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MENTAL HEALTH TREATMENT AND CRIMINAL JUSTICE OUTCOMES

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ABSTRACT

Are many prisoners in jail or prison because of their mental illness? And if so, is mental health treatment a cost-effective way to reduce crime and lower criminal justice costs? This paper reviews and evaluates the evidence assessing the potential of expansion of mental health services for reducing crime. Mental illness and symptoms of mental illness are highly prevalent among adult and child criminal justice populations. The association between serious mental illness and violence and arrest is particularly strong among individuals who are psychotic and do not adhere to medication. Two empirical studies augment the empirical research base relating mental illness to crime. In a recent community sample of adults, we find higher rates of arrest for those with serious mental illness and with substance abuse. Among youth, even with family fixed effects, antisocial personality scores predict future school problems and arrests. A large body of research tracks mental health and criminal justice outcomes associated with treatments and social policies. Reviews of the cost-effectiveness of treatments for children with behavioral problems, mental health courts, and mandatory outpatient treatment are inconclusive.

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1. Introduction

Tragic data relate mental illness and crime. The Los Angeles County Jail, Cook County Jail, and Riker's Island in New York each house more persons with mental illness (about 1,400 in LA, alone) than any psychiatric institution in the country (Treatment Advocacy Center, 2009). Two-thirds of the nation's juvenile inmates have at least one mental illness (Moore, 2009). By Skeem et al.'s (2009) calculations, on a typical day, over one million people with mental illnesses are in jail, in prison, on probation, or on parole. These figures raise natural questions: Are many prisoners in jail or prison *because* of their mental illness? And if so, is mental health treatment a cost-effective way to reduce crime and lower criminal justice costs? The main goal of this paper is to review and evaluate the evidence assessing the potential of expansion of mental health services for reducing crime. We also undertake two empirical studies to augment the empirical research base relating mental illness to crime.

A simple logic offers a starting point for analysis. If: a) mental illness causes crime, and b) mental health treatment reduces mental illness, then: c) increasing mental health treatment can reduce mental illness and crime. National efforts based on this reasoning, some led by the Council of State Governments (2009), have been underway for some time, targeting expansion of access to community-based mental health care to the criminally involved.

A good deal of research evaluates premises a) and b). The social science literature bearing on the link of mental illness to crime (a), is the main focus of this paper, whereas the clinical literature regarding the effectiveness of mental health treatment (b), is also relevant. As we will see later on, the connection between mental illness and crime is predominantly among persons with severe mental illness such as psychosis and major depression. These illnesses are

serious and persistent in about 2 percent of the adult population. Development of and evaluation of the effects and costs of treatments for people with these conditions has long been a focus of public and private research. In the cases of both illnesses, effective treatments, largely drug treatments with appropriate monitoring and supportive psychosocial services, have been known for some time.¹ Major advances in the treatment of schizophrenia with psychoactive drugs, date from the early 1950s and the marketing of chlorpromazine. Many other antipsychotics are now available, most with very comparable effectiveness and side effect profiles (clozapine, introduced in 1989 in the US, may be particularly helpful for patients who fail on other drugs). A large number of these drugs are now available as generics. The unresolved problems with treatment for schizophrenia is that while many drug treatments have some effectiveness, it is rare for full function to be restored, adjunctive treatments such as vocational rehabilitation and family counseling are expensive and themselves of modest effectiveness, and, unpleasant side effects of drugs lead many patients to discontinue therapy. Less than half of patients with schizophrenia are on a treatment likely to be effective.

Depression is an episodic illness for which there are also many effective drug treatments (which have a major effect on symptoms). Tricyclic antidepressants have been available since the early 1960s, and the selective serotonin uptake inhibitors (the first and most famous of which is Prozac) since 1988. Many effective drugs for depression are available as low-cost generics and are frequently prescribed by non-psychiatrists. While overtreatment or inappropriate treatment is a concern for people with mild symptoms, a positive trend in the past several decades has been the large increases in share of people with serious depression who are taking

¹ This discussion is based on material in Frank and Glied (2006). For a series of articles on the cost-effectiveness and policy implications of treatment for schizophrenia, see the May, 2008 issue of *Psychiatric Services*.

medications likely to help them, with recent estimates of over 80% (Frank and Glied, 2006, p116).

Two difficulties encountered by researchers in assessing the causal link between mental illness and crime are worth calling attention to at the outset. First, mental illness is correlated with many factors (e.g., criminal attitudes) that cause crime and may be difficult to measure. In community and survey data, indicators of mental illness might be picking up effects of other criminogenic factors correlated with mental illness (being raised in a family where there is violence). Related to this common problem of “unobservables” in social science research is a second issue. Mental illness may affect crime directly and indirectly, mediated by other factors, and this process may occur over an extended period of time. Mental illness may have a contemporaneous effect on crime, and in addition, mental illness in the past may have an indirect effect on current crime working through the role of mental illness in elevating other risk factors contributing to current crime (e.g. growing up in bad neighborhoods, substance abuse). These complications are depicted in Figure 1. Past problems with mental illness, going back to childhood, are tied up with personal and social factors, and are a potential cause of current mental illness and other personal and social factors (some of which are unobserved) causing crime. The link to childhood raises similar issues and possibilities discussed by Heckman and Masterov (2004) related to workplace outcomes. The direct effect of current mental illness on crime (arrow a) is the limited sense in which it is usually meant by the question “does mental illness cause crime?” but the full effect of mental illness on crime goes beyond a contemporaneous causal relation.

To preview one conclusion from the literature: a small fraction (Skeem et al. (2009) judge it to be one in ten) of criminals with mental illness commit crimes because of their current

illness, but the elevated risk is small. Current treatment can ameliorate current illness and symptoms, but cannot reverse the past effects of illness on the accumulation of other risk factors over a person's lifetime. In light of this, we pay attention in our review to the role of past on current illness and on other social factors leading to crime. Although the research base is less developed, the effects of childhood mental illness and treatments for children are an important consideration for the intersection of mental health and criminal justice policy.

We also note that our syllogism is a sufficient, but not a necessary, condition for improved mental health treatment to reduce crime and criminal justice costs. Policies that link people at risk for committing crimes to community mental health treatment comprise more than simple mental health care interventions and their route of cause might be by some mechanism other than by improving mental health. Some treatments, like hospitalization or outpatient case management, may keep potential offenders out of trouble simply by keeping them off the streets and providing supervision. A "mental health court," to take another example discussed in more detail below, is a package of interventions which includes an active judge, frequent court monitoring, as well as mandated mental health care. In evaluating the role of "mental health" interventions in reducing crime, we will comment on whether the mechanism seems to be through improved mental health.

The paper is organized as follows. In Section 2 we review research on the association and causal relationship between mental illness and crime. If mental health treatment is to be cost-effective in terms of criminal justice outcomes, it should be targeted to "high-risk" populations. The next two sections study mental health treatment in two high-risk groups who are candidates for mental health interventions targeted to reduce crime: children with serious behavioral problems, and adult criminals. Section 3 is concerned with the effect of past illness

and treatment on subsequent criminal justice contact in the case of children with conduct disorder. Section 4 is concerned with current mental health interventions targeted to criminals who are also mentally ill. A large range of programs are designed for this second population – mental health courts, specialty probation programs, forensic-oriented community treatments, among others. We focus on mental health courts. We also consider mandatory outpatient treatment, a widely applied policy with implications for criminal justice. We return, in Section 5, to the question of the cost-effectiveness of expanding various forms of mental health treatment based on favorable effects on crime and criminal justice costs.

2. Mental Illness and Crime

The association between mental illness and crime, with a special focus on whether “mental illness causes crime,” has attracted a great deal of interest among social scientists. The literature features some excellent analytic reviews.² We begin with a review of the association between mental illness and crime.

Mental Illness and Crime in Community Samples

The “dangerousness” of people with mental illnesses emerged as a social concern as state mental hospitals closed beds during the 1960s and 1970s and patients with serious mental illness found themselves in the community, often struggling to maintain stable living arrangements, social support, and basic services. Former mental patients, or those who formally would have been hospitalized for long periods of time, were largely without jobs and visible on city streets. Advocates for the mentally ill claimed that people with mental illness “pose no more of a crime threat than do other members of the general population” (National Mental Health Association,

² Skeem, Manchak and Petersen (2009) review a wider literature than is covered here in Section 4, and their views will be highlighted below. Marcotte and Markowitz (2009) contain a nice review from an economic perspective. See also Monahan and Steadman (1983, 2010), Fisher, Silver and Wolff (2006).

1987), but this conclusion was premature because data to that point were not well-suited to test the relationship (Monahan and Steadman, 1983). For example, with data from a psychiatric epidemiologic survey, Swanson et al. (1990) found that violence (self-reported hitting, fighting or weapon use) was five times higher among persons meeting diagnostic criteria for mental illness than community residents without illness, even after adjusting for demographic and socioeconomic factors, and the presence of a substance abuse diagnosis.³ This partial association is not necessarily casual.⁴

The conclusions of a community-based study around this time by Link, Andrews and Cullen (1992), based on comparison of former patients and community residents in one neighborhood in New York City, remain a good summary of the literature. Mental patients had elevated rates of self-reported violence. Substance abuse, correlated with mental illness, also elevates violence but does not account for the full effect of mental illness. Notably, the presence of psychotic symptoms mediates the effect of mental illness.⁵ In other words, the elevated violence is found among the patients with more severe and current illness. Other studies come to similar conclusions about the role of substance abuse and mental illness. One review (Friedman, 2006) concluded that substance abuse alone dramatically increases the lifetime prevalence of

³ See also Harry and Steadman (1988). Data on the association of mental illness and crime has been found in other countries. In Australia patients with schizophrenia more likely to have been convicted of a violent offense than matched controls without schizophrenia (8.2% versus 1.8%) (Wallace, Mullen & Burgess, 2004). In Sweden men with major mental disorders are four times more likely than men without a mental disorder to be registered for a violent offense; women with major mental disorders 27 times more likely to be registered for a violent offense than women with no disorder (Hodgins 1992). In Switzerland men with schizophrenia were five times more likely to commit violent crimes than matched controls without schizophrenia (Modestin and Ammann, 1996). Stueve and Link (1997) found elevated rates of violence and weapon use among persons diagnosed with psychosis or bipolar disorder in Israel. The evidence for the association of mental illness and crime is not uniform, however. A meta-analysis of 58 studies found clinical variables (eg diagnosis, treatment history) did not predict criminal recidivism (Bonta, Law and Hanson, 1998).

⁴ Causality is irrelevant for many purposes. Community residents do not care why someone might be more dangerous.

⁵ One notable study, Applebaum et al (2000), however, did not find this relationship.

violent behavior, and among people with serious mental disorders, the effects were almost additive.

We add to this literature and characterize the association between crime and mental illness with recent data from the Collaborative Psychiatric Epidemiological Surveys (CPES), designed to capture the prevalence of psychiatric illness and service use with a national sample including an oversampling of minority groups. The CPES combines three surveys conducted with a unified approach during 2002-4, allowing for integration of design-based weights to combine the data as if they were a single, nationally representative study (NIMH, 2007).⁶ These data accurately identify recent (12-month) and lifetime presence of psychiatric disorder. We focus on the effects of serious mental illness, defined to include bipolar disorder or schizophrenia, and substance abuse, defined as abuse of alcohol or illicit drugs.⁷ Respondents answered a single question about their arrest history (“have you ever been arrested”) which we use as a dependent variable in our models. After excluding some cases because of missing data, we analyzed a sample of 10,686 individuals.

Figure 2 shows both the unadjusted and adjusted association between serious mental illness (SMI) and arrest. The left-hand section of the figure shows the unadjusted rates of arrest at any time during a respondent’s lifetime according to whether the respondent reported having

⁶ The University of Michigan Survey Research Center (SRC) collected data for the CPES, combining data from the National Latino and Asian American Study (NLAAS; Alegria et al., 2004), the National Comorbidity Survey Replication (NCS-R; Kessler & Merikangas, 2004) and the National Survey of African American Life (NSAL; Jackson et al., 2004). Design and methodological information can be found at the CPES website (<https://www.icpsr.umich.edu/CPES/index.html>).

⁷ Bipolar disorder was present in the past 12 months if the respondent met DSMIV criteria for either Bipolar I or Bipolar II Disorder in the past 12 months. A designation of substance abuse was present if the respondent met DSM IV criteria for Alcohol or Drug Abuse or Dependence. Psychosis was designated differently on the basis of symptom report and is therefore less reliable. The respondent was regarded as having psychosis if they reported experiencing at least one of a set of symptoms associated with psychosis in the past 12 months, such as (when not dreaming/sleeping/using substances): Ever saw visions others couldn’t see; even felt their mind was being controlled; ever experienced communication attempts from strange forces; and three others.

an SMI in the past twelve months.⁸ Not surprisingly, those with an SMI are at an elevated risk of having been arrested, though in these data the arrest could have predated illness. The adjusted bars on the right-hand side of the figure report results from a linear model of arrest rates on age categories, gender, race, and having an SMI and abusing substances in the past 12 months. For presentation, rates are compared against a “base case” rate of 42.2% for white males aged 25-34 with neither SMI nor substance abuse. Presence of an SMI alone elevates the rate of lifetime risk of arrest to 57.9%, and substance abuse alone is much higher. As shown by a negative and significant interaction term for substance abuse and serious mental illness, a person reporting both SMI and substance abuse has adjusted arrest rates more like someone with SMI alone than with substance abuse alone. We added an indicator of “other mental illness” into the model, and the estimated coefficient for this variable was not significant at conventional levels, implying that elevated rates of arrest are concentrated among those with serious mental illness or substance abuse.⁹ (Regression results from the basic model are included in Appendix A.) From these data, we would conclude that both serious mental illness and substance abuse have an independent effect on arrest rates.

Overlap in Criminal Justice and Patient Samples

Community samples exclude individuals that are institutionalized, those in hospitals, jails and prisons, and may undercount people that are homeless and others without established community ties. A powerful impression of the association of mental illness and criminal involvement emerges from studies of jail and patient samples.

⁸ The CPES also collected information about lifetime rates of SMI. The unadjusted rate of arrest is about 40 percent for this group.

⁹ We have estimated models separately for males and females, and adjusting also for income and education. The results are similar. SMI raises risk of arrest, but not as much as substance abuse. The interaction effect between the two conditions is negative. The CPES contains an alternative arrest variable but it is only reported for about half the sample used here.

Mental illness and symptoms of mental illness are highly prevalent among adult and child criminal justice populations. In 2002, 25% of inmates in local jails had at least one previous diagnosis of a mental illness; in 2004, 25.5% of inmates in state prisons and 14.8% of inmates in federal prisons had at least one previous diagnosis of a mental illness (Wilper et al. 2009). The prevalence of mental disorders among inmates of the Cook County Department of Corrections was significantly higher than that of the general population, including major depression (3.9% versus 1.1%), bipolar disorder (1.4% versus 0.1%), and schizophrenia (2.7% versus 0.9%); overall, the rate of any severe mental disorder among inmates was elevated more than three-fold (6.4% vs. 1.8%) in comparison to the general population (Teplin 1990). Inmates with major psychiatric disorders, particularly bipolar disorder, are more likely to return to jail (Baillargeon et al. 2009). Among inmates, prisoners with any psychiatric disorder were more likely to have committed violent crimes than prisoners with no psychiatric disorder – this rate was further elevated among prisoners with schizophrenia or another psychotic disorder (Baillargeon et al. 2009). The association between serious mental illness and violence and arrest is particularly strong among individuals who are psychotic and do not adhere to medication (Ascher-Svanum et al. 2006).

Criminal Opportunities and Victimization

Before considering the causal connection between mental illness and committing a crime, it is worth mentioning another link between crime and mental illness, through the elevated rates of victimization *experienced by* persons with severe mental illness. Issues of reverse causality may confound associations in this literature as in connections already discussed. Teplin et al. (2005) matched a sample of 936 patients with severe mental illness to a much larger comparison group from the National Crime Victimization Survey and found dramatically elevated rates for

the mentally ill. Persons with mental illness were eight times more likely to be robbed, 15 times more likely to be assaulted and 23 times more likely to be raped than the general population. Vulnerability of community-based mentally ill makes them easy marks and creates criminal opportunities contributing to overall criminal activity.¹⁰ Vulnerability of persons with mental illness is exacerbated in prisons. Wolff et al. (2007) found male prisoners in New Jersey who were mentally ill were three times more likely to be raped than those without mental illness.

Does Mental Illness Cause Crime?

Are people more likely to commit crimes due to having a mental illness? There are many routes by which mental illness may make it more likely for an individual to engage in criminal activity.¹¹ Mental illness disrupts lives and may put people at higher risk for committing crimes or being victimized. Mental illness interferes with human capital accumulation and wealth building generally. Some psychotic symptoms, such as feeling threatened, may lead directly to criminal conduct. Cognitive distortions associated with mental illness may erode interpersonal relationships and lead individuals to approach situations in maladaptive fashion. Finally, mental illness can make it more likely that individuals abuse drugs and alcohol, both of which also contribute to crime.

Monahan and Steadman (1983) observe that some mental illnesses (such as bipolar disorder) may predispose individuals to crime whereas others (such as catatonia) may inhibit many activities including crime. Swanson, Swartz, Van Dorn et al (2008), find a complex mix of effects of correlates and symptoms of schizophrenia on violence. In particular, negative psychiatric symptoms (such as social withdrawal) predicted less violence.¹² Most of the

¹⁰ See Cook's chapter, this volume, on "criminal opportunities."

¹¹ We are grateful to Harold Pollack for discussion of some of these points.

¹² See also Swanson, Swartz, Van Dorn et al. (2006).

empirical research investigating the causal effect of mental illness on crime has concentrated on serious mental illnesses that blend conditions that may have a positive and negative effect.

As Link et al. (1992), Skeem et al. (2009) and others have emphasized, interpreting correlations in community-based studies of illness and self-reported violence and crime is problematic because mental illness and crime are both associated in complicated causal webs with disadvantaged social backgrounds: poverty, bad housing, unsafe neighborhoods, among other factors (Swanson et al., 2002). The poor and disadvantaged are both more likely to commit crimes and more likely to be in the hands of the state mental health system. Without being able to control for all of these factors it is difficult to attribute causality to mental illness using data from a community sample.

To what degree is the observed correlation between mental illness and crime due to unmeasured third factors? Skeem et al. (2008) studied 112 parolees with mental illness matched to an otherwise similar group of parolees without mental illness. The parolees with mental illness had more antisocial personality patterns, earlier and more diverse criminal histories, more criminal attitudes and a pattern of generalized trouble in comparison to the non-ill parolees. These variables, linked to crime, are often unmeasured in empirical investigations and could account for the observed association between mental illness and criminal behavior.

It is useful to place our discussion in the context of more general theories of criminal behavior. Bonta et al. (1998) regard crime as partly a learned behavior (“crime pays”) reinforced by environments that tolerate crime and criminals, and personality traits, such as impulsivity or antisocial attitudes. Mental illness has a role within this framework as it may have a direct effect on personality traits, and an indirect effect on the environments a person spends time. Such a more general theory also however points up the possibility that causes of crime, like

neighborhood characteristics or even personality are simply correlates of mental illness. Perspectives from criminology develop broad-based theories of criminal behavior that can accommodate mental illness, but emphasize other more general factors, such as a life-course developmental perspective, or a local life circumstances perspective (Fisher, Silver and Wolff, 2006). The life-course perspective, for example, stresses early parenting styles. These theories are an alternative to conceptualizing crime by persons with mental illness within theories of mental illness and tend to deemphasize the salience of the illness as a cause of crime.

Interpretation of a correlation as causation is subject to other hazards. Teplin (1983, 1984) and others refer to the “criminalization of mental illness.” Fisher, Silver and Wolff (2006) in their review of the conceptual connections between mental illness and crime see criminalization as in reaction to the stricter requirements for involuntary inpatient psychiatric treatment imposed in the 1970s. The burden of “social control” of persons with serious mental illness shifted from the mental health to the criminal justice system. On a day-to-day basis, criminalization implies that a person with mental illness committing offenses is more likely to be arrested even with the offending behavior is similar. Higher arrest rates under this explanation can be accounted for by police reaction to disturbed behavior, not a causal effect of mental illness. Presumably this explanation is more relevant to less serious and nonviolent crimes, and the data supporting this contention are equivocal (Fisher, Silver and Wolff, 2006). Conversely, crime and mental illness could be correlated due to the “psychiatrization of criminal behavior” noted by Monahan (1973). Aggression, violence, abuse of substances, among other behaviors, has increasingly fallen within the domain of psychiatry. Those who at one time had been simply called “bad,” are now instead or in addition labeled “ill.” If we, by definition label criminal behavior to be mental illness, the positive link is not so much causal as definitional. Some

mental illnesses, like conduct disorder in adolescents, include criminal behavior as symptoms of the illness itself. This explanation is likely to be more relevant to more serious offenses.

Studies of the clinical situation and the actual criminal behavior of persons with serious mental illness have assessed the degree to which offenses are related to the immediate effects of the symptoms of mental illness. Junginger et al. (2006) and Petersen et al. (2009) both find some but a small part of the criminal behavior of offenders with mental illness is due to their immediate symptoms; in Junginger et al. (2006), for example, it is only 8%. (The percentage was higher, 26%, for substance abuse effects on arrests). The “immediate effect” of symptoms means that a person may have reacted violently if, by disordered reasoning, he thought he being threatened. Serious mental illness can put persons in positions of being likely to commit crimes (e.g. by causing them to be homeless) which would not be accounted for in the methods in these papers.

If current illness causes crime, effective treatment for the illness ought to reduce rates of criminal activity. Another way to test for a causal relationship between serious mental illness and crime is to see, in a treatment study, if randomization to treatment reduces crime. In effect, treatment assignment becomes a kind of instrument for illness, avoiding endogeneity of illness and other social factors. A “no treatment” group for schizophrenia may make such studies hard to find, however. Reporting results from a prominent trial of treatment for schizophrenia, for example, Swanson, Swartz, Van Dorn et al (2008) report that violence declined by around 15% after treatment with antipsychotic medication. The violence reports in this study are pre-post. Randomization was among alternative drug treatments for schizophrenia, and there, no differences were found in violence reduction by drug assignment.

Marcotte and Markowitz (2009) call attention to the contemporaneous drop in violent crime during the 1990s, and the rapid growth in treatment for mental disorders, particularly drug treatment that occurred during the same period. Large national surveys estimate that between the early 1990s and early 2000's the percent of those with a mental disorder being treated rose from 20.3 percent to 32.9 percent (Kessler, Demler, et al., 2005). In an analysis of a panel of US states from 1997-2004, they find that violent crime is negatively correlated with rates of prescriptions for some antidepressants, antipsychotics, and stimulants for ADHD (in separate models) after adjusting for some other variables likely to affect crime. If those results were interpreted as causal, the observed growth of medication treatment over their time period would account for 12 percent of the crime reduction.

Another perspective on the relationship of mental illness and crime derives from longitudinal data, permitting the study of childhood mental health problems on adult criminal behavior. Attention Deficit/Hyperactivity Disorder (ADHD) and conduct disorder are both prevalent illnesses whose consequences for many adult outcomes have been subject to study. ADHD has been linked to risky behaviors, lower academic performance, and poor adult human capital outcomes (see, e.g., Currie and Stabile, 2006). A recent paper by Fletcher and Wolfe (2009) uses the large sample from the National Longitudinal Study of Adolescent Health (Add Health) to examine the association between ADHD symptoms and crime in young adulthood. ADHD is positively associated with a range of criminal outcomes. For example, ADHD increases the likelihood of being arrested (by a mean age of 22) by four percentage points (on a sample average of about 12 percent) in a regression with extensive controls for individual, family, and neighborhood characteristics. A significant positive estimated effect of ADHD is maintained in a smaller sample identifying the effect off of sibling differences within families.

This strong research design, extensive controls including family fixed effects in a large longitudinal data set, is applied in the next section, to study of conduct disorder.

3. Prevention and Treatment of Mental Disorders to Reduce Crime: The Case of Conduct Disorder

Conduct disorder is characterized by aggression towards people or animals, property destruction, deceit or theft, and serious rule violation, and is one of the most prevalent of childhood mental disorders, with estimated lifetime prevalence rates of about 10% for males and 7% for females (Kessler, Berglund, et al. 2005 and Nock et al. 2006). The median age of onset is 11 years. Childhood onset of conduct disorder, defined as occurring prior to age 10, is regarded as distinct from adolescent onset at ages 10 and above (Kazdin 2002). Childhood onset is more likely to be severe and persistent (Nock et al. 2006). Untreated childhood onset is associated with poor long-term development and poor social and economic outcomes in adulthood (Moffit, 1993). Many behaviors associated with the disorder are indeed criminal, and moderation of the symptoms of conduct disorder, by definition, reduces criminal activity. No definitional relationship connects childhood conduct disorder to adult crime. We focus on conduct disorder in children, and its links to adult criminal activity.

Children with conduct disorder are at elevated risk to develop adult mental disorders, drop out of school, abuse substances, and become pregnant as teenagers (Nock et al. 2006, DHHS, 1999). Conduct disorder has also been associated with adult crime whereas the association between crime and other childhood mental disorders is generally weaker. We discuss this evidence in below. Prevention and treatment programs aimed at conduct disorder have been found to be effective in controlled evaluations (Kazdin, 2002; Farmer et al. 2002). Investment in

treatment and prevention of conduct disorder is a candidate policy for an efficient way to reduce criminal activity, the issue we investigate in this section.

3.1 General Framework

Cunha and Heckman (2007) regard the social and economic capabilities of adults as being produced by a developmental process that starts in early childhood. Inputs into a child's development include parental capabilities, the household and community environment in which the child grows up, and the investments made in the child and young adult by parents and others (including the child him or herself). Research in psychiatric epidemiology and developmental neuroscience calls attention to what might be called "toxic inputs" (our term) into the production of mental health. Adversity early in life can literally damage the structure of a child's brain in a way that increases the likelihood of subsequent mental health problems (National Scientific Council on the Developing Child, 2008). Toxic inputs include persistent poverty, abuse, neglect, witnessing domestic violence, and maternal depression (Nock et al. 2006; Rubin et al. 2003; IOM, 2009). Social programs may be able to counteract some of these negative effects. Investment in prevention and early treatment of conduct disorders include teaching parenting skills, treatment of parental substance abuse and depression, early recognition and treatment of disruptive behavior and training of teachers in management of disruptive behavior (Kazdin 2002, IOM, 2009).

3.2. Childhood Conduct Disorder and Adult Crime

We next consider the connection between childhood conduct disorder and adult crime, with a focus on the question of whether conduct disorder in childhood can be considered a cause of adult crime. The causal path could be from early to late mental illness, or from early illness to a personally and socially disadvantaged young adulthood. We know children with conduct

disorder are less likely to do well in school and otherwise have a troubled adolescence. How much of this carries over into young adulthood showing up in higher rates of criminal activity?

Swanson, Van Dorn, Swartz et al. (2008) used data from a large clinical trial on treatment for schizophrenia to compare rates of violence in adults in patients who did and did not have conduct disorders as children. Rates of violence were significantly higher among patients who had had conduct disorder problems, and the rate of elevation varied uniformly with the number of conduct problems, even in the presence of extensive controls, including substance use. The investigators also found that medication adherence was associated with lower violence only among adults with schizophrenia who did not have a history of antisocial conduct as children.

Large longitudinal data sets enable the study of the relationship between childhood conduct disorders and consequences in later life. The U.K. collects data on birth cohorts enabling longitudinal analyses of birth cohorts from 1946, 1958, and 1970 (Sainsbury Center for Mental Health, 2009). The 1946 cohort of 5,362 people was followed until age 53. The 1958 cohort included 17,416 people followed up first at age 7 and until age 45. The 1970 cohort consisted of 16,571 subjects with the first follow-up at age 5, continuing until age 34. In each cohort questions were asked of each child's parents and teachers that enable conduct and other emotional problems to be identified. The 1958 and 1970 cohorts used the Rutter A scale and the 1946 cohort used a prequel to the scale (Rutter et al. 1970).

Recent analyses of the 1958 and 1970 cohorts examine the relationship between childhood and adolescent conduct problems and adult criminal activity (Sainsbury Center for Mental Health, 2009). Analysis of the 1958 cohort estimated the relation between the presence of either a severe or mild conduct problem during the teenage years on adult offending between ages 32 and 42. Analysis of the 1970 cohort estimated the relation between severe and mild

conduct problems and lifetime offending up to age 34. Logit models stratified by gender and controlling for IQ and father's occupation revealed elevated rates of adult offending (arrested, convicted of a crime) for people with severe conduct problems as teenagers in the 1958 cohort. The estimated relative odds for men were between 1.1 and 1.9 compared to otherwise similar people without conduct disorder. Analysis of the 1970 cohort linked severe conduct problems at age 5 and offending between the ages of 16 and 34. The estimated logit models showed the relative odds of being arrested for men were 3.4 fold and 2 fold for women, and the relative odds of being convicted of a crime for men was 1.4 times that for men without childhood conduct problems of any kind. The corresponding estimate for women was 1.5. Analyses of severe conduct problems during early adolescence and lifetime offending between 16 and 34 years of age showed relative odds of being arrested for men was about 4 times that for people with no history of conduct problems. Women with severe conduct problems in adolescents had relative odds that were 5 times those for women with no history of conduct problems. These estimates are consistent with but do not establish causality because there are a variety of unobserved factors that might affect both the development of conduct problems and criminal behavior later in life.

Nagin and Tremblay (1999) followed a cohort of 1037 boys in Montreal, Canada to investigate the effects of externalizing disorders, including indicators of conduct disorder, to juvenile delinquency. Aggression and oppositional behavior persisted from childhood into adolescence. Fergusson et al. (2005) studied a 25-year cohort of 973 children beginning at age 7 to 9 in New Zealand. Conduct problems were identified through teacher and parent interviews. A variety of educations, economic and social outcomes were measured at age 25, including criminal and anti-social behavior. The authors controlled for a variety of individual and family

covariates including child and family adversity, family socioeconomic status, parent educational background, family stability (divorce, single motherhood, domestic violence), demographics (ethnicity, age of parents) and child cognitive ability. The analysis compared children with rates of conduct problems in the top 5% at ages 7-9 with those below the median. Multivariate analysis showed that those in the top 5% of the distribution of conduct problems had rates of property offenses that were 3 times those below the median (15.3% v 4.8%), rates of violent offenses that were roughly four times those below the median (15.9% v. 3.9%) and rates of arrest/conviction nearly 5 times higher (19.5% v 4.2%).

Currie and Stabile (2007) use the U.S. National Longitudinal Study of Youth (NLSY) and the Canadian National Longitudinal Survey of Children and Youth (NLSCY) to study the effect of mental and emotional problems in children on educational and behavioral outcomes. They measure behavior for the Canadian children age 4 to 11 years in 1994 and observe outcomes for the same children in 2002. For the NLSY they examine children aged 4 to 11 in 1994 and outcomes measured in 1998-2004. To address the problem of unobserved factors in an analysis seeking a causal relationship, they examine households with multiple children and including a household fixed effect. Thus, estimates of the impact of early life behavior problems on subsequent delinquency in young adults are identified based on differences between siblings growing up in the same household. Children with higher levels of antisocial and aggressive behavior at ages 4-11 are more likely to display delinquency as young adults. The results were similar for both the U.S. and Canadian cohorts.

We pursue a similar analysis of the NLSY as that conducted by Currie and Stabile (2007) but focus on behavior problems at the most serious end of the spectrum for children ages 6 to 9 years. Specifically, we create an indicator for a child with behavioral problems that are in the

top decile of the age specific population. We also construct an indicator of whether the symptom scale is between the 50th and 89th percentile of the age specific population. Like Currie and Stabile (2007), we estimate the impact of conduct problems on expulsion/suspension from school and the likelihood of having been arrested/convicted by age 16 using household (mother) fixed effects, thereby basing identification on sibling differences.

We identified 6329 children living in multiple-child households where at least two children had reached age 15 in 2008. Item non-response reduced the sample size for the suspended/expelled and arrested/convicted regressions.¹³ Descriptive statistics from the estimation samples are included in Table 1. Note that the percentage of children in our sample who exceed the 90th percentile on the BPI antisocial scale is about 24 percent for each outcome, indicating that the children in this sample are considerably more disturbed than a nationally representative sample. The NLSY data guide acknowledges that the BPI distribution was above national values in the early rounds of the NLSY, possibly due to oversampling children born to younger and less-educated women.

Table 2 contains the results from three models, one with no controls, one with controls listed in the Table, and one adding family fixed effects to the analysis. The dependent variable is the 0-1 suspension/expulsion by age 17. All models are estimated with a linear probability models by a GLM. Key regressors are indicators of externalizing disorder symptoms (measured at the 50-89th percentile and the 90+ percentile) and the household fixed effects.

The estimated coefficient for the 90th percentile for the externalizing disorder score is positive and significant for being suspended/expelled in all specifications, though the estimated magnitude drops as controls and then fixed effects are added. Having a high level of symptoms of externalizing disorder increases the likelihood of being suspended or expelled by age 17 by

¹³ A delinquency scale was asked only in 1994, 1996 and 1998, and led to a smaller sample size.

14.3 percentage points in the model with fixed effects. The sample mean for suspended/expelled is about 21% so this estimate implies a large elevation in the risk.

Table 3 contains the results bearing directly on criminal activity, with specifications and analysis identical to those described for Table 2. The estimated impact of high levels of externalizing disorder symptoms on probability of being arrested/convicted prior to age 16 and on the delinquency score are positive and significant in all models, including with family fixed effects where the point estimate indicates a 5 percentage point elevation on a base of about 4.6%, another large increase. To argue that the estimated effects in Tables 2 and 3 are causal, we need to rely on the longitudinal research design with family fixed effects to control for pervasive unobserved factors that might lead to both conduct disorder problems and later behavioral problems. Overall, our findings are consistent with early conduct disorder causing later criminal involvement. Of course if delinquency in teen years is seen simply as a continuation of externalizing disorder in younger children identifying this “cause” does not help much in understanding the developmental process behind the later criminal behavior.

3.2. Cost Effectiveness of Prevention of Conduct Disorder

Another way to approach the question of whether extension of mental health treatment to a high-risk group reduces criminal behavior is to examine the results of social programs changing access to, in this case, children with conduct disorder. A variety of prevention and treatment programs aim to reduce the individual and social impacts of conduct disorder. Effective prevention of conduct disorders requires identification of at-risk populations and interventions in place early in a child’s life (Conduct Problems Prevention Research Group,

1992; IOM, 2009). While a number of prevention interventions have been shown to be effective we focus on prevention interventions where cost-effectiveness has also been assessed.¹⁴

A pair of meta analyses identifies prevention programs for which measured benefits, including in terms of crime reduction, exceed costs (Aos et al. 2001, 2004). These are Nurse-Home visitation programs targeted at low income single mothers; Parent Child Interaction Therapy; Home Visiting Programs for At-Risk Mothers, and the Good Behavior Game (delivered in school). Overall the early childhood home visitation programs reviewed by Aos and colleagues (2004) yielded net social benefits of about \$6000 per child in 2003 dollars. The Good Behavior Game which uses behavioral techniques in the classroom to prevent conduct problems from developing yielded small positive benefits of less than \$200 per child.

More recently Foster and colleagues (2005) conducted a cost-effectiveness study of the Fast Track program which focuses specifically on prevention of conduct disorder and violence. The program was likely to be cost effective (70%) when targeted at high risk children but had a less than 1% chance of being cost effective when applied to the general population in “high risk” communities.

3.3. Cost Effectiveness of Treatment for Conduct Disorder

Kazdin (2002) identifies 550 psychosocial treatments for conduct disorder in children and youth, noting paradoxically that treatments with the strongest evidence base are those less frequently applied in practice.¹⁵ The treatments most frequently used to treat conduct disorder are psychodynamic psychotherapy, eclectic psychotherapies and family therapy. Few of these are

¹⁴ Only a small portion of all the interventions that have been shown to be effective have been subjected to economic evaluations (IOM, 2009 Chapter 9 p.254). Furthermore, where economic evaluations have been done, the report notes that the findings are subject to considerable uncertainty from low statistical power, short follow-up periods, and generalizability outside of research contexts.

¹⁵ Psychosocial treatments are emphasized because existing research suggests that pharmacotherapies are not effective in treatment of conduct disorder.

supported by evidence of effectiveness.¹⁶ Kazdin (2002) identified five main classes of evidence based treatments for conduct disorder. They are Parent Management Training (PMT), Multisystemic Therapy (MST), Problem Solving Skills Training (PSST), Functional Family Therapy (FFT) and Brief Strategic Family Therapy (BSFT). Recently, the National Institute for Clinical Excellence (NICE) in the United Kingdom issued a technology appraisal guideline indicating that parent training programs were cost-effective in treating conduct disorder (NICE, 2006).

PMT, MST, FFT and a program that combines several of these elements known as the Incredible Years program have been subject to economic evaluations. Parent Management Training (PMT) trains parents to modify their child's behavior at home and in the context of their family. PMT is based on the theory that poor parenting is a source of conduct disorder. Parents are trained to identify problem behaviors and to intervene in ways that do not reinforce bad behavior. NICE (2006) concluded that PMT was cost-effective in relation to usual care of conduct disorder due to savings from the health and education sectors. Some evidence of reduced crime related activity has been reported in outcome studies but the net economic consequences for criminal activity have not been established (Brestan and Eyberg, 1998).

Multi Systemic Therapy extends PMT by adding other types of skills and treatment including family communication skills, marital therapy, and problem solving therapy among others. Aos and Barnoski (1998) estimated significant net cost savings for MST, on the order of \$13,000 in 1997. Aos et al. (2004) conducted a later review of MST on the application of the technology to violent offending youth aged 12 to 17 years. The assessment was based on three evaluations of MST targeted at offending youth. MST incurred direct costs of \$4,473 on average in year 2000 dollars, whereas the savings to the criminal justice system were estimated at

¹⁶ An exception is Brief Strategic Family Therapy (BSFT), discussed below.

\$31,661. The large benefits in this study appear to stem from the highly targeted nature of the populations treated with MST.

Functional Family Therapy (FFT) was evaluated in Washington State (Washington State Institute for Public Policy, 2004) by randomly assigning youth offenders to FFT, MST, Aggression Replacement Training (ART) or a waiting list (with usual care).¹⁷ FFT focuses on teaching families to change problematic family behaviors through the development of problem solving skills. Families participate in 12 therapy visits over a 90-day period. ART is a group therapy method administered to youth offenders for 30 hours over a 10 week period. It focuses on teaching youth to control impulses and anger. Therapists running the groups received intensive training and their adherence to the ART model was measured. ART has been widely adopted by juvenile courts in Washington State. The meta analysis by Aos et al. (2004) estimated savings, based on four controlled evaluations, of \$10 to \$30 in criminal justice spending for each dollar of direct program spending.

The Washington State evaluation found no significant differences between rates of overall recidivism or felony recidivism between FFT, ART and the controls. However, for therapists that adhere to the treatment the two experimental programs yielded savings of between \$10 and \$12 for each dollar of program spending. This analysis however, sacrifices the virtues of randomization since adherence rates may be associated with a variety of unmeasured characteristics of the youths assigned to different therapists. Furthermore, fidelity to program design is higher in experimental than real-world settings, implying that the overall results might be more of what we could expect in non-experimental settings rather than results for the therapists with the greatest fidelity.

3.4. Summary Comment

¹⁷ Implementation problems for MST limited the ability to evaluate the MST intervention.

Evidence from longitudinal surveys in the New Zealand, the U.K., Canada and the U.S. imply that the association between early life conduct problems and later criminal activity is partly causal. Prevention and treatment programs have potential to reduce the economic and social costs of crime stemming from conduct disorder to a degree that may more than pay for treatment. Some studies yield very favorable payoffs in terms of lowering criminal justice costs from investment in treatment and prevention. However, this potential has not been clearly established in the real world of the constrained, poorly coordinated, unevenly staffed social service, education, and criminal justice sectors.

4. Mental Health Treatment for Offenders

An obvious high-risk candidate group for enhanced investment in mental health treatment is those who have already offended and are at some stage in the criminal justice system. The left-hand side of Figure 3 depicts a typical sequence of events for an offender. After a police encounter, arrest and arraignment, the accused proceeds to trial, and if found guilty, is sentenced to prison or jail. Eventually the offender would be released to the community and may be put on probation, remaining for some period under the supervision of the criminal justice system.

Movement down the left hand side is slow, expensive and may not be effective in forestalling future problems, especially for people with serious mental illnesses. At virtually every step in the process interventions addressing role of mental illness have been devised to divert the offender from the criminal justice system; some of these are indicated in Figure 3. Some police officers have special training in mental health issues and are trained to handle mentally ill offenders with recognition of the role of symptoms and illness in behavior. Mental health courts, reviewed in detail below, are an alternative to regular court trials. Judges in these

courts work with mental health system professionals, more actively supervise progress, and employ jail-prison as a backup for lapses in progress. Mental health courts are one but not the only way that offenders, upon release, can be referred and in many cases forced to receive community treatment (such as medication and counseling). During the probation period, some jurisdictions use probation officers with special training and who specialize in persons with mental illness.

Criminal justice system involvement identifies good targets for intervention, and, furthermore, enforces a link between offenders and mental health treatment. One would expect that closely targeted mental health treatment, with sanctions of the criminal justice system backing up adherence, would have a good chance of being cost-effective. We review here the evidence for mental health interventions associated with mental health courts and mandated community treatment, two prominent policies diverting offenders from the left-hand side of Figure 3.¹⁸

4.1 Mental Health Courts

Mental Health Courts (MHCs) are alternatives to regular courts for offenders whose mental illness may have contributed to their criminality, and employ resources of both the criminal justice and the mental health system within a framework of therapeutic jurisprudence (Wexler and Winick 1991). Therapeutic jurisprudence is based on the principle that punishment should not be the sole concern of the courts, but rather the well-being of the accused as well as the potential mitigating circumstances regarding mental health are required for a more complete sense of justice (Rottman and Casey, 1999). MHCs were modeled on drug courts established earlier (Steadman et al. 2001), with the important distinction that while drug possession and use are crimes, having a mental illness is not. The monitoring-sanctioning function of MHCs thus

¹⁸ See Skeem, Manchak and Peterson (2009) and Monahan and Steadman (2010) for related reviews.

works differently than drug courts, and the enforced treatment handed down by MHCs is also more controversial than treatment mandates set for drug offenders (Slate and Johnson, 2008).

Broward County, Florida, established the first MHC in 1997, one county north from the nation's first drug court in Dade (Poythress et al. 2002). Broward's MHC was established with the goals of making sure mentally ill patients were released from jail in a timely fashion, got connected with both legal representation and mental health resources, and were oriented well in a return to the community (Christy et al. 2005). MHCs have proliferated, mainly in southern and western states (Slate and Johnson, 2008). By December, 2005, the National Alliance for the Mentally Ill (2005) counted 113 courts; Steadman recently estimated that there are about 150 courts in operation (Slate and Johnson, 2008).¹⁹ The *Mentally Ill Offender Treatment and Crime Reduction Act* of 2003 awards grants to counties for mental health courts or other court-based programs fueling growth of MHCs. Research on MHCs must contend with local idiosyncrasies (Steadman et al. 2001), and the malleable nature of court administration (Bernstein and Seltzer, 2003).

MHCs are usually defined as courts with a separate docket for mentally ill patients with specialized personnel to handle the cases. Courts set criminal and mental health criteria for selecting candidates (Redlich et al. 2005).²⁰ To establish leverage, some MHCs require that the defendant enter a guilty plea (Bernstein and Seltzer, 2003).

¹⁹ There is no consensus on the definition of a MHC (Christy et al., 2005).

²⁰ Some courts test potential clients after the initial arrest, and some require confirmed diagnosis before considering the candidate eligible for treatment. Referrals to MHCs come from law enforcement personnel, court personnel, district attorneys, public defenders or patient families. In an early study of 20 MHCs, Bernstein and Seltzer (2003) report that four courts excluded offenders with any history of violent behavior. Ten courts accepted offenders with felony charges, and ten were restricted to those with misdemeanor only charges. In Broward County, referrals to the MHC *must* come post-arrest and may only come from other judges, district attorneys or lawyers for the defense (Christy et al. 2005). Redlich et al. (2005) distinguish between what they refer to as first and second-generation MHCs. Those following the Broward County model, accepting only misdemeanor patients, are termed first generation courts. Second generation courts modify the Broward County model on four dimension: "(a) type of charges the court accepts (felony vs. misdemeanor), (b) type of adjudicative model the courts follow (pre- vs. postadjudication), (c) sanctions used in the court (specifically the expressed willingness to use jail as a sanction), and (d) supervision of MHC participants (mental health vs. criminal justice professionals)." (Redlich et al. 2005)

Discharge from an MHC may take months or years, and may extend well beyond the time a defendant would have spent in jail had he followed the normal route of criminal justice. Although mental health courts may help mentally ill offenders avoid jail time, they are designed to incur additional costs in terms of MHC supervision and contacts, and in the mental health treatment system.

MHCs have been studied from several perspectives. Legal scholars question the concept of therapeutic jurisprudence and whether offenders with mental illness are competent to abdicate their rights to regular judicial processing including jury trial (Slobogin 1995, Allen and Smith, 2001). Others question whether clients in MHCs should be coerced or “leveraged” into treatment (Griffin et al. 2002).²¹ MHCs mandate the mental health system to treat court-supervised clients at a high priority, and in a setting with limited community-based resources, some other clients, possibly with greater need from a clinical perspective, will be crowded out (Clark 2004; Goldkamp and Iron-Guynn 2000; Steadman et al. 2001; Watson et al. 2001).²² Discretion in application of who is “appropriate” for MHCs, access to mental health courts may not be fair, in the sense of leading to systematic discriminating on the basis of gender or race.²³

²¹ See Monahan et al. (2005) for an empirical review of the application of “leverage” in mental health courts.

²² In principle, any impact of “queue-jumping” on the mental health system should be taken into account in evaluating the impact of MHCs, this is very difficult to do in practice (Wolff 2002, Petrila 2003). In resource constrained mental health systems, persons with mental illness have incentives to offend in order to access treatment, an “unintended consequence” referred to by a number of observers (Sinaiko and McGuire 2006, Wolff 2002).

²³ MHC clientele differ systematically from traditional criminal caseloads. Referring agents may select for ‘good’ risks based upon personal characteristics. Steadman et al. (2005) studied selection in seven MHCs concluding that older, white females tend to be preferentially referred to MHCs. Naples et al. (2007) confirmed the Steadman finding in that older, white women without felony or violent charges (even among courts that accept felony cases) appear to be preferentially selected for entry into mental health court. The other way to state these results is that young Black males are less likely to be referred to MHCs. Whether this represents unfair discrimination or decisions based on application of reasonable criteria for likely success in MHCs has not been established. Fairness is an issue in other application of mental health treatments for criminal justice populations, though the treatment is not always regarded as a positive as in the case of MHCs. Blacks are more, not less likely to be referred to mandated outpatient treatment, though in the case of New York State at least, this is due to Blacks’ overrepresentation in the denominator population of those at risk for crime with extensive contact with the public mental health system rather than any race-based discrimination by referring agents. See Swanson et al (2009).

Our main interest is evaluation of MHCs from the standpoint of their impact on criminal justice and mental health system outcomes and costs. Table 3 summarizes the findings of eight case studies of particular courts. The reports are generally positive, but study designs are not uniformly strong.²⁴

Cosden (2003) investigated the Santa Barbara MHC/ACT system for clients that received MHC treatment compared to TAU using a randomized design. Clients in the MHC system reported marginally better quality of life increases, but similar criminal outcomes in terms of number of times arrested and time in jail. Cosden notes however, that MHC patients had less intensive jail stays and were more frequently released with no charge.

Ridgely et al. (2007) studied the Allegheny County (Pittsburgh, PA) MHC, oriented to non-violent offenders (though some aggravated assault cases are admitted). The court accepts only those individuals with a documented diagnosis of mental illness and requires a guilty plea be entered before beginning the MHC intervention. Like most MHCs, the intervention is a form of monitored probation with integrated community treatment and ‘reinforcement hearings’ in the MHC. Participants are discharged as having completed the program, potentially earlier than a normal sentence, after the MHC team rules treatment to have been effective. The pre-post component of the study yielded savings after one year and even larger savings, over \$9,000 over

²⁴ Hendrickx et al. (2005) studied the MHC in Clark County Nevada using a 12-month pre-post time comparison. Crime dropped after MHC participation, and dropped most for those completing court participation. Boothroyd et al. (2005) and Christy et al. (2005) studied mental health and criminal justice outcomes, respectively, for the Broward court, comparing trends for MHC participants from a matched group of misdemeanants from Hillsborough County. Although the MHC participants were more likely to be linked to treatment, this did not improve mental health outcomes. Christy reported mainly favorable criminal justice outcomes. Compared to offenders handled in regular court, Moore (2006) finds reduced recidivism in a MHC in the southeastern U.S., particularly for those completing MHC. Trupin (2003) investigated the effect of MHCs in Seattle on recidivism, clinical outcome measures and severity. In a pre-post comparison, recidivism dropped. Notably, offenders were in jail longer pre-booking with MHCs, offsetting any savings in reduced recidivism. McNeil (2007) examined the San Francisco county MHC which included violent offenders. Compared to a matched sample, recidivism fell 55%, but McNeil cautioned that the propensity matching may not be picking up unobservable characteristics related to being “most likely to violently reoffend,” biasing findings in favor of the MHC, a problem plaguing the nonexperimental studies.

two years. The savings were largely in the form of reduced jail days, set against estimated MHC and mental health system costs. Investigators attempted to compensate for weaknesses of the pre-post design by construction of a hypothetical counterfactual group. With the assumptions behind this hypothetical group, Ridgely et al. (2007) believed there would be a net savings from MHCs if subjects were followed at least for two years.

The evidence is highly uneven on the effectiveness and cost-effectiveness of MHCs. Some but not all of the evaluations of MHCs point to a reduction in criminal activity associated with participation in the court. Little evidence connects the mental treatment component of the mental health court to these positive outcomes. In some studies mental health outcomes were not evaluated. In others there was a weak or no effect, even when the criminal justice outcomes were affected (as in the Broward evaluations). Good cost data to evaluate the cost-effectiveness of this set of interventions is essentially absent.

4.2 Voluntary and Involuntary Community Treatment

By voluntary treatment we have in mind the typical client-provider relationship in which treatment is sought freely by the client, who may terminate treatment at any time, and symmetrically, the provider is under no obligation, other than due to normal professional responsibility, to treat the client. Access to public and private mental health care is restricted by non-price rationing, such as capacity constraints. Relaxation of these constraints will lead to more use, and possibly reduction in criminal justice costs. Expansion of access to voluntary treatment for mental health care is generally not done for the purpose of affecting the criminal justice system. Any such offset would be a kind of bonus over and above the main purpose of providing good mental health care to those who need it.

Two studies of the introduction of managed mental health care in King County (Seattle), Washington, investigate how an exogenous shift in the availability of community-based mental health services affects jail use.²⁵ For Medicaid enrollees in 1995, a prospective payment system replaced a fee-for-service payment system to community-based mental health care providers in Seattle, giving them new incentives to “manage care.” Managed care introduces an incentive to providers to reduce costs and even to “cost shift” care of persons with mental illness to other sectors, such as jails. The authors posit this incentive may affect jail use: “If managed care worsens access to adequate mental health treatment and resulting worsened mental health status leads to more criminal offenses, then jail detentions should increase.” (Norton et al. 2006, p720)

Outpatient mental health costs fell after the introduction of managed care, and according to the analysis in Domino et al. (2004) of about 40,000 Medicaid enrollees, in which non-Medicaid enrollees were used as a control group, managed mental health care resulted in a 5 percent increase in the likelihood of jail for a typical Medicaid enrollee (on a base rate of about 3 percentage points). In a subsequent analysis of a subset of 6800 persons who were likely to be severely mentally ill, however, the authors found no effect of managed care on the likelihood of jail (Norton et al. 2006).²⁶

Involuntary outpatient commitment, sometimes euphemistically referred to as “assisted outpatient commitment” is a form of civil commitment for persons with mental illness modeled on earlier civil commitment to inpatient care. Under involuntary outpatient commitment laws, a court determines that a person is remanded to care of the mental health system. The subject is

²⁵ Domino et al (2004) and Norton et al (2006) are essentially the same research team.

²⁶ The statistical methods of the two studies are quite different (two-part model vs Markov model), leaving it unclear how to understand the different findings of the two studies.

obliged to get care and the system is obliged to give it to him.²⁷ Patient non-compliance can result in transport to an inpatient facility to be evaluated for an involuntary inpatient admission. The impression patients have that they are required to comply with treatment is probably more powerful than any actual legal sanction (Borum et al., 1999). Maximum available sanctions are not always employed. More than forty states have some provision for outpatient commitment, and although the primary legislative intention behind assisted commitment is to convince noncompliant but needy patients to get treatment, outpatient commitment is probably the most prevalent policy with the potential for using the mental health system to avoid crime and criminal justice costs. Outpatient commitment can be evaluated from numerous perspectives, its ethical principles, the experience of coercion, improvements in mental health, as well as its impact on criminal justice (Monahan, 2008; Swartz et al. 2002).

The Duke Mental Health Study (Swartz et al. 2001) recruited 331 persons committed by a court in North Carolina to community treatment, and randomly assigned about half of these to be released from the orders. Both groups had access to enhanced mental health care, so the randomization is associated with mandating, not the availability of services. A reduction in arrests was associated with extended outpatient commitment for a subset of seriously ill patients (Swanson et al., 2001). The comparison in this paper is no or short versus extended commitment without randomization. The experimental vs. control group found no significant differences in arrests.

New York State (NYS) established an outpatient commitment law (Chapter 408 of the Laws of 1999) known as Kendra's Law, named after a young woman pushed in front of a subway train in New York City by a man with serious mental illness. NYS evaluated the law

²⁷ "Mandated" or involuntary treatment can commit the client to go to care, the provider to supply care, or both. See Sinaiko and McGuire (2006) for discussion and classification.

itself (NYS OMH, 2005), and commissioned an independent evaluation (Swartz et al., 2009). In addition, researchers have studied the law's impact (Link, 2010).

NYS created strict criteria for a person to be eligible for assisted outpatient treatment (AOT) including illness, dangerousness, noncompliance history, and likelihood of benefiting from AOT (Swanson et al 2009). By December 2004, 3,493 had received court-ordered treatment through AOT. New York State's evaluation used a pre-post design and showed very large favorable changes comparing the six-month period prior to AOT assignment to the months afterwards. Rates of incarceration fell from 23% pre to 3% during AOT (NYS OMH, 2005, p.18). Arrests fell from 30% to 5%; psychiatric hospitalization from 97-22%; homelessness from 19% to 5%. In the NY evaluation, AOT assignment is catching individuals at a time of crisis, and they are likely to have improved in any case without AOT.

Link (2010) compared 76 individuals assigned to AOT with 108 patients recently discharged from a psychiatric hospital. Matching via propensity scores he found the AOT group had significantly lower rates of suicide risk, serious violent behavior, and better illness-related social functioning. Interestingly the AOT group reported less subjective coercion associated with treatment compared to the non AOT group. This matched, cross-sectional, post design relies heavily on the ability to find comparable patients to those assigned to AOT.

Involuntary outpatient commitment shows some promise in improving both mental health and reducing crime. Costs, however, have not yet been systematically studied, and the key question of how the costs of enhanced outpatient treatment stack up against any savings in criminal justice has not yet been answered.²⁸

²⁸ Ongoing research on Kendra's Law will address this issue. The costs of enhanced services for criminal offenders through involuntary treatment generally fall on the public mental health system. If this system is capacity-constrained, the cost will be manifest as other patients not getting treatment. See Sinaiko and McGuire (2006) for

5. Conclusions

As others have argued, persons who are severely mentally ill should be offered treatment, independently of any social externalities that might flow to others (Monahan and Appelbaum, 2000). This paper bears on whether extra priority ought to be put on services for persons with mental illness who also commit crimes, in terms of providing these individuals better access, more extensive treatment, or even in terms of imposing sanctions against not adhering to treatment. The potential spillover benefits – less crime, lower criminal justice costs – are experienced by others, not the patient, implying the patient would put little weight on them in deciding about treatment, and creating the classic externality rationale for special subsidy or quantity targets.

The correlation between serious mental illness and crime, especially based on criminal justice-involved samples, lends curb-appeal to the case for special priority. Time-series data are also highly suggestive of a close connection between mental illness and the way we manage it, and crime. Frank and Glied (2006) tracked the living arrangements of persons with serious and persistent mental illness (SPMI) over the 50-years between 1950 and 2000.

“Deinstitutionalization” reduced the percent of persons with SPMI in psychiatric hospitals from 23 percent to seven percent over this period; during the same period, the percent of persons with SPMI residing in jails and prisons went from one percent to five percent.²⁹ These associations do not of course amount to a sound case for elevated priority.

discussion, and Swanson, Van Dorn, Swartz et al. (unpublished) for evidence that in the early phase of the implementation of Kendra’s Law, there was some “crowd-out” effect.

²⁹ As Frank and Glied point out, the increasing incarceration rates in the 80s and 90s swept up larger portions of criminals in the net, including those with mental illness.

Researchers do find some convincing causal connection between mental illness and crime, but it is not large, and it is specific to certain groups of patients at certain stages of their illness. The case for broad-based expansion of mental health prevention or treatment would need to rest on grounds other than crime reduction. We identified some potential areas for effective care targeted to high-risk groups, youth offenders with conduct disorders and adults with serious mental illness. Some criminal justice offsets seem to follow enhanced mental health services for these groups.

The strength of the evidence for positive spillover is not overwhelming. Two recent reviews came to similar conclusions about the limited role of crime-related arguments for putting more resources into mental health care. Skeem et al., (2009) conclude that while “theoretically, effective psychiatric treatment would reduce recidivism for the subgroup of offenders for whom mental illness has a direct effect on criminal behavior,” there is no evidence to date “that insufficient psychiatric treatment causes criminal justice involvement for this population.” (p. 16). Fisher, Silver and Wolff (2006), referring to the high prevalence of persons with mental illness in the criminal justice system: “...Targeting mental health treatment services as “the” problem and “the” solution is ... likely ineffective as a means of addressing this issue.” (p.548)

The evidence on criminal justice impacts needs to be understood within the context of the package of social needs and deficits bearing on this group. Among disadvantaged populations with elevated rates of crime, homelessness, welfare, and poverty, effective mental health care produces joint products, better mental health, and better social functioning, including less crime and its associated costs. To judge the value in relation to cost of mental health care, it is insufficient to track just one of the potential joint products and compare value in this one sphere to the costs. Although the interventions reviewed here have in common that they seek to

improve mental health and functioning as well as impact criminal justice, the scope of each type of program, and the need to take into account a range of factors, differs across intervention types.

The most focused intervention we covered is the mental health court. These courts are adjuncts to the criminal justice system, and their costs and benefits are directed primarily to criminal justice considerations. Rigorous evaluation of mental health courts are lacking, in spite of the years of experience in many jurisdictions with the courts. Cost data are particularly needed. Comparison of the full social cost, of crime, criminal justice, court operation, and the mental health system will lead to an accounting of a sufficient set of effects to make a determination of the net value of this policy. Based on the evidence available to date, it seems unlikely that any effect of mental health courts is not mediated through improvement in the mental health of the offenders under supervision. If this turns out to be correct, it may suggest ways to economize on mental health treatment per se, and make an effort to identify the active ingredient in the “mental health” court.

Involuntary outpatient treatment is more complex for purposes of evaluation than mental health courts. Involuntary treatment can be targeted to the set of patients/offenders who are most likely to benefit from treatment both from a clinical as well as a criminal justice standpoint. The criminal justice/mental health cost-effectiveness of this policy is an important but one piece of the set of information needed to conduct a social evaluation. Cost-effectiveness is ill-suited to valuing the subjective and ethical social costs of coercion associated with involuntary treatment. In practice, those committed to involuntary treatment seem only mildly bothered by the coercion, but this finding does not fully answer the ethical question about whether society should be forcing mental health care.

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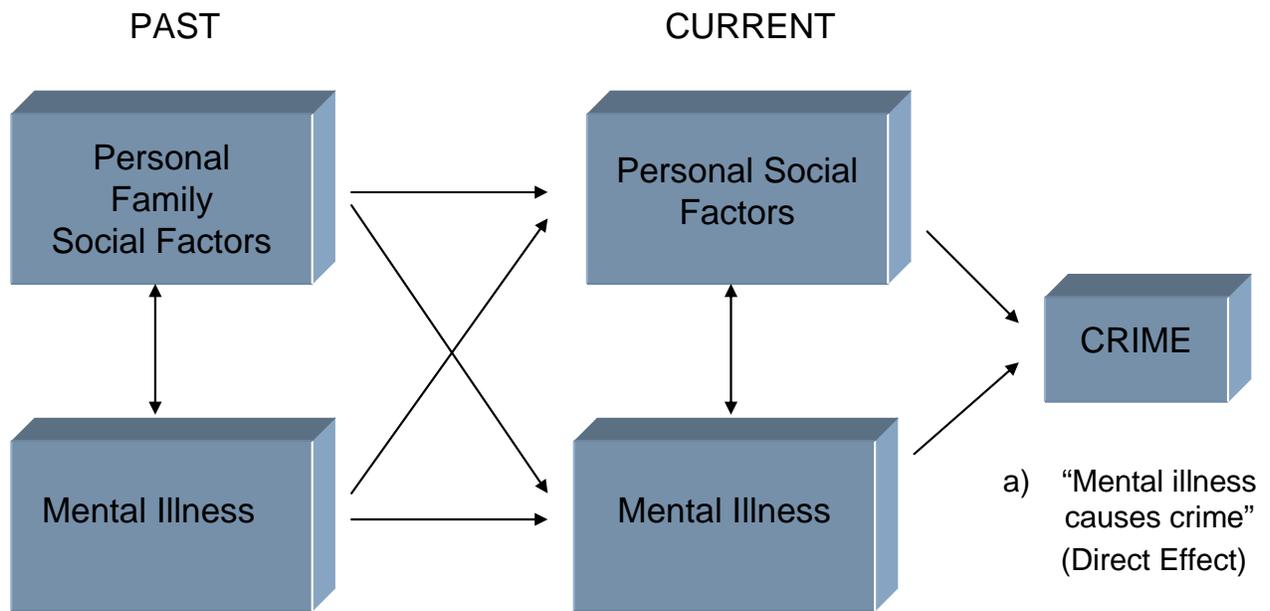
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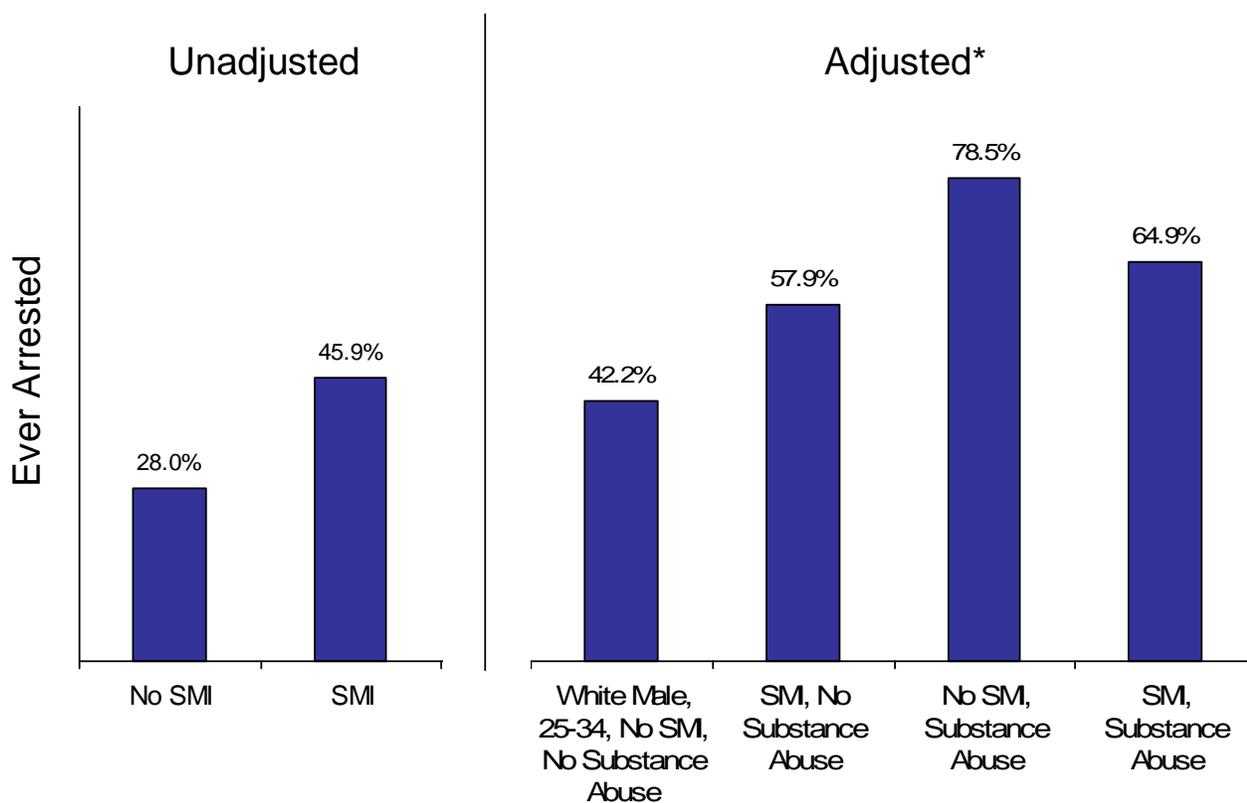
Figure 1
Past (Indirect) and Current (Direct)
Effects of Mental Illness on Crime



Many Indirect Casual Arrows!

Figure 2

Serious Mental Illness, Substance Abuse and Arrest Rates



Source: Collaborative Psychiatric Epidemiology Surveys. Rates of arrest are lifetime rates. Illness and substance abuse are rates for past 12 months.

*Linear model adjusted for gender, age categories and race/ethnicity

Figure 3

Mental Health Treatment in the Flow of Criminal Justice

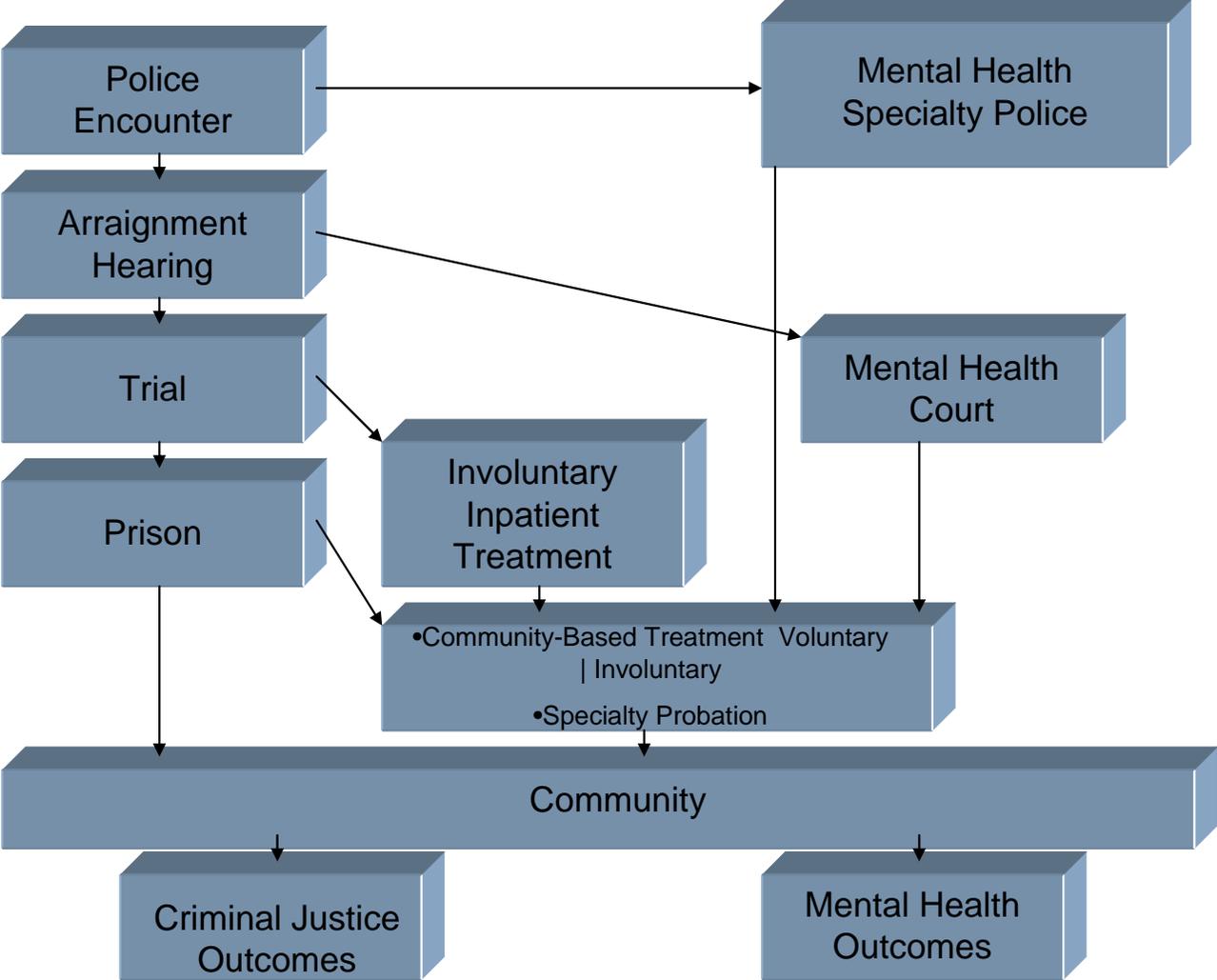


Table 1: Estimation Samples from NLSY

	Suspended/Expelled		Convicted/Probation	
Model N	6,329		5,421	
Dependent variable				
No	4,978	78.65%	4,828	89.06%
Yes	1,351	21.35%	593	10.94%
BPI Antisocial score (percentile) at age 8 group				
Below 50th percentile	2,155	34.05%	1,787	32.96%
50th to 89th percentile	2,696	42.60%	2,353	43.41%
90th percentile and above	1,478	23.35%	1,281	23.63%
Sex				
Male	3,253	51.40%	2,777	51.23%
Female	3,076	48.60%	2,644	48.77%
Race				
Hispanic	1,420	22.44%	1,258	23.21%
Black	2,020	31.92%	1,833	33.81%
White	2,889	45.65%	2,330	42.98%
First born				
No	4,190	66.20%	3,493	64.43%
Yes	2,139	33.80%	1,928	35.57%
Teen mom				
No	5,191	82.02%	4,426	81.65%
Yes	1,138	17.98%	995	18.35%
Mom divorced in last year				
No	5,928	93.66%	5,088	93.86%
Yes	401	6.34%	333	6.14%
Mom widowed in last year				
No	6,318	99.83%	5,412	99.83%
Yes	11	0.17%	9	0.17%

Note: Children are from multiple-child households where at least two children reach age 15 by 2008. Dependent variables are "ever" up to age 17.

**Table 2 Suspension/expulsion by age 17
NSLY Regression Results**

	No controls	With controls	Controls & fixed effects
BPI 90 th	0.269** (0.013)	0.206** (0.012)	0.143** (0.017)
BPI 50-89	0.090** (0.010)	0.058** (0.010)	0.027* (0.012)
Male		0.102** (0.009)	0.116** (0.010)
Latino		0.053** (0.015)	0.620 (1.095)
Black		0.240** (0.011)	0.383 (1.176)
First Born		-0.012 (0.010)	0.015 (0.010)
Teen Mom		0.066** (0.014)	0.006 (0.018)
Divorce Last Yr		0.019 (0.018)	0.004 (0.022)
Widow Last Yr		0.018 (0.095)	0.137 (0.114)
Intercept	0.081** (0.007)	-0.003* (0.009)	-0.269 (0.332)
R2	0.068	0.151	0.559
N	6329	6329	6329
Fixed Effects	No	No	Yes

** p<0.01 *p<0.05

**Table 3 Convicted or Probation by age 17
NSLY Regression Results**

	No controls	With controls	Controls & fixed effects
BPI 90 th	0.122** (0.011)	0.108** (0.011)	0.050** (0.016)
BPI 50-89	0.039** (0.009)	0.036** (0.009)	0.013 (0.012)
Male		0.054** (0.008)	0.068** (0.010)
Latino		0.017 (0.014)	0.023 (0.953)
Black		0.007 (0.010)	0.037 (1.029)
First Born		-0.031** (0.009)	-0.011 (0.010)
Teen Mom		0.007 (0.013)	-0.036* (0.017)
Divorce Last Yr		0.047** (0.017)	0.004 (0.022)
Widow Last Yr		0.133 (0.097)	0.165 (0.123)
Intercept	0.061** (0.007)	0.041** (0.009)	-0.078 (0.173)
R2	0.022	0.033	0.470
N	5421	5421	5421
Fixed Effects	No	No	Yes

** p<0.01 *p<0.05

Table 3: Summary of Mental Health Court Evaluations

Setting	Court and Study Population	Comparison Population	Notable Outcomes	Notes
<i>Herinckx et al. (2005) Psychiatric Services vol. 56</i>	Clark County, NV: 2000 - 2003 Court: Diagnosis near time of arrest. In 2001, switched from pre-plea to post-plea. Study: Misdemeanor only; Axis I disorder. Majority of court cases, but not all.	Pre-post	Criminal Justice: 400% overall crime reduction rate one year after enrollment. 62% reduction in probation violations. MH treatment had no effect on CJ outcomes, court completion associated with less crime Mental Health: used as covariate, not outcome.	Favorable effects were concentrated among those completing MHC; noncompleters showed little benefit.
<i>Moore (2006) Law and Human Behavior vol. 30</i>	Southeastern MHC (Unspecified): 2001 - 2002 Court: Subjective 'not a threat to the community.' Mental illness evaluated and confirmed after MHC screening for 'inappropriate behavior' or prior diagnosis. Subjective evaluation made by MHC. Study: White or African American.	Nonequivalent comparison group. Used chief district court judge to identify traditional court participants from the prior year who would have been eligible for the MHC had it been in existence; that is, court defendants with a history of mental illness that did not pose a public safety risk. Comparison group is nonequivalent as it is both time mismatched, and diagnostic criterion mismatched, as diagnosis is not confirmed as it is for MHC patients. Statistical controls for age, race, gender, prior criminal history, prior jail time and severity of current charge.	Criminal Justice: MHC reports an order as a six month treatment window. Negative binomial regressions report that after using prior offense severity, the incident rate ratio for MHC presence at recidivism was -.62, significant at $p < .01$. On average MHC completers were rearrested .58 times, a significant at $p < .001$ chi-squared difference between non-completers average of 2.03. Mental Health: None	Similar to Herinckx result.
<i>Trupin (2003) International Journal of Law and Psychiatry vol. 26</i>	King County, WA / Seattle, WA: (1999 - 2001) Court: Misdemeanor only. Psych evaluation at entry into court. Plea-bargain integrated court process. Study: No exclusions, followed sample for nine-month follow up following MHC enrollment.	Pre-post analysis of MHC sample, along with comparison of MHC sample and those that opted-out.	Criminal Justice: Post enrollment booking decreased to a $p < .05$ significant level. Cohen d's were reported .587 and .617 for Seattle and King County respectively. Annualized jail LOS decreased for Seattle $p < .01$, $d = .779$. Opt outs in Seattle also appeared to decrease annualized LOS, but not as much, $p < .05$, $d = .442$. Mental Health: 95.4% linkage to services in Seattle reported, 84% reported in King County. King County report and increase in global assessment of functioning, $p < .05$, but the effect is weak, $d = .257$.	Qualitative evaluation of the courts gives a more complete picture than quantitative data. Quantitative results are of weak and mixed effect. Though results are generally strong for treatment access, the selective nature of the opt-in/opt-out process makes the effects on criminal justice uncertain.
<i>Ridgely (2007) RAND Technical Reports TR-439</i>	Allegheny County, PA: 2001 - 2006 Court: Nonviolent instigating arrests with documented diagnosis of mental illness, felonies and misdemeanors included. Study: All participants from inception 2001 through end of Sept. 2004.	Pre-post analysis and counterfactual hypothetical population.	Cost: One year follow up pre-post overall \$1,804 savings per person in MHC, two year \$9,584. Against hypothetical, increase in cost of \$2,656. In both cases, reduction in jail costs offset by increase in mental health costs.	A cost study of MHC effectiveness. While results are compelling in favor of MHC use, especially from pre-post analysis, the sensitivity of the returns to investment from the counterfactual make positive/negative value largely dependant upon sensitivity assumptions.

<p>Cosden (2005) Behavioral Sciences and the Law vol. 23</p>	<p>Santa Barbara, CA</p>	<p>Court: Voluntary participation of nonviolent (no longer posed a danger to others), could be either pre or post plea. Court is integrated with ACT team. Study: Stratified random sample from those that were deemed to have met the criterion above. Due to desire to add more to MHC population, randomization occurred two-to-one in favor of the MHC at the onset of the study.</p>	<p>Random sample. It should be noted that demographics of the randomization are not perfect, suggesting incomplete randomization, at least on some grounds, though reported chi square values are insignificant.</p>	<p>Criminal Justice: Re-arrests, convictions, incarceration days all report no significant effect of the MHC. If the top percent of offenders from both categories are removed, a moderate effect of the MHC appears. The success seems to be determined by 'serious of substance abuse problems at intake.' Mental Health: MHC patients received many more treatment hours and moderately better on GAF, Lehman QOL, BASIS and ASI scores compared to TAU. Partial support for MHC positive treatment on mental health functioning.</p>	<p>True experiment gives a more compelling design, though demographic differences within the normal jail population and those selected for the study call into question the generalizability of the model. Both samples exhibit significant reversion to the mean (both TAU and MHC patients fare better over time). Cosden concludes that MHC is not useful for all offenders, but may be helpful for the majority of moderate cases. Reversion to mean is contrary to behavior exhibited in the Trupin study.</p>
<p>Boothroyd (2005) Psychiatric Services 56 -and- Christy (2005) Behavioral Sciences and the Law vol. 23</p>	<p>Broward County, FL: 1999 - 2003</p>	<p>Court: Nonviolent misdemeanors, no formal diagnostic criteria, referred by magistrates. Mental health screening conducted by students after referral. Study: English speaking MHC patients, whose initial court date came between Dec. 1999 and April 2001.</p>	<p>Matched sample of misdemeanor defendants from Hillsborough county due to similar demographics and census variables. Matching was done on a one to one basis, two month lagged, looking for defendants in other counties exhibiting signs of mental illness.</p>	<p>Criminal Justice (Christy): Recidivism and time to rearrest were measured in both groups. Recidivism was lower for the MHC population, but not significantly so. Time to rearrest was longer for MHC patients. Felony vs. non-felony rearrest rates were not significantly different. Index jail time was significantly reduced. Mental Health Measures (Boothroyd): BPRS reports no better outcome from MHC patients compared to matched TAU patients in other counties. While MHC patients may be matched more successfully to treatment, 'receipt of treatment alone is not sufficient to effect positive changes in clinical status.'</p>	<p>MHC does not show significant improvement over base treatment condition; however it does no worse. As the Broward county mission was to reduce jail time without harming public safety, authors conclude the MHC has succeeded. Study only found a difference in rate patients were matched with services not in outcomes. Study interprets this as MHC working properly, mental health systems in county as deficient. Contrary to Cosden study, all defendants showed worsening severity over time.</p>
<p>McNiel (2007) American Journal of Psychiatry vol. 164</p>	<p>San Francisco, CA: 2003 - 2004</p>	<p>Court: Diagnosed Axis I mental disorder or developmental disabilities and amenable to community treatment. Does not preclude felonies. Study: All participants in the court from inception through November 2004 for whom complete six month follow-up was available.</p>	<p>Used propensity weighting scores to construct a TAU group out of diagnosed mentally ill patients in the SF county jail system. Controlled for non-random assignment using observables</p>	<p>Criminal Justice Measures: Reported the effect of the MHC on probability of new charge and probability of new violent charge. MHC appeared to reduce recidivism by 26% total and violent recidivism by 55% at 18 month mark. Graduate effect was more striking. Mental Health Measures: None.</p>	<p>Study notes that while propensity weighting scores can construct an approximately equal sample in both cases, it can only do so on observables. Unobservables (willingness to accept treatment) may still cause selection bias. Study reinforces idea that MHC benefit is more easily recongized after both completion of the MHC and longer time frames.</p>

Appendix A: Basic Model Estimates from CPES Analysis

Number of obs = 10686
 F (12, 85) = 115.68
 Prob > F = 0.0000
 R-squared = 0.1387

EverArrested	Coef.	t	p
Male	.265	18.10	0.000
Age < 25	.043	1.87	0.064
Age 25-24	.095	3.79	0.000
Age 35-44	.089	4.61	0.000
Age 45-54	.045	2.15	0.034
ASIAN	-.093	-1.52	0.133
AFR	.139	10.45	0.000
HISP	.104	4.49	0.000
RACEOTHER	.083	2.03	0.045
Severe MI	.155	4.74	0.000
SA	.362	8.96	0.000
SevereMI*SA	-.291	-2.48	0.015
Constant	.063	4.22	0.000
Omitted categories: female, age 55+, white race.			