



**The Impact of a
Medicaid Behavioral Carve-out Program on
Patterns of Acute Psychiatric Hospitalization:
The Massachusetts Experience,
FY 1996 - FY 1997**

By

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EXECUTIVE SUMMARY

The focus of this study is the impact of the Commonwealth's Medicaid funded Mental Health and Substance Abuse Program (MHSAP) on patterns of acute inpatient psychiatric care in the October 1, 1995 to September 30, 1997 period. It is an analysis of data reported from each acute inpatient facility in the state to the Massachusetts Division of Health Care Finance and Policy, consisting of approximately 750,000 episodes for each of the two years, and a total of 40,552 episodes of care on psychiatric units. A review of available data and research indicates high levels of reliability for demographic and insurance statistics, moderate levels for diagnostic fields, and questionable levels for information on treatments provided. Key findings include the following:

1. A comparison of the diagnostic profiles of the various insurance cohorts reveals that patients under both Mental Health Management of America, Inc. (MHMA) and the Massachusetts Behavioral Health Program (MBHP) have a similar profile with higher levels of schizophrenia, affective disorders, and personality disorders, one which is clearly more severe than for those under the other plans, including the Medicaid HMOs.
2. This data strongly suggests that tightened eligibility criteria for psychiatric hospitalizations has led to the increased use of medical units for the care of psychiatric and substance abuse conditions, especially under the current MBHP program.
3. Two-fifths of a percent of the population were hospitalized in each year in an acute psychiatric unit, with highest rates in central Boston, the North Shore, and the urban areas of central and western Massachusetts; and the lowest levels, in the Southeastern part of the state, as well as the surrounding suburbs of Boston.
4. In the first 6 months of the MBHP program there was no evidence of any significant changes in hospitalization levels as would be expected with the broader mandate of this program. However, beginning in February 1997, a consistent upward trend in caseload bed day sizes was found resulting in an increase of about 50% in the monthly number of bed days. Most of MBHP's increases are clearly associated with declines from the regular Medicaid program.
5. The Massachusetts Mental Health and Substance Abuse (MMHSA) Program appears to have taken a somewhat preventative approach to hospitalization as fewer of its psychiatric admissions were on an emergency basis or through emergency rooms, compared the Medicaid HMOs and the other programs.
6. The results reveal that only 6.7% of the former free care psychiatric population were able to receive MBHP funding during their subsequent hospitalization during the implementation period. An even smaller number under "Other Government Funding", which may include the Department of Mental Health (DMH) replacement program, were able to make the transition to MBHP funding.

7. The Medicaid MBHP and HMO hospitalization programs are less specifically targeted at the poorest communities than the Medicaid program as a whole. The Commonwealth's free care program was even less targeted at these communities.
8. The median length of stay in Massachusetts institutions has fallen from 6.5 to 6.0 days just within the two year period of this study, or 7.7%. This represents a similar drop as was experienced under the MMHSA Program, or 6.8%, and considerably more than that under the Medicaid HMOs (3.4%).
9. With the exception of the free care program, the MMHSA Program had the highest rate of non-referral upon patient discharge, increasing slightly in the transition from MHMA, to MBHP, considerably higher than other programs.
10. Low rates were found for continuity between psychiatric and medical care under MBHP in which 19% of the patients had the same doctor during the most recent medical and psychiatric hospitalizations, and 12%, the same facility. This is considerably less than the corresponding 51% and 91% figures under the Medicaid HMO program, and the 43% and 44% figures overall.
11. Typically, the medical stays were appreciably longer than psychiatric stays for both MHMA and MBHP patients, whereas patients in all other plans had longer psychiatric than medical stays. In addition, while MBHP patients had lower rates of discontinuity when they were medically hospitalized than when they were psychiatrically hospitalized, the opposite was the case with all other plans: psychiatric care had the lower rate of discontinuity in respect to both changes in doctors and facilities, when compared with the medical hospitalizations of these same patients.
12. Thirty-day relapse rates have declined slightly, from 16.8% to 16.2%, by 3.4%. Similarly, the rates declined slightly in the transition from the MHMA to the MBHP program, from 18.0% to 17.6%, or by 2.2%. In contrast, there were considerably larger declines in the Medicaid HMO program, from 22.9% to 18.9%, or 17.5%.
13. In contrast, the 6-month recidivism rates reveal that the Medicaid managed care options, both the MMHSA Program and the Medicaid HMOs had the highest rates of recidivism, just about 50% (48% and 49%, respectively). These are up substantially from the earlier period, by about 20%. Likewise, they are almost 20% higher than that of the overall psychiatric population, which stood at 41% in 1997.
14. A comparison of diagnoses during first and last hospitalizations during the time periods of interest reveal that the remission rates have become somewhat less favorable during the most recent time period, despite the fact that this period was longer than the first. As is well known, schizophrenia was found to be the most recalcitrant, with a 16% remission rate, whereas Depressive Disorder remitted in over four-fifths (81%) of the cases in the most recent time period. Few, if any, systematic difference between insurance cohorts were found in this analysis.
15. During the baseline period, the number of diagnoses increased by 3% between first and last

hospitalizations, in contrast to the 7% increase during the implementation period. The carve-out program saw a parallel and high level of increase, of 6% under MHMA, which grew to a 17% increase under MBHP.

16. A comparison of changes in severity ratings between first and last hospitalizations for the same patients during the baseline and implementation periods reveal that the MBHP program had slightly higher levels of regression than was the case overall, but not as high as the Medicaid HMOs or free care program.
17. An analysis of rates of discharges made against medical advice (AMA) reveals that they are fairly stable, at 3.3% during both periods. Similarly, the AMA rates for the MMHSA Program are also fairly stable and average, moving from 3.3% to 3.4% over the transition period. In contrast, the least favorable AMA rates were found with the Medicaid HMO program and the Commonwealth's free care program, both of which also increased to the greatest extent during the transition period.
18. During the most recent period investigated (7/1/96-9/30/97), the median per diem cost under the Medicaid carve-out program (MBHP) was \$992, compared with over a thousand for most of the other alternatives, and a high of \$1,170 under the residual Medicaid fee-for-service program. Even the Medicaid HMOs were slightly more, at \$1,046 per diem. However, costs continued to rise under the carve-out, but at a rate only slightly greater than inflation, at 3.0%. This compares very favorably with the Regular Medicaid program where costs rose by 12.6%, as well as the overall experience of 3.9%.

Clearly the HMO model assures better continuity of care within the psychiatric sector as well as between medical and psychiatric sectors. Yet most other indicators of quality of care, both in its processes and outcomes, are no better for the carve-out model, and in some cases worse under the Medicaid HMOs. Both programs create multiple causes for concern. For this reason, it may be best to continue to offer patients both options, and instead focus efforts on improving the quality of services under both. Particular agencies, such as the Department of Mental Health, should advise its clientele as to the desired alternative, based on the needs of the particular subgroup under consideration. For the most seriously mentally ill, there are many reasons to work toward improvements in the speciality or carve-out services which include a comprehensive range of carefully linked programs and other resources.

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The Impact of a Medicaid Behavioral Carve-out Program on Patterns of Acute Psychiatric Hospitalization: The Massachusetts Experience

INTRODUCTION

In 1992 Massachusetts was the first state to contract with a managed care corporation for the management of the state Medicaid program for the mentally ill and substance abusers. As extensive as this experiment was, it was partial effort as during this initial period, until 1996, the Commonwealth continued to contract directly with many private acute psychiatric units for the care of its most seriously mentally ill citizens. However, on July 1, 1996, the Commonwealth expanded this program, contracting with a new management company, and included acute psychiatric units which formerly were overseen by the Department of Mental Health (DMH). Despite the magnitude of this change, and the efforts of the DMH, as well as the mental health advocacy community, only minimal data has been forthcoming from the corporation responsible for implementing these changes.

This document will report on the preliminary results of an analysis of the Commonwealth's annual casemix database, consisting of records on approximately 750,000 acute hospitalizations each year, for the purpose of assessing changes in the patterns of psychiatric hospitalization--their rate, frequency, length, and periodicity, as well as inpatient services provided and referral patterns upon discharge. Specifically, this study will report on a pilot study of the FY 1996 and FY 1997 data (from 10/1/95 to 9/30/97) which covers the last nine months of the operation of the initial Medicaid managed care corporation, Mental Health Management of America (MHMA), and the first 15 months of implementation of its successor program, the Massachusetts Behavioral Health Partnership (MBHP). As such, this pilot study will not only permit refining the methods of aggregating and analyzing this data, but most importantly, will permit a preliminary comparison the hospitalization experience under the original and the expanded Medicaid managed care program.

THE DATA

After downloading and transferring the data from the Commonwealth's mainframe system to a high end PC, the initial task involved converting the data into SPSS format, including development of the SPSS data dictionary consisting of variable and value labels and related information. The next step consisted of recoding variables, such as diagnoses, from ones with hundreds of discrete categories to ones with a fewer number of more generic categories. In several cases, such as with both procedures and diagnoses which had been originally coded into a primary and several secondary versions, it was necessary to compute binary variables reflecting the presence or absence of a category in any one of these original variables. For example, a schizophrenia variable was created which reflected whether or not during that particular episode the patient received any primary or secondary diagnosis involving schizophrenia. Similarly, variables were created for each of 27 major diagnostic categories.

More complex data transformations were then required to code for items of information which required consideration of characteristics of subgroups of records. For example, each record was not

**Table 1. Overview of Acute Hospital Utilization in
Massachusetts, 1997, by Type**

		Medical Only	Psychiatric			Total Psychiatric
			Psych Stay Only	Both Psych & Medical Stays	Unknown Medical Stays	
Individuals		501,999	16,466	6,570	1,607	24,643
Episodes	Psych.		23,180	10,648	2,347	36,175
	Medical	710,927		17,630		17,630
Episodes per Person	Psych.		1.4	1.6	1.5	1.5
	Medical	1.4		2.7		0.7
Total Beddays	Psych.		206,344	94,465	22,236	323,045
	Medical	3,546,902		64,710		64,710
Mean Beddays per episode	Psych.		8.9	8.9	9.5	8.9
	Medical	5.0		3.7		3.7
Mean Beddays per Person per yr)	Psych.		12.5	14.4	13.8	13.1
	Medical	7.1		9.8		2.6
# Facilities	Psych.		44	44	42	44
	Medical	85		85		85
Individuals per Facility	Psych.		374	149	38	560
	Medical	5,906		77		290
Beddays per Facility	Psych.		4,689.6	2,146.9	529.4	7,341.9
	Medical	41,728.3		761.3		761.3
Estimated Average daily census	Psych.		12.8	5.9	1.5	20.1
	Medical	114.3		2.1		2.1

SOURCE: Computed from FY 1997 Case Mix Data Base (Feb. 1997), Division of Health Care Finance and Policy, Commonwealth of Massachusetts.

Table 2. Overview of Changes in Acute Hospital Utilization in Massachusetts, 1996 to 1997, by Type

		Medical Only	Psychiatric			
			Psych Stay Only	Both Psych & Medical Stays	Unknown Medical Stays	Total Psychiatric
Individual Patients	1996	514,299	15,606	6,523	1,881	24,006
	1997	501,999	16,466	6,570	1,607	24,643
	With Episodes in Either Year	884,825	26,714	10,716	3,112	40,542
	With Episodes in Both Years	65,737	2,679	1,189	188	4,055
	With Episodes 1996 Only	448,563	12,927	5,335	1,693	19,955
	With Episodes 1997 Only	436,263	13,787	5,382	1,419	20,588
	% Change ('97 Only/'96 Only)	-2.74%	6.65%	0.88%	-16.18%	3.17%
Hospitalization Episodes	1996	710,133	21,871	22,547	2,272	46,690
	1997	710,927	23,180	22,923	2,347	48,450
	% Change ('97/'96)	0.11%	5.99%	1.67%	3.30%	3.77%
Bed days	1996	3,548,246	202,607	165,367	22,122	390,096
	1997	3,546,902	206,344	159,175	22,236	387,755
	% Change '97 - '96	-0.04%	1.84%	-3.74%	0.52%	-0.60%

NOTE: Computed from 1996 and 1997 Case Mix Data, Massachusetts Division of Health Care Finance and Policy.

only given a code as to whether it represented a psychiatric hospitalization (called “psych”), but whether it was associated with an individual who had any psychiatric hospitalization during the year, even though the current episode may have been on a medical unit. Similarly, new variables were created to reflect the temporal order of psychiatric hospitalizations and the total number of psychiatric hospitalizations. Another key example is the generation of an individual weighting factor which can

be used in analyses involving patients rather than episodes, consisting of the inverse of the total number of episodes for a designated patient. Many of these preparations required what are referred to as lag transformations, and in each case these were typically combined with various conditional or “if” statements so as to generate the desired information. In each case, the resulting transformations were thoroughly inspected and tested. Such transformations are required for generating tables, i.e. table 1, involving multiple levels of analysis, or variables required for survival analyses involving recidivism patterns.

When the 1997 data became available, it was necessary not only to repeat most of the above transformations with the combined data set consisting of approximately a million and a half episodes. These transformations resulted in a reduced data set of all patients who had one or more psychiatric episodes as well as all their associated medical episodes. This file consists of 105,701 episodes of 40,542 individuals, and these include 34,827 psychiatric episodes and the 70,874 medical episodes of these same individuals.

At this stage, primarily descriptive statistics have been generated for the initial review of the data and exploration of key bivariate relationships. This was done through the computation of subgroup means, cross tabulations, zero-order correlations, and survival analyses. Analyses of recidivism patterns have focused on the subgroup of patients who are between 18 and 65 and who were discharged to the community, excluding those who died. In addition, because 30 day and 6 month recidivism rates are reported, all episodes for the final one or six months of the period were excluded so as to permit the possibility of readmission for those at the tail end of this period.

When questions concerning length of stay, recidivism, and referral patterns were examined, the units of analysis involved episodes. However, many of the questions investigated involved individuals. Typically either one of two procedures were used in these cases to generate unduplicated statistics on individual patients. In cases in which only basic descriptive statistics are required, a weighting factor was used which consisted of the inverse of the number of episodes for the particular individual. For example, a person with four stays would have a weight of .25 assigned to each stay. Analyses were then conducted on the weighted episodes to produce weighted means, percentages, and other statistics reflective of the underlying population of individuals. In other cases requiring computation of individual change scores, the data set was aggregated to the individual level after sorting by the patient identifier. These typically involved comparisons of diagnoses, severity ratings, insurers, facilities, or doctors, between the first and last episode of the individual in a given period.

In several analyses an adjustment weight was used to control for the varied demographic and diagnostic profiles of each of the groups of patients receiving various types of insurance. This was done first by determining the relative percentage of all patients who fell into the possible combinations the following categories: gender (male/female), age (0-18, 19-34, 35-49, 50-64, & 65+), and diagnosis (psychosis/non-psychosis). Similar percentages were calculated for each insurance subgroup. The percentage of the insurance subgroup was then divided into the corresponding overall subgroup percentage to determine the weight for any individual fitting the designated criteria. One of resulting 140 weights (20 demographic/diagnostic times 7 insurance groups) were then assigned to each patient, based on that patient’s particular group memberships in respect to insurance, gender, age, and diagnosis. The effect of using such weights is to stratify the sample disproportionately and in effect to make each insurance group comparable to the overall population, thus, controlling for their

different age, gender, and diagnostic profiles (see Lee, et al, 1989, p. 16).

Finally, it should be noted that, in most cases, tests of statistical significance have not been used. There are two principal reasons for this: (i) we are usually dealing with a population and not a sample, and (ii) because of the large number of cases, if tests of significance were used, most correlations and group differences would be significant, even when they are substantively negligible. Thus, it was decided to focus on the substantive interpretation of group differences, comparing them to the overall population experience when possible.

Reliability of the Data. Any analysis of administrative databases is inevitably confronted with questions about the reliability of the data, especially when it is provided through multiple sources. Fortunately, several studies have been conducted, both by the author and by the Division of Health Care and Finance, which provide evidence of the data's reliability in several important areas.

The reliability of data on demographic characteristics of patients, such as age, sex, and race, was investigated by the author through an analysis of the consistency of these fields across multiple hospitalizations of the same individuals. Specifically, the author selected out of the combined FY 1996-1997 database the first three episodes of individuals who

had three or more episodes, all in separate facilities over the course of 12 months. These records, along with their demographic, insurance, and diagnostic information, were aggregated to the individual level. Measures of reliability, such as the unweighted Kappa and the intraclass correlation coefficient, were then computed for each set of the three versions for each variable, such as gender, age, race, and Veteran's status. In the case of dichotomous and nominal variables--gender, race, and Veteran's status--the standard bivariate formula for Kappa had to be adapted to the problem of simultaneously comparing three versions of the variable.¹ This analysis, summarized in table 3, indicates a very high level of reliability or agreement amount the three facilities (different for each patient) which provided information on these fields. While gender, age, and Veteran's status had nearly perfect agreement, agreement about patient's racial affiliation was also very high, at 0.93.

A parallel procedure was used to examine for agreement between separate facilities as to patients' diagnoses. It should be noted that some changes in diagnoses are expected over the course of a year, especially those which are not considered chronic, such as adjustment reactions or acute reactions to stress. Each of the primary and secondary 3 digit ICD-9 psychiatric diagnoses were

Table 3. Reliability Coefficients for Selected Demographic Variables (n=3,000)

Variable	Type of Coefficient	Coefficient
Gender	Unweighted Kappa	0.995
Age	Intraclass Correlation Coefficient	0.998
Race	Unweighted Kappa	0.93
Veteran's Status	Unweighted Kappa	1.019

NOTE: See notes for table 3. Interpretation of the Kappa's can be done using the following benchmarks: Poor (<0), Slight (.0-.20), Fair (.21-.40), Moderate (.41-.60), Substantial (.61-.80), and Almost Perfect (.81-1.0) (Landis and Koch (1977).

dichotomously coded and an unweighted Kappa coefficient computed for each separately, as well as several aggregate categories, such as functional psychosis. The resulting Kappas, listed in table 4, range from the slight (0-.19) to the substantial (.60 to .79), most typically falling in the Fair (.20-.39) to Moderate (.40-.59) range. Substantial reliabilities were found with Senile-/presenile organic psychosis (.67), as well as schizophrenia (.74), and moderately strong reliabilities were found with Affective disorders (.54), Adjustment reaction (.48), Alcohol dependence (.59). In contrast, negligible to slight reliabilities were found with Alcohol/drug induced psychosis, Physiological malfunction resulting from mental disorder (.04), Acute reaction to stress (.16), Depressive disorder (.16), Specific delays in development (.11), and Psychological factors associated with disease (.00). These tend to be either brief disorders not expected to last a year, or difficult to diagnosis or atypical conditions.

It should be noted that the diagnostic reliabilities in the case mix database are typically about a third lower than those in the DSM-III diagnostic studies. This is no doubt because the diagnosticians in the current study did not have access to identical case reports as was the case in the earlier study. In addition, the current study is naturalistic and was not done with the same training and diagnostic protocols used in the earlier more structured study.

Table 4. Kappa Coefficients of Reliability for Selected Diagnoses (n=3,000)

Diagnosis	Kappa	DSM-III Kappa
Senile/presenile organic psychosis (290)	.67	.73
Alcohol or drug induced psychosis (291.2)	.19	.58
Other organic psychosis (293.4)	.30	.65
Schizophrenic disorder (295)	.74	.81
Affective disorders (296)	.54	.83
Paranoid disorders (297)	.22	.75
Other non-organic disorders (298)	.30	
Psychological disorders specific to child. (299)	.69	.73
Neurotic disorders (300)	.32	
Personality disorders (301)	.38	.65
Sexual deviations (302)	.28	.78
Alcohol dependence (303)	.59	
Drug dependence or abuse (304, 305)	.24	
Physiological malfunction from mental disorder (306)	.04	
Special symptoms not elsewhere classified (307)	.56	
Acute reaction to stress (308)	.16	
Adjustment reaction (309)	.48	.68
Specific non-psychotic disturbance resulting from organic con. (310)	.16	
Depressive disorder (311)	.16	
Disturbance of conduct (312)	.28	-.003
Disturbance of emotion (313)	.43	
Hyperkinetic syndrom (314)	.42	.50
Specific delays in development (315)	.11	
Psychological factors associated with disease (316)	.00	.44
Mental retardation (317-19)	.28	.83
ORGANIC PSYCHOSES	.49	.76
FUNCTIONAL PSYCHOSES	.54	
OTHER FUNCTIONAL MENTAL DISORDERS	.45	
SUBSTANCE ABUSE INCL. ALCOHOLISM	.56	.80

NOTES: The numbers in parentheses are the ICD-9 codes. DSM-III reliabilities obtained from: American Psychiatric Association, (1981). Diagnostic and Statistical Manual of Mental Disorders (Third Edition) (pp.470-471).

Particularly important are variables involving the identification of the patient's insurer. The Division of Health Care Finance and Policy recently completed an analysis of these fields, comparing their own data with that of selected facilities and insurers, including Medicaid, for 1994. This analysis indicated a good to very good level of agreement. The insurer with the lowest level of agreement was Medicaid, but even in this case, there were precise matches in 69.4% of the cases, and in almost all the remaining cases, 28.9%, there was agreement as to the general insurer, but not the specific plan. In only 1.7% of the cases was there complete lack of agreement. In contrast, there was a precise match in between 84.0% and 90.0% of the HMOs, and a complete non-match in between 2.0% and 2.4% of these cases. It should be pointed out that this was the first year that specific codes were introduced, and in the intervening two years between time of data collection of this study and the current one, it would be expected that hospital coding departments would have improved their ability to determine the correct insurance company, how much, is not known.

Unfortunately, there is no separate code for the Department of Mental Health's former replacement program in which it funded stays on acute units for patients who did not have any other form of coverage. In 1996 this was folded into the new MBHP contract. However, there is a residual category, "Other Governmental Programs", which very likely includes these patients as well as others. What proportion of these patients were those in the old replacement hospitalization program, however, cannot be ascertained. Thus, considerable caution needs to be exercised in drawing inferences about this particular program from the data reported here.

The reliability of several other fields has yet to be investigated, however, it needs to be noted that a few of these lack face validity. These include the presence of a zip code for the employer, treatment procedures used, and the external cause of accident codes, especially those involving self-injury and suicide. All of these have extraordinarily low frequencies which may very well reflect under reporting. Nonetheless, research to date indicates that the key variables, especially the demographic, and to a lesser extent the insurance and diagnostic fields, typically have a good if not excellent level of reliability.

THE POPULATION

This analysis focuses on the 40,552 individuals who were hospitalized in an acute psychiatric facility within the state in either 1996 or 1997, about 0.66% of the state's population. Of particular interest is the experience of those patients who received services from the Massachusetts Mental Health and Substance Abuse (MMHSA) Program's vendor, either MHMA (n=805) or MBHP (n=1,594), as well as those enrolled in the Medicaid HMO option (n=679). In each of these programs, close to two-thirds are female (see table 5), which is considerably higher than the regular Medicaid program in which just under three-fifths (58.2%) are female. In contrast to the Medicaid program, the Commonwealth's free care programs redresses this imbalance, as 61.8% of its hospitalized recipients were male.

Unlike MMHSA's lead managed care organizations--MHMA and MBHP--which had a disproportionate percentage of children represented on their caseloads (11.4% & 8.6%), only 3.5% of the HMOs inpatient caseload consisted of children. In contrast, only between 11% and 13% of these program's caseloads consist of persons over 65, considerably lower than the 23% for the remaining programs in the state, however, it is unexpected that the percentage should be this high since persons over 65 are technically not eligible for these particular managed care programs. It should

also be pointed out that particularly high proportions of the caseloads of the Medicaid managed care programs are persons of color, especially blacks and Hispanics.

Diagnostic Profile. A comparison of the diagnostic profiles of the various insurance cohorts reveals that patients under both MHMA and MBHP have a similar profile, one which is clearly more severe than for those under the other plans. Specifically, at least a fifth (20.0% to 23.2%) of these patients have the diagnosis of schizophrenia (either on a primary or secondary basis), and three-fifths (58.8% to 60.2%), have affective or bi-polar conditions, compared to dramatically lower figures for

Table 5. Selected Patient Characteristics, By Type of Insurance, FY 1996-1997

Patient Characteristic	MBHP (N=1,594)	MHMA (N=805)	Other Medicaid Managed Care (N=679)	Regular Medicaid (N=4,790)	Free Care (N=2,746)	Other Government Program (n=239)	All Other (31,920)
GENDER							
Male	36.8%	33.1%	30.3%	41.8%	61.8%	54.8%	44.5%
Female	63.2%	66.9%	69.7%	58.2%	38.2%	45.2%	54.8%
AGE							
0-17	11.4%	8.6%	3.5%	16.5%	2.4%	4.6%	6.9%
18-64	77.5%	77.7%	79.4%	70.4%	86.6%	88.2%	69.8%
65+	11.1%	13.7%	17.1%	13.1%	11.0%	7.2%	23.3%
Mean	34	35	38	34	35	38	46
Median	34	35	37	34	34	36	41
RACE							
Am. Indian	0.6%	0.3%	0.2%	0.1%	0.0%	0.0%	0.2%
Asian	1.8%	2.1%	1.5%	1.3%	2.6%	0.4%	0.9%
Black	7.1%	8.3%	14.0%	11.3%	14.4%	8.3%	6.2%
Hispanic	19.4%	17.9%	17.3%	12.2%	8.8%	16.5%	4.0%
White	69.3%	68.8%	65.5%	73.0%	72.8%	73.0%	87.6%
Other	1.9%	2.6%	1.7%	2.1%	1.3%	1.7%	1.1%
EMPLOYMENT	4.3%	2.7%	3.0%	9.9%	7.0%	10.2%	11.5%

SOURCE: Computed from FY 1996 and FY 1997 Case Mix Data Base (Feb. 1997), Division of Health Care Finance and Policy, Commonwealth of Massachusetts.

each of the other insurance cohorts (see table 6). Similarly close to a fifth (17.9% to 19.7%) received a personality disorder diagnosis, more than most other groups.

Table 6. Selected Psychiatric Diagnoses, By Type of Insurance

Diagnosis	MBHA (N=370)	MHMA (N=954)	Other Medicaid Managed Care (N=319)	Free Care (N=1569)	Other Govern- ment Program (n=136)	All Other (20,658)	Total (24,006)
Schizophrenia	23.2%	20.0%	11.6%	7.4%	7.4%	14.4%	14.2%
Affective Disorders	56.8%	60.2%	39.5%	36.1%	39.3%	45.4%	45.4%
Neurotic Disorder	21.6%	15.4%	12.2%	15.8%	14.0%	13.9%	14.2%
Personality Disorders	19.7%	17.9%	14.4%	14.9%	17.6%	12.9%	13.4%
Adjustment Disorders	21.6%	21.0%	20.4%	16.7%	27.9%	13.9%	14.7%
Depressive Disorder	3.0%	3.7%	6.0%	3.6%	6.7%	5.2%	5.0%
Substance Abuse or Dependence	19.5%	22.5%	19.1%	34.0%	19.1%	19.3%	20.4%
Any MH Diagnosis (MI, MR, or SA)	99.7%	98.6%	78.7%	83.4%	87.4%	91.9%	91.5%

NOTES: These include both primary and secondary diagnoses. That is, if for instance a patient received any diagnosis of “schizophrenia”, primary or secondary, they were recoded as having this diagnosis. Because patients may have several diagnoses, these percentages will not total to 100%.

A broader examination of diagnoses, specifically primary diagnoses, includes both medical and psychiatric diagnoses of not only those on psychiatric units, but also of psychiatric patients--those with at least one episode on a psychiatric unit--while on medical units. Table 7 summarizes these diagnoses, and reveals that the most frequent ones which cause psychiatric patients to be medically hospitalized include substance abuse (12%), circulatory conditions (11%), injuries, poisonings, and toxic drug effects (11%), respiratory conditions (11%), mental disorders (9%), as well as diseases of the nervous (7%) and digestive (7%) systems. In contrast to the overall experience, patients under the MHMA program were medically hospitalized mostly due to either mental conditions (36%) or substance abuse (50%); and those under MBHP, because of mental conditions (59%) or substance abuse (28%). This data, thus, suggests that tightened eligibility criteria for psychiatric hospitalizations has led to the increased use of medical units for the care of psychiatric and substance abuse

**Table 7. Comparison of Distribution of Major Diagnostic Groups (Primary Diagnosis),
By Type of Unit and Insurance, FY 1996 - FY 1997**

	Type of Insurance						Total
	MBHP	MHMA	Medicaid HMO	Regular Medicaid	Free Care	DMH & Misc.	
MEDICAL STAYS OF PATIENTS WITH AT LEAST ONE PSYCHIATRIC EPISODE							
Alcohol, drug use, & induced organic mental disorders	28%	50%	3%	15%	23%	18%	12%
D./d. of circulatory system	0%	1%	7%	6%	10%	10%	11%
Injuries, poison. & toxic drug effects	4%	3%	14%	13%	14%	19%	11%
D./d. of respiratory system	0%	1%	12%	9%	8%	7%	11%
Mental diseases & disorders	59%	36%	2%	8%	7%	2%	9%
Diseases of the nervous system	0%	2%	7%	5%	4%	6%	7%
D./d. of digestive system	0%	1%	6%	7%	8%	7%	7%
D./d. of muscle-skeletal & connective tissue	2%	0%	6%	5%	4%	6%	7%
Endocrine, nutri., & metabolic D./d.	1%	1%	5%	4%	4%	1%	5%
Pregnancy, childbirth & puerperium	3%	2%	16%	11%	3%	5%	4%
D./d. of hepatobiliary system	0%	0%	3%	3%	4%	4%	3%
D./d. skin, subcutaneous tissue, & breast	1%	1%	4%	2%	3%	2%	3%
D./d. of kidney/urinary tract	1%	1%	3%	2%	1%	5%	3%
D./d. female reproductive system	0%	1%	4%	2%	1%	5%	2%
Infectious & parasitic diseases	0%	0%	0%	1%	1%	0%	2%
D./d. of blood, blood forming organs, immune disease	0%	0%	1%	1%	0%	1%	1%
D./d. male reproductive system	0%	0%	0%	0%	1%	0%	1%
Factors influencing health & other contact w/ health services	0%	0%	1%	1%	1%	0%	1%
Multiple significant trauma	0%	0%	3%	2%	1%	1%	1%
Diseases/dis. of ear, nose, & throat	0%	0%	2%	1%	2%	0%	1%
Myeloproliferative D.d. & poorly differentiated neoplasms	0%	0%	1%	0%	1%	1%	0%

Table continued on next page.

**Table 7. Comparison of Distribution of Major Diagnostic Groups (Primary Diagnosis),
By Type of Unit and Insurance, FY 1996 - FY 1997**

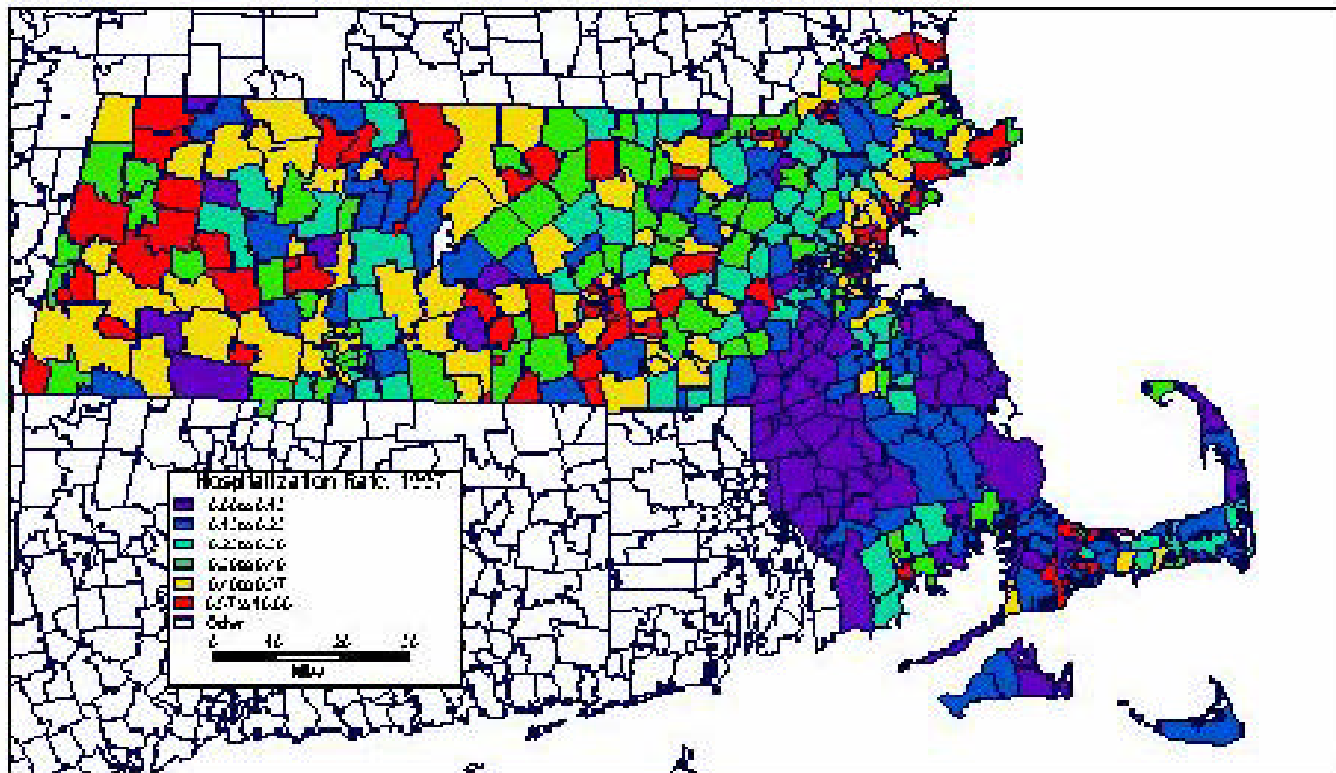
	Type of Insurance						Total
	MBHP	MHMA	Medicaid HMO	Regular Medicaid	Free Care	DMH & Misc.	
PSYCHIATRIC STAYS							
Mental diseases & disorders	87%	95%	72%	87%	64%	85%	82%
Alcohol, drug use, & induced organic mental disorders	12%	4%	8%	9%	24%	8%	13%
Diseases of the nervous system	0%	0%	1%	0%	0%	1%	1%
Disorders/diseases of circulatory system	0%	0%	8%	1%	6%	5%	2%
Endocrine, nutritional, and metabolic D./d.	0%	0%	1%	1%	1%	0%	1%
Injuries, poisonings and toxic drug effects	0%	0%	2%	0%	2%	1%	1%
D./d. of respiratory system	0%	0%	3%	0%	1%	0%	0%
D./d. of digestive system	0%	0%	1%	0%	0%	0%	0%
Pregnancy, childbirth, & puerperium	1%	0%	0%	0%	0%	0%	0%
Infectious & parasitic diseases	0%	0%	0%	0%	0%	0%	0%
Multiple significant trauma	0%	0%	1%	1%	0%	0%	0%

NOTE: Sample includes those who have had at least one psychiatric hospitalization and may or may not have had medical episodes. Thus, those listed in the first part of this table represent a subsample of those listed in the second half. Only diagnostic groups listed which had a percentage greater than .5% (rounded to 1%) in one or more of the insurance subgroups.

conditions.

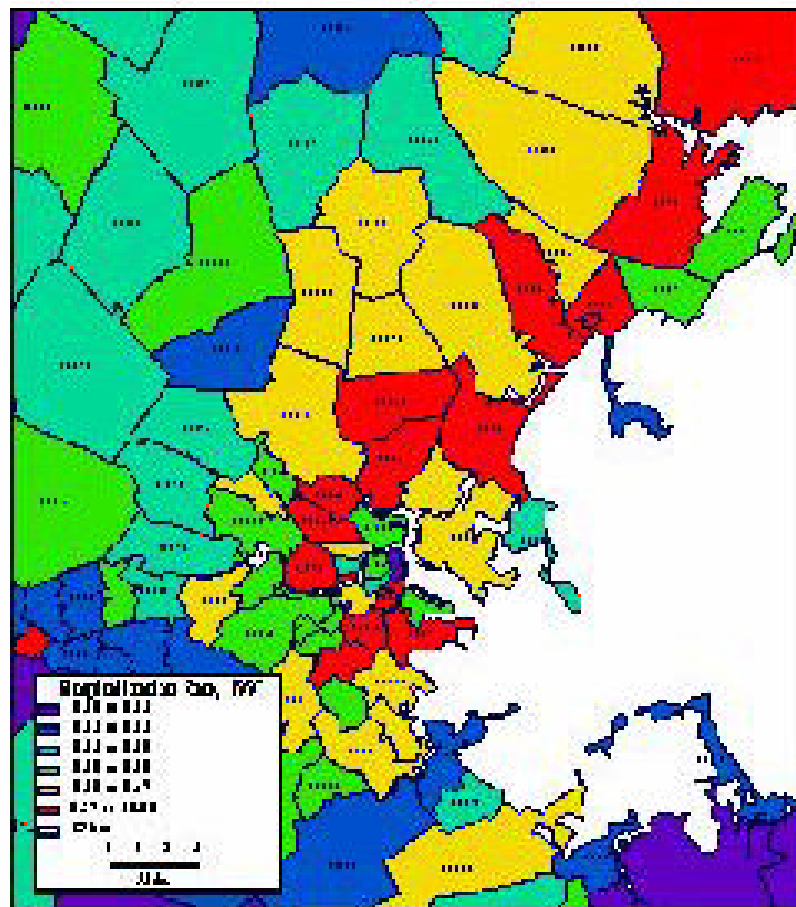
In contrast, virtually all (95%) patients on psychiatric units are those for mental disorders (82%) or substance abuse (13%). While 5% of the patients overall had non-mental health conditions, only 1% of patients under either MHMA or MBHP were psychiatric hospitalized for a non-mental health condition. Among the overall 5% there are four discernible groups, those with disorders of the circulatory system(2%), nervous system(1%), endocrinal, nutritional, or metabolic conditions (1%), and those with injuries, poisonings, and toxic drug effects (1%). It should be noted that at the same time that the percentage of substance abusers which were hospitalized on medical units declined from 50% to 28% during the transition from MHMA to MBHP, the percentage of substance abusers under these programs on psychiatric units increased from 4% to 12%.

Figure 1. Overall Rate of Hospitalization on Acute Psychiatric Units, 1997



NOTE: The above rates represented unduplicated persons, of all ages, who were hospitalized on any acute psychiatric unit any number of times, from Oct. 1, 1996 to Sept. 30, 1997.

Figure 2. Eastern Area States of Access to Psychiatric Hospitalization during 1997



NOTE: See map on Page 1

SERVICE COVERAGE

Although two-fifths of a percent (0.38%) of the state’s population are hospitalized each year in an acute psychiatric unit, the chance that any individual will be hospitalized varies considerably throughout the state. Figure 1 illustrates these varying rates by zip code on a map of the state. The highest rates (in red) are found mainly in central Boston, the North shore, and the urban areas of central and western Massachusetts. The lowest levels of hospitalization are found throughout the Southeastern part of the state, as well as the surrounding suburbs of Boston (see “Service Access” for discussion of socioeconomic correlates). A more focused examination of these rates are possible through an examination of figure 2, which illustrates variations in the Boston metropolitan area. This reveals that the highest rates are found along the North Shore, parts of Cambridge, South Boston, Roxbury, and Dorchester. With the exception of low to average rates in Marblehead, Nahant, Chelsea, and the Back Bay, Beacon Hill, and North Boston, the rates are high in the central parts of the city, and

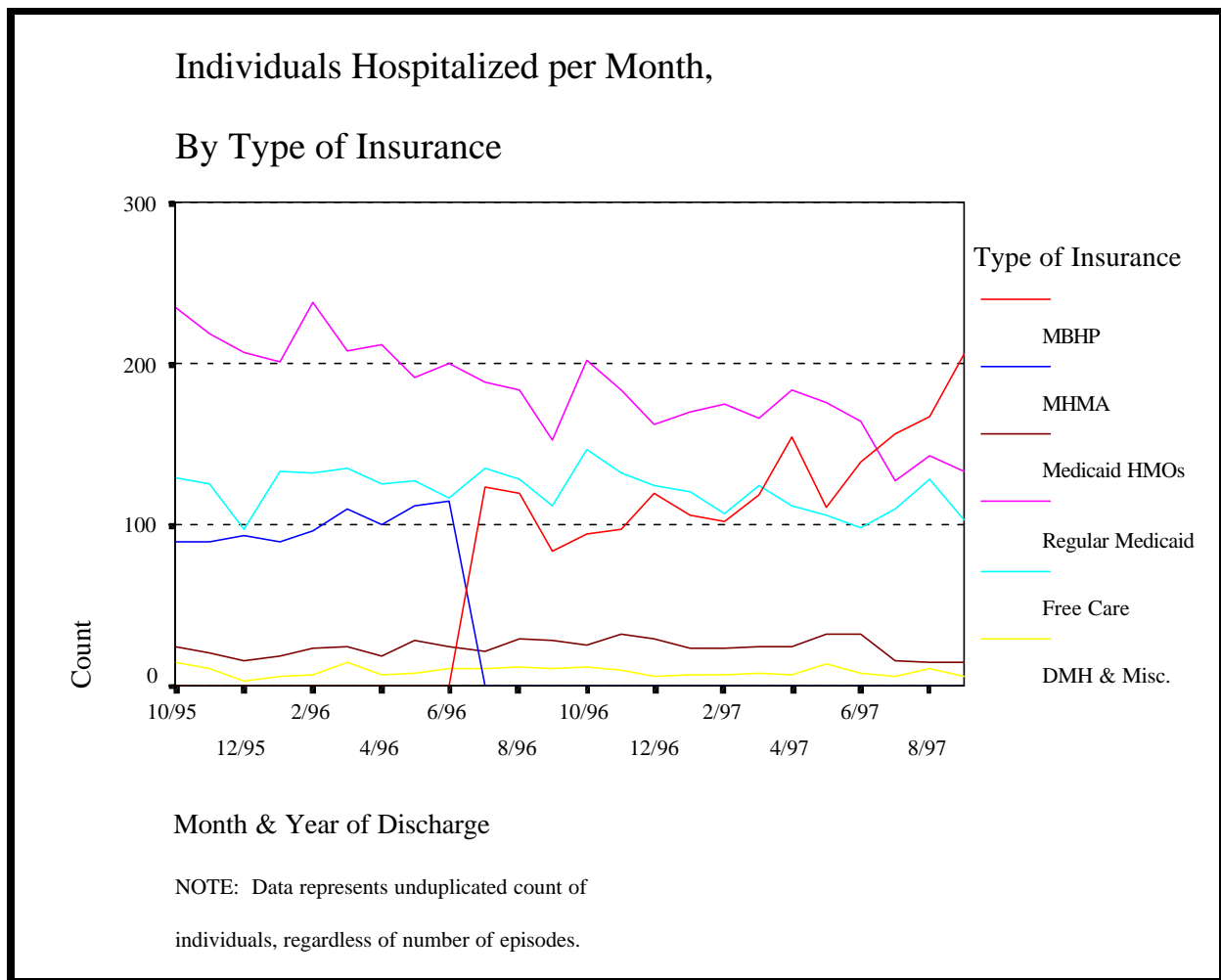


Figure 4

decline as distance increases in the more distant suburbs to the West and South.

One of the goals of the state’s revision of the MMHSA Program in 1996 is that it would pick

up on the seriously mentally ill population whose hospitalizations are being subsidized by the Commonwealth's free care program. In the first 6 months of the program there was no evidence of any changes in caseload size as would be expected. However, beginning in February 1997, a consistent upward trend in caseload bed day sizes was found resulting in an increase of about 50% in the monthly number of bed days. At the same time, the caseloads of the regular Medicaid, Medicaid HMO, and free care programs all began to drop (see figure 3). When numbers of patients hospitalized are examined, similar increases were found in the MBHP caseload, but only negligible declines were found in the free care program (see figure 4). Rather, most of the corresponding declines were found in the state's regular Medicaid program. Thus, case transfers from this program are considerably more likely, yet the associated declines and increases may instead simply reflect the possibility that hospital coding departments are better able to differentiate these the two programs.

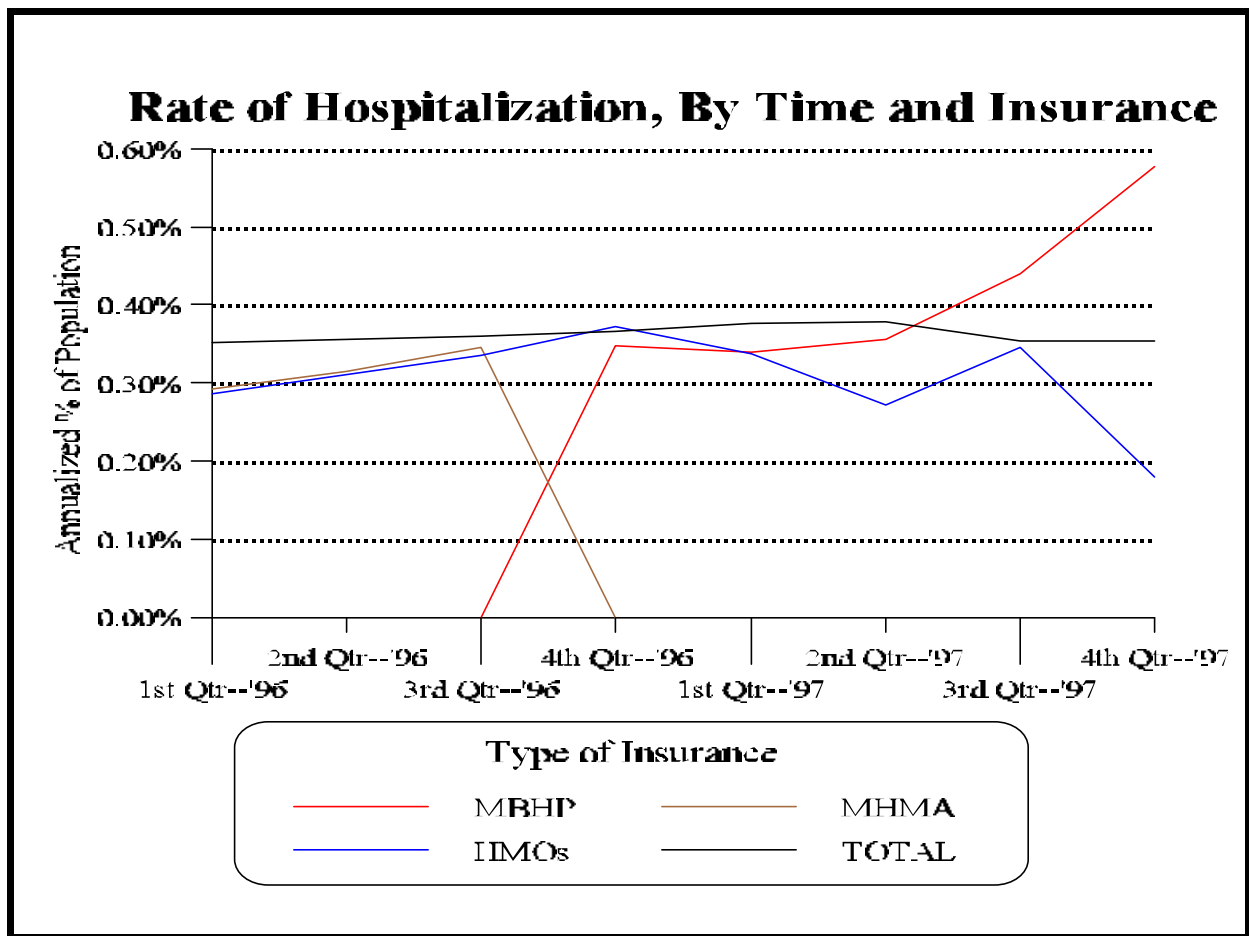


Figure 5

The question as to whether MBHP actually was picking up on cases from these other programs will be explored in greater depth in the section on service access. When caseload sizes are converted to enrolled population rates, most differences in the Medicaid managed care programs (MHMA, MBHP, and HMO) largely disappear, except during the last two quarters of 1997 when this same trend as noted above is observed with the rates which take into account the total enrollment of the state's Medicaid programs (see figure 5).

PROFILE OF ADMISSIONS

One of the original goals of managed care organizations was to provide preventative and early intervention services so as to reduce reliance on more expensive emergency and intensive treatment services. In this respect, the Commonwealth's MMHSA Program appears to have done well as only a third (34.1% & 32.9%) of its psychiatric admissions were on an emergency basis, compared with 81.1% for the Medicaid HMOs, and between 44.2% (Other Government) and 69.2% (Free Care) for the other programs (see table 8). Likewise, the MMHSA Program, compared to all other programs, received the lowest percentage of emergency room referrals and, along with the regular Medicaid program, the highest rate of physician referrals, as well as higher than average referrals from "Other" sources (which include Level 4 nursing facilities).

**Table 8. Type and Source of Patient Admissions to Acute Psychiatric Units,
By Type of Insurance**

	MBHP (N=3606)	MHMA (N=1600)	Other Medicaid Managed Care (N=1095)	Regular Medicaid (7874)	Free Care (N=4152)	Other Govern- ment Program (n=321)	All Other (51615)	Total (70263)
TYPE OF ADMISSION								
Emergency	34.1%	32.9%	81.1%	56.9%	69.2%	44.2%	59.8%	58.3%
Urgent	63.5%	63.9%	17.8%	36.0%	27.8%	53.0%	36.3%	37.6%
Elective	2.4%	3.2%	1.1%	7.1%	3.1%	2.8%	4.0%	4.1%
SOURCE OF REFERRAL								
Emergency Room	43.7%	35.4%	66.8%	49.1%	65.4%	53.3%	56.7%	55.4%
Physician	31.3%	45.9%	16.8%	35.9%	19.0%	26.5%	27.7%	28.5%
Acute Hospital Transfer	9.1%	7.3%	4.8%	7.7%	7.3%	15.0%	7.2%	7.4%
Other (incl. Level 4 Nursing Facility)	8.0%	8.9%	2.3%	1.9%	1.2%	1.9%	1.9%	2.3%
Clinic	0.9%	1.4%	6.2%	1.6%	1.9%	0.6%	2.3%	2.2%
Observation	1.6%	0.3%	1.3%	1.8%	1.8%	1.2%	1.7%	1.7%
SN Home Transfer	0.3%	0.2%	0.1%	0.6%	0.0%	0.0%	1.0%	0.8%
HMO	0.1%	0.1%	0.7%	0.0%	0.0%	0.0%	0.7%	0.5%
Court/Law Enfor.	0.3%	0.1%	0.5%	0.2%	0.5%	0.6%	0.1%	0.2%
Ambulatory Surg.	0.0%	0.0%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%

NOTES: The above figures are computed based on episodes of care on acute psychiatric units (both regular and intensive care) during the FY 1996-1997 period. Excluded from Source are delivery and birth since frequencies are rounded to .0%.

ACCESSIBILITY

In recent years the pursuit of cost containment goals under managed care has led to widespread concerns regarding access to services, both geographic and economic. With the use of increasingly restricted provider circles it would be expected that service facilities--inpatient units--will be located

at increasing distances from patients' homes. This possibility was investigated in this study through the computation of straight line distances between the center point of the patient's home zip code and that of their hospital. Table 9 presents the results of these calculations, which are broken down by time period and type of insurer. Median distances since mid-1996 were typically 4.6 miles, 10.7% greater than they were the year before. However, under the Medicaid managed care programs they ranged from 1.9 to only 3.2 miles, considerably less than most of the other programs. The MMHSA Program (MHMA/MBHP) saw a similar 10% increase as was the overall experience. In contrast, the Medicaid HMOs became 57.9% more distant, though this was an increase from only 1.9 to 3.0 miles, hardly a cause of alarm. Thus, while managed care hospital services are becoming more geographically more distant, it would be difficult to argue that they have reached a point of geographic inaccessibility.

In 1996 when the MMHSA program was reorganized it was agreed that the new vendor--MBHP--would assume responsibility for the

seriously and acutely mentally ill who formerly were hospitalized either under the Department of Mental Health "replacement unit" or the state's free care program. It was possible to investigate the question of whether MBHP has been assuming responsibility for these groups since the state's case mix database contains a universal patient identifier, an encrypted social security number, which permits tracking patients not only between hospitals but between insurers. The analysis focused on that

Table 9. Median Distance Between Hospital and Home, By Time Period and Type of Insurance (Miles)

Type of Primary Insurance	Oct. 1, 1995- June 30, 1996	July 1, 1996 - Sept. 30, 1997 ^a	Percentage Change
Massachusetts Behavioral Health Partnership (MBHP)		3.2 (n=3,525)	10.3%
Mental Health Management of America (MHMA)	2.9 (1,562)		
Medicaid HMOs	1.9 (371)	3.0 (705)	57.9%
Regular Medicaid	4.5 (3,270)	4.2 (4,424)	-6.7%
Free Care	3.4 (1,562)	3.8 (2,507)	11.8%
Other Govern. Payments ^b	3.9 (115)	3.4 (201)	-12.8%
All Other ^c	4.5 (18,351)	5.0 (32,574)	11.1%
TOTAL	4.3 (25,231)	4.6 (43,936)	10.7%

NOTES: Mileage computed on a straight line basis for each psychiatric episode, using latitude and longitude of the population weighted center point of zip code for both home and hospital. Includes out of state home addresses. Median is reported as data is significantly skewed by a small number of distant home addresses.

subgroup of patients who had at least one psychiatric hospitalization prior to the implementation of the new program, and one subsequent to it. Specifically examined were the designated insurers during the first of the hospitalizations during the Oct.1, 1995 to June 30, 1996 period and the first hospitalization under the subsequent period for which there is available data. In total 4,316 individuals qualified for inclusion in this analysis. The results, summarized in table 10, reveal that only 6.7% of the former free care psychiatric population were able to receive MBHP funding during their subsequent hospitalization. An even smaller number under "Other Government Funding", which would include the DMH replacement program, made the transition.

Table 10. Case Transfers Between Insurers During Initial Implementation of the Massachusetts Behavioral Health Partnership(n=7,460), FY1996-FY1997

		Primary Type of Insurance During First Hospital Episode, Oct.1, 1995-June 30, 1996						
		MHMA	Medicaid HMOs	Regular Medicaid	Free Care	Other Govern- ment Program	All Other	Total
Primary Type of Insurance During First Episode, 7/1/1996 to 9/30/1997	MBHP	67.5% (226)	13.6% (8)	21.7% (139)	6.7% (16)	*	1.5% (44)	10.3% (436)
	Medicaid HMOs	3.3% (11)	49.2% (29)	4.7% (30)	*	0 (0)	1.0% (29)	2.4% (104)
	Regular Medicaid	15.2% (51)	16.9% (10)	49.1% (315)	13.4% (32)	*	3.6% (109)	12.1% (522)
	Free Care	*	0.0% (0)	33% (21)	44.8% (107)	*	2.4% (73)	4.8% (207)
	Other Government Program	0.0% (0)	0.0% (0)	*	0.0% (0)	*	0.3% (8)	0.3% (15)
	All Other	12.8% (43)	20.3% (12)	21.2% (136)	33.1% (79)	*	91.3% (2,760)	70.1% (3,032)
TOTAL		100.0% (335)	100.0% (59)	100.0% (642)	100.0% (239)	100.0% (18)	100.0% (3,023)	100.0% (4,316)

NOTES: This table reports on a sub-sample, only those persons who had two or more episodes of acute hospitalization in FY 1996-FY1997, at least one of which was prior to and at least one subsequent to the implementation of the MBHP program. Caution should be used in generalizing to all persons insured.

* -- Cells with counts of between 1 and 7; not specified per agreement with Division Health Care Finance and Policy.

In contrast, about a seventh of the HMO population (13.6%) and over a fifth of the regular Medicaid caseload were able to make the transition. About four-ninths (44.8%) of the free care group continued to be on free care; about a third were able to switch to another, presumably private, form

of insurance, assuming they became gainfully employed. A negligible number managed to become enrollment in the Medicaid HMO program.

An additional analysis of economic accessibility was conducted to determine the overall extent that acute inpatient psychiatric services, and especially those funded by the Medicaid managed care program, are targeted at low-income areas, particularly those with substantial poverty. This was done by aggregating the numbers of hospitalizations to the zip code level, converting them to population rates, and computing zero-order correlations with key indicators of socioeconomic conditions. Table 11 reports these results, and reveals that, as expected, Medicaid coverage rates are substantially correlated with both median family income and poverty rates. To a lesser extent, both the MBHP and HMO hospitalization programs also have the highest rates of coverage in the poorest communities. In contrast, the Commonwealth's free care program is only marginally targeted at these communities (correlation with median family income---.10; Poverty--.11; Extreme Poverty--.11).

Table 11. Zero-order Correlations of Hospitalization and Insurance Accessibility with Indicators of Socioeconomic Conditions (n=473 zip codes)

	Indicators of Socioeconomic Conditions (1990 U.S. Census)					
	Median Family Income	% Under Poverty Line	% Under 50% of Poverty Line	% of age 25+ without High School Graduation	% of Households One Person	% Living in Urbanized Area
Percentage of individuals (undup.) hospitalized in acute psychiatric facilities, 1996-1997	-.41**	.42**	.35**	.35**	.39**	.13**
Percentage of hospitalized receiving Medicaid	-.51**	.54**	.45**	.56**	.35**	.22**
Percentage of hospitalized on MBHP	-.35**	.40**	.29**	.51**	.17**	.26**
Percentage of hospitalized on Medicaid HMO	-.28**	.27**	.18**	.33**	.09	.06
Percentage of hospitalized receiving free care	-.10*	.11*	.11*	.09	.02	.05

NOTES: The above represent Pearson r's computed based on aggregate zip code statistics, and weighted with relative population size of zip code.

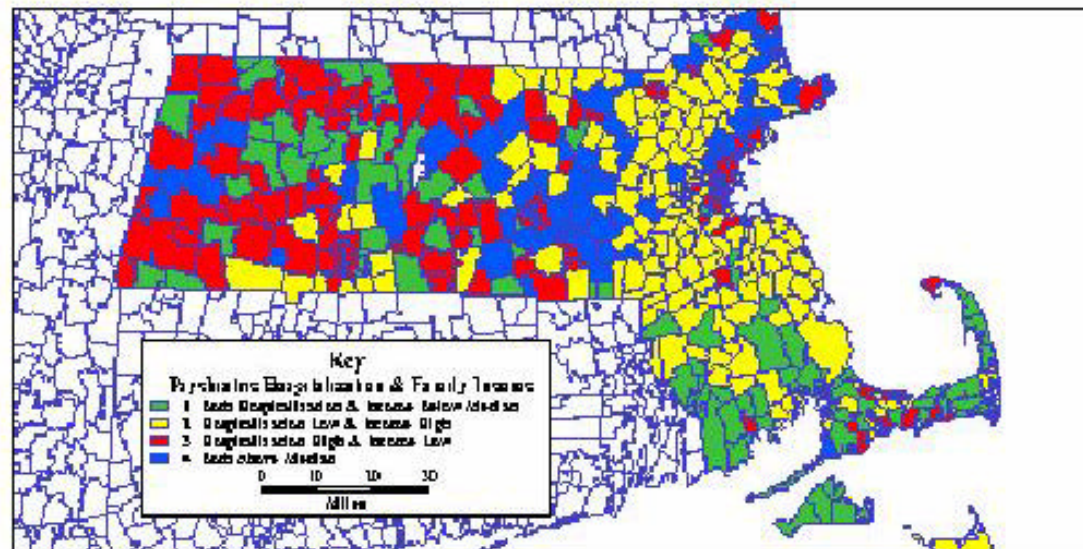
* " < 0.05

** " < .01

Figure 6 illustrates the strong negative correlation between hospitalization rates and income. The red and yellow areas of the state--containing 70% of its population--fit the pattern of this

correlation: either below median income and above median hospitalization rates, or vice versa. In contrast, the remaining 30% of the state are exceptions and consist mainly of three areas: the Cape where both are low, and the North Shore and the Worcester area where both are high.

Figure 6. The Negative Correlation of Psychiatric Hospitalization with Income



NOTE: Red and yellow areas represent patterns of negative correlations between income and psychiatric hospitalization, whereas green and blue represent the exceptions, or areas where both income and hospitalization are above median, or the reverse.

PATTERNS OF CARE

There is a widespread belief that cost saving incentives under managed care are leading to the curtailment of care. In particular, it is believed by many that the length of the stay for the typical psychiatric patient has fallen. This is, in fact, true as the median length of stay in Massachusetts

Table 12. Length of Stay, By Type of Insurance and Time Period

Type of Primary Insurance	Oct. 1, 1995- June 30, 1996	July 1, 1996 - Sept. 30, 1997	Percentage Change
Massachusetts Behavioral Health Partnership (MBHP)		6.9 6.2 (3,606)	- 6.8%
Mental Health Management of America (MHMA)	7.4 7.5 (1,600)		-17.3%
Other Medicaid Managed Care	5.6 5.0 (371)	5.4 4.4 (723)	-3.4% -12.0%
Regular Medicaid	7.4 7.2 (3,344)	7.0 6.5 (4,529)	-5.4% -9.7%
Free Care	5.5 5.3 (1,590)	5.3 4.9 (2,561)	-3.6% -7.5%
Other Government Payments ^b	7.4 7.0 (118)	7.2 6.1 (203)	-2.7% -12.9%
All Other ^c	6.4 6.7 (18,581)	5.9 6.2 (33,000)	-7.8% -7.5%
TOTAL	6.5 6.7 (25,604)	6.0 6.1 (44,622)	-7.7% -9.0%

NOTES: The first figure in each cell represents the Grouped Median Length of Stay in days, adjusted for each groups age, sex, diagnostic (DRG psychosis Yes/No) profile. The second is the unadjusted Median length of days of the stay on the psychiatric unit and/or psychiatric ICU. The third figure represents the unweighted number of episodes examined.

^b. "Other Government Payments" excludes all Medicaid and Medicare, and CHAMPUS.

^c. "All Other" includes all Medicare, Non-managed care Medicare, and all forms of commercial insurance, both traditional and managed care.

institutions has fallen from 6.5 to 6.0 days just within the two year period of this study, or 7.7% (see table 12). This represents a similar drop as that experienced under the MMHSA Program, or 6.8%, and considerably more than that under the Medicaid HMOs (3.4%). Other programs saw declines which ranged from a low of 2.7% in the free care program to 7.8% in "All Other", mainly private insurance programs.

It may be that such differences mask differential discharge practices since each program has a somewhat different profile of patients. For instance, the MMHSA programs serve a higher percentage of patients with schizophrenia and other forms of psychosis. For this reason, median lengths of stay were

**Table 13. Percentage of Patients Changing Facilities,
By Type of Insurance and Time Period**

Type of Primary Insurance	Oct. 1, 1995- June 30, 1996	July 1, 1996 -Sept. 30, 1997		Change in Percentage (Col.3-Col.1)
		Actual	Adjusted*	
Massachusetts Behavioral Health Partnership (MBHP)		17.5% (525)	10.5%	3.3%
Mental Health Management of America (MHMA)	7.2% (209)			
Other Medicaid Managed Care	0.0% (40)	1.3% (75)	0.8%	0.8%
Regular Medicaid	20.2% (420)	17.0% (542)	10.2%	-10.0%
Free Care	12.1% (157)	48.8% (223)	29.3%	17.2%
Other Government Payments ^b	0.0% (8)	0.0% (21)	0.0%	0.0%
All Other ^c	20.9% (2,706)	22.7% (4,998)	13.6%	-7.3%
TOTAL	20.0% (3,420)	21.2% (6,384)	12.7%	-7.3%

NOTES: This table is calculated on the basis of the subsample of patients who have had at least two hospitalizations in each of the two designated periods. Change in facility is figured by comparing the first and last facility for each patient within each period.

* The "Adjusted" is calculated by multiplying the unadjusted figure by 9/15 to produce an estimate of the amount of changes which would have occurred had this second period been 9 months instead of 15. This is to assure comparability with the first 9 month period.

recomputed, adjusted for the differential age, sex, and diagnostic profile of each group This was done by stratifying or by subdividing the overall population into 5 age groups, 2 genders, and 2 diagnostic groups (psychotic/not psychotic), or 20 strata in total. Relative percentages were calculated for each of the 20 strata, as well as the corresponding strata in each of the 7 generic groups based on insurance. Based on the relative size of these strata a weight was computed for each of the 140 possible combinations, and then assigned to each patient based on his or her personal characteristics and type of insurance. By using these weights, each insurance subgroup is made equal to the overall population in respect to its age, gender, and diagnostic (psychotic) profile.

The results of the recomputation of median lengths of stay, using the adjustment described, are reported in the second figure in each cell of table 10. This analysis reveals that the MMHSA Program saw the largest declines in median stay, from 7.5 to 6.2 days, a 17.3% decline, almost

double that of the overall psychiatric population. Whether lengths of stay should be increased or

Table 14. Treatment Procedures Reported Used on Acute Psychiatric Units, FY 1996 - 1997

Insurance	Procedure	Oct. 1, 1995- June 30, 1996	July 1, 1996 - Sept. 30, 1997
Massachusetts Behavioral Health Partnership (MBHP)	Psychiatric somatotherapy		2.0%
	Individual psychotherapy		0.0%
	Alcohol/drug rehab or detox		14.0%
	Other		0.0%
Mental Health Management of America (MHMA)	Psychiatric somatotherapy	3.0%	
	Individual psychotherapy	0.0%	
	Alcohol/drug rehab or detox	6.0%	
	Other	0.0%	
Other Medicaid Managed Care	Psychiatric somatotherapy	2.0%	2.0%
	Individual psychotherapy	0.0%	0.0%
	Alcohol/drug rehab or detox	3.0%	6.0%
	Other	0.0%	0.0%
Regular Medicaid	Psychiatric somatotherapy	2.0%	2.0%
	Individual psychotherapy	1.0%	1.0%
	Alcohol/drug rehab or detox	8.0%	9.0%
	Other	1.0%	2.0%
Free Care	Psychiatric somatotherapy	1.0%	1.0%
	Individual psychotherapy	0.0%	0.0%
	Alcohol/drug rehab or detox	21.0%	22.0%
	Other	0.0%	0.0%
Other Government Payments ^b	Psychiatric somatotherapy	13.0%	14.0%
	Individual psychotherapy	2.0%	1.0%
	Alcohol/drug rehab or detox	10.0%	6.0%
	Other	2.0%	0.0%
All Other ^c	Psychiatric somatotherapy	5.0%	5.0%
	Individual psychotherapy	1.0%	1.0%
	Alcohol/drug rehab or detox	10.0%	12.0%
	Other	2.0%	2.0%

shortened can not be determined from this particular data, however, data to be reported under “Outcomes” suggest that the shrinking length of stay is being accompanied by increasingly unfavorable outcomes.

One of the most important indicators of quality of inpatient services is the mix of services provided in such settings. Unfortunately, the data available from the case mix database indicates such low levels of key services that one is left suspecting that the low rates represent under-reporting rather than low rates of service provision. Since it is fairly plausible that the direct care staff do not record many of their routine activities, the coding departments of the hospitals which transcribe the data have insufficient material in the medical records to include in the database. Nonetheless, a summary of this data is included in this report to not only highlight this problem but also as *one indicator of the relative levels* of service provision under alternative financing mechanisms (see table 14). For example, under most forms of insurance, only 1 to 3 percent of the patient episodes are reported to be provided psychiatric somatotherapy, with the exception of Other Government Payments which is at 14.0% and All Other, at 5.0%. Individual psychotherapy was even rarer, rounding off to 0% under all three Medicaid managed care options, 1% under Regular Medicaid, Other Government Payments, and All Other. Alcohol or Drug rehab or detoxification is the most frequent treatment reported, increasing from 6.0% under MHMA to 14% under MBHP, and varying between 6% and 12% under the other programs.

CONTINUITY OF CARE

A major critique of the traditional fee-for-service insurance plans is that they promote fragmentation of care. Patients are reported to “shop around” and frequently change doctors and facilities. Managed care has been held up as a solution to such fragmentation. This question could be investigated in this study, specifically by comparing doctors and facilities between patients earlier and later hospitalizations. The analysis, thus, says nothing about continuity of care among the substantial group of patients who were hospitalized only once. To conduct this analysis, those patients who had two or more stays in either of the designated periods were selected for further analysis in which both the facility and assigned doctors were compared between the first and last hospitalization for each patient within the time period of interest. Finally, change rates had to be adjusted to account for the longer period (15 months) subsequent to the implementation of the new program than that which preceded it (9 months), by multiplying the latter rate by 9/15.

Table 15 reports the extent to which patients changed facilities, broken down by time period and type of insurance. The 10.5% change rate under the MMHSA Program is only slightly less than that of all patients, 12.7%. However, this represented an increase of 3.3%, in contrast to the experience of patients generally which consisted of a 7.3% drop in facility changes. The Medicaid HMOs had in aggregate among the lowest levels of facility change, at .8% which was slightly up from 0% in the preceding period. Thus, while managed care does appear to contribute to continuity of care in respect of facilities utilized, this benefit only marginally characterizes the MMHSA program, and is a benefit which appears to be disappearing.

Information on assigned doctors was available only for 1997. This data reveals that the MMHSA Program had the highest rate of doctor changes, at 47.0%, of all the types of insurance examined. The Medicaid HMOs had only a slightly lower rate at 45.8% which was identical as that of the regular Medicaid program, and also somewhat greater than the experience of all psychiatric

patients in 1997, which stood at 44.2%. These represent rates of change of doctors, whether or not in the same facility, over the course of two or more hospitalizations during FY 1997.

Finally, continuity of care was examined by comparing both physicians and facilities between the most recent medical and psychiatric stays among those patients who had at least one stay of each type in 1997. Table 15 reveals that the percentages of such patients with identical doctors or facilities ranged from 12% to 19% under the MMHSA Program, compared with rates ranging from 33% to 91% under the various other programs. The highest levels of medical-psychiatric continuity were found in the Medicaid HMO program in which 91% had the same facility and 51% had the same doctor in their most recent psychiatric and medical hospitalizations.

Table 15. Proportion of Most Recent Psychiatric and Medical Episodes of Same Person which Share Identical Doctor and Facility (n=15,063)

	MBHP	MHMA	Medicaid HMO	Regular Medicaid	Free Care	DMH & Misc.	All Other
% of last psych and medical episodes with same facility	12%	14%	91%	40%	64%	88%	44%
% sharing same doctor	19%		51%	47%	33%	38%	43%

Continuity of care was also examined through a comparison of patterns of referral upon discharge on the part of the various types of insurance and time periods (see table 17). With the exception of the free care program, the MMHSA Program had the highest rate of non-referral, going from 89.2% under MHMA, to 90.3% under MBHP, considerably higher than the 79.8% for All Others. In most cases, non-referral rates increased over the two time periods. The Medicaid HMOs had a slightly better record of continuity of care, although there is evidence that the Medicaid HMOs are superior in this respect.

Finally, length of stay and continuity of care were compared between the psychiatric and medical stays of the same patients, and this data is summarized in table 16. Typically, the medical stays were appreciable longer than psychiatric stays for both MHMA and MBHP patients, whereas patients in all other plans had longer psychiatric than medical stays. In addition, while MBHP patients had lower rates of discontinuity when they were medically hospitalized than when they were psychiatrically hospitalized, the opposite was the case with all other plans: psychiatric care had the lower rate of discontinuity in respect to both changes in doctors and facilities, when compared with the medical hospitalizations of these same patients.

**Table 16. Comparison of Hospital Utilization,
By Type (Psychiatric or Medical) and Insurance, FY 1996-FY1997**

	Type of Insurance						
	MBHP	MHMA	Medicaid HMO	Regular Medicaid	Free Care	DMH & Misc.	All Other

MEDICAL STAYS OF THOSE WITH PSYCHIATRIC STAYS

Mean Length of stay	9.2	11.1	4.7	5.4	5.4	4.7	5.3
% Changing facility	0%	2%	3%	16%	5%	1%	19%
% Changing doctor	6%		9%	16%	9%	11%	22%

PSYCHIATRIC STAYS

Mean Length of stay	8.4	9.4	6.9	10.5	6.8	7.7	8.8
% Changing facility	4%	1%	0%	6%	2%	0%	7%
% Changing doctor	11%		8%	10%	6%	1%	9%

NOTES: Computed on subsample of patients who had 2 or more psychiatric episodes during the 1996-1997 period, and if they had medical episodes, had two or more. Changes in facility, doctor, and severity level computed between first and last episode of each individual, and the results of all individuals were then aggregated.

* -- Severity Levels: 1--Minor; 2--Moderate; 3--Major; 4--Extreme (unavailable for FY 1996).

Table 17. Discharge Referral Patterns, By Time Period and Type of Insurance

	Type of Insurance						
	MBHP	MHMA	Medicaid HMO	Regular Medicaid	Free Care	DMH & Misc.	All Other
Oct. 1, 1995 to June 30, 1996							
No referral		89.2% (1,427)	85.5% (318)	85.2% (2,850)	92.5% (1,471)	89.0% (105)	77.1% (14,334)
Referred to another institution		3.1% (49)	4.6% (17)	6.8% (226)	3.1% (50)	*	12.7% (2,362)
Referred to Outpatient or home health services		6.0% (96)	7.5% (28)	5.8% (193)	2.9% (46)	*	8.4% (1,567)
Referred to a mental health facility		1.8% (28)	2.2% (8)	2.1% (70)	1.3% (20)	*	1.6% (304)
Other (expired)		*	*	*	*	*	0.2% (31)
July 1, 1996 to Sept. 30, 1997							
No referral	90.3% (3,256)		84.8% (613)	87.2% (3,950)	94.0% (2,408)	86.7% (176)	79.8% (26,344)
Referred to another institution	3.1% (111)		4.1% (30)	7.4% (337)	2.6% (66)	4.4% (9)	12.3% (4,077)
Referred to outpatient or home health services	5.3% (190)		6.8% (49)	3.3% (149)	2.8% (71)	8.4% (17)	6.2% (2,051)
Referred to a mental health facility	1.3% (48)		4.1% (30)	2.1% (94)	0.6% (15)	*	1.5% (502)
Other (expired)	*		*	*	*	0.0%	*

NOTE: This table is calculated based on all episodes of psychiatric patients and their associated medical episodes in acute hospitals during the designated periods.

* -- Cells with counts of between 1 and 7; not specified per agreement with Division Health Care Finance and Policy

SELECTED OUTCOMES

Administrative databases usually offer a sparsity of outcome measures, however, when indicators of functioning are compared at multiple points in time, inferences can be made as to outcomes. The case mix database, thus, can be used to examine not only recidivism rates, but also changes in the severity levels of patients conditions and their diagnoses.

Recidivism rates were initially examined through the computation of percentages of patients who either were rehospitalized in designated periods of time, such as 30, 60, and 90 days, 6 months, and a year. In these analyses, only adults on psychiatric units, between the ages of 18 and 65, who did not die while in the hospital, were selected for analysis. In addition, all cases were excluded from

a period of time, i.e. 30 days, at the end of the period of available data, for an analysis of the corresponding recidivism rate, i.e. 30 day. Otherwise, patients admitted during the final month would not have had the required 30 day chance to be rehospitalized, thus, artificially lowering the rates. The longer the period is, the more is the biasing effect, and the greater the cost of its correction through the exclusion of cases.

Thirty day recidivism rates in the most recent period examined have declined slightly, from 16.8% to 16.2%, by 3.4%. Similarly, the rates declined slightly in the transition from the MHMA to the MBHP program, from 18.0% to 17.6%, or by 2.2%. In contrast, there were considerably larger declines in the Medicaid HMO program, from 22.9% to 18.9%, or 17.5%. The only cohort to see significant increases was "Other Government Payments", the small numbers in this group may lend themselves to considerable instability.

Table 18 reports the six month recidivism rates, broken down about time period and type of insurance. These reveals that the Medicaid managed care options, both the MMHSA Program and the HMOs have the highest rates of recidivism, just about 50% (48% and 49%, respectively). These are up substantially from the earlier period, by about 20%. Likewise, they are almost

**Table 18. Six Month Recidivism Rates,
By Time Period and Type of Insurance, FY1996-1997**

Type of Primary Insurance	Oct. 1, 1995- June 30, 1996	July 1, 1996 - Sept. 30, 1997 ^a	Percentage Change
Massachusetts Behavioral Health Partnership (MBHP)		48% 47.3% (1,564)	20.0% 24.1%
Mental Health Management of America (MHMA)	40% 38.1% (1,450)		
Other Medicaid Managed Care	41% 39.5% (350)	49% 50.5% (393)	19.5% 27.8%
Regular Medicaid	42% 41.9% (2,756)	47% 46.7% (2,077)	11.9% 11.5%
Free Care	26% 25.5% (1,415)	30% 30.4% (1,373)	15.4% 19.2%
Other Government Payments ^b	25% 25.3% (102)	35% 35.8% (100)	40.0% 41.5%
All Other ^c	36% 36.2% (12,440)	40% 40.0% (12,756)	11.1% 11.0%
TOTAL	37% 36.3% (18,513)	41% 40.6% (18,263)	10.8% 11.8%

NOTES: This table represents percentage returning to an acute psychiatric facility (psychiatric unit or psychiatric ICU) in Massachusetts, within 6 months of discharge from one. It is computed based on all episodes of acute hospitalization in the Commonwealth, in the designated period, of adults aged 18-65, excluding those who were transferred to another hospital or died while in the hospital. The second figure in each cell is the same rate, but adjusted for age, sex, and psychotic diagnosis.

^a. To compute 6 month recidivism rates it was necessary to also exclude all cases with discharge dates less than 6 months from the end of the FY 1997.

^b. "Other Government Payments" excludes all Medicaid and Medicare, and CHAMPUS.

^c. "All Other" includes all Medicare, Non-managed care Medicare, and all forms of commercial insurance, both traditional and managed care.

20% higher than that of the overall psychiatric population, which stood at 41% in 1997. These same rates were then recomputed, adjusting for the differential age, sex, and diagnostic profiles of the various insurance groups. These rates for the MMHSA Program are only slightly lower, and those for the Medicaid HMOs, slightly higher. However, in both cases the patterns of increasing recidivism are even greater. An examination of similar tables (not included) for 2 and 3 months, and 1 year, reveal the disparities between the various programs exemplified in this table, increase over time, from very minor differences at the one month level, to even greater differences at the one year mark.

A more in depth examination of the differential recidivism rates was possible through a survival analysis in which the likelihood of remaining in the community (or non-rehospitalization) is plotted against time from discharge for each insurance group. This plot (see figure 7) clearly indicates that the experience of MBHP is slightly worse than that of MHMA, which consisted of substantially the same population, and considerably less favorable than all other groups, including free care. While the MBHP experience, according to this analysis represent an almost 55% rate after 15 months, all other groups have rates between 35% and 52% at this point. Since this program has the greatest declines in length of stay and the lowest continuity of care and referral rates, it should

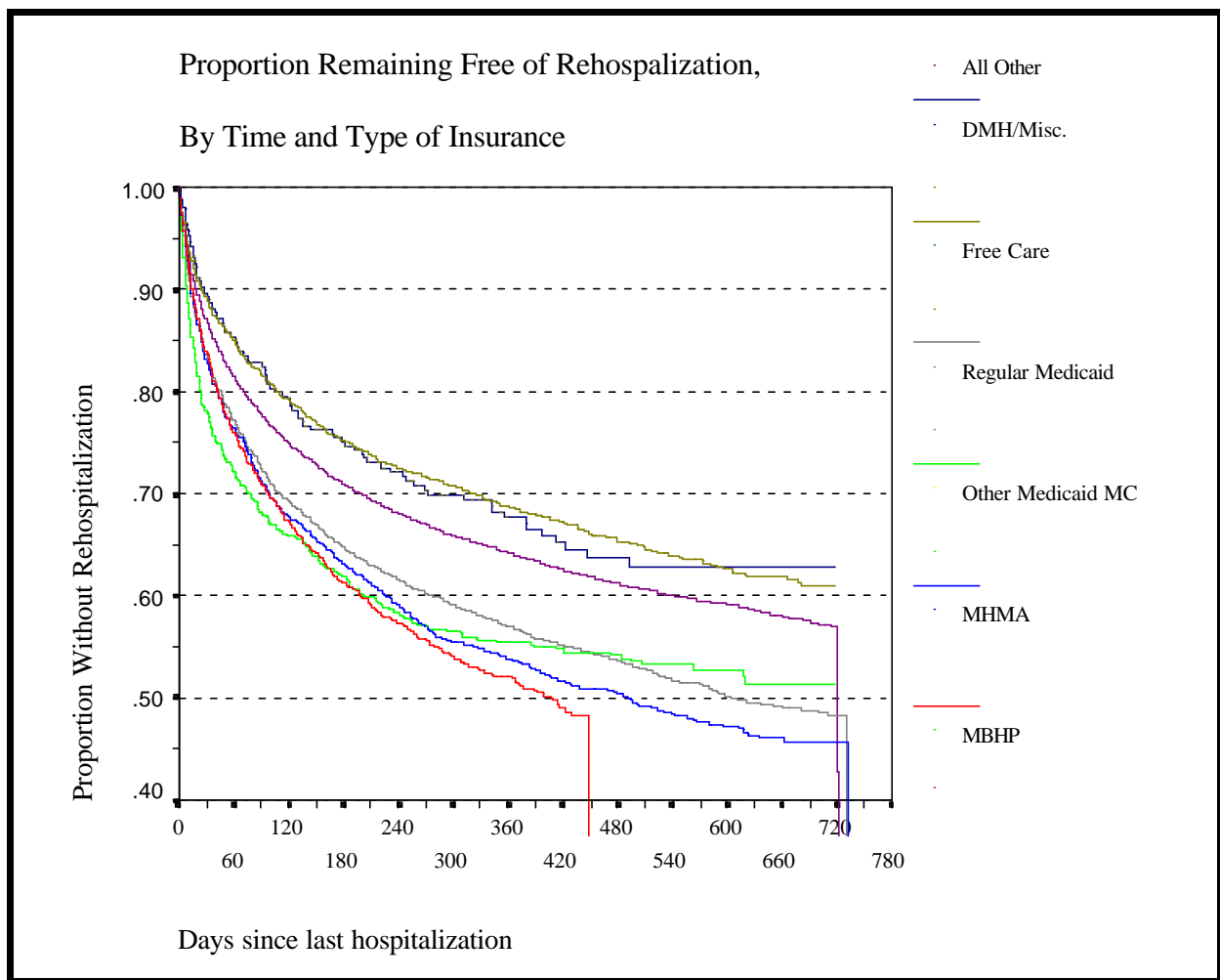


Figure 7

Table 19. Changes in Selected Diagnoses among Patients with Multiple Hospitalizations, By Time Period and Type of Insurance

	Type of Insurance						
	MBHP	MHMA	Medicaid HMO	Regular Medicaid	Free Care	DMH & Misc.	All Other
Oct. 1, 1995 to June 30, 1996							
Schizophrenia		20%	33%	16%	18%	100%	17%
Affective Disorders		24%	22%	24%	19%	43%	21%
Neurotic Disorders		51%	83%	63%	73%		57%
Personality Disorders		42%	43%	31%	43%	0%	39%
Conduct Disorder		50%		71%	100%		66%
Alcohol Abuse/Dependence		38%	75%	39%	25%		30%
Substance Abuse/Dependence		50%	100%	86%	67%		80%
Depressive Disorder		20%	0%	58%	100%		90%
July 1, 1996 to Sept. 30, 1997							
Schizophrenia	19%		15%	22%	22%	0%	16%
Affective Disorders	24%		12%	28%	21%	6%	20%
Neurotic Disorders	44%		75%	54%	51%	100%	56%
Personality Disorders	39%		30%	44%	40%	67%	48%
Conduct Disorder	75%			38%	100%		64%
Alcohol Abuse/Dependence	31%		41%	39%	23%	100%	28%
Substance Abuse/Dependence	57%		75%	46%	48%	100%	57%
Depressive Disorder	50%		0%	72%	33%	100%	81%

NOTE: This table is calculated using the subsample of individuals who have had at least two hospitalizations in either of the two periods. The two periods, thus, represent two overlapping samples. Each diagnosis is coded dichotomously (1--Present; 0--Absent), and diagnosis change is calculated from the first to the last hospitalization during each period in the following manner: From Present to Absent---1; from Present to Present--0. Those who did not have the condition at first hospitalization are, therefore, excluded from this analysis which does not take into account persons who did not have but developed the disorder. When averaged, 100% indicates that everyone who had the disorder at first hospitalization did not have it at the end of the period, and 0% indicates that all these people continued to have the diagnosis. Blank cells indicate there were no applicable individuals for this analysis.

come as not surprise that the recidivism rates are among the least favorable of the programs

examined.

An important indicator of improvement occurs when patients who have been diagnosed for a particular disorder no longer receive such a diagnosis during a subsequent hospitalization. Of course, some disorders spontaneously remit, and others are persistent even with the best treatments. Complicating the picture is the moderate level of reliability that clinicians have in diagnosing mental disorders. Nonetheless, a comparison of diagnoses of the same patients between the first and last hospitalizations during designated periods of time reveals important trends.

Table 19 reports the results of this analysis which are in the form of percentages of patients whose diagnosis was no longer present during the final hospitalization during the designated time

period. In all but one of the diagnoses--personality disorders--the rates became somewhat less favorable during the most recent time period, despite the fact that this period was longer than the first. As is well known, schizophrenia was found to be the most recalcitrant, with a 16% remission rate, whereas Depressive Disorder remitted in over four-fifths of the cases (81%) in the most recent time period. There appears to be few, if any, systematic differences in remission rates among the various insurance groups, other than a general decline in the rates over the two periods studied.

Another indicator of the changing conditions of patients is the change in the frequency of different diagnoses which they are given. This was examined by comparing the number of distinct

Table 19 reports the results of this analysis which are in the form of percentages of patients whose diagnosis was no longer present during the final hospitalization during the designated time

Table 20. Changes in Average Frequency of Psychiatric Diagnoses By Time Period and Type of Insurance, FY 1996 - 1997

Type of Primary Insurance	Oct. 1, 1995- June 30, 1996	July 1, 1996- Sept. 30, 1997 ^a	Percentage Change
Massachusetts Behavioral Health Partnership (MBHP)		0.17	183%
Mental Health Management of America (MHMA)	0.06		
Other Medicaid Managed Care	0.11	-0.07	-164%
Regular Medicaid	0.01	0.12	1100%
Free Care	0.05	0.20	300%
Other Government Payments ^b	0.14	-0.12	-186%
All Other ^c	0.03	0.07	133%

NOTES: This table is calculated using the subsample of individuals who have had at least two hospitalizations in either of the two periods. The two periods, thus, represent two overlapping samples. Changes are calculated by dividing the number of psychiatric diagnoses given in the last episode, by the number given in the first. Thus, a positive number such as .2 indicates that on average patients in this period were given 20% more diagnoses in their last, compared to their first hospitalization.

diagnoses given during the first and last hospitalization during the periods of interest for each of those

patients who have had two or more hospital episodes. These results were then aggregated and broken down by insurance cohort, and compared between time periods (see table 20). Overall, during the last hospitalization there were 3% more diagnoses during the baseline period, and 7% during the subsequent period. The carve-out program saw a parallel and high level of increase, of 6% under MHMA, which grew to a 17% increase under MBHP. In contrast the Medicaid HMOs saw an initial

11% increase fall to a 7% decline in the subsequent period, a 164% decrease. Both the regular Medicaid and free care programs saw substantial increases in their rates of 1,100% and 300% respectively, however, these were from fairly low rates, with smaller numbers of patients.

Table 21. Changes in Severity Ratings, By Type of Insurance

Type of Primary Insurance	July 1, 1996 - Sept. 30, 1997
Massachusetts Behavioral Health Partnership (MBHP)	.05 (496)
Other Medicaid Managed Care	.14 (72)
Regular Medicaid	.00 (517)
Free Care	.08 (201)
Other Government Payments ^b	.00 (20)
All Other ^c	.03 (4,695)
TOTAL	.03 (6,001)

NOTES: All the above represent slight, probably negligible worsening. Numbers in the negative range would represent improvements, and 0, no change on average. This table is calculated on the basis of the subsample of patients who have had at least two hospitalizations in the designated period. Change in severity is figured by subtracting the first from the last severity rating for each patient within the period. Because higher numbers represent greater severity, positive numbers here indicate worsening. Data on severity ratings is not available for 1996 comparisons.

Table 22. Switches of Patients Between MHMA/MBHP and Medicaid HMOs Between First and Last Hospitalization, By Time Period

Type of Change	Oct. 1, 1995- June 30, 1996	July 1, 1996- Sept. 30, 1997
MHMA/MBHP to HMO	1.8% (284)	1.2% (645)
HMO to MHMA/MBHP	3.3% (60)	9.3% (118)
Net Change to MHMA/MBHP	-1.1% (284)	0.5% (645)
Net Change to Medicaid HMOs	5.0% (60)	-2.5% (118)

NOTES: Under Net Change a positive number indicates a net gain of the size of the indicated population, and a negative, a relative loss of population. This analysis includes all those patients who have had at least two hospitalizations in either of the periods; as such, the subsamples for each time period are overlapping (a few have had at least two hospitalizations in both periods). Because of the small numbers, n's are deleted per agreement with the Division of Health Care Policy and Finance. The numbers in parentheses represent the total N for the subgroup, not those who switched. Because of the small number of switches, considerable caution needs to be used in extrapolating any trends from this data.

Another indicator of psychiatric outcomes involves changes in severity ratings which each hospital supplies (beginning in 1997) concerning its discharged patients. These ratings consist of Mild (1), Moderate (2), Major (3), and Extreme (4), with both the median at 1.4. Just about seven-tenths (69.1%) of all psychiatric patients had no reported change in the severity of their condition between the first and last hospitalization, with the median being .03, a very slight and probably negligible level of regression. While 14.1% were given less severe ratings at the final admission, the remainder--16.8%--saw increasing levels of severity (see table 21).

A comparison of these change scores in 1997 between insurance type, revealing that the MBHP program had slightly higher levels of regression (.05) than was the case overall (.03), but not as high as the Medicaid HMOs (.14) or free care program (.08). Whether any of these levels of regression can be considered substantive can not be determined from this data. However, because they point in a similar direction as many of the other indicators, they must be considered a basis for concern.

PATIENT SATISFACTION

Two indicators of patient satisfaction were examined in this study: (i) elective switches on the part of Medicaid recipients between the MMHSA Program and the Medicaid HMOs, and, (ii) Rates of discharges made "against medical advice" (AMA). The first is a more specific indicator of satisfaction with the insurance plan, though as is the case with many indicators, it can be influenced by many other conditions. The second is a more direct indicator of satisfaction with the treatment received, with the doctor, or facility, and only indirectly, of the insurance plan.

Table 22 summarizes the extent of switches between the MMHSA and HMO options among those patients who have had two or more hospitalizations in either of the designated periods. During the first period the MMHSA Program lost 1.1% of its patients, resulting in a net gain of 5.5% to the HMO population of patients with multiple hospitalizations, suggesting slightly greater satisfaction with the HMO option. During the second period, the direction of the transfers shifted, but with only a half a percent (.5%) increase in the MMHSA population, and a 2.5% drop in the corresponding HMO group, indicating slightly greater satisfaction with the MMHSA alternative.

Table 23 reports the results of an analysis of discharges against medical advice (AMA). These results indicate that overall AMA rates are fairly stable, at 3.3% during both periods. Similarly, the AMA rates for the MMHSA program are also fairly stable, and average, moving from 3.3% to 3.4% over the transition period. In contrast, the least favorable AMA rates were found with the Medicaid HMO program and the Commonwealth free care program, both of which also increased to the greatest extent during the transition period. Both these analyses reinforce the view that the Medicaid managed care program has only average levels of satisfaction, probably slightly worse with the HMOs, and in each case patient satisfaction--whether it be with the treatment, doctor, facility, or insurance company--is slipping.

COST

Table 23. Frequency of Discharges Against Medical Advice, By Time Period and Type of Insurance, FY1996-1997

Type of Primary Insurance	Oct. 1, 1995- June 30, 1996	July 1, 1996 - Sept. 30, 1997 ^a	Percentage Change
Massachusetts Behavioral Health Partnership (MBHP)		3.4% (121)	3%
Mental Health Management of America (MHMA)	3.3% (53)		
Other Medicaid Managed Care	3.8% (14)	4.3% (31)	13%
Regular Medicaid	3.4% (114)	3.6% (162)	6%
Free Care	4.3% (69)	5.3% (136)	23%
Other Government Payments ^b	5.9% (*)	1.5% (*)	-75%
All Other ^c	3.3% (622)	3.3% (1,096)	0%

NOTES: The first figure in each cell is the percentage of the total applicable episodes which resulted in a "discharge against medical advice" (AMA). The second figure represents the actual count of persons who left their facility AMA.

* -- Cells with counts of between 1 and 7; not specified per agreement with Division Health Care Finance and Policy

One of the most frequently voiced rationales for the introduction of managed care is the control of rising costs. Indeed, during the most recent period investigated (7/1/96-9/30/97), the per diem costs under the Medicaid carve-out program (MBHP) was \$992, compared with over a thousand most of the other alternatives, and a high of \$1,170 under the residual "Regular Medicaid" program. Even the Medicaid HMOs were slightly more, at \$1,046 per diem. However, costs continued rise under the carve-out, but only slightly greater than inflation, at 3.0%. This compares very favorably with the Regular Medicaid program where costs rose by 12.6%, as well as the overall

experience of 3.9%. However, the Medicaid HMO program managed to actually reduce its per diem costs by 8.1%. Thus, there seems to be only a slight cost savings under the carve-out, and an even smaller savings under the HMOs, although the HMOs made the most *progress* in reducing costs over the time periods studied. It should be pointed out that these are the costs as reported by each hospital. These are not necessarily what any individual or third party eventually pays.

DISCUSSION

Evidence concerning improvements in program accessibility and effectiveness under Massachusetts' Medicaid managed care program is mixed. By the last half of FY1997 the data indicated a clear increase in both bed days and episodes of psychiatric hospitalization, at the same time that these decreased under the Commonwealth's free care program. Yet further analysis reveals other more likely explanations for this. When the numbers of individual patients hospitalized are

Table 24. Mean Daily and Episode Costs for Acute Psychiatric Care, By Time Period and Type of Insurance, FY 1996 - 1997

Type of Primary Insurance	Oct. 1, 1995- June 30, 1996	July 1, 1996 - Sept. 30, 1997 ^a	Percentage Change
Massachusetts Behavioral Health Partnership (MBHP)		\$992 \$8,217 (3,606)	3.0% -7.4%
Mental Health Management of America (MHMA)	\$963 \$8,878 (1,600)		
Other Medicaid Managed Care	\$1,138 \$7,345 (371)	\$1,046 \$6,309 (723)	-8.1% -14.1%
Regular Medicaid	\$1,039 \$10,367 (3,344)	\$1,170 \$11,307 (4,529)	12.6% 9.1%
Free Care	\$1,168 \$7,705 (1,590)	\$1,098 \$6,352 (2,561)	-6.0% -17.6%
Other Government Payments ^b	\$975 \$8,907 (118)	\$984 \$7,547 (203)	0.9% -15.3%
All Other ^c	\$1,033 \$8,978 (18,580)	\$1,076 \$8,831 (32,995)	4.2% 4.2%
TOTAL	\$1,039 \$8,217 (25,603)	\$1,079 \$8,844 (44,617)	3.9% 7.6%

NOTES: This table is calculated based on all psychiatric episodes during the two designated periods. It includes days on psychiatric units and psychiatric ICU, both all routine bed as well as all ancillary charges.

^b. "Other Government Payments" excludes all Medicaid and Medicare, and CHAMPUS.

^c. "All Other" includes all Medicare, Non-managed care Medicare, and all forms of commercial insurance, both traditional and managed care.

analyzed over time, there were still significant increases in the MBHP program, but negligible decreases in the free care program. Most of MBHP's increases are more clearly associated with declines from the regular Medicaid program. One possible explanation for this, other than that of case transfers, involves the possibility that only recently have hospital coding departments overcome their confusion concerning these Medicaid programs. An analysis of actual transfers of individuals between their programs revealed that while only 6.7% of free care patients transferred to MBHP during this two year transition, 21.7% of the larger non-managed care Medicaid program did so.

Despite the marginal, if non-existent, ability of MBHP to pick up on the previously excluded indigent, there is some evidence that MBHP's services are partly targeted at poor communities. This is no doubt due to the strict financial eligibility rules under the Medicaid program. It should be noted, however, that while the correlation of MBHP hospital activity with income and poverty is less than that of the Medicaid program overall, it is considerably better than that of the Medicaid HMO program, and a lot better than that of the Commonwealth's free care program which is only marginally targeted at poor communities. The other

probably more important reason is the negative correlation between the rate of both mental hospitalization and of serious mental illness itself, on one hand, and poor socioeconomic conditions, on the other hand. This has been one of the most consistent findings in the social sciences (Hudson, 1988) and one which was found in this study to be at the -0.41 level (see table 9). Approximately 70% of the zip codes in this state have profiles which fit this pattern--either below average income and above average hospitalization rates, or the reverse.

The picture that the case mix data presents must be cause for concern. Both the continuing declines and lengths of stay, especially the 17% decline under MBHP, are consistent with the finding that there is decreasing referral activity made at patient discharge. Mental health professionals have hardly time to complete their intake assessments before discharge, let alone discharge plans. That 80% of patients over all are not referred--and 90% of those of MBHP's--is a matter of significant concern, if true. Further research using independent data sources will need to verify their figures, as these may in part reflect under reporting. Whether the trends identified in this study are substantive will only be determined over the course of the next five to ten years. Most the shifts of 1% or 2% and above are certainly important if they continue over the course of several years. However, many such changes are unstable and do not progress in a straight line fashion. Thus, considerable caution must be exercised in interpreting the changes identified here.

The high rates of non-referral are consistent with the particularly high and increasing recidivism rates identified, especially under the MBHP program. That almost a half of patients (48%) are rehospitalized within six months under the MBHP program, a figure which is up by 20% since its reorganization, should also be cause of concern. The worsening recidivism rates are also consistent with data on declining remission rates in respect to changes in diagnoses and very slight increases in the severity levels of patient conditions. While no systematic differences between changes in diagnoses could be found based on program participation, slightly greater than average changes in severity levels were found with the MBHP patients, but not nearly to the degree as in the free care and Medicaid HMO programs.

Another area examined involves continuity of care, in respect to patients' continuation with their same doctor and facility over the course of two or more hospitalizations. In respect to changes in facilities, MBHP patients changed facilities slightly less than average (10.5% vs. 12.7%, in 1997), compared with only 0.8% with the Medicaid HMO patients. This MBHP figure (10.5%) was up by 3.3% percentage points from the 7.2% figure under its predecessor organization, MHMA, compared with overall declines. Of particular concern are the very low rates of continuity between psychiatric and medical care under MBHP in which 19% of the patients had the same doctor during the most recent medical and psychiatric hospitalizations, and 12%, the same facility. This is considerably less than the corresponding 51% and 91% figures under the Medicaid HMO program, and the 43% and 44% figures overall.

In preliminary analyses on the integration of medical and psychiatric care, especially that reported in table 1, it was found that those patients who have both psychiatric and medical stays also have the longest stays, using a large proportion of resources. Further analyses revealed that upwards of a half of the medical stays of patients in the MMHSA program are actually for diagnoses involving mental illness and substance abuse. Thus, not only does it appear that psychiatric utilization is being mislabeled and thus under reported in this program, but that these patients may not be getting medical care for actual medical conditions, unlike patients under the other programs who evidence a fuller

range of medical diagnoses and fewer psychiatric diagnoses when hospitalized on medical units (table available from author).

It should be noted that what mental health professionals see as continuity of care, the patients and the larger public see as the lack of freedom of choice. A benefit for the professional may be a perceived liability for many others. This may be the reason that when indicators of patient satisfaction were examined--elective switches between the HMO and MMHSA programs as well as discharges done against medical advise--slightly higher satisfaction levels were revealed under the MMHSA Program. This is especially suggested by the higher percentage of AMA discharges. With greater enforced 'continuity of care' under the HMOs, patients have fewer opportunities to bypass sources of dissatisfaction, whether these involve their treatment, their doctor, or facility.

One area in which the MMHSA Program, as implemented both by MHMA and MBHP, has been true to some of the original ideals of managed care has involved the admission process. Considerably fewer patients are admitted on an emergency basis or from emergency rooms than in the other programs examined, such as the Medicaid HMOs. Instead, the patients' physicians have played a considerably more important role. If, in fact, physicians are intervening earlier in the process of decompensation, it could be that shorter hospitalizations are sufficient. However, the data on discharge planning, continuity of care, recidivism, and other outcomes clearly suggest otherwise.

A central issue confronting policy makers is whether the seriously mentally ill are better served in a speciality carve out program as exemplified by the MMHS Program, or through a more integrated HMO structure. Clearly the HMO model assures better continuity of care within the psychiatric sector as well as between medical and psychiatric sectors. Yet most other indicators of quality of care, both in its process and outcomes, are no better, and in some cases worse under the HMOs. Both programs create multiple causes for concern. For this reason, it may be best to continue to offer patients both options, and instead focus efforts on improving the quality of services under both. Particular organizations, such as the Department of Mental Health, should advise its clientele as to their desired alternative, based on the needs of the particular subgroup under consideration. For the most seriously mentally ill, there are many reasons to work toward improved speciality services which include a comprehensive range of carefully linked programs and other resources. At this point, it would clearly be a mistake to promote either model as the superior alternative for all populations of mentally ill persons.

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Notes

1. The following formula was adapted for the 3 rater situation from the 2 rater formula given in:
Spitzer, R.L. et al. "Quantification of agreement in psychiatric diagnosis," Archives of General Psychiatry, 17 (July 1967), p. 85.

$$K = (Po - Pc) / (1 - Pc)$$

using the following SPSS syntax:

```
compute pa=a/total.
```

```
compute pc=((p1/total)*(p2/total)*(p3/total)) + ((1-(p1/total))*((1-(p2/total))*((1-(p3/total))))).
```

```
compute Kap=(pa-pc)/(1-pc).
```

where: pa = percent agreement (Po); a = frequency of agreement; total = total n; pc = percent expected;

p1, p2, p3 = marginal n's; Kap = Kappa

Note: After case statistics computed, data was aggregated to a single 'case', and pa, pc, and Kap were computed from the results of the aggregation/summation.