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MEDICAID MANAGED CARE: EFFECTS ON CHILDREN'S MEDICAID COVERAGE AND UTILIZATION

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ABSTRACT

We use data from the National Health Interview Surveys to measure the effects of the growth of Medicaid managed care on children. We examine both the probability that individual children were Medicaid-covered and their utilization of care. We find that managed care penetration has significant effects on the composition of the Medicaid caseload. Poor white and Hispanic children are more likely to be enrolled in Medicaid where Medicaid managed care organizations are more prevalent, whereas black children are less likely to be enrolled. Also, toddlers are less likely to be enrolled than school age children. These lower enrollment rates are linked to increases in the numbers of black children and toddlers who go without any doctor visits in a year. Our results are consistent with cream-skimming by Medicaid managed care organizations along the lines of race and age.

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The rapid growth of managed care more generally has been accompanied by the growth of Medicaid managed care: Between 1989 and 1994, the period we examine in this study, the fraction of the Medicaid caseloads in Medicaid managed care organizations (MMCOs) rose from 6.8% to 24.2%. By 1997 it had reached 47.5% (HCFA, 1989, 1994, 1997). Most of this growth has occurred among low income women and children rather than among elderly Medicaid recipients.

This paper examines the effects of the growth in Medicaid managed care organizations on children. Specifically, we calculate the fraction of the low income Medicaid caseload that is in MCOs and ask what effect this measure has on the probability of Medicaid coverage and on the utilization of medical services.

Our study differs from previous evaluations of Medicaid MCOs in several respects. First, most previous efforts have examined the effects of MCOs on the utilization of care among Medicaid enrollees in particular plans. In contrast, we examine the effect of Medicaid MCOs on Medicaid coverage and on the utilization of medical care by all lower income children as well as by those who are covered by Medicaid. Thus, we explicitly account for the fact that the growth of Medicaid MCOs may have changed the population that is covered by Medicaid. It is also possible that the growth of both private and Medicaid MCOs has affected the care rendered by non-MCO providers to those without Medicaid coverage.

Second, we use a national sample of data from the National Health Interview Surveys (NHIS). Unfortunately, state identifiers are not available after 1994, so we are unable to extend our analysis to more recent years. Much of the previous literature emphasizes the differences between types of MCO plans, and focuses on the effects of a particular plan. While we think that this case-study approach is very useful, having a sense of the overall impact of MCOs is likely to prove useful to policy makers.

Third, we disaggregate our analysis by the age and race of the child, and look for differential effects of MMCOs on the poor and on children with chronic conditions. Managed care organizations are often suspected of "cream-skimming", that is, of systematically selecting the healthiest patients to be enrolled and encouraging the sickest patients to go elsewhere (Leibowitz *et al*, 1992; Congressional Research Service, 1993). This literature suggests that Medicaid managed care may have different effects on children with chronic conditions than on other children.

However, MMCOs could also use other indicators to screen out unhealthy children. Poor children are less healthy on average than wealthier ones, and black children are less healthy on average than white children--For example, black children die at twice the rate of white children at all age levels. Moreover, the medical needs of infants and preschool children are typically greater than those of school-aged children. Thus, poverty status, race and/or age could also be used as screens by MMCOs.

In this case the effects of MMCOs on the supply of medical services could vary with these factors. The demand for MMCO services could also vary by race, because there are important racial differences in access to care. MMCO services may be more or less attractive than services that are already available to different groups.

We find that the growth of Medicaid Managed Care had significant effects on the Medicaid caseload, shifting it towards poor white and Hispanic children, and away from near-poor black children. Enrollments also shifted away from pre-school children and towards school-aged children. These changes appear to have had real effects on utilization of care by black children and preschool children, increasing the numbers of these children who received no doctor visits in the preceding year.

I. Background

a) The Growth of Medicaid MCOs and Other Changes to the Medicaid Program.

Medicaid is the main source of public health insurance for low income women and children. There are two main classes of Medicaid recipients, those who are eligible because they are receiving some other form of public assistance, and those who are eligible only for Medicaid. Until the mid-1980s, it was difficult to qualify for Medicaid other than through participation in public assistance programs such as Aid to Families with Dependent Children (AFDC). Since that time, the link between Medicaid eligibility and public assistance has been broken as the income cutoff for Medicaid eligibility has been greatly liberalized. For example, in 1984, the income cutoff for Medicaid eligibility in South Carolina was the same as the cutoff for public assistance: 29% of the federal poverty line. By April 1990, states were required to offer Medicaid coverage to children under six in families with incomes up to 133% of the poverty line. Effective July 1, 1991, states were required to offer coverage to all children under age 19 who were born after Sept. 30, 1983 and whose family incomes were below 100% of the federal poverty line.

Over the period of our study, increases in these income cutoffs increased the fraction of children eligible for Medicaid from 20 to over 30% (Currie and Gruber, 1996a). Thus, changes in income cutoffs can be regarded as one of the main factors driving Medicaid enrollments and Medicaid costs over our sample period. It is possible that many states adopted Medicaid managed care in an attempt to counterbalance increases in costs caused by increases in income cutoffs for the program. Hence, it will be important to control for the income cutoffs lest their effects be confounded with the estimated effect of MCO growth.

A managed care plan is one in which the overall care of a patient is overseen by a single provider or organization. For example in a Health Maintenance Organization (HMO), the organization receives a fixed periodic payment and in return accepts financial responsibility for all covered medical expenses. The patient is obligated to receive care only through the HMO or through referrals from it. Treatments recommended by doctors may be subject to utilization review. HMOs may also use financial or other incentives to influence doctors' decisions.

The growth of Medicaid MCOs has been spurred by state efforts to control the growth of Medicaid expenditures, by the growth of MCOs more generally, and by federal legislation which allowed states to experiment with different ways of delivering care to the Medicaid population and/or to mandate enrollment in managed care plans. The Omnibus Budget Reconciliation Act of 1981 created the so called 1915b "Freedom of Choice" waiver which allowed states to require Medicaid beneficiaries to enroll in managed care plans, as long as they were offered a choice between plans.[1] Within states, these mandates have typically be implemented county by county, so that all the children in a particular county are required to be enrolled in managed care in order to receive Medicaid-covered services.

Table 1 shows that Medicaid MCO growth occurred very unevenly across states, leading to a great deal of variation which can be used to identify the effects of the Medicaid MCOs. For example, New York started with 2.0% of the Medicaid caseload enrolled in MCOs in 1989, and had enrolled 13% of the caseload by 1994. On the other hand, Florida started this period with enrollments of 6% and ended with enrollments of 32.2%.

[1] States can also apply for 1115 Research and Demonstration waivers, which set aside virtually all Medicaid requirements (including those that mandate that enrollees be given a choice of providers) but

b) Potential Effects of Medicaid MCO Enrollment on the Health Care of Individuals

Arguments in the literature suggest that being enrolled in Medicaid managed care could either help or hurt low income patients. On the positive side, managed care organizations have the potential to coordinate services provided to low-income patients by providing one usual place of care, and may place more emphasis on providing preventive care than traditional fee-for-service medicine (Sisk *et al.*, 1998; Valdez, *et al.*, 1989; Rowland *et al.* 1995).

On the other hand, many Medicaid recipients receive services for only a short time (Short *et al.* 1988) and so incentives for managed care organizations (MCOs) to provide preventive care are muted. Moreover, patients on Medicaid often effectively have little choice of provider which removes an important potential source of "market" discipline (Szylagyi, 1998; Hurley *et al.*, 1998).

The MCO horror stories that abound in newspapers suggest that some plans skimp on necessary care, deny access to specialists, and refuse to pay for emergency hospital care. Medicaid recipients may be even more vulnerable to this type of treatment than other patients, given a limited choice of providers and little oversight of Medicaid managed care plans on the part of state governments (U.S. GAO, 1990, 1995). These issues may be especially important for children with serious chronic conditions since they are more likely to need access to specialists and hospital care.

Attempts to evaluate the effects of Medicaid MCOs on the care provided to individuals who are enrolled may be contaminated by selection bias. Many previous investigations suggest that those who enroll in MCOs are generally healthier and less likely to use services than those who do not. This may be due either to the personal preferences of the patients, or to the cream-skimming behavior of the MCOs. This potential for positive selection makes it difficult to interpret a common finding in the literature which is that those enrolled in MCOs typically receive fewer doctor's visits and are less likely

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over our sample period these are much less common.

to see specialists than other patients (Szilagyi, 1998; Leibowitz *et al*, 1993; Rowland *et al.*, 1995).

At first blush it may appear that this selection problem is less serious for evaluations of Medicaid managed care since many Medicaid enrollees have been compelled to enroll if they wanted to access Medicaid services. However, it is important to keep in mind that Medicaid eligibles do choose whether or not to become enrolled in the program, and that MMCO penetration may affect this decision, as discussed below.

c) Possible Effects on Medicaid Enrollments

Takeup of Medicaid benefits has always been very high among those on public assistance, presumably because there are virtually no additional transactions costs associated with accessing these benefits. However, takeup among those newly eligible for Medicaid coverage as a result of the increases in income cutoffs has been disappointing. For example, Currie and Gruber (1996a) show that between 1984 and 1992 the fraction of newly eligible children taking up benefits ranged from a half to two thirds. These takeup rates are comparable to those of other assistance programs such as Aid to Families with Dependent Children and Unemployment Insurance (Blank and Card, 1991; Blank and Ruggles, 1996).

These low takeup rates suggest either that there are significant transactions costs to enrolling in the Medicaid program which deter many eligibles, and/or that many of the newly eligible are unaware of their benefits. Transactions costs include requirements to document residency, income, and citizenship; several meetings with a caseworker; and requirements that Medicaid eligibility be re-established at least yearly. Currie (2000) shows that takeup increases with the number of eligible children and with urban residence as one might expect if transactions costs are important.

Ignorance about eligibility is also likely to be an important factor. For example, it appears that many pregnant women gain access to Medicaid only at the point of delivery, because they do not know that their prenatal care is covered under the program (Currie and Gruber, 1996b). Hence, Medicaid MCOs may affect Medicaid enrollment rates among those who are not on public assistance either by lowering the transactions costs of enrollment, or through outreach efforts (we will refer to these two strategies together as "recruitment" strategies below). Medicaid MCOs might be expected to focus any recruiting efforts on children whom they expect to have relatively low health care costs.

A switch from fee-for-service Medicaid to Medicaid managed care could also affect enrollments by altering patients' perceptions of the benefits associated with being enrolled. It is important to keep in mind that even the uninsured have access to medical care in the event of a medical emergency. Thus, patients who "pay" the transactions associated with Medicaid enrollment "buy" access to non-urgent care, as well as urgent care of potentially higher quality.

Thus, patients who fear that managed care will lower the quality of services received (e.g. by denying care or restricting access to specialists) may be less likely to enroll in Medicaid if they are expected to seek care from an MCO rather than from an alternative provider. However, to the extent that MCOs really do emphasize preventive care and provide care-coordination services, increasing MCO penetration could make Medicaid more attractive to eligible families.

Moreover, a lack of private physicians willing to accept Medicaid payments is often cited as a significant barrier to care among those who are Medicaid eligible. Twenty percent of U.S. pediatricians refuse to see Medicaid patients at all, and 40 percent limit the number of Medicaid patients in their practices. Both percentages have been growing over time, as more and more physicians opt out of the Medicaid program--in 1977, only 15 percent of pediatricians refused

Medicaid patients and only 26 percent limited their numbers (Yudkowsky, Cartland, and Flint, 1990). Presumably, difficulty finding providers willing to accept Medicaid deters some families from enrolling in the program. To the extent that managed care organizations fill this gap, they could encourage both Medicaid enrollments, and utilization of care.

d) Effects of Medicaid MCOs on the Overall Market for Health Care Among Low Income Persons

The growth of MCOs has also had important effects on the health care market. Many analysts have attributed a slow down in the growth of costs of medical care to MCOs (c.f. Cutler and Sheiner, 1998). In addition to the strong emphasis on cost containment within plans, MCOs create competitive pressures on other providers to reduce costs (Baker, 1995; Baker and Shankarkumar, 1997; Noether, 1988). These pressures may in turn lead to a reduction in the provision of indigent care by hospitals and other providers. Increasing MCO penetration may also have market-wide effects on physician practice patterns by influencing the local "standard of care" (Phelps, 1992). Thus, the growth of Medicaid MCOs, and of MCOs more generally, could reduce the quantity and quality of care rendered to the low-income population by other providers.

These arguments imply that it is important to examine the overall effect of MCO penetration on the health care received by low-income individuals rather than focusing only on the care received by individuals who are enrolled in these plans. Second, they imply that it is important to control for the growth of private sector MCOs in our regression models so that we do not erroneously attribute their effects on health care markets to Medicaid MCOs.

e) Evidence Regarding Racial and Ethnic Differences in the Effects of Medicaid and Potential Effects of Managed Care.

MMCO penetration could have differential effects on blacks, whites and Hispanics for two reasons. First, it is possible that MMCOs wishing to engage in cream-skimming behavior use race as a proxy for a patient's probable health care costs. If black children are perceived as less healthy than white children on average, then a cost-conscious MMCO will try to avoid enrolling blacks. A company could do this without engaging in overt discrimination against individual applicants through the simple expedient of concentrating recruitment efforts in white and Hispanic areas, rather than in black neighborhoods. Alternatively, MMCOs could increase the transactions costs for some applicants with resulting losses in both enrollment and utilization of care in affected groups.

Second, we argued above that the introduction of an MMCO could alter the perceived benefit associated with enrolling in Medicaid. To the extent that race and ethnicity are associated with differential access to care in the absence of MMCOs, blacks, whites, and Hispanics may respond differently to MMCO penetration.

For example, a good deal of evidence suggests that blacks are more likely than whites to rely on hospital clinics and emergency rooms for care, instead of on private physicians' offices (Bloom, 1990; Fossett and Peterson, 1989; Fossett *et al.*, 1992). This is due in part to residential segregation which makes blacks more likely than whites to live in inner-city areas served by large hospitals with indigent care services. If MMCOs offer services of low quality, then uninsured blacks with access to superior services elsewhere will not be induced to enroll in Medicaid. Poor whites are less likely to live in inner-city areas, and hence may find even low-quality MMCO services to be better than what is available to the uninsured in their areas.

By looking at both Medicaid enrollments and utilization, we can attempt to distinguish between these "demand-side" and "supply-side" hypotheses about the effects of MMCOs. Suppose for example that the introduction of a Medicaid MCO is accompanied by a decline in Medicaid enrollments. The demand-side explanation is that this is because consumers dislike MMCOs and feel that they can obtain better services outside of the Medicaid system. In this case, one would not expect to see any dramatic decline in the utilization of necessary care among those who passed up Medicaid coverage. On the other hand, if the decline in Medicaid enrollments is a result of cream-skimming on the part of the MMCOs, then one might well expect to see reductions in utilization of care in the population that lost Medicaid coverage.

f) Potential Differences in the Effects of MMCOs by Age

Younger children typically have higher health care costs than older children both because they require more visits for preventive care, and because they are more subject to illnesses such as ear infections. Thus, a cream-skimming MMCO would prefer to insure older children rather than infants and toddlers. Once again, it is possible to accomplish this end without engaging in overt discrimination against babies--for example, an MMCO could target school age children by recruiting members through schools.

II. The Data

State-level data about enrollments in Medicaid managed care come from the annual Medicaid Managed Care Enrollment Reports published by the Health Care Financing Administration (HCFA). This report provides a comprehensive listing of MCOs that provide Medicaid coverage, by state, along

with the enrollment numbers for each plan. We combine these enrollment numbers with information about total, non-elderly, Medicaid enrollments from HCFA's annual 2082 enrollment reports to calculate the overall Medicaid MCO penetration rate in each state and year.

Our main source of data is the National Health Insurance Survey (NHIS) insurance supplements for each state and year. The NHIS is a large, annual, nationally representative survey of the health care utilization of American Households which has information about household demographics, chronic conditions, and health care utilization. The data on health insurance coverage comes from the health insurance supplements from 1989, 1992, 1993 and 1994. Unfortunately, the state identifiers that we use to merge in the state-level data about Medicaid MCO penetration rates are not available after 1994 so we are unable to use later waves of the NHIS. However, the period we examine was one of rapid MMCO growth, and so is of particular interest. These four waves of the NHIS yield information about 120,000 children 18 or younger.

In each year, respondents are asked whether each member of the household is covered by up to 4 private health plans, and about whether each of those plans is a managed care plan. If respondents replied that any plan they were covered by was an MCO, then we counted them as MCO-covered. We also used these data to calculate state-level private sector MCO penetration rates.[2] Unfortunately, individuals enrolled in Medicaid were not asked whether they were in an HMO.

The individual-level data for this study also comes from the NHIS. We excluded children who were very unlikely to be income eligible for Medicaid by restricting the sample to children in families

[2] We also examined Interstudy's data on Medicaid penetration rates. Interstudy only reports Medicaid enrollments separately starting in 1991. Interstudy also only collects data from HMOs and not from other MCOs. Perhaps for this reason, the number of MMCO enrollees in the Interstudy data is much less than the number reported by the Health Care Financing Administration (HCFA). For example, in 1992, Interstudy reported 1,325,210 people in Medicaid managed care compared to the 3,634,516 reported by HCFA. Nevertheless, the correlation between penetration rates reported by

with incomes less than or equal to 300% of the poverty line. Since income is reported in brackets, this cutoff sometimes fell in the middle of a family's income bracket. Children from these families were included in the sample. This restriction yielded a final sample of approximately 75,000 children.

The NHIS questions about public insurance changed somewhat over time. In the 90s respondents were consistently asked whether they were covered by Medicaid in the past month. In 1989, respondents were asked whether they had a Medicaid card. We use affirmative answers to this question as our measure of Medicaid coverage for that year. About 1.5% of respondents report that they have both Medicaid and private insurance coverage. In these cases, we count the person as Medicaid covered.

Table 2 shows that slightly over 60% of our sample children have private health insurance, while 20% are covered by Medicaid at some point in the past year. A further 18% are uninsured. These fractions vary with race and ethnicity--among blacks 41% have private coverage, and 40% have Medicaid, while among Hispanic children, 40% have private insurance and 29% have Medicaid. Thus, Hispanic children are more likely than others to be uninsured.

We focus on 3 measures of health care utilization. The first is the number of doctor visits in the past 12 months. This variable is of interest because it has a direct impact on the costs of providing care. However, it is difficult to link the number of doctor visits to health outcomes. Better educated and higher income parents are likely to take children to the doctor more often, even though their children are generally healthier than other children. Moreover, the distribution of the number of doctor visits is very skewed, with some children receiving very large numbers of visits. We address this later problem by focusing on the log of the number of visits, conditional on any visits having occurred, in our regression models (in order to make the dependent variable more normally distributed).

Interstudy and those we calculate using NHIS was .83.

As a second measure, we construct a variable equal to one if the child received no doctor visits in the past 12 months. It is recommended that most children receive at least one visit each year, and children who do not are likely to be lacking recommended preventive care. Hence, the absence of visits may be more directly linked to health than the total number of visits.

We also examine whether or not the child was hospitalized in the past 12 months. Hospitalization is a rare event affecting only 4% of our sample, but is of interest because a typical hospitalization is as much as 50 times more costly than a doctor's visit. However, once again, the link between hospitalization and health is ambiguous. On the one hand, it is important that children have access to hospitalization if they need it. On the other hand, children who do not have access to regular preventive care are much more likely to be hospitalized for chronic conditions such as asthma. These preventable hospitalizations are costly and place additional and unnecessary stress on sick children and their families. Moreover, there is evidence from previous research that 20 to 30% of pediatric hospitalizations are not medically necessary, and that the probability that a child will be hospitalized rises with the generosity of insurance coverage (Kemper, 1988).

Table 2 shows that there are racial and ethnic differences in all of these measures of utilization. White children have more doctor visits, and are less likely than other children to have done without doctor visits in the past year. Black and Hispanic children look quite similar in terms of numbers of doctor visits, but black children are more likely than either white or Hispanic children to be hospitalized.

Table 2 shows that 20% of the children were reported to have a chronic health condition. Respondents were asked to describe any existing health conditions to the interviewer, and to say how long they had had the condition. Interviewers are instructed to consider a health problem of any kind

as a "condition". On the basis of the respondent's description, the interviewer codes the type of condition as well as whether it was acute or chronic.

The fraction of children reporting any chronic conditions is similar for blacks and whites, and lower for Hispanic children. However, conditional on reporting any chronic condition, blacks tend to report more serious conditions. For example, among those with chronic conditions, 24.1% of blacks reported asthma compared to 14.7% of whites and 21% of Hispanics. Blacks with chronic conditions are also more likely than whites or Hispanics to list mental retardation and speech, hearing, or visual problems. Conversely, whites with chronic conditions are more likely than blacks to cite conditions such as hayfever, sinusitis, bronchitis or dermatological problems such as acne.[3]

In combination with the fact that black children are more likely to be hospitalized, these findings suggest that it may be more expensive for MMCOs to treat groups of black children than groups of white children. Hence, they provide a possible motive for cream-skimming along racial lines.

Table 2 also shows some of the demographic background variables that are available in the NHIS, by race and ethnicity. Black and Hispanic families tend to have less educated parents, larger numbers of siblings, a higher incidence of single headship, but also a higher probability that other relatives (such as grandparents) are present in the household. In addition, minority families are more likely to live in poverty, and more likely to live in a central city. All of these variables will be controlled for in the regression models reported below.

Finally, annual state-level data about Medicaid income eligibility cutoffs by state, year, and the child's year of age are taken from National Governor's Association Maternal and Child Health

[3] The percentages of whites, blacks, and Hispanics with hay fever, sinus, or tonsil problems are 19.1, 17.4, and 15.4 respectively. Corresponding percentages for mental retardation are 7.0, 10.5, and 6.7. For dermatological conditions and acne they are 8.4, 5.7, and 5.8. And for speech, hearing, and visual disorders they are 8.6, 9.2 and 8.4.

Newsletters (various issues). These cutoffs were as high as 300% of poverty for infants in some states, but as low as 100% of poverty for older children. As discussed above, the inclusion of this variable in our regression models will account for the increasing generosity of the Medicaid program over our sample period.

III. Estimation

a) Models of Medicaid Coverage and Utilization of Care

As discussed above, Medicaid MCO penetration may affect Medicaid enrollments either through patient preferences (patients may like or dislike MCOs compared to other Medicaid providers) or through cream-skimming on the part of the MCO. It can also affect utilization of care either directly through effects on MCO patients, or indirectly through effects on the market for care. In order to examine the overall effects of Medicaid MCOs, we estimate linear probability models for the probability of individual Medicaid coverage/utilization which are of the following form:

$$(1) \qquad Medicaid = a_0 + a_1 MMCO + a_2 CUTOFF + a_3 PMCO + a_4 UNEMP + a_5 X + \varepsilon,$$

where Medicaid is a zero/one variable equal to one if the person is covered (or alternatively one of our 3 measures of utilization), MMCO is the Medicaid MCO penetration rate, PMCO is the private sector MCO penetration rate, CUTOFF is the Medicaid income cutoff applicable to a child of that age in a particular state and year, UNEMP is the state unemployment rate, and X is a vector of other control variables.

CUTOFF is included because, as discussed above, it is a major determinant of movements in

Medicaid enrollments, Medicaid costs, and of the utilization of care over our sample period. Since both income cutoffs for Medicaid eligibility and managed care enrollments were growing in most states over our sample period, failure to control for CUTOFF could confound our estimates of the effects of MMCO. It is also possible that budgetary pressures caused by the higher Medicaid income cutoffs encouraged states to look to managed care for cost savings.

We include PMCO because the growth of private managed care organizations may have had important effects on the availability of alternatives to MMCO care, and hence, on the relationship between MMCO penetration, Medicaid enrollments, and utilization of care. PMCO is highly correlated with MMCO, largely because it is easier for governments to create an MMCO in an area that is already served by a private managed care organization. Thus, failure to control for PMCO could again lead to biased estimates of the effects of MMCO.

We have also included the unemployment rate for the state and year in all of our regression models because it could affect the availability of private health insurance coverage, and that in turn would have independent effects on both Medicaid enrollments and on the utilization of care. Unemployment may also have direct effects on health. However, we found that the unemployment rate did not have a statistically significant effect in any of our models.

The vector X includes all of the demographic variables shown in Table 2, as well as dummy variables for each year of age of the child, the calendar year, the season (since there are seasonal patterns in Medicaid enrollments and in utilization rates), and the state. The year and state dummies control for fixed characteristics of states (such as demographic composition) and years (such as overall national economic conditions), which may have affected Medicaid enrollments.

It is possible that despite the rich set of controls included in (1), that there are omitted variables

that are correlated both with Medicaid enrollments (or utilization of care) and with MMCO. For example, a state budget crisis could precipitate both a reduction in the number of clinics serving low income families, and a move towards Medicaid managed care. We investigated this hypothesis using annual data on state deficits from the Statistical Abstract of the United States, but were unable to find evidence of any relationship between state budget deficits and MMCO penetration.

Alternatively, it is possible that states which adopt Medicaid managed care, make other concurrent changes to their Medicaid programs (such as changes in the services covered) which affect Medicaid enrollments and/or utilization of care. Another potential problem is that measurement error in the MMCO penetration rate could bias the estimated coefficient on this variable.

Given the possibility of omitted variables bias and/or measurement error, we have also estimated instrumental variables (IV) models. As instruments for MMCO we use whether or not the state had a 1915b waiver, and the fraction of the state's children living in a county with mandatory enrollment in Medicaid managed care. We expect that states that mandate enrollment in Medicaid MCOs will have higher enrollments than those that do not. The 1915b waiver allows states to implement this mandate. Knowing which counties the mandate was implemented in gives us some idea of the number of children who were potentially subject to it. It seems reasonable to assume that the existence of a mandate, and the number of children potentially subject to the mandate, should affect Medicaid enrollments and/or utilization only through their effects on Medicaid managed care enrollments.

Table 3 shows the variation in our instruments by state and year. A comparison of Table 1 and 3 shows that MMCO penetration tends to be higher in states with mandates and that, within states, MMCO penetration increases when a mandate is adopted. However, the number of children living in

counties with a mandate can be greater or less than the fraction of the Medicaid caseload enrolled in managed care. First, some groups such as foster children and disabled children are typically exempted from the mandatory MCO enrollment requirements. Second, even children subject to mandatory enrollment may not all be enrolled due to administrative problems implementing the mandatory MCO program. Third, the counties with the largest share of the state's children are not necessarily those with the largest share of the Medicaid caseload. In any case, we find that both of these instruments are strongly correlated with Medicaid MCO enrollment (as shown in Appendix Table 1, which is discussed further below).

Our instrumental variables procedure is much easier to implement in a linear, rather than in a non-linear framework. Hence, we show linear probability estimates below. We found that probit models yielded estimates very similar to Ordinary Least Squares (OLS) estimates of (1).

A more serious concern about the estimation of (1) is that in the models of insurance coverage, the non-Medicaid alternative includes both the uninsured and private insurance coverage. We have estimated multinomial logit models examining the choice between these three types of insurance coverage. However, the "Independence of Irrelevant Alternatives" assumption implicit in these models was overwhelmingly rejected. This result implies that a more sequential model of insurance choices may be appropriate. Equation (1) can be regarded as the first step in such a sequence. We assume that households first choose whether or not to participate in Medicaid, the free health insurance alternative, and we model this choice. MMCOs may have some impact on the subsequent choice between private health insurance and self-insurance, but this choice is not the central focus of our paper.

A final empirical problem is that while our data is individual, our measure of Medicaid MCO's

varies only with state and year. Thus, standard OLS regressions will tend to understate the standard errors. We have corrected for this problem by allowing arbitrary correlations between individual level error terms within state-year cells.

III. Results

a) Effects on Medicaid Coverage

Table 4 shows the estimated effects of MMCO penetration on the probability of Medicaid coverage in this lower-income population. Panel A shows estimates for all children and estimates broken out by race and ethnicity. Panel B shows estimates broken down by the age of the child. In order to conserve space, only the coefficients of greatest interest are shown. Models corresponding to those in Panel A are shown in Appendix Table 2 with the full set of covariates.

Table 4 suggests that higher MMCO penetration rates reduce the probability of Medicaid coverage among blacks, and among toddlers (2 to 5 year olds). If we consider a 20 percentage point increase in MMCO (a plausible change in our data set), our results imply that there would be a 1.8 percentage point decline in Medicaid coverage among blacks, and a 1.4 percentage point decline among toddlers. MMCO is not statistically significant among other groups.

Having a chronic condition is an important predictor of Medicaid coverage in every group which raises an important issue. On the one hand, it seems important to control for health status when examining the effects of MMCO penetration. On the other hand, the probability of being diagnosed with a chronic condition may be higher for those who have insurance coverage and/or more utilization of care for other reasons. Due to this potential endogeneity problem, we have estimated all of our models without the indicator for chronic conditions. We found that the estimates for MMCO and

PMCO were very similar to those reported in Table 4 and in the Tables discussed below. The estimated effect of poverty was sometimes increased by the exclusion of chronic conditions, which indicates that the poor are more likely to suffer from these conditions.

Poverty itself was also an important predictor of Medicaid coverage. Overall, the poor were 18% more likely to be enrolled in Medicaid than the non-poor. Private MCO penetration rates did not have any effect on Medicaid coverage. However, Medicaid generosity (as measured by the income-eligibility cutoff) was found to be statistically significant overall, and in every racial/ethnic group. We estimate that an increase in the cutoff from 100 to 200% of poverty would be associated with a 2 percentage point increase in the probability of Medicaid coverage overall, from a baseline of 20%. The increases in the cutoff had the greatest effect on school aged children as one might expect. This was the group who was becoming eligible for coverage under the higher income cutoffs over this period.

We have also estimated models broken down by both race/ethnicity and age. The patterns of estimated coefficients were generally consistent with those shown above (i.e. if we see effects for blacks and for toddlers, then we would also see an effect for black toddlers in the more disaggregated samples) but were often statistically insignificant due to the small sample sizes. Hence, we have not reported these estimates.

First stage regressions are shown in Appendix Table 1. Both "waiver" and the fraction of children living in a mandatory enrollment county (%mandatory) have the expected positive sign on Medicaid managed care enrollments when they are entered into the model separately. The R-squareds suggest that %mandatory is a better instrument in the sense that it explains a larger fraction of the variance in MMCO than does the simple waiver variable. However, the percent mandatory is not as clean an instrument as "waiver" since the distribution of children across the state could be related to the

provision and utilization of medical care. Thus, although there is some evidence of multicollinearity between these two variables (the coefficient on waiver becomes negative when %mandatory is added to the first stage regression model), we have included both instruments in our IV models and done Hausman tests to determine whether or not the over-identifying assumption can be rejected. We find that it cannot be which suggests that %mandatory is a legitimate instrument, as long as waiver is.

Instrumental variables estimates of the effect of Medicaid MCO penetration rates on Medicaid coverage are shown in Panels C and D of Table 4. To save space, only the coefficients on MMCO are shown. We cannot reject the null hypothesis that the point estimates are the same as those shown in Panels A and B, and the standard errors are only slightly greater than in OLS. Hence, these estimates suggest that any biases in the OLS estimates of the effects of MMCO on Medicaid coverage are small.

b) Effects on the Medicaid Coverage of Different Groups

Table 5 shows estimates from models that allow the effects of MMCOs on Medicaid enrollments to vary by whether or not children have a chronic condition, as well as with poverty status. We find that there is a strong positive interactive effect between poverty and MMCO for every group except infants. A 20 percentage point increase in MMCO would increase Medicaid enrollments among the poor by 2 percentage points (where the mean is 56%). When we stratify by race and ethnicity, we find that this effect is concentrated among poor whites and Hispanics. There is no effect on enrollments among poor blacks, but a 20 percentage point increase in MMCO would be associated with a reduction in enrollments of 3.4 percentage points among black children with incomes between 100 and 300% of poverty from a baseline of 15.4%. Panel B shows estimates by age. There is no significant effect of MMCO among infants. Among toddlers, MMCO decreases Medicaid coverage

among those with incomes between 100 and 300% of poverty, while among school-aged children, MMCO decreases Medicaid coverage among those between 100 and 300% of poverty but increases the Medicaid coverage of the poor. We find an interactive effect between MMCO and chronic conditions for toddlers, which suggests that a 20 percentage point increase in MMCO would decrease Medicaid coverage among toddlers with chronic conditions by approximately 3 percentage points. Instrumental variables estimates are shown in Panels C and D. Once again, they are very similar to the OLS estimates discussed above.

Overall, these results suggest that Medicaid MCOs are not systematically excluding poor children. On the contrary, higher Medicaid MCO penetration is associated with higher Medicaid enrollments among poor whites and Hispanics. Since all Medicaid eligibles are low-income, perhaps poverty status is too coarse a screen. We do find some evidence consistent with cream-skimming along the lines of race and age. Among blacks and among toddlers, higher Medicaid MCO penetration is associated with declines in enrollment among those between 100 and 300% of poverty. It makes sense that declines in enrollments would be concentrated in this group, since those in poverty are more likely to qualify for Medicaid automatically via participation in other social assistance programs.

c) Effects on Utilization of Care

The estimated effect of MMCO on our three measures of utilization are shown in Table 6. There are no statistically significant effects of MMCO on the probability that a child went without visits in the past year in OLS. When we turn to IV, there is a marginally significant 6 percentage point increase in the number of toddlers going without a visit. Turning to the number of visits, conditional on having any visits, we find small but statistically significant positive effects of MMCO for whites and

for toddlers using either OLS or IV. Specifically, the OLS estimates imply that a 20 percentage point increase in MMCO would be associated with an increase of .06 visits per year among whites (from a baseline of approximately 4 visits), and an increase of .1 visits among toddlers.

The estimates for the probability of hospitalization suggest that blacks are more likely to be hospitalized while Hispanics are less likely to be hospitalized when MMCO rises. However, Panel F of Table 6 shows that neither of these estimates is robust to the use of instrumental variables. In summary, there is little clear evidence from Table 6 that utilization of care is greatly affected by MMCO penetration.

On the other hand, private MCO penetration is estimated to lead to an overall increase in the number of doctor visits conditional on any visits. However, this increase is concentrated among whites, and blacks actually suffer a relatively large decrease in the number of visits. A 20 percentage point increase in private MCO penetration would lead to an increase of .56 visits among whites, and a decrease of .90 visits among blacks (assuming a mean 4 visits for both whites and blacks). Private MCO penetration is also estimated to reduce the probability of going without visits among infants by .16 visits per year. Increases in the generosity of Medicaid income cutoffs also increase the number of visits among blacks, while decreasing the probability of doing without visits among Hispanics and infants.

The addition of interactions between MMCO, chronic conditions, and poverty yields a somewhat richer story, as shown in Table 7. Among the poor, OLS estimates indicate that the overall probability of going without doctor visits is reduced by 1 percentage point for each 20 percentage point increase in MMCO (from a baseline of 23.6% of the poor who go without visits). However, this effect is not statistically significant in any of the sub-groups, and it is not significant when we use instrumental

variables methods.

Among blacks, the OLS estimate suggests that black children with chronic conditions are more likely to go without any visits when MMCO rises. This estimate is robust to the use of IV techniques. The estimate in Panel D suggests that a 20 percentage point increase in MMCO would be associated with a 4 percentage point increase in the probability of going without a visit. This effect is large relative to the baseline probability of going without a visit of 14% among these children.

When we examine the pattern of effects by age group, the OLS estimates indicate an increase in the probability of doing without visits among toddlers of .8 percentage points for each 20 percentage point increase in MMCO. The IV estimate is somewhat larger at 1.3 percentage points.

Turning to the number of doctor visits conditional on having had any visits, we find that in the sample as a whole, increases in MMCO are estimated to increase the number of visits slightly. This effect is concentrated among near poor children--there is no statistically significant effect among poor children, or among those with chronic conditions.

When we break out the results for number of doctor visits by race and ethnicity it appears that the small gains in number of visits are concentrated among white children. Both poor and near-poor white children see small increases in the number of visits (the OLS estimate suggests that a 20 percentage point increase in MMCO would be associated with a reduction of .07 visits per year). However, among black and Hispanic children, there is no evidence of any gain in the number of visits. On the contrary, poor black children receive slightly fewer visits, as do Hispanic children with chronic conditions, although these results are only marginally statistically significant.

When we break out the results regarding number of visits by age group, it appears that increases in MMCO penetration leads to small increases in the number of doctor visits among children

between 2 and 11, conditional on their having had any visits. Once again, this effect is concentrated among the near poor and does not apply to the poor. OLS estimates suggest that a 20 percentage point increase in MMCO is estimated to increase the number of doctor visits by .16 visits in the younger children and by .07 visits in the older group. The IV estimates imply increases of .22 and .16 visits respectively.

Turning to the results for hospitalizations, the OLS estimate implies that a 20 percentage point increase in MMCO would reduce the probability that a black child was hospitalized by 1.6 percentage point. Given the overall hospitalization rate among blacks of 4%, this point estimate seems very large. When we turn to IV, the estimates suggest that hospitalization rates are reduced among all blacks by approximately 1 percentage point, but that those with chronic conditions do not see such a reduction. There are no significant patterns to hospitalization rates by age group.

In summary, these estimates suggest that MMCO has little effect on the probability of receiving any visits, except among blacks with chronic conditions and among toddlers. These groups suffer relatively large reductions in the probability of any visits. There are also relatively large declines in hospitalization rates among blacks.

A higher level of MMCO penetration is also associated with small increases the number of visits among whites, conditional on having had any visits, and perhaps with small decreases in the number of visits among poor blacks and among Hispanics with chronic conditions. However, among children who received at least one visit, we also see small but significant increases in the number of visits for children between 2 and 11 years of age. These gains are concentrated among near poor as opposed to poor children.

Thus, the results suggest that the main effects of MMCOs are on access to care as measured by

whether or not a child had any visits in the past year. The decline in hospitalization rates among blacks may also indicate reduced access to care (since they do not seem to be associated with improved utilization of preventive care). The effects on numbers of visits, conditional on any visits, are quite small.

d) Effects on Utilization of Care Among Those with Medicaid Coverage

Table 5 suggested that the growth of Medicaid MCOs has changed the composition of the Medicaid caseload, increasing the number of poor white and Hispanic children covered, and decreasing the number of near-poor black children. If poorer people are generally sicker than less poor people, then one might expect these changes in the caseload to be associated with more intensive utilization of care among those actually covered by Medicaid (as compared to the population of all poor and near-poor children that was examined in Table 7).

Table 8 shows that among the Medicaid-covered, higher MMCO is associated with a lower probability of doing without visits overall for poor children. However, when we examine the sub-groups, we find that this effect is only statistically significant among 12 to 18 year olds. Moreover, when we use IV techniques, only the estimate for 12 to 18 year olds remains statistically significant.

Among black children, the OLS estimates indicate that there are no changes in utilization among the Medicaid covered. However, the IV estimates suggest once again, that increases in MMCO are associated with an increased probability that black children with chronic conditions went without any visits. Turning to the number of visits, conditional on any visits, we find small but significant positive effects for toddlers, but negative effects for 12 to 18 year olds. These estimates are robust to the use of IV.

Finally, the estimates in Panel C suggest that there are reductions in hospitalization rates overall, and among whites and Hispanics with Medicaid coverage. The OLS estimates suggest that the reduction among Hispanics is concentrated among those with chronic conditions, while the IV estimates suggest that all Hispanic children see reductions in hospitalization rates and that these reductions are greatest for children with chronic conditions.

It is striking that we do not find reductions in hospitalization rates among black Medicaid-covered children, although we did find them in the population of near-poor and poor black children as a whole. This finding suggests that the reductions in hospitalizations among blacks are occurring in the uncovered population, perhaps in the same group who "lost" Medicaid coverage as a result of increases in the MMCO penetration rate.

IV. Discussion and Conclusions

A major finding is that increases in Medicaid MCO penetration had significant effects on the composition of the Medicaid caseload. Poor white and Hispanic children are more likely to be enrolled in Medicaid where Medicaid MCOs are more prevalent. But black children with incomes between 100 and 300% of poverty are less likely to be enrolled. When we look at enrollments by age, we find that poor school-aged children are more likely to be enrolled where MMCO is higher. These effects are consistent with cream-skimming by Medicaid MCOs along the lines of race and age, rather than by poverty or the presence of chronic conditions.

The results regarding utilization are again consistent with a cream-skimming story in that the same groups who "lose" coverage when MMCO increases, also seem to lose access to services. Black children with chronic conditions suffer relatively large increases in the probability of doing without

doctor visits. When we look by age, we see similar results for toddlers. Black children also see significant reductions in the probability of hospitalization. The estimated effects on the number of visits (conditional on any visits) are generally small. Thus, the major effects on utilization seem to be in the form of declines in access to any ambulatory care among blacks and toddlers, as well as some decreases in hospitalizations among blacks.

The results discussed above apply to the entire population of children with incomes less than 300% of poverty (the poor and the near-poor), regardless of Medicaid coverage. However, it is also of interest to examine effects on children who are actually Medicaid covered. When we examine this group, we find once again that black children with chronic conditions are more likely to do without doctor visits when MMCO increases, as are infants. In contrast, teens are actually less likely to do without visits. We also find decreases in hospitalizations among white and Hispanic Medicaid-covered children.

Our results raise the question of whether the patterns we identify have continued to the present day. It is possible that these patterns reflect the way that MMCOs were phased in rather than any conscious desire to cream-skim. For example, MMCO offices might be located close to company head quarters and far from black areas of cities. In this case it would not be surprising to find that blacks required to use these offices were both less likely to enroll in Medicaid and less likely to receive services. It is possible that the opening of new, more conveniently located offices has alleviated this problem in recent years. Similarly, it would be interesting to know if initial MMCO recruitment efforts were indeed based in schools and if MMCOs later increased their efforts to enroll eligible infants and toddlers.

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Table 1: Medicaid Managed Care Penetration Rates

State	1989	1992	1993	1994
AK	0.0%	0.0%	0.0%	0.0%
AL	1.2%	3.9%	8.1%	7.7%
AR	0.0%	0.0%	0.0%	26.7%
AZ	51.3%	100.0%	100.0%	72.8%
CA	11.6%	14.1%	15.7%	18.1%
CO	6.0%	52.5%	52.4%	53.7%
CT	0.2%	0.0%	0.0%	0.0%
DC	9.3%	15.5%	14.5%	37.8%
DE	0.0%	0.0%	0.0%	3.8%
FL	6.0%	20.6%	24.8%	32.2%
GA	0.0%	0.0%	0.0%	0.3%
HI	5.7%	4.2%	4.2%	4.6%
IA	2.0%	19.3%	20.2%	17.6%
ID	0.0%	0.0%	0.0%	3.1%
IL	8.9%	9.4%	9.6%	12.0%
IN	0.4%	0.2%	0.1%	0.0%
KS	0.0%	25.8%	27.8%	23.0%
KY	0.0%	56.8%	54.9%	53.1%
LA	0.0%	0.0%	3.1%	4.0%
MA	7.1%	11.9%	71.0%	75.1%
MD	14.7%	70.5%	75.0%	84.8%
ME	0.0%	0.0%	0.0%	0.0%
MI	10.9%	27.6%	35.7%	37.5%
MN	10.5%	21.4%	26.0%	31.8%
MO	6.6%	7.9%	7.5%	6.5%
MS	0.0%	0.0%	0.0%	6.8%
MT	0.0%	0.0%	16.2%	51.7%
NC	0.5%	8.0%	11.6%	23.2%
ND	0.0%	0.0%	0.0%	56.1%
NE	0.0%	0.0%	0.0%	0.0%
NH	2.4%	6.9%	10.2%	11.3%
NJ	0.0%	2.9%	2.6%	3.7%
NM	0.0%	39.5%	34.8%	42.4%
NV	0.0%	13.8%	16.2%	27.0%
NY	2.1%	4.9%	8.1%	13.0%
OH	9.0%	10.2%	11.9%	13.1%
OK	0.0%	0.0%	0.0%	0.0%
OR	25.5%	24.4%	27.3%	50.9%
PA	13.4%	17.5%	22.4%	36.6%
RI	0.5%	0.2%	1.0%	2.2%
SC	0.0%	3.3%	3.1%	3.0%
SD	0.0%	0.0%	1.8%	4.9%
TN	2.2%	4.3%	3.5%	94.7%
TX	0.0%	0.0%	0.0%	3.0%
UT	16.3%	60.8%	57.9%	63.8%
VA	0.0%	2.9%	12.4%	35.3%
VT	0.0%	0.0%	0.0%	0.0%
WA	3.7%	6.7%	6.1%	76.8%
WI	26.7%	32.2%	29.9%	30.6%
WV	0.0%	18.7%	23.9%	25.9%
WY	0.0%	0.0%	0.0%	0.0%
Total	6.8%	13.6%	16.6%	24.2%

Sources: HCFA's Managed Care Enrollment Reports 1989, 1992-94.
HCFA's 2082 Reports 1989, 1992-94.

Table 2 - Descriptive Statistics from the NHIS 1989, 1992-94 by Race, Ethnicity

	All		White		Black		Hispanic	
	Mean	S.E.	Mean	S.E.	Mean	S.E.	Mean	S.E.
Insurance variables:								
Private	0.635	(.002)	0.734	(.002)	0.430	(.005)	0.422	(.005)
Medicaid	0.198	(.002)	0.129	(.002)	0.400	(.005)	0.286	(.004)
Uninsured	0.182	(.002)	0.151	(.002)	0.191	(.004)	0.316	(.005)
Utilization Variables:								
Number of doctor's visits in the last 12 months	3.079	(.027)	3.244	(.030)	2.680	(.086)	2.770	(.063)
Number of doctor's visits in the last 12 months if any	3.893	(.033)	4.022	(.036)	3.538	(.112)	3.670	(.080)
No doctor's visits in the last 12 months	0.209	(.002)	0.193	(.002)	0.242	(.004)	0.245	(.004)
Any doctor's visit in the last 2 weeks	0.124	(.001)	0.132	(.002)	0.107	(.003)	0.109	(.003)
Any hospitalizations in the last 12 months	0.035	(.001)	0.034	(.001)	0.040	(.002)	0.034	(.002)
Demographic variables:								
Chronic condition	0.196	(.002)	0.205	(.002)	0.192	(.004)	0.162	(.004)
Asthma	0.170	(.004)	0.147	(.004)	0.241	(.010)	0.210	(.011)
Hay fever, sinus, tonsil	0.264	(.004)	0.248	(.005)	0.313	(.011)	0.296	(.013)
Mental retardation	0.076	(.003)	0.070	(.003)	0.105	(.007)	0.067	(.007)
Bronchitis	0.060	(.002)	0.061	(.003)	0.050	(.005)	0.068	(.007)
Derm., acne	0.075	(.002)	0.082	(.003)	0.057	(.005)	0.057	(.006)
Speech, hearing, visual	0.081	(.003)	0.080	(.003)	0.087	(.006)	0.080	(.007)
Below poverty	0.261	(.002)	0.161	(.002)	0.506	(.005)	0.441	(.005)
Male	0.512	(.002)	0.513	(.002)	0.506	(.005)	0.513	(.005)
Mom is h.s. dropout	0.205	(.002)	0.141	(.002)	0.233	(.004)	0.469	(.005)
Mom has some college	0.202	(.002)	0.226	(.002)	0.178	(.004)	0.121	(.003)
Dad is h.s. dropout	0.153	(.001)	0.123	(.002)	0.111	(.003)	0.334	(.005)
Dad has some college	0.144	(.001)	0.170	(.002)	0.077	(.003)	0.099	(.003)
Oldest child	0.440	(.002)	0.448	(.002)	0.445	(.005)	0.401	(.005)
Number of siblings	1.701	(.005)	1.624	(.006)	1.785	(.013)	1.956	(.014)
No male head	0.251	(.002)	0.166	(.002)	0.573	(.005)	0.280	(.004)
Mom is respondent	0.303	(.002)	0.231	(.002)	0.563	(.005)	0.339	(.005)
Dad is respondent	0.618	(.002)	0.706	(.002)	0.296	(.004)	0.582	(.005)
Oth. fem. relatives present	0.083	(.001)	0.059	(.001)	0.153	(.003)	0.113	(.003)
Oth. male relative present	0.054	(.001)	0.042	(.001)	0.070	(.002)	0.089	(.003)
Central City	0.280	(.002)	0.173	(.002)	0.535	(.005)	0.486	(.005)
Rural	0.017	(.001)	0.022	(.001)	0.008	(.001)	0.003	(.001)
# Observations	74800		48280		13853		12667	
# Observations for doctor's visits if any	59019		38895		10570		9554	
# Observations for specific chronic conditions	12481		8603		2368		1510	

Notes: The sample has been limited to children (0-18) with family incomes in the income bracket 300% of the poverty line.
Data have been weighted to national totals. Standard errors are in parentheses.

Table 3 - Variation in Instruments by State and Year

	1989		1992		1993		1994	
State	% Mandatory	Waiver	% Mandatory	Waiver	% Mandatory	Waiver	% Mandatory	Waiver
AK	0.0%	0	0.0%	0	0.0%	0	0.0%	0
AL	0.0%	0	0.0%	0	0.0%	0	0.0%	0
AR	0.0%	0	0.0%	0	0.0%	0	100.0%	1
AZ	100.0%	1	100.0%	1	100.0%	1	100.0%	1
CA	2.9%	1	2.9%	1	2.9%	1	4.2%	1
CO	0.0%	0	100.0%	1	100.0%	1	100.0%	1
CT	0.0%	0	0.0%	0	0.0%	0	0.0%	0
DC	0.0%	0	0.0%	0	0.0%	0	100.0%	1
DE	0.0%	0	0.0%	0	0.0%	0	0.0%	0
FL	0.0%	0	13.5%	1	13.4%	1	13.3%	1
GA	0.0%	0	0.0%	0	0.0%	0	0.0%	0
HI	0.0%	0	0.0%	0	0.0%	0	0.0%	0
IA	0.0%	0	33.4%	1	33.6%	1	33.6%	1
ID	0.0%	0	0.0%	0	0.0%	0	0.0%	0
IL	0.0%	0	43.1%	1	42.9%	1	42.7%	1
IN	0.0%	0	0.0%	0	0.0%	0	0.0%	0
KS	0.0%	0	52.3%	1	52.6%	1	52.7%	1
KY	0.0%	0	100.0%	1	100.0%	1	100.0%	1
LA	0.0%	0	4.3%	1	4.3%	1	4.3%	1
MA	0.0%	0	100.0%	1	100.0%	1	100.0%	1
MD	0.0%	0	100.0%	1	100.0%	1	100.0%	1
ME	0.0%	0	0.0%	0	0.0%	0	0.0%	0
MI	0.0%	0	22.9%	1	22.8%	1	22.7%	1
MN	28.5%	1	28.5%	1	38.5%	1	38.4%	1
MO	12.2%	1	12.2%	1	12.2%	1	12.1%	1
MS	0.0%	0	0.0%	0	1.0%	1	4.6%	1
MT	0.0%	0	0.0%	0	100.0%	1	100.0%	1
NC	0.0%	0	1.7%	1	29.7%	1	29.7%	1
ND	0.0%	0	0.0%	0	0.0%	0	100.0%	1
NE	0.0%	0	0.0%	0	0.0%	0	0.0%	0
NH	0.0%	0	0.0%	0	0.0%	0	0.0%	0
NJ	0.0%	0	0.0%	0	0.0%	0	0.0%	0
NM	0.0%	0	60.2%	1	60.2%	1	60.2%	1
NV	0.0%	0	0.0%	0	0.0%	0	0.0%	0
NY	0.0%	0	0.0%	0	14.1%	1	14.0%	1
OH	5.1%	1	5.1%	1	5.0%	1	5.0%	1
OK	0.0%	0	0.0%	0	0.0%	0	0.0%	0
OR	100.0%	1	100.0%	1	100.0%	1	100.0%	1
PA	13.6%	1	13.4%	1	13.3%	1	23.4%	1
RI	0.0%	0	0.0%	0	0.0%	0	0.0%	0
SC	0.0%	0	0.0%	0	0.0%	0	0.0%	0
SD	0.0%	0	0.0%	0	3.4%	1	30.0%	1
TN	0.0%	0	0.0%	0	0.0%	0	100.0%	1
TX	0.0%	0	0.0%	0	3.0%	1	3.0%	1
UT	76.6%	1	76.6%	1	76.5%	1	76.3%	1
VA	0.0%	0	5.9%	1	5.9%	1	100.0%	1
VT	0.0%	0	0.0%	0	0.0%	0	0.0%	0
WA	4.2%	1	5.6%	1	5.6%	1	100.0%	1
WI	25.6%	1	26.9%	1	26.7%	1	26.5%	1
WV	0.0%	0	100.0%	1	100.0%	1	100.0%	1
WY	0.0%	0	0.0%	0	0.0%	0	0.0%	0
Total	5.8%	0.34	18.6%	0.64	20.7%	0.80	29.2%	0.83

Sources: Census Bureau 1990, 1992-94.
HCFA's National Summary of State Medicaid Managed Care Programs 1993, 1994.
HCFA's Medicaid Managed Care Enrollment Report 1989.

Table 4: Effects of Medicaid MCO's on Medicaid Coverage of Different Groups

Panel A: OLS by Race	**All**	**White**	**Black**	**Hispanic**
Medicaid MCO	-0.033	0.005	-0.088	-0.048
	(.019)	(.017)	(.037)	(.085)
Chronic Condition	0.055	0.039	0.077	0.081
	(.004)	(.004)	(.008)	(.009)
Poverty	0.179	0.214	0.138	0.144
	(.012)	(.018)	(.022)	(.014)
% Private MCO	0.083	0.045	0.081	-0.039
	(.104)	(.081)	(.273)	(.303)
Medicaid generosity	0.023	0.015	0.044	0.038
	(.005)	(.004)	(.010)	(.012)
# Observations	74800	48280	13853	12667
R-Squared	0.409	0.374	0.384	0.360
Panel B: OLS by Age	**0-1**	**2-5**	**6-11**	**12-18**
Medicaid MCO	-0.026	-0.069	-0.020	-0.019
	(.030)	(.026)	(.027)	(.022)
Chronic Condition	-0.026	0.061	0.061	0.050
	(.010)	(.008)	(.006)	(.005)
Poverty	0.151	0.206	0.179	0.170
	(.023)	(.014)	(.014)	(.019)
% Private MCO	0.040	0.132	0.099	0.010
	(.227)	(.173)	(.122)	(.114)
Medicaid generosity	0.014	0.004	0.021	0.020
	(.011)	(.010)	(.007)	(.008)
# Observations	7798	17562	25502	23938
R-Squared	0.401	0.446	0.419	0.351
Panel C: IV By Race	**All**	**White**	**Black**	**Hispanic**
Medicaid MCO	-0.026	0.001	-0.123	0.108
	(.027)	(.026)	(.051)	(.099)
# Observations	74800	48280	13853	12667
R-Squared	0.409	0.374	0.384	0.360
Panel D: IV By Age	**0-1**	**2-5**	**6-11**	**12-18**
Medicaid MCO	-0.035	-0.083	-0.007	0.001
	(.045)	(.038)	(.038)	(.029)
# Observations	7798	17562	25502	23938
R-Squared	0.401	0.446	0.419	0.351

Notes: Standard errors are in parentheses. All models include the full set of variables described in the text. IV models are similar to OLS, but only the coefficients on Medicaid MCO is reported.

Table 5: Effects of Medicaid MCO's on Medicaid Coverage of Different Groups

Panel A: OLS by Race	**All**	**White**	**Black**	**Hispanic**
Medicaid MCO	-0.063	-0.022	-0.165	-0.083
	(.024)	(.019)	(.043)	(.089)
MMCO*Chronic Condition	-0.027	-0.005	-0.056	-0.037
	(.016)	(.017)	(.048)	(.034)
MMCO*Poverty	0.169	0.180	0.187	0.117
	(.050)	(.061)	(.064)	(.066)
Chronic Condition	0.059	0.040	0.085	0.086
	(.004)	(.005)	(.010)	(.009)
Poverty	0.154	0.182	0.115	0.129
	(.014)	(.021)	(.025)	(.017)
# Observations	74800	48280	13853	12667
R-Squared	0.410	0.375	0.385	0.361
Panel B: OLS by Age	**0-1**	**2-5**	**6-11**	**12-18**
Medicaid MCO	-0.031	-0.085	-0.060	-0.054
	(.035)	(.030)	(.032)	(.025)
MMCO*Chronic Condition	-0.010	-0.067	-0.002	-0.028
	(.063)	(.031)	(.028)	(.021)
MMCO*Poverty	0.024	0.118	0.200	0.225
	(.054)	(.053)	(.060)	(.076)
Chronic Condition	0.050	0.072	0.061	0.054
	(.013)	(.011)	(.008)	(.006)
Poverty	0.147	0.187	0.149	0.138
	(.025)	(.017)	(.017)	(.024)
# Observations	7798	17562	25502	23938
R-Squared	0.401	0.446	0.420	0.353
Panel C: IV By Race	**All**	**White**	**Black**	**Hispanic**
Medicaid MCO	-0.052	-0.014	-0.209	0.078
	(.030)	(.027)	(.056)	(.107)
MMCO*Chronic Condition	-0.029	-0.002	-0.036	-0.044
	(.019)	(.019)	(.074)	(.048)
MMCO*Poverty	0.165	0.126	0.210	0.125
	(.067)	(.075)	(.089)	(.100)
# Observations	74800	48280	13853	12667
R-Squared	0.410	0.375	0.385	0.360
Panel D: IV By Age	**0-1**	**2-5**	**6-11**	**12-18**
Medicaid MCO	-0.029	-0.091	-0.043	-0.034
	(.050)	(.042)	(.040)	(.032)
MMCO*Chronic Condition	-0.007	-0.082	-0.027	-0.004
	(.066)	(.042)	(.033)	(.026)
MMCO*Poverty	-0.017	0.109	0.222	0.209
	(.076)	(.075)	(.086)	(.093)
# Observations	7798	17562	25502	23938
R-Squared	0.401	0.447	0.420	0.353

Notes: See Table 4.

Table 6: Estimates of Effects of Medicaid MCO's on Utilization by Race and Age

	All	White	Black	Hispanic	0-1	2-5	6-11	12-18
Panel A: OLS, Dependent Variable=No Doctor Visits Last Year								
Medicaid MCO	-0.004	0.006	-0.045	-0.102	-0.023	0.030	-0.019	-0.021
	(.019)	(.017)	(.036)	(.073)	(.016)	(.020)	(.036)	(.033)
Chronic Condition	-0.151	-0.150	-0.135	-0.169	-0.032	-0.098	-0.173	-0.186
	(.006)	(.005)	(.011)	(.017)	(.005)	(.006)	(.008)	(.008)
Poverty	0.000	-0.010	0.003	0.021	0.003	-0.010	-0.004	0.012
	(.007)	(.014)	(.016)	(.012)	(.009)	(.012)	(.013)	(.015)
% Private MCO	-0.052	-0.059	-0.098	0.282	-0.200	-0.020	0.036	-0.091
	(.092)	(.092)	(.251)	(.337)	(.095)	(.109)	(.162)	(.154)
Medicaid generosity	0.009	-0.005	-0.011	-0.027	-0.025	0.001	-0.005	-0.004
	(.005)	(.005)	(.012)	(.012)	(.009)	(.009)	(.008)	(.008)
R-Squared	0.109	0.099	0.116	0.149	0.032	0.059	0.084	0.079
Panel B: OLS, Dependent Variable=ln(#Doctor Visits Last Year) if Any Doctor Visits								
Medicaid MCO	0.049	0.074	-0.046	-0.062	0.027	0.127	0.057	-0.008
	(.031)	(.037)	(.071)	(.101)	(.055)	(.058)	(.037)	(.070)
Chronic Condition	0.636	0.625	0.552	0.640	0.525	0.682	0.616	0.595
	(.011)	(.013)	(.023)	(.036)	(.027)	(.020)	(.017)	(.018)
Poverty	0.033	0.050	0.016	0.022	0.014	0.017	0.047	0.051
	(.018)	(.026)	(.034)	(.033)	(.044)	(.027)	(.029)	(.029)
% Private MCO	0.383	0.698	-1.121	0.472	0.568	-0.163	0.559	0.565
	(.178)	(.203)	(.475)	(.514)	(.339)	(.308)	(.278)	(.306)
Medicaid generosity	0.009	0.000	0.050	0.009	0.016	-0.024	-0.006	-0.001
	(.009)	(.011)	(.020)	(.022)	(.024)	(.023)	(.016)	(.018)
R-Squared	0.183	0.183	0.172	0.213	0.123	0.142	0.132	0.130

Table 6: Estimates of Effects of Medicaid MCO's on Utilization by Race and Age

	All	White	Black	Hispanic	0-1	2-5	6-11	12-18
Panel C: OLS, Dependent Variable=Any Hospitalization Last 12 Months								
Medicaid MCO	-0.008	0.002	0.033	-0.034	-0.026	-0.006	0.001	-0.013
	(.004)	(.005)	(.011)	(.018)	(.024)	(.009)	(.006)	(.008)
Chronic Condition	0.064	0.058	0.079	0.072	0.136	0.071	0.053	0.052
	(.003)	(.003)	(.007)	(.009)	(.013)	(.006)	(.004)	(.003)
Poverty	-0.002	-0.006	-0.004	0.006	-0.010	-0.006	-0.008	0.008
	(.003)	(.004)	(.006)	(.005)	(.014)	(.006)	(.004)	(.006)
% Private MCO	0.010	0.024	-0.025	-0.084	0.164	0.004	0.025	0.059
	(.028)	(.034)	(.075)	(.097)	(.134)	(.059)	(.047)	(.047)
Medicaid generosity	0.002	0.003	-0.001	0.002	-0.012	-0.002	0.001	0.005
	(.002)	(.002)	(.004)	(.007)	(.007)	(.004)	(.002)	(.002)
R-Squared	0.037	0.035	0.050	0.052	0.050	0.034	0.028	0.030
Panel D: IV, Dependent Variable=No Doctor Visits Last Year								
Medicaid MCO	0.014	0.004	0.059	-0.142	0.030	0.064	-0.041	0.031
	(.026)	(.025)	(.069)	(.099)	(.023)	(.033)	(.044)	(.050)
R-Squared	0.109	0.099	0.116	0.149	0.032	0.059	0.084	0.078
Panel E: IV, Dependent Variable=ln(# Doctor Visits Last Year) if Any Doctor Visits								
Medicaid MCO	0.086	0.105	0.042	0.085	0.028	0.201	0.170	-0.074
	(.048)	(.051)	(.110)	(.188)	(.091)	(.096)	(.070)	(.088)
R-Squared	0.183	0.183	0.172	0.213	0.123	0.142	0.132	0.129
Panel F: IV, Dependent Variable=Any Hospitalization Last 12 Months								
Medicaid MCO	0.002	0.007	-0.011	-0.008	-0.037	-0.003	0.015	0.004
	(.007)	(.008)	(.017)	(.040)	(.043)	(.014)	(.010)	(.010)
R-Squared	0.037	0.035	0.050	0.052	0.050	0.034	0.028	0.030
# Observations: Panels A, C, D, and F.	74800	48280	13853	12667	7798	17562	25502	23938
# Observations: Panels B and E	59019	38895	10570	9554	7437	15567	18972	17043

Notes: See Table 4.

Table 7: Estimates of Effects of Medicaid MCO's on Utilization by Race and Age for Different Groups

	All	White	Black	Hispanic	0-1	2-5	6-11	12-18
Panel A: OLS, Dependent Variable=No Doctor Visits Last Year								
Medicaid MCO	0.002	0.009	-0.039	-0.104	0.026	0.039	-0.016	-0.014
	(.020)	(.018)	(.041)	(.074)	(.017)	(.022)	(.036)	(.033)
MMCO*Chronic Condition	0.019	-0.004	0.137	0.013	0.013	0.033	0.015	0.022
	(.025)	(.025)	(.053)	(.062)	(.021)	(.025)	(.036)	(.036)
MMCO*Poverty	-0.044	-0.018	-0.065	-0.004	-0.021	-0.062	-0.029	-0.063
	(.019)	(.031)	(.046)	(.035)	(.024)	(.036)	(.033)	(.046)
Chronic Condition	-0.154	-0.149	-0.153	-0.170	-0.034	-0.103	-0.175	-0.189
	(.008)	(.006)	(.014)	(.023)	(.007)	(.008)	(.011)	(.011)
Poverty	0.007	-0.007	0.012	0.021	0.006	0.000	0.000	0.022
	(.007)	(.015)	(.017)	(.012)	(.010)	(.012)	(.014)	(.018)
R-Squared	0.109	0.099	0.117	0.149	0.032	0.059	0.084	0.079
Panel B: OLS, Dependent Variable=ln(#Doctor Visits Last Year) if Any Doctor Visits								
Medicaid MCO	0.084	0.088	0.037	0.043	0.011	0.207	0.092	-0.005
	(.034)	(.034)	(.087)	(.113)	(.067)	(.071)	(.042)	(.064)
MMCO*Chronic Condition	-0.064	-0.069	-0.003	-0.163	-0.036	-0.178	-0.070	0.029
	(.056)	(.067)	(.106)	(.104)	(.170)	(.102)	(.078)	(.103)
MMCO*Poverty	-0.095	0.019	-0.180	-0.166	0.077	-0.211	-0.101	-0.061
	(.048)	(.062)	(.103)	(.094)	(.105)	(.106)	(.081)	(.097)
Chronic Condition	0.627	0.637	0.552	0.664	0.531	0.711	0.627	0.591
	(.014)	(.018)	(.026)	(.042)	(.037)	(.025)	(.022)	(.023)
Poverty	0.048	0.047	0.039	0.045	0.002	0.050	0.062	0.060
	(.020)	(.028)	(.038)	(.035)	(.047)	(.031)	(.033)	(.033)
R-Squared	0.183	0.183	0.172	0.213	0.123	0.143	0.132	0.130
Panel C: OLS, Dependent Variable=Any Hospitalization Last 12 Months								
Medicaid MCO	-0.003	0.001	-0.016	-0.013	-0.022	-0.003	0.005	-0.006
	(.005)	(.005)	(.011)	(.019)	(.027)	(.010)	(.008)	(.009)
MMCO*Chronic Condition	-0.015	0.006	-0.066	-0.049	-0.049	0.008	-0.023	-0.009
	(.011)	(.012)	(.030)	(.026)	(.063)	(.030)	(.015)	(.015)
MMCO*Poverty	-0.010	0.000	-0.012	-0.025	0.016	-0.018	0.002	-0.024
	(.007)	(.012)	(.015)	(.014)	(.051)	(.013)	(.012)	(.015)
Chronic Condition	0.066	0.057	0.088	0.080	0.143	0.069	0.057	0.053
	(.004)	(.004)	(.009)	(.011)	(.017)	(.008)	(.005)	(.004)
Poverty	-0.001	-0.006	-0.003	0.009	-0.013	-0.003	-0.008	0.012
	(.003)	(.005)	(.007)	(.006)	(.017)	(.006)	(.005)	(.006)
R-Squared	0.038	0.035	0.050	0.053	0.050	0.034	0.028	0.030

Table 7: Estimates of Effects of Medicaid MCO's on Utilization by Race and Age for Different Groups

	All	White	Black	Hispanic	0-1	2-5	6-11	12-18
Panel D: IV, Dependent Variable=No Doctor Visits Last Year								
Medicaid MCO	0.015	0.007	0.026	-0.147	0.039	0.068	-0.052	0.041
	(.026)	(.027)	(.065)	(.100)	(.025)	(.034)	(.046)	(.050)
MMCO*Chronic Condition	0.005	-0.023	0.167	0.021	-0.002	0.013	0.018	0.003
	(.033)	(.033)	(.066)	(.079)	(.027)	(.033)	(.046)	(.049)
MMCO*Poverty	-0.017	0.003	0.008	-0.007	-0.032	-0.036	0.034	-0.063
	(.028)	(.043)	(.070)	(.046)	(.028)	(.042)	(.049)	(.060)
R-Squared	0.109	0.099	0.116	0.149	0.032	0.059	0.083	0.079
Panel E: IV, Dependent Variable=ln(# Doctor Visits Last Year) if Any Doctor Visits								
Medicaid MCO	0.114	0.126	0.103	0.161	0.002	0.270	0.202	-0.075
	(.051)	(.052)	(.117)	(.195)	(.103)	(.107)	(.075)	(.086)
MMCO*Chronic Condition	-0.030	-0.033	0.128	-0.238	-0.041	-0.128	-0.024	0.039
	(.063)	(.077)	(.151)	(.148)	(.173)	(.120)	(.101)	(.105)
MMCO*Poverty	-0.103	-0.082	-0.193	-0.063	0.118	-0.208	-0.149	-0.061
	(.067)	(.094)	(.115)	(.149)	(.138)	(.122)	(.097)	(.111)
R-Squared	0.183	0.183	0.172	0.213	0.123	0.143	0.132	0.129
Panel F: IV, Dependent Variable=Any Hospitalization Last 12 Months								
Medicaid MCO	0.004	0.006	-0.054	-0.002	-0.051	-0.005	0.018	0.013
	(.007)	(.008)	(.016)	(.040)	(.045)	(.014)	(.010)	(.011)
MMCO*Chronic Condition	-0.010	0.010	0.075	-0.027	-0.034	0.041	-0.014	-0.027
	(.014)	(.016)	(.040)	(.041)	(.079)	(.038)	(.020)	(.018)
MMCO*Poverty	-0.003	-0.004	-0.024	0.002	0.070	-0.024	0.000	-0.011
	(.011)	(.014)	(.018)	(.024)	(.054)	(.017)	(.016)	(.019)
R-Squared	0.037	0.035	0.115	0.053	0.050	0.034	0.028	0.030
# Observations: Panels A, C, D, and F.	74800	48280	13853	12667	7798	17562	25502	23938
# Observations: Panels B and E	59019	38895	10570	9554	7437	15567	18972	17043

Notes: See Table 4.

Table 8: Estimates of Effects of Medicaid MCO's on Utilization by Race and Age for Children with Medicaid Coverage

	All	White	Black	Hispanic	0-1	2-5	6-11	12-18
Panel A: OLS, Dependent Variable=No Doctor Visits Last Year								
Medicaid MCO	-0.001	0.056	-0.044	-0.151	0.054	0.069	-0.100	-0.019
	(.041)	(.053)	(.101)	(.100)	(.035)	(.057)	(.077)	(.096)
Medicaid MCO*Chronic Condition	0.005	0.005	0.076	-0.008	-0.007	0.011	0.027	-0.009
	(.033)	(.033)	(.067)	(.074)	(.033)	(.034)	(.069)	(.060)
Medicaid MCO*Poverty	-0.065	-0.087	0.025	-0.086	0.008	-0.057	0.008	-0.217
	(.030)	(.050)	(.077)	(.077)	(.044)	(.070)	(.050)	(.090)
Chronic Condition	-0.115	-0.130	-0.114	-0.102	-0.021	-0.077	-0.144	-0.156
	(.011)	(.010)	(.016)	(.025)	(.011)	(.012)	(.019)	(.021)
Poverty	0.000	-0.018	-0.004	0.029	-0.006	-0.013	-0.018	0.043
	(.012)	(.022)	(.022)	(.024)	(.017)	(.020)	(.023)	(.031)
R-Squared	0.094	0.103	0.108	0.115	0.047	0.054	0.091	0.090
Panel B: OLS, Dependent Variable=ln(#Doctor Visits Last Year) if Any Doctor Visits								
Medicaid MCO	0.041	0.030	-0.124	0.291	0.285	0.427	-0.037	-0.762
	(.095)	(.132)	(.206)	(.250)	(.203)	(.139)	(.177)	(.265)
Medicaid MCO*Chronic Condition	-0.049	-0.156	-0.147	0.116	-0.276	-0.116	-0.128	0.279
	(.081)	(.125)	(.152)	(.168)	(.287)	(.180)	(.119)	(.238)
Medicaid MCO*Poverty	-0.109	-0.071	-0.148	-0.137	-0.116	-0.292	-0.063	0.308
	(.095)	(.121)	(.207)	(.225)	(.205)	(.162)	(.181)	(.190)
Chronic Condition	0.657	0.706	0.620	0.648	0.579	0.712	0.704	0.566
	(.023)	(.039)	(.038)	(.049)	(.060)	(.041)	(.040)	(.054)
Poverty	-0.034	-0.040	-0.077	0.034	-0.003	-0.039	-0.039	-0.111
	(.036)	(.056)	(.075)	(.062)	(.066)	(.056)	(.055)	(.072)
R-Squared	0.196	0.194	0.191	0.226	0.151	0.181	0.197	0.180
Panel C: OLS, Dependent Variable=Any Hospitalization Last 12 Months								
Medicaid MCO	-0.045	-0.057	-0.057	-0.059	-0.019	-0.046	-0.015	-0.070
	(.020)	(.028)	(.039)	(.059)	(.073)	(.031)	(.027)	(.051)
Medicaid MCO*Chronic Condition	-0.038	0.032	-0.084	-0.143	-0.144	0.001	-0.023	-0.036
	(.026)	(.035)	(.050)	(.054)	(.122)	(.059)	(.039)	(.051)
Medicaid MCO*Poverty	0.015	0.031	0.038	0.005	0.067	0.018	0.004	-0.008
	(.023)	(.035)	(.041)	(.059)	(.075)	(.036)	(.030)	(.054)
Chronic Condition	0.098	0.083	0.105	0.117	0.189	0.088	0.078	0.083
	(.009)	(.012)	(.016)	(.019)	(.032)	(.016)	(.011)	(.014)
Poverty	-0.020	-0.034	-0.013	-0.004	-0.035	-0.031	-0.029	0.007
	(.008)	(.012)	(.157)	(.018)	(.023)	(.014)	(.011)	(.021)
R-Squared	0.066	0.067	0.079	0.097	0.087	0.062	0.062	0.098

Table 8: Estimates of Effects of Medicaid MCO's on Utilization by Race and Age for Children with Medicaid Coverage

	All	White	Black	Hispanic	0-1	2-5	6-11	12-18
Panel D: IV, Dependent Variable=No Doctor Visits Last Year								
Medicaid MCO	0.047	0.064	0.072	-0.229	0.067	0.117	-0.052	0.049
	(.060)	(.064)	(.150)	(.105)	(.058)	(.075)	(.094)	(.128)
Medicaid MCO*Chronic Condition	0.002	-0.034	0.168	0.041	-0.012	0.008	0.001	0.039
	(.046)	(.047)	(.077)	(.110)	(.043)	(.045)	(.090)	(.103)
Medicaid MCO*Poverty	-0.069	-0.071	0.050	-0.146	0.007	-0.059	0.022	-0.245
	(.045)	(.066)	(.119)	(.089)	(.052)	(.071)	(.079)	(.106)
R-Squared	0.093	0.102	0.107	0.114	0.047	0.054	0.091	0.090
Panel E: IV, Dependent Variable=ln(# Doctor Visits Last Year) if Any Doctor Visits								
Medicaid MCO	0.049	0.029	0.114	0.415	0.278	0.420	0.128	-0.795
	(.133)	(.183)	(.275)	(.491)	(.254)	(.218)	(.223)	(.370)
Medicaid MCO*Chronic Condition	-0.051	-0.128	-0.120	-0.016	-0.428	-0.006	-0.044	0.023
	(.111)	(.155)	(.253)	(.283)	(.334)	(.201)	(.167)	(.248)
Medicaid MCO*Poverty	-0.066	-0.044	-0.361	0.040	0.017	-0.265	-0.143	0.359
	(.121)	(.163)	(.298)	(.299)	(.236)	(.215)	(.208)	(.267)
R-Squared	0.196	0.194	0.191	0.226	0.150	0.181	0.197	
Panel F: IV, Dependent Variable=Any Hospitalization Last 12 Months								
Medicaid MCO	-0.063	-0.101	0.019	-0.199	-0.099	-0.060	0.014	-0.038
	(.034)	(.041)	(.074)	(.118)	(.115)	(.047)	(.038)	(.080)
Medicaid MCO*Chronic Condition	-0.038	0.008	-0.039	-0.124	-0.118	0.076	-0.035	-0.130
	(.034)	(.043)	(.083)	(.065)	(.162)	(.076)	(.052)	(.062)
Medicaid MCO*Poverty	0.038	0.054	-0.004	0.086	0.204	-0.016	-0.004	0.014
	(.037)	(.045)	(.073)	(.084)	(.108)	(.044)	(.044)	(.076)
R-Squared	0.066	0.067	0.079	0.095	0.085	0.061	0.062	0.097
# Observations: Panels A, C, D, and F	15745	6201	5851	3693	2560	4713	4960	3512
# Observations: Panels B and E	13412	5397	4852	3163	2456	4270	3953	2733

Notes: See Table 4.

Appendix Table 1 - First Stage Regressions

Dependent Variable = *%MCO*	Est.	S.E.	Est.	S.E.	Est.	S.E.	Est.	S.E.
Waiver			0.106	(.041)			-0.047	(.024)
% Mandatory					0.434	(.064)	0.471	(.066)
HMO penetration rate	0.378	(.387)	0.329	(.365)	0.348	(.253)	0.367	(.255)
Has a chronic condition	-0.001	(.001)	-0.001	(.001)	-0.001	(.001)	-0.001	(.001)
Below poverty	-0.001	(.003)	-0.001	(.002)	-0.002	(.002)	-0.002	(.002)
Medicaid generosity	0.008	(.006)	0.014	(.006)	0.008	(.005)	0.006	(.004)
Male	0.000	(.001)	0.000	(.001)	0.000	(.001)	0.000	(.001)
Black	0.001	(.002)	0.000	(.002)	0.001	(.001)	0.001	(.001)
Hispanic	0.000	(.002)	0.001	(.002)	0.000	(.002)	-0.001	(.002)
Mother is high school drop-out	0.000	(.001)	0.000	(.001)	0.001	(.001)	0.001	(.001)
Mother has some college	0.002	(.001)	0.002	(.001)	0.002	(.001)	0.001	(.001)
Father is high school drop-out	0.001	(.001)	0.001	(.001)	0.000	(.001)	0.000	(.001)
Father has some college	0.001	(.002)	0.001	(.001)	-0.001	(.001)	-0.001	(.001)
Oldest sibling	0.000	(.000)	0.000	(.000)	-0.001	(.000)	-0.001	(.000)
Number of siblings	0.000	(.001)	0.000	(.001)	0.000	(.000)	0.000	(.000)
Female headed household	-0.002	(.002)	-0.001	(.002)	0.001	(.001)	0.000	(.001)
Mother is reference person	-0.002	(.003)	-0.003	(.003)	-0.004	(.002)	-0.004	(.002)
Father is reference person	-0.004	(.003)	-0.004	(.003)	-0.003	(.002)	-0.003	(.002)
Other reference person - female	0.000	(.003)	0.000	(.003)	-0.002	(.002)	-0.002	(.002)
Other reference person - male	-0.004	(.003)	-0.003	(.003)	0.001	(.002)	0.001	(.002)
Income < $10k	-0.002	(.003)	-0.002	(.003)	-0.002	(.002)	-0.002	(.002)
$10k <= Income < $20k	0.000	(.003)	-0.001	(.003)	-0.002	(.002)	-0.002	(.002)
$20k <= Income < $30k	0.000	(.002)	-0.002	(.002)	-0.003	(.002)	-0.002	(.001)
$30k <= Income < $40k	-0.003	(.002)	-0.004	(.002)	-0.005	(.002)	-0.004	(.002)
$40k <= Income < $50k	-0.003	(.003)	-0.003	(.003)	-0.004	(.002)	-0.004	(.002)
Central City	0.001	(.001)	0.001	(.001)	0.001	(.001)	0.001	(.001)
Rural	-0.001	(.004)	-0.001	(.004)	-0.001	(.003)	-0.001	(.003)
Unemployment rate	-1.136	(1.246)	-0.328	(1.130)	-0.076	(.772)	-0.343	(.786)
N	74800		74800		74800		74800	
R^2	0.728		0.747		0.860		0.863	

Notes: The results for the dummy variables for year, season, state, and age are not shown
Standard errors are in parentheses.

Appendix Table 2 - Effects of Medicaid MCO's on Medicaid Coverage

	All		White		Black		Hispanic	
Dependent Variable = Medicaid Coverage	Est.	S.E.	Est.	S.E.	Est.	S.E.	Est.	S.E.
%Medicaid MCO	-0.033	(.019)	0.005	(.017)	-0.088	(.037)	-0.048	(.085)
Chronic Condition	0.055	(.004)	0.039	(.004)	0.077	(.008)	0.081	(.009)
Poverty	0.179	(.012)	0.214	(.018)	0.138	(.022)	0.144	(.014)
%Private MCO	0.083	(.104)	0.045	(.081)	0.081	(.273)	-0.039	(.303)
Medicaid generosity	0.023	(.005)	0.015	(.004)	0.044	(.010)	0.038	(.012)
Unemployment	0.079	(.306)	-0.326	(.277)	0.475	(1.094)	-0.012	(.479)
Male	-0.004	(.003)	-0.005	(.002)	-0.002	(.007)	-0.005	(.007)
Black	0.056	(.008)						
Hispanic	-0.030	(.014)						
Mother is high school drop-out	0.067	(.005)	0.080	(.009)	0.067	(.014)	0.049	(.010)
Mother has some college	-0.020	(.004)	-0.011	(.004)	-0.048	(.014)	-0.034	(.013)
Father is high school drop-out	-0.003	(.008)	0.028	(.009)	0.022	(.018)	-0.051	(.012)
Father has some college	0.002	(.004)	0.003	(.004)	-0.021	(.015)	-0.007	(.016)
Oldest sibling	0.029	(.002)	0.024	(.002)	0.044	(.006)	0.033	(.008)
Number of siblings	0.024	(.002)	0.024	(.003)	0.040	(.005)	0.010	(.006)
Female headed household	0.068	(.009)	0.033	(.010)	0.084	(.020)	0.126	(.023)
Mother is reference person	-0.019	(.012)	0.015	(.011)	-0.062	(.023)	-0.076	(.029)
Father is reference person	-0.056	(.013)	-0.025	(.012)	-0.104	(.028)	-0.099	(.029)
Other reference person - female	0.045	(.010)	0.053	(.013)	0.003	(.022)	0.021	(.017)
Other reference person - male	0.028	(.010)	0.046	(.014)	0.055	(.026)	-0.008	(.022)
Income < $10k	0.369	(.015)			0.447	(.038)		
$10k <= Income < $20k	0.170	(.014)	-0.184	(.021)	0.235	(.029)	-0.169	(.019)
$20k <= Income < $30k	0.070	(.008)	-0.280	(.021)	0.136	(.025)	-0.272	(.021)
$30k <= Income < $40k	0.039	(.007)	-0.305	(.021)	0.076	(.023)	-0.325	(.023)
$40k <= Income < $50k	0.019	(.005)	-0.324	(.021)	0.050	(.026)	-0.334	(.025)
Income >= $50k			-0.346	(.020)			-0.322	(.024)
Central City	0.038	(.007)	0.035	(.007)	0.026	(.012)	0.017	(.018)
Rural	0.023	(.013)	0.021	(.014)	0.005	(.068)	-0.044	(.067)
N	74800		48280		13853		12667	
R^2	0.409		0.374		0.384		0.360	

Notes: The results for the dummy variables for year, season, state, and age are not shown.
Standard errors are in parentheses.