Implications of the Medicaid Undercount in a High-Penetration Medicaid State

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Research Objective. This study investigates the impact of misreporting by Medicaid recipients on estimates of the uninsured in Louisiana, and is based on similar work by Call et al. in Minnesota and Klerman, Ringel, and Roth in California. With its unique charity hospital system, culture, and high poverty, Louisiana provides an interesting and unique context for examining Medicaid underreporting.

Study Design. Results are based on a random sample of 2,985 Medicaid households. Respondents received a standard questionnaire to identify health insurance status, and individual records were matched to Medicaid enrollment data to identify misreporting.

Data Sources. Data were collected by the Public Policy Research Lab at Louisiana State University using computer-assisted telephone interviewing. Using Medicaid enrollment data to obtain contact information, the Louisiana Health Insurance Survey was administered to 2,985 households containing Medicaid recipients. Matching responses on individuals from these households to Medicaid enrollment data yielded responses for 3,199 individuals.

Conclusions. Results suggest relatively high rates of underreporting among Medicaid recipients in Louisiana for both children and adults. Given the very high proportion of Medicaid recipients in the population, this may translate up to a 3 percent bias in estimates of uninsured populations.

Implications. Medicaid bias may be particularly pronounced in areas with high Medicaid enrollments. Misreporting rates and thus the bias in estimates of the uninsured may differ across areas of the United States with important consequences for Medicaid funding.

Funding Source. Louisiana Department of Health and Hospitals.

Key Words. Health insurance, uninsured, Medicaid bias, survey methods

Scholars and state health administrators have long noted differences in administrative enrollment records and survey-based estimates of Medicaid populations. In Louisiana, the 2005 Current Population Survey estimates

Medicaid enrollments for children (under 19 years old) at 35 percent or 404,730 children, while state administrative data place enrollments at over 51.5 percent or 665,454 children.¹ Overall nonelderly Medicaid enrollment in Louisiana is 836,442 or 21.2 percent of the population according to state administrative records, but is 633,070 or 15 percent of the population based on CPS estimates. Such gaps—referred to as the Medicaid undercount—are noteworthy in their own right, but are of primary interest because of their potential to create an upward bias in survey-based estimates of the uninsured.

Research reported by the American Enterprise Institute and conducted by the Actuarial Research Corporation suggests that—due largely to the underreporting of Medicaid enrollment in survey research—the 2003 CPS estimates of the uninsured may be inflated by as many as 9 million persons (O’Grady 2005). While the size of this estimate has been subject to dispute (Davern 2005; Giannerelli 2005), the fact that general population surveys underestimate Medicaid enrollments and that this underreporting has the potential to impact estimates of uninsured populations is not (Lewis, Ellwood, and Czajka 1998; Blumberg and Cynamon 1999; Call et al. 2002). Moreover, Medicaid misreporting may be becoming worse over time (Ku and Bruen 1999; Blewett et al. 2005; Klerman, Ringel, and Roth, 2005).

Recognizing these gaps, most states now commission their own state-level surveys to estimate uninsured populations.² Subsequent uninsured estimates are generally lower than CPS estimates reflecting important differences in methodology, including differences in question wording, population coverage and sampling, nonresponse bias, and data processing (Call, Davern, and Blewett 2007). The CPS, for example, gauges uninsured status by identifying respondents who have been uninsured for the previous year, while most state-level surveys (including the surveys described below) are “point-in-time” estimates reflecting current insurance status. Studies such as those by the Actuarial Research Corporation and Urban Institute, likewise, model uninsurance in terms of year-long (rather than point-in-time) uninsured status. Moreover, most state-level surveys use random digit dialing leaving out households without telephone service and potentially underestimating unin-

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sured populations.³ Even accounting for these differences, state-level surveys are subject to individual misreporting which, in the aggregate, tends to underestimate Medicaid populations and overestimate uninsured populations.

While there has been a notable increase of research in this area, the causes and consequences of Medicaid underreporting—on estimates of uninsured populations—are not yet fully understood (Call et al. 2002; Eberly, Pohl, and Davis 2005; Klerman, Ringel, and Roth 2005). To the extent that Medicaid underreporting reflects individuals currently counted as not having health insurance, estimates of uninsured populations may be significantly inflated (Callahan 2005; Giannerelli 2005). However, if these cases are reported as having private insurance, estimates of uninsured populations may be largely unaffected by Medicaid undercounts (Call et al. 2002; Klerman, Ringel, and Roth 2005; Peterson and Grady 2005).

According to Urban Institute estimates, general population surveys may overestimate uninsured populations by as much as many as 3.6 million people (Lewis, Ellwood, and Czajka 1998; Giannerelli 2005). Estimates derived by the Actuarial Research Corporation are even larger, suggesting that the CPS estimated 45 million uninsured Americans may be closer to 36 million. However, the simulations used by the Urban Institute and the Actuarial Research Corporation have not been universally embraced, and many scholars believe such adjustments overcorrect for the Medicaid undercount (Call et al. 2002; Davern 2005; Klerman, Ringel, and Roth 2005). Studies directly comparing general population survey estimates of the uninsured to administrative data have been fewer in number, and have yielded mixed results (Call et al. 2002; Davern 2005; Klerman, Ringel, and Roth 2005). The common denominator has been that estimates of the effect of Medicaid underreporting on uninsured rates are much smaller than the simulated measures would indicate, largely because misreported cases are only partially attributed as uninsured.

Comparing self-reported insurance status among a sample of Minnesota Medicaid enrollments, Call et al. (2002) find substantial misreporting of Medicaid enrollment, but negligible effects (approximately 0.26 percentage points) on estimates of the uninsured.⁴ Matching enrollment data to individual CPS data, Klerman, Ringel, and Roth (2005) find more substantial Medicaid underreporting in California and statistically and substantively significant effects on estimates of the uninsured. Medi-Cal enrollment increases by about 40 percent when adjusting for underreporting, and the estimated percent of uninsured Californians drops by approximately 2.7 percentage points for adults and 6.9 percentage points for children.⁵ Both studies note the limitations of their data and importance of population factors that cannot be captured in a

single state study. A study in Maryland found a comparable 25 percent undercount when using a survey modeled after the CPS questionnaire, though changes in question wording to better capture state specific programs significantly reduced the undercount (Eberly, Pohl, and Davis 2005).

The issue of the Medicaid undercount also plays a role on state-level estimates of the uninsured and comparisons of uninsured rates across states. The Medicaid population, degree of undercount, and impact of the undercount on estimates of the uninsured may vary significantly across individuals and geographic boundaries. Klerman, Ringel, and Roth (2005) find higher rates of misreporting among groups with lower coverage rates reflecting a “stigma-based” explanation of the undercount. Research examining parish-level differences within Louisiana found that the undercount was negatively related to parish-level per capita income and positively related to the percent of the parish population receiving public assistance (Goidel et al. 2005). One might subsequently suspect that Medicaid underreporting would be more frequent in states and geographic areas with a larger proportion of the population on Medicaid and/or public assistance, and that the effects of the undercount on estimates of the uninsured would vary according to the size of the Medicaid population.

Recent studies by the State Health Access and Data Assistance Center at the University of Minnesota have focused on Minnesota, California, Pennsylvania, and Florida (Blewett et al. 2005). The percent of Medicaid recipients misreporting their insurance status varies from 3.3 to 10.5 percent; while the effect on uninsured rates varies from 0.1 to 0.9 percent. We add to this literature by utilizing the Call et al. (2002) methodology to examine self-reported insurance status among a random sample of Louisiana Medicaid households as identified by state administrative data. We differ from prior research in two important ways. First, the survey questionnaire employs a household approach in which respondents are asked whether anyone any in the household has health insurance provided by an employer, former employer, someone not currently in the household, Medicare, Medicaid, LaCHIP, military insurance, or insurance purchased on their own. This contrasts with the Call et al. (2002) work, which utilized a person-level approach in which respondents are asked about insurance coverage for each individual. Prior research indicates that a household-level approach yields higher estimates of uninsured populations (Hess et al. 2001).⁶ Second, our methodology also requires using the exact LHIS survey instrument, which does not allow us to identify a particular member of the household. Asking about a particular member of the household may inform the respondent that they have been identified in a nonrandom

manner generating both sample selection and response bias. Third, our matching methodology also deviates from studies matching based on social security number such as Klerman, Ringel, and Roth (2005) and Card, Hildreth, and Shore-Sheppard (2004).

Studies linking survey reports to Medicaid enrollment data remain relatively rare due to limitations in data access. In the present study, we make use of state administrative data provided by the Louisiana Department of Health and Hospitals to link survey reports directly to Medicaid enrollments, and add to this growing literature. As a southern state with high Medicaid penetration, Louisiana provides an important context for this investigation. With over half of its children (0–18) and 6.4 percent of adults (19–64) enrolled in Medicaid or LaCHIP, there is potential for a larger bias due to the undercount in Louisiana even if misreporting is comparable with other states. If misreporting is more common in high-penetration Medicaid areas, bias due to the undercount may be more substantial in Louisiana and other similar states than has been reported in the existing research.

METHODS

The Louisiana Health Insurance Survey was administered to 2,985 randomly selected Louisiana Medicaid households drawn from Louisiana Department of Health and Hospital administrative records. Each of the households includes at least one Medicaid recipient. The survey administered was a questionnaire identical to that used for a sample of 10,000 randomly selected Louisiana households as part of the 2005 Louisiana Health Insurance Survey.⁷ State administrative records were collected in May 2005, and the Medicaid household survey was conducted in June 2005.⁸ The response rate for the survey was 37 percent and the cooperation rate was 54 percent.⁹ While the response rate is not ideal, it does fall within the norm of academic survey research (Kosicki, Marton, and Lee 2003), reflects a more general decline in response rates over time (Curtin, Presser, and Singer 2005), and is consistent with similar studies. Call et al. (2006) report a 41.7 percent response rate in California, 29.8 percent in Florida, and 55.9 percent in Pennsylvania. Even so, the response rate remains a limitation of the study.

The 2,985 Medicaid household respondents provided information on 9,426 individuals. However, not all 9,426 individuals are enrolled in Medicaid or LaCHIP. To ensure that our analysis only includes actual Medicaid recipients, survey data were matched back to Medicaid enrollment data. We

assume administrative data provide accurate reports of Medicaid enrollment; though Blewett et al. (2005) have cautioned against assuming that state administrative data are the “gold standard” and may suffer from their own biases.¹⁰ We also acknowledge that the analysis presented below is asymmetrical; that is, we only consider whether respondents who are insured through Medicaid misreport as uninsured or as insured through private insurance and do not consider uninsured respondents who incorrectly answer as insured.

To match survey data to Medicaid enrollments, survey respondents were offered the option of providing a first name or first initial for all household members. In addition, they provided the age and gender of all individuals in the household. Both an automatic process and visual inspection was used to link individual data from the survey to Medicaid/LaCHIP enrollments. First, we obtained a match based on age and first initial, then verified the match based on gender for 1,569 of the cases. Second, we matched 953 cases using a matching initial with a survey age 1 year older than that recorded on Medicaid enrollment records, and 118 cases using a matching initial with a survey age 1 year younger than recorded on Medicaid enrollment records. An additional 321 cases were matched on age alone. Finally, visual inspection of the data was used to match 238 cases. For example, a clear match on first name and age was missed in some cases due to differences in spelling.

The final tally reveals that some of the sampled households contained multiple individuals listed as enrolled in Louisiana Medicaid or LaCHIP programs while other households had only one Medicaid or LaCHIP recipient. Table 1 contains the number of cases with one to seven matches. These results also reveal that only 2,025 of the 2,985 surveyed Medicaid households contained one or more matching names on the Medicaid or LaCHIP roles. The fact that 960 households or almost a third of our households did not contain a

Table 1: Medicaid/LaCHIP Matches by Household and Individual Case

<i># Matches in Household</i>	<i># Households</i>	<i># Cases</i>
1	1,272	1,272
2	459	918
3	207	621
4	60	240
5	16	80
6	9	54
7	2	14
Total	2,025	3,199

match likely reveals a very transitory population and also reflects the fact that much of our sample is based on children's enrollment. In some cases, children move from one parent's home to live with another parent or relative. Likewise, children may have been enrolled by a relative caring for the child while he or she was ill.¹¹

RESULTS

Before we consider the demographic differences in misreporting, we first consider how misreporting may differ depending based on type of match type. One might expect that the first two types of match, an exact match based on age, gender and first initial or age plus one, gender and first initial would yield fewer false negatives than matches based on other criteria. To test this hypothesis, Table 2 presents the percent of matches reporting as enrolled in Medicaid or LaCHIP and the percent of false negatives by match type. A χ^2 test rejects the hypothesis of no difference across all groups, suggesting that the quality of match is related to incorrectly reporting Medicaid enrollment.¹² Looking more closely at the first two types of matches (reported age, gender, and first initial and reported age + 1, gender, and first initial), however, a χ^2 test fails to reject that the percent false negatives is the same for the first two groups at the .05 level, but is significant at the .10 level. In the analyses that follow, we present results for both the full sample of 3,199 individuals and for the 1,569 who matched on all criteria.

Table 3 contains the reported coverage type for Medicaid respondents in Louisiana by match type. The full sample and smaller sample based on exact matches provide similar results. Between 70 and 75 percent of Medicaid recipients correctly reported their insurance status, with exact matches generating a slightly larger estimate. Twelve to 13 percent report having no

Table 2: Matches between Survey and Medicaid/LaCHIP Data

<i>Match Type</i>	<i>Percent Medicaid</i>	<i>Percent False Negatives</i>
Reported age, gender, and first initial	74.3	11.6
Reported age plus 1, gender, and first initial	71.1	13.0
Reported age minus 1, gender, and first initial	52.5	24.6
Reported age and gender only	69.8	14.3
Visual inspection	65.2	15.1
Full sample	71.4	13.0

Table 3: Reported Insurance Status for Individuals Listed as Medicaid or LaCHIP Enrollees

<i>Coverage Type</i>	<i>All</i>	<i>Exact Match Only</i>
Current employer	8.3% (0.005)	7.6% (0.007)
Past employer	0.4% (0.001)	0.2% (0.001)
Private coverage	2.7% (0.003)	2.9% (0.004)
Medicare	3.5% (0.003)	3.4% (0.005)
Medicaid/LaCHIP	71.4% (0.008)	74.3% (0.011)
Military	0.6% (0.001)	0.6% (0.002)
No insurance	13.0% (0.006)	11.6% (0.008)
# observations	3,199	1,569

Note: This table supplies the reported insurance status of Louisiana residents recorded as Medicaid or LaCHIP recipients by the Louisiana Department of Health and Hospitals. Standard errors in parentheses.

insurance, and just under 10 percent report employer coverage. Overall, the respondents accurately identify the insurance status for the majority of the individuals enrolled in Medicaid or LaCHIP.

Table 4 breaks the reported coverage type into adults and children. Just over 80 percent of children are accurately identified as enrolled in the Medicaid or LaCHIP program. However, for adults just under half identified themselves as enrolled in Medicaid. Even accounting for the fact that some individuals may have dual coverage, this implies substantial underreporting by Louisiana's adult Medicaid population. If those who misreport their status

Table 4: Reported Insurance Status for Individuals Listed as Medicaid or LaCHIP Enrollees

<i>Coverage Type</i>	<i>Full Sample</i>		<i>Exact Match</i>	
	<i>Under 19</i>	<i>Adults 19–64</i>	<i>Under 19</i>	<i>Adults 19–64</i>
Current employer	8.3% (0.006)	8.1% (0.009)	8.0% (0.008)	6.0% (0.011)
Past employer	0.4% (0.001)	0.3% (0.002)	0.3% (0.002)	0.0% (0.000)
Private coverage	2.3% (0.003)	3.6% (0.006)	2.0% (0.004)	3.7% (0.009)
Medicare	0.7% (0.002)	10.4% (0.010)	0.4% (0.002)	11.4% (0.015)
Medicaid/LaCHIP	80.2% (0.008)	49.4% (0.016)	81.3% (0.011)	55.6% (0.024)
Military	0.7% (0.002)	0.5% (0.002)	0.6% (0.002)	0.4% (0.003)
No insurance	7.2% (0.005)	27.6% (0.015)	7.4% (0.008)	22.7% (0.020)
# observations	2,274	908	1,139	430

Note: This table supplies the reported insurance status of Louisiana residents recorded as Medicaid or LaCHIP recipients by the Louisiana Department of Health and Hospitals. The full sample omits 17 observations due to missing data on age. Standard errors in parentheses.

simply choose another form of insurance, the bias in estimates of the uninsured may be small. The key task is to identify the proportion of false negatives, those who report being uninsured when they are in fact covered by Medicaid or LaCHIP. Seven percent of children enrolled on Medicaid or LaCHIP were reported as uninsured, while 28 percent of adult Medicaid recipients were reported as uninsured. Comparing exact matches to the full sample reveals small, but interesting, differences. The percent correctly reporting Medicaid enrollment rises for both children and adults as one moves from the overall sample to the exact matches. However, the increase is larger for adults and leads to a five percentage point decline in the estimated proportion of false negatives. For children, the exact match sample result is a slightly higher (but largely negligible) proportion of false negatives.

To get an idea of the overall bias created in estimates of the uninsured population, we multiply proportion of false negatives in our sample times the Medicaid enrollment. According to state enrollment data, as of May 2005, 52 percent of Louisiana's children (665,545) were enrolled in LaCHIP, while 6 percent of adults (170,998) were enrolled in Medicaid. Multiplying this out, this implies 47,970 Louisiana children are reported as uninsured in survey-based estimates when in fact they are covered through LaCHIP. Among nonelderly adults (19–64), 47,073 are counted as uninsured when they are in fact covered by Medicaid. For children, this implies a 3.7 percent bias in estimates of the uninsured compared with a 1.8 percent bias for adults.

Demographic Differences

Table 5 reports the proportion of Medicaid enrollees reporting no insurance coverage (false negatives) for children and adults by various demographic classifications and respondent characteristics. Overall, children (under age 19) have the lowest rate of false negatives, while young adults have the highest rate of misreporting as uninsured. Looking at all matches, over 37 percent of 19–30 year olds were misreported as uninsured when in fact they are covered through Medicaid. This declines to 24.3 percent among 31–45-year-old Medicaid recipients and 18.6 percent of 46–64-year-old Medicaid recipients. Among children (under age 19) enrolled in LaCHIP, only 7.2 percent are incorrectly reported as uninsured. Misreporting also varies with the respondent's age (as opposed to the age of the Medicaid enrollee), though notably the effects are much smaller when respondents are reporting on children rather than adults. Medicaid status is misreported just under 40 percent of the time

Table 5: Proportion of Respondents Reporting No Insurance Coverage by Age Group

Category	All Matches		Exact Matches	
	Under 19	19–64	Under 19	19–64
Gender				
Male	7.6% (0.008)	29.5% (0.029)	7.9% (0.011)	22.1% (0.039)
Female	6.8% (0.008)	26.8% (0.017)	6.7% (0.011)	23.0% (0.024)
Race				
White	5.7% (0.007)	26.1% (0.021)	6.9% (0.011)	21.6% (0.028)
Black	8.3% (0.010)	29.1% (0.023)	8.0% (0.014)	24.0% (0.032)
Parish Medicaid enrollment				
Median or above	8.2% (0.008)	28.7% (0.021)	8.8% (0.009)	26.5% (0.030)
Below median	6.1% (0.008)	26.3% (0.021)	5.8% (0.011)	18.8% (0.027)
Household income				
< 100% FPL	8.2% (0.008)	27.2% (0.018)	8.4% (0.011)	22.6% (0.025)
100%–150% FPL	5.6% (0.010)	29.6% (0.037)	6.5% (0.015)	24.6% (0.052)
150%–200% FPL	6.0% (0.015)	32.7% (0.062)	3.6% (0.016)	25.0% (0.082)
> 200% FPL	6.7% (0.016)	23.9% (0.041)	8.7% (0.025)	20.0% (0.060)
Respondent education				
< High school	7.2% (0.013)	23.1% (0.027)	7.0% (0.019)	21.4% (0.038)
High school graduate	9.5% (0.010)	34.0% (0.025)	8.8% (0.013)	28.2% (0.036)
> High school	5.2% (0.007)	23.9% (0.024)	6.3% (0.011)	18.5% (0.031)
Respondent age				
< 19	4.7% (0.033)	0	0	0
19–30	7.9% (0.010)	39.8% (0.030)	7.8% (0.014)	34.7% (0.044)
31–45	6.8% (0.008)	29.6% (0.029)	7.3% (0.011)	25.8% (0.040)
46–64	6.3% (0.013)	18.8% (0.020)	6.3% (0.018)	14.5% (0.027)

Note: Standard errors in parentheses.

when the respondent is between 19 and 30 years old and only 19 percent when the respondent is between 46 and 64 years old.

Aside from recipient and respondent age, differences in misreporting across demographic characteristics appear smaller for children than adults. Other than age related differences, the largest difference in Table 5 indicates that respondents with at least some college are 10 percentage points less likely to misreport as uninsured than those with just a high school degree.

While such analyses are informative, categorical analysis can lead to some incorrect inferences. For example, only adults below 85 percent of the federal poverty level qualify for Medicaid, so most of those with higher levels of household income are also children under 19. A solution to this problem is to use regression analysis to estimate the impact of these variables on the probability of false negatives, holding other variables constant. Tables 6 and 7

Table 6: Probit Estimates of the Impact of Individual and Respondent Characteristics on Misreporting (under Age 19 Only)

<i>Variable</i>	<i>All Matches</i>			<i>Exact Matches Only</i>		
	<i>Coefficient Estimate</i>	<i>Marginal (dy/dx)</i>	<i>SE of Marginal</i>	<i>Coefficient Estimate</i>	<i>Marginal (dy/dx)</i>	<i>SE of Marginal</i>
Recipient age	0.011	0.0014	0.0016	0.013	0.0017	0.0016
Recipient race (1 = black)	0.087	0.0115	0.0163	0.002	0.0003	0.0163
% FPL	− 0.043	− 0.0055	0.0101	− 0.072	− 0.0096	0.0101
Respondent HS dropout	− 0.197*	− 0.0233	0.0191	− 0.148	− 0.0184	0.0191
Respondent education beyond HS	− 0.314***	− 0.0396	0.0163	− 0.160	− 0.0212	0.0163
Male respondent	0.298*	0.0451	0.0273	0.314**	0.0496	0.0273
Respondent age	− 0.005	− 0.0006	0.0008	− 0.006	− 0.0007	0.0008
High Medicaid/LaCHIP residence	0.156*	0.0202	0.0152	0.217*	0.0289	0.0152
Constant	− 1.350			− 1.365		
Pseudo R^2	0.0240			0.0194		
Number of observations	2261			1132		

Note: The dependent variable in this regression is set to one for false negatives. Marginal effects are computed at the sample means and are computed for a change from 0 to 1 for dummy variables.

*Significant at the .10 level.

**Significance at the .05 level.

***Significance at the .01 level.

contain probit regressions with a dummy variable coded one for those misreported as uninsured and zero otherwise. We include as the unit of analysis all individuals on which we were able to successfully match the survey and Medicaid enrollment data, such that each surveyed household may contribute multiple cases to the analysis. Because misreporting may reflect the characteristics of the individual being matched or the respondent reporting for the household, we explicitly identify characteristics matched to the respondent (as opposed to the individual case) as part of our probit models. Specifically, we expect that younger, less educated, and male respondents will be more likely to misreport insurance status for members of their household. Independent variables include respondent age, a dummy set equal to one for African Americans, and the ratio of household income¹³ to the federal poverty level. The model also includes a dummy variable set equal to one if the respondent reporting on household insurance status is a high school dropout and another set equal to one if the respondent has more than a high school education. For the models that follow, our measure of education reflects the respondent's education and not the education of the individual Medicaid recipient. This

Table 7: Probit Estimates of the Impact of Individual and Respondent Characteristics on Misreporting (Adults Ages 19–64 Only)

Variable	All Matches			Exact Matches Only		
	Coefficient Estimate	Marginal (dy/dx)	SE of Marginal	Coefficient Estimate	Marginal (dy/dx)	SE of Marginal
Recipient age	−0.011**	−0.0036	0.0020	−0.020***	−0.0056	0.0020
Recipient race (1 = black)	0.043	0.0140	0.0420	−0.012	−0.0033	0.0420
% FPL	−0.031	−0.0102	0.0223	−0.036	−0.0102	0.0223
Respondent dropout	−0.270**	−0.0844	0.0480	−0.118	−0.0329	0.0480
Respondent education beyond HS	−0.318***	−0.1007	0.0441	−0.306**	−0.0843	0.0441
Male respondent	0.066	0.0217	0.0498	−0.155	−0.0425	0.0498
Respondent age	−0.012**	−0.0038	0.0020	−0.008	−0.0023	0.0020
High Medicaid residence/LaCHIP	0.053	0.0174	0.0409	0.221	0.0628	0.0409
Constant	0.430**			0.395		
Pseudo R^2	0.0494			0.0816		
Number of observations	908			428		

Note: The dependent variable in this regression is set to one for false negatives. Marginal effects are computed at the sample means and are computed for a change from zero to one for dummy variables.

*Significant at the .10 level.

**Significance at the .05 level.

***Significance at the .01 level.

allows us to include a parallel measure in the models for both children and adults. The model also includes dummy variables set equal to one for male respondents and for observations from households residing in parishes with Medicaid/LaCHIP enrollment rates exceeding that of the median parish.

Before we consider the results presented in Tables 6 and 7, we would first note that the most important difference in misreporting is whether the recipient is a child or an adult. In a model including all ages (not shown), a dummy for recipients under age 19 was statistically significant. Looking at the results broken out separately for children and adults, the coefficient estimates predict the same qualitative relationship between misreporting as uninsured and each characteristic for children and adults. Some intuition may come from the small misreporting rate among children. This rate implies that the marginal impact of any one characteristic on misreporting is likely to be quite small, suggesting very small coefficient estimates that are difficult to identify. For example, the one significant result for the sample containing all matches implies that respondents with education levels above high school are 3.9 percent less likely to

misreport than high school graduates holding all else constant. Compared with a 7.2 percent mean level of misreporting, both this figure and the statistically insignificant coefficient estimate for the model using only exact matches (which implies that they are 2.1 percent less likely) seem quite large. Simply stated, even if the effects of characteristics on misreporting as uninsured are important in magnitude, they would likely be small enough that very precise coefficient estimates would be required to rule out no relationship in our sample.

Focus now on the pattern of results across Tables 6 and 7. While the standard error suggests an imprecise estimate for children, the difference in the impact of respondent age on misreporting as uninsured is somewhat intuitive. For children, the probability of misreporting is quite small and predicted to rise with age. For adults, the impact of age is large and significantly different from zero. For the all (exact) matches model, the estimated coefficient implies that the probability of misreporting for a 50-year-old respondent would be 11 percent (17 percent) higher than that of a 20-year-old respondent. For both children and adults, the models suggest that African Americans and poorer households are more likely to misreport as uninsured. However, the estimated impact is small and insignificant for both variables.

In terms of respondent education, high school graduates are more likely to misreport than both high school dropouts and those with some education beyond high school. For adults, the estimated probability of misreporting is up to 10 percent lower for respondents with education beyond high school. Male respondents generally appear more likely to misreport as uninsured than female respondents. Likewise, older respondents appear less likely to misreport as either themselves or other members of the household as uninsured.

The final variable in the probit models is a dummy variable set to one if the individual resides in a parish where the proportion of Medicaid recipients to the total population exceeds the median. Holding all else constant, persons from areas with a high Medicaid population are more likely to misreport as uninsured. If this result generalizes to other studies, it suggests a second avenue for bias in estimates of the uninsured for high Medicaid penetration areas. In addition to the fact that there is a larger percentage of the population to misreport Medicaid insurance as no insurance, the incidence of misreporting itself may be higher.

DISCUSSION

Differences in state administrative data and survey-based estimates of uninsured populations have important consequences for estimates of uninsured

populations. Utilizing methodologies developed in earlier research (Call et al. 2002), we add to a growing literature considering the effects of the Medicaid undercount on survey-based estimates of uninsured populations. Specifically, relying on unique access to Louisiana state administrative data, we examine self-reported insurance status among a large random sample of Medicaid enrollees. We find that estimates of uninsured children in Louisiana are likely to be inflated by as much as 3.7 percent, which equates to approximately 47,500 children, while estimates of uninsured adults are inflated by 1.8 percent or approximately 47,900 adults. Overall, our estimates of bias fall between the “negligible” effects reported by Call et al. (2002) and the more substantial effects reported by Klerman, Ringel, and Roth (2005).

The differences in these estimates likely reflect an additional finding in this paper—the Medicaid undercount and any subsequent bias on uninsured rates is likely to vary across demographic characteristics and geographic regions. Among children covered by LaCHIP, for example, misreporting is highest among households at or above 200 percent of the federal poverty line. We also find misreporting is highest among 19–30 year olds. Importantly, this age demographic is the most likely to be reported as uninsured and may be the least knowledgeable about their insurance status as well as the insurance status of other members of the household. As a corollary, the uninsured rates among this group may be most inflated due to misreporting.

Perhaps the most important implication of this research, however, is that accurate adjustments to estimates of uninsured populations require further population-specific research. Not only does the Medicaid bias appear to differ across demographic groups but it also differs across geographic areas. Developing appropriate adjustments means better understanding the nature of this variation, and incorporating this variation into uninsured estimates. We would suggest that both the causes and the consequences are dependent upon the broader social and political context, and the effects likely differ across space and time. Understanding these differences, means, first, expanding the scope of research to include multiple states and, second, extending the research to include multiple years. Based on our findings, we suspect that future research would find variations in bias estimates over time as economic, political, and social conditions change, and across space as one moves from one political environment to another. More to the point, we suspect these changes reflect differences in the broader environment and not just changes in individual characteristics. These contextual factors may help to explain the variations in misreporting noted in prior research, and lead the development of models that can provide appropriate adjustments to survey-based estimates of the

uninsured (Klerman, Ringel, and Roth 2005). In the best of all worlds, misreporting will be shown to be related to identifiable demographic and contextual factors. If coefficients in a probit model such as ours are similar across states, one could then define a single adjustment procedure (although the impact on estimates of the uninsured would vary with demographics).

We would be remiss if we did not end by noting several limitations of this study. First, because we only look at misreporting among insured respondents, we miss any biases in survey research that may be associated with uninsured respondents answering health insurance surveys as though they have insurance. Second, while our response rates are not outside the normal range for academic survey centers, they still open the possibility that we may be missing important segments of the Medicaid population, particularly the population that is most transient, less likely to have a landline telephone, and presumable poorer. Finally, we also assume that state administrative data provide an accurate count of Medicaid enrollment, but these data may also contribute to the Medicaid undercount by overestimating "true" Medicaid enrollment. Even with these limitations, the study provides important insight by examining the Medicaid undercount within the context of a high penetration Medicaid state and by linking survey data directly to administrative data. While the results are not definitive, they do illustrate the need for additional research so that we can more fully understand the causes and consequences of the Medicaid undercount and the implications for survey-based estimates of uninsured populations.

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NOTES

1. These CPS estimates are reported on the Kaiser Family Foundation State Health Facts web page (www.statehealthfacts.org). State administrative records were provided by the Louisiana Department of Health and Hospitals and reflect point-in-time enrollment as of May 2005. The use of these monthly figures may understate the Medicaid gap as CPS estimates attempt to capture uninsured status for the previous year.

2. Blewett et al. (2005) note that over 40 states conduct their own health insurance surveys.
3. Often state-level surveys make adjustments based on respondents who report telephone interruptions (Davern et al. 2004). No such adjustments made to the current data.
4. For a review of findings, see Blewett et al. (2005) who report the range of the bias due to the Medicaid undercount ranges from an upward adjustment of 0.1–0.9 percentage points.
5. It is important to note that Klerman, Ringel, and Roth (2005) use 0–14 for children and 15–64 for adults, while other studies generally use 0–18 for children and 19–64 for nonelderly adults. In addition to other differences in the studies, these differences are also likely influence their reported results.
6. Hess et al. (2001) note that interviewers may not have probed sufficiently to identify all policy holders in the household, and that the results could reflect the specific questionnaire design and not the household-level approach.
7. The Louisiana Health Insurance Survey was conducted to provide statewide and regional estimates of uninsured populations. The Medicaid Undercount Study was included as part of the 2005 survey to help inform these statewide and regional estimates. Data from both sets of surveys have been held to the highest standards of confidentiality, and have been generously supported by the Louisiana Department of Health and Hospitals.
8. Call et al. (2002) verified that the person was not enrolled on Medicaid at the time of the interview. We use May 2005 enrollments meaning that at least some of our respondents may have moved off the Medicaid rolls. Given the limited time between the enrollment data and survey collection, this should be a minor problem. Still it is an important difference between our work and Call et al. (2002).
9. Calculations based on Response Rate 3 and Cooperation Rate 3 from the American Association of Public Opinion Research. We discuss the response rates as potential limitation in the research in the conclusions, though would also note that several studies have indicated nonresponse may have only a limited impact on reported results (Curtin, Presser, and Singer 2000; Keeter et al. 2000).
10. State administrative data may overreport Medicaid enrollments (see also Davern 2006). A low response rate may also reflect limitations in the administrative data from which these samples are originally drawn.
11. This finding may also point out weaknesses in the Medicaid enrollment data similar to those found in previous studies such as Card, Hildreth, and Shore-Sheppard (2004).
12. The χ^2 test statistics for all groups are 31.30 and 18.11, respectively. Looking at only the first two groups, the χ^2 test statistic is 2.91 which implies that we can reject equal proportions at the .10, but not .05 level of significance.
13. Income was imputed for 31 percent of observations based on household size, education of respondents, race, and number of working adults in the household using a hotdecking procedure. Results for other coefficients in models without percent FPL were quite similar to those reported here and are available upon request from the authors.

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