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Uncovering the Connection Between Mental Health Service Availability and Violent Crime: A Test of Macrolevel Theory

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UNCOVERING THE CONNECTION BETWEEN MENTAL HEALTH SERVICE AVAILABILITY AND VIOLENT CRIME: A TEST OF MACROLEVEL THEORY

By

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ABSTRACT

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Uncovering The Connection Between Mental Health Service Availability and Violent Crime: A Test of Macrolevel Theory

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Since the decline of mental health service funding and availability, the relationship between untreated (or improperly treated) serious mental illness and violent crime is increasingly critical to examine. Rooted in a social support and institutional anomie theory (IAT) perspective, the purpose of this quantitative study is to analyze the relationship between mental health service availability and violent crime rates across the United States for the year 2016. It was hypothesized that findings would suggest an inverse relationship between mental health service availability and rates of violent crime. Results revealed the opposite, however, indicating that the more psychiatric hospitals in an area, the more violent crime will exist. This analysis provides insights into the most up-to-date reporting on the nationwide availability of mental health services, and how this impacts the rate and severity of crime at the state level.

Keywords: Violent crime, mental health, social support, anomie

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INTRODUCTION

Although many studies in the field of criminology focus on the correlation between mental health and violent crime, little has been examined regarding the decline in mental health service availability, and how that may affect crime levels in the United States. With the de-institutionalization movement of the mentally ill in the 1960's (Erickson 2021), one of the anticipated outcomes was to have more rehabilitation and treatment centers made available to criminal injustice involved individuals who were also suffering from a mental illness. The purpose of this movement was to promote rehabilitation and increase community ties. It can be argued that the de-institutionalization of the mentally ill movement has collapsed and even backfired. In 2016, 42.9% of state prisoners, and 23.2% of federal prisoners reported a history of mental health problems. Moreover, only 40.5% of state prisoners and 33.9% of federal prisoners report receiving treatment for their mental health concerns (U.S. Department of Justice 2021). Conversely, only 18.53% of the general adult population in America reported suffering from a mental illness in 2016 (Mental Health America 2016). Given the over-representation of mental illness within the prison system, there may be some connection between mental illness and crime.

An estimated 1,248,185 violent crimes occurred in 2016 (Federal Bureau of Investigations [FBI] 2022). While violent crime at the aggregate level is rare, it is commonly studied in attempts to explain why it takes place. The National Institute of Mental Health defines a serious mental illness as, "…a mental, behavioral or emotional disorder resulting in serious functional impairment, which substantially interferes with or limits one or more major life activities." Moreover, according to the Treatment Advocacy Center, in 2016 only a total of 37,679 state hospital beds remained for the United States, a stark decrease from the 558,922 that

were available in 1955. The amount of social support available via state hospital beds varies drastically state by state.

The aim of the current analysis is to test the interplay between social support and institutional anomie theories as they pertain to violent crime in the United States. Specifically, the present study will examine the relationship between mental health service availability and violent crime. Three mental health variables were applied in this study in order to thoroughly examine the relationship between mental health service availability and violent crime. First, data from the Treatment Advocacy Center, which is a nonprofit focused on mental health treatment availability, was used to estimate the number of state mental health hospital beds per 100,000 people. Second, availability of psychiatric hospitals was included to account for residential services devoted specifically to mental health purposes. Psychiatric hospital data was collected from the 2016 National Mental Health Services Survey (N-MHSS) deployed by SAMHSA. Third, percent of population with mental health concerns (The State of Mental Health America 2016) was included to account for prevalence of reported mental health concerns at the state level. A variety of control variables were gathered from the United States Census Bureau. In order to assess the level of crime in the sample, data will be collected from the FBI's Uniform Crime Report (UCR).

To my knowledge, this study is the first study to examine the relationship between violent crime rates and social support as conceptualized by nationwide availability of mental health services. It was hypothesized that, due to the economic pressures of achieving the American Dream (i.e., Messner and Rosenfeld [1994]2001) and lack of social support (i.e., Cullen 1994) to do so, findings would demonstrate an inverse relationship between mental health service availability and rates of violent crime.

THEORETICAL FRAMEWORK

Social Support: A Historical Perspective

The basic proposition of social support theory is that variation in degrees of cohesiveness, support, shared values, and instrumental or expressive provisions of support influence the rates of crime (Brazena and Azimi 2018; Altheimer 2008; Cullen 1994; Pratt and Godsey 2002). Further, it has been found that prosocial individuals are more likely to enjoy considerable and adequate social support, while antisocial individuals disproportionately suffer from limited social support (DeLisi 2015). Much of this disproportionality can be explained by what is commonly known as the revolving door of the criminal justice system, otherwise known as recidivism.

In his presidential address to the academy of criminal justice, Cullen (1994) describes formal social support as the provision of instrumental and expressive types of needs. Instrumental needs are material aid, financial assistance, guidance, and advice of an individual while expressive needs are emotional connections/relationships and social reinforcement that serves to affirm or bolster one's worth/dignity. In this influential literary call to action, Cullen (1994) further connects crime and social support, by outlining fourteen research-based propositions:

1). America has higher rates of serious crime than other industrialized nations because it is a less supportive society.
2). The less social support there is in a community, the higher the crime rate will be.
3). The more support a family provides, the less likely it is that a person will engage in crime.
4). The more social support in a person's social network, the less crime will occur.
5). Social support lessens the effects of exposure to criminogenic strains.
6). Across the life cycle, social support increases the likelihood that offenders will turn away from a criminal pathway.
7). Authentication of a lack of social support increases criminal involvement.
8). Giving social support lessens involvement in crime.
9). Crime is less likely when social support for conformity exceeds social support for crime.
10). Social support often is a precondition for effective social control.

11). A supportive correctional system lessens crime.
12). Social support leads to more effective policing.
13). Social support lessens criminal victimization.
14). Social support lessens the pains of criminal victimization.

After outlining the propositions, not only are many benefits made clear about social support, but next steps can be drawn from these propositions as well. Further research, improvements in a supportive social order, and pursuit of a less restrictive and disintegrated criminal justice system are only small steps in the right direction towards a more connected and supportive society.

Institutional Anomie

Other perspectives have also hypothesized that forms of support can decrease crime, including institutional anomie theory (IAT). IAT is presented by Messner and Rosenfeld ([1994]2001) as an extension of Emile Durkheim's 1897 work on suicide, and on Merton's (1938) strain theory. Durkheim (1951) originally introduced the concept of anomie to explain certain patterns of suicide across societies. Against this background, Messner and Rosenfeld ([1994] 2001) introduce IAT in their book *Crime and the American Dream*. Despite the evolution of social trends and the fury of economic, natural, and micro-level crises, the ethos of the American dream has persisted (although ideologically it has shifted over time) and serves as a cultural compass guiding one through their everyday life. Messner and Rosenfeld describe the American dream as, "a commitment to the goal of material success, to be pursued by everyone in society, under conditions of open, individual competition" ([1994]2001:5). Not only does the American dream largely shape societal behaviors and norms (that contribute to long term goals), but it encourages society to justify a continued commitment to this goal. What does this mean for those who are unsuccessful or experience extreme hardship in attempting to achieve these shared cultural goals? This would indicate that for some, the American dream is not as easy to achieve

for various reasons, some being beyond their control. Some would argue that when this takes place, individuals resort to crime in their pursuit of the American dream. Messner and Rosenfeld state, “If the American Dream places such a heavy cultural emphasis on monetary success…then those who are unsuccessful in the pursuit of material well-being will be pressured to use illegitimate means regardless of the ‘openness’ of the opportunity structure” ([1994]2001: 56).

While both IAT and social support assert conceptually distinct characteristics in terms of explaining crime, they draw on common propositions that variations in social aggregates (of cohesiveness, support, shared values, provide aid to those in need, etc.) are assumed to be related to crime (Cao et al. 2010; Pratt and Godsey 2003; Savolainen 2000). According to DeLisi (2015), social institutions largely function to support the economic values of the American Dream, as opposed to building a community in which citizens feel cared for. While IAT implies that crime occurs at the aggregate level, social support theory stems from IAT, addressing a society’s unwillingness or inability to care for its citizens at an individual level (DeLisi 2015).

LITERATURE REVIEW

Empirical Evidence of Social Support Theory

Cullen (1994) identifies social support as consisting of several dimensions including expressive vs. instrumental support, objective delivery and perception of support, and that social support occurs on different social levels. Chamlin and Cochran define social altruism (a form of social support) as "…the willingness of communities to commit scarce resources to the aid and comfort of their members distinct from the beneficence of the state" (1997:204). Lin, Dean and Ensel define social support as, "…the perceived or actual instrumental and/or expressive provisions supplied by the community, social networks, and confiding partners" (1986:18). Kim and Pridemore describe social support as "…a 'buffering-effect' on criminogenic conditions…by providing resources that allow individuals or groups to cope with existing strains more effectively" (2005a:562).

Sources in which individuals seek Social Support

As Altheimer (2008) identifies, a major point of contention among social support theorists is the type or dimension of support and its bearing on influencing crime. Social support is often thought of as either being strong or weak. Brezina and Azimi (2018) examine social support from a different angle: whether it is derived from deviant or pro-social sources. In alignment with Cullen's (1994) framework, Brezina and Azimi argued that while level of social support does matter (and is found time and again to contribute to crime), so too does the source. Legitimate social support is described as law-abiding sources that promote conformity and foster moral commitment and obligation while illegitimate social support might consist of gang membership, delinquent peer groups, etc. The basis of their study was to examine the plausibility

of illegitimate social support, or what they refer to as the differential social support hypothesis. Results showed considerable support of this hypothesis: illegitimate social support increases the likelihood of delinquent behavior. While this study was carried out on a group of adolescents and their loyalty to their peers, this same outcome can be assumed for members of other social strata who do not receive adequate or legitimate social support.

To examine whether levels of crime depend on the type or dimension of social support, Altheimer (2008) examined the relationship between homicide and five divergent measures of social support (general social support, education expenditure, health expenditure, decommodification, and human development index [HDI]) among 51 nations. Results showed that three of these five social support measures were significantly associated with homicide when controlling for ethnic heterogeneity. Further, Altheimer's (2008) key findings suggested that (1) nations with higher levels of ethnic heterogeneity will have higher levels of homicide, (2) nations with higher levels of social support tend to have lower levels of homicide, and (3) the effects of ethnic heterogeneity on homicide can be reduced by the provision of social support.

Social Support & its Relationship to Inequality, Poverty, and Crime

Pratt and Godsey (2002) identify social support or social altruism as a degree of cohesion, support, shared values, and willingness to come to the aid of those in need within social aggregates (from communities to nations). In their study, Pratt and Godsey (2002) test to see if social support is inversely related to crime at the cross-national level. The sample consisted of 46 nations covering the time period of 1989-1995. To measure violent crime, researchers utilized homicide rates per 100,000 as a proxy which is a common reliable cross-national measure. The independent variable of focus in this study, social support, is measured by creating an index of two variables including the percent of the nation's GDP spent on health care, and the

percent of the nation's GDP spent on public education. Other structural control variables included in the analysis were the ratio of the richest to the poorest 20 percent of citizens (to measure economic inequality), sex ratio, proportion of population living in urban areas, and HDI. The researchers were also sure to identify the potential spuriousness of their analytic strategy in that their proxy measure of social support contains what they identify as a 'hospital effect' where citizens living in nations with a higher quality of health care are less likely to die as a result of a potentially fatal interpersonal encounter" (2002:593). Therefore, to control for this, researchers also included the proportion of one-year-olds that have been immunized for measles as an identification restriction. Weighted least squares (WLS) regression was used for this analysis due to concerns of heteroscedasticity. In doing so, data presented robust inverse effect of social support index on homicides. Additionally, the researchers created another model, excluding the United States from analysis because the US is often viewed as exceptional with regard to public social support (which therefore can be "driving" the results). This new model showed no significant change from previous results. Then, a second model specification included a Western dummy variable, as Western nations often have higher levels of social support and lower levels of homicide relative to other nations contained in the sample. Including the Western variable in the second nested model not only demonstrated that it is not a predictor of homicide rates, but also fails to mediate the effects of social support on homicide. Since previous theorists suggest that social support should ease the criminogenic effects of economic deprivation (as cited in Cullen 1994), researchers provided a third nested model including an interaction term between social support and inequality. Data from this model demonstrated that the interaction term is significant and robust, and yet it does not cause the main effect of social support (or inequality) to wash out. These vigorous and consistent findings suggest that "the inverse effect of social

support on homicide rates revealed…is a reflection of empirical reality and not a methodological artifact" (2002:595). This study provides strong data to demonstrate how characteristics of social aggregates (whether it be at the national, state, or local level) play a large part in levels of crime.

Along the same lines of social support, Chamlin and Cochran conduct a study to examine the relationship between social altruism and varying types of crime. Social altruism is defined as, "…the willingness of communities to commit scarce resources to the aid and comfort of their members distinct from the beneficence of the state" (1997:204). Social altruism is measured in terms of contributions to local charitable institutions from 1992-1994. This data was collected from United Way, a philanthropic organization that researchers felt approximates their concept of social altruism. It was decided to measure the dependent variable across the ratio of a two-year average of money to minimize the effects of idiosyncratic yearly fluctuations in monetary contributions. These parameters, along with generating sample attrition for missing data, resulted in a sample size of 354 U.S. cities. To explore if and how social altruism might vary across offense categories, two measures of crime were included in the study: property crime (number of burglaries, larcenies, and motor vehicle thefts per 100,000 population) and violent crime (total number of homicides, robberies, aggravated assaults, and forcible rapes per 100,000 population). Following previous research, Chamlin and Cochran (1997) included control variables in their model specifications identified by motivational, opportunity, and compositional theories (absolute and relative economic deprivation, percent of population that is black, percent of population that is foreign born, population size, and percent of single-person households) in addition to urbanization control variables that are likely to affect the level of social altruism and crime rates across different U.S. Cities (percent of population aged 18-24, residential mobility, family disruption and regional [Southern] location dummy coded where 1=South and 0= non-

South). The dollar value of contributions to the United Way was collected from the Chronicles of Philanthropy, and data for property and personal crimes were collected from the Uniform Crime Reports provided by the FBI. Preliminary investigation of descriptive statistics for all except violent crime rates revealed no concerns of heteroscedasticity or multicollinearity. Violent offenses demonstrated heteroscedastic errors, therefore was transformed into its natural logarithm. Continuing their study with OLS regression, Chamlin and Cochran (1997) demonstrated results similar to previous findings. That is, many of the urbanization control variables had significant effects on their measure of social altruism. Specifically, percent of population that is black and percent of population that is foreign born were positively related to social altruism, population size, economic equality, and their dummy variable for southern location negatively affected social altruism. The only significant finding that was contrary to expectation and previous research was the positive relationship between social altruism and both poverty and single-person households. Researchers exclaim that this finding, "might reflect the objective demand for assistance from the larger community" (1997:217). While the Gini index was positively related to property crime, it had no effect on violent crime. In contrast however, poverty was directly related to violent crime but had no impact on property crimes. Additionally, and most apropos to the aim of the study, researchers found that net of the other factors, property and violent crimes were negatively associated with social altruism. Despite the somewhat mixed findings, the study supports the main hypothesis that social altruism negatively affects both violent and property crime rates. While further studies are recommended in order to replicate these findings, it can be inferred that the more communities commit donations and scarce resources to those in need, the less likely crime is to occur. When aid is given to the comfort of members of a community, they may feel that their needs are being met, therefore reducing the

likelihood that those members meet their needs via alternative methods (committing property or violent crime).

To critically examine the relationship between economic inequality and serious crime, Savolainen (2000) emulates a study using Messner and Rosenfeld's (1997) research as a primary dataset in addition to conducting a parallel set of analyses on a secondary dataset that involves a different sample of nations and different set of measures. The primary dataset of this study consisted of 45 nations, with national homicide rates (obtained from the World Health Organization [WHO]) as the dependent variable. Independent variables included a decommodification index, income inequality, economic discrimination, human development index, and sex ratio. To replicate this analysis with their own dataset, Savolainen obtains a secondary dataset using a sample of 32 nations (9 of which that were not included in the primary sample. These nations were included in the secondary sample to include emerging market economies in Eastern Europe). While the primary dataset includes rates from the years of 1980-1990, the secondary dataset reports rates from 1990. To disaggregate and more clearly compare crime rates, the secondary dataset reports male and female homicide rates as the two dependent variables of the dataset. Independent variables of the secondary dataset include GNP per capita, percent at ages 15-24, sex ratio, income inequality, and welfare spending. It is hypothesized in this study that economic inequality is a strong predictor of the national homicide rates in societies in which weak institutions of social protection exist. Using ordinary least squares regressions, results from both samples provide support for the legitimacy of institutional anomie theory. The primary sample from the Messner-Rosenfeld dataset was analyzed by using a series of nested models (6). Model 1 estimates the main effect of each independent variable on the dependent variable, while models 2 and 3 separately include each Gini index (income inequality

and decommodification, and economic distribution and decommodification respectively). A negative interaction effect emerges in models 1-3, however is only statistically significant in model 3. To examine the interaction effect more closely, models 4-6 of the nested model were re-estimated with a reduced sample excluding six nations that had missing values. Findings remained similar among these models in that a negative interaction effect was still present. The secondary dataset was also analyzed using OLS regression technique; however, models were reported such that male homicide victimization rates and female homicide victimization rates were the dependent variables. Consistent with their hypothesis, results from this analysis showed a presence of a negative interaction effect between income inequality and welfare spending in both male and female homicide victimization rates. This suggests that nations with the most generous welfare programs tend to also have the lowest levels of income inequality and therefore lower levels homicide victimization rates.

Lee and Pridemore (2014) examine how HDI effects suicide and homicide rates both at the global level (N=102) and use Australia as a case example for the year of 2008. The Human Development Index (HDI) is a variable often used in studies to predict measures of well-being. The HDI usually consists of a composite of three basic domains of life: life expectancy (health), literacy and school enrollment (education) and standard of living (income). The researchers hypothesized that they would find an inverse relationship between suicide and homicide at the global level, and that there would be a negative correlation between HDI and homicide. After preliminary analysis, researchers found non-normal distributions of the data sets for HDI, suicide, and homicide and therefore chose to proceed with Spearman's *p* for correlation statistics. As hypothesized, results suggest a weak, though significant inverse relationship between suicide and homicide at the global level. Lee and Pridemore explain, "This suggests that past a certain

minimum suicide rate, there is also a slight increase in homicide rates" (2014:113). In looking at data for Australia, results only indicated a strong but non-significant inverse relationship between suicide and homicide rates. Lastly, their data showed a significant inverse correlation between HDI values and homicide rates, however unexpectedly and contrary to previous findings, a significant positive correlation between HDI values and suicide. Despite the mixed findings, results from Lee and Pridemore's (2014) study suggest that whatever the direction (positive or inverse) wellbeing and quality of life (measured by HDI) has an effect on suicide and homicide rates and is an important variable worth further exploring to explain violent crime. The evidence at the macro level bolsters the proposition that a significant association between social support and crime rates exists.

Social Support & its Relationship to Institutional Anomie Theory

Focusing on a combined theoretical approach, the relationship between social support, institutional anomie and general strain theories and their direct effect on crime is explored in Pratt and Godsey's (2003) study. The general aim of the analysis is to address whether social support and economic inequality have independent effects on homicide rates, whether controlling for each variable moderates the effect of the other variable, and whether there is a significant interaction effect between social support and economic inequality on homicide rates at the cross-national level. In this study, Pratt and Godsey (2003) measure social support by percent if the nation's gross domestic product (GDP) spent on healthcare. Institutional anomie was measured by calculating the median incomes of the richest to the poorest 20 percent of citizens in each nation included in the sample. Other control variables included sex ratio, percentage of population living in urban areas, and human development index (HDI). After multicollinearity diagnostics, analysis on a total sample of 46 nations revealed a significant inverse relationship

between social support and homicide. Additionally, data showed that measures of social support and economic inequality maintain strong main and interaction effects with homicide rates, thus supporting the original hypothesis. Lastly, analysis indicated that criminogenic effects of economic inequality are enhanced when found in conjunction with low levels of social support, meaning that crime is more likely to occur when both economic inequality and social support are low.

Cochran and Bjerregaard stress that, "…the joint effects of a powerful cultural force that elevates aspirations for economic success, and a strong economy that can both convert these cultural aspirations into expectations and can, in turn, satisfy these expectations for a significant portion of the population" (2012: 212). In such societies, those who are more vulnerable to economic inequality are forced to find alternative means to attain economic security. Similarly, Cao et al. conducted a study to determine if variation in social support at the national level was inversely related to individuals' sense of anomie. Their findings indicated that, "Societies providing their citizens with more social support are less likely to have their population suffer from anomie…people surrounded by more social support are less likely to be pressured to take drastic means to achieve their desired goals" (2010:636).

The present study attempts a multi-theoretical approach to explain crime from a social support and IAT perspective. One of the major differences between social support theory and IAT is that structural covariates used in social support often measure how well societies feel supported, whereas IAT uses economic variables. For example, studies testing social support theory involve control variables such as academic achievement, health expenditure, education expenditure, or contributions to local charities (Brezina and Azimi 2018; Chamlin and Cochran 1997, Altheimer 2008; Pratt and Godsey 2003), and studies testing IAT include GDP, HDI, voter

turnout, family stability, or proxy or index measures for variables such as economic inequality, poverty, etc. (Ouimet 2012; Pridemore 2008; Hughes et al. 2015; Savolainen 2000; Weiss et al. 2020; Zito 2019; Kim and Pridemore 2005a; Maume and Lee 2003; Schaible and Altheimer 2016). There is overlap in both theories using economic and well-being measures that allows for the current analysis to take a multi-theoretical approach.

Empirical Evidence of Institutional Anomie Theory

IAT is distinct from social support theory in that its primary focus is not on supportive provisions but rather the cultural processes and economic values that lead to crime (Altheimer, 2008). IAT is among the most prominent theoretical explanations for crime at the macro-level. It posits that anomic conditions occur when social institutions are imbalanced such that the economy comes to dominate other institutions, in turn weakening the ability for other institutions to promote prosocial behavior (Messner & Rosenfeld ([1994]2001). Essentially, because "the American Dream" is such a heavily regarded cultural ethos, society is vulnerable to an "anything goes" attitude in attempts to achieve this.

Messner and Rosenfeld's Institutional Anomie theory extends insights drawn from Merton's anomie theory (1938). Merton (1938) seeks to explain the nature of social structure and anomie. In doing so, he found that deviance is high in societies where the pressure of wealth and economic wellbeing are widely shared cultural goals. Often, these cultural goals are stressed more than institutionalized means (appropriate behavior) for reaching those goals. According to Messner and Rosenfeld, who built on Merton's original work on institutional anomie theory, "Merton's theory attributes crime to the lack of articulation within and between the basic components of social organization: culture and social structure" ([1994]2001:52). When the essence of social structure is not accepted, the moral obligation for adopting these means causes

one to resort to illegitimate means to attain the goal, often resulting in antisocial behavior or, in this case, violent crime. Achieving cultural goals by socially acceptable means is incredibly difficult and rare for those who have little-to-no economic resources. It is unreasonable to demand a particular conduct of a person when they are denied effective opportunities to do so institutionally, ultimately narrowing or closing the opportunity for vertical mobility. Merton states, "Whatever the sentiments of the writer or reader concerning the ethical desirability of coordinating the means-and-goals phases of the social structure, one must agree that lack of such coordination leads to anomie" (1938:682).

Following this, Messner and Rosenfeld (1997) make a notable attempt at strengthening the concept of IAT by examining its relationship to social welfare systems (measured as decommodification). IAT has since been described by many criminology researchers as attributing levels of crime within a social unit to interrelated cultural and structural dynamics (Chamlin and Cochran 1997; Messner and Rosenfeld 1997; Savolainen 2000). In their more recent revitalization, Messner, Thome and Rosenfeld clarify the distinguishing features of IAT. They note, "The interdependence of major social institutions implies that, for the society to 'work' at all, there must be some coordination among institutions" (2008:168). They further explain that IAT is built upon the underlying foundation that the levels and forms of criminal activity in any society reflect the fundamental features of social organization.

Schaible and Altheimer (2016) apply negative binomial regression to assess the degree to which Mertonian anomie theory explains the variation in homicide rates. Results from their study were generally supportive of this, indicating that homicide rates were significantly higher in deinstitutionalized and demoralized societies and lower in stable societies. While results suggest

that cultural patterns have implications for societal levels of homicide, it begs the question about what other cultural patterns are important for examining and explaining crime rates.

IAT diverges from Merton's anomie theory by shifting focus from the means in which an individual achieves success to the balance of power among social institutions. While Merton (1938) argued that those on the lowest rungs of the socio-economic ladder experience greater stress to engage in crime, Messner & Rosenfeld ([1994]2001) somewhat deviate from this by suggesting that social institutions are viewed as the building blocks of society, of which play a key role in orienting behavior in accordance with shared values and norms. The interplay of these two main ideas postulates that the blocked opportunities for achieving the American Dream are both cultural and structural.

To test IAT, Hughes, Schaible and Gibbs (2015) determine the extent to which the American Dream moderates that effect of the economy on homicide. Using OLS regression, authors found a statistically significant relationship between economic freedom (the extent to which individuals participate freely in market activities without government coercion or constraint) and an index measure of the American Dream. Results suggest that, "…countries with strong structural and cultural emphases on the economy and personal responsibility for achieving monetary success tend to experience the highest rates of lethal violence" (2015:119-118).

To adequately capture if crime rates can really be attributed to the imbalances of social institutions, Rogers and Pridemore (2022) conduct a similar study in which they compare the strength of the economy to five social institutions: economy, polity, family, education and religion. Results from their analysis showed that nations with greater levels of economic dominance over education and polity have higher homicide rates suggesting that sectors of

education and polity may possess greater abilities to influence behavior and counteract the effects of a dominant economy.

While many studies have used IAT to explain crime at the macro-level, it has only recently become more common to investigate at the individual level. Stults and Falco (2012) argue this importance as a way to explain how the institutional balance of power might influence behavior and individual outcomes. Using this interpretation, attitudes and behaviors of U.S. high school seniors are evaluated to examine the empirical validity of IAT. Although model fit varied across types of delinquency, results of this study showed considerable support for IAT at the individual-level, demonstrating that offending was higher among those who expressed an adherence to values associated with the market economy (as compared to those who expressed adherence to the values of non-economic institutions).

That IAT has been found to explain crime at the individual level is to insinuate that there is some level of justification (at least to the individual) for deviant behavior. Zito suggests this argument in their multilevel examination and do so by pointing out that, "The constellation of economic features highlighted in IAT-robust market societies with high degrees of both economic freedom *and* economic inequality-matter for justifications of everyday-life crimes and violence" (2019:266). The key findings of this study were not only that the expression of individual hardship is shaped by anomic conditions, but also that IAT accounted for, at least in part, cross-national variation in willingness to justify criminal conduct. This is to say that the economically dominant market causes hardship, which results in crime/deviant behavior, and is later justified due to the anomic conditions of the economically dominant market (Zito 2019).

In addition to the justification of deviant behavior, Hövermann et al. (2015) contend that another consequence of a marketized society (also referred to as marketized mentality) is the

prejudice towards the "unprofitable." The premise of their argument is that a marketized mentality establishes and reinforces inequality and structural discrimination between groups and purportedly targets and burdens vulnerable social groups who "fail to measure up" to the American Dream. Results from this study shed light on several significant findings. First, Hövermann and colleagues (2015) found that respondents who embrace the marketized mentality (as opposed to what they identified as solidarity values) are more likely to devalue vulnerable groups such as unemployed, unhoused, and immigrants. Second, they found that these same types of respondents are inclined to use their marketized values as guiding principles in other social spheres (ultimately judging entire social groups by their usefulness to the standards of the market). In consonance with this interpretation, vulnerable groups are readily seen as economically burdening, unprofitable, and therefore of little utility. The marketized mentality that is coveted in our society has remarkable consequences for individuals with severe mental health concerns.

Prevalence of Mental Health in the Criminal Justice System

It is common knowledge that the US is one of the largest jailers in the world at around 2 million people (Fazel and Seewald 2012; Fazel and Danesh 2002). At such a high rate, it is important to review the prevalence and severity of mental health conditions existing among imprisoned populations. Fazel and Danesh (2002) examine this by conducting a systematic review of 62 surveys that have been distributed across 12 western countries. Their study concluded that one in seven prisoners have psychotic illnesses, and one in two male prisoners and one in five female prisoners have a personality disorder. Additionally, Fazel and Danesh suggest, "that a few hundred thousand prisoners might have psychotic illnesses, major depression, or both-an amount that is twice the number of patients in all American psychiatric

hospitals combined" (2002:548). In a similar study, results are replicated by Fazel and Seewald (2012) suggesting that not only are mental health conditions widespread among prisoners, but that rates of depression have increased over time. Equally as important to identifying the prevalence of mental health conditions among criminal justice involved individuals is to examine how imprisonment is having an effect/exacerbating these conditions.

The Evolution of Mental Health Services

It has been over half a century since the mass de-institutionalization of mental illness movement; therefore, it is important to note how the public mental health system has shifted and the implications of each of these shifts (Fuller et al. 2016). According to Hadley (1996) at least five major phases have occurred since 1950. In the 1950's, mental health services existed only through state hospitals, and were funded only through the state government. This made budgeting centrally controlled and monitored, and that care was largely generic with inadequate staffing and (what would be considered today) severe maltreatment of patients. It was during the 1960's that the first notable ideological shift occurred concerning the confinement of the mentally ill. The concept of deinstitutionalization began to show up in politics resulting in grant funded community mental health centers (CMHC). Continuity of care became more important, but more difficult to maintain due to the increased complexity of regulations (as a result of increased fundings sources). Fee-for-service programs were brought in during the 1970's, which gave incentive for general hospitals to enter the mental health service market. This growth dramatically complicated how programs were designed and managed now due to third-party funding sources, grants, and state governments. This is also when data compilation and administrative procedures became a requirement for providers. In efforts to re-target specialized services for individuals with severe mental illness, contracts became a fourth funding source by

the late 1970's. Contracted service providers were aimed to not only increase community support in providing services, but to reduce access for individuals with less serious or low-level mental health concerns. Finally, by the 1990's many new treatment modalities began to emerge in response to the financially complex and enormously fragmented structure. By this time, the solution to the mental health system became redundant: to fix the structure, create a new organization (Hadley 1996:395-402). The original goal of deinstitutionalization was to safely release individuals from hospitals to the community, divert from hospital admission, and develop alternative community services (Lamb and Bachrach, 2001). Currently, it is evident that the first two processes of deinstitutionalization have proceeded far more rapidly than the third. Additionally, as optimistic and passionate the deinstitutionalization movement was, there remains a fraction of individuals with such chronic and severe mental illness who need 24-hour care, often in secured facilities. It is therefore imperative to reflect if eliminating all psychiatric hospitals in the US is feasible. With the advancement of medication, policy change, shifting of costs and substantial underfunding, many individuals are often stabilized (given medication) and released without adequate after-care support services (Markowtiz 2010).

Current Insights

Just as historical context of the evolution of the mental health service system is important, so too is analyzing the condition and effectiveness of mental health services currently; specifically for criminal justice involved individuals with severe mental illness. Many alternatives to institutionalization, involuntary commitment, and criminal justice system involvement have been implemented since the deinstitutionalization movement. Of which includes mental health court/prearrest diversion, and an increase in community mental health

centers. Additionally, ways in which authorities approach and engage with individuals experiencing mental health concerns have been criticized and modified.

Mental health court is a therapeutic alternative judicial approach that some jurisdictions have implemented to avoid criminal justice system involvement, reduce jail overcrowding, and to connect individuals in need with mental health services in the community. Individuals who qualify for mental court agree to participate in a treatment program under the supervision of a probation officer. In these scenarios, individuals are convicted of a crime, however a sentence is not imposed. If the individual successfully completes the treatment recommendations that are agreed upon by the court, then the individual avoids incarceration. In the long run, mental health court is additionally hoped to reduce recidivism and build independent living skills and functioning within individuals (Yuan and Capriotti 2019). In their study, Yuan and Capriotti (2019) evaluated the effectiveness of mental health court in Sacramento, California. Their findings revealed that not only did individuals involved in mental health court have lower recidivism rates, but that they also had fewer psychiatric hospitalizations. An area for improvement that was revealed in their results was an increased capacity of probation officers to provide adequate monitoring and oversight.

In a similar study, Bird and Shemilt (2019) conduct a systematic review of long-term prearrest diversion programs. With a specific focus on people with suspected mental disorder who come into contact with police, they had three research questions: 1), To what extent is their risk of recidivism reduced after diversion into community health services compared with those who are not? 2). To what extent is their mental health improved after diversion into community health services compared with those who are not? 3). What are the economic costs and/or savings associated with prearrest diversion, and to which sectors do they fall? The diversion

programs that were evaluated in these studies consisted of Crisis Triage Centre (CIT), Link Scheme, and Mobile Crisis Outreach. Data from these evaluations were mixed, indicating that while one of the programs had a reduced risk of recidivism three months after diversion, the other two programs apparently showed an increased risk. Additionally, data suggested that twelve months after diversion, all three programs demonstrated an apparent increased risk of recidivism (Bird and Shemilt 2019). Regarding mental health outcomes of diversion program, data showed an increased likelihood of diverted individuals to receiving counseling, compared to controls of the CIT program. For the Mobile Crisis Outreach program, data indicated that diverted individuals were less likely than controls to receive counseling. Moreover, evaluative data from these programs also showed that the relative risk of diverted individuals being hospitalized for a mental disorder reduced over time (all findings were statistically significant at three months, however the findings for only one program reached statistical significance at the twelve month follow up. Ten studies met the inclusion criteria for the economics group. Three of the nine economic related studies found that prearrest diversion led to cost shifting from local criminal justice agencies to local health care agencies for up to two years but did not create overall saving. Specifically, the studies found that at two years, there were higher costs associated with mental health care treatment, there were lower costs associated with the criminal justice system (Bird et al. 2019). Five economic studies involved in the meta-analytic review conducted cost-effective analyses. These results showed that prearrest diversion can in fact produce overall cost-savings from a multisector perspective. On the contrary however, two other studies provided evaluations associating prearrest diversion programs with higher costs. Although the findings of Bird and Shemilt's (2019) study were mixed, it is a strong indication

that more research is needed on the long-term economic, crime, and mental health impact of prearrest diversion programs for individuals with severe mental illness.

Another approach to analyzing the ways in which mental health initiatives have (or have not) been beneficial in reducing criminal justice involvement among individuals experiencing mental illness is to gather the perspectives of frontline practitioners. Roy et al. (2020)do so by interviewing law enforcement, public health and social service workers, and community organizations in an urban Canadian location. Data revealed that many participants of the health and social service sectors believed that behaviors causing criminal justice involvement were being driven by underlying health problems, therefore reflective of the failure of health and social services. Contrary to this opinion, most law enforcement participants understood criminal justice involvement as a result of intoxication of alcohol or other substances. Another theme that was drawn was that participants from all sectors reached a consensus about the value and perceived benefits of a formally integrated team across all disciplines. This would include a broader, more holistic evaluation of an individual's complex situation, a more positive attitude towards marginalized populations on the part of law enforcement, court personnel and health care workers, and enhanced access to appropriate health and social services (thus reducing recidivism). Participants also agreed on the difficulties of achieving such an effective collaboration. Lastly, another significant finding of the data was that the same barriers were identified time and again in each focus group including limited or inequitable access to community services, inappropriate or untimely use of involuntary treatment, and the "missing-sectors" in cross-sector collaboration (Roy et al. 2020). To make more of a long-term impact on the ongoing battle of rehabilitation versus recidivism, more involvement is needed, particularly of corrections, forensic mental health care, and housing services. Lack of support in the

transition from the criminal justice system to community living (or even in avoiding the criminal justice system altogether) negatively impacts a person's ability to abide by parole/probation (or societal) expectations.

Ahern (2021) proposes another solution to mental health service alternatives by advocating for better training for police to de-escalate mental health situations and connect individuals with mental illness with appropriate resources as opposed to jail. Ahern (2021) points out the large discrepancy between the number of arrests (or even number of police encounters) involving individuals suffering from mental illness, and significant lack of training police officers receive to de-escalate these situations. Due to this, institutionalization has become the standard of care, and mentally ill individuals are vastly overrepresented in the criminal justice system. Moreover, individuals suffering from untreated mental illness tend to be charged with more serious crimes (and therefore face harsher sentences), and often have trouble consistently complying, leading to isolation while incarcerated, or additional charges for violating probation. According to Ahern, "The average length of basic law enforcement training in the United States is about 840 hours, or 21 weeks of academy training. Topics generally include operations, reporting procedures, investigation procedures, firearm training, defense tactics, self-improvement, CPR, and legal education. Unfortunately, mental health and crisis intervention training is not a widely trained topic for academies" (2021:190). Inadequate training and the emphasized use of force is a perfect recipe for a call to turn into an arrest or physical brawl between an officer and an individual with a severe mental illness. Ahern (2021) adds that in addition to police response and tactics, other major issues in today's society that exacerbates the symptoms and outcomes of individuals with severe mental illness are treatment in the court system and lack of resources in jails and prison settings. While immediate improvement of

response to criminal justice involved individuals with severe mental illness seems insurmountable, Ahern (2021) offers recommendations that contribute to small steps in the right direction. First, because dispatchers are the first point of contact for emergency situations, mental health training should be made a priority in order to decrease the miss identification of a 911 call as domestic violence or other dangerous situation that would require aggressive police force. Crisis intervention teams (CIT) were the second recommendation and while some law enforcement entities have adopted this collaboration, its outcomes can be benefitted on a much more widescale level. Ahern reflects on the first CIT program developed in Memphis, Tennessee, "CIT has been recognized as a best practice model by multiple organizations including NAMI (National Alliance on Mental Illness), Department of Justice, and Department of Health and Human Services…" (Ahern 2021:195). Third is pre-arrest jail diversion which involves the redirection of mentally ill low-level offenders away from jail and toward productive and collaborative treatment. Post booking jail diversion is a fourth solution and might be helpful when pre-arrest jail diversion might not be an option due to the nature or severity of crime committed, or if a mental illness was not discovered until after booking into jail. Lastly of course is state legislative funding for the abovementioned solutions, as none of them would sustain without appropriate funds.

Despite the apparent shift in the approach to the intersection between mental health and the criminal justice system, there is still a rampant level of unmet needs for individuals within this intersection. While many individuals might avoid care services for personal reasons and on their own accord, Schout, Jong and Zeelen, (2011) expand on this by describing these reasons for care avoidance as being due to alienation and anomie. Additionally in their study, they present the contrary of such, referred to as care paralysis. In addition to the personal reasons for not

seeking treatment (whether it be by choice or by incapacitation of the individual), complexities of adequate services are worsened due to societal infrastructure, budgeting, regulatory barriers, thresholds, waiting lists and lack of insurance. In other words, accessibility to mental health services is at an all-time low. Using ethnographic observation and action research approach, Schout et al. (2011) conduct a qualitative study in the Netherlands investigating the conditions that produce care avoidance, care paralysis and how the two phenomena amplify and trigger each other. Additionally, researchers investigate the opposite: conditions that produce trust and initiative. Professionals from 23 Public Mental Health Care (PMHC) facilities in the capital city of Groningen which consists of capital and rural areas and vast populations with low-socioeconomic status were interviewed and observed. Some common themes found in their interviews with professionals was that in the professional's opinion, individuals with mental health concerns might avoid seeking services due to social idleness (feeling as if they are on the sideline). This in turn causes individuals to search for their own social circle and occupation. However, "searching for networks of like-minded people can also lead to a culture with…hostility towards mainstream society" (Schout et al. 2011:671). Another common theme that researchers found in their studies was that professionals commonly felt that when an individual does seek mental health services, they are often estranged and challenged due to the fragmented and bureaucratic nature of health care institutions. "When the number of requirements and protocols increase and the professional discretion decreases, professionals can become estranged from themselves and alienated from their creativity" (Schout et al. 2011:672). When health care professionals are required to focus on the legal obligations of their job, they are left with less of a capacity to focus on the therapeutic nature of their work. Not only is it complex for professionals to do their job, but it is equally as complex for individuals to receive

adequate treatment services, “The lives of people with severe and ongoing mental health problems are also accompanied by complex and multiple social problems. Services nowadays are fragmented and deal with single aspects of service and treatment…the complexity of rules and infrastructure and the budgeting of services hinder integrated care” (Schout et al. 2011:666). To combat the societal issues of care avoidance and care paralysis, researchers shift their focus to trust and initiative within communities. In doing so, Schout et al. (2011) found five vital features to inducing more trust and initiative among individuals with mental health concerns and health care professionals: experienced proximity between local population and care facilities, a small-scale service level, committed involvement of professionals to a fixed territory, discretional space for professionals to develop initiatives, and (regarding professionals) a moral framework. Rebuilding health care communities that allow cooperation, trust, initiative, and new forms of solidarity to unfold facilitates individuals to regain faith in the institutions, and professionals to develop (re-develop) a genuine and deep-rooted motivation to help others.

One major issue of unmet needs among justice involved individuals with mental health concerns is the breakdown of continuity of care upon their release. Continuity of care is known as the sustained receipt of a comprehensive range of services in accordance with need, (Durbin et al. 2006). The diverse and convoluted elements of the service delivery system make it difficult to ensure adequate continuity of care for those on the receiving end. Given this, a key aim of systems integration is to develop working relationships between mental health and other service sectors (i.e., social welfare, corrections and primary care). However, as the number of sectors increases so does the complexity and efficiency of continuity. Durbin et al., (2006) conduct a meta-analytic review of large-scale system integration initiatives to identify strategies associated with increased continuity and suggestions for improvement. Initiatives reviewed in this study

were the Robert Wood Johnson Foundation Program on Chronic Mental Illness, ACCESS Program, Fort Bragg Demonstration Project, Stark County Evaluation Project and the Mental Health Reform in Kansas. Indicators against continuity of care that were analyzed in these studies included aspects of care such as wait time for services, interrupted care, sustained service use, time from discharge to follow-up, having a case manager, case manager turnover, diversity of service use, and whether the service met the individual's needs. Results from their review demonstrated that continuity of care improved on at least one of the indicators, meaning that as that particular indicator improved, so too did continuity of care. Results also showed that better continuity of care was obtained in systems where service sectors were smaller and centralized, where case management capacity was enhanced, and where community social capital (level of trust and cooperation) was strong. Contrarily, results showed that a decrease in continuity of care was present where funding cuts for services took place (Durbin et al. 2006). These findings offer a direction for improvement; however, a broader range of integration and evaluation is needed to produce a more cohesive mental health system.

In a similar study, Durbin, Sirotich and Durbin (2014) analyze the major issue of unmet needs among justice involved individuals with mental health concerns from a psychiatrist/healthcare professional perspective in a large urban area in Canada. In this cross-sectional study, authors analyzed the clinical judgement and assessment feedback of professionals from five different mental health court support programs. The final sample consisted of 994 admitted individuals, and correlates of unmet needs were categorized into three groups: predisposing (age, gender, marital status, etc.), clinical (diagnosis and presenting issues), and enabling or impeding (housing type, income source, charge severity, etc.). Results from the study showed that 77% of the sample presented to their assessment with symptoms of a serious

mental illness and while individuals were actually more likely to be connected to resources than justice involved individuals who did not participate in mental health support programs, there were still significant indicators of unmet needs. Specifically, twelve percent of participants had an unmet need for care from a primary care physician and 34% from a psychiatrist. Both measures of these unmet needs were associated with having an unknown diagnosis, no income source, and homelessness. This study demonstrates that although availability of, and access to, mental health services has been made more easily obtainable, there are still socioeconomic barriers that prevent individuals (especially justice involved individuals) from accessing these resources. It is apparent that the rapid implementation of such a major change requires cross-sector involvement including law enforcement, justice, health, and social services.

How Situational Dynamics Interplay with Mental Health

It is important to not only examine the interplay between societal/environmental factors and symptoms of mental illness, but also the consequences of incarceration on these symptoms. Along these lines, Hiday (1995) argues that severe mental illness (including active psychosis) is not in and of itself, a sufficient cause of violence but rather, for severe mental illness to lead to violent crime, social factors must intervene. In fact, Hiday (1995) creates a causal model linking social stratification with mental illness and violence. The model postulates that social disorganization, poverty, and neurobiological pathology leads (directly and indirectly) to violence. Specifically, the chronic strain that social disorganization and poverty lead to inherently causes stressful events (job loss, separation, etc.). In conjunction with the neurobiological pathology of mental illness, these stressful events can influence and even exacerbate the course of mental illness symptoms ultimately producing environments in which

the individual feels threatened or suspicious, antisocial, as though they are a victim, as though they feel the need to resort to violence or any combination of the above.

Another important factor to consider (that closely supports the deinstitutionalization movement) is the effect imprisonment has on individuals with mental health concerns. To closely examine this, Steingrimsson et al., (2016) compare survival rates of Icelandic male inpatients over a 25-year period who have and have not been imprisoned. Data was collected between January 1983 to March 2008, from three sources: discharge diagnosis registration from all psychiatric centers in Iceland, the Prison Administration of Iceland database and the National Register of causes of death at the Statistical Office of Iceland. The diagnosis at discharge (from a psychiatric center) after the first admission during the study period was defined as the index diagnosis, and diagnoses were not considered mutually exclusive (if an individual had more than one diagnosis at admission, all diagnoses were considered valid). Imprisonment status was defined as one or more prison sentence during the study period, regardless of whether the individual had been admitted to a psychiatric clinic before or after imprisonment. To describe the variable of interest of mortality more clearly, researchers indicated that individuals dying in accidents, by suicide or by homicide were considered to have died of unnatural causes whereas all other causes were identified as natural. Researchers hypothesized that inpatients with a mental disorder and a history of imprisonment would have a higher mortality rate than those who experienced hospitalization alone. A nested-case control design was used to compare adult men between the ages of 18 and 65 at index admission who had been imprisoned or not. Index diagnoses included in the analysis were: schizophrenia, unipolar affective disorder, bipolar affective disorder, anxiety related disorders, and other diagnoses (organic disorder). Cases involving men that were imprisoned during the study period with a discharge diagnosis of

substance use disorder were included in this analysis; this was because over 90% of psychiatric patients also had such a diagnosis. Sample size for this study consisted of 2,247 men aged 18 years or older that had been admitted to psychiatric wards in Island between January 1983 and March 2008. Of this sample, 749 had served a prison sentence. Results showed that men who have both a serious psychiatric disorder resulting in hospitalization and who have also been imprisoned are at higher risk of all-cause mortality then men who have been hospitalized for a psychiatric disorder but have never been imprisoned. For individuals with bipolar disorder, there was twice the likelihood of an unnatural death, and those diagnosed with schizophrenia were at an elevated risk for a natural cause of death. Given these results it can be drawn that society is quite literally putting the lives of individuals with mental health concerns at greater risk by reducing service availability resulting in imprisonment/criminal justice system involvement.

In addition to these societal and environmental factors, many other difficulties present in themselves regarding individuals with mental health concerns including lack of insight into their disorder and/or difficulty complying with medication regimen. This leaves an individual with little support, stigma, social rejection, decreased opportunities and therefore are at an increased risk of aggressive behavior, homelessness, substance dependence, housing and employment difficulties and violence (Markowitz 2010). Given the disorganized and disintegrated nature of the deinstitutionalization movement/current conditions of mental health system, it is unrealistic to expect that diverting individuals from the criminal justice system to said mental health services will be successful due to the diminished capacity, substantial underfunding, and disintegrated condition of the current mental health system. Instead, many individuals are either subject to mercy bookings or left fallen through the cracks of community-based services. The decrease in hospital and psychiatric beds in conjunction with the societal pressure to operate as a

prosocial individual in order to be successful has left individuals with severe mental health conditions ill-equipped to cope with these pressures and disadvantaged in achieving a laudable quality of life.

METHODS

Sample

To carry out this research study, the sample includes the fifty United States excluding the District of Columbia and Puerto Rico due to limited data availability. Statistics from 2016 were collected (as that is the most recently published data made available for all variables of interest) from a variety of sources including the UCR, Census Bureau, Treatment Advocacy Center, SAMHSA, and Mental Health America. The total sample dropped from 50 to 43 within the Psychiatric Hospital Rate analysis, as sources did not have data available for seven states due to concerns of confidentiality.

Dependent Variables

Multiple dependent variables were included in the analysis in order to fully assess the relationship between the independent variables and various types of crime (violent crime index, murder and non-negligent manslaughter, robbery, aggravated assault, and rape). Data was collected from the FBI's UCR, which is a common resource for official crime statistics, particularly prior to the global coronavirus pandemic. Variables were collected and reported as rates per 100,000 to account for the fact that reported violent crime is considerably rare, and to allow for an adequate comparison among the drastically different state populations.

Murder & non-negligent manslaughter is defined in the UCR as the willful killing of one human being by another. *Robbery* is defined as the taking (or attempting to take) anything of value from the care/custody/control of a person/s by force, threat, or by putting the victim in fear. *Aggravated assault* was also included in the study and is defined in the UCR as an unlawful attack by one person upon another for the purpose of inflicting severe or aggravated bodily

injury, usually accompanied by the use of a weapon or other means likely to produce death or bodily harm. Data for *rape-revised* was collected and analyzed in the present study. The definition of rape was revised in 2013 by the FBI to exclude the term "forcible" from the offense description. Figures of *violent crime* were also included from the FBI's UCR, where violent crime is defined as, "those offenses that involve force of threat of force" and is compiled as an index measure that includes all four of the above-mentioned offenses (Federal Bureau of Investigations, Criminal Justice Information Services Division 2016).

Social Support Measure

To avoid examining social support as a single divergent measure, three different figures pertaining to mental health were operationalized as social support. *Percent of population with mental health* illness was the first independent variable analyzed. Examining the prevalence of mental health illness in the US population not only gives information as to how widely prevalent mental health illness is, but also how this prevalence interplays with crime rates. Percent of population with mental illness was collected from Mental Health America and is reported as adults with any mental illness per state. As of 2016, approximately 18.53% of adults in America reported suffering from a mental illness. Additionally, according to Mental Health America (2016), Oregon had the highest rate of adults with reported mental illness at 22.31%, while New Jersey had the lowest rate at 15.62% for the year 2016.

The second measure of mental health for this study is the *number of state hospital beds per 100,000*. State hospital bed availability was collected from the Treatment Advocacy Center, an organization founded in 1998 dedicated to the decriminalization of mental illness and reform of state commitment laws. The rate of state hospital bed availability was chosen as one measure of mental health service availability because they are often used as a last resort for the severely

ill and potentially dangerous while other community resources are directed toward individuals without a severe mental illness (Fuller et al. 2016). As of 2016, only 11.7 per 100,000 state hospital beds remain, compared to the 337 per 100,000 that were available when the deinstitutionalization movement began (Fuller et al. 2016). Moreover, roughly 5.5 of the 11.7 state beds available in 2016 were occupied by forensic patients who were charged with or convicted of crimes. North Dakota maintained the most state hospital beds at 18.5 per 100,000 while Vermont had 4.0 per 100,000, the lowest in the nation.

Psychiatric hospital availability rate was collected from the Substance Abuse and Mental Health Services Administration (SAMHSA) 2016 Mental Health Services Survey. SAMHSA is an agency within the U.S. Department of Health and Human Services that leads public health efforts to advance the behavioral health of the nation. The National Mental Health Services Survey, directed in part by SAMHSA, collected data from all known mental health treatment facilities in the United States (both public and private). Approximately four psychiatric hospitals per 100,000 people exist as of 2016. Additionally, Louisiana had the most psychiatric hospitals at 19.3 per 100,000 and, aside from state level data that was suppressed due to confidentiality issues, Oregon had the lowest in the nation at 1.8 per 100,000 (Ahrnsbrak et al. 2017).

Since previous studies have employed a measure of *percent of population uninsured* as a proxy measure of decommodification (Cullen 1994; Altheimer 2008; Cao 2004; Pratt and Godsey 2003; Savolainen 2000), it was also included as a supplemental analysis for this study. As such, the relationship between percent of population uninsured and crimes rates were also examined. It is expected that similar relationships will be found to those between dependent variables and the social support proxy used in this study (mental health services). Doing so

contributes confidence to the reader and to the researcher the validity of the social support component represented in the present study.

Control Variables

Although the primary variables of interest are violent crime rates and mental health service availability, it is important to consider other possible factors of crime rates in order to avoid specification error (Messner 1982). Four structural covariates have consequently been included as previous research has indicated their theoretical importance. The first of these covariates is *region*. The subcultural assumption with regional differentiation is that violence in the South leads to relatively higher rates of homicide (Maume and Lee 2003; Messner 1982; Chamlin and Cochran 1997). Region was dichotomized where each state was given a "1" if it was located in the South, and a "0" if it was not. To control for population structure and characteristics, *proportion of population in crime-prone age groups* (age 15-29) (Maume and Lee 2003; Messner 1982; Ouimet 2012; Pridemore 2008) is included due to the high risk of this age group in both offending and victimization. *Population density* is also included as a control variable to account for urbanization (Chamlin and Cochran 1997). Finally, *percent of population below the poverty* level is used as a measure for poverty, as a variety of studies (Kim and Pridemore 2005a; Messner 1982) have found a relationship between poverty and crime. All figures for control variables were collected from the U.S. Census Bureau, a raw data source that is considered to be confidential and valid in the collection of meta-data regarding people and the economy.

Statistical Plan

Given the linear nature of the data, and the research question at the heart of the present study, Ordinary Least Squares (OLS) regression was decided as the appropriate method of analysis (Hughes et al. 2015; Cao et al. 2010). According to Allison this method of analysis, "…makes it possible to combine many variables to produce optimal predictions of the dependent variable. For causal analysis, it separates the effects of independent variables on the dependent variable so that you can examine the unique contribution of each variable" (1999:3). Applying regression in this way will allow for thorough exploration of the current research question, and a more reputable explanation for violent crime rates across the United States. Principal components analysis was an additional statistical technique used to assess the relationship between mental health variables and more conventional social support measures.

RESULTS

Multiple assumptions were tested in order to ensure validity of findings. Bivariate correlations greater than .70 warrant caution of multicollinearity and further examination, however none were found in this analysis (see Appendix A). Then, the relationship between the independent and dependent variables were examined using a scatterplot to ensure a linear relationship. Further, the distribution of rape, and psychiatric hospital rate were not normal and therefore transformed to their natural logarithm.

Next in preliminary examination, inflation factors (VIF) were examined to determine concerns of multicollinearity. An inflation factor of 4 or greater will suggest problems with variance inflations (Altheimer 2008; Ouimet 2012). VIF scores (reported below) did not appear to be of concern as none of them exceeded or even approached the threshold. To check for heteroskedasticity, residual statistics were examined. The following tables display the unstandardized coefficient, standard error, beta and VIF score for each independent variable, dependent variable and control variables including population density, proportion of population age 15-29, percent of population below poverty level, and regional southern effect.

Percent of Population with Mental Illness

Tables 1-5 display the results of OLS regression analysis of percent of population with mental health illness and various types of crime (violent crime, murder & non-negligent manslaughter, robbery, aggravated assault, and rape respectively). Control variables have been included in these analyses to avoid omitted variable bias. When comparing the standardized coefficients, the strongest relationships were found between percent of population below poverty level and murder & non-negligent manslaughter (β =.440, p< .01), regional southern effect and

murder & non-negligent manslaughter (β =.*354*, p<.01), and population density and rape (β =-.549, p<.001) net the influence of other variables in the model.

Table 1: Ordinary Least Squares Regression Analysis of Percent of Population with Mental Health Illness and Violent Crime (N=50)

	B (S.E.)	*β*	*VIF Score*
Percent of Population with Mental Health Illness	.035 (.073)	.068	1.03
Population Density	-.037 (.80)	-.067	1.11
Proportion of Population Age 15-29	4.36 (81.65)	.008	1.05
Percent of Population below Poverty Level	14.70 (8.51)	.305	1.63
Southern	33.71 (51.60)	.109	1.46
R^2	0.161		

Note: *p<.05; **p<.01; ***p<.001

Table 1 displays the estimated OLS regression of percent population with mental health illness and violent crime. None of the variables were significant predictors of having committed an act of violent crime. This model explains approximately 16.1% ($R^2 = 0.161$) of the variation in the dependent variable.

Table 2: Ordinary Least Squares Regression Analysis of Percent of Population with Mental Health Illness and Murder & Non-negligent Manslaughter (N=50)

	B (S.E.)	*β*	*VIF Score*
Percent of Population with Mental Health Illness	.001 (.001)	.069	1.03
Population Density	.000 (.001)	.029	1.11
Proportion of Population Age 15-29	-.184 (1.04)	-.020	1.05
Percent of Population below Poverty Level	.345 (.108)	.440**	1.63
Southern	1.78 (.658)	.354**	1.46
R^2	0.487		

Note: *p<.05; **p<.01; ***p<.001

Table 2 represents the OLS regression analysis of the percent of population with mental health illness and murder & non-negligent manslaughter. The variables that exert the strongest and statistically significant relationship with the dependent variable are percent of population below poverty level and regional southern effect. This means that net the influence of other variables in the model, for every one unit increase in percent of population below poverty level, there is a .345 increase in murder & non-negligent manslaughter (β =.440, p<.01). Additionally, net the influence of other variables in the model, for every one unit increase in regional southern effect, there is a 1.78 increase in murder & non-negligent manslaughter (β =.354, p<.01). Table 2 explains approximately 48.7% (R^2 = 0.487) of the variation in the dependent variable.

Table 3: Ordinary Least Squares Regression Analysis of Percent of Population with Mental Health Illness and Robbery (N=50)

	B (S.E.)	*β*	*VIF Score*
Percent of Population with Mental Health Illness	-.006 (.021)	-.039	1.03
Population Density	.047 (.023)	.291	1.11
Proportion of Population Age 15-29	2.56 (23.97)	.015	1.05
Percent of Population below Poverty Level	3.71 (2.50)	.262	1.63
Southern	10.57 (15.14)	.117	1.46
R^2	0.157		

Note: *p<.05; **p<.01; ***p<.001

Table 3 shows the OLS regression analysis of the percent of population with mental health illness and robbery. While none of the variables met the conventional threshold of statistical significance, population density approached significance at the 0.5 level. Table 3 explains approximately 15.7% (R^2 = 0.157) of the variation in the dependent variable.

Table 4: Ordinary Least Squares Regression Analysis of Percent of Population with Mental Health Illness and Aggravated Assault (N=50)

	B (S.E.)	*β*	*VIF Score*
Percent of Population with Mental Health Illness	.027 (.053)	.071	1.03
Population Density	-.055 (.058)	-.136	1.11
Proportion of Population Age 15-29	1.94 (59.38)	.005	1.05
Percent of Population below Poverty Level	10.72 (6.19)	.301	1.63
Southern	26.28 (37.53)	.115	1.46
R^2	0.188		

Note: *p<.05; **p<.01; ***p<.001

Table 4 displays the OLS regression analysis of the percent of population with mental health illness and aggravated assault. None of the variables were significant predictors of aggravated assault. Table 4 explains approximately 18.8% ($R^2 = 0.188$) of the variation in this model.

Table 5: Ordinary Least Squares Regression Analysis of Percent of Population with Mental Health Illness and Rape (N=50)

	B (S.E.)	*β*	*VIF Score*
Percent of Population with Mental Health Illness	.000 (.000)	.208	1.03
Population Density	-.001 (.000)	-.549***	1.11
Proportion of Population Age 15-29	.054 (.161)	.041	1.05
Percent of Population below Poverty Level	.008 (0.17)	.073	1.63
Southern	-.102 (.102)	-.143	1.46
R^2	0.39		

Note: *p<.05; **p<.01; ***p<.001

Table 5 displays the OLS regression analysis of the percent of population with mental health illness and rape. The variable that exerts the strongest relationship with rape is population

density. This means that net the influence of other variables in the model, for every one unit increase in population density, there is a .001 decrease in rape (β =-.549, p<.001). Approximately 39% (R^2 = 0.39) of the variation in the dependent variable (rape) is explained by this model.

Hospital Bed Rate

Tables 6-10 display the results of OLS regression analysis of percent of hospital bed rate and various types of crime (violent crime, murder & non-negligent manslaughter, robbery, aggravated assault, and rape respectively). Control variables have been included in these analyses to avoid omitted variable bias. Net the influence of the other variables in the model, the strongest relationships were found between percent of population below poverty level and murder & non-negligent manslaughter (β =.454, p<.01), regional southern effect and murder & non-negligent manslaughter (β =.340, p<0.5), population density and robbery (β =.306, p<.05) and population density and rape (β = -.530, p<.001).

Table 6: Ordinary Least Squares Regression Analysis of Hospital Bed Rate and Violent Crime (N=50)

	B (S.E.)	*β*	*VIF Score*
Hospital Bed Rate	-3.34 (4.01)	-.116	1.03
Population Density	-.030 (.080)	-.054	1.12
Proportion of Population Age 15-29	8.36 (81.36)	.015	1.06
Percent of Population below Poverty Level	14.69 (8.41)	.305	1.61
Southern	30.40 (50.65)	.098	1.42
R^2	0.17		

Note: *p<.05; **p<.01; ***p<.001, Hospital Bed Rate includes both civil and forensic beds

Table 6 represents the OLS regression analysis of hospital bed rate and violent crime. None of the variables were significant predictors of violent crime. Table 6 explains approximately 17% (R^2 = 0.17) of the variation in the dependent variable.

Table 7: Ordinary Least Squares Regression Analysis of Hospital Bed Rate and Murder & Non-Negligent Manslaughter (N=50)

	B (S.E.)	*β*	*VIF Score*
Hospital Bed Rate	.005 (.052)	.011	1.03
Population Density	.000 (.001)	.030	1.12
Proportion of Population Age 15-29	-.187 (1.05)	-.020	1.05
Percent of Population below Poverty Level	.356 (.108)	.454**	1.61
Southern	1.71 (.652)	.340*	1.42
R^2	0.482		

Note: *p<.05; **p<.01; ***p<.001, Hospital Bed Rate includes both civil and forensic beds

Table 7 shows the OLS regression analysis of the percent of hospital bed rate and murder & non-negligent manslaughter. The variables that exert the strongest relationship with the dependent variable are percent of population below poverty level and regional southern effect. Net the influence of other variables in the model, for every one unit increase in percent of population below poverty level, there is a .356 increase in murder & non-negligent manslaughter (β =.454, p<.01). Further, net the influence of other variables in the model, for every one unit increase in regional southern effect, there is a 1.71 increase in murder & non-negligent manslaughter (β =.340, p<.05). Approximately 48.2% (R^2 = 0.482) of the variation in the dependent variable is explained by this model.

Table 8 (below) displays the OLS regression analysis of the percent of hospital bed rate and robbery. The variable that exerted the strongest relationship was population density. This means that net the influence of other variables in the model, for every one unit increase in population density, there is a .049 increase in robbery (β =.306, p<.05). Table 8 explains approximately 18.1% (R^2 = 0.181) of the variation in the dependent variable.

Table 8: Ordinary Least Squares Regression Analysis of Robbery (N=50)

	B (S.E.)	*β*	*VIF Score*
Hospital Bed Rate	1.38 (1.17)	0.163	1.03
Population Density	.049 (.023)	0.306*	1.12
Proportion of Population Age 15-29	4.12 (23.66)	0.024	1.06
Percent of Population below Poverty Level	3.35 (2.45)	0.237	1.61
Southern	11.57 (14.73)	0.128	1.42
R^2	0.181		

Note: *p<.05; **p<.01; ***p<.001, Hospital Bed Rate includes both civil and forensic beds

Table 9 represents the OLS regression analysis of hospital bed rate and aggravated assault. None of the variables were significant predictors of aggravated assault. Approximately 18.8% (R^2= 0.188) of the variation in the dependent variable (aggravated assault) is explained by this model.

Table 9: Ordinary Least Squares Regression Analysis of Hospital Bed Rate and Aggravated Assault (N=50)

	B (S.E.)	*β*	*VIF Score*
Hospital Bed Rate	-1.54 (2.93)	-.073	1.03
Population Density	-.051 (.058)	-.127	1.12
Proportion of Population Age 15-29	3.84 (59.47)	.009	1.06
Percent of Population below Poverty Level	10.91 (6.15)	.306	1.61
Southern	23.45 (37.02)	.103	1.42
R^2	0.188		

Note: *p<.05; **p<.01; ***p<.001, Hospital Bed Rate includes both civil and forensic beds

Table 10: Ordinary Least Squares Regression Analysis of Hospital Bed Rate and Rape (N=50)

	B (S.E.)	*β*	*VIF Score*
Hospital Bed Rate	-.009 (.008)	-.137	1.03
Population Density	-.001 (.000)	-.530***	1.12
Proportion of Population Age 15-29	.066 (.164)	.049	1.06
Percent of Population below Poverty Level	.011 (.017)	.096	1.61
Southern	-.129 (.102)	-.180	1.42
R^2	0.366		

Note: *p<.05; **p<.01; ***p<.001, Hospital Bed Rate includes both civil and forensic beds

Table 10 shows the OLS regression analysis of the percent of hospital bed rate and rape. Population density exerted the strongest relationship with the dependent variable. This means that net the influence of other variables in the model, for every one unit increase in population density, there is a .001 decrease in rape (β =-.530, p<.001). This model explains approximately 36.6% (R^2 = 0.366) of the variation in the dependent variable.

Psychiatric Hospital Rate

Tables 11-15 display the results of OLS regression analysis of percent distribution of psychiatric hospitals and various types of crime (violent crime, murder & non-negligent manslaughter, robbery, aggravated assault, and rape respectively). Control variables have been included in these analyses to avoid omitted variable bias. Net the influence of the other variables in the model, the strongest relationships were found between psychiatric hospitals and violent crime (β =.537, p<.01), psychiatric hospitals and murder & non-negligent manslaughter (β =.387, p<.01), psychiatric hospitals and robbery (β =.685, p<.001), psychiatric hospitals and aggravated assault (β =.430, p<.05) and population density and rape (β = -.696, p<.001).

Table 11: Ordinary Least Squares Regression Analysis of Psychiatric Hospital Rate and Violent Crime (N=43)

	B (S.E.)	*β*	*VIF Score*
Psychiatric Hospital Rate	139.01 (40.70)	.537**	1.33
Population Density	-.095 (.088)	-.165	1.25
Proportion of Population Age 15-29	-20.35 (688.75)	-.004	1.07
Percent of Population below Poverty Level	1.62 (9.17)	.033	1.89
Southern	-10.92 (49.25)	-.037	1.49
R^2	0.315		

Note: *p<.05; **p<.01; ***p<.001; Data for seven states (Hawaii, New Hampshire, North Dakota, Rhode Island, South Dakota, Vermont and Wyoming) were suppressed due to confidentiality issues

Table 11 shows the OLS regression analysis of the percent of psychiatric hospital rate and violent crime. The variable that exerted the strongest relationship with psychiatric hospital rate was violent crime. In other words, net the influence of other variables in the model, for every one unit increase in psychiatric hospital rate, there is a 139.01 unit increase in violent crime (β =.537, p<.01). This model explains 31.5% ($R^2 = 0.315$) of the variation in the dependent variable (violent crime).

Table 12: Ordinary Least Squares Regression Analysis of Murder & Non-Negligent Manslaughter (N=43)

	B (S.E.)	*β*	*VIF Score*
Psychiatric Hospital Rate	1.60 (.540)	0.387**	1.33
Population Density	.000 (.001)	0.018	1.25
Proportion of Population Age 15-29	1.84 (9.14)	0.024	1.07
Percent of Population below Poverty Level	.222 (.122)	0.284	1.89
Southern	1.13 (.653)	0.239	1.49
R^2	0.525		

*p<.05; **p<.01; ***p<.001

The OLS regression analysis of the percent of psychiatric hospital rate and murder & non-negligent manslaughter is displayed in Table 12. The variable that exerted the strongest relationship with was psychiatric hospital rate which means that net the influence of other variables in the model, for every one unit increase in psychiatric hospital rate, there is a 1.60 increase in murder & non-negligent manslaughter (β =.387, p<.01). Approximately 52.5% (R^2 = 0.525) of the variation in the dependent variable (murder & non-negligent manslaughter) is explained by this model.

Table 13: Ordinary Least Squares Regression Analysis of Psychiatric Hospital Rate and Robbery (N=43)

	B (S.E.)	*β*	*VIF Score*
Psychiatric Hospital Rate	49.09 (10.02)	.685***	1.33
Population Density	.032 (.022)	.201	1.25
Proportion of Population Age 15-29	-56.97 (169.52)	-.042	1.07
Percent of Population below Poverty Level	-.939 (2.26)	-.069	1.89
Southern	-6.68 (12.12)	-.082	1.49
R^2	0.458		

Note: *p<.05; **p<.01; ***p<.001; Data for seven states (Hawaii, New Hampshire, North Dakota, Rhode Island, South Dakota, Vermont and Wyoming) were suppressed due to confidentiality issues

Table 13 displays the OLS regression analysis of the percent of psychiatric hospital rate and robbery. Psychiatric hospital rate exerted the strongest relationship indicating that net the influence of other variables in the model, for every one unit increase in psychiatric hospital rate, there is a 49.09 increase in robbery (β =.685, p<.001). Approximately 45.8% (R^2 = 0.458) of the variation in the dependent variable is explained by this model.

Table 14: Ordinary Least Squares Regression Analysis of Psychiatric Hospital Rate and Aggravated Assault (N=43)

	B (S.E.)	*β*	*VIF Score*
Psychiatric Hospital Rate	83.91 (31.63)	.430*	1.33
Population Density	-.086 (.068)	-.199	1.25
Proportion of Population Age 15-29	-46.08 (535.16)	-.012	1.06
Percent of Population below Poverty Level	3.05 (7.12)	.083	1.89
Southern	1.87 (38.27)	.008	1.49
R^2	0.273		

Note: *p<.05; **p<.01; ***p<.001; Data for seven states (Hawaii, New Hampshire, North Dakota, Rhode Island, South Dakota, Vermont and Wyoming) were suppressed due to confidentiality issues

Table 14 represents the OLS regression analysis of the percent of psychiatric hospital rate and aggravated assault. The variable that exerted the strongest relationship with aggravated assault was psychiatric hospital rate. Net the influence of other variables in the model, for every one unit increase in psychiatric hospital rate, there is an 83.91 unit increase in aggravated assault (β =.430, p<.05). This model explains 27.3% (R^2 = 0.273) of the variation in the dependent variable.

Table 15: Ordinary Least Squares Regression Analysis of Psychiatric Hospital Rate and Rape (N=43)

	B (S.E.)	*β*	*VIF Score*
Psychiatric Hospital Rate	.104 (.085)	.165	1.33
Population Density	-.001 (.000)	-.696***	1.25
Proportion of Population Age 15-29	1.17 (1.44)	.098	1.07
Percent of Population below Poverty Level	-.006 (.019)	-.052	1.89
Southern	-.136 (.103)	-.188	1.49
R^2	0.500		

Note: *p<.05; **p<.01; ***p<.001; Data for seven states (Hawaii, New Hampshire, North Dakota, Rhode Island, South Dakota, Vermont and Wyoming) were suppressed due to confidentiality issues

The OLS regression analysis of the percent of psychiatric hospital rate and rape is displayed in Table 15. The variable that exerted the strongest relationship was population density. This means that net the influence of other variables in the model, for every one unit increase in population density, there is a .001 decrease in rape (β =-.696, p<.001). Table 15 explains approximately 50% (R^2 = 0.500) of the variation in the dependent variable.

Supplemental Analysis: Percent of Population Uninsured

Tables 16-20 display the results of OLS regression analysis of percent of population that is uninsured and various types of crime (violent crime index, murder & non-negligent manslaughter, robbery, aggravated assault, and rape respectively). Control variables have been included in these analyses to avoid omitted variable bias. Net the influence of other variables in the model, the strongest relationships were found between percent of population uninsured and violent crime (β =.374, p< .05), percent of population below poverty level and murder & non-negligent manslaughter (β =.436, p< .01), population density and robbery (β =.380, p< .05), percent of population uninsured and aggravated assault (β =.321, p<.05), and population density and rape (β =-.455, p<.001).

Table 16 displays the estimated OLS regression of percent of uninsured population and violent crime. Net the influence of other variables in the model, for every one unit increase in percent of population uninsured, there is an 18.16 unit increase in aggravated assault (β =.374, p<.05). This model explains 25.4% (R^2 = 0.254) of the variation in the dependent variable.

Table 16: Ordinary Least Squares Regression Analysis of Percent of Population Uninsured and Violent Crime (N=50)

	B *(S.E.)*	*β*	*VIF Score*
Percent of Population Uninsured	18.16 (7.55)	0.374*	1.43
Population Density	.030 (.080)	0.054	1.25
Proportion of Population Age 15-29	39.84 (78.36)	0.069	1.09
Percent of Population below Poverty Level	14.06 (7.95)	0.292	1.61
Southern	8.60 (50.56)	-0.028	1.58
R^2	0.254		

Note: *p<.05; **p<.01; ***p<.001

The OLS regression analysis of the percent of percent of population uninsured and murder is displayed in Table 17. The variable that exerted the strongest relationship with murder was the percent of population below poverty level. This means that net the influence of other variables in the model, for every one unit increase in percent of population below poverty level, there is a .343 increase in murder (β = .436, p<.001). This model explains approximately 52.1% (R^2 = 0.521) of the variation in the dependent variable.

Table 17: Ordinary Least Squares Regression Analysis of Percent of Population Uninsured and Murder & Non-negligent Manslaughter (N=50)

	B *(S.E.)*	*β*	*VIF Score*
Percent of Population Uninsured	.185 (.099)	0.234	1.43
Population Density	.001 (.001)	0.106	1.25
Proportion of Population Age 15-29	.180 (1.02)	0.019	1.09
Percent of Population below Poverty Level	.343 (.104)	0.436**	1.61
Southern	1.32 (.661)	0.263	1.58
R^2	0.521		

Note: *p<.05; **p<.01; ***p<.001

Table 18: Ordinary Least Squares Regression Analysis of Percent of Population Uninsured and Robbery (N=50)

	B *(S.E.)*	*β*	*VIF Score*
Percent of Population Uninsured	3.99 (2.28)	0.281	1.43
Population Density	.061 (.024)	.380*	1.25
Proportion of Population Age 15-29	10.31 (23.61)	0.061	1.09
Percent of Population below Poverty Level	3.33 (2.40)	0.236	1.61
Southern	2.85 (15.23)	0.031	1.58
R^2	0.211		

Note: *p<.05; **p<.01; ***p<.001

Table 18 displays the OLS regression analysis of the percent of population uninsured and robbery. Population density exerted the strongest relationship indicating that net the influence of other variables in the model, for every one unit increase in population density, there is a .061 increase in robbery (β =.380, p<.05). Approximately 21.1% (R^2 = 0.211) of the variation in the dependent variable is explained by this model.

Table 19: Ordinary Least Squares Regression Analysis of Percent of Population Uninsured and Aggravated Assault (N=50)

	B *(S.E.)*	*β*	*VIF Score*
Percent of Population Uninsured	11.54 (5.58)	0.321*	1.43
Population Density	.013 (.059)	0.031	1.25
Proportion of Population Age 15-29	24.52 (57.89)	0.058	1.09
Percent of Population below Poverty Level	10.40 (5.88)	0.292	1.61
Southern	1.21 (37.35)	0.005	1.58
R^2	0.255		

Note: *p<.05; **p<.01; ***p<.001

Table 19 represents the OLS regression analysis of the percent of percent of population uninsured and aggravated assault. Net the influence of other variables in the model, for every one unit increase in percent of population uninsured, there is an 11.54 unit increase in aggravated assault (β =.321, p<.05). This model explains 25.5% (R^2 = 0.255) of the variation in the dependent variable.

Table 20: Ordinary Least Squares Regression Analysis of Percent of Population Uninsured and Rape (N=50)

	B (S.E.)	*β*	*VIF Score*
Percent of Population Uninsured	.013 (.007)	0.275	1.43
Population Density	.000 (.000)	-.455***	1.25
Proportion of Population Age 15-29	.050 (.070)	0.087	1.09
Percent of Population below Poverty Level	.004 (.007)	0.092	1.61
Southern	.085 (.045)	0.275	1.58
R^2	0.401		

Note: *p<.05; **p<.01; ***p<.001

The OLS regression analysis of the percent of percent of population uninsured and rape is displayed in Table 20. The variable that exerted the strongest relationship was population density. This means that (net the influence of other variables in the model) for every one unit increase in population density, there is a .00 increase in rape (β =.455, p<.001). Table 20 explains 40.1% (R^2 = 0.401) of the variation in the dependent variable.

Principal Components Analysis

Lastly, a principal components analysis (PCA) with varimax rotation was conducted to examine the impact of decommodification (percent of population uninsured and percent of population receiving temporary assistance for needy families (TANF) which are more

conventional measures of social support). This was done to ensure that the psychiatric hospital beds measure was capturing what the primary researcher intended for it to capture (social support). Factor scores with eigenvalues >1 (Gontkovsky, Kreiner and Ryan 2020; Falco and Martin 2012) are displayed below in Table 21. Factor scores greater than .35 were loaded into a component, as suggested by much of the literature (Gontkovsky et al. 2020; Falco and Martin 2012; Sims 2003). PCA revealed two distinct components, which means that these components have more predictive power than any of the variables alone. Psychiatric Hospital Rate was pulled into Component 1 which suggests that it is attempting to capture the same aspects of social support, especially with percent of population uninsured as the factor score for TANF was a negative value. Percent of population with mental illness was loaded onto Component 2 with a negative value, in addition to Hospital bed rate suggesting that these measures might be capturing something different than Psychiatric Hospital Rate, or social support in general.

Table 21: Principal Components Matrix

Component 1	Component 2
TANF (-.744)	Percent of Population with Mental Health Illness (-.754)
Percent of Population Uninsured (.874)	Hospital Bed Rate (.717)
Psychiatric Hospital Rate (.695)	

CONCLUSION

Overview

The theoretical framing of the present study departs from the economic backdrop of IAT and harnesses more on the cultural ethos of the American Dream in addition to social support theory. This study was the first (to the primary researcher's knowledge) in examining the relationship of mental health service availability and violent crime through this theoretical lens. Findings suggest that crime rates are positively correlated with psychiatric hospital availability. While this is the inverse of what was hypothesized, this is consistent with Markowitz (2006:60) who states, "…when social control agents must deal with individuals whose behavior may be disturbing or troublesome, in the absence of hospitalization in public psychiatric institutions as an option, arrests may be more frequent." What psychiatric hospital availability may actually be capturing is the amount of serious mental illness within the sample. These results suggest that this is a valuable area for researchers to continue studying.

Percent of Population with Mental Health Illness

Percent of population with mental illness revealed no consistently significant relationships to crime rates, however some control variables had effects on crime. Among the correlations that were examined between crime and percent of population with mental illness, the strongest relationships were found between percent of population below poverty level and murder & non-negligent manslaughter (β =.440, p< .01), regional southern effect and murder & non-negligent manslaughter (β =*.354*, p<.01). These findings are consistent with previous research and are in the expected direction (Pridemore 2008; Messner 1982). A surprising finding, however, was the positive correlation between population density and rape (β =-.549, p<.001).

State Hospital Beds

Net the influence of the other variables in the model, the strongest relationships were found between percent of population below poverty level and murder & non-negligent manslaughter (β =.454, p<.01), regional southern effect and murder & non-negligent manslaughter (β =.340, p<0.5), population density and robbery (β =.306, p<.05) and population density and rape (β = -.530, p<.001). While state hospital beds did not appear to have a significant relationship with crime rates, the specified control variables were significant in the predicted direction (aside from rape which will be discussed further in the discussion section).

Psychiatric Hospital Facilities

Of the three mental health figures employed in this study, psychiatric hospital rate had, by far, the most significant and positively correlated relationship with crime. Specifically with violent crime (β =.537, p<.01), murder & non-negligent manslaughter (β =.387, p<.01), robbery (β =.685, p<.001), and aggravated assault (β =.430, p<.05). Additionally, and consistent with previous models, population density and rape had a significant inverse relationship (β = -.696, p<.001).

Interpretation of these models is suggesting that as psychiatric hospital rate increases, so too does crime rate (this relationship is identified in the violent crime index, murder, robbery, and aggravated assault models). While the direction of these relationships was unexpected, they can reflect the need for services (Markowitz 2006). The high level of psychiatric hospitals may allude to a high level of prevalence and therefore a high level of need for services. In other words, psychiatric hospitals may be acting as a proxy for mental health issues in the state.

An interesting discovery within this study was the significant, negative relationship between rape and population density across all models, suggesting that as population density increases, rape decreases. This could be explained, in part, by routine activities theory which speculates that crime not only requires the convergence of space and time, but the absence of capable guardians or authorities (Cohen and Felson 1979).

Findings for other control variables that may have an effect on violent crime were mixed. The proportion of population between the age of 15-29, and regional southern effect did not produce stable results which is not consistent with historical research. At the same time, population density and percent of population below poverty level seemed to have significant relationships across the models specifically with murder and rape respectively.

Supplemental Analysis

Many similar relationships were found between this supplemental proxy for social support, and the proxy highlighted in the present study. For example, percent of population uninsured was found to be significantly, positively associated with violent crime index and aggravated assault, which mirrors findings in the psychiatric hospital rate models. Additionally, murder & non-negligent manslaughter was found to be positively associated with poverty (like that of percent of population with mental health concerns, and hospital bed rate), and robbery with population density (which is mirrors results from the hospital bed rate model) (Messner 1989; Maume & Lee). This supplemental analysis implies that the measure selected as the independent variable for this study is not arbitrary or necessarily erroneous.

Limitations

Despite the contributions the present study provides to social support theory and IAT, it is important to note a few limitations. First, data collected from SAMHSA for psychiatric hospital rate was limited due to concerns of confidentiality, therefore reducing the total sample to 43. This can be potentially problematic in quantitative analysis because a sample smaller than 50 can risk greater error (Allison 1999). Further, a common expectation with OLS regression is to limit the number of variables in a model with a sample of this size (degrees of freedom) to avoid error (Allison 1999). Therefore, this study was limited to a handful of control variables.

Second, crime statistics gathered from the UCR make up only the crimes that had been reported and recorded for that year. Many crimes in a given location go unreported, and some that do get reported are not recorded appropriately by the police. Therefore, there is a considerable gap between available crime statistics and the level of crime that actually occurs, otherwise known as the dark figure of crime (Aljumily 2017). It is recognized that the dark figure of crime may have affected the results of the present study. Additionally, the UCR suffers from the hierarchy rule, in which only the most serious crime is reported during an incident in which multiple crimes took place. Furthermore, the current analysis also only examined violent crimes. However, the UCR offers data on property crimes, which could be a fruitful avenue for future researchers exploring similar questions.

Lastly, because the present study involved most recent data availability for all involved variables, this left the study taking place for the year of 2016. It is acknowledged that rates and trends may have changed in more recent years, especially since the global coronavirus pandemic.

It is therefore recommended that future studies examine crime rates and mental health service trends at a more recent year when data becomes available. In addition, future studies may benefit from a longitudinal research approach that involves multiple years of data to better examine the impact that changes in mental health services have on crime.

Recommendations & Policy Implications

A number of important research implications can be drawn as a result of the findings of the present study. Future researchers should continue to find creative ways to examine the relationship between mental health and crime. While the current analysis employed three different measures, there were clear limitations with each[1]. Therefore, a more standardized mental health measure (in a similar way that health or crime data is collected) would allow for more direct policy recommendations.

It is also recommended that future research avenues examine community mental health service availability (as opposed to psychiatric hospitals) and crime, as well as mental health service availability and arrest rates. These alternative measures of mental health services and crime may lend further insights into what is actually occurring between mental health and crime. Further, it may be germane to consider a comparative cost analysis of expenditures on psychiatric hospitals versus community mental health centers. Doing so will justify the need for services as it pertains to each jurisdiction in which these cost analyses take place.

Another important step for future research is considering longitudinal studies to better understand the progression of mental health and crime, and to establish cause and effect. This is especially important because mental illness in its very nature is not static, both in symptom type

[1] Please see *Limitations* section

and severity. While this may be a reason it is not easy to collect data on, this makes it all the more important to examine longitudinally. For the same reason, including other measures of situational dynamics coupled with social support would be practical as they are often the root cause of, or exacerbated by mental health symptoms and/or crime (i.e., homelessness, substance abuse, etc.). Due to the spurious nature of the results, I caution against policy recommendations based on the current analysis. However, if future research can build off this study and employ a longitudinal approach, policy recommendations can be made with more confidence.

Summary

The American Dream has become such a widely accepted paragon for success in today's society, that most attempt to achieve it without even being consciously aware of it. When it becomes difficult to achieve is often when one becomes aware of this dominant narrative. That, paired with lack of social support and symptoms of mental illness are a recipe for crime and ultimately criminal justice involvement. Unfortunately, while the results of the present study were inconclusive, the benevolent spirit of the deinstitutionalization movement has left community mental health centers and the criminal justice system ill-equipped to provide a higher level of care for those in need (Durbin et al. 2006; Durbin et al. 2014; Hadley 1996). Further, not only is continuity of care between the criminal justice system and mental health services gravely lacking, but the fragmentation behind providing low level services makes it difficult to adequately treat individuals and to maintain a highly motivated workforce.

This study has elucidated the current state of the intersection between mental health services and violent crime from a social support and IAT perspective. While findings were mixed, it is suggested that reduction in psychiatric hospital capacity must be strongly reconsidered as replacing them with alternative community mental health services may not be

adequately serving or equipped to serve a portion of population that is in grave need. Above all else, this study provides evidence that mental health service facilities and illnesses are disproportionately understudied. Efforts have been made to aid individuals with mental health concerns who have found their way into the criminal justice system (Roy et al. 2020; Lamb and Bachrach 2001; Bird and Shemilt 2019; Yuan and Capriotti 2019), but it is argued that society is doing a disservice to these vulnerable populations by not providing insightful research and change into the depth and quality of the treatment services that are available to them. Doing so may afford this population more opportunities to avoid committing crime, therefore avoiding the criminal justice system and overall, a better quality of life.

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Appendix A. Correlation Matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Percent of Population with Mental Health Illness	1												
2. Hospital Bed Rate	-0.133	1											
3. Psychiatric Hospital Rate (log)	-0.137	-0.011	1										
4. Violent Crime	0.08	-0.168	.532**	1									
5. Murder & Non-Negligent Manslaughter	0.067	-0.064	.602**	.703**	1								
6. Robbery	-0.036	-0.161	.626**	.681**	.668**	1							
7. Aggravated Assault	0.084	-0.134	.463**	.969**	.635**	.498**	1						
8. Rape (log)	0.234	-0.205	0.058	.538**	0.167	0.019	.555**	1					
9. Population Density	-0.015	0.125	0.021	-0.152	-0.098	0.219	-0.22	-0.569	1				
10. Percent of Population age 15-29	-0.018	0.081	0.043	-0.07	-0.147	-0.047	-0.074	0.026	0.015	1			
11. Percent of Population below poverty level	0.073	-0.136	.420**	.384**	.629**	0.24	.403**	0.151	-0.269	-0.216	1		
12. South	-0.098	-0.044	.397**	0.264	.581**	0.253	0.27	-0.118	-0.019	-0.091	.529**	1	
13. Percent of Population Uninsured	-0.128	0.14	.464**	.436**	.455**	0.235	.425**	.341*	-0.346	-0.214	.365**	.388**	1

*p<.05; **p<.01; ***p<.001