Mental Health Courts Reduce Crime*

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Preliminary/Incomplete. Comments welcome.

Abstract

How do specialized mental health courts affect crime rates? We provide causal evidence on this question using as natural experiments the establishments of 339 mental health courts across U.S. counties over the period 1995-2016. Our differences-in-differences regressions show that these mental health courts reduced crime. The effect is larger for property crime than for violent crime. Further, there is a larger effect on reported crimes than on arrests, suggesting an increase in clearance rates. We observe no effect on a proxy for mental illness (suicide rates), suggesting that mental health courts are not reducing crime only through improved medical interventions.

1 Introduction

Mental illness poses a number of social challenges, not least due to its relationship with criminality and criminal-justice-system involvement (Frank et al., 2010). Mental illness is correlated with committing crimes, and it is substantially more frequent in the criminal justice population. As of 2012, 44% of jail inmates and 37% of prisoners had been diagnosed in the past with a mental health disorder (Bronson and Berzofsky, 2017).

Jails and prisons are not well-equipped as mental health treatment facilities. Incarcerated individuals often filter in and out of jail without receiving treatments or services to address their unique needs, potentially leading to a cycle of recidivism (Lamb and Weinberger, 1998; Bonta et al., 1998). The recognition of this problem has prompted criminologists and mental health professionals to support diversion programs, such as specialized mental health courts (Moore and Hiday, 2006).

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Hundreds of local mental health courts (MHCs) have been established since their origins in the late 1990s to address the ineffectiveness of the criminal justice system at dealing with the mentally ill defendants (Moore and Hiday, 2006). Unlike traditional courts, the main goal of MHCs is to improve mental health among mentally ill defendants, reducing the likelihood of committing crime individuals whose mental illness has been related to criminal behavior (McNiel and Binder, 2007).

Notwithstanding the proliferation of MHCs, there are few studies evaluating their effectiveness in reducing crime and recidivism (Skeem et al., 2011). This study is the first to explore the causal effect of MHCs on crime using panel data. We produce a new dataset on all first introductions of mental health courts (339 treatments) in U.S. counties from 1995 through 2016. We pair the courts data with county-level data on crime rates, measured through both crime reports and arrests per capita.

We then analyze the effect of mental health courts on crime rates in a difference-in-difference framework. Our regressions adjust for time-invariant county-level factors and for arbitrary state-wide time-varying factors to estimate an average treatment effect at the county level. In identification checks, we demonstrate parallel trends in crime rates and other observable characteristics before introducing mental health courts.

We find that specialized mental health courts reduce crime. Relative to the pre-period and to untreated counties, in treated counties that introduced a mental health court, the number of reported crimes per 10,000 people decreased by 37.5 crimes (about 10% relative to the mean). In turn, the number of arrests per 10,000 people decrease by 5.2 (7% relative to the mean). We demonstrate robustness to a number of alternative specifications, including differences in weighting, specifications for the outcome, and controlling for police officer employment.

We see effects on both violent crimes and property crimes, although the shifts in property crime are more robust. For the property crimes, in particular, the number of reported crimes decreases significantly more than arrests. That suggests an improvement in crime clearance rates, as a greater share of reported crimes result in arrests post-treatment.

In the previous literature, a proposed mechanism for how MHC's could reduce crime is by reducing mental illness. While the data on local mental health are limited, we have access to a measure of serious mental illness in suicide rates. We find that introducing MHC's has no effect on suicide rates. Hence, there is limited evidence for this proposed mechanism.

The rest of the paper is organized as follows. Section 2 provides an institutional background and situates the paper in the literature. Section 3 describes the data, while section 4 describes the empirical methods. Section 5 reports the results, while Section 6 concludes.

2 Background: Mental Health and Crime

A number of cross-sectional studies have shown a relationship between mental health and negative outcomes, including crime. Overall, mental illness is correlated with criminality (Teplin et al., 2002; Frank et al., 2010). Having ADD/ADHD in childhood is associated with higher crime rates in adulthood (Fletcher and Wolfe, 2009). Having a psychiatric disorder is associated with lower employment (Chatterji et al., 2011). Adolescents who suffer from depression are more likely to engage in property crime, and the effect holds using school and sibling fixed effects (Anderson et al., 2015).

Notwithstanding these correlations, most crimes are committed by individuals without mental illness, and most individuals with mental illness are not committing crimes (Glied and Frank, 2014). Still, this relationship invites consideration of evidence-based policies to see whether addressing mental illness can also reduce crime (Osher et al., 2012). A number of papers have begun to address this question.

The most credible evidence comes from RCT's. Heller et al. (2017) report on a large-scale randomized crime prevention program in Chicago. A group counseling program for young boys, focusing on social skills and self-control, was effective at reducing crime. In a developing-country context (Liberia), Blattman et al. (2017) show that randomly assigned cognitive behavioral therapy reduced crime.

A number of other papers look at this issue through natural experiments. Marcotte and Markowitz (2011) show that states that adopted mental-health-related pharmaceuticals earlier had drops in crime rates. Busch et al. (2014) use the introduction of FDA warnings as an instrument for antidepressant use and show that untreated depression reduces grades in school. Jácome (2020) shows that losing medical insurance due to an aging-out threshold increases the likelihood of incarceration among young men. The effect is driven by individuals with mental health histories, consistent with higher crime due to untreated mental illness.

Methodologically, the closest papers to ours have used county-level variation in crime policy. Bondurant et al. (2018) look at openings and closings of drug treatment facilities at the county level and find that those facilities reduce both violent and property crime. Deza et al. (2022) show that the introduction of mental health clinics in a county reduce crime rates in that county. Deza et al. (2021) show a similar effect for juvenile crime. Our contribution, compared to these papers, is to focus on judicial, rather than medical, interventions related to crime and mental health.

Substantively, the closest papers are those who have assessed the policy impacts of mental health courts. Frank et al. (2010) and Skeem et al. (2011) review a large literature

Table 1: Summary Statistics Crime Rates, 1995-2016

A. Crime Reports

Variable:	**Mean**	**Std. Dev.**
County crime rates per 10,000 residents		
Violent Crime	45.41	33.24
Property Crime	323.32	163.63
Total Crime	368.74	188.39
Observations	65,955	

B. Arrests

Variable:	**Mean**	**Std. Dev.**
County crime rates per 10,000 residents		
Violent Crime	18.62	15.08
Property Crime	51.82	30.77
Total Crime	70.45	40.74
Observations	65,696	

Panel A: The data set is UCRC (Crime-Reported) pooled over the 1995-2016 period. Panel B: The data set is UCRC (Crime-Arrests) pooled over the 1995-2016 period. The unit of observation is a county in a state in a year. Observations are weighted by the population covered by the UCRC data.

evaluating mental health courts at a smaller scale. In particular, a number of studies compare individual defendants who could go to a regular court or a mental health court (Cosden et al., 2003; Boothroyd et al., 2005). The longitudinal studies all examine single courts, with mixed results.[1] Our paper is the first to analyze the statistical impact of the universe of county-level mental health courts using a panel event study design. Unlike the studies of individual defendants, our design captures the general-equilibrium effects on all potential offenders in the whole county.

3 Data

3.1 Uniform Crime Reports

For our analysis, we use Uniform Crime Reports (UCRC) County Level Detailed Arrest and Offense Data. Specifically, we use data in crime reports (ICPSR-part 4) and data in crime arrests (ICPSR-part 1). We evaluate changes in the type of crimes documented in Part One of these data: murder, rape, aggravated assault, robbery, burglary, larceny, motor vehicle thefts, and arson. We construct aggregate measures of the total crime, total violent crime

[1] See Trupin and Richards, 2003; Ridgely et al., 2007; Herinckx et al., 2005; Moore and Hiday, 2006.

(murder, rape, aggravated assault, robbery), and total property crime (burglary, larceny, motor vehicle thefts, and arson).

We change crime counts into crime rates per 10,000 using the population covered by the UCRC. Summary statistics for these variables are reported in Table 1, with crime measured by reported crime in Panel A and crime arrests in Panel B. The values are pooled over the 1995-2016 period and weighted by the population covered by the UCRC data. For crime (arrests), the total crime rate per 10,000 residents is 70.45, with a rate of 18.62 violent crimes and 51.82 property crimes per 10,000 residents. In total, we have 65,696 county-year observations. Crime rates are substantially higher for reported crime, as expected, with an average of 369.74 total crime rate per 10,000 residents. Over the period 1995-2016, the average violent crime rates per 10,000 are 45.41 and 323.32 for property crime rates.

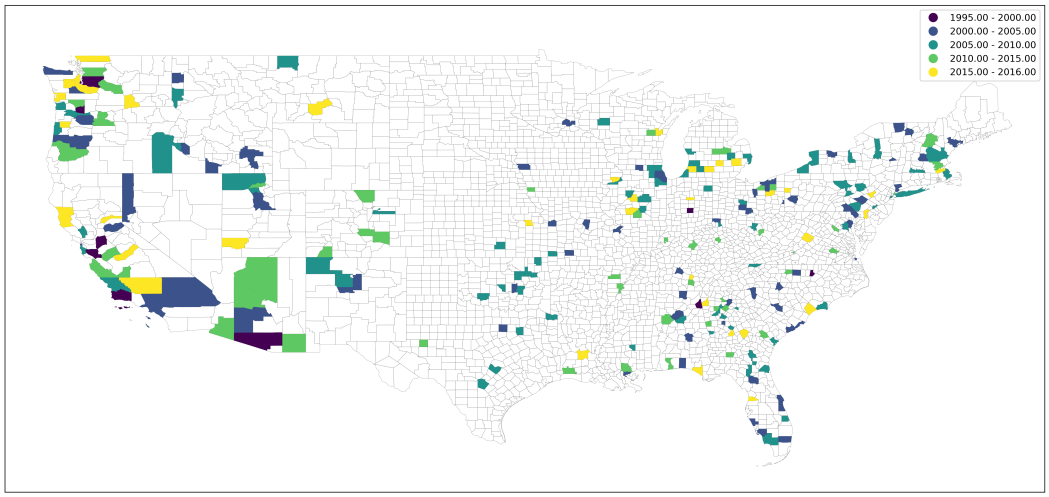
3.2 Mental Health Courts

As part of a larger movement toward 'therapeutic' jurisprudence, mental health courts are designed to reduce arrests and jail time by addressing the psychosocial needs of individuals whose criminal behavior is directly linked to their mental illness (Wexler, 2001; Cosden et al., 2005). MHCs assist criminal defendants with serious mental illness by disposing of their criminal charges that consider mental illness, decreasing their chances of returning into the criminal justice system McNiel and Binder (2007).

The organization of MHCs varies across jurisdictions. However, some features are common to all Mental health courts. First, in contrast to traditional courts, a Mental Health court manages the case of each identified mentally ill defendant on a single court docket. Second, MHCs have a dedicated judge who leads at the initial hearings and subsequent monitoring sessions. Third, MHCs are characterized by a non-adversarial team approach, entailing joint decision-making between criminal justice and mental health professionals. For instance, a clinical specialist plays a significant role in recommending treatment and putting forward linkages to it. Fourth, MHCs ensure the availability of appropriate clinical placement before the judge makes any ruling. Fifth, MHCs have devoted prosecution and defense counsel (Trupin and Richards, 2003; Steadman et al., 2001; Moore and Hiday, 2006)

This paper uses a newly collected dataset on the establishment of mental health courts (MHCs) in each county from 1995 until 2016. The starting point for the dataset is the records of the Treatment Court Locator maintained by the GAINS Center for Behavioral Health and Justice Transformation, a branch of the Substance Abuse and Mental Health Services Administration (SAMHSA). The GAINS database strives to include all existing mental health courts in the United States. For each court, GAINS has updated information

Figure 1: Map of Counties with Criminal Courts



on location, year of establishment, target participants,[2] and approximate annual enrollments (*U.S DHHS*, 2021).

We scrape each of the mental health courts' information from the GAINS web site. We can scrape data for 476 court pages, and after dropping duplicates in terms of zip code and year, we end up with a total of 345 records of mental health courts established between 1995 and 2016. For 45 scraped records, the information is not complete; either the zip code is incorrect or the establishment's year is missing. To gather the missing observations of these 45 MHCs, we undertake detailed research on the internet, visiting the U.S districts' official web pages of justice institutions. We successfully gather the missing information for 40 out of the 45 MHCs, producing a dataset of 339 MHCs for use in the analysis.

Figure 1 shows a map of U.S. counties, with the treated counties – those with a mental health court – identified by color fill. These courts are geographically quite distributed. The colors indicate the timing of introducing a court. Again, the timing is quite distributed, even within the clusters of neighboring counties that have courts.

[2]We center our analysis on the effect of adult mental health courts, as opposed to juvenile mental health courts. Although adult and juvenile mental health courts have some similarities, juvenile mental health courts focus on treatment and rehabilitation and help divert youth from detention facilities to common-based services, addressing issues involving families and schools in treatment.

3.3 Linking and Covariates

The location information for the mental health courts is at the zip code level. To match to the crime date data, we map each zip code to the containing county. Finally, we link in county-level demographic and economic characteristics from the 2000 census. This linked dataset is used for the empirical analysis.

4 Empirical Strategy

4.1 Estimating Equation

To estimate the effect of mental health courts (MHCs) on crime, we use a two-way fixed-effects regression model. We have

$$Crime_{ist} = \eta_i + \lambda_{st} + \alpha MHC_{ist} + X'_{ist}\beta + \epsilon_{ist} \tag{1}$$

where $Crime_{ist}$ is the crime rate for county i state s in year t, η_i is a vector of county fixed-effects, λ_{st} is a vector of state-by-year fixed-effects, and X_{ist} includes additional covariates to assess robustness of estimates to controls. $MHC_{i,s,t}$ is our treatment indicator, which is a binary variable coded as 1 if a county i in state s has established a mental health court before year t and 0 otherwise. ϵ_{ist} is an idiosyncratic error term with $\mathbb{E}\{\epsilon|\eta, \lambda, MHC, X\} = 0$.

The parameter of interest, α, captures the average treatment effect of establishing a local mental health court – that is, switching to a judicial system that allows for a judicial diversion to bring defendants to mental health treatment rather than standard criminal penalties. We estimate Eq. 1 using least squares, weighting by the county population covered by UCRC. Standard errors are clustered by county.

4.2 Identification

Our identification assumption is parallel trends (Bertrand et al., 2004). The effect of mental health courts is identified based on the within-county change in crime rates among counties that establish mental health courts in this time period, relative to the comparison group of other counties in the same state. County fixed effects account for time-invariant characteristics of counties that might be correlated with both crime and the establishment of MHCs. We control for state-specific time-varying shocks, such as the expansion or adoption of new judicial or public security laws, by including state-by-year fixed effects. State-by-year fixed effects will also account for national-level acts and policies influencing the economic, social,

and security conditions as a whole.

To provide some initial checks on the soundness of the identification strategy, we run a number of placebo checks. First, Appendix Figure A.1 shows that there is no effect of the treatment on county population. This null supports the idea that MHC's are not introduced due to expectations about different growth trends. Second, Appendix Figure A.2 shows that there is no effect on the number of police officers working in the county. This check supports the assumption that there are not confounding policy changes in policing affecting crime rates occurring at the same time as the introduction of MHC's. Third, Appendix Figure A.3 show that there is no effect on the share of data that is imputed, meaning our results are not biased by imputation-related artifacts.

4.3 Negative Weighting under Staggered Treatment

Negative weights arising in the calculation of two-way fixed-effects estimator(TWFE) have been a concern in recent econometric research. Negative weights are an issue when treatment timing is staggered, and treatment effects change within-unit over time or between groups of units treated at different times. (Goodman-Bacon, 2021; Callaway and Sant'Anna, 2020; De Chaisemartin and d'Haultfoeuille, 2020). If there is heterogeneity in treatment effects and differential timing of treatment, two-way fixed-effects estimates can be biased by negative weighting of observations.

In Appendix A.2, we examine whether negative weights are a cause of concern for the validity of our estimates, following the approach of De Chaisemartin and d'Haultfoeuille (2020). As shown in Table A.1, negative weighting is negligible in our estimation sample – at most 1.4% of observations. Hence, we have reassurance that our differences-in-differences estimates are valid.

5 Results

This section reports the results.

5.1 Two-Way Fixed Effects Estimates

The main results are reported in Table 2. Each panel shows estimates for the coefficient and standard error on α from Equation 1.

Panel A uses data on reported crimes. The effect is negative and significant. Comparing the estimated coefficients to the sample mean suggests that establishing a mental health

Table 2: Effect of Mental Health Court on Crime Rates

A. Crime Reports

Outcome	(1) Violent Crime b/se/p	(2) Property Crime b/se/p	(3) Total Crime b/se/p
Outcome Mean	45.20	322.8	368.0
Mental Health Court	-7.114**	-30.40**	-37.51**
	(2.538)	(6.261)	(7.639)
	[0.005]	[0.000]	[0.000]
County Fixed-Effects	Yes	Yes	Yes
State-by-Year-Fixed-Effects	Yes	Yes	Yes
Observations	65,761	65,761	65,761
R-Squared	0.879	0.886	0.890

B. Arrests

Outcome	(1) Violent Crime b/se/p	(2) Property Crime b/se/p	(3) Total Crime b/se/p
Outcome Mean	18.65	51.92	70.57
Mental Health Court	-1.614*	-3.671**	-5.285**
	(0.758)	(1.389)	(1.752)
	[0.033]	[0.008]	[0.003]
County Fixed-Effects	Yes	Yes	Yes
State-by-Year-Fixed-Effects	Yes	Yes	Yes
Observations	65,669	65,669	65,669
R-Squared	0.847	0.847	0.859

Note: OLS panel two-way fixed effects for the 1995-2016 period. Panel A uses the crime report rate outcome, while Panel B uses the arrest rate outcome. Regression coefficients are shown with robust standard errors (clustered by county) in parenthesis and p-values in brackets; +,*,**,= statistically different from zero at the 10% level, 5% level, 1% level.The unit of observation is a county in a state in a year. The outcome variables are crime rates per 10,000 residents, the independent variable is Mental Health Court (1 if a mental health court is established in county-year).Observations are weighted by the population covered by the UCRC data.

court implies a 15.6% reduction in the violent crime rate (Column 1) and 9.4% reduction in the property crime rate (Column 2). Adding these together, in Column 3, we see that the establishment of a mental health court decreases total reported crime by 37.51 per 10,000 residents or 10.1% relative to the mean.

Panel B reports corresponding estimates using the number of arrests rather than crime reports. Establishing a mental health court reduces the average violent crime rate by 1.6 (Column 1) and the property crime rate by 30.40 (Column 2) per 10,000 people. Comparing the estimated coefficients to the sample mean implies an 8.6% reduction in the violent crime rate and a 6.9% decrease in the property crime rate. Adding these together in Column 3, we see that establishing a mental health court decreases the total crime rate by 5.2 crimes per 10,000 residents or 7% relative to the mean.

5.2 Event Study Estimates

We explore the dynamics of the effect and assess the parallel trends assumption using a dynamic event study design. We estimate effects of indicators for the relative treatment year, rather than the post-treatment dummy. Otherwise, the specification is the same as above. We run separate models for all crime, property crime, and violent crime.

Figure 2 shows the dynamic event-study effect of introducing a mental health court. Panel A shows the effect on all crime. We see, consistent with parallel trends, that there are no effects in the years before the introduction of a court. Even in the year that the court is established, there is already a decrease in reported crimes per capita. That effect gets larger over the next three years and persists for at least five years. We see a decrease in both property crimes and violent crimes.

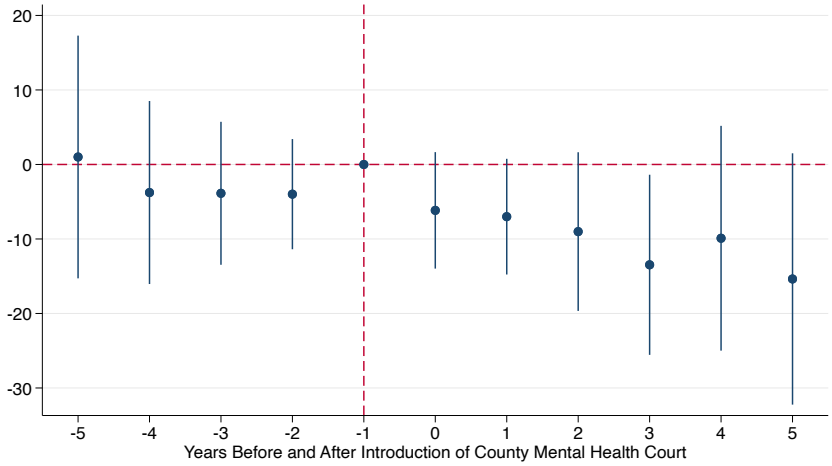
Figure 3 shows analogous event-study results for crime arrests. For this outcome, again we see no pre-trends. Starting two years after the introduction of a court, we see that crime starts to decrease, consistent with our differences-in-differences estimates. The effect is significant starting in the third year after the introduction of a court, and persists. Figure 3 Panels B and C show the effects for property crime and violent crime separately. While there are negative coefficients in both graphs, they are not significant for violent crime. Thus, it appears that the effects on arrests are driven mostly by reductions in property crime.

5.3 Specification Checks

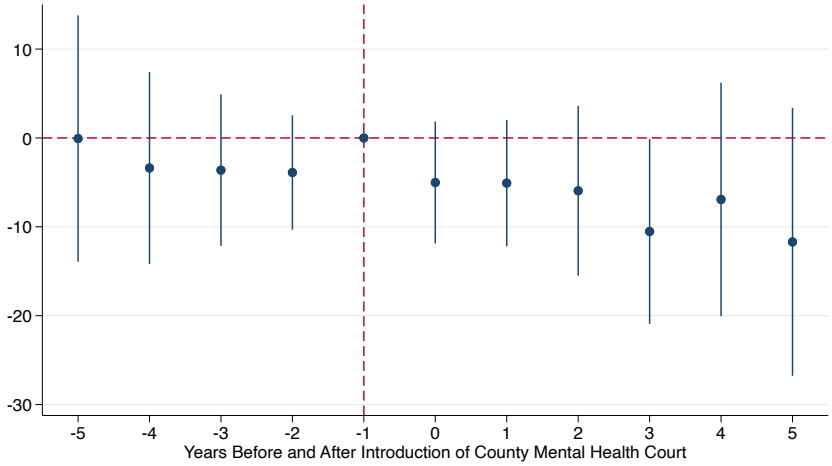
Appendix Tables A.2 and A.3 collect a number of additional specification checks to assess the robustness of our results, for crime reports and for arrests respectively. First, the results are

Figure 2: Dynamic Effect of Mental Health Court on Crime Rates (Crime Reports)

A. All Crime



B. Property Crime



C. Violent Crime

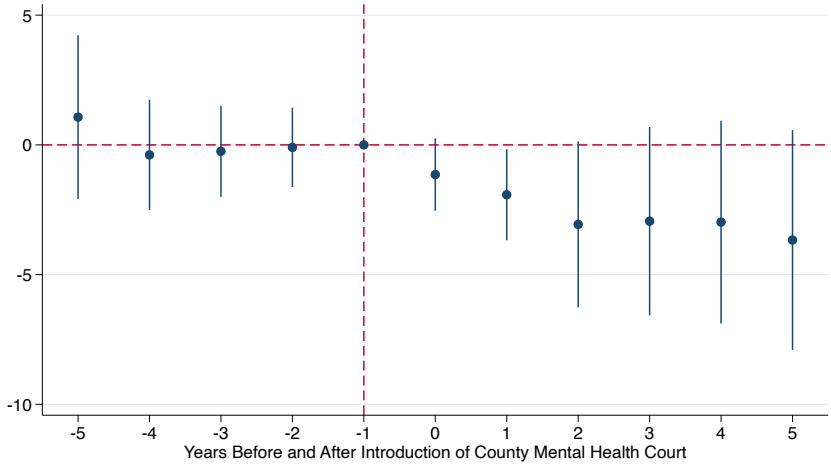
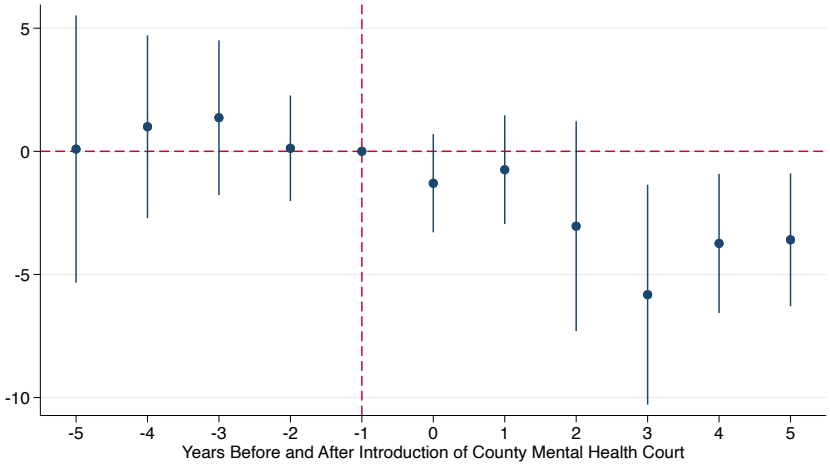
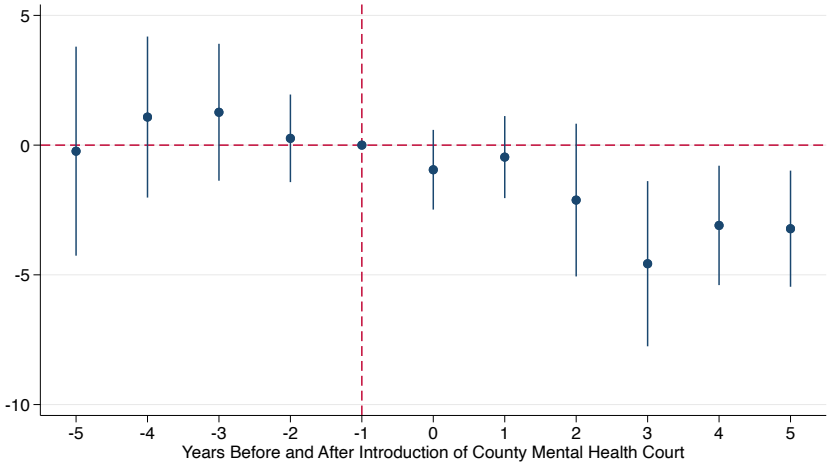


Figure 3: Dynamic Effect of Mental Health Court on Crime Rates (Arrests per Capita)

A. All Crime



B. Property Crime



C. Violent Crime

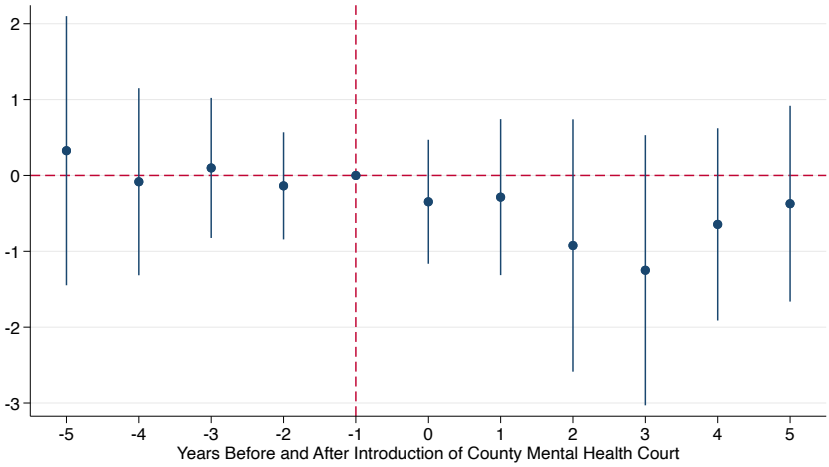
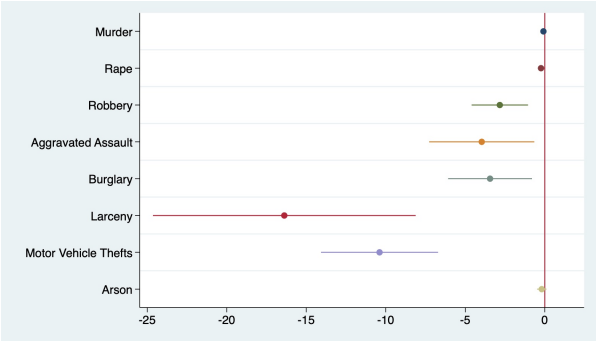
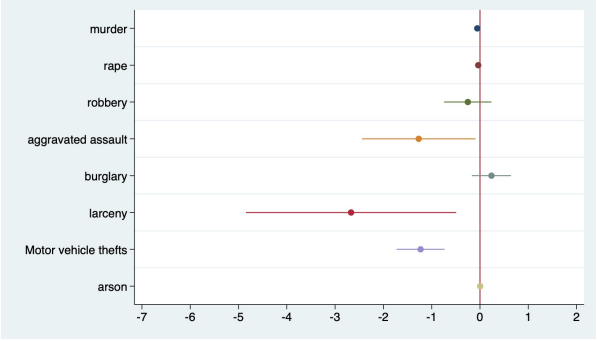


Figure 4: Effect of Mental Health Court, by Specific Crime Type

A. Crime Reports



B. Arrests



not sensitive to using unweighted regressions, rather than weighting by county population. Second, the results are not sensitive to how the outcome variable is transformed. We see qualitatively similar and statistically significant effects when using the total count of crime, rather than per 10,000 residents. The results go through when using the inverse hyperbolic sine of the crime rate, or the log of the crime rate plus one. Finally, we can show that the results are not driven by imputation choices taken by the data provider, as dropping counties with high imputation does not change the results either.

Again showing that the results are not driven by population changes, the results on crime per capita are robust to using a time-invariant measure of county population from the year 2000 (Appendix Table A.4). Appendix Table A.5 shows that the results are robust to controlling for the number of police officers per capita.

5.4 Effects by more specific crime type

Here we show our differences-in-differences estimates for more specific crime types. The specification is the same as the columns in Table 2. We show the results as coefficient plots with 95% confidence intervals. Corresponding tables are shown in the appendix (Tables:A.6, A.7, A.8, A.9).

Figure 4 shows the effects for all crime types in the dataset. Panel A shows Crime Reports and Panel B shows arrests. We see in Panel A that all of the property-related crimes (robbery, aggravated assault, burglary, larceny, and vehicle theft) are significantly reduced. In Panel B, correspondingly, there are decreases in arrests for aggravated assault, larceny, and vehicle theft. There is no effect on arrests for robbery, however, and even a positive coefficient for burglary.

Murder, rape, and arson are too rare to see effects on the full graph. Thus we show them separately in Appendix Figure A.4. While there are no effects on arson, there is a

negative significant effect on reports about murder and rape (Panel A). In turn, the number of murder arrests go down, while the negative effect on rape arrests is not significant (Panel B).

If there are the same number of arrests, but fewer reports, that suggests an increase in arrests per report. Thus, at least for some crimes, there appears to be an increase in policing efficiency, as measured by clearance rates, due to the establishment of mental health courts. We tested for this formally by running our diff-in-diff regressions with clearance rates as outcome, defined as the number of arrests in a county-year divided by the number of crime reports in a county-year. As suggestive evidence for an increase in clearance rates, these coefficients are uniformly positive. Most are not statistically significant, but the effect for robbery is positive and significant at the 5 percent level.

5.5 Mental Illness as a Mechanism

A proposed mechanism for how mental health courts reduce crime is by reducing mental illness. That is, these courts help offenders with mental illnesses move into treatment programs, rather than face criminal penalties, which increases the likelihood of reducing mental illness symptoms. This reduction in mental illness could then reduce crime.

To check this mechanism, we use suicide rate as a measure of mental illness. We linked our data with information on causes of death from the Center for Disease Control. We produced a measure of suicide rate by county and year from this dataset. We then run our event-study analysis using suicide rate as an outcome, rather than crime rates.

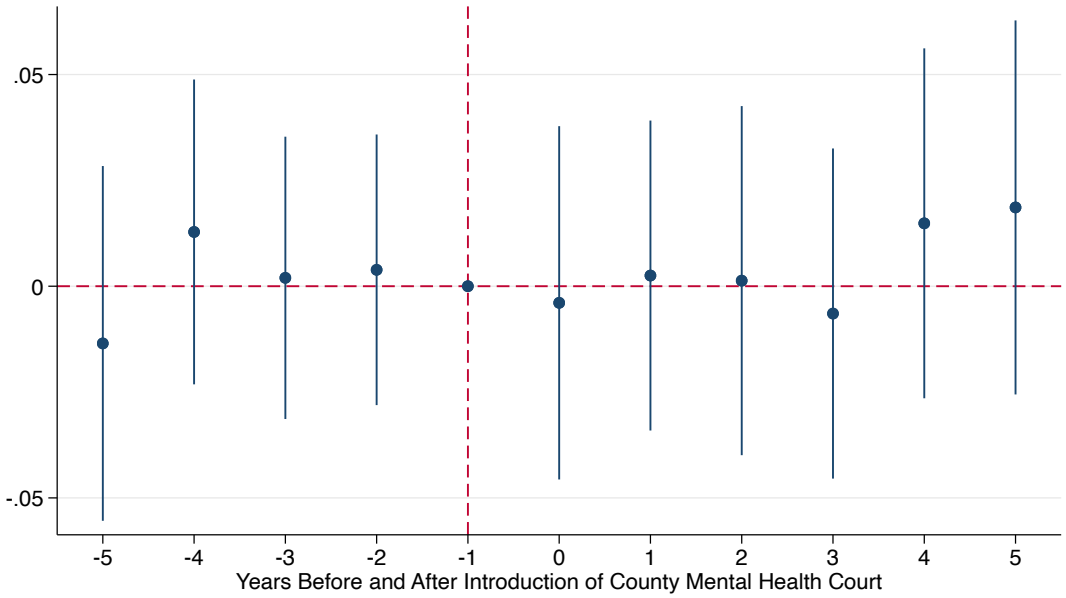
Figure 5 shows these estimates as a coefficient plot. Unlike the results for crime rates, we can see there is no effect of the introduction of an MHC on suicide rates. Consistent with that, our main results are unchanged when we include suicide rates as a time-varying control in our regressions (Appendix Table A.10). This evidence suggests that mental health courts do not reduce crime by reducing serious mental illness, as measured by suicides.

6 Conclusion

While scholars have investigated the correlation between specialized courts and crime outcomes, we still lack causal evidence of whether the introduction of mental health courts reduces crime. In this study we address this gap using as a set of natural experiments the establishment of 340 mental health courts across U.S counties over the period 1995-2016.

Using difference-in-difference regressions, we show that mental health courts reduce crime. There are decreases in both reported crime and arrests, and the effect is largest

Figure 5: Effect of Mental Health Court on Suicide Rates



Coefficient plot for event study estimates of the effect of introducing a mental health court on the county's suicide rate in the years before and after. County and state-year fixed effects absorbed. Standard errors clustered by county.

for property crime, rather than violent crime. The results are robust to a number of identification and specification checks. Further, we find some suggestive evidence for an increase in clearance rates for some crime types. Finally, we find no effect of MHC's on suicide rates.

These results provide some supportive evidence for policymakers deciding whether to invest in a specialized mental health court. If a major goal is reducing crime, then our evidence would provide support in establishing such a court. Yet our analysis does not consider the costs of establishing and maintaining such a court. Such an overall welfare evaluation should be prioritized in future work.

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Appendix: Mental Health Courts Reduce Crime

A.1 Identification Checks

Figure A.1: Effect of MHC on Log Population

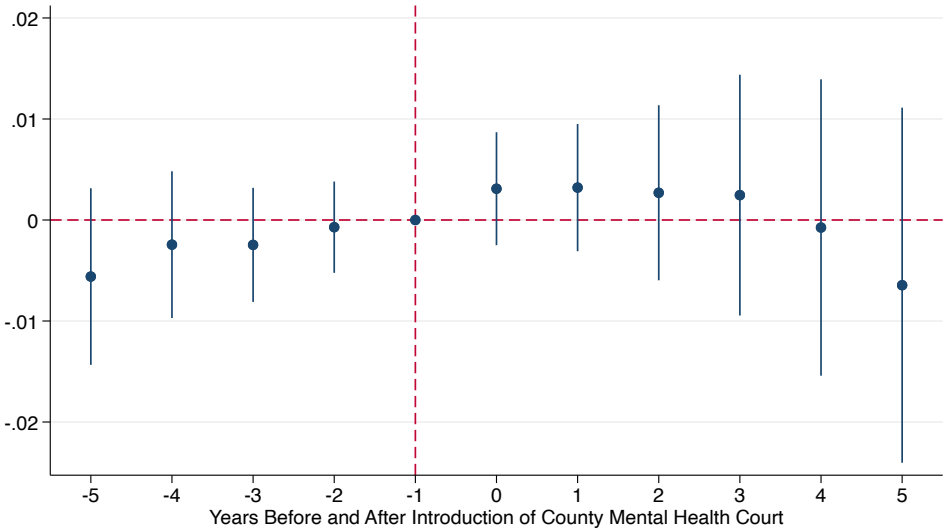


Figure A.2: Effect of MHC on Police Employees per Capita

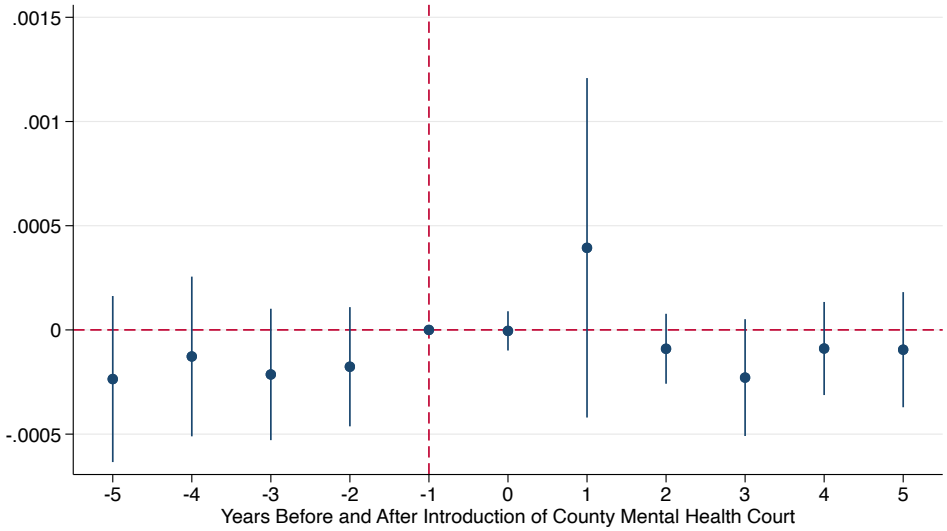


Figure A.3: Effect of MHC on Share Data Imputed

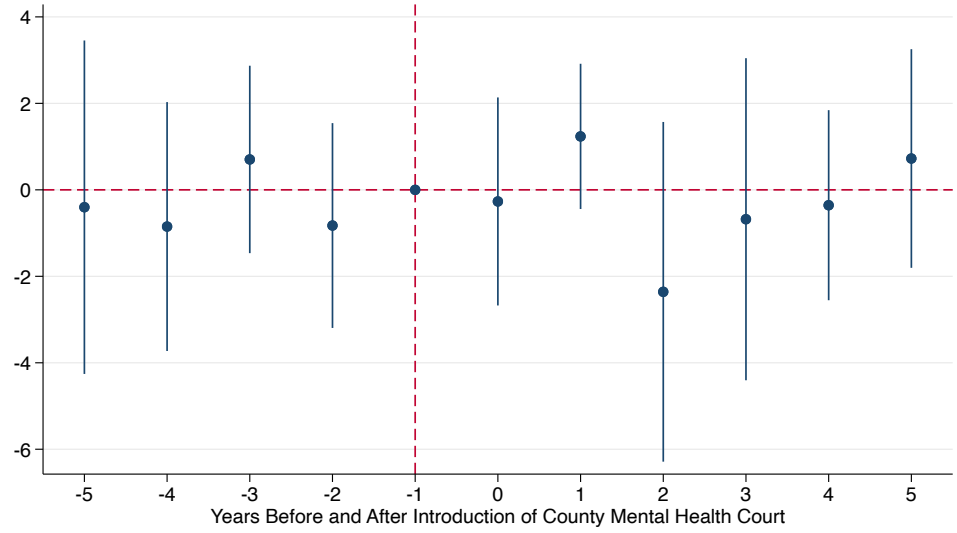


Table A.1: Negative Weights of Mental Health Court estimates

A. Reported Crime

	(1) Violent Crime	(2) Property Crime	(3) Total Crime
Total ATTs	1923	1923	1923
Positive weights	1896	1896	1896
Negative weights	27	27	27
Share of negative weights	0.014	0.014	0.014
$\sigma 1_f e$	18.25	55.92	74.18
$\sigma 2_f e$	266.81	817.14	1083.94
Observations	65,761	65,761	65,761

B. Arrests

	(1) Violent Crime	(2) Property Crime	(3) Total Crime
Total ATTs	1906	1906	1906
Positive weights	1880	1880	1880
Negative weights	26	26	26
Share of negative weights	0.013	0.013	0.013
$\sigma 1_f e$	4.75	15.06	20.36
$\sigma 2_f e$	70.84	232.38	303.23
Observations	65,669	65,669	65,669

Note: We use the *twowayfeweights* Stata package from De Chaisemartin and d'Haultfoeuille (2020) to estimate the weights attached to the two weights fixed-effects regressions under the common trends assumption. The unit of observation is a county in a state in a year. Observations are weighted by the population covered by the UCRC data.

A.2 Diagnosis of Negative Weights due to Staggered Treatment

This section provides diagnostics for negative weighting due to staggered treatments in a two-way fixed-effects design. We follow the approach in De Chaisemartin and d'Haultfoeuille (2020). The results are shown in Table A.1. We estimate the weights attached to $\hat{\alpha}$ and construct two measures $\sigma 1_f e$ and $\sigma 2_f e$ proposed in Corollary 1 by De Chaisemartin and d'Haultfoeuille (2020). We use $\sigma 1_f e$ to test the robustness of $\hat{\alpha}$ to treatment effect heterogeneity across groups and periods. $\sigma 1_f e$ is given by the absolute value of the expectation of $\hat{\alpha}$ divided by the standard deviation of the weights attached to $\hat{\alpha}$. Next, $\sigma 2_f e$ give us the minimal value of the standard deviation of the treatment effect across the treated groups and time periods under which $\hat{\alpha}$ could be be of a different sign than the treatment effect in all the treated group and time periods.

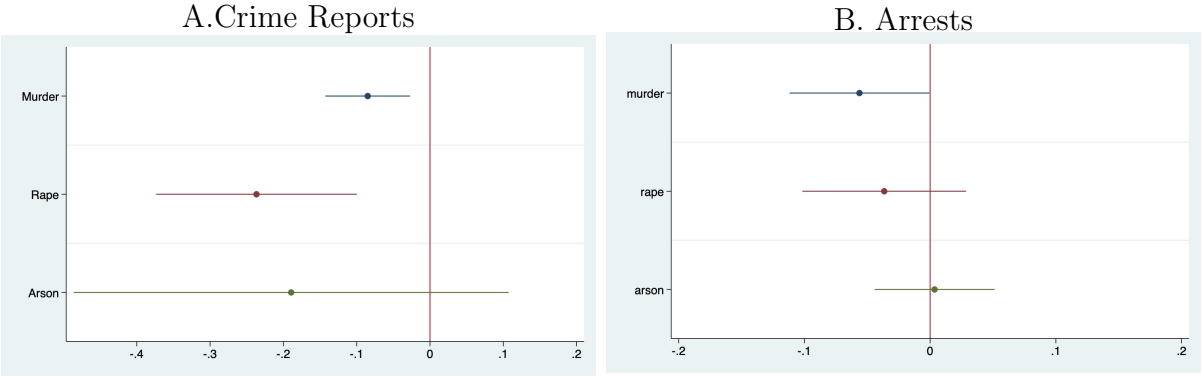
Panel A provides the tests with crime reports as the outcome. We find that 98.6 % of the weights are strictly positive and 1.4% of the weights are strictly negative. The sum of negative weights is equal to -.00306803. We find that $\sigma 1_f e$ is equal to 18.25 for the effect of

MCHs on violent crime, 55.92 for property crime and 74.18 for total crime. α and the ATT may be of opposite signs if the standard deviation of the ATEs across all treated county-year cells is equal to 18.25, 55.92 and 74.18 for violent, property and total crime. Further, $\sigma 2_f e$ is equal to 266.81 (violent crime), 817.14 (property crime) and 1083.94.23 (total crime) , meaning that α may be of a different sign than the ATEs of all treated county-year cells if the standard deviation of those ATEs is equal to 266.81, 817.14, or 1083.94.23, respectively. This is an unrealistic amount of heterogeneity and suggests that using the standard TWFE estimate is sound.

Panel B shows analogous diagnostic tests for crime arrests, rather than reported crime. We see that 98.7 % of the weights are strictly positive and 1.3% of the weights are strictly negative. The sum of negative weights is equal to -.00300549. We find that $\sigma 1_f e$ is equal to 4.75 for the estimated effect of MCHs on violent crime, 15.06 for property crime, and 20.36 for total crime. α and the ATT may be of opposite signs if the standard deviation of the ATEs across all treated county-year cells is equal to 4.75, 15.06, and 20.36 for violent, property, and total crime, respectively. Since none of the calculated $\sigma 1_f e$ are close to zero, $\hat{\alpha}$ and the average treatment effect can be of opposite signs only under a very large and implausible amount of treatment effect heterogeneity. Consistent with this, $\sigma 2_f e$ is equal to 70.84 (violent crime), 232.38 (property crime) and 303.23 (total crime), which means that α may be of a different sign than the ATEs of all treated county-year cells if the standard deviation of those ATEs is equal to 70.83, 232.38, 303.23.

Overall, these diagnostics suggest that negative weights are not a serious problem in our dataset. Thus we have some reassurance that our differences-in-differences estimates are valid.

Figure A.4: Effects on Murder, Rape, and Arson



A.3 Additional Tables and Figures

Table A.2: Specification Checks: Effect of MHC on Reported Crime)

Outcome	(1) Violent Crime b/se/p	(2) Property Crime b/se/p	(3) Total Crime b/se/p
Unweighted			
Outcome Mean	25.21	212.6	237.8
Mental Health Court	-4.328**	-41.78**	-46.10**
	(1.010)	(5.870)	(6.579)
	[0.000]	[0.000]	[0.000]
Observations	65,761	65,761	65,761
Crime Counts			
Outcome Mean	6857.7	36254.4	43112.1
Mental Health Court	-4157.7+	-8455.9*	-12613.7+
	(2488.3)	(4128.6)	(6600.1)
	[0.095]	[0.041]	[0.056]
	65,761	65,761	65,761
i.h.s. of crime rate			
Outcome Mean	4.165	6.233	6.359
Mental Health Court	-0.148**	-0.183**	-0.191**
	(0.0416)	(0.0477)	(0.0489)
	[0.000]	[0.000]	[0.000]
Observations	65,761	65,761	65,761
Log(1+var)			
Outcome Mean	3.525	5.558	5.683
Mental Health Court	-0.133**	-0.165**	-0.173**
	(0.0378)	(0.0428)	(0.0441)
	[0.000]	[0.000]	[0.000]
Observations	65,761	65,761	65,761
Only obs with COV>50			
Outcome Mean	46.16	329.8	375.9
Mental Health Court	-5.937*	-25.62**	-31.56**
	(2.588)	(6.235)	(7.575)
	[0.022]	[0.000]	[0.000]
Observations	60,372	60,372	60,372

*N*ote: OLS panel two-way fixed effects for 1995-2016 period. Regression coefficients are shown with robust standard errors (clustered by county) in parenthesis and p-values in brackets; +,*,**,= statistically different from zero at the 10% level, 5% level, 1% level.The unit of observation is a county in a state in a year. Observations are weighted by the population covered by the UCRC data unless otherwise noted. i.h.s. refers to Inverse hyperbolic sine.

Table A.3: Specification Checks: Effect of MHC on Arrests

Outcome	(1) Violent Crime b/se/p	(2) Property Crime b/se/p	(3) Total Crime b/se/p
Unweighted			
Outcome Mean	13.19	41.61	54.80
Mental Health Court	-1.436*	-3.939**	-5.376**
	(0.606)	(1.456)	(1.895)
	[0.018]	[0.007]	[0.005]
Observations	65,669	65,669	65,669
Crime Counts			
Outcome Mean	2783.2	5393.6	8176.8
Mental Health Court	-1148.6+	-1753.0**	-2901.6*
	(668.7)	(659.1)	(1289.2)
	[0.086]	[0.008]	[0.024]
Observations	65,669	65,669	65,669
i.h.s. of crime rate			
Outcome Mean	3.162	4.206	4.492
Mental Health Court	-0.0436	-0.0686+	-0.0730+
	(0.0358)	(0.0357)	(0.0388)
	[0.224]	[0.055]	[0.060]
Observations	65,669	65,669	65,669
Log(1+var)			
Outcome Mean	2.599	3.595	3.875
Mental Health Court	-0.0414	-0.0631*	-0.0674+
	(0.0319)	(0.0318)	(0.0346)
	[0.194]	[0.047]	[0.052]
Observations	65,669	65,669	65,669
Only obs with COV>50			
Outcome Mean	20.67	56.73	77.40
Mental Health Court	-1.638*	-3.174*	-4.812*
	(0.828)	(1.534)	(1.905)
	[0.048]	[0.039]	[0.012]
Observations	52,645	52,645	52645

*N*ote: OLS panel two-way fixed effects for 1995-2016 period. Regression coefficients are shown with robust standard errors (clustered by county) in parenthesis and p-values in brackets; +,*,**,= statistically different from zero at the 10% level, 5% level, 1% level.The unit of observation is a county in a state in a year. Observations are weighted by the population covered by the UCRC data unless otherwise noted. i.h.s. refers to Inverse hyperbolic sine.

Table A.4: Effect of MHC on Crime Rate: Time-Invariant County Population)

A. Crime Reports

Outcome	(1) Violent Crime b/se/p	(2) Property Crime b/se/p	(3) Total Crime b/se/p
Outcome Mean	47.426	337.809	385.235
Mental Health Court	-6.629*	-27.03**	-33.66**
	(2.708)	(6.477)	(8.360)
	[0.014]	[0.000]	[0.000]
County Fixed-Effects	Yes	Yes	Yes
State-by-Year-Fixed-Effects	Yes	Yes	Yes
Observations	65,733	65,733	65,733
R-Squared	0.878	0.888	0.891

B. Arrests

Outcome	(1) Violent Crime b/se/p	(2) Property Crime b/se/p	(3) Total Crime b/se/p
Outcome Mean	19.583	54.481	74.0659
Mental Health Court	-1.684*	-3.537*	-5.221**
	(0.807)	(1.428)	(1.827)
	[0.037]	[0.013]	[0.004]
County Fixed-Effects	Yes	Yes	Yes
State-by-Year-Fixed-Effects	Yes	Yes	Yes
Observations	65,610	65,610	65,610
R-Squared	0.844	0.837	0.848

Note: OLS panel two-way fixed effects for the 1995-2016 period. Panel A uses the crime report rate outcome, while Panel B uses the arrest rate outcome. Crime rates are calculated using the 2000 county population. Regression coefficients are shown with robust standard errors (clustered by county) in parenthesis and p-values in brackets; +,*,**,= statistically different from zero at the 10% level, 5% level, 1% level.The unit of observation is a county in a state in a year. The outcome variables are crime rates per 10,000 residents, the independent variable is Mental Health Court (1 if a mental health court is established in county-year) Observations are weighted by the 2000 county population covered by the UCRC data.

Table A.5: Effect of MHC on Crime Rates: Controlling for Police Employment)

A. Crime Reports

Outcome	(1) Violent Crime b/se/p	(2) Property Crime b/se/p	(3) Total Crime b/se/p
Outcome Mean	43.10	310.0	353.1
Mental Health Court	-5.476**	-23.12**	-28.59**
	(2.075)	(5.332)	(6.434)
	[0.008]	[0.000]	[0.000]
Police Employees(per Capita)	-126.1	-497.7	-623.8
	(163.6)	(567.7)	(694.2)
	[0.441]	[0.381]	[0.369]
County Fixed-Effects	Yes	Yes	Yes
State-by-Year-Fixed-Effects	Yes	Yes	Yes
Observations	56,349	56,349	56,349
R-Squared	0.900	0.898	0.903

B. Arrests

Outcome	(1) Violent Crime b/se/p	(2) Property Crime b/se/p	(3) Total Crime b/se/p
Outcome Mean	17.68	49.26	66.94
Mental Health Court	-1.166+	-2.865*	-4.031**
	(0.609)	(1.135)	(1.458)
	[0.056]	[0.012]	[0.006]
Police Employees(per Capita)	60.61	82.21	142.9
	(62.64)	(100.3)	(153.1)
	[0.333]	[0.413]	[0.351]
County Fixed-Effects	Yes	Yes	Yes
State-by-Year-Fixed-Effects	Yes	Yes	Yes
Observations		56,209	56,209
56,209			
R-Squared	0.861	0.849	0.862

Note: OLS panel two-way fixed effects for 1995-2016 period. Panel A uses the crime report rate outcome, while Panel B uses arrest rate outcome. Regression coefficients shown with robust standard errors (clustered by county) in parenthesis and p-values in brackets; +,*,**,= statistically different from zero at the 10% level, 5% level, 1% level.The unit of observation is a county in a state in a year. The outcome variables are crime rates per 10,000 residents, the independent variable is Mental Health Court (1 if a mental health court is established in county-year).Observations are weighted by the population covered by the UCRC data.

Table A.6: Effect of MHC on specific Violent Crime Rates (Reported-Crime)

Outcome	(1) Murder b/se/p	(2) Rape b/se/p	(3) Robbery b/se/p	(4) Agg.Assault b/se/p
Outcome Mean	0.535	2.996	13.65	28.02
Mental Health Court	-0.0850**	-0.237**	-2.828**	-3.964*
	(0.0295)	(0.0698)	(0.905)	(1.687)
	[0.004]	[0.001]	[0.002]	[0.019]
County Fixed-Effects	Yes	Yes	Yes	Yes
State-by-Year-Fixed-Effects	Yes	Yes	Yes	Yes
Observations	65,761	65,761	65,761	65,761
R-Squared	0.778	0.734	0.904	0.835

*O*LS panel two-way fixed effects for 1995-2016 period. Regression coefficients shown with robust standard errors (clustered by county) in parenthesis and p-values in brackets; +,*,**,= statistically different from zero at the 10% level, 5% level, 1% .The unit of observation is a county in a state in a year.The outcome variables are crime rates per 10,000 residents, the independent variable is Mental Health Court (1 if a mental health court is established in county-year). Observations are weighted by the population covered by the UCRC data

Table A.7: Effect of MHC on Specific Property Crime Rates (Reported-Crime)

Outcome	(1) Burglary b/se/p	(2) Larceny b/se/p	(3) Motor Vehicle Theft b/se/p	(4) Arson b/se/p
Outcome Mean	69.42	216.5	34.61	2.323
Mental Health Court	-3.441*	-16.38**	-10.39**	-0.189
	(1.345)	(4.213)	(1.877)	(0.151)
	[0.011]	[0.000]	[0.000]	[0.211]
County Fixed-Effects	Yes	Yes	Yes	Yes
State-by-Year-Fixed-Effects	Yes	Yes	Yes	Yes
Observations	65,761	65,761	65,761	65,761
R-Squared	0.872	0.871	0.873	0.687

*O*LS panel two-way fixed effects for 1995-2016 period. Regression coefficients are shown with robust standard errors (clustered by county) in parenthesis and p-values in brackets; +,*,**,= statistically different from zero at the 10% level, 5% level, 1% .The unit of observation is a county in a state in a year.The outcome variables are crime rates per 10,000 residents, the independent variable is Mental Health Court (1 if a mental health court is established in county-year). Observations are weighted by the population covered by the UCRC data

Table A.8: Effect of Mental Health Court on specific Violent Crime Rates (Arrests)

Outcome	(1) Murder b/se/p	(2) Rape b/se/p	(3) Robbery b/se/p	(4) Agg.Assault b/se/p
Outcome Mean	0.436	0.781	3.773	13.66
Mental Health Court	-0.0562*	-0.0365	-0.252	-1.268*
	(0.0283)	(0.0332)	(0.250)	(0.599)
	[0.047]	[0.272]	[0.314]	[0.034]
County Fixed-Effects	Yes	Yes	Yes	Yes
State-by-Year-Fixed-Effects	Yes	Yes	Yes	Yes
Observations	65,669	65,669	65,669	65,669
R-Squared	0.520	0.605	0.850	0.823

*O*LS panel two-way fixed effects for 1995-2016 period. Regression coefficients shown with robust standard errors (clustered by county) in parenthesis and p-values in brackets; +,*,**,= statistically different from zero at the 10% level, 5% level, 1% .The unit of observation is a county in a state in a year.The outcome variables are crime rates per 10,000 residents, the independent variable is Mental Health Court (1 if a mental health court is established in county-year). Observations are weighted by the population covered by the UCRC data

Table A.9: Effect of MHC on Specific Property Crime Rates (Arrests)

Outcome	(1) Burglary b/se/p	(2) Larceny b/se/p	(3) Motor Vehicle Theft b/se/p	(4) Arson b/se/p
Mean	9.094	38.60	3.751	0.460
Mental Health Court	0.238	-2.670*	-1.230**	0.00352
	(0.207)	(1.110)	(0.253)	(0.0243)
	[0.250]	[0.016]	[0.000]	[0.885]
County Fixed-Effects	Yes	Yes	Yes	Yes
State-by-Year-Fixed-Effects	Yes	Yes	Yes	Yes
Observations	65,669	65,669	65,669	65,669
R-Squared	0.817	0.846	0.786	0.368

*O*LS panel two-way fixed effects for 1995-2016 period. Regression coefficients are shown with robust standard errors (clustered by county) in parenthesis and p-values in brackets; +,*,**,= statistically different from zero at the 10% level, 5% level, 1% .The unit of observation is a county in a state in a year.The outcome variables are crime rates per 10,000 residents, the independent variable is Mental Health Court (1 if a mental health court is established in county-year). Observations are weighted by the population covered by the UCRC data

Table A.10: Effect of Mental Health Court on Crime Rates controlling for Suicide rate

A. Crime Reports

Outcome	(1) Violent Crime b/se/p	(2) Property Crime b/se/p	(3) Total Crime b/se/p
Outcome Mean	42.60	306.8	349.4
Mental Health Court	-5.220**	-21.20**	-26.42**
	(1.974)	(5.096)	(6.163)
	[0.008]	[0.000]	[0.000]
Suicides rate	1.120**	6.357**	7.477**
	(0.181)	(0.831)	(0.939)
	[0.000]	[0.000]	[0.000]
County Fixed-Effects	Yes	Yes	Yes
State-by-Year-Fixed-Effects	Yes	Yes	Yes
Observations	52,640	52,640	52,640
R-Squared	0.906	0.903	0.908

B. Arrests

Outcome	(1) Violent Crime b/se/p	(2) Property Crime b/se/p	(3) Total Crime b/se/p
Outcome Mean	17.41	48.67	66.09
Mental Health Court	-0.974+	-2.531*	-3.505*
	(0.567)	(1.038)	(1.361)
	[0.086]	[0.015]	[0.010]
Suicides rate	0.316**	0.939**	1.256**
	(0.0928)	(0.157)	(0.220)
	[0.001]	[0.000]	[0.000]
County Fixed-Effects	Yes	Yes	Yes
State-by-Year-Fixed-Effects	Yes	Yes	Yes
Observations	52,496	52,496	52,496
R-Squared	0.864	0.853	0.864

Note:The data set is the combined UCRC and CDC 1999–2016. Panel A uses the crime report rate outcome, while Panel B uses arrest rate outcome. Regression coefficients shown with robust standard errors (clustered by county) in parenthesis and p-values in brackets; +,*,**,= statistically different from zero at the 10% level, 5% level, 1% level.The unit of observation is a county in a state in a year. The outcome variables are crime rates per 10,000 residents, the independent variable is Mental Health Court (1 if a mental health court is established in county-year).Observations are weighted by the population covered by the UCRC data. All models estimated with least squares and control for state-by-year fixed-effects and county fixed-effects.