

# 2011 Wisconsin Family Health Survey Technical Notes

## Wisconsin Family Health Survey Design

The Wisconsin Family Health Survey (FHS) is a telephone survey of Wisconsin households, designed to provide estimates of health care coverage, various health problems and use of health care services among people across the state.

The Family Health Survey sampling frame consists of all Wisconsin households with a working landline telephone. In 2011, the sample design for selecting telephone numbers for the survey divided the state into eight sample strata, seven of which were defined geographically. Five strata were composed of regional county groupings and two strata were defined as Dane and Brown counties. Telephone area code/prefix combinations from these seven strata were randomly sampled at varying rates, designed to provide a usable sample for several parts of the state. An eighth sample stratum consisted of telephone prefixes that had previously been found to include at least 20 percent black respondents. This oversample, primarily within the city of Milwaukee, was necessary to assure sufficient representation of the black or African American population in the survey results. This stratum was also randomly sampled.

The University of Wisconsin Survey Center, University of Wisconsin-Madison, the contracted survey laboratory, drew the samples and conducted all interviews for 2011. Trained interviewers called the sampled telephone numbers and conducted the survey using a computer-assisted telephone survey system (CASES). Each telephone number was called at least 10 times before being designated unanswered. The final overall response rate was 47 percent.

The questions asked in the FHS were designed in the Wisconsin Office of Health Informatics, Population Health Information Section (now the Health Analytics Section). Interviews were conducted from February through December of 2011. The final FHS sample consisted of 2,462 household interviews, comprising a total of 6,033 Wisconsin household residents. A total of 366 households were interviewed from February through March; 842 from April through June; 714 from July through September; and 540 from October through December. The demographic characteristics of the 2011 sample are displayed in the “Wisconsin Family Health Survey, 2011 Sample” table (next page), which presents the unweighted frequencies. The results in this table are not representative of the Wisconsin population because they have not been weighted to correct for disproportionate sampling rates.

The adult in each household who knows the most about the health of all household members is selected to answer all survey questions during the telephone interview. This respondent answers survey questions for him/herself as well as for all other household members. Since each household member does not speak directly to the interviewer, survey answers are “reported” by the respondent. The reader will see the phrase “. . .” *was reported to be* “. . .” in publications based on Family Health Survey data. In places where this phrase is not used, the reader should keep in mind that all information based on Family Health Survey results is reported by one respondent on behalf of all household members. In 2011, 68 percent of the respondents were women.

The data set for analysis of the 2011 Family Health Survey was constructed in the Office of Health Informatics, using the individual as the basic unit for analysis. Some missing data (i.e., respondent refused to answer or answered “don’t know”) on the age and sex variables were imputed, using interview transcripts and similar cases. Through imputation from other income information or corrections, the final proportion of households with missing information on poverty status was reduced to 8 percent (unweighted for households).

## Wisconsin Family Health Survey 2011 Sample

<b>Total</b>	<b>6,033</b>		
<b>Age Groups</b>		<b>Milwaukee County</b>	1,225
0-17	1,297		
18-44	1,408	<b>Residence</b>	
45-64	2,031	City of Milwaukee	857
65+	1,297	Other metropolitan (excluding City of Milwaukee)	3,284
		Non-metropolitan	1,892
<b>Sex and Age Groups</b>		<b>Poverty Status</b>	
<b>Male</b>		Poor	636
0-17	660	Near-poor	1,038
18-44	675	Not poor	3,988
45-64	960	No response	371
65+	562		
<b>Female</b>		<b>Educational Attainment</b>	
0-17	637	<b>Ages 18 and older</b>	
18-44	733	Less than high school diploma	291
45-64	1,071	High school diploma	1,616
65+	735	More than high school	2,793
<b>Ethnicity and Race</b>		<b>Employment</b>	
Hispanic or Latino	167	<b>Ages 0-17</b>	
White, non-Hispanic/Latino	4,836	Live with no employed adult(s)	113
Black or African American, non-Hispanic/Latino	542	Live with employed adult(s)	1,184
American Indian or Alaska Native, non-Hispanic/Latino	240	<b>Ages 18-64</b>	
Asian, non-Hispanic/Latino	52	Employed full-time	1,801
Pacific Islander	1	Self-employed full-time	205
Other, non-Hispanic/Latino	75	Employed or self-employed part-time	403
Two or more races, non-Hispanic/Latino	78	Not employed/Not in labor force	1,025

Source: 2011 Family Health Survey, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services.

### Data Set Weighting

Data set weights are used to adjust for sampling and response rates, and to provide estimates of Wisconsin's total household population using the sample data. The weighting procedure includes adjustments for the fact that the FHS sample includes only landline telephone numbers, while ever-increasing numbers of people are using only cell phones, with no landline telephone service. Researchers are learning that the characteristics of cell-phone-only users differ from the characteristics of people who use landline telephones.<sup>1</sup> Young adults and adults with higher levels of education are especially likely to use only cell phones. Excluding "cell only" people excludes a part of Wisconsin's population from the survey data set, and this may influence the accuracy of survey results. The current weighting procedure modifies the data set weights to adjust for the exclusion of "cell only" people, thereby making the sample characteristics more closely resemble characteristics of the total population.

The first part of the weighting process adjusted for the varying sampling rates, response rates by stratum, and number of landline telephone numbers in each interviewed household. The next step adjusted the sample to match the total estimated household population in Wisconsin, tabulated for 40 separate subgroups. (These subgroups were composed of the combinations of four age groups, by two sex groups, by five geographic regions.) Next, the black or African American population within Milwaukee County was adjusted to match the proportion black or African American according to Census Bureau estimates.

The rest of the weighting process uses additional variables to adjust the sample characteristics. The weighting variables for 2011 were race/ethnicity; educational attainment for various age groups; household type; DHS region, with Milwaukee County separated from the Southeast DHS Region; and home ownership. Research has shown that these variables, and home ownership in particular, provide a strong correction for lack of cell phone households in the sample.<sup>1</sup> When the final weight is applied to the data set, the results for age groups, sex, education, race, household composition, and region/Milwaukee County closely resemble official estimates of Wisconsin's household population from the U.S. Census Bureau and from the Department of Health Services (DHS). The population used to weight this data set was 5,536,772, the total estimated household population for Wisconsin on July 1, 2010. The procedure, termed "slow raking," was used to adjust the composition of the total sample to more closely resemble the total household population in Wisconsin. In summary, the weight adjusts the sample using more variables than used in the previous weighting procedure (used for FHS results before 2010).

The slow-raking procedure has been used by survey researchers for many years. It is a valid method for adjusting a data set that does not adequately represent all parts of the study population. This method cannot provide data from people who use only cell phones; however, it can help adjust survey results to be more representative of the total population.

The resulting weight was used to compute each percentage and number of people presented in the 2011 FHS results. All references to "weighted" data refer to data that have been adjusted by using this weight. When the weight is applied to the data set, the results are considered to be representative of all Wisconsin household residents in 2011. This method produces the most reliable results from the survey data.

## Definitions of Variables Used in FHS Publications

**Age and Sex.** These characteristics are reported by the respondent for each household member. Individual years of age are classified into four groups for analysis: ages 0 through 17, 18 through 44, 45 through 64, and 65 and older.

**Ethnicity and Race.** FHS respondents were first asked if anyone in the household was Hispanic or Latino. Then they were asked to report each household member's race or races. Up to five races could be reported for each person.

In FHS publications, all persons who were reported to be Hispanic or Latino are in the Hispanic/Latino category. All persons not reported as Hispanic/Latino, but for whom two or more races were reported, are in the "two or more races" category. All remaining persons are distributed in the "single-race, not Hispanic/Latino" categories. Some ethnic and racial groups are not included in the tables due to small sample sizes, which make any estimates based on those samples unreliable.

**Metropolitan and Non-metropolitan.** Twenty-six Wisconsin counties are designated as metropolitan counties by the federal Office of Management and Budget, based on the 2010 U.S. Census standards: Brown, Calumet, Chippewa, Columbia, Dane, Douglas, Eau Claire, Fond du Lac, Green, Iowa, Kenosha, Kewaunee, La Crosse, Marathon, Milwaukee, Oconto, Outagamie, Ozaukee, Pierce, Racine, Rock, St. Croix, Sheboygan, Washington, Waukesha, and Winnebago. Counties are designated as metropolitan because they either 1) have a central city of at least 50,000 people or 2) are adjacent and economically linked to a “central city” county. For the published tables of FHS estimates, results for the city of Milwaukee have been separated from the rest of the metropolitan counties. The “Other Metropolitan” category includes Milwaukee County outside the city plus the remaining 25 metropolitan counties. The other 46 counties are non-metropolitan.

**Poverty Status.** The relationship between the number of people in a household and the annual income of that household determines the poverty status. The Family Health Survey asked several questions about total household income during the calendar year prior to the survey (2010), and used current household size to determine whether a household’s income was below the federal poverty guideline. A household of four people was considered poor if the total income was below \$22,000. (This is based on federal guidelines, published annually in the Federal Register.) The “near-poor” category used in this report includes all people in households where the income was greater than the poverty guideline but less than twice the guideline. For a household of four, this was \$44,000 (“Wisconsin Family Health Survey Poverty Guidelines, 2010” below).

#### **Wisconsin Family Health Survey Poverty Guidelines, 2010**

Household Size	Poor	Near-Poor
1	\$11,000	\$22,000
2	\$15,000	\$29,000
3	\$18,000	\$37,000
4	\$22,000	\$44,000
5	\$26,000	\$52,000
6	\$30,000	\$59,000

Source: 2011 Family Health Survey, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services. Guidelines derived from *Federal Register*, January 22, 2010, and rounded to nearest \$1,000.

Note: All members of a household were considered “poor” if total household income was less than the poverty guideline (less than 100% FPL) shown for a household of that size. Household members were considered “near-poor” if total household income fell between the poor and near-poor guidelines (between 100 and 200% FPL) shown for a household of that size. Household members were considered “not poor” if the total household income was greater than 200% of the poverty guideline shown for a household of that size.

**Educational Attainment.** Years of schooling completed are categorized in three groups. Adults who finished 11 grades of school or less are in the first group, “less than high school diploma.” Adults who completed 12 years of school or a G.E.D. are in the “high school graduate” group. Adults who attended college or technical school beyond high school are in the “education beyond high school” group.

**Working-Age Adults (ages 18 to 64).** People in this age range are classified by employment status. Those who were working full-time for an employer at the time of the survey interview are grouped together; some in this group also were self-employed. Among those not working full-time for an employer, those who were self-employed full-time are grouped together, as are those who were working part-time. The remaining adults ages 18-64 include homemakers, the retired, full-time students, persons laid off, the unemployed (either looking or not looking for work), and those disabled persons who are unable to work. Together they make up the “Not employed/Not in labor force” category.

**Children Under Age 18.** All children under age 18 are classified by the employment status of the adults in their household. If at least one adult was employed either part-time or full-time, then the child was classified as living with an employed adult. If no adult in the child’s household was employed at the time of the interview, then the child was classified as living with no employed adults.

**Health Insurance.** As used in FHS publications, “health insurance” includes any kind of private or public coverage for health care costs, including Medicare, Wisconsin Medicaid (or BadgerCare Plus) and other government-funded insurance.

Questions about health insurance coverage inquire about specific types of insurance in this sequence: Medicare, employer-sponsored, Medicare supplement or Medigap, private (insurance bought directly from an agent or company), coverage from someone not living in the household, military health care (TRICARE, CHAMPUS, CHAMP-VA, VA), Medicaid, including BadgerCare Plus, and other types of coverage (HIRSP is specifically mentioned). For each type of insurance, the respondent is asked whether any household members are currently enrolled and, for each enrolled person, whether that person has been enrolled for less than or more than 12 months.

At the end of this set of questions, the respondent is asked about each person who was not reported to be covered by any type of insurance. This verification question locates another small group of people who otherwise would mistakenly be considered uninsured.

People with Indian Health Service medical care and no other coverage are considered uninsured in FHS publications. This is based on a decision of the U.S. Census Bureau in the 1998 Current Population Survey to modify the definition of the population without health insurance to count people with Indian Health Service medical care as uninsured. The effect of this change on the overall estimates of health insurance coverage in Wisconsin is negligible.

**Health Insurance Coverage Over the Past Year.** This estimates three groups: the percentage of residents who were covered by any type of insurance over the entire 12 months preceding the telephone interview, the percentage who had insurance during part of the 12 months and had no insurance part of the time, and the percentage who had no health insurance at all during the preceding 12 months.

Because FHS interviews were conducted throughout the year, the “preceding 12-month” period is variable. For example, respondents interviewed in May 2011 were asked to report their health insurance coverage for the 12-month period between May 2010 and May 2011.

**Insured and Uninsured.** The estimate of health insurance coverage is the percentage (or number) who had health insurance coverage at the time of the interview. It is a “snapshot” estimate, a cross-section of the Wisconsin household population at one point in time. Any type of public or private insurance

coverage at the time of the interview classifies a person as having health insurance. Those with no insurance at the time of the interview are considered uninsured.

### **Published Tables**

The tables include estimated percentages, 95 percent confidence intervals, and estimated numbers of people. Results are referred to as “estimated” percentages and numbers because all of the results are derived from a sample survey. The weighted survey data provide reliable estimates of characteristics of Wisconsin’s population. The percentage estimates, as well as the percentage confidence intervals, are rounded to whole numbers to avoid the impression of greater precision than is warranted from a sample survey. The estimated numbers of people, which are estimates of the Wisconsin household population, are rounded to the nearest 1,000 for the same reason.

The Family Health Survey conducts interviews with randomly selected households, a sample of all Wisconsin households. The random sample is used to represent the actual Wisconsin population, but the sample will have some small amount of variation from the actual population. Statistical procedures, such as constructing confidence intervals, are a guide to the amount of precision attributed to the survey results.

### **Confidence Intervals and Statistical Tests**

In most published tables, the 95 percent confidence interval (for both the estimated percentage and number of people) is in parentheses. Add the confidence interval value to the estimated percent to find the high boundary of the 95 percent confidence interval, and subtract it from the percent to find the low boundary. For example, in 2011, 7 percent of Wisconsin household residents were reported to be uninsured for the entire 12 months prior to the survey interview. Adding and subtracting the 1 percent value yields a 95 percent confidence interval of 6 to 8 percent. This means that 95 out of 100 random surveys would estimate that 6 to 8 percent of Wisconsin household residents in 2011 were uninsured for the entire 12 months prior to the survey interview.

A chi-square statistical test was used each time a difference between two estimates was identified in the text. For example, the phrase “those more likely to be uninsured” means that the difference between the identified groups was tested and found to be a statistically significant difference, not due to random variation. Only those differences that are statistically significant at the 0.05 level are mentioned in FHS reports.

In some tables the percentage estimates would be expected to sum to 100 percent, but they do not. This is due to two factors: rounding to whole numbers and the omission of “no answer” categories. The “no answer” category includes refusals to answer and answers of “don’t know.” Information about the “no answer” or missing data category is presented in tables when it is a notable percentage.

### **Other Estimates of Health Insurance Coverage**

Two federal surveys also provide useful estimates of the uninsured in Wisconsin: the American Community Survey and the Current Population Survey. Each survey has certain strengths, as does the Family Health Survey, and each survey provides differing estimates of the uninsured in Wisconsin. The estimates differ because each survey uses different methods (e.g., sample design, question wording, time period of data collection, method of data collection), each survey has a different purpose, and results from random samples have their own random variations.

The **American Community Survey (ACS)** is conducted every year by the U.S. Census Bureau. It has a very large address-based sample, uses multiple methods to reach sampled people (mail, with phone and

in-person interviews for non-respondents), is conducted year-round, and has the authority of federal law to encourage participation. Starting in 2008, the ACS includes one detailed question about health insurance coverage for each person in the sampled household.

ACS data users should be cautioned that the ACS health insurance question does not specifically ask about BadgerCare or other Wisconsin health insurance programs; it asks about “Medicaid, Medical Assistance, and any kind of government-assistance plan.” The ACS health insurance question is relatively new, so researchers are using the results with some caution until more detailed analysis provides a better understanding of the question’s strengths and weaknesses.

ACS results are useful for comparisons between states and for analysis of sub-state geographic areas as well as specific demographic groups. Starting in 2010, ACS results are available for every county in Wisconsin, using five years of combined data. ACS health insurance estimates for all counties will be available in 2013. ACS results can be compared to the Family Health Survey results for health insurance coverage.

The **Current Population Survey (CPS)**, March Supplement, is conducted every year in March by the U.S. Census Bureau. The CPS is primarily a labor force survey. Its strengths include a long history of data collection and analysis, a large sample size, and the high quality of Census Bureau survey work. A single question about health insurance coverage during the previous calendar year was added to the survey in 1987.

Extensive research has shown that many respondents answer the CPS health insurance question as if it asks about current health insurance coverage, instead of previous-year coverage. This issue limits the usefulness of CPS results. Results are widely used for comparisons between states, and as indicators of relative change in insurance coverage from one year to the next.

CPS results are not directly comparable to Family Health Survey results. In addition to potential respondent confusion about the health insurance question, the CPS differs from the FHS in sample design, data collection methods, and main topics.

The **Wisconsin Family Health Survey (FHS)** has been conducted by the Department of Health Services each year since 1989. The FHS collects health-related information, so the survey respondent has been thinking about health care and health problems for several minutes when asked about the health insurance coverage of each household member. This health context enhances the accuracy of information provided. The FHS asks several detailed questions about health insurance, and provides results for two distinct measures of health insurance coverage: coverage, and coverage over the past year. Neither the ACS nor the CPS offers this comprehensive set of information.

The sample size of the Family Health Survey is smaller than the CPS and ACS, limiting the analysis possibilities for sub-state areas and for smaller population groups. Confidence intervals around estimates are larger due to the limited sample size. The FHS sample is selected randomly from all landline telephone numbers in Wisconsin. This method has caused concern about the representativeness of FHS results in recent years; however, new weighting methods have provided some improvements.

For program and policy analysis in Wisconsin, the Family Health Survey provides more detailed health and health insurance information than either the ACS or the CPS. The FHS is the preferred data resource for more detailed analyses.

Despite many differences between the three surveys, findings are consistent on the characteristics of people without health insurance. The ACS, CPS and FHS all find that people are much more likely to be uninsured if they (or their family members) are unemployed, members of some minority groups, low-income or poor, or lacking a high school diploma. Young adults are more likely to be uninsured compared to other age groups.

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<sup>1</sup> Sunghee Lee, et al., Growing Cell-Phone Population and Noncoverage Bias in Traditional Random Digit Dial Telephone Health Surveys, *Health Services Research*, v.45(4), Aug. 2010, 1121–1139.

