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DO CHILDREN OF IMMIGRANTS MAKE DIFFERENTIAL USE OF PUBLIC HEALTH INSURANCE?

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ABSTRACT

Medicaid is one of the most costly welfare programs available to immigrants. This paper uses data from the 1989 to 1992 National Health Interview Survey to compare the effects of Medicaid eligibility on public and private health insurance coverage and on the utilization of medical services among children of natives and children of immigrants.

Children of immigrants are more likely to be covered by Medicaid, but less likely to use health care. However, after conditioning on eligibility and other observable characteristics and instrumenting individual eligibility using an index of the generosity of state Medicaid regulations, I find that recent expansions of eligibility had negligible effects on Medicaid coverage among children of immigrants, although coverage rose among children of the native born. Among immigrants in border states, eligibility was also associated with declines in private health insurance coverage. Effects on utilization were quite different: becoming eligible increased the probability that a child had a doctor's visit more for immigrants than non-immigrants, but increased the hospitalization rate only among children of the native born. Hence, although recent Medicaid expansions shifted as much as one-quarter of the cost of providing infra-marginal services to children of immigrants from private to public insurers in border states, they drew many previously unserved children of immigrants into care.

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The fraction of the U.S. population that is foreign born has risen dramatically over the past two decades from 4.7% in 1970 to 7.9% in 1990 (Banister, 1994). The increased inflow of immigrants has been accompanied by growing concern about the cost of social services used by immigrants and their families. These concerns are particularly acute in "border" states such as New York, California, Texas, and Florida that are absorbing disproportionately large numbers of immigrants (Banister, 1994).

Medicaid, a system of public health insurance for poor women and children, is one of the most costly social programs available to the families of immigrants. Clark (1994) estimates that while the U.S. spends $3.4 billion annually on cash welfare payments to immigrants under the Aid to Families with Dependent Children program, it spends about $5.5 billion on payments to children of immigrants under the Medicaid program.[1] Moreover, Medicaid is one of the few welfare programs that has been growing over time. The number of children covered by Medicaid has expanded rapidly since the early 80s, as a result of Congressional mandate: The fraction of children eligible for Medicaid coverage increased from 16.1% in 1984 to 31.2% in 1992 (Currie and Gruber, 1996). The cost per child also rose rapidly over this period, due primarily to the rising costs of medical care (Newhouse, 1993). The draft Personal Responsibility Act would make even legal immigrants ineligible for 60 federally-assisted programs -- and available estimates suggest that one-sixth of the projected savings of $22 billion over the next 5 years would come from reductions in Medicaid payments to immigrant children.[2]

These figures indicate that it is important to understand the determinants of the takeup of Medicaid benefits by children of immigrants. The analysis of takeup is complicated by the fact that enrollment in Medicaid is not synonymous with the receipt of benefits. It is possible that even those who carry

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[1] By way of comparison, the entire budget for AFDC is 22 billion annually. According to Clark (1994), Medicaid expenditures for immigrants total 16.6 billion dollars. Since two-thirds of Medicaid expenditures are on the elderly, this implies that 5.5 billion is spent on children.

[2] Bloom *et al.* (1995) calculate that half of the projected savings would come from reductions in Medicaid payments, and about 1/3 of Medicaid payments go to children.

Medicaid cards lack access to medical services. For example, Fossett *et al.* (1992) and Fossett and Peterson (1989) show that areas with high concentrations of Medicaid enrollees tend to be under-served by Medical providers. Children of immigrants may face additional barriers to the utilization of care if their parents lack fluency in English, lack transportation to providers, or work long or irregular hours. It is also possible for uncovered Medicaid eligibles to enroll in the program at the time that medical services are rendered, or even afterwards. The U.S. General Accounting Office (1994) provides several examples of cases in which hospitals contracted with "enrollment vendor firms" to recover the expenses of treating unenrolled Medicaid eligibles.[3]

This paper compares the effects of Medicaid eligibility on the children of immigrants and on the children of the native born. I use data from the 1989 to 1992 waves of the National Health Interview Survey (NHIS) to examine the effects on both formal health insurance coverage, and on the utilization of care. The NHIS is the only large-scale public-use U.S. data set with both types of measures. State rules and information about family circumstances are used to evaluate the Medicaid eligibility of each child. The effects of eligibility are identified using variations in eligibility stemming from the fact that recent expansions of the Medicaid program have been implemented at different rates in different states, and generally covered younger children first.

I find that children of immigrants are more likely than other children to be eligible for Medicaid. This result is consistent with previous research into cash assistance programs such as AFDC which shows that because immigrants tend to be poorer than the native born, their children are more likely to be eligible

[3] The GAO gives the following example: "The child of a single, uninsured, working mother incurred a $20,000 hospital bill... The hospital referred this case to an enrollment vendor firm after determining that it was a potential Medicaid case. After contacting the mother, the firm initiated and submitted a Medicaid application. The firm gave the applicant a list of verification items she would have to provide. However, the applicant did not provide the requested items and medicaid coverage was denied. Upon learning of the denial, the firm contacted the applicant twice weekly for a period of 2 months to get her to cooperate... Eventually, the applicant responded and submitted the verification items and a signed power of attorney to the firm... The signed power of attorney allowed the firm to appeal the denial successfully and obtain Medicaid coverage for the children" (pg. 24, 1994).

(Blau, 1984; Borjas, 1990; Jensen, 1988; Tienda and Jensen, 1986; Trejo, 1992).

However, I show that other things being equal, becoming eligible under the recent Medicaid expansions has a bigger effect on coverage among children of the native born than among children of immigrants. Among the native born, Medicaid eligibility is associated with a 20 percentage point increase in the probability of being covered by Medicaid, and a 26 percentage point decrease in the probability that a child is reported to be uninsured. There is no significant effect on the probability of private health insurance coverage. No statistically significant effects on any type of insurance coverage are found for immigrants as a whole. But among immigrants in border states, becoming eligible under the Medicaid expansions is associated with a 34 percentage point decrease in the probability of private health insurance coverage and a corresponding increase in the probability that a child is reported to be uninsured. Becoming eligible under the expansions has no significant effect on the probability that an immigrant child in a border state is covered by Medicaid.

The effect of eligibility on patterns of utilization is quite different. Eligibility is associated with a 29 to 39 percentage point reduction in the probability that an immigrant child went without a doctor's visit in the past 12 months. Eligibility is also associated with reductions in the probability of doing without a doctor's visit among children of the native born, but the effect is smaller in magnitude, and only statistically significant in border states. Eligibility has no significant effect on the number of doctor visits conditional on any visits, or on the probability of hospitalization among immigrants. However, it is associated with a 7.5 percentage point increase in the probability of hospitalization among children of the native born in "border" states.

These systematic differences in patterns of coverage and utilization between children of immigrants and children of the native born suggest that using administrative data on Medicaid coverage and average Medicaid costs per child enrolled is likely to give a very misleading estimate of the likely effects of extending or curtailing Medicaid eligibility for the children of immigrants. They also suggest that it is

important to distinguish between types of utilization: Among immigrants, eligibility increases the utilization of relatively low-cost ambulatory services by children who were not previously served by the medical system, while among children of the native born, eligibility also increases hospitalization rates.

Hence, the marginal services used by eligible immigrant children are relatively low cost, and making immigrant children eligible improves their access to basic health care. However, although there is no increase in hospitalizations or number of doctors visits conditional on any visits among children of immigrants, expanding Medicaid eligiblility increases the share of these infra-marginal services that is paid for by public rather than private insurers. The rest of the paper is laid out as follows: Section I outlines the methods to be used. The data is described in Section II. Section III provides the empirical results while Section IV concludes.

I: Methods

The main empirical problem involved in investigating the effects of Medicaid eligibility and Medicaid coverage is that eligibility, coverage, and utilization all reflect choices made by parents, at least to some extent. The effects of eligibility will be identified by drawing on dramatic federally mandated recent expansions of Medicaid eligibility for low income children. Historically, eligibility for Medicaid was tied to the receipt of cash welfare payments under the Aid to Families with Dependent Children program. Hence, eligibility was effectively limited to very low income women and children in single parent families.

Beginning in 1984, states were first permitted and then required to extend Medicaid coverage to other groups of children. By 1992, states were required to cover children below age 6 in families with incomes up to 133% of the federal poverty line, and children between ages 6 and 19 with family incomes up to 100% of the poverty line; states also had the option of covering infants up to 185% of the poverty

line.[4] A list of the relevant statutes is given in Appendix Table 1.

The important point to note is that states took up these options at different rates, so that there was a great deal of variation across states in both the income thresholds and the age limits governing Medicaid eligibility. Table 1 shows the maximum age covered by Medicaid in each state at three different points in time, as well as the maximum income limit that applied to any child (the oldest child eligible was generally subject to a less generous income cutoff). The table shows that as of January 1988, 26 states had taken advantage of the options described above to extend Medicaid eligibility to previously ineligible children. By December 1989, all 50 states had expanded Medicaid eligibility -- however states like Colorado covered only infants in families with incomes up to 75% of the poverty line, while more generous states, like California, covered children up to age 5 in families with incomes up to 100% of poverty, and covered infants in families with incomes up to 185% of the poverty line. By December 1991, most states had been required by federal law to increase the age limits and income limits even further. I will exploit this variation in eligibility thresholds by state, year, and age of child to identify the effects of the Medicaid expansions.

Currie and Gruber (1996) describe the construction of a detailed simulation model that uses information about state rules, the child's age, and family characteristics to impute Medicaid eligibility to each child in the Current Population Survey (CPS) and the NHIS.[5] The key assumptions involved in the construction of this program are described in the Data Appendix. Applying the model suggests that between 1989 and 1992 the fraction of children less than 15 years of age who were eligible for Medicaid

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[4] States received federal matching funds for coverage of these groups. However, some states have extended coverage to children above 200% of the poverty line, using state only funds.

[5] When using these two data sets, it is necessary to impute eligibility at the time of the survey on the basis of annual income. Devine and Heckman (1994) conduct a comparison of eligibility simulations using the CPS to some constructed using the Survey of Income and Program Participation (SIPP), which has monthly income data. They conclude that CPS-based simulations of eligibility for training programs produce estimates remarkable similar to those using the SIPP.

increased from 20.4 to 31.2%, and that all but 2.1 percentage points of this increase can be attributed to changes in state Medicaid rules as opposed to changes in economic conditions or demographics.

This imputed individual-level eligibility measure is included in linear probability models of health insurance coverage and utilization of medical care below. However, these Ordinary Least Squares (OLS) estimates are subject to two sources of bias. The first is omitted variables bias. In addition to eligibility, all of the models include observable variables associated with Medicaid eligibility such as: the absence of a male head, income, the number of children in the family, and the age of the child (through single year of age dummies). Family income and the child's gender, race, and ethnicity, whether he or she is the oldest child, the number of siblings, the education of the mother and (if present) the father, whether the mother or father was the respondent, the presence of other adult relatives, and whether the family lives in a central city or rural area are also controlled for. Even after conditioning on this detailed set of controls, however, persons who are eligible for Medicaid may have other characteristics that affect both their takeup and their utilization of medical care. For example, they may be more likely to live in areas with limited access to physicians.

The second problem is that there may be substantial measurement error in the eligibility indicator, given limitations of the NHIS income data that are discussed below. Since coverage is self-reported (with some verification of the holding of Medicaid cards by interviewers), it may also be measured with error. An additional measurement problem is that children of immigrants who are themselves undocumented are ineligible for Medicaid coverage of non-emergency services, and it is not possible to identify these children.[6]

Hence, in addition to the OLS estimates, I present instrumental variables estimates. The aim is

[6] It is difficult to estimate the fraction of children of immigrants who are themselves undocumented. Estimates based on the 1990 Census suggest that 3 in 20 immigrants are undocumented (Banister, 1994). However, many undocumented adult immigrants have citizen children who are entitled to services under the Medicaid program. It is also unclear that the undocumented are accurately counted in a survey such as the NHIS.

to abstract from characteristics of the child and/or family that may be correlated with both eligibility and the dependent variables and to achieve identification using only legislative variation in Medicaid policy. One way to do this would be to instrument imputed individual eligibility in the NHIS using the fraction of children in the same state, year, and age group who are eligible, calculated using the CPS. This instrument captures differences in Medicaid eligibility across states, years, and age groups, and purges the regression of individual-level sources of variation in eligibility.

This approach runs into two problems in practice, however. First the CPS is simply not large enough to permit reliable estimation of the fraction of children eligible in each state, year, and age category. Second, these estimates could be biased by the omission of characteristics of state, year, and age groups that are correlated with both eligibility and with utilization or health. For example, if infants in a given state and year were particularly poor they might have both higher eligibility levels and fewer doctor's visits, resulting in a downward bias in estimates of the effects of eligibility on utilization.

In order to address these problems, the fraction of children eligible in each state/year/age group is simulated in order to create an instrument that varies only with the state's legislative environment and not with its economic or demographic characteristics. This instrument is constructed by first selecting a national random sample of 300 children of each age (0 to 14), in each year, and then calculating the fraction of these children who would be eligible for Medicaid in each state and year.[7] This measure can be thought of as a convenient summary of the legislation affecting children in each state, year, and age group. I use linear probability models for ease of computation and for consistency of this instrumental variables procedure (Heckman and MaCurdy, 1985). All standard errors are corrected for heteroskedasticity using White's (1980) procedure.

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[7]That is, how many of the 300 one year olds would be eligible if they all lived in California, how many would be eligible if they all lived in Massachusetts, etc. The sample size of 300 was chosen due to data and computational constraints. In order to assess the severity of potential problems due to sampling variability, the instrument was constructed twice, using two different random samples. The correlation between the two instruments was 0.97.

This instrumental variables strategy overcomes the econometric difficulties noted above -- the model is purged of endogeneity bias and biases due to individual-level omitted variables that are correlated with both eligibility and outcomes. To the extent that the measurement error in the instrument is uncorrelated with the measurement error in the individual eligibility measure, this procedure also surmounts the measurement error problem.[8] Finally, using a national random sample eliminates the effects of state and year specific economic conditions that might be correlated with both eligibility and with utilization; the problem of small age/year/state cell sizes is also eliminated. This instrument is strongly correlated with individual eligibility, as shown in Appendix Table 2.

Of course, using legislation as the source of identifying variation raises the question of whether laws can be treated as exogenous variables. It is possible, for example, that rich states may have both more generous Medicaid policy and more utilization of medical care. It is important to note that much of the identifying variation used in this paper is a result of federal mandates, and therefore outside the control of state governments -- as Table 1 and Appendix Table 1 show, states differed widely in their propensity to take up optional Medicaid expansions prior to 1989. Hence states started with differing levels of generosity, a fact that can be controlled for by including state fixed effects in the models. Between 1989 and 1992, however, even recalcitrant states were forced to extend Medicaid coverage to meet federal standards, with the result that greater uniformity across states was achieved.[9] Thus although New Hampshire and Minnesota ended up with similar programs in 1992, New Hampshire expanded eligibility much more rapidly than Minnesota between 1989 and 1992 as the federal mandates began to

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[8] If the measurement error stems mainly from random individual response error, then measurement error in the CPS instrument will be uncorrelated with that in the NHIS data, especially given the fact that the measure calculated using the CPS is the average eligibility for a large group.

[9] Possible legislative endogeneity would be a potentially greater problem if instead of the simulated fraction eligible for Medicaid, laws such as the maximum AFDC benefit levels (which helps to determine Medicaid eligibility) were used as instruments. The problem is that the maximum AFDC benefit will help to determine Medicaid eligibility, but may also be correlated with time-varying characteristics of states that affect utilization of health care and insurance coverage.

bite.

In addition to state fixed effects, the models estimated below include a full set of dummy variables for calendar years, and each single year of age. These variables control for unobserved variables such as secular trends in hospitalization rates, or changes in the recommended schedule of visits for various age groups. Interactions between 5 broad age groups and the year dummies, and between the 5 age groups and the state are also included.[10] These interactions control for variables such as state programs targeted to specific age groups, and technological changes affecting specific age groups. Finally, the standard errors are corrected to allow for any residual correlations between the errors within state-year clusters.[11]

II. Data

The National Health Interview Survey interviews a large, nationally representative cross-section of American families each year.[12] The baseline survey collects information about demographic characteristics and family income. There are also a number of questions about the utilization of medical care over the previous year. These data cover approximately 100,000 individuals and 30,000 children less than 15 years old in each year.

Beginning in 1989, the NHIS has asked all non-native born adults in the household how long they have lived in the U.S. Responses are grouped into 6 categories: less than 1 year, 1 to 5 years, 5 to 10 years, 10 to 15 years, 15 plus years, and "don't know". Using this information it is possible to determine

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[10] The five groups are: less than 1; greater than or equal to 2 and less than or equal to 4; greater than or equal to 5 and less than or equal to 7; greater than or equal to 8 and less than or equal to 10; and greater than or equal to 11. All the children in the sample are 14 or under.

[11] White's (1980) procedure is generalized to allow the covariance matrix of the residuals to be block-diagonal rather than diagonal, with each block corresponding to a particular state and year.

[12] The models estimated in this paper are unweighted, but include controls for key variables used in stratifying the sample such as race, central city residence, and rural residence. The inclusion of these variables results in estimates similar to those that would be obtained by weighting (Dumouchel and Duncan, 1983).

whether either the mother or father of the child is an immigrant[13], and whether or not they immigrated within the past 10 years. The relatively few respondents who answer that they "don't know" how long they have been in the U.S. are treated as immigrants, but are dropped from consideration when the effect of time in the U.S. is considered. Sixteen percent of the sample children have at least one parent who is an immigrant. Appendix Table 3 indicates that children of immigrants are disadvantaged relative to the average child of a native born parent: immigrant parents are less educated, less likely to be employed, more likely to live in central cities, and less likely to be in a higher-income category.

The NHIS also fields supplements that ask additional questions about health insurance status every three years. Insurance supplements were fielded in 1989 and 1992, years that neatly bracket much of the increase in Medicaid eligibility for low income children that was shown in Table 1. Using these supplements, it is possible to determine whether the child was covered by private insurance, Medicaid, or was uninsured at the time of the interview.[14]

Information from the main NHIS survey can be used to impute Medicaid eligibility to each child,

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[13] In principal, one could distinguish between the effects of having an immigrant father and the effects of having an immigrant mother. However, 83% of children who had at least one immigrant parent had a mother who was an immigrant, while 70% of these children had an immigrant father. Thus, there is a high degree of correlation between the two measures, and it proved impossible to separate these effects.

[14] The questions about private health insurance coverage and no insurance coverage are straightforward. There are four questions asked about public health insurance coverage. Parents are asked whether each child received Medicaid in the past 12 months, has a Medicaid card, is covered by some other type of public assistance program that pays for health care, or is covered by any type of public assistance health insurance coverage. In 1989 for example, 7287 respondents reported receiving Medicaid in the past 12 months, 7319 said they had a Medicaid card (and this was verified for 4534 individuals), 8072 said that they were covered by public assistance health insurance coverage, and 686 said that they were covered by some form of public assistance health insurance coverage other than Medicaid. Hence, the most inclusive definition of Medicaid coverage, which is the one adopted here, is to count anyone who received public assistance health insurance that was not of some "other" type as Medicaid covered. This leaves 7386 individuals which is not very different than what would be obtained using the least inclusive measure -- the 7287 individuals who reported "receiving" Medicaid in 1989. Experimentation with other possible measures of Medicaid coverage produced results similar to those reported below. The existence of "other" public health insurance programs accounts for the fact that the effects of eligibility on Medicaid coverage, private health insurance coverage, and no insurance coverage may not sum to zero.

although there are several problems to be overcome. First, family income is missing for a number of households, as shown in Appendix Table 3. Missing income data is imputed by using CPS data to estimate regressions of income on household characteristics, and then using the regression coefficients to calculate income for NHIS households with similar characteristics. The Census bureau uses a similar procedure to impute missing data in the CPS. These estimates were calculated separately for each year.[15]

Second, when family income is reported, it is reported in brackets. This is less of a problem than it might first appear because it causes problems only when the Medicaid cutoff falls in the middle of the family's reported income bracket, and the income brackets are in $1000 increments if income is less than $20,000.[16] Currie and Gruber (1995) experimented with two approaches to this problem. The first involved predicting income within the bracket using regressions estimated using the CPS, as described above. The second method involved choosing a random number within the bracket. Since the estimated fraction eligible was very similar under both approaches, I opted for the latter, simpler method. The estimated models control for income brackets rather than the noisy imputed income measure, and interactions between the (nominal) income brackets and the year dummies are included in order to account for inflation. The omitted income category in all the models estimated below is "missing".

A third problem is that there is no information about the distribution of income across family members, or about income sources. This lack of information is potentially problematic because, for example, some portion of earnings, but not other types of income, can be disregarded from total family income in determining AFDC eligibility. In this paper, these disregards are applied to total income, under

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[15]For most of the missing observations, I know whether income was greater than or less than $20,000, so I can impute income within those subsamples. The imputation regressions fit fairly well; the R-squareds for the yearly regressions estimated using all individuals average 0.45. For those with incomes below $20,000, the R-squareds average 0.32; while for those with incomes above $20,000, the R-squareds average 0.25.

[16] For incomes over $20,000 and less than $50,000 the brackets are in increments of $5,000. The last bracket is for incomes over $50,000.

the assumption that most family income comes from earnings.[17] These limitations of the NHIS income data do not seem to lead to any systematic measurement problems; the resulting annual eligibility rate in the NHIS is similar to that calculated using the CPS in terms of both levels and the time series trend.[18]

This paper focuses on three measures of utilization of medical services over the past year: Whether or not the child had a doctor visit in the last year; the number of doctor visits if the child had any visits; and whether or not the child was hospitalized.[19] Pediatric guidelines recommend at least one doctor's visit per year for most children in the sample, so that the absence of a doctor's visit in the previous year is suggestive of an access problem, regardless of underlying morbidity.[20] If the marginal benefit of doctor's visits is decreasing in the number of visits (which seems reasonable if children who get any visits receive some necessary preventive care), then this first visit is also the most important from the point of view of the child's health. Nevertheless, it is interesting to examine the number of doctor's visits conditional on the child receiving care, since the cost of care will be increasing in the number of visits. Because this distribution is highly skewed to the right, I focus on the log of the number of doctor's visits in the analysis.

It is interesting to examine hospitalizations primarily because they are so much more expensive than doctor's visits, and hence account for a disproportionate share of Medicaid costs. For example, the U.S. House of Representatives (1993) reports that in 1991, the Medicaid program spent 5.4 billion on

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[17]In the 1984 CPS, 75% of the average child's family income comes from his or her parents' earnings.

[18] In the years 1989 to 1992, the fraction of children eligible for Medicaid in the NHIS data was 19.3, 25.2, 27.5, and 31.5%. These numbers are very close to those calculated from the CPS.

[19] Although the NHIS asks many questions about utilization, most pertain to a two week window. Even in a sample as large as the NHIS, this sampling scheme yields very small samples of immigrant children who have received specific services.

[20]More frequent visits are recommended for infants, and less frequent visits are recommended for older children.

inpatient hospital services for AFDC children, and only 1.5 billion on physician services.[21] Estimates presented below suggest that approximately 80% of children receive a doctor's visit in any given year, while only 3 to 5% of children are hospitalized. These figures suggest that the average hospitalization for an AFDC child is as much as 100 times more expensive than the average doctor visit,[22] so even a small change in hospitalization rates could have a large effect on costs. It is possible that expanding Medicaid eligibility could reduce hospitalizations by increasing access to preventive care, and to ambulatory alternatives to hospitalization (Bindman *et al.*, 1995). Alternatively, there is some evidence that hospitalizations increase with insurance coverage. For example, Kemper (1988) finds that 21% of pediatric hospitalization days are of "doubtful necessity" and that this fraction is higher for Medicaid covered children than for uninsured children. Currie and Gruber (1996) found that over the 1984 to 1991 period, Medicaid eligibility was associated with a 4 percentage point increase in the probability of pediatric hospitalization. Given that children who need hospitalization are likely to be treated in any case, it is likely that a significant fraction of these "new" hospitalizations are unnecessary. In addition to being costly to taxpayers, unnecessary hospitalizations are detrimental to children since they are disruptive, and expose children to infection and invasive procedures (Goodman *et al.*, 1994).

An overview of the data on eligibility, coverage, and utilization is shown in Table 2. All means are calculated using sample weights. The table presents separate estimates for all natives and all immigrants, and for natives and immigrants in "border" states. For the purposes of this analysis, border states are defined to include Arizona, California, Florida, Texas, New Mexico, and New York. As discussed above, these states are of particular interest because they are absorbing a disproportionate share of the immigrant flow. Table 2 suggests that over half of the immigrant children in the sample live in

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[21] Some of these physician services would have been rendered in hospitals.

[22] Let X be the number of AFDC children, Y be the average cost of a hospitalization, and Z be the average cost of a doctor's visit. Then .03*XY=5.4 billion and .80*XZ=1.5 billion. Hence, Y/Z=96.

these states. Estimates are also shown separately for children with at least one parent who immigrated less than 10 years ago. In principal, a comparison of these "new" immigrants with all immigrants is of interest because of claims that new immigrants are less skilled than previous cohorts (Borjas, 1990) and because new arrivals may be less familiar with programs such as Medicaid. However, Table 2 indicates that even in a sample as large as the NHIS, there are relatively few children of new immigrants.

The first row of Table 2 indicates that 35% of immigrant children are Medicaid eligible, compared to 21% of the children of the native born. This fraction rises to 47% among children of new immigrants, and to 42% among children of immigrants in border states. A comparison of the last two columns suggests that the latter result is not an artifact of immigrants being concentrated in more generous states; only 23% of the native born are eligible in border states.

The second row of Table 2 suggests that although a slightly higher fraction of immigrant children are currently covered by Medicaid (17% compared to 13% of children of the native born)[23], average takeup rates conditional on eligibility are actually lower among the immigrant population -- approximately 50% of Medicaid-eligible immigrant children are covered compared to 66% of eligible children of the native born. Immigrant children are also less likely to be covered by private health insurance, with the result that 25% of the immigrant children are without health insurance coverage compared to 13% of all children. The fraction without coverage rises to 30% among the children of recent immigrants and among children of immigrants to the border states.

This large difference in the probability of having health insurance coverage is associated with relatively small differences in the utilization of care, however. The second panel of Table 2 indicates that

[23] Borjas and Hilton (1995) look at "participation" rates for immigrant and non-immigrant households. An immigrant household is defined as one in which the householder is an immigrant. They find using the SIPP that in 1984/1985 8.4% of native households participated in Medicaid compared to 11% of immigrant households. In 1990/1991 the comparable figures were 9.4 and 15.4%. It is likely that my numbers are slightly higher than those of Borjas and Hilton because households without children, disabled people, or elderly people do not qualify for Medicaid.

20% of immigrant children went without a visit in the 12 months prior to the survey, whether or not they were Medicaid eligible. The comparable figures for children of the native born are 17% for Medicaid eligibles and 18% for non-eligibles. Conditional on having had at least one visit, Medicaid eligible children had more visits. But the difference of .2 or .3 more visits is much smaller than the raw differences between children of the native born and children of immigrants, which are on the order of .6 to .7 visits. Finally, the percentage of children hospitalized is lower among immigrants than among the native born, but higher among Medicaid eligibles than among those who are ineligible: 5% of Medicaid eligible native born children are hospitalized compared to 4% of eligible immigrants, 3% of ineligible native born children, and 2% of ineligible immigrants.

What remains to be seen is how much of these raw differences can be explained by the characteristics of immigrant children and their families. Some additional characteristics of children of immigrants and children of the native born and their families are shown in Appendix Table 3. As others have noted, immigrant parents in border states are less skilled on average than other immigrants -- 49% of the children of immigrants in border states have mothers with less than 12 years of education, compared to 42% of all children of immigrants. Immigrant children's families are poorer, have more children, are more likely to have other adults present in addition to the parents, are less likely to be female headed, and are more likely to live in central cities than other families. These differences will be controlled for in the models estimated below.

III. Results

a) Effects of Eligibility on Insurance Coverage

A large literature documents the fact that eligible individuals do not always take up public assistance -- for example, only about two thirds of those eligible for AFDC or Unemployment Insurance receive benefits (Blank and Card 1991; Blank and Ruggles, 1993). This problem may be more severe

among new Medicaid eligibles, since they may be both less well informed about public program availability and more reticent to avail themselves of public "handouts".

Evidence presented in Currie and Gruber (1994, 1996) and in Cutler and Gruber (1996) suggests that takeup of the Medicaid expansions has indeed been lower than the takeup of these other programs. One reason for low takeup is that some of the newly eligible are already covered by private insurance -- Currie and Gruber (1996) estimate that takeup rates rise from about 23% to almost 60% if one assumes that all those taking up Medicaid were previously uninsured. However, Cutler and Gruber (1996) estimate that one third of new Medicaid enrollees dropped their private insurance. If these people are excluded from the calculation, the takeup rate among the otherwise uninsured would fall to approximately 40%. A second possible reason for low takeup is that as discussed above, it may not be necessary to be formally enrolled in the Medicaid program in order to gain access to Medicaid benefits.

The question addressed in this section is whether there is any difference in takeup of Medicaid coverage between children of immigrants and the children of the native born conditional on eligibility and other observable characteristics. Ordinary Least Squares models of the probability of Medicaid coverage are shown in Table 3. The estimates shown in the first row indicate that becoming eligible for Medicaid increases the probability of coverage by between 13 and 21 percentage points. The effects are smaller for immigrants than for non-immigrants, and are smallest for new immigrants.[24]

The remainder of Table 3 illustrates the ways in which coverage varies with child and family characteristics, as well as with immigrant background. As one might expect, children of richer parents are less likely to be covered. Children of less educated parents are more likely to be covered, and the effect is greater for the children of the native born, than it is for children of immigrants. Other things equal, black children of the native born are more likely to be covered, while black immigrant children are

[24] The estimates for children of the native born are quite similar to the takeup rate of 23% reported by Currie and Gruber (1996).

less likely to be covered than other children. There is some evidence that the fixed costs of applying for Medicaid coverage may be higher for immigrants than non-immigrants, since children in larger families are more likely to be covered than other children, and this effect is largest for immigrants. Also, children in central cities are more likely to be covered, and again, this effect is larger for immigrants than non-immigrants.

Other noteworthy findings are that the probability of coverage is much higher in families without a male head, and this differential is greatest among children of immigrants. This result may reflect greater stigma associated with the receipt of welfare by two parent families. Secondly, Table 3 shows that there is a seasonal pattern to Medicaid coverage: children are less likely to be covered in the first quarter of the year, and once again, the pattern is most evident among immigrants. The probability that a child is uninsured also rises during the first quarter of the year, and there is no change in the probability that a child has private health insurance. Finally, although they are not shown, the age dummies included in the regression indicate that among both immigrants and children of the native born, younger children are more likely to have coverage, other things being equal.

The coefficients on Medicaid eligibility shown in the first row of Table 3, are reproduced in the first part of Table 4. The next two parts of Table 4 show OLS estimates of the effects of Medicaid eligibility on private health insurance coverage and on the probability that the child is uninsured. These OLS estimates suggest that all of the increased Medicaid coverage is coming from a "crowding out" of private health insurance coverage. In fact, among immigrant families the probability of no insurance rises with eligibility suggesting that some families drop private health insurance coverage without taking up Medicaid coverage. This effect is particularly pronounced among new immigrants.

As discussed above, these OLS estimates are subject to several sources of bias. Hence, Two-Stage Least Squares (TSLS) estimates which eliminate these biases are shown in the second half of Table 4. These estimates tell a very different story. There is little impact on the estimated effect of eligibility on

Medicaid coverage among the native born, but the corresponding coefficients for immigrants are much reduced, and become statistically insignificant. Hence, the TSLS results indicate that recent expansions of Medicaid eligibility were associated with increases in coverage only among children of the native born. For these children, the increase in Medicaid coverage is associated with a decline in the probability that children are uninsured, and eligibility has no effect on private health insurance coverage.[25]

In contrast, the TSLS estimates show evidence of a "crowding out" of private health insurance among newly eligible immigrants in border states. Increased Medicaid eligibility for these children is associated with decreases in the probability of private health insurance coverage without any corresponding effect on the probability of Medicaid coverage, with the result that there is an increase in the probability of being uninsured. Note that this reduction in insurance coverage does not necessarily leave the children worse off: Many private health insurance policies do not cover preventive pediatric care, and most require copayments for covered services. Medicaid requires no copayments, and as discussed above, in emergencies, many Medicaid eligibles receive Medicaid-covered care without formal Medicaid coverage. Hence, parents with relatively high costs of formally enrolling in the program (and thereby obtaining free preventive care for their children) may still be rationally choosing the lowest cost insurance for emergency care. The results presented below suggest that many parents of newly eligibile children use money saved by dropping private insurance coverage to finance basic ambulatory and preventive health care out-of-pocket, leaving eligible children of immigrants better off than they would have been in the absence of the

[25] In private correspondence, Cutler and Gruber also find smaller crowd out effects if they use CPS data from 1989 and 1992 only, rather than data from all of the years between 1987 and 1992: the estimated coefficient on private insurance coverage is reduced to -.040 from -.074. The extent of crowdout is likely to be sensitive to the nature of the expansion -- at low incomes, people may not have private insurance to begin with, while at high incomes, private health insurance may be of significantly higher quality than Medicaid coverage.

Medicaid expansions.[26]

It is also important to keep in mind that these effects are identified using recent extensions of Medicaid eligibility to the working poor and to children in two-parent families, so they should be interpreted as the effect that similar changes or reductions in Medicaid eligibility would have. Evidentally, barring all immigrants from receiving Medicaid would have some effect on coverage rates, since some immigrants do in fact receive Medicaid coverage as shown in Table 2.

b) Effects of Eligibility on Utilization

This section shows that eligibility can affect utilization, even in the absence of a significant effect on formal Medicaid coverage. Table 5 shows linear probability models of the effects of eligibility on the probability that a child went without a doctor's visit in the past 12 months. As discussed above, children who do not see a doctor at all are likely to have a true access problem, and may be more likely to go without necessary preventive care.

Table 5 indicates that Medicaid eligibility is associated with an increase in the utilization of care among children of the native born, but not among children of immigrants. However, as discussed above, these OLS estimates are likely to be biased towards zero if the eligible children are those who are most likely to go without a doctor's visit for unobservable reasons. It is also interesting to compare the effects of the other covariates on utilization to their effects on coverage. For example, black native born children were more likely than other native born children to have Medicaid coverage, but they are less likely to have received any visits in the past year. Similarly, Table 3 showed that children in large families were more likely to be covered while Table 5 indicates that eldest children and children in smaller families are

[26] Children may also get more timely care when it is free. Speaking of the first death to be attributed to California's Proposition 187, the father of the dead child said "If it weren't for Proposition 187, the first day he felt sick we would have taken him to the hospital". Instead, the family waited until after the father's pay day to take the child to a private doctor (Romney and Marquis, 1994).

more likely to have had a doctor's visit: the former effect may reflect parental diligence with respect to scheduling the first child's checkups that is relaxed for later children, or the classic Becker (1981) child quality/quantity tradeoff. And although coverage rates were highest for children with less educated and poorer parents, the probability of receiving any doctor's visits was also lowest for these children. These results are consistent with previous evidence that doctor's visits are a normal good, and one which more educated parents tend to value more (Currie and Thomas, 1995).

On the other hand, lacking a male head of household is associated both with higher probabilities of coverage, and higher probabilities of having had a visit among both immigrants and non-immigrants.[27] Similarly, having other adult male relatives in the household, is associated with a lower probability of having had a visit. Finally, children in central cities are both more likely to be covered and less likely to go without a visit; the opposite is true for rural children.

The coefficients on eligibility from Table 5 are reproduced in the first row of Table 6. The rest of Table 6 follows the same format as Table 4: OLS estimates of the effects of eligibility on the probability that the child had no visits, the probability of hospitalization, and the number of doctor visits conditional on any visits are shown in the top half of the table, and TSLS estimates are shown in the second half of the table.

Table 6 suggests that OLS estimates of the effects of Medicaid eligibility on the probability of "no visits" are indeed biased towards zero. The coefficient of -.092 on eligibility for "all natives" is almost identical to Currie and Gruber's (1996) estimate of -.096 for the 1984 to 1991 period. However, the standard errors rise significantly when eligibility is instrumented, with the result that only the coefficients on "all immigrants", and on children in border states (native and immigrant) are statistically significant. In contrast to the OLS results, these estimates suggest that the probability that a child went without any

[27] This result is consistent with evidence from many countries that *caeteris paribis*, resources in the hands of the mother have a greater impact on child well-being than resources in the hands of the father. See Thomas and Strauss (1996) for a review of this literature.

visits falls faster with eligibility among immigrant children than it does among children of the native born: In border states for example, the coefficient for immigrant children is -.39 compared to -.21 for children of the native born. These numbers are large relative to the mean probabilities of going without a visit for these two groups of 22% and 18%, respectively. On the other hand, neither the OLS or TSLS results show any effect of eligibility on the number of doctor visits conditional on the child having had at least one visit.

Ordinary Least Squares estimates of the effects of eligibility on hospitalization suggest that among children of the native born, eligibility is associated with increased hospitalization rates. There is no significant effect for children of immigrants. The TSLS results shown at the bottom of Table 6 indicate that once again, the OLS coefficients are biased towards zero. However, the standard errors are large enough that only the coefficient for children of the native born in border states remains statistically significant when eligibility is instrumented using the fraction eligible in each child's demographic group, year, and state. The point estimates for children of all immigrants, and for immigrants in border states are not only small and insignificant but negative in sign. There is certainly no evidence here that Medicaid eligibility increases hospitalization rates among children of immigrants.

The point estimates suggest that among the native born, eligibility increases hospitalization rates between 2.3 percentage points (overall) and 7.5 percentage points (in border states). It is interesting to compare these estimates to Currie and Gruber's (1996) estimate of a statistically significant 4.0 percentage point increase in hospitalization rates, obtained using the same data set over a longer time period. The fact that the overall elasticity is half the size in the more recent period and not statistically significant, suggests that the overall relationship between insurance coverage and hospitalization has weakened over time, perhaps in part because of negative publicity about unnecessary hospitalizations. However, the high estimate in border states indicates that unnecessary hospitalizations may be a significant problem in some states. Previous research on pediatric hospitalization rates shows wide variation across areas that is not

related to medical need, demographic factors or patterns of disease; it is thought that high pediatric hospitalization rates may be related either to differences in physician practice style or to inadequacies in alternative sources of care (Bindman *et al.*, 1995; Connell *et al.*, 1981; Soulen *et al.* 1994). Goodman *et al.* (1994), show that the supply of outpatient alternatives has a strong effect on pediatric hospitalization rates.

There are two ways to interpret the results in Table 6. The first is to conclude that it is merely coincidental that states with high immigrant flows are states in which Medicaid expansions are linked to higher hospitalization rates, since the relationship between eligibility and hospitalizations appears only among children of the native born. Alternatively, if one believes that hospitalization rates increase because alternative sources of care are unavailable, then there may be a relationship between the effect of Medicaid eligibility on the use of primary care (i.e. on the probability of getting any doctor's visits) and the effect of eligibility on the hospitalization rate. It is possible for example, that the increased demand for doctor's visits by newly eligible immigrant and non-immigrant children who previously obtained no visits strains the community health care system, with the result that some children do not receive ambulatory care and are hospitalized. Currie, Gruber, and Fischer (1995) point out that an increase in the demand for Medicaid services will not necessarily increase the supply of physicians willing to provide those services. But it is hard to understand why this kind of congestion effect would only affect children of the native born.

IV: Conclusions

This paper demonstrates that children of immigrants are more likely than other children to be eligible for Medicaid. This is especially true of children of recent immigrants, and for children of immigrants in border states. Despite higher eligibility levels, the fraction of children covered by Medicaid is only slightly higher among immigrant children, which indicates that immigrants have lower average takeup rates. In fact, when observable characteristics are controlled for, and eligibility is instrumented

using the fraction eligible in the child's demographic group, year, and state, I find that eligibility increases coverage only among children of the native born. Hence, recent expansions of Medicaid eligibility to the working poor and children in two-parent families appear to have had little effect on the coverage rates of children of immigrants.

Eligibility has quite different effects on the utilization of care. Becoming eligible for Medicaid reduces the probability that a child went without a doctor's visit in the past year dramatically for both immigrants and non-immigrants. However, the effects are at least twice as big among children of immigrants. On the other hand, there is no increase in the number of doctor visits given at least one visit. Hence, eligibility draws previously unserved children into ambulatory care, without increasing the number of visits by infra-marginal users. The Medicaid expansions also appear to have increased the use of costly and possibly unnecessary hospitalization among the native born, although this effect was only statistically significant in border states. Eligibility has no effect on the probability of hospitalizations among children of immigrants.

A potentially disturbing trend is that eligibility is associated with decreases in the probability of having private health insurance coverage among immigrants in border states. It may be rational for parents of eligible children to drop private health insurance coverage even if they do not take up Medicaid coverage since many private health insurance policies only cover acute care, and Medicaid will often pay for acute care, even if a child was not covered at the time services were rendered. In this case public costs would increase without any change in the utilization of acute care.

It is somewhat surprising, however, that eligibility increases the use of ambulatory care for immigrants, without affecting coverage. Even if it were possible to get Medicaid coverage of non-urgent care retroactively, a child who obtained an annual checkup would then be covered for up to a year.[28] It is possible that immigrant parents of eligible children use some of the money saved by dropping private

[28] States are required to re-certify Medicaid eligibility at least once every 12 months.

health insurance coverage to pay for basic ambulatory care out-of-pocket. In any case, although immigrant children are made unambiguously better off by this substitution, taxpayers foot a larger portion of the total bill. My estimates suggest that in border states as much as one quarter of the infra-marginal costs are shifted from private insurers to the state.[29]

Proposals currently before Congress (e.g. the draft "Personal Responsibility Act") would make it more difficult for children of immigrants to qualify for welfare programs. President Clinton has also proposed lengthening the period of time that sponsors are responsible for supporting legal immigrants, which would have the effect of making fewer immigrants eligible for welfare programs. One implication of this research is that estimates of projected cost savings based on formal coverage rates and average Medicaid costs per child are likely to be extremely misleading.

Restricting the Medicaid eligibility of immigrant children could reduce public costs by shifting more of the burden of providing insurance for acute care to private insurers. But if recent expansions in the Medicaid program are any guide, such a shift would increase the number of immigrant children going without basic medical care, without reducing the number of costly hospitalizations (as long as emergency care continued to be provided on the basis of need). Any cost-benefit analysis of changes in the eligibility of immigrant children should incorporate an evaluation of possible negative effects on the health of these children, as well as an analysis of the consequences of foregone preventive care among immigrants for public health more generally.

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[29] My estimates suggest that if out of a group of 100 children of immigrants in border states, 42 became eligible for Medicaid, then 34% of these children (i.e. 14 children) would drop their private health insurance coverage. If in the absence of eligibility, 61 children would have private health insurance (i.e. the 41% who have private coverage in Table 2, plus the 14 children who may have dropped coverage due to the eligibility expansion), then the size of the "crowd out" would be 14/61 or approximately 25%.

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TABLE I
State Medicaid Eligibility Thresholds for Children

State	Age limit	MEDICAID%	Age limit	MEDICAID%	Age limit	MEDICAID%
	January, 1988		December, 1989		December, 1991	
Alabama			1	185	8	133
Alaska			2	100	8	133
Arizona	1	100	2	100	8	140
Arkansas	2	75	7	100	8	185
California			5	185	8	185
Colorado			1	75	8	133
Connecticut	0.5	100	2.5	185	8	185
Delaware	0.5	100	2.5	100	8	160
D.C.	1	100	2	100	8	185
Florida	1.5	100	5	100	8	150
Georgia	0.5	100	3	100	8	133
Hawaii			4	100	8	185
Idaho			1	75	8	133
Illinois			1	100	8	133
Indiana			3	100	8	150
Iowa	0.5	100	5.5	185	8	185
Kansas			5	150	8	150
Kentucky	1.5	100	2	125	8	185
Louisiana			6	100	8	133
Maine			5	185	8	185
Maryland	0.5	100	6	185	8	185
Massachusetts	0.5	100	5	185	8	185
Michigan	1	100	3	185	8	185
Minnesota			6	185	8	185
Mississippi	1.5	100	5	185	8	185
Missouri	0.5	100	3	100	8	133
Montana			1	100	8	133
Nebraska			5	100	8	133
Nevada			1	75	8	133
New Hampshire			1	75	8	133
New Jersey	1	100	2	100	8	185
New Mexico	1	100	3	100	8	185
New York			1	185	8	185
North Carolina	1.5	100	7	100	8	185
North Dakota			1	75	8	133
Ohio			1	100	8	133
Oklahoma	1	100	3	100	8	133
Oregon	1.5	85	3	100	8	133
Pennsylvania	1.5	100	6	100	8	133
Rhode Island	1.5	100	6	185	8	185
South Carolina	1.5	100	6	185	8	185
South Dakota			1	100	8	133
Tennessee	1.5	100	6	100	8	185
Texas			3	130	8	185
Utah			1	100	8	133
Vermont	1.5	100	6	225	8	225
Virginia			1	100	8	133
Washington	1.5	100	8	185	8	185
West Virginia	0.5	100	6	150	8	150
Wisconsin			1	130	8	155
Wyoming			1	100	8	133

Notes: The source is Yelowitz (1996). The age limit represents the oldest that a child could be (at a given point in time) and still be eligible. MEDICAID% represents the maximum income limit for an infant (the maximum for an older child is less).

Table 2: Eligibility, Coverage and Utilization in the NHIS

	All Natives	All Immigrant	Immigrated <10 yrs. ago	Border Natives	Border Immigrant
# Observations	44665	8256	2898	11966	5295
Insurance Status					
Medicaid Eligible	.21	.35	.47	.23	.42
Medicaid Coverage	.13	.17	.22	.15	.20
Private Health Ins.	.72	.56	.46	.68	.49
No Insurance	.13	.25	.30	.16	.30
Fraction Eligible in Child's st./age/yr.	.25	.28	.30	.27	.29
Utilization of Medical Care					
Medicaid Eligibles					
No Visit in Past Year	.17	.20	.20	.16	.20
# of Doctor Visits Last Year if Any Visits	4.30 (3.66)	3.57 (4.12)	3.49 (5.18)	4.33 (4.61)	3.41 (4.85)
Hospitalization last Year	.05	.04	.03	.05	.03
Non-Medicaid Eligibles					
No Visit in Past Year	.18	.20	.19	.18	.22
# of Doctor Visits Last Year if Any Visits	3.97 (1.90)	3.39 (3.29)	3.68 (6.16)	4.14 (4.61)	3.27 (4.33)
Hospitalization last Year	.03	.02	.02	.03	.02

Notes: Standard deviations in parentheses. Means calculated using annual weights.

Table 3: OLS Regressions of Medicaid Coverage on Eligibility

	All Natives	All Immigrant	Immigrated <10 yrs. ago	Border Natives	Border Immigrant
Medicaid Eligible	.200	.166	.132	.206	.165
	(.012)	(.015)	(.024)	(.025)	(.018)
Child is Male	.000	-.007	-.018	-.006	-.001
	(.003)	(.006)	(.012)	(.007)	(.006)
Black	.071	-.096	-.166	.074	-.083
	(.009)	(.019)	(.041)	(.015)	(.021)
Hispanic	.015	-.019	-.064	.020	-.044
	(.009)	(.036)	(.079)	(.012)	(.046)
Child Eldest, or Only	.016	.031	.050	.009	.041
	(.003)	(.008)	(.013)	(.005)	(.012)
# Siblings	.020	.036	.067	.017	.034
	(.003)	(.006)	(.007)	(.005)	(.007)
Mother < Highschool	.072	.033	-.020	.091	.037
	(.008)	(.015)	(.018)	(.014)	(.018)
Mother Some College	-.028	-.071	-.130	-.029	-.087
	(.004)	(.012)	(.021)	(.007)	(.015)
Male Head < Highschool	.013	-.035	.037	-.007	-.048
	(.009)	(.025)	(.028)	(.018)	(.030)
Male Head Some College	.005	.020	.037	.007	.029
	(.004)	(.009)	(.022)	(.007)	(.013)
No Male Head	.093	.200	.181	.120	.260
	(.016)	(.030)	(.045)	(.034)	(.021)
Other Adult Female	-.008	.000	-.032	-.022	.007
Relative in HH	(.013)	(.019)	(.019)	(.020)	(.021)
Other Adult Male	-.018	-.085	-.066	-.034	-.100
Relative in HH	(.015)	(.025)	(.037)	(.026)	(.029)
Income Bracket					
lt 10,000	.214	.149	.078	.216	.145
	(.023)	(.043)	(.038)	(.031)	(.051)
10,000-19,999	.018	-.005	-.020	.014	-.007
	(.011)	(.020)	(.027)	(.019)	(.020)
20,000-29,999	-.010	-.019	-.047	-.006	-.019
	(.007)	(.018)	(.030)	(.017)	(.018)
30,000-39,999	-.011	-.001	-.021	-.004	-.010
	(.008)	(.018)	(.053)	(.018)	(.020)
40,000-49,999	-.003	-.004	-.010	-.007	-.031
	(.009)	(.017)	(.045)	(.015)	(.010)
50,000+	.000	.012	-.016	-.000	-.011
	(.009)	(.016)	(.036)	(.016)	(.013)
Central City	.031	.054	.088	.021	.046
	(.006)	(.015)	(.018)	(.009)	(.018)
Rural	-.004	.041	.045	-.033	.049
	(.006)	(.024)	(.051)	(.017)	(.035)

Table 3, con't: OLS Regressions of Medicaid Coverage on Eligibility

	All Natives	All Immigrant	Immigrated <10 yrs. ago	Border Natives	Border Immigrant
First Quarter	-.008	-.043	-.071	-.005	-.048
	(.005)	(.018)	(.027)	(.005)	(.023)
Second Quarter	-.004	-.011	-.003	.002	-.016
	(.006)	(.015)	(.024)	(.012)	(.019)
Third Quarter	.007	-.011	-.024	.015	-.003
	(.005)	(.015)	(.026)	(.010)	(.017)
Intercept	-.067	-.025	-.076	-.004	-.038
	(.036)	(.036)	(.129)	(.055)	(.034)
R-squared	.426	.392	.385	.422	.355
Mean Dep. Var.	.149	.192	.242	.165	.224
# Observations	44665	8256	2898	11966	5295

Notes: White corrected standard errors in parentheses. Standard errors also correct for possible correlations between the errors within state-year cells. Regressions also included a dummy if the year was 1992, interactions of the income bracket dummies with the dummy for 1992, indicators for whether the mother or the father was the respondent (rather than some other household member), single year of age dummies, state dummies, and interactions of 5 age group dummies with state dummies and with the year dummy for 1992. Omitted income category is "missing".

Table 4: Effects of Eligibility on Insurance Coverage

	All Natives	All Immigrant	Immigrated <10 yrs. ago	Border Natives	Border Immigrant
OLS Estimates					
1. Medicaid Coverage	.200	.166	.132	.206	.165
	(.012)	(.015)	(.024)	(.025)	(.018)
Mean of Dep. Var.	.149	.192	.242	.165	.224
R-squared	.426	.392	.385	.422	.355
# Observations	44665	8256	2898	11966	5296
2. Private Insurance	-.194	-.215	-.207	-.218	-.184
	(.011)	(.023)	(.034)	(.013)	(.026)
Mean of Dep. Var.	.706	.538	.426	.659	.468
R-squared	.445	.462	.452	.429	.436
# Observations	44159	8098	2835	11810	5171
3. No Insurance	-.004	.046	.068	.011	.017
	(.011)	(.027)	(.031)	(.015)	(.034)
Mean of Dep. Var.	.129	.256	.305	.163	.299
R-squared	.116	.200	.213	.115	.183
# Observations	43921	8010	2811	11726	5102
TSLS Estimates					
4. Medicaid Coverage	.200	-.100	.123	.294	.074
	(.068)	(.119)	(.229)	(.114)	(.115)
Mean of Dep. Var.	.149	.192	.242	.165	.224
R-squared	.414	.368	.380	.408	.344
# Observations	44665	8256	2898	11966	5295
5. Private Insurance	.069	-.046	-.126	.010	-.335
	(.072)	(.166)	(.309)	(.090)	(.086)
Mean of Dep. Var.	.706	.538	.426	.659	.468
R-squared	.429	.449	.443	.414	.426
# Observations	44159	8098	2835	11810	5171
6. No Insurance	-.259	.234	.348	-.355	.351
	(.074)	(.151)	(.307)	(.121)	(.163)
Mean of Dep. Var.	.129	.256	.305	.163	.299
R-squared	.112	.197	.206	.108	.175
# Observations	43921	8010	2811	11726	5102

Notes: White-corrected standard errors in parentheses. Standard errors also corrected for possible correlation within state-year cells. Each figure is from a separate regression. Regressions include all variables described in Table 3.

Table 5: OLS Estimates of the Effects of Eligibility on the Probability of Having Had No Visits in the Past Year

	All Natives	All Immigrant	Immigrated <10 yrs. ago	Border Natives	Border Immigrant
Medicaid Eligible	-.023	-.008	.005	-.024	-.002
	(.006)	(.009)	(.020)	(.008)	(.011)
Child is Male	-.004	-.004	-.014	.002	-.003
	(.002)	(.005)	(.011)	(.004)	(.006)
Child is Black	.040	.015	.025	.033	.017
	(.007)	(.015)	(.030)	(.014)	(.022)
Child is Hispanic	.009	.002	.006	.011	-.005
	(.009)	(.008)	(.023)	(.013)	(.009)
Child is Eldest	-.022	-.033	-.030	-.018	-.034
	(.003)	(.005)	(.015)	(.006)	(.006)
# Siblings	.016	.007	.014	.013	.006
	(.003)	(.003)	(.008)	(.005)	(.004)
Mother < Highschool	.023	.027	.003	.029	.022
	(.004)	(.011)	(.019)	(.008)	(.013)
Mother Some College	-.033	-.003	-.024	-.024	.005
	(.004)	(.009)	(.017)	(.006)	(.010)
Father < Highschool	.022	.017	-.001	.027	.021
	(.006)	(.012)	(.017)	(.015)	(.014)
Father Some College	-.025	-.022	-.003	-.023	-.018
	(.004)	(.011)	(.023)	(.009)	(.015)
No Male Head	-.042	-.041	-.031	-.050	-.032
	(.008)	(.013)	(.030)	(.017)	(.015)
Other Adult Female Relative	-.009	-.033	.005	.002	-.007
	(.008)	(.014)	(.023)	(.011)	(.016)
Other Adult Male Relative	.024	.007	.058	.039	.037
	(.010)	(.014)	(.024)	(.014)	(.016)
Income Bracket					
< 10,000	-.010	-.037	-.021	-.010	-.061
	(.012)	(.041)	(.052)	(.023)	(.049)
10,000-19,999	-.002	.010	.072	.006	-.010
	(.013)	(.029)	(.057)	(.025)	(.036)
20,000-29,999	-.036	-.036	.030	-.046	-.051
	(.010)	(.027)	(.049)	(.013)	(.030)
30,000-39,999	-.031	-.004	.073	-.035	-.012
	(.010)	(.031)	(.049)	(.018)	(.039)
40,000-49,999	-.071	-.065	.073	-.101	-.060
	(.013)	(.022)	(.055)	(.022)	(.015)
50,000+	-.070	-.075	-.058	-.082	-.079
	(.012)	(.029)	(.056)	(.017)	(.035)
Central City	-.011	-.024	-.020	.000	-.032
	(.004)	(.011)	(.016)	(.007)	(.014)
Rural	.025	.037	-.001	.050	.034
	(.005)	(.020)	(.024)	(.013)	(.030)

Table 5, con't: OLS Regressions of Medicaid Coverage on Eligibility

	All Natives	All Immigrant	Immigrated <10 yrs. ago	Border Natives	Border Immigrant
First Quarter	-.004	.010	.011	.004	.014
	(.004)	(.013)	(.020)	(.008)	(.017)
Second Quarter	-.001	.014	.005	.010	.018
	(.005)	(.013)	(.024)	(.009)	(.019)
Third Quarter	.004	-.005	-.013	.008	-.004
	(.004)	(.016)	(.024)	(.008)	(.022)
Intercept	.079	.103	.176	.054	.089
	(.022)	(.030)	(.049)	(.044)	(.024)
Mean of Dependent Variable	.182	.207	.197	.198	.241
R-squared	(.093)	(.121)	(.154)	(.093)	(.110)
# Observations	94172	18291	6237	26168	11986

Notes: White corrected standard errors in parentheses. Standard errors also correct for possible correlations between the errors within state-year cells. Regressions also included year dummies, interactions of the income bracket dummies with the year dummies, indicators for whether the mother or the father was the respondent (rather than some other household member), single year of age dummies, state dummies, and interactions of 5 age group dummies with state dummies and with the year dummies. Omitted income category is "missing".

Table 6: Effects of Eligibility on the Utilization of Care

	All Natives	All Immigrant	Immigrated <10 yrs. ago	Border Natives	Border Immigrant
OLS Estimates					
1. No Visits in Past Year	-.023	-.008	.005	-.024	-.002
	(.006)	(.009)	(.020)	(.013)	(.011)
Mean of Dependent Variable	.182	.207	.197	.198	.241
R-squared	.093	.121	.154	.093	.110
# Observations	94,167	18,290	6,236	26,168	11,986
2. Log of # Doctor's Visits	-.006	-.001	.009	-.010	.025
in Past Year	(.012)	(.024)	(.041)	(.019)	(.026)
Mean of Dependent Variable	.924	.826	.849	.935	.804
R-squared	.121	.156	.212	(.126)	(.146)
# Observations	77038	14497	5006	21401	9378
3. Hospitalized in the Past Year	.007	.001	-.005	.013	.001
	(.002)	(.004)	(.007)	(.005)	(.004)
Mean of Dependent Variable	.034	.025	.027	.033	.021
R-squared	.026	.035	.062	.031	.024
# Observations	94,461	18,358	6,262	26,251	12,025
TSLS Estimates					
4. No Visits in Past Year	-.092	-.351	-.292	-.212	-.389
	(.068)	(.135)	(.294)	(.076)	(.151)
Mean of Dependent Variable	.182	.207	.197	.198	.241
R-squared	.093	.113	.146	.091	.102
# Observations	94,167	18,290	6,236	26,168	11,986
5. Log of # Doctor's Visits	-.134	.023	.157	-.270	-.066
in Past Year	(.135)	(.402)	(.529)	(.201)	(.402)
Mean of Dependent Variable	.924	.826	.849	.935	.803
R-squared	.121	.156	.211	.126	.145
# Observations	77038	14497	5006	20401	9378
6. Hospitalized in the Past Year	.023	-.016	.034	.075	-.002
	(.028)	(.057)	(.090)	(.038)	(.055)
Mean of Dependent Variable	.034	.025	.027	.033	.021
R-squared	.026	.035	.061	.030	.024
# Observations	94,461	18,358	6,262	26,251	12,025

Notes: White corrected standard errors in parentheses. Standard errors also correct for possible correlations between the errors within state-year cells. In addition to the variables shown in Table 5, the regressions also included year dummies, interactions of the income bracket dummies with the year dummies, indicators for whether the mother or the father was the respondent (rather than some other household member), single year of age dummies, state dummies, and interactions of 5 age group dummies with state dummies and with the year dummies. Omitted income category is "missing".

Data Appendix: Simulating Medicaid Eligibility

This appendix describes procedures for imputing the Medicaid eligibility of individuals in the CPS and NHIS. The sources for information on state Medicaid options are National Governors Association (various years) and Congressional Research Service (1988, 1993).

a) Eligibility for AFDC

In order to qualify for AFDC, the child's family must satisfy three tests: 1) gross income must not exceed a given multiple of the state need's standard[30], 2) the gross income less certain "disregards" must be below the state needs standard, and 3) the gross income less the disregards, less a portion of their earnings, must be below the state's payment standard.

The disregards can be computed as follows. Beginning in October 1981, the allowance for work and child care expenses was $75 per month for work expenses and a maximum of $160 per child for child care costs. These allowances were not changed until the Family Support Act of 1988, which raised the allowances to $90 for work expenses and $175 per child for child care expenses, effective October 1, 1989. In addition, a portion of earned income was disregarded. In 1984, women were allowed to keep $30 plus 1/3 of earned income for four months. Hence, I assumed that women could keep $120 + 1/9 of their earnings for the year. From 1985 onwards, individuals who would have become ineligible for AFDC (and hence for Medicaid) after the 4 months were allowed to remain eligible for Medicaid for an additional 9 to 15 months depending on the state. This was modelled by assuming that for Medicaid eligibility purposes, women were allowed to keep the full $30 and 1/3. The aim was to consistently model the maximum amount that a person could have received while remaining eligible for Medicaid coverage under AFDC. Finally, AFDC rules until October, 1984 mandated that women be assumed to be using the Earned Income Tax Credit, regardless of whether they actually were doing so. This assumption is followed in the eligibility calculation for 1984 only.

One difficulty in implementing these rules in the NHIS is that the disregards apply only to earned income and one cannot distinguish between earned income and other income. It is therefore assumed that all household income is earned. This assumption yielded AFDC eligibility findings in the NHIS that were similar to those from the CPS, where there is data on individual earnings by source.

The second set of rules that must be evaluated to see if a child is eligible for AFDC are rules relating to family structure. Eligibility under the traditional program requires that the child reside in a female-headed household. However, children in two-parent households may still have been eligible under the AFDC-UP program. Eligibility for AFDC-UP conditions on both current employment status and work history. Data on AFDC-UP regulations are from Hoynes (1993). In addition, some states covered families with Medicaid if they had an unemployed head, even if there was no AFDC coverage; these states are identified in National Governor's Association (various years).

Lacking longitudinal data on work histories, it is assumed in the CPS that families are eligible if the state has a program, and the spouse had worked less than 40 weeks in the previous year. In the NHIS it is only possible to determine whether or not the spouse is currently unemployed. Hence, the estimate of the AFDC-UP caseload is biased upwards because it is not possible to determine whether those who are unemployed have been attached to the labor force long enough to qualify for AFDC-UP. Still, the estimates of the size of the AFDC-UP caseload appear to be reasonable as about 1 in 20 AFDC eligibles are estimated to qualify through that program, matching the ratio reported in administrative data.

b) Eligibility under state Medically Needy programs.

In some states, children in families with incomes too high for AFDC could qualify for Medicaid under state Medically Needy programs. Income thresholds for these programs could be set no higher than 133% of the state's needs standard for AFDC. Families could "spend down" to these thresholds by subtracting their medical expenditures from their gross incomes (less disregards) -- if they did so, then Medicaid would pay the remainder of their medical expenses. In order to qualify, however, families must have high medical expenditures for several consecutive months (the "spend down period"). There is no way to determine which families have had such high medical spending in the CPS, and I do not do so in the NHIS since eligibility would then be a direct function of utilization and health. As an approximation, eligibility thresholds

[30] In 1984 this multiple was 1.5. From 1985 onwards, the multiple was 1.85.

are set to the Medically Needy levels in states with this program. Data on Medically Needy coverage and thresholds is from National Governors Association (various years).

c) Eligibility for Ribicoff children.

Ribicoff children are those who would qualify for AFDC given income criteria alone, but who do not qualify for reasons of family structure. States may or may not choose to cover children under this optional program. In states that do cover them, the family structure requirements are ignored and screening is done only on income. Some states cover selected groups of children (such as only those in two parent families, or only those in institutions). However, it was not possible to obtain precise information on the groups of children covered. Hence, states are counted as a "Ribicoff state" only if it covers all categories of children, as reported by the National Governors Association. Currie and Gruber also tried calling all of the states to obtain information about their Ribicoff children program; the resulting information appeared unreliable, since almost every state said that they had a program whereas secondary sources report that coverage is much more selective. Using the state self-reported coverage yielded similar results to those reported in the paper.

d) Eligibility under the Medicaid Expansions.

See Appendix Table 1 for a summary of the relevant legislation. If family income and the child's age were less than the cutoffs, it was assumed that the child was eligible. One important question is whether states apply AFDC disregards when computing a family's eligibility for the expansions. Discussions with several state and federal Medicaid administrators suggested that such disregards were generally applied, so they were used in our eligibility calculations. Calculating eligibility without the disregards yielded a significantly smaller effect of the expansions, but the regression results were quite similar. This is probably because although the levels of eligibility are lower if the disregards are not used, the changes within and across states are quite similar.

Appendix Table 1: The Medicaid Expansions

Deficit Reconciliation Act, 1984: Effective October 1, 1984. Required states to extend Medicaid coverage to children born after September 30, 1983, if those children lived in families that were income-eligible for AFDC.

Omnibus Budget Reconciliation Act, 1986: Effective April 1, 1987. Permitted states to extend Medicaid coverage to children in families with incomes below the federal poverty level. Beginning in fiscal year 1988, states could increase the age cutoff by one year each year, until all children under age five were covered.

Omnibus Budget Reconciliation Act, 1987: Effective July 1, 1988. Permitted states to cover children under age 2, 3, 4, or 5, who were born after September 30, 1983. Effective October 1, 1988, states could expand coverage to children under age 8 born after September 30, 1983. Allows states to extend Medicaid eligibility to infants up to one year of age in families with incomes up to 185% of the federal poverty level. States were required to cover children through age 5 in fiscal year 1989, and through age 6 in fiscal year 1990, if the families met AFDC income standards.

Medicare Catastrophic Coverage Act, 1988: Effective July 1, 1989, states were required to cover infants up to age one in families with incomes less than 75% of the federal poverty level. Effective July 1, 1990, the income threshold was raised to 100% of poverty.

Family Support Act, 1988: Effective April 1, 1990. States were required to continue Medicaid coverage for 12 months among families who had received AFDC in three of the previous six months, but who had become ineligible because of earnings.

Omnibus Budget Reconciliation Act, 1989: Effective April 1, 1990. Required states to extend Medicaid eligibility to children up to age 6 with family incomes up to 133% of the federal poverty line.

Omnibus Budget Reconciliation Act, 1990: Effective July 1, 1991. States were required to cover all children under age 19 who were born after September 30, 1983 and whose family incomes were below 100% of the Federal poverty level.

Appendix Table 2: First Stage Regressions of Individual Eligibility on the Fraction Eligible in the Child's Demographic Group, Year, and State 1989 and 1992

	All Natives	All Immigrant	Immigrated <10 yrs. ago	Border Natives	Border Immigrant
Fraction Eligible	.500	.584	.623	.506	.668
	(.031)	(.077)	(.144)	(.055)	(.093)
Child Male	-.006	.002	-.001	-.010	-.004
	(.002)	(.007)	(.012)	(.005)	(.009)
Child Black	.040	-.025	-.048	.043	-.028
	(.004)	(.013)	(.024)	(.007)	(.017)
Child Hispanic	.015	.026	.032	.011	.011
	(.006)	(.008)	(.015)	(.008)	(.010)
Child Eldest, or Only	.024	.017	.018	.025	.016
	(.003)	(.008)	(.014)	(.006)	(.010)
# Siblings	.060	.055	.053	.067	.054
	(.001)	(.003)	(.006)	(.003)	(.004)
Mother < Highschool	.041	.041	.035	.020	.050
	(.004)	(.011)	(.018)	(.007)	(.013)
Mother Some College	-.033	-.029	-.032	-.041	-.038
	(.003)	(.010)	(.019)	(.006)	(.014)
Male Head < Highschool	.029	.041	.054	.032	.046
	(.004)	(.011)	(.020)	(.009)	(.014)
Male Head Some College	-.009	.010	.024	-.015	.014
	(.003)	(.011)	(.021)	(.007)	(.015)
No Male Head	.036	.006	.006	.044	.011
	(.006)	(.014)	(.026)	(.012)	(.018)
Other Adult Female Relative in HH	.026	.050	.030	.036	.041
	(.008)	(.012)	(.020)	(.013)	(.015)
Other Adult Male Relative in HH	.008	.015	.041	-.030	.022
	(.009)	(.014)	(.023)	(.017)	(.016)
Income Bracket					
lt 10,000	.594	.547	.448	.603	.507
	(.007)	(.019)	(.030)	(.014)	(.023)
10,000-19,999	.004	.122	.116	.083	.131
	(.007)	(.017)	(.027)	(.013)	(.020)
20,000-29,999	-.147	-.229	-.287	-.154	-.270
	(.007)	(.018)	(.031)	(.014)	(.023)
30,000-39,999	-.146	-.269	-.377	-.174	-.343
	(.007)	(.021)	(.038)	(.013)	(.029)
40,000-49,999	-.134	-.257	-.332	-.165	-.321
	(.007)	(.022)	(.048)	(.014)	(.029)
50,000+	-.126	-.239	-.330	-.153	-.297
	(.007)	(.019)	(.037)	(.013)	(.025)
Central City	.015	.017	.010	.007	.016
	(.003)	(.008)	(.014)	(.006)	(.010)
Rural	.023	.033	.010	.020	.041
	(.003)	(.015)	(.028)	(.008)	(.021)

Appendix Table 2, continued

	All Natives	All Immigrant	Immigrated <10 yrs. ago	Border Natives	Border Immigrant
First Quarter	.001	-.025	-.084	.005	-.031
	(.004)	(.010)	(.017)	(.007)	(.012)
Second Quarter	.001	-.007	-.029	.008	-.003
	(.003)	(.009)	(.017)	(.007)	(.012)
Third Quarter	.003	-.004	-.011	.001	-.013
	(.003)	(.009)	(.017)	(.007)	(.012)
Intercept	-.012	.192	.177	-.013	.232
	(.030)	(.055)	(.094)	(.040)	(.063)
R-squared	.621	.647	.665	.624	.635
Mean of Dep. Var.	.220	.375	.497	.247	.441
# Observations	43921	8010	2811	11726	5102

Notes: These are the first stage regressions corresponding to row 6 of Table 4. First stage regressions corresponding to rows 4 and 5 had different numbers of observations but were otherwise very similar. These regressions also included a dummy if the year was 1992, interactions of the income bracket dummies with the dummy for 1992, indicators for whether the mother or the father was the respondent (rather than some other household member), single year of age dummies, state dummies, and interactions of 5 age group dummies with state dummies and with the year dummy for 1992. The omitted income category is "missing".

Appendix Table 3: Child and Family Characteristics in the NHIS

	All Natives	All Immigrant	Immigrated <10 yrs. ago	Border Natives	Border Immigrant
Child Age	6.86	6.55	5.54	6.74	6.62
	(.90)	(2.04)	(3.36)	(1.72)	(2.49
Child Male	.51	.51	.51	.51	.51
Child Black	.17	.09	.09	.16	.09
Child Hispanic	.05	.43	.43	.13	.54
Child Oldest or Only Child	.55	.50	.51	.55	.48
# of Siblings in HH	1.26	1.56	1.59	1.28	1.68
	(.23)	(.63)	(1.14)	(.44)	(.81)
Mother lt 12 yrs. ed.	.18	.42	.45	.20	.49
Mother Some College	.37	.33	.30	.42	.29
Male Head lt 12 yrs. Education*	.15	.37	.41	.16	.44
Male Head Some College*	.47	.39	.38	.50	.34
Male Head Employed*	.92	.88	.84	.91	.87
Female Head Employed	.58	.54	.44	.57	.52
No Male Head	.22	.16	.15	.23	.17
Mother is Respondent	.30	.30	.28	.32	.33
Male Head is Resp.*	.69	.72	.73	.68	.71
Other Adult Female Relative in HH	.03	.10	.11	.03	.11
Other Adult Male Relative in HH	.02	.07	.08	.02	.08
Central City	.23	.46	.50	.31	.54
Rural	.26	.07	.06	.16	.05
Household Income Category					
lt 10,000	.11	.14	.17	.11	.16
10,001-20,000	.15	.21	.28	.15	.24
20,001-30,000	.16	.15	.14	.14	.14
30,001-40,000	.15	.11	.08	.14	.08
40,001-50,000	.12	.08	.05	.11	.07
gt 50,000	.19	.16	.11	.23	.15
Missing	.12	.15	.17		

Notes: Standard errors in parentheses. Means calculated using annual weights.