

# Impact of the Oregon Health Plan on Community Health Centers

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## **EXECUTIVE SUMMARY**

This report consists of two papers. The first is a description of the patient mix, staffing, costs, and revenues of seven Oregon community health centers over a four-year period: 1992-1995. The second is an econometric analysis of the impact of Medicaid managed care on community health centers nationwide (including Oregon).

### **A Description of Federally Qualified Health Centers Before and After Implementation of the Oregon Health Plan**

This report describes changes in demand, costs, financial status, and health center adaptations for two years prior to implementation of OHP (1992-1993) and two years after (1994-1995). It uses the standardized reports submitted by health centers to HRSA's Bureau of Primary Health Care. Because of a change in HRSA reporting requirements in 1996, it was not possible to analyze a longer time period post-OHP. Data were available for seven of the ten centers in Oregon that receive community health center and/or migrant health center funding from the federal government.

Because one of the seven health centers (Multnomah County Health Department and its associated clinics) was larger than the other six combined, data are presented separately for this center. Multnomah County Health Department (MCHD) is also unique in that it was part of the joint venture that formed CareOregon, a capitated health plan comprised of safety net providers and created for the sole purpose of contracting with OHP.

These descriptive results suggest that the six health centers (excluding MCHD) have done reasonably well since OHP was implemented. They have enjoyed increases in demand with fewer revenue disallowances. Costs have remained stable, resulting in greater resources available for capital investment. These six health centers appear to have made these investments and kept their overall margins stable. They have adapted personnel and services and improved efficiency, as measured by increased users per FTE and greater use of mid-level providers.

MCHD, on the other hand, has not fared as well. This center has not enjoyed an increase in demand like the other centers, but its charges per user and per encounter have increased. While this may be due to a worsened casemix, OHP capitation rates—at least during the 1994-1995 period—would not have compensated them for this. MCHD also

did not demonstrate the same efficiencies in service delivery as did the other centers. Finally, MCHD made huge increases in their administrative staff relative to the other centers, presumably because of their involvement with CareOregon.

These results should clearly be considered preliminary. We do not know how other health care providers fared during this same four-year time period. Furthermore, these results reflect just the first two years of OHP. The financial solvency of these health centers may well have changed since 1995.

### The Impact of Mandatory Medicaid Managed Care Programs on Community and Migrant Health Centers

This report evaluates the impact of mandatory Medicaid managed care on the demand for community health center (CHC) services. A cross-section time-series econometric model was developed to estimate demand as a function of three factors: (1) local market conditions; (2) federal grant support; and (3) the duration and organization of mandatory managed care. Data sources included the standard reports submitted to HRSA by CHCs nationwide, the Area Resource File, and supplemental federal and state data sources. While the evaluation is national in scope, encompassing a total of 496 centers over the 1992-1995 study period, we also tested whether managed care impacts were different in Oregon.

This study found that mandatory Medicaid managed care did not drive clients out of CHCs and into private sector sources of health care. CHCs in counties with mandatory managed care programs were able to maintain, and even increase, their client base, as measured by total users and Medicaid charges. Moreover, these increases were over and above those expected due to population growth, increases in Medicaid enrollees per capita, or increases in federal grant support. CHCs in Oregon experienced the same managed care effects as CHCs elsewhere.

At the same time, CHCs in mandatory managed care programs also have higher uncompensated care charges. This anomaly (given higher Medicaid charges) may be attributed to two competing market forces. Demand for CHC services may increase if the introduction of mandatory managed care has led private providers to reduce services to the uninsured. Alternatively, increased Medicaid demand may provide CHCs with the financial resources to offer more services to existing uninsured clients.

# **A Description of Federally Qualified Health Centers Before and After Implementation of the Oregon Health Plan**

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## Introduction

Federally Qualified Health Centers (FQHCs) are publicly funded health care centers that serve as a medical safety net<sup>i</sup> to over 8 million low income, predominantly minority, individuals (Dievler, 1998). A majority of health center patients are either uninsured or on Medicaid. Enacted in 1989, FQHC legislation requires states to pay FQHCs for services to Medicaid patients on the basis of “reasonable cost”. Thus, FQHCs with high relative levels of Medicaid reimbursement may pay infrastructure costs using Medicaid dollars - effectively subsidizing costs for the uninsured. However, the advent of managed care has brought new reimbursement schemes that, in turn, have challenged the role of FQHCs. Indeed, some analysts now believe that the long-term survivability of FQHCs is in question (Belzer, 1995).

The purpose of this paper is to evaluate the effects of the Oregon Health Plan (OHP) on the financial status and operations of Community Health Centers (CHC, recipient of PHS 330 funds) and Migrant Health Centers (MHC, recipient of PHS 329 funds) in Oregon. While the Health Centers are eligible to participate in OHP, their role and treatment under the program do not differ from those of other providers. A fundamental shift occurred when Oregon did not establish special payment provisions for FQHCs -- their reimbursement depends on the terms of contracts negotiated with managed care plans (Swigonski, 1997). In addition, through its contracts with managed care plans, OHP has substantially broadened the network of providers available to Medicaid beneficiaries and the previously uninsured expansion population. This paper describes changes in demand, costs, financial consequences and Health Center response for two years prior to implementation of OHP and two years after the implementation of OHP.

**Demand.** The Oregon Health Plan (OHP) expanded Medicaid eligibility to legal State residents below the federal poverty level (FPL), without regard to categorical eligibility criteria. The expansion had tremendous impact on the number of people enrolled in the program<sup>ii</sup>. For FQHCs, the enrollment explosion had great potential to increase the number of insured among their clients. However, several policy, social and

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<sup>i</sup> Safety net providers consist of a broad variety of not-for-profit health care entities that serve underserved populations and have an open-door policy regardless of a patients’ ability to pay. (Belzer, 1995).

<sup>ii</sup> Enrollment swelled from 197,800 in March 1994 to 329,000 in October 1995 but has gradually declined to approximately 250,000.

cultural barriers may also adversely, and inordinately, affect enrollment of populations served by the FQHCs. For example, FQHCs compete with private sector providers for their traditional population base. Additionally, certain eligibility changes implemented under OHP may have a disproportionate impact on the population served by FQHCs. Thus, FQHCs may experience a decrease in enrollment in spite of the expansion.

**Costs.** We hypothesized that the costs of providing services to users would increase for two reasons. First, increased competition for younger, healthier families would draw families away from the Health Centers' while the provision of enabling services would continue to attract those with more needs. Therefore, the Health Center population would reflect market pressures and consist of a greater percentage with chronic illness, elderly or more disadvantaged. Our second hypothesis was that administrative costs would increase because of an increase in absolute numbers of personnel needed to handle increasing paper work loads as well as an increased cost due to a higher skill level necessary for staff and administrators.

**Financial Status.** Our description of the Health Centers financial status falls into three areas: 1) analysis of the overall profit margin, 2) systematic analysis of trends in revenues and 3) systematic analysis of trends in expenditures. Because the FQHCs are non-profit organizations, we expect the margin to be nearly zero. To understand trends in service revenues, one must look at collections, charges, adjustments and accounts receivable. If collections are up, it may be a reflection of pay off of accounts receivable rather than sustainable growth; or collections may be up reflecting increased business but if charges and disallowance are rising even faster then the services are being sold at a lesser value.

**Health Center Adaptations.** We hypothesized that Health Centers would make changes consistent with a competitive managed care market place: by increasing staff efficiency (i.e., increasing encounters per staff FTE), using less expensive labor (i.e., midlevel providers instead of physicians or techs instead of nurses); rationing visits (i.e., decreasing the number of encounters per user); and decreasing non-reimbursable services (i.e., support and other health services).

## **METHODS**

### ***Sample***

Health Centers were drawn from the Bureau of Primary Health Care, Health Resources and Services Administration, U.S. DHHS Federal grant programs. These grant programs provide support for primary health care services to medically underserved, disadvantaged, high-risk and hard-to-reach populations. In the 1998 directory there are 12 grantees with 28 satellite Health Centers. Table 1 shows the 10 Health Centers receiving Migrant Health Center or Community Health Center funding. (The other two centers did not receive MHC or CHC funds.) We report on the 7 Health Centers for which we have 1992 through 1995 data.

Multnomah County Health Department (MCHD) and its clinics have a budget and user population larger than the other six Health Centers combined. At the inception of OHP, MCHD sponsored CareOregon, a fully capitated health plan contracting with the State to provide services. Because of its size, contracting arrangements and location in a highly competitive urban area, the impact of OHP on MCHD may be very different than the other FQHCs. Thus, Multnomah County Health Department (MCHD) is reported separately from the aggregate data.

### ***Data***

Data are from the Bureau's Common Reporting Requirements (BCRR), 1992-1995<sup>i</sup>. The Bureau of Health Care Delivery and Assistance (BHCDA) was responsible for the administration of the Community Health Center Program (section 330 of the Public Health Service (PHS) Act), Health Care Services for the Homeless Program (PHS section 340), Migrant Health Program (section 329), and the National Health Service Corps (NHSC) Program (PHS section 331). To satisfy management and information needs, operational data were collected routinely by BHCDA / OPA through the BCRR. The level of funds allocated to the grantees was substantially dependent upon the data reported by grantees through the BCRR tables. Failure to report by the grantees, therefore, affected the amount of funds awarded.

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<sup>i</sup> In 1996 reporting was changed to the UDS. Cross-walking of data between the BCRR and UDS was attempted but proved unreliable because basic definitions (such as that of a "user") as well as required fields had changed substantially. Other studies have subsequently noted similar difficulties (GAO, 2000).

## *Measures*

BCRR reporting consists of several tables. Financial and operational measures were drawn from the following: Number of Users by Type of Provider, Age, and Sex; Utilization of Special Population Groups; Personnel and Encounters by Cost Center and Type of Provider; Selected Clinic Services; Costs before and after Distribution by Functional Cost Center; Accounts Receivable, Charges, and Collections by Source of Funds; Summary of Receipts and Expenditures; and Prepaid Revenue and Expense Report. Testing of our hypotheses were limited by the data set. For example, in describing demand for services, we were limited to charges and the age and sex characteristics of users although other factors including diagnoses and insurance status may have an effect. Another limitation is that cost data are not reported for 1992.

## **RESULTS**

### **Demand for Health Center Services.**

We used two methods of measuring demand: numbers of users and amount of charges which reflect trends in service provision. Outside of MCHD, the number of users increased in all ages for both males and females from 1992 to 1995 (Table 2). Total users increased, on average, 19.7% for the 6 Health Centers. Since many females in the childbearing years were already covered under SOBRA, we expected and found a higher increase in male users than female users. The results differ for Multnomah County Health Department (MCHD) where total users increased by less than 1%. Female users in the 18-34 year old age group decreases by 8.9%; male and female users in the youngest age brackets show decreases; teen females show only moderate increases, while teen males also decrease (Table 3).

We include the results of charges as a measure of demand as well as costs. Charges are not necessarily a good direct measure of demand because they may reflect an increased price of the services rather than true need for more services. Total charges rose by 31.59% while total users rose by 19.7% for the six Health Centers. Mean charges rose from \$1,048,059 to \$1,379,096 between 1992 and 1995. For MCHD total charges rose 32.53% while total users increased just .38%. The increase in charges per user was a

modest 9.9% for the six Health Centers but Multnomah's charges per user increased by almost a third. Charges per user and charges per encounter are reported in Table 4. Charges per encounter rose by \$7 from 1992 to 1995 for the six Health Centers (a 14.5% increase) while charges per encounter rose by \$15 for MCHD (a 22% increase).

### **Costs of Health Center Services.**

We hypothesized that increased competition for younger, healthier families would draw families away from the Health Centers while the provision of enabling services would continue to attract those with more needs including the elderly or more disadvantaged. (See Tables 2 and 3.) The user population is aging disproportionately to the younger, healthier, age groups. Those 35 or older rose at rates of 20-40% over the 4 year period while the younger age groups rose 6-23%. This difference is most striking for MCHD where, those 65+ accounted for 3.4% of the total population in 1992, but account for 4.8% of the total user population in 1995. In the same time period, the youngest, presumably healthiest, age groups dropped from 50.5% of the total user population to 47.8%<sup>i</sup>.

More disadvantaged clients are expected to increase costs because of their need for enabling services such as translation and transportation. Many agricultural workers are disadvantaged. The BCRR classifies agricultural workers into two groups: migratory and seasonal. Both migratory and seasonal workers have agriculture as their principal employment on a seasonal basis. For at least part of the year, migratory agricultural workers travel to an area and live (temporarily) there while working. Seasonal agricultural workers work in the area of their permanent address and do not move temporarily to a work area. Four of the Oregon Federally Qualified Health Centers received MHC funding for the years 1992-1995. The number of migrant agricultural users increased by 17% from 1992 to 1995 while the number of seasonal agricultural users stayed the same. Migrant workers are least likely to be citizens and therefore are

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<sup>i</sup> We were not able to look at health status using our data, but a subsequent report demonstrated that MCHD has a disproportionately sicker population as measured by DPS (Oregon Department of Administrative Services, February 1999).

not eligible for health insurance through OHP. Over the same time period, MHC federal funding dropped by 16.1%<sup>i</sup> (data not shown).

Our second hypothesis, regarding costs was that administrative costs would increase because of an increase in absolute numbers of personnel needed to handle increasing paper work loads as well as increased cost due to a higher skill level necessary for staff and administrators. For the six Health Centers, we found that the administrative FTE did increase but only by 7.7%. Personnel costs were not available for 1992, however from 1993 to 1995, salaried administrative costs rose by 31% while total administrative costs increased by almost 15% (Table 5). The cost per administrative FTE rose by nearly \$6000 (22%). For the six Health Centers, administrative costs accounted for, on average, 20% of the total Health Center costs for 1993 through 1995. For MCHD, administrative (including salaried, consultant and contractual) costs soared by 48% (Table 6). This is primarily due to a doubling of the salaried administrative staff costs, likely associated with the development of CareOregon. The cost per administrative FTE rose by 12% or a little more than \$4,000 per FTE. Despite the marked increase, the administrative costs accounted for a modest 9.94, 12.03 and 12.33 per cent of Multnomah's total Health Center costs for 1993, 1994 and 1995 respectively.

## **Financial Status of Health Centers.**

### **Overall Profit Margin**

The mean net (total receipts – total expenditures) from the six Health Centers was -\$118,935 in 1992, \$340,855 in 1993, \$111,613 in 1994 and -\$41,000 in 1995. The mean margin ((total receipts-total expenditures) / total receipts) for the 6 Health Centers was – 0.12 in 1992, 16 in 1993, .04 in 1994 and -.05 in 1995. For MCHD, the net was -\$4943 in 1992, \$1,152,494 in 1993, -\$0 in 1994 and \$0 in 1995; the margin was nearly \$0 in all four years.

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<sup>i</sup> The subsequent report using 1996-1998 data confirmed our findings that the number of unsponsored clients were increasing (Oregon Department of Administrative Services, February 1999).

## **Revenues-Total Receipts**

Total receipts include all funding sources that the CHCs and MHCs receive (such as State and Federal grants, donations, and patient revenues). The mean total receipts for the Health Centers rose by 60.5% (see Table 7). The total sum of the receipts from the Health Centers rose from \$8,327,062 in 1992 to \$13,363,637 in 1995. Medicaid and CHC funds, which contribute the largest proportion of receipts, increased by 72.8% and 35.5%, respectively. The largest increase in contribution, between 1992 and 1995, came from State funds, which increased nearly 20 fold. Medicare funds quadrupled and third party payers increased by 75%. Patient collections remained relatively stable while local funds, on average, decreased.

For MCHD, total receipts increased between 1992 and 1993 then fell from 1993 to 1995 so the 20% increase in total receipts from 1992 to 1995 is misleading in that the increase pre-dates OHP. As a county health department and, in contrast to the other Health Centers, State and local funds account for the largest proportion of receipts. From 1992 to 1995, State funds increased four fold, while local funds dropped by a quarter. Third party payments more than tripled. Medicaid receipts paralleled total receipts with a large increase from 1992 to 1993 then a plateau from 1993 to 1995 (Table 8).

## **Service Revenues**

To understand trends in service revenues, one must look at collections, charges, adjustments and accounts receivable. If collections are up, it may be a reflection of pay off of accounts receivable rather than sustainable growth. Alternatively, collections may be up reflecting increased business but if charges and disallowance are rising even faster then the services are being sold at a lesser value. Charges for the six Health Centers and MCHD increased by nearly a third. Collections and accounts receivable were up nearly two-thirds for the 6 Health Centers. For MCHD collections increased by half and accounts receivable more than doubled (Table 9). Adjustments to charges increased during this time period but did not outstrip gains in charges or collections. Disallowances decreased and sliding payments rose moderately while bad debt and other rose by 36-45%. Overall, the total adjustments rose by 12% for the six Health Centers. For Multnomah Health Center, total adjustment rose by 29% from about \$8M to over \$10M.

Disallowance & reductions rose by 88%; sliding payments rose by 12%; bad debt rose by 136% and other reductions rose by 54% (data not shown).

## **Expenditures**

The total expenditures rose, on average, 50%. Although the greatest proportion of the increase came from capital expenditures, it is important to note that reporting the means may be somewhat misleading since only half of the Health Centers actually increased capital expenditures (two spent more than a million dollars in 1995) (Table 10).

### **Health Center Adaptation to a Competitive Market Place**

In a capitated managed care environment, Health Centers may take steps to improve their financial condition: by increasing staff efficiency (i.e., increasing encounters per staff FTE), using less expensive labor (i.e., midlevel providers instead of physicians or techs instead of nurses); rationing visits (i.e., decreasing the number of encounters per user); and decreasing non-reimbursable services (i.e., support and other health services).

Total FTEs rose 9.25% between 1992 and 1995. Encounters rose 15% (Table 11) and users 20%. More encounters and more users were reported per total Health Center FTE while there were less encounters per user. These trends are consistent with increased efficiencies expected with managed care. Although not dramatic, Multnomah County did not show similar efficiencies (i.e., more users per FTE and fewer encounters per user). For the six Health Centers, primary care FTE and encounters decreased slightly although the ratio of encounters per FTE rose slightly. Average primary care encounters per FTE was 3439 in 1992 and 3626 in 1995. Midlevel FTE increased almost 30%, from an average of 1.9 FTE per Health Center to average of 2.5 FTE per Health Center. Midlevel encounters increased 51% with the ratio of encounters per FTE rising by 16% (Table 12). The mean number of nurses and medical support staff did not vary between 1992 and 1995 (not shown). Allied health services rose dramatically from only 1.2 FTE in the six Health Centers to 11 FTE between the six Health Centers. Ancillary services FTE, however dropped by a quarter. Again, in contrast, the number of midlevel encounters per FTE dropped in Multnomah County.



Table 13 describes the costs of 2 enabling services traditionally provided by the health centers: community service and transportation. For the six Health Centers, between 1992 and 1995, community service and transportation FTE and costs dropped. This trend was not true for MCHD, where community services and transportation FTE and costs rose 11.7 and 180%, respectively.

## **DISCUSSION**

This report describes changes in demand, costs, financial status and Health Center adaptations for two years prior to implementation of OHP and two years after the implementation of OHP.

**Demand.** Our analysis of demand uses two measures: number of users and charges. Number of users increased by 19.7% for the six Health Centers but a negligible 0.38% for MCHD. Although we do not have the insurance status of clients, the loss of clients were primarily in the age categories traditionally covered by Medicaid (i.e., less than 11 years old and women in their child bearing (18-34) years). This loss may reflect the fiercely competitive environment in Portland, especially for OB patients and their babies.

Charges increased by a little more than 30% for both MCHD and the six Health Centers. Given the difference in the growth of the user population however, the charges per user grew by 9.9% in the six Health Centers (a rate consistent with inflation) while charges per user grew 32.0% in MCHD. This change however was primarily between 1992 and 1993 i.e., prior to OHP. The increase in charges is not a good direct measure of demand since charges may reflect an increased cost for the same amount of services or an increased number of services necessary to treat users, hence, a sicker clientele or inappropriate use.

**Costs – Clients.** Costs of providing services at Health Centers were hypothesized to increase for two reasons. The first reason was that increased competition for younger, healthier families would draw families away from the Health Centers while the provision of enabling services would continue to attract those with more needs including the elderly or more disadvantaged. We analyzed trends in client population by measuring charges per encounter, changing age demographics, and trends in agricultural workers (as an

example of a disadvantage, likely to be unsponsored population). Charges per encounter increased at a rate slightly above inflation for the six Health Centers while charges per encounter increased by 22% between 1992 and 1993 for MCHD then flat-lined. Charges are not further broken down in the BCRR so it is not known if the increased charges result from more services or more expensive services<sup>i</sup>. Demographics from all of the Health Centers show a trend toward an aging population. Those 65 years and older grew by 22 to 44 per cent. This growth may, in part, reflect strategic marketing to a population for whom the Health Centers still receive cost-based reimbursement.

Agricultural workers, as an example of a traditionally disadvantaged population, were divided into two groups: seasonal and migratory. We do not have insurance status of the agricultural workers, however, increased competition for seasonal workers under OHP may account for the plateau in the seasonal population while the migratory worker population, who are more likely to be non-residents and therefore, not eligible for OHP, continues to grow. Migrant Health Center funding might alleviate some of the financial burden of providing services to the migratory population but MHC funding dropped an average of 16% over the 4 year period while the number of seasonal users increased by 17%.

**Costs – Administrative.** We also believed that administrative costs would increase. We found that administrative personnel increased, on average, a little more than half an FTE per Health Center and that the cost per FTE increased by 22% from 1993 to 1995. This supports information obtained at site visits (see Swigonski, 1997) that, not only an increased number of staff were necessary to handle an increased paper load, but also more highly trained (and therefore, expensive) staff are necessary. Administrative costs soared by 48% for MCHD, most likely due to the formation of the health plan, CareOregon. Although CareOregon is a joint venture between the Multnomah County Health Department, Oregon Health Sciences University and the Oregon Primary Care Association, its administration sat in Multnomah County Health Department. Despite the increases in administrative staff and FTE, the ratio of total administrative costs to total Health Center costs remained relatively stable at an average of 20% for the six Health Centers and 12% for MCHD.

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<sup>i</sup> See above footnotes. Increased charges in 1996-1998 data were most likely due to increased demand from sicker patients.

**Financial Status.** Our analysis of the Health Centers financial status falls into (3) areas: 1) analysis of the overall profit margin, 2) systematic analysis of trends in revenues and 3) systematic analysis of trends in expenditures. Profit margins are determined by the difference between revenues and expenses. In forecasting the future financial condition of the Health Centers, it is important to know whether trends in revenues and expenses will continue and also whether their underlying determinants are due to favorable or unfavorable business factors. Careful analysis of revenues and expenses helps to answer these questions.

**Overall Trends in Profit Margins.** Across the seven Health Centers, the net margins start out moderately negative in 1992 and improve to a modestly negative total in 1995 (margins are virtually zero for all years in MCHD). Health Centers appear to more or less breaking even at the beginning and end of the study period, consistent with their non-profit mission. However, this simple trend does not indicate whether break even operations are being supported by extraordinary steps, such as reducing capital expenditures, accelerating one-time collections of cash, etc., or whether break even represents solid trends in revenues growth and cost control. To answer this question, a more careful examination of revenues and expenses is required.

**Trends in Revenues.** The 60% growth for the six health centers in collections over the period is a favorable trend, because it indicates healthy demand and the ability to cover overhead. Given increasing demand, an organization need only hold marginal costs below price to realize greater financial surplus. Multnomah's growth is primarily between 1992 and 1993 (pre-OHP) and there is a growth of 9% between 1993 and 1995.

Increases in business activity can still be problematic if they are achieved by severely discounting service prices (to attract business). This issue can be analyzed by studying trends in charges and discounts. If discounts per unit service are holding stable, both charges and allowances should also be growing by 60% over the time period. Growth rates *in excess* of 60% would indicate that services supplied are growing more rapidly than collections, indicating greater discounts. The opposite holds for growth rates in charges and disallowances below 60%. This would indicate that the growth in collections owes, in part, to a reduction in disallowances and less discounting compared to before. This would be a favorable economic trend. The data clearly indicate that

charges and disallowances both grew by less than 60% over the study period. This is quite favorable for the six FQHCs, because it indicates that the growth in collections was not achieved by vigorous discounting (to attract business). In fact, the opposite is true. To some extent, the growth in collections reflects a reduction in disallowances. This is consistent with the idea that OHP has covered more individuals, leading to a reduction in sliding scale disallowances. Review of the 60% growth in collections over the period, reveals the following decomposition: 32% due to increased charges (and presumably increased services), 10% due to fewer discounts per unit charge, and 18% due to other causes, such as collections of outstanding accounts receivable. Overall, this is a favorable trend – more services are being supplied at a smaller financial discount.

However, if growth prior to OHP is excluded, MCHD demonstrates just the opposite effect. Adjustments between 1993 and 1995 grew by 17% while total receipts grew by only 9%. This may reflect the discounting necessary to attract business in the highly competitive Portland marketplace.

**Trend in Expenditures.** Expenditures grew by 50% for the six counties excluding Multnomah. This is close to the growth rate in revenues, which accounts for the fact that overall margins were relatively stable over the study period. However, as in the case of revenues, it is also important to study the composition of the expenditure growth. For example, if growth is held down by cutting capital expenditures, this would be an unfavorable sign because it would be unsustainable (capital must ultimately be replaced) and because it would indicate an even greater growth rate for non-capital expenditures. On the other hand, if capital expenditures grew by more than 50% then this would be favorable. It would indicate that the Health Centers were investing heavily in their infrastructure and that they were able to hold down their non-capital expenditures to finance the outlays.

The data support the favorable scenario for at least half of the FQHCs. Capital expenditures grew massively over the period, while non-capital expenditures grew by only 26.48%. The increase in capital expenditures should position the Health Centers to compete with private sector providers. The growth rate in non-capital expenditures of 26% indicates an ability to hold down operating costs in relation to revenue growth.

**Health Center Adaptations.** We hypothesized that Health Centers would make changes consistent with adaptations to a managed care market such as increasing staff efficiency, rationing visits, using less expensive labor and decreasing non-reimbursable services. While the number of users has increased, the number of encounters per user has decreased. Efficiency as measured by users per FTE or encounters per FTE has improved 5 to 10%. This trend is not so favorable for MCHD where the number of encounters per user has increased while the number of users per FTE has actually decreased. In contrast to a fee-for-service or cost-based reimbursement system, under capitation, increased encounters per user consumes the Health Centers' resources instead of increasing its revenues.

The Bureau of Primary Health Care encourages the use of midlevel providers as a cost effective means to provide primary care. Another trend that we found was a drop in primary care physicians offset by an increase in midlevel providers. Other changes in staffing and costs of services differed between the six Health Centers and MCHD. Community service and transportation dropped on average 40-50% in the six Health Centers but increased 40-180% for MCHD. Provision of such services is what sets the Health Centers apart as safety net providers and enables them to target at risk and disadvantaged populations.

**Overall Picture.** The overall picture that emerges is favorable for the 6 FQHCs. One could imagine a scenario, under OHP, in which the Health Centers suffer reductions in demand and are forced to cut capital expenditures, personnel and community service to maintain acceptable profit margins. In such a scenario, the financial future would be bleak, since updated facilities and services are needed to compete with providers from the private sector. The data here indicate something different. Under OHP, Health Centers have enjoyed increases in demand with fewer revenue disallowances. Costs have remained stable, resulting in greater resources available for capital investment. The Health Centers have made these investments and kept their overall margins stable. Health Centers appear to be improving efficiency and adapting their personnel and services. This puts Health Centers in a position to compete with private sector providers, based on the quality of their infrastructure. Whether or not they compete successfully will become evident in the future.

The overall picture for MCHD, however, does not appear as favorable. Users have not increased nor have total receipts while charges per user and charges per encounter are increased. Under a fully capitated scenario increased charges, no matter whether they reflect an increased number of services necessary to treat users, hence, a sicker clientele or inappropriate use, are foreboding. At the same time, MCHD has had to make more adjustments than the six FQHCs and has markedly increased their administrative staff, most likely due to their role with the fully capitated health plan, CareOregon. Efficiencies are also less evident for MCHD. Again there are two possible scenarios – one is that there truly are inefficiencies in MCHD relative to the other FQHCs and the second is that a sicker clientele does not allow for time and mid-level encounter efficiencies.

**Table 1**  
**BPHC Grantees and Data Availability, 1992-1996**

<b>Grantees listed in the 1998 directory</b>	<b>Type of grant</b>	<b>BCRR number:</b>	<b>Data Available</b>
Siskiyou Community Health Center	CHC	100150	., 0, 94, 95
Southeast Oregon Rural Health Network	CHC	100010	92, 93, 94, 95
Virginia Garcia Memorial Health Center	CHC, MHC	101230	92, 93, 94, 95
La Clinica Del Carino	CHC, MHC	102080	92, 93, 94, 95
La Clinica Del Valle	CHC, MHC	100790	92, 93, 94, 95
Clackamas County Public Health Division	CHC, MHC	101310	., 93, 94, 95
Multnomah County Health Department	CHC, HO, SA	101120	92, 93, 94, 95
Northwest Human Services, Inc.	CHC, HO	100760	92, 93, 94, 95
Tillamook County Health Department	CHC	102360	., ., ., .
Salud Medical Center, Inc.	CHC, MHC	100340	92, 93, 94, 95

CHC = Community Health Center Program funded under Section 330 of the PHS Act

HO = Health Care for the Homeless Program established under the Stewart B. McKinney Homeless Assistance Act of 1987

MHC = Migrant Health Program funded under Section 330(g) of the PHS Act.

SA= Integrated Primary Care and Substance Abuse Treatment Program

Data available: 92, 93, etc. is the year that the data are available and have > 0 total users reported; 0 is listed when the database lists the grantee but there are "0" total users for that year; if the grantee is not listed in the database then the data are "." i.e., missing.

**SOURCE:** DHHS/HRSA/Bureau of Primary Health Care Common Reporting Requirements, 1992-1995.

**Table 2**  
**Total Number of Users (Unduplicated Clients) by Age, Sex, and Year (MCHD Excluded)**

Year	0-11 years		12-17 years		18-34 years		35-64 years		65+ years	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
1992	4141	3854	774	1073	3654	6254	2235	3563	485	680
1993	4841	3699	698	918	3866	5923	2535	3454	474	677
1994	4340	4414	880	1169	4073	6723	2992	4242	581	786
1995	4604	4731	936	1240	4303	6663	3111	4506	636	827
Change	11.18%	22.76%	20.93%	15.56%	17.76%	6.54%	39.19%	26.47%	31.13%	21.62%

SOURCE: DHHS/HRSA/Bureau of Primary Health Care Common Reporting Requirements, 1992-1995.

**Table 3**  
**Number of Users (Unduplicated Clients) by Age, Sex, and Year (MCHD Only)**

Year	0-11 years		12-17 years		18-34 years		35-64 years		65+ years	
	male	female	Male	Female	male	Female	Male	female	Male	female
1992	7774	7532	2111	3476	2055	9409	1951	3665	499	905
1993	7456	7175	1939	3413	2074	9069	2052	3842	510	939
1994	7185	6808	1710	3496	1902	8687	2078	3794	562	1005
1995	6943	6497	1928	3614	2176	8575	2300	3800	721	1190
Change	-10.69%	-13.74%	-8.67%	3.97%	5.89%	-8.86%	17.89%	3.68%	44.49%	31.49%

SOURCE: DHHS/HRSA/Bureau of Primary Health Care Common Reporting Requirements, 1992-1995.



**Table 4**  
**Total Charges, Charges per User and Charges per Encounter by Year**

Year	Six Health Centers			Multnomah County Health Department		
	Total Charges	Charges / Encounter	Charges/User	Total Charges	Charges / Encounters	Charges/User
1992	\$6,288,351	\$50	\$217.32	\$15,695,047	\$70	\$334.61
1993	\$6,785,696	\$52	\$240.41	\$18,871,848	\$84	\$406.99
1994	\$7,305,184	\$51	\$226.59	\$18,431,514	\$83	\$409.04
1995	\$8,274,578	\$57	\$238.90	\$20,801,299	\$85	\$441.81
Change	31.59%	14.53%	9.93%	32.53%	22.02%	32.04%

**SOURCE:** DHHS/HRSA/Bureau of Primary Health Care Common Reporting Requirements, 1992-1995.

**Table 5**  
**Administrative Costs and FTE by Year (MCHD Excluded)**

<b>Year</b>	<b>Mean Admin. FTE</b>	<b>Total Admin. FTE</b>	<b>Salaried Admin. Costs</b>	<b>Cost/ Admin. FTE</b>	<b>Contract/ Consulting</b>	<b>Total Admin. Costs</b>	<b>Total Health Center Costs</b>
1992	6.9	41.6					
1993	6.9	41.6	\$1,206,014	\$28,991	\$863,316	\$2,069,330	\$10,099,419
1994	7.2	43.5	\$1,190,481	\$27,367	\$901,232	\$2,091,713	\$10,356,955
1995	7.5	44.8	\$1,581,399	\$35,299	\$795,239	\$2,376,638	\$11,552,609
Change		7.69%	31.13%	21.76%	-7.89%	14.85%	14.39%

SOURCE: DHHS/HRSA/Bureau of Primary Health Care Common Reporting Requirements, 1992-1995.

**Table 6**  
**Administrative Costs and FTE by Year (MCHD Only)**

<b>Year</b>	<b>Admin FTE</b>	<b>Salaried Admin. Cost</b>	<b>Cost/ Admin. FTE</b>	<b>Contract/ Consulting</b>	<b>Total Admin Costs</b>	<b>Total Health Center Costs</b>
1992						
1993	5.21	\$183,790	\$35,276	\$2,660,314	\$2,844,104	\$28,626,656
1994	6.09	\$258,279	\$42,410	\$3,093,764	\$3,352,043	\$27,859,091
1995	9.19	\$363,349	\$39,537	\$3,838,041	\$4,201,390	\$34,066,060
Change	76.39%	97.70%	12.08%	44.27%	47.72%	19.00%

SOURCE: DHHS/HRSA/Bureau of Primary Health Care Common Reporting Requirements, 1992-1995.

**Table 7**  
**Mean Receipts by Source by Year (MCHD Excluded)**

<b>Year</b>	<b>CHC</b>	<b>Medicare</b>	<b>Medicaid</b>	<b>3<sup>rd</sup> party</b>	<b>Patient Fees</b>	<b>State*</b>	<b>Local†</b>	<b>Total receipts#</b>
1992	\$302,698	\$21,986	\$332,023	\$65,442	\$150,380	\$8,076	\$17,949	\$1,387,844
1993	\$229,823	\$50,306	\$411,866	\$89,193	\$142,278	\$21,521	\$14,891	\$1,591,766
1994	\$285,778	\$59,603	\$565,456	\$84,205	\$174,994	\$25,615	\$28,275	\$1,841,193
1995	\$410,091	\$86,634	\$573,726	\$114,144	\$161,454	\$157,610	\$10,111	\$2,227,273
Change	35.5%	294.0%	72.8%	74.4%	7.4%	1851.6%	-43.7%	60.5%

\*The 1992 mean actually represents only one of the 6 Health Centers who received \$48,554. The 1995 mean represents 4 of the 6 Health Centers that received State funds ranging from \$3,544 to \$806,800.

†Mean represents 3 of the 6 Health Centers that received local funds in 1992; 4 of the 6 Health Centers received local funds in 1995.

#Total includes all sources listed in Table 8 of the BCRR report not just those listed in the table above. Therefore, row totals are less than total receipts.

**SOURCE:** DHHS/HRSA/Bureau of Primary Health Care Common Reporting Requirements, 1992-1995.

**Table 8**  
**Receipts by Source by Year (MCHD only)**

<b>Year</b>	<b>CHC</b>	<b>Medicare</b>	<b>Medicaid</b>	<b>3rd party</b>	<b>Patient Fees</b>	<b>State</b>	<b>Local</b>	<b>Total receipts#</b>
1992	\$2,467,890	\$109,469	\$4,973,305	\$598,954	\$566,564	\$1,319,115	\$15,784,356	\$27,042,059
1993	\$2,517,176	\$151,211	\$6,838,145	\$679,476	\$456,007	\$4,964,870	\$19,025,798	\$36,567,205
1994	\$2,504,639	\$98,248	\$7,693,513	\$1,298,725	\$332,091	\$3,474,626	\$10,567,007	\$27,870,896
1995	\$3,129,243	\$206,881	\$6,797,165	\$2,072,938	\$380,226	\$7,064,639	\$11,681,431	\$34,127,015
Change	26.80%	88.99%	36.67%	246.09%	-32.89%	435.56%	-25.99%	26.20%

#Total includes all sources listed in Table 8 of the BCRR report not just those listed in the table above. Therefore, row totals are less than total receipts.

**SOURCE:** DHHS/HRSA/Bureau of Primary Health Care Common Reporting Requirements, 1992-1995.

**Table 9**  
**Total Charges, Collections, Adjustments, and Accounts Receivable by Year (in millions)**

Year	Six Health Centers				Multnomah County Health Department			
	Total Charges	Collections	Adjustments	Accounts Receivable	Total Charges	Collections	Adjustments	Accounts Receivable
1992	\$6.29	\$3.42	\$2.57	\$1.30	\$15.70	\$6.25	\$7.97	\$2.49
1993	\$6.79	\$4.12	\$2.30	\$1.65	\$18.87	\$8.12	\$8.51	\$4.73
1994	\$7.31	\$4.64	\$2.25	\$1.74	\$18.43	\$9.42	\$8.48	\$5.26
1995	\$8.27	\$5.49	\$2.88	\$2.17	\$20.80	\$9.46	\$10.29	\$6.32
Change	31.59%	60.58%	12.00%	66.96%	32.53%	51.36%	29.17%	153.80%

**SOURCE:** DHHS/HRSA/Bureau of Primary Health Care Common Reporting Requirements, 1992-1995.

**Table 10**  
**Mean Capital, Non-capital and Total Expenditures by Year**  
**(excluding MCHD)**

<b>Year</b>	<b>Capital</b>	<b>Non-capital</b>	<b>Total Expenditures</b>
1992	\$22,751	\$1,484,028	\$1,506,778
1993	\$14,424	\$1,236,458	\$1,250,882
1994	\$160,869	\$1,489,915	\$1,650,784
1995	\$391,653	\$1,877,020	\$2,268,673
Change	1621.48%	26.48%	50.56%

**SOURCE:** DHHS/HRSA/Bureau of Primary Health Care Common Reporting Requirements, 1992-1995.

**Table 11**  
**FTEs, Encounters and Users by Year**

<b>Year</b>	<b>Six Health Centers</b>				<b>Multnomah County Health Department</b>			
	<b>Total FTE</b>	<b>Encounters / FTE</b>	<b>Encounters /Users</b>	<b>Users / FTE</b>	<b>Total FTE</b>	<b>Encounters / FTE</b>	<b>Encounters /Users</b>	<b>Users / FTE</b>
1992	196	641.67	4.35	147.63	398.7	563.74	4.79	117.64
1993	199.35	652.85	4.61	141.59	367.58	611.14	4.84	126.15
1994	206.62	698.75	4.48	156.04	369.66	599.52	4.92	121.90
1995	214.13	674.80	4.17	161.75	410.23	595.10	5.19	114.77
Change	9.25%	5.16%	-4.02%	9.56%	2.89%	5.56%	8.21%	-2.44%

**SOURCE:** DHHS/HRSA/Bureau of Primary Health Care Common Reporting Requirements, 1992-1995.

**Table 12**  
**Mean FTE and Encounters\* for Primary Care Providers by Year**

Year	Six Health Centers				Multnomah County Health Department			
	Primary Care FTE	Primary Care Enc. / FTE	Midlevel FTE	Midlevel Enc. / FTE	Primary Care FTE	Primary Care Enc. / FTE	Midlevel FTE	Midlevel Enc. / FTE
1992	2.76	3439	1.89	2632	10.03	4001	18.97	2453
1993	2.79	3068	2.34	2619	8.55	4319	20.88	2228
1994	2.56	3694	2.19	3254	8.47	4018	19.39	2257
1995	2.43	3626	2.46	3054	7.86	4257	21.58	2224
Change	-11.89%	5.43%	29.93%	16.05%	-21.64%	6.40%	13.76%	-9.31%

\*Encounters include on-site, inpatient and off-site encounters.

**SOURCE:** DHHS/HRSA/Bureau of Primary Health Care Common Reporting Requirements, 1992-1995.

**Table 13**  
**Cost\* of Selected Enabling Services by Year**

Year	Six Health Centers		Multnomah County Health Department	
	Community Services	Transportation	Community Services	Transportation
1992	.	.	.	.
1993	\$48,379	\$15,353	\$4,134,528	\$675
1994	\$59,918	\$12,033	\$3,512,634	\$733
1995	\$44,326	\$9,087	\$4,618,220	\$1,893
Change	-8.38%	-40.81%	11.70%	180.44%

\*Costs include salaried personnel, consulting and contractual expenses.

**SOURCE:** DHHS/HRSA/Bureau of Primary Health Care Common Reporting Requirements, 1992-1995.

## References

- Belzer, MB. Will Congress Shred the Safety Net? *Postgraduate Medicine* 1995; 98:15-19.
- Dievler A, Giovannini T. Community Health Centers: Promise and Performance. *Medical Care Research and Review*. 1998;55:405-431.
- Government Accounting Office (GAO). Community Health Centers: Adapting to Changing Health Care Environment Key to Continued Success. Washington, DC: US General Accounting Office. 2000
- Oregon Department of Administrative Services. Analysis of Oregon Health Care Safety Net Services. <http://www.ohppr.state.or.us> February, 1999.
- Swigonski NL, The Role of Federally Qualified Health Centers in the Oregon Health Plan. Second Interim Report HCFA Chapter 6, Contract No. 500-04-0056. 1997.

# **The Impact of Mandatory Medicaid Managed Care Programs on Community and Migrant Health Centers**

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## **BACKGROUND**

Federally Qualified Health Centers (FQHCs) are publicly funded health care centers that serve as a medical safety net<sup>1</sup> to over 8 million low income, predominantly minority individuals (Dievler and Viovanni, 1998). A majority of health center patients are either uninsured or on Medicaid. Enacted in 1989, FQHC legislation requires states to pay FQHCs for services to Medicaid patients on the basis of “reasonable cost”. Thus, FQHCs with high relative levels of Medicaid reimbursement may pay infrastructure costs using Medicaid dollars - effectively subsidizing costs for the uninsured. However, the advent of managed care has brought new reimbursement schemes that, in turn, have challenged the role of FQHCs. Indeed, some analysts now believe that the long-term survivability of FQHCs is in question (Belzer, 1995; Korenbrot *et al.*, 1999)

Medicaid managed care may compromise the FQHCs in two ways: First, FQHCs must compete with private sector providers for their traditional population base. With increased provider choice, patients (especially those with fewer needs or who are more profitable) may choose to go elsewhere for care (Holahan *et al.*, 1998; Baxter and Mechanic, 1997). Second, FQHCs may be unable to subsidize care for their low-income, uninsured population if competition forces them to accept lower payment rates from managed care organizations for their Medicaid population (Bodenheimer, 1997; Oregon Department of Administrative Services, 1999). If FQHCs serve an increasingly disadvantaged insured population at lower reimbursement rates, and continue to serve their traditional uninsured population, they may become financially non-viable. In this schema of increasing uncompensated care, FQHCs may be forced to raise fees to paying patients, to reduce service scope and capacity and, ultimately, reduce services to the uninsured. Hence, the financial health and future viability of FQHCs are closely tied to the demand for their services.

Oregon’s Section 1115 waiver program uses service-rationing through a prioritized list of health services and managed care to expand Medicaid eligibility to uninsured residents below the federal poverty level. The program, known as the Oregon Health Plan (OHP) was implemented in February 1994. One of the goals of OHP is to

provide access to “mainstream” care for Oregon’s Medicaid recipients (Swigonski, 1997). Historically, many private providers have been unwilling to accept Medicaid patients because of the program’s low payment rates. As a result, FQHCs and other safety net providers have been a primary source of care for Medicaid beneficiaries and other indigent populations. The implementation of OHP dramatically expanded insurance coverage for many of the populations traditionally served by FQHCs. Nonetheless, far from providing a windfall for these safety net providers, their financial condition may have eroded under OHP.

While the Health Centers are eligible to participate in OHP, their role and treatment under the program do not differ from those of other providers<sup>ii</sup>. Prior to OHP, the Centers (as Federally Qualified Health Centers) were eligible for cost-based reimbursement<sup>iii</sup>. A fundamental shift occurred when Oregon did not establish special payment provisions for FQHCs -- their reimbursement depends on the terms of contracts negotiated with managed care plans. In addition, through its contracts with managed care plans, OHP substantially broadened the network of providers available to Medicaid beneficiaries and the previously uninsured expansion population. As a result, FQHCs compete with private sector providers for their traditional population base (Swigonski, 1997).

Although there have been a multitude of case studies both within (Lewin-VHI, 1996) and outside (Harrington *et al.*, 1997; Sparer, 1996; Lipson and Naierman, 1996) of Oregon, describing the growing concern that FQHCs may fail and erode the safety net, few empirical studies have evaluated the impact of Medicaid managed care on FQHCs. This study uses a quasi-experimental design across geography and time by performing a cross-sectional time series analysis of a national database. Using an econometric model of mandatory Medicaid managed care effects on the demand for FQHC health services, we hypothesize that three factors - local market, federal grant support and the duration

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<sup>i</sup> Safety net providers consist of a broad variety of not-for-profit health care entities that serve underserved populations and have an open-door policy regardless of a patients’ ability to pay (Belzer, 1995).

<sup>ii</sup> Despite its initial stance against affording special treatment to FQHCs, Oregon has recently adopted policies designed to partially offset some of the negative impacts of OHP. First, OHP implemented risk adjustment in 1998. Furthermore, in 1997, the Oregon legislature set aside \$3.1 million for grants to safety net providers. And finally, a large study completed in 1999 outlines the challenges FQHCs have faced under OHP (OHPPR, 1999).

<sup>iii</sup> Section 4704 of OBRA of 1990 (PL 101-508, 104 Statute 1388, 1388-171) required Medicaid and Medicare to reimburse FQHCs at 100 percent of their reasonable costs.

and organization of mandatory managed care- will influence (1) the overall demand for FQHC services, (2) the amount and proportion of charges from Medicaid (the demand from Medicaid patients) and (3) the level (amount and proportion) of uncompensated care. We also test whether there is an Oregon specific effect on each of the outcomes.

## **THEORETICAL FRAMEWORK**

Demand is defined as the ability and willingness to consume FQHC services and interacts with supply to determine the quantity of services delivered. Although demand is determined by factors that are both internal and external to the FQHC, our empirical model focuses on the external (or exogenous) influences. These external factors include both demographic and programmatic variables that may shift demand inward or outward. The shifts, in turn, change the quantity of services delivered by the FQHC. So, if as described in the Background, mandatory Medicaid managed care (MMC) shifts demand inwards, then this will be reflected in a lower quantity of services delivered.

The demand curve of each FQHC may also be shifted by community factors and State Medicaid structural factors. Community factors include the overall size of the population, income and the availability of alternative providers such as hospitals and rival FQHCs. Larger population and income increase the quantity of services demanded, whereas the availability of substitute providers reduces demand for any individual FQHC. The external factors of greatest interest in this study are structural measures of the state's Medicaid system. This includes indicators of whether the county in which the FQHC resides has a mandatory Medicaid managed care program, how long the program has been in place and what type of program it is: primary care case management (PCCM), some type of prepaid health plan (PHP) or both.

Although the concern is that mandatory MMC programs will reduce demand for FQHC services, they need not necessarily do so. FQHCs may instead adapt to the new payer environment and market their services to the right constituencies. Under PCCM systems, for example, FQHC's primary care providers may become active members of the state provider panels and inform their traditional Medicaid constituencies of this fact. Likewise, demand may be maintained under PHP systems if pre-paid health plans include

FQHCs in their provider networks. In Oregon, for example, FQHCs and other safety net providers joined together to form their own PHP. Thus, the effects of Medicaid managed care on FQHC demand are ambiguous and depend upon how effectively FQHCs adapt to their new market environment.

## **DATA**

We utilized three data sources: 1) the Bureau's Common Reporting Requirements (BCRR); 2) the Area Resource File (ARF, 1998)) and; (3) information gathered directly from State Medicaid agencies and other State and Federal sources. During the study period, the Bureau of Health Care Delivery and Assistance (BHCDA) was responsible for the administration of the FQHCs. Operational data were routinely collected by BHCDA through the Bureau's Common Reporting Requirements (BCRR) to satisfy management and information needs. Five hundred and fifty three Community Health Centers and Rural Health Centers were identified from the 1992 BCRR data. Sixty-seven FQHCs (12%) were excluded because they were missing one or more years of data for 1993-1995<sup>i</sup>.

The second data source, the 1995 Area Resource File, provides county level demographic and market information. Third, State and Federal websites were used to obtain county level, non-institutionalized Medicaid enrollments for each of the years 1992-1995. Telephone calls were used to fill in gaps in State-specific information such as when mandatory managed care was implemented and the managed care model. Since the type of mandatory managed care might differ between counties within a state and programs were frequently implemented in different counties at different times, we obtained Medicaid managed care information for the county in which the FQHCs were located. Data were obtained for the 48 States containing the 496 FQHCs in the sample. The BCRR data were merged with data from the Area Resource File (ARF) as well as the county-level Medicaid managed care information.

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<sup>i</sup> 58/67 were missing only a sporadic year of data – for example the files contained 1992, 1994 and 1995 but not 1993 data. 9 FQHCs were missing consecutive years of data, 3 of which were in States with managed care programs.

## **DEPENDENT VARIABLES**

To test our hypotheses, we analyzed three dependent variables from the BCRR: 1) total users from the table “Number of Users by Type of Provider, Age and Sex”; 2) total Medicaid charges from the table “Costs before and after Distribution by Functional Cost Center”; and 3) total uncompensated charges from the table “Collections by Source of Funds”. The extent that MMC reduces the demand of Medicaid enrollees is reflected both in total users and Medicaid charges. Similarly, if MMC programs leave FQHCs with a higher level of uninsured users, this will be reflected in total uncompensated charges.

## **INDEPENDENT VARIABLES**

We used multiple regressions to estimate the effects of mandatory Medicaid managed care (MMC) on the demands for FQHC services. The econometric specifications used in the three equations were virtually identical and consist of a set of control variables for county-level demand and FQHC resources, as well as measures of the state's MMC program. Coefficients on the MMC variables are used to test the main hypotheses.

From the ARF, measures of county population and HMO penetration act as general controls for FQHC demand. Since population varied by several fold, the log of the county population was used in the regression. The number of hospitals with social services and the total number of FQHCs within the county measure the availability of substitute providers. The proportion of the population on Medicaid (Medicaid per capita) was used as the measure of county level need<sup>i</sup>. Finally, from the BCRR, federal grant support is used to control for FQHC resources that can be used to offer uncovered services. Within this set of general controls, we hypothesize that grants, population, and

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<sup>i</sup> Because county level Medicaid enrollments were not universally available for the years 1992-1995, we developed a regression model using the county population, state-level Medicaid enrollments, as well as measures of county urbanization, percent black and percent children, to impute these. Using the 40% of counties that reported their enrollments, we developed an imputation regression with R2 equal to .9. The fitted regression model was then used to impute the county level Medicaid population for the other counties. This approach does not result in errors in variables bias because the errors in the imputed values are uncorrelated with the predicted values themselves.

Medicaid per capita each increase the demand for FQHC services, while HMO penetration, number of rival FQHCs and rival hospitals depress demand.

The structure of each county's Medicaid program is defined by the existence of a *mandatory* managed care (MMC) program (vs. voluntary or none), the tenure (years since implementation) and the type (PCCM, PHP or both). For each MMC, we include, first, an indicator variable for whether the county has a MMC program. In addition, we measure the total years since program inception, entering a zero where the county has no program. This allows program effects to vary as the program matures. We estimate two specifications, one that combines all three programs types (MODEL 1) to test the effect of MMC versus no MMC, and one that distinguishes between the three MMC types (MODEL 2). The program tenure variables are interacted with the variable measuring Medicaid enrollments per capita. Examining whether the MMC variables have negative effects on our measures of total utilization and Medicaid charges tests the hypothesis that MMC negatively impacts FQHC demand.

To test whether MMC effects are different in Oregon, due to the unique nature of the Oregon Health Plan, we created a dummy variable to indicate the state of Oregon and interacted it with the various MMC variables.

## **ANALYSES**

The time series-cross section (TSCS) data used in this study fail to satisfy the statistical assumptions needed for ordinary least squares regression in at least two ways. First, the variable measuring total grants is arguably jointly determined with the FQHC's total demand. FQHCs anticipating higher demand may be rewarded with higher grants as well as vice versa. To address the problem of reverse causality (or endogeneity<sup>i</sup>), we form an instrumental variable (Zohoori and Savitz, 1997) for total grants based on a first stage regression in which grants are regressed on total grants awarded to the state and other variables.

Second, the TSCS data are not likely to satisfy the condition of identically and independently distributed (IID) residuals. To address this problem we apply standard

panel data corrections, using both random and fixed effects. In the latter case, each FQHC has its own individual intercept in the regression equation. A statistical test based on the Hausman statistic is used to choose between the random and fixed effects estimators.

## RESULTS

### Characteristics of the FQHC Counties

There were 496 CHCs and MHCs in 394 counties in 48 States that submitted BCRR data for each of the years 1992 through 1995 (Table 1). Between 1992 and 1995, the number of FQHCs in counties with mandatory managed care nearly doubled from 128 (26%) to 224 (45%). Between 1992 and 1995, the number of counties in States given 1915(b) waivers<sup>ii</sup> by the Health Care Financing Administration increased one and one half times (27% of the 496 counties). In 1994, counties in States that were granted 1115 waivers<sup>iii</sup> tripled, although the number remained relatively small (7.7% of the 496 FQHCs). In 1995, the proportion of counties with MMC programs that were partially or fully capitated increased from 23/128 (18.0%) in 1992 to 70/224 (31.2%).

Tables 2 shows the mean values for the independent variables, for each year of the study, by MMC program type. Counties with PCCM programs had the lowest penetration of managed care, fewer FQHCs or hospitals with social services, the lowest Medicaid and county populations and the lowest amount of grant support. These data most likely reflect the implementation of PCCM programs in more rural counties (Slifkin *et al.*, 1998; Moscovice *et al.*, 1998).

Counties with both PHP and PCCM programs had the highest number of hospitals with social services. Counties with only PHP had the highest penetration of managed care, the highest number of FQHCs per county, the highest county population, the highest

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<sup>i</sup> An endogenous variable is defined as a predictor variable that is partly determined by factors within the model itself.

<sup>ii</sup> An endogenous variable is defined as a predictor variable that is partly determined by factors within the model itself.

<sup>iii</sup> The 1915(b) waiver or Freedom-of-Choice Waiver, waives states of section 1915(b) of the Social Security Act thereby allowing States to require Medicaid beneficiaries to enroll in managed care, or to implement managed care in only part of the state for certain categories of beneficiaries.

number of Medicaid enrollees per capita, and largest amount of grant support -- reflecting highly urban areas.

Counties with no managed care had intermediate rates of managed care penetration, hospitals with social services, numbers of FQHCs, county and Medicaid populations and federal grant support.

Between 1992 and 1995, counties with only PHP programs had the largest mean change in FQHC total users, increasing by 2,700 (Table 3). Counties with both types of MMC had FQHCs that, on average, saw a decrease in the percentage of charges covered by Medicaid. However, FQHCs in counties with PHP or without MMC saw about a 2% increase in Medicaid covered charges. The mean differences in uncompensated care decreased in all of the FQHCs, but the declines were greatest in counties with mandatory PHP and smallest in those with PCCM alone or with PHP and PCCM (Table 3).

## **MULTIVARIATE ANALYSES**

The fixed effects regressions of Total Users are given in Table 4, Medicaid Charges in Table 5 and Uncompensated Care (uncompensated charges) in Table 6. To better focus the results, the incremental Oregon effects are displayed in Tables 7, 8 and 9. In descending order, the independent variables for these regressions consist of general control variables (first five variables in each table), Medicaid enrollees per capita in the county (MCAP) and, finally, the presence of Medicaid managed care programs, as described. Overall, the equation fits are excellent as measured by variance explained ( $R^2$  exceeds .99 in all regressions). The Hausman statistics indicate that fixed effects are preferred to random effects in all three regressions. Therefore, we present fixed effects results in all tables.

### **Independent Variables**

The general controls take on the expected sign in all cases. The log of population is positive (increases demand) and statistically significant in all three regressions. HMO penetration is negative (reduces demand) in the total user and Medicaid charges regression and is positive in the uncompensated charges regressions. However, the



effects are statistically insignificant. The controls for substitute providers (number of FQHCs and hospitals with social services) have negative signs, as expected, although only HWSS is statistically significant.

The instrumental variable for the amount of grant support is positive and significant in all of the estimated models. Increasing grant support increased the total number of users, Medicaid charges and uncompensated care. This provides some evidence that FQHCs use grant revenues to attract and serve users of all types.

Finally, the control for Medicaid users per capita takes on the expected positive sign in the total users and Medicaid charges regressions. More Medicaid enrollees increase the market from which to draw users. The effect is statistically significant in Model 1 of these two regressions, but only at  $p < .10$ . The magnitude of this effect is also striking –for each 1% increase in Medicaid per capita, total users also increase by about 1%. For example, if Medicaid per capita were to increase from 9% to 10% and total users at an FQHC were 1000, then total users would be expected to from 1000 to 1010. Finally, the Medicaid per capita effect is virtually non-existent in the uncompensated charges regressions, except where it is interacted with the Medicaid program variables as discussed below.

### **Mandatory Managed Care Variables**

The results of interest are for the Medicaid program variables. These effects are discussed separately for each of the three regressions (Tables 4-6).

#### ***Total Users***

Several of the Medicaid program variables are statistically significant in the total users models, including the effects measured across all (PHP, PCCM or both) programs shown in Model 1 of Table 4. In Model 1, we find that a MMC program that is one year old will increase total users in an FQHC by about 10.6%<sup>i</sup>, but each 10% increase in Medicaid per capita will decrease the effect of MMC by about 3%. Thus, in a typical county, in which Medicaid per capita is about 8%, total FQHC users will increase, on

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<sup>i</sup> The effect of a one year old program is equal to the sum of the coefficient for MMC plus Years of MMC.

average, by about 8%\*. However, if the county has a higher than average Medicaid population, for example, 12%, then total users increase by only about 7%. In model 2 (Table 4), we provide separate results for the three different types of MMC programs: PHP, PCCM, or both. The same pattern of results holds with the net positive effect, but is largest for "both-type" programs that combine PHP and PCCM options. Positive effects (albeit significant only at the .10 level) are roughly equal in exclusively PHP and PCCM systems. Thus, contrary to the main hypothesis, we find that MMC programs lead to increases in total users in FQHCs.

### ***Mandatory Managed Care and Medicaid Charges***

In the Medicaid charges regression (Model 1 of Table 5), we find that a MMC program that is one year old will increase Medicaid charges by about 14% but each 10% increase in Medicaid per capita will reduce them by about 2.2%. In a typical county, where MCAP is about 8%, this works out to a net positive effect on total users of about 12%. Model 2 provides separate results for different types of MMC programs. Here, we find positive results for all programs with the positive effects strongest for MMC plans that are PHP or combine PCCM and PHP options. However, the standard errors of the relative effects make any comparisons across plan types tentative at best. Again, contrary to the initial hypothesis, our data shows that MMC actually increases rather than decreases Medicaid charges.

### ***Mandatory Managed Care and Uncompensated Care***

In Model 1 of Table 6, we find that uncompensated charges are increased in areas that have MMC programs (although the main effect of MMC is not significant). However, this effect is mitigated if there are larger Medicaid populations. For example, in counties with a MMC program, an increase in the Medicaid per capita percentage is associated with a smaller increase in uncompensated charges. Model 2 of Table 6, provides separate results for different types of MMC programs. Here, the general pattern of results is repeated, although most of the variables are not significant at  $p < .05$ . The smallest net effect is for PCCM programs.

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\* The effect of a one-year old program where there is 8% Medicaid penetration is equal to the sum of the coefficients for MMC plus Years of MMC less .08 times the absolute value of the coefficient for Years\*MCAP.

### ***Other Findings: Percent of Charges Due to Medicaid and Percent of Charges that are Uncompensated***

We also estimated regressions (not shown here) for percent of all FQHC charges that are Medicaid and percent of all charges that are uncompensated. We sought to determine whether MMC programs skew the mix of total charges towards a heavier (or lighter) Medicaid dependence or provision of uncompensated care. Given our findings that MMC programs increase each category of use (total users, Medicaid charges and uncompensated charges), it is not surprising that we find no effect of MMC on the percent of charges that are uncompensated. On the other hand, we do find that in states with mature MMC programs and a low Medicaid per capita, MMC programs may result in a net increase in the percentage of FQHC charges due to Medicaid. Overall, however, the effect is virtually zero at mean values of the relevant variables.

### ***Incremental Oregon Effects***

We also tested the hypothesis that MMC operates differently in Oregon due to the special nature of its program. To test this hypothesis we included a series of interaction terms in each regression, in which Oregon dummy variables were interacted with the MMC dummies and program types. The results of these interactions are displayed in Tables 7, 8 and 9. None of the interaction terms are significant in the total users or Medicaid charges regressions. In model 2 of the uncompensated charges regression, the intercept for “both-type” programs is negative and significant (although only at  $p < .10$ ), although the tenure (years) variable is positive and significant. This indicates that OHP initially had no net effect on uncompensated charges, but that it may have increased uncompensated charges as the program has matured. A positive effect is also found for the PHP intercept, also indicating that OHP may have lead to an increase in uncompensated charges.

## **CONCLUSIONS**

Will the growth in mandatory Medicaid managed care programs drive users away from FQHCs and into private sector venues of care? This question is significant, since reductions in FQHC business activity that reduce available resources may ultimately

reduce their ability to provide access to the uninsured and erode an important health-care safety net. The data presented in this paper suggests, in fact, the opposite conclusion. Between the years of 1992-1995, FQHCs in MMC counties were able to maintain and even increase their user base as measured by total users and Medicaid charges. Moreover, such increases were over and above those expected due to increases in population, increases in Medicaid enrollees per capita or Federal grants, which are controlled for in our regressions. MMC increases total users by 7-8% in a program that is one year old. The effect is attenuated in areas with a dense Medicaid population but generally larger in programs that are more seasoned. In addition to total users, Medicaid charges grew under MMC programs.

That FQHCs are able to effectively compete with private sector providers in a MMC environment is not totally surprising. Case studies demonstrate that CHCs perform as well or better than comparable providers in their network (Bureau of Primary Health Care, 1994; GAO, 1995; Lipson, 1996). FQHCs have a historical relationship of serving and depending financially on the Medicaid population. To have effectively competed in MMC counties, FQHCs must have both enrolled as providers and successfully marketed their services to their client base.

Another striking finding is that FQHCs in counties with mature MMC programs have an increasing degree of uncompensated charges. The disparity between increasing Medicaid charges with increasing uncompensated charges may be due to two competing market forces. Demand for FQHC services may increase if the introduction of MMC programs has induced private sector providers to decrease care provision to the uninsured. Alternatively, increases in total users and Medicaid charges may provide FQHCs with the financial resources to offer improved access to an existing base of uninsured clients. Of course, both factors may be in play. There is no incremental effect of Oregon on number of users or Medicaid charges, however there is an incremental increase in uncompensated charges for prepaid health plans.

Significantly, we find that the increases in uncompensated charges are smaller in MMC counties with high Medicaid enrollments per capita. This finding may be due to a decrease in the number of uninsured or FQHC restriction of services or both. In certain states, MMC programs were expanding eligibility and enrolling the previously uninsured.

In areas of expanded insurance eligibility, FQHCs are able to bill a higher percentage of their rendered services for the same population base, thus reducing the proportion of uncompensated care. However, it is also possible that as MMC programs become more seasoned, local competition increases and FQHCs restrict services to the uninsured due to financial pressures. Both explanations are consistent with our results.

Our study has several limitations. This study uses four years of older i.e., 1992 through 1995 data. In 1996, the BCRR reporting format was changed to the UDS. Cross-walking of data between the BCRR and UDS was attempted but proved unreliable because basic definitions (such as that of a “user”) as well as required fields had changed substantially. Data between 1995 and 1996 seemed to make spurious jumps and we were unable to obtain 1997 and 1998 data. At least one other study reports similar difficulties with the BCRR and UDS data (GAO, 2000). The fact that we found virtually no significant results for Oregon may be due to having data for only the first year or two of operation under OHP. In addition, although we used multiple years and a national data set for comparison, the small number of FQHCs affected by OHP decreases our power to detect a difference. Another limitation was the availability of county level data. Many studies emphasize the “local” nature of safety net providers and the complex context in which they operate (Baxter and Mechanic, 1997) yet relatively little information is readily available on local markets. For example, we had to impute county level Medicaid enrollments in a large proportion of our counties.

Taken as a whole, our results show that FQHCs were maintaining a vital role under mandatory managed care programs. They increased their user base overall and within the Medicaid market. FQHCs were offering increased overall services to the uninsured as measured by uncompensated charges. This suggests that FQHCs were able to compete with the private sector within the Medicaid market and, using their resources, continue to fulfill their role as a medical safety net. This paper however, does not necessarily reflect the long-term survivability of FQHCs. One caveat is that most FQHCs still receive special subsidies under the mandate for cost-based reimbursement (Coughlin *et al.*, 1999). Although the phasing out of such subsidies is now on hold, the loss of this revenue could be substantial. In addition, if increased uncompensated care burdens at FQHCs do not represent an increase in net access for the uninsured but instead a shifting

of the burden from other providers, FQHCs will come under increasing financial pressures. This may be especially true in Oregon where there is an incremental effect for uncompensated care. As such, long-term survival likely depends on their ability to adapt, not only to exogenous but endogenous demands (such as investment outlays, scope of services and charge levels) as well.

**Table 1**  
**Number of FQHCs in Counties with Mandatory Managed Care,**  
**Type of Waiver and Managed Care Model by Year.**

	1992	1993	1994	1995
<b>Mandatory Medicaid managed care</b>	128	141	206	224
<b>Waiver type</b>				
1115 waiver	11	11	36	38
1915(b) waiver	117	130	170	186
<b>Managed care model</b>				
PCCM	58	70	94	109
PHP	23	23	52	70
Both PHP & PCCM	47	48	60	47

**Table 2**  
**Means by Program Type and Year**

		PCCM	PHP	BOTH	NONE
<b>County population</b>	1992	94,000	817,316	652,722	604,198
	1993	162,286	953,522	667,462	587,219
	1994	75,753	722,950	670,008	690,344
	1995	77,101	674,732	676,683	710,166
<b>Penetration of Managed care</b>	1992	.03	.38	.18	.09
	1993	.06	.40	.28	.10
	1994	.025	.306	.314	.130
	1995	.034	.349	.337	.150
<b>Grant support</b>	1992	1,314,049	2,209,912	1,690,015	1,636,690
	1993	1,373,025	2,423,739	1,732,203	1,666,496
	1994	1,375,526	2,134,513	1,840,756	1,756,556
	1995	1,408,331	2,208,705	1,930,288	1,841,927
<b>Number FQHCs</b>	1992	1.17	2.59	2.27	1.72
	1993	1.25	2.79	2.22	1.71
	1994	1.12	2.24	2.19	1.82
	1995	1.12	2.15	2.19	1.84
<b>Hospitals with social services</b>	1992	1.62	7.49	8.29	6.03
	1993	2.16	7.61	8.49	5.95
	1994	1.28	6.05	8.08	6.90
	1995	1.29	5.69	8.08	7.08
<b>Medicaid population per capita</b>	1992	.04	.136	.09	.095
	1993	.05	.16	.10	.10
	1994	.06	.136	.103	.11
	1995	.06	.144	.103	.11

**Table 3**  
**Change in Mean Differences between 1992-1995 in Total Users, Percentage of Charges Covered by Medicaid, and Uncompensated Care by Type of Mandated Managed Care in the County**

	<b>PCCM</b>	<b>PHP</b>	<b>BOTH</b>	<b>NONE</b>
<b>Change in total users</b>	1,363.24	2,722.65	2,416.48	2,390.66
<b>Change in Medicaid %</b>	.008	.023	-.029	.020
<b>Change in % uncompensated</b>	-.022	-.044	-.020	-.037

**Table 4**  
**Regression of Log of Total Users**

	<b>MODEL 1</b>			<b>MODEL 2</b>		
	<b>Coefficient</b>	<b>Standard Error</b>	<b>P Value</b>	<b>Coefficient</b>	<b>Standard Error</b>	<b>P Value</b>
<b>Population</b>	0.681	0.201	0.001	0.682	0.205	0.001
<b>HMO penetration</b>	-0.100	0.062	0.109	-0.094	0.068	0.170
<b>Number of FQHCs</b>	-0.088	0.149	0.557	-0.076	0.150	0.614
<b>Number of hospitals with social services</b>	-0.307	0.090	0.001	-0.309	0.091	0.001
<b>Medicaid per capita</b>	0.911	0.532	0.087	0.746	0.559	0.182
<b>Grants</b>	0.999	0.146	0.000	1.020	0.148	0.000
<b>MMC</b>	0.065	0.019	0.001			
<b>Years of MMC</b>	0.041	0.013	0.002			
<b>YEARS*MCAP</b>	-0.315	0.097	0.001			
<b>PCCM</b>				0.042	0.026	0.111
<b>PHP</b>				0.055	0.034	0.099
<b>BOTH</b>				0.144	0.042	0.001
<b>Years of PCCM</b>				0.037	0.017	0.032
<b>Years of PHP</b>				0.039	0.032	0.218
<b>Years of BOTH</b>				0.046	0.022	0.041
<b>Years PCCM*MCAP</b>				-0.240	0.185	0.194
<b>Years PHP*MCAP</b>				-0.233	0.159	0.143
<b>Years BOTH*MCAP</b>				-0.576	0.174	0.001
<b>R SQUARE</b>	.99			.99		
<b>HAUSMAN (P VALUE)</b>	94.07 (.0000)			97.95 (.0000)		
<b>F – FIXED EFFECTS (P VALUE)</b>	51.20 (.0000)			50.61 (.0000)		

Table legend- This table presents the regression of the log of total users on controls for FQHC demand as well as MMC variables. The first five variables control for county-level demand and the availability of substitute providers. The sixth variable, Grants, is an instrumented value of grant funding for the FQHC; MMC is a dummy variable that indicates that the FQHC's county has a mandatory Medicaid managed care program in effect. Years of MMC is a measure of the number of years the state's MMC plan has been active in the FQHC's county. In model 2, the dummy variable for mandatory managed care as well as the tenure (years) of MMC are specified separately for each program type, PCCM, PHP or both. All regressions use instrumented values for Grants and are estimated with fixed effects. The Hausman statistic provides a test of the null hypothesis that the random effects are equivalent to fixed effects. The F statistic for fixed effects tests the null hypothesis that fixed effects are not needed in the regression.



**Table 5**  
**Regression of Log of Medicaid Charges**

	MODEL 1			MODEL 2		
	Coefficient	Standard Error	P Value	Coefficient	Standard Error	P Value
<b>Population</b>	1.526	0.391	0.000	1.617	0.397	0.000
<b>HMO penetration</b>	-0.094	0.119	0.430	-0.109	0.130	0.402
<b>Number of FQHCs</b>	-0.328	0.363	0.366	-0.245	0.364	0.501
<b>Number of hospitals with social services</b>	-0.772	0.188	0.000	-0.818	0.189	0.000
<b>Medicaid per capita</b>	1.884	1.027	0.067	1.204	1.078	0.264
<b>Grants</b>	2.550	0.284	0.000	2.675	0.287	0.000
<b>MMC</b>	0.116	0.037	0.002			
<b>Years of MMC</b>	0.026	0.025	0.300			
<b>YEARS*MCAP</b>	-0.222	0.185	0.233			
<b>PCCM</b>				0.069	0.050	0.167
<b>PHP</b>				0.148	0.065	0.023
<b>BOTH</b>				0.206	0.080	0.010
<b>Years of PCCM</b>				0.073	0.033	0.028
<b>Years of PHP</b>				-0.043	0.061	0.479
<b>Years of BOTH</b>				0.006	0.043	0.893
<b>Years PCCM*MCAP</b>				-0.919	0.351	0.009
<b>Years PHP*MCAP</b>				0.262	0.304	0.389
<b>Years BOTH*MCAP</b>				-0.289	0.330	0.399
<b>R SQUARE</b>	.99			.99		
<b>HAUSMAN (P VALUE)</b>	159.20 (.0000)			171.08 (.0000)		
<b>F – FIXED EFFECTS (P VALUE)</b>	31.96 (.0000)			31.91 (.0000)		

Table legend- This table presents the regression of the log of FQHC charges due to Medicaid on controls for FQHC demand as well as MMC variables. The first five variables control for county-level demand and the availability of substitute providers. The sixth variable, Grants, is a an instrumented value of grant funding for the FQHC, MMC is a dummy variable that indicates that the FQHC's county has a mandatory Medicaid managed care program in effect. Years of MMC is a measure of the number of years the state's MMC plan has been active in the FQHC's county. In model 2, the dummy variable for mandatory managed care as well as the tenure (years) of MMC are specified separately for each program type, PCCM, PHP or both. All regressions use instrumented values for Grants and are estimated with fixed effects. The Hausman statistic provides a test of the null hypothesis that the random effects are equivalent to fixed effects. The F statistic for fixed effects tests the null hypothesis that fixed effects are not needed in the regression.

**Table 6**  
**Regression of Log of Uncompensated Charges**

	MODEL 1			MODEL 2		
	Coefficient	Standard Error	P Value	Coefficient	Standard Error	P Value
<b>Population</b>	0.725	0.391	0.064	0.713	0.399	0.074
<b>HMO penetration</b>	0.171	0.123	0.167	0.173	0.134	0.199
<b>Number of FQHCs</b>	-0.404	0.288	0.161	-0.375	0.289	0.195
<b>Number of hospitals with social services</b>	-0.277	0.175	0.113	-0.292	0.176	0.098
<b>Medicaid per capita</b>	-0.071	1.041	0.870	-0.348	1.091	0.750
<b>Grants</b>	1.220	0.291	0.000	1.335	0.295	0.000
<b>MMC</b>	0.035	0.037	0.353			
<b>Years of MMC</b>	0.110	0.026	0.000			
<b>YEARS*MCAP</b>	-0.682	0.188	0.000			
<b>PCCM</b>				-0.002	0.051	0.970
<b>PHP</b>				0.019	0.065	0.771
<b>BOTH</b>				0.156	0.083	0.060
<b>Years of PCCM</b>				0.136	0.034	0.000
<b>Years of PHP</b>				0.052	0.061	0.397
<b>Years of BOTH</b>				0.055	0.045	0.219
<b>Years PCCM*MCAP</b>				-0.733	0.355	0.040
<b>Years PHP*MCAP</b>				-0.548	0.306	0.074
<b>Years BOTH*MCAP</b>				-0.433	0.339	0.201
<b>R SQUARE</b>	.99			.99		
<b>HAUSMAN (P VALUE)</b>	34.69 (.0001)			70.21 (.0000)		
<b>F – FIXED EFFECTS (P VALUE)</b>	29.96 (.0000)			29.19 (.0000)		

Table legend- This table presents the regression of the log of FQHC charges that are uncompensated on controls for FQHC demand as well as MMC variables. The first five variables control for county-level demand and the availability of substitute providers. The sixth variable, Grants, is an instrumented value of grant funding for the FQHC, MMC is a dummy variable that indicates that the FQHC's county has a mandatory Medicaid managed care program in effect. Years of MMC is a measure of the number of years the state's MMC plan has been active in the FQHC's county. In model 2, the dummy variable for mandatory managed care as well as the tenure (years) of MMC are specified separately for each program type, PCCM, PHP or both. All regressions use instrumented values for Grants and are estimated with fixed effects. The Hausman statistic provides a test of the null hypothesis that the random effects are equivalent to fixed effects. The F statistic for fixed effects tests the null hypothesis that fixed effects are not needed in the regression.

**Table 7**  
**Regression of Log of Total Users –Incremental Oregon Effects**

	MODEL 1			MODEL 2		
	Coefficient	Standard Error	P Value	Coefficient	Standard Error	P Value
<b>MMC</b>	-0.102	0.149	0.494			
<b>PCCM</b>				-0.125	0.200	0.532
<b>PHP</b>				-0.017	0.468	0.971
<b>BOTH</b>				-0.305	0.497	0.539
<b>YEARS of MMC</b>	-0.010	0.058	0.861			
<b>YEARS of PCCM</b>				0.043	0.125	0.732
<b>YEARS of PHP</b>				-0.021	0.127	0.871
<b>YEARS of BOTH</b>				0.101	0.298	0.735

Table Legend-This table presents the estimated differences of the effects of managed care in Oregon compared to the rest of the country. The dependent variable is the log of total charges and the measures of managed care are identical to those defined for Table 4.

**Table 8**  
**Regression of Log of Medicaid Charges –Incremental Oregon Effects**

	MODEL 1			MODEL 2		
	Coefficient	Stand Error	P Value	Coefficient	Stand Error	P Value
<b>MMC</b>	0.309	0.284	0.276			
<b>PCCM</b>				-0.194	0.380	0.611
<b>PHP</b>				1.304	0.889	0.143
<b>BOTH</b>				-0.359	0.944	0.704
<b>YEARS of MMC</b>	-0.165	0.111	0.137			
<b>YEARS of PCCM</b>				0.345	0.237	0.147
<b>YEARS of PHP</b>				-0.305	0.242	0.208
<b>YEARS of BOTH</b>				0.392	0.567	0.489

Table Legend-This table presents the estimated differences of the effects of managed care in Oregon compared to the rest of the country. The dependent variable is the log of Medicaid charges and the measures of managed care are identical to those defined for Table 5.

**Table 9**  
**Regression of Log of Uncompensated Charges – Incremental Oregon Effects**

	MODEL 1			MODEL 2		
	Coefficient	Standard Error	P Value	Coefficient	Standard Error	P Value
<b>MMC</b>	-0.022	0.288	0.940			
<b>PCCM</b>				-0.569	0.385	0.139
<b>PHP</b>				1.562	0.900	0.083
<b>- BOTH</b>				-1.604	0.955	0.094
<b>YEARS of MMC</b>	0.087	0.112	0.439			
<b>YEARS of PCCM</b>				0.630	0.240	0.009
<b>YEARS of PHP</b>				-0.150	0.245	0.540
<b>YEARS of BOTH</b>				1.368	0.575	0.017

Table Legend-This table presents the estimated differences of the effects of managed care in Oregon compared to the rest of the country. The dependent variable is the log of uncompensated charges and the measures of managed care are identical to those defined for Table 6.

## References

- Area Resource File (ARF), Office of Research and Planning, Bureau of Health Professions, US Department of HHS (February 1998 Edition)
- Baxter RJ, Mechanic RE. The Status of Local Health Care Safety Nets. *Health Affairs*. 1997;16:7-23.
- Belzer, MB. Will Congress Shred the Safety Net? *Postgraduate Medicine* 1995; 98:15-19
- Bodenheimer, T. The Oregon Health Plan – Lessons for the Nation. Second of Two Parts. *NEJM* 1997;337:720-723.
- Bureau of Primary Health Care. Community Health Centers' Performance Under Managed Care. Executive Summary of a Report Prepared for BPHC by Lewin-VHI, Inc. December, 1994.
- Coughlin TA, Zuckerman S, Wallin S, Holahan J. A Conflict of Strategies: Medicaid Managed Care and Medicaid Maximization. *Health Services Research*. 1999;34:281-93.
- Dievler A, Giovannini T. Community Health Centers: Promise and Performance. *Medical Care Research and Review*. 1998;55:405-431
- General Accounting Office (GAO). Community Health Centers: Challenges in Transitioning to Prepaid Managed Care. Washington, DC: US General Accounting Office. 1995.
- Government Accounting Office (GAO). Community Health Centers: Adapting to Changing Health Care Environment Key to Continued Success. Washington, DC: US General Accounting Office. 2000
- Harrington M, Frazer H, Aizer A. Mathematica Policy Research, Inc. Medicaid Managed Care and FQHCs: Experiences of Plan, Networks and Individual Health Centers. Contract # 240-94-0035; DO 240-96-0500. November, 1997
- Holahan, J., Zuckerman, S, Evans, A, and S.Rangarajan. 1998. "Medicaid Managed Care in Thirteen States." *Health Affairs* 17 (1) 43-63.
- Korenbrodt CC, Miller G, Greene J. The Impact of Medicaid Managed Care on Community Clinics in Sacramento County, California. *American Journal of Public Health*. 1999;89:913-17.

- Lewin-VHI, Inc. An Evaluation of the Impact of the Social Security Act Section 1115(a) Waivers on Federally Qualified Health Centers. Submitted to Bureau of Primary Health Care, Health Resources and Services Administration Contract #282-92-0041, January 1996.
- Lipson DJ, Naierman N. Effects of Health System Changes on Safety-Net Providers. *Health Affairs* 1996;15:33-48.
- Moscovice I, Casey M, Krein S. Expanding rural managed care: enrollment patterns and prospects. *Health Affairs*. 1998;17:172-9.
- Oregon Department of Administrative Services. Analysis of OR Health Care Safety Net Services, Office for Oregon Health Plan Policy and Research. <http://www.ohppr.state.or.us> Feb. 1999
- Oregon Health Plan Policy and Research. Safety Net Study. <http://www.ohppr.state.or.us> March 1999
- Slifkin RT, Hoag SD, Silberman P, Felt-Lisk S, Popkin B. Medicaid managed care Programs in Rural Areas: a Fifty State Overview. *Health Affairs*. 1998;17:217-227.
- Swigonski NL, The Role of FQHCs under the Oregon Health Plan. Second Interim Report to HCFA Chapter 6. Contract No. 500-04-0056.
- Sparer M. Medicaid Managed Care and the Health Reform Debate: Lessons from New York and California. *Journal of Health Politics, Policy and Law*. 1996;21:433-460
- Zohoori, N, and D.A. Savitz. 1997. "Econometric Approaches to Epidemiologic Data: Relating Endogeneity and Unobserved Heterogeneity to Confounding." *Annals of Epidemiology* 7:251-257