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**EVALUATION OF THE  
UTAH PREPAID MENTAL HEALTH PLAN**

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## EXECUTIVE SUMMARY

In this report, we present research findings pertaining to a Medicaid mental health carve-out program as implemented in the State of Utah — the Utah Prepaid **Mental Health Plan (UPMHP)**. The report is organized around the following research questions:

- What were the organizational and **financial** characteristics of the UPMHP and how did the UPMHP evolve over time?
- What impact did the UPMHP have on the organization of mental health services delivery and the use of mental health services by Medicaid beneficiaries?
- What was the financial impact of the UPMHP on contracting mental health providers and on the Utah Medicaid program?

### **What were the organizational and financial characteristics of the UPMHP and how did the UPMHP evolve over time?**

Given the number of actors involved and the complexity of the conceptual and practical issues that needed to be addressed, the development of the UPMHP proceeded fairly smoothly, albeit somewhat more slowly than planned. In July, 1991, three Community Mental Health Centers (CMHCs) began serving Utah Medicaid beneficiaries under **capitated** payment arrangements with the Utah Medicaid program, while eight CMHCs chose not to participate in the UPMHP. The contracting CMHCs were to be at no risk for ambulatory mental health care expenditures in the UPMHP's first two years and at modified risk for inpatient care expenditures. Full-risk contracting was to be phased in during the third year of the UPMHP.

The UPMHP was affected by several changes in the program's environment during its first three years. Full-risk contracting was delayed an additional six months when the CMHCs were asked to provide services to a new group of children without benefit of data adequate for negotiation of acceptable **capitation** rates. When the Utah legislature imposed a provider tax to fund Medicaid, the CMHCs in the UPMHP were required to contract with free-standing psychiatric hospitals. As a result, one of these CMHCs incurred increased administrative costs and experienced additional **difficulties** in controlling inpatient admissions and discharges from these hospitals. Throughout the first three years of the UPMHP, a housing shortage diverted administrative attention and compromised the ability of both contracting and **non-**

contracting CMHCs to manage the timely transition of hospitalized patients to residential facilities. The impact of changes in the way that State Mental Hospital beds are managed, another potentially important influence on the UPMHP, is uncertain at present.

In addition to these environmental changes, which had an impact on the UPMHP as a whole, several issues arose that posed challenges for the participating CMHCs. For instance, the Medicaid agency introduced a new risk sharing arrangement during third-year contract negotiations that shifted fifteen percent of the savings to the Medicaid agency. Also, continuing reliance on a shadow claims system for program monitoring purposes required that the contracting CMHCs devote resources to develop, submit, revise, and resubmit claims to the Medicaid agency.

### **What Impact Did the UPMHP Have on the Organization of Mental Health Services Delivery and the Use of Mental Health Services by Medicaid Beneficiaries?**

Participation in the UPMHP was expected to encourage changes in the organization of service delivery on the part of the CMHCs and changes in the pattern of service use on the part of Medicaid beneficiaries. Data collected through interviews with CMHC administrative and clinical staff over a three year period was used to document service delivery changes. Data on service utilization and expenditures for three years prior to the UPMHP and three and a half years after its implementation was used to assess changes in service use.

At the operational level, both contracting and non-contracting CMHCs reported expansions in children's programs, day treatment programs, and case management. And, contracting CMHCs, and those CMHCs anticipating UPMHP contracting, began to focus staff attention on ways to increase the efficiency with which discharges from the hospital were managed and outpatient services delivered, while maintaining quality of care. Several of the larger non-contracting centers also reported taking specific actions to position themselves for future participation in the UPMHP, including increasing the quantity of outpatient services provided to Medicaid beneficiaries, to build up their rate base, and training staff in the philosophy and activities associated with "managed care."

The analysis of utilization and expenditures for mental health services is based on a **pre/post** comparison with a contemporaneous comparison group. Both features are essential to drawing appropriate inferences about the effects of the UPMHP in the absence of a randomized controlled trial. A major concern in conducting the analysis was that something would be confounded with the presence of the UPMHP that

would cause, or be correlated with, use and expenditures. The pre-post aspect of the design controls for historical differences among the CMHCs. The use of a contemporaneous control group constructed with data from the non-contracting sites adjusts for secular trends that may be confounded with trends in treatment in the CMHCs that became capitated.

The results of the analysis suggest that the UPMHP reduced expenditures on acute inpatient mental health care by reducing inpatient admissions. Expenditures and visits for outpatient mental health care for Medicaid beneficiaries trended upward at both capitated and non-capitated CMHCs throughout the six and a half year study period, with no significant effects of UPMHP occurring for outpatient care. Thus, there was no evidence indicating that outpatient care was substituted for reduced inpatient admissions.

There are several caveats to these conclusions that pertain to the overall research design as well as limitations in the available data. A quasi-experimental research design was employed, with the non-capitated sites functioning as a comparison group. This assumes that the comparison, non-capitated sites are not “contaminated” by the presence of the UPMHP. This may be a problematic assumption. If the non-capitated sites were anticipating participating in the UPMHP in the future (and most did join the UPMHP after the study period), they may have expanded outpatient treatment in order to increase their expenditure base for the calculation of capitated payments. And they may have increased inpatient utilization for the same reason. Or, inpatient utilization may have been reduced if control mechanisms were put into place early, in order to determine their effectiveness prior to capitation. Utilization trends for the non-capitated sites in the last year of the study period provide no strong evidence concerning these questions.

Second, the analysis does not take into account the possibility that the capitated CMHCs may have shifted utilization and expenditures into areas not covered in their contracts but reimbursed by the State through other means. Two possible areas for cost shifting include emergency room visits and admissions to the state hospital. We examined emergency room use in the first year of the UPMHP and found no difference for Medicaid beneficiaries in capitated and non-capitated sites (Christianson, et al., 1995). We were not able to assess differences in state hospital use due to limitations in the data. However, the number of state hospital beds was constrained during the study period and our interview data did not suggest that capitated CMHCs were able to shift significant numbers of patients to the state hospital. The data did not allow analysis of possible shifting of patients to **nursing** homes, nor have we assessed the impact of the UPMHP on expenditures for medications. However, we did estimate models with total physical and mental health

care expenditures as the dependent variable (omitting well child care and maternity care). **If major** shifting of care from services included under the **capitated** rate to **non-covered** services occurred, a positive UPMHP effect would be observed in these regressions. Instead, a negative and significant effect was observed for the **first** two and a half years of the UPMHP, and a negative but insignificant effect was observed in the next year.

### **What Was the Financial Impact of the UPMHP on Contracting Mental Health Providers and on the Utah Medicaid Program?**

The UPMHP altered the way in which Medicaid funds flowed to contracting CMHCs and redefined their responsibilities with respect to the provision of services to the Medicaid population. Thus, the change in payment arrangements under the UPMHP had potential financial implications for both the contractors and state government in Utah.

When examining the financial experience of the contracting and **non-contracting** CMHCs under the UPMHP, it is important to note that the contracting CMHCs were not a “random sample” of the CMHCs in Utah. Because of the voluntary nature of the UPMHP, it seems reasonable to assume that CMHCs expecting to fare well under **capitation** payments would be the entities most likely to participate. Data for assessing the financial impact of the UPMHP on contracting CMHCs were abstracted from financial statements provided by both contracting and non-contracting CMHCs in Utah. These data covered the three fiscal years prior to initiation of the UPMHP, as well as the first three years of the UPMHP. Financial statements were solicited after the first, second, and third years of the UPMHP. All data were reviewed for consistency and completeness. Financial officers of the CMHCs were interviewed in person after the first fiscal year and by telephone as needed thereafter for clarification of entries on financial statements. Relatively complete data on revenues and expenses were collected for the three contracting CMHCs and five of the eight non-contracting CMHCs. The accounting practices of the three small, rural CMHCs administered through state government offices were not comparable to those of the other CMHCs. Consequently, they were eliminated from the analysis. Relatively complete balance sheet information, consistently reported over the study period, was available for three of the five non-contracting CMHCs. Therefore, comparisons relying on balance sheet data were possible for the three contracting CMHCs and three of the non-contracting CMHCs.

In order to **evaluate** financial performance of CMHCs under the UPMHP, we used a wide range of standard financial indicators. The results suggest there were relatively few financial differences between contracting and non-contracting CMHCs

during the first three years of the UPMHP that didn't already exist prior to the UPMHP. For both groups, the six year study period was one of strong revenue growth, which allowed for increases in fixed assets and cash reserves. Further, those differences that did exist were generally favorable for contracting CMHCs and appeared to reflect the continuation of trends that occurred prior to the contracting period. Consequently, in this instance, the decision to contract appears to have had, at worst, a neutral effect on CMHC financial performance. It should be recognized that other managed care capitation programs with different designs may yield different results. In the UPMHP, the contracting CMHCs may have fared well financially because they "self-selected" into the program. Their financial condition was strong prior to participation in the UPMHP and/or the phase in of financial risk allowed them to gradually adjust to full capitation payments.

A second critical part of the analysis of the financial impact of the UPMHP addressed whether the Utah Medicaid program saved dollars by implementing the UPMHP. Estimation of program savings **first** requires the projection of Medicaid program expenditures at the capitated sites if the UPMHP had not been implemented. Then, the actual payments to the capitated CMHCs must be deducted from these projected expenditures to produce an estimate of savings. In the analysis of the UPMHP, neither of these calculations is straightforward. For instance, there are a variety of approaches that could be taken to project what expenditures would have been in the absence of the UPMHP. We employed three different methods. Under Method 1, separate time trends for inpatient and outpatient expenditures were estimated using data for the capitated sites prior to the UPMHP; projections of expenditures at the capitated sites if the UPMHP had not been implemented were made using these time trends. Method 2 is a variation of Method 1. The only difference is that the projections were adjusted for changes in the proportion of enrollment in different Medicaid eligibility categories at the capitated sites. We regard the estimates generated using Method 2 to be the most appropriate for estimating Medicaid savings. Method 3 differs **from** Method 1 in that the time trend in expenditures at the non-capitated sites after implementation of the UPMHP is assumed to be the best indicator of how expenditures would have trended forward at the capitated sites in the absence of the UPMHP.

We employed two different approaches to estimate the actual payments made by Medicaid to the contracting CMHCs. The first approach used the total payment amounts reported by the Utah Medicaid program in its Waiver Renewal Request (1996). The second approach estimated these payment amounts using Medicaid eligibility data and per person per month capitated rates. The payments reported by the Utah Medicaid program were less than the estimated payments, resulting in

greater projected cost savings under each of the three models described above, when the Medicaid program reported payments were used.

Using Method 2, and our estimates of program payments, we found savings of **\$2,159,093** to Medicaid for the first three and a half years of the UPMHP. There were **\$3,886,751** in savings on inpatient care for this period, but these savings were offset by **\$1,727,658** in “losses” on outpatient care during the last study year. Inpatient savings were modest in the first year of the UPMHP (\$52,045) but expanded in subsequent years as the trend line diverged further **from** the actual payment level.

This same pattern of inpatient savings, diminished by outpatient “losses,” characterized all of the overall estimates of program savings. However, the **\$2,159,093** estimate of savings was the lowest of the six estimates produced through combining the three different trend methods with the two different payment calculations. For instance, using our program payment calculations, Method 1 generated **\$9,232,831** in program savings and Method 3 yielded **\$2,414,458** in program savings. The large difference in the Methods 1 and 2 estimates illustrates how sensitive the calculations are to the adjustment for changes in proportions of beneficiaries in different eligibility categories. As noted above, the estimates of cost savings using payments as reported by the Utah Medicaid program are larger for each of the three methods: **\$12,938,973** (Method 1), **\$5,860,236** (Method 2), and **\$3,964,219** (Method 3).

A caution in this analysis is the sensitivity of the projected Medicaid program savings to the methods used to project trends and to the two competing estimates of program payments. It also should be noted that none of the estimates of program savings were adjusted for fee-for-service payments made to capitated CMHCs for some mental health services. However, as reported by the Utah Division of Health Care Financing in its Waiver Renewal Request (1996), these payments are relatively small in comparison to the estimated savings.

While the ability of managed mental health programs to generate savings for Medicaid is an important policy topic, policymakers are also concerned about impacts on process of care and the mental health of beneficiaries. These issues are not addressed in this report. However, we are evaluating (under NIMH funding) the experience of a group of Medicaid beneficiaries with schizophrenia, comparing process and outcomes for members of this beneficiary subgroup who reside in capitated and non-capitated catchment areas. This analysis relies on medical records and beneficiary interview data (Manning, et al., 1996).

## INTRODUCTION

The reimbursement of mental health care providers using capitation payment rates has been a controversial issue for Medicaid programs. In theory, capitated payment, when accompanied by financial risk, should reduce the use of expensive inpatient treatment settings and encourage the use of less costly inpatient settings and outpatient treatment programs, and thereby reduce overall Medicaid expenditures, because capitated payments assign the responsibility for the financing and delivery of services to a single organizational entity. However, a major issue in the use of capitation reimbursement has been the development of appropriate **financial** incentives for providers. **Capitation** arrangements that reward cost containment could lead to the under-provision of services, especially to subgroups of beneficiaries with chronic mental illness. On the other hand, capitation payment arrangements that provide only weak cost containment incentives could be ineffective at restraining Medicaid expenditures.

Medicaid programs have applied capitation payment methodologies to mental health care by including mental health services under capitation payments received by Health Maintenance Organizations or by breaking out mental health services from other benefits and paying organizations to manage them. This second approach — sometimes called a “mental health carve out” — has two variations. Under the first variation, Medicaid contracts on a capitated basis with a single entity that is responsible for the provision of all mental health services to beneficiaries in the state. This is the approach that has been taken by the Massachusetts (Callahan, et al., 1995) and Iowa (Micali and Nardini, 1996) Medicaid programs. Under the second variation, Medicaid contracts directly with local mental health entities, such as community mental health centers, that agree to provide services to all beneficiaries in their geographical catchment areas and are reimbursed on a capitated basis. The presumed advantage of this second approach is that the responsibility for the coordination and delivery of mental health care rests with entities that are familiar with local delivery systems and treatment resources (Christianson and Gray, 1994).

In this report, we present research findings pertaining to the second variation of a Medicaid mental health carve out program, as implemented in the State of Utah -- the Utah Prepaid Mental Health Plan (UPMHP). The report is organized around the following three research questions:

1. What were the organizational and financial characteristics of the UPMHP, and how did the UPMHP evolve over time?

2. What impact did the UPMHP have on the organization of mental health services delivery and the use of mental health services by Medicaid beneficiaries?
3. What was the financial impact of the UPMHP on contracting mental health providers and on the Utah Medicaid program?

## DISCUSSION

### **What Were the Organizational and Financial Characteristics of the UPMHP, and How Did the UPMHP Evolve Over Time?**

The concept of a prepaid program for mental health care for Utah Medicaid beneficiaries was developed during the 1980s. In order to understand the characteristics of the UPMHP as it was implemented and how the design of the program changed in its initial years, it is **useful** to review the original context for its development.

**Factors influencing change--During** the 1980s, Utah's Medicaid agency experimented with several strategies to contain costs of mental health services. In 1982, the state began enrolling Medicaid clients in either **staff-** or group-model **HMOs** which offered a comprehensive set of Medicaid-financed psychiatric and physical health care services. By 1984, a significant number of chronically mentally ill Medicaid clients had disenrolled from the **HMOs** to seek fee-for-service care for their **particular** needs. Utah responded by eliminating mental **health** inpatient and physician services **from** its contracts with **HMOs**.

At about the same time (December, **1984**), Utah's Certificate of Need program expired and eight new freestanding psychiatric facilities were licensed in Utah. Acute care hospitals with psychiatric wings also increased their bed capacity. By 1987, inpatient psychiatric bed availability had doubled from 784 beds to over 1,623 beds (Speckman, 1992, p. 1). The Medicaid agency reimbursed inpatient mental health services for its beneficiaries directly, with the exception of State Hospital services, and **also** paid for outpatient services. County-level mental health authorities used state and local funds to support outpatient treatment services and were responsible for the state "match" for all Medicaid clinical services, with the exception of inpatient services. This arrangement created incentives for providers to shift services to more expensive, increasingly available inpatient settings (Speckman, 1992, p. 5). Although the Medicaid program was under pressure from the state legislature to allow

freestanding psychiatric hospitals to participate, it sought to contain inpatient costs by limiting mental health service providers to general acute care hospitals, their distinct part psychiatric units, and the State mental hospital.

**Obtaining a HCFA waiver--**In 1985, with the encouragement of several CMHCs, the Utah legislature directed the Medicaid agency to develop a single capitation payment system for both inpatient and outpatient mental health services. Utah initiated discussions with the Health Care Financing Administration (HCFA) concerning a freedom-of-choice waiver, but because some of the CMHCs provided clinic services under a prepaid plan administered by the State's Division of Mental Health, comprehensive fee-for-service data adequate to support a waiver application were not available. On the advice of HCFA, Utah decided to delay its application until data for three additional years were available, and as a result began the waiver application process in September, 1988.

Two obstacles extended the waiver approval process by an additional two years. First, while the CMHCs were important components of Utah's mental health care system, they were not qualified under HCFA regulations to provide inpatient hospital services and physician psychiatric services, and therefore would not be eligible as UPMHP contractors. The CMHCs became eligible to participate in the UPMHP when HCFA agreed to allow Utah to subsume these services under the hospital and mental health clinic categories.

A second obstacle surfaced when it was discovered that an exemption from the State Insurance Commissioner was required to allow non-HMO providers to enter into risk-based contracts for a limited scope of services. An exemption was granted on the basis that close monitoring by Utah and HCFA would provide sufficient safeguards to protect Medicaid clients. HCFA approved Utah's waiver request in April, 1990.

**Establishing a provider network--**Utah has eleven CMHCs that provide services within separate catchment areas which together cover all geographic areas of the state. Four of the CMHCs are located along the urban Wasatch Front, and seven serve clients in predominantly rural areas of the state. All of the CMHCs are required by statute to provide a comprehensive range of services that includes: twenty-four hour crisis; inpatient; residential; outpatient; follow-up care and services; day treatment and psychological rehabilitation services; screening for referral; consultation and education services; and case management.

The CMHCs have varying administrative **structures**. Five are operated by the counties in which they are located; three are operated through a contract with a

private, non-profit entity; and three are administered by local, unified state offices under contract with the county (Speckman, 1992, p. 8).

In June, 1990, Utah invited proposals from any organization that could provide the full range of Medicaid **financed** mental health services to clients; proposals were submitted by six of Utah's CMHCs. Medicaid then entered into contract negotiations with these six CMHCs. The negotiations centered on payment levels, but also addressed issues relating to categories of eligible clients, covered and non-covered psychiatric diagnoses, excluded groups, subcontracts, reporting requirements, stop-loss provisions, foster children, and coverage for clients who carried a dual diagnosis.

The capitation rates submitted by the CMHCs as part of their proposals were considered to be too high by Medicaid. The CMHCs, however, argued that these rates were realistic in that they reflected the likely costs of newly mandated service expansions for children and the chronically mentally ill. The CMHCs were concerned that they would bear an unacceptable level of risk for these service expansions unless the State agreed to higher rates for clinic services.

**Medicaaid** contracts with CMHCs under the UPMHP were divided into inpatient and outpatient portions, with financial risk phased in over a three year period. During the first two years, contractors could retain any funds allocated for inpatient care that exceeded payments to inpatient providers. If they believed that they incurred losses on inpatient care during either year, they could petition the State to recalculate their payments. The new payment rate would be based on documented inpatient utilization valued at the State's Medicaid fee-for-service payment rates. While designed to protect the contracting CMHCs from incurring major losses on inpatient care during the first two years, this process did not fully insulate them from financial risk. For instance, if the State's recalculation resulted in an estimate that was less than the capitated payment, the contracting CMHC was required to pay the difference to the State. However, the State's estimate could be less than actual CMHC expenditures **if the** CMHC paid hospitals higher rates than paid by Medicaid, or if the CMHC expended funds for alternatives to inpatient services that were not covered by traditional Medicaid. In these cases, the contracting CMHC could experience financial losses on inpatient care that would not necessarily be recouped through the reconciliation processes. In contrast to inpatient care, the contractors received a capitated payment for clinic services, with a required year-end cost settlement based on the shadow claims data. Thus, for the first two years of the UPMHP, the CMHCs and Medicaid could collect data on the costs of outpatient care reflecting new State mandates without placing the CMHCs at financial risk for this care. These data were then to be used to calculate new capitation rates for the third

year of the UPMHP, when the contractors would assume full risk for both inpatient and clinic services.

The rate formula that was initiated beginning July 1, 1991, was based on Fiscal Year 1989 expenditures, and included adjustments for inflation, new EPSDT and clinic services, and the state's administrative costs. Medical detoxification was not included in the capitation rate, nor was any emergency room service that was usually billed as an outpatient service, or services provided by the State Hospital. Participating CMHCs were required to undertake quality assurance activities and to monitor the accessibility of services to Medicaid beneficiaries.

After negotiations with the six potential contractors, Utah ultimately entered into contracts with three CMHCs. The three contracting CMHCs included ten of Utah's 29 counties, 36 percent of the state's land area, and 50 percent of the population. Their catchment areas contained 52 percent of the State's Medicaid beneficiaries. These CMHCs are located in the state's population center, Salt Lake County and nearby Summit County; three rural counties in the central-eastern area of the state; and a five-county region of the southwest corner of the state. All three **catchment** areas have unemployment rates that are above the state's average. Several service delivery indicators presented in a previous report (Christianson, et al., 1992) indicated that the contracting CMHCs provided relatively more services to the Medicaid population than non-contracting CMHCs prior to the implementation of the UPMHP. The State continued to reimburse Medicaid mental health providers on a fee-for-service basis in areas not covered by capitation contracts.

### **The Operational Impact of the UPMHP**

Given the number of actors involved and the complexity of the conceptual and practical issues that needed to be addressed, the development and implementation of the UPMHP proceeded fairly smoothly, albeit somewhat more slowly than planned (Christianson, et al., 1992, 1995). In July, 1991, the three contracting CMHCs began serving Utah Medicaid beneficiaries under **capitated** payment arrangements. During its **first** year, the program was successful in containing inpatient expenditures, and hence overall expenditures, for the Utah Medicaid program (Christianson, et al., 1995). However, as the UPMHP matured, several questions remained concerning its further development and its potential impact on the contracting CMHCs. First, as with all "natural experiments" in public policy, there was uncertainty about whether the design and essential features of the program would be kept intact over time. The major "threat" to the UPMHP was likely to come from changes in the political environment that could force changes in the program. These changes could be in

response to legislative or other policy initiatives at the state level, or to new federal or state policies that inadvertently influenced program operations.

Second, operating under the UPMHP was expected to pose administrative challenges for the contracting CMHCs. The program placed clear demands on the CMHCs for the provision of data for program monitoring purposes. Also, yearly contract negotiations with the State would be required for continued participation in the program. And, as financial risk was phased in for the CMHCs, administrators would face the challenge of maintaining staff enthusiasm while at the same time implementing increasingly vigorous efforts to control costs.

Finally, assuming that changes in the number and types of patients treated by contracting CMHCs did occur under the UPMHP, it was reasonable to expect that the CMHCs would need to implement changes in service delivery. Under the terms of their contracts with the State, the participating CMHCs were required to offer a continuum of outpatient mental health care, with the **capitation** payment mechanism expected to provide them with additional flexibility to develop new programs. The financial resources needed to add staff and develop programs were expected to come in part from savings on the provision of inpatient care.

In this section, we summarize the evidence relating to each of these issues. The data on which our assessment is based were collected through interviews with Medicaid **officials**, CMHC administrators, and CMHC clinical directors conducted at the end of the first, second, and third years of UPMHP operations. Additional data on patients were assembled from annual reports prepared by the State of Utah Division of Mental Health, Department of Human Services, based on forms submitted each year by all Utah CMHCs.

### **Changes in the Design and Operations of the UPMHP**

Several environmental changes **did** occur that influenced the evolution of the UPMHP over its **first** three years, or have the potential to influence its development in the future. In this section, we briefly describe four such environmental changes.

**Delay in the assumption of full financial risk--**The initial design of the UPMHP also called for the contracting CMHCs to assume full financial risk for all outpatient mental health care used by Medicaid beneficiaries in their catchment areas at the beginning of the third year of the program. However, during the second program year, a change in Medicaid policy allowed providers to bill Medicaid for the provision of rehabilitative services to a group of children under the statutory authority of the Department of Human Services. A lack of historical data on the use of

Medicaid mental health services by the group made it difficult to construct an appropriate **capitated** reimbursement rate. Medicaid decided to collect data on service use during the first six months of the third year of the UPMHP, after which the contracting CMHCs would be required to provide outpatient services to this group, along with all other groups of Medicaid beneficiaries, on a full risk basis. As a consequence, the contracting CMHCs did not begin assuming **financial** risk for outpatient care until January 1, 1994, two and one half years after the start of the UPMHP.

**Imposition of a provider tax to fund Medicaid--**In the last days of the 1993 Utah legislative session, a bill was passed that imposed a tax on all of the hospitals in Utah, including psychiatric hospitals, to help fund the Medicaid program. (Previously, hospitals had “donated” funds to help meet the State’s Medicaid match requirement, but this procedure was found to be in violation of federal regulations.) Although federal law allows **free-standing** psychiatric hospitals to provide services to Medicaid beneficiaries under 21 and over 65 years of age, the policy of the Utah Medicaid program had been to exclude these facilities from participation. Under the new law, because they would be paying the tax, the psychiatric hospitals were allowed to provide care to Medicaid beneficiaries. Furthermore, the new law required the contracting CMHCs to contract with the psychiatric hospitals. The large urban CMHC participating in the UPMHP was forced to renegotiate all of its hospital contracts for children and youth. In addition to the increased administrative costs incurred by this CMHC in dealing with the staffs of multiple hospitals over inpatient admissions, the change made it more **difficult** for the CMHC to educate hospital staff about procedures for admitting and discharging its Medicaid patients.

**Housing shortage--** Particularly during the third year of the UPMHP, CMHCs across the State (contracting and non-contracting) reported that an increased demand for housing was constraining the available housing options for their clients. This shortage had two effects. First, it resulted in **fundraising** activities for the construction of apartments and residential treatment facilities. Second, and more importantly, it restricted the ability of the contracting CMHCs to manage their financial risk for inpatient care by discharging patients from hospitals in a timely manner, due to a lack of space in suitable alternative living environments.

**State hospital beds--**One other environmental change has the potential to influence the operations of the UPMHP, but its impact is as yet uncertain. In July, 1993, the legislature passed a bill that gave each CMHC the responsibility for managing an allocation of beds within the state mental hospital. The bill also states that the number of beds in the state hospital will grow in proportion to the overall growth of the state’s population. The CMHCs coordinated the use of state hospital

beds informally with each other, “loaning” beds as needed. Overall, it is too early to determine whether this change has influenced the way in which inpatient care is delivered by the CMHCs, or whether capitated CMHCs have responded differently to the change than non-contracting CMHCs.

### **Administrative Challenges for Contracting CMHCs**

As expected, participation in the UPMHP posed several administrative challenges for the CMHCs. Some of these challenges related to interactions with the State Medicaid program, while others were concerned with internal management issues.

**Shadow claims-Implementation** of a “shadow claims” system proceeded more slowly than the contracting CMHCs expected. This system was intended to be used by the Medicaid program to monitor utilization in the contracting sites, provide data for comparison to beneficiaries in the non-contracting catchment areas, and serve as the basis for the negotiation of capitated rates. In the beginning, the contracting CMHCs were required to collect and “store” data that would ultimately be entered into the system. They were not able to assess the accuracy of these data or their compatibility with the Medicaid fee-for-service claims system until the second year of the program. There were enough **difficulties** with these data, particularly for outpatient care, that the second year rates were based on 1990 fee-for-service data trended forward. The CMHCs have argued forcefully for a “modified” shadow claims system that would serve the informational needs of Medicaid, but be less administratively cumbersome for the contractors. There are ongoing negotiations concerning the parameters of such a system.

While the original design of the UPMHP called for the contracting CMHCs to assume full financial risk for inpatient care in the program’s third year, keeping all of the savings and bearing total responsibility for any losses, a new risk sharing arrangement for inpatient care was developed. Each contracting CMHC received a capitated payment from Medicaid for inpatient care. At the end of the year, the actual costs of care, along with adjustments, were submitted to Medicaid. Adjustments are allowed for the costs of conducting pre-certification review, administrative costs associated with claims processing, and residential treatment costs incurred by patients who otherwise would have been hospitalized. The contracting CMHC was allowed to retain eighty-five percent of the difference between the capitated payment and the adjusted costs, with the State receiving fifteen percent.

**Reimbursement--The** reimbursement received by the contracting CMHCs from Medicaid reflects not only the negotiated capitated rates, but also the number

of Medicaid eligibles in a **CMHC's** catchment area. The month-by-month count of the number of beneficiaries is obtained **from** data tapes maintained by the state based on enrollment records. Even a relatively small error rate in these files could have a substantial impact on the revenues of contracting CMHCs.

During the first two years of the program, the CMHCs and the State discovered some errors in the way enrolled eligibles were counted for the purpose of issuing monthly premiums. The errors included undercounts of some eligibles and overcounts of others. When these problems surfaced, the State reconciled the premium payments for the risk-based services with the CMHCs. Since then, the state has implemented further safeguards to ensure accurate reporting. One CMHC believes it may have been underpaid because it served beneficiaries with Medicaid cards whose names did not appear on the monthly premium tapes; the state believes it has documented that, in **almost** all cases, the CMHC received retroactive payments for this group. Since these disputes require much time and effort to resolve, administrative staff of the CMHCs and the State continue to attempt to improve the accuracy of enrollment records and monthly premium payments.

**Determination of responsibility for the care of foster children** --“Boundary” issues arise when the responsibility for the management of care for defined populations is determined along **geographical** lines. While these issues are generally relatively minor, their resolution consumes administrative time and resources. In the UPMHP, such an issue arose with respect to the care provided to foster children. These children may have their residence, for the purpose of Medicaid eligibility determination, in one CMHC’s catchment area, but they may reside in another area, as a result of a foster home placement. During the first two years of the UPMHP, contracting CMHCs were not responsible for care provided to foster children residing outside of their catchment areas. During the third contract year, it was agreed that the contracting CMHC should be responsible for this care, as these children moved in and out of catchment areas relatively frequently.

**Changes in internal management of CMHCs**--Administrative changes occurred in the two rural contracting CMHCs during the first year of the UPMHP. In one of these CMHCs, the clinic director turned over some of the day-to-day decision making responsibilities to the unit managers. This was seen in the CMHC as a change in management style rather than a change motivated by participation in the UPMHP. In the other rural contracting CMHC, two unit-level clinical managers were elevated to Associate Director positions in order to better coordinate the CMHC’s adult and children’s services across a five county area. A further change occurred during the third year of the UPMHP when a new CMHC director was hired and a Clinical Associate Director and an Administrative Associate Director were appointed.

The large, urban contracting CMHC made one major change in its organizational structure during the **first** three years of the UPMHP; it developed a new area of community service delivery (Client Support Services, as described below). It also explored ways to better coordinate services within the CMHC and to achieve greater involvement of line staff in the decision making process. In this respect, a CMHC-wide committee implemented a Total Quality Management program. There was extensive system-wide staff training in what came to be called "Twelve Managed Care Principles."

Two of the three urban non-contracting CMHCs adopted changes intended to increase administrative efficiency in anticipation of future UPMHP participation. The largest non-contracting CMHC added three unit-level directors to reduce the decision making load of the Clinical Director. The smallest urban non-contracting CMHC shifted its full-time intake coordinator to other duties, distributing the responsibility for the intake process directly to clinic staff. While the prospect of UPMHP participation may have been a factor in the timing of these changes, the primary motivation for change in these CMHCs appeared to be a desire to become more efficient in the provision of clinic services.

**Summary--The UPMHP** was affected by several changes in the program's environment during its first three years. Full-risk contracting was delayed an additional six months when the CMHCs were asked to provide services to a new group of children without benefit of data adequate for negotiation of acceptable capitation rates. When the Utah legislature imposed a provider tax to fund Medicaid, **the CMHCs in the UPMHP** were required to contract with free-standing psychiatric hospitals. As a result, one of these CMHCs incurred increased administrative costs and experienced additional difficulties in controlling inpatient admissions and discharges from these hospitals. Throughout the first three years of the UPMHP, a housing shortage diverted administrative attention and compromised the ability of both contracting and non-contracting CMHCs to manage the timely transition of hospitalized patients to residential facilities. The impact of changes in the way that State Mental Hospital beds are managed is uncertain at present.

In addition to these environmental changes, which had an impact on the **UPMHP** as a whole, several issues arose that posed challenges for the participating CMHCs. For instance, the Medicaid agency introduced a new risk sharing arrangement during third-year contract negotiations that shifted fifteen percent of the savings to the Medicaid agency. Also, continuing reliance on a shadow claims system for program monitoring purposes required that the contracting CMHCs devote resources to develop, submit, revise, and resubmit claims to the Medicaid agency.

## **What Impact Did the UPMHP Have on the Organization of Mental Health Services Delivery and the Use of Mental Health Services by Medicaid Beneficiaries?**

Participation in the UPMHP was expected to encourage changes in the organization of service delivery on the part of the CMHCs and changes in the pattern of service use on the part of Medicaid beneficiaries. Data collected through interviews with CMHC **administrative** and clinical staff over a three year period was used to document service delivery changes. Data on service utilization for three years prior to the UPMHP and three and a half years after its implementation was used to assess changes in service use.

### **Organization of Mental Health Services Delivery**

All of the contracting CMHCs instituted new programmatic efforts designed to help them manage service delivery more effectively under the UPMHP.

**Rural contractor 1**--One rural contractor moved slowly, initially, in the development of new services and programs. It used its experience in the first year of the UPMHP to determine whether funds from savings on inpatient care would be available to devote to the reconfiguration of outpatient programs and to assess the service needs of its new Medicaid patients. One consequence of this assessment was a decision to change its adult treatment programs in two counties in its service area (Carbon and Grand) to a "Clubhouse Model." This model, based on Fountain House in New York City, emphasizes work, contribution, productivity, and a **consumer-provider** partnership in service delivery. To accomplish the change to the Clubhouse Model, three separate teams, consisting of staff members and consumers, went to New York City for four weeks of training in the model. The model was first offered to patients at the CMHC in the fall of 1993. Individuals who choose to participate are offered individual support and skills development services. A total of approximately 50 patients now participate in the two clubhouse programs on a regular basis. Two para-professionals were added to the CMHC's staff to help in implementing the Clubhouse Model, one in January, 1994, and one in July, 1994. Reimbursement for the Clubhouse Model was not available under traditional Medicaid; this service reconfiguration was a direct result of participation in the UPMHP.

In addition to this major effort, several changes in services occurred during the UPMHP. For instance, a school-based treatment program was initiated in September, 1993, a residential unit for eight people opened in October, 1994, and supported work programs were initiated in one county in September, 1994, and in a second county in

July, 1992. Funding for the residential unit came primarily from the Utah Housing Trust Fund and the sale of low income housing tax credits to private investors.

In direct response to new management demands under **capitation**, three additional outpatient treatment positions were filled. An individual with a masters degree in social work was hired in September, 1992, a Ph.D. psychologist was hired in March, 1993, and another Ph.D. psychologist was added in March, 1994. Also, a managed care specialist was hired in December, 1992, to review referrals to intensive inpatient or residential services and evaluate their necessity and to monitor provision of inpatient services. This person had experience in a similar role for a private managed behavioral health care company. To address other staffing needs, half of the time of a psychiatric nurse already employed at the CMHC was allocated to medication evaluations and a full time psychiatrist was added to the CMHC's staff to serve all three of the CMHC's offices.

**Rural contractor 2**--The second rural contractor also implemented significant programmatic and staffing changes during the first three years of the UPMHP. In anticipation of an increased demand for services under the UPMHP, the CMHC expanded its service delivery capacity in the areas of outpatient services, day treatment, and case management. The hours of the staff psychiatrist were increased at the beginning of the UPMHP and a second full time psychiatrist was added to the staff in the third year of the UPMHP. Another psychologist was added in the third year in response to the gradually increasing demands being placed on the single existing staffpsychologist. The number of case managers grew steadily over the three year period, and the day treatment program in one of the communities served by the CMHC was expanded in 1993 to meet new service demands. Early in the UPMHP, the number of outpatient therapists was expanded at two of the CMHC's offices. These expansions in CMHC staff were generally consistent with a change in structure and orientation of outpatient treatment from long term care to more focused, **shorter-term** care.

A very significant change occurred in 1993, when an eight-bed residential treatment program was opened. This is a self-contained facility, staffed by a licensed clinical social worker, other social workers, residential technicians, nurses, and an **on-call** physician. It functions as an alternative to inpatient hospitalization and as a transition from the hospital back to the community.

To address housing shortages that occurred during the first three years of the UPMHP, the CMHC developed several independent living arrangements. In the first year of the UPMHP, it purchased a community duplex consisting of two apartments that were capable of housing seven people. Separate apartments were established for

men and women. The duplex was managed initially by case management staff and later by day program staff. While this facility met some immediate needs of CMHC patients, the demand for housing alternatives continued to increase throughout the first three years of the UPMHP. In response, the CMHC has contracted with private owners for apartments and leased a home, providing six additional beds.

Throughout the first three years of the UPMHP, and motivated by participation in it, CMHC staff initiated new efforts to collaborate and coordinate with other agencies to ensure that all necessary services were available to patients. It developed new arrangements, or improved existing linkages, with the Division of Family Services, the court system, the Office of Vocational Rehabilitation, and the local Interagency Councils (which consist of representatives from numerous other county and state agencies.) These relationships proved beneficial in dealing with foster care issues, transitional employment concerns, and court-ordered evaluations.

Recently, the CMHC has changed the way in which it organizes the delivery of services to its patients; it has adopted a team approach to service delivery that focuses on the careful evaluation of each patient's needs and the tailoring of services to address them. Individuals requesting services complete a comprehensive informational form and are entered into a tracking system. The appropriate program director reviews these forms and refers the patient to a treatment team if necessary. A physician or therapist on the team completes an intake assessment for each patient. The treatment team makes a diagnosis, establishes goals for each patient, and formulates a treatment plan. The team consists of an M.D. and R.N. a case manager, a therapist, and other individuals with special skills needed by the patient. The M.D. sees the patient at least every ninety days, focusing primarily on medication management. The R.N. assists the M.D. with medication management and other patient-related activities. The therapist provides individual and group therapy as needed. The treatment team approach means that patients are no longer treated autonomously by each provider. This change, which was initiated in early 1995, was the result of several factors, including a change in the CMHC's executive director, concerns raised in a previous Medicaid audit, and a desire to assure quality of care with respect to all aspects of service delivery at the CMHC.

**Urban contractor I--**The urban contractor under the UPMHP is the largest CMHC in Utah. Prior to the implementation of the UPMHP, it already offered a wide range of treatment programs to its patients. Participation in the UPMHP has resulted in a shift in emphasis in some areas and an expansion in others. For instance, the CMHC's system for delivering services to children was reconstructed and expanded to include several new components. There was a significant expansion in residential treatment facilities for children, with the addition of 12 intensive treatment residential

beds, eight alcohol and drug treatment beds, six additional secure beds, and ten beds utilized by the CMHC's sex offender program.

The CMHC also became a licensing agency for therapeutic foster care homes in order to be able to place non-custody children in therapeutic foster homes. Previously all placements were for custody children only and were carried out by the Utah Department of Family Services (DFS). Under this program, the CMHC has access to forty-two homes. The CMHC entered into a "Family Preservation" contract with DFS, under which case workers visit homes and do intensive case management and therapy, reducing the proportion of cases in which the child is removed from the home.

Eight new day treatment and **after** school programs for children were implemented and the existing full-day program was expanded. In 1995, approximately 320 children were involved in these programs at any one time, compared to approximately 200 prior to the UPMHP. Also, prior to the UPMHP, case management was not used in the treatment of children at the CMHC, because it was only allowed through DFS for custody children. The CMHC was able to demonstrate that the type of case management for children it offered was different than that available through DFS and essential for treatment. Now, case management is an integral part of the care of children at the CMHC.

Significant changes took place in the adult treatment area as well. For instance, all of the CMHC's crisis and intake programs were restructured. There previously had been substantial variability in intake procedures across units, waiting lists for patients, and multiple interviewers. The CMHC implemented new policies to standardize and streamline this process. Senior clinicians are now employed in the screening of patients and waiting lists have been eliminated. Patients are prioritized according to their need for immediate treatment. A same-day appointment is arranged with a crisis worker for patients with severe needs, and appointments within ten days are scheduled for patients of moderate severity. Day treatment programs were refocused to enhance the ability of the CMHC to manage acutely ill patients in a community setting. Emphasis was placed on intensive medical management and the development of a clear plan for handling acute episodes. The CMHC also developed an array of contracts with providers that it did not employ directly, in order to ensure that patients would have access to specialty services as needed. These services include dual diagnosis of mental illness and major medical problems (e.g. AIDS and cancer); specialized treatment for sex offenders; services to deaf, retarded, and geriatric patients; and, services for patients with limited ability to communicate in English.

Administratively, the CMHC created a new area related to community services delivery (called Client Support Services) that was geared towards diversion of patients **from** restrictive, traditional services and placing them in educational programs, work situations, and safe, affordable residential environments. Educational and work opportunities are provided by accessing community programs or center-based programs, with primary emphasis on community-based programs. Case management has played an integral part in this effort by coordinating services received by patients.

**Non-contracting CMHCs--In** general, the three relatively small, state-affiliated, rural CMHCs reported less activity related to new program development and restructured service delivery than the other five non-contracting CMHCs. The larger of these state-affiliated CMHCs reported expansion in day treatment and programs for children, along with some reconfiguration of staff. A second state-affiliated center added housing units and instituted efforts to improve record keeping. However, none of the three CMHCs planned, if given the option, to participate in a **capitated** payment arrangement with Medicaid in the future.

The majority of the other five non-contracting centers expanded their day treatment programs, their programs directed at children, and their case management programs. They also added housing units. In these respects, their actions were similar to those of the contracting CMHCs, and appeared to be responsive to general changes in the overall environment in which Utah CMHCs functioned during the first three years of the UPMHP. In addition, however, several of these non-contracting CMHCs reported that they had taken specific steps to better position themselves to participate in the UPMHP as a contractor in the future. Specifically, three CMHCs increased services delivered to existing Medicaid patients in order to build up the historical expenditure' base that would be used in establishing capitation rates. Two CMHCs reported the implementation of new management information systems that they anticipated would facilitate effective management of patients and funds flows under capitation. And, two CMHCs instituted training programs for staff members to prepare them for managing patient care under capitation in a cost-effective manner.

In summary, at the operational level, both contracting and non-contracting CMHCs reported expansions in children's programs, day treatment programs, and case management. And, contracting CMHCs, and those CMHCs anticipating UPMHP contracting, began to focus staff attention on ways to increase the efficiency with which discharges **from** the hospital were managed and outpatient services delivered, while maintaining quality of care. Several of the larger non-contracting centers also reported taking specific actions to position themselves for future participation in the UPMHP, including increasing the quantity of outpatient services provided to

Medicaid beneficiaries, to build up their rate base, and training staff in the philosophy and activities associated with “managed care.”

### **Utilization of Mental Health Services**

The analysis of utilization and expenditures for mental health services is based on a **pre/post** comparison with a contemporaneous comparison group. Both features are essential to drawing appropriate inferences about the effects of the UPMHP in the absence of a randomized controlled trial. A major concern in conducting the comparison was that something would be confounded with the presence of the UPMHP that would cause, or be correlated with, expenditures in its own right. For example, if the non-contracting sites had historically different use rates or populations at risk, or if there were secular changes in use, then either a pure **pre/post** or a pure cross-sectional comparison would generate biased estimates of the impact of the UPMHP. The pre-post aspect of the design controls for historical differences among the CMHCs. Failure to adjust for such differences could lead to a biased assessment of **capitation** due to selection effects. The use of a contemporaneous control group adjusts for secular trends that may be confounded with trends in treatment in the CMHCs that became capitated. Failure to control for such trends could provide a biased estimate of the effect of the UPMHP. For example, if hospital expenditures declined in the catchment areas of the contracting CMHCs in the three pre-capitation years, a simple pre-post comparison involving only the contracting sites could show a significant effect for the UPMHP, when the program, in fact, may have had no effect.

**Methods-In** the simplest case, the effects of secular trends could be estimated using the experience of the comparison group. The estimated trend would be: (“post” period use - “pre” period use). The corresponding “post minus pre” measure for the capitated sites includes both the effects of the UPMHP and the time trend. An unbiased estimate of the program effect would be the difference between these two trends (“post” for capitated sites - “pre” for capitated sites) - (“post” for non-capitated sites - “pre” for non-capitated sites). This approach is sometimes known as a “difference in difference” estimator.

The actual analysis is more complicated than this, because of possible site differences and the use of additional explanatory variables. To conduct the analysis, we used a variant of the “fixed effects” model (see Greene (1990)), combined with an AR(2) model. The basic “fixed effects” part of the model is:

$$y_{it} = x_{it}\beta + TIME_{it}\eta + CAP_{it}\alpha + \mu_i + \epsilon_{it} \quad (1)$$

where  $y_{it}$  is the dependent variable (e.g., expenditure rate) for the  $i^{\text{th}}$  site in the  $t^{\text{th}}$  time period (e.g., PRE, POST);  $x_{it}$  is a row vector of site characteristics that vary over site and time. CAP is an indicator for a contracting site currently participating in the UPMHP, while TIME is either a time trend variable or a vector of binary variables to capture secular trends and other confounding over time periods (both specifications are used in different versions of the model). Here,  $\mu_i$  represents a site specific, time invariant, but unobserved characteristic, while  $\epsilon$  is an i.i.d. error term -- that is it is an error term that is uncorrelated with the other covariates, as well as uncorrelated across time. (A more complicated specification of the model interacts time with the other variables in the analysis.) The estimated coefficient for the CAP variable represents the effect of the UPMHP on the utilization or expenditure measure.

Estimating this equation by ordinary least squares (OLS) would lead to biased estimates if either the  $\mu$  and  $\epsilon$  terms were correlated with **capitation**, time or other characteristics; that is, if the error term ( $\mu + \epsilon$ ) were correlated with any other included variables. In a quasi-experiment involving a once and for all change (which describes the UPMHP) CAP, and TIME are correlated with  $\mu$ . The fixed effects model can remove the correlation by removing the  $\mu$  term; for example, we could insert site indicator  $z_i$  to remove the effect of unobserved, variables that are stable within sites. The unobserved time effects are captured in the coefficient vector  $\eta$ .

Consider a case with no time variables. For each site  $I$ , take the mean of equation 1 above across  $t$  and subtract this mean from (1). Each variable is now taken as a deviation from its site specific mean; or, equivalently, the model includes site and time indicator variables. The  $\mu_i$ 's cancel out. Because the remaining error term is now uncorrelated with time or site, the estimates will be unbiased for CAP. This model is estimable because there is both a pre and post period for both the contracting and non-contracting sites. Thus, even when utilizing the deviations from the site specific means, there will still exist variance in the CAP variable, because there are pre and post observations on the comparison group. If no explanatory variables other than site, time, and UPMHP participation status are used in the analysis, then the fixed effects model generates exactly the same pre-post comparison described above.

The use of indicator variables for each site, or for groups of sites, is particularly important in the analysis, given the prominence of the Salt Lake County site, in terms of the high proportion of state Medicaid beneficiaries residing there. One of the unavoidable consequences of the fixed effects model, which uses indicator variables for sites, is that the effect of specific time-invariant site characteristics cannot be determined. These are perfectly confounded with the unobserved  $\mu_i$  in the fixed effects version of equation 1. Nevertheless, the fixed effects model does avoid the potential for generating inconsistent coefficient estimates if the  $\mu_i$  were correlated

with other covariates. Given the limited precision permitted with the data used in this study, the use of more precise, but potentially inconsistent, random effects modeling to generate estimates for the effects of time-invariant site characteristics was rejected.

Another important consideration in the specification of equation 1 is the level of aggregation for the dependent variable(s). For a population of frequent users of mental health care, interview data on mental health status and sociodemographic characteristics could be used to supplement claims data when investigating differences in utilization between program and comparison groups of Medicaid beneficiaries. However, for the general Medicaid population, it would be prohibitively expensive to interview a sample large enough to detect significant differences in mental health care expenditures or utilization at the individual beneficiary level, because of the relative rarity of mental illness episodes and, especially, inpatient admissions for mental health care. This argues against using a random sample of Medicaid beneficiaries to analyze the impact of the demonstration on expenditures and service utilization.

There are other considerations that also suggest that a beneficiary-level analysis, based on a randomly-selected sample of beneficiaries, would not be desirable. First, the fragmented eligibility periods for many general Medicaid recipients introduces substantial analytic complexity. This could be addressed by identifying beneficiaries with an unbroken period of Medicaid participation before and during the UPMHP, but these continuous program participants would not necessarily be representative of the general Medicaid population. Second, many robust statistical models for analyzing individual level data (such as the multipart models used in the RAND Health Insurance Experiment) require equal time periods for all observations, a condition that clearly would not be met in the general Medicaid population; see Duan, **Manning**, et al. (1983, 1984). Alternative approaches for generating robust estimates using individual level data rely on Poisson or negative binomial distributional assumptions, but these assumptions do not fit patterns of mental health expenditures and utilization in the general population and are extremely sensitive to the long right tail of the distribution (heavy users). The presence of chronically mentally ill beneficiaries in the Medicaid population makes such methods impractical for this analysis.

For these reasons, the analysis uses a time series of aggregate expenditure and utilization rates to analyze program-level impacts. These rates are developed on a monthly basis for the three years prior to the start of the demonstration and the first three and a half years of the UPMHP. The denominator of the rate calculations is the number of Medicaid eligibles residing in the catchment area of the CMHC each month. These catchment areas are **defined** by county, facilitating the assignment of

beneficiaries to catchment areas using the zip code of the beneficiary's residence. Conceptually, eleven expenditure or utilization rates (equal to the number of CMHCs) could be calculated monthly for each category of service, with the numerator equal to expenditures or utilization that month by beneficiaries in a given area. However, in this analysis, service areas are aggregated into four groups because of the low level of inpatient expenditures and admissions observed on a monthly basis in some rural CMHC **catchment** areas, and the volatility in inpatient expenditure and admission rates in these areas. These four groups are: capitated rural, capitated urban, **non-**capitated rural, and non-capitated urban. This process generates 48 rates for each measure per year (assuming complete data) over a six and a half year period (July 1988 through December 1994).

To remove the effects of time trends from the analysis, we followed a two step procedure. First, using the never-capitated (non-UPMHP) sites, we estimated the effect of year-month and Medicaid eligibility group on fee-for-service expenditures and utilization, using weighted least squares. For each outcome, we calculated a residual for the ever-capitated (UPMHP) sites, which is equal to their actual rate minus the rate predicted by the non-UPMHP experience over time. These detrended residuals were then used to estimate the effect of the UPMHP on the ever-capitated sites.

In earlier work, we used simple linear and quadratic time trends to capture the fee-for-service experience. However, when we examined data for all six and a half years, we found that the fee-for-service pattern was more complex than a simple quadratic formulation. As a result, we used indicators for each year and month to capture the time trends in fee-for-service.

Including variables for eligibility category, time: and month removes the effects of any site or temporal factors confounded with program participation. However, the data exhibited non-constant and non-zero correlations across time. To obtain efficient parameter estimates and unbiased inference statistics, an **auto-**regressive AR(2) error structure (Harvey, 1981) was examined within CMHC site groupings for expenditure and utilization rates, in addition to the fixed-effects approach described earlier. Each observation is weighted by the total number of beneficiaries in that service area during that month to correct for the heteroscedasticity that is inherent when rates are constructed for populations (Greene, 1990).

**Data** source-We estimated the effect of participation in the UPMHP on three mental health expenditure variables, measured on a monthly per beneficiary basis, with numerators defined as: acute stay inpatient expenditures, outpatient

expenditures, and total mental health care expenditures. The total expenditure rate does not equal the sum of the **first** two rates because it also includes expenditures on residential treatment and a small number of relatively insignificant services and medications. The expenditures exclude the costs of care provided for residents of the state hospital and state training school, which were not covered by the UPMHP contract. We also estimated the affect of UPMHP participation on inpatient admission and outpatient visit rates.

Medicaid claims are used to calculate mental health expenditures and service use per beneficiary month in the comparison sites. For the three years prior to the UPMHP these measures can be constructed for the contracting sites as well. In the demonstration, the contracting CMHCs were reimbursed on a capitated, rather than fee-for-service, basis so there were no "claims paid" data for beneficiaries in these sites. However, the contracting CMHCs submitted encounter forms which were used in reconciling outpatient reimbursements under the capitation rates during the first two and a half years of the UPMHP and in documenting inpatient rates. This "shadow claims" system also contained per unit reimbursement rates. Thus, for contracting CMHCs, expenditures that would have occurred if the Centers had been paid on a fee-for-service basis can be calculated, permitting a comparative analysis of expenditure rates.

Medicaid claims data provide reasonably accurate gross measures of service utilization when providers are paid on a fee-for-service basis. This is the case for both capitated and comparison sites for the three years prior to the demonstration and for the comparison sites for the **first** two and a half years of the demonstration. It is the experience of the authors that claims for inpatient services are reasonably accurate under capitation payments as well. However, past analyses of the outpatient utilization of Medicaid beneficiaries in **HMOs** have often confronted under-reporting based on "shadow claims" submitted by capitated plans. (These are reports of provider encounters that are required by the state for program monitoring activities but are not used to pay plans, since plans are prepaid on a capitated basis.) The financial incentives for CMHCs in the UPMHP suggest that under-reporting of outpatient utilization is not an issue for the **first** two and a half years of the program. During this period, the CMHCs had a strong incentive to report all outpatient care, because their final payments depended on documentation of the services they provided. During the last year of the analysis (January, 1994 - December 1994), when outpatient care costs were not reimbursed on a per unit of service basis, the incentives for the contracting CMHCs to report outpatient claims accurately were not as strong.

Several steps were involved in moving from the raw data in the Utah Medicaid claims files to the expenditure and service use rates used in the analysis. First, Medicaid claims coding manuals and file structures were reviewed to determine how utilization and expenditure data were organized in the claims files. Second, based on this review, variable specifications were developed that defined how expenditures should be constructed. Third, these specifications were reviewed by programmers from the State and modifications were made based on their suggestions. Fourth, a “test file” was run on a small subset of Medicaid beneficiaries. The purpose of this **file** was to determine if the variable specifications and programming language produced measures that appeared to have reasonable values. Means, standard deviations, and frequencies for the constructed variables were examined. As a result, several instances were detected where variables needed to be re-specified or programming language re-written. This iterative process continued until an acceptable test file was generated.

The **fifth** step in the process involved moving from the test file to the construction of a file for each of the years included in the analysis. These included all of the “constructed” outcome measures to be used in the study, as well as the raw data on utilization and expenditures and other beneficiary level data. Processing of data from the years after implementation of the UPMHP was more complicated because these data were located in two different places: the standard Medicaid claims files for the non-capitated sites and “shadow claims” files for the **capitated** sites. While the two files were substantially the same in their construction, there were a few major differences that required some programming changes. Also, the availability of the shadow claims files lagged behind the availability of the other data, and this delayed the analysis.

The sixth step involved the aggregation of the individual level outcome measures into expenditure rates. This required a separate programming effort directed at assigning beneficiaries to appropriate CMHC **catchment** areas, aggregating data within catchment areas, and constructing “denominators” for each catchment area. The aggregated measures then were divided by the denominator counts to obtain the rates that were ultimately used as the dependent variables in the regression analyses.

Before the actual analysis could be conducted, however, a seventh step was necessary; trends in all of the constructed rates were examined for anomalies that could indicate problems in constructing the measures. Problems could occur, for instance, if there were changes in coding procedures for entering claims in the Medicaid claims **dataset** that were missed in constructing the outcome measures.

These types of problems might not be detected until the “time series” of rates could be examined for large and abrupt changes in rates from one month to the next.

**Results--**The results of the analysis are contained in two sections. The first section presents descriptive data on trends in expenditure and utilization rates for thirty-six months prior to the UPMHP and the first forty-two months of the UPMHP. For each measure, trends are plotted for the two groups of CMHCs: the sites that became capitated under UPMHP, and the sites that remained under traditional **fee-for-service** Medicaid arrangements. The CMHCs are aggregated into these groups to avoid volatility in rates that could occur due to the relatively small number of Medicaid beneficiaries and infrequent use of some services in many rural CMHC catchment areas in Utah.

To make the results more accessible, we have plotted the different expenditure and utilization rates for both the capitated and fee-for-service areas for the whole study period. The month-to-month estimates per eligible are quite noisy, due to the influence of individual hospitalizations or large claims cases. We smoothed the data to make the underlying trends in the data more apparent in the figures by aggregating to two month periods. (Specifically, using the “smooth” feature in STATA 4.0, we employed a variant based on running medians of spans 3 and 5, repeated twice, with a Harming option (Statacorp, 1995)).

The second section presents the results of the statistical analyses of the data, using the model and statistical techniques described above. The results from two different empirical specifications of the model are presented. The second specification differs from the first in that it includes variables to control for rurality and beneficiary composition. To test the sensitivity of the findings to model specification, a third model was estimated, where the effect of the UPMHP is captured by four variables: two variables that indicate the beginning of partial capitation (July 1991) and full capitation (January 1994), and two time variables that allow the effect of the UPMHP to change as the program matures during the partial and full capitation periods. The results of this sensitivity analysis are discussed but not presented in tabular form.

For all models, we examine the detrended expenditures and utilization rates for the UPMHP sites. Using data from the non-capitated sites, we estimated coefficients for a weighted least squares model, with weights equal to the population at risk in that site in that year-month. The detrended values for the dependent variables for the UPMHP sites are the differences between their actual rates and those predicted by this non-capitated site model. The equations using these detrended values were estimated using a GLS model based on a version of an AR(2) model with

weights equal to the population at risk in that site in that year-month. The estimates of the lag structure for the AR(2) model are based on the detrended UPMHP sites.

## Graphical Analysis

Figures 1-5 present evidence concerning trends in Medicaid monthly per beneficiary expenditures and utilization for mental health care. Figure 1 indicates that the difference in total expenditures for beneficiaries in the capitated and non-capitated sites remained relatively constant over the period prior to implementation of the UPMHP, with expenditures at the capitated sites higher than at the non-capitated sites. This difference dropped slightly after implementation of the UPMHP, but rose again in the last year and a half of the study period.

Figure 2 reveals an apparent effect of the UPMHP on inpatient expenditures for mental health care. Inpatient expenditures in the contracting sites exceeded those in the non-contracting sites prior to the UPMHP. After the UPMHP was implemented, this difference disappeared, with inpatient expenditures averaging slightly higher in the non-capitated sites. Thus, in the raw expenditure rates, there is some indication that the UPMHP reduced expenditures for acute inpatient mental health care, particularly during its first year. This pattern was repeated in Figure 3, which depicts annualized mental health hospitalization rates per 1,000 eligibles per month. Rates were fairly constant throughout the six year study period in the non-capitated sites, but declined after implementation of the UPMHP at the capitated sites.

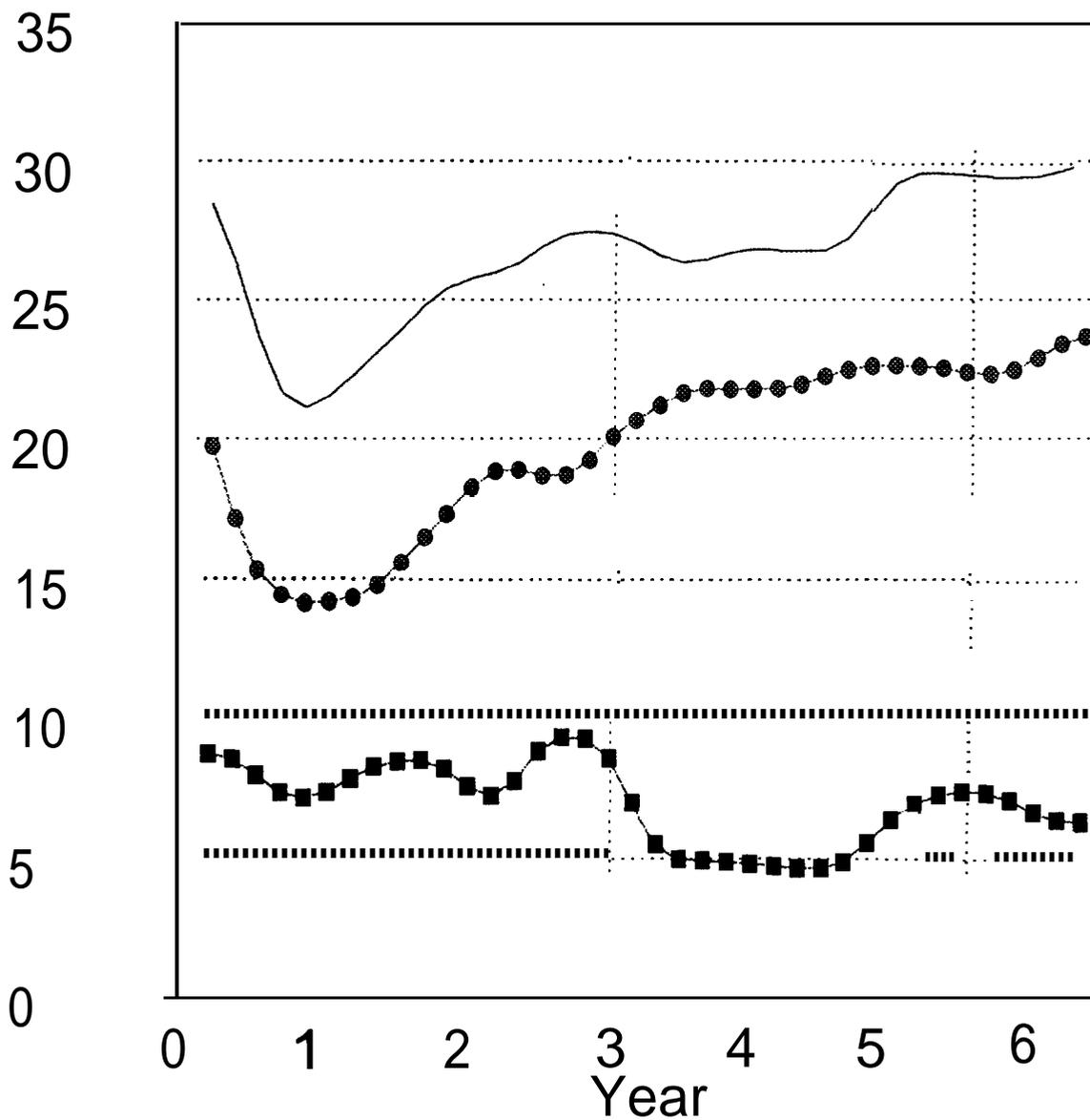
Figure 4 presents data on outpatient mental health expenditures at capitated and non-capitated sites. In both capitated and non-capitated sites, expenditures on outpatient mental health care were increasing before implementation of the UPMHP. This trend continued after implementation of the UPMHP, with the difference between capitated and non-capitated sites increasing by a small amount. The same pattern is evident with respect to mental health outpatient visits (Figure 5).

## Statistical Analysis

**Overall Findings--**This section presents results from estimating two forms of the general statistical model described earlier. The difference in the two specifications relates to the control variables used. The first model has no controls beyond group (capitated versus non-capitated). The second model introduces a time trend and also controls for beneficiary category and rural/urban site. This second model provides the best estimates of the effects of the UPMHP on expenditures.

Figure 1

# Total Mental Health Expenditures\* (Per Capita per Month)

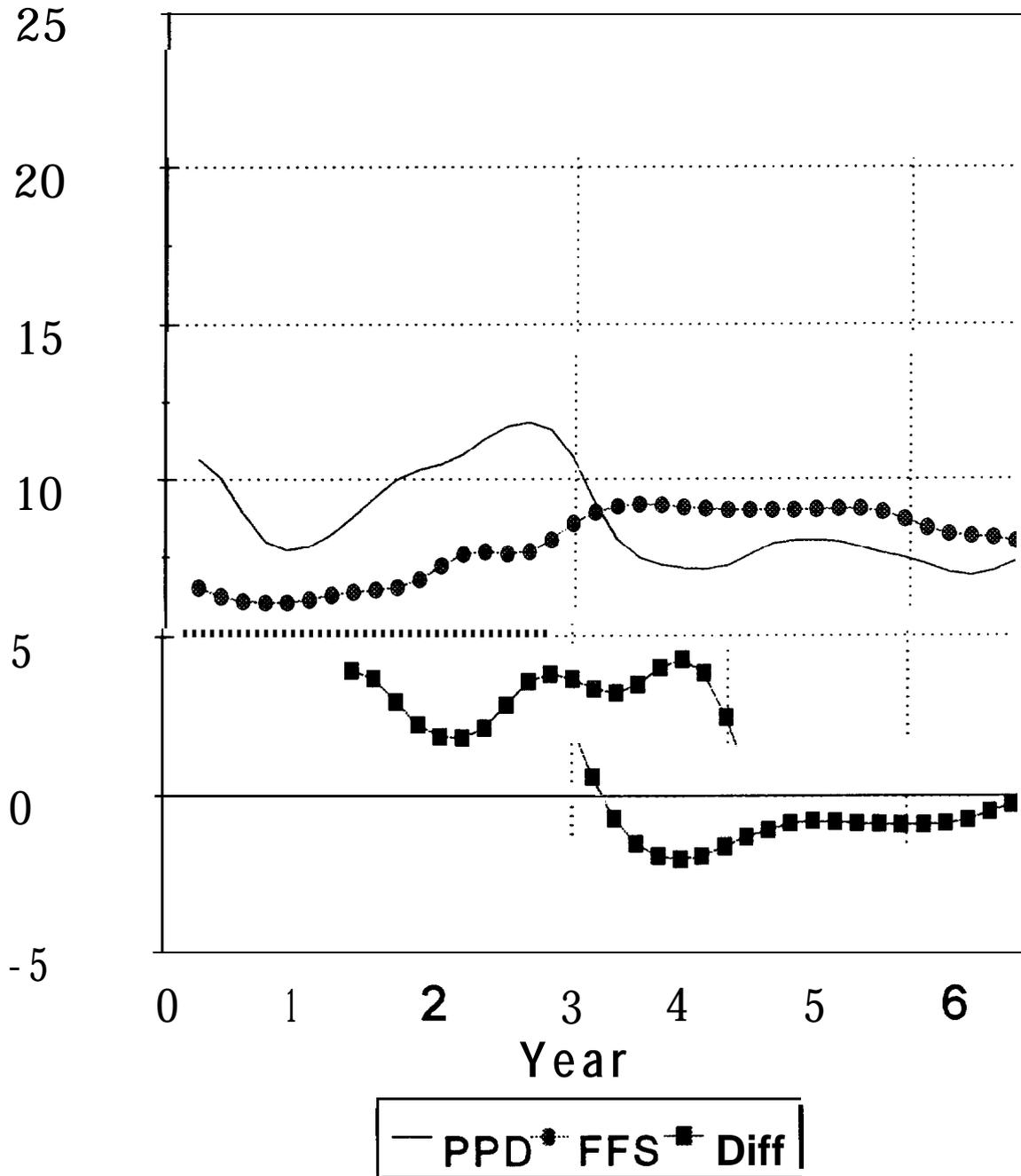


\*Smoothed



Figure 2

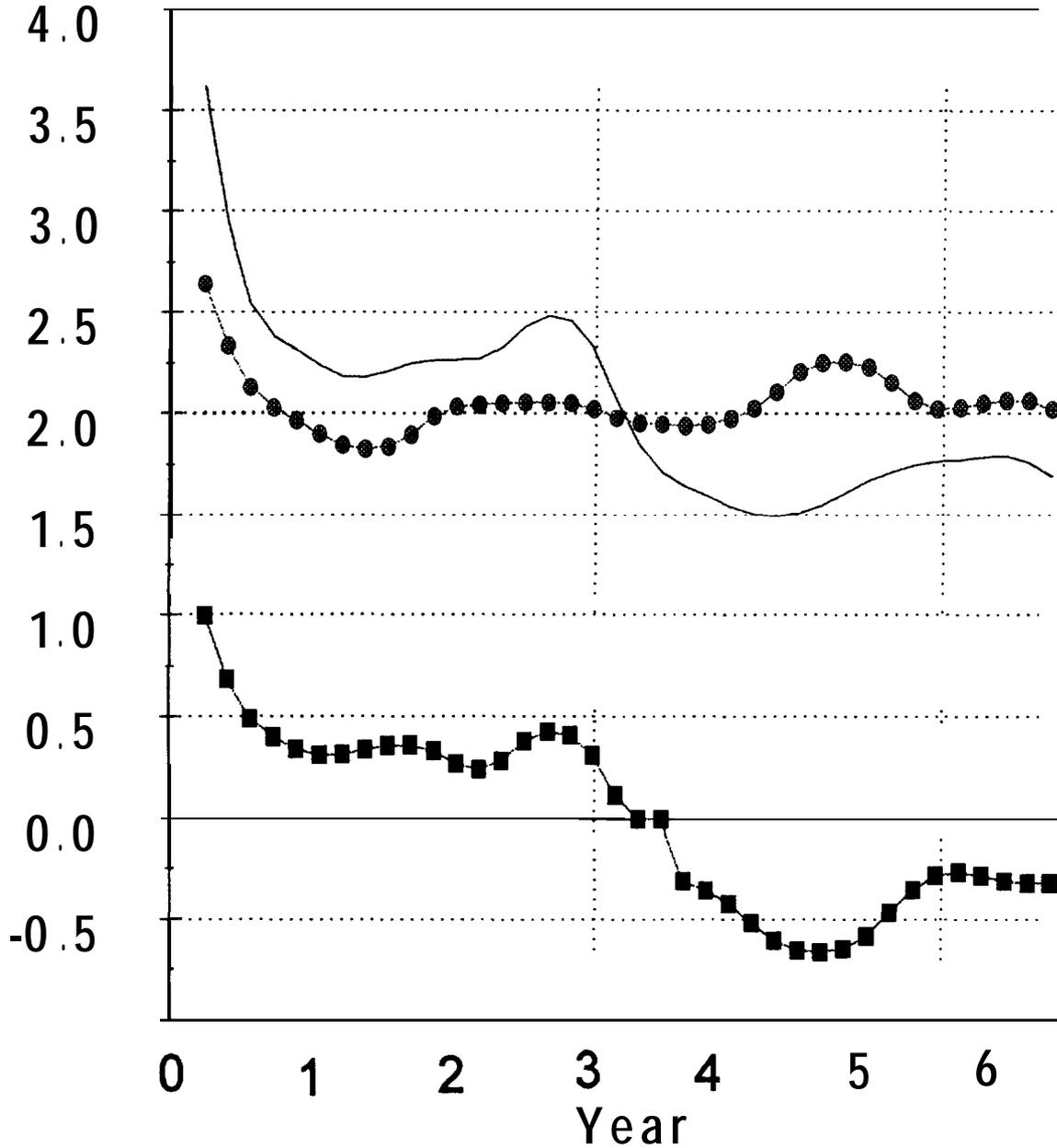
# Inpatient Mental Health Expenditures\* (Per Capita per Month)



\*Smoothed

Figure 3

# Mental Health Hospitalizations\* (Per 1,000 Eligibles per Month)

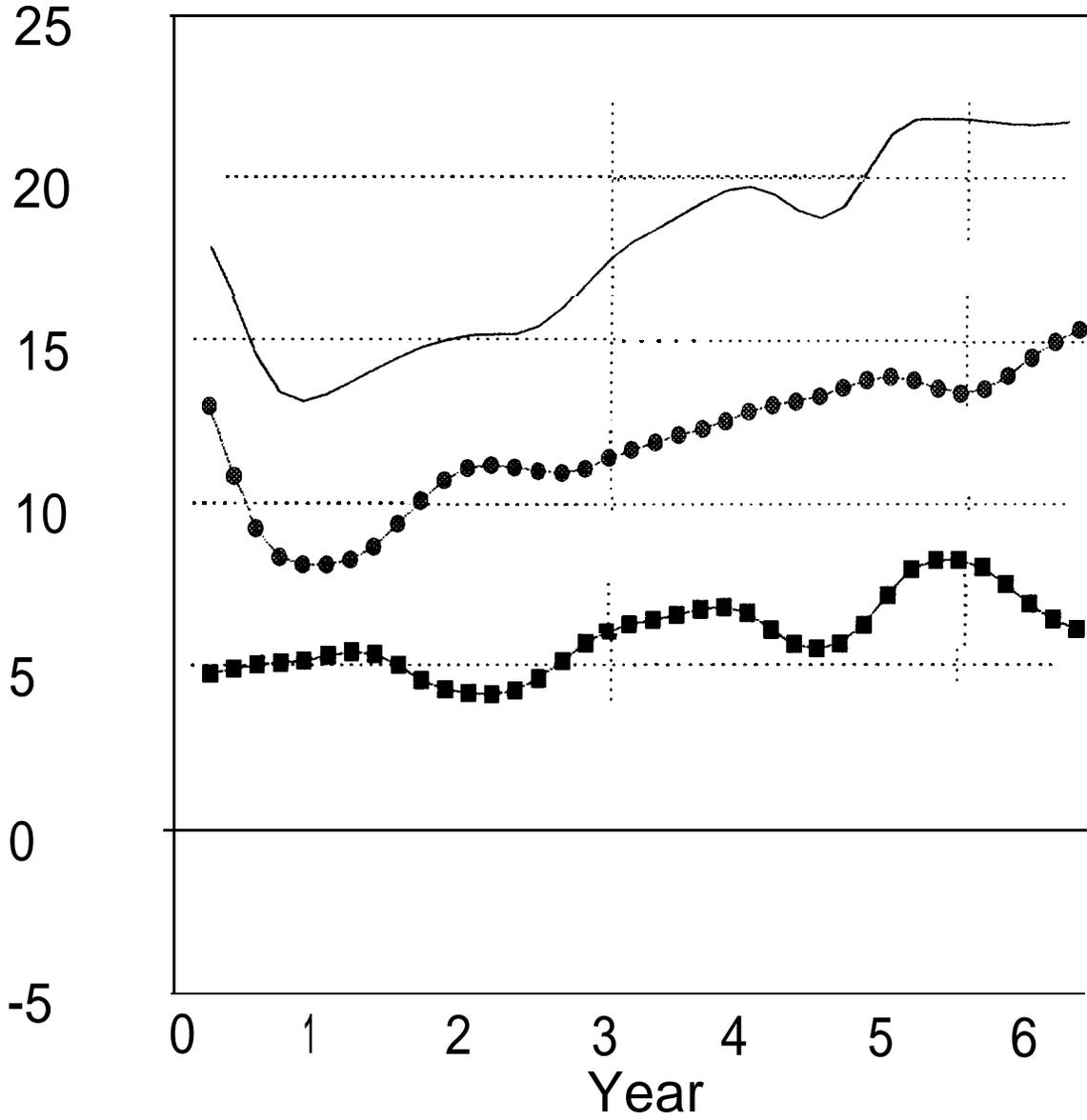


\*Smoothed

-PPD • FFS ■ Diff

Figure 4

### Outpatient Mental Health Expenditures\* (Per Capita per Month)

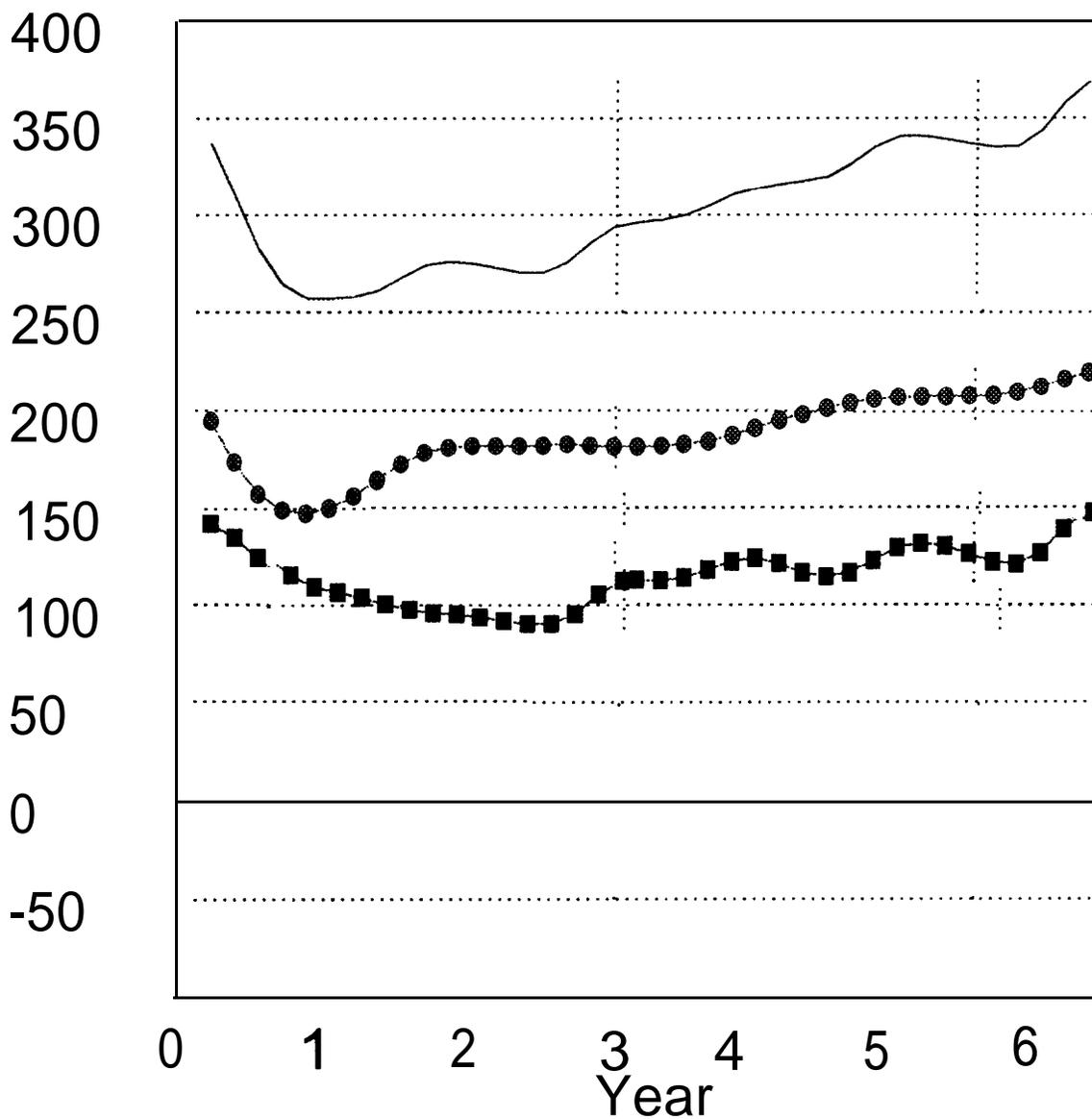


— PPD • FFS □ Diff

\*Smoothed

Figure 5

# Mental Health Outpatient Visits\* (Per 1,000 Eligibles Per Month)



— PPD • FFS ■ Diff

\*Smoothed

Table 1 summarizes the **findings** related to the effect of participation in the UPMHP on total mental health expenditures per beneficiary per month, where effects are measured as the UPMHP expenditures at the capitated and non-capitated sites after detrending based on the experience of the never-capitated sites. According to Model 1, this **difference** increased by \$1.89 in the middle period and \$2.79 during the late period (relative to the pre period). These effects are not statistically significant at the .05 level. Once differences in beneficiary composition and rurality are controlled for in the model (Model 2), the estimated effect of the UPMHP decreased to \$1.01 in the middle period, but increased to \$3.32 in the late period, and remained statistically insignificant.

While these findings suggest no UPMHP effect on overall mental health expenditures, had the capitated CMHCs been paid on a fee-for-service basis, there do appear to have been significant UPMHP effects on acute inpatient expenditures. Inpatient expenditures were greater in the capitated sites during the pre period (Figure 2). Model 1 suggests that this difference decreased by \$3.32 in the middle period relative to the pre-period, a significant effect (Table 2). The comparison of inpatient spending in the late period versus the pre period was also significant in Model 1, again suggesting a decrease. Under Model 2, the estimated effects of the UPMHP were not as strong. The difference in the middle period was \$3.05 lower than the difference observed in the pre period, indicating relatively lower inpatient expenditures in the capitated sites, a statistically significant finding. This UPMHP effect was less in the **full capitation** period and was no longer statistically significant at the .05 level. Over both periods, there was a significant UPMHP effect in inpatient expenditures;  $F(2, 151) = 11.88, p < .001$ . A similar pattern was observed with respect to hospitalizations for treatment of mental health problems (Table 3). Hospitalizations were higher at the capitated sites in the pre period, but this difference was reduced under Model 1 by .0009 hospitalizations per beneficiary per month in the middle period, a statistically significant reduction. This reduction declined in size but remained significant under Model 2. Under Model 1, hospitalizations also were reduced significantly for the late period, but the reduction was not statistically significant under Model 2. Over both periods, there was a significant UPMHP effect on hospitalizations;  $F(2, 151) = 9.06, p < .001$ .

Outpatient expenditures in the capitated CMHCs exceeded expenditures in the non-capitated CMHCs prior to the UPMHP (Figure 4). As Model 2 indicates (Table 4), the magnitude of the UPMHP effect was to increase that difference by \$ 1.99 when comparing middle to pre period and by \$1.90 when comparing the late to pre-period. However, over both periods, the UPMHP effect was not significant ( $p = 0.26$ ). (In Model 1, the middle period effect was significant.) This comparability of effects across the two comparisons is somewhat surprising, given that the capitated sites

TABLE 1

**Effect Of The Utah Prepaid Mental Health Plan On Total Mental Health Expenditures:  
Difference Between Capitated And Non-capitated Sites  
(Per Beneficiary Per Month)**

	Model 1 Without Separate Time Trend or Rural Adjustors			Model 2 With Separate Time Trend and Rural Adjustors		
	Estimated Effect	95% Confidence Interval (lower/upper)	Significance	Estimated Effect	95% Confidence Interval (Lower/upper)	Significance
Middle Period vs. Pre Period	1.89	-1.0509/4.8235	.206	1.0071	-2.3863/4.4004	.559
Late Period vs. Pre Period	2.79	-1.8824/7.4564	.240	3.3250	-2.2577/8.9078	.241
Late Period vs. Middle Period	.9001	-3.3666/5.1680	.677	2.3180	-1.0588/5.6948	.177
Time Trend	NA	NA	NA	-1.2335	-2.3808/-.0861	.035

NOTE: Pre Period = 7/1/88-7/1/91; Middle Period = 7/1/91 - 12/31/93; Late Period = 1/1/94 - 12/31/94.  
Model 2 adjustors include Medicaid classification, time indicators, rural site.

**TABLE 2**

**Effect Of The Utah Prepaid Mental Health Plan On Acute Inpatient Mental Health Expenditures:  
Difference Between Capitated And Non-capitated Sites  
(Per Beneficiary Per Month)**

	<b>Model 1 Without Separate Time Trend or Rural Adjustors</b>			<b>Model 2 With Separate Time Trend and Rural Adjustors</b>		
	<b>Estimated Effect</b>	<b>95% Confidence Interval (lower/upper)</b>	<b>Significance</b>	<b>Estimate d Effect</b>	<b>95% Confidence Interval (Lower/upper)</b>	<b>Significance</b>
Middle Period vs. Pre Period	-3.3196	-4.5572/-2.0820	<.001	-3.0519	-5.2807/ -.8231	.008
Late Period vs. Pre Period	-2.2614	-3.53331 - .98960	.001	-1.3704	-4.7799/2.0392	.428
Late Period vs. Middle Period	1.0581	-.12303/ 2.2393	,079	1.6815	.02504/ 3.3380	.047
Time Trend	NA	NA	NA	-.3295	-1.043 1/ .3840	.363

NOTE: **Pre** Period = 7/1/88-7/1/91; Middle Period = 7/1/91 - 12/31/93; Late Period = 1/1/94 - 12/31/94.  
Model 2 adjustors include Medicaid classification, time indicators, rural site.

**TABLE 3**  
**Effect Of The Utah Prepaid Mental Health Plan On Mental Health Hospitalizations:**  
**Difference Between Capitated And Non-capitated Sites**  
**(Per Beneficiary Per Month)**

	<b>Model 1</b> <b>Without Separate Time Trend or</b> <b>Rural Adjustors</b>			<b>Model 2</b> <b>With Separate Time Trend and</b> <b>Rural Adjustors</b>		
	<b>Estimate d Effect</b>	<b>95% Confidence Interval (lower/upper)</b>	<b>Significance</b>	<b>Estimate d Effect</b>	<b>95% Confidence Interval (Lower/upper)</b>	<b>Significance</b>
Middle Period vs. Pre Period	-.00090	-.00121/-.00060	<.001	-.00039	-.00068/-.00010	.008
Late Period vs. Pre Period	-.00101	-.00136/-.00065	<.001	-.00008	-.00055/ .00038	.724
Late Period vs. Middle Period	-.00011	-.00038/ .00017	.452	.00031	.00003/ .00059	.032
Time Trend	NA	NA	NA	-.00025	-.00036/-.00013	<.001

NOTE: Pre Period = 7/1/88-7/1/91; Middle Period = 7/1/91 - 12/31/93; Late Period = 1/1/94 - 12/31/94.  
 Model 2 adjustors include Medicaid classification, time indicators, rural site.

**TABLE 4**

**Effect Of The Utah Prepaid Mental Health Plan On Outpatient Mental Health Expenditures:  
Difference Between Capitated And Non-capitated Sites  
(Per Beneficiary Per Month)**

	<b>Model 1 Without Separate Time Trend or Rural Adjustors</b>			<b>Model 2 With Separate Time Trend and Rural Adjustors</b>		
	<b>Estimated Effect</b>	<b>95% Confidence Internal (lower/upper)</b>	<b>Significance</b>	<b>Estimated Effect</b>	<b>95% Confidence Interval (Lower/upper)</b>	<b>Significance</b>
Middle Period vs. Pre Period	2.0223	.05237/ 3.9923	.044	1.9946	-.4976/ 4.4867	.116
Late Period vs. Pre Period	2.0717	-.7631/ 4.9064	.151	1.9014	-1.7789/5.5816	.309
Late Period vs. Middle Period	.0493	-2.1715/2.2702	.965	-.0932	-2.3075/2.1210	.934
Time Trend	NA	NA	NA	-.4046	-1.1798/ .3706	.304

NOTE: Pre Period = 7/1/88-7/1/91; Middle Period = 7/1/91 - 12/31/93; Late Period = 1/1/94 - 12/31/94.  
Model 2 adjustors include Medicaid classification, time indicators, rural site.

shifted **from** no **financial** risk to full financial risk for outpatient care as they moved from the middle to the late period. It may be that the capitated sites began increasing outpatient services during the middle period in conjunction with reduced use of acute inpatient care and simply continued this pattern into the late period, which was limited to only one year in this study. However, this increase was paralleled by an upward trend at the non-capitated sites as well. The analysis of mental health visits also found no significant effect of the UPMHP (Table 5).

**Sensitivity Analysis--Under** Model 2, the time trend variable was constrained to be the same during the middle and later periods. We also conducted analyses that allowed differences in time trends during the middle and later periods. Using this approach, the estimated effects of the UPMHP on overall mental health expenditures, mental health outpatient expenditures, and mental health visits remained insignificant. With respect to inpatient mental health expenditures and admissions, the estimated effects reported for Model 2 (Tables 2 and 3) remained significant for the first two and a half years of the UPMHP.

Summary--The results of the analysis suggest that the UPMHP achieved its goal of reducing expenditures on acute inpatient mental health care by reducing inpatient admissions. Expenditures and visits for outpatient mental health care for Medicaid beneficiaries trended upward at both capitated and non-capitated CMHCs throughout the six and a half year study period with no significant effects of UPMHP occurring for outpatient care. Thus, there was no evidence supporting the hypothesis that outpatient care would be substituted for reduced inpatient admissions. However, there may have been minor substitution that we lacked the precision to detect.

There are several caveats to these conclusions that pertain to the overall research design as well as limitations in the available data. A quasi-experimental research design was employed, with the non-capitated sites functioning as a comparison group. Essentially, the role of the comparison group is to control for secular trends in measures, so that observed changes in the capitated sites are not inappropriately attributed to the UPMHP. However, this assumes that the comparison, non-capitated sites are not “contaminated” by the presence of the UPMHP. This may be a problematic assumption. If the non-capitated sites were anticipating participating in the UPMHP in the future (and most did join the UPMHP after the study period), they may have expanded outpatient treatment in order to increase their expenditure base for the calculation of capitated payments. And, they may have increased inpatient utilization for the same reason. Or, inpatient utilization may have been reduced if control mechanisms were put into place early, in order to determine their effectiveness prior to **capitation**. The utilization trends in Figures 3

TABLE 5

**Effect Of The Utah Prepaid Mental Health Plan On Outpatient Mental Health Visits:  
Difference Between Capitated And Non-capitated Sites  
(Per Beneficiary Per Month)**

	<b>Model 1 Without Separate Time Trend or Rural Adjustors</b>			<b>Model 2 With Separate Time Trend and Rural Adjustors</b>		
	<b>Estimated Effect</b>	<b>95% Confidence Interval (lower/upper)</b>	<b>Significance</b>	<b>Estimated Effect</b>	<b>95% Confidence Interval (Lower/upper)</b>	<b>Significance</b>
Middle Period vs. Pre Period	.01713	-.00308/.03734	.096	.01100	-.00996/.03196	.301
Late Period vs. Pre Period	.01900	-.01130/.04930	.217	.01226	-.01719/.04171	.412
Late Period vs. Middle Period	.00186	-.02013/.02386	.867	.00126	-.01984/.02237	.906
Time Trend	NA	NA	NA	.00503	-.00583/.01508	.325

NOTE: Pre Period = 7/1/88-7/1/91; Middle Period = 7/1/91 - 12/31/93; Late Period = 1/1/94 - 12/31/94.  
Model 2 adjustors include Medicaid classification, time indicators, rural site.

and 5 for the non-capitated sites in the last year of the study period provide no strong evidence concerning these questions.

Second, the analysis does not take into account the possibility that the capitated CMHCs may have shifted expenditures into areas not covered in their contracts but reimbursed by the State through other means. Two possible areas for cost shifting include emergency room visits and admissions to the state hospital. We examined emergency room use in the first year of the UPMHP and found no difference for Medicaid beneficiaries in capitated and non-capitated sites (Christianson, et al., 1995). We were not able to assess differences in state hospital use due to limitations in the data. However, the number of state hospital beds was constrained during the study period and our interview data did not suggest that capitated CMHCs were able to shift significant numbers of patients to the state hospital. The data did not allow analysis of possible shifting of patients to nursing homes, nor have we assessed the impact of the UPMHP on expenditures for medications. However, we did estimate models specified as in Tables 1-5, with total physical and mental health care expenditures as the dependent variable (omitting well child care and maternity care). If major shifting of care from services included under the capitated rate to non-covered services occurred, a positive UPMHP effect would be observed in these regressions. Instead, under Model 2, a negative and significant effect was observed for the first two and a half years of the UPMHP, and a negative but insignificant effect was observed in the next year.

### **What Was the Financial Impact of the UPMHP on Contracting Mental Health Providers and on the Utah Medicaid Program?**

The UPMHP altered the way in which Medicaid funds flowed to contracting CMHCs and redefined their responsibilities with respect to the provision of services to the Medicaid population. Thus, the change in payment arrangements under the UPMHP had potential financial implications for both the contractors and state government in Utah.

**Financial impact on contracting community mental health centers** --During the early 1990s, there was a major movement into managed care by Medicaid in many states (Essork and Goldman, 1995; Callahan, et al., 1995). In some cases, this provided new financial opportunities for CMHCs. Broskowski and Eddy (1994) note that "...many CMHCs are already in the managed care business based on their history of contracts for local, state and federal funding which limited their revenue, while placing limits on service demands...managing scarce resources is an approach as comfortable as old shoes for most CMHCs. Their primary reliance on alternatives to inpatient and residential care places CMHCs in the position of being in tune with

much of the current managed care philosophy” (p. 343). Thus, there is reason to expect CMHCs to fare well financially under capitated, managed care contracts with Medicaid programs. By delivering services efficiently to Medicaid beneficiaries under capitated contracts, CMHCs could generate surplus revenues that could be used to offset losses in other lines of business, develop new programs, or expand existing ones. However, these contracts can pose financial risks for CMHCs as well: “A CMHC can expose itself to financial risks if it negotiates a **capitated** contract since the revenues will be based on estimates of the probable number of users and the average utilization per user. If the estimates are flawed, a CMHC can be required to provide services beyond the available financial resources” (Broskowski and Eddy (1994) p. 344). In particular, where Medicaid revenues constitute a substantial portion of total CMHC revenues, this could jeopardize the financial viability of the CMHC.

When examining the **financial** experience of the contracting and non-contracting CMHCs under the UPMHP, it is important to note that the contracting CMHCs were not a “random sample” of the CMHCs in Utah. Because of the voluntary nature of the UPMHP, it seems reasonable to assume that CMHCs expecting to fare well under **capitation** payments would be the entities most likely to participate. Medicaid program administrators characterized the CMHCs responding to its Request for Proposals (RFP) as “...the more progressive community mental health centers that had maximized Medicaid billings and provided a more comprehensive array of services” (Speckman, 1992, p. 13). In contrast, they noted that the CMHCs that dropped out of the negotiation process “...were entities that felt they would have little impact on reducing hospital lengths of stay and therefore saw little gain in changing their delivery system. They were also the more conservative centers who wanted to take a ‘watch and see approach’ before embarking on what they viewed as ‘a risky venture’” (Speckman, 1992, p. 14).

Data--Data for assessing the financial impact of the UPMHP on contracting CMHCs were abstracted **from** financial statements provided by both contracting and non-contracting CMHCs in Utah. These data cover the three fiscal years prior to initiation of the UPMHP, as well as the first three years of the UPMHP. Financial statements were solicited after the first, second, and third years of the UPMHP. All data were reviewed for consistency and completeness. Financial officers of the CMHCs were interviewed in person after the first fiscal year and by telephone as needed thereafter for clarification of entries on financial statements. Relatively complete data on revenues and expenses were collected for the three contracting CMHCs and five of the eight non-contracting CMHCs. The accounting practices of the three small, rural CMHCs administered through state government **offices** were not comparable to those of the other CMHCs. Consequently, they were eliminated from

the analysis. Relatively complete balance sheet information, consistently reported over the study period, was available for three of the five non-contracting CMHCs. Therefore, comparisons relying on balance sheet data were possible for the three contracting CMHCs and three of the non-contracting CMHCs.

**Measures--Financial** ratios can be considered as key statistics that monitor the financial operation of an entity. Although it is recognized that ratios must be used with caution, both in general (Foster, 1978) and specifically when applied to health care (Finkler, 1982), ratios are used for a wide range of financial analyses, (e.g. by bankers evaluating requests for loans (Kreps and Wacht, 1978), security analysts evaluating potential investments (Sokoloff, 1979) and government regulators evaluating solvency (Best's, 1993)). Ratios are frequently used to identify trends for health care entities as well (Cleverley, 1992a). For example, Cleverley (1992b) used financial ratios to contrast the **financial** performance of investor-owned and **tax-exempt** hospitals.

Sorenson, et al. (1987) developed a series of ratios specifically designed for tracking and assessing the financial performance of CMHCs. The National Council of Community Mental Health Centers (NCCMHC) (1991) suggested the use of a somewhat smaller set of ratios for this purpose. These ratios consisted primarily of indicators used to analyze for-profit businesses. Although financial ratios have been proposed as possible tools for policy analysis, they have not generally been applied in **evaluation** of the effects of policies on CMCHs. This evaluation uses ratios **from** both of the above sources. For the purposes of the analysis, the ratios are divided into five groups: growth, profitability, asset management, debt funding, and liquidity.

In assessing performance, it is common to compare the values of a firm's ratios with benchmarks from industry-wide data. A literature review identified a comprehensive set of ratios based on a sample of clinics, which was compiled by Dun and Bradstreet (1992). However, the benchmark values of these ratios were calculated based on all types of clinics in the Standard Industrial Code (SIC) 8093. This SIC code includes a range of clinic types, including alcohol treatment clinics, birth control clinics, and rehabilitation clinics (Office of Management and Budget, 1987), and therefore the estimated ratios do not provide clear benchmarks for use in this study.

Given the lack of available external benchmarks, a different approach is needed. Although accounting practices may vary somewhat from CMHC to CMHC, the accounting principle of consistency encourages entities to report items consistently **from** one period to the next (Hawkins, 1986). As a result, the likelihood of **significant** bias in year-to-year comparisons of a particular Center's ratios is less

than the likelihood that differences in accounting practices will bias comparisons of ratios among CMHCs. For this reason, instead of comparing aggregate statistics for the two groups of centers, this study tracks the changes in each ratio for each center in the two groups. This approach is similar to **first** doing a series of case studies, some on contracting CMHCs and some on non-contracting CMHCs, and then determining whether as a group the case studies point out differences in the experiences of the two types of CMHCs.

**Results-**The results are reported in three sections. The **first** section contains an analysis of changes in the growth of CMHCs, including an analyses of revenue streams, changes in patient mix, and changes in assets. The second section addresses profitability, asset management and debt funding. The third section examines measures of liquidity.

Growth--Table 6 shows the growth in revenue for each CMHC during the study period. The rate of revenue growth is a measure of the financial health of a Center, and it is an indicator of the need for additional assets and financing. Any differences in revenue growth between contracting and non-contracting Centers could be directly due to differences in Medicaid reimbursement. There could also be indirect effects. For example, one implication of a model of CMHC behavior proposed by Frank and **McGuire** (1994) is that the level of reimbursement from Medicaid may influence the amount of services a Center provides to other **payor** groups.

In order to show cumulative differences, revenue growth (Table 6) is measured by an index, with the base year 1989 (the first year of complete data for all CMHCs) set equal to 100. Revenue in contracting Centers grew at more rapid rates than revenue in non-contracting Centers. In part this was because contracting Centers received payments that were intended to cover the cost of inpatient care for Medicaid beneficiaries. Prior to the UPMHP, Medicaid payment for inpatient care went directly to the providers of inpatient care. Since contracting Centers passed these funds through to cover inpatient costs, rolling these funds into CMHC income statements overstates the growth in available revenue. However, this payment is only a part of the difference in the revenue growth between contracting and **non-**contracting Centers. For example, the financial statement for Center C indicates that Medicaid inpatient revenue represented 9.03% of total revenue in 1994. If the index number for Center C in 1994 is adjusted to remove the influence of this payment, the resulting index number still greatly exceeds the index numbers for the non-contracting centers. Another factor that may have caused contracting Centers to have more rapid revenue growth was the requirement that all Medicaid beneficiaries in a contracting Center's catchment area seek care for mental illness from the contracting CMHC.

**Table 6**  
**Revenue Growth**  
**(1989 = 100)**

	1988	1989	1990	1991	1992	1993	1994
<b>Contracting CMHCs</b>							
A	100.14	100.00	108.58	134.14	168.68	183.56	201.23
B	97.84	100.00	115.96	121.10	205.58	218.83	228.03
C	N.R.	100.00	125.90	154.17	203.81	222.50	259.84
<b>Non-Contracting CMHCs</b>							
D	N.R.	100.00	101.80	109.58	112.42	126.03	136.54
E	98.73	100.00	115.04	129.18	148.25	158.50	N.R.
F	106.43	100.00	N.M.	102.99	71.96	77.02	N.R.
G	98.49	100.00	99.47	112.53	126.87	151.35	162.65
H	100.10	100.00	101.80	109.61	119.95	132.30	143.74

Note: N.R. = Not Reported; N.M. = Not Meaningful

This would increase Medicaid revenues if some of these beneficiaries had received care previously **from** other sources. However, the 1990 index numbers indicate that contracting Centers experienced somewhat more rapid revenue growth prior to the UPMHP. Consequently, it is unlikely that the decision to participate in the UPMHP was the only cause of the more rapid revenue growth for contracting Centers; this growth also may reflect a more entrepreneurial nature on the part of the Centers that self-selected into the UPMHP.

In fact, Table 7 suggests that factors other than contracting must have caused the differences in revenue growth shown in Table 6. Somewhat surprisingly, Table 7 shows that both contracting and non-contracting centers had similar growth in the share of their revenues from Medicaid. For example, the growth between 1990 and 1994 for contracting Centers C (i.e. **from .297 to .419**) and A (from **.253 to .451**) paralleled the growth in non-contracting Centers D and E. It appears that participation in the UPMHP did not clearly influence the proportion of a Center's revenue that came from Medicaid. It is noteworthy that the contracting Centers tended to have a greater reliance on Medicaid than most centers in the United States. (As cited above, in 1988 roughly 15% of **CMCHs'** revenue was from Medicaid.) As a result, these Centers may already have been serving a large portion of Medicaid beneficiaries in their catchment areas, leaving little room for major changes in revenue growth from adding new patients under **capitation**.

Sorenson, et al. (1987) suggest that studying the share of revenue that is due from each **payor** type can provide insight into the Center's revenue stream. For example, for policymakers it is useful to know the extent to which funding is shifting from one source to another over time. However, tracking the trends for **payor** types is more difficult than might be expected. Funding is highly fragmented, and when CMHCs aggregate information on their financial records they do not necessarily combine programs on the basis of source of payment. In many instance "matching" funds are involved, so a program involves funding from several sources. And, in some instances, reporting matched funds can be misleading because funds from providers are used as "match". Even with these complications, it is possible to develop gross estimates of the changes in share of revenue by **payor** over time.

Table 7 also contains estimates of the percentage of CMHC funds that are from federal programs. Because of the way these data are reported by CMHCs, this includes all funding (state or federal) for Medicaid beneficiaries. The share of revenue from federal programs increased between 1989 and 1994 for all Centers except one.

Table 7

**CMHC Revenue Growth By Source  
(Proportion of Revenues)**

	1988	1989	1990	1991	1992	1993	1994
<b>MEDICAID/REVENUE</b>							
<b>Contracting CMHCs</b>							
A	0.195	0.195	0.253	0.347	0.392	0.440	0.451
B	0.140	0.189	0.192	0.189	N.R.	N.R.	N.R.
C	N.R.	0.217	0.297	0.311	0.389	0.416	0.419
<b>Non-Contracting CMHCs</b>							
D	N.R.	0.144	0.235	0.270	0.280	0.350	0.366
E	0.299	0.218	0.233	0.345	0.405	0.364	0.452
F	0.128	0.242	N.M.	0.215	0.256	0.276	N.R.
G	0.105	0.088	0.099	0.085	0.096	0.158	0.165
H	0.231	0.225	0.196	0.211	0.250	0.287	0.291
<b>FEDERAL/REVENUE</b>							
<b>Contracting CMHCs</b>							
A	0.405	0.423	0.499	0.564	0.581	0.625	0.639
B	0.447	0.327	0.289	0.637	N.R.	N.R.	N.R.
C	N.R.	0.609	0.596	0.622	0.627	0.650	0.639
<b>Non-Contracting CMHCs</b>							
D	N.R.	0.231	0.335	0.401	0.389	0.454	0.456
E	0.371	0.265	0.330	0.398	0.452	0.411	0.497
F	0.561	0.568	0.423	0.555	0.333	0.342	N.R.
G	0.195	0.249	0.314	0.309	0.484	0.439	0.388
H	0.295	0.302	0.294	0.304	0.348	0.378	0.377
<b>PUBLIC/REVENUE</b>							
<b>Contracting CMHCs</b>							
A	0.873	0.894	0.902	0.917	0.866	<b>0.895</b>	<b>0.916</b>
B	0.447	0.327	0.289	0.637	N.R.	N.R.	N.R.
C	N.R.	0.869	0.846	0.860	0.873	<b>0.890</b>	<b>0.887</b>
<b>Non-Contracting CMHCs</b>							
D	N.R.	0.917	0.942	0.912	0.869	<b>0.922</b>	<b>0.915</b>
E	0.929	0.951	0.957	0.937	0.919	0.917	0.926
F	0.942	0.930	0.927	0.951	0.918	0.905	N.R.
G	0.910	0.876	0.886	0.898	0.928	0.939	0.931
H	0.831	0.841	0.845	0.863	0.861	0.846	0.852

Note: N.M. =Not Meaningful; N.R. = Not Reported

Table 7 presents data on the percentage of funds that are from public sources. NCCMHC (1991) argues that too much reliance on public grants is undesirable because grant funding is volatile. All Centers except contracting Center B began the study period with a heavy reliance on public funds and remained heavily dependent on public funds throughout the period. From 1990 to 1994, the Centers converged towards 91.5% of their revenue **from** public sources. Centers that began above 91.5% moved down toward that figure, and Centers that began below 91.5% also moved closer to 91.5%.

In summary, the decision to participate in the UPMHP does not appear to have influenced, in a substantial way, the revenue growth or mix in revenues for the contracting CMHCs. Contracting Centers had higher revenue growth than **non**-contracting Centers prior to the UPMHP, and they maintained these higher growth rates during the **first** three years of the UPMHP. It appears that factors other than whether a CMHC participated in the UPMHP also influenced changes in the Center's **payor** mix.

**Patient mix--Several** relationships are possible between participating Centers' revenue growth (Table 6) and changes in patient mix. The revenue growth during this period could have occurred because access to care improved and a larger number of Medicaid beneficiaries received care. It is also possible that, despite overall revenue growth participation in the UPMHP could have been associated with a reduction in care for some demographic group or groups. Tables 8 and 9 examine changes in the number of people who received care at the CMHCs over the study period, disaggregated by type of patient.

As Table 8 indicates, there was a 27.6 1% increase in the number of individuals receiving care at the eight CMHCs between 1990 and 1993. This increase was consistent with an overall trend beginning in 1988 (the first year of the data) or earlier, as each year a larger number of individuals received care from the CMHCs.

Although the total number of patients steadily increased, every Center had at least one year when the number of patients declined, (with the exception of Center A). Because of this inconsistent growth, the choice of a base year is critical in evaluating which Centers experienced the fastest growth. For example, the three fastest growing centers for the period 1990 - 1993 were Center C, Center E, and Center F, and each of these had rapid growth in part because they provided care to fewer individuals in 1990 than in 1989.

Table 8 also contrasts the CMHCs' patient growth with their growth in revenues. The 1990 - 1993 rate of revenue growth for each of the individual

**Table 8**

**Number of Patients Treated by CMHCs  
(Unduplicated Count)**

	1988	1989	1990	1991	1992	1993	% Change in Count 1990-93	% Change in Revenue 1990-93
<b>Contracting CMHCs</b>								
A	11,552	12,014	12,098	<b>12,731</b>	13,973	<b>15,715</b>	29.90%	69.05%
B	1,041	1,165	1,148	1,280	1,465	1,560	35.89%	88.72%
C	704	1,395	831	944	1,410	1,990	139.47%	76.73%
<b>Subtotal</b>	<b>13,297</b>	<b>14,574</b>	<b>14,077</b>	14,955	<b>16,848</b>	19,265	36.85%	
<b>Non-Contracting CMHCs</b>								
D	1,828	1,943	2,422	2,245	2,494	2,349	-3.01%	23.80%
E	1,575	1,712	1,560	2,344	2,400	2,309	48.01%	37.77%
F	1,079	875	868	960	999	1,237	42.5 1%	11.15%
G	2,333	2,210	2,556	2,347	2,552	2,495	-2.39%	52.16%
H	1,321	1,059	1,178	<b>1,251</b>	1,193	1,262	7.13%	29.97%
<b>Subtotal</b>	<b>8,136</b>	<b>7,799</b>	<b>8,584</b>	9,147	9,638	9,652	12.44%	
<b>TOTAL</b>	<b>21,433</b>	<b>22,373</b>	<b>22,661</b>	<b>24,102</b>	26,486	28,917	27.61%	

**Source:** State of Utah, Center for Program Evaluation and Research, Division of Mental Health.

contracting Centers was roughly double the rate of patient count growth of 36.85% for all contracting Centers. This indicates that roughly half the increase in revenue that the contracting Centers received as a group came from higher revenue per unduplicated patient. As a group, non-contracting Centers also had a rate of revenue growth that exceeded patient count growth (12.44%). For both contracting and **non-contracting** CMHCs, as groups, the revenue increase was due in part to larger volumes of patients and in part to higher revenue per patient.

Tables 9 through 11 examine changes in the counts of various types of patients in order **to** assess whether the higher revenue per patient shown in Table 8 was likely associated with difference or changes in patient mix. Table 9 shows for each Center the number of patients diagnosed with Schizophrenia, Affective Disorders and Anxiety Disorders. Between 1990 and 1993, at all eight Centers, the count increased for each of these diagnoses. A comparison to the rate of increase for the total count in Table 8 shows that the count for these diagnoses tended to grow faster than the overall growth in number of patients. This indicates that, all else being equal, the case mix of both contracting and non-contracting Centers shifted.

Table 10 shows trends in **the** number of individuals in each of three age groups who received care. For the age 0- 17 group, both contracting and non-contracting Centers show a mixed pattern of growth over time. For the age group 18-44, all three contracting Centers served more individuals in 1993 than in 1990 or 1991. In contrast, non-contracting centers had a mixed pattern, with both Center D and Center G showing a decline in the count for the 18-44 age group. The over-45 age group shows the clearest trend. All centers served substantially more individuals over the age of 45 in 1993 than in 1990 or 1991.

Table 11 examines changes in the patients served who were poor (\$0-\$399 income per month) or near poor (**\$400-\$799**). With respect to individuals with income of \$0 - \$399 per month, the number served by Center C and Center A grew fairly steadily, but Center B had no clear trend. All four reporting non-contracting Centers cared for fewer poor individuals in 1993 than in 1990. With respect to individuals earning \$400 - \$799 per month, all seven centers reported an increase in the number served between 1990 and 1993.

**Asset Growth--The** assets of Utah CMHCs grew very rapidly during the period 1989-1994 (Table 12). Contracting Centers' assets grew more rapidly than assets of non-contracting Centers between 1989 and 1994, however the difference in growth was most pronounced in 1989-1990, prior to the contracting period. The 1990-1994 asset **growth** rate for non-contracting Center D (2.14 times) was similar to the growth rate for contracting Center C (2.28 times), and the growth rate for

**Table 9**  
**Number of Patients by Selected Diagnoses**  
**(Unduplicated Count)**

	1988	1989	1990	1991	1992	1993	% Change 1990-93
<b>SCHIZOPHRENIA</b>							
<b>Contracting CMHCs</b>							
A	476	500	390	518	2,296	2,371	507.95%
B	25	26	36	38	136	118	227.78%
C	20	50	26	30	136	225	765.38%
<b>Non-Contracting CMHCs</b>							
D	118	174	202	153	638	572	183.17%
E	63	139	116	194	634	524	35 1.72%
F	54	46	51	67	59	78	52.94%
G	121	114	161	52	278	300	86.34%
H	51	22	151	43	148	178	17.88%
<b>AFFECTIVE DISORDER</b>							
<b>Contracting CMHCs</b>							
A	4,210	4,814	5,130	5,059	6,588	6,855	33.63%
B	289	390	416	372	498	501	20.43%
C	112	217	178	210	412	694	289.89%
<b>Non-Contracting CMHCs</b>							
D	302	540	679	617	832	781	15.02%
E	411	420	383	761	703	751	96.08%
F	283	237	262	261	200	348	32.82%
G	641	559	602	524	860	853	41.69%
H	409	402	497	507	506	552	11.07%
<b>ANXIETY DISORDERS</b>							
<b>Contracting CMHCs</b>							
A	551	626	725	794	836	1,150	58.62%
B	93	68	69	91	96	165	139.13%
C	20	49	21	30	136	222	957.14%
<b>Non-Contracting CMHCs</b>							
D	333	285	96	70	137	119	23.96%
E	63	118	99	189	146	183	84.85%
F	48	47	68	57	79	96	41.18%
G	109	43	143	122	174	204	42.66%
H	77	89	132	158	171	158	19.70%

Note: Table 4 entries were derived from data in Table 3 and data from the State of Utah, Center for Program Evaluation and Research, Division of Mental Health.

**Table 10**  
**Number of Patients by Age**  
**(Unduplicated Count)**

	1988	1989	1990	1991	1992	1993	% Change 1990-93
<b>AGE 0-17</b>							
<b>Contracting CMHCs</b>							
A	3,597	3,665	3,599	3,468	2,940	3,449	-4.17%
B	325	370	376	424	451	471	25.27%
C	185	399	289	306	412	618	113.84%
<b>Non-Contracting CMHCs</b>							
D	531	631	886	775	692	733	-17.27%
E	450	450	390	616	521	533	36.67%
F	357	309	293	277	337	403	37.54%
G	476	452	553	455	290	445	-19.53%
H	297	293	224	304	174	180	-19.64%
<b>AGE 18-44</b>							
<b>Contracting CMHCs</b>							
A	6,972	7,207	7,348	7,875	8,230	8,609	17.16%
B	605	639	641	718	779	858	33.85%
C	419	797	450	519	699	958	112.89%
<b>Non-Contracting CMHCs</b>							
D	1,030	1,111	1,299	1,236	1,298	1,186	-8.70%
E	934	1,028	967	1,384	1,493	1,392	43.95%
F	559	430	448	538	515	613	36.83%
G	1,554	1,526	1,747	1,678	1,758	1,739	-0.46%
H	868	681	735	827	799	804	9.39%
<b>AGE 45+</b>							
<b>Contracting CMHCs</b>							
A	984	1,239	1,151	1,388	2,803	3,657	217.72%
B	111	156	130	138	235	231	77.69%
C	101	198	92	119	299	413	348.91%
<b>Non-Contracting CMHCs</b>							
D	213	185	237	245	504	435	83.54%
E	191	236	204	298	386	384	88.24%
F	163	136	128	145	147	221	72.66%
G	300	228	256	213	431	312	21.88%
H	156	86	218	119	223	278	27.52%

Note: Table 5 entries were derived from data in Table 3 and data from the State of Utah, Center for Program Evaluation and Research, Division of Mental Health.

**Table 11**

**Number of Patients by Monthly Income Level  
(Unduplicated Count)**

	1988	1989	1990	1991	1992	1993	% Change 1990-93
<b>INCOME \$0-\$399</b>							
<b>Contracting CMHCs</b>							
A	4,374	4,864	<b>4,975</b>	5,505	<b>7,253</b>	<b>7,861</b>	58.01%
B	461	291	564	468	635	487	-13.65%
C	392	715	417	492	637	877	110.3 1%
<b>Non-Contracting CMHCs</b>							
D	1,080	1,036	1,262	956	568	514	-59.27%
E	791	866	881	682	827	694	-21.23%
F	295	251	215	191	248	N.R.	
G	872	1,007	1,042	869	880	880	-15.55%
H	368	437	360	275	319	225	-37.50%
<b>INCOME \$400-\$799</b>							
<b>Contracting CMHCs</b>							
A	3,009	3,068	3,107	<b>3,379</b>	3,338	4,232	36.21%
B	181	239	172	263	280	359	108.72%
C	123	282	158	178	271	496	213.92%
<b>Non-Contracting CMHCs</b>							
<b>D</b>	472	487	583	461	1,120	993	70.33%
E	<b>350</b>	398	318	<b>559</b>	816	997	213.52%
F	220	190	210	253	238	N.R.	
G	458	324	529	610	678	687	<b>29.87%</b>
H	301	133	281	295	381	471	67.62%

Note: N.R. = Not Reported

Note: Table 6 entries were derived **from** data in Table 3 and data **from** the State of Utah, Center for Program Evaluation and Research, Division of Mental Health.

Source: State of Utah, Center for Program Evaluation and Research, Division of Mental Health

**Table 12**

**Asset Growth  
(1989 = 100)**

	1988	1989	1990	1991	1992	1993	1994
<b>Contracting CMHCs</b>							
A	97.57	100.00	111.57	142.47	174.97	218.65	293.01
B	77.5 1	100.00	212.16	274.73	364.37	379.13	423.71
C	N.R.	100.00	359.97	467.75	521.71	608.03	822.11
<b>Non-Contracting CMHCs</b>	<b>N.R.</b>	100.00	115.72	157.97	153.20	241.46	248.09
D	92.44	100.00	120.15	129.32	155.50	201.52	228.00
G	96.09	100.00	110.57	100.55	114.18	128.09	154.29
H							

Note: N.R. = Not Reported

contracting Center B (2.00 times) was similar to the growth rate for Center G (1.90 times). As a result, there is not clear evidence that contracting contributed to a different rate of asset growth.

During the study period, there was significant growth in fixed assets for several contracting and non-contracting Centers (Table 13), but no clear pattern associated with participation in the UPMHP. Also, the ranking of size of cash balances remained constant across this period (e.g. Center A had the largest cash reserves in 1990 and in 1994).

The data in Table 13 suggest that CMHC investment behavior followed one of two different patterns. With one pattern, the CMHC **first** built up cash reserves and then used these reserves to **finance** increases in fixed assets. For example, comparing Center A for 1989 and 1990 **shows** that, in 1989, Center A had a large cash reserve, which was drawn down in 1990. In contrast Center A's fixed assets increased substantially between 1989 and 1990. This pattern of **first** building up cash reserves and then drawing the balances down to help finance investment in fixed assets is repeated by Center A in 1992- 1993, by Center D in 1991- 1992 and 1992- 1993, and by Center G in 1991-1992 and 1992-1993. This process points to a link between the level of cash flow received by a Center and the amount of investment by the Center. The "building up/drawing down" pattern contrasts with the steadier growth in both cash and fixed assets for Center C, Center B, and Center H. (The Centers' **financing** behavior is explored further in Table 18.)

### **Profitability, Asset Management, Debt Funding**

Tables 14 and 15 use the **Dupont** method as a **framework** for an analysis of the six Centers that reported balance sheet data (Gapenski (1993) discusses the application of the **Dupont** model more generally to health care entities.) The **Dupont** method is based on the following relationship:

$$\frac{\text{Net Income}}{\text{Net Worth}} = \frac{\text{Net Income}}{\text{Revenue}} \times \frac{\text{Revenue}}{\text{Total Assets}} \times \frac{\text{Total Assets}}{\text{Net Worth}}$$

Since net income/net worth is a measure of overall financial health, this relationship allows an analysis that first investigates the overall health of the different Centers over time and then focuses on likely causes of changes in net income/net worth. First, Table 14 displays differences in net income/net worth. Table 15 shows each Center's "profit margins", as measured by net income/revenue. Contracting and **non**-contracting Centers could have different patterns of net income/revenue if one of the Medicaid reimbursement options is more generous. This ratio also could reflect

**Table 13**

**Type of Asset  
(Thousands of Dollars)**

	1988	1989	1990	1991	1992	1993	1994
<b>FIXED</b>							
<b>Contracting CMHCs</b>							
A	2,623	2,646	4,166	5,437	8,245	12,732	13,078
B	214	212	642	876	908	803	940
C	N.R.	84	874	873	885	926	1,353
<b>Non-Contracting CMHCs</b>							
D	N.R.	944	415	434	669	3,401	4,125
G	717	697	676	687	1,289	1,589	1,551
H	1,373	1,471	1,850	1,449	1,486	1,475	1,945
<b>CASH</b>							
<b>Contracting CMHCs</b>							
A	5,053	2,779	959	2,987	5,400	1,482	8,883
B	54	48	9	0	311	610	594
C	N.R.	213	199	521	670	810	752
<b>Non-Contracting CMHCs</b>							
D	N.R.	671	894	1,866	1,220	796	1,853
G	246	288	395	817	555	424	772
H	597	598	593	512	727	1,050	1,190

**Table 14****Net Income/Net Worth**

	1988	1989	1990	1991	1992	1993	1994
<b>Contracting CMHCs</b>							
A	<b>0.389</b>	0.085	0.052	0.170	0.397	0.203	0.213
B	0.119	-0.018	0.213	0.024	0.369	0.136	0.071
C	<b>N.R.</b>	0.475	0.492	0.561	0.240	0.017	0.217
<b>Non-Contracting CMHCs</b>							
D	N.R.	-0.036	-0.359	0.436	0.160	0.138	0.078
E	0.138	0.033	-0.005	0.123	-0.030	0.244	0.216
F	0.380	0.069	-0.078	0.108	0.088	0.113	0.096
G							
H							

Note: **N.R.** = Not Reported

**Table 15**

**Decomposition of Net Income/Net Worth**

	1988	1989	1990	1991	1992	1993	1994
<b>NET INCOME/REVENUE</b>							
<b>Contracting CMHCs</b>							
A	0.120	0.029	0.017	0.054	0.142	0.078	0.101
B	0.030	-0.005	0.078	0.009	0.127	0.051	0.028
C	N.R.	0.055	0.077	0.141	0.060	0.004	0.057
<b>Non-Contracting CMHCs</b>							
D	N.R.	-0.011	0.027	0.150	0.064	0.057	0.032
G	0.040	0.010	-0.001	0.036	-0.008	0.069	0.072
H	0.389	0.077	-0.094	0.105	0.086	0.113	0.097
<b>NET REVENUE/ TOTAL ASSETS</b>							
<b>Contracting CMHCs</b>							
	2.061	2.008	1.955	1.891	1.936	1.686	1.379
A	3.547	2.810	1.536	1.239	1.585	1.622	1.512
B	N.R.	6.518	2.279	2.148	2.546	2.385	2.060
C							
<b>Non-Contracting CMHCs</b>							
D	N.R.	1.966	1.729	1.364	1.443	1.026	1.082
G	2.756	2.587	2.142	2.251	2.110	1.943	1.845
H	0.814	0.781	0.719	0.851	0.820	0.807	0.728
<b>TOTAL ASSETS/ NET WORTH</b>							
<b>Contracting CMHCs</b>							
	1.576	1.478	1.564	1.658	1.450	1.541	1.527
A	1.116	1.348	1.784	2.203	1.835	1.647	1.693
B	N.R.	1.321	2.803	1.849	1.566	1.764	1.867
C							
<b>Non-Contracting CMHCs</b>							
D	N.R.	1.699	N.M.	2.137	1.741	2.365	2.239
G	1.260	1.318	1.591	1.502	1.861	1.822	1.631
H	1.202	1.141	1.157	1.204	1.247	1.241	1.352

Note: N.M. = Not Meaningful; N.R. = Not Reported

differences in expenses, which could be related to differences in the cost of delivering fee-for-service versus **capitated** care. Table 15 also addresses how efficiently a Center manages its assets, as measured by asset turnover, calculated as the dollars of revenue generated from each dollar of assets. Finally, total assets/net worth is displayed in Table 15. This ratio can indicate the amount of financial risk a Center faces due to indebtedness.

The financial concepts reflected by the different ratios in the **Dupont** model can be **illustrated** through the experience of Center C in the years 1989 through 1991. In that time period Center C reported the largest Net Income/Net Worth of any center, but the cause of the high profitability varied each year. Table 15 shows that, in 1989, Center C generated a high volume of revenue for each dollar of assets, In 1990, Center C financed relatively more earning assets by using a greater proportion of debt to achieve a high ratio of assets/net worth. And in 1991, Center C earned a relatively large profit on each dollar of sales.

**Net Income/Net Worth--**The net income/net worth ratio is important both because negative values indicate a CMHC's future could be in jeopardy, and because the ratio provides an indication of a CMHC's ability to continue to grow and update services. The limit on growth exists because net income is the primary source of additional net worth for the CMHCs. Growth generally requires additional assets, which must be financed out of net worth or debt. Without additional net worth, growth will tend to cause increased indebtedness up to a point where a CMHC can no longer borrow, and therefore can not add assets.

An important distinction between the CMHCs in this evaluation and for-profit firms is that part of the income earned by for-profit firms may be paid out as dividends and therefore is not available to fund growth. However, since the Utah CMHCs do not pay dividends, they "retain" all income. Taking this into account, both contracting and non-contracting CMHCs tended to be fairly "profitable" during this period. Contracting CMHCs were particularly profitable in the initial contract year of 1992, when returns ranged between 24.0% and 39.7%. Each contracting CMHC was profitable every contracting year, and each contracting CMHC had a return that exceeded 13% in at least two of the three contracting years. Contracting CMHCs also were more profitable than non-contracting CMHCs in 1990, prior to the UPMHP. This may have influenced the willingness of the CMHCs to accept the financial risk associated with participating in the UPMHP.

Although contracting CMHCs were generally more profitable than non-contracting CMHCs, in 1993 the profits of non-contracting CMHCs tended to be above contracting CMHCs. Over time, highly profitable CMHCs tended to have

profits decline toward the average, and relatively unprofitable CMHCs tended to have increases in their profitability. In general, Table 14 shows a long term trend of regression to the mean. As is the case with many of the other indicators used in this study, any influence that the decision to contract had on the net income/net worth of the CMHCs appears to have been relatively small compared to other factors influencing profitability.

**Net Income/Revenue--**The most variable of the three right hand side components of the Dupont model was Net Income/ Revenue. As Table 15 indicates, there was more year-to-year variability for non-contracting than for contracting CMHCs. Compared to contracting CMHCs, non-contracting CMHCs tended to have lower **values** for this ratio in 1990, higher values in 1991, lower values in 1992, and higher values in 1993. However, the swings in the value of this ratio for **non-contracting** CMHCs tended to become smaller over time, and it appears that the reduced variation contributed to the regression to the mean for net income/net worth.

Table 16 explores changes in the value of the net income/revenue ratio by tracking two types of costs, as percentages of revenue, that affect this ratio. Given the strong growth in the number of cases served, fixed costs were spread across more patients. To the extent that wages and contracted services included some fixed expenses, given the increased number of cases served, it might be anticipated that wages and contracted services would become a smaller portion of total expenses. However, Table 16 shows that, compared to 1991, both contracting CMHCs that reported wages had a higher share of their total expenses devoted to salaries in 1994. Three of the four reporting non-contracting CMHCs also had increased values for this ratio between 1991 and 1994. The other non-contracting CMHC, Center D, had a declining value for this ratio between 1991 and 1992, and then the ratio increased between 1992 and 1994. Regardless of whether a CMHC participated in the UPMHP, wages tended to become a larger share of total costs over time. This occurred despite the increase in those costs that were necessary for the build up in fixed assets.

**Revenue/Assets--**Table 15 suggests that, for all CMHCs, there was a gradual decline in the revenue/assets ratio and that this decline was not influenced by the decision to contract. Between 1989 and 1994, all six CMHCs that provided balance sheet **information** experienced a decline in the value of this ratio. All had declines in the period 1989-1990, prior to contracting, and all but Center H also had declines in the period 1990-1994.

Changes in the asset turnover ratio can be examined further by comparing turnover ratios for subcategories of assets. This type of comparison shows the

Table 16

Selected Costs As a Portion of Expenses

	1988	1989	1990	1991	1992	1993	1994
<b>CONTRACTED SERVICES/EXPENSES</b>							
<b>Contracting CMHCs</b>							
A	0.225	0.214	0.220	0.277	0.264	0.230	0.235
B	0.091	0.098	0.087	0.079	N.R.	N.R.	N.R.
C	N.R.	0.074	0.055	0.048	0.105	0.088	0.068
<b>Non-Contracting CMHCs</b>							
D	N.R.	0.100	0.132	0.122	0.112	0.131	0.114
E	0.141	0.154	0.202	0.140	0.178	0.114	0.062
F	0.008	0.004	0.012	0.028	0.070	0.069	N.R.
G	0.017	0.012	0.001	0.002	0.019	0.000	0.000
H	0.000	0.057	0.077	0.078	0.070	0.048	0.050
<b>SALARIES AND BENEFITS/EXPENSES</b>							
<b>Contracting CMHCs</b>							
A	0.628	0.637	0.625	0.589	0.601	0.612	0.619
B	0.596	0.614	0.658	0.633	N.R.	N.R.	N.R.
C	N.R.	0.674	0.714	0.715	0.649	0.710	0.739
<b>Non-Contracting CMHCs</b>							
D	N.R.	0.690	0.712	0.73 1	0.709	0.726	0.728
E	0.585	0.570	0.538	0.567	0.582	0.607	0.648
F	0.666	0.702	0.657	0.652	0.645	0.640	N.R.
G	0.781	0.772	0.750	0.783	0.781	0.769	0.789
H	0.993	0.744	0.624	0.801	0.806	0.836	0.829

Note: N.R. = Not Reported; Data for Center E cover 6 months only in 1994.

relative effectiveness of the use of these subcategories of assets, which can help explain why CMHCs experienced a decline in efficiency. Table 17 examines build-up in receivables, which would occur if payers were slow to make payments to the CMHCs. This should be viewed as negative, as it means resources are tied up in unproductive assets. Data in Table 17 also can be used to determine if the increased investment in fixed assets led to a slow down in the amount of revenue generated for each dollar invested in fixed assets. This would indicate that expansion was resulting in a greater amount of capital services provided for each dollar of revenue. Increased levels of cash reserves (also displayed in Table 17) could be associated with declining efficiency in the use of assets. This would suggest that a reduction in asset turnover was due to a CMHC's increasing its liquidity to create a greater margin of safety.

During the period 1989-1994, all three factors apparently were important reasons for the decline in asset turnover for both contracting and non-contracting CMHCs. With the exception of the results for Center H, all six CMHCs had higher values in all three ratios in 1989 than in 1994. All six CMHCs also had a decline in the revenue/cash ratio for the period 1990- 1994. In all other cases, both for the period 1990-1994 and for the period 1991-1994, there is no consistent trend for either the three contracting or three non-contracting CMHCs. In short, the data in Table 17 show that a number of strong long term trends affected the asset turnover ratio and, over the period that these trends occurred, they influenced both contracting and non-contracting CMHCs.

**Assets/Net Worth--Between** 1989 and 1994 all six CMHCs that reported balance sheets experienced an increase in the value of the total assets/net worth ratio (Table 15). Since total assets equals the sum of debt and net worth, the increase in the total assets/net worth ratio indicates that the CMHCs were increasingly relying on debt for financing. However, during the shorter period 1990 - 1994, this ratio decreased for contracting CMHCs, but increased for non-contracting CMHCs. The combination of the reliance on cash flow as a source of investment (Table 13 the higher rate of profits (which are generally positively correlated with cash flow) for contracting CMHCs shown in Table 14, and the lower growth in indebtedness for contracting CMHCs in Table 15 suggests that higher rates of profits allowed contracting CMHCs to finance a larger share of their growth with income.

Financing behavior is explored further in Table 18, which shows the primary sources and uses of funds by the CMHCs. For example, the right half of Table 18 indicates that, during the years 1992,1993 and 1994, Center C's primary sources of funds were income ("profit") of \$541,000 and additional debt of \$498,000. These funds were used primarily to purchase \$480,000 additional fixed assets and to build

**Table 17**

**Turnover Ratios by Type of Asset**

	1988	1989	1990	1991	1992	1993	1994
<b>REVENUE/RECEIVABLES</b>							
<b>Contracting CMHCs</b>							
A	41.28	36.47	41.27	47.46	<b>22.91</b>	21.39	5.25
B	13.13	9.53	4.19	4.96	6.67	10.39	8.18
C	N.R.	N.R.	N.R.	N.R.	<b>N.R.</b>	56.64	14.5 1
<b>Non-Contracting CMHCs</b>							
D	N.R.	9.31	3.69	3.61	3.27	3.34	6.93
G	9.65	7.97	5.60	10.79	11.21	7.11	7.00
H	5.27	5.38	7.75	4.34	4.07	4.27	4.39
<b>REVENUE/FIXED ASSETS</b>							
<b>Contracting CMHCs</b>							
A	8.70	8.61	5.94	5.62	4.66	3.29	3.51
B	6.37	6.56	2.52	1.93	3.15	3.80	3.38
C	<b>N.R.</b>	23.12	2.80	3.43	4.48	4.67	3.74
<b>Non-Contracting CMHCs</b>							
D	<b>N.R.</b>	6.05	14.00	14.41	9.59	2.12	1.89
G	5.19	5.42	5.47	6.29	3.72	3.60	3.96
H	1.40	1.31	1.06	1.46	1.55	1.73	1.42
<b>REVENUE/CASH</b>							
<b>Contracting CMHCs</b>							
A	4.52	8.20	25.79	10.23	7.12	28.22	5.16
B	25.19	28.97	189.43	N.M.	9.21	4.99	5.35
C	N.R.	9.14	12.3 1	5.75	5.91	5.34	6.72
<b>Non-Contracting CMHCs</b>							
D	N.R.	8.51	6.50	3.35	5.26	9.04	4.21
G	15.13	13.12	9.52	5.20	8.64	13.47	7.96
H	3.23	3.22	3.31	4.12	3.18	2.43	2.32

**Note:** N.M. = Not **M**eaningful; N.R. = Not Reported

Table 18

Sources and Uses of Funds  
(Thousands of Dollars)

	<u>Flows for Yrs. 1989 or 1990 - 1994</u>				<u>Flows for Yrs. 1992-1994</u>			
	<b>Change in Cash</b>	<b>Change in Fixed Assets</b>	<b>Total Income</b>	<b>Total New Debt</b>	<b>Change in Cash</b>	<b>Change in Fixed Assets</b>	<b>Total Income</b>	<b>Total New Debt</b>
<b>Contracting CMHCS</b>								
A	3,830	10,456	16,081	7,420	5,896	7,642	13,353	5,054
B	540	726	740	819	594	64	607	116
C	539	1,269	1,153	1,067	231	480	541	498
<b>Non-Contracting CMHCs</b>								
	1,182	3,181	2,164	2,792	(14)	3,691	1,070	1,546
D	526	834	985	1,010	(46)	875	799	657
G	593	572	941	593	678	496	755	570
H								

Note: For balance sheet items "flow 1992-1994" means (year end 1994 – year end 1991). Total income 1992- 1994 is the sum of net income for 1992, 1993, and 1994.

up cash reserves by \$23 1,000. For the six CMHCs, the following financial behavior appears to have occurred during the contracting period:

- All six CMHCs aggressively added fixed assets. Given the continuing high rates of return it appears there were strong **financial** incentives to make investments in fixed assets.
- The CMHCs relied heavily on income (“profit”) as a source for investment capital.
- Even when income was **sufficient** to fund additional fixed assets, the CMHCs added debt to **fund** larger cash reserves. The need for larger cash reserves is consistent with commonly expected financing behavior, where growth in the size of an entity is associated with a need for larger cash balances.
- When income was not sufficient to allow a build up both in fixed assets and cash (Center G; Center D) the Centers increased their fixed assets and not cash reserves.

In short, income went first to build up fixed assets, and then to build up cash reserves. This pattern was probably influenced by the strong growth in revenue, which points to the likely availability of profitable investment projects. Some financial theorists believe that when for-profit business **firms** finance projects they follow a similar, but different, “pecking order” where the preferred source of financing is profits. If profits are not sufficient, the **firms** draw down cash, and if there is still a need for additional funding the firms increase their indebtedness (Myers, 1984). The financing behavior of the CMHCs, as evident in Table 13, differs from the for-profit pecking order in that the CMHCs appeared at times to borrow before drawing down cash. In part this may reflect the rapid growth of the CMHCs and the tendency for larger entities to hold larger cash balances. This interpretation is supported by the earlier analysis of data in Table 13.

## **Liquidity**

Table 19 contains measures of liquidity; that is, the ability of an entity to pay its bills as they come due. Both Sorensen et al (1987) and the National Council of Community Mental Health Centers (199 1) suggest tracking CMHCs’ current ratios, defined as current assets/current liabilities. A decline in the current ratio means that fewer liquid assets are available for each dollar of liabilities that are about to come

**Table 19**  
**Measures of Liquidity**

	1988	1989	1990	1991	1992	1993	1994
<b>CURRENT ASSETS/ CURRENT LIABILITIES</b>							
<b>Contracting CMHCs</b>	2.400	1.668	0.914	<b>0.972</b>	1.948	0.750	1.836
A	4.259	3.375	2.843	2.305	1.835	1.647	1.693
B	N.R.	N.M.	N.M.	N.M.	N.M.	4.302	4.577
C							
<b>Non-Contracting CMHCs</b>							
D	N.R.	2.212	2.867	1.973	2.713	1.749	1.834
G	2.274	2.166	1.637	1.921	1.403	1.915	2.696
H	3.313	6.726	3.915	3.666	3.085	3.331	3.081
<b>WORKING CAPITAL (Thousands of Dollars)</b>							
<b>Contracting CMHCs</b>	4,547	2,453	<b>(371)</b>	<b>(182)</b>	4,415	<b>(1,771)</b>	8,022
A	130	155	266	212	509	674	656
B	N.R.	214	200	523	671	682	860
C							
<b>Non-Contracting CMHCs</b>							
D	N.R.	713	1,617	1,781	2,019	1,272	1,393
G	335	411	415	582	282	522	990
H	694	845	651	748	897	1,177	1,254
<b>DAYS IN RECEIVABLES</b>							
<b>Contracting CMHCs</b>							
A	8.84	10.01	8.84	7.69	15.93	17.07	69.55
B	27.81	38.30	87.16	73.62	54.69	35.12	44.64
C	N.R.	0.00	0.00	0.00	0.00	6.44	25.15
<b>Non-Contracting CMHCs</b>							
D	N.R.	39.20	98.98	101.16	111.50	109.13	52.70
G	37.82	45.81	65.20	33.83	32.56	51.34	52.14
H	69.25	67.79	47.11	84.17	89.64	85.58	83.08
<b>DAYS CASH ON HAND</b>							
<b>Contracting CMHCs</b>							
A	80.83	44.51	14.15	35.67	51.28	12.93	70.71
B	14.49	12.60	1.93	0.00	39.65	73.11	68.24
C	N.R.	39.92	29.65	63.45	61.72	68.35	54.32
<b>Non-Contracting CMHCs</b>							
D	N.R.	42.88	56.14	108.92	69.38	40.39	86.77
G	24.12	27.83	38.34	70.16	42.24	27.09	45.83
H	113.06	113.34	110.42	88.58	114.89	150.46	157.04

Note: N.M. = Not **M**eaningful; N.R. = Not Reported

due. Although the current ratio is widely used, it is problematic in its interpretation. When evaluating current ratios, one type of problem arises when both the denominator and numerator change by a significant amount (Bernstein, 1984). This problem occurs with these CMHCs, since there is strong growth in their balance sheets. Because the CMHCs began this period with current ratios greater than 1, an equal increase in both current assets and current liabilities causes the ratio to fall. An alternative measure of liquidity, net working capital, (defined as the difference between current assets and current liabilities) avoids this problem. Consequently, it is common for financial analysts to jointly use the current ratio and net working capital to assess liquidity. For example, lending agreements often require the borrower both to maintain a minimum current ratio and to maintain a minimum net working capital (American Bar Foundation, 1971). Table 19 shows that those CMHCs that followed the pattern of first, building up cash reserves (a current asset) and then drawing down the cash for investment in fixed assets had variation in their current ratios across time. However, between 1989 and 1994 there was a rapid increase in each of the CMHCs' net working capital.

Although increases in working capital (and current assets) are generally favorable, the source of the increase can be important. For example, either an increase in receivables or an increase in cash will increase both current assets and working capital, but cash is clearly more liquid than receivables, and growth in receivables may indicate an inability to collect bills. In Table 19, receivables and cash are adjusted for changes in CMHC size using the number of days revenue. For example, in 1989 CMHC B had the equivalent of 38.30 days of revenue tied up in receivables, and this increased to 44.64 days of revenue in 1994. During the period 1989-1994, both cash and receivables at all the CMHCs were growing at a rate that exceeded growth in revenue. After implementation of the UPMHP, there were no consistent trends in either ratio for contracting or non-contracting CMHCs. In **summary**, comparing the experience of the three contracting CMHCs to the three non-contracting CMHCs suggests the two groups had similar changes in both aggregate and detailed measures of liquidity.

**Summary-In** evaluating the effects of capitation of Medicaid mental health services, the first concern of policymakers is likely to be whether there are any negative effects on the access to care or quality of care for Medicaid's enrollees. A second major concern is whether capitation results in cost containment. A **third** important concern, however, is whether participating in a **capitated**, Medicaid managed mental health care program influences CMHC financial performance. This is of concern in part because a **CMHC's financial** viability will determine whether it continues to provide care and remains a viable contractor for Medicaid. It is also of concern because the financial condition of the CMHC conceivably could have

spillover effects on the delivery of patient care and on the amount other payers are billed.

In order to **evaluate** financial performance, we adapted some standard financial techniques and combined these techniques with previous proposals for evaluating the financial health of CMHCs. Our analysis suggests that there were relatively few financial differences between contracting and non-contracting CMHCs during the first three years of the UPMHP that didn't already exist prior to the UPMHP. The contracting and non-contracting CMHCs had largely similar financial experiences during the six year study period. For both **groups**, this was a period of strong revenue growth, which allowed for increases in fixed assets and cash reserves. Further, those differences that did exist were generally favorable for contracting CMHCs and appeared to reflect the continuation of trends that occurred prior to the contracting period. Consequently, in this instance, the decision to contract appears to have had, at worst, a neutral effect on CMHC financial performance. It should be recognized that other managed care capitation programs with different designs may yield different results. In the UPMHP, the contracting CMHCs may have fared well **financially** because they "self-selected" into the program. Their financial condition was strong prior to participation in the UPMHP and/or the phase in of financial risk allowed them to gradually adjust to full capitation payments.

### **Financial Impact on the Utah Medicaid Program**

The analysis to this point has not addressed whether the Utah Medicaid program saved dollars by implementing the UPMHP. Estimation of program savings first requires the projection of Medicaid program expenditures at the capitated sites if the UPMHP had not been implemented. Then, the actual payments to the capitated CMHCs must be deducted from these projected expenditures to produce an estimate of savings. In the analysis of the UPMHP, neither of these calculations is straightforward. For instance, there are a variety of approaches that could be taken to project what expenditures would have been in the absence of the UPMHP. We employed three different methods. Under Method 1, separate time trends for inpatient and outpatient expenditures were estimated using data for the capitated sites prior to the UPMHP; projections of expenditures at the capitated sites if the UPMHP had not been implemented were made using these time trends. Method 2 is a variation of Method 1. The only difference is that the projections were adjusted for changes in the proportion of enrollment in different Medicaid eligibility categories at the capitated sites. We regard the estimates generated using Method 2 to be the most appropriate for estimating Medicaid savings. Method 3 differs from Method 1 in that the time trend in expenditures at the non-capitated sites after implementation of the

UPMHP is assumed to be the best indicator of how expenditures would have trended forward at the capitated sites in the absence of the UPMHP.

In implementing Methods 1 and 2 to project inpatient expenditures, time trends were estimated based on 24 months of pre-UPMHP data. However, a different approach was taken to project outpatient expenditures. The contracting CMHCs were not at financial risk for these expenditures during the **first** two and a half years of the UPMHP; they received a capitated payment for outpatient care but a settlement occurred at the end of each year so that the CMHCs received the fee-for-service equivalent for this care. Our analysis of outpatient expenditures and visits found no significant UPMHP impact on these measures. Therefore, we assumed that any savings (or losses) to Medicaid related to payments for outpatient care could be measured by focusing only on the last year covered by our study. This allowed us to use four and a half years of data (two years pre-UPMHP and the **first** two and a half years of the UPMHP) to estimate trend lines.

We employed two different approaches to estimate the actual payments made by Medicaid to the contracting CMHCs. The first approach used the total payment amounts reported by the Utah Medicaid program in its Waiver Renewal Request (1996). The second approach estimated these payment amounts using Medicaid eligibility data and per person per month capitated rates. The payments reported by the Utah Medicaid program were less than the estimated payments, resulting in greater projected cost savings under each of the three models described above, when the Medicaid program reported payments were used.

Using Method 2, and our estimates of program payments, we found savings of **\$2,159,093** to Medicaid for the first three and a half years of the UPMHP. There were **\$3,886,751** in savings on inpatient care for this period, but these savings were offset by **\$1,727,658** in “losses” on outpatient care during the last study year. Inpatient savings were modest in the first year of the UPMHP (\$52,045) but expanded in subsequent years as the trend line diverged further from the actual payment level.

This same pattern of inpatient savings, diminished by outpatient “losses,” characterized all of the overall estimates of program savings. However, the **\$2,159,093** estimate of savings was the lowest of the six estimates produced through combining the three different trend methods with the two different payment calculations. For instance, using our program payment calculations, Method 1 generated **\$9,232,831** in program savings and Method 3 yielded **\$2,414,458** in program savings. The large difference in the Methods 1 and 2 estimates illustrates how sensitive the calculations are to the adjustment for changes in proportions of beneficiaries in different eligibility categories. As noted above, the estimates of cost

savings using payments as reported by the Utah Medicaid program are larger for each of the three methods: **\$12,938,973** (Method 1), **\$5,860,236** (Method 2), and **\$3,964,219** (Method 3).

A caution in this analysis is the sensitivity of the projected Medicaid program savings to the methods used to project trends and to the two competing estimates of program payments. It also should be noted that the estimates of program savings were not adjusted for fee-for-service payments made to capitated **CMHCs** for some mental health services. However, as reported by the Utah Division of Health Care Financing in its Waiver Renewal Request (1996), these payments are relatively small in comparison to the estimated savings.

While the ability of managed mental health programs to generate savings for Medicaid is an important policy topic, policymakers are also concerned about impacts on process of care and the mental health of beneficiaries. These issues are not addressed in this report. However, we are evaluating (under NIMH funding) the experience of a group of Medicaid beneficiaries with schizophrenia, comparing process and outcomes for members of this beneficiary subgroup who reside in capitated and non-capitated catchment areas. This analysis relies on medical records and **beneficiary** interview data (Manning, et al., 1996).

## REFERENCES

American Bar Foundation: Commentaries on Model Debenture Indenture Provisions. Chicago. American Bar Foundation, 1971.

Bernstein, L.: Analysis of Financial Statements Revised Edition. Homewood, IL. Irwin, 1994.

Best Co.: 1993 - Best Insurance Reports-Life-Health. Oldwick, NJ. A.M. Best co., 1994

Brokowski, A., and Eaddy, M.: Community mental health centers in a managed care environment. Administration and Policy in Mental Health 21:335-352, 1994.

Callahan, J., Shepard, D., Beinecke, R., Larson, M., and Cavanaugh, D.: Mental health/substance abuse treatment in managed care: the Massachusetts Medicaid experience. Health Affairs 14: 173-184, 1995.

Christianson, J., and Gray, D.: What CMHCs can learn from two states' efforts to capitate Medicaid benefits. Hospital and Community Psychiatry 45(8):777-78 1, August 1994.

Christianson, J.B., Gray, D.Z., Kihlstrom, L.C., and Speckman, Z.K. : Development of the Utah prepaid mental health plan. In R.M. Scheffler and L.F. Rossiter (eds.) Advances in Health Economics and Health Services Research. Volume 15 Greenwich, CT. JAI Press Inc. pp. 117-135, 1995.

Christianson, J.B., Gray, D.Z., and Speckman, Z.K.: Development of the Utah Medicaid Prepaid Mental Health Plan. Prepared for the U.S. Health Care Financing Administration, U.S. Department of Health and Human Services and the Division of Health Care Financing, Utah State Department of Health, October, 1992.

Christianson, J.B. Manning, W.G., Lurie, N., Stoner, T., Gray, D.Z., Popkin, M., and Marriott, S.: Utah's prepaid mental health plan: the first year. Health Affairs 14(3): 160-172, Fall 1995.

Cleverley W.O.: Essentials of Health Care Finance. Third Edition, Gaithersburg, MD. Aspen, 1992a.

Cleverley W.O.: Financial and operating performance of systems: voluntary versus investor-owned. Topics in Health Care Finance. 18:63-73, 1992b.

Dun and Bradstreet: Industry Norms and Key Business Ratios, One Year Edition 1991-1992. Finance, Insurance, Real Estate, Services SIC #6000-8999, New York. Duns Analytic Services, 1992.

Essock, S., and Goldman, H.: States' embrace of managed mental health care. Health Affairs 14:34-44, 1995.

Finkler, S.A.: Ratio analysis: use with caution. Health Care Management Review (Spring):65-72, 1982.

Foster, G.: Financial Statement Analysis. Englewood Cliffs, CA. Prentice Hall, 1978.

Frank, R., and McGuire, T. : Health care reform and community mental health systems. Prepared presented at Mental Health and Health Care Reform conference of the National Institute of Health, September 19-20 1994.

Greene, W.: Econometric Analysis. New York. MacMillan, pp. 482-485, 1990.

Harvey, A.C.: The Econometric Analysis of Time Series. Oxford, U.K. Philip Allan Publishers, Ltd., 1981.

Hawkins, D.: Corporate Financial Reporting and Analysis. Third Edition, Homewood, IL. Irwin, 1986.

Kreps, C.H., and Wacht, R.: Analyzing Financial Statements. Fifth Edition, Washington, DC. American Bankers Association, 1978.

Manning, W.G., Liu, C.F., Stoner, T., Gray, D.Z., Lurie, N., Popkin, M., and Christianson, J.B.: Outcomes for Medicaid beneficiaries with schizophrenia under a prepaid mental health carve-out. University of Minnesota., 1996.

Micali, P., and Nardini, C.: Merit behavioral care in Iowa: a case study. Behavioral Health Management (March/April) 65-7, .

Myers, S.: The capital structure puzzle. Journal of Finance 39:575-592, 1984.

National Council of Community Mental Health Centers: Business Yardsticks. An Introduction to Financial Ratios.

Executive Office of the President, Office of Management and Budget: Standard Industrial Classification Manual. Washington, DC, Office of Management and Budget, 1987.

Sokoloff, K.: The Paine Webber Handbook of Stock and Bond Analysis, Appendix III Ratio Trend Analysis. New York. McGraw-Hill, 1979.

Sorensen, J., Zelman, W., Hanbery, G., and Kucic A.R.: Managing mental health organizations with 25 key performance indicators. Evaluation and Program Planning 10:239-247, 1987.

**Speckman, Z.:** The Medicaid Experiment: Utah's Prepaid Mental Health Plan. Utah Department of Health, Division of Health Care Financing. Salt Lake City, Utah, 1992.

Statacorp: Reference Manual, Release 4. College Station, TX: Stata Press, 1995.