Wisconsin Family Health Survey, 2017
Technical Notes

Wisconsin Family Health Survey Design

The Wisconsin Family Health Survey (FHS) is a survey of Wisconsin households conducted using telephone interviews. It is designed to provide estimates of health insurance coverage, various health conditions and use of health care services among Wisconsin residents of all ages.

For more than 20 years, the FHS sampling frame consisted of all Wisconsin households with a working landline telephone. Due to the rapid increase in cellphone usage in recent years and the lack of cell-phone-only households in the sampling frame, the decision was made to switch to a residential address-based sampling frame starting with the 2012 FHS. The shift to an address-based sample design means the unweighted sample now consists of a combination of "cell-phone-only" households, households with both landline telephones and cell phones, and households with only landline telephones.

Beginning in 2012, the sample design for the survey divided the state into six sample strata based on U.S. census tracts. Two of the strata are composed of census tracts with greater than 50% minority population, the first within Milwaukee County and the second in the rest of the state. Minority population is defined as all persons who indicate their race or ethnicity to be a group other than White, non-Hispanic. The other four strata are groupings of census tracts by county size.

The University of Wisconsin Survey Center, UW-Madison, the contracted survey laboratory, purchased randomly selected residential addresses for each stratum, drew the samples, and conducted all the interviews for 2017. About half the addresses had an identified telephone number (called "matched sample") that was used to contact the household. The addresses without telephone numbers were contacted by mail to request a phone number (called "unmatched sample"). Trained interviewers called the telephone numbers and conducted the survey interviews using a computer-assisted telephone interview system. Interviewers called the same phone number at least 10 times before designating it as "unanswered." The final response rate was 30%.

The questions asked in the FHS were designed in the Health Analytics Section of the Office of Health Informatics, Division of Public Health, Department of Health Services. Interviews were conducted from April through the end of 2017. The final FHS sample consisted of 2,395 household interviews, comprising a total of 5,432 Wisconsin household residents.

During the interview, the adult in each household who knew the most about the health of all household members was selected to answer all survey questions. This respondent answered survey questions for him/herself as well as for all other household members. In 2017, 64% of the respondents were women.

The data set for analysis of the 2017 FHS was constructed in the Office of Health Informatics, using the individual as the basic unit for analysis. Missing data on age and income were imputed when possible.

Wisconsin Family Health Survey 2017 Sample

Total	**5,432**		

Age Groups		**Milwaukee County**	845
0-17	1,018		
18-44	1,335	**Residence**	
45-64	1,676	City of Milwaukee	567
65+	1,403	Other metropolitan (excluding	
		City of Milwaukee)	3,310
Sex and Age Groups		Non-metropolitan	1,555
Male			
0-17	500	**Poverty Status**	
18-44	662	Poor	505
45-64	802	Near-poor	890
65+	626	Not poor	3928
Female		No response	109
0-17	518		
18-44	673	**Educational Attainment**	
45-64	874	**Ages 18 and older**	
65+	777	Less than high school diploma	200
		High school diploma	1,373
Ethnicity and Race		More than high school	2,824
Hispanic or Latino	222		
White, non-Hispanic/Latino	4,568	**Employment**	
Black or African American,		**Ages 0-17**	
non-Hispanic/Latino	298	Live with no employed adult(s)	76
American Indian or Alaska Native,		Live with employed adult(s)	942
non-Hispanic/Latino	71	**Ages 18-64**	
Asian, non-Hispanic/Latino	108	Employed full-time	1,677
Other, non-Hispanic/Latino	62	Self-employed full-time	178
Two or more races,		Employed or self-employed part-time	408
non-Hispanic/Latino	103	Not employed/Not in labor force	746

Source: 2017 Family Health Survey, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services.

Data Set Weighting

FHS is designed to capture information about Wisconsin's household population. Rather than contacting every member of this population for information—that is, conducting a census of them—it is much more cost effective to contact a sample of the population and then assign a weight to each record so that when the results are multiplied by these weights, they are representative of the full population. The sum of the entire set of case weights is equal to the household population of the state of Wisconsin.

Weighting Procedure

The first part of the weighting process involves adjusting for the varying sampling and response rates by sampling season (spring/fall), matching status (matched/unmatched sample), and stratum. The next step adjusts the household weights to match the household distribution of the 2016 American Community Survey (ACS) data on household type and home ownership. This is done by a process known as iterative proportional fitting, or raking.

Next the household weights are used as the initial "person-level" weights and those weights are adjusted to match the 2016 ACS distribution on Department of Health Services region, with Milwaukee County separate from the Southeast DHS region, age, gender, educational attainment, race/ethnicity, the interaction between age and gender, and the interaction between race/ethnicity and Milwaukee County residence (this is done since the majority of African American and Hispanic residents in Wisconsin live in Milwaukee County). 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.

The resulting weighting variable was used to compute all estimates presented in the 2017 FHS results. All references to "weighted" data refer to data that have been adjusted using this weighting variable. When the weighting variable is applied to the data set, the results are considered to be representative of all Wisconsin household residents in 2017. 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. FHS asked several questions about total household income during the calendar year prior to the survey (2016), 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 $24,000. (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 $49,000 ("Wisconsin Family Health Survey Poverty Guidelines, 2016" below).

Wisconsin Family Health Survey Poverty Guidelines, 2016

Household Size	Poor	Near-Poor
1	$12,000	$24,000
2	$16,000	$32,000
3	$20,000	$40,000
4	$24,000	$49,000
5	$28,000	$57,000
6	$33,000	$65,000

Source: 2017 Family Health Survey, Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services. Guidelines derived from *Federal Register*, 2016, 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. For adults, 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 after 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 were also 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 ask about specific types of insurance in this sequence: Medicare, SeniorCare, Health Insurance Marketplace (also known as "exchange"), 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. 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 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 from April through December in 2017, the "preceding 12-month" period is variable. For example, respondents interviewed in September 2017 were asked to report their health insurance coverage for the 12-month period between September 2016 and September 2017.

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.

Insurance Type. As depicted in the "Type of Insurance" section of the "Point-in-Time" table, type of insurance categories were created as mutually exclusive groups. If an individual carries more than one type of insurance, the insurance coverage for that individual is counted only once. In other words, a person who has two types of insurance is included in only one insurance type category. For example, an individual with both employer-sponsored and private coverage is included only in the employer-sponsored column. The mutually exclusive categories for insurance type are listed in the table in the hierarchical order by which they were categorized.

Published Tables
The tables include estimated percentages, 95% 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. Percentage estimates are rounded to the nearest whole number. The estimated numbers of people, which are estimates of the Wisconsin household population, are rounded to the nearest 1,000.

FHS 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% confidence interval (for both the estimated percentage and number of people) is in parentheses.

In some tables the percentage estimates would be expected to sum to 100%, but they do not. This is due to 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 FHS, 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 and internet, with phone and in-person interviews for nonrespondents), is conducted year-round, and has the authority of federal law to encourage participation. Since 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."

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. As of 2013, ACS health insurance estimates for all counties are available. ACS results can be compared to FHS 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 U.S. 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 FHS 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 has been conducted annually by the Department of Health Services since 1989, except for 2013. 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. FHS asks several detailed questions about health insurance, and provides results for two distinct measures of health insurance coverage: coverage (point-in-time), and coverage over the past year. Neither the ACS nor the CPS offers this comprehensive set of information.

The sample size of FHS may limit the analysis possibilities for sub-state areas and for smaller population groups. For some analysis measures, confidence intervals around estimates are larger due to the limited sample size. Beginning with the 2012 FHS, the sample is selected randomly from all residential addresses in Wisconsin.

For program and policy analysis in Wisconsin, FHS provides more detailed health and health insurance information than either the ACS or the CPS. 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.

Wisconsin Department of Health Services
Division of Public Health | Office of Health Informatics
P-45369B (January 2019)

7