kansas, or PrimeCare Kansas	HealthWave
Kentucky	A	Passport, Kentucky Health Select, or KENPAC	Kentucky Children's Health Insurance Program (K-CHIP)
Louisiana	B	CommunityCARE program	Louisiana Children's Health Insurance Program (La-CHIP)
Maine	A	PrimeCare	Cub Care
Maryland	D	Medical Assistance Program, or HealthChoice	. . .
Massachusetts	C	MassHealth	. . .
Michigan	A	Medical Assistance Program	MI-Child
Minnesota	D	Medical Assistance	. . .
Mississippi	A	HealthMACS	Mississippi Health Benefits Program, which includes CHIP, the Children's Health Insurance Program
Missouri	D	MC-Plus For Kids	. . .
Montana	A	Passport to Health program	Montana Child Health Insurance Plan (CHIP)
Nebraska	B	Medical Assistance Program, or the Nebraska Health Connection program	Kids Connection
Nevada	A	None	Nevada Check Up
New Hampshire	A	Healthy Kids Gold	Healthy Kids Silver
New Jersey	A	New Jersey Care 2000	New Jersey KidCare
New Mexico	B	SALUD!	New MexiKids
New York	A	None	Child Health Plus, or CH Plus
North Carolina	A	Carolina ACCESS, or Healthcare Connection	North Carolina Health Choice for Children
North Dakota	A	None	Healthy Steps Children's Health Insurance Plan
Ohio	D	Healthy Start	. . .
Oklahoma	D	SoonerCare or SoonerCare Choice	. . .
Oregon	A	None	Oregon Health Plan, which includes the Oregon Children's Health Insurance Program
Pennsylvania	A	None	Pennsylvania Children's Health Insurance Program (PaCHIP)
Rhode Island	D	RIte Care	. . .
South Carolina	D	Partners for Healthy Children program	. . .
South Dakota	D	The PRIME program, or the Child Health Insurance Program	. . .
Tennessee	D	TennCare	. . .
Texas	A	State of Texas Access Reform program, or STAR program	TexCare Partnership, which includes the Texas Children's Health Insurance Program
Utah	A	None	Utah Children's Health Insurance Program (CHIP)
Vermont	C	Dr. Dynasaur	. . .
Virginia	A	Medallion, or the Options program	Virginia Children's Medical Security Insurance Plan
Washington	A	Healthy Options, or Basic Health Plus	Washington State's Children's Health Insurance Program
West Virginia	A	West Virginia Physician Assured Access System, or the Mountain Health Trust program	West Virginia Children's Health Insurance Program
Wisconsin	B	None	BadgerCare
Wyoming	A	None	Wyoming KidCare

. . . Category not applicable. No SCHIP questions were asked in this State.

[1]States in category A had distinct Medicaid and SCHIP programs and used different names for their SCHIP programs than for their Medicaid programs. For States in category B, the SCHIP program was an expansion of the Medicaid program, but was given a name that differed from the original Medicaid program in that State. The name of the Medicaid expansion program was used with SCHIP questions. States in category C used the same (or substantially similar) name for both the SCHIP and Medicaid program. States in category D did not have SCHIP program or used Title XXI funds to expand the Medicaid program without giving it a new name. For States in categories C and D, no SCHIP questions were asked.

[2]SCHIP is State Children's Health Insurance Program.

Appendix II. Health Insurance Coverage Estimates

This appendix presents weighted estimates of insurance coverage by type from the National Survey of CSHCN, followed by a summary of uninsurance rates by key demographic characteristics. Estimates of insured and uninsured status were based on information from all coverage-related questionnaire items. A child was considered to be insured if any type of comprehensive coverage was reported. If no coverage was reported or if the coverage reported was not comprehensive, the child was considered to be uninsured.

Tables II–IX show the percentages weighted to represent children 0–17 years of age in each State by special-needs status. Standard errors and hypothesis tests using data from the National Survey of CSHCN were conducted using SUDAAN, which accounts for the complex sample design of the survey.

Insurance Coverage Estimates by Type of Insurance

Estimates for the type of insurance coverage are limited to public, private, and other comprehensive insurance. Public insurance included Medicaid, SCHIP, Title V, and any other public insurance reported as ‘‘other’’ coverage. Private insurance includes employment-based coverage, union-based coverage, military insurance, and insurance purchased directly. Other comprehensive insurance includes insurance reported as ‘‘other’’ coverage that was said to be comprehensive, but could not be definitively classified as either public or private. This category does not include insurance that only covers dental care, vision, or accident care. It also does not include health insurance plans specifically for American Indians and Alaska Natives. Children whose insurance only covers dental care, vision, or accident care, and children who only had Indian Health Service coverage were considered uninsured.

The overall estimated insurance rate from the National Survey of CSHCN is 91.7%. Most of these insured children had private health insurance only (75.6% of the insured children, which is 69.3% of all children). Estimated State insurance rates ranged from 82.6% in Texas to 97.2% in Rhode Island and are presented by type of insurance in table II. Standard errors for the insurance rates are presented in table III. Tables IV–VII present the State-specific insurance estimates and standard errors by type of insurance for children with and without special needs.

Uninsurance Estimates by Key Demographic Characteristics

To establish insured status, respondents were asked about various types of coverage. For each item, the respondent indicated whether the sampled child had that coverage. For a child to be considered uninsured, a negative response for every question was required. Alternatively, a child could also be considered uninsured if the type of coverage was not reported to be comprehensive (e.g., if the respondent indicated that the insurance did not cover doctor visits and hospital stays) or was not considered to be comprehensive (e.g., single-service plans).

Children without special health care needs were more likely to be uninsured than were CSHCN. Nationally, the estimated uninsurance rate for children without special needs was 8.7%, compared with a rate of 5.2% for children with special needs. This difference was statistically significant, $p < .001$. Similarly, for 31 States, the estimated uninsurance rate for children without special needs was higher than for CSHCN, $p < .05$. Table VIII presents the results of State-specific analyses testing the statistical significance of observed differences between the estimated uninsurance rates for children with and without special needs.

Uninsurance rates by other key demographic characteristics from the National Survey of CSHCN are summarized in table IX, and they are presented separately for children with and without special health care needs. Trends in uninsurance rates among demographic groups matched expectations based on historical data from other studies. For example, uninsurance rates were lower for younger children, for children living in households with higher incomes, and for children whose mothers have more education. Hispanic children and children in non-English-speaking households were more likely to be uninsured than were non-Hispanic children or children in English-speaking households.

Table II. Percent of children under 18 years of age by type of health insurance coverage and State: United States, 2001

State	Type of health insurance coverage				Uninsured
	Private	Public	Private and public	Other comprehensive insurance	
All States	69.3	16.8	5.1	0.5	8.3
Alabama	66.5	20.8	5.1	0.2	7.4
Alaska	63.6	17.3	6.0	0.4	12.6
Arizona	66.1	16.4	3.8	0.7	13.0
Arkansas	62.4	22.2	4.0	0.3	11.1
California	65.1	19.5	5.3	0.6	9.5
Colorado	76.5	10.3	2.5	0.5	10.2
Connecticut	79.2	12.2	4.8	0.6	3.2
Delaware	69.7	17.9	6.6	0.3	5.5
District of Columbia	52.8	28.5	12.8	0.2	5.7
Florida	63.2	19.7	4.9	0.5	11.7
Georgia	65.4	20.8	5.8	0.3	7.7
Hawaii	78.1	11.1	6.3	0.7	3.7
Idaho	66.0	17.2	4.4	0.6	12.0
Illinois	73.9	14.4	3.5	0.5	7.6
Indiana	74.4	14.0	5.3	0.2	6.1
Iowa	78.6	10.2	5.1	0.5	5.7
Kansas	76.2	11.8	4.1	0.5	7.4
Kentucky	68.9	19.9	4.5	0.2	6.5
Louisiana	56.9	22.9	5.8	0.6	13.9
Maine	71.0	16.3	5.2	0.1	7.4
Maryland	80.0	10.6	4.7	0.6	4.1
Massachusetts	71.1	18.2	6.6	0.6	3.6
Michigan	75.5	13.1	5.3	0.1	5.9
Minnesota	79.7	10.3	4.4	0.5	5.1
Mississippi	60.6	24.5	5.7	0.5	8.8
Missouri	73.0	18.0	5.0	0.3	3.7
Montana	61.8	17.4	4.2	0.8	15.7
Nebraska	73.9	15.7	5.1	0.3	5.0
Nevada	72.0	10.4	3.9	0.3	13.5
New Hampshire	75.9	13.3	3.9	0.3	6.6
New Jersey	75.5	11.8	5.3	0.4	7.0
New Mexico	50.4	30.3	6.1	0.3	12.9
New York	66.0	21.3	7.7	0.3	4.7
North Carolina	67.3	19.3	5.0	0.3	8.1
North Dakota	74.3	13.4	3.8	0.6	8.0
Ohio	75.5	14.4	5.3	0.4	4.5
Oklahoma	61.6	20.0	4.4	0.5	13.5
Oregon	71.2	13.4	5.3	0.6	9.5
Pennsylvania	73.1	13.0	6.4	1.3	6.3
Rhode Island	73.5	16.9	5.5	1.4	2.8
South Carolina	65.3	20.5	8.0	0.2	6.0
South Dakota	73.6	13.5	4.9	0.5	7.5
Tennessee	67.0	21.0	6.9	0.3	4.9
Texas	61.6	17.3	3.3	0.4	17.4
Utah	79.9	8.5	3.0	0.4	8.2
Vermont	60.2	23.6	12.0	0.6	3.7
Virginia	81.4	9.4	4.0	0.4	4.9
Washington	70.1	18.0	5.8	0.6	5.6
West Virginia	58.5	27.4	5.5	0.4	8.2
Wisconsin	81.5	9.7	4.1	0.4	4.3
Wyoming	70.4	13.9	3.6	0.6	11.5

Table III. Standard errors for the percent of children under 18 years of age by type of health insurance coverage and State

State	Type of health insurance coverage				
	Private	Public	Private and public	Other comprehensive insurance	Uninsured
All States	0.21	0.17	0.10	0.03	0.13
Alabama	1.02	0.91	0.46	0.08	0.54
Alaska	0.93	0.74	0.50	0.12	0.64
Arizona	1.01	0.82	0.43	0.18	0.69
Arkansas	1.05	0.93	0.43	0.15	0.69
California	0.93	0.78	0.45	0.13	0.57
Colorado	0.86	0.64	0.28	0.14	0.59
Connecticut	0.85	0.70	0.46	0.14	0.36
Delaware	1.08	0.94	0.59	0.14	0.51
District of Columbia	1.12	1.04	0.83	0.08	0.51
Florida	1.03	0.86	0.44	0.11	0.70
Georgia	1.05	0.94	0.53	0.15	0.57
Hawaii	0.88	0.68	0.49	0.19	0.39
Idaho	0.98	0.79	0.40	0.13	0.70
Illinois	1.03	0.87	0.38	0.15	0.63
Indiana	0.97	0.77	0.52	0.10	0.53
Iowa	0.81	0.61	0.42	0.12	0.46
Kansas	0.93	0.72	0.44	0.14	0.56
Kentucky	0.98	0.84	0.40	0.06	0.51
Louisiana	1.16	1.01	0.54	0.20	0.91
Maine	0.97	0.80	0.45	0.06	0.56
Maryland	0.90	0.69	0.49	0.17	0.41
Massachusetts	1.11	0.96	0.63	0.21	0.45
Michigan	0.98	0.79	0.48	0.07	0.56
Minnesota	0.94	0.73	0.48	0.15	0.52
Mississippi	1.09	1.00	0.50	0.14	0.64
Missouri	0.92	0.81	0.44	0.10	0.38
Montana	1.00	0.84	0.41	0.19	0.75
Nebraska	0.91	0.75	0.47	0.12	0.44
Nevada	0.88	0.61	0.37	0.10	0.68
New Hampshire	1.02	0.83	0.42	0.12	0.61
New Jersey	0.92	0.70	0.48	0.12	0.55
New Mexico	1.10	1.03	0.52	0.10	0.83
New York	0.93	0.80	0.53	0.09	0.43
North Carolina	1.07	0.95	0.49	0.11	0.61
North Dakota	0.97	0.83	0.38	0.16	0.57
Ohio	0.98	0.82	0.50	0.18	0.45
Oklahoma	1.12	0.99	0.49	0.11	0.77
Oregon	0.99	0.77	0.48	0.15	0.67
Pennsylvania	0.89	0.67	0.46	0.27	0.51
Rhode Island	1.00	0.87	0.49	0.25	0.36
South Carolina	1.03	0.89	0.60	0.08	0.48
South Dakota	0.89	0.73	0.44	0.11	0.52
Tennessee	1.01	0.89	0.53	0.09	0.46
Texas	1.00	0.76	0.35	0.14	0.81
Utah	0.76	0.52	0.32	0.11	0.51
Vermont	1.10	0.97	0.74	0.17	0.47
Virginia	0.85	0.63	0.46	0.13	0.44
Washington	0.93	0.76	0.50	0.15	0.46
West Virginia	1.15	1.10	0.53	0.13	0.62
Wisconsin	0.84	0.64	0.38	0.15	0.45
Wyoming	0.93	0.72	0.36	0.14	0.64

NOTE: These standard errors are associated with the estimates in table II.

Table IV. Percent of children under 18 years of age with special health care needs by type of health insurance coverage and State: United States, 2001

State	Type of health insurance coverage				Uninsured
	Private	Public	Private and public	Other comprehensive insurance	
All States	64.7	21.7	8.1	0.4	5.2
Alabama	58.0	30.6	7.0	0.3	4.2
Alaska	56.1	23.5	11.6	0.5	8.4
Arizona	67.2	20.5	6.4	0.8	5.1
Arkansas	50.7	36.0	7.0	0.1	6.2
California	71.9	16.5	6.8	0.5	4.3
Colorado	76.7	13.7	5.3	–	4.3
Connecticut	73.9	17.0	6.2	0.9	2.0
Delaware	60.5	21.8	14.3	0.8	2.7
District of Columbia	42.6	33.2	18.6	0.0	5.6
Florida	55.0	30.2	7.6	0.4	6.9
Georgia	59.9	28.7	8.1	0.1	3.3
Hawaii	70.7	15.0	9.9	2.1	2.3
Idaho	55.2	27.4	10.7	0.5	6.1
Illinois	72.2	18.1	4.5	1.0	4.2
Indiana	65.0	19.3	11.0	–	4.8
Iowa	66.4	19.5	8.8	1.0	4.3
Kansas	70.5	16.8	8.0	0.3	4.4
Kentucky	59.5	29.0	6.7	0.2	4.6
Louisiana	46.0	33.6	12.2	0.1	8.1
Maine	58.3	26.1	10.8	0.1	4.9
Maryland	77.4	12.8	6.7	0.4	2.7
Massachusetts	62.0	24.0	11.9	–	2.1
Michigan	70.1	17.0	8.7	0.2	4.0
Minnesota	71.4	13.4	10.7	0.2	4.4
Mississippi	48.8	34.6	9.6	0.4	6.7
Missouri	64.9	23.9	8.0	0.2	3.1
Montana	51.4	27.2	8.2	1.1	12.1
Nebraska	62.5	24.3	9.4	0.2	3.6
Nevada	66.8	18.1	7.1	0.5	7.6
New Hampshire	65.7	21.8	6.5	0.1	5.9
New Jersey	72.1	13.2	9.3	0.1	5.2
New Mexico	46.4	38.2	6.5	0.1	8.8
New York	59.4	28.4	7.7	0.2	4.2
North Carolina	59.9	27.2	7.1	–	5.9
North Dakota	62.9	22.7	9.6	0.1	4.7
Ohio	67.0	19.9	8.8	0.6	3.7
Oklahoma	57.8	27.1	5.9	0.3	8.9
Oregon	69.3	15.0	9.2	0.3	6.3
Pennsylvania	59.4	20.6	13.8	1.4	4.9
Rhode Island	63.8	23.2	9.4	1.4	2.3
South Carolina	54.8	25.8	14.8	0.2	4.5
South Dakota	65.3	20.8	8.8	0.1	5.0
Tennessee	60.5	26.4	9.9	0.2	3.0
Texas	65.6	18.4	4.0	–	12.0
Utah	74.5	12.0	8.0	0.3	5.2
Vermont	46.3	30.0	20.1	0.6	3.0
Virginia	78.0	10.4	7.2	0.4	3.9
Washington	63.7	23.6	7.6	0.1	5.0
West Virginia	42.1	41.9	7.5	0.2	8.4
Wisconsin	72.0	15.4	10.1	0.1	2.4
Wyoming	60.1	22.5	7.3	0.9	9.2

– Quantity zero.

0.0 Quantity more than zero but less than 0.05.

Table V. Standard errors for the percent of children under 18 years of age with special health care needs by type of health insurance coverage and State

State	Type of health insurance coverage				
	Private	Public	Private and public	Other comprehensive insurance	Uninsured
All States	0.46	0.41	0.25	0.06	0.21
Alabama	2.33	2.28	1.16	0.19	0.89
Alaska	2.25	1.89	1.62	0.34	1.19
Arizona	2.52	2.35	1.09	0.51	1.13
Arkansas	2.32	2.31	1.17	0.06	1.31
California	2.20	1.89	1.24	0.27	0.78
Colorado	2.00	1.65	1.23	. . .	0.74
Connecticut	2.01	1.76	1.12	0.40	0.62
Delaware	2.42	2.22	1.83	0.62	0.57
District of Columbia	2.42	2.45	2.28	0.03	1.21
Florida	2.49	2.48	1.28	0.24	1.18
Georgia	2.51	2.46	1.38	0.05	0.72
Hawaii	2.43	1.89	1.64	0.90	0.81
Idaho	2.40	2.34	1.46	0.36	1.09
Illinois	2.35	2.11	0.97	0.67	0.90
Indiana	2.38	1.99	1.78	. . .	0.98
Iowa	2.11	1.78	1.20	0.43	1.13
Kansas	2.21	1.84	1.45	0.17	1.02
Kentucky	2.21	2.10	1.08	0.15	0.84
Louisiana	2.35	2.47	1.72	0.11	1.49
Maine	2.13	1.95	1.35	0.06	0.95
Maryland	2.00	1.77	1.01	0.25	0.67
Massachusetts	2.56	2.25	2.05	. . .	0.63
Michigan	2.19	1.90	1.30	0.14	0.87
Minnesota	2.36	1.88	1.70	0.11	1.00
Mississippi	2.56	2.51	1.73	0.29	1.54
Missouri	1.75	1.56	1.13	0.09	0.73
Montana	2.24	2.07	1.32	0.40	1.60
Nebraska	2.36	2.21	1.47	0.18	0.91
Nevada	2.34	2.10	1.20	0.35	1.27
New Hampshire	2.38	2.27	1.00	0.10	1.24
New Jersey	2.32	1.70	1.59	0.06	1.29
New Mexico	2.49	2.61	1.06	0.05	1.73
New York	2.30	2.22	1.16	0.14	0.91
North Carolina	2.31	2.18	1.25	. . .	1.11
North Dakota	2.36	2.28	1.36	0.14	0.94
Ohio	2.20	1.95	1.29	0.56	0.84
Oklahoma	2.53	2.40	1.29	0.18	1.39
Oregon	2.13	1.67	1.35	0.16	1.09
Pennsylvania	2.29	2.00	1.65	0.47	0.88
Rhode Island	2.19	1.96	1.39	0.54	0.65
South Carolina	2.30	2.11	1.75	0.24	0.94
South Dakota	2.25	2.08	1.19	0.07	0.95
Tennessee	2.25	2.11	1.39	0.14	0.74
Texas	2.30	1.91	0.90	. . .	1.66
Utah	2.07	1.61	1.38	0.29	0.93
Vermont	2.34	2.21	1.87	0.27	1.03
Virginia	1.92	1.42	1.29	0.27	0.81
Washington	2.10	1.92	1.02	0.11	1.00
West Virginia	2.39	2.62	1.31	0.14	1.43
Wisconsin	2.09	1.69	1.50	0.10	0.67
Wyoming	2.16	1.89	1.00	0.37	1.28

. . . Category not applicable.

NOTE: These standard errors are associated with the estimates in table IV.

Table VI. Percent of children under 18 years of age without special health care needs by type of health insurance coverage and State: United States, 2001

State	Type of health insurance coverage				Uninsured
	Private	Public	Private and public	Other comprehensive insurance	
All States	70.0	16.1	4.7	0.5	8.7
Alabama	67.8	19.2	4.8	0.2	7.9
Alaska	64.5	16.6	5.4	0.4	13.1
Arizona	66.0	15.9	3.5	0.7	14.0
Arkansas	64.3	19.9	3.5	0.4	11.9
California	64.3	19.8	5.2	0.6	10.1
Colorado	76.5	9.8	2.2	0.6	10.9
Connecticut	80.0	11.4	4.6	0.6	3.4
Delaware	71.4	17.2	5.2	0.3	6.0
District of Columbia	54.4	27.7	11.9	0.3	5.7
Florida	64.4	18.1	4.5	0.5	12.4
Georgia	66.2	19.7	5.5	0.3	8.4
Hawaii	79.0	10.7	5.9	0.5	3.9
Idaho	67.4	15.8	3.5	0.6	12.7
Illinois	74.2	13.9	3.4	0.5	8.1
Indiana	75.9	13.1	4.4	0.3	6.3
Iowa	80.3	8.9	4.5	0.5	5.8
Kansas	77.2	10.9	3.5	0.5	7.9
Kentucky	70.7	18.2	4.1	0.2	6.8
Louisiana	58.9	20.9	4.6	0.6	15.0
Maine	73.3	14.5	4.2	0.2	7.9
Maryland	80.4	10.2	4.4	0.7	4.4
Massachusetts	72.6	17.2	5.7	0.7	3.8
Michigan	76.4	12.5	4.7	0.1	6.2
Minnesota	80.9	9.9	3.5	0.6	5.2
Mississippi	62.3	23.0	5.1	0.5	9.1
Missouri	74.4	17.0	4.5	0.4	3.8
Montana	63.2	16.2	3.7	0.8	16.2
Nebraska	75.6	14.4	4.5	0.4	5.2
Nevada	72.6	9.4	3.5	0.3	14.2
New Hampshire	77.7	11.8	3.5	0.3	6.7
New Jersey	76.0	11.6	4.7	0.5	7.2
New Mexico	50.9	29.3	6.0	0.4	13.5
New York	66.8	20.4	7.7	0.3	4.8
North Carolina	68.5	18.0	4.7	0.4	8.4
North Dakota	75.9	12.1	2.9	0.6	8.5
Ohio	76.8	13.5	4.7	0.4	4.6
Oklahoma	62.3	18.8	4.1	0.6	14.3
Oregon	71.5	13.1	4.7	0.6	10.0
Pennsylvania	75.2	11.8	5.3	1.3	6.5
Rhode Island	75.0	15.9	4.8	1.4	2.9
South Carolina	66.9	19.7	7.0	0.2	6.3
South Dakota	74.6	12.6	4.4	0.6	7.8
Tennessee	68.1	20.1	6.4	0.3	5.2
Texas	61.1	17.1	3.2	0.5	18.1
Utah	80.6	8.0	2.4	0.4	8.6
Vermont	62.8	22.4	10.5	0.5	3.8
Virginia	82.0	9.2	3.4	0.4	5.1
Washington	71.1	17.1	5.6	0.7	5.7
West Virginia	61.8	24.5	5.1	0.5	8.2
Wisconsin	82.9	8.8	3.2	0.5	4.6
Wyoming	71.9	12.7	3.1	0.6	11.8

Table VII. Standard errors for the percent of children under 18 years of age without special health care needs by type of health insurance coverage and State

State	Type of health insurance coverage				
	Private	Public	Private and public	Other comprehensive insurance	Uninsured
All States	0.22	0.18	0.10	0.03	0.14
Alabama	1.04	0.91	0.47	0.09	0.60
Alaska	0.97	0.76	0.48	0.12	0.69
Arizona	1.05	0.84	0.45	0.19	0.75
Arkansas	1.10	0.93	0.46	0.17	0.75
California	0.97	0.81	0.47	0.15	0.62
Colorado	0.88	0.64	0.27	0.16	0.64
Connecticut	0.88	0.69	0.49	0.14	0.40
Delaware	1.12	0.97	0.54	0.12	0.58
District of Columbia	1.17	1.09	0.80	0.10	0.53
Florida	1.04	0.84	0.45	0.12	0.75
Georgia	1.09	0.95	0.54	0.17	0.63
Hawaii	0.88	0.70	0.49	0.16	0.42
Idaho	1.01	0.79	0.38	0.14	0.76
Illinois	1.05	0.87	0.40	0.14	0.67
Indiana	0.99	0.78	0.50	0.12	0.57
Iowa	0.82	0.60	0.43	0.12	0.49
Kansas	0.96	0.73	0.44	0.15	0.62
Kentucky	1.01	0.85	0.42	0.07	0.58
Louisiana	1.22	1.02	0.52	0.24	1.00
Maine	0.99	0.80	0.43	0.06	0.61
Maryland	0.93	0.70	0.51	0.20	0.46
Massachusetts	1.16	1.00	0.63	0.24	0.51
Michigan	1.03	0.82	0.49	0.07	0.62
Minnesota	0.96	0.75	0.45	0.17	0.54
Mississippi	1.12	1.01	0.49	0.15	0.67
Missouri	1.00	0.89	0.47	0.12	0.41
Montana	1.04	0.86	0.41	0.20	0.79
Nebraska	0.92	0.74	0.46	0.13	0.48
Nevada	0.90	0.59	0.37	0.10	0.72
New Hampshire	1.02	0.79	0.45	0.13	0.65
New Jersey	0.94	0.72	0.46	0.14	0.58
New Mexico	1.14	1.04	0.57	0.11	0.88
New York	0.95	0.80	0.55	0.10	0.46
North Carolina	1.09	0.94	0.50	0.13	0.66
North Dakota	0.96	0.79	0.35	0.18	0.62
Ohio	1.02	0.86	0.52	0.19	0.49
Oklahoma	1.17	1.01	0.49	0.13	0.84
Oregon	1.06	0.81	0.50	0.17	0.73
Pennsylvania	0.91	0.67	0.45	0.28	0.55
Rhode Island	1.02	0.88	0.50	0.26	0.37
South Carolina	1.07	0.93	0.59	0.08	0.52
South Dakota	0.92	0.72	0.45	0.13	0.56
Tennessee	1.05	0.93	0.54	0.10	0.51
Texas	1.04	0.80	0.36	0.16	0.86
Utah	0.77	0.51	0.30	0.12	0.55
Vermont	1.15	1.01	0.75	0.18	0.49
Virginia	0.89	0.68	0.44	0.14	0.49
Washington	0.98	0.79	0.54	0.18	0.50
West Virginia	1.18	1.08	0.56	0.15	0.65
Wisconsin	0.83	0.64	0.35	0.17	0.49
Wyoming	0.97	0.73	0.37	0.15	0.69

NOTE: These standard errors are associated with the estimates in table VI.

Table VIII. Results of statistical tests to identify differences between uninsurance rates for children under 18 years of age with and without special health care needs, by State

State	Uninsurance rate for children with special health care needs	Uninsurance rate for children without special health care needs	Test statistic (chi-square)	*p* value[1]
All States	5.2	8.7	213.2	0.00
Alabama	4.2	7.9	12.3	0.00
Alaska	8.4	13.1	13.3	0.00
Arizona	5.1	14.0	42.4	0.00
Arkansas	6.2	11.9	16.0	0.00
California	4.3	10.1	35.5	0.00
Colorado	4.3	10.9	45.8	0.00
Connecticut	2.0	3.4	4.3	0.04
Delaware	2.7	6.0	17.7	0.00
District of Columbia	5.6	5.7	0.0	0.94
Florida	6.9	12.4	18.3	0.00
Georgia	3.3	8.4	28.0	0.00
Hawaii	2.3	3.9	3.5	0.06
Idaho	6.1	12.7	27.1	0.00
Illinois	4.2	8.1	15.0	0.00
Indiana	4.8	6.3	2.2	0.14
Iowa	4.3	5.8	1.6	0.21
Kansas	4.4	7.9	9.5	0.00
Kentucky	4.6	6.8	5.0	0.03
Louisiana	8.1	15.0	17.2	0.00
Maine	4.9	7.9	8.5	0.00
Maryland	2.7	4.4	4.5	0.03
Massachusetts	2.1	3.8	4.9	0.03
Michigan	4.0	6.2	5.0	0.03
Minnesota	4.4	5.2	0.6	0.44
Mississippi	6.7	9.1	2.2	0.14
Missouri	3.1	3.8	0.8	0.36
Montana	12.1	16.2	5.9	0.02
Nebraska	3.6	5.2	2.5	0.11
Nevada	7.6	14.2	22.7	0.00
New Hampshire	5.9	6.7	0.4	0.54
New Jersey	5.2	7.2	2.3	0.13
New Mexico	8.8	13.5	6.4	0.01
New York	4.2	4.8	0.3	0.59
North Carolina	5.9	8.4	4.3	0.04
North Dakota	4.7	8.5	12.7	0.00
Ohio	3.7	4.6	1.0	0.33
Oklahoma	8.9	14.3	12.4	0.00
Oregon	6.3	10.0	9.3	0.00
Pennsylvania	4.9	6.5	2.8	0.09
Rhode Island	2.3	2.9	1.0	0.32
South Carolina	4.5	6.3	3.0	0.09
South Dakota	5.0	7.8	6.8	0.01
Tennessee	3.0	5.2	6.4	0.01
Texas	12.0	18.1	12.0	0.00
Utah	5.2	8.6	11.1	0.00
Vermont	3.0	3.8	0.7	0.41
Virginia	3.9	5.1	1.5	0.22
Washington	5.0	5.7	0.4	0.52
West Virginia	8.4	8.2	0.0	0.86
Wisconsin	2.4	4.6	8.9	0.00
Wyoming	9.2	11.8	3.6	0.06

0.0 Quantity more than zero but less than 0.05.

0.00 Quantity more than zero but less than 0.005.

[1]Values less than 0.05 indicate that the difference between the uninsurance rates was statistically significant. The uninsurance rate for children without special health care needs was greater than the uninsurance rate for children with special health care needs.

Table IX. Percent of children under 18 years of age without health insurance coverage by selected demographic characteristics and health status: United States, 2001

Selected demographic characteristic	Children with special health care needs	Children without special health care needs	All children	Children with special health care needs	Children without special health care needs	All children
	Percent uninsured			Standard error of percent		
Age						
0–5 years	4.8	7.4	7.2	0.45	0.22	0.21
6–11 years	4.7	9.1	8.4	0.33	0.26	0.23
12–17 years	5.9	9.8	9.2	0.35	0.25	0.22
Sex						
Female	5.4	8.7	8.4	0.33	0.20	0.18
Male	5.1	8.7	8.2	0.28	0.20	0.18
Race/ethnicity						
Hispanic	10.1	20.0	19.2	0.90	0.56	0.53
Black non-Hispanic	5.3	7.6	7.3	0.60	0.33	0.31
White non-Hispanic and all others	4.5	6.0	5.8	0.23	0.12	0.11
Language of interview						
English	4.7	6.5	6.3	0.21	0.11	0.11
Spanish or other language	21.0	27.9	27.5	2.22	0.85	0.83
Household income						
Up to $9,999	8.6	18.4	17.0	1.05	0.86	0.76
$10,000–$19,999	10.2	18.9	17.7	0.88	0.63	0.58
$20,000–$39,999	8.9	14.8	14.0	0.65	0.44	0.40
$40,000–$59,999	4.9	7.0	6.7	0.45	0.32	0.30
$60,000 and over	2.0	2.6	2.5	0.25	0.13	0.12
Household poverty status[1]						
Up to 49% of FPL	9.2	19.9	18.5	1.19	0.97	0.87
50%–99% of FPL	9.8	19.8	18.4	0.97	0.74	0.67
100%–149% of FPL	9.7	16.4	15.5	0.99	0.65	0.60
150%–199% of FPL	7.8	11.9	11.4	0.78	0.52	0.48
200% of FPL and over	3.0	4.0	3.8	0.22	0.12	0.11
Maternal education						
8th grade or less	18.3	29.0	28.3	2.54	1.20	1.15
Some high school	7.9	17.6	16.3	0.86	0.65	0.60
High school graduate or GED[2]	6.0	8.6	8.3	0.40	0.22	0.21
Some post-high school, but no college degree	4.6	5.7	5.5	0.39	0.20	0.19
4-year college degree or higher	2.1	2.9	2.8	0.17	0.11	0.10

[1]FPL is Federal poverty level.

[2]GED is General Educational Development high school equivalency diploma.

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