

Why Do Household Surveys Undercount Medicaid Enrollment?

Research Comparing State Administrative Records To Census Data Systems To Uncover the Medicaid Enrollment Undercount

SUMMARY

Researchers from the University of Minnesota State Health Access Data Assistance Center (SHADAC) investigated why state and national household surveys often produce much lower estimates of Medicaid enrollment than Medicaid enrollment data collected by states. Determining why this discrepancy, known as the "Medicaid undercount," exists will improve the data systems used to analyze insurance coverage and focus proposals to change health policy where they are needed.

To study the factors contributing to the Medicaid undercount, the researchers linked administrative records on Medicaid enrollment from 2000 to 2002 compiled by the Centers for Medicare & Medicaid Services (CMS) with survey data from the U.S. Census Bureau's Current Population Survey, the nation's main source for estimates of uninsurance rates.

Key Findings

- Discrepancies between the populations included in the Medicaid administrative records and the Current Population Survey (CPS) account in part for the Medicaid undercount. Adjusting the data to account for these discrepancies enabled researchers to reduce the Medicaid undercount in 2000 from 42 percent to 32 percent.
- Incorrect responses to Current Population Survey questions about Medicaid coverage appear to be an even larger cause of the Medicaid undercount. Among CPS respondents who were linked to administrative records documenting their Medicaid enrollment, 43 percent failed to report Medicaid participation on the survey.

Key Conclusions and Recommendations

 Findings of substantial underreporting of Medicaid suggest that Current Population Survey-based estimates of the uninsured and the population eligible but not enrolled are overstated. Estimating the magnitude of this overstatement is the subject of ongoing analysis. • Given the weaknesses associated with the Current Population Survey and the high rate of participant response errors, policy-makers should consider whether some other data sources might better meet their need for insurance coverage estimates.

Funding

The Robert Wood Johnson Foundation (RWJF) provided a grant of \$322,167 to support this unsolicited project, which ran from 2004 to 2007. The Office of the Assistant Secretary for Planning and Evaluation in the Department of Health and Human Services provided an additional \$150,000.

THE PROBLEM

When making decisions about programs and budgets to cover the uninsured, policy-makers often rely on state and national surveys to determine how many are covered by Medicaid and other public or commercial insurance, and how many lack coverage and may be eligible for Medicaid but are unenrolled.

A drawback of these surveys is that fewer people report to survey takers that they are covered by Medicaid than program administrative data show are enrolled. This discrepancy is known as the "Medicaid undercount."

When survey respondents with Medicaid coverage do not report that they have coverage, surveys may overestimate the true population rate of uninsurance. Other inaccuracies occur when individuals who do not have Medicaid report that they do, and when respondents erroneously report some other type of coverage, such as Medicare or commercial health insurance.

The Medicaid Undercount in the Current Population Survey

The Medicaid undercount in the Census Bureau's Current Population Survey (CPS) is an example of the serious policy implications of the discrepancy between survey estimates and administrative records.

CPS estimates of the number of uninsured are widely used by researchers and policy-makers at the national level to allocate State Children's Health Insurance Program (SCHIP) funds to states. At the state level, health policy analysts use these data to examine the potential cost and impact of health reform legislation and to report to the federal government on their progress toward covering the uninsured.

Understanding the Medicaid undercount in the CPS should improve survey design, provide more accurate information about insurance coverage and ultimately enhance decision-making related to uninsurance.

About the Grantee

RWJF funds the University of Minnesota's State Health Access Data Assistance Center (SHADAC) to help states monitor rates of health insurance coverage and to understand factors associated with uninsurance. It provides targeted policy analysis and technical assistance to states that are conducting their own health insurance surveys and/or using data from national surveys.

RWJF STRATEGY

One of RWJF's longtime, major goals is to assure that all Americans have access to quality health care at reasonable cost. To further that goal, RWJF over the years has pursued various strategies to expand insurance coverage. One strategy is assuring that accurate and complete data are gathered by both state and federal governments describing the extent of insurance coverage.

In 2004, the year the grant described in this report was made, RWJF adopted an ambitious goal: to help secure affordable and stable health care coverage for all Americans by 2010. RWJF aimed to build support among opinion leaders for this goal through high-profile communications campaigns, innovative research and policy analysis, and efforts to enroll the millions of uninsured children who are eligible for Medicaid or State Children's Health Insurance Program (SCHIP). RWJF believed that ensuring coverage for all children and low-income adults was a first step toward achieving coverage for all. To assist policy-makers in developing and implementing effective policies, RWJF pursued expanding coverage and assessing the barriers to achieving affordable and stable coverage. Those barriers include inaccurate estimates of the number of uninsured children and adults.

In making the grant, RWJF hoped that the study would produce clear conclusions about the reasons for differences between survey and administrative data on Medicaid enrollment, resulting in better estimates of health insurance status, especially among low-income populations, and improved analyses of the implications of health policy proposals.

THE PROJECT

From 2004 to 2007, researchers from the University of Minnesota's State Health Access Data Assistance Center (SHADAC) conducted the Medicaid Undercount Project. The research was designed to explain why discrepancies exist between Current Population Survey (CPS) estimates of enrollment in Medicaid and the number of enrollees reported in state and national Medicaid administrative data.

Five federal agencies collaborated with the University of Minnesota center on the Medicaid Undercount Project (also known as SNACC in recognition of the partnering groups):

- National Center for Health Statistics (NCHS) of the Centers for Disease Control and Prevention
- Agency for Healthcare Research and Quality (AHRQ)
- U.S. Department of Health and Human Services Assistant Secretary for Planning and Evaluation
- Centers for Medicare and Medicaid Services (CMS)
- U.S. Census Bureau

At the time the project was funded, project director Michael Davern, Ph.D., SHADAC's director of research, was planning a state-based approach to the research. However, the Census Bureau already had a memorandum of understanding in place to share data with CMS, which compiles administrative data for Medicaid from all states. The researchers decided to work first at a national level, and then narrow its approach by focusing on specific states.

Methodology: The Medicaid Undercount Study

The Medicaid Undercount Project linked national survey data at the individual level directly to Medicaid enrollment records.

The two data sources were:

• The Current Population Survey. The CPS, a monthly survey of some 65,000 households conducted by the Census Bureau and the Department of Labor, is the primary source of information on the U.S. labor force.

Since 1980 the survey has also collected information on health insurance coverage through its Annual Social and Economic Supplement, a survey of about 78,000 households. Interviews occur in February, March and April and ask respondents whether they had health insurance coverage in any of a variety of health insurance programs during the previous calendar year. This is in sharp contrast to most health-focused surveys, which ask about health insurance coverage at the time of the survey (point-in-time data).

Researchers used results from the 2001 and 2002 CPS survey, which asked about health insurance coverage in the previous calendar years of 2000 and 2001.

• The Centers for Medicare and Medicaid Services Medicaid Statistical Information System (MSIS). The purpose of MSIS is to collect, manage, analyze and disseminate information on people eligible for Medicaid, beneficiaries, use and

payment for services covered by state Medicaid programs. States provide CMS with quarterly computer files containing individual-level data on Medicaid enrollees. Data are used by CMS to produce Medicaid program characteristics and use information for the states.

Researchers used 2000–2002 MSIS data.

The research was conducted in four phases (see the Appendix for details on methodology). In the fourth phase, researchers replaced Current Population Survey Data with data from the 2001 and 2002 National Health Interview Survey, conducted by the CDC's National Center for Health Statistics. This survey, ongoing throughout the year, asks interviewees about their insurance coverage at the time of the interview.

Challenges

Managing a complex data-sharing project involving five federal government agencies was challenging. The agencies had a patchwork of policies for reviewing and publishing data, and differing rules for interagency data sharing agreements, according to project director Davern. The agencies faced challenges in managing both internal processes and interagency relations, as well as financial, legal and technical barriers.

RESULTS

The project produced the following results:

- Four reports describing the methodology and results of the multiple phases of the Medicaid Undercount Project. The reports provide an overview of the Medicaid Undercount Project as well as descriptions of the technical aspects of the methodologies and detailed data tables. They are posted on the SNACC project page on the U.S. Census Bureau Web site.
 - Phase I Research Results: Overview of National Medicare and Medicaid Files
 - Phase II Research Results: Examining Discrepancies Between the National Medicaid Statistical Information System (MSIS) and the Current Population Survey (CPS) Annual Social and Economic Supplement (ASEC)
 - Phase III Research Results: Refinement in the Analysis of Examining
 Discrepancies Between the National Medicaid Statistical Information System
 (MSIS and the Current Population Survey (CPS) Annual Social and Economic
 Supplement (ASEC)
 - Phase IV Research Results: Estimating the Medicaid Undercount in the National Health Interview Survey (NHIS) and Comparing False-Negative Medicaid Reporting in NHIS to the Current Population Survey (CPS)

 A data-sharing agreement between the Census Bureau and the Centers for Medicare and Medicaid Services that can serve as a model for future projects. In January 2006, the project team finalized an interagency agreement between the Census Bureau and Centers for Medicare and Medicaid Services (CMS), which authorized the Census to reuse certain CMS data and to acquire new state-level data from CMS.

FINDINGS

In an article in *Health Services Research*, "An Examination of the Medicaid Undercount in the Current Population Survey: Preliminary Results from Record Linking," project director Michael Davern and his research team described these findings:

- The Current Population Survey (CPS) undercounts Medicaid enrollment compared to the data in the Medicaid Statistical Information System (MSIS):
 - In 2000, administrative records showed Medicaid enrollment of 45.1 million, compared to CPS survey estimates of 26.1 million. The difference of 19.0 million yields a "crude" or unadjusted CPS undercount of 42 percent.
 - In 2001, Medicaid administrative records indicated that 48.6 million people were enrolled in Medicaid, compared to 27.7 million according to CPS survey data.
 The difference of 20.9 million in 2001 yields a "crude" or unadjusted CPS undercount of 43 percent.
- Incorrect responses to survey questions about Medicaid coverage are the largest cause of the CPS Medicaid undercount. However, the impact on rates of uninsurance is not straightforward. The researchers found:
 - While 43 percent of survey respondents who were linked to MSIS data failed to report having Medicaid at same point in the previous year, approximately onequarter of that population reported other sources of health insurance coverage.
 - In 2001, approximately 6.2 million people were coded as uninsured based on CPS responses, but were linked to MSIS data indicating they did have Medicaid. Approximately three million people reported only having Medicaid but were not linked to the MSIS data (suggesting that without the unverifiable enrollment report they would have been uninsured).
 - Response errors were not random. The longer people were enrolled in Medicaid during the previous year, the more likely they were to correctly report having coverage. Enrolled people in lower income brackets were more likely to report Medicaid coverage (and less likely to report some other form of insurance); enrolled people with higher incomes were less likely to report Medicaid (but more likely to report some other type of coverage).

- Discrepancies between the populations included in the CPS and the MSIS account in part for the Medicaid undercount. MSIS and CPS collect data on somewhat different populations and use different definitions of Medicaid, and thus are not directly comparable.
 - To align the data, researchers adjusted the MSIS by subtracting the following groups:
 - People living in institutional or group settings (e.g., nursing homes, prisons, homeless shelters). These individuals are included in the MSIS, but not in the Current Population Survey, which samples only noninstitutionalized people.
 - Low-income children enrolled in the State Children's Health Insurance Program (SCHIP). Some states report all SCHIP enrollees in the Medicaid database, while others do not. To maintain consistency, the researchers subtracted SCHIP enrollees from the MSIS.
 - Individuals receiving partial Medicaid benefits, such as for childbirth only or family planning only
 - Duplicate records, such as for persons receiving Medicaid in two states in one year
 - Subtracting these groups reduced the size of the crude CPS undercount to 32 percent in 2000 and 31 percent in 2001.

In an article in *Health Affairs*, "Understanding The Current Population Survey's Insurance Estimates And The Medicaid 'Undercount' " (Klerman et al.), the researchers used their findings from the linked CPS and MSIS data to further clarify the sources of the Medicaid undercount.

- The "point-in-time" explanation—that CPS respondents answer questions about insurance coverage in terms of their status during the month they were surveyed, rather than during the previous year—does not explain the Medicaid undercount.
 - Only one-quarter of people who—according to Medicaid enrollment files—had
 Medicaid in the survey month but not during the previous year reported they had
 Medicaid. According to the point-in-time theory, the majority of these people
 should have reported coverage.
 - Conversely, people who had coverage during the previous year, but not during the survey month, should not have reported coverage if the point-in-time theory was valid, but almost one-third of them did.
- The long recall period—fourteen to sixteen months—is a larger contributor to response errors. Those whose most recent quarter of Medicaid enrollment was later

in the previous calendar year were more likely to report receiving Medicaid than those with Medicaid only in an earlier quarter.

- The ability of the respondent to accurately report Medicaid coverage was also correlated with duration of coverage. The longer the respondent had received Medicaid during the previous year, the more likely that person was to report having Medicaid.
 - Among those with Medicaid during the survey month, 68.8 percent of those who
 were enrolled in Medicaid in all twelve months reported Medicaid in the Current
 Population Survey.
 - Among those enrolled in Medicaid for only one month, only 32.3 percent did so.

In their report on Phase IV of the Medicaid Undercount Project (available on the U.S. Census Bureau Web site) the researchers present their analysis of the linked data from the National Health Interview Survey (NHIS), which asks about coverage at the time of the interview, and the Medicaid Statistical Information System.

- The adjusted Medicaid undercount in NHIS was 27 percent in 2001 and 22 percent in 2002. This is lower than the adjusted undercount for the Current Population Survey (31.5 percent for 2000 and 31.4 percent for 2001).
- The Medicaid undercount in NHIS is largely attributable to incorrect responses from Medicaid enrollees about their coverage. Among NIHS respondents with records inked to MSIS data indicating they had Medicaid:
 - Some 65 percent reported that they were covered by Medicaid only or Medicaid in combination with other coverage. Almost one-third did not report Medicaid coverage.
 - Some 23.5 percent (in 2001) and 22 percent (in 2002) reported no Medicaid coverage, but other private or public coverage.
 - Almost 10 percent (in 2001) and almost nine percent (in 2002) reported no Medicaid and no other insurance, and were coded as uninsured. This percentage was significantly lower than the 17 percent of CPS respondents who reported no other insurance.
- Enrollees who are older, have higher incomes or have private insurance are more likely to underreport Medicaid coverage. Low-income enrollees, those on other benefit programs, and those who have recently used Medicaid services are less likely to underreport Medicaid coverage.

Limitations

In their article in *Health Affairs* (Klerman et al.), the project team concludes that the linked CPS and MSIS data are the "best available" for understanding the Medicaid undercount, but they also point out several limitations.

- The Medicaid enrollment file is available only with a long lag time. Researchers analyzed data from 2000 to 2002 for this study. However, preliminary analyses from subsequent years suggest there have been no major changes in the pattern of survey response errors.
- About 20 percent of the CPS survey records lack an identifier. This commonly occurs when a survey respondent refuses to disclose a Social Security number. Inability to include these respondents in the study by linking them to administrative data is a possible source of bias.
- The MSIS files also had some deficiencies that could bias study results. About 10 percent of the MSIS cases were missing Social Security numbers and about two percent may have been duplicates. However, the researchers concluded that the data were of high enough quality to be used to investigate the discrepancy between Medicaid enrollees and the enrollment reported in the Current Population Survey.

Recommendations

In their *Health Affairs* article (Klerman et al.), the researchers made the following recommendation:

- Given the limits of the Current Population Survey (CPS), policy-makers should consider whether some other data source might better meet their need for insurance coverage estimates.
 - The National Health Interview Survey is a "natural candidate" with its lower Medicaid error rates. However, its sample size is smaller than the CPS and it does not release data by state.
 - The Census Bureau's very large Current Population Survey, which will include an expanded set of insurance questions, is another candidate. Researchers should study the quality of responses to this survey using the linking methodology developed for the Medicaid Undercount Project.

CONCLUSIONS

In their published articles and reports, the researchers came to the following conclusions:

 When estimating enrollment rates for public programs using survey data, policymakers should recognize that many people who actually have Medicaid, according to administrative data, fail to report it.

- The substantial underreporting of Medicaid in the Current Population Survey (CPS) suggests that the CPS overestimates the rate of uninsurance and the population that is eligible for Medicaid but not enrolled. The magnitude of that overstatement continues to be studied.
- Preliminary estimates from the Medicaid Undercount Project imply that the originally published CPS estimate of 41.2 million people lacking coverage should be lowered by between three and six million people, with a more precise number to be determined through future modeling.
- The main reason that National Health Interview Survey (NHIS) and Current
 Population Survey data differ appears to be related to the reference period used in the
 surveys: the NHIS asks about coverage at the time of the survey, the CPS requires the
 respondent to recall coverage during the previous year. Both surveys indicate that
 accurate reporting among respondents who are not enrolled in Medicaid at the time of
 the interview is difficult.
- More analysis of cross-survey and state-level effects is required to understand the impact that survey design, differing eligibility rules and program administration may have on reporting errors.

Significance to the Field

Understanding differences between enrollment data and survey data will benefit the Census Bureau and other participating agencies by suggesting possible improvements to the Current Population Survey (CPS) and other surveys. It will also engender a better understanding of existing CPS insurance data and provide a more accurate view of Medicaid and other insurance coverage for U.S. residents.

LESSONS LEARNED

Project Director Michael Davern identified the following lessons related to the complexities of developing data-sharing agreements among multiple federal agencies.

- 1. **Set goals that are narrow but flexible.** According to Project Director Michael Davern, "at first, people wanted to do everything and so there was a scope issue. The team had to answer the question of what objectives are the important ones or the project would have derailed." On the other hand, he added, while it is good to get a project to be well-defined up front, it is also important to leave some flexibility. A project can deviate from what was initially planned and still meet its goals. (Project Director/Davern)
- 2. **Don't underestimate the time required to develop a data-sharing agreement, or memorandum of understanding.** The technical and legal challenges of data sharing, especially dealing with conflicting agency confidentiality concerns, had not been considered before. Staff at the Census Bureau and the Center for Medicare and

Medicaid Services put in a lot of extra time to deal with them. (Project Director/Davern)

- 3. **Build on existing interagency relationships to smooth the way for data-sharing agreements.** Because Project Director Davern had worked at the Census Bureau prior to joining the University of Minnesota, and CMS already had a relationship with the Census Bureau, a level of trust had already been established. (Project Director/Davern)
- 4. Make data-sharing part of a job description to ensure that future collaborations are easier. Agencies rarely designate people and/or units to guide the development of the complex interagency agreements that must accompany data-sharing projects. Including the appropriate skill set in a job description will help to institutionalize this work. (Project Director/Davern)
- 5. Maintain a balance of interests among all parties to the interagency agreement. Staff members from the involved agencies knew their own agency requirements, but were also highly sensitive to the policies and rules in place at other agencies. The principal of mutual interest was key. (Project Director, Davern)

AFTERWARD

One of the collaborating federal agencies, the Office of the Assistant Secretary for Planning and Evaluation in the Department of Health and Human Services, supported two additional project phases:

- Phase V to update the original Current Population Survey, using data from the 2004 and 2005 surveys
- Phase VI to examine the Medicaid undercount in the Medical Expenditure Panel Survey. That survey was conducted by the federal Agency for Healthcare Research and Quality and focused on the cost and use of health care and health insurance coverage.

For a brief description of Phases V and VI of the Medicaid Undercount Project, click here.

In 2008, a cross-agency team of researchers sponsored by the Federal Committee on Statistical Methodology, a project of the Office of Management and Budget to improve the quality of federal statistics, examined the Medicaid Undercount Project, along with six other projects that implemented data-sharing arrangements among various federal, state and academic entities. The researchers reported major lessons in an unpublished paper: "Profiles in Success of Statistical Uses of Administrative Data." Also the Federal Committee on Statistical Methodology (FCSM) used many of the elements generated in the SNACC project to create a template that statistical agencies could use to accomplish this kind of work.

In December 2009, after a final closeout meeting, the Medicaid Undercount Project formally ended. Its activities will be integrated in the ongoing survey work of the Census Bureau, which will continue to host the project reports on its Web site.

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APPENDIX

Survey Methodology of the Four-Phase Medicaid Undercount Study

Using the 2000–2002 Medicaid Statistical Information System and the 2001 and 2002 Current Population Survey (CPS) data reporting on the two previous calendar years, researchers conducted the Medicaid Undercount Study in four phases:

Phase I: Testing Phase

Researchers laid the groundwork for the subsequent phases of the project by analyzing the quality of the administrative data in the national Medicaid Statistical Information System (MSIS). Because Social Security numbers are used to identify individuals and were needed to reliably match MSIS records to CPS data, the team validated the numbers in the MSIS files against information from the Social Security Administration.

The MSIS files had some deficiencies that could bias study results: 10 percent of files had missing Social Security numbers and 2.2 percent were possible duplicates (see Limitations). However, the researchers concluded that the MSIS file was of high enough quality to be used to investigate the discrepancy between Medicaid enrollees and reported enrollment in the CPS.

Phase II: Linking the MSIS and CPS

The Center for Medicare and Medicaid Services provided to the Census Bureau extracts of its individual-level monthly data on Medicaid enrollment in the Medicaid Statistical Information System. In its secure data facility and with appropriate protections of privacy, confidentiality and data security, the Census Bureau matched the Medicaid enrollment file to the Current Population Survey data survey records. Records that did not have identifiers allowing the data to be linked were dropped.

The team used the resulting linked file to analyze the discrepancies between the two databases. If an MSIS record showed enrollment in Medicaid in the year of interest and a linked CPS record did not, researchers could be nearly certain that a survey measurement error had occurred in the CPS.

Phase III: Refining the Analysis of the Discrepancies

The research team conducted further analyses to account for remaining discrepancies between MSIS enrollee counts and CPS enrollee estimates.

Phase IV: Evaluating the Medicaid Undercount Using the NHIS

In Phase IV, the research team reused the Phase II linking procedures, replacing the CPS data with data from the Centers for Disease Control and Prevention's National Health Interview Survey (NHIS). The NHIS, a component of the National Center for Health Statistics, is the major source of health information on the U.S. civilian population.

NHIS interviewing is continuous throughout the year. In contrast to the Current Population Survey, which asks about insurance coverage in the previous year, NHIS interviewees are asked about their coverage at the time of the interview, with additional questions about prior year coverage.

In addition to providing explanations for discrepancies between the National Health Interview Survey and the Medicaid Statistical Information System, the Phase IV study allowed researchers to compare their findings to the CPS results. This allowed a more general examination of how survey design and implementation affect the quality of the resulting survey data and the estimates derived from it.

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www.shadac.org. The Web site of the University of Minnesota's State Health Access Data Assistance Center (SHADAC) is funded by the Robert Wood Johnson Foundation to help states monitor rates of health insurance coverage and to understand factors associated with uninsurance. The site contains links to all Medicaid Undercount Project publications.