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FINAL REPORT

**ESTIMATING THE IMPACTS OF
MEDICAID MANAGED CARE
ON MEDICAID SSI BENEFICIARIES:
A NATIONAL STUDY**

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Abstract

Increasingly states are shifting disabled Medicaid beneficiaries from the fee-for-service (FFS) delivery system to managed care. Using pooled data from the 1997 to 2001 National Health Interview Surveys, we investigate how Medicaid managed care (MMC), relative to FFS Medicaid, affects access to and use of medical services among a national sample of Medicaid SSI beneficiaries. We also examine whether there are different effects on access and use under different types of managed care. For context, a parallel analysis of non-SSI beneficiaries is provided. We find that the impact of MMC on access and use is not homogenous but varies across different types of managed care models, Medicaid populations, and geographic area. Given this variation, Medicaid policymakers should be mindful of these differences when developing and evaluating MMC initiatives.

Executive Summary

With the exception of Alaska and Wyoming, all states enroll some or all of their Medicaid beneficiaries in managed care. While the bulk of Medicaid managed care (MMC) enrollees are relatively healthy low-income children and their parents, a sizable share of disabled Medicaid beneficiaries receive health care services through managed care systems. In 1998, one in four (1.6 million) disabled beneficiaries was enrolled in managed care, with most in capitated systems such as HMOs.

Although several states have enrolled disabled beneficiaries in managed care, very little is known about how they fare in such a system. A key unanswered policy question is whether MMC improves disabled individuals' access to care relative to the traditional Medicaid FFS system. Various studies have investigated this issue but are limited because they focus on a particular plan, selected geographic areas or a single state.

In this analysis we investigate how MMC, relative to FFS Medicaid, affects access to care and use of medical services among adult Supplemental Security Income (SSI) Medicaid beneficiaries at the national level. We also examine whether the type of managed care (for example, capitated arrangements versus PCCM programs or voluntary versus mandatory programs) affects health care access compared to FFS.

To our knowledge no studies have taken a national look at the effects of managed care on adult SSI Medicaid beneficiaries, ages 19 to 64. Having a broad understanding of the impacts would be helpful to state and federal policymakers, especially as they look for ways to stem the increasing costs of the Medicaid program. Our principal data source for the analysis is the National Health Interview Survey, which is large annual nationally representative survey of health care use among American households. The study period is 1997 to 2001, a time of substantial expansion in MMC for the SSI population. Our analysis addresses two questions:

- What is the overall impact of MMC on access and use for the adult SSI Medicaid population?
- Do the impacts differ by type of MMC program?

The analysis focuses on the impacts of MMC for the SSI population; however, for context we include a parallel analysis of the impacts of MMC on the non-SSI Medicaid population.

Key Findings

- We find that the impact of MMC on access and use varies across different types of managed care models Medicaid populations and geographic areas.
- For adult SSI beneficiaries living in urban areas, we observe some statistically significant—and important—managed care impacts. Regardless of type of managed care (mandatory capitated or other types of MMC), SSI beneficiaries residing in urban counties with MMC were less likely to report any contact with health care providers and less likely to report having had any office visit over the past year,

compared to beneficiaries living in counties with FFS Medicaid systems. Further, beneficiaries in counties with a mandatory HMO MMC program were significantly less likely to have had a specialist visit in the past 12 months than those in FFS.

- We found more positive MMC effects for SSI beneficiaries living in rural areas. For example, SSI beneficiaries living in rural counties with any type of MMC were more likely to report contact with physician extenders such as nurse practitioners than beneficiaries living in rural counties with FFS Medicaid. While we observed no evidence of significant effects of mandatory HMO programs, we found that with other types of MMC, beneficiaries were more likely to have had a visit to a general doctor and a visit to a physician extender in the past year compared to their FFS counterparts. Offsetting this finding, however, managed care beneficiaries were more likely to be heavy users of emergency rooms.
- For other outcome measures examined, including having a hospital stay, visiting the emergency room or getting a flu shot in the past year, we find virtually no managed care impacts for the SSI population—that is, we see no significant increase or decrease in use of these services—regardless of geographic residence or type of managed care.
- For the non-SSI population we find little evidence of significant changes in access or use in counties with MMC compared to FFS Medicaid. The MMC effects we do find provide a mixed assessment of managed care for this population: in some cases access is better and in other it is worse than counties still in FFS. The limited and mixed effects we observe for non-SSI beneficiaries are consistent with general trends reported in other research on MMC.

Summary and Conclusions

Study findings suggest that the impact of MMC is not homogenous but rather it varies by Medicaid sub-group, geographic area and type of managed care. Medicaid policymakers should be mindful of these differences when developing managed care program policies. More research is needed to better understand the implications--including health outcomes-- of MMC for this vulnerable population.

Introduction

With the exception of Alaska and Wyoming, all states enroll some or all of their Medicaid beneficiaries in managed care. As of the 2002, more than 23 million Medicaid beneficiaries—nearly 60 percent of program beneficiaries--receive their health care through a managed care arrangement such as health maintenance organizations (HMOs) or more loosely structured primary care case management (PCCM) programs (CMS 2002).

While the bulk of Medicaid managed care (MMC) enrollees are relatively healthy low-income children and their parents, a sizable share of disabled Medicaid beneficiaries receive health care services through managed care systems. In 1998, one in four (1.6 million) disabled beneficiaries was enrolled in managed care, with most in capitated systems such as HMOs (Regenstein and Schroer 2000).¹ States have pursued managed care for disabled persons for a variety of reasons. One driving factor is the cost of health care for the population: In 2000, disabled persons accounted for about 15 percent of total Medicaid enrollment but more than 40 percent of program expenditures. Average total expenditures for disabled individuals (\$9,960) were comparable to those for elderly individuals (\$10,020) but more than six times average spending for other adults and eight times that of other children (Urban Institute 2000).

Beyond the desire to control expenditures, another motivating factor to shift disabled Medicaid beneficiaries to managed care has been to improve access, which often has been problematic under the traditional Medicaid fee-for-service (FFS) system (Rowland et al. 1995; US GAO 1996; Coughlin, Long and Kendall 2002; Long, Coughlin and Kendall 2002; Vladeck

¹Individuals who qualify for Medicaid coverage on the basis of disability generally do so in one of two ways. The principal way is by qualifying for the Supplemental Security Income (SSI) program. SSI is a federally funded entitlement program that provides cash assistance to low-income aged, blind and disabled persons. Individuals who receive SSI are automatically eligible for Medicaid in all states except the so-called “209(b)” states, where SSI beneficiaries must satisfy a separate set of criteria to receive Medicaid.) Another major way to qualify on the basis of disability is through state medically needy programs. Under that program, a state may elect to provide coverage to higher-income individuals with high medical expenses.

2003). Finally, changes in federal policies have made it easier for states to move beneficiaries into managed care arrangements. An important policy change was included in the Balanced Budget Amendments of 1997 which allowed states to implement mandatory MMC programs without first securing a federal waiver from the Centers for Medicare & Medicaid Services.

Disabled individuals stand to gain a lot from managed care arrangements (Tannebaum and Hurley 1995). Managed care systems hold the promise of providing comprehensive, coordinated health care that matches the many complex needs of disabled individuals. Another potential strength of managed care is that by combining resources into a single capitation payment, available funding may be more flexible, which could enable health plans to better target and creatively reallocate resources to meet the specific health care requirements of each disabled person (Regenstein and Anthony 1998). For example, by emphasizing disease management strategies, managed care could potentially help disabled individuals maintain their health and functional status while avoiding costly inpatient care or emergency room use.

At the same time, the basic cost incentives built into capitated managed care models could limit access to needed services (particularly specialty care), potentially compromising the health of the disabled individual. Another concern is the limited experience most managed care plans have had in caring for people with disabilities. To date, the majority of enrollment for disabled individuals has been in mainstream health plans that typically do not have established relationships with all the many provider specialists and ancillary services (for example, personal care attendants or wheelchair manufacturers) disabled persons require on a regular basis.

Despite these concerns states have demonstrated that the disabled population can successfully be included in capitated managed care programs. For example, Arizona has mandatorily enrolled all of its Supplemental Security Income (SSI) beneficiaries in HMOs since

1982. Similarly, for nearly ten years both Oregon and Tennessee have required SSI beneficiaries to enroll in capitated managed care plans. At the same time, several states (for example, Minnesota, Vermont and Washington) have failed in their efforts to expand capitated managed care to SSI beneficiaries (Hurley et al. 1993; Verdier et al. 1998; Coughlin and Long 2004). While several factors contributed to the demise of these initiatives, major issues included maintaining health plan participating and determining a capitation rate that was feasible for both the state and the health plans.

Although several states have enrolled disabled beneficiaries in managed care, very little is known about how they fare in such a system (Regenstein et al. 2000; Wallack et al. 1996). A key unanswered policy question is whether MMC improves disabled individuals' access to care relative to the traditional Medicaid FFS system. Various studies have investigated this issue but are limited because they focus on a particular plan, selected geographic areas or a single state (see, for example, Lurie et al. 1992; McCall 1998; Cebul et al. 2000; Mitchell et al. 2001). Further, the results have been mixed, with some studies reporting improvements in access and use under managed care, some reporting declines and others no significant change for disabled individuals.

In this analysis we investigate how MMC, relative to FFS Medicaid, affects access to care and use of medical services among adult disabled Medicaid beneficiaries at the national level. We also examine the effects of different types of managed care (for example, mandatory capitated arrangements, PCCM programs or voluntary programs) affects health care access compared to FFS.

A few recently completed studies have estimated the impacts of MMC on selected segments of the non-SSI Medicaid population at the national level (Currie and Fahr 2002;

Kaestner et al. 2002; Garrett et al. 2003; Zuckerman et al. 2002). To our knowledge, however, no studies have taken a national look at the effects of managed care on disabled Medicaid beneficiaries. Having a broad understanding of the impacts would be helpful to state and federal policymakers, especially as they look for ways to stem the increasing costs of the Medicaid program, which totaled more than \$220 billion in 2002 (NASBO 2003). Our principal data source for the analysis is the National Health Interview Survey, which is large annual nationally representative survey of health care use among American households. The study period is 1997 to 2001, a time of substantial expansion in MMC for the SSI population.

Our analysis addresses two questions:

- What is the overall impact of MMC on access and use for the adult SSI Medicaid population?
- Do the impacts differ by type of MMC?

The analysis focuses on the impacts of MMC for the SSI population; however, for context we include a parallel analysis of the impacts of MMC on the non-SSI Medicaid population.

Data

The National Health Interview Survey (NHIS) is an ongoing cross-sectional survey that provides individual-level data on health care access and use, health status and insurance coverage, as well as basic demographic and socioeconomic characteristics. For the study, we pooled data for four years (1997 to 2001). We used data from the sample adult file, which provides detailed information on a randomly sampled adult in each sample household. We also rely on data from the household and family files.

Building on previous research (Long et al. 2003; Garrett et al. 2003; Zuckerman et al. 2003), we constructed a measure of Medicaid managed care status based on whether the

individual lived in a county that had some type of MMC.² To construct the measure we used information from the Centers for Medicare & Medicaid Services' *National Summary of State Medicaid Managed Care Programs* and *Medicaid Managed Care Enrollment Report, Medicaid Managed Care Summary*. These are annual summaries of state MMC programs that describe the types of managed care (e.g. HMO or PCCM; mandatory or voluntary), the population (e.g. SSI beneficiaries, pregnant women, or children) enrolled in the particular program, and the geographic areas covered by each program. For our analysis we used summary reports for 1996 to 2000, which capture the MMC programs in place in June of each year.³ To the extent possible we cross checked these data with other sources to ensure that our MMC measures were as accurate as possible.⁴

In constructing our measures of county MMC status, we coded Medicaid beneficiaries as living in a MMC county if their county of residence operates a voluntary and/or mandatory MMC program for its SSI population.⁵ A similar coding was used to group individuals on Medicaid but not receiving SSI—which we refer to as the non-SSI population. In addition to the overall measure of county MMC, we constructed measures for the type of MMC in place in the individual's county of residence. Specifically, we assigned counties into one of four MMC categories—mandatory HMO only, mandatory PCCM only, mixed mandatory HMO/PCCM and any voluntary managed care.

²The NHIS, where interviewing is done continuously throughout the year, does inquire about whether respondents are enrolled in managed care. Unfortunately, concerns about the reliability of self-reported measures of managed care enrollment have been raised and thus we constructed an alternative MMC status variable (Reschovsky and Hargraves 2000).

³Many of the access questions in the NHIS ask about experiences in the prior year. As such, we used lagged (by one year) MMC data for June of the prior year to match the look back period of the NHIS.

⁴ Cross-checking included comparing the MMC information we put together with information posted on state Medicaid web sites and on other health care sites such as the Kaiser Family Foundation and State Coverage Initiatives, which track state managed care activities.

⁵ Excluded from our list are plans dedicated to targeted services such as dental, behavioral health, substance abuse and transportation.

Table 1 shows the share of counties that had MMC programs for SSI beneficiaries over our study period. Nationwide, the portion of counties with any MMC for SSI beneficiaries increased substantially over the period, going from 34 percent in 1996 to 53 percent in 2000. Further, though starting from different bases, the growth was comparable between rural and urban areas. All forms of MMC grew between 1996-2000 but mandatory HMO programs experienced the fastest growth: In both rural and urban areas, the number of counties with mandatory HMO programs more than doubled during the study period. However, even with this rapid growth, less than 15 percent of counties nationwide had such a program for SSI beneficiaries in 2000. Although not shown in the table, similar patterns of MMC development were observed for the non-SSI population.

In addition to NHIS and Centers for Medicare and Medicaid data, we used several data sources to construct county and state level characteristics that may be related to access and use including, the Area Resource File, the American Hospital Association Annual Survey, the Current Population Survey, and the Urban Institute's Transfer Income Model.

Empirical Model

We model health care access and use as a function of the individual's predisposition to use health care services, factors that enable or impede use, and the need for health care (Anderson and Aday 1978). Predisposing factors include demographic and social characteristics (e.g., age, race, gender, education, marital status). Enabling/impeding characteristics include individual and family resources (e.g., income, employment, family size) and community health care resources. Finally, an individual's need for services is measured by their health and disability status.

Our basic model can be written as:

$$(1) Y = \beta_0 + \beta_1 \text{MMC} + \beta_2 X + \beta_3 Z + \beta_4 \text{YEAR} + \varepsilon$$

Where Y is the access or use outcome of interest, MMC is a dummy variable that takes the value 1 for an individual who resides in a county that has Medicaid managed care, and 0 otherwise; X is vector of individual and family characteristics; Z is a vector of county, state and region characteristics; and YEAR is a vector of year dummy variables to capture changes over time. The coefficient β_1 provides the estimate of the impact of residing in a MMC county relative to living in a FFS Medicaid county on access and use. We rely on the variation across counties and over time in the implementation of MMC to obtain the estimates of the impact of MMC.

The estimate of the impact of residing in a MMC county differs from an estimate of the impact of being *enrolled* in MMC since not all Medicaid beneficiaries in a county with managed care will actually be enrolled in a health plan. Under voluntary MMC programs, some individuals will choose not to enroll, and under mandatory MMC programs, some individuals may be exempt from enrolling (e.g., beneficiaries who are dually enrolled in Medicaid and Medicare). Consequently, the county MMC measure we use captures the average effect of being in a MMC county across MMC enrollees (who are directly affected by MMC) and non-enrollees (who may be indirectly affected by MMC because of changes in the health care system with the introduction of MMC).

While ideally county and individual measures of managed care are desired, county measures provide some statistical advantages (Garrett et al. 2003). For example, to the extent that beneficiaries are exempted from mandatory programs or can choose between HMOs and PCCMs, selection bias may be an issue with an individual managed care measure if the choice to enroll in managed care is not controlled for in the model. By contrast, if a county level measure is used, selection bias is less of a concern.

Another advantage of the county level measure is that it is less prone to error. An individual measure, for example, is based on their response to questions about the type of managed care program they are enrolled in. Securing accurate information on managed care participation has been problematic in surveys. Indeed, as mentioned earlier, while the NHIS asks respondents about managed care enrollment, responses are not published because of reporting concerns. Using a county-based measure avoids this potential measurement error.

An important concern in estimating this model is the possibility that there are other differences between the MMC and FFS Medicaid counties that could affect the outcomes of interest and mistakenly be attributed to the presence of MMC. To address that possibility, we control for county characteristics that are likely to be correlated with a state's decision to implement MMC in a particular county.

Most importantly, since the health care markets and the types of MMC programs that are implemented tend to be very different between urban and rural areas, we estimate separate equations for beneficiaries living in rural counties and those living in urban counties. (We relied on the standard Metropolitan Statistical Area or MSA designation to determine whether a county was urban and rural.) Beyond estimating separate models for rural and urban areas, we also include several measures to control for differences in county, state and regional characteristics (see below).

In addition to estimating models of the overall effect of MMC, we also look at the effects of different types of MMC. We began by focusing on four MMC models: counties with mandatory HMO only programs, counties with PCCM programs only, counties with both mandatory HMO and PCCM programs, and counties with voluntary models. Owing to small samples sizes for the rural SSI population and the similarity of our findings across some MMC models, we focused the analysis on the impacts of mandatory HMOs and all other forms of MMC versus FFS Medicaid. Mandatory HMO programs are of particular interest both because they were a significant component of state managed care activity during the study period, and because particular concerns about the possibility of rationing of care for the SSI Medicaid population in the HMO model have been raised.

Sample. Our sample consists of non-aged adults (ages 19 to 64) who were enrolled in Medicaid or were receiving SSI benefits at the time of the survey.⁶ Since many of our outcome measures focus on health care use over the prior year, we ideally want the sample to include only those individuals who were on Medicaid for the full-year. While full-year insurance data are not available in the NHIS, the survey does ask whether the individual was ever uninsured over the past year. We use that information to limit our sample to those adults who reported being on Medicaid at the time of the survey and continually insured over the prior year. For the SSI population, who rarely disenroll from Medicaid once they have been determined to be eligible, it is likely that this measure corresponds to full-year Medicaid enrollment. We also exclude individuals who reported also being on Medicare as the dually enrolled (that is, person on both Medicare and Medicaid) are generally exempt from MMC. Finally, as noted above, we divided the sample into SSI Medicaid beneficiaries and non-SSI Medicaid beneficiaries, which we included in the analysis for context. Overall, the analysis sample totaled 8193 adults. Of these, 2203 were SSI beneficiaries and 5599 were non-SSI Medicaid beneficiaries.

Control Variables. Guided by the conceptual model outlined earlier in this section, we included a number of control variables in our estimations. A listing of the variables and means for the total sample and four sub-samples is provided in Table 2. Controls for individual and family characteristics include age, gender, race/ethnicity, marital status, education, work status, family size, family income as percent of the federal poverty level and home ownership. Also included are several health status variables--self-reported health status, whether the individual has limitations in activities of daily living or in instrumental activities of daily living, has a

⁶ In selecting the sample, we assumed that all SSI beneficiaries were also enrolled in the Medicaid program. With the exception of a few 209(b) states, this is a valid assumption. Further, the vast majority of our sample of SSI beneficiaries who reported *not* being on Medicaid did not live in a 209(b) states but in states that automatically offer Medicaid coverage to SSI enrollees.

cognitive impairment, has a health condition that limits work or one of six separate health conditions.⁷

We also control for county and state characteristics that may be correlated with the implementation of MMC in a county and that may influence an individual's access and use. For each of the four analyses years, we constructed a range of variables including the supply of providers in the county (doctors and hospital beds), the competitiveness in the local hospital market (as measured by a Herfindahl index constructed for each county), the county's cost of health care (as measured by the county's AAPCC rate), and stress on the health care system (as measured by the county HMO penetration rate and the percent of county population below the poverty line). In addition, we included a control variable for geographic region of the country.

As part of this cluster of control variables, we include three Medicaid eligibility measures—yearly state medically needy income limits, Medicaid eligibility coverage for a standard population under each state's Medicaid program rules for each analysis year, and whether the state is a 209(b) state for Medicaid eligibility. Controlling for the breadth of a state's Medicaid program is important as it may influence the timing and type of MMC implemented by the state. It will also influence who is eligible for benefits and whether eligible people enroll in the program (Currie and Fahr 2002), as well as the extent of provider participation in the Medicaid program. Both of these factors—who selects into Medicaid and provider participation—can affect access and use patterns. Finally, the model includes dummy variables for the survey year to account for any national changes in trends on access and use that may have occurred over the study period.

⁷ Activities of daily living include basic activities such as bathing, dressing, and eating whereas instrumental ADL include activities such as shopping, money management and housework.

Access and Use Outcome Measures. We looked at a range of access and use measures. We examined two global access measures: whether the person had *any contact* (phone consultation or visit) with *any* health care provider (including those seen in the hospital) in the last 12 months, and whether the person had any office *visit* to any health care provider over the past 12 months. We also examined several provider-specific access measures, including having contact with a general doctor in the last two weeks, having contact with a general doctor, specialist or physician extender (e.g., nurse practitioner, physician's assistant, midwife) in the past year, receiving a flu shot, going to an emergency room (ER) in the last year, or having a hospital stay in the last year. Finally, we examined a continuity of care measure--whether the person had a usual source of care other than an ER).

The means for the outcome measures for the total sample and the four sub-samples (SSI and non-SSI beneficiaries by rural and urban status) are listed in Table 3. As shown, an overwhelming majority of SSI beneficiaries (91 percent of urban and 90 percent of rural) reported having a usual source of care other than an ER, suggesting that the population has good continuity of care. Further, most had had an office visit with a health care provider in the past year. However, more than two-fifths of urban beneficiaries and nearly half (44 percent) of rural beneficiaries visited an ER in the last 12 months. Moreover, a quarter of both urban and rural SSI beneficiaries reported having more than one ER visit. This high level of ER use occurred despite most beneficiaries reporting they had a usual source of care. Other recent research has also reported high ER use among Medicaid beneficiaries, significantly higher than that of the low-income privately insured and the uninsured (Zuckerman and Shen 2004; Long, Coughlin and King, 2004). Another indication of access problems for the population is that less than a third of SSI beneficiaries reported getting a flu shot in the last year, which is well below the

Healthy People 2000 goal of a 60 percent immunization rate for high-risk groups (U.S. DHHS 1991).

Estimation. Since all our access and use measures considered are binary variables, we estimate probit models. The NHIS data are obtained through a complex sampling design involving stratification, clustering and multistage sampling. To ensure that we obtain appropriate standard errors for the impact estimates, we conducted weighted analyses using the svy estimation procedures in Stata (Stata 2001).

Results

Impacts of MMC in Urban Areas. As shown in Table 4, we find some differences in access to care, particularly for ambulatory care use, for urban SSI beneficiaries living in counties with FFS Medicaid and those in counties with MMC. Overall, the SSI beneficiaries living in urban counties with any MMC (Model 1) are significantly less likely to report having had any type of health care contact in the past year relative to their counterparts in FFS Medicaid, and are less likely to report having had any office visit to a health care provider in the past year as compared to SSI beneficiaries living in urban FFS counties. They are also less likely to have had contact with a physician in the past year. These results suggest that the decline in the likelihood of a contact with a provider is due to a drop in physician contacts among SSI beneficiaries in counties with MMC. No differences between MMC and FFS beneficiaries on the other measures--including ER and hospital use, getting a flu shot, and having a usual source of care—were found.

When we examine the effect of type of MMC in urban areas, we found many similarities in the overall impacts of MMC and the impacts of mandatory HMO programs and other types of

MMC relative to FFS Medicaid (Model 2). We did find some evidence of greater impacts of mandatory HMOs. In particular, we find that SSI beneficiaries in counties with mandatory HMO programs are significantly less likely to have had contact with a specialist in the past 12 months, compared to SSI beneficiaries in FFS Medicaid counties. However, SSI beneficiaries in counties with mandatory HMO programs were more likely to have 9 or more physician visits in the last 12 months, compared to SSI beneficiaries in FFS Medicaid counties. For other types of MMC (Model 2), the results are identical to those for any MCC (Model 1).

In Table 5, we show results for non-SSI adult Medicaid beneficiaries living in urban counties. For this population, we find only a few differences in access for beneficiaries in FFS counties and beneficiaries in MMC counties. We observe that non-SSI beneficiaries in MMC counties are significantly more likely to report having a usual source of care (other than the ER) and having contact with a physician extender (e.g., nurse practitioner, physician's assistant or midwife). However, despite being more likely to have a usual source of care and having contact with extender providers, beneficiaries in MMC counties report more hospital use, suggesting that primary care access may still be problematic (discussed further below).

Impacts of MMC in Rural Areas. We find limited effects of MMC on access to or use of care in rural areas—for either SSI or non-SSI beneficiaries. For SSI beneficiaries in rural areas (Table 6), we find only a one significant impact: beneficiaries living in counties with MMC are significantly more likely than those in FFS Medicaid to report having contact with a physician extender in the past year.

When we examine differences by type of MMC program (Model 2), we find no significant differences in access for beneficiaries in mandatory HMO programs and beneficiaries in FFS. For other types of MMC, we find positive effects of managed care: SSI beneficiaries

living in rural counties with other types of MMC were significantly more likely have had contact with a general medical doctor and with physician extenders in the past year.

For the non-SSI Medicaid population in rural areas (Table 7), we find no difference in difference in access and use between FFS Medicaid and MMC overall (Model 1), and no differences for other types of MMC (Model 2). For mandatory HMO programs we observe a mixed picture: Although we find a consistent and significant reduction in ER use among non-SSI beneficiaries in rural counties with mandatory HMO programs, these beneficiaries were also less likely to report contact with a physician compared to beneficiaries in FFS counties.

Summary and Discussion

In this study we estimated the national average effects of different models of managed care programs on adult SSI Medicaid beneficiaries. The strongest conclusion to our analysis is that the impact MMC on access and use varies across different types of managed care models, Medicaid populations and geographic area.

For adult SSI beneficiaries living in urban areas, we did observe some statistically significant—and important—managed care impacts. Regardless of type of managed care, SSI beneficiaries residing in urban counties with MMC were less likely to report any contact with health care providers and less likely to report having had any office visit over the past year. Further, beneficiaries in counties with a mandatory HMO MMC program were significantly less likely to have had a specialist visit in the past 12 months. Given the health status and medical needs of SSI beneficiaries, the lower levels of use in primary and specialty care raise the possibility of increased access problems under MMC. Further, that beneficiaries reported significantly lower use of ambulatory care under managed care is particularly troubling since

some SSI MMC programs have failed in part because of the *higher* than expected use of primary care services under MMC and our results suggest the opposite for the SSI population (Verdier et al. 1998; Coughlin and Long 2004).

We found more positive MMC effects for SSI beneficiaries living in rural areas. For example, SSI beneficiaries living in rural counties with any type of MMC were more likely to report contact with physician extenders such as nurse practitioners. While we observed no evidence of significant effects of mandatory HMO programs, we found that with other types of MMC beneficiaries were more likely to have had a visit to a general doctor and a visit to a physician extender in the past year. Offsetting this finding, however, beneficiaries were more likely to be heavy users of emergency rooms, compared to SSI beneficiaries in rural counties with FFS Medicaid.

Overall MMC does not appear to have achieved its goals of providing a coordinated system of care that emphasizes preventive and primary care for the SSI population, especially in urban areas. For urban beneficiaries, we find no significant decline in inpatient care or ER use. We do, however, observe a significant decline in the share of beneficiaries reporting having an office visit in the past year and a decline in the number having contact with a specialist. We also find no improvement in the number of beneficiaries getting a flu shot.

For the non-SSI population we find little evidence of significant changes in access or use in counties with MMC compared to FFS Medicaid. The MMC effects we do find provide a mixed assessment of managed care: in some cases access is better and in other it is worse than counties still in FFS. The limited and mixed effects we observe are consistent with general trends reported in other research on MMC examining the adult non-SSI population (Coughlin and Long 2000; Long and Coughlin 2002; Garrett et al. 2003; Zuckerman et al. 2002).

We acknowledge that there are caveats to consider in interpreting the study results. Our findings are based on the effects of managed care on groups of counties with selected types of MMC program. Results will certainly vary by state and even within states. Further, our results measure the effects of living in a county with a Medicaid managed care program rather than the individual effects of enrolling in such a program. While our measure of MMC effects should be in the same general direction as individual effects, their magnitude will be smaller as some of people that live in counties with a MMC program may in fact still be getting their care under FFS Medicaid system.

Another caveat to the study is that, like all survey-based research, the results are based on self-reported access and use. However, since we have no reason to expect differences in the likelihood that respondents in MMC counties or FFS counties under- or over-report their health care experiences, our estimates of managed care impacts should be consistent.

Beyond these, we use a .10 significance level test to determine whether there is a significant relationship between MMC and each outcome measure. With this significance level there is a 1 in 10 chance of concluding that there is a significant relationship when no such relationship exists. Consequently, it is likely that at least some of the differences that we report as significant effects of MMC on access and use are due to chance rather than a true MMC effect.

Finally, it is important to consider the effect of sample size on the precision of our estimates, particularly for the rural SSI Medicaid sample, which totaled just over 500 observations. (By comparison the urban SSI sample was three times the size.) Given that the ability to detect an effect of MMC on access and use increases with sample size, we may mistakenly conclude that there is no effect of MMC on access and use when, in fact, MMC

does have a significant impact. Because of the sample size effect, our finding of few significant effects of MMC in rural areas for SSI beneficiaries should be interpreted as a finding of no evidence of *relatively large* effects. Additional research that extends the study to include more recent years of the NHIS (when managed care activity in rural areas became more developed) would allow us to detect relatively small effects of MMC for SSI beneficiaries in rural areas with greater confidence.

Despite these caveats the study does suggest that the impact of MMC is not homogenous. Instead the impacts vary by Medicaid sub-group, geographic area and type of managed care. Medicaid policymakers should be mindful of these differences when developing managed care program policies. Further, the evidence of a decrease in ambulatory care use for the SSI beneficiaries in urban areas suggest that decision-makers and consumers are right to be cautious in extending MMC to this population. More research is needed to better understand the implications--including health outcomes-- of MMC for this vulnerable population.

Type of MMC	Share of Counties				
	1996	1997	1998	1999	2000
All Counties (N=3142)	100.0%	100.0%	100.0%	100.0%	100.0%
Counties with Any MMC	33.9%	40.4%	46.6%	49.9%	53.1%
Mandatory HMO	5.2%	6.0%	8.8%	12.7%	12.6%
Mandatory PCCM	18.5%	21.5%	23.1%	24.1%	26.7%
Mixed Mandatory HMO/PCCM	5.4%	6.3%	6.4%	4.3%	4.1%
Voluntary MMC	4.8%	6.6%	8.3%	8.9%	9.6%
Urban Counties (N=835)*	100.0%	100.0%	100.0%	100.0%	100.0%
Counties with Any MMC	44.2%	52.5%	56.9%	60.5%	62.9%
Mandatory HMO	6.7%	7.9%	11.7%	16.6%	17.2%
Mandatory PCCM	13.2%	15.1%	15.3%	17.8%	19.2%
Mixed Mandatory HMO/PCCM	13.3%	15.1%	13.5%	9.3%	8.9%
Voluntary MMC	11.0%	14.4%	16.3%	16.6%	17.6%
Rural Counties (N=2307)*	100.0%	100.0%	100.0%	100.0%	100.0%
Counties with Any MMC	30.2%	36.1%	42.9%	46.1%	49.5%
Mandatory HMO	4.6%	5.3%	7.7%	11.3%	11.0%
Mandatory PCCM	20.4%	23.8%	26.0%	26.3%	29.4%
Mixed Mandatory HMO/PCCM	2.6%	3.1%	3.8%	2.4%	2.4%
Voluntary HMO	2.6%	3.8%	5.5%	6.1%	6.7%

Source: Constructed from CMS's National Summary of State Medicaid Managed Care Programs and Medicaid Managed Care Enrollment Report, Medicaid Managed Care Summary for 1996 to 2000 (available at www.cms.hhs.gov/medicaid/managedcare).

* Urban counties are those located in a Metropolitan Statistical Area (MSA) whereas rural counties are those located outside a MSA.

Explanatory Variables	Total Analysis Sample	SSI Beneficiaries		Non-SSI Beneficiaries	
		Urban	Rural	Urban	Rural
Socio-economic/Demographic Characteristics					
Age (years)	36.26	42.36	42.40	33.70	34.67
Female	0.68	0.60	0.58	0.72	0.67
Race/ethnicity					
White	0.49	0.49	0.75	0.39	0.69
Black/Other Non-White, Non-Hispanic	0.33	0.36	0.22	0.37	0.23
Hispanic	0.18	0.16	0.03	0.24	0.08
Marital status					
Married	0.39	0.29	0.38	0.40	0.50
Never married	0.38	0.40	0.32	0.40	0.29
Divorced/separated/widowed	0.23	0.31	0.31	0.20	0.21
Education					
High school or more	0.57	0.50	0.44	0.60	0.65
Less than high school	0.43	0.50	0.56	0.40	0.35
Work status					
Worked last year	0.45	0.17	0.16	0.56	0.59
Work status missing	0.04	0.02	0.02	0.05	0.06
Family size	3.36	2.74	2.69	3.67	3.39
Ratio of family income to Federal Poverty Level	1.86	1.74	1.28	2.02	1.73
Own home	0.28	0.26	0.36	0.23	0.43
Health Status					
Has 1 or more ADL limitations	0.04	0.11	0.10	0.02	0.01
Has IADL limitations only	0.07	0.15	0.17	0.03	0.04
Has neither ADL or IADL limitations	0.89	0.75	0.73	0.95	0.95
Has cognitive impairment	0.09	0.21	0.21	0.05	0.06
Currently pregnant	0.04	0.01	0.01	0.05	0.06
Health status is fair or poor	0.30	0.53	0.57	0.19	0.26
Has health condition that limits work	0.36	0.75	0.77	0.19	0.25
Ever been diagnosed with:					
Diabetes	0.08	0.14	0.15	0.05	0.08
Heart condition/disease	0.13	0.20	0.25	0.08	0.12
Hypertension	0.20	0.34	0.34	0.14	0.17
Stroke	0.03	0.07	0.05	0.02	0.03
Emphysema	0.02	0.04	0.06	0.01	0.03
Cancer	0.05	0.08	0.10	0.03	0.06
County, State and Region Characteristics					
Hospital beds per 1000 people in county ¹	3.58	3.54	3.52	3.55	3.75
MDs per 1000 people in county ¹	2.62	2.98	1.30	3.04	1.18
HMO penetration rate in county ²	0.25	0.28	0.09	0.30	0.11
Poverty rate in county ¹	0.15	0.14	0.18	0.15	0.16
Hospital with ER department in county ¹	0.94	0.97	0.77	0.98	0.83
County Herfindahl Index ³	0.43	0.36	0.72	0.35	0.72
State has Medically Needy program	0.85	0.85	0.77	0.88	0.80
State Medically Needy income limit for a family of 3 ⁴	6127.66	6055.20	4151.95	6791.33	4698.79
State Medicaid eligibility rate for a standard population ⁵	0.07	0.06	0.06	0.07	0.09
County AAPCC rate ¹	524.38	539.71	450.13	550.38	441.84
State is a 209(b) state for SSI eligibility	0.18	0.17	0.20	0.16	0.25
Region					
Midwest	0.22	0.23	0.22	0.20	0.27
West	0.22	0.20	0.13	0.26	0.13
South	0.32	0.31	0.57	0.25	0.50
Northeast	0.24	0.26	0.08	0.29	0.11
Survey Year					
1997	0.22	0.22	0.22	0.23	0.19
1998	0.20	0.19	0.19	0.20	0.19
1999	0.19	0.18	0.21	0.18	0.21
2000	0.19	0.20	0.20	0.18	0.20
2001	0.21	0.21	0.18	0.21	0.22
Medicaid status imputed based on SSI receipt in 209(b) state	0.04	0.14	0.13	--	--
Sample Size	8193	1667	536	5031	959

Source: Unless otherwise noted, data are from the 1997-2001 National Health Interview Survey.

1. Area Resource File
2. Area Resource File and Douglas Wholey
3. Area Resource File and American Hospital Association Annual Survey
4. Urban Institute's TRIM Simulation Model
5. Urban Institute's TRIM Simulation Model and Current Population Survey

Outcome	Total Analysis Sample	SSI Beneficiaries		Non-SSI Beneficiaries	
		Urban	Rural	Urban	Rural
		Has usual source of care other than ER	0.90	0.91	0.90
In the last 2 weeks					
Contact with a physician	0.23	0.34	0.29	0.19	0.21
Over the last 12 months					
Any contact with any health care provider	0.90	0.93	0.93	0.89	0.91
Any office visit to any provider	0.86	0.90	0.91	0.84	0.88
Over the last 12 months, contact with					
A general medical doctor	0.56	0.52	0.43	0.61	0.52
More than 9 doctor visits in last 12 months	0.25	0.38	0.36	0.19	0.23
Specialist	0.26	0.39	0.34	0.21	0.24
Nurse practitioner, physician's assistant or midwife	0.13	0.13	0.14	0.11	0.20
Hospital stay in last 12 months	0.19	0.21	0.25	0.17	0.20
ER visit in last 12 months	0.36	0.41	0.44	0.33	0.36
More than 1 ER visit in last 12 months	0.18	0.23	0.24	0.17	0.16
Flu shot in last 12 months	0.19	0.28	0.27	0.16	0.18
Sample Size	8193	1667	536	5031	959

Source: 1997-2001 National Health Interview Survey

Outcome	Assuming All Under FFS	Model 1	Model 2		Sample Size
		Change Under MMC	Change Under Mandatory HMO	Change Under Other MMC	
Has usual source of care other than the ER	0.912	0.005	0.028	-0.001	1606
In the last 2 weeks					
Contact with a physician	0.421	-0.060 *	-0.051	-0.062 *	1620
Over the last 12 months					
Any contact with any health care provider	0.964	-0.036 **	-0.047 **	-0.034 **	1589
Any office visit to any provider	0.941	-0.052 ***	-0.065 ***	-0.049 **	1565
Over the last 12 months, contact with					
A general medical doctor	0.484	0.056	0.055	0.056	1573
More than 9 doctor visits in last 12 months	0.423	0.022	0.100 *	0.002	1612
Specialist	0.423	-0.038	-0.088 *	-0.027	1595
Nurse practitioner, physician's assistant or midwife	0.104	0.034	0.022	0.037	1595
Hospital stay in last 12 months	0.205	0.028	-0.005	0.035	1615
ER visit in last 12 months	0.462	-0.047	-0.014	-0.054	1620
More than 1 ER visit in last 12 months	0.266	-0.029	0.035	-0.043	1620
Flu shot in last 12 months	0.345	-0.061	-0.103	-0.052	1583

Source: 1997-2001 National Health Interview Survey

* (**) (***) Significantly different from zero at the .10 (.05) (.01) level, two-tailed test.

Outcome	Assuming All Under FFS	Model 1	Model 2		Sample Size
		Change Under MMC	Change Under Mandatory HMO	Change Under Other MMC	
Has usual source of care other than the ER	0.853	0.053 ***	0.054 ***	0.052 **	4902
In the last 2 weeks					
Contact with a physician	0.187	0.016	0.020	0.014	4924
Over the last 12 months					
Any contact with any health care provider	0.880	0.012	0.011	0.012	4863
Any office visit to any provider	0.825	0.021	0.017	0.022	4850
Over the last 12 months, contact with					
A general medical doctor	0.615	-0.013	-0.019	-0.009	4833
More than 9 doctor visits in last 12 months	0.170	0.022	0.037	0.013	4911
Specialist	0.198	0.002	0.001	0.003	4873
Nurse practitioner, physician's assistant or midwife	0.065	0.046 ***	0.038 **	0.051 ***	4869
Hospital stay in last 12 months	0.137	0.038 *	0.049 **	0.030	4924
ER visit in last 12 months	0.319	0.003	-0.010	0.011	4927
More than 1 ER visit in last 12 months	0.135	0.030	0.017	0.039 *	4927
Flu shot in last 12 months	0.149	0.010	0.001	0.016	4839

Source: 1997-2001 National Health Interview Survey

* (**) (***) Significantly different from zero at the .10 (.05) (.01) level, two-tailed test.

Outcome	Assuming All Under FFS	Model 1	Model 2		Sample Size
		Change Under MMC	Change Under Mandatory HMO	Change Under Other MMC	
Has usual source of care other than the ER	0.908	-0.003	0.010	-0.007	513
In the last 2 weeks					
Contact with a physician	0.323	0.021	-0.081	0.069	519
Over the last 12 months					
Any contact with any health care provider	0.935	0.016	0.038	0.007	511
Any office visit to any provider	0.914	0.013	-0.001	0.018	508
Over the last 12 months, contact with					
A general medical doctor	0.390	0.071	-0.029	0.113 *	513
More than 9 doctor visits in last 12 months	0.409	-0.045	0.022	-0.074	515
Specialist	0.342	0.003	0.063	-0.024	517
Nurse practitioner, physician's assistant or midwife	0.100	0.093 **	0.097	0.091 **	513
Hospital stay in last 12 months	0.251	0.030	0.023	0.033	517
ER visit in last 12 months	0.499	-0.078	-0.077	-0.079	519
More than 1 ER visit in last 12 months	0.241	0.034	0.068	0.018	519
Flu shot in last 12 months	0.283	-0.042	0.039	-0.079	511

Source: 1997-2001 National Health Interview Survey

* (**) (***) Significantly different from zero at the .10 (.05) (.01) level, two-tailed test.

Outcome	Assuming All Under FFS	Model 1	Model 2		Sample Size
		Change Under MMC	Change Under Mandatory HMO	Change Under Other MMC	
Has usual source of care other than the ER	0.901	0.008	-0.016	0.018	851
In the last 2 weeks					
Contact with a physician	0.236	-0.025	-0.070 **	-0.003	939
Over the last 12 months					
Any contact with any health care provider	0.893	0.024	0.024	0.024	864
Any office visit to any provider	0.865	0.030	0.001	0.040	917
Over the last 12 months, contact with					
A general medical doctor	0.499	0.025	0.019	0.028	923
More than 9 doctor visits in last 12 months	0.238	-0.007	-0.015	-0.002	937
Specialist	0.226	0.010	-0.030	0.032	932
Nurse practitioner, physician's assistant or midwife	0.199	0.017	0.030	0.011	933
Hospital stay in last 12 months	0.227	-0.038	-0.052	-0.032	939
ER visit in last 12 months	0.364	0.001	-0.109 **	0.055	939
More than 1 ER visit in last 12 months	0.169	-0.007	-0.098 **	0.043	939
Flu shot in last 12 months	0.178	-0.005	0.003	-0.009	924

Source: 1997-2001 National Health Interview Survey

* (**) (***) Significantly different from zero at the .10 (.05) (.01) level, two-tailed test.

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