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# TECHNICAL REPORT

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## Justice, Treatment, and Cost

### An Evaluation of the Fiscal Impact of Allegheny County Mental Health Court

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Christine DeMartini, Jacob W. Dembosky

Sponsored by the Council of State Governments



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## Preface

This report presents a first-of-its-kind study of the fiscal impact of a mental health court program. The report was commissioned by the Council of State Governments Justice Center in response to a formal resolution adopted by the Pennsylvania General Assembly in 2004. The Council of State Governments Justice Center is a national nonprofit organization that serves policymakers at the local, state, and federal levels from all branches of government. It provides practical, nonpartisan advice and consensus-driven strategies, informed by available evidence, to increase public safety and strengthen communities. The study was funded by the Staunton Farm Foundation and the Commonwealth of Pennsylvania, Department of Public Welfare, through grants to the Council of State Governments.

Based on the model of a drug court, a *mental health court* is a special docket of a criminal court designed to divert mentally ill offenders out of the criminal justice system and into the mental health treatment system while at the same time ensuring public safety. While aspects of the programs vary, essentially, mental health courts offer participants an opportunity to avoid incarceration if they agree to comply with community supervision and mandated treatment. Compliance is monitored through a series of reinforcement hearings before a dedicated jurist. Mental health courts have proliferated across the United States in spite of a lack of evidence to support their impact on individuals and on their communities. In particular, no published study to date has systematically examined the costs of mental health courts or, more specifically, the fiscal impact of these special dockets on criminal justice, mental health, and welfare (i.e., cash assistance) systems.

This report provides an analysis of the service utilization and costs for participants in the Allegheny County Mental Health Court program since its inception in 2001 and compares these costs against those that would have been incurred under routine adjudication and processing of these same offenders.

The report will be of interest to its primary audience—policymakers in the Commonwealth of Pennsylvania—as well as to others who are responsible for criminal justice and mental health policy at the federal, state, and local levels. In addition, this report will be of interest to those who are planning or operating mental health court programs and to researchers interested in documenting their effects.

### *The RAND Safety and Justice Program*

This research was conducted under the auspices of the Safety and Justice Program within RAND Infrastructure, Safety, and Environment (ISE). The mission of RAND Infrastructure, Safety, and Environment is to improve the development, operation, use, and protection of society's essential physical assets

and natural resources and to enhance the related social assets of safety and security of individuals in transit and in their workplaces and communities. Safety and Justice Program research addresses occupational safety, transportation safety, food safety, and public safety—including violence, policing, corrections, substance abuse, and public integrity.

Questions or comments about this report should be sent to the project director, M. Susan Ridgely (Ridgely@rand.org). Information about the Safety and Justice Program is available online (<http://www.rand.org/ise/safety>). Inquiries about Safety and Justice research projects should be sent to the following address:

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## Summary

In response to Pennsylvania Senate Resolution 125, calling for the evaluation of three criminal justice and mental health diversion programs in the Commonwealth of Pennsylvania, the Council of State Governments Justice Center contracted with the RAND Corporation to conduct a fiscal impact study of the Allegheny County Mental Health Court (MHC). The MHC is a specialized docket of the Court of Common Pleas designed to divert individuals with mental illness who have committed nonviolent crimes from the criminal justice to the mental health treatment system, while preserving public safety. Using administrative data from six state and county public agencies, the fiscal impact study identified the treatment, criminal justice, and cash assistance costs for the MHC participants, compared those costs with the costs of routine adjudication and processing, and calculated the fiscal impact of the MHC program.

The findings from our fiscal impact analyses show that entry into the MHC program leads to an increase in the use of mental treatment services in the first year after MHC entry, as well as a decrease in jail time for MHC participants. The decrease in jail expenditures mostly offsets the cost of the treatment services.

However, an analysis that followed a subsample of MHC participants for a longer period of time showed a dramatic decrease in jail costs in the second year of MHC participation. The treatment costs return to pre-MHC levels in the second year. The drop in jail costs more than offset the treatment costs, suggesting that the MHC program may help decrease total taxpayer costs over time. Although the total cost savings for the two years was not statistically significant, the leveling off of mental health treatment costs and the dramatic drop in jail costs yielded a large cost savings at the end of our period of observation. The lower cost associated with the MHC program in the last two quarters was over \$1,000 per quarter and is statistically significant in both quarters. We also found that more-seriously distressed subgroups (participants charged with felonies, people suffering from psychotic disorders, and people with scores indicating high psychiatric severity and low functioning) had larger estimated cost savings, although, again, none of the savings was statistically significant in the first year of MHC participation.

These findings generally suggest that the MHC program does *not* result in substantial incremental costs, at least in the short term, over status quo adjudication and processing for individuals who would otherwise pass through the criminal justice system. Although determining the fiscal impact of the MHC program by levels of government was beyond the study's scope, it is worth noting that the federal government and the Commonwealth share any increased treatment costs. The findings also suggest that, over a longer time frame, the MHC program may actually result in net savings to government, to the extent that MHC participation is associated with reductions in criminal recidivism and

utilization of the most expensive sorts of mental health treatment (i.e., hospitalization). Prospective tracking of participants in the MHC program could help to quantify both the long-term outcomes and cost implications for the program. Such tracking might also help to refine the entry criteria for the program, by clarifying the types of criminal offenses and mental health problems that are most effectively addressed through mental health court-supervised care.

## **Acknowledgments**

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## **Abbreviations**

ADA	assistant district attorney
DHS	Department of Human Services
GAF	Global Assessment of Functioning
MHC	mental health court
PCCD	Pennsylvania Commission on Crime and Delinquency
PD	public defender



## CHAPTER ONE

### Introduction

Past research has shown that criminal offender populations have substantially higher prevalence rates of mental illness than those found in the general population (Robins, Locke, and Regier, 1991, p. 364; Teplin, 1990). Social institutions for dealing with mental illness and criminal misconduct have evolved largely independently of one another and with very different assumptions about the origins of and appropriate responses to maladaptive behavior. The mental health treatment system provides clinical interventions to treat illness, while the justice system imposes punishment to deter criminal misconduct. Notwithstanding this disparity between the two systems, the frequent co-occurrence of mental illness and criminal behavior has created a demand for more integrated approaches capable of addressing both of these problems (Steadman et al., 1999; Steadman, Morros, and Dennis, 1995; Steadman, Davidson, and Brown, 2001).<sup>1</sup> In particular, increasing pressure on the justice system due to a burgeoning inmate population, combined with high prevalence rates of mental illness among inmates, suggests that alleviating the pressure by channeling appropriate offenders into mental health treatment instead of incarceration may be desirable. This approach may be especially useful given that inmates who suffer from mental illness may present unique challenges for the penal system, which is not primarily organized to address mental health problems.

In January 2004, the Pennsylvania General Assembly adopted a formal resolution acknowledging these sorts of challenges in the Commonwealth's penal system and identifying several county-based mental health diversion programs as models for addressing the challenges (General Assembly of Pennsylvania, 2003). The resolution suggested that the integration of mental health, substance abuse, and criminal justice institutions could help break the cycle of psychiatric deterioration, criminal behavior, and incarceration for persons with serious mental illness and thereby reduce the number of such persons residing in the criminal justice system. The resolution included a request for an assessment of the fiscal impact of identified diversion programs in Allegheny, Chester, and Philadelphia counties, ultimately as a means of determining the appropriateness of developing and implementing similar programs throughout the Commonwealth.

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<sup>1</sup> The U.S. Bureau of Justice Assistance administers the Mental Health Courts Grant Program created by statute (Public Law 106-515). The grant program has funded 37 mental health court initiatives around the country and also provides technical assistance. The Bureau works in collaboration with the U.S. Substance Abuse and Mental Health Services Administration, the Council of State Governments' Criminal Justice/Mental Health Consensus Project, and the TAPA Center for Jail Diversion. BJA (undated) provides information on mental health court programs, including profiles and the results of national surveys.

In response to the resolution of the Pennsylvania General Assembly, in July 2005, the Council of State Governments contracted with the RAND Corporation to conduct a fiscal impact study of the Allegheny County Mental Health Court (MHC) program. This MHC is a specialized division of the Commonwealth's criminal justice system, and it serves to expedite case adjudication for individuals with mental illness, while mandating treatment and support services as conditions of probation. To evaluate the fiscal impact of the MHC program, we set out to address the following research questions:

- What are the criminal justice and treatment costs for participants in the Allegheny County MHC in the time prior to MHC entry and during MHC participation?
- How do these costs compare with what we would expect from routine adjudication and processing for these participants?
- What is the fiscal impact (net savings or increase in public expenditures) of the MHC program?

Undertaking a fiscal impact study presents a series of conceptual and methodological challenges. On a conceptual level, understanding the fiscal impact of a program that diverts individuals from the criminal justice system requires a comparison of the costs generated by MHC participants with a baseline for costs associated with conventional adjudication and disposition. On a methodological level, the costs associated with diversion are multifaceted; are accrued in the justice, mental health care, and welfare systems; and are tracked through a multitude of county- and state-level databases connected to justice, mental health, and social welfare institutions. In the current study, we collected and linked data from six databases in order to build a composite picture of criminal justice, behavioral health, and cash assistance costs for a group of offenders who participated in the Allegheny County MHC program. We also developed baseline comparisons for costs associated with participating in the MHC program first, by generating hypothetical or "counterfactual" criminal sentences for participants, which were based on the punishment they might have received in the absence of the MHC program, and second, by comparing participants' utilization of services before and after their entry into the program.

The remainder of the report is organized as follows. We will first set a context for our study by providing a brief overview of outcome studies of MHCs in other jurisdictions (Chapter Two). We will then describe the operations of the Allegheny County MHC (Chapter Three). We then turn to our evaluation methods, including the data sources we used (Chapter Four). Next, we present our findings on the fiscal impact of the MHC program (Chapter Five) and discuss the limitations of our study and the effect those limitations have on the ability to generalize from our data (Chapter Six). Finally, we conclude with a discussion of the findings and observations on applying the findings to policymaking in the Commonwealth of Pennsylvania (Chapter Seven).

## CHAPTER TWO

### Prior Studies of Mental Health Courts

Because MHC programs are relatively new and have not been widely evaluated, their costs and outcomes are not well understood. The few evaluations that have been conducted suggest that these programs may improve access to treatment as well as certain outcomes for clients, but the evaluations say very little about program costs.

The most extensively studied MHC program is also the country's oldest, in Broward County, Florida. An ongoing evaluation of the program found that enrolled clients spent significantly fewer days in jail than did offenders in a comparison group (Christy et al., 2005). Researchers also found that the MHC program increased access to treatment services for mentally ill defendants (Boothroyd, Poythress, et al., 2003). However, another analysis focusing specifically on clinical outcomes (as measured by the Brief Psychiatric Rating Scale) showed no significant differences between MHC participants and a comparison group (Boothroyd, Mercado, et al., 2005). Some study limitations raise uncertainties surrounding these findings. The evaluation used a matched comparison group of defendants in misdemeanor court in another county, so there may have been unobserved differences between the two groups as well as between the courts in different counties. The evaluation also had high levels of attrition (i.e., subjects who could not be located for follow-up interviews), especially in the comparison group. The authors had no data on diagnosis, used symptom measures for clinical status, relied on self-report for data on acts of aggression and violence, and tracked participants for only eight months after their initial court appearance.

An evaluation of a MHC in Clark County, Nevada, compared the criminal justice history of a group of program participants from one year prior to enrollment in the program to one year after enrollment. The researchers found that the overall crime rate for enrolled clients was four times lower in the postenrollment period than it was during the preenrollment period. In addition, probation violations declined by 62 percent, and 54 percent of participants had no arrests during the postenrollment period (Herinckx et al., 2005). Unfortunately, this study did not include a comparison or control group, meaning that the authors cannot attribute the observed effects to the MHC program. As the authors note, self-selection may account for the positive impacts found (i.e., those individuals who were motivated to improve their lives were the ones who agreed to participate in the program).

A third study also raises questions about the potential effect of self-selection on outcomes. In this study, investigators looked at the effectiveness of two MHCs in Seattle by comparing outcomes for two groups of mentally ill offenders who had been referred to MHC—those who were referred and agreed to participate (“opt-ins”) and those who elected not to participate (“opt-outs”).

(Trupin and Richards, 2003). Those who chose to participate in MHC had significantly fewer bookings over the nine-month follow-up than they had had prior to entry into MHC, and fewer bookings than those who refused to participate in MHC.

Another study that speaks to a range of potential outcomes was the recently completed evaluation of the Brooklyn MHC (O'Keefe, 2006). This multifaceted evaluation included an examination of outcomes such as criminal recidivism, homelessness, substance abuse, psychiatric hospitalizations, psychosocial functioning, and service utilization among 37 MHC participants (those who had participated in the MHC program for a year). The study design used the participants "as their own controls"—that is, the investigators compared participants' experiences in the first 12 months in the MHC program with their experiences in the 12 months preceding MHC program entry. The author reports that the participants demonstrated significant reductions in substance abuse and psychiatric hospitalizations and improvements in psychosocial functioning; however, differences in arrest rates and days homeless were not statistically significant. As the author notes, the very small numbers in the study population and the lack of a comparison group make these findings only "suggestive" of the program's impact.

A study in North Carolina explicitly focused on recidivism, rearrest and "recidivism severity" (a summation scale based on structured sentencing guidelines) among MHC program participants and similar defendants in traditional criminal court over a 12-month period (Moore and Hiday, 2006). The comparison group consisted of offenders who were selected from public criminal records of arrest for the county in the year *before* the MHC was established and who were deemed to have been eligible for MHC had it existed. The study also separately analyzed "completer" and "non-completer" subgroups of MHC participants. The authors found that, using both measures of recidivism, there were significant differences between the defendants of the two courts, a finding that supports the effectiveness of MHCs programs in reducing the number of new arrests and the severity of new crimes. MHC "completers" had better outcomes than did non-completers. However, this study also had its limitations, as noted by the authors. The MHC participants and the comparison group were significantly different in terms of age, race, and prior offense severity; the adequacy of the sample selection for the comparison group depended on the accuracy of a single rater (the chief district court judge); and the study relied on criminal justice data only (i.e., offense type, offense date, judgments, sentences). No information on treatment or services was reported.

Finally, in what we believe may be the only random assignment study of a MHC program, investigators in Santa Barbara, California, compared a MHC program combined with an intensive form of mental health treatment (assertive community treatment) to routine adjudication and "treatment as usual" (which, in this case, was a less intensive form of case management). The authors reported that individuals in both groups improved in life satisfaction, reductions in

distress, and independent living, but that MHC participants also showed reductions in substance abuse and criminal activity (Cosden et al., 2005). In a subgroup analysis (having excluded some outliers—offenders who had a disproportionate number of arrests and jail days), the authors reported that a majority in both groups decreased jail days and improved functioning, but that the MHC participants demonstrated greater gains (Cosden et al., 2005).

Although this was a random assignment study, which is widely regarded as the “gold standard” for research, the study did have limitations. There were differences across the two study groups (experimental and control) on some of the intake measures, suggesting that, because of the small numbers of participants in the study, the randomization failed to produce entirely equivalent groups. In addition, a number of the outcome measures relied on self-report. A quarter of the study population could not be located for the 12-month follow-up. It is difficult to assess the effect of the MHC program per se because the positive outcomes may have been the result of the more highly intensive treatment that the MHC participants received from assertive community treatment teams. To fully parse out the effect of the MHC program, it would have been necessary to have an additional comparison group who participated in the MHC program but received “usual care” treatment.

Taken together, these studies provide *preliminary* support for the impact that MHCs may have on the outcomes of mentally ill offenders, but because of limitations in the research designs, they do not provide a solid evidence base for MHCs. On the other hand, as Moore and Hiday (2006) note in their review, nothing in these studies would suggest that MHC participants pose a higher risk to public safety when they are diverted from traditional courts. To our knowledge, however, no published study to date has systematically examined MHC costs or, more specifically, the fiscal impact of these special dockets on the criminal justice, mental health, and social welfare systems.





## CHAPTER THREE

### The Allegheny County Mental Health Court

The Allegheny County MHC is a special docket of the Court of Common Pleas. The MHC program is a collaboration among the Allegheny County Department of Human Services, Office of Behavioral Health<sup>2</sup> and the Allegheny County Court of Common Pleas, the Office of the Public Defender, the Office of the District Attorney, and the Office of Probation and Parole. The goals of the MHC program are

- to maintain effective communication between the criminal justice and mental health systems;
- to divert individuals with nonviolent criminal charges who have a documented diagnosis of mental illness to community-based services;
- to maintain treatment, housing, benefits, supervision, and community support services for the individual; and
- to support public safety.<sup>3</sup>

The MHC program accepts adult residents of Allegheny County who have a documented diagnosis of mental illness (or co-occurring mental and substance abuse disorder) and are currently charged with a misdemeanor or felony,<sup>4</sup> who are awaiting trial and/or sentencing, and who are willing to participate in the program voluntarily. MHC has processed more than 350

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<sup>2</sup> The Department of Human Services, Office of Behavioral Health operates forensic behavioral health programs that divert mentally ill individuals from the criminal justice system, of which the MHC is one.

<sup>3</sup> These goals are outlined in a brochure for attorneys and court personnel that describes the MHC program (Allegheny County Mental Health Court, undated).

<sup>4</sup> Although the eligibility criteria have changed some over time, the MHC program will *not* accept individuals who have committed very serious crimes such as homicide, sexual offenses, assault with a weapon (if there is injury and/or a history of violence), burglary of a residence, theft by extortion with threats of violence, drug trafficking, assault while a prisoner, or probation violations. Fugitives, those charged with criminal contempt and those on federal retainer are also not eligible. Persons charged with DUI are referred to the DUI court or to an accelerated rehabilitation disposition program. The assistant district attorney assigned to the MHC decides based on “the totality of the circumstances” whether to accept or reject applicants who are charged with aggravated assault, arson, burglary, robbery, or firearms violations. For example, where there is a documented mental illness and the theft of the firearm was for the purpose of committing suicide and not to harm another, those circumstances would be taken into account in the decision. Generally, having serious charges, with a high “prior record score” (prior arrests or convictions), or objections from the victim will negatively influence the decision.

participants since its inception in June 2001. The MHC process is initiated by referral, which may come from the jail, the Office of the District Attorney, the Office of the Public Defender, or from a treatment provider or family member. Once a referral is made, the case is placed on the “review list” for the assistant district attorney (ADA) who is dedicated full time to the MHC program. The MHC “monitor” who works for the DHS Office of Behavioral Health also assesses the defendant. The ADA reviews the individual’s case file and rap sheets and, when circumstances warrant, may contact the victim of the crime. The MHC monitor, the public defender (PD), and the ADA meet every two weeks to review the cases. When all of the pertinent information is available and has been reviewed, a decision is made as to whether to offer the defendant the opportunity to enter the MHC program. If the decision is in the affirmative, the ADA and the PD (who is also dedicated full time to the MHC program) have a discovery meeting and a plea is offered. If the defendant agrees to the plea, the defendant will plead guilty and enter the MHC program.<sup>5</sup>

The MHC intervention is essentially probation with close supervision and mandated treatment. The participant is assigned a MHC “forensics support specialist” who develops a service plan. A “probation liaison” is assigned. The individual is seen at an initial MHC proceeding<sup>6</sup> and then returns to court for a reinforcement hearing every 30, 60, or 90 days. Before the initial proceeding, the MHC judge, the ADA, the PD, the MHC monitor, the MHC forensics support specialist, and the probation liaison meet and discuss the circumstances surrounding the charges, the diagnosis, the need for treatment, the service plan, and the need for supervision in the community. At the initial MHC proceeding, the MHC judge explains what is expected of the participant. The service plan is then implemented and a MHC forensics support specialist and a probation liaison monitor the MHC participant in the community.<sup>7</sup> If the participant adheres to the service plan and continues to get positive reports at the periodic reinforcement hearings, the probation term is cut short—this represents the incentive to comply with treatment. The MHC program maintains a database that tracks basic diagnostic, treatment, and adjudication variables for MHC participants.

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<sup>5</sup> The MHC program also accepts individuals who have pled guilty in another courtroom and are awaiting sentencing. Additionally, if the defendant rejects the plea offer, he or she may enter a general plea and the MHC judge will decide the sentence. If the defendant wants a bench trial, the case will be tried in front of the MHC judge; however, if the defendant desires a jury trial, the case will be sent back to the original judge for adjudication and returned to the MHC for sentencing.

<sup>6</sup> The initial proceeding is actually the individual’s MHC trial date, at which time he or she may plead guilty, litigate pretrial motions, or have a trial.

<sup>7</sup> MHC participants receive no priority for services within the county; however, they do get support, coordination, and supervision from both a MHC forensics support specialist and a probation liaison. While forensics support specialists do their best to access services for their clients, they report that supported housing can be difficult to find, funding for drug and alcohol programs is insufficient, and there are few high-quality programs for people suffering from co-occurring mental and substance abuse disorders.

## CHAPTER FOUR

### Methods

To understand the fiscal impact of the MHC program, we needed to acquire and link individual-level data on MHC participants from multiple public agencies in order to generate a combined data set that included all relevant and available information on mental health, substance abuse, and criminal justice encounters over a defined period. The analysis also required construction of a comparison condition because we did not have a readily available comparison group.<sup>8</sup> We employed two methods to construct comparison conditions. First, we used a “counterfactual” condition<sup>9</sup>—which is to say that we formed an estimate of *hypothetical costs*, based on assumptions about the criminal penalties that MHC participants would likely have experienced had there been no MHC program. Second, we used the MHC participants “as their own controls”—which is to say that we did a pre / post comparison focusing on the costs associated with a *previous arrest* compared to the costs associated with the arrest that brought the participant into the MHC program.

The appendix describes these methods in detail.<sup>10</sup> Briefly, for both methods, the first step was to describe the *actual costs* incurred by MHC participants leading up to and following the arrest that triggered their entry into the MHC program. For each MHC participant, we aggregated the costs associated with mental health and substance abuse treatment, arrests, incarceration, probation, and cash assistance payments for one year prior to the triggering arrest. We also aggregated these costs plus the costs of adjudication through and supervision by the MHC program for up to two years following MHC entry.

For the *counterfactual comparison*, the actual costs were then compared to the costs that would have accrued if the individual had been adjudicated through traditional court processes. Due to uncertainty about what might have happened to MHC participants under these hypothetical sentences, we also conducted two sensitivity analyses with different assumptions about the MHC program’s effect on recidivism and on the utilization of mental health services.

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<sup>8</sup> We worked with Office of Behavioral Health staff to identify an appropriate comparison group but, after several discussions, concluded that there were no practical options. Because we were going to need to access personally identifiable health information for our analyses, we would need to get informed consent from subjects for the comparison condition, and we did not have the resources to locate and obtain consent from individuals who were not in the MHC program.

<sup>9</sup> A counterfactual conditional hypothesizes what would have happened under conditions contrary to the actual conditions, see Maldonado and Greenland (2002).

<sup>10</sup> The appendix provides detailed descriptions of the subsamples and our study methods, as well as additional tables presenting the findings reported in Chapter Five.

For the *pre/post comparisons*, the actual costs were then compared to the costs associated with a prior arrest that was adjudicated through traditional court processes.<sup>11</sup> To identify an arrest that closely resembled the MHC-related arrest, we examined each MHC participant's jail records for the most recent arrest that occurred at least one year (for the first pre/post analysis; two years for the second pre/post analysis) prior to the arrest associated with MHC entry. We also required that this earlier arrest be in the year 1999 or later because behavioral health treatment utilization records were not available for earlier periods.

Due to a concern that these individuals might be deteriorating over time, that is consuming more mental health treatment services and becoming more likely to offend because of the progressive nature of their conditions, the pre/post analysis focuses on a comparison of the *growth in costs* from before the arrest to after the arrest. Each of these methods will be described in a little more detail below, after we first describe the study population and the data sources.

### *Study Sample*

The study sample included all 365 individuals who participated in the MHC program between its inception in June 2001 and the end of September 2004.<sup>12</sup> As we explain in more detail below, cost analyses were carried out on subsamples for which the comparison conditions could be constructed.

### *Data on Utilization and Costs*

For each MHC participant, data were extracted from the information systems that record utilization of services from and interactions with the MHC program, the county behavioral health service system, the county and state criminal justice systems, and the public welfare system. The data variables and sources are shown in Table 4.1.

To construct a complete data set, we first obtained comprehensive information on participants' interactions with the MHC program. We allocated the MHC costs by taking the MHC program's annual operating budget for fiscal year 2004–2005 and then divided by the number of persons under supervision,

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<sup>11</sup> Note that this is a more complex method for comparing costs pre/post than simply using average costs for the periods preceding and following entry into the MHC program. Although this simpler method is often used in program evaluations, it can nevertheless be misleading. In particular, the exacerbation of behavioral problems that leads to a criminal justice encounter is likely to be at its height immediately prior to that encounter and might well diminish after entry into the justice system simply because of regression to the mean, rather than because of any program effect. The more complicated pre/post comparison that we employ here serves to control for this possibility.

<sup>12</sup> Thirteen individuals had to be eliminated from the sample because of missing information on date of birth or date of MHC entry.

pro-rated over the year to get a cost per person per day. We then multiplied this daily cost by 365 days to obtain an annual cost (\$649 per person).

**Table 4.1.**  
**Data Sources and Variables**

Category	Variables	Data Source
Demographics	Age Gender Race or ethnicity	Allegheny County Department of Human Services (DHS)
MHC records	Date of referral and acceptance to MHC Diagnosis, Global Assessment Functioning (GAF) score, <sup>a</sup> and substance use Cost of MHC administration	Allegheny County DHS
Behavioral health claims	Date, type, and units of service Cost of service	Allegheny County DHS
Cash assistance benefits	Date and amount of each benefit check	Pennsylvania Department of Public Welfare
Arrest history	Date of arrest	Pennsylvania Commission on Crime and Delinquency (PCCD)
Criminal prosecution records	Criminal charges associated with MHC entry Prior record score and offense gravity score associated with each criminal charge	Office of the District Attorney of Allegheny County
Incarceration – jail	Booking charge Date of commitment and release for each jail term Type of housing (regular or mental health “pod”) Average cost per day	Allegheny County Jail
Incarceration – prison	Date of commitment and release Average cost per day	Pennsylvania Department of Corrections
Probation	Term and timing	Allegheny County DHS; PCCD

<sup>a</sup> The GAF scale is a rating of severity of psychological disturbance (American Psychiatric Association, 1994).

The MHC program’s annual operating budget includes salaries for management and administrative personnel as well as for personnel who had regular contact with MHC participants during assessment, monitoring, and enforcement (i.e., forensics support specialists). The budget also includes costs for supplies, office space, and equipment. For all personnel and material not exclusively dedicated to the MHC program, the costs were prorated based on random-prompt time-motion studies conducted by DHS. The MHC program compensated the Office of the District Attorney and the Office of the Public Defender for one dedicated staff person each; we used the line item amount for this compensation in our calculations. On the other hand, the MHC program did

not compensate the cost of the judge and other court personnel and we did not include these costs in our analysis.<sup>13</sup>

The primary source of data on behavioral health (i.e., mental health and substance abuse) treatment was the county's *eCaps* database, which DHS, Office of Behavioral Health maintains. We obtained detailed claims records of mental health and substance abuse services. For the vast majority of these services, the county provided the amount paid for each claim. However, the county funds some services on a program basis rather than as individual claims. For those services, we obtained units of service and rates based on average costs. The county calculated average costs from total annual budgets or by estimating unit costs from planning documents. While these estimates clearly are not as precise as claims data, program-funded services accounted for only 6.2 percent of all mental health service costs. By contrast, 93.8 percent of the service utilization data came from claims that had costs associated with them. The average cost of mental health services during the two years preceding entry into the MHC program was \$249 per day.<sup>14</sup>

Criminal justice data are found in many databases at both the county and state levels. From the county jail, we obtained a detailed record of the dates of incarceration and release for each MHC participant, as well as an indication of whether the participant was housed on a regular unit or a mental health "pod." Cost information that the jail provided to us indicates an average daily cost of \$64.66 for an inmate housed among the regular population and \$98.35 for an inmate housed in a mental health "pod."<sup>15</sup> From the Pennsylvania Department of Corrections, we obtained detailed records of MHC participants' dates of incarceration in prisons. The Department's Director of the Bureau of Administration indicated that the average daily cost of incarceration in a prison in the Commonwealth is \$85.01. From PCCD, we obtained complete arrest histories for each MHC participant. These records contain the incident and arrest

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<sup>13</sup> We would have preferred to have information on the added time (and the associated costs) that participation in the MHC program required of the ADA, the PD, the MHC judge, and all other adjudicatory personnel. However, this information was not available. Therefore, including costs for some personnel and not others is our way of approximating the costs for the additional time.

<sup>14</sup> In this chapter, we report daily costs whenever possible. Later in the report, we describe the fiscal impact in terms of average annual costs or savings. Annual cost figures reflect both the daily costs and the number of days of service used.

<sup>15</sup> The use of average jail and prison costs as the measure of the fiscal impact of the MHC through changes in incarceration is controversial. Jails and prisons have large fixed costs; the addition or reduction of a few inmate days make little difference in the operating costs. Therefore, some analysts prefer using much smaller "marginal cost" estimates that include only the cost of food and other immediate services that can be adjusted based on daily inmate counts. However, over the long run, jail and prison capacity can be adjusted to account for changes in demand. Furthermore, if institutions are at capacity, reduction in use by MHC participants will make available space for other offenders. Incarcerating these other offenders is of value to the county and average cost is a generally accepted way to place a dollar value on this.

dates, as well as a list of charges for each arrest. For each arrest, we assigned a cost of \$2,150. This is based on a study by Cohen, Miller, and Rossman that estimates police- and court-related costs for a variety of violent crimes.<sup>16</sup> We used their estimate for the least severe category (assault, robbery) and adjusted for inflation.<sup>17</sup>

Our information regarding probation comes from two sources. The MHC program information system records the days of probation imposed as a part of the plea bargain at the time of entry into the MHC program. The PCCD arrest records also provide information on arrest disposition that, in many cases, includes date of entry into probation and maximum possible date to which probation might extend. To calculate a cost per person for probation, we divided the total 2005 expenditures for Allegheny County Probation and Parole by the total number of persons on the probation and parole caseload. We assumed the average time under supervision to be 183 days (six months),<sup>18</sup> so we divided our per-person figure by 183 to obtain an estimate of \$3 per day per person. This amount is similar to the average amount reported for probation supervision in six states and the District of Columbia in 2001 (Criminal Justice Institute, 2002, pp. 206–207).

From the Pennsylvania Department of Public Welfare, we obtained detailed records of cash assistance received by each MHC participant. These records included the amounts of General Assistance and Temporary Assistance to Needy Families checks provided to the MHC participants. These are the two cash assistance programs managed by the Commonwealth.

Table 4.2 illustrates the cost information we have obtained. It contains the average annual cost-by-cost category in the two years prior to MHC entry. As Table 4.2 illustrates, jail and mental health services are the cost drivers. Jail services are funded mostly with county resources and treatment services are funded mostly with Commonwealth and federal dollars. Table 4.2 includes both average costs and standard deviations in order to illustrate that “outliers” (i.e., individuals who have disproportionately high costs) sometimes affect averages.

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<sup>16</sup> Cohen, Miller, and Rossman (1994) produced cost estimates of \$1,125 for robbery and \$1,225 for aggravated assault. We obtained the \$2,150 figure by rounding these two estimates to \$1,200 and then adjusted for inflation from 1987 dollars to 2006 dollars. The estimate does not include victim costs as these would not be borne by the government and therefore are not a part of our fiscal impact calculation.

<sup>17</sup> We chose the least severe category because it was the best fit with MHC participants’ charges.

<sup>18</sup> We did not have information on average length of supervision under probation and parole. Days of supervision per year can be no more than 365 and no less than 1, so we took the midpoint as an estimate.

**Table 4.2.**  
**Costs for MHC Participants in the Two Years Prior to MHC Entry**

Program	Average Annual Cost (\$)	Standard Deviation (\$)
Jail	12,811	11,800
Mental health treatment	11,235	23,478
Arrests	2,257	2,263
Cash assistance	363	849
Prison	7	136

The individual records from these six administrative databases were linked together using a variety of individual identifiers, including name, social security number, date of birth, and criminal justice agency identification numbers. The criminal justice agencies provided information on alternate names and social security numbers used by some individuals. Although there is no way to determine whether some subjects used additional aliases, leading to an undercount of service utilization, we believe that we have constructed very complete mental health care, criminal justice, and cash assistance histories for the subjects. Records were located for 95 percent or more of the MHC participants in *eCaps* (treatment services), PCCD (arrest history), and Allegheny County Jail files. Match rates using the same identifiers were lower for the other data sources (e.g., Pennsylvania Department of Corrections, Pennsylvania Department of Public Welfare) at least in part reflecting lower rates of incarceration in prison and lower utilization of cash assistance programs.

#### *Data to Generate Counterfactual Sentences*

For a sample of 135 participants<sup>19</sup> in the MHC program, the Office of the District Attorney provided data from its own records regarding the criminal charges that were pending against the defendants at the point at which they entered the MHC program (i.e., prior to plea bargaining or any sentencing recommendations associated with admission into the program). The ADA also provided standard criminal sentencing recommendations, based on Pennsylvania sentencing guidelines.<sup>20</sup> Under Pennsylvania law, each criminal charge carries with it a standard sentencing range, which is based primarily on the severity of the crime (offense gravity score) and on an offender's prior criminal record (prior record score). The sentencing guidelines provide significant latitude to judges in determining the actual length of criminal sentences, within broad ranges defined by the law. Notably with regard to less

<sup>19</sup> These 135 were all current MHC participants. Due to resource limitations and concerns about the completeness of older records, we were not able to obtain information for the entire study population. Data from the Office of the District Attorney were available on all 135 current MHC participants but only 88 had a long enough postarrest experience to support the counterfactual analysis of costs.

<sup>20</sup> The Pennsylvania sentencing guidelines, the regulatory provisions, and sentencing tables are available online from the Pennsylvania Commission on Sentencing (undated).



serious (misdemeanor) offenses, judges have considerable flexibility in deciding how to apportion criminal sentence time between incarceration and probation. Judges also have flexibility in deciding whether sentences for multiple (simultaneous) criminal convictions will be served concurrently or consecutively.

Based on our conversations with the Office of the District Attorney, we formulated an algorithm to convert the standard sentencing recommendations for each offender into a hypothetical sentence,<sup>21</sup> as follows:

- Except as noted below, assume that criminal sentences for all index offenses will be served concurrently. Use the most serious offense to determine the criminal sentence.
- Use the midpoint of the sentencing range to determine the length of sentence.
- For misdemeanor offenses, assume that the entire sentence is spent on probation (except where the defendant is a repeat felon).
- For felony offenses (or misdemeanors where the offender is a repeat felon), assume that half of the sentence is spent in incarceration and half on probation.
- To determine sentence length where multiple index felonies have been committed, first use the midpoint of the sentencing range for the most serious offense, then add the midpoint of the sentencing range for each subsequent offense, up to the statutory maximum sentence for the primary felony count.

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<sup>21</sup> All of the rules that we built into this algorithm came out of specific discussions we had with the ADA about typical sentencing practices. We learned, for example, that incarceration is considerably more likely in sentencing for felony offenses than for misdemeanor offenses and, therefore, that it was appropriate to treat these cases differently in generating hypothetical standard sentences. We also took from our discussions with the ADA that it was reasonable to assume that the vast majority of MHC participants would have been found guilty had they gone to trial through traditional court processes and, moreover, that most of them would have been sentenced based on the charges in the records maintained by the Office of the District Attorney. As we discuss in Chapter Six, the assumptions we built into our sentencing algorithm, while reasonable, may be imperfect and may not accurately reflect how specific offenders would have been sentenced.

### *Calculating the Fiscal Impact*

For each MHC participant, we constructed a quarterly record of individual utilization and costs from the combined data set. The date of entry into the MHC program (i.e., the date by which both the MHC and the participant had agreed to assignment to MHC) was used as the index date for each participant. In addition to calculating the actual costs incurred in each quarter for each MHC participant, we calculated the costs that *would have been* incurred had the MHC program not existed—that is, we calculated the costs based on the expected amount of time that the MHC participant would have spent in jail and/or on probation, based on the algorithms that we developed from the sentencing information provided by the ADA. Although our analysis is based on aggregation of costs to quarterly periods, we present our findings in terms of annual costs.

For the counterfactual comparison condition, the hypothetical jail time was assumed to begin immediately following the date that the plea was entered as recorded in the MHC records. The number of *hypothetical* days in jail was compared to the number of *actual* days in jail for that quarter, and, if the number of hypothetical days exceeded the actual number of days in jail, the cost of the additional jail days was added to the quarterly counterfactual record. Because individuals in jail would not have received county-funded mental health treatment or cash assistance while in jail, nor could they be arrested during their time in jail, those costs were reduced in proportion to the amount of time that an offender hypothetically would have spent in the community during that quarter. The number of *hypothetical* days of probation was added to the costs if it exceeded the number of *actual* days of probation; however, the cost of mental health services and cash assistance was not reduced in proportion to the amount of time spent in the community during that quarter (because individuals on probation could receive both cash assistance and county-funded mental health treatment).

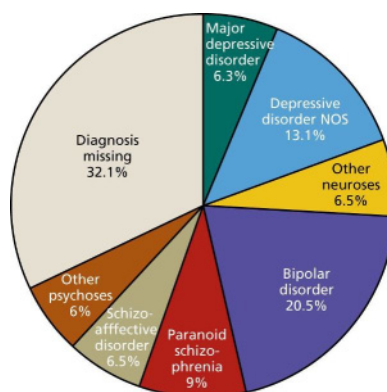
## CHAPTER FIVE

### Findings

#### *The MHC Participants*

The MHC participants were predominantly male (62 percent). They ranged in age from 18 to 72 years old; half of the participants were between the ages of 29 and 44. The total study population was split between white, non-Hispanic (55 percent) and African American (41 percent) individuals. As shown in Figure 5.1, diagnoses were missing for almost one-third of the sample, but for the remainder, severe mental illnesses dominated, with high percentages of bipolar disorder (21 percent), schizophrenia, schizoaffective and other psychotic disorders (22 percent), and major depression (6 percent).

**Figure 5.1.**  
**Psychiatric Diagnosis at MHC Entry**



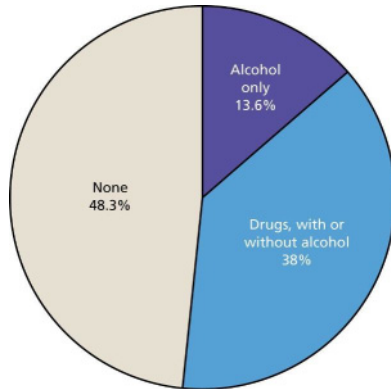
Only half of the population had evidence of alcohol or drug abuse as determined by the MHC monitor's assessment at entry to the MHC program (Figure 5.2). Drug problems or combined drug and alcohol problems predominated (38 percent).

Although Global Assessment of Functioning scores<sup>22</sup> were missing for a quarter of the MHC participants, the majority of MHC participants had a GAF score of less than 50, indicating a group of individuals with serious psychiatric impairment (Figure 5.3). Only 20 percent of MHC participants had GAF scores indicating mild or moderate symptoms and functioning.

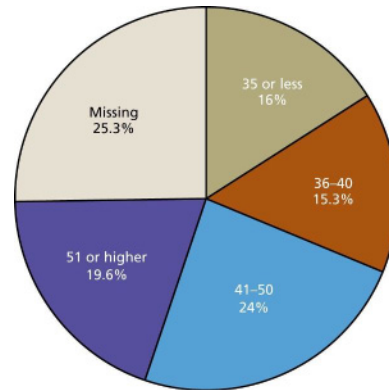
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<sup>22</sup> The Global Assessment of Functioning Scale is a rating of severity of psychological disturbance on a scale of 0-100, with lower scores indicating poorer functioning (American Psychiatric Association, 1994).

**Figure 5.2.  
Substance Use Disorder at MHC  
Entry**



**Figure 5.3.  
GAF Score at MHC Entry**



As expected, MHC participants had come into contact with the criminal justice system in the years prior to their entry into the MHC program. On average, MHC participants were arrested twice in the two years prior to MHC entry (including, in most cases, the arrest that triggered entry into the MHC program) and had spent almost half of the two years (an average of 345 days) in jail. The amount of time these individuals spent in prisons, however, was negligible. At the time of MHC entry, the majority of MHC participants had entered a plea or been found guilty of a misdemeanor; however, 23 percent of the participants had entered a plea or been found guilty of a felony. If we include previous criminal justice encounters, 52 percent of the MHC participants had been charged with a felony at some point in their lives (as indicated by jail booking records that date back to 1991).

#### *Costs Associated with Service Use by MHC Participants*

As described in Chapter Four, to determine the fiscal impact of the MHC, we created three different comparisons based on the cost data that we obtained. Even in the absence of a MHC program, these individuals would have had their cases adjudicated using public resources. Our task was to determine how the costs related to diversion to MHC compared with routine adjudication and processing—which requires some sort of comparison group. For that purpose, we constructed three comparisons:

- a “counterfactual” sample (88 MHC participants) for which we calculated the *actual* costs for one year following MHC entry compared to the *hypothetical* costs based on sentencing guidelines.
- a pre/post sample (199 MHC participants) for which we compared the actual costs in the year following the arrest that triggered MHC entry to the actual costs in the year following a *similar prior arrest*.

- a second pre/post sample (66 MHC participants) for which we compared actual costs for *two years* for both the triggering arrest and a similar prior arrest.

The demographic, clinical, and criminal characteristics of these subsamples were very similar to that of the entire MHC participant population.<sup>23</sup> The counterfactual sample consists of recent entrants to the program, whereas the second pre/post sample consists of early MHC entrants.<sup>24</sup>

### *Findings in Brief*

As shown in Table 5.1, the findings from the first analysis (the comparison of actual costs with counterfactual costs based on the hypothetical sentence) suggest that the MHC program has led to an *increase* in the use of mental health treatment services<sup>25</sup> in the first year after entry, as well as a *decrease* in jail time for the participants. However, the decrease in jail expenditures almost offsets the increase in the outlays for treatment services.

**Table 5.1.**  
**Fiscal Impact in Brief: Net Annual Cost of MHC Per Participant**

Cost	Actual Versus Counterfactual (\$)	Pre/Post Comparison (1 Year) (\$)	Pre/Post Comparison (2 Years) (\$)
Total costs <sup>a</sup>	2,656	-1,804	-9,584
Mental health costs	6,844	1,920	-6,876
Jail costs	-5,532	-5,656	-5,948

<sup>a</sup> Mental health costs and jail costs do not add up to total cost because total cost also includes the costs of arrests, prison, probation, cash assistance, and MHC administration.

And although it is beyond the scope of this study to assess fiscal impact by level of government, we would note that mental health costs are primarily supported by Medicaid, a public insurance program that the Commonwealth and the federal government jointly fund. Since the federal government shares the costs of Medicaid, the Commonwealth bears only approximately half of the burden of additional mental health costs reported in the “Actual Versus Counterfactual” column of Table 5.1 (\$3,422). Therefore, when cost-sharing with the federal government is taken into account, the estimated extra costs of the

<sup>23</sup> The appendix provides tables (A.1 through A.7) that describe the demographic, diagnostic, and criminal justice characteristics of the various subsamples used in the analyses.

<sup>24</sup> This difference in the timing of the subsamples follows from data availability. The counterfactual sample required a review of records from the Office of the District Attorney, which were only available for recent MHC entrants. The second pre/post sample required two years of observation following MHC entry, thereby eliminating recent entrants.

<sup>25</sup> Treatment costs reported in tables and figures in this chapter, and in the appendix, include both mental health and substance abuse.

MHC program for the Commonwealth are eliminated (i.e., the total costs drop from \$2,656 to -\$766).

The second analysis (comparing costs for the MHC with costs associated with a prior arrest) shows a small net *decrease* in costs in the first year, mostly attributable to the decrease in jail costs. However, the third analysis (two years of MHC participation) shows that, over a two-year time horizon, *both* average mental health services and jail costs are reduced, suggesting that the MHC program may help to decrease total taxpayer costs. Although the total cost savings for the two years was not statistically significant, the leveling off of mental health treatment costs and the dramatic drop in jail costs yielded a large and statistically significant cost savings at the end of our period of observation.

We also found that more seriously distressed subgroups (participants charged with felonies, participants suffering from psychotic disorders, and those with high psychiatric severity and low functioning) had larger estimated cost savings, although, again, none of the savings was statistically significant in the first year of MHC participation. We will describe each of the analyses in more detail below, starting first with the counterfactual comparison.

### *The Counterfactual Comparison*

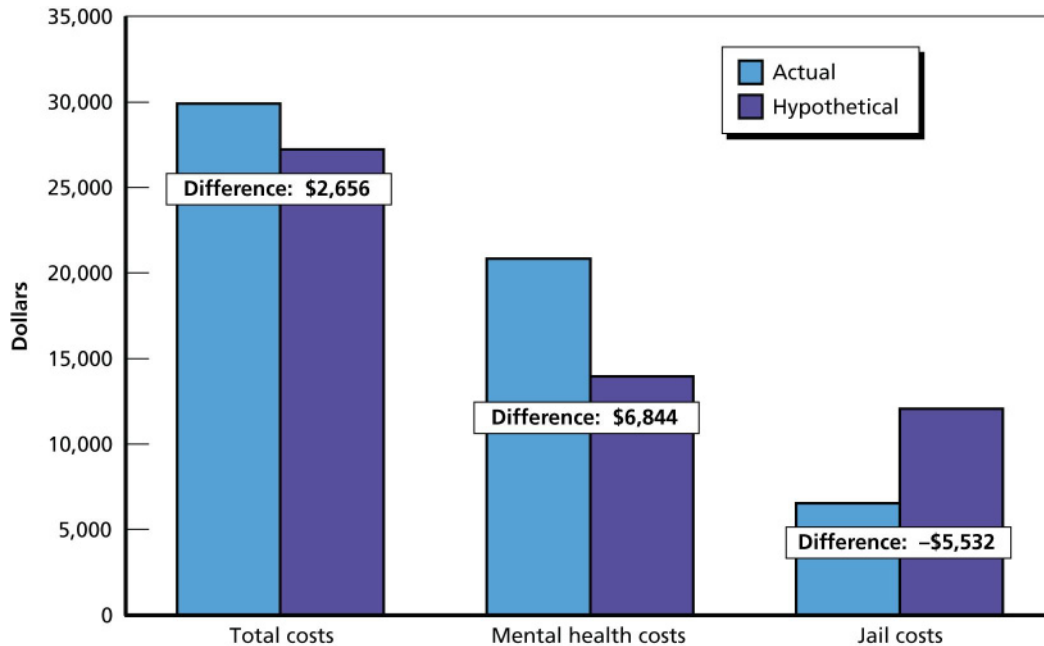
Figure 5.4 presents the estimated fiscal impact of the MHC program using the counterfactual comparison.<sup>26</sup> In Figure 5.4, the blue bars represent the actual costs for MHC participants and the purple bars represent the costs based on the hypothetical sentences for MHC participants “if there were no MHC program.”

The average annual cost that MHC participants actually incurred for the first year following MHC entry was \$29,892. As shown in the middle set of bars in Figure 5.4, mental health treatment costs (\$20,820) account for 70 percent of the actual costs. Using the hypothetical sentences derived from the information that the ADA provided, however, we estimate that, if there were no MHC program, the mental health treatment costs for these participants would have been a third lower (\$13,976). Their jail costs (the set of bars on the far right), however, would have been almost double. Because the lower treatment costs under the hypothetical sentences more than offset the increased jail costs, the total costs had there been no MHC program would have been slightly lower (but by a difference of only \$2,656). Thus, the findings suggest that the MHC program led to a small increase in total costs in the first year. However, as noted in the “Findings in Brief” section, when Medicaid cost-sharing with the federal government is taken into account, the estimated extra costs to the Commonwealth are eliminated.

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<sup>26</sup> These data are also presented in Table A.9 in the appendix.

**Figure 5.4.**  
**Hypothetical to Actual Cost Comparison - Average Annual Costs (One Year Follow-up)**



The counterfactual analysis presumes that, when the subjects are released from their hypothetical jail sentences, they offend and are rearrested and reincarcerated with the *same frequency* that we observe in the actual records of the MHC participants. An alternative assumption, and one that is consistent with findings from research on drug courts (Rempel, 2006), is that MHC participants are offending at *lower* rates than they would had they been adjudicated in the traditional court system. This implies that we may have underestimated the reduction in criminal justice costs attributable to the MHC program by assuming the same frequency of reoffending.

To test how this alternative assumption might affect our counterfactual analysis, we examined the implications for our cost estimates if the subjects under our hypothetical sentences offended at *higher* rates (10 percent higher) than the actual rates we observed in the experience of the MHC participants. Figure 5.5 presents this analysis.<sup>27</sup> Somewhat surprisingly, a 10-percent increase in offense rates results in an increase in relative costs from \$2,656 to \$2,824. This increase in relative costs occurs because individuals who are not incarcerated incur additional treatment and cash assistance costs that more than offset the decrease in criminal justice costs. Therefore, in the short run, the more effective MHC is at reducing incarceration, the more expensive it is to taxpayers.

<sup>27</sup> These data are also presented in Table A.10 in the appendix.

**Figure 5.5.**  
**Sensitivity Analysis - Recidivism (One Year Follow-Up)**

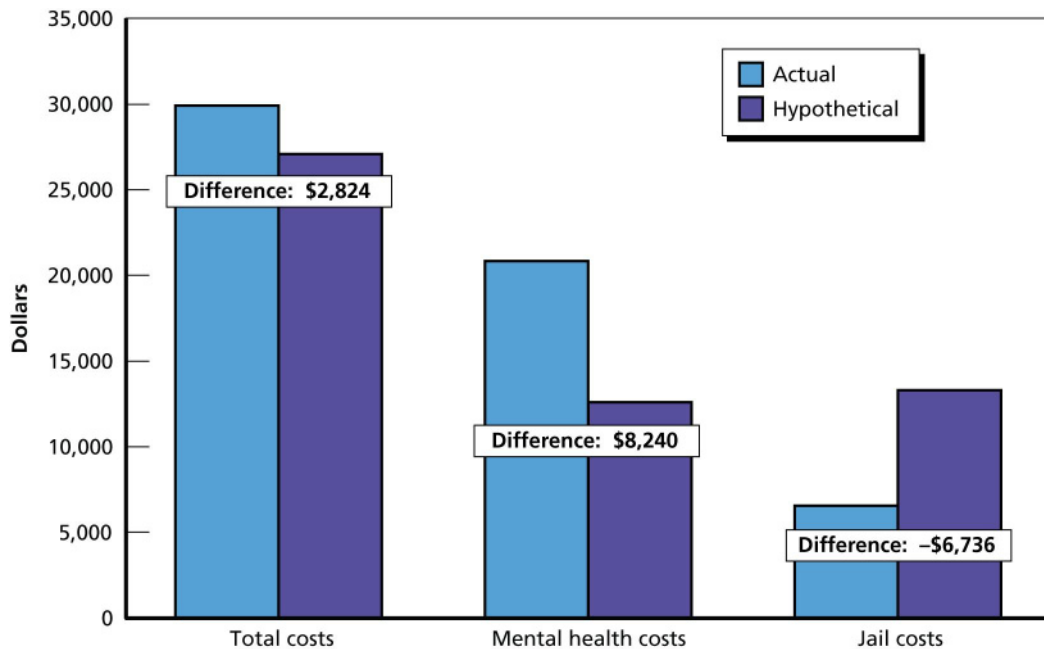


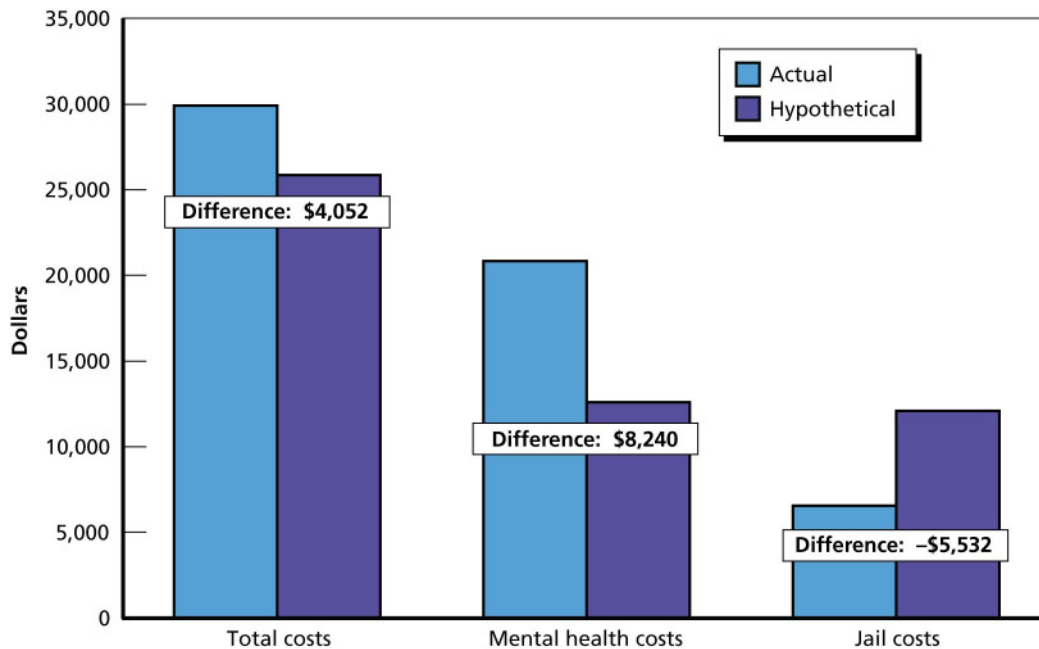
Figure 5.6 presents the findings of a sensitivity analysis along a different dimension.<sup>28</sup> In the analysis presented in Figure 5.4, we assumed that while individuals were in the community (i.e., not incarcerated) they would have consumed mental health services at the same rate as observed while under supervision of the MHC program. Alternatively, we could assume that individuals would use fewer mental health services if not being supervised by MHC program personnel. The analysis presented in Figure 5.6 is based on the assumption that individuals use 10 percent fewer mental health services in the absence of the MHC program. This reduces the cost under the hypothetical, thereby resulting in an increase in relative costs associated with the MHC program to \$4,052.

As suggested by these two sensitivity analyses, the weakness of the counterfactual comparison is that our hypothetical sentences only provide explicit information on the difference in criminal justice (i.e., incarceration and probation) costs. Any further differences in costs due to effects on recidivism or utilization of mental health services are based on assumptions. The following analyses (the pre/post analyses) eliminate the need for such assumptions. If the MHC program is reducing recidivism or increasing mental health service utilization, this will be apparent when we compare actual costs of the experience under the MHC program with actual costs associated with an earlier arrest (one that was not adjudicated through the MHC).

<sup>28</sup> These data are also presented in Table A.11 in the appendix.



**Figure 5.6.**  
**Sensitivity Analysis - Mental Health Service Use (One Year Follow-Up)**



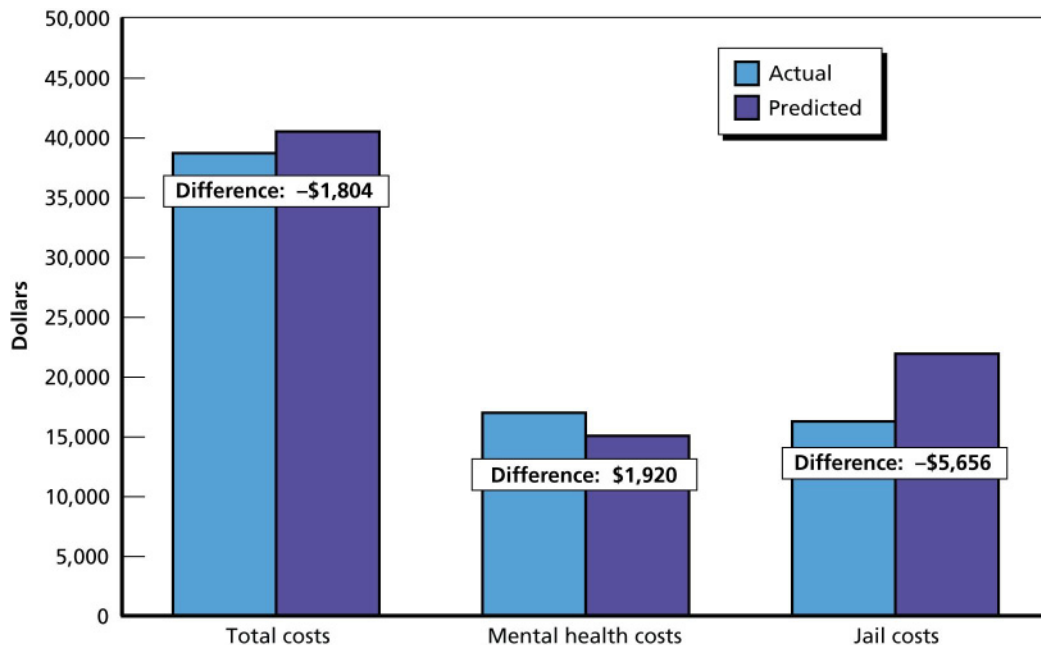
*The First Pre/Post Comparison (One Year of MHC Participation)*

The results of the first pre/post comparison also suggest that the MHC program did not have a substantial impact on costs during the first year of MHC participation. However, presenting findings from pre/post comparisons is more complicated because we are comparing two points in time and the data suggest a “secular trend” of increasing costs over time—meaning that criminal justice and mental health treatment costs are going up over time with or without intervention programs such as the MHC. In addition, as mentioned previously, pre/post comparisons are complicated by the fact that the individuals involved may be deteriorating clinically over time and therefore using more (and more intensive) treatment services or incurring more incarceration days or longer probation terms because of severity of sentences based on accumulated offenses. In order to tease out the effect of the MHC program on costs, therefore, we need to look at the difference between actual costs and the predicted costs using growth rates. By growth rates, we mean the extent to which costs jump following an arrest. Costs associated with an offender’s use of services will always jump upward following an arrest, because the arrest itself reflects an encounter with the criminal justice system and is typically followed by criminal proceedings, jail time, probation, and often intensified psychiatric symptoms, and corresponding mental health care. If all of these costs increase by a larger proportion following the MHC-triggering arrest than they did following an earlier arrest, we would take this as evidence of a negative fiscal impact of MHC. On the other hand, if

costs decrease (or increase less) following the MHC-triggering arrest than they did following the earlier arrest, this would provide evidence of a positive fiscal impact of the MHC.

Figure 5.7<sup>29</sup> shows the fiscal impact of the MHC program by comparing the average annual cost following the MHC-triggering arrest to the cost that is predicted using an earlier arrest for the same person. As described in more detail in the appendix,<sup>30</sup> the predicted cost is based on the assumption that, in the absence of the MHC program, the ratio of annual costs in the year before the arrest to annual costs in the year following the arrest (i.e., the *growth rate* of costs) would have been similar for the MHC-triggering arrest and the previous arrest. By applying this growth rate to the costs in the year before the MHC-triggering arrest, we obtain a predicted cost.

**Figure 5.7.**  
**Pre/Post Cost Comparison - Average Annual Costs (One Year Follow-Up)**



NOTE: Comparison of average annual costs. Actual costs are those accrued in the four quarters following the MHC triggering event. Predicted costs are based on applying the growth rate in costs from an earlier arrest to the MHC arrest.

As Figure 5.7 illustrates, the actual annual costs are \$1,804 below the predicted costs. As in the counterfactual analysis presented earlier, mental health costs are higher than predicted, but jail costs are lower. In this case, the lower jail

<sup>29</sup> These data are also presented in Table A.12 in the appendix.

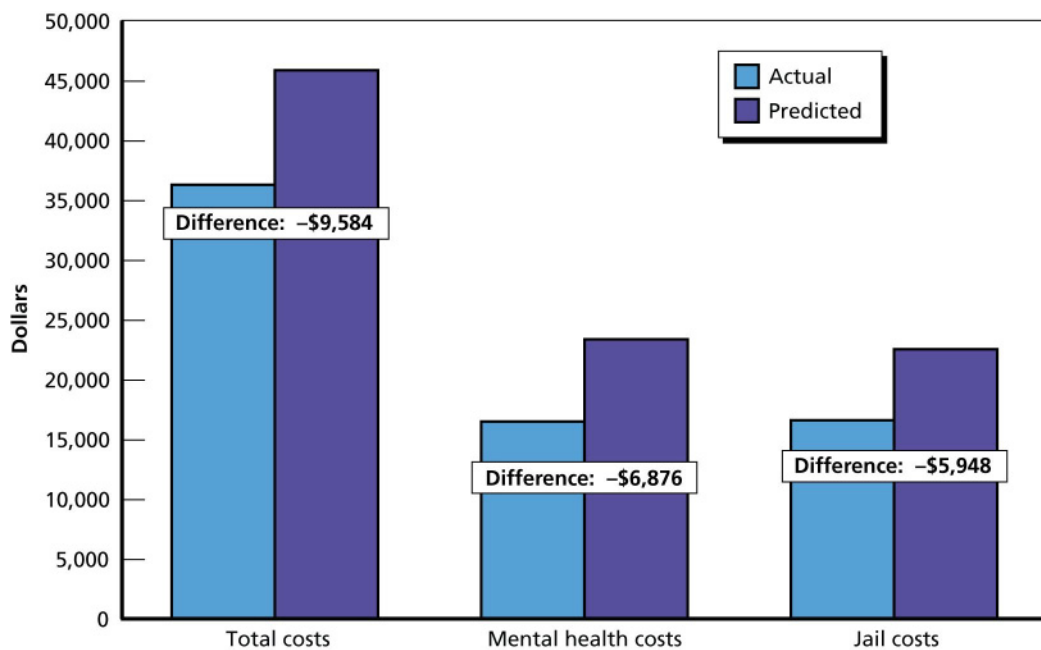
<sup>30</sup> The discussion of the pre/post analyses in the appendix includes detail on how the predicted cost is calculated.

costs more than offset the higher mental health costs, leading to an estimated cost savings. One reason that these results might differ from the results of the counterfactual analysis is that they compare the *actual pattern* of service utilization following the MHC-triggering arrest to the pattern following an earlier arrest. It appears that mental health treatment costs for MHC participants grew almost as much following the earlier arrest as they did following the MHC-triggering arrest, and jail costs grew considerably more. This suggests that our assumption in the counterfactual about mental health treatment costs could be incorrect.

#### *The Second Pre/Post Comparison (Two Years of MHC Participation)*

Results of the two-year pre/post analysis suggest that the fiscal impact of the MHC program improves over time. This analysis is similar to the one-year pre/post analysis except that it used a smaller subsample of MHC participants (i.e., those for whom we have two full years of follow-up data for both the MHC-triggering arrest and the prior arrest). The results of this analysis are shown in Figure 5.8.<sup>31</sup>

**Figure 5.8.**  
**Pre/Post Cost Comparison - Average Annual Costs (Two Year Follow-Up)**



NOTE: Comparison of average annual costs. Actual costs are those accrued in the four quarters following the MHC triggering event. Predicted costs are based on applying the growth rate in costs from an earlier arrest to the MHC arrest.

<sup>31</sup> These data are also presented in Table A.13 in the appendix.

In this case, average annual costs are \$9,584 lower than predicted based on the experience of the prior arrest. Both mental health treatment services and jail costs are lower than predicted. This result suggests that a longer time horizon improves the fiscal impact—that is, the MHC program may be *saving* money once offenders reach the second year of MHC participation.

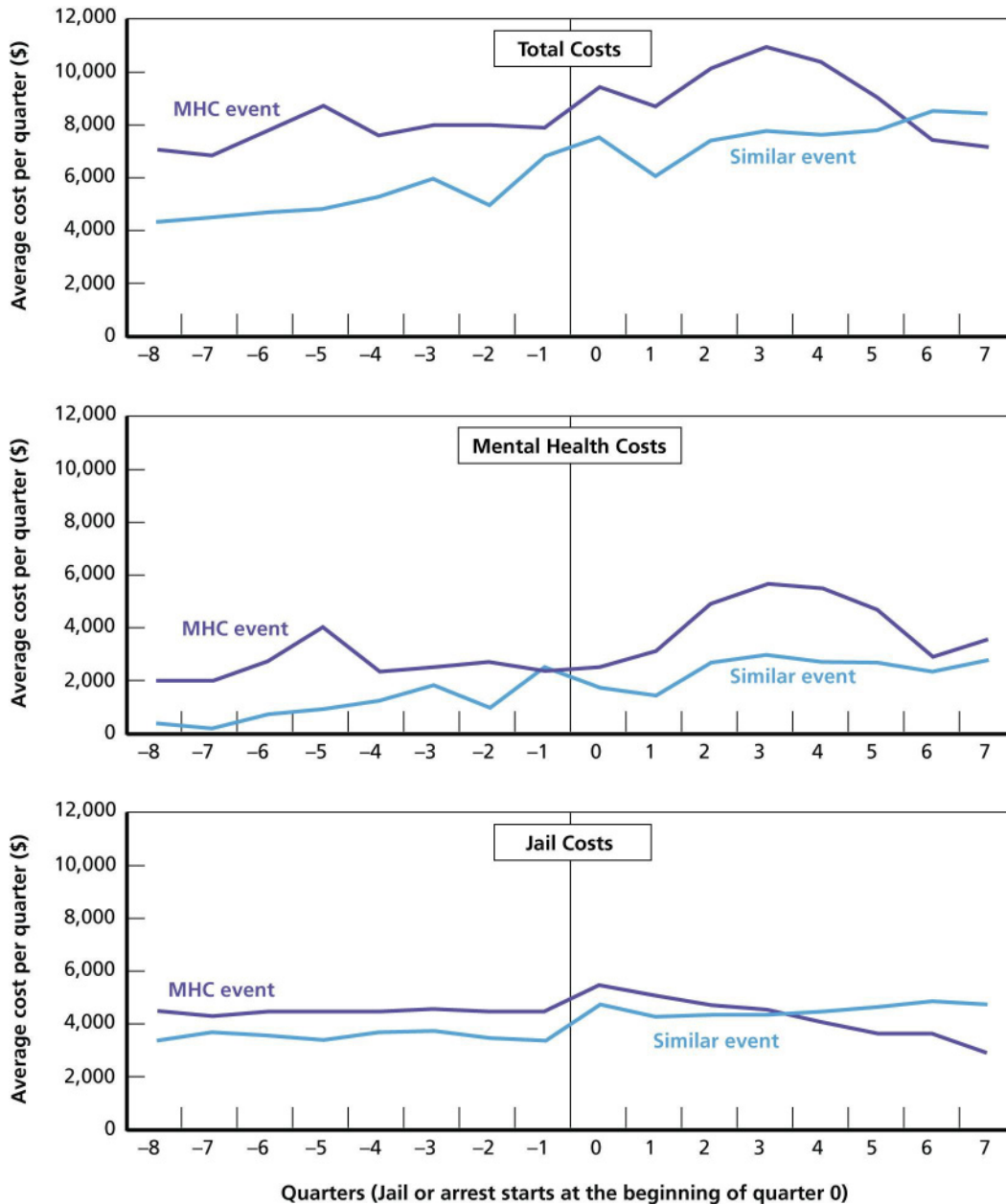
Figure 5.9 provides more detail on the cost estimates by quarter for total costs, mental health costs, and jail costs. The top panel of Figure 5.9 shows that costs are consistently higher leading up to the MHC-triggering arrest than leading up to the prior arrest. Following the MHC-triggering arrest, the cost difference initially increases but then shrinks and reverses by the end of the observation period. The lower cost associated with the MHC program in the last two observed quarters was over \$1,000 per quarter and is statistically significant in both quarters.

The bottom two panels in Figure 5.9 show the patterns in treatment and jail costs that account for this savings. The middle panel shows that mental health costs increase in the first year following MHC entry but then return to a level near the previous cost pattern. The bottom panel shows that jail costs, which had been higher before the MHC-triggering arrest, actually drop below the old cost pattern by the beginning of the second year. This suggests that the MHC program is having a positive effect on criminal activity that is translating into cost savings by the end of the second year of MHC participation.

#### *Differences in Cost Estimates for Subgroups*

We calculated cost estimates for a variety of subgroups using the first pre/post comparison (one year). Unfortunately, there are not enough individuals with two years of post-MHC utilization data to analyze cost patterns for these subgroups in the second year. We found that more seriously distressed subgroups (participants charged with felonies, participants suffering from psychotic disorders, and participants with scores indicating high psychiatric severity and low functioning) had larger estimated cost savings from participation in the MHC program, although none of the savings was statistically significant in the first year of MHC participation. MHC participants with diagnoses of depression or other mild to moderate disorders were estimated to have significantly higher costs in the first year under the MHC program than they would otherwise. There was no pattern of cost differences by race or gender or for MHC participants who have co-occurring substance abuse disorders.

**Figure 5.9.**  
**Pre/Post Cost Comparison: Total, MH, and Jail Costs By Quarter (Two**  
**Year Follow-up)**



NOTES: Total costs include MHC administration, mental health and substance abuse services, jail, arrest (including law enforcement and court system), probation, and cash assistance. The MHC event is the most recent jail entry prior to MHC referral, if such a jail entry is recorded; otherwise, it is the most recent arrest prior to MHC entry, if recorded. The similar event is the most recent event of the same kind (jail or arrest) at least one year earlier than the MHC event. Quarter 0 begins at the event.



## CHAPTER SIX

### Study Limitations

Although we have taken advantage of excellent administrative data sources that permit detailed analysis of cost comparisons, every study has limitations that influence the generalizability and usefulness of the findings. This chapter details the limitations of our study.

#### *Use of Average Rather Than Marginal Cost*

Although some of our cost estimates, such as those for claims-based mental health services, reflect payments that would be avoided if utilization were reduced, many other estimates are based on average costs. These estimates, such as the cost per day of jail or probation or the cost of program-funded mental health services, should be interpreted as the possible savings from large-scale changes in utilization over the long run. In the long run, as new jails and prisons are built (or not built) and program funds are renegotiated, adjustments can be made to the capacity funded by the county (in the case of jails) and the Commonwealth (in the case of prisons). In the short run, however, most of the costs for jails and prisons are fixed and only some costs, such as those for food, can be saved when there are small changes in utilization. As the Department of Corrections noted to us, the estimated *marginal cost* of an inmate day is only \$12. In the short run, program costs are fixed and do not vary at all for changes in utilization by MHC participants. We prefer our average cost method, however, as a more accurate reflection of the value of the resources used for these services. In many cases, when facilities or programs are operating at capacity, marginal reductions in utilization from programmatic innovations such as the MHC provide openings for other individuals who otherwise would not receive services. The average cost method reflects the value of the resources that can be redirected to these individuals.

#### *Incomplete Utilization Records and Unmatched Records*

Any research based on administrative records that were collected for other purposes must contend with the fact that administrative data sets contain errors. Because of imperfect links among data sources and incomplete recordkeeping, not all services will be captured in the combined data set. In particular, probation information, extracted from arrest histories and MHC records, was not complete. It appears that the recordkeeping process that PCCD uses to update arrest records with disposition information was frequently not used. Fortunately, daily costs of probation are very small in comparison to those for other services.

It also appears that we did not completely match all arrest and jail records to MHC participants. For example, over one-fourth of the individuals in the sample did not have an arrest recorded within the year prior to their MHC entry,

although many of these participants did have earlier arrests recorded. This suggests that the identifying information that the MHC recorded is not the same as the identifying information recorded at the time of arrest. Although we expect that we underestimated the total cost of these individuals, we do not think there is any reason to believe that these omissions will systematically bias our fiscal impact estimates because these omissions will affect both the actual experience and the comparison conditions.

We could not obtain records for several types of services. For example, we do not have records on medical and surgical healthcare utilization (i.e., physical health as opposed to behavioral health) nor do we have records on expenditures for prescription drugs.<sup>32</sup> We do not have information on utilization of supported housing or emergency shelter. We do not have information about the exact composition of the family unit covered by the cash assistance payments. To the extent that any of these are affected by MHC participation, our findings could be biased.

#### *Use of Cost Estimates from Other Jurisdictions*

For arrests, cost estimates are based on studies in other jurisdictions, rather than on financial data from the administrative units providing services to this population. Unfortunately, it was well beyond the resources of this study to estimate costs for each and every step of police and court activity associated with each arrest.

#### *Assignment of Costs to Levels and Entities of Government*

We did not distinguish among costs that are ultimately paid by Allegheny County, the Commonwealth of Pennsylvania, and the federal government. While this information would be useful to policymakers, it would be extremely difficult to parcel out these costs in a comprehensive way because, even among the local programs, some fraction of the funding is ultimately being drawn down through Commonwealth and federal funding mechanisms. Sorting out the many complicated cost-sharing arrangements across governmental agencies and levels of government was beyond the scope of this study. We have noted, however, the effect that federal cost-sharing through Medicaid has on our findings. Claims-based mental health services are primarily paid for by Medicaid, which is funded jointly by the Commonwealth and the federal government. Therefore, changes in mental health service costs are only partially borne by the Commonwealth. Since we estimate that the MHC program has led to a small increase in mental health costs, the amount of the estimated increase is

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<sup>32</sup> The Commonwealth of Pennsylvania pays for prescription drugs (including psychotropic medications) during incarceration, but the federal government shares the costs of prescription drugs through Medicaid cost-sharing while individuals are in the community. Therefore, this omission would also affect an analysis of cost allocation among levels of government.



an overstatement of the cost to the Commonwealth because the federal government shares the costs of Medicaid.

We also do not distinguish between the various branches of government or agencies within branches that incur costs or reap savings. Such a distinction would be useful because moving funds within an agency or branch may well be easier than moving funds between them.

#### *Omission of Costs Due to Service Utilization by Victims*

The scope of the study was limited to the fiscal impact of the MHC program on government payers and not on individuals. We therefore avoided the very difficult task of attempting to assess victim costs. However, if the victims of crime perpetrated by MHC participants used government services (such as health or mental health services or cash assistance) as a result of their being crime victims, then these costs should have been included. Unfortunately, we have no aggregate information on service utilization by crime victims, nor would we be able to access information on such service use by individual crime victims without their informed consent.

#### *Criminal Sentences Under the Counterfactual*

Our counterfactual comparison reflects an attempt to generate hypothetical criminal sentences for MHC participants, based partly on actual criminal charges that were pending against them prior to entry into the program and partly on Pennsylvania sentencing guidelines. The counterfactual also depends on additional assumptions about the allocation of sentence time between incarceration and probation, the imposition of concurrent versus consecutive sentences for multiple offenses, and the use of a midpoint within the statutory sentencing range to determine each hypothetical sentence.

Although we specified these additional assumptions based on significant input from the Office of the District Attorney, the assumptions may not accurately capture the sentence that defendants would have received in a system without the MHC. In particular, even within the standard criminal sentencing guidelines, judges in Pennsylvania retain considerable discretion over the sentences they actually impose. In any event, our counterfactual condition involves generating plausible criminal sentences that reflect the sentence that offenders *could* have received, based on sentencing guidelines and some reasonable ancillary assumptions. The purpose is not to generate a perfect prognostication, but rather a point of comparison.

The “gold standard” for evaluating an intervention such as a MHC program would be a randomized controlled trial in which those eligible for MHC participation were randomly assigned to experimental (MHC) and comparison (no MHC) conditions. However, a randomized controlled trial in the criminal justice context raises a host of legal and ethical issues. Finding a good

comparison group in the general population, in the same jurisdiction, and for whom we could obtain informed consent to access personally identifiable health information was simply not practicable. And, as was shown in the review of prior studies, the use of some comparisons, such as a matched comparison group in another jurisdiction, is far from a perfect solution because of possible unobserved differences across the groups and the jurisdictions.

#### *Service Utilization Under the Counterfactual*

The additional jail time under the counterfactual has implications for costs, which we capture only partially and imperfectly. We assume that the additional jail time results in proportionately less opportunity to use mental health services and cash assistance or to be arrested. However, we do not account for other possible changes, such as the complete elimination of some types of services or the increased likelihood of recidivism to the criminal justice system or to more intensive mental health care.

In spite of these limitations, this report contributes greatly to the existing literature by providing some data on the cost of MHC programs. By linking administrative data from a wide variety of public agencies and comparing observed costs to two comparison conditions, we have demonstrated that the important cost consideration for MHC programs is the balance between increased behavioral health services and decreased jail time, with other cost components contributing very little. Furthermore, we have shown that the MHC program was almost cost neutral in the first year and significantly cost saving by the end of the second year. Although the study's limitations affect the precision of our findings, we do not think that any of the limitations are sufficiently severe to call our major conclusions into question.

## CHAPTER SEVEN

### Conclusions and Policy Implications

The formal resolution adopted by the Pennsylvania General Assembly called for an assessment of the fiscal impact of mental health diversion programs as a means to determine the appropriateness of similar program development and implementation throughout the Commonwealth. Therefore, the scope of the study was limited to the *fiscal* impact of the Allegheny County MHC. However, it is important to note that other outcomes should be of concern to policymakers, as they are to MHC practitioners, including whether those who participate in MHC programs are also improving clinically, are getting housed appropriately, and are becoming productive members of society.

A detailed examination of any of these issues was outside of the scope of this study; however, such information is vital to determining the appropriateness of this program as a model for widespread replication.

#### *Summary of Findings*

Our findings indicate that the Allegheny County MHC program is a success in achieving its mission to divert nonviolent offenders with serious mental illnesses out of the penal system and into community-based mental health treatment and other support services. While achieving these goals, the MHC program did not result in substantial incremental costs, at least in the short term, over status quo adjudication and processing for individuals with serious mental illness who would otherwise pass through the traditional court system. Although determining the fiscal impact of the MHC program by levels of government was beyond the scope of the study, it is worth noting that the federal government and the Commonwealth share any increased treatment costs. The findings also suggest that, over the longer term, the MHC program may actually result in net savings to government, to the extent that MHC participation is associated with reductions in criminal recidivism and reductions in the utilization of the most expensive types of mental health treatment (i.e., hospitalization). And, as in prior MHC studies, we saw no evidence to suggest that diverting these seriously mentally ill individuals into the MHC program poses any higher risk to public safety.

The methods we chose were, of necessity, imperfect. Finding a comparison group within the county was impractical given the limits on time and resources. Because of that, we endeavored in our study to “take two bites of the apple.” Both the counterfactual analysis and the one-year pre/post analysis suggest a negligible impact on costs (even though one shows some incremental expense associated with the MHC program and the other shows some savings). We acknowledge that the counterfactual approach is more dependent than the pre/post analysis on a series of assumptions. In spite of that, there is a convergence of findings between the two—which is what is important. And the

two-year pre/post analysis suggests that the costs to the taxpayer are dropping the longer MHC participants are in the program.

Absent a larger sample of MHC participants and a longer, prospective study of the MHC program, saying with any confidence what explains the reductions in services close to the end of the two years of MHC participation would be difficult. If we were to speculate, we might observe that 20 percent of the participants have relatively mild mental health problems (depression or anxiety disorder, with no psychotic involvement). For these individuals, their participation in the MHC program may have kept them out of jail and then provided supervision and reinforcement, together with some mental health services. To the extent that the MHC program helps tide them over a crisis, helps them to improve their mental health status and functional level, and eliminates their contact with the jail, that could plausibly result in improved longer-term functioning with reduced use of all services. This would be the *rehabilitation* argument.

The reductions in service utilization are a little more difficult to explain for participants with more serious mental health problems. Conventional wisdom suggests that people with serious mental health problems require ongoing, intensive treatment and supervision, without which their functional level can deteriorate—which might, in turn, make these participants unable support themselves and increase the likelihood of vagrancy and other types of street offenses, which might land them back in jail. On the other hand, a more optimistic view (voiced by consumers and clinicians who subscribe to a *recovery* philosophy) suggests that any individual, even someone with a serious mental disorder, if given the right treatment at the right time, can recover and lead a productive life in the community with some supports, but without the need for continued, intensive medical treatment and supervision.

Of course, one could also imagine that program participants are simply more likely to leave Allegheny County as time goes on, although, other factors being equal, the ability of participants to move out of the county might itself be construed as evidence of improved functioning. We do not have the data to answer this question. Therefore, we can only speculate; we cannot be sure which, if any, of these possibilities explains the reduction in services at the end of two years of MHC participation.

### *Applying the Findings to Policymaking*

In terms of relying on our findings to make policy within the Commonwealth, our study was comprehensive (in terms of including costs across the criminal justice, behavioral health, and welfare systems), included a reasonable number of subjects, followed individuals for at least one year after entry to the MHC program (and, for some, two years), provided findings in relation to a comparison condition, did not rely on patient self-report data, and provided some subgroup analysis.

Providing data on nonfiscal impacts was outside the scope of the study, even though ideally the MHC program should achieve good clinical and social outcomes for its participants and such outcomes should factor into policymaking decisions. Prospective tracking of participants in the MHC program could help to quantify both the long-term outcomes and cost implications for the program. Such tracking might also help to refine entry criteria by clarifying the types of criminal offenses and mental health problems that are most effectively addressed through MHC programs.

There are a few cautions of note in terms of replicating the Allegheny County MHC model across the Commonwealth. Although our study did not include a formal process evaluation, during the course of the study, we discussed MHC operations with many of the principals involved—including the judge who has presided over the MHC for most of its tenure, two ADAs and their paralegal staff, the MHC administrator and monitor, and county DHS administrators. According to some of those with whom we spoke, there is anecdotal evidence of recidivism in the MHC program. By that we mean that a few individuals who have “graduated” from the program have reoffended and been referred back into the program. Perhaps the mental health treatment system did not sufficiently engage these individuals after their probation ended or perhaps they are people who need the structure of periodic reinforcement hearings to keep them “on the straight and narrow.” In any case, it may be time to reevaluate the program model to consider some sort of “aftercare” function for the program or to find a way to strengthen the “hand-off” to the mental health treatment system to ensure that the MHC program does not become its own “revolving door.”

A second issue raised was the admission of felons to the program. While our report suggests that the fiscal impact of the MHC was particularly positive for people charged with felonies (which would imply a fiscal advantage to bringing more felons into the program), the admission of felons (as opposed to misdemeanants) raises additional public safety concerns. Originally, the MHC program targeted low-level offenders, but the criteria for entry seem to have evolved over time toward more serious offenders and those with more significant criminal histories. Again, perhaps it is time to evaluate whether the supervision staffing is sufficient for the program to handle larger numbers of serious offenders. A related issue, raised both internally and externally, concerns the lack of graduated sanctions in the current program model.

Finally, MHC participants do not receive any priority for access to behavioral health services in their community. They do get extra support, coordination, and supervision from the MHC program itself, but they otherwise compete for admission to treatment services with all other individuals who have a need for treatment services. Because involvement with treatment is critical to diversion from the criminal justice system, policymakers considering replication in other communities should consider whether sufficient resources exist in those communities to provide high-quality, evidence-based mental health and substance abuse treatment—not only for the entire period of MHC supervision

but beyond. The lack of funding for substance abuse treatment services in Allegheny County was particularly noted and raises a concern given the high rates of co-occurring mental and substance abuse disorders in this population.

### *In Conclusion*

We cannot compare the findings of our evaluation of the fiscal impact of the Allegheny County MHC with those of any other MHC programs around the country because, quite simply, this is the first study of its kind to document the costs and fiscal impact of a MHC program. But this report does add to the growing evidence base on the effectiveness of MHC programs and underscores the need for carefully designed studies to enable us to understand the potential effect of these and other “problem-solving courts” on the participants, their communities, and the taxpayer—who ultimately pays the bill.

## APPENDIX

### Detailed Explanation of Samples and Methods with Additional Tables

We extracted three analytic subsamples from the study population (n=352). One was a recent subsample of MHC participants for whom we were able to obtain sufficient information from the Office of the District Attorney to construct hypothetical sentences that are the basis for a counterfactual cost stream. The other two (pre/post subsamples) are those MHC participants for whom we were able to match an arrest shortly prior to MHC entry to a similar arrest at least a year earlier.

For the counterfactual sample (n=88), we compare the actual costs for the four quarters following MHC entry to the costs that we calculate would have been incurred had the MHC not existed. For the first pre/post sample (n=199), we compare the costs in the *four quarters* following the event that triggered MHC entry to the costs in the four quarters following the similar earlier event. The analysis for the second pre/post sample (n=66) is similar, but uses the subset of MHC participants who can be followed for *eight quarters* from both the triggering and similar events. As shown in the accompanying tables, the samples are similar in their demographic, clinical, and criminal characteristics to the entire population.

Tables A.1 through A.8 provide more information on the 352 MHC participants for whom we have data and for the subsamples used in the counterfactual and pre/post analyses.

**Table A.1.**  
**Sample Size and Demographics**

Characteristic	MHC Pop.	Counterfactual Sample (4-qtr follow-up)	Pre/Post Sample (4-qtr follow-up)	Pre/Post Sample (8-qtr follow-up)
N	352	88	199	66
Age (years)	37.4	37.2	37.5	37.5
Gender (% male)	62.0	56.8	63.8	63.6
Race (%)				
White	54.6	50.0	47.2	45.5
Black	41.2	47.7	50.8	50.0
Other	0.8	0	0.5	1.5
Unknown	2.8	2.3	1.5	3.0

White, non-Hispanic and African-American individuals make up almost the entire study population with slightly more than half of the sample being white. The population and samples are approximately 60 percent male. The

main demographic difference is that all of the analytic subsamples have a slightly higher proportion of African-Americans (Table A.1).

The date of the study population's MHC entry ranges from 2001 through 2005, with the largest numbers of participants entering in 2002 and 2004 (Table A.2). The date of entry differs among the subsamples. The first pre/post sample is very similar to the overall study population. Participants in the second pre/post sample are early MHC entrants (those for whom we could obtain eight quarters of MHC experience). The participants in the counterfactual sample are more recent entrants (those for whom the Office of the District Attorney had complete records).

**Table A.2.**  
**Year of MHC Entry (%)**

Year of Entry	MHC Population	Counterfactual Sample (4-qtr follow-up)	Pre/Post Sample (4-qtr follow-up)	Pre/Post Sample (8-qtr follow-up)
2001	8.8	1.1	8.0	1.5
2002	26.7	12.5	23.1	24.2
2003	18.5	12.5	19.6	36.4
2004	31.3	68.2	35.2	37.9
2005	14.8	5.7	14.1	0

The subsamples have a similar diagnostic profile to the entire study population (Table A.3). However, fewer subjects in the counterfactual sample are missing diagnoses as compared to the total study population or the two pre/post subsamples. The subsamples generally have larger proportions of drug and alcohol users than the study population (Table A.4).

**Table A.3.**  
**Diagnosis at MHC Entry (%)**

Diagnosis	MHC Population	Counterfactual Sample (4-qtr follow-up)	Pre/Post Sample (4-qtr follow-up)	Pre/Post Sample (8-qtr follow-up)
Major depressive disorder	6.3	8.0	7.0	6.1
Depressive disorder	13.1	15.9	15.6	18.2
Other neuroses	6.5	9.1	5.5	7.6
Bipolar disorder	20.5	31.8	21.1	19.7
Paranoid schizophrenia	9.1	8.0	7.5	7.6
Schizoaffective disorder	6.5	8.0	7.5	9.1
Other psychoses	6.0	5.7	8.0	9.1
Diagnosis missing	32.1	13.6	27.6	22.7



**Table A.4.**  
**Assessment of Substance Use Disorder at MHC Entry (%)**

Use	MHC Population	Counterfactual Sample (4-qtr follow-up)	Pre/Post Sample (4-qtr follow-up)	Pre/Post Sample (8-qtr follow-up)
None	48.3	35.2	40.7	42.4
Alcohol only	13.6	9.1	14.1	18.2
Drugs, with or without alcohol	38.1	55.7	45.2	39.4

Over 50 percent of the study population has a GAF score at or below 50 at entry into the MHC program (Table A.5). All of the analytic subsamples have lower percentages of missing GAF scores and higher percentages of low GAF scores.

**Table A.5.**  
**GAF Score at MHC Entry (%)**

Score	MHC Population	Counterfactual Sample (4-qtr follow-up)	Pre/Post Sample (4-qtr follow-up)	Pre/Post Sample (8-qtr follow-up)
35 or less	15.9	17.1	16.7	18.2
36–40	15.3	13.6	17.6	12.1
41–50	23.9	27.3	25.1	33.3
51 or higher	19.6	20.5	16.1	16.7
Missing	25.3	21.6	24.6	19.7

The study population averages two arrests in the two years prior to MHC entry (including, in most cases, the arrest that triggered MHC entry), and has spent almost half of the two years in jail prior to MHC entry (Table A.6). The counterfactual subsample has spent considerably less time in jail, whereas the pre/post subsamples have spent considerably more time in jail. The amount of time in prison in the two years preceding MHC entry is negligible for all samples.

**Table A.6.**  
**Arrests, Jail, and Prison in the Two Years Prior to MHC Entry**

Arrests, Jail, and Prison	MHC Population	Counterfactual Sample (4-qtr follow-up)	Pre/Post Sample (4-qtr follow-up)	Pre/Post Sample (8-qtr follow-up)
Number of arrests	2.1	2.7	2.8	2.3
Days in jail	344.9	155.6	469.5	495.1
Days in prison	0.2	0.7	0.3	0.9

Between one-fourth and one-fifth of the study population were charged with a felony at the time of entry into MHC (Table A.7). The severity of offenses for the analytic subsamples differs slightly, but no pattern emerges.

**Table A.7.**  
**Severity of Offense (%)**

Offense	MHC Population	Counterfactual Sample (4-qtr follow-up)	Pre/Post Sample (4-qtr follow-up)	Pre/Post Sample (8-qtr follow-up)
Felony as MHC entry offense	23.0	26.1	19.6	19.7
Felony at or before MHC entry	52.0	54.5	54.3	59.1

The costs incurred prior to MHC entry reflect both the mental health status and criminal history of this population (Table A.8). Jail (48 percent) and behavioral health treatment (42 percent) dominate the costs that MHC participants incurred in the two years prior to entry. The costs of arrests (8 percent), including associated law enforcement court system costs, and cash assistance payments (1 percent) account for most of the remaining costs. Prison costs are negligible. The information we received on probation and parole was incomplete and therefore not reported in this table, but we estimate that the actual costs associated with such supervision are less than 1 percent of costs. The difference in pre-MHC costs between the subsamples and the total study population reflect the lower jail time of the counterfactual subsample and the greater jail time of the pre/post subsamples.

**Table A.8.**  
**Annual Costs in the Two Years Prior to MHC Entry, Average (Standard Deviation) (\$)**

System	MHC Population		Counterfactual Sample (4-qtr follow-up)		Pre/Post Sample (4-qtr follow-up)		Pre/Post Sample (8-qtr follow-up)	
Jail	12,811	(11,800)	5,591	(5,427)	17,389	(11,223)	18,327	(11,103)
Mental health and substance abuse services	11,235	(23,478)	13,844	(25,918)	12,190	(21,989)	11,968	(17,136)
Arrests	2,257	(2,263)	2,932	(2,210)	3,009	(2,327)	2,476	(1,886)
Welfare	363	(849)	481	(1,068)	388	(750)	351	(741)
Prison	7	(136)	29	(272)	13	(181)	39	(314)

## Methods

For each MHC participant, we constructed a quarterly record of individual utilization and costs from the combined data set. The date of entry into the MHC program (i.e., the date by which both the MHC and the participant had agreed to assignment to MHC) was used as the index date for each participant. Quarter 0 begins on the index date and ends on the same day of the month, three months later. Quarter 1 is the three-month span following quarter 0, quarter -1 is the three-month span preceding the index date, and so forth.

### *The Counterfactual Analysis*

In addition to calculating the actual costs incurred in each quarter for each MHC participant, we calculated the costs that *would have been* incurred had the MHC program not existed—that is, we calculated the costs based on the expected amount of time the MHC participant would have spent in jail and on probation, based on the algorithms we developed from the sentencing information provided by the ADA. For the counterfactual comparison condition, the hypothetical jail time was assumed to begin immediately following the date that the plea was entered as recorded in MHC records. The number of *hypothetical* days in jail was compared to the number of *actual* days in jail for that quarter, and, if the number of hypothetical days was greater than the actual number of days in jail, the cost of the additional jail days was added to the quarterly counterfactual record. Because individuals in jail would not have received county-funded mental health treatment or cash assistance while in jail, nor could they be arrested during their time in jail, those costs were reduced in proportion to the amount of time that an offender hypothetically would have spent in the community during that quarter. The number of *hypothetical* days of probation was added to the costs, if it exceeded the number of *actual* days of probation; however, the cost of mental health services and cash assistance was not reduced in proportion to the amount of time spent in the community during that quarter (because individuals on probation could receive both cash assistance and county-funded mental health treatment).

**Table A.9.**  
**Hypothetical to Actual Cost Comparison - Average Annual Costs (One Year Follow-up)**

Program	Actual Cost (\$)	Counterfactual Cost (\$)	Difference (\$)	P-value
Total	29,892	27,236	2,656	0.033
Mental health	20,820	13,976	6,844	0.000
Jail	6,540	12,072	-5,532	0.000

NOTE: Total Actual Cost includes the cost of MHC administration, mental health and substance abuse treatment, arrests, jail, prison, probation, and cash assistance.

Table A.9 presents the cost comparison information that is presented in the report in Figure 5.4. The “Total” row contains all costs for which we have

information: mental health services, arrest, jail, prison, probation, cash assistance, and MHC costs. The “Mental health” and “Jail” rows of Table A.9 present costs for the two largest cost components—mental health (including substance abuse) treatment services and jail.

The “Actual Cost” column of Table A.9 is created by summing costs for each MHC participant and then averaging over the 88 individuals in the subsample and over the four quarters following MHC entry. The “Counterfactual Cost” column presents the same calculations, using hypothetical rather than actual costs. The “Difference” column is the difference between the actual and hypothetical costs. The “P-value” column provides the p-value for a two-tailed t-test for paired data. In the first row, the p-value of 0.033 is less than 0.05, which indicates that the difference between the actual and counterfactual costs is significant at the 5-percent level. Likewise, the difference in mental health and jail costs are significant.

Table A.10 provides the same information for the first sensitivity analysis (assuming higher rates of recidivism). In this analysis, we adjust the counterfactual costs to reflect higher recidivism than that shown by MHC participants’ actual experience. The number of arrests, days in jail, and days in prison are all increased by 10 percent over the standard counterfactual, up to the number of days in the quarter. As days in jail and prison are increased, the amount of mental health services and cash assistance are reduced to reflect the fact that these services are not available to incarcerated individuals. Therefore, increased recidivism leads to higher jail and other criminal justice costs, but a reduction in mental health and cash assistance costs from the standard counterfactual. The “Counterfactual Cost” column of Table A.10 can be compared to the same column of Table A.9. The decrease in mental health costs more than offsets the increase in criminal justice costs, leading to a lower total cost in the adjusted counterfactual. This implies a smaller fiscal impact of the MHC program.

**Table A.10.**  
**Sensitivity Analysis - Recidivism (One Year Follow-Up)**

System	Actual Cost (\$)	Counterfactual Cost (\$)	Difference (\$)	P-value
Total	29,892	27,068	2,824	0.025
Mental health	20,820	12,580	8,240	0.000
Jail	6,540	13,280	-6,736	0.000

NOTE: Assumes a 10-percent program effect on recidivism. Therefore, we increase hypothetical criminal justice costs by 10 percent and reduce mental health treatment and cash assistance costs by 10 percent.

Table A.11 provides the same information for the second sensitivity analysis (assuming decreased utilization of treatment services). In this analysis, we simply reduce all mental health costs by 10 percent in the counterfactual to reflect less intensive use of mental health services in the absence of MHC

supervision. As can be seen in the “Difference” column, this increases the implied cost of the MHC program relative to the counterfactual.

**Table A.11.**  
**Sensitivity Analysis - Mental Health Service Use (One Year Follow-Up)**

System	Actual Cost (\$)	Counterfactual Cost (\$)	Difference (\$)	P-value
Total	29,892	25,840	4,052	
Mental health	20,820	12,580	8,240	0.000
Jail	6,540	12,072	-5,532	0.000

NOTE: Assumes a 10-percent program effect on mental health utilization. Therefore, we decrease counterfactual mental health costs 10 percent.

### *The Pre/Post Analyses*

We also calculated the fiscal impact of the MHC program using the MHC participants as their own controls by comparing costs associated with a similar prior arrest and disposition. The calculation of the fiscal impact based on a comparison with a prior arrest requires an adjustment for increasing costs over time. Costs can increase for a MHC participant for a number of reasons, including increased intensity of services related to the progression of the disease, increased severity of sentencing based on more accumulated offenses, and the secular trend of increasing costs of programs and services. If we directly compared costs following the MHC arrest to costs following an earlier arrest, MHC’s effect on costs could not be parsed out.

However, many of the MHC participants have been continuously involved with the mental health treatment system and criminal justice system for many years. We take the year prior to each arrest as the baseline for each subject and examine the extent to which costs jump following the arrest. If costs increase by a larger proportion following MHC entry than they did following an earlier arrest, we take this as evidence that MHC is imposing additional costs (or increasing costs to the system). On the other hand, if the costs increase less following the MHC arrest, this would provide evidence that MHC is cost saving.

To identify an arrest that closely resembles the MHC-related arrest, we examined each MHC participant’s jail records for the most recent date of commitment that occurred at least one year (for the first pre/post analysis; two years for the second pre/post analysis) prior to the commitment date associated with MHC entry. We also required that this earlier commitment date be in 1999 or later because *e-Caps* utilization records were not available for earlier periods. We found 199 MHC participants with an appropriate earlier arrest (four-quarter analysis) and 66 MHC participants with an appropriate earlier arrest (for the eight-quarter analysis).

Using the commitment dates for the earlier jail stays and the MHC jail stays as our anchor dates, we created a quarterly aggregation of each type of cost for each MHC participant for four quarters prior to commitment and either four or eight quarters following commitment. We then averaged over individuals and quarters in a similar fashion to the counterfactual analysis.

The “Total before offense” row of Table A.12 presents the average annual costs in the year before the MHC arrest and the earlier arrest. These MHC participants were incurring considerably more costs during the period just prior to the MHC arrest than they had been prior to the earlier arrest. The “Total after offense” row indicates that, in the year following their MHC arrest, they also were incurring more expenses than following their earlier arrest. Although the difference is approximately the same dollar amount, the jump in cost from before the arrest to after the arrest is a larger percentage because of the lower starting amount before the earlier arrest.

**Table A.12.**  
**Pre/Post Cost Comparison - Average Annual Costs (One Year Follow-up)**

Measure	Cost for MHC Event	Cost for Similar Event	Difference	P-value
Total before offense	\$30,940	\$22,788	\$8,152	0.000
Total after offense	\$38,736	\$29,860	\$8,876	0.000
Growth rate	25%	31%	-6%	0.914
Mental health before offense	\$11,192	\$6,856	\$4,332	0.000
Mental health after offense	\$17,020	\$9,252	\$7,768	0.000
Growth rate	52%	35%	17%	0.327
Jail before offense	\$16,304	\$13,136	\$3,168	0.000
Jail after offense	\$18,208	\$17,696	\$512	0.297
Growth rate	12%	35%	-23%	0.007

The growth rate reported in the first “Growth rate” row of Table A.12 is used to create the predicted cost that is reported in Figure 5.7 in the report. Applying the 31-percent growth in costs that occurred with the earlier arrest to the \$30,940 yields a predicted cost of \$40,540. This differs from the actual cost of \$38,736 by \$1,804.

The estimated impact on mental health costs, jail costs, and the two-year follow-up costs was calculated in a similar manner. These data are presented in Table A.13, which corresponds to Figure 5.8 in the text.

**Table A.13.**  
**Pre/Post Cost Comparison - Average Annual Costs (Two Year Follow-up)**

Measure	Cost for MHC Event	Cost for Similar Event	Difference	P-value
Total before offense	\$30,948	\$20,348	\$10,600	0.000
Total after offense	\$36,316	\$30,180	\$6,136	0.001
Growth rate	17%	48%	-31%	0.317
Mental health before offense	\$10,644	\$4,344	\$6,304	0.000
Mental health after offense	\$16,520	\$9,548	\$6,972	0.000
Growth rate	55%	120%	-65%	0.831
Jail before offense	\$17,468	\$13,876	\$3,592	0.000
Jail after offense	\$16,624	\$17,932	-\$1,308	0.052
Growth rate	-5%	29%	-34%	0.005





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