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Small Area Health Insurance Estimates from the Census Bureau: 2008 and 2009

Introduction

The U.S. Census Bureau's Small Area Health Insurance Estimates (SAHIE) program produces model-based estimates of health insurance coverage for all counties and states. Estimates for calendar years 2008 and 2009 were released on October 13, 2011.[1] Currently, the SAHIE program is the only source of health insurance coverage estimates for all counties in the United States. This brief highlights what is new for this release, provides an overview of how the SAHIE estimates are developed, and compares the SAHIE model-based methodology to the American Community Survey.

What is New for the 2008 and 2009 SAHIE Modeled Estimates

The SAHIE program models health insurance coverage by combining survey estimates with administrative records, population estimates, and decennial Census data. The 2008 and 2009 estimates model health insurance coverage based on the American Community Survey (ACS). Previous years of SAHIE estimates used the Current Population Survey's Annual Social and Economic Supplement (CPS). Compared to CPS, the larger sample size of the ACS produces estimates with greater precision and allows for additional income categories.

The SAHIE county estimates are available by age, income, and sex categories; race/ethnicity estimates are produced at the state level only. Beginning with this release the income categories have been modified to reflect break points that are important for estimating the impacts of the Affordable Care Act (138 and 400 percent of the Federal Poverty Level (FPL), in addition to existing categories for people with incomes at or below 200 and 250 percent of the FPL).

Finally, the Census Bureau introduced new interactive mapping and table tools with these estimates that allow users to easily customize maps and tables of uninsurance rates by the available demographic categories.

[1] Estimates are available at http://www.census.gov/did/www/sahie/index.html.

Background on the SAHIE Program

The SAHIE program released the first nationwide set of county-level uninsurance estimates in 2005, reflecting the population as a whole and children for calendar year 2000.[2] Development of these modeled estimates was an important step to better inform the public about health insurance coverage and provide health policy analysts a tool to monitor sub-state estimates of health insurance coverage. Over time, the SAHIE program has made enhancements to the models; this brief focuses on the SAHIE estimates and methodology for 2008 and 2009, the most recent estimates available.[3]

The SAHIE program uninsurance estimates are available for states and counties by the following demographic categories:

- Age: Under 65 years, 18 to 64 years, 40 to 64 years, 50 to 64 years (state only), and under 19 years
- Race/ethnicity (state only): White alone not Hispanic, Black alone not Hispanic, and Hispanic (any race)
- Income: at or below 138, 200, 250, or 400 percent of poverty
- Sex

Table 1 summarizes the level of detail available for each age group. For example, county-level estimates are available for females ages 40 to 64 with incomes at or below 138 percent of poverty. In contrast, only state-level estimates are available for the 50 to 64 age category, and for children there are no race/ethnicity or sex estimates available.

Table 1. Level of Detail Available in SAHIE Estimates, by Age Group

Age	Race/Ethnicity	Income	Sex
Under 65 years	State	State, County	State, County
18 to 64 years	State	State, County	State, County
40 to 64 years	State	State, County	State, County
50 to 64 years	State	State	State
Under 19 years	None	State, County	None

Modeling Approach

The SAHIE program models health insurance coverage estimates by combining survey data from the ACS with administrative records, population estimates from the Census Bureau's Population Estimates Program, and decennial Census data. Modeling estimates allows the "borrowing" of information from a variety of data sources to achieve more reliable estimates for areas with small direct survey sample sizes.

There are separate state and county models. The state estimates are controlled so they are consistent with ACS national estimates. Summing over the states will equal ACS national estimates for key sub-groups. Similarly, the county estimates are controlled to sum to the SAHIE state-level estimates.[4] The data used in the models are described below.

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[2] SHADAC participated in the methodological review of these estimates and the report is available at http://www.census.gov/did/www/sahie/methods/review/index.html.

[3] The program enhancements were partially funded by the Centers for Disease Control and Prevention, National Breast and Cervical Cancer Early Detection Program (NBCCEDP). The NBCCEDP has a congressional mandate to provide screening services for breast and cervical cancer to low-income, uninsured, and underinsured women. The demographic variables available in the SAHIE estimates partially reflect this mandate.

[4] A detailed description of the methodology is available at http://www.census.gov/did/www/sahie/methods/20082009/index.html.

American Community Survey (ACS)

The ACS is conducted by the Census Bureau to provide communities with up-to-date information on key demographics and policy-relevant data, and in 2008 began asking about health insurance coverage using a point-in-time measure of coverage. The SAHIE program model uses single-year ACS direct estimates for all states and all counties, regardless of population size. For example, the 2009 ACS was used to model the 2009 SAHIE program estimates.

The ACS sample includes people living in both institutionalized and non-institutionalized group quarters, but the published health insurance tabulations are restricted to the civilian non-institutionalized population. The SAHIE program estimates further restrict the population to those for whom income is reported (the poverty universe). As such, the SAHIE estimates exclude active-duty military, people in prisons, people living in nursing homes, children under age 15 who are not related to the householder, and people living in college dormitories.

In addition to ACS health insurance coverage estimates, the SAHIE program uses ACS income data to estimate the numbers of people in the specific income categories.

Administrative Data

The administrative data used in the models are aggregated to the state and county levels. Sources of data used in the model include:

- Federal tax returns: number of exemptions from the Internal Revenue Service, total counts for the area partitioned by child versus adult and by income group;
- Supplemental Nutrition Assistance Program (SNAP), formerly Food Stamps: number of people participating in SNAP from the United States Department of Agriculture;
- Medicaid and the Children's Health Insurance Program (CHIP): number of people covered by Medicaid and CHIP from the Centers for Medicare and Medicaid Services;
- County Business Patterns: establishment data from the Census Bureau's Business Register.

Population Estimates

The Census Bureau's Population Estimates Program publishes intercensal estimates of the resident population for the nation, states, and counties, by age, sex, race, and Hispanic origin. The SAHIE program adjusts these estimates so they have a universe similar to the civilian non-institutionalized population. In addition to the number of people in each of the age, race, sex, Hispanic origin (ARSH) groups, the model incorporates the proportion American Indian and Alaska Native and the proportion Hispanic.

Census 2000

Census 2000 sample data are used in the models. The sample (long form) 2000 questionnaire was sent to about one in six households and included questions on social and economic characteristics of the population and physical and financial characteristics of housing. In addition to the number of people in each of the ARSH groups, the SAHIE models also include the proportion who are non-citizens, the proportion of owner occupied housing units, and the proportion of households in rural areas.

Comparison of SAHIE and ACS

An important feature of the ACS is that it has a large enough sample for state-level and sub-state health insurance coverage estimates. The Census Bureau will publish ACS estimates of health insurance coverage for all counties when 5-year estimates (2008-2012) are available in 2013, but these will only be available from the summary tables on American FactFinder. County estimates will not be available in the microdata except for the largest counties.[5]

At this time, 1-year health insurance coverage estimates are currently available for areas with populations of 65,000 or more and 3-year pooled estimates will be available in late October 2011 for areas with populations of 20,000 or more, including estimates for 59 percent of counties.[6] Table 2 summarizes key information about the SAHIE program and the ACS.

Table 2. Comparison of SAHIE and ACS Health Insurance Estimates

	SAHIE Modeled Estimates	ACS Direct Estimates
Years available	2000, 2001 (states only), 2005, 2006, 2007, 2008, 2009	1-year estimates: 2008, 2009, 2010 3-year pooled estimates: 2008-2010 available in late October 2011 with microdata one to two months later
Geography available	All states and all counties	All states, all congressional districts, some counties, and various sub-state geographies[7]
Estimates available	Uninsured and insured	Uninsured and insured by coverage type: private coverage, employer-based, direct-purchase, TRICARE/military health care, public coverage, Medicare, Medicaid, VA
Summary vs. microdata	Summary tabulations available in pre-defined tables	Summary tabulations available in pre-defined tables on American FactFinder; microdata available in public use files for custom analysis
Comparability across geographies and over time	Estimates are comparable across geographies and over time with an approximation, but it is recommended to only compare 2008 and 2009 due to the model change from CPS ASEC to ACS[8]	Estimates are comparable across geographies and over time[9]
Uncertainty of estimates	Margins of error are published for the 90 percent confidence interval Estimates have more precision due to the use of additional information from administrative records	Margins of error are published for the 90 percent confidence interval Microdata users can calculate standard errors to measure precision at other confidence intervals

[5] The lowest level of geography available in the 1-year, 3-year, and 5-year ACS microdata files are the Public Use Microdata Area (PUMA); areas with at least 100,000 people.
[6] The public use microdata for the 3-year estimates will be available one to two months after the AFF release.
[7] See http://www.census.gov/acs/www/data_documentation/areas_published/ for a complete listing of geographic areas available in the 1-year, 3-year, and 5-year ACS estimates.
[8] Details on comparing SAHIE estimates are available at http://www.census.gov/did/www/sahie/about/faq.html#q12.
[9] Recommendations for comparing ACS estimates are available at http://www.census.gov/acs/www/guidance_for_data_users/comparing_data.

Both the SAHIE and ACS can be used for county-level health insurance coverage estimates and both have strengths and limitations. The SAHIE estimates have several advantages. For analysts interested in all counties within a state, the SAHIE estimates are currently the only available source. The SAHIE estimates are for a single year so there is no need to pool or average multiple years of data, and they have greater precision due to the incorporation of additional information in the models.

The SAHIE estimates also have some limitations. The release of SAHIE estimates lags the ACS direct estimates by more than a year. (For example, SAHIE estimates for 2009 were released shortly after the ACS estimates for 2010.) Another limitation is that the SAHIE estimates are only available by insurance status (uninsured/insured) and not by type of health insurance coverage. The SAHIE estimates are available for relevant demographic groups, but unlike the ACS, microdata are not available so analysts are not able to conduct custom analyses.

Comparison to Estimates from State Surveys

Several states conduct their own household health access surveys that have large enough sample to provide estimates for at least their larger counties. Some of these states may also conduct their own small area estimation. When comparing estimates from individual state surveys with the SAHIE program estimates, differences may be observed for a variety of reasons. For example, there may be differences due to the survey's design, the health insurance coverage questions asked, mode of administration, and data processing.

Conclusions

The SAHIE estimates are a valuable source of information on local health insurance coverage, and for most states they are the only complete source of county-level estimates available. There are tradeoffs between using the SAHIE modeled estimates and the ACS direct estimates, but the precision and single-year estimation of the SAHIE estimates provides a useful basis for understanding changes over time. The ACS will eventually produce estimates for all counties using 5-year pooled data, but the 5-year estimates will be of limited use for trend analysis.

The 2010 SAHIE release is planned for summer 2012.

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About SHADAC

The University of Minnesota's State Health Access Data Assistance Center (SHADAC) is funded by the Robert Wood Johnson Foundation to collect and analyze data to inform state health policy decisions relating to health insurance coverage and access to care. For information on how SHADAC can assist your state with small area estimation or other data issues relevant to state health policy, please contact us at shadac@umn.edu or call 612-624-4802.