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Abstract

If immigrant parents face higher transactions costs of enrolling in Medicaid, and different opportunities in the market for private health insurance, then their responses to becoming eligible for Medicaid are likely to differ from those of native-born parents. This prediction is tested using data about health insurance coverage and the utilization of medical care from the U.S. National Health Interview Survey.

The results suggest that focusing on coverage alone will produce misleading assessments of the costs and benefits of expanding Medicaid eligibility for immigrants since among immigrants, eligibility increases utilization of basic services without affecting coverage. Second, the marginal cost of the additional medical services consumed by eligible immigrant children is small. However, the infra-marginal costs of expanding Medicaid eligibility to immigrants may be quite large, because as much as a quarter of the cost of providing infra-marginal services is shifted from private to public insurers.

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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 states such as New York, California, Texas, and Florida that are absorbing disproportionately large inflows 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.[2] Moreover, 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, 1996b). The cost per child also rose rapidly over this period, due primarily to the rising costs of medical care (Newhouse, 1993).

These figures suggest that it is important to understand the determinants of the takeup of Medicaid benefits by children of immigrants. This paper documents differences in the effects of Medicaid eligibility on children of immigrants and on children of the native born. Data from the 1989 and 1992 waves of the National Health Interview Survey are used to examine the

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[2] 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.

effects on both formal health insurance coverage, and on the utilization of care. State rules and family circumstances are used to evaluate the Medicaid eligibility of each child. It is argued that Ordinary Least Squares (OLS) estimates of the effects of eligibility on coverage and utilization are likely to be biased by a number of factors: Poor children may be both sicker and more likely to be eligible, but less likely to be covered or to receive services. Hence, eligibility is instrumented using the fraction of children from a fixed national population who would be eligible for Medicaid in each state, year, and age group. This instrument exhibits considerable variation due to the fact that recent expansions of the Medicaid program have been implemented at different rates in different states, and generally covered younger children first.

The estimates show 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 suggests that because immigrants tend to be poorer than the native born, their children are more likely to be eligible (Blau, 1984; Borjas, 1990; Borjas and Hilton, 1996; Jensen, 1988; Tienda and Jensen, 1986; Trejo, 1992). However, 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.

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 associated with smaller reductions in the probability of doing without a doctor's visit among children of the native born. However, eligibility has no significant effect on the number of doctor visits (conditional on any visits) among either group. The reason that coverage and utilization show different patterns

appears to be that it is possible for eligibles to receive services without being covered *ex ante*. If immigrants face higher transactions costs of enrolling in the program than non-immigrants, then this option of being eligible but unenrolled may be relatively more attractive for them.

These systematic differences in patterns of coverage and utilization have not been previously noted. They 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 probable effects of extending or curtailing Medicaid *eligibility* for children of immigrants. They also suggest that it is important to distinguish between types of utilization: Among immigrants, eligibility decreases the number of children going without any medical care at all, but has no effect on the intensity with which services are used given that the child had at least one visit.

Hence, the good news is that the marginal services used by eligible immigrant children are relatively low cost, and making immigrant children eligible improves their access to basic health care. The bad news is that although there is no increase in the number of doctors visits conditional on any visits among children of immigrants, expanding Medicaid eligibility 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: Necessary background information about the Medicaid program and a discussion of their effects on the incentives facing eligible immigrants and non-immigrants is given in Section I. Section II outlines the instrumental variables strategy. The data is described in Section III. Section IV provides the empirical results while Section V concludes.

I. The Medicaid Expansions and Incentives for Immigrants and Non-Immigrants

Historically, eligibility for Medicaid was closely 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.[3] 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,

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[3] 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.

most states had been required by the federal government to increase the age limits and income limits still further. This variation in eligibility thresholds by state, year, and age of child will be exploited to identify the effects of Medicaid eligibility.

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). The probability of taking up benefits should be systematically related to the relative costs and benefits of being covered. For example, as Blank and Card suggest, those who expect to be unemployed for only a short spell may be less likely to apply for or receive benefits. The available pre-expansion evidence suggests that although takeup of Medicaid among children on AFDC is high, only about one quarter of children eligible through other aspects of the program (e.g. under the Ribicoff provisions) took up coverage (Shore-Sheppard, 1996).

It is not unreasonable to suppose that immigrant parents face higher costs of enrolling their children in the Medicaid program than non-immigrants. First, the General Accounting Office (GAO, 1994) reports that many applications are denied, and that half of all denials occur because the applicant failed to supply supporting documentation (such as birth certificates or pay stubs), or failed to keep all of the necessary appointments. It may be more difficult for immigrants to follow these procedures. Second, although citizen children are eligible for all Medicaid services, and even undocumented children are eligible for emergency services under the Medicaid program, immigrant parents may fear harassment by authorities, particularly if they or other family members are themselves undocumented. Third, the residential segregation of many immigrants may make it difficult to get to an enrollment center. Fourth, language barriers

may make the enrollment process more difficult.

It is also possible that the benefits of formal enrollment are not as great as they might at first appear, because it is often possible for eligible children to obtain acute services even if they are not formally covered at the time that services are rendered. 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" (pg. 24, 1994). In this example, the child became covered by Medicaid for a time. But eligibility must be periodically re-established in order to retain coverage, and one suspects that this child's coverage might have been particularly likely to lapse subsequently.[4]

Hence, immigrant parents with an eligible child have two options: They can choose to incur the transactions costs and become covered. The Medicaid program will then cover the costs of both preventive care and acute care for their child. Alternatively, they may choose to forego the transactions costs and remain uncovered, knowing that acute care will be provided under the Medicaid program as necessary.

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[4] Federal rules require that eligibility be re-established at least every 6 months.

The role of transactions costs is depicted in Figure 1, which shows the tradeoff between expenditures on health insurance for children and expenditures on other child goods. An eligible child whose family faces no transactions costs becomes covered by the program and is able to consume at point M1. A family facing high transactions costs can choose to become enrolled and consume at point M4, or it can choose to forego coverage, and consume slightly less health insurance at point M2. Thus, if parents have preferences like those depicted in the figure and immigrant parents face higher transactions costs than non-immigrant parents, then their eligible children will be less likely to become formally covered.

Parents of eligible children may also have another decision to make: Whether or not to take up Medicaid coverage for their children and drop the child's private health insurance coverage. Cutler and Gruber (1996) emphasize that public insurance could "crowd-out" private insurance in this way. Alternatively, they point out that employers might stop offering private insurance of employees' dependents if substantial numbers of them were to become covered under public programs. Immigrant parents may be more likely than non-immigrants to work for small employers who offer insurance at less favorable rates than large employers, or who do not offer it at all.

This situation is illustrated in Figure 2, in which immigrant parents are assumed to face a steeper tradeoff between health insurance for their children and other child goods than other parents. Given these opportunities, immigrant parents will consume less child health insurance than non-immigrant parents in the absence of Medicaid eligibility (compare point A to point B). Now consider what happens when the child becomes Medicaid eligible, assuming that the transactions costs associated with becoming covered are similar to those described in Figure 1.

Native-born parents with the preferences shown in Figure 2 do not change their insurance arrangements: The private insurance they are purchasing is far superior to what is available under Medicaid. Immigrant parents on the other hand, are made better off by moving to M2 (eligible but not covered). Although the health insurance offered at M2 is inferior to what was being purchased previously, the cost savings allow a more than offsetting increase in the consumption of other child goods. In the data, a movement from A to M2 will appear as an increase in the fraction of children who are uninsured.

These diagrams implicitly assume that being eligible for Medicaid coverage of acute services is better than not being insured at all (i.e. that point M2 is higher than point N). Since some emergency care is likely to be available to all children in the United States, one may question this assumption. However, there is considerable evidence which suggests that hospitals are able to determine relatively quickly whether someone is likely to be Medicaid eligible. For example, Piper et al. (1990) found that a 1985 expansion of Medicaid eligibility to married pregnant women in Tennessee increased Medicaid enrollments, but that most of this increase is likely to have occurred at the time of the delivery. And it is well known that insured patients receive more intensive treatment than uninsured patients along a number of margins (c.f. Hadley et al. (1991) and Wenneker et al. (1990)). Hence, it seems likely that patients who are eligible for Medicaid will receive better care (and receive it with greater certainty) than those who are not, even if the later do receive some acute care.

In summary, these diagrams suggest that if immigrant parents face differences in transactions costs and/or opportunities relative to native-born parents, then they will make different choices of health insurance. Among parents who were not purchasing private health

insurance for their children previously, increases in Medicaid eligibility will be associated with larger increases in formal coverage among children of the native-born than among children of immigrants. And among parents who were purchasing private health insurance to begin with, increases in eligibility for Medicaid will be more likely to cause "crowd-out" among immigrants than among non-immigrants.

It is more difficult to make predictions about the relationship between utilization and eligibility among immigrants and non-immigrants. If eligible children of immigrants are less likely to be formally covered than children of non-immigrants, then utilization of non-acute services is less likely to be paid for by Medicaid. Hence, one might expect eligible immigrant children to be less likely than other eligible children to have routine checkups, for example. On the other hand, the distinction between acute and non-acute services may be somewhat artificial -- it may be possible to ask a doctor to do a checkup or administer vaccinations even though the putative reason for the visit is that the child is ill.

Both diagrams illustrate the fact that even if the child is not formally covered, the family may be made better off when the child becomes Medicaid eligible. Since the utilization of medical care given health status is known to be a normal good, one would expect some of this increase in household "income" to translate into an increase in the number of visits. Moreover, if there is a decreasing marginal utility of visits, one might expect the largest increase in visits to be seen among those who received the fewest visits (or no visits) to begin with. These predictions will be tested below.

Finally, it is worth noting that although the preceding discussion assumes that immigrant and native-born parents have similar preferences, it is possible that there are systematic cultural

differences in attitudes towards the utilization of medical care. For example, one might expect eligible immigrant parents to be less likely to enroll in Medicaid because they value the available services less than native-born parents. It is also possible that immigrant parents have less information about these programs -- Currie and Gruber (1996) conclude that lack of information about welfare programs among the working poor may be an important barrier to takeup of coverage. However, as we shall see, such cultural or informational explanations are not particularly consistent with the findings of this study: Children of immigrant parents actually show larger changes in the utilization of basic medical care when they become Medicaid-eligible than children of the native-born.

II: Methods

The main empirical problem involved in investigating the effects of Medicaid eligibility on coverage and utilization is that those children who are most likely to be eligible, are least likely to take up coverage or to use services, given health status. They are also more likely to be ill. Currie and Gruber (1996b) describe the construction of a detailed simulation model that uses information about state rules, the child's age, and family characteristics to impute individual Medicaid eligibility.[5] They estimate that between 1989 and 1992 the fraction of children less than 15 years of age who were eligible for Medicaid increased from 20.4% to 31.2%, and that

[5] They use data from the National Health Interview Survey and Current Population Survey. In these 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.

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.

In what follows, the Currie-Gruber imputation program is used to determine individual eligibility. This measure is included in linear probability models of health insurance coverage and the 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 make them less likely to take up Medicaid coverage or to utilize medical care. For example, they may be more likely to live in areas with limited access to physicians (c.f. Fossett, 1992; Fossett and Peterson, 1989). In this case, OLS estimates of the effects of eligibility on coverage and utilization would be biased towards zero. If these omitted factors are more important for immigrants than for non-immigrants, then estimates for immigrants may be more severely affected by these biases than estimates for non-immigrants.

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. Such measurement error would normally be expected to bias the estimated effect of eligibility towards zero. Since Medicaid coverage is also 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, instrumental variables estimates are presented below. The aim of the instrumental variables procedure is to abstract from characteristics of the child and/or family that may be correlated with eligibility, survey response error, 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 who are eligible, calculated using the Current Population Survey (CPS). This instrument would capture differences in Medicaid eligibility across states, years, and age groups, and would purge the regression of individual-level sources of variation in eligibility.

This approach would run 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 the fraction eligible

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[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.

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, an instrument that varies only with the legislative environment, and not with its economic or demographic conditions was developed. This instrument was constructed by first selecting a national random sample of 300 children for each single year of age (0 to 14) from the CPS, in each year, and then using the Currie-Gruber program to calculate the fraction of this national sample of children who would have been 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. In what follows, we 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.

This instrumental variables strategy overcomes the econometric difficulties noted above -- the model is purged of endogeneity bias and of 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

[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.

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, among both natives and immigrants, as shown in Appendix Table 2 -- although the standard error on the fraction eligible is twice as high in the model for immigrants as it is in the model for natives, the T-statistic is still over 6 in the model for immigrants.

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 empirical model. Between 1989 and 1992, however, even the most recalcitrant states were forced to extend Medicaid coverage to meet federal standards, with the result that greater uniformity across states was achieved. Thus, although New Hampshire and Minnesota ended up with similar programs in 1992, New Hampshire expanded eligibility much more rapidly over this period as federal mandates began

[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.

to bite. Note that possible legislative endogeneity would be a potentially far greater problem if, instead of simulating the fraction eligible for Medicaid, the various state rules that help to determine eligibility such as maximum AFDC benefit levels had been used. The problem is that things like benefit levels in other programs may be correlated with other characteristics of states that affect the utilization of health care and insurance coverage.

In addition to state fixed effects, the models estimated below include a full set of dummy variables for calendar years, and for each child's single year of age. These variables control for unobserved variables such as secular trends in utilization 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 of residence are also included.[9] Finally, the standard errors are corrected to allow for any residual correlations within state-year clusters.[10]

III. Data

The National Health Interview Survey (NHIS) interviews a large, nationally representative cross-section of American families each year.[11] The baseline survey collects

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[9] 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.

[10] Essentially, 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.

[11] 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

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 in each year. This age cutoff was chosen in order to avoid issues arising from the fact that teens may become eligible for Medicaid due to pregnancy.

Beginning in 1989, the NHIS has asked all non-native-born adults in the household how long they have lived in the U.S. As in the Census, 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 whether either the mother or father of the child is an immigrant[12], 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.

The NHIS 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

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obtained by weighting (Dumouchel and Duncan, 1983).

[12] 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.

private insurance, Medicaid, or was uninsured at the time of the interview.[13]

Information from the main NHIS survey can be used to impute Medicaid eligibility to each child, 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 the two years 1989 and 1992.[14] Second, when family

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[13] The questions about private health insurance coverage and no insurance coverage are straight-forward. 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.

[14]For most of the missing observations, we 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.

income is reported, it is reported in brackets.[15] 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] Two approaches to this problem were tried. 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, simpler method was used. 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 the assumption that most family income comes from earnings, especially in poor families.[17] These limitations of the NHIS income data do not

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[15] The brackets are in increments of $1,000 if income is less than $20,000. 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.

[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.

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

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 two measures of the utilization of medical services over the past year: Whether or not the child had a doctor visit in the last year; and the number of doctor visits if the child had any visits.[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, the analysis focuses on the log of the number of doctor's visits.

In principal, it would also be 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

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[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.

in 1991, the Medicaid program spent $5.4 billion on inpatient hospital services for AFDC children, and only $1.5 billion on physician services.[21] However, 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. Hence, inferences about differences in hospitalization rates between immigrants and non-immigrants would have to be based on very small sample sizes.[22]

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 states with high immigrant inflows. For the purposes of this analysis, "inflow" 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 immigrant flows. Table 2 suggests that five-eights of the immigrant children in the sample live in these six states, compared to only one-quarter of the children of the native born. 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 Medicaid and may face higher transactions costs of enrolling in the program. However, Table 2 indicates that even in a sample as large as the

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

[22] Nevertheless, analyses similar to those reported below were conducted. The results did not show any statistically significant effect of eligibility on hospitalizations among immigrants. Among the native-born, there were marginally significant positive effects. See Currie and Gruber (1996b) for a further discussion of these issues.

NHIS, there are relatively few children of new immigrants, making it difficult to judge the effects of assimilation.

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 states with high immigrant inflows. 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 high-inflow 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), average takeup rates conditional on eligibility are actually lower among immigrants--approximately 50% of the 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 high-inflow 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 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.

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 using Census data, immigrant parents are less skilled on average than other parents and this difference is even more pronounced in states with high immigrant inflows -- 49% of the children of immigrants in these states have mothers with less than 12 years of education, compared to 42% of all children of immigrants. Immigrant 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.

IV. Results

a) Effects of Eligibility on Insurance Coverage

This section investigates the relationship between Medicaid eligibility and type of insurance coverage among children of immigrants and children of the native born. Ordinary Least Squares models of the probability of Medicaid coverage are shown in Table 3. The first row indicates 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 children of new immigrants.

There is some evidence in Table 3 that the transactions costs of applying for Medicaid coverage may indeed be higher for immigrants than non-immigrants as discussed above, 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 (where it may be easier to apply) are more likely to be covered, and again, this effect is larger for immigrants than non-immigrants. Both effects are highest among children of new immigrants. We observe the same pattern of effects in the two-stage least squares models discussed below, although the coefficients on these variables are not shown.

The remainder of Table 3 shows that for the most part, coverage varies with child and family characteristics as one might expect. For example, children of richer parents are less likely to be covered, while children of less educated parents are more likely to be covered. One noteworthy finding is that the probability of coverage is much higher in families without a male head. This differential may reflect the fact that families on AFDC are already familiar with the welfare system and in most cases are already covered by Medicaid. The positive effect of having a female head is greatest for immigrants - once again, this result may reflect differential transactions costs since the advantage to being on welfare and thus already "in the system" may be greatest for those who would have had the greatest difficulty making an application in the absence of such assistance. 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. This result may reflect a higher perceived benefit of regular medical care for younger children.

As discussed above, it is possible that the OLS estimates of the effects of becoming

eligible under the Medicaid expansions reflect omitted variables that are correlated both with eligibility and coverage. Suppose for example that some children are both more likely to be eligible, and more likely to have been covered by Medicaid in the absence of the Medicaid expansions, perhaps because they receive AFDC benefits, or because their parents are refugees. In this case, the estimated effect of making someone eligible for Medicaid under the expansions would be biased upwards. Similarly, it is easy to see that OLS estimates of the effect of eligibility on private health insurance coverage are likely to be biased downwards--the same children who are most likely to be made eligible for Medicaid are least likely to have private health insurance coverage.

Ordinary least squares estimates of the effects of eligibility on coverage are compared to TSLS estimates in Table 4. The coefficients from first row of Table 3 are reproduced in the first row 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, the OLS estimates indicate that among immigrant families the probability of no insurance rises with eligibility suggesting that some families drop (or lose) private health insurance coverage without formally taking up Medicaid coverage. This effect is particularly pronounced among new immigrants, who may face the highest transactions costs of formally enrolling.

The TSLS estimates shown in the second half of the table suggest a story that differs in two important respects. First, although the TSLS estimates of the effects of eligibility on Medicaid coverage are very similar to the OLS estimates for the native born, the effects for

immigrants are greatly reduced. Whereas the OLS estimates suggested that immigrants were slightly less likely to take up coverage than the native born, the TSLS estimates suggest that among immigrants there was no statistically significant response to the eligibility expansions at all. This result is consistent with the hypothesis outlined in Figure 1 above, in which eligible immigrants are less likely to become covered by Medicaid because they face higher transactions costs.

Second, in contrast to the OLS estimates, the TSLS specification suggests that there was no statistically significant crowd-out of private health insurance coverage among the native-born, or among immigrants as a whole. However, among immigrants in states with high immigrant inflows, the estimated extent of crowdout is even greater than before. The end result is that insurance coverage increases among children of the native born as eligibles enroll in Medicaid, but decreases among children of immigrants as eligible children lose private health insurance coverage.[23] The finding that eligible immigrants are more likely to lose private health insurance coverage than eligible natives is consistent with the story in Figure 2 above, in which the native born are able to purchase private health insurance at more favorable rates than immigrants.

Are these TSLS estimates reasonable? Note first that although the standard errors are large, the changes in the point estimates are also large. Thus, it is not the case that the TSLS crowdout coefficients become statistically insignificant among the native-born solely because of the increase in the size of the standard errors. Second, these estimates turn out to be completely

[23] Purcell (1996) shows that takeup is significantly higher in some states than in others (notably in the midwest) but does not relate this to the share of immigrants in the population.

consistent with those obtained by Cutler and Gruber (1996) using CPS data. In their published work, they find an estimated crowdout coefficient of -.07 over the period 1987 to 1992 for all children. However, in private correspondence, they find a smaller but statistically significant crowdout coefficient of -.04 over the 1989 to 1992 period used here. Recall that approximately 10% of the sample children are children of immigrants who live in states with high immigrant inflows. A weighted average of a zero coefficient for all others and a coefficient of -.34 for these children yields an estimate remarkably similar to -.04.

This comparison highlights the fact that the extent of crowdout is likely to be sensitive to the nature of the expansion--an expansion covering people with very low incomes will affect people who may not have private insurance to begin with, while an expansion to people of higher incomes may affect people whose private insurance is of much higher quality than the insurance available under Medicaid. Second, it suggests that estimates of average treatment effects may mask considerable heterogeneity in responses within the affected population, as Heckman (1990) points out.

It is important to keep in mind that these effects are identified using recent changes in Medicaid eligibility, so they should be interpreted as the effect that similar changes or reductions in Medicaid eligibility would have. Evidently, 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 on Utilization

The discussion of Figures 1 and 2 highlighted the fact that even if children do not take

up Medicaid coverage, becoming eligible for Medicaid is likely to make their families better off, and may therefore have some effect on the consumption of Medical care. This section investigates this hypothesis and suggests that examination of coverage alone can give a quite misleading picture of the effects of expanding Medicaid eligibility on utilization of care (and hence of the benefits and costs of changes to the program).

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 to go without necessary preventive care.

Table 5 indicates that becoming eligible for Medicaid 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 estimates are likely to be biased towards zero if eligible children are those who are most likely to go without a doctor's visit for unobservable reasons.

The remainder of Table 5 highlights the fact that many observable characteristics have different effects on utilization than they have on coverage. For example, black children of the native born were more likely than other 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 children in smaller families are more likely to have had a doctor's visit: the latter 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.[24] 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 latter 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). Hence, they strengthen our suspicion that OLS estimates of the effect of eligibility are likely to be biased towards zero if the covariates that are included in the regressions do not adequately capture variations in socio-economic status.

Ordinary Least Squares estimates of the effects of eligibility on the utilization of doctor visits are compared to TSLS estimates in Table 6. The coefficients on eligibility from Table 5 are reproduced in the first row of Table 6. The rest of the table follows the same format as Table 4: OLS estimates of the effects of eligibility on the probability that the child had no visits, and on the number of doctor visits conditional on any visits are shown at the top, while the corresponding 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. A weighted average of the TSLS coefficient of -.092 for "all natives" and -.389 for immigrants in high-inflow states produces an estimate almost identical to Currie and Gruber's (1996b) estimate of -.096 for all children over 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 high-inflow states (native and immigrant) are statistically significant.

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[24] Alternatively, larger families have lower per capita incomes and may therefore purchase fewer normal goods such as health care.

In contrast to the OLS results, the TSLS estimates suggest that the probability that a child went without any visits falls much more with eligibility among immigrant children than it does among children of the native born: In high-inflow states, the coefficient of -.39 for immigrant children can be 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.

V: Discussion and 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 states with high immigrant inflows. 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 appropriately instrumented, it appears that recent eligibility expansions increased coverage only among children of the native born.

The eligibility expansions had quite different effects on the utilization of care, suggesting that a narrow focus on coverage can lead to quite misleading assessments of the costs and benefits of extending eligibility. Becoming eligible for Medicaid reduced the probability that a child went without a doctor's visit in the past year dramatically for both immigrants and non-immigrants. However, the effect was at least twice as big among children of immigrants. On the other hand, there was no increase in the number of doctor visits given at least one visit.

Hence, the Medicaid expansions drew previously unserved children into care, without increasing the number of visits by infra-marginal users.

A potentially disturbing finding is that the expansions were associated with decreases in the probability of having private health insurance coverage among immigrants in high-inflow states. Moving from private health insurance coverage to being eligible for Medicaid but uncovered may be a rational response to becoming Medicaid eligibile, and one which does not make children worse off. In fact, the utilization results suggest that immigrant children were more likely to receive basic health care when they became Medicaid eligible.

However, although immigrant children may be made unambiguously better off by this substitution of public for private insurance, taxpayers foot a larger portion of the bill. The estimates suggest that if, out of a group of 100 children of immigrants in high-inflow 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%. Hence, as much as one quarter of the infra-marginal costs of insuring immigrant children in high-inflow states may have been shifted from private to public insurers. This cost-shifting may explain why it is that high-inflow states are so concerned about the costs of insuring immigrant children, even though the margincal cost of providing a visit to a previously unserved child is likely to be small.

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 necessarily having a large impact on the total costs of providing medical care, as long as acute care continues to be provided on the basis of need.

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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 (1995). 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.	H-Inflow Natives	H-Inflow 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)
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)

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.	H-inflow Natives	H-inflow 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.	H-Inflow Natives	H-Inflow 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.	H-inflow Natives	H-inflow 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. Coefficients on Medicaid Coverage, Private Insurance, and No Insurance do not sum to one because there is a small fourth category called "Other Public Insurance".

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.	H-inflow Natives	H-inflow 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, continued

	All Natives	All Immigrant	Immigrated <10 yrs.	H-Inflow Natives	H-Inflow 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.	H-inflow Natives	H-inflow Immigrant
OLS Estimates					
1. No Visits in Past Year	-.023	-.008	.005	-.024	-.002
	(.006)	(.009)	(.020)	(.013)	(.011)
Mean of Dep. 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 Dep. Variable	.924	.826	.849	.935	.804
R-squared	.121	.156	.212	(.126)	(.146)
# Observations	77038	14497	5006	21401	9378
TSLS Estimates					
3. No Visits in Past Year	-.092	-.351	-.292	-.212	-.389
	(.068)	(.135)	(.294)	(.076)	(.151)
Mean of Dep. Variable	.182	.207	.197	.198	.241
R-squared	.093	.113	.146	.091	.102
# Observations	94,167	18,290	6,236	26,168	11,986
4. Log of # Doctor's Visits	-.134	.023	.157	-.270	-.066
in Past Year	(.135)	(.402)	(.529)	(.201)	(.402)
Mean of Dep. Variable	.924	.826	.849	.935	.803
R-squared	.121	.156	.211	.126	.145
# Observations	77038	14497	5006	20401	9378

Notes: White-corrected standard errors in parentheses. Regressions include child and family characteristics shown in Table 5 as well as season dummies, year dummies, state dummies, age dummies, and interactions between state dummies and 5 age groups and between year dummies and 5 age groups.

Figure 1: The Role of Transactions Costs

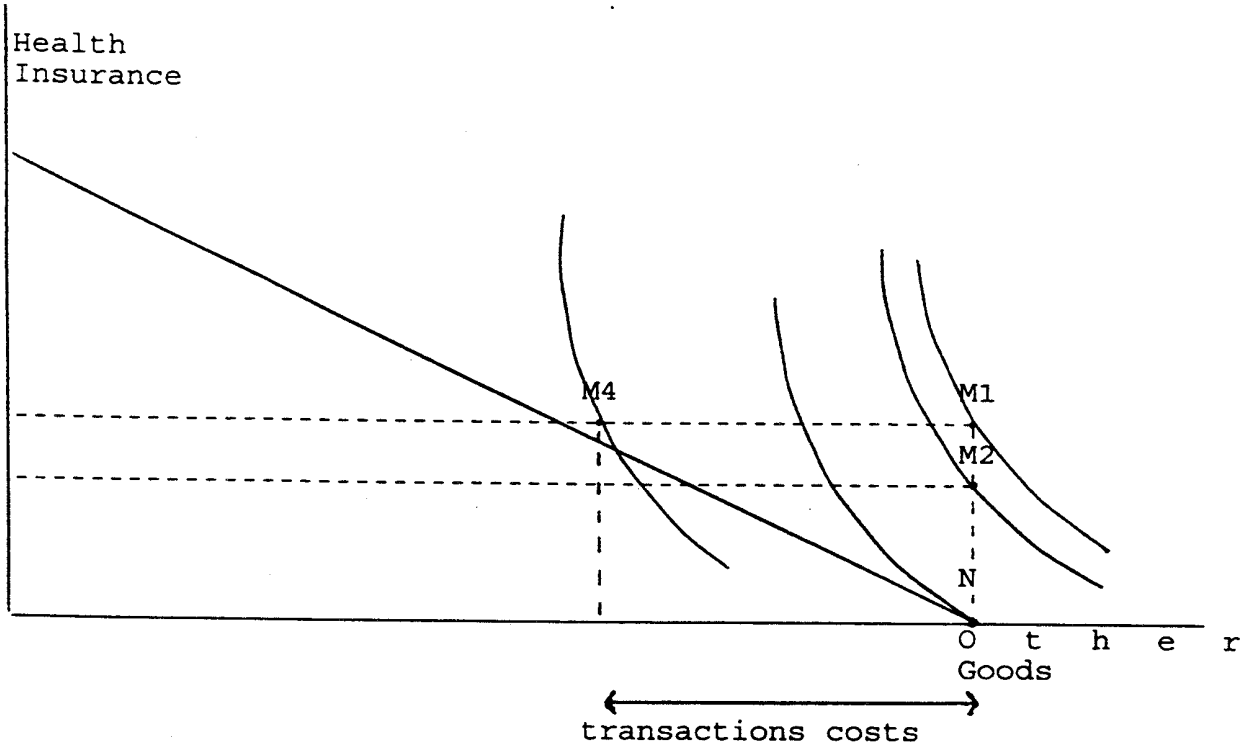
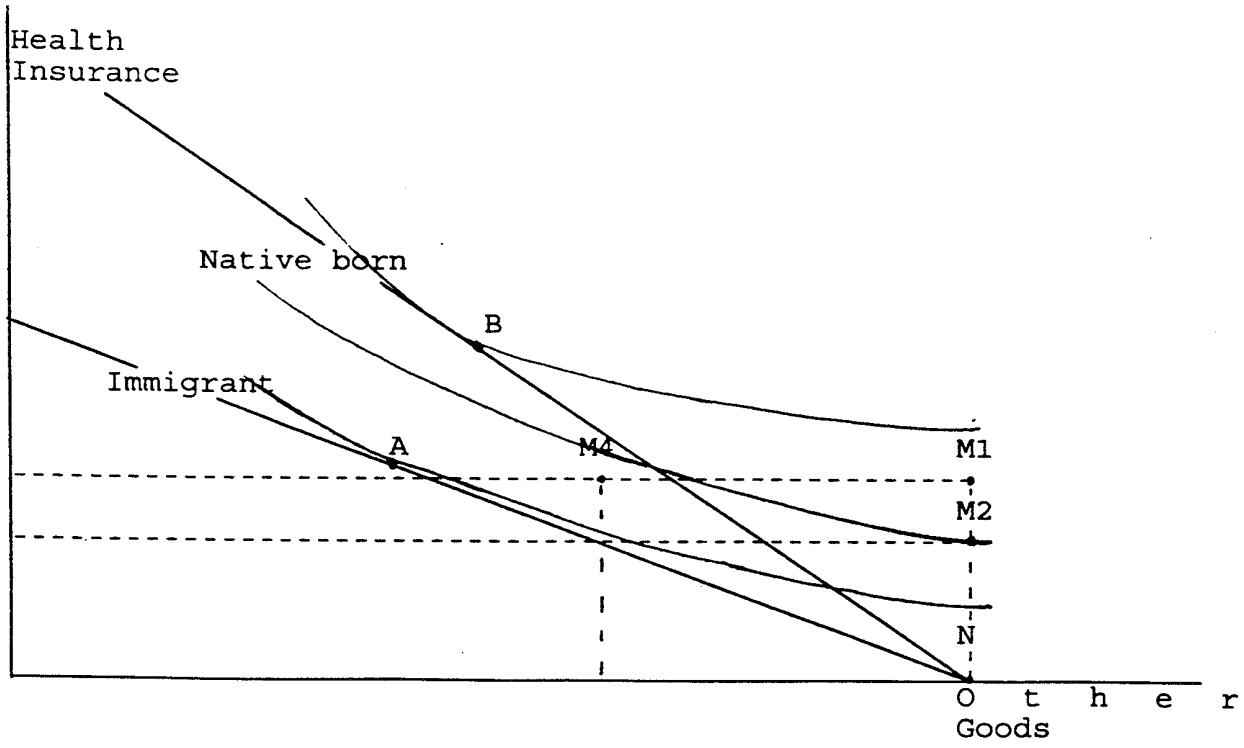


Figure 2: The Role of Differential Opportunities



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
Fraction Eligible in the Child's Demographic Group, 1989 and 1992

	All Natives	All Immigrant	Immigrated <10 yrs.	H-inflow Natives	H-inflow 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	.026	.050	.030	.036	.041
Relative in HH	(.008)	(.012)	(.020)	(.013)	(.015)
Other Adult Male	.008	.015	.041	-.030	.022
Relative in HH	(.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.	H-inflow Natives	H-inflow 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. 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.	H-inflow Natives	H-inflow 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
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
Chld Oldest/Only Chld	.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 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	.12	.16

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

Data Appendix: Simulating Medicaid Eligibility
(Not Intended for Publication)

This appendix describes the procedure for imputing the Medicaid eligibility of individuals in the CPS and NHIS. The source for information on state Medicaid options is 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 1.85 times the state need's standard, 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. 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. We modeled this by assuming that for Medicaid eligibility purposes, women were allowed to keep the $30 and 1/3 of earned income for a year. The aim was to consistently model the maximum amount that a person could have received while remaining eligible for Medicaid coverage under AFDC.

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, our 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 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.

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