

**Validating Health Insurance Coverage Survey Estimates:
A Comparison Between Self-Reported Coverage and Administrative Data Records**

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The authors are especially grateful to Pete Rode, Steven Foldes, Barb Schillo, Nina Alesci, Jessie Saul and Ann Kenny for help in compiling the data. Also we would like to thank Cathi Callahan of ARC and Linda Giannarelli of the Urban Institute for their comments on this paper. An earlier version of this paper was presented at the annual meeting of the American Association of Public Opinion Research Annual Meeting in Phoenix, AZ, May 2004 by Kathleen Thiede Call, and at the American Enterprise Institute on April 8th 2005 by Michael Davern. Preparation of this manuscript was funded by Grant no. 038846 from The Robert Wood Johnson Foundation.

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ABSTRACT

We administered a health insurance coverage survey module to a sample of 4,575 adult Blue Cross and Blue Shield of Minnesota (BCBS) members to examine if people who have health insurance coverage self-report that they are uninsured. We were also interested in whether respondents correctly classify themselves as having commercial, Medicare, MinnesotaCare, and/or Medicaid coverage (the four sample strata). The BCBS of Minnesota sample is drawn from both public and commercial health insurance coverage strata that are important to policy research involving survey data. Our findings support the validity of our health insurance module for determining whether someone who has health insurance is correctly coded as having health insurance coverage. While just 0.4% of the BCBS members answered the survey as though they were uninsured, we find problems for researchers interested in using specific self-reported types of coverage. For example, 49% of the people on MinnesotaCare reported having Medicaid/PMAP coverage and 50% reported having commercial coverage. We conclude with a discussion of the study's implications for understanding the Medicaid "undercount" and suggestions for altering the design of surveys of health insurance coverage in order to improve the validity of the types of self-reported coverage.

INTRODUCTION

Knowing who lacks insurance coverage is essential for health services research and health policy analysis. The only way to enumerate this population—as there is no list of

uninsured people throughout the country—is through the use of a general population survey. Many government-sponsored general population surveys—such as the Current Population Survey’s Annual Social and Economic Supplement (CPS-ASEC), the National Health Interview Survey (NHIS), the Medical Expenditure Panel Survey-Household Component (MEPS-HC), the Survey of Income and Program Participation (SIPP) and state-specific surveys—currently collect data on whether respondents have health insurance coverage (see Blewett et al. 2004 for a review). Estimates from these surveys form the core of our comprehensive knowledge about the number and characteristics of people lacking health insurance coverage. These surveys are widely used to simulate various policy options, distribute funding to states for public health insurance programs, and to evaluate whether specific policies have been successful in achieving stated goals (Blewett et al. 2004; Davern et al. 2003).

Because surveys are central to our understanding of health insurance coverage, validation of these measures is essential. In this paper we first examine whether people with known health insurance coverage tend to correctly classify themselves as being insured. Specifically, we look at stratified sample of Minnesota adults age 18 and over enrolled in both public and commercial health insurance products within one specific plan. Surveys generally follow a “conventional” measurement approach in which an exhaustive list of types of health insurance coverage are read and respondents can say yes or no to having that type of coverage. At the end of the series a verification question is asked to determine whether a person who said “no” to all the different insurance types actually considers themselves uninsured.

In addition to examining whether people known to have health insurance coverage accurately self-report *having* coverage, we also explore whether people are able to accurately self-report the *type* of health insurance coverage they have. Health insurance coverage in the

United States is comprised of a complex array of government-sponsored health insurance programs and commercially purchased health insurance products, which may lead to confusion about the specific type of insurance a person has. Furthermore, people can—and many do—have multiple types of coverage, both public and commercial. To measure this complex concept, conventional survey questionnaires usually contain items asking whether respondents have any of the many types of coverage, allowing the respondents to answer affirmatively to more than one type.

BACKGROUND

There are two major challenges to the perceived validity of conventional surveys of health insurance coverage. First, there are multiple surveys for the same geographic area that can and often do produce different estimates of health insurance coverage (Lewis, Ellwood and Czajka 1998). Second, population surveys are thought to “undercount” the number of people enrolled in public health programs according to enrollment data (Blumberg and Cynamon 1999; Call et al. 2002; Lewis, Ellwood and Czajka 1998).

Many surveys collect detailed information on health insurance coverage and much of their data are in the public domain and easily accessible (Blewett et al. 2004). Ironically, it is the very wealth of survey data in this area that has served to undermine their perceived validity. The many surveys that measure health insurance coverage produce different estimates of the rates of uninsurance. Despite many attempts to explain why survey estimates differ—Nelson et al. 2003; Congressional Budget Office 2003; Fronstin 2000; Lewis, Elwood and Czajka 1998; and Farley-Short 2001—this issue has not been settled. There are many potential reasons why survey

estimates can vary, but a rigorous accounting of the relative importance of them has not yet been achieved.

In addition to conflicting estimates coming from various surveys, counts of program participation produced by surveys are consistently different than administrative data. Specifically, surveys usually undercount the number of people enrolled in public programs (e.g., Medicaid, food stamps, welfare) when compared to program enrollment data (Blumberg and Cynamon 1999; Call et al. 2002; Lewis, Ellwood and Czajka 1998). Although the undercounting of public program participation in surveys of health insurance coverage is not important for determining the number of individuals enrolled in Medicaid (enrollment data should be used for this purpose), surveys provide the only estimate of those lacking insurance and the extent to which programs are reaching their target populations. If, as it is often assumed, a significant number of survey respondents with Medicaid coverage report that they do not have coverage, then the survey may overestimate the rate of those who are uninsured and eligible for a program. On the other hand, if survey respondents who are Medicaid enrollees report that they have other types of public (e.g., Medicare) or commercial health insurance, then estimates of these coverage types will be higher than they should be, but the overall uninsured estimate would be unaffected.

The undercount and confusion over the various survey estimates of the uninsured have led to severe criticism of the major survey estimates of health insurance coverage. A particularly pointed example was included in a research report released by the Heritage Foundation in August 2004 to coincide with the Census Bureau's annual release of the CPS-ASEC estimates of the number of uninsured:

“At the very least, the undercounting of Medicaid recipients and the undercounting of insurance coverage...demonstrate that the Census Bureau's figures on the uninsured do

not accurately reflect reality and may lead policymakers and the public to incorrect impressions about the uninsured. Policymakers and policy experts have no excuse for not owning up to this fact and should supply it as a major caveat whenever making use of the Census data on the uninsured.” (Hunter 2004, p. 3).

Another example of this sentiment, extended to health insurance surveys in general, comes from the recent US Congress’ Joint Economic Committee report on the uninsured:

“Methodologies for estimating the number of uninsured suffer from several shortcomings that may lead them to overestimate the number of uninsured. Many respondents are unsure of or forget their insurance status, which makes surveys tend to overestimate the ranks of the uninsured. Those eligible for Medicaid, in particular, may report themselves as uninsured... Indeed, fewer people indicate in surveys that they have Medicaid than are accounted for by the Medicaid program.” (Joint Economic Committee 2004, p. 2)

We use a unique data set of adults enrolled in Blue Cross and Blue Shield of Minnesota (BCBS) that allows us to answer three related research questions that speak to this broader question of the merit of conventional survey estimates of health insurance coverage. First, at what rate do individuals who actually have specific types of commercial and public health insurance coverage report that they are uninsured in surveys? Second, at what rate do individuals with specific types of coverage respond that they are insured, but report having coverage they are not known to be enrolled in (e.g., someone known to be enrolled in PMAP/Medicaid reporting

that they have insurance coverage through an employer)?¹ Although past research has examined accuracy of reporting among public program enrollees in a similar fashion (Klerman 2005; Eberly 2005; Call et al. 2002; Card, Hildreth and Shore-Sheppard 2001; Blumberg and Cynamon 1999) no published report has systematically examined both public and commercial enrollment as we are able to with this data set. Finally and given this information, how can conventional health insurance survey instruments be improved in the future?

DATA AND METHODS

The source of our data is the 2003 Minnesota Adult Tobacco Survey (MATS). This cross-sectional survey was designed to estimate smoking prevalence rates and tobacco-related behaviors and beliefs of BCBS health plan members 18 years of age and older. As part of this analysis we included a health insurance module on the MATS survey that allows us to validate the survey self-reported health insurance coverage against BCBS's administrative records. This module forms the core of the Coordinated State Coverage Survey (CSCS) that has been fielded in at least 12 states over the past ten years (State Health Access Data Assistance Center 2005).

The MATS survey drew a stratified random sample from four major strata of BCBS members: 1) people 18-64 years of age with commercial health insurance coverage (e.g., employer-sponsored and privately-purchased); 2) people 65 years of age and older with commercial insurance coverage (mainly those people with privately purchased Medicare supplemental coverage, but also including seniors with employer-sponsored coverage); 3) MinnesotaCare enrollees, which is a state-sponsored health insurance program for low-income

¹ We base the known enrollment status on the BCBS administrative data. It is possible that there are errors in recording who has coverage and what type of coverage a person has.

adults and children who are not eligible for Medicaid;² and 4) Prepaid Medical Assistance Program (PMAP), which is prepaid Medicaid coverage provided by a managed care organization.³ Three of these strata were further broken down into 18-24 year olds versus other adults, resulting in a total of seven sampling strata.⁴ Members of BCBS were excluded if they lived outside the state of Minnesota. Institutionalized members of BCBS and “dual eligible” Medicaid/Medicare enrollees were excluded from the MATS sample. Table 1 lists the sample size and total population for each stratum.

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The total number of adults enrolled in BCBS health insurance products and eligible to be sampled for the survey was 897,866, or roughly 24% of the adult population in the state of Minnesota. Survey weights were created for the respondents selected in the stratified random sample so that the sample represents the entire BCBS population in the state. Respondents were weighted relative to their probability of selection into the sample. The person-weight is equal to the inverse probability of selection. This weight is adjusted through post-stratification to match known population distributions of a given group. The post-stratifying variables are: 1) gender; 2)

² Over 80 percent of the adult MinnesotaCare enrollees are enrolled in BCBS.

³ Medicaid Prepaid Medical Assistance Plan (PMAP) enrollees are not a random subset of adult Medicaid enrollees in Minnesota. In most cases, developmentally and physically disabled Medicaid-eligible persons are not required to enroll in Medicaid managed care plans – they are allowed to remain in the fee for service sector. Those enrolled in PMAP are allowed to choose from a number of insurance carriers, of which BCBS is just one carrier in the state. As of April 2003, Medicaid in Minnesota had an enrollment of 446,375, of whom 257,605 were in PMAP (58%). Only 17,463 of these cases are enrolled in BCBS. There is also a long list of the types of MA recipients who are not required to enroll in PMAP including people who are blind/disabled, in a county not participating in PAMP are the largest of these groups. For these reasons we carefully interpret our PMAP findings.

⁴ The survey was designed to obtain detailed information on the smoking habits of 18-24 year olds making an oversample of this population appropriate.

the total number of adults in each of the sampling strata; and 3) whether the person lived in the Minneapolis/Saint Paul metropolitan area, another Minnesota metropolitan area, or a Minnesota non-metro area. All reported estimates are derived from the weighted sample.

The survey was administered by Clearwater Research, Inc.; interviewers used Computer Assisted Telephone Interviewing (CATI) software, and no proxy responses were allowed. Only BCBS enrollees with listed telephone numbers were included in the study.⁵ BCBS does not keep careful track of current phone numbers and the MATS survey team were able to find listed numbers for 65% percent of the BCBS records (through using commercial marketing databases and the National Change of Address file). Interviews were conducted between November 2002 and June 2003 and if an individual sampled BCBS member was no longer a resident of a household, follow up contact information was requested.

Of the 4,575 completed cases, 235 were later found to no longer be enrolled in BCBS on the day of the interview. These observations were excluded from the analysis because we could not validate their self-reported insurance status. In addition, 18 cases were removed from the analysis because the respondent did not affirmatively answer “yes” to any type of health coverage but answered “don’t know/not sure” to one or more types of coverage; and eight cases

⁵ Lepkowski et al. (2005) found very little bias between listed and unlisted telephone numbers in a large national random digit dial telephone survey in the variables they studies although they were not specifically interested in health insurance.

were removed because they were under 65 and enrolled in senior supplemental insurance. Our final analysis sample size was therefore 4,314, representing 860,870 BCBS members.⁶

The overall response rate calculated using the American Association for Public Opinion Research's (AAPOR) (RR4) of the survey was 61.5% and the respondent weights were post-stratified to equal total enrollees within each of the BCBS strata by region of the state, age and gender.⁷ All analysis was done using StataSE 8.0 software to correct for the complex survey design (StataCorp 2003).

We have two sources of insurance status information for each respondent. The first is the BCBS health plan administrative data regarding insurance type. For analytical purposes we break the sampling strata into four analytically useful types of coverage: commercial coverage for those under 64 years of age; commercial coverage for those 65 years of age and older (including all the senior supplemental enrollees plus those enrollees over 65 with employer-sponsored coverage); MinnesotaCare coverage; and Medicaid/PMAP coverage.⁸

The second source of coverage data is the respondents' self-reported insurance status from the survey questions. The survey questions begin, "I am going to read you a list of different types of insurance...." As with many health insurance surveys, the interviewer

⁶ Appendix A contains a table comparing the demographics of the BCBS sample of adults we use in this analysis to the statewide Random Digit Dial (RDD) survey of adults that was conducted in parallel as part of the entire 2003 Minnesota Adult Tobacco Survey. The RDD sample size was 5,525 and the AAPOR response rate (RR4) for the RDD component was 51.9%. Compared to the RDD sample the BCBS sample are more likely to be: white, older, live outside of Minneapolis/Saint Paul MSA, slightly less educated, slightly lower income, report being insured, and non-smokers. For more information about the RDD survey see Minnesota Adult Tobacco Survey (2003).

⁷ Using AAPOR response rate (RR4), the response rate was 61% among commercially insured, 66% among Minnesota Care enrollees, 58% among Medicaid enrollees, and 74% among senior supplemental enrollees (AAPOR 2004).

⁸ BCBS data managers report it is highly unlikely that a sample person's coverage type would be inaccurately classified given differences in revenue by sector; however, we have not conducted an independent evaluation of the classification system.

continues by reading an exhaustive list of different types of insurance (i.e., Medicare, Railroad Retirement Plan, Medicaid/PMAP, employer sponsored insurance, etc.). The respondent answers “yes,” “no,” or “don’t know/not sure” to each type of insurance (See Table 2 for the exact question wording). After the list is read through completely, if the person does not report having coverage an uninsurance verification item is asked. Answering “yes” to more than one type of insurance is allowed. If the respondent answers “yes” to having at least one type of health insurance coverage, then any “don’t know/not sure” and refusals in the series were treated as “no” responses.

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RESULTS

Table 3 provides the distribution of self-reported coverage types by the known type of BCBS health insurance plan a person was enrolled in. Only 0.3% of the commercially insured (<65), 0.3% of those on MinnesotaCare, 0.5% of the commercially insured (≥ 65), and 0.6% of those on PMAP/Medicaid self-reported being uninsured. Thus, relying on these self-reports exclusively, over the entire sample we would count 0.4% of this known *insured* population as being uninsured. There are no statistically significant differences between the type of enrollment and the likelihood of self-reporting no insurance coverage.

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Further, focusing on the types of coverage self-reported, only a small percentage of individuals under age 65 known to have commercial coverage report having public coverage

(Medicare (4.5%), MinnesotaCare (1.8%), or Medicaid/PMAP (2.1%)). However, their relative impact on the number of people estimated to be in public coverage using the survey responses is quite large because the commercial enrollees under age 65 are the largest population of people included in the survey. In contrast, 49.9% of individuals known to have MinnesotaCare self-report having commercial coverage, 6.8% report Medicare, and 48.8% self-report having Medicaid. In spite of the large percent of those on MinnesotaCare reporting other types of coverage, the relative impact on the number estimated to have those types of coverage is minimal except for the number estimated to have Medicaid.

Fully 99.4% of respondents under age 65 known to be enrolled in commercial health insurance reported being enrolled in commercial health insurance coverage, compared to 87.9% of those enrolled in MinnesotaCare and 84.3% of those enrolled in PMAP/Medicaid. Among those people age 65 or older and known to have commercial coverage, 90.7% report having commercial coverage and 98.3% report having Medicare (which they likely do have in most instances).

Table 4 shows the percent of people who report either the type of coverage they are known to be enrolled in and/or the type of coverage they are likely to be enrolled in (i.e. the BCBS commercial insurance enrollees age 65 and older who are presumed to be enrolled in Medicare). For respondents under age 65 with commercial insurance, 87.4% of these survey respondents report exclusively having commercial insurance. Among those age 65 and older with commercial insurance, 71.7% report exclusively having both Medicare and commercial insurance. Finally, for Medicaid/PMAP enrollees 34.5% report exclusively having Medicaid/PMAP coverage, and 24.5% of MinnesotaCare enrollees report exclusively having MinnesotaCare.

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Column 2 of Table 5 provides the weighted count of those people known to be enrolled in commercial insurance under age 65, commercial insurance age 65 and older (who are likely to be enrolled in Medicare), MinnesotaCare, and Medicaid/PMAP. Column 3 provides the weighted count of respondents who self-reported having that type of coverage regardless of their known coverage type. That is, this column provides the count of coverage types that would be generated from a general population survey estimate. The fourth column gives the percent of respondents self-reporting that type of insurance who are known to be enrolled. As seen, 96.0% of the total self-reported count of commercial BCBS enrollees under 65 is made up of people known to be enrolled. For those commercial enrollees 65 years of age and older, 99.9% of the total count of those self-reporting Medicare and commercial coverage is made up of those known to be enrolled.

On the other hand, only 20.7% of those self-reporting Medicaid/PMAP were known to be enrolled and 66.8% of those self-reporting MinnesotaCare were known to be enrolled. In both cases clearly a considerable percentage of the self-reported count consists of people who are not known to be enrolled in Medicaid/PMAP or MinnesotaCare, respectively.

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DISCUSSION

Our experiment conducted on Minnesota adult enrollees in BCBS indicates that the estimates of uninsurance are minimally biased upward as a result of counting people who have

health insurance coverage as being uninsured. Specifically, only 0.4% of our adult respondents with coverage self-reported they are uninsured. In addition, we find that respondents do well reporting their “correct” insurance coverage type, although the degree of accuracy varies by the type of insurance coverage a person is enrolled in. The vast majority of respondents answered affirmatively to having the type of coverage they were known to be enrolled in, but the percent exclusively answering that “correct” coverage ranged from 99% of commercial enrollees under 65 to 84% of Medicaid/PMAP enrollees. Our analysis also exposes a large—and unexpected—impact of respondents who are not known to be enrolled in Medicaid/PMAP and MinnesotaCare for the self-reported counts of the number of people enrolled in these two programs. This finding has implications for the “Medicaid undercount” literature and how to think about different survey estimates and Medicaid enrollment. Finally, our results suggest the need for a discussion of the design of health insurance survey items. The conventional health insurance module used in this survey appears effective at measuring uninsurance and enrollment in commercial coverage. But there are clearly concerns for measuring enrollment in Medicaid or MinnesotaCare, an SCHIP-like state program, and we discuss our results below within the context of relevant literature and debates in the field.

Effect on Estimates of the Uninsured

We begin by comparing our findings to the results of other experimental studies that have examined bias in uninsurance estimates due to people with coverage incorrectly reporting they are uninsured (Klerman 2005; Eberly 2005; Blumberg and Cynamon 1999; Call et al. 2002).

Blumberg and Cynamon⁹ found that 4.5% of the parent proxies for a sample of Minnesota children on Medicaid falsely report no insurance coverage. The Call et al. (2002) study, which analyzed Minnesota Medicaid enrollees of all ages, found that 4.1% of Medicaid enrollees reported not having any insurance coverage. The Klerman et al. (2005) study found 21.7% of those cases they were able to match between the CPS-ASEC and Medi-CAL enrollment data incorrectly answered the survey as though they were uninsured. Finally, a study by Eberly (2005) et al. in Maryland found that 4.5% of the Medicaid enrollees they contacted over the telephone answered the survey as though they were uninsured.

This large range from the seemingly negligible 0.4% in the current study to the high 21.7% in the study by Klerman et al. (2005) may be due to different methodological approaches. There are good reasons to believe the Klerman et al. (2005) result to be an outlier, with 21.7% of the adults 15-64 in enrolled in Medi-CAL answering the CPS-ASEC survey as though they were uninsured. Specifically, the CPS-ASEC produces the highest rate of all-year uninsured people, and in fact the CPS-ASEC all-year uninsured estimate is higher than some other national survey estimates of the number of people uninsured at a specific point-in-time (Congressional Budget Office 2003). The CPS-ASEC asks whether someone had Medicaid (or other types of insurance coverage) at any time during the last calendar year, with the interviews conducted in March. As shown by the Klerman et al. (2005) analysis, there is a significant impact of the length of the reference period for the survey question on the answers provided in the CPS-ASEC. Those enrolled in Medicaid only in the first few months of the reference period and not again during the rest of the year were the least likely to report having Medicaid. Thus the CPS-ASEC high

⁹ The results of three studies are reported by Blumberg and Cynamon. Only the results from the first study conducted in Minnesota are included here. The uninsurance estimates from the second and third studies are omitted from this comparison as they are subject to considerable uncertainty as the authors thoroughly discuss.

uninsurance error rate of the Klerman et al. (2005) study is likely to be driven to some extent by this reference period issue.

Likewise, our 0.4% result could be an outlier due to certain parameters of our study: we did not allow for proxy interviews (and most other health insurance surveys do allow for proxy responses), we only interviewed adults, we only sampled BCBS adults with listed telephone numbers, and the disabled on Medicaid are not enrolled in PMAP. There may also be something unique about the BCBS of Minnesota population that would lead them to be much more aware of their insurance status than other insured people throughout the country.

Findings of bias in the uninsurance rates due to people with insurance coverage answering the survey as though they are uninsured should be taken with caution. The upward bias in the uninsurance rate is likely to be offset (at least in part) by the potential corresponding tendency for uninsured people to report having coverage. Unfortunately this bias in the opposite direction is much harder (if not impossible) to validate. We think that some uninsured people are likely to respond to the survey as though they have insurance coverage given how health insurance questionnaires are designed, providing many opportunities to answer “yes, I have coverage” even if the respondent does not have coverage. Two likely reasons for this outcome include: 1) “satisficing” (Holbrook, Green and Krosnick 2003); and 2) errors favoring a report of coverage when the respondent is in fact not covered.

“Satisficing” occurs when respondents choose a socially acceptable response (Holbrook, Green and Krosnick 2003). The odds of it occurring, in general, increase with the number of items devoted to a topic. Having health insurance is a socially acceptable answer, and uninsured people may eventually feel pressured to answer “yes” to having a type of coverage as they are specifically asked about each type. In addition, it only takes one positive response to a question

about health insurance type for a respondent to be considered insured; one coding error or misunderstood question during the health insurance survey module could lead to the uninsured person being coded as insured. Whether it is satisficing or a coding error, there are likely to be coverage responses recorded for respondents who do not have health insurance coverage. Thus we hypothesize that the bias in the uninsurance rate that we observed in this paper (and has been observed elsewhere) is likely offset by insurance coverage responses among uninsured respondents. The Urban Institute's TRIM simulation model actually accounts for this likely phenomenon in their adjustment for the Medicaid undercount (Giannarelli et al. 2005). Not only do they impute CPS-ASEC respondents reporting that they are uninsured to have Medicaid or SCHIP but they also impute those reporting coverage to not have coverage.

Partially Correct Responses

To answer the question of how well people are able to accurately report the type of insurance coverage they have, we found that people are generally able to place themselves appropriately, but the overall rate varies by insurance coverage type. The percentage of people who answer correctly varies from 99.4% of those adults under age 65 who are commercially insured to 84.3% of those who have Medicaid/PMAP. Although lower than the commercially insured, it is important to remember that the vast majority of Medicaid enrollees know they have Medicaid (84.3%). This is consistent with Card, Hildreth and Shore-Sheppard (2001), Klerman et al. (2005) and Eberly (2005). The estimates from these studies for correctly reporting Medicaid coverage ranged is from 87.5% (Eberly et al. 2005) to 72.3% (Klerman et al. 2005) of those on Medicaid responding that they have Medicaid. Again, lower accuracy in the Klerman

study is likely attributable to the reference period used in asking about health insurance coverage.

These findings are in contrast to Call et al. (2002) who found that 54% of Medicaid enrollees reported having Medicaid. However, the Call et al. (2002) study allowed only one “yes” response to a type of coverage and imposed a hierarchy of insurance status so that those responding “yes” to Medicare were not asked the Medicaid survey item. As shown in the analysis of the BCBS data (see Table 3) a fair number of Medicaid enrollees—when asked both the Medicaid and Medicare question—answer yes to both. Therefore our finding that 85% of Medicaid respondents reported having Medicaid would likely be consistent with Call et al. (2002) had they used a conventional health insurance question module.

The second lowest rate of accurately reporting known coverage was found for MinnesotaCare respondents, 88.8% of whom correctly self-report their coverage. Although this is much lower than the rate for commercial coverage (under age 65 years), it is virtually the same rate found by Call et al. (2002) for their MinnesotaCare enrollees. Greater accuracy among MinnesotaCare enrollees is expected as they pay a monthly sliding scale premium to remain enrolled in the program. Finally, BCBS enrollees age 65 or older—having commercial coverage and likely having Medicare—are more likely to report Medicare (98%) than commercial insurance coverage (91%).

Following from our findings we conclude that survey instruments employing a conventional point-in-time measure of health insurance coverage and that use a “check all that apply” approach to health insurance coverage measurement – like the MEPS-HC, the CSCS (the survey module validated in this paper), NHIS, and SIPP – do a good job of gauging whether an insured person has health insurance coverage. Furthermore, the rate of falsely reporting

uninsurance in our study was low. On the other hand, given the large number of people enrolled in public programs that report having the wrong type of public coverage raises the issue of whether estimates of specific public program are possible. Follow-up analysis should be conducted on whether the federal surveys employing the conventional health insurance survey module demonstrate the same pattern.

Our expectation is that other federal surveys with point-in-time measures would likely have significantly less people answering the wrong type of public coverage than we found. This expectation is based on two things: the federal surveys actually ask respondents during face-to-face interviews to show their insurance card (e.g., Division of Health Interview Statistics 2003; Cohen 1997). The NHIS, and the MEPS-HC are exclusively face-to-face and the CPS-ASEC and SIPP are mainly phone with some surveys conducted face-to-face (see footnote 10 for details). A second possible explanation of our findings is that many individuals and families may be confused about their program of enrollment either because they move between programs as their circumstances (e.g., income) change, or because they may sign up for an SCHIP-like program but instead meet the eligibility criteria and become enrolled in Medicaid. In Minnesota, one card is issued to all public program enrollees regardless of their enrollment in Medicaid or MinnesotaCare.

Medicaid Undercount

Although our Medicaid analysis is limited to a small sample of Medicaid respondents in Minnesota, it demonstrates the significant impact on estimates of Medicaid coverage resulting from self reports of Medicaid among those in commercial plans who are not known to be enrolled in Medicaid. This is a unique and unexpected contribution of this study. In a typical

survey, an analyst would total up the number of people who answer affirmatively to having Medicaid to get the number of people estimated to be on Medicaid. In our study, only 21% of this total number would be made up of those people who are actually known to be enrolled. Those who were actually known to be enrolled in MinnesotaCare and Medicaid/PMAP accounted for 67% and 21% of the survey weighted count of self-reported MinnesotaCare and Medicaid coverage, respectively. In contrast, those actually known to be enrolled in commercial insurance coverage products made up 96-99% of the commercial enrollment count from respondent self-reports.

Our findings have puzzling implications for undercount research in that the “undercount”, as conventionally measured, is probably underestimated. In other words, the difference between the survey count of those enrolled in Medicaid is likely to be significantly lower after taking out those who claim to have Medicaid but are not known to be enrolled. In our study it only takes a relatively small percentage of “yes” responses to Medicaid from those people known to be enrolled in commercial programs to impact the self-reported Medicaid estimates. In order to get an idea of how our estimate of Medicaid false-positives would impact a typical statewide population survey counting the number of people enrolled in Medicaid, we would need to adjust the BCBS population to resemble the distribution of coverage within the adult population of Minnesota.

The MinnesotaCare coverage in this BCBS sample is 2.7 times larger than is found in the full adult population in Minnesota, and adult Medicaid/PMAP coverage in the BCBS sample is only half what it is in the general adult population. Thus, it is misleading to directly use our BCBS-based estimate of the effect of those who are not known to be enrolled in Medicaid/PMAP on the Medicaid count from the survey. To obtain a rough estimate of the

impact on a general statewide adult population survey, we use administrative data on adult enrollment in Medicaid and MinnesotaCare and combine this with the most recent estimates of the proportion of the adult population (under age 65) with commercial coverage, with no insurance and, finally, the total Medicare population.¹⁰ Even with these statewide population adjustments, we would still likely find that actual Medicaid/PMAP enrollees made up only 50% of the total Medicaid count from the survey.

Respondents known to have MinnesotaCare coverage make up the largest percentage contribution to the overall number of self-reported Medicaid responses. Forty nine percent of those respondents enrolled in MinnesotaCare report that they have Medicaid. Nine percent of those known to be enrolled in commercial insurance and age 65 and older responded yes to having Medicaid. While only 2% of commercial enrollees under age 65 responded that they have Medicaid, the absolute contributions to self-reported Medicaid count is significant because it is the largest group in the survey.

Where does this leave us in understanding the Medicaid “undercount” issue? There are four likely sources of the error leading to the undercount. The first source, under-reporting of Medicaid, is one we assessed in this analysis: 15.7% of the Medicaid/PMAP population we surveyed did not report having Medicaid; of this 15.7%, 96% answered some other type of coverage. A second source is survey sample coverage error which occurs when Medicaid recipients are systematically not included in the survey sample for some reason. This can happen in a phone survey, for example, because Medicaid respondents are more likely to be without a telephone than the general population (Davern et al. 2004). It could be happening in surveys with area probability sample designs—such as the CPS-ASEC or the NHIS—if people with

¹⁰ We use the statewide RDD survey conducted in conjunction with the MATS survey for these coverage estimates (Minnesota Adult Tobacco Survey 2003).

Medicaid are systematically missed by the sample design (i.e., the sampling frame for these surveys may be more likely to exclude Medicaid enrollees for some reason).¹¹

The third possible explanation is that Medicaid participants are more likely to refuse to participate in surveys than those who are not enrolled in Medicaid, and the post-stratification adjustments that population surveys use to adjust for differential non-response (e.g., see Gelman and Carlin 2002) may not fully capture this tendency. The final potential source of undercount error is some sort of systematic over-reporting of Medicaid-enrolled individuals in the enrollment files. For example, including institutionalized people in the administrative data count who are not eligible to be in household surveys, or not completely de-duplicating enrollment databases prior to the count. Although all four errors are likely to play a role, more research is needed to understand what is causing the mismatch between survey counts of Medicaid enrolled people and administrative data enrollment counts.

CONCLUSION

Our experiment found only a 0.4% upward bias in the uninsurance estimate for people over 18 years of age enrolled in BCBS of Minnesota due to insured people answering the survey items as if they are uninsured. Given this finding, the severe criticism that has been leveled against survey estimates of the uninsured (that use conventional health insurance survey measurement) by Hunter (2004) and the Joint Economic Committee (2004) is overblown.

¹¹ Most surveys have trouble enumerating low-income populations such as Medicaid recipients. Surveys that have the resources to conduct thorough sample coverage evaluations such as the CPS-ASEC, show that there are sample coverage problems (U.S. Census Bureau 2003). The policy implications of the coverage problems have also been examined for the decennial census (PriceWaterhouseCoopers 2001). Medicaid coverage is not explicitly examined but it is correlated with many of the documented coverage problems and could contribute to the Medicaid undercount.

Survey instruments employing a conventional point-in-time measure of health insurance coverage and that use a “check all that apply” approach to health insurance coverage measurement do a good job of gauging whether an insured person has health insurance coverage. However, the large number of people enrolled in public programs that report having the wrong type of public coverage raises the issue of whether policy-useful survey estimates of specific public programs such as SCHIP are possible. Follow-up analysis should be conducted on whether the federal surveys employing the conventional health insurance survey module demonstrate the same pattern.

In closing we note that the existence of a Medicaid undercount in surveys does not mean that there is a large direct bias in survey estimates of the uninsured. The number of people reporting no health insurance coverage when they are known to have it is rather small in our study and in other studies examining point-in-time survey instruments (Blumberg and Cynamon 1999; Call et al. 2002). Many more people with Medicaid and MinnesotaCare (a SCHIP like program in Minnesota) insurance coverage answer that they have a different kind of insurance coverage than the one they are known to be enrolled in (Klerman et al. 2005; Call et al. 2002). This is potentially troubling for policy researchers interested in modeling the enrollment or potential enrollment of specific public programs (such as MinnesotaCare, SCHIP, and Medicaid) that survey instrument designers should attempt to improve. Finally, we add a cautionary note that just because we know that some people who have insurance coverage answer the survey as though they are uninsured, this does not mean that survey estimates of the uninsured are biased. To know the true impact of misreporting on bias in the uninsurance estimates we would also need to know how many uninsured people incorrectly answer the survey as though they are insured.

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Appendix A

Table A-1: A Comparison of the Blue Cross and Blue Shield of Minnesota Sample to the General Statewide Random Digit Dial Component of the 2003 Minnesota Adult Tobacco Survey

Demographic Characteristics	Random Digit Dial Component [^]	BCBS of MN Component ^{^^}
Gender		
Male	49.7%	46.5% *
Female	50.4%	53.5% *
Race		
Black	1.8%	0.1% ***
Hispanic	1.9%	0.8% **
White, American Indian, Other	96.3%	99.1% ***
Age		
18 to 24	12.5%	10.3% **
25 to 34	17.1%	10.2% ***
35 to 44	20.7%	17.8% *
45 to 54	20.9%	22.7%
55 to 64	13.4%	15.4% *
65plus	15.4%	23.6% ***
Education		
0-12, no diploma	5.9%	5.6%
HS diploma/GED	27.1%	29.8% *
Some college/AA	30.9%	31.5%
College graduate	28.0%	24.5% **
Some graduate school	8.2%	8.6%
Income		
<\$15,000	5.8%	5.6%
\$15,000-\$24,999	13.5%	14.8%
\$25,000-\$34,999	12.6%	14.7% *
\$35,000-\$49,999	17.9%	19.4%
\$50,000-\$74,999	22.3%	20.9%
\$75,000 plus	27.9%	24.6% *
Insurance Status		
Uninsured	5.8%	0.4% ***
Smoking Status		
Current	18.0%	12.0% ***
Former	26.2%	30.6% ***
Never smoked	55.8%	57.4%
Been to health professional In last year		
Yes	92.3%	94.5% **
No	7.7%	5.5% **
Health status		
Fair or poor	9.8%	7.9% *
Excellent, very good, or good	90.2%	92.1% *
MSA		
Minneapolis/Saint Paul MSA	59.6%	43.5% ***
Other MN MSA	10.5%	14.1% ***
Non-MSA	29.9%	42.4% ***

* p<0.05, ** p<0.01, *** p<0.001

[^] Source: Minnesota Adult Tobacco Survey, Statewide Random Digit Dial Component 2003

^{^^} Source: Minnesota Adult Tobacco Survey, BCBS Listed Frame Component 2003

Table 1: Blue Cross and Blue Shield of Minnesota Sample Records Used, Completed Surveys, and Total Population

Sampling Strata	Listed Phone Numbers Sampled	Surveys Completed	Weighted Population
Commercial (25 and over)	2,388	1,316	590,258
MinnesotaCare (25 and over)	1,953	1,115	32,380
Medicaid/PMAP (25 and over)	2,070	1,214	11,458
Medicare Supplemental	508	315	163,306
18-24 year olds	1,287	615	100,471
Total	8,206	4,575	897,873

Table 2: 2003 Minnesota Adult Tobacco Survey Health Insurance Question Series

<p><i>I am going to read you a list of different types of insurance. Please tell me if you currently have any of the following.</i></p> <ul style="list-style-type: none">• Do you have Medicare?• Do you have a Railroad Retirement plan?• Do you have ChampUS, Tricare, Veteran's Affairs or military health care for a service connected disability?• Do you have Medical Assistance, Medicaid, PMAP (Prepaid Medical Assistance Plan), also known as Minnesota Health Care Programs?• Do you have General Assistance Medical Care, or GAMC?• Do you have insurance through MinnesotaCare (a state-sponsored program that offers health insurance as a subsidized rate)?• Do you have insurance through the Minnesota Comprehensive Health Association or high risk pool insurance (also known as MCHA)?• Do you have health insurance through your work or union?• Do you have health insurance through someone else's work or union?<ul style="list-style-type: none">• If under 25, through parent's work or union?• If under 25, through school, college, or university?• Do you have health insurance bought directly by you?• Do you have health insurance bought directly by someone else?
<p>IF RESPONDENT ANSWERED NO TO ALL OF ABOVE,</p> <p>According to the information you provided, you do not have health insurance coverage. Does anyone else pay for your bills?</p>
<p>IF RESPONDENT ANSWERED YES, And who is that? (PROMPT ONLY IF NECESSARY)</p> <p>Repeat options from above series</p>

Table 3: Type of Coverage Known to be Enrolled in, by Self-Reported Insurance Coverage Type and Uninsured

Type of Known Coverage	Self-Reported Coverage Type									
	Commercial	Std Error	Medicare	Std Error	Minnesota-Care	Std Error	Medicaid	Std Error	Uninsured	Std Error
Commercial (<65 years)	99.4%	0.19%	4.5%	0.53%	1.8%	0.33%	2.1%	0.36%	0.3%	0.14%
Commercial (≥ 65 years)	90.7%	1.42%	98.3%	0.60%	1.4%	0.56%	8.5%	1.35%	0.5%	0.34%
MinnesotaCare	49.9%	1.69%	6.8%	1.04%	87.9%	1.27%	48.8%	1.69%	0.3%	0.21%
Medicaid/PMAP	32.1%	2.43%	11.6%	1.83%	28.3%	2.27%	84.3%	1.88%	0.6%	0.20%

Source: 2003 Minnesota Adult Tobacco Survey, n=4,314 Respondents

Note: Respondents can check more than one type of coverage so row percentages total more than 100%.

Table 4: Respondents Who Report Known Type or Type They are Likely to Have Only, by Type of Coverage Known to be Enrolled In

Type of Known Coverage	Percent Reporting Known or Likely Enrolled Type Only	Standard Error
Commercial (< 65 years)	87.4%	0.87%
Commercial (≥ 65 years)		
Medicare and Commercial	71.7%	2.19%
MinnesotaCare	24.5%	1.35%
Medicaid/PMAP	34.5%	2.29%

Source: 2003 Minnesota Adult Tobacco Survey, n=4,314

Note: Commercial ≥65 are enrolled in commercial coverage and are likely to have Medicare but are not known to be enrolled.

Table 5: Total Count of Known Enrollees, Total Count from Self-Report, and Percent of Self-Report Count that are Known Enrollees by Insurance Coverage Type

Type of Coverage	Count of Known Enrolled	Count From Self-Report	Percent of Self-Report Known Enrolled or Likely Enrolled	Standard Error
Commercial (<65 years)	602,792	623,961	96.0%	0.20%
Commercial (≥65 years)				
Medicare	202,381	199,121	99.9%	0.05%
Commercial	202,381	183,874	99.8%	0.06%
Medicare and Commercial	202,381	181,765	99.9%	0.05%
MinnesotaCare	40,380	53,071	66.8%	3.08%
Medicaid/PMAP	15,316	62,290	20.7%	1.51%

Source: 2003 Minnesota Adult Tobacco Survey, n=4,314

Note: Commercial ≥65 are enrolled in commercial coverage and are likely to have Medicare but are not known to be enrolled.