

How Well Does Medicaid Work in Improving Access to Care?

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Objective. To provide an assessment of how well the Medicaid program is working at improving access to and use of health care for low-income mothers.

Data Source/Study Setting. The 1997 and 1999 National Survey of America's Families, with state and county information drawn from the Area Resource File and other sources.

Study Design. Estimate the effects of Medicaid on access and use relative to private coverage and being uninsured, using instrumental variables methods to control for selection into insurance status.

Data Collection/Extraction Method. This study combines data from 1997 and 1999 for mothers in families with incomes below 200 percent of the federal poverty level.

Principal Findings. We find that Medicaid beneficiaries' access and use are significantly better than those obtained by the uninsured. Analysis that controls for insurance selection shows that the benefits of having Medicaid coverage versus being uninsured are substantially larger than what is estimated when selection is not accounted for. Our results also indicate that Medicaid beneficiaries' access and use are comparable to that of the low-income privately insured. Once insurance selection is controlled for, access and use under Medicaid is not significantly different from access and use under private insurance. Without controls for insurance selection, access and use for Medicaid beneficiaries is found to be significantly worse than for the low-income privately insured.

Conclusions. Our results show that the Medicaid program improved access to care relative to uninsurance for low-income mothers, achieving access and use levels comparable to those of the privately insured. Our results also indicate that prior research, which generally has not controlled for selection into insurance coverage, has likely understated the gains of Medicaid relative to uninsurance and overstated the gains of private coverage relative to Medicaid.

Key Words. Medicaid, access to care, instrumental variables

Medicaid is the nation's largest health insurance program. More than 51 million people—about one in seven Americans—were enrolled in Medicaid at some time during 2002 (Holahan and Bruen 2003). Medicaid also plays a vital role in funding the health care safety net, including hospitals, community health centers, and school health programs. Consistent with this important role, federal and state Medicaid expenditures were more than \$256 billion

in 2002, about equal to what was spent on Medicare (Holahan and Bruen 2003).

Because of its cost, Medicaid is often at the center of budget discussions, both in Washington and state capitals. Currently, states, which are experiencing especially tough fiscal times, are proposing or implementing large cutbacks to Medicaid (Smith et al. 2003). And, at the national level, the Bush administration has reiterated its support for legislation proposed last year that would make sweeping changes to the program (U.S. Department of Health and Human Services 2003).

In an effort to inform this debate, we assess how well Medicaid works. Specifically, we look at how Medicaid beneficiaries' access to health care and use of medical services compares with that of both the privately insured and the uninsured. Do Medicaid beneficiaries do as well as their privately insured counterparts? Do they do better than the uninsured? We compare the experiences of Medicaid beneficiaries with the experiences of the uninsured because, in all likelihood, if Medicaid were cut, most of its beneficiaries would become uninsured.

Several previous studies have examined the relationship between access to care and insurance status. Early studies tended to use descriptive methods to contrast the patterns of access and service use by different insurance groups (Wilensky and Berk 1982; Hayward et al. 1988; Himmelstein and Woolhandler 1995). More recent studies have used a multivariate framework to help control for factors that may confound estimates of the effect of insurance status on access and use (Freeman and Corey 1993; Marquis and Long 1996; Berk and Schur 1998; Newacheck et al. 1998; Long and Marquis 1999). Such factors include socioeconomic characteristics, health status, and local health market conditions. The general finding of the studies is that having insurance (including Medicaid) is associated with better access to care and increases in the use of health-care services relative to being uninsured.

Although these studies accounted for a range of variables that may influence access and use, they have an important limitation: They do not separate the effects of who enrolls in Medicaid from the effects of Medicaid itself. This is a limitation because health insurance status is not a random event; on the contrary, a variety of reasons may underlie an individuals' choice to enroll or not enroll in Medicaid. If these reasons also directly affect the individuals'

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health care access and use, then observed differences in access and use between Medicaid and those with private insurance and the uninsured may be due, in part, to unmeasured differences between the individuals who choose Medicaid relative to those choosing private insurance or uninsurance rather than the individual's actual insurance status, biasing the estimates of the impacts of insurance.

To illustrate, all else equal, we might expect individuals with greater health care needs (e.g., severity of disability) or strong preferences for health care to be both more likely to choose insurance over uninsurance and to use more health care services, regardless of their insurance status. By the same token, we might expect people with a high tolerance for risk to be more likely to go without insurance and to use fewer services, even if they do have coverage. Because the first group would be more likely to use services even without health insurance and the second group would be less likely to use services even with health insurance, comparisons between the insured and uninsured that fail to control for the severity of need, preferences, and risk tolerance could overstate the impact of insurance status on use.

While this example suggests a particular direction for the bias in the impact of insurance status on use, there are many factors that are often unmeasured in studies of the impacts of Medicaid that could affect the choice of insurance status and, potentially, health care access and use, making it difficult to predict the likely direction of bias. For example, individuals with a strong attachment to safety net providers may be less likely to choose Medicaid than uninsurance, but more likely to use services (particularly emergency room services), regardless of insurance status. Other possible factors that could bias estimates of the impacts of Medicaid include proximity to providers (including safety net providers), financial barriers (e.g., current medical debt), prior experience (good or bad) with private insurers and/or public programs, difficulties enrolling in Medicaid (e.g., because of time and transportation barriers or the complexities of the application process), and attitudes toward participation in public programs. Given the range of unmeasured factors that could affect insurance status and health care access and use, it is not possible to predict the direction of potential bias in current estimates of the impacts of Medicaid on access and use relative to private coverage and uninsurance.

Several recent health services research studies have attempted to deal with selection bias in estimating the impacts of Medicaid on access to and use of care for children (Currie and Gruber 1996; Glied et al. 1998; Kaestner 1999), homeless adults (Glied et al. 1998/1999), and elderly Medicare beneficiaries (Pezzin and Kasper 2002). In general, these studies find that

controlling for selection into insurance status has significant implications for estimates of the impacts of insurance coverage, although the direction of the bias in unadjusted estimates varies across populations and outcomes. For example, Glied, Hoven et al. (1998/1999) show that for homeless adults, estimates of the impacts of Medicaid relative to uninsurance on hospital stays and emergency room use are smaller after controlling for selection into insurance status. On the other hand, Glied, Garrett et al. (1998) finds larger effects of Medicaid and uninsurance relative to private coverage on children's mental health use after controlling for selection into insurance status. Our work builds on this literature by estimating the relationship between insurance status and a number of access and use measures, while controlling for insurance choice.

The paper is organized as follows: We begin with a discussion of our study methods. This is followed by a description of the data used in the analysis and key study variables. Then we present study findings. We conclude with a discussion of the implications of the research findings.

METHODS

In our model, we assume that health care access and service use are functions of an individual's health care needs, the price of health care, individual and community attitudes and preferences, and the state and local health care market. Insurance coverage, whether public or private, enters the model because it lowers the price of obtaining care: All else equal, individuals who face a lower price for health care are expected to consume more care. Thus, Medicaid beneficiaries; who typically pay no or minimal cost-sharing, are expected to consume more care than the uninsured, who face the full costs of their care. The privately insured face more direct costs in obtaining care (e.g., copays and deductibles) than Medicaid beneficiaries; however, Medicaid beneficiaries likely face greater indirect costs, including more difficulty finding providers who will see them, longer wait times to schedule appointments, and longer travel times. Depending on the net effect of these different kinds of costs, Medicaid beneficiaries may or may not consume more care than those with private insurance.

As discussed above, comparing access and use across the three insurance groups is complicated because observed differences could be because of insurance status and factors that affect the individual's *choice* of insurance status. To account for the possibility that there are factors that affect an individual's choice of a particular type of insurance coverage (or to be uninsured) and also

directly affect his or her health care access and use, we estimate the following empirical model:

$$A_i = X_i\beta_1 + I_i\gamma + \varepsilon_i \quad (1)$$

where A is a measure of access to care, X is a vector of exogenous control variables, and ε is the error term. I is the vector of variables describing insurance status (private coverage, public coverage or uninsured) and γ provides the estimate of the impact of insurance status on access to care. The possibility of biased estimates arises when I is simultaneously determined with A . One strategy to correct for this possibility is to identify one or more variables, Z , that are correlated with I but do not enter the access equation (i.e., are uncorrelated with A):

$$I_i = X_i\beta_2 + Z_i\delta + \eta_i \quad (2)$$

Equations (1) and (2) are estimated using instrumental variables (IVs) methods to obtain consistent estimates of γ (McClellan and Newhouse 2000).¹ The estimates of γ are obtained using two-stage estimation methods: we first estimate equation (2) and then substitute the predicted values from equation (2) for I_i into equation (1) and estimate the modified equation.

The central challenge in estimating this IV model is to identify a set of variables, Z , that are highly correlated with insurance status but not correlated with access to care. As discussed below, the variables we identify are based on an individual's potential eligibility for public and private insurance, individual attitudes, and community characteristics.

The IV approach seeks to isolate the changes in health-care access and use that can be attributed to the shifts in insurance status that are associated with shifts in the instrumental variables. Because the instruments affect only insurance status (and not health care access and use directly), they can be thought of as mimicking randomization to insurance status.

In the modeling, we take advantage of newly available software to estimate the individual's decision about insurance status (private coverage, Medicaid coverage, uninsured) in equation (2) using a multinomial probit model.² Based on the probit model, we predict insurance status (I) for each sample member and replace an individual's reported insurance status in the model of health-care access or use (equation [1]) with predicted insurance status, as generated by equation (2). Equation (1) is then estimated by ordinary least squares (OLS).

Whether the instruments fully correct for selection biases in the access and use equations (equation [1]) depends on the instruments'

explanatory power in equation (2) and on whether the instruments can appropriately be excluded from equation (1). As we will show, our set of instruments has good predictive power in the first-stage estimation (equation [2]), indicating that the instruments are strongly correlated with insurance status. Further, we find that the instruments have no independent effects on our measures of access and use in the second stage estimation (equation [1]). Together, these attributes suggest that the influence of the instruments is only through their effect on insurance status and not through any direct effect on health-care access or use.

DATA

The data for this study are from the 1997 and 1999 National Survey of America's Families (NSAF), which provides detailed economic, health, and social characteristics for a nationally representative sample of almost 45,000 families. Of particular relevance, NSAF oversamples low-income families—defined as having incomes below 200 percent of the federal poverty level (Kenney et al. 1999). We combine the two rounds of data, both to increase the sample size available for the study and to provide greater variation in state policy variables. To ensure that we focus on a relatively homogenous population facing similar insurance choices, we limit our study sample to low-income women with children.

The response rates for the 1997 and 1999 rounds of NSAF were 70 and 64 percent, respectively. Responses to the interviews were weighted to adjust for the oversampling of low-income families and other survey design issues, nonresponse and undercoverage. Because of the complex design of the NSAF, we rely on a jack-knife replication method to obtain accurate variance estimates.

Outcome Measures

Our access and use measures include whether the individual has a usual source of care other than an emergency room, health care use over the past year, and unmet need for medical care or surgery. The health care use measures are any emergency room use, any doctor or dental visits, receipt of a clinical breast exam and a pap smear, and any hospital stays (excluding for delivery) during the past year.

Explanatory Variables

The key explanatory variable in this analysis is insurance status. In each round of the NSAF, respondents are asked a series of questions about their family's health insurance coverage over the past year. Based on those questions, we assigned individuals to insurance groups based on the following hierarchy: (1) private coverage (includes employer-sponsored coverage from a current or former employer or union or under a military program and insurance purchased directly by the individual), (2) Medicaid or other state-sponsored insurance program, (3) other insurance (includes Medicare and other coverage not captured elsewhere), and (4) uninsured. Because less than 4 percent of our sample fell into the "other insurance" category, we excluded those individuals from our analytic sample. Further, we limited our sample to those who had the same coverage for a full year to avoid any distortions resulting from partial coverage over the period. We compare the effects of full-year private coverage and full-year uninsured to the effects of full-year Medicaid coverage.

Beyond insurance status, we control for a range of observable variables that are likely to affect access to and use of care. Our controls include measures of the individual's predisposition to use health care services, factors that enable or impede use, and the need for health care (Andersen 1995). Predisposing factors include demographic and social characteristics (e.g., age, race, marital status, education, and citizenship status). Enabling/impeding characteristics include individual, family, and community resources (e.g., income, employment, family size, number of hospital beds per 1,000 persons in the county, number of physicians per 1,000 persons in the county, and the county-managed care penetration rate). Finally, an individual's need for health care services is measured by pregnancy and health and disability status. The models also include a dummy variable for the year of the survey. Descriptive statistics for the sample are provided in Table 1.

Instruments for Insurance Status

We identify four variables that are exogenous predictors of insurance status and do not have an independent effect on access to or use of care. Those variables are related to the accessibility of private insurance, availability of public coverage, and family and community attitudes toward public assistance. Access to private insurance in the local market, for example, is expected to affect an individual's choice of coverage. Because large firms are more likely to offer employer-sponsored insurance than small firms, we include a dummy variable that indicates whether the individual or his or her spouse (if present)

Table 1: Characteristics of the Sample of Low-Income Women with Children

<i>Characteristics</i>	<i>Mean or Percent</i>	<i>Standard Deviation</i>
<i>Health insurance coverage</i>		
Medicaid	24.2%	
Private coverage	43.0%	
Uninsured	32.8%	
<i>Sociodemographic characteristics</i>		
Age (mean)	34.2	8.0
White/non-Hispanic	50.2%	
Black/non-Hispanic	20.5%	
Other/non-Hispanic	3.6%	
Hispanic		
Mexican	18.6%	
Other Hispanic	7.2%	
Interview was conducted in Spanish	14.8%	
Individual is not a U.S. citizen	15.4%	
Married	53.9%	
Never married	20.8%	
Less than high school	27.5%	
High-school graduate	36.1%	
Any college	35.3%	
<i>Health care needs</i>		
Health status is good, very good, or excellent	79.3%	
Health status is fair or poor	20.7%	
Has condition that limits ability to work	14.3%	
Pregnant in last year	7.6%	
<i>Individual/family resources</i>		
Family size (mean)	4.2	1.6
Any child aged 0–5 years	52.0%	
Child/spouse in fair/poor health or child/spouse with disability	11.2%	
Family income is 50–100 percent of FPL	25.6%	
Family income is 100–200 percent of FPL	55.9%	
Whether have a car	75.3%	
Self or spouse worked in past year	82.7%	
<i>Local area characteristics</i>		
Urban county	74.6%	
Number of physicians/1,000 people in county (mean)	2.3	1.7
Number of hospital beds/1,000 people in county (mean)	4.1	3.1
HMO penetration in county (mean)	0.24	0.17
Whether Medicaid is operated as managed care in county	61.4%	
County Medicare reimbursement rates (\$100s) (mean)	\$4.70	\$1.10
Sample size	11,213	

Sources: Individual data are from the 1997 and 1999 National Survey of America's Families. Local area characteristics are from a variety of sources: urban county, number of physicians/1,000 people in county, and number of hospital beds/1,000 people in county are from the Area Resource File; HMO penetration in county is from Doug Wholey (1996) and the Area Resource File (1998); county Medicaid managed care information is based on data from the Centers for Medicare and Medicaid Services (CMS); county Medicare reimbursement rates are from the CMS website.

FPL = federal poverty level; HMO = health maintenance organization.

works for an establishment with more than 50 employees. Likewise, the availability of public coverage in the state in which a person lives will affect their insurance choice. To capture this effect, we include a variable for the share of a standard population that would be eligible for Medicaid based on the program eligibility criteria of the state in which the individual lives.³

Finally, both family and community attitudes toward welfare are likely to affect an individual's choice of insurance coverage. Family attitudes toward welfare are based on a question in NSAF that asks adult respondents in the family whether they agree or strongly agree with the statement "Welfare helps people get on their feet when facing difficult situations such as unemployment, a divorce, or a death in the family."⁴ Our proxy for community attitudes toward welfare is the share of the population in the individual's county of residence that is on public assistance. We would expect the social acceptability of welfare to be higher in communities with a greater share of the population on welfare. The instruments for insurance coverage are summarized in Table 2.

Our results are robust to sensitivity analyses in which we used alternative instruments for insurance status. For example, our findings were not particularly sensitive to the inclusion of a number of additional variables, including the share of workers in the county likely to be offered employer-sponsored coverage, whether the state had guaranteed issue in the nongroup market, the presence of a medically needy Medicaid program in the state, and other measures of community attitudes (e.g., the share of the population in the county with a college degree). We present the results here for a relatively parsimonious model.

METHODOLOGICAL ISSUES

Several methodological limitations in this study must be acknowledged. Like all survey-based research, the analysis is based on self-reported data, raising concerns about both validity and reliability. However, while we are not able to validate the access and use measures, the values for the measures are consistent with levels reported in other national surveys. Another methodological shortcoming is that we conduct a cross-sectional analysis. This prevents us from establishing causality between insurance status and access to care, even when strong associations exist. Longitudinal studies are needed to assess causality. Another limitation is that our analysis focuses exclusively on how insurance status affects health care access and service use. Unfortunately, the

Table 2: Summary of Instruments for Insurance Status for Low-Income Women with Children

<i>Instrument</i>	<i>By Insurance Status</i>		
	<i>Full Sample</i>	<i>Medicaid</i>	<i>Private Coverage</i>
<i>Potential eligibility for private insurance</i>			
Whether self or spouse works for a firm with more than 50 workers (%)	0.628	0.392	0.806
<i>Potential eligibility for public insurance</i>			
Share of "standard" population eligible for Medicaid in state (mean)	0.240	0.350	0.207
<i>Community and individual attitudes toward welfare</i>			
Whether individual views welfare as helping people get on their feet (%)	0.796	0.795	0.789
Percent of population in county receiving public assistance (mean)	0.054	0.064	0.049
Sample size	11,213	3,162	4,892

Source: Individual data are from the 1997 and 1999 National Survey of America's Families. Share of "standard" population eligible for Medicaid in state calculated by running national population through microsimulation model for each state's Medicaid and (if relevant) state-specific program eligibility rules; percent of population in county receiving public assistance is from the U.S. Census Bureau.

data do not permit us to examine how access and use affect individuals' health status, which, of course, is the question of ultimate concern. Again, longitudinal studies are needed to explore the relationship between Medicaid coverage, health care utilization and health status. Finally, while IV estimation is superior to other analytical methods that typically have been used to examine the relationship between insurance status and health care access and use, we recognize that our models may not capture all unobserved factors that influence an individual's insurance choice. As such, our estimates may still be biased (although less so than the methods that do not control for unobserved factors). To fully remove the possibility of bias requires random assignment of people into an insurance status, an approach that is seldom feasible.

RESULTS

Table 3 presents the estimation results for the multinomial probit model of insurance status. These estimates are used to generate the predicted measures of insurance status, which are then entered into the access and use equations. Of particular relevance for this study is the explanatory power of the instruments for insurance status. As shown in the table, the four instruments are highly significant predictors of insurance status. For example, the probability of choosing private insurance versus Medicaid is higher for low-income mothers who are in a family with at least one member employed by a firm with more than 50 workers and lower for mothers who view welfare as helping people get back on their feet after family difficulties and for mothers in communities with higher levels of participation in public assistance programs. For the choice between uninsurance and Medicaid, mothers who live in states with more generous state Medicaid eligibility, in areas with higher levels of public assistance receipt, and who view welfare as helping people get back on their feet are also less likely to be uninsured than be on Medicaid. We also find that low-income women who are in a household with at least one member working for a large firm are less likely to be uninsured than on Medicaid.

In addition to separate tests of significance, we examined the joint significance of the instruments in the insurance status equation using a likelihood ratio test. We found that the addition of the four variables significantly improves the overall explanatory power of the model, providing further evidence of the importance of the instruments in predicting an individual's choice of insurance status. Beyond being significant predictors of insurance status, the instruments should not be correlated with the error terms in the access and

Table 3: Multinomial Probit Estimates of the Probability of Insurance Coverage (Private, Medicaid, Uninsured) for Low-Income Women with Children

<i>Explanatory Variables</i>	<i>Private Coverage versus Medicaid</i>		<i>Uninsured versus Medicaid</i>	
Age	0.039**		0.004	
Black/non-Hispanic	0.060		-0.074	
Other/non-Hispanic	-0.029		0.245**	
Mexican	0.136*		0.159**	
Other Hispanic	-0.074		-0.053	
Interview was conducted in Spanish	-0.206**		0.434**	
Not a U.S. citizen	-0.061		0.595**	
Married	0.087		-0.336**	
Never married	-0.202**		-0.096*	
High-school graduate	0.260**		-0.124**	
Any college	0.421**		-0.238**	
Health status is fair or poor	-0.262**		0.161**	
Has condition that limits ability to work	-0.400**		-0.486**	
Pregnant in last year	0.158**		-0.851**	
Family size	-0.045**		-0.031**	
Any child aged 0-5 years	0.001		-0.012	
Child/spouse in fair/poor health or child/spouse with disability	-0.281**		-0.149**	
Family income is 50-100 percent of FPL	0.171**		-0.034	
Family income is 100-200 percent of FPL	1.183**		-0.115*	
Whether have a car	0.621**		0.071*	
Self or spouse worked in last year	0.319**		0.643**	
Urban county	-0.004		0.003	
Number of physicians/1,000 people in county	-0.026*		-0.021*	
Number of hospital beds/1,000 people in county	0.023**		0.005	
HMO penetration in county	-0.018		-1.121**	
Whether Medicaid is managed care	-0.026		-0.163**	

County Medicare reimbursement rates	0.072**	0.046*
Survey year is 1999	0.026	0.128**
<i>Instruments for insurance status</i>		
Whether self or spouse works for a firm with more than 50 workers	0.470**	- 0.358**
Share of "standard" population eligible for Medicaid in state	- 0.904**	- 2.136**
Percent of county population receiving public assistance	- 6.193**	- 5.706**
Individual views welfare as helping people get on their feet	- 0.161**	- 0.048
Sample size	11,213	

Source: 1997 and 1999 National Survey of America's Families.

*Significantly different from zero at the .05 level, two-tailed test.

**Significantly different from zero at the .01 level, two-tailed test.

FPL = federal poverty level; HMO = health maintenance organization.

use equations. To test for this, we conducted a Hausman specification test for over identification (Greene 2000). In all the access and use equations (discussed next), the value of the test statistic was quite small and never significantly different from zero at the 10 percent level. This confirms that the effect of the four instruments on access and use is only through their effect on insurance status.

Table 4 presents estimates of the impact of Medicaid on access to and use of care for low-income mothers. In the table, we first show the differences in access and use between private coverage and Medicaid and then differences between the uninsured and Medicaid. We present three sets of estimates:

- simple population differences, with no adjustments for individual or area characteristics;
- OLS regression-adjusted differences, which control for individual and area characteristics; and
- IV regression-adjusted differences, which control for selection into insurance status, as well as the individual and area characteristics included in the OLS model.

Simple Population Differences

In general, the simple population differences indicate that low-income mothers have better access to care under private coverage than Medicaid. The results also show that low-income mothers who are uninsured have significantly worse access to care relative to those with Medicaid coverage. For example, the simple differences show that mothers with private coverage are significantly less likely to lack a usual source of care (5 percentage points) and significantly more likely to have a dental visit (13 percentage points) and a clinical breast exam (7 percentage points) than mothers on Medicaid.

In contrast, uninsured mothers are significantly more likely to lack a usual source of care and to have unmet need and less likely to have a doctor visit, dental visit, pap smear, or clinical breast exam than Medicaid mothers. Medicaid mothers are significantly more likely to have hospital stays and emergency room visits than either mothers with private coverage or mothers who are uninsured.

OLS Model

The OLS model, which controls for a range of individual and area characteristics, shows that many of the access and use disparities between private coverage and Medicaid observed in the simple difference model described

Table 4: OLS and IV Estimates of the Impact of Insurance Coverage on Access and Use for Low-Income Women with Children

	<i>Private Coverage versus Medicaid</i>			<i>Uninsured versus Medicaid</i>		
	<i>Simple Difference</i>	<i>OLS</i>	<i>IV</i>	<i>Simple Difference</i>	<i>OLS</i>	<i>IV</i>
No usual source of care	-0.048**	-0.013	-0.064	0.174**	0.177**	0.245**
Hospital stay	-0.055**	-0.010	0.059	-0.081**	-0.054**	0.003
ER visit	-0.182**	-0.056	-0.103	-0.208**	-0.098**	-0.026
Doctor visit	0.029	0.038	0.099	-0.283**	-0.232**	-0.427**
Dental visit	0.130**	0.118**	0.082	-0.191**	-0.156**	-0.418**
Pap smear	-0.012	0.001	-0.035	-0.216**	-0.177**	-0.329**
Clinical breast exam	0.071**	0.014	0.008	-0.149**	-0.147**	-0.283**
Unmet need	-0.026	-0.043*	-0.004	0.075**	0.094**	0.102

Source: 1997 and 1999 National Survey of America’s Families.

*Significantly different from zero at the .05 level, two-tailed test.

**Significantly different from zero at the .01 level, two-tailed test.

OLS = ordinary least squares; IV = instrumental variable; ER = emergency room.

above reflect underlying differences in the characteristics of the populations. As shown, many of the simple differences between mothers with private coverage and mothers with Medicaid are no longer significant in the OLS model. The OLS results do, however, suggest that mothers with private coverage are more likely to have a dental visit and less likely to have unmet need for medical care or surgery than are mothers on Medicaid. For uninsured mothers, the OLS results, like the simple differences, continue to indicate substantially worse access to and use of care relative to Medicaid mothers.

IV Estimation Model

The IV models include everything in the OLS models plus controls for unobserved factors that affect both selection into insurance status and access and use. With the IV models, we find that the access and use differences between low-income mothers with private insurance and those with Medicaid observed in the OLS estimates are no longer significant. Rather, the low-income Medicaid mothers and those with private coverage have comparable levels of access to and use of care across all of the measures considered. Comparing across the three models suggests that failing to account for unobserved factors

(as in the simple differences and OLS models) overstates the benefits that private insurance confers relative to the benefits of Medicaid coverage.

The effect of addressing the endogeneity of insurance status on the differences in access and use for the uninsured and those with Medicaid is more mixed: In the IV model, the differences in hospital stays, emergency room visits, and unmet need that were found in the OLS model disappear. However, differences between uninsured mothers and mothers on Medicaid on all other access and use measures remain significant. Relative to mothers on Medicaid, uninsured mothers are significantly more likely to lack a usual source of care and significantly less likely to have a doctor visit, a dental visit, a pap smear or clinical breast exam. Not only do differences between the uninsured and those on Medicaid persist, but the differences are bigger in the IV model than the OLS model. As with the previous comparison between private insurance and Medicaid mothers, the fact that the estimates changed across the three models suggests that failing to account for unobserved factors (as in the OLS and the simple differences models) produces biased estimates of the impact of Medicaid relative to uninsurance. In this case, not controlling for selection into insurance status leads one to understate the gains in access and use that Medicaid provides relative to being uninsured.

DISCUSSION

Over the past 20 years, a substantial body of research investigating the relationship between insurance status and access to health care has developed. An important shortcoming in much of this literature is a failure to account for an individual's selection of their insurance status. In this analysis, we examined the impact of the Medicaid program on health care access and use for low-income women with children, using an analytical approach that controlled for insurance choice. We found that, across a gamut of measures, Medicaid beneficiaries' access to care was significantly better than that obtained by the uninsured. Indeed, by controlling for insurance selection, the analysis showed that the benefits of having Medicaid coverage versus being uninsured are substantially larger than estimates that do not account for selection into insurance status suggest. This finding indicates that the importance of Medicaid coverage relative to being uninsured is greater than what has previously been reported. After controlling for selection into insurance status, low-income mothers on Medicaid are significantly more likely than uninsured mothers to have a usual source of care, doctor visits, and preventive care.

Our results also indicate that access to care for low-income mothers on Medicaid is comparable to that of low-income privately insured mothers. Once insurance selection was controlled, access to care for the two populations did not differ significantly. This dynamic was consistent across all the access measures examined. Importantly, without controls for insurance selection, the impact of Medicaid coverage relative to private coverage is underestimated: If selection is not controlled for, access for Medicaid beneficiaries is found—erroneously—to be significantly worse than for the low-income privately insured.

While we find that low-income mothers on Medicaid fare as well as low-income privately insured mothers, we cannot determine whether the low-income privately insured mothers have good access to care. For example, cost sharing generally associated with private insurance may limit or delay service use, especially for the low-income population (Newhouse 1993). If low-income privately insured women have limited benefit packages, this too could curtail service use. Similarly, if the low-income privately insured have benefit packages that emphasize selected services — for example, inpatient care—this could shift use patterns across services.

One puzzling finding is the lack of any differences in hospital and emergency room use between Medicaid and uninsured mothers after controlling for selection into insurance status. This suggests that the higher levels of use of other types of care that we see under Medicaid relative to the uninsurance (e.g., doctor visits and preventive care) do not translate into a reduction in either emergency room use or hospitalizations for the Medicaid population. We also found no difference in emergency room use and hospital stays for the Medicaid population relative to those with private coverage. Together, these findings suggest broad inadequacies in care delivery for the low-income population and are also consistent with a recent study that finds increased emergency room use for both insured and uninsured populations over time in response to more difficulties obtaining primary care (Cunningham and May 2003). In future research, it will be important to examine ambulatory care sensitive emergency room use and avoidable hospitalizations to better understand what might be driving these findings.

This analysis has focused on estimating the impact of Medicaid on access to care for low-income mothers. It is likely that the unmeasured factors that affect insurance choice and health care access and use are different for other Medicaid populations (e.g., children and persons with disabilities). It will be important in future work to extend this analysis to assess the effects of selection on current estimates of the benefits of Medicaid for those populations.

Our results clearly show that the Medicaid program improved access to care for low-income mothers relative to being uninsured. Presumably, extending Medicaid to somewhat higher income uninsured parents would lead to a significant improvements in their access to care, including a greater likelihood of having a usual source of care and increased use of preventive care.⁵ However, with the current fiscal crisis facing the states and the mounting federal deficits, expansions in eligibility seem unlikely in the near term. On the contrary, states are seeking ways to contain Medicaid costs. For example, a recent survey by the Kaiser Commission on Medicaid and the Uninsured (Smith et al. 2003), found that 18 states plan to reduce Medicaid eligibility, 20 states plan to scale back benefits, and 21 states plan to increase copayments in 2004. An implication of our findings is that cutting Medicaid eligibility will lead to a substantial reduction in access to care for those who become uninsured. It is also likely that benefit reductions and increased copays would change the relationship between Medicaid and private coverage. If states significantly revamp Medicaid benefits and cost-sharing arrangements, it will be important to examine how well a scaled-back Medicaid program works.

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NOTES

1. An alternative approach to addressing selection bias is to use the "Heckit" procedure (Heckman 1979) to construct a "selection bias correction" term that is included in the outcome equation to correct for the bias from unobserved variables that are correlated with insurance status and affect the outcomes. Both the Heckit procedure and IV methods yield consistent estimates of program impacts (Greene 2000). We chose to use IV methods both because of a desire to avoid the functional form assumptions of the Heckman method and to build on the current literature using IV methods to assess the impacts of Medicaid on access and use.
2. We estimate a multinomial probit model for insurance choice rather than a multinomial logit model because the probit model is based on a normal distribution (which underlies the theoretical foundations of the IV literature) and because the probit model does not require the assumption of the independence of irrelevant alternatives that underlies the multinomial logit model (Greene 2000). The multi-

- nomial probit model of insurance status is estimated using aML (Lillard and Panis 2003). The remaining models are estimated using Stata (StataCorp 2001).
3. This is similar to the method used by Currie and Gruber (1996). In this case, we have simulated eligibility for Medicaid and state-specific programs in each state using the same national sample of women with children.
 4. The individual asked the NSAF attitude questions is the adult family member who is the most knowledgeable about a child in the family who was selected for additional survey questions. The “most knowledgeable adult” is usually the mother in the family.
 5. Applying our results for low-income mothers to ambitious expansions up the income distribution is more problematic: Higher income mothers may respond very differently to the direct and indirect costs of Medicaid and private coverage than low-income mothers.

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