
Articles

Insurance Status and Access to Health Services among Poor Persons

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Objective. We examine the relationship between health insurance status and access to care among low-income persons 65 years of age and under, taking into account their social demographic characteristics and health care needs.

Data Sources and Study Setting. Study groups consist of the subsamples of persons with incomes between 100 and 150 percent of the federal poverty level and those below the federal poverty level interviewed in the 1983, 1984, and 1986 Health Interview Surveys (HIS) of the National Center for Health Statistics. Sample sizes range from about 6,000 to 11,000 depending on the proportion of each study group administered the insurance supplement.

Study Design. Annual visits and whether hospitalized during a year are used as measures of access to medical care. The analysis consists of identifying predictors of use of services (i.e., health status and social characteristics) and, taking them into account, examining the relationship of insurance status to access to care. This was first undertaken on the 1983 survey; the models obtained then are replicated on the other two years of data.

Data Collection/Extraction Methods. The HIS utilizes in-person interviews to gather health and medical history information from a stratified random sample of the U.S. population. Data were obtained through public use tapes distributed by the National Center for Health Statistics.

Principal Findings. Results are consistent for all three years among persons in poverty. Being covered by Medicaid, in contrast to having private insurance *or* being without health insurance, is related to use of both ambulatory care and hospital care. The access differences for persons in poverty, regardless of their vulnerability or "risk" of requiring medical care, are marked and generally statistically significant. Among the near-poor the same findings occur, although the differences are less sharp and less often statistically significant.

Conclusions. The most obvious explanation is that the poor, and to a considerable extent the near-poor, have limited access because of copayments and deductibles that are typically part of private insurance coverage. The findings raise policy questions regarding the utility of either "play or pay" employer-provided insurance or income tax deductions to increase access.

Keywords. Access, health insurance, Medicaid, utilization, uninsured

Based on the 1983, 1984, and 1986 Health Interview Surveys (HIS) of the National Center for Health Statistics (NCHS), analyses were undertaken on the relationships between insurance status and access to health services among the U.S. noninstitutionalized population living in poverty and close to poverty (the near-poor, with incomes between 100 and 150 percent of the federal poverty criterion). The major objective was to examine the extent to which being on Medicaid, having private insurance, or being uninsured is related to access to care, taking into account social characteristics and health status.

METHODS

The analysis plan consisted of identifying predictors of use of ambulatory and hospital medical services (i.e., health status and social demographic characteristics) and, taking them into account, examining the relationship of insurance status to the access to care measures. The HIS data set for 1983 was used exclusively for developing the analyses models. Subsequently, the analyses were replicated on the 1984 and 1986 surveys.

The study group consists of all persons living in households with incomes of 150 percent of the federal poverty level, or less, whose interviews included the insurance supplement. The "near-poor" group is included in the analysis but treated separately since in some states the income levels for Medicaid eligibility include some near-poor.

In 1983, the insurance supplement was employed only in interviews conducted during the second half of the year, resulting in an unweighted sample of approximately 50,000 persons. In 1984, the entire study group was interviewed on the supplement, an effective study group of 82,000 persons. In 1986, a random one-half of the entire year's sample was interviewed on the supplement. The effective study group is about 50,000. These analyses are based on unweighted

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samples of approximately 6,000 to 11,000 poor and near-poor persons, or approximately 12 to 14 percent of the study groups.

The independent variables were selected based on findings of surveys indicating that they are associated with use of health care services and, of course, on their inclusion in the HIS. The two dependent variables are the most common access measures currently employed (Freeman et al. 1990).

VARIABLES

The dependent variables included in the analysis are:

- DRVISITS The natural log (plus .02, to retain those with zero visits) of the number of ambulatory care visits in the past year. The unlogged number of visits was used when means were calculated as presented in a number of the tables.¹
- HOSPITAL Equals 1 if the respondent was hospitalized in the past year, 0 if not hospitalized during that time.

The independent variables that were used from the data set included:

- SEX Respondent's sex (1 = male, 2 = female)
- AGE Age in years
- EDUC Years of education completed
- BLACK Identification of respondent as African American, non-Hispanic
- HISP Hispanic
- URBAN 1 if respondent lives in a Metropolitan Statistical Area (This variable was dropped in analyses involving state Medicaid variables due to multicollinearity problems.)
- POVLEV Income as percent of the federal poverty level for the household²
- HEALTH Self-reported health status, ranging from excellent (1) to poor (5)
- LOGCONDS Natural log of the number of chronic conditions the individual has plus .01
- LOGBED Natural log of the number of bed days in the past year plus .01

INSURED Coverage under Medicare, private health insurance, Public Assistance health insurance, or military health coverage of some sort (Respondents were considered to have health insurance unless they reported that they were not covered by any of these programs. These are the same four variables used by the National Center for Health Statistics in determining insurance status. Our figures will differ slightly as NCHS uses an algorithm to randomly assign insurance status to respondents who have missing data on any of these four variables. We employed no such procedure but eliminated missing cases from the analysis. The insured were divided among persons reporting Medicaid coverage or AFDC status [Aid to Families with Dependent Children], and persons reporting private insurance coverage.)

THE ANALYSIS

The first step in the analysis consisted of calculating "vulnerability to medical care" prediction scores for each person. Vulnerability to ambulatory or hospital care refers to an individual's predicted utilization of health care based upon his or her health status and social characteristics. The computation of vulnerability requires that each individual be scored on the basis of regression coefficients obtained when the annual number of ambulatory visits or hospital experiences is regressed against the health and demographic variables (see Tables 1 and 2). In the case of hospitalization, the scores were computed using logistic regression analysis.

For ease of presentation the vulnerability scores were grouped into quartiles. The lowest quartile consists of persons with the least likelihood of utilizing services (either ambulatory visits or hospitalization) and the highest quartile indicates the greatest likelihood of utilization.

Next, insurance status was cross-tabulated by either mean number of visits or hospital experience, taking into account the vulnerability scores. It should be noted that the private insurance group includes persons belonging to HMOs or other capitation programs. Unfortunately, the interviews did not differentiate out these persons. A small

Table 1: Regression Equations Predicting Vulnerability to Ambulatory Care in 1983, 1984, and 1986

Variable	Year		
	1983	1984	1986
LOGCONDS	.139877	.134382	.137442
LOGBED	.154550	.159434	.148612
HEALTH	.145082	.150163	.153589
URBAN	.142143	.111495	.091184
SEX	.305415	.289412	.307986
PHONE	-.032---*	-.089021	-.077693
MARRIED	.136459	.124168	.062443
HISP	-.135830	-.107218	-.091853
EDUC	.064653	.085782	.080627
POVLEV	-.038---	-.047038	-.092028
BLACK	.000---	.016---	-.040---
AGE2	.000540	.000652	.000694
AGE	-.045318	-.052743	-.053524
Constant	.659512	.801090	.842829
Adjusted R^2	.30569	.30645	.29604

*Regression coefficients with "---" are *not* significant at the .05 level.

Table 2: Logistic Regression Equations Predicting Vulnerability to Hospitalization in 1983, 1984, and 1986

Variable	Year		
	1983	1984	1986
LOGCONDS	-0.2276	-0.1666	-0.1960
HEALTH	-0.2900	-0.4090	-0.3412
URBAN	-0.02--*	0.06--	-0.1082
SEX	-0.4952	-0.5465	-0.5120
PHONE	-0.2167	-0.2239	-0.2517
MARRIED	-0.6160	-0.5535	-0.5166
HISP	0.4441	0.2629	-0.0778
EDUC	-0.0806	-0.0891	-0.0938
POVLEV	0.0776	-0.0820	0.1923
BLACK	0.00--	0.06--	-0.0911
AGE	0.0088	0.0096	0.0056
Constant	3.5104	4.1585	3.8848
X^2	772.07	1287.99	755.21

*Regression coefficients with "--" are *not* significant at the .05 level.

number of persons had both private insurance and Medicaid (fewer than 5 percent of the study group), and it was not possible to interpret the coverage of these persons. Some might have been "spend-downs," others covered part of the year by different programs, and so on.

All secondary analyses are limited to the variables in the data sets used, in this case mainly by the available details on insurance coverage, household finances, and health status. An important methodological issue in the use of HIS data is the extent to which self-reports and proxy reports are similar; in the HIS, one household member reports all of the information for each person living there. Despite these limitations, the large-sample HIS data sets are one of the best sources available for examining differences in access between the insured and uninsured.

RESULTS

The results are presented separately for the two access measures. The first part of this section reports on ambulatory visits, the second on hospital experiences.

AMBULATORY VISITS

Although somewhat counterintuitive, the results are clear and consistent across vulnerability categories (Table 3). Among persons in poverty, depending on vulnerability category, persons on Medicaid have utilization rates one-and-one-half to over two times those of persons without insurance. The findings are consistent for all groups vulnerable to ambulatory care and for all three years. All of the comparisons between the Medicaid and private insurance groups and between the Medicaid and uninsured groups are statistically significant ($p < .05$). Equally noteworthy, the mean number of visits of persons with private insurance are similar to those without any insurance. *Private insurance simply does not provide the same access to ambulatory care as Medicaid.*

The same trends pertain among the group at the 100-to-150-percent-of-poverty level (Table 4). Among the near-poor, however, the number of persons enrolled in Medicaid is quite small and the differences approach significance at the $p < .05$ level in only 7 of the 12 comparisons. It should be noted that there generally are only small differences between persons with private insurance and those without coverage.

Table 3: Mean Ambulatory Visits, Medical Care Vulnerability, and Insurance Status for Persons in Poverty

	Year					
	1983		1984		1986	
	Mean	Cases [†]	Mean	Cases [†]	Mean	Cases [†]
<i>Vulnerability Quartile: 1</i>						
(Lowest)						
Medicaid	1.47**	231	2.02**	467	1.84**	298
Private Insurance	.82	464	.87	871	.90	377
No Insurance	.67	758	.77	1411	.82	746
<i>Vulnerability Quartile: 2</i>						
Medicaid	2.33**	437	2.62*	768	2.41*	570
Private Insurance	1.32	441	1.50	825	1.33	435
No Insurance	1.47	687	2.00	1380	1.85	811
<i>Vulnerability Quartile: 3</i>						
Medicaid	4.22**	395	5.21**	829	4.98**	577
Private Insurance	3.02	499	2.99	934	3.12	509
No Insurance	3.14	621	3.08	1114	2.79	718
<i>Vulnerability Quartile: 4</i>						
(Highest)						
Medicaid	10.11**	559	10.55**	1075	11.07**	748
Private Insurance	7.15	463	7.60	808	7.25	521
No Insurance	7.68	606	7.08	1116	7.56	718

**t*-Test between Medicaid and private insurance $p < .05$.

***t*-Test between Medicaid and no insurance $p < .05$.

†Unweighted sample size.

HOSPITAL EXPERIENCE

For the poverty group most vulnerable to hospital care levels, insurance status appears to relate to differences in whether or not a person was hospitalized during the year. Persons with private insurance are much closer to the uninsured in their likelihood of being hospitalized than they are to persons on Medicaid (Table 5). Among persons in poverty, 10 of the 12 comparisons are statistically significant at the $p < .05$ level. In the two cases where they are not, variability quartiles one and three, the trend is in the same direction and the differences reasonably sharp.

Because of the small size of the Medicaid group among the near-poor, while results run generally in the same direction as the findings for persons in poverty, only one-half of the comparisons are significant at the $p < .05$ level. In particular, the differences among the near-poor for the 1986 study group, while in the same direction as in other years, are significant among only one of the vulnerability groups.

Table 4: Mean Ambulatory Visits, Medical Care Vulnerability, and Insurance Status for Persons between 100 and 150 Percent of Poverty Level

	Year					
	1983		1984		1986	
	Mean	Cases [†]	Mean	Cases [†]	Mean	Cases [†]
<i>Vulnerability Quartile: 1</i>						
(Lowest)						
Medicaid	1.11	38	1.85**	64	1.37	33
Private Insurance	.91	802	.83	1289	.98	635
No Insurance	.76	450	.71	775	.76	452
<i>Vulnerability Quartile: 2</i>						
Medicaid	1.93	68	3.37**	101	4.45**	60
Private Insurance	1.82	747	1.69	1131	1.75	585
No Insurance	1.41	337	1.65	631	1.49	350
<i>Vulnerability Quartile: 3</i>						
Medicaid	4.16	77	5.94**	136	6.57*	77
Private Insurance	3.12	769	3.63	1220	2.98	676
No Insurance	2.83	354	3.30	604	4.09	379
<i>Vulnerability Quartile: 4</i>						
(Highest)						
Medicaid	9.92	96	12.32**	188	13.61**	133
Private Insurance	7.06	618	7.75	1007	8.26	594
No Insurance	7.25	340	8.42	584	7.36	412

**t*-Test between Medicaid and private insurance $p < .05$.

***t*-Test between Medicaid and no insurance $p < .05$.

[†]Unweighted sample size.

It is also of interest that in the case of hospital experience, privately insured persons are more likely to have been hospitalized during a year's period than uninsured ones. It seems reasonable to hypothesize that for medical conditions resulting in hospitalization, in comparison with those treated on an outpatient basis, persons with private insurance are less likely to neglect or postpone treatment. In such cases, these persons may be pressed harder to expand personal resources in order to cost-share their care, or their portions of the bill may be forgiven by the hospital.

CONCLUSIONS

Being covered by Medicaid, in contrast to having private insurance or being without health insurance, is strongly related to access to care. This is the case regardless of predicted vulnerability or "risk" of requir-

Table 5: Percent with One or More Hospitalizations and Medical Care Vulnerability and Insurance Status for Persons in Poverty

	Year					
	1983		1984		1986	
	Percent	Cases [†]	Percent	Cases [†]	Percent	Cases [†]
<i>Vulnerability Quartile: 1</i>						
(Lowest)						
Medicaid	5.1*	311	8.6**	733	3.3	343
Private Insurance	1.5	431	2.8	1037	2.3	375
No Insurance	2.0	674	1.9	1265	1.9	542
<i>Vulnerability Quartile: 2</i>						
Medicaid	9.4**	423	8.4**	710	10.9**	612
Private Insurance	4.3	514	4.7	906	2.6	485
No Insurance	4.5	686	3.6	1264	3.1	804
<i>Vulnerability Quartile: 3</i>						
Medicaid	15.1**	433	14.4**	761	9.5	587
Private Insurance	9.1	477	8.8	801	7.3	496
No Insurance	6.2	660	7.3	1274	7.5	837
<i>Vulnerability Quartile: 4</i>						
(Highest)						
Medicaid	29.9**	477	28.0**	970	29.9**	681
Private Insurance	21.5	462	20.6	708	18.2	494
No Insurance	18.8	668	18.6	1268	17.9	841

**t*-Test between Medicaid and private insurance $p < .05$.

***t*-Test between Medicaid and no insurance $p < .05$.

[†]Unweighted sample size.

ing medical care, and it occurs both for ambulatory and hospital services. The differences between the Medicaid group and both the privately insured and the uninsured are sharper for persons in poverty than for those a notch above it, and for ambulatory visits compared with hospitalizations.

The most obvious explanation for the finding is that persons in poverty and the near-poor (although to a lesser extent) face economic barriers to access because of the copayments and deductibles that are typically part of private health insurance coverage. Although there are other possibilities, of course, we believe it is difficult to argue that utilization causes Medicaid enrollment. In our view, access is determined largely by insurance status.

To the extent that the out-of-pocket costs explain our findings, important policy questions are raised regarding the utility of "play or pay" employer-provided health insurance and similar legislative efforts

if such insurance includes the deductibles and coinsurance requirements common in current policies. For persons without Medicaid, including the working poor, even modest deductibles and cost-sharing may have a dramatic dampening effect on access to care. The findings further suggest that either neglect or postponement of treatment among the disadvantaged is more common for medical conditions that can be treated on an outpatient basis than in the hospital, or that providers "discount" patients' out-of-pocket costs in the case of hospital care but not ambulatory care.

Expansion of work-related private insurance programs, then, mainly may transfer the burden of meeting the costs of care for the poor and near-poor from the government and the provider to the individual employer and the worker. But the impact of such programs on access to care for the unemployed and for persons working at minimal wage could be extremely limited. The same would be the case with providing income tax deductions for part of individuals' health insurance or medical care costs. For the poor, and to some extent for the near-poor as well, it appears that it is the out-of-pocket costs associated with private insurance that are the barrier to access to care, particularly ambulatory care. Our findings on access are consistent with those of the RAND Health Insurance Experiment: that cost sharing and deductibles result in lower use of health services (Brook et al. 1983).

Government-provided universal health care or mandated use of HMOs and similar capitated programs are obvious alternatives to meet the access problems of low-income persons. If deductibles and copayments are built into any expanded private health insurance program to reduce the risks of overuse, they must be minimal and within the marginal incomes of the poor and near-poor. Certainly for such persons, the out-of-pocket costs typical in today's private health insurance packages would operate to curtail access. The apparent solution would be some "sliding scale" of deductibles or copayments. However, for private carriers to administer such programs and to verify family incomes would be nearly impossible. Perhaps the most feasible way of administering a private insurance program that does not curtail access to the poor and near-poor would be for the federal government to "pre-pay" providers for deductibles and coinsurance portions of the costs of care, and then recapture them as add-ons to federal income taxes scaled to personal incomes.

Our results certainly raise questions on the extent to which expansion of private insurance will affect access to care for low-income workers, given current deductibles and copayments. Providing income tax deductions for health insurance also is a questionable solution to the

problem of access faced by persons in poverty and by part of the near-poor group as well. Neither of these initiatives represent sufficiently powerful social programs to deal with the unmet medical care needs of the nation's poor.

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NOTES

1. The residuals of the number of visits were plotted in order to assess the normality of the distribution. The log of the number of visits provides a satisfactory fit of the data to the normal distribution. The constant .2 was added to the number of visits in order to avoid undefined values for persons with no visits. The value of .2 was selected by trial and error in order to achieve the best fit between the residuals and a normal distribution. The same procedure was employed with number of chronic conditions and number of bed-days. In these cases a constant of .01 yielded the best fit.
2. The poverty measure was included in the prediction equation so that "joint" variance accounted for by this variable and the others was not excluded. However, since the study group used here was partitioned into poverty and near-poverty groups, its values within each group become constants and are irrelevant.

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