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Access to Mental Health Facilities and Homicidal Circumstances

by

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Abstract

In this paper I consider the possible links between access to mental health facilities and homicidal circumstances. I describe my findings and I review the evidence of prior research showing that mental illness is a risk factor for both criminal behavior and victimization. I examine national criminal and mortality data in the most recent years to assess the relationship between mental health facilities and crimes that occur in conjunction to homicide as well as victim-perpetrator relationships. Controlling for other factors that may explain trends in homicide, I find evidence that the expansion of mental health facilities reduce mental health related mortality while increasing homicide rates by some circumstances. All estimates are robust; however, I find no significant impacts on homicide in general. My estimates imply that about 5 percent of the increase in homicide under the circumstance of negligence during the period of my study was due to the expansion of mental health facilities.

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1 Introduction

As of 2016, approximately one in five adults in the U.S. (44.7 million people, nearly 14 percent of the population) were affected by mental illness in a given year (NIMH, 2017). According to recent findings, on an average day, more than one million people with mental illnesses are in jail, prison, on probation, or on parole (Skeem et. al, 2009). In 2006, the Bureau of Justice Statistics stated that nearly one fourth of the state and jail inmate population with mental health problems had served 3 or more prior incarcerations (James et al, 2006). In the midst of these findings arise questions: Are prisoners incarcerated because of unresolved mental health problems? If so would access to mental health treatment be a cost-effective solution to reduce violent crimes?

In an attempt to reduce criminal behavior, policy makers and the justice system look toward supply-side enforcement and demand-side prevention. Recent work regarding one such prevention strategy shows that an addition of one substance abuse/mental health facility can significantly reduce related mortality rates on average per county year (Swensen, 2015). This result shows how the benefits of these facilities may impact some individuals positively, but the same cannot be necessarily extended to communities at large. As a natural extension, Bondurant et al. (2016) finds that an addition of this type of facility reduces all crime by a marginally significant 0.04 percent and homicide by 0.18 percent. The objective of this paper is to contribute to the conversation through the exploration of how homicidal circumstances maybe impacted by access to mental health facilities.

In general, people make decisions by conducting a mental cost benefit analysis of some measure. As such, it is no surprise that criminals are responsive to, and considerate of, incentives such as severity of punishment when weighing their costs of crime (Becker, 1968 and Ehrlich, 1973). From such assumptions policy makers follow a natural agenda to find the most cost-effective solutions for reducing crime. As mental illness may impact a person's decision-making process, it is important to understand the degree to which mental health status may influence criminal behavior. One way this may occur is through alterations of time horizons where an individual will discount the future and lower the deterrent effect of

anticipated punishments. Becker and Mulligan (1997) explain this through their formulation of impatience as the compensation of allocating resources to overcome one's weakness of high rate of time preference. Therefore, as Marcotte and Markowitz (2011) suggest, mental health treatment can be considered as one such allocation as it does not change the anticipation or degree of punishment but rather reshapes the response to established costs of crime .

The purpose of my paper is to study broadly the relationship between access to mental health facilities, crimes that occur in conjunction to homicide and victim-perpetrator relationships. I utilize county level data and account for control variables within populations that may also contribute to underlying trends of homicide. I find that the expansion of access to mental health facilities had a negative affect on homicide rates as expected. However, the magnitude of the estimated effects specific to circumstances were rather small and varying in significance.

2 Literature Review

In pursuit of identifying causality, economists have made efforts to identify factors that may affect criminal behavior and costs associated with crime. Many previous studies analyzing crime began research at the time of declining crime, marked by the early 1990s. Crime rates in America fell rapidly between the 1990s and 2000s, which left economists questioning its causes. Understandably, factors such as an increase in size of the police force, portions of the population that were incarcerated or in institutionalized hospitals, and the waning of the crack epidemic have all been identified as contributors to this decline in crime (Levitt, 2004; Zimring, 2007). However, notable analysts concluded that large changes in crime rates could occur without dramatic changes in economic conditions and demographics (Cook, 2008; Zimring, 2007). Analysts further explored a variety of changes with in the realm of socioeconomic conditions that could be linked to crime such as lead exposure and the increased use of abortions in the 1970s (Reyes, 2007; Donohue and Levitt, 2001). However, the empirical findings of these studies were not well received.

As such leads were inconclusive, clinical studies have been assessing the degree to which crime is related to the symptoms of mental illness. Many correlational studies examine mental illness among criminals or criminal behavior among the mentally ill. The positive correlation between mental illness and crime could be causal but it is difficult to interpret how. Marcotte and Markowitz (2011) explain that, “impairment of proper brain functioning may cause a person to engage in violent [and or] criminal behaviors. However, incarceration may cause [or worsen preexisting] mental illness and lead to the observed correlation via recidivism. Conversely, the relationship [could be] a result of substance abuse, environment, financial strain, family stress, traumatic events, past violence or victimization, unemployment, and the like”. Another relationship between crime and mental illness is status of mental health since it could be a factor in determining a person’s risk for victimization. As mental illnesses may cause impaired judgment, impulsive behavior, and cause one to behave in a way that anger others, such a person could be more susceptible to victimization (Teplin et al., 2005; Silver et al., 2005).

The clear connection between mental illnesses and criminal behavior/victimization would help explain the decline of crime if there were prevalent changes in the presentation of mental illness in the community. Therefore, it is important to note that during this timeframe the treatments of mental illnesses were dramatically changing. Most treatment changes occurred in pharmacotherapy while outpatient psychotherapy remained unchanged (Olsson et al., 2002). A prominent change in pharmaceutical therapy available for prevalent disorders began to change when a series of new types of antidepressants were approved by the FDA¹ in the late 1980s. Some of these drugs included selective serotonin reuptake inhibitors (SSRIs) such as “Prozac in 1988, Zoloft in 1992, and Paxil in 1993, and newer generation antidepressants (NGAs) such as Trazodone and Wellbutrin, approved in 1988 and 1989, respectively” (Marcotte and Markowitz, 2011). Attributed by the inclusion of ADHD into the

¹There are four broad categories of antidepressants: monoamine oxidase inhibitors (MAOIs), tricyclic antidepressants (TCAs), selective serotonin reuptake inhibitors and serotonin norepinephrine reuptake inhibitors (SSRIs and SNRIs), and a fourth group that is commonly referred to as the newer generation antidepressants (NGAs). These last two categories were introduced beginning in the late 1980s (Marcotte and Markowitz, 2011).

Supplemental Security Income program², Individuals with Disabilities Education Act³ and the expansion of Medicaid⁴, the popularity of stimulants⁵ grew even though there weren't any new approvals by the FDA. Of course the idea of expanded treatment for mental illness having broad benefits is not a new concept. In fact, there is evidence that through Medicaid an increase in spending on psychiatric drugs are related to reductions in violent crime (Markowitz and Cuellar, 2007). In a state and time fixed effects controlled model, Marcotte and Markowitz (2011) found that for every 1 percent increase in all psychiatric drugs crime rates dropped by 0.007 percent.

It logically follows that if mental illness causes violent crime, mental health facilities will reduce mental illness, thus increasing mental health treatment facilities can reduce mental illness and violent crime. However, mental health facilities are often met with a “not in my back yard” attitude, as it may attract more “dangerous” people. Depending on severity, it is entirely possible that mental illnesses could lead people to engage in criminal activity. This social concern arose in the 1960s and 1970s when state mental hospitals closed beds and patients were forced back in to communities often struggling to maintain stable living arrangements, social support and basic services (Frank et al. 2010). Later studies showed that violence was in fact up to five times higher among people that met criteria for mental illness than community residents without mental illness (Swanson et al. 1990). Frank et al. (2010) contributed to this literature by focusing on how serious mental illnesses (SMIs)⁶ such as bipolar disorder, schizophrenia and substance abuse could impact incarceration. Their findings suggest that the presence of an SMI could elevate the lifetime risk of arrest rate of the average white male between the ages of 25-34 by 15.7 percent.

²In the 1990 Supreme Court ruling, the federal Supplemental Security Income program added ADHD to the list of diseases for which children from low-income families could qualify to receive.

³In 1991 Congress expanded the Individuals with Disabilities Education Act to include ADHD. This enabled children with ADHD to receive special modifications in school, such as extra time on exams and homework.

⁴This allowed for an increased rate of ADHD diagnoses and treatment for children from low-income families.

⁵Commonly used to treat ADHD and ADD.

⁶Note that the National Institute of Mental Health classifies mental illness as any or serious mental illness.

Mental illness disrupts lives, interferes with human capital accumulation, wealth building in general and cognitive distortions caused by mental illnesses can deteriorate interpersonal relationships. Furthermore, it is no surprise that substance abuse is often paired with mental health problems and as such individuals with mental illness are more likely to abuse drugs and alcohol, both of which also contribute to crime (Frank et al. 2010). However, other studies have emphasized the problematic nature of interpreting correlations of mental illness, violence and crime, as these variables are associated with complex causalities such as social backgrounds (housing arrangements, neighborhood status etc.) and other factors (Frank et al. 2010). As the data used in this analysis does not allow controls for many of these factors, I will not be able to make direct assumptions of mental illness causality on homicide or crime.

Of course changes in treatment for mental illness were not limited to pharmaceutical contributions as illustrated by Swensen's research on mortality and substance abuse treatment (SAT) (Swensen, 2015). His study spans over 1999-2008 evaluating the effect of net openings and closing of substance abuse facilities on drug induced death. His findings show that a "a net increase of one facility reduces a county's annual drug- induced mortality rate by 0.4 percent, suggesting that a 10 percent increase in the number of facilities lowers a county's drug-induced mortality rate by 2" (Swensen, 2015). His work encourages further research to be done to understand how treatment can affect other outcomes such as crime and labor productivity. The following year Swensen works in collaboration with Lindo and Bondurant to look more closely at SAT facilities on the outcomes of crime. As an extension of the previous work this study considers data over 1999-2012 and finds that an additional SAT facility reduces drug-related mortality by 0.50 percent in a county. This paper will closely follow this line of work and expand the conversation by considering how mental health facilities may have impacted homicide and its circumstances.

3 Data

Following Swensen (2015) and Bondurant et al. (2016), I begin by identifying county-level changes in the number of mental health centers using data from the U.S. Census Bureau's County Business Patterns (CBP). Specifically CBP data reports the annual number of mental health centers in each county for outpatient and residential facilities for 2005-2015⁷. As Bondurant et al. (2016) points out, although CBP data identifies outpatient and residential facilities separately, estimating their effects distinctly would not be informative. Therefore, I identify the county-level provision of mental health centers by the total counts of establishments.

To analyze the effect of mental health facilities (MHF) on mental health related mortality, I merge CBP data with county-level Multiple Cause of Death data from the National Center of Health Statistics (NCHS). I used the UCD-ICD-10 codes F01-F99 (Mental and behavioral disorders) to measure mental health related mortality. Please note that mental health related mortality includes all deaths that are identified as deaths caused by mental health related complications. For a broader understanding, causes of death have been categorized into mental health behavior disorders due to alcohol, cocaine, opioids, and psychoactive substances; dementia; depression; psychosis and other disorders⁸.

All homicide data comes from the Uniform Crime Reports data, Offenses Known (OK) and Supplementary Homicide Reports (SHR). In addition to homicide, OK provides data on other major crimes such as sexual assault, robbery, assault, burglary, larceny, and motor

⁷The following six-digit NAICS codes identify treatment establishments: 621420 —“Outpatient mental health and substance abuse centers” and 623220—“Residential mental health and substance abuse facilities.”

⁸The category of dementia includes: multi-infarct dementia, unspecified dementia, vascular dementia of acute onset, and vascular dementia, unspecified.

The category of depression includes: unspecified depressive episode, unspecified reaction to severe stress, unspecified anxiety disorder.

The category of psychosis includes: unspecified schizophrenia, unspecified nonorganic psychosis, delirium superimposed on dementia, unspecified delirium, unspecified mental disorder due to brain damage and dysfunction and to physical disease.

The category of other disorders include: anxiety disorder, conduct disorder, delirium unspecified and superimposed on dementia, depressive episode, disorder due to brain damage and dysfunction and to physical disease, mental retardation, nonorganic psychosis, other eating disorders reaction to severe stress, schizophrenia, psychological and behavioral factors associated with disorders or diseases classified elsewhere.

vehicle theft. As mentioned by Bondurant et al. (2016) these are crimes that come to the attention of law enforcement, as opposed to alternative data sets that are available but are restricted to crimes that have been cleared by arrest⁹. SHR provides rich details of circumstances of homicide such as sub crimes, victims, offenders and weapons used.

The analysis was restricted to U.S. counties with at least one treatment facility present over the time frame and available identifiers limited to the contiguous 48 states¹⁰. The cleaned data includes treatment facility, mortality, and crime data in the 48 states spanning the 11 years. Over this time period the number of facilities increased from 14,235 to 17,604. In table 1 I present summary statistics of the sample, weighted by relevant populations. The CBP data indicates that counties have a population-weighted average of 57.6 MHFs. The average county experienced 3.09 net facility openings and 1.29 net closing from 2005 to 2015 with notable variation in the number of facilities¹¹. For reference, Table 1 also shows all summary statistics for some of the major mortality categories considered and circumstances used in this analysis.

4 Analysis

I begin my analysis by identifying the effects of MHF using year-to-year variation within counties that are marked by openings and closings while controlling for state-by-year shocks as well as time-varying county specific characteristics. As the crime data is agency level I focus on agency level outcomes in my regression model grouped by agency type including year and state fixed effects:

$$Y_{cst} = \theta Facilities_{(cs,t-1)} + \alpha_t + \alpha_s + X_{cst} + \epsilon_{cst}$$

⁹Please note that when a law enforcement agency reports clearance by arrest, it signifies that the crime reported meets the following condition: at least one person was arrested, charged with commission of offense and prosecuted.

¹⁰As specified in Bondurant et. al (2016), I dropped all counties in HI and AK and combine counties that experience boundary changes over time. This involves combining Adams, Broomfield, Boulder, Jefferson, and Weld in Colorado; Prince George's and Montgomery in Maryland; Gallatin and Yellowstone National Park in Montana; Craven and Carteret in North Carolina; Alleghany and Clifton Forge in Virginia; Augusta and Waynesboro in Virginia; Bedford and Bedford City in Virginia; Halifax and South Boston City in Virginia; Prince William and Manassas Park in Virginia; Southampton and Franklin in Virginia; and York and Newport News in Virginia.

¹¹A net opening is an observed increase in the number of facilities from one year to the next and a net closing is defined similarly.

Where Y_{cst} represents outcomes in county c in state s in year t . I used log rates to measure both mental health related deaths and crime outcomes. $Facilities_{cs,t}$ Represents the number of MHF in county c in state s in year $t-1$, α_t and α_s are time and state fixed effects respectively. X_{cst} Includes state-by-county unemployment rates, number of officers per 100,000, and demographic controls such as race, gender, and age groups¹² and ϵ_{cst} is a random error term clustered by state-county that is allowed to be correlated across time within county and across all counties in a given year following Bondurant et al (2016). All log values are calculated after an addition of 1 count to all observations so to avoid resulting outcomes that would otherwise be undefined. Please note that my main results are based on regressions that are weighted by the relevant population in order to improve the efficiency.

The state fixed effect will be accounting for fixed characteristics that are inherently different across the 48 contiguous states such as state funding and law enforcement services. Meanwhile the time fixed effect is accounting for time-varying shocks such as economic conditions or national mental health policies that may change over time. I will be controlling for unemployment rates specifically in order to account for the possibility that MHFs are related to local economic conditions. Lastly, it is important to control for demographics as the composition of county population may affect outcomes of crime and investments in MHFs.

My empirical approach follows that of Bondurant et al. (2016) and Swensen (2015) rather closely. These authors note that approximately a third of all substance abuse treatment admissions are court-ordered as an alternative to incarceration. This figure also carries weight in reference to mental health facilities as well because these facility types are often grouped together. Therefore, an increase in admissions due to an addition of such facilities

¹² County unemployment rates are from the BLS Local Area Unemployment Statistics. The number of law-enforcement officers per 100,000 residents are calculated using the UCR agency-specific employment reports available in the Law Enforcement Officers Killed and Assaulted (LEOKA) database and the various age groups include ages 0-17 years old, 18-25 years old and 26-64 years old.

may correspond with more mental illness related crimes, which may lead to estimates that understate any decreases in mental illness related criminal activity (Bondurant et al., 2016).

5 Results

I begin by examining the effects of MHFs on mental health related mortality rates at the county level. I do so using restricted-use NCHS mortality data for the years 2005-2015. Table 2 shows the results of this analysis using logged mental health related mortality rates as the outcome. Columns 1-5 report the estimates of models with increasing specifications ranging with year and state fixed effects and control variables. These estimates suggest that all are similar in magnitude and significance. Table 2 indicates that an addition of one MHF results in a robust estimate of 0.45¹³ percent decline in mental health related mortality rates. This estimate is also very similar to Bondurant et al. (2016), which estimates a 0.50 percent decline in drug-induced mortality rates associated with an addition of a substance abuse facility in a county.

In table 3 I investigate the effects on homicide rates using law-enforcement-agency-level data from the UCR's Offenses Known and Supplemental Homicide Reports databases. As described in the previous section, prior to the log homicide outcomes calculation 1 count was added to all observations in order to avoid dropping county-year observations for which the outcome would have otherwise been undefined. That being said I must acknowledge that this transformation may introduce bias as homicide rates tend to be low. Bondurant et al. (2016) also had a similar concern and found that their estimates are almost identical in an alternative approach in which they do not add 1 count. The estimates in table 3 suggest that there is a robust decline in homicide rates with the addition of a MHF.

Using the detailed data available through the SHR database, I constructed table 4 and 5 to report homicides by different victim-perpetrator relationships and circumstances separately. In these tables, I am looking at the homicide rates to explore the degree to which homicide is associated with MHFs specific to particular relationships and circumstances re-

¹³Percent effects are calculated as $(e^{\beta} - 1) * 100\%$

spectively. When considering only state and year fixed effects, table 4 suggests that the availability of MHFs explain a statistically significant, reduction of 0.14 percent homicides committed by unknown victim-perpetrator relationship, while partners see a 0.21 percent increase. These results suggest that the component of familiarity between perpetrator and victim in homicides, is negatively impacted by an increase of MHFs as seen by the change of signs in some of the categories with the addition of controls.

Lastly I consider the sub crimes that occur along side homicide in table 5. The five main groups of sub crimes considered were homicide that occurred alongside arguments, robbery, drugs, negligence and unspecified circumstances. Surprisingly I find evidence that under the category of drugs, MHFs have increased homicide by an estimate of 0.46 percent. Although varying in significance across models, MHFs seem to have a consistently negative impact on unspecified and undetermined homicidal circumstances. Interestingly, I find that MHFs have a positively and highly significant impact of manslaughter by negligence. This category illustrates that an addition of 1 MHF can increase homicide by 5.09 percent. With that said, it is important to note that the category of manslaughter by negligence heavily consists of accidental firing of a gun that resulted in death of another person. Along the circumstances considered, MHFs explain an increase in homicide overall.

6 Conclusion

In conclusion, there is suggestive evidence alluding that MHFs have a less than promising effect on helping reduce the most violent type of crime. While my data does not allow me to make direct links between mental illness and homicide, the results of my analysis provide support that there are a few possible consequences of MHFs, in terms of public safety. Even though, they seem to be reducing homicide in general, specific circumstances analyzed in this paper suggest otherwise. Considering the most profound results in the circumstance of manslaughter by negligence, it maybe important to look more closely at gun ownership and more broadly, gun control. Policies regarding the thoroughness of background checks and transport of guns over state lines maybe an area to revisit. It is also important to consider the attitude of communities towards MHFs that could be contributing to these “accidents”

resulting in manslaughter. Perhaps the “not in my backyard attitude” is compelling people to become paranoid and more ready to exercise their right to bare arms. Perhaps MHFs are causing communities to mistrust their surroundings and to be anxious around their neighbors. This is also supported by the increasing effect MHFs have on the circumstances of homicides under arguments and drugs. Although I am able to identify effects of an additional MHF, this effect could conceal other important heterogeneous effects as well, which may include the distances between areas within counties and facilities and quality of MHFs. Assessing such heterogeneity and building on calculations of social costs based on statistical valuation maybe interesting topics to expand upon for future research.

7 References

- [1] Abadie, A., Diamond, A., and Hainmueller, J. (2010). Synthetic Control Methods for Comparative Case Studies: Estimating the Effect of California’s Tobacco Control Program. *Journal of the American Statistical Association*, 105(490), 493,505.
- [2] Abadie, A., and Gardeazabal, J. (2003). The Economic Costs of Conflict: A Case Study of the Basque Country. *The American Economic Review*, 93(1), 113,132.
- [3] Becker, G. S. (1968). Crime and punishment: An economic approach. *Journal of Political Economy*, 76, 169–217.
- [4] Bondurant, S. R., Lindo, J. M., and Swensen, I. D. (2016). Substance Abuse Treatment Centers and Local Crime. National Bureau of Economic Research Working Paper Series. 22610. National Bureau of Economic Research. Cambridge, MA.
- [5] Cook, P. J. (2008). Assessing urban crime and its control: An overview. NBER Working Paper No. 13781. Cambridge, MA: National Bureau of Economic Research.
- [6] Donohue, J., and Levitt, S. (2001). The impact of legalized abortion on crime. *Quarterly Journal of Economics*, 11, 379–420.
- [7] Ehrlich, I. (1973). Participation in illegitimate activities: A theoretical and empirical investigation. *Journal of Political Economy*, 81, 521–565.
- [8] Frank, Richard G., and Thomas G. McGuire. “Mental Health Treatment and Criminal Justice Outcomes.” NBER, NBER, 27 July 2010, www.nber.org/chapters/c12100.
- [9] Skeem, J. L., S. Manchak, and J. K. Peterson. 2009. “Correctional Policy for Offenders with Mental Illness: Moving Beyond the One-Dimensional focus to Reduce Recidivism.” Unpublished manuscript.
- [10] James, Doris J., Glaze, Lauren E., BJS Statisticians. “Mental Health Problems of Prison - Bureau of Justice Statistics” U.S. Department of Justice Office of Justice Programs, Bureau of Justice Statistics, Sept. 2006, www.bjs.gov/content/pub/pdf/mhppji.pdf.

- [11] Levitt, S. D. (2004). Understanding why crime fell in the 1990s: Four factors that explain the decline and six that do not. *Journal of Economic Perspectives*, 18, 163–190.
- [12] Markowitz, S., and Cuellar, A. E. (2007). Antidepressants and youth: Harmful or helpful? *Social Science and Medicine*, 64, 2138–2151.
- [13] “Mental Illness.” National Institute of Mental Health, U.S. Department of Health and Human Services, Nov. 2017, www.nimh.nih.gov/health/statistics/mental-illness.shtml.
- [14] Olfson, M., Marcus, S. C., Druss, B., and Pincus, H. A. (2002). National trends in the use of out-patient psychotherapy. *American Journal of Psychiatry*, 159, 1914–1920.
- [15] Reyes, J. W. (2007). Environmental policy as social policy? The impact of childhood lead exposure on crime. *B.E. Journal of Economic Analysis and Policy*, 7, Article 51. Available at <http://www.bepress.com/bejeap/vol/iss1/art51>.
- [16] Silver, E., Arseneault, L., Langley, J., Caspi, A., and Moffitt, T. E. (2005). Mental disorder and violent victimization in a total birth cohort. *American Journal of Public Health*, 95, 2015–2021.
- [17] Swanson, J. W., C. E. Holzer III, V. K. Ganju, and R. T. Jono. 1990. “Violence and Psychiatric Disorder in the Community: Evidence from the Epidemiologic Catchment Area Surveys.” *Hospital and Community Psychiatry* 41 (7): 761–70.
- [18] Teplin, L. A., McClelland, G. M., Abram, K. M., and Weiner, D. A. (2005). Crime victimization in adults with severe mental illness, comparison with the National Crime Victimization Survey. *Archives of General Psychiatry*, 62, 911–921.
- [19] Zimring, F. E. (2007). *The great American crime decline*. New York: Oxford University Press.

8 Tables

Table 1: Summary statistics

	Mean	Std Dev.
Mental Health Facilities (2,382 counties)		
Total	57.64	100
Openings	3.09	7.66
Closings	1.29	3.63
NCHS Mortality (per 100,000)		
Total Meantal Health Related Deaths	20.53	22.01
Dementia	27.52	21.86
Depression	1.04	1.76
Psychosis	1.59	2.45
Other Mental Disorders	0.86	0.16
UCR Offenses Known Databases (per 100,000)		
Homicide	6.98	8.035
Manslaughter	0.22	0.88
Murder	6.76	7.94
Rape	39.47	27.43
Robbery	174.49	156.41
Assault	1550.04	1059.07
Simple Assault	1213.09	898.86
Burglery	823.95	532.99
Larceny	2655.45	1222.42
Moter Vehicle Theft	352.6	304.28
UCR Supplementary Homicide Reports (per 100,000)		
Homicide	12.74	58.56
Homicide with unknown victim-perpetrator relationship	0.08	0.38
Homicides committed by strangers	0.04	0.29
Homicides committed by family members	0.04	0.42
Homicide committed by partner	0.07	0.89
Homicides circumstance unspecified	20.68	72.23
Homicides circumstance argument	9.24	56.86
Homicides circumstance robbery	0.34	1.29
Homicides circumstance drugs	3.09	21.32

Over the time frame, the aggregate number of facilities increased from 14,235 to 17,604.

Table 2: Estimated Effects of Mental Health Facilities on Log Mental Health Related Mortality Rates

	(1)	(2)	(3)	(4)	(5)
Homicide Data: UCR Offenses Known Database					
Facilities Last Year	-0.0151*** (0.0003)	-0.0187*** (0.0004)	-0.0051** (0.0009)	-0.0045*** (0.0011)	-0.0045*** (0.0011)
State and Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
State by County and Year Fixed Effects	No	Yes	Yes	Yes	Yes
Demographic Controls	No	No	Yes	Yes	Yes
Economic Controls	No	No	No	Yes	Yes
Officer Rate per 100,000	No	No	No	No	Yes

Table 3: Estimated Effects of Mental Health Facilities on Log Homicide Rates

	(1)	(2)	(3)	(4)	(5)
Facilities Last Year	-0.0003 (0.0003)	-0.0013* (0.0005)	-0.0025 (0.0013)	-0.0007 (0.0017)	-0.0007 (0.0017)
State and Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
State by Agency and Year Fixed Effects	No	Yes	Yes	Yes	Yes
Demographic Controls	No	No	Yes	Yes	Yes
Economic Controls	No	No	No	Yes	Yes
Officer Rate per 100,000	No	No	No	No	Yes

Table 4: Estimated Effects of Mental Health Facilities on Log Homicide Rates by Relationship

	(1)	(2)	(3)	(4)	(5)
Unknown victim-perpetrator relationship					
Facilities Last Year	-0.0014** (0.0005)	-0.0016 (0.0012)	-0.0053 (0.0034)	-0.0060 (0.0043)	-0.0062 (0.0043)
Homicides committed by partners					
Facilities Last Year	0.0021* (0.0010)	-0.0018 (0.0048)	0.0049 (0.0119)	-0.0214 (0.0253)	-0.0220 (0.0249)
Homicides committed by strangers					
Facilities Last Year	-0.0009 (0.0011)	-0.0012 (0.0101)	0.0176 (0.0125)	0.0246 (0.0305)	0.0396 (0.0311)
Homicides committed by family members					
Facilities Last Year	0.0004 (0.0017)	-0.0072 (0.0091)	-0.0348 (0.0523)	-0.0527 (0.0691)	-0.0350 (0.0836)
State and Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
State by Agency and Year Fixed Effects	No	Yes	Yes	Yes	Yes
Demographic Controls	No	No	Yes	Yes	Yes
Economic Controls	No	No	No	Yes	Yes
Officer Rate per 100,000	No	No	No	No	Yes

Table 5: Estimated Effects of Mental Health Facilities on Log Homicide Rates

	(1)	(2)	(3)	(4)
Unspecified and undetermined circumstance				
Facilities Last Year	-0.0014** (0.0005)	-0.0014 (0.0009)	-0.0014 (0.0017)	-0.0014 (0.0012)
Circumstance of arguments				
Facilities Last Year	0.0010 (0.0005)	0.0009 (0.0009)	0.0020 (0.0015)	0.0020 (0.0015)
Circumstance of drugs				
Facilities Last Year	0.0011 (0.0015)	0.0049 (0.0030)	0.0048 (0.0047)	0.0046 (0.0047)
Circumstance of robbery				
Facilities Last Year	0.0013 (0.0034)	-0.0015 (0.0063)	-0.0048 (0.0074)	-0.0011 (0.0076)
Circumstance of negligence				
Facilities Last Year	0.0048 (0.0033)	0.0265** (0.0077)	0.0496*** (0.0099)	0.0496*** (0.0099)
State and Year Fixed Effects	Yes	Yes	Yes	Yes
Demographic Controls	No	Yes	Yes	Yes
Economic Controls	No	No	Yes	Yes
Officer Rate per 100,000	No	No	No	Yes