

NBER WORKING PAPER SERIES

SELECTION, MARKETING, AND  
MEDICAID MANAGED CARE

Sherry Glied  
Jane Sisk  
Sheila Gorman  
Michael Ganz

Working Paper 6164  
<http://www.nber.org/papers/w6164>

NATIONAL BUREAU OF ECONOMIC RESEARCH  
1050 Massachusetts Avenue  
Cambridge, MA 02138  
September 1997

This research was funded, in part, by a grant from the Commonwealth Fund. The authors thank Susan Ettner for very useful comments and A. Bowen Garrett for his comments and programming assistance. Karuna Patel provided able research assistance. This paper is part of NBER's research program in Health Care. Any opinions expressed are those of the authors and not those of the National Bureau of Economic Research.

© 1997 by Sherry Glied, Jane Sisk, Sheila Gorman and Michael Ganz. All rights reserved. Short sections of text, not to exceed two paragraphs, may be quoted without explicit permission provided that full credit, including © notice, is given to the source.

Selection, Marketing, and Medicaid Managed Care  
Sherry Glied, Jane Sisk, Sheila Gorman  
and Michael Ganz  
NBER Working Paper No. 6164  
September 1997  
JEL No. I11  
Health Care

### **ABSTRACT**

In several states, the Medicaid program allows beneficiaries a choice among multiple managed care plans and traditional Medicaid. This paper uses data from a survey of New York City Medicaid beneficiaries enrolled in conventional Medicaid and in five Medicaid managed care plans to examine the effect of plan selection on measures of satisfaction with care, access to a regular source of care, and utilization of ambulatory and emergency room services. We use information on health status to evaluate selection on observable characteristics; variation in geographic patterns of enrollment to investigate selection on unobservable characteristics; and survey responses to questions about source of information about a plan to study selection responses to plan marketing.

We find that managed care enrollees differed from those who remained in traditional Medicaid on both observable and unobservable characteristics. Adjusting for population differences reduced the positive effect of managed care on satisfaction with care and eliminated the apparent utilization savings from managed care, but did not reduce the positive effect of managed care on access to regular care. Enrollees in different managed care plans did not differ substantially in terms of their observable health-related characteristics. They did, however, differ on unobservable characteristics in ways that affected measures of satisfaction, access, and utilization.

We find that there are significant differences in the health-related characteristics of plan enrollees who learned about plans in different ways. Enrollees who learned about plans from plan representatives were healthier than those who learned about plans from city income support staff. This evidence suggests that marketing practices can be a contributor to selection. Differences in marketing, however, also had direct effects on patterns of use of health services that should be considered in making marketing policy decisions. Enrollees who learned about plans from plan representatives were more likely to report that they had a regular physician at their usual source of care and made fewer emergency room visits.

Sherry Glied  
Division of Health Policy and Management  
Columbia School of Public Health  
600 West 168th Street, 6th Floor  
New York, NY 10027  
and NBER  
sagl@columbia.edu

Jane Sisk  
Division of Health Policy and Management  
Columbia School of Public Health  
600 West 168th Street  
New York, NY 10027

Sheila Gorman  
Division of Health Policy and Management  
Columbia School of Public Health  
600 West 168th Street  
New York, NY 10027

Michael Ganz  
Division of Sociomedical Sciences  
Columbia School of Public Health  
600 West 168th Street, 7th Floor  
New York, NY 10027

Health programs in the private and public sector have increasingly turned to managed care as a way to control costs while maintaining the quality of care. In most States, the Medicaid program now offers beneficiaries a choice between multiple managed care plans and traditional Medicaid or a choice among competing managed care plans. Programs that permit beneficiary choices in this way raise three related problems. First, some plans may attract healthier beneficiaries than other plans or traditional Medicaid. If favorable selection occurs between managed care and traditional Medicaid, managed care may not lead to cost-savings or quality improvements for the program as a whole. In the past, this pattern has characterized the performance of the Medicare managed care program (Brown, Clement, et al. 1993). Second, selection between managed care plans may lead some efficient, high quality plans to drop out of the Medicaid program altogether. In the private sector, selection that occurs in the course of competition among health plans has led high cost plans to stop offering benefits in some markets (Cutler and Remer, 1997). Third, beneficiaries may not have the information they need to make appropriate choices between plans. Beneficiaries may be misinformed about the functioning or benefits of managed care or of particular plans. Misinformed beneficiaries are likely to be more dissatisfied with managed care than well-informed beneficiaries, once they learn the rules.

Analysts have been particularly concerned about the possibility that selection or misinformation might be a consequence of direct health plan marketing (Physician Payment Review Commission, 1996). In New York City, concern over such marketing-related misinformation led the office of managed care to suspend enrollment in the city's Medicaid managed care initiative in the summer and fall of 1995.

Extensive prior research on managed care has examined the extent of selection between competing health plans and between managed care and fee-for-service plans in the private sector

and in the Medicare program (see, for example, Brown, Clement et al., 1993; Robinson and Gardner, 1995). Analyses of the Medicaid program have also found evidence that healthier patients are more likely to choose HMOs (West et al., 1996; Sisk et al., 1996). Analyses of marketing practices have focused on the Medicare program (Branch, Coulam, and Zimmerman, 1995; Lichtenstein et al., 1992; Porell and Turner, 1990). In general, these analyses have suggested that marketing practices have little influence on selection. An analysis of marketing practices among Medicaid beneficiaries found that different beneficiaries were attracted by different forms of marketing, with film being the most effective marketing strategy for beneficiaries who already had a usual source of care (Andrews et al., 1989). That analysis did not examine the relationship between marketing and selection.

In this analysis, we examine the determinants and consequences of Medicaid and plan choice in New York City's managed Medicaid initiative. This initiative began in January 1993 and had enrolled 26% of all Medicaid beneficiaries by July 1995. Those who joined managed care were exempt from the cost-sharing provisions then in effect in traditional Medicaid. In prior research, we showed that a random sample of enrollees were generally more satisfied with their care than a sample of enrollees in conventional Medicaid (Sisk et al., 1996). Measures of access tended to favor managed care, while measures of utilization showed little difference between managed care and conventional Medicaid. Furthermore, we found relatively few differences in satisfaction among enrollees in different Medicaid managed care plans, but larger differences in access (Gorman et al., 1997). Our prior results are qualified by the non-experimental nature of the survey design. Most enrollees in New York City managed Medicaid (with the exception of

those in a mandatory demonstration project in Southwest Brooklyn) voluntarily chose to join Medicaid plans.

New York City's managed Medicaid initiative explicitly discouraged enrollment among those with adverse health conditions who had established relationships with health providers. This group are likely to be in worse health than other enrollees. In our previous research, we identified (and controlled for) statistically significant differences in health and sociodemographic characteristics between managed care and traditional Medicaid enrollees using information we collected in our survey of enrollees. In this analysis, we explore the determinants of managed care enrollment, including the role of plan marketing, and assess the effect of selection on measures of satisfaction, access, and utilization.

### Hypotheses

While it is clear that beneficiary and plan choices may bias estimates of the effects of managed care, and of specific plans, on satisfaction, access, and utilization, the direction of these potential biases is not obvious. The usual concern in the literature on selection is that those who choose managed care plans are apt to be healthier than those who remain with their usual provider. We might expect healthier people to be more satisfied with their care, less likely to use services, and less likely to have a usual source of care or usual doctor (because they use fewer services).

Other factors are also likely to affect the choice of joining managed care (or a specific plan). Those who are dissatisfied with their existing care (perhaps because they have no usual doctor or because they always use the emergency room) are more likely to change than those who are satisfied. To the extent that this is true, the measured effect of managed care on

satisfaction, access, and emergency room use, will be biased toward zero, since few dissatisfied people will be expected to remain in the fee-for-service sector. Voluntary switchers may report more satisfaction with their choice, simply because they chose it. Switchers may also differ from non-switchers in their ability to make use of the health care system, biasing estimates of the effect of managed care on access. Those who are confident about their ability to understand managed care may be more likely to switch, and this group is also more likely to have a usual source of care.

Unobserved characteristics other than health status may also lead to utilization outcome measures that favor managed Medicaid over fee-for-service care. For example, while reliance on the emergency room may induce some people to switch to managed care, other emergency room users may choose not to join because they do not want to give up their access to the emergency room. People with a high propensity to use services who have successfully negotiated barriers in traditional Medicaid may be reluctant to join a new system. We test the hypothesis that managed care enrollment has no effect on satisfaction, access, or utilization under alternate specifications.

Five specific managed care plans are included in the dataset we are examining. One of them, HIP, is a long-standing group model HMO. A second, MetroPlus, was initially designed around the clinic operating in one New York City municipal hospital, and now includes the various clinics and hospitals of the City municipal hospital system. Two of the others, US Healthcare and Oxford Health Plans, are large, commercial HMOs. The final plan, Primecare, was a not-for-profit, Medicaid-specific managed care plan that was capitated for ambulatory service use only. HIP is likely to include sicker Medicaid beneficiaries than the other plans, because it had a large established patient population before the beginning of the initiative. Mean

length of time in HIP was five times as long as the average in the other plans. Again, we test the hypothesis that selection among plans does not affect satisfaction, access, or utilization.

One way that selection may occur is through marketing practices. Several plans stationed plan representatives in income support offices to encourage beneficiaries to join. These representatives could have focused on healthier-looking beneficiaries and discouraged those with obvious health problems from joining. Thus, we might expect plan marketing strategies to improve the apparent standing of plans with respect to satisfaction and to reduce service utilization. On the other hand, plan representatives may have been better than income support center staff in explaining plan details to new enrollees. Plan representatives could better inform patients about rules governing emergency room use and choice of physician. We test the hypotheses that marketing strategies are unrelated to the characteristics of those who enrol in a plan and do not affect satisfaction, access, or utilization.

Data

The design of the New York City managed care survey is described in Sisk, et al., 1996. We drew a random sample of 2,500 New York City Medicaid beneficiaries enrolled in 5 managed care plans (HIP, Oxford Health Plans, Metroplus, US Healthcare, and PrimeCare New York) from New York State records. Interviews were completed with 52% of those eligible from August to December 1994. The survey was conducted in successive rounds by telephone, mail, and personal interview. Interviews were completed with 71% of those sampled who had valid telephone numbers. The response rate compares favorably with those for similar surveys of this population (Sisk et al., 1996). We compared respondent and non-respondent characteristics using administrative data. The two groups did not differ in gender, aid category, or residence in

the mandatory demonstration enrollment area in Southwest Brooklyn. Non-respondents were 2 years younger than respondents, on average.

The data available for analysis consist of interviews conducted with 1038 managed care enrollees and 410 beneficiaries enrolled in conventional Medicaid. For these analyses, we restrict the sample to the 961 beneficiaries who were eligible for Medicaid under AFDC and who had complete data available for all survey questions. All those sampled had been enrolled in a plan or eligible for Medicaid for at least 6 months.

Survey data include information about respondent health, socioeconomic status, and experience with managed care. In addition to the variables described in our prior research, the survey also asked managed care enrollees how they had learned about their managed care plan -- City Income Support Center staff, friends/relatives; representative of the plan; advertisement (a very small percentage of the population, whom we group into the "other" category), or other. The data also include respondent's zip code of residence. We group contiguous zip codes into 17 large geographic areas (e.g., Northern Manhattan, Southwest Brooklyn) with 5 or more beneficiaries in each. Table 1 provides summary statistics on the demographic variables, health variables, zip code variables included in the analyses that follow and on the satisfaction, access, and utilization outcomes we examine below for managed care and traditional Medicaid beneficiaries.

## Methods

Our analysis is in three parts. First, we examine the role of selection into managed care on satisfaction, access to regular care, and utilization. We compare analyses that control for demographic variables only with analyses that also include a full set of health variables



(including self-reported health, chronic conditions, and health limitations). In most of the city, enrollment into managed care was voluntary, but in one area in Southwest Brooklyn, managed care enrollment was mandatory for most Medicaid recipients (although many of those who enrolled chose to do so voluntarily). We use the geographic variation in managed care enrollment to construct instrumental variables estimates of the effects of managed care. As a check on these IV estimates, we compare satisfaction, access, and utilization for beneficiaries enrolled in managed care in Southwest Brooklyn (where enrollment was mandatory), with these outcomes for beneficiaries enrolled in fee-for-service Medicaid in other parts of the city.

Although some people with health problems were exempted from enrolling under the Medicaid demonstration project in Southwest Brooklyn, managed care plan enrollees in this area of the city are likely to be more like fee-for-service enrollees on all dimensions than managed care enrollees in the rest of the city. Conversely, fee-for-service beneficiaries outside Southwest Brooklyn are likely to be more like average fee-for-service enrollees than those in Southwest Brooklyn.

Second, we examine the effects of selection on satisfaction, access to regular care, and utilization across plans. Again, we compare the effect of controlling for demographic variables with the effect of also controlling for health status. Plans differed significantly in where they focused their enrollment efforts. At this early stage of the managed care initiative in New York City, these geographic differences in enrollment across broad areas of the city are unlikely to reflect deliberate attempts by plans to target healthier populations. The broad geographic regions of residence we study are not important independent determinants of satisfaction, access, or service utilization either in managed care/non-managed care comparisons or in comparisons

across plans<sup>1</sup>. Differences in enrollment are more likely a consequence of longstanding arrangements between plans and providers. For example, MetroPlus, a city-operated plan, grew out of a health clinic operating at Metropolitan Hospital in Northern Manhattan. Most of those enrolled in this plan whom we surveyed lived in the area around Metropolitan Hospital (Northern Manhattan and the South Bronx). Since then, enrollment has spread to areas near other municipal hospitals. Similarly, Primecare was developed to involve practicing physicians in low income areas in managed care and geographic patterns of enrollment in the plan depended on the location of these physicians. Again, we use instrumental variables estimates based on this geographic variation to examine the effects of selection on outcomes.

As a check on the cross-plan instrumental variables estimates, we collapsed the broad 17 geographic areas into five New York City boroughs (Bronx, Brooklyn, Queens, Manhattan, and Staten Island). The boroughs are internally heterogeneous and it seems unlikely that a plan would deliberately target one borough rather than another in order to attract lower utilizers. In each of the five boroughs, no more than two of the five plans accounted for over 70% of surveyed managed care enrollment, but a different pair predominated in each borough. The results using borough-based instrumental variables estimates were not substantially different (but were measured with more error) than those using the 17 geographic areas.

Finally, we study the role of marketing practices on selection and outcomes. We compare the characteristics of beneficiaries who learned about plans in different ways, and look at

---

<sup>1</sup>. This strong correlation between geographic region and managed care (or plan) enrollment, combined with the limited correlation between geographic region and outcome measures, suggests that these regions are acceptable instruments.

differences in the plans they join. We then test the effect of marketing on satisfaction, access, and utilization patterns.

### Selection into Managed Care

New York City's Medicaid managed care plan explicitly encouraged the enrollment of healthy patients who did not have longstanding relations with specific physicians. Consistent with these rules, analysis of our survey data suggest that there are large and systematic differences between Medicaid beneficiaries enrolling in managed care and those who choose to remain in the fee-for-service system. Sociodemographic characteristics explain about 3% of the variation in managed care enrollment (pseudo- $R^2$  from a logistic regression). Adding self-reported health status, physical and emotional health problems, and 13 chronic condition variables increases the amount of variation explained to 7% (likelihood ratio test for significance of health variables  $p < 0.05$ ). Adding 17 zip code variables increases the variation explained to 10% (likelihood ratio test for significance of zip code variables  $p < 0.05$ ). Not surprisingly, most of the geographic variation in enrollment comes from the difference between residents of Southwest Brooklyn and residents of other parts of the city. Excluding Southwest Brooklyn, the geographic variables have essentially no influence on the decision to join managed care.

Selection is likely to bias outcome measures if poor health status tends to reduce satisfaction with medical care or increase use or access. We find that those who report that their overall health is fair or poor are more than twice as likely to report that their medical care is fair or poor as are those who report very good or excellent health ( $p < 0.01$ ). We also find that those in fair or poor health are less likely to report having a usual source of care ( $p < 0.01$ ) and somewhat less likely to report seeing a regular doctor at that source of care. We find no

statistically significant differences in emergency room or clinic use according to general health status.

We next investigate how these patterns of enrollment affect satisfaction with care, access to care, and utilization of health care services. In our prior research, we showed that satisfaction with managed care (relative to fee-for-service care) differed at different levels of satisfaction, so that ordered logit analysis was not appropriate. Managed care enrollees were much more likely to report excellent satisfaction as were fee-for-service enrollees, but were also almost as likely to report poor satisfaction as were their fee-for-service counterparts. Thus, we examine four levels of overall satisfaction with medical care. In order to simplify comparisons among specifications, we also report regression analyses of the five-level satisfaction variable. We report results for satisfaction variables in Table 2.

The first row of Table 2 reports results of satisfaction analyses that use demographic data only. These analyses suggest that managed care enrollees are substantially and significantly more satisfied with their care than are those enrolled in fee-for-service Medicaid. The effect of managed care is greater at higher levels of satisfaction than at lower levels. In the second row, we control for a set of health variables. These controls uniformly reduce the magnitude of the managed care effects, but they remain sizable and often significant. The third row contains results of instrumental variables regressions based on geographic variation in enrollment. The standard errors from using predicted enrollment are much larger than those from the uninstrumented analyses<sup>2</sup>. Using the IV estimates, the effect of managed care remains (generally) positive, although it is no longer significant. The pattern of managed care effects,

---

<sup>2</sup>. We adjust the standard errors for the IV estimates using the method suggested by Murphy and Topel (1985). This adjustment has very little effect on the estimated standard errors.

however, is quite different using the IV estimates. Managed care has the strongest effect at the lowest levels of satisfaction. The final row of the Table presents estimates contrasting mandatory managed care enrollees with those in voluntary fee-for-service insurance. These estimates are uniformly positive, but not statistically significant. Again, selection appears to bias upward the estimate of the effect of managed care on excellent satisfaction, while biasing downward the effect of managed care on fair or better satisfaction.

We focus on two access measures: having a usual source of care and seeing the same clinician at the usual source of care. We use logistic regression to compare outcomes on access measures. We also examine self-reported data on utilization of emergency room and ambulatory care. We report results for access and utilization variables in Table 3.

Managed care has persistently positive and significant effects on access to a regular source of care. Controlling for health status has almost no effect on the estimates. The IV estimate of usual source of care is extremely imprecise (therefore not reported), but the estimate using Southwest Brooklyn data suggests that, if anything, selection leads to downward bias in estimates of the effect of managed care on access. The odds of having a regular doctor at the usual source of care are also strongly positively related to managed care enrollment, although the selection-corrected point estimates are lower than the uncorrected estimates. In general, our results suggest that managed care has strong and significantly positive effects on access to care.

Managed care has no large or significant effect on the odds of any clinic or outpatient visit under any specification. Managed care enrollees who do make visits appear to make fewer visits than those in regular Medicaid, but the size and significance of this result are reduced in the selection-corrected estimates. Finally, managed care appears to increase the odds of Emergency

Room use, particularly after correcting for selection, while reducing the number of emergency room visits made conditional on any visits. We combine the results for any use and those for number of visits using the method suggested by Duan et al. (1983) and Duan (1983). Our results suggest that the measured dollar effects of Medicaid managed care in New York City on utilization costs in clinics and emergency rooms are biased downward by failure to correct for effects of selection on both observable and unobservable characteristics. Based on New York State fee-for-service payment rates for office and emergency room visits in 1994 (\$7 for an office visit and \$95 for an emergency room visit), the uncorrected six month average ambulatory and emergency room cost for managed care beneficiaries was \$9.35 lower than that for beneficiaries in traditional Medicaid. The Southwest Brooklyn estimates, however, suggest that if the entire population used services at managed care rates, per beneficiary ambulatory and emergency room costs would increase by \$1.41.

#### Selection Among Managed Care Plans

Next, we turn to issues of selection between managed care plans. We confine our sample to Medicaid beneficiaries who had chosen to enroll in managed care and examine the effect of plan choice on their satisfaction, access, and service utilization. We find that health characteristics collected in the survey do not contribute significantly to the choice of plan (likelihood ratio test after combining rare conditions that do not occur in every plan;  $p < 0.40$ ). Selection into specific plans may, however, be correlated with unobserved health or other characteristics that affect satisfaction, access, and use. There is substantial geographic variation in enrollment in different managed care plans. Adding geographic areas to a multinomial logistic

analysis of plan choice increases the share of variation explained from 14% to 48% (likelihood ratio test  $p < 0.01$ ).

In Table 4, we examine the effects of controlling for demographic characteristics (first set of rows), health status characteristics (second set of rows), and instrumented enrollment based on geographic area of residence (third set of rows) on satisfaction with different managed care plans. In unreported analyses, we also examined the effect of controlling for length-of-time in plan<sup>3</sup>. Length of time in plan did not have substantial effects on satisfaction, access, or utilization. In addition to odds ratios and coefficients, we report likelihood ratio or F-tests for the joint significance of all plan variables. The analysis using demographic variables only suggests that USHealthcare performs slightly better in satisfaction than HIP (and other plans). In general, odds ratios for satisfaction tend to favor other plans over HIP.

Controlling for observed health status has little effect on these results. The instrumental variables results reported in the third set of rows are much more precisely measured than those in the preceding analysis, a consequence of the substantial geographic variation in plan enrollment<sup>4</sup>. In general, these results suggest that selection did skew satisfaction measures. Rather than falling behind on satisfaction measures, HIP beneficiaries appear to be generally more satisfied with their care than enrollees in the other plans. The apparent advantage of the commercial plans is completely erased in the IV estimates. Differences between the other four plans are never significant.

---

<sup>3</sup>. We did not include this variable in the main analyses because length of time in plan is clearly not exogenous to the choice of plan and cannot be included in the first stage of the IV estimates.

<sup>4</sup>. We were not able to use the Murphy and Topel (1985) method to adjust these standard errors because some health plans had no enrollment in some geographic areas, leaving empty cells in the variance-covariance matrix. This omission is unlikely to significantly affect our results given the result that the correction made little difference in the managed care/non-managed care analyses.

Table 5 compares the effect of plan choice on access and service utilization. We do not examine having a usual source of care because there is too little variation among plans to make the results meaningful. Controlling for health status does not change the estimated effects of plan choice on any of the outcomes of interest. The instrumental variables estimates for same physician tend to be more favorable to HIP than the uncorrected estimates and the instrumental variables estimates also suggest that odds of any clinic use in HIP are lower, rather than higher, than in other plans. The instrumental variables estimates tend to reduce the performance of HIP with respect to limiting emergency room use. Combining estimates of any utilization and level of utilization and weighting by prices suggests that while HIP has average clinic use somewhat higher than the average of the other plans in uncorrected analyses, clinic use is lower (by about the same amount) in selection-corrected analysis. Emergency room use in HIP is somewhat higher than the average in uncorrected analyses, but the estimated increase in emergency room use is actually twice as high in selection-corrected analyses.

We compute the effects of selection on resource use by comparing costs for HIP and Metroplus (which has the lowest utilization coefficients in the uncorrected specification) using the uncorrected and corrected specifications. We assign fee-for-service Medicaid costs to office visits and emergency room use. According to the uncorrected specification, resource use for visits and emergency room use is \$23.96 less in Metroplus than in HIP over six months. In the selection-corrected specifications, HIP uses \$4.60 fewer resources over this period per enrollee than does Metroplus.



## Selection and Marketing

The results of our instrumental variables analysis suggest that selection among plans does play a part in the observed differences in satisfaction, access, and utilization. Using data on sources of information about plans collected in our survey, we examine whether this biased selection is related to the marketing process.

Under New York City's managed care initiative (as it operated in the period of our survey), Medicaid beneficiaries could learn about specific managed care plans through the staff at city income support centers, through plan representatives who worked in the income support centers, through friends and relatives, and through advertisements posted by the plans. Our survey asked participants how they had learned about the managed care plan they chose. As Table 6 indicates, there were substantial differences among plan enrollees in how they learned about plans. Those who chose HIP, the oldest of the plans in our study, for example, were much more likely to have learned about the plan through friends or relatives. Those who joined either of the two commercial plans (Oxford and USHealthcare) were more likely to have learned about plans through city income support center staff. Finally, those who joined Primecare or Metroplus, two HMOs specifically organized to enroll Medicaid beneficiaries, were most likely to report that they learned about their plan through a plan representative. These two plans had undertaken major marketing initiatives related to Medicaid. These differences remain in multivariate analysis ( $p < 0.01$ ).

To what extent did these marketing differences influence the selection of healthier than average beneficiaries? Health characteristics are significantly correlated with the way a recipient learned about a health plan ( $p < 0.05$ ). It is difficult to interpret the results on any specific health

characteristic, but those who learned about plans from city income support center staff were somewhat less likely to report excellent or very good health than those who learned about plans in other ways (this result persists after controlling for whether beneficiaries were residents of Southwest Brooklyn).

In Table 7, we examine the effect of source of information about a plan on satisfaction. The inclusion of source of plan information has almost no effect on the plan coefficients. Marketing differences are not the source of the plan selection effects identified in the analysis of satisfaction above. Marketing does, however, have a direct effect on satisfaction. Those who learned about plans through plan representatives and other sources were significantly more likely to be satisfied with their plan than those who learned about their plan through a city income support center (the pattern of results persists after controlling for residence in Southwest Brooklyn). Plan representatives may have selected people more likely to express satisfaction with care (because they were healthier or had fewer--or more--complaints about their current care). Alternatively, speaking to a plan representative may, in itself, have improved satisfaction with a managed care plan.

In Table 8, we examine the effects of marketing practices on access and service utilization. The results for access are quite striking. People who learned about a plan through a friend or a plan representative have odds over twice as high of having a regular doctor as those enrolled through city income support centers, even after controlling for their health plan, demographic characteristics, and health status. Marketing practices have similar effects on emergency room use. Enrollees who learned about a plan from a representative or friend (or other source) had much lower emergency room use than those who learned about a plan through

city income support centers. Marketing practices have little effect on ambulatory utilization (except that people who learned about plans through friends have fewer visits).

### Conclusions

Selection issues are an important concern in any system of competing health plans. Selection between managed care and fee-for-service care is likely to be different in Medicaid than in private insurance. Many fee-for-service Medicaid beneficiaries report limited access to providers and their access to care may improve, rather than becoming more limited, after they join managed care. About 1/4 of the respondents in the New York City survey reported that they had joined managed care to get better access to care. Nonetheless, it is likely that those who have been most successful in obtaining services in traditional Medicaid will be least likely to join managed care. Our results support the hypothesis that selection affects estimates of utilization savings between plans and between managed care and fee-for-service care, even in Medicaid. Our results also show that selection can affect measured satisfaction ratings. People who join managed care are, in observed and unobserved ways, the sort of people who are more likely to be satisfied with their care.

We do not find evidence of selection on the basis of health characteristics occurring among managed care plans. Since the benefit structure of these plans is uniform, selection on health characteristics between plans may be more likely to occur through selective disenrollment rather than selective enrollment. Nonetheless, unobserved differences in plan enrollees characteristics affect their access to care, utilization of care, and satisfaction with care.

Our results with respect to plan marketing present a quandary. We find that how people learn about plans is indeed correlated with their health status, suggesting that selection through

marketing is a real concern. On the other hand, direct marketing appears to give plans a valuable opportunity to inform beneficiaries about how to use managed care. Rather than being misled about the strengths and limitations of managed care, those who learned about plans through plan representatives or friends were more likely to use managed care “right.” They were more likely to have a regular doctor and had lower emergency room utilization. Combining efforts to reduce selection by limiting direct marketing with a mechanism for providing new enrollees with adequate information is likely to yield a more efficient Medicaid managed care system.

Table 1: Summary Statistics

	Managed (n=752)		Non-Managed (n=209)	
	Mean	S.D.	Mean	S.D.
Age	31.76	8.76	31.91	9.71
Female	0.93	0.26	0.88	0.33
White	0.15	0.36	0.08	0.27
Black	0.37	0.48	0.29	0.45
Hispanic	0.44	0.50	0.58	0.49
High School	0.32	0.47	0.33	0.47
College	0.33	0.47	0.22	0.41
# Kids<6	0.80	0.93	0.77	0.98
Working	0.14	0.35	0.16	0.37
Physical limits	0.34	0.47	0.43	0.50
Emotional Limits	0.53	0.50	0.55	0.50
Fair health	0.17	0.38	0.28	0.45
Good health	0.32	0.47	0.33	0.47
Very good health	0.27	0.44	0.19	0.39
Excellent health	0.20	0.40	0.15	0.36
Hypertension	0.15	0.36	0.19	0.39
Hearing Problems	0.04	0.19	0.06	0.24
Heart Disease	0.04	0.20	0.10	0.30
Diabetes	0.06	0.24	0.07	0.25
Allergies	0.17	0.37	0.13	0.34
Lung Disease	0.11	0.31	0.10	0.30
Back Problems	0.09	0.28	0.12	0.33
Arthritis	0.09	0.29	0.17	0.38
AIDS	0.01	0.11	0.01	0.10
Drinking	0.01	0.10	0.03	0.18
Cancer	0.01	0.10	0.01	0.10
Other Condition	0.09	0.28	0.06	0.23
Satisfaction=Excellent	0.12	0.33	0.07	0.26
Satisfaction=V. Good or Better	0.36	0.48	0.24	0.43
Satisfaction=Good or Better	0.73	0.44	0.67	0.47
Satisfaction=Fair or Better	0.94	0.24	0.92	0.27
Usual Source of Care	0.96	0.19	0.90	0.30
Regular Doctor	0.88	0.32	0.69	0.46
Any Clinic Visits	0.69	0.46	0.66	0.48
Clinic Visits if Any	2.98	2.40	3.52	3.11
Any emergency room	0.27	0.45	0.23	0.42
emergency room Visits if Any	1.98	1.56	2.65	2.03

...Table 1: Summary Statistics continued

HIP	0.20	0.40
USHealthcare	0.24	0.43
Oxford	0.24	0.43
Metroplus	0.14	0.35
Primecare	0.19	0.39
Learned through income support center	0.41	0.49
Learned through Friend	0.14	0.35
Learned through Plan Representative	0.33	0.47
Other Source	0.12	0.32

---

Table 2: Satisfaction with Care: Managed Care vs. Non-Managed Care  
N=961

	OLS	<u>Satisfaction scores with Different Breaks</u>			
		Excellent (odds) $\psi$	Vgood (odds)	Good (odds)	Fair (odds)
Baseline	0.26** (0.08)	1.81* (0.55)	1.87** (0.34)	1.32# (0.23)	1.34 (0.40)
Health	0.15# (0.08)	1.60 (0.49)	1.57* (0.31)	1.13 (0.22)	1.29 (0.39)
IV	0.21 (0.43)	0.08 (0.13)	1.38 (1.38)	3.37 (3.44)	8.59 (16.67)
SW	0.12 (0.11)	1.18 (0.51)	1.33 (0.38)	1.29 (0.38)	1.85 (0.87)

Baseline estimates control for age, sex, race, ethnicity, education, number of children under 6, and employment status. Health estimates also control for self-rated health (5 point scale), emotional and physical health limitations, and 13 chronic conditions. IV estimates from equation using 16 geographic dummy variables. SW Brooklyn estimates contrast managed care enrollees in Brooklyn with non-managed care enrollees outside Brooklyn.

Instrumental variables standard errors corrected using method suggested by Murphy and Topel (1985).

$\psi$  Analysis combines three chronic condition codes.

\*\* Significant at 1%; \* Significant at 5%; # Significant at 10%

Table 3: Access and Utilization Variables: Managed Care vs. Non-Managed Care  
n=961

	Usual Source of Care (Odds) $\psi$	Same Doctor (Odds) $\psi$	Any Visits (Odds)	Log # of Visits if any (Reg.)	Any emergenc y room (Odds)	Log # of emergenc y room Visits if any (Reg.) $\psi$
Baseline	2.88** (0.89)	3.22** (0.62)	1.18 (0.20)	-0.09 (0.07)	1.24 (0.23)	-0.27* (0.11)
Health	2.69** (0.88)	3.31** (0.66)	1.20 (0.20)	-0.09 (0.07)	1.27 (0.24)	-0.30** (0.11)
IV		1.66 (1.93)	0.95 (0.87)	0.08 (0.38)	2.54 (2.47)	-0.61 (0.53)
SW	6.40* (4.09)	2.67** (0.80)	1.07 (0.26)	0.003 (0.11)	2.04* (0.55)	-0.37* (0.18)

Baseline estimates control for age, sex, race, ethnicity, education, number of children under 6, and employment status. Health estimates also control for self-rated health (5 point scale), emotional and physical health limitations, and 13 chronic conditions. IV estimates from equation using 16 geographic dummy variables. SW Brooklyn estimates contrast managed care enrollees in Brooklyn with non-managed care enrollees outside Brooklyn.

\*\* Significant at 1%; \* Significant at 5%; # Significant at 10%

$\psi$  Analysis combines three chronic condition codes.



Table 4: Satisfaction with Care: Plans Relative to HIP  
n=717

	OLS	<u>Satisfaction scores with Different Breaks</u>			
		Excellent (odds)	Vgood (odds)	Good (odds)	Fair (odds)
<u>Demographics Only</u>					
USHealth	0.18 (0.12)	0.91 (0.31)	1.47 (0.36)	1.70* (0.45)	1.34 (0.76)
Oxford	0.03 (0.12)	0.82 (0.27)	1.19 (0.29)	1.04 (0.28)	1.16 (0.67)
Metroplus	-0.15 (0.14)	0.79 (0.31)	1.10 (0.31)	0.73 (0.21)	0.28* (0.14)
Primecare	-0.01 (0.13)	0.70 (0.27)	1.91* (0.50)	0.78 (0.21)	0.28* (0.14)
Joint Plans	n.s.	n.s.	#	*	*
<u>Demographics and Health Variables</u>					
USHealth	0.16 (0.12)	0.94 (0.34)	1.48 (0.38)	1.74* (0.50)	1.07 (0.72)
Oxford	0.07 (0.12)	1.02 (0.36)	1.36 (0.35)	1.1 (0.32)	0.93 (0.65)
Metroplus	-0.05 (0.14)	0.88 (0.38)	1.34 (0.42)	0.89 (0.28)	0.25* (0.15)
Primecare	-0.003 (0.13)	0.78 (0.31)	2.27* (0.66)	0.73 (0.22)	0.20* (0.12)
Joint Plans	n.s.	n.s.	#	#	*
<u>Instrumented Plan Choice</u>					
USHealth	-0.38 (0.31)	0.13# (0.14)	0.53 (0.38)	1.03 (0.77)	0.44 (0.56)
Oxford	-0.19 (0.22)	0.25* (0.17)	0.78 (0.39)	1.0 (0.54)	1.30 (1.26)
Metroplus	-0.18 (0.23)	0.30 (0.23)	1.08 (0.55)	0.70 (0.36)	0.79 (.72)
Primecare	-0.22 (0.21)	0.24* (0.15)	1.25 (0.57)	0.76 (0.38)	0.35 (0.29)
Joint Plans	n.s.	n.s.	n.s.	n.s.	n.s.

Baseline estimates control for age, sex, race, ethnicity, education, number of children under 6, and employment status. Health estimates also control for self-rated health (5 point scale), emotional and physical health limitations, and 13 chronic conditions. IV estimates from equation using 16 geographic dummy variables.

\*\* Significant at 1%; \* Significant at 5%; # Significant at 10%

Table 5: Access and Utilization: Plans Relative to HIP  
n=717

	Same Doctor (Odds)	Any Visits (Odds)	Log # of Visits if any (Reg.)	Any emergency room (Odds)	Log # of emergency room Visits if any (Reg.)
<u>Demographics Only</u>					
USHealth	1.13 (0.42)	0.92 (0.22)	-0.15 (0.10)	1.05 (0.27)	-0.11 (0.13)
Oxford	0.92 (0.35)	1.02 (0.25)	0.07 (0.10)	1.72* (0.44)	-0.05 (0.13)
Metroplus	0.77 (0.30)	0.94 (0.27)	-0.12 (0.11)	0.63 (0.21)	-0.13 (0.17)
Primecare	0.68 (0.26)	1.53 (0.43)	-0.03 (0.10)	0.96 (0.27)	0.04 (0.15)
joint sig.	n.s.	n.s.	n.s.	*	n.s.
<u>Demographic and Health Variables</u>					
USHealth	1.06 (0.41)	0.99 (0.24)	-0.14 (0.10)	1.08 (0.28)	-0.21 (0.14)
Oxford	0.99 (0.39)	1.10 (0.28)	0.08 (0.10)	1.76* (0.46)	-0.15 (0.14)
Metroplus	0.82 (0.34)	0.97 (0.28)	-0.10 (0.11)	0.65 (0.22)	-0.28 (0.18)
Primecare	0.66 (0.26)	1.57 (0.45)	-0.04 (0.10)	0.99 (0.29)	-0.05 (0.16)
joint sig.	n.s.	n.s.	n.s.	*	n.s.
<u>Instrumented Plan Choice</u>					
USHealth	0.80 (0.77)	1.62 (1.13)	-0.14 (0.28)	0.32 (0.25)	0.22 (0.39)
Oxford	0.78 (0.59)	1.14 (0.56)	0.07 (0.20)	1.15 (0.61)	-0.07 (0.27)
Metroplus	0.62 (0.44)	1.16 (0.56)	-0.11 (0.20)	1.22 (0.63)	-0.03 (0.29)
Primecare	0.36# (0.22)	1.25 (0.57)	-0.05 (0.19)	0.58 (0.29)	0.06 (0.27)
	n.s.	n.s.	n.s.	*	n.s.

Baseline estimates control for age, sex, race, ethnicity, education, number of children under 6, and employment status. Health estimates also control for self-rated health (5 point scale), emotional and physical health limitations, and 13 chronic conditions. IV estimates from equation using 16 geographic dummy variables.

\*\* Significant at 1%; \* Significant at 5%; # Significant at 10%



Table 7: Effect of Information Source on Satisfaction: Plans Relative to HIP  
 Controlling for Demographics and Health Variables  
 n=717

Satisfaction scores with Different Breaks

	OLS	Excellent (odds)	Vgood (odds)	Good (odds)	Fair (odds)
USHealth	0.15 (0.12)	0.90 (0.34)	1.51 (.42)	1.67# (0.50)	1.00 (0.72)
Oxford	0.07 (0.112)	1.08 (0.39)	1.29 (0.35)	1.10 (0.33)	0.89 (0.65)
Metroplus	-0.07 (0.15)	0.81 (0.36)	1.33 (0.44)	0.87 (0.30)	0.20* (0.13)
Primecare	-0.03 (0.14)	0.67 (0.31)	2.20* (0.68)	0.71 (0.22)	0.18** (0.12)
Friend	0.002 (0.13)	0.90 (0.37)	1.01 (0.27)	0.94 (0.28)	1.51 (0.99)
Plan Rep.	0.17# (0.10)	1.32 (0.39)	1.27 (0.27)	1.47 (0.35)	1.99# (0.73)
Other	0.28* (0.13)	1.71 (0.67)	1.74# (0.50)	1.76# (0.60)	1.93 (1.05)
Joint sig plans	n.s.	n.s.	n.s.	#.	**
Joint sig Learn	#	n.s.	n.s.	n.s.	n.s.

Estimates control for age, sex, race, ethnicity, education, number of children under 6, employment status, self-rated health (5 point scale), emotional and physical health limitations, and 13 chronic conditions.

\*\* Significant at 1%; \* Significant at 5%; # Significant at 10%

Table 8: Effect of Information Source on Access and Utilization: Plans Relative to HIP  
n=717

	Same Doctor (Odds)	Any Visits (Odds)	# of Visits if any (Reg.)	Any emergency room (Odds)	# of emergency room Visits if any (Reg.)
USHealth	1.23 (0.49)	0.83 (0.24)	-0.55 (0.36)	1.01 (0.28)	-0.55 (0.41)
Oxford	1.35 (0.58)	1.14 (0.31)	0.02 (0.36)	1.70* (0.46)	-0.49 (0.40)
Metroplus	0.77 (0.32)	1.00 (0.31)	-0.79# (0.43)	0.52# (0.19)	-0.71 (0.55)
Primecare	0.66 (0.27)	1.69# (0.52)	-0.34 (0.38)	0.95 (0.30)	-0.13 (0.45)
Friend	2.22# (0.95)	0.78 (0.21)	-0.94** (0.37)	0.54* (0.16)	-0.10 (0.45)
Plan Rep.	2.85** (0.93)	0.83 (0.17)	-0.10 (0.27)	0.92 (0.20)	-0.47# (0.29)
Other	1.90 (0.82)	0.78 (0.22)	0.08 (0.38)	0.58# (0.18)	-0.06 (0.45)
Joint sig plans	n.s.	n.s.	n.s.	*	n.s.
Joint sig Learn	**	n.s.	#	#	n.s.

\*\* Significant at 1%; \* Significant at 5%; # Significant at 10%

## References

- Andrews, RM, BA Curbow, E Owen, and A Burke. "The Effects of method of Presenting Health Plan Information on HMO Enrollment by Medicaid Beneficiaries." August 1989 Health Services Research 24(3): 311-27.
- Branch LG, RF Coulam, YA Zimmerman. "The PACE Evaluation: Initial Findings." Gerontologist June 1995 (35(3): 349-359.
- Brown RS. Clement DG. Hill JW. Retchin SM. Bergeron JW. "Do health maintenance organizations work for Medicare?." 1993 Fall. Health Care Financing Review. 15(1):7-23,
- Cutler, D. and S. Reber. "Paying for Health Insurance: The Tradeoff between Competition and Adverse Selection" NBER Working Paper 5796, October 1996.
- Duan, N. "Smearing Estimate: A Nonparametric Retransformation Method." Sept. 1983 Journal of the American Statistical Association. 78: 605-610.
- Duan, N., W.G. Manning, C.N. Morris, and J.P. Newhouse. "A Comparison of Alternative Models for the Demand for Medical Care." April 1983 Journal of Business and Economic Statistics 1(2): 115-126.
- Gorman, Sheila A., Jane E. Sisk; Anne Lenhard Reisinger; Sherry A. Glied; William H. DuMouchel; Margaret M. Hynes. "Beneficiaries Experience with Diverse Medicaid Managed Care Plans," 1997submitted.
- Lichtenstein R, JW Thomas, B Watkins et al. "HMO Marketing and Selection Bias: are TEFRA HMOs skimming?" April 1992 Medical Care 30(4): 32-46.
- Murphy, K. and R. Topel. "Estimation and Inference in Two-Step Econometric Models." 1985. Journal of Business and Economic Statistics 3(4): 370-379.
- Porell FW and WM Turner. "Biased Selection under an Experimental Enrollment and Marketing Medicare HMO Broker." July 1990 Medical Care 28(7): 604-615.
- Physician Payment Review Commission. 1996. Annual Report to Congress. Washington, D.C.: Physician Payment Review Commission.
- Robinson JC, LB Gardner. "Adverse Selection Among Multiple Competing Health Maintenance Organizations." Medical Care Dec. 1995 33(12): 1161-1175.

Sisk JE, SA Gorman, AL Reisinger et al., "Evaluation of Medicaid Managed Care: Satisfaction, Access, and Use." JAMA July 3, 1996 276(1): 50-55.

West DW, ME Stuart, AK Duggan, and CD DeAngelis. "Evidence for Selective Health Maintenance Organization enrollment among Children and Adolescents Covered by Medicaid." Archives of Pediatrics and Adolescent Medicine , May 1996 150(5): 503-507.