

Is there an undercount of Medicaid participants in the ACS Content Test?

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Abstract

Previous research has shown that the surveys undercount Medicaid participation and overcount the number of uninsured. This study examines the extent of an undercount of Medicaid participants and the subsequent impact on the percent uninsured. The Medicaid Statistical Information System (MSIS) is an administrative database for the Medicaid program. The American Community Survey tested new questions on health insurance. The MSIS database is linked to the persons in the ACS Content Test. This research shows that the count of Medicaid participants is underestimated and the uninsured rate should be lower, assuming the administrative records are without error. The size of the Medicaid undercount for children was larger than expected.

Key words: ACS, health insurance, Medicaid undercount, administrative records, measurement error

^{*} Data from many sources were used to produce this report. The Census Bureau appreciates the support from the source agencies that provided data. This report is released to inform interested parties of ongoing research and to encourage discussion. The views expressed are those of the author and not necessarily those of the U.S. Census Bureau.

I. Introduction

The number of people that have health insurance coverage is a persistent issue with policymakers and others that are involved in tracking Medicaid, Medicare, and other types of medical assistance. Estimates of health insurance coverage, and the type of coverage, are needed for making decisions. However, there is much debate concerning which survey provides the most accurate estimates. The major surveys that produce uninsured estimates are Medical Expenditure Panel Survey (MEPS), National Health Interview Survey (NHIS), and the Annual Social and Economic Supplement of the Current Population Survey (CPS ASEC). In 2006, uninsured rates were 12.2 (MEPS 2006), 14.8 (NHIS 2006), and 15.8 (CPS 2006) percent. Because of this broad range of estimates, research has occurred to tease out the differences in the uninsured rates. The obvious culprits are the survey design and the recall period of the health insurance questions. Particularly, the focus has been on response error due to telescoping (tendency to report events occurring outside the recall period as if they occurred within it) and memory decay (under-reporting of events due to forgetting) (Pascale 2007).

Among federal surveys, CPS ASEC has the longest recall period of up to 16 months and is the most quoted survey for the national estimate for the uninsured. The CPS ASEC question asks if the person had health insurance coverage at any point in the last calendar year. Many analysts (DeNavas-Walt et al. 2006) believe that the health insurance question is capturing a mixture of the respondent's current health insurance coverage

(telescoping error) and status from the last calendar year (memory decay). If this is the case, the estimate of the uninsured rate is biased.

To figure out the bias of the uninsured rate, an external source of “truth” is needed. From a variety of administrative data, benchmarks can be formed. A direct approach to measuring bias is linking individuals in an administrative health insurance database to the micro-level data in a survey. A multi-agency research group was formed (The University of Minnesota’s State Health Access Data Assistance Center, the Centers for Medicare and Medicaid Services, the Department of Health and Human Services Assistant Secretary for Planning and Evaluation, the National Center for Health Statistics, and the U.S. Census Bureau; i.e., SNACC) to analyze data that linked the CPS ASEC to Medicaid’s administrative records. The goal was to evaluate reporting error in health insurance questions. The major finding was that Medicaid participation was under-reported and, thus, the number of uninsured people was over-reported (SNACC 2008). Currently, the SNACC group is extending their research to encompass other surveys to determine if the measurement error is smaller than that of CPS ASEC. For the NHIS, the measurement error was smaller (Lynch 2008).

In 2009, the 2008 American Community Survey (ACS) will release a set of estimates of health insurance coverage for all counties with geographic areas with populations over 65,000. These estimates will improve policy decisions concerning the uninsured at the local level. The ACS question is a “point-in-time” measure; i.e., the health insurance question asks if you are currently insured. This question removes any bias from the recall period. However, there still can be other sources of reporting error, but the expectation is it would be less than CPS ASEC would be.

In late December 2005 through March of 2006, the ACS conducted a test in part to evaluate the quality of the health insurance questions. The test had a split design where the health insurance questions differed between between two groups. One version had a screener question that asked if the person was covered by health insurance. If the person did have coverage, the respondent could check a box for types of coverage. The second version had no screener question; instead, it had yes / no boxes for each type of coverage. There was a follow-up in-person interview to test the accuracy of the results. One option for the type of health insurance coverage was if the person was on Medicaid or some other means-tested health insurance plan. This question does not ask about Medicaid specifically. It was determined that both versions produced reasonable results. However, the second version had several properties that were desirable. Nelson and Ericson (2007) provide an in-depth discussion about the research questions, results and sample design. In the 2008 ACS, the questions on health insurance are identical to the second version of the questions.

This paper focuses on evaluating the ACS health insurance questions and builds on the SNACC research. Administrative data for Medicaid participation were released in 2009 enabling an external evaluation of Medicaid participants reported in the ACS Content Test.

II. Medicaid Program

The Medicaid program was created in 1965 to provide medical services for certain low-income individuals and families. The federal and the state government finance this program. The federal government pays a percentage, between 50-83 percent, of the

state's total Medicaid expenses. The higher a state's per capita income, the lower the federal share of reimbursement of medical expenses. The state administers the program and, within federal guidelines, defines the eligibility criteria (CMS 2008).

Primarily, those eligible for Medicaid coverage are low-income children, persons with disabilities, persons 65 and over, and pregnant women. Generally, the parents are eligible for Medicaid services if the parents are in extreme poverty. There are many exceptions to these eligibility categories, such as expanding the program to include all low-income adults with HIV (in some states), low-income women that have breast or cervical cancer, covering children aged 19-21 if they are full-time students, and covering parents that are not in extreme poverty (HHS 2004).

The definition of low-income is state defined and varies by eligibility groups. For low-income infants, the income-eligibility varies from 133 through 300 percent of the federal poverty level (FPL). Because of this variation, persons may not meet eligibility criteria if they change states. States differ on how a person certifies that they are still eligible for Medicaid benefits; i.e., continuous eligibility. Most states recertify participants every six months and have the family provide documentation for total income (Kaiser 2008). Continuous eligibility assures that Medicaid covers a person even when the income fluctuates around the threshold.

Traditionally, Medicaid has been a fee-for-service program. States can provide non-traditional Medicaid to lower the state's costs while maintaining the quality of medical services. The most common approach is for the state to contract with a Health Maintenance Organization (HMO). Another option is for a state to use private insurers to provide health insurance. Private insurance often takes the form of case management or selective contracting (Dunkelberg and O'Malley 2004, MSIS 2008). The HMO's and the private insurers' plans are named after the company, not "Medicaid".

III. Data

The data for this research are based upon the ACS Content Test and administrative records on Medicaid participation. Following appropriate person-identity confirmation, record linkage, data security, and personal privacy protection procedures, Census staff joined the corresponding individual-level Medicaid information to the ACS Content Test (hereafter, the 2006 ACS CT) at the person level. *From this point on, the 2006 ACS CT are the people that had their identity confirmed, not all people in the test.* Medicaid participants refers to the people that were identified in the Medicaid administrative records.

Reweighting the 2006 ACS CT was necessary for many reasons. This is a major limitation in the study. There were 62,900 addresses in the initial sample for the test, of which data were collected for 29,028 occupied households. There were 68,563 people interviewed and 64,970 answered uninsured or reported a type of insurance. Because the 2006 ACS was a content test for which the universe of interest was households that respond to the ACS, the responses were not edited and the weights were not adjusted to reflect non-response or population controls; the person weights were identical to the household weight. Additionally, the percent of people in the survey that had their identity determined was 93.5 percent. There are many reasons for a person's identity not to be determined. For instance, the respondent(s) have the choice of filling in their

names. The non-identified persons do not exhibit an apparent trend by age or income, using the age and income variables (where available) from the 2006 ACS CT.

An incremental approach to reweighting non-identified persons and non-respondents to the health insurance questions was used. The population was adjusted to equal the 2006 ACS population by age groups (under 19, 19-39, 40-64, 65 and over). The age groups under 19 and 65 and over roughly correspond with the age criteria for the Medicaid program. This reweighting did not affect the percent uninsured within that age group. However, reweighting had the effect of changing the overall uninsured rate because of the changing population distribution. The adjustments are not the ones used on ACS production data. Indian Health Services are not counted as health insurance (Census 2008).

To calculate variances, the ACS uses a method called “successive difference replication.” This was not done for the 2006 ACS CT because it was a content test. Instead, the survey procedures available in the SAS software using jackknife weights to estimate variance were used.

The Balanced Budget Act of 1997 required states to report all Medicaid participation and medical claims data to the Centers for Medicare and Medicaid Services (CMS) through the Medicaid Statistical Information System (MSIS). The MSIS data are received quarterly from the states. The Census Bureau has obtained micro-level Medicaid participant data from CMS for quarters one and two for fiscal year 2006. The MSIS data contains information that indicates whether the person (1) has health insurance that covers a full and comprehensive array of medical services or (2) has health insurance that covers limited medical services and (3) is not eligible for any medical services. People that had limited Medicaid benefits were considered non-participants for this study. For certain states, the data include persons that are participating in the State Children's Health Insurance Program (SCHIP). The SCHIP participants are included in this study when available.

IV. Method & Variable Selection

The approach for estimating Medicaid participants is simple. The MSIS-based Medicaid records replace the survey answer concerning health insurance. From the 2006 ACS CT, there is no way to distinguish Medicaid participants from other means-tested health insurance plans. If the Medicaid administrative records are the truth, this procedure corrects the responses to types of health insurance coverage by “editing” the data. Regardless of the editing of the health insurance response, the ACS has sampling error. The ACS Medicaid participants are estimated from the linked MSIS data. This “corrected” measure is compared to the original responses. This has implications on misreporting other types of health insurance coverage and being uninsured.

Multinomial and dichotomous logistic regressions are used to help explain why misreporting of Medicaid coverage exists. The multinomial model is used because what influences misreporting uninsured as opposed to misreporting non-Medicaid insurance could be affected by different characteristics. The dependent variable for the multinomial model is uninsured, reporting a means-tested health insurance program, or insured by another source. For the dichotomous model, reporting uninsured or insurance through some other source is collapsed. In both models, the reference group is “reporting correctly.”

The predictors of the logistic regression involve characteristics of the first person identified in the survey; i.e., the householder. The householder’s characteristics that are used in the model are gender, age, race / ethnicity, marital status, educational attainment, and type of housing / ownership. Other predictors are for family traits (income, participation in Supplementary Security Income (SSI), Food Stamps or public assistance, and the number of children), and information about the Medicaid participant (age, disability, enrolled in a non-traditional plan and length of time on Medicaid).

There is an income-eligible flag used in the regressions. Using the state Medicaid rules about eligibility, the flag is the income threshold that corresponds to infants. Infants have the highest (or are tied for the highest) threshold. There were people whose survey-reported income was above the eligibility standard. This is expected because some people report their income inaccurately and there are programmatic reasons this can happen. The reason multiples of the FPL were not used in the model is because some states have a threshold near poverty (133 percent of the FPL) while some states have a much higher threshold (300 percent of the FPL). The 2006 ACS CT does not have enough sample size to control for state effects.

V. Results

All of the results stated in this paper are significant at the 90 percent level unless denoted otherwise. Table 1 shows that respondents that used a Computer Assisted Personal-visit Interviewing (CAPI) instrument had lower insured rates (78.0 versus 90.6 percent) and a higher rate of being on a means-tested health insurance program (15.3 versus 7.2) than the Paper instrument. A probable explanation of the CAPI versus Paper results is that the people interviewed using a CAPI instrument are the hard to reach populations (Joshipura 2008); uninsured rates and means-tested health insurance are expected to be higher in the hard to reach populations. Adults aged 65 and over have the highest health insurance rate (98.8 percent), while young adults have the lowest (74.0 percent). According to the linked MSIS data, the estimate of Medicaid participation is 25.8 percent of children and 0.9 percent of adults aged 65 and over. For adults aged 65 and over, the discrepancy between means-tested health insurance and Medicaid estimates results from the restrictions that the Medicaid coverage must cover a full and comprehensive array of medical services.

Table 1: Health Insurance Estimates, descriptive statistics

		HI Rate	Means-tested HI	MSIS Medicaid
		<i>Estimate (s.e.)</i>	<i>Estimate (s.e.)</i>	<i>Estimate (s.e.)</i>
Mode	CAPI	78.0 (1.1)	15.3 (0.8)	15.8 (0.8)
	Paper	90.6 (0.3)	7.2 (0.3)	5.7 (0.2)
Age Categories	Under 19	88.6 (1.0)	21.8 (1.1)	25.8 (1.1)
	19-39	74.0 (1.0)	6.5 (0.5)	6.9 (0.4)
	40-64	87.5 (0.6)	4.9 (0.4)	3.4 (0.3)
	19-64	81.1 (0.7)	5.6 (0.4)	5.0 (0.3)
	Under 65	83.3 (0.7)	11.2 (0.5)	10.5 (0.4)
	65 and over	98.8 (0.2)	11.3 (0.7)	0.9 (0.2)

These percentages do not represent estimates of the US population for these characteristics and should not be quoted as such. They were computed using Contest Test data that have not been edited or imputed for, nor weighted to known population totals using standard ACS methodology.

Source: Author's tabulations of modified data from the U.S. Census Bureau, 2006 American Community Survey Content Test.

For programmatic reasons, the expectation is that there are fewer adult participants than children participants. Table 2 confirms this expectation. Of those people on Medicaid, 67.7 percent are children. Because there are so few elderly that receive comprehensive medical services through Medicaid, the elderly are dropped from further analysis. The remaining results are focused on children and on people under 65.

Table 2: Distribution of Medicaid Participants, by Age

Age Group	<i>Estimate</i>	<i>(s.e.)</i>
Under 19	67.7	(1.4)
19-39	20.0	(1.0)
40-64	11.1	(0.9)
65 and Over	1.2	(0.2)
<i>Total</i>	<i>100</i>	

These percentages do not represent estimates of the US population for these characteristics and should not be quoted as such. They were computed using Contest Test data that have not been edited or imputed for, nor weighted to known population totals using standard ACS methodology.

Source: Author's tabulations of modified data from the U.S. Census Bureau, 2006 American Community Survey Content Test.

Table 3 shows that of those children identified in MSIS, 64.5 percent reported they were on a publicly funded health insurance program, 14.3 percent reported no insurance, and 21.2 percent reported private insurance. The Medicaid undercount is because of these reporting errors. If the 14.3 percent of Medicaid children marked any of the types of health insurance on the survey question, the overall uninsured rate would decrease. If the 35.5 (14.3 + 21.2) percent of Medicaid participants marked the box for means-tested health insurance programs, there would be a better estimate for Medicaid participation. For persons under 65 and ages 19-64, the categories were not statistically different from those for the children.

Table 3: Participants in the Medicaid Program

	Under Age 19		Ages 19-64		Under Age 65	
<i>HI Category</i>	<i>Estimate</i>	<i>(s.e.)</i>	<i>Estimate</i>	<i>(s.e.)</i>	<i>Estimate</i>	<i>(s.e.)</i>
Uninsured	14.3	(2.1)	16.9	(2.1)	15.1	(1.7)
Public	64.5	(2.6)	68.1	(2.4)	65.6	(2.1)
Private	21.2	(1.8)	15.0	(1.8)	19.3	(1.5)
<i>Total</i>	<i>100</i>		<i>100</i>		<i>100</i>	

These percentages do not represent estimates of the US population for these characteristics and should not be quoted as such. They were computed using Contest Test data that have not been edited or imputed for, nor weighted to known population totals using standard ACS methodology.

Source: Author's tabulations of modified data from the U.S. Census Bureau, 2006 American Community Survey Content Test.

Table 4 illustrates how the distribution of health insurance coverage changes when the misreporting of Medicaid participation is corrected. A new category was formed to account for public insurance that is not Medicaid. Because 14.3 percent of children on Medicaid (Table 3) were moved from uninsured to insured, the uninsured rate changed from 11.4 percent to 7.7 percent. The children that reported a non-Medicaid publicly funded health insurance plan was 5.1 percent. As expected, for people under 65, the change was less dramatic. For working-age adults, there was not a statistically significant change in the uninsured rate at the 10 percent level.

Table 4: Distribution of Health Insurance Types (adjusted)

	Under Age 19	Ages 19-64	Under Age 65
<i>HI Category</i>	<i>Estimate (s.e.)</i>	<i>Estimate (s.e.)</i>	<i>Estimate (s.e.)</i>
Uninsured, Adjusted	7.7 (0.7)	18.0 (0.6)	15.0 (0.6)
Medicaid	25.8 (1.2)	5.0 (0.3)	11.2 (0.5)
Public, Other	5.1 (0.5)	4.3 (0.2)	4.5 (0.3)
Private	61.3 (1.5)	72.7 (0.8)	69.3 (0.9)
<i>Total</i>	<i>100</i>	<i>100</i>	<i>100</i>
<i>(Uninsured, not adjusted)</i>	<i>11.4 (0.8)</i>	<i>18.9 (0.7)</i>	<i>16.7 (0.6)</i>

These percentages do not represent estimates of the US population for these characteristics and should not be quoted as such. They were computed using Contest Test data that have not been edited or imputed for, nor weighted to known population totals using standard ACS methodology.

Source: Author's tabulations of modified data from the U.S. Census Bureau, 2006 American Community Survey Content Test.

A logistic regression was conducted on children under 19 and persons under 65 that are on Medicaid. The model predicts the likelihood that a person misreported having means-tested health insurance. These results are available upon request. Table 5 is an extract of the independent variables for the children that are on Medicaid. These variables were transformed into percentage rates to give an intuitive interpretation of the logistic regression. The first two columns are results that tease out the difference between misreporting uninsured versus misreporting a different type of insurance. When a Medicaid participant reports a different type of insurance, it will be referred to as "other insurance." The third column has the results that were based on any misreporting.

Across models, children are less likely to misreport their health insurance status when the householder was a female, the family received public assistance or the child had a disability. Children that live in a housing unit that can be moved are 61 percent less likely to report uninsured than children in other types of housing are. For the "other insurance" estimates, the child is less likely to report a different type of insurance if the householder was Hispanic or the family's income was missing or at or below the poverty threshold. Children enrolled in Medicaid sponsored private insurance are 210 percent more likely to report another type of health insurance than Medicaid recipients with a traditional plan (fee-for-service). For the overall misreporting model, children with householders under forty years of age are 59 percent more likely to have reporting errors than children with householders that are forty years of age or more.

Table 5: Mis-Reporting Among Medicaid Participants Under 19 years of Age
(Selected Factors from a Logistic Model translated into percents)

Category	Uninsured % estimate	Other HI % estimate	Misreport % estimate
Householder is female	-50%	-49%	-49%
Householder is under 40 years of age	86%	NS	59%
Householder is Hispanic	NS	-51%	NS
Householder rents the dwelling	NS	73%	NS
Home can be moved (mobile home, boat, RV, etc.)	-61%	NS	NS
Income is missing	NS	-58%	NS
Income is at or below the Federal Poverty Level	NS	-69%	NS
Presence of earned income	NS	90%	NS
Food Stamps or public assistance	-72%	-68%	-70%
Child is under 6 years of age	NS	-42%	-27%
Child has a disability	-56%	-65%	-61%
Child is enrolled in a Medicaid sponsored private insurance	NS	210%	125%
Child has been on Medicaid for at least a year	-43%	NS	NS

NS means that the coefficient for that variable was not statistically significant at the 10 percent level

VI. Conclusion

Because of the Medicaid undercount, children have a lower uninsured rate than the survey estimates suggest. There was a relatively large portion of non-Medicaid children using publicly funded health insurance plans. This group is partly SCHIP participants that are not in the MSIS records. Given that the ACS question is a point-in-time measure, the size of the Medicaid undercount for children was larger than expected. NHIS (2006) has a point-in-time estimate of the uninsured rate of 9.3 percent for children. Perhaps the direct estimate of the 2006 ACS CT was too high because it was unedited; this study should be repeated with a calibration to the 2008 ACS health insurance rate. There was no statistical evidence to suggest that adults have a different uninsured rate after Medicaid participation is accounted for.

The logistic regression results were consistent with the literature. By modeling reporting errors for the Medicaid participants as uninsured versus reporting a different type of health insurance, there appear to be different mechanisms for the undercount. The act of reporting the household income is predictive of reporting other types of health insurance coverage. This finding suggests that when imputing both health insurance and income, the result may be unpredictable. In terms of achieving a more precise estimate of the uninsured rate, the same strategies used for persons that report other health insurance types could be used. Being in a Medicaid sponsored health insurance plan is not predictive of reporting uninsured but predictive of reporting other health insurance types. A common sense explanation is that if it looks and feels like private insurance, the respondent will report it as such. Notably, HMO participation was not predictive of misreporting.

Future research involves using data from the 2008 ACS matched with the MSIS records. This will provide estimates that are more robust. Other future research involves

predicting the number of the Medicaid participants. At a tabular level, this paper showed the impact on the uninsured rate. Davern et al. (2007) take the next step in predicting the number of Medicaid participants using, as the dependent variable, MSIS-based and survey-based Medicaid. This is an important step because predicting Medicaid in the population is not the same as improving our understanding of how Medicaid participants respond to health questions.

There are many limitations with this study. The 2006 ACS CT was reweighted for a variety of reasons; different survey weights will result in different conclusions. The sample size was relatively small. Small sample size was not much of a problem with estimating a single number but the sample size does make a difference when estimating a multivariate regression on a subset (e.g., the Medicaid participants under 19 years of age) of the population. The MSIS data and the person-identity confirmation has non-survey error that is not accounted for in this study. However, the system of person-confirmation is believed to contain little error in linking survey persons to the MSIS data (SNACC 2009). For the regression, a predictive variable in the SNACC research was the intensity of medical services. The data from MSIS does not have this information. Another concern is that the date of dis/enrolling from Medicaid is not available and could cause a mismatch of time frames with the interview date for the survey.

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