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Racial/Ethnic Disparities in Mental Health Service Use in U.S. Prisons

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Racial/Ethnic Disparities in Mental Health Service Use in U.S. Prisons

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2016

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Abstract

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By Katie Kleeberger

Black and Hispanic individuals are more likely to be incarcerated than non-Hispanic (NH) white individuals. In addition, those with mental health disorders are over-represented in the U.S. correctional system, which is the largest provider of mental health services in the nation. Although racial/ethnic disparities in mental health treatment have been reported in community settings, little is known about whether these disparities persist in correctional settings. This paper aimed to determine if racial/ethnic disparities exist in receipt of any mental health treatment services (psychotherapy or psychotropic medication), any psychotherapy, or any psychotropic medication since admission to prison when compared to non-Hispanic white individuals. Data were analyzed from the 2004 Survey of Inmates in State and Federal Correctional Facilities in weighted logistic regression models, controlling for a robust set of predisposing, enabling, and need-related characteristics. Results from these analyses found that compared to non-Hispanic white individuals, non-Hispanic black individuals (Marginal Effect [M.E.]= -3.8%, 95% CI= -4.0%, -3.7%), Hispanic individuals (M.E.= -2.8%, 95% CI= -3.0%, -2.6%), and non-Hispanic American Indian/Alaskan Native individuals (M.E.= -6.3%, 95% CI= -6.7%, -6.0%) were less likely to receive any mental health treatment since admission to prison. This same pattern was also observed for receipt of each type of mental health treatment. While incarceration may eliminate many structural barriers to accessing care, such as geography and cost, other barriers may still exist. Further research is needed to determine if these disparities persist given recent political focus on criminal justice and mental health reform. Additionally, future research should aim to identify the mechanisms that perpetuate these disparities in correctional settings.

Racial/Ethnic Disparities in Mental Health Service Use in U.S. Prisons

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Chapter 1: Introduction

Mental health disorders are some of the most common health conditions in the United States, but many of those with a disorder do not receive treatment. Estimates from 2016 suggest that 1 in 5 adults live with a mental health disorder, which can affect mood, thinking, and behavior (1). Depending on the diagnosis and severity of the disorder, they can impact an individual's ability to function (e.g. Activities of Daily Living) (2). While there are efficacious treatments for mental health disorders, including psychotropic medication, psychotherapy, or a combination of both (2-4), estimates suggest that less than half of adults with a mental health disorder receive treatment (5).

While the gap in mental health treatment is significant, it is not experienced equally. Racial/ethnic minority individuals use community mental health resources at lower rates than non-Hispanic white individuals (6-12), despite there being no difference in the underlying prevalence of mental health disorders (12). According to two reports from the Surgeon General's Office, racial/ethnic minority groups have poorer access to mental health care, use care less often when needed, and receive lower-quality care when compared to non-Hispanic white individuals (13, 14). This treatment gap is problematic because, when left untreated, mental health disorders can lead to job instability, victimization and trauma, chronic physical health problems, suicide, and incarceration (15).

In addition to racial/ethnic disparities in mental health treatment, there are also racial/ethnic disparities in incarceration rates, with the criminal justice system housing a disproportionate share of people of color. In fact, racial/ethnic minority individuals are overrepresented at every point of contact with the criminal justice system (16-18). The

disproportionate burden of incarceration borne by people of color has been attributed to biased policing policies, institutional racism, and the War on Drugs (17, 19).

The estimates of mental health conditions in correctional settings far exceed the estimates of mental health conditions in community settings. In fact, estimates from the Bureau of Justice Statistics found that 56% of those in state facilities and 45% of those in federal facilities were estimated to have a mental health condition at midyear 2005 (20) —which can be partially attributed to the deinstitutionalization movement. The deinstitutionalization movement of the 1960s was characterized by the movement of individuals with mental health conditions from state psychiatric facilities into community settings. However, community resources were not equipped to handle the influx of these high need patients and resulted in many individuals with mental health disorders being incarcerated(21) often for crimes of poverty (e.g. stealing food or loitering) or socially deviant behaviors (e.g. talking to themselves or yelling at hallucinations) resulting from their untreated mental illness. The high rates of mental health disorders in correctional settings and the constitutional mandate that incarcerated individuals have a right to health care (22) have led to the U.S. penal system being the nation's largest provider of mental health services (23).

Despite the elimination of many structural barriers to care (e.g. cost, geography, availability) in prisons and the constitutional mandate that guarantees adequate health care for individuals who are incarcerated (22), there is limited information on the care that individuals receive. Overall, treatment rates for mental health disorders appear to be better in prison settings when compared to overall treatment rates in the community, and treatment rates in prisons are improving over time (20). Wilper et al. found that of those

who had a diagnosed psychiatric condition and had ever received psychotropic medication, 69.1% of persons in federal prison and 68.6% of persons in state prison had received psychotropic medication since admission to prison. They also reported that of those who had a diagnosed psychiatric condition and had ever received counseling, 58.4% of persons in federal prison and 64.2% of persons in state prison had received counseling since admission to prison (24). While this analysis provides evidence of mental health treatment patterns as a whole, it fails to contribute to the understanding of mental health treatment patterns for racial and ethnic minority groups.

The evidence on racial/ethnic disparities in mental health service use within prisons is more limited. Steadman, Holohean Jr., and Dvoskin conducted a study in May 1986 in the New York state prison system and found that non-Hispanic white individuals were substantially more likely to have received mental health services in the past 30 days and past year compared to black individuals and Hispanic individuals (25). A more recent investigation using national data from 1997 found that, compared to non-African American individuals, African American individuals were less likely to have received any mental health treatment since admission to prison (26). This evidence suggests that racial/ethnic disparities may persist in prison settings, but more information is needed.

To date, there has never been a nationally representative study published that looks at racial/ethnic disparities in mental health service use by persons in prison. In order to address this gap in the literature, this paper estimated the racial/ethnic disparities in prison mental health service use by using the most currently available nationally representative sample of persons in U.S. prisons. This paper also investigated whether racial/ethnic disparities in mental health service use varied by type of treatment

(psychotropic medication or psychotherapy). Given the evidence of racial/ethnic disparities in mental health treatment in community settings, it is hypothesized that these relationships persist into the prison context despite improved access to care. These findings presented here can help to inform correctional policies focused on improving the treatment for individuals with mental health disorders.

Chapter 2: Literature Review

Mental Health Disorders and Treatment in the U.S.

Mental health disorders are both common in the U.S. and associated with high levels of morbidity. Estimates from 2016 found that 1 in 5 Americans were living with a mental health disorder (1). Among mental health disorders, serious mental health disorders are a more debilitating form of mental health disorders that significantly impacts an individual's ability to perform essential tasks related to daily life and were estimated to affect 1 in 25 people (2). In addition to the high prevalence of mental health disorders, they also contribute 13.6% of all U.S. Disability Adjusted Life Years (DALYs) and are the leading cause of disability in the US (27).

While these disorders can have a severe impact on individuals and society, efficacious treatments exist. The most common types of treatment for mental health disorders are psychotropic medications, psychotherapy, or some combination of the two (6, 9). Despite the availability of effective treatment, it was estimated that only 43.3% of US adults with a mental health disorder received treatment in 2018, with a higher percentage of those with serious mental health disorders receiving treatment at 64.1% (28).

The lack of treatment for mental health disorders has been associated with a host of adverse outcomes, including job instability, homelessness, victimization and trauma, physical health problems, and suicide (15). For example, adults with any mental health disorder are more likely to be unemployed than those without a mental health disorder (15), and one in five individuals who are experiencing homelessness has a serious mental health disorder (15). Additionally, prior research has reported that individuals with a serious mental health disorder were victims of a violent crime at a rate that is 11 times higher than that of the general population (29). Individuals with mental health disorders are also more likely to suffer from other physical health conditions (15, 30). Moreover, mental health disorders are a major contributor to suicide, with 46% of those who commit suicide having a diagnosed mental health disorder, and 90% having shown symptoms of a mental health disorder (15). While these consequences are concerning independently, they are commonly seen in clusters, with individuals experiencing multiple negative outcomes at any given time, contributing to the large burdens experienced by those with mental health disorders.

Disparities in Mental Health Treatment and Criminal Justice Involvement

Individuals identifying as members of racial/ethnic minority groups have poorer access to mental health care, use care less often when needed, and receive lower-quality care when compared to non-Hispanic white individuals (13, 14). A study using a nationally representative sample of non-institutionalized adults found that non-Hispanic black adults and Latino adults were about half as likely as their non-Hispanic white counterparts to have any mental health care expenditures. Conditional on having any mental health care expenditures, non-Hispanic black individuals and Latino individuals

spent less for prescription medication, outpatient treatment, and of total mental health care when compared to non-Hispanic white individuals (31). Another study, utilizing nationally representative survey data for non-institutionalized adults, found that Latino adults and non-Hispanic black adults had lower odds of receiving any depression treatment, and non-Hispanic black adults had lower odds of receiving adequate treatment when compared to non-Hispanic white adults (32). When examining the location where non-elderly adults received mental health treatment using a nationally representative sample, there continued to be disparities in the receipt of mental health treatment in psychiatry settings and in human services settings, with non-elderly racial/ethnic minority adults being less likely to receive treatment in these settings compared to non-elderly, non-Hispanic white adults (33).

Given the racial/ethnic disparities mentioned above, further research has investigated the structural (e.g. cost, provider availability) and social mechanisms (e.g. stigma, institutional mistrust) that hinder treatment engagement. Some research has found that access barriers, such as cost and provider availability, are the reasons that individuals identifying as racial/ethnic minorities fail to receive mental health treatment at the same rate as non-Hispanic white individuals (34, 35). However, there is another body of literature that has identified social barriers to care, including institutional mistrust (36), patient-provider racial concordance (37) and cultural stigma (38-40).

It is also important to note that there are racial/ethnic disparities in criminal justice involvement. In fact, racial/ethnic minority groups are over-represented at every point of contact with the criminal justice system (16-18). For example, blacks represented 13.4% of the US population in 2005 (41), but constituted 33.1% of the state and federal

prison population at midyear 2004 (42). In addition, Hispanics represented 18.3% of the US population (41) but comprised 23.4% of persons in state or federal prisons during this same time period (42).

How the US Penal System Became the Largest Provider of Mental Healthcare

The de facto criminalization of mental illness began with the deinstitutionalization movement of the 1960s (21). The deinstitutionalization movement was primarily characterized by moving those with mental health disorders from state mental hospitals into less restrictive community settings. This movement was initiated with the discovery of antipsychotic medications, a desire to cut costs, and the public belief that asylums were inhumane (43). The public mental health system was not equipped to deal with the massive influx of patients with unique needs, and the closure of state mental hospitals left many individuals without treatment or a place to go (43).

This gap in public mental health services has led many individuals with mental health disorders to become involved with the criminal justice system (43). Without effective treatment, individuals with serious mental health disorders are prone to socially deviant behaviors, such as trespassing, public nudity, and talking or yelling to oneself, that are often interpreted as threatening to others. Other behaviors, such as loitering outside of businesses or stealing food from restaurants because they are unable to pay also increase the likelihood of involvement with law enforcement. In addition, those with mental health conditions are likely to use drugs or alcohol which leads to increased criminal justice involvement for drug or public order offenses (i.e. DUI/DWI) (44).

The increased involvement with the criminal justice system led to high rates of incarceration for individuals with mental health disorders. A report published by the

Bureau of Justice Statistics estimated that 24% of those in state facilities, and 14% of those in federal facilities had a formally diagnosed mental health condition. However, when this definition was expanded to include those who had shown past year symptoms of a mental illness, the numbers increased to 56% and 45%, respectively (20). Consequently, the U.S. penal system has become the nation's largest provider of mental health services (23).

Mental Health Treatment in Prisons

Prisons provide a unique setting to understand mental health care. Persons who are incarcerated are the only group in the United States with a constitutionally mandated right to healthcare—including mental health care. In addition, many barriers to care in community settings are virtually eliminated in criminal justice settings (e.g. cost, geography, and provider availability). However, social barriers to care (e.g. stigma, institutional mistrust, and patient-provider racial/ethnic concordance) that differentially affect racial/ethnic minority individuals, when compared to non-Hispanic white individuals, may be heightened in prison settings. The increase in social barriers to care, combined with structural barriers unique to the correctional system (i.e. institutional bias), elimination of community structural barriers, and constitutional mandate to provide care, provide both a legal and social imperative to understand mental health care delivery in correctional settings. Despite this pressing need, there is a dearth of literature on mental health care delivery in correctional settings. Furthermore, only two empirical studies have examined racial/ethnic disparities in prison mental health care and their findings are limited.

Current literature suggests that mental health treatment is being delivered in prisons, but limitations in the granularity of analysis and in study designs hinder the strength of the evidence they provide. The Bureau of Justice Statistics reported that of individuals with a "mental problem" 33.8% of those in state facilities and 24% of those in federal facilities had received treatment since admission (20). Other studies have estimated that treatment rates for mental health disorders are closer to 60-70%, but have limited their samples to only those with formally diagnosed conditions (24). However, limiting study samples to only those with formally diagnosed conditions makes it difficult to estimate the true unmet need for mental health treatment in prison settings. This is because many of those who are incarcerated and have mental health conditions would have lacked access to care prior to incarceration that would have led to a formal diagnosis (20, 24). Notwithstanding the differences in treatment rate estimates, there still appear to be significant gaps in mental health treatment in correctional settings.

The evidence on racial/ethnic disparities within prisons is more limited. Steadman et al. found that 20.1% of non-Hispanic white individuals housed in the New York State prison system had received mental health treatment in the previous 30 days, compared to 11.3% and 11.4% for black individuals and Hispanic individuals, respectively (25). A similar pattern was seen for past year mental health treatment. The robust mental health system of New York and its integration with the prison system make it difficult to extrapolate these findings to other prison systems. In addition, this study was conducted using data that are now over 30 years old. In her book, *Mad or Bad? Race, Class, Gender and Mental Disorder in the Criminal Justice System*, Melissa Thompson, found that African American individuals had 36% lower odds of receiving any psychiatric treatment

since admission to prison when compared to non-African American individuals. While these data are more recent and representative than the Steadman et al. data, they still fail to provide information about the more nuanced relationship between racial/ethnic groups use of mental health treatment services and remain dated.

Summary

The current paper aims to gain a better understanding of the gaps in mental health service delivery experienced by these vulnerable populations via an assessment of racial/ethnic disparities in the use of mental health services during incarceration. To date, there has never been a nationally representative study published that looks at racial/ethnic disparities in mental health service use by persons in prison. By using the most recently available, nationally representative sample of persons in U.S. prisons, this paper attempts to understand what disparities exist in mental health service use and to assess whether racial/ethnic disparities exist in the type of treatment services utilized.

Chapter 3: Methods

Theory

The conceptual framework—presented in Figure 1—drew on Andersen's Behavioral Model of Health Service Use and current literature to identify how racial/ethnic groups' mental health service use can vary within the unique context of the U.S. prison system. Mental health service use can be conceptualized as a function of the interaction between individual and contextual constructs (45). Individual predisposing factors, such as sociodemographic characteristics or health beliefs, can make an individual more likely to use mental health services. Enabling factors can provide the means for someone to engage in mental health service use—e.g., income, social support.

Additionally, individual need for services, both perceived and evaluated, also influences whether or not an individual uses mental health services. Coupled with these individual factors, contextual factors can also predispose or enable the use of mental health services and aggregate levels of need that can shape the availability of services.

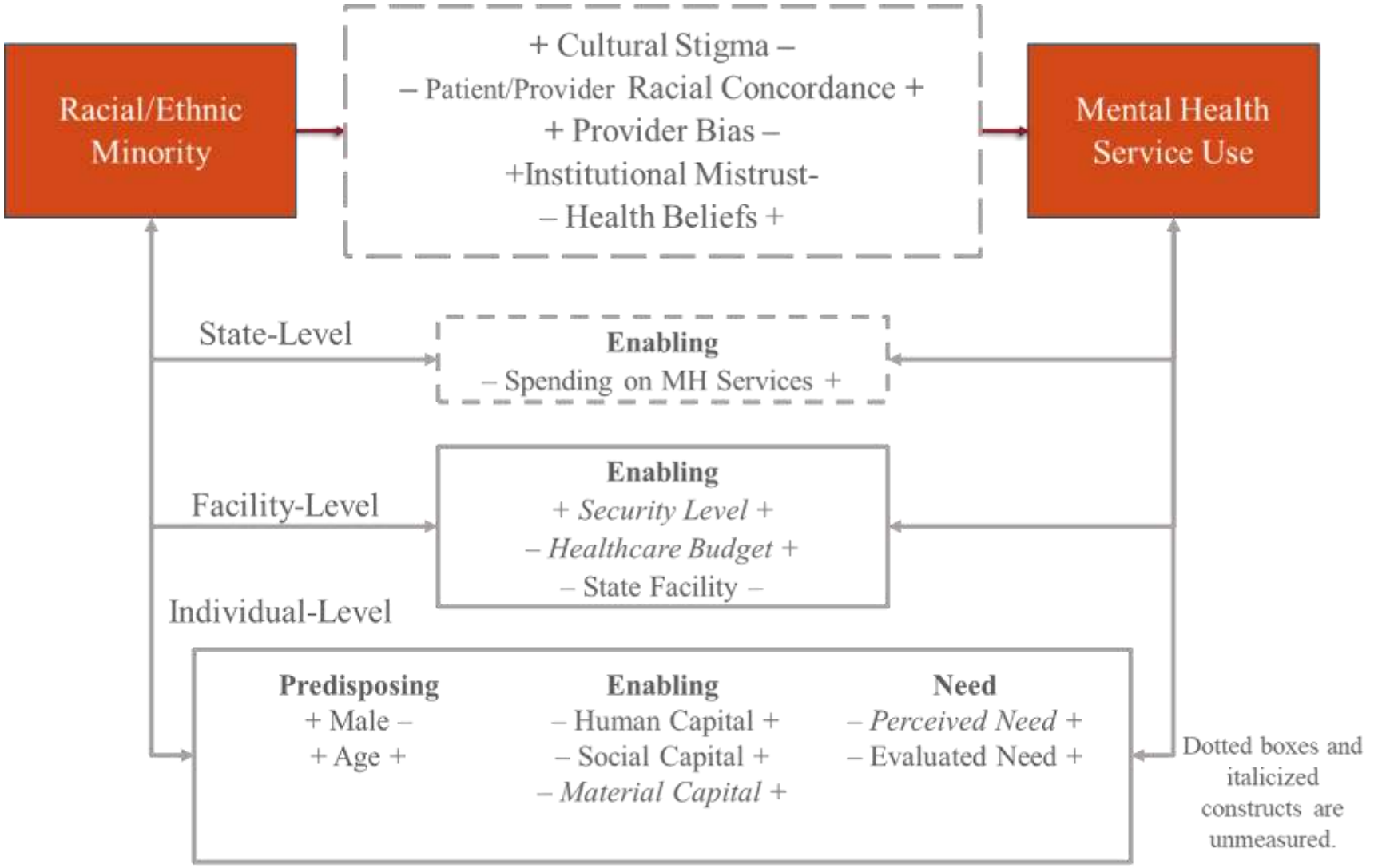


Figure 1: Conceptual Framework based on Anderson's Behavioral Model for Health Service Use

Focal Relationship

The focal relationship depicted in Figure 1 hypothesizes that identifying as a member of a racial/ethnic minority group leads to a decrease in the likelihood of using prison mental health services, when compared to those identifying as non-Hispanic white. In this context, race/ethnicity is a joint social construct that includes how an individual self identifies based on their phenotypic genetic expression and their socio-cultural background (including origin, language, and traditions) (46, 47). Mental health service use is conceptualized as the receipt of formal treatment for a mental health condition from a licensed provider. Previous research focusing on the relationship between race/ethnicity and mental health service use in the community setting has found that disparities exist between non-Hispanic white groups and other racial/ethnic groups in the use of mental health services (12, 48, 49).

Mechanisms

As previously mentioned, there are many potential pathways through which racial/ethnic disparities in mental health service use manifest in community settings. While some of these pathways are eliminated in the context of prison healthcare, others are shaped by social processes that are also present—and often amplified—in the prison setting. One of these factors is cultural stigma. Culture defines what activities an individual belonging to a particular group should participate in to gain the status of a recognized member. Cultural stigma is the process by which cultural groups encourage or discourage participation in specific activities by individuals wishing to gain member status (50). Belonging to a group is an integral part of prison life, for both safety and housing reasons, and is often driven by an individual's racial/ethnic identity (51). Because of this, the effects of cultural stigma are likely to be heightened in prison settings, discouraging

participation in mental health service use among racial/ethnic minority groups as seen in community settings (52). Cultural stigma is unmeasured in this model.

Another potential factor that may contribute to differences in the use of mental health services is patient-provider racial/ethnic concordance. In prisons, there is little opportunity to choose the provider from whom an individual will seek care. Evidence from community mental health care suggests that patient-provider racial concordance is lower for racial/ethnic minority individuals because a majority of mental health professionals are non-Hispanic white individuals (49). Previous literature in community settings has shown that racial/ethnic patient-provider concordance is associated with an increased probability of using needed health services, a decreased probability of delaying needed care, and higher volumes of services use compared to individuals who were not racially/ethnically concordant with their providers (37). There have been no studies conducted in prison settings on the characteristics of mental health service providers or how these relationships play out in the correctional system. This construct is unmeasured.

Institutional mistrust is conceptualized as an individual's distrust of institutions to make decisions that have the individuals well-being as a primary consideration (53). This has been shown to be particularly important for engaging people of color in mental health care because it decreases their perceived effectiveness of mental health treatment (36, 53). This construct is unmeasured.

Health beliefs are conceptualized as the knowledge and ideas people have about disease etiology, idioms of distress, and appropriate treatments (45). These beliefs can manifest in individuals' perceptions of need for treatment and health behaviors in response to disease symptoms. Racial/ethnic minority groups are more likely to hold beliefs that focus on the

cultural/spiritual etiology of disease manifestations. These beliefs may result in a decrease in medical treatment seeking behavior for mental health conditions (49, 54).

Individual Confounders

Predisposing factors at the individual level are factors that may indirectly influence the probability that an individual will use services (45). Sex is conceptualized as the biological and physiological characteristics of an individual (55) (note that prison facilities are separated based on phenotypic sex and regardless of an individual's gender identity.) Males are more likely to be of minority race (56) and are less likely to use mental health services in prison settings (57-60). Another predisposing factor, age, is positively associated with minority race in prison settings because racial/ethnic minority groups often receive longer and harsher sentences for similar offenses and are less likely to be diverted to other programs than non-Hispanic white individuals (17). Age is also positively associated with mental health service use in criminal justice populations (56, 60, 62).

Enabling factors at the individual level are factors that can directly facilitate or hinder service use (45). Socioeconomic status includes three separate domains: human capital, social capital, and material capital. Human capital includes the innate and acquired knowledge, skills, and abilities that an individual has (63). An increase in human capital is hypothesized to be associated with more mental health service use (49). Social capital is an individual's cumulative social resources (e.g. social networks, social support) (64, 65). Higher levels of social capital are associated with greater realized access for mental health services (54, 60). Material capital includes the tangible items under an individual's control that can be easily converted into useful goods or services (63). An increase in material capital is associated with higher realized access to mental health services (49).

This model includes two need constructs: perceived need and evaluated need. Perceived need is how an individual feels about their health status (45). Racial/ethnic minority groups are more likely to have lower levels of perceived need based on health beliefs, and more perceived need is positively associated with service use (54, 60). Evaluated need is the objectively measured or professionally assessed measure of health status (45). Racial/ethnic minorities are more likely to have higher levels of evaluated need and greater evaluated need should be associated with increased realized access (66-68).

Contextual Confounders

State spending on mental health care is conceptualized as the amount of funds allocated to provide mental and behavioral health services in a given state (69). States that have higher spending on mental health care are more likely to have better access to services and higher quality care (70). This relationship assumes that higher state spending on mental health care will translate to higher spend on mental health care in correctional settings. Those states with higher spending are also more likely to have lower racial/ethnic minority populations (71, 72). This construct is unmeasured.

Several enabling facility-level characteristics may be associated with the race/ethnicity of the individuals and the likelihood of using mental health services. Facility security level is a construct that determines the amount of freedom that individuals have in their daily routines and access to programs, services, and other individuals. Racial/ethnic minorities are more likely to be housed in higher security facilities, and higher security level facilities are likely to have higher rates of mental health service use (59). This construct is unmeasured.

Another facility-level characteristic that can be related to race/ethnicity and mental health service use is the type of system operating a prison. Facilities are commonly separated into either

state or federal facilities based on who is responsible for operating and funding the institution. A state prison is classified as a prison that is operated/funded by the state's Department of Corrections. A federal prison is classified as a prison that is operated/funded by the Federal Bureau of Prisons (73). State prisons, as compared to federal prisons, are likely to house fewer minority inmates, because of federal drug prosecuting policies that disproportionately affect minority groups (17, 19). State facilities are also more likely to have lower rates of mental health service use because of the variability in state designed prison systems and requirements for adequate mental health care delivery policies (73). This construct is measured in the model.

Data Description

Data from the 2004 Survey of Inmates in State and Federal Correctional Facilities were used in these analyses. The data were collected between October 2003 and May 2004. A two-tiered sampling method was used to create a nationally representative sample of all individuals housed in adult state and federal prisons in the United States. The first tier of sampling selected institutions and the second selected persons within the institutions. Data was collected through the use of computer-assisted personal interviews. The survey collected data on individual characteristics, offense and criminal history, medical conditions (including mental health, disabilities, and alcohol and drug use), and prison programs. The response rate was 89.1% for the state survey and 84.6% for the federal survey. This study used secondary data that lacked personally identifiable information and was available for public use by download from the National Archive of Criminal Justice Data website (74). As such, this research was determined to be exempt from review and not human subjects research by the Emory University Institutional Review Board.

Measurement

Focal Independent Variable

Race/Ethnicity was measured using a combination of two questions in the data set. The first measure assessed the Hispanic/Latinx/Spanish origin of the respondent. If the respondent identified as Hispanic/Latinx/Spanish then they were coded as Hispanic. If the response to the Hispanic/Latinx/Spanish origin question was no, then individuals were categorized as non-Hispanic and their corresponding race category of White, Black, American Indian/Alaskan Native or Other. Using this information, a categorical variable was derived to classify individuals as non-Hispanic white, non-Hispanic black, Hispanic, non-Hispanic American Indian/Alaskan Native or non-Hispanic other. The values for race/ethnicity in the survey were either an individual's response to the question or were imputed values using one of two methods. The first method imputed values for individuals who did not respond to these questions, but answered other questions in the survey that identified their race or Hispanic descent. These individuals were coded as their imputed value. The second method used 'hot decking' to impute values based on the nearest neighbor. Individuals with 'hot decked' values for race/ethnicity were excluded from the analysis.

Dependent Variables

There were four dichotomous dependent outcome variables derived from the survey data. The four dependent variables included: (1) receipt of any psychotropic medication, (2) receipt of any counseling/therapy, (3) receipt of any mental health services (psychotropic medication or counseling/therapy), and (4) receipt of both counseling/therapy and psychotropic medication since admission to prison. All of the treatment questions used in the construction of the outcome

variables explicitly excluded treatment for alcohol or drugs as stated in the survey instructions (74).

A dichotomous indicator for psychotropic medication use was coded as 1 (yes) if the respondent affirmatively answered the question “Have you taken medication for a mental or emotional problem since your admission to prison on (admission date)” (74). Respondents were coded as 0 (no) for psychotropic medication use if they answered no to the question about receiving psychotropic medication since admission or if they answered no to the question “Because of an emotional or mental problem, have you EVER taken a medication prescribed by a psychiatrist or other doctor” (74).

Counseling/Psychotherapy use was coded as 1 (yes) if the respondent affirmatively answered the question “Have you received counseling or therapy since your admission to prison on (admission date)” (74). Respondents were coded as 0 (no) for counseling/psychotherapy use if they answered no to the question about receiving counseling/therapy since admission or if they answered no to the question “Because of a mental or emotional problem have you EVER received counseling or therapy from a trained professional” (74).

Individuals who received either type of treatment (psychotropic medication or counseling/psychotherapy) were coded as 1 (yes) for having received any mental health treatment since admission to prison. Those who reported not receiving either type of treatment were coded as 0 (no).

Receipt of both types of treatment since admission to prison was coded as 1 (yes) if an individual reported receiving both counseling/therapy and psychotropic medication since admission to prison. Those who had not received both types of treatment were coded as 0 (no).

Mechanisms

All of the mechanisms were unmeasured in the model.

Individual Level Confounders

Predisposing

Sex and age were both measured using responses to survey questions in the data set. Sex is dichotomized as either male or female. Age is a continuous variable measured in years at the time of interview, ranging from 18 to 84 years of age.

Enabling

Socioeconomic Status

Socioeconomic status included measures in three separate domains: human capital, social capital and material capital. The measures for each domain are described in more detail below.

Human Capital

Education is assessed with a categorical measure of the level of education attained prior to admission to prison. The survey asks about the highest grade of school attended before admission, whether that grade was completed, and whether or not the respondent has a GED. Responses range from first grade (1) to two or more years of graduate school (18) for years attended. Using this information, individuals were categorized into four mutually exclusive groups to assess education attainment: less than high school, high school diploma/GED, some college, and a college degree or higher.

Work assignment was measured as a dichotomous indicator based on the survey questions “Do you now have a work assignment outside this prison facility for which you leave the prison grounds” and “Do you have a work assignment here, either inside this facility or on

the facility grounds,"(74). A response of yes to either question was coded as a 1(yes), and the response of no to both questions was coded as a 0 (no).

Time served is assessed using a continuous measure of the number of months served at the date of the interview. This variable serves as a proxy measure for human capital because as individuals spend more time within the prison system, they acquire the knowledge and skills needed to navigate the healthcare delivery system. Previous literature has found that as the length of time served increased the probability of accessing services/programs within the prison setting increased (75).

Social Capital

Marital status is measured using a categorical variable with the following five mutually exclusive groups: married, widowed, divorced, separated, and never married (reference). This measure was constructed based on the individual's self-reported marital status.

Two measures were created to assess extra-prison social support based on previous literature (60, 75). The first question asked if the respondent had received visits in the past month and the second asked if they had received phone calls in the past week. Both questions strictly excluded visits or calls from an attorney or lawyer. A response of yes was coded as 1 and a response of no was coded as 0.

The veteran status of an individual was measured based on the respondent's answer to the question "Did you ever serve in the U.S. Armed Forces" (74). An affirmative response was coded as 1 (yes) and a negative response was coded as 0 (no). This variable will serve as a proxy measure for social capital as there have been veteran-specific programs implemented in prisons and jails that focus on rehabilitation and reentry training that are not accessible to those who are not veterans(76, 77).

Citizenship serves as a proxy measure of social capital because it can play a role in defining the groups to which an individual belongs within the prison context. Individuals who are non-citizens are likely to have less internal and external social support than those who are citizens. A dichotomous variable was created to indicate whether the respondent was a citizen of the United States based on their response to the question "Are you now a citizen of the United States" (74).

Need

Nine measures were constructed to assess the evaluated need for treatment.

The first measure of evaluated need is a dichotomous indicator for whether a person had a self-reported diagnosis of a mental health disorder or a positive screen for a mental health condition. This measure was created by collapsing two series of questions within the data set. The first series of questions ask if a licensed professional has ever told the individual they have: a depressive disorder, manic-depression/bipolar or mania, schizophrenia or another psychotic disorder, post-traumatic stress disorder, another anxiety disorder such as a panic disorder, personality disorder, or any other mental or emotional condition. The second series of questions are screening questions based on DSM-IV criteria for major depression, mania, or a psychotic disorder. The criteria for screening positive for each of the conditions were obtained from a cross-walk file provided by the Bureau of Justice Statistics and is included in Appendix A. If the respondent had any self-reported diagnosis or met screening criteria for a manic, psychotic, or major depressive disorder, they were coded as having a mental health condition (1=yes).

Two measures of evaluated need were created to proxy for the severity of mental health condition(s). The first measure is a dichotomous indicator variable (yes/no) for whether the individual had received a mental health diagnosis within the last year. Another measure is an

indicator variable (yes/no) for whether the individual had ever had an overnight stay in a hospital for a mental/emotional problem.

A fourth measure of evaluated need assesses history of treatment and was constructed using two series of survey questions. The first series of questions asks whether the individual has received psychotropic medication for a mental or emotional problem: ever, in the year before incarceration, at time of arrest, and since admission to prison. Individuals who reported that they had ever received psychotropic medication and had not received psychotropic medication at any other time (i.e. in year prior, at time of arrest, or since admission) were coded as 1(yes) for having a history of psychotropic medication treatment. In addition, individuals who had received psychotropic medication in the year before incarceration, or had received treatment at time of arrest were coded as 1 (yes) for having a history of psychotropic medication treatment; otherwise, they were coded as 0 (no). A second series of questions asked if the respondent had received counseling/therapy for a mental or emotional problem: ever, in the year before incarceration, and since admission. Individuals who reported that they had received counseling/therapy ever, but not in the year prior to incarceration or since admission were coded as 1 (yes) for having a history of counseling/psychotherapy. Additionally, those who reported receiving counseling/therapy in the year before incarceration were coded as 1 (yes) for having a history of counseling/therapy; otherwise, they were coded as 0 (no). (Note that the survey did not ask individuals if they had received counseling/therapy at time of arrest). Using these two measures, a dichotomous indicator was created for those who had a history of either psychotropic medication treatment or counseling/therapy.

The fifth measure of evaluated need was an indicator for whether the respondent has any substance use disorder. The alcohol and drug use section of the survey contains screening tools

based on DSM-IV criteria for alcohol abuse, alcohol dependence, illicit drug use, and illicit drug dependence. The composite scores were used to determine whether or not an individual would meet the criteria for having an alcohol or illicit substance use disorder. The criteria and cut off scores for alcohol use disorders are located in Appendix B. Criteria used to create the measure of illicit drug use or dependence were provided in the supplemental syntax file by the Bureau of Justice Statistics. A dichotomous indicator was created for individuals that met the criteria for having any of the substance use disorders,

The sixth measure of evaluated need is a dichotomous indicator for whether the respondent has a co-occurring physical health condition. Individuals were asked if they currently had: (1) cancer, (2) paralysis/unable to move your legs, arms, or other areas of your body, (3) high blood pressure/hypertension, (4) stroke/brain injury, (5) diabetes/high blood sugar, (6) problem with heart, (7) problem with kidneys, (8) arthritis/rheumatism, (9) asthma, (10) Cirrhosis of the liver, (11) Hepatitis, or (12) an STD other than AIDS. An affirmative response to any of these questions was coded as having a current physical health condition.

Another measure of evaluated need is a dichotomous measure of self-reported HIV status. A categorical variable for HIV status was created with three groups: HIV positive, HIV negative, and HIV status unknown.

A measure of an individual's history of victimization was constructed based on seven questions. The survey asks respondents if, before admission, they have ever been: physically abused; ever been pushed, grabbed, slapped, kicked, bit or shoved; ever been hit with a fist; ever been beaten up; anyone ever choked them; anyone ever used a weapon against them; or if they have ever been sexually abused. A dichotomous indicator was created if they responded yes to any of the questions.

A categorical measure of offender status was constructed based on the most serious type of crime for which the individual was currently incarcerated. Five mutually exclusive categories assessed whether the most serious type of crime was a: violent offense (reference), drug offense, property offense, other offense, or offense type unknown.

The final proxy measure of need assessed the restrictiveness of the housing unit in which an individual resided. Special housing units can be therapeutic communities, offer protection for those who are at high risk of victimization from others, or be used to house individuals who pose a danger to themselves or others; all special housing units restrict the amount of interaction individuals have with others(51). The restrictiveness of an individual's housing unit was a continuous measure, in hours, based on the individual's response to the question, "In the last 24 hours, how much TOTAL time did you spend where you sleep? Include time spent sleeping as well as doing things other than sleeping(74)." A continuous measure was created, with responses ranging from 0 to 24 hours.

All individuals who had values of missing, don't know, or refused for any of the survey questions were coded as missing, unless otherwise noted (i.e. HIV status and offense type).

Contextual Level Confounders

State-level

All state-level confounders were unmeasured in this model.

Facility-level

Facility type was a measure that indicated whether the facility is under the jurisdiction of the Federal Bureau of Prisons or a state prison system. State prison system was the reference group.

Other facility-level constructs were unmeasured in this model.

Table 1 contains a list of all the measures and their hypothesized relationship to the dependent variable. The bottom of the table includes constructs that were unmeasured.

Table 1: Construct and Measurement Mapping

Construct	Measure(s)	Relationship to Dependent Variable
Race/Ethnicity	Categorical variable with five categories: non-Hispanic (NH) White, NH Black, Hispanic, NH American Indian/Alaskan Native, and NH Other.	-
Mental Health Service Use in Prison	Dichotomous variable for: • Psychotropic medication • Counseling/Psychotherapy • Both medication and therapy • Either medication or therapy	**N/A**
Facility Type	State prisons compared to federal prisons.	+
Sex	Dichotomous male/female variable.	+
Age	Continuous number of years alive.	+
Human Capital	Categorical variable for highest education attained before admission to prison with four groups: less than High School, High School/GED, some college, college degree+. Dichotomous measure of having a work assignment. Continuous variable for the number of months served at the date of the interview.	+
Social Capital	Categorical variable for marital status with the following five groups: married, widowed, divorced, separated, or never married. Never married was the reference category. Dichotomous indicator for received phone calls in the last week. Dichotomous indicator for had visits in the past month. Dichotomous variable for U.S. military service. Dichotomous measure for a citizen of the U.S.	+

Construct	Measure(s)	Relationship to Dependent Variable
Evaluated Need	Dichotomous indicator for ever been diagnosed with: depressive disorder, manic-depression/bipolar/mania, Schizophrenia/another psychotic disorder, post-traumatic stress disorder, another anxiety disorder/panic disorder, personality disorder, or any other mental/emotional condition or met DSM-IV criteria for a manic, major depressive or psychotic disorder. Dichotomous indicator for diagnosed within the last year Dichotomous indicator for ever hospitalized for mental/emotional problems Dichotomous indicator for a history of mental health treatment if a positive response to the psychotropic medication before admission or counseling before admission. Dichotomous indicator for SUD based on DSM-IV criteria for alcohol abuse, alcohol dependence, drug abuse, or drug dependence. Dichotomous indicator for physical health condition of cancer, paralysis/unable to move your legs, arms, or other areas of your body, high blood pressure/hypertension, stroke/brain injury, diabetes/high blood sugar, problem with heart, problem with kidneys, arthritis/rheumatism, asthma, Cirrhosis of the liver, Hepatitis, or STD other than AIDS. Categorical HIV status: positive, negative, unknown Dichotomous indicator for ever abused. Categorical variable for current offense type: drug, violent, property, other, unknown. The violent category is the reference. Continuous-time spent where an individual sleeps—including sleeping—in the last 24 hours reported in hours.	+
Spending on mental health services	Unmeasured	+
Healthcare Budget	Unmeasured	-
Security Level	Unmeasured	+
Cultural Stigma	Unmeasured	-
Patient/Provider Racial Concordance	Unmeasured	+

Construct	Measure(s)	Relationship to Dependent Variable
Provider Bias	Unmeasured	-
Health Beliefs	Unmeasured	+
Perceived Need	Unmeasured	+
Material Capital	Unmeasured	+

Analytic Sample

The analytic data set was limited to those who were over the age of 18 (Figure 2). The data set utilized multiple imputation methods to account for missing values for race/ethnicity. Individuals who had missing values for both Hispanic descent and race were excluded from the analysis (n=15). The analysis then excluded 315 respondents who were missing on the outcome measures of any mental health service use since admission to prison, psychotropic medication use since admission to prison, and counseling/therapy use since admission to prison. Individuals were also excluded if they did not have complete information (i.e. those who were coded as don't know, refused, or missing) for the other covariates in the model (n=1987). One variable, length of time served at date of interview, contributed to 1,330 missing observations (7.3% of the initial sample). The total analytic sample included 15,841 observations, which was 87% of the total survey sample of 18,185.

Figure 2: Derivation of the analytic sample including initial sample size and those lost to exclusion criteria.

Analytic Plan

The analyses utilized weighted logistic regression models. The weights accounted for the complex survey design elements of the data and were calculated differently for state facilities than federal facilities. State facility weights included the basic weight, weighting control factor, duplication control factor, person non-interview adjustment factor, and control count ratio adjustment factor. Federal facility weights included the same factors as the state facility's final weights and also included a drug subsampling factor (74). The statistical models followed a stepwise progression that first examined the bivariate relationship between race/ethnicity and any mental health service use. The models then included predisposing characteristics, enabling characteristics, and need characteristics, in that order. Secondary analyses examined specific types of treatment utilized and followed the same step-wise pattern as the primary analysis. STATA version 16 was used for all analyses.

A sensitivity analysis was conducted to check the robustness of the findings. This analysis limited the analytic sample to only those who self-reported race/ethnicity and excluded

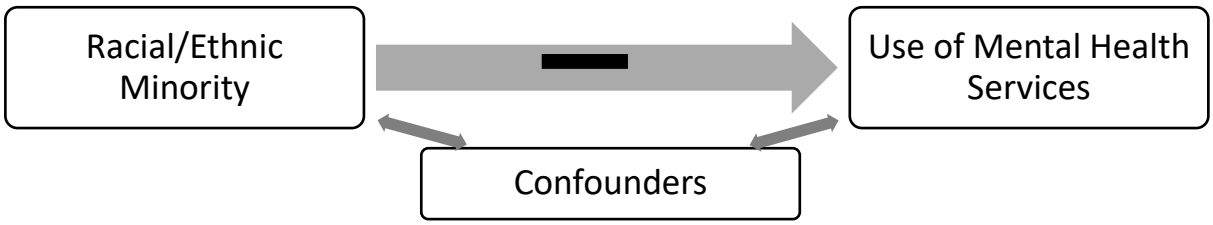
individuals who had their race/ethnicity imputed from other responses in the survey data identifying their race/ethnicity (n=5).

Hypotheses

H1: Racial/ethnic minorities are less likely than non-Hispanic whites to use any mental health services in U.S. prisons.

Racial/ethnic minorities are less likely than non-Hispanic whites to use mental health services in the community (12, 48, 49, 79). Because many of the factors that influence the use of mental health services in the community are perpetuated and exacerbated within the prison system, it is hypothesized that these disparities will also be observed within the prison system. The secondary analyses for specific treatment types are expected to follow this same pattern.

H2: The negative association between racial/ethnic minority identity and the use of mental health services is partially attenuated after controlling for predisposing, enabling and need characteristics.



The inclusion of confounders is likely to partially attenuate the observed relationship between racial/ethnic minority status and the use of mental health services. The secondary analyses for specific treatment types are expected to follow this same pattern.

Chapter 4: Results

Table 2 presents the weighted descriptive statistics for the total analytic sample, and by race/ethnicity. The majority of respondents were male (93.0%), and the average age was approximately 35.4 years. Most individuals had a high school diploma or GED (52.1%). When examining the most serious offense type, the most common category observed was violent offenses (44.9%), followed by drug offenses (21.9%), property offenses (19.8%), unknown offenses (9.3%) and public order offenses (4.2%). The majority of the analytic sample (91.5%) was held in state facilities, and the mean number of months incarcerated at the time of the interview was 57.8 months.

Mental health and other health conditions were prevalent in the sample. Approximately 55.1% of the sample had a diagnosed mental health condition or screened positive for having a psychotic, manic, or major depressive disorder. Approximately 9.0% of the sample had been diagnosed with a mental health disorder within the last year, and 11.3% had ever been hospitalized for a mental health problem. Prior to incarceration, approximately 20.3% of the sample had received either psychotropic medication or psychotherapy. Substance use disorders were also common, as 67.3% of the sample screened positive for having a substance use disorder. Finally, approximately 38.3% of respondents reported having a current physical health condition.

There were significant racial/ethnic differences in predisposing, enabling, and need-related characteristics in the analytic sample. Racial/ethnic minority respondents had lower levels of educational attainment compared to non-Hispanic white individuals. In the analytic sample, 21.5% of non-Hispanic white respondents had less than a high school education, compared to

48.3% of Hispanic respondents (p-value <0.001) and 39.6% of non-Hispanic black respondents (p-value <0.001).

There were also significant differences in health and mental health conditions for racial/ethnic minorities compared to non-Hispanic white respondents. For example, 53.6% of non-Hispanic black respondents, 44.7% of Hispanic respondents, and 55.8% of non-Hispanic American Indian/Alaskan Native respondents had a mental health disorder compared to 61.5% of non-Hispanic white individuals (all p-values <0.001). Furthermore, racial/ethnic minority individuals were less likely than non-Hispanic white respondents to have received any mental health treatment prior to incarceration, with14.0% of non-Hispanic black respondents, 14.0% of Hispanic respondents, and 21.5% of non-Hispanic American Indian/Alaskan Native respondents having received treatment compared to 29.9% of non-Hispanic white individuals (all p-values <0.001).

Table 2: Weighted Descriptive Statistics of Nationally Representative Sample of Individuals in State and Federal Prisons in the US in 2004 by Race/Ethnicity

	Non-Hispanic White	Non-Hispanic Black		Hispanic		Non-Hispanic American Indian/Alaskan Native		Non-Hispanic Other		Total Sample
	Mean (SD)	Mean (SD)	p-value[a]	Mean (SD)	p-value[a]	Mean (SD)	p-value[a]	Mean (SD)	p-value[a]	Mean (SD)
Predisposing										
Male	91.1%	94.3%	**<0.001**	94.2%	**<0.001**	89.5%	**<0.001**	92.2%	**<0.001**	93.0%
Age	37.2(11.2)	34.6(9.9)	**<0.001**	33.6(10.1)	**<0.001**	36.9(11.0)	**<0.001**	34.3(10.5)	**<0.001**	35.4(10.5)
Education										
Less than High School	21.5%	39.6%	**<0.001**	48.3%	**<0.001**	27.7%	**<0.001**	29.0%	**<0.001**	34.1%
High School /GED	60.7%	49.5%	**<0.001**	40.0%	**<0.001**	61.2%	0.20	53.0%	**<0.001**	52.1%
Some College	15.1%	9.6%	**<0.001**	8.1%	**<0.001**	10.5%	**<0.001**	14.8%	0.11	11.5%
College or Higher	2.7%	1.4%	**<0.001**	3.6%	**<0.001**	0.6%	**<0.001**	3.2%	**<0.001**	2.3%
Enabling										
Has work assignment	70.5%	71.0%	**<0.001**	61.6%	**<0.001**	66.0%	**<0.001**	68.1%	**<0.001**	68.9%
Months incarcerated	57.2(66.9)	62.9(66.7)	**<0.001**	49.1(53.0)	**<0.001**	54.4(65.0)	**<0.001**	52.6(56.3)	**<0.001**	57.8(64.2)
Marital Status										
Married	17.0%	14.3%	**<0.001**	24.6%	**<0.001**	14.2%	**<0.001**	19.1%	**<0.001**	17.3%
Widowed	2.3%	1.4%	**<0.001**	1.8%	**<0.001**	1.7%	**<0.001**	2.2%	**0.02**	1.9%
Divorced	32.3%	11.4%	**<0.001**	14.2%	**<0.001**	27.9%	**<0.001**	20.2%	**<0.001**	19.9%
Separated	4.5%	4.6%	**<0.001**	6.9%	**<0.001**	8.5%	**<0.001**	5.9%	**<0.001**	5.1%
Single	43.8%	68.3%	**<0.001**	52.4%	**<0.001**	47.7%	**<0.001**	52.6%	**<0.001**	55.8%
Phone calls	51.2%	51.0%	0.17	39.5%	**<0.001**	42.8%	**<0.001**	49.6%	**<0.001**	48.8%

Table 2: Weighted Descriptive Statistics of Nationally Representative Sample of Individuals in State and Federal Prisons in the US in 2004 by Race/Ethnicity

	Non-Hispanic White	Non-Hispanic Black		Hispanic		Non-Hispanic American Indian/Alaskan Native		Non-Hispanic Other		Total Sample
	Mean (SD)	Mean (SD)	p-value[a]	Mean (SD)	p-value[a]	Mean (SD)	p-value[a]	Mean (SD)	p-value[a]	Mean (SD)
Had visits in past month	33.0%	27.7%	**<0.001**	30.7%	**<0.001**	28.9%	**<0.001**	28.3%	**<0.001**	30.2%
Veteran	16.2%	8.4%	**<0.001**	3.5%	**<0.001**	15.2%	**<0.001**	12.5%	**<0.001**	10.5%
US Citizen	99.4%	98.8%	**<0.001**	73.9%	**<0.001**	100%	**<0.001**	89.1%	**<0.001**	94.0%
In state facility	93.7%	90.8%	**<0.001**	88.7%	**<0.001**	89.7%	**<0.001**	93.1%	**<0.001**	91.5%
Need Variables										
Mental Health Disorder	61.5%	53.6%	**<0.001**	44.7%	**<0.001**	54.8%	**<0.001**	62.2%	**<0.001**	55.1%
Diagnosed within last year	12.8%	6.5%	**<0.001**	6.5%	**<0.001**	8.4%	**<0.001**	11.5%	**<0.001**	9.0%
Ever Hospitalized	16.6%	8.2%	**<0.001**	6.6%	**<0.001**	12.3%	**<0.001**	16.8%	0.35	11.3%
Any History of Treatment	29.9%	14.0%	**<0.001**	14.0%	**<0.001**	21.5%	**<0.001**	26.9%	**<0.001**	20.3%
History of Medication	22.0%	10.1%	**<0.001**	9.7%	**<0.001**	14.7%	**<0.001**	18.7%	**<0.001**	14.7%
History of Psychotherapy	18.8%	8.3%	**<0.001**	8.3%	**<0.001**	13.0%	**<0.001**	16.4%	**<0.001**	12.4%
Any Substance Use Disorder	75.4%	62.1%	**<0.001**	63.0%	**<0.001**	80.6%	**<0.001**	63.8%	**<0.001**	67.3%
Physical health condition	44.3%	35.1%	**<0.001**	32.0%	**<0.001**	44.9%	0.10	43.6%	**<0.001**	38.3%
HIV status										
Negative	78.5%	82.7%	**<0.001**	74.9%	**<0.001**	67.5%	**<0.001**	76.8%	**<0.001**	79.2%
Positive	0.8%	1.6%	**<0.001**	1.1%	**<0.001**	0.5%	**<0.001**	1.0%	**<0.001**	1.2%
Unknown	20.8%	15.8%	**<0.001**	24.1%	**<0.001**	32.0%	**<0.001**	22.2%	**<0.001**	19.6%

Table 2: Weighted Descriptive Statistics of Nationally Representative Sample of Individuals in State and Federal Prisons in the US in 2004 by Race/Ethnicity

	Non-Hispanic White	Non-Hispanic Black		Hispanic		Non-Hispanic American Indian/Alaskan Native		Non-Hispanic Other		Total Sample
	Mean (SD)	Mean (SD)	p-value[a]	Mean (SD)	p-value[a]	Mean (SD)	p-value[a]	Mean (SD)	p-value[a]	Mean (SD)
History of Any Abuse	76.9%	67.6%	**<0.001**	56.4%	**<0.001**	77.2%	0.25	74.5%	**<0.001**	69.3%
Offense Type										
Violent	44.9%	45.6%	**<0.001**	41.1%	**<0.001**	53.2%	**<0.001**	50.8%	**<0.001**	44.9%
Property	24.3%	17.0%	**<0.001**	18.5%	**<0.001**	12.8%	**<0.001**	18.4%	**<0.001**	19.8%
Drug	16.2%	26.4%	**<0.001**	24.6%	**<0.001**	13.2%	**<0.001**	17.5%	**<0.001**	21.9%
Public Order	4.7%	3.2%	**<0.001**	5.3%	**<0.001**	8.1%	**<0.001**	2.9%	**<0.001**	4.2%
Unknown	9.9%	7.8%	**<0.001**	10.5%	**<0.001**	12.8%	**<0.001**	10.4%	**<0.001**	9.3%
Hours spent in cell last 24	13.2 (5.7)	12.4 (5.6)	**<0.001**	13.0 (6.2)	**<0.001**	12.9 (5.8)	**<0.001**	13.3 (5.7)	0.37	12.9 (5.8)
Observations	5699	6254		2904		300		684		15841
Weighted %	35.3%	40.4%		18.3%		1.7%		4.3%		100%

Note: NH (non-Hispanic) SD (standard deviation)
Bold values statistically significant $p < 0.05$
[a]adjusted Wald test compared to non-Hispanic white group

Table 3 presents the weighted outcomes by race/ethnicity and for the total sample. Of the total analytic sample, 17.9% had received any mental health treatment, 14.4% had received psychotropic medication, 12.2% had received psychotherapy and 8.6% had received both counseling and psychotherapy since admission to prison. In bivariate comparisons, these rates of treatment were significantly lower among non-Hispanic black respondents, Hispanic respondents, and non-Hispanic American Indian/Alaskan Native respondents compared to non-Hispanic white respondents (all p-values <0.001). For example, when examining receipt of any treatment, only 13.1% on non-Hispanic black respondents, 11.8% of Hispanic respondents, and 14.8% of non-Hispanic American Indian/Alaskan Native respondents had received treatment compared to 25.9% of non-Hispanic white respondents (all p-values< 0.001). Similarly, when examining psychotropic medication, only 10.1% of non-Hispanic black respondents, 8.9% of Hispanic respondents, and 11.1% of non-Hispanic American Indian/Alaskan Native respondents had received medication compared to 21.7% of non-Hispanic white respondents (all p-values< 0.001).

Table 3: Weighted Outcomes of Nationally Representative Sample of Individuals in State and Federal Prisons in the US in 2004

	NH White Mean	NH Black		Hispanic		NH AI/AN		NH Other		Total Sample Mean
		Mean	p-value[a]	Mean	p-value[a]	Mean	p-value[a]	Mean	p-value[a]	
Any Treatment	25.9%	13.1%	**<0.001**	11.8%	**<0.001**	14.8%	**<0.001**	24.5%	**<0.001**	17.9%
Medication	21.7%	10.1%	**<0.001**	8.9%	**<0.001**	11.1%	**<0.001**	18.9%	**<0.001**	14.4%
Psychotherapy	17.0%	9.4%	**<0.001**	7.9%	**<0.001**	12.0%	**<0.001**	17.2%	0.35	12.2%
Both Treatments	12.9%	6.4%	**<0.001**	5.0%	**<0.001**	8.3%	**<0.001**	11.6%	**<0.001**	8.6%
Observations	5699	6254		2904		300		684		15841

Note: Note: NH (non-Hispanic) AI/AN (American Indian/Alaskan Native) SD (standard deviation)
Bold values statistically significant $p < 0.05$
[a]adjusted Wald test compared to non-Hispanic white group

Table 4 reports results from the logistic regressions that examined racial/ethnic differences in the use of any mental health treatment services since admission to prison. Results are presented as the average marginal effects for each racial/ethnic group. The models were estimated sequentially; the first model examined the bivariate relationship between race/ethnicity and any mental health service use, the second model added in predisposing factors, the third model added enabling factors, and the fourth model added in need-related factors.

Racial/ethnic minorities were less likely to have received any mental health treatment when compared to non-Hispanic white respondents. In Model 1, non-Hispanic black respondents were 12.8 percentage points less likely (95% CI= -13.0%, -12.6%) than non-Hispanic white respondents to have received any mental health treatment since admission to prison. Compared to non-Hispanic white respondents, non-Hispanic American Indian/Alaskan Native respondents were 11.1 percentage points less likely (95% CI= -11.6%, -10.6%) to have received any mental health treatment. In addition, Hispanic respondents were 14.1 percentage points less likely (95% CI= -14.3%, -13.9%) to have received any mental health treatment since admission to prison when compared to non-Hispanic white respondents. The magnitude and direction of these findings were similar after adding predisposing (Model 2), and enabling (Model 3) characteristics.

The inclusion of need-related factors in Model 4 partially attenuated the relationship between minority race/ethnicity and the receipt of any mental health treatment. Non-Hispanic black respondents (Average marginal effect [AME]= -3.8%; 95% CI= -4.0%, -3.7%), Hispanic respondents (AME= -2.8%; 95% CI= -3.0%, -2.6%), and non-Hispanic American Indian/Alaskan Native respondents (AME= -6.3%; 95% CI= -6.7%, -6.0%) were all significantly less likely to have received any mental health treatment since admission when compared to non-

Hispanic white respondents. However, these negative associations were smaller in magnitude than those in the first three models.

Table 4: Weighted Logistic Regression of Race/Ethnicity on Any Mental Health Treatment Service Use since Admission to Prison using the Survey of Inmates in State and Federal Correctional Facilities, 2004 (Partial Table)

	Any Mental Health Treatment											
	Model 1 Bivariate			Model 2 Controlling for predisposing			Model 3 Controlling for predisposing and enabling			Model 4 Controlling for predisposing, enabling, and need		
Characteristic	AME	95% CI		AME	95% CI		AME	95% CI		AME	95% CI	
Race/Ethnicity												
NH White (ref.)		-			-			-			-	
NH Black	-12.8	-13.0	-12.6	-11.9	-12.0	-11.7	-11.5	-11.7	-11.4	-3.8	-4.0,	-3.7
Hispanic	-14.1	-14.3	-13.9	-13.1	-13.3	-12.9	-11.0	-11.2	-10.7	-2.8	-3.0	-2.6
NH AI/AN	-11.1	-11.6	-10.6	-11.1	-11.6	-10.6	-11.0	-11.5	-10.6	-6.3	-6.7	-6.0
NH Other	-1.4	-1.8	-1.0	-0.8	-1.2	-0.4	0.2	-0.2	0.5	-0.4	-0.7	-0.2
Observations		15841			15841			15841			15841	

Note: NH (non-Hispanic) AI/AN (American Indian/Alaskan Native);
AME (Average Marginal Effect) reported in percentage point change

Table 5 reports the average marginal effects, in percentage point changes, for models 1 through 4. These regression models examined racial/ethnic differences in the receipt of psychotropic medication since admission to prison. When compared to non-Hispanic white respondents, racial/ethnic minority respondents were less likely to have received psychotropic medication. In Model 3, after the inclusion of predisposing and enabling factors, non-Hispanic black respondents, Hispanic respondents, and non-Hispanic American Indian/Alaskan Native respondents were 10.5 (95% CI= -10.6%, -10.3%), 10.2 (95% CI= -10.5%, -10.1%), and 10.6 percentage points less likely (95% CI= -11.0%, -10.2%), respectively, to have received psychotropic medication since admission to prison when compared to non-Hispanic white respondents.

After the inclusion of need factors in Model 4, the magnitude of the negative association was reduced. Compared to non-Hispanic white respondents, non-Hispanic black respondents were 4.2 percentage points less likely (95% CI= -4.3%, -4.1%), Hispanic respondents were 3.5 percentage points less likely (95% CI= -3.6%, -3.3%), and non-Hispanic American Indian/Alaskan Native respondents were 6.3 percentage points less likely (95% CI= -6.6%, -6.0%) to have received psychotropic medication since admission to prison.

Table 5: Weighted Logistic Regression of Race/Ethnicity on Psychotropic Medication Mental Health Treatment Service Use since Admission to Prison using the Survey of Inmates in State and Federal Correctional Facilities, 2004 (partial table)

	Psychotropic Medication											
	Model 1 Bivariate			Model 2 Controlling for predisposing			Model 3 Controlling for predisposing and enabling			Model 4 Controlling for predisposing, enabling, and need		
Characteristic	AME	95% CI		AME	95% CI		AME	95% CI		AME	95% CI	
Race/Ethnicity												
NH White (ref.)		-			-			-			-	
NH Black	-11.6	-11.8	-11.5	-10.7	-10.9	-10.6	-10.5	-10.6	-10.3	-4.2	-4.3	-4.1
Hispanic	-12.8	-13.0	-12.7	-11.9	-12.1	-11.7	-10.3	-10.5	-10.1	-3.5	-3.6	-3.3
NH AI/AN	-10.6	-11.1	-10.2	-10.6	-11.0	-10.2	-10.6	-11.0	-10.2	-6.3	-6.6	-6.0
NH Other	-2.8	-3.2	-2.4	-2.2	-2.6	-1.8	-1.4	-1.8	-1.0	-1.7	-2.0	-1.5
Observations		15841			15841			15841			15841	

Note: NH (non-Hispanic) AI/AN (American Indian/Alaskan Native);
AME (Average Marginal Effect) reported in percentage point change

Table 6 reports the results for the logistic regressions that examined racial/ethnic differences in the use of psychotherapy since admission to prison. In Model 3, all racial/ethnic minority groups were less likely than non-Hispanic white respondents to have received psychotherapy since admission to prison (non-Hispanic black respondents: AME= -6.8 percentage points, 95% CI= [-6.9%, -6.6%]; Hispanic respondents: AME= -6.6 percentage points, 95% CI= [-6.8%, -6.4%]; non-Hispanic American Indian/Alaskan Native respondents: AME= -4.9 percentage points, 95% CI= [-5.4%, -4.5%]). These estimates were similar in size and direction to those in models 1 and 2.

The magnitude of the negative relationship between minority race/ethnicity and receipt of psychotherapy was reduced after adding need-related factors to the model. Compared to non-Hispanic white respondents (Model 4), the predicted probabilities of receiving psychotherapy since admission to prison were significantly lower among non-Hispanic black respondents (AME=2.2 percentage points; 95% CI=-2.3%, -2.0%), Hispanic respondents (AME=1.4 percentage points; 95% CI= -1.5%, -1.2%), and non-Hispanic American Indian/Alaskan Native respondents (AME=2.1 percentage points; 95% CI= -2.5%, -1.7%).

Table 6: Weighted Logistic Regression of Race/Ethnicity on Counseling/Psychotherapy Mental Health Treatment Service Use since Admission to Prison using the Survey of Inmates in State and Federal Correctional Facilities, 2004 (partial table)

	Psychotherapy											
	Model 1 Bivariate			Model 2 Controlling for predisposing			Model 3 Controlling for predisposing and enabling			Model 4 Controlling for predisposing, enabling, and need		
Characteristic	AME	95% CI		AME	95% CI		AME	95% CI		AME	95% CI	
Race/Ethnicity												
NH White (ref.)		-			-			-			-	
NH Black	-7.7	-7.8	-7.5	-7.0	-7.1	-6.9	-6.8	-6.9	-6.6	-2.2	-2.3	-2.0
Hispanic	-9.2	-9.3	-9.0	-8.5	-8.7	-8.3	-6.6	-6.8	-6.4	-1.4	-1.5	-1.2
NH AI/AN	-5.0	-5.4	-4.5	-5.1	-5.5	-4.6	-4.9	-5.4	-4.5	-2.1	-2.5	-1.7
NH Other	0.2	-0.2	0.5	0.6	0.2	0.9	1.4	1.1	1.7	0.6	0.4	0.9
Observations		15841			15841			15841			15841	

Note: NH (Non-Hispanic) AI/AN (American Indian/Alaskan Native);
AME (Average Marginal Effect) reported in percentage point change

Table 7 reports the differences in predicted probabilities for racial/ethnic groups in logistic regressions examining the receipt of both psychotherapy and psychotropic medication since admission to prison. Racial/ethnic minority groups were all significantly less likely than the non-Hispanic white group to have received both types of treatment since admission to prison (non-Hispanic black respondents: AME=5.7 percentage points, 95% CI= [-5.8%, -5.6%]; Hispanic respondents: AME=6.0 percentage points, 95% CI=[-6.1%, -5.8%]; non-Hispanic American Indian/Alaskan Native respondents: AME=4.6 percentage points; 95% CI= [-4.9%, -4.6%]) after controlling for predisposing and enabling characteristics (Model 3).

The negative association between racial/ethnic minority group status and receipt of both types of treatment was partially reduced after the inclusion of need-related factors (Model 4). Non-Hispanic black respondents were 1.9 percentage points less likely (95% CI= -2.0%. -1.8%), Hispanic respondents were 1.7 percentage points less likely (95% CI= -1.9%, -1.6%), and non-Hispanic American Indian/Alaskan Native respondents were 1.9 percentage points less likely (95% CI= -2.2%, -1.6%) than non-Hispanic white respondents to have received both types of treatment since admission to prison.

Full tables of all regression results are available in Appendix C

Table 7: Weighted Logistic Regression of Race/Ethnicity on Receipt of Counseling/Psychotherapy and Psychotropic Medication for Mental Health Treatment since Admission to Prison using the Survey of Inmates in State and Federal Correctional Facilities, 2004 (partial table)

	Receipt of Psychotropic Medication and Psychotherapy											
	Model 1 Bivariate			Model 2 Controlling for predisposing			Model 3 Controlling for predisposing and enabling			Model 4 Controlling for predisposing, enabling, and need		
Characteristic	AME	95% CI		AME	95% CI		AME	95% CI		AME	95% CI	
Race/Ethnicity												
NH White (ref.)		-			-			-			-	
NH Black	-6.5	-6.6	-6.3	-5.9	-6.0	-5.8	-5.7	-5.8	-5.6	-1.9	-2.0	-1.8
Hispanic	-7.9	-8.0	-7.7	-7.3	-7.4	-7.2	-6.0	-6.1	-5.8	-1.7	-1.9	-1.6
NH AI/AN	-4.5	-4.9	-4.1	-4.6	-4.9	-4.2	-4.6	-4.9	-4.2	-1.9	-2.2	-1.6
NH Other	-1.2	-1.5	-0.9	-0.8	-1.1	-0.5	-0.2	-0.4	0.1	-0.5	-0.8	-0.3
Observations		15841			15841			15841			15841	

Note: NH (Non-Hispanic) AI/AN (American Indian/Alaskan Native);
AME (Average Marginal Effect) reported in percentage point change

Sensitivity Analyses

A sensitivity analysis was conducted that limited the analytic sample to only those individuals who self-reported a race/ethnicity. This criterion excluded an additional 5 observations (n=15,836). After running the models on this smaller sample, there was no change to the estimates. The full results of these models can be found in Appendix D.

Chapter 5: Discussion

This study provides the first national estimates of the racial/ethnic disparities in mental health treatment in prison settings. Overall treatment rates were low, with less than 1 in 5 individuals receiving treatment. What is perhaps more concerning is that racial/ethnic minority individuals were consistently less likely to have received psychotropic medication, psychotherapy, and any mental health care since admission to prison when compared to non-Hispanic white individuals. These disparities persisted in adjusted models that controlled for predisposing, enabling, and need characteristics.

These findings indicated that there is a significant gap in mental health treatment within U.S. prisons, which is consistent with prior literature (24, 80-84). Notably, more than half of the sample either met criteria for a serious mental health disorder or reported having been diagnosed with a mental health disorder by a provider. Thus, it is concerning that only 18% of the sample had received any type of treatment since admission. For context, 43% of U.S. adults receive mental health treatment in a given year in community settings where the prevalence and severity of mental health disorders is significantly lower (5). This large gap in treatment is particularly concerning given the legal mandate to provide care to individuals in correctional settings and the high prevalence of severe mental disorders within correctional institutions.

One potential reason that many individuals may not have received treatment could be the lack of funding for prisons (85, 86). Correctional budgets are used to provide food housing, security, transportation and medical care around the clock. The lack of funding for prisons combined with the fact that many facilities are at or above capacity often means that facilities have to make cuts to many programs and services in order to maintain a balanced budget. The ambiguity in the legal mandate to provide adequate health care to incarcerated individuals allows facilities to deliver health services in a variety of ways and may contribute to the significant variations in the percentage of prison budgets being spent on health services. Estimates from the Vera Institute found that spending on healthcare providers ranged from as little as 5% to as much as 28% of a state's prison spending (85).

In addition to variations in funding and delivery of health care in prison populations, a majority of facilities lack data monitoring for quality improvement or fail to incorporate data in their decision making processes (87, 88). When systems fail to monitor the outcomes of the care they are delivering, they lose the ability to ensure that individuals are in fact receiving the care they need. This ability to monitor quality can help facilities to better understand the value of the care they are providing and to reach the goals of ensuring public safety and meeting legal mandates to provide adequate care, in a fiscally prudent manner(87). This lack of monitoring could also provide some insight as to why treatment rates remain low in correctional settings and why racial/ethnic disparities persist in receipt of mental health treatment. Facilities that fail to track what care is being provided to whom do not have the ability to identify problems in delivery. This inability to identify problems in delivery then lead to an inability to implement solutions to correct these problems.

In addition to the low treatment rates, there were racial/ethnic disparities in the receipt of mental health treatment. Compared to non-Hispanic white individuals, racial/ethnic minority individuals were significantly less likely to have received any treatment since admission to prison. This same pattern was observed for both sub-types of treatment as well, with larger disparities seen for psychotropic medication than psychotherapy. These racial/ethnic disparities in receipt of mental health treatment have also been seen in community settings. In a nationally representative sample of adults in community settings, non-Hispanic black individuals and Hispanic individuals had 66% and 48% lower odds of receiving depression treatment than non-Hispanic white individuals(32). Given the results of the analyses presented in this paper, racial/ethnic disparities persist in prison settings in a similar way to those seen in community settings.

The racial/ethnic disparities in receipt of mental health treatment found in this paper are concerning given the fact that racial/ethnic disparities in receipt of mental health treatment in prison settings have been identified as early as the late 1980s in New York(25). Additionally, analyses using nationally representative data from 1997 found that there were disparities in mental health treatment in prison for African Americans compared to non-African Americans, with African Americans having 36% lower odds of receiving treatment. These continued disparities despite almost 20 years of time between the findings of previous studies and this one suggests that there has been little successful intervention to address this issue.

The fact that disparities remain, despite controlling for predisposing, enabling, and need-related factors, suggest that there are other factors that influence the decision to engage in treatment. Perceived need for services, which was unmeasured in these analyses may be one such factor. Despite the clinical and behavioral factors that may suggest a need for treatment,

individuals who do not perceive a need for treatment or think that treatment will be effective are less likely to engage in treatment(89). Studies looking at perceived need for mental health treatment in community settings have found that individuals identifying as racial/ethnic minority often have a lower perceived need for formal mental health treatment(35, 36). These racial/ethnic differences in perceived need for treatment may come from differences in racial/ethnic beliefs about the etiology of mental health conditions. For example, many cultures consider mental health conditions to be driven from spiritual imbalances. This belief about the etiology of mental health conditions would lead individuals to seek mental health care from traditional healers, rather than seeking care from formal mental health providers. This mechanism could explain why there were larger disparities for non-Hispanic American Indian/Alaskan Native compared to the other racial/ethnic minority groups. non-Hispanic American Indian/Alaskan Native communities often seek mental health care in collaboration with traditional healing services(90) which are highly unlikely to be offered in prison contexts given the lack of resources.

Another potential mechanism that could be driving these disparities is institutional bias. Melissa Thompson's research on the interpretation of socially deviant behavior based on race found that African American individual often have their behaviors interpreted as aggressive or criminal, while white individuals are often seen as needing treatment(26). In the correctional environment, individuals who are experiencing symptoms related to a more severe mental illness may exhibit disruptive behaviors. If these are interpreted differently across racial/ethnic groups, it is possible that expression of distress for racial/ethnic minority individuals may be more likely to lead to referral to punitive services whereas expressions of distress among non-Hispanic white individuals may be more likely to be lead to referral to treatment(26).

The differences in social interpretation are not the only source of institutional bias that may disproportionately affect racial/ethnic minorities. While almost all facilities report that they screen all individuals for mental health disorders at their time of admission, racial/ethnic bias in screening instruments could perpetuate disparities in receipt of mental health services. There has been some evidence that the screening tools used to identify a need for mental health treatment are more likely to identify non-Hispanic white individuals as needing mental health services when compared to racial/ethnic minority groups(91).Thus, non-Hispanic white individuals may be more likely to be referred to services when compared to individuals belonging to racial/ethnic minority groups at time of intake. This additional form of institutional bias could also explain why racial/ethnic minority individuals are receiving mental health treatment at lower rates than non-Hispanic white individuals even after controlling for confounders.

The existence of racial/ethnic disparities in prison settings—even with the virtual elimination of structural barriers to care such as cost and geographic access—suggests that policies and programs targeting social barriers to care (e.g. cultural stigma, health beliefs, and institutional mistrust) may be necessary to address racial/ethnic disparities in mental health treatment in these settings. In community settings, among diverse age and socioeconomic groups, multi-component chronic disease management models have been shown to reduce racial/ethnic disparities in mental health care (92) by targeting patient, provider, and system-level factors. However, these interventions have not been evaluated in the context of institutional settings. In addition, social barriers to care may be heightened in the highly racialized prison environment which may reduce the effectiveness of these types of interventions. Both the formal and informal rules that govern prison life are highly dependent on an individual's racial/ethnic identity. Housing and social groups are predominantly driven by an individual's racial/ethnic

identity (51). These factors in combination with the above-mentioned budget constraints may make the implementation of multi-level interventions difficult in prison settings.

In addition to interventions in correctional settings, programs and policies in earlier stages of criminal justice involvement (e.g. pre-arrest, pre-sentencing) have focused on deferring individuals from correctional settings to treatment services. Evaluations of the processes used to determine who is referred and who completes these programs have found racial/ethnic minority individuals to be less likely to be referred and to have lower completion rates than non-Hispanic white individuals(93, 94). These programs have the potential to alter the composition of the prison population in terms of both race/ethnicity and mental health. It is possible that these interventions have changed the disparities presented here, and warrant further research.

Strengths and Limitations

There are several limitations in this study. First, this study is limited by the age and structure of the data and measurement error. The data used for this study is from 2004 and may no longer reflect the characteristics of today's incarcerated population. However, this is the most currently available data that allows for national-level analyses for this population. The data used for these analyses are also cross-sectional; therefore, causal inferences cannot be made. Although the analysis can provide an understanding of the initiation of care, little can be said about the quality of the care that is being received due to the available information about mental health treatment. It is also important to note that this study was unable to control for many of the contextual factors identified in the conceptual framework such as state spending on mental health care, facility security level, facility health care budget, and the offering of mental health services.

Despite these limitations, this study has several strengths. It is the first study use national data to examine racial/ethnic disparities in access to mental health services within the U.S. prison

system. This study was able to examine several outcome measures including receipt of any mental health care, as well as receipt of different subtypes of mental health care (i.e. psychotropic medication, psychotherapy). Additionally, the models used in these analyses were able to control for a number of confounding variables.

Future Research

This research lays a foundation for future studies to further investigate racial/ethnic disparities in mental health treatment in correctional settings. One line of research should identify the impact of recent state and federal policies related to criminal justice reform and correctional mental health care on mental health treatment rates and racial/ethnic disparities in mental health treatment in prison settings. Future studies should also investigate the mechanisms through which these disparities occur. Mixed-methods research that aims to understand the quantitative differences in use, while also using qualitative narratives to gain a more holistic understanding of the decision-making process used to engage in mental healthcare within the prison context, would be well suited to this task. Finally, future studies should investigate racial/ethnic differences in the quality of the care that is being delivered in correctional settings as well as the associated outcomes.

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Appendix A: Cross-walk for mental health disorder screening

Symptoms of mental health disorders

	Program Code	Jails	SPI
Major depression			
Persistent sad, numb, or empty mood	A1	v2017	v2395
Loss of interest or pleasure in activities	A2	v2009	v2387
Increased or decreased appetite	A3	v2011	v2389
Insomnia or hypersomnia	A4	v2010	v2388
Psychomotor agitation or retardation	A5	v2005,or v2006	v2384, or v2385
Feelings of worthlessness or excessive guilt	A7	v2012,or v2016	v2392, or v2394
Diminished ability to concentrate or think	A8	v2007	v2386
Ever attempted suicide	A9	v2044	v2423
Criteria: at least 5 of the 8 symptoms AND 1 of the 5 had to be A1 or A2			
Mania			
Persistent angry mood	manicA	v2000, or v2001, or v2002	v2379, or v2380, or v2381
Insomnia or hyersomnia	manic2	v2010	v2388
Diminshed ability to think or concentrate	manic4	v2007	v2386
Psychomotor agitation/retardation OR inc/dec in activities	manic6	v2005,or v2006, or v2009, or v2015	v2387, or v2393, or v2384, or v2385
Criteria: 3 symptoms (manic2 and manic4 and manic6) or persistent angry mood (manicA)			
Psychotic disorder			
Delusions	schzdel	v2008, or v2014, or v2021	v2397, or v2391, or v2400
Hallucinations	schzhal	v2019, or v2020	v2398, or v2399
Criteria: 1 symptom of delusions or hallucinations			

Appendix B: Criteria for alcohol abuse or dependence

DSM–IV	
In the past year, have you:	
Any 1 = ALCOHOL ABUSE	Found that drinking—or being sick from drinking—often interfered with taking care of your home or family? Or caused job troubles? Or school problems?
	More than once gotten into situations while or after drinking that increased your chances of getting hurt (such as driving, swimming, using machinery, walking in a dangerous area, or having unsafe sex)?
	More than once gotten arrested, been held at a police station, or had other legal problems because of your drinking?
	Continued to drink even though it was causing trouble with your family or friends?
Any 3 = ALCOHOL DEPENDENCE	Had to drink much more than you once did to get the effect you want? Or found that your usual number of drinks had much less effect than before?
	Found that when the effects of alcohol were wearing off, you had withdrawal symptoms, such as trouble sleeping, shakiness, restlessness, nausea, sweating, a racing heart, or a seizure? Or sensed things that were not there?
	Had times when you ended up drinking more, or longer, than you intended?
	More than once wanted to cut down or stop drinking, or tried to, but couldn't?
	Spent a lot of time drinking? Or being sick or getting over other aftereffects?
	Given up or cut back on activities that were important or interesting to you, or gave you pleasure, in order to drink?
	Continued to drink even though it was making you feel depressed or anxious or adding to another health problem? Or after having had a memory blackout?

Appendix C: Complete regression results for Table 4 through Table 7

Table C4: Weighted Logistic Regression of Race/Ethnicity on Any Mental Health Treatment since Admission to Prison using the Survey of Inmates in State and Federal Correctional Facilities, 2004

	Any Mental Health Treatment							
	Bivariate		Controlling for predisposing		Controlling for predisposing and enabling		Controlling for predisposing, enabling, and need	
	Model 1		Model 2		Model 3		Model 4	
Characteristic	AME	95% CI	AME	95% CI	AME	95% CI	AME	95% CI
Race/Ethnicity								
NH White	0.0	0.0, 0.0	0.0	0.0, 0.0	0.0	0.0, 0.0	0.0	0.0, 0.0
NH Black	-12.8	-13.0, -12.6	-11.9	-12.0, -11.7	-11.5	-11.7, -11.4	-3.8	-4.0, -3.7
Hispanic	-14.1	-14.3, -13.9	-13.1	-13.3, -12.9	-11.0	-11.2, -10.7	-2.8	-3.0 ,-2.6
NH AI/AN	-11.1	-11.6, -10.6	-11.1	-11.6, -10.6	-11.0	-11.5, -10.6	-6.3	-6.7, -6.0
NH Other	-1.4	-1.8, -1.0	-0.8	-1.2, -0.4	0.2	-0.2, 0.5	-0.4	-0.7, -0.2
Predisposing								
Male			-19.7	-20.0, -19.4	-21.7	-22.0, -21.4	-7.7	-8.0, -7.5
Age			0.1	0.1, 0.1	-0.1	-0.1, -0.1	0.1	0.1, 0.1
Enabling								
Work Assignment					-4.2	-4.4, -4.1	-0.3	-0.4, -0.2
Education								
Less than HS					1.5	1.4, 1.7	0.7	0.6, 0.9
HS/GED					0.0	0.0, 0.0	0.0	0.0, 0.0
Some College					2.0	1.8, 2.2	0.5	0.3, 0.6
College or Higher					4.4	3.9, 4.9	2.9	2.5, 3.3
Months incarcerated					0.0	0.0, 0.0	0.0	0.0, 0.0

Any Mental Health Treatment								
	Bivariate		Controlling for predisposing		Controlling for predisposing and enabling		Controlling for predisposing, enabling, and need	
	Model 1		Model 2		Model 3		Model 4	
Characteristic	AME	95% CI	AME	95% CI	AME	95% CI	AME	95% CI
Marital Status								
Married					-1.4	-1.6, -1.2	-1.8	-2.0, -1.7
Widowed					1.0	0.5, 1.5	0.8	0.5, 1.2
Divorced					2.0	1.8, 2.1	1.2	1.0, 1.4
Separated					4.6	4.3, 5.0	0.4	0.2, 0.7
Single					0.0	0.0, 0.0	0.0	0.0, 0.0
Phone Calls					-0.6	-0.8, -0.5	1.2	1.1, 1.3
Visits in Past Month					-2.8	-2.9, -2.6	-0.6	-0.7, -0.5
Veteran					4.5	4.2, 4.7	1.0	0.9, 1.2
US Citizen					9.3	9.0, 9.5	0.7	0.4, 1.1
Federal Facility					-5.4	-5.6, -5.1	0.2	0.0, 0.5
Need Variables								
Mental Health Disorder							13.4	13.2, 13.5
Any History of Treatment							7.7	7.6, 7.9
Ever Hospitalized							19.7	19.4, 19.9
Diagnosed within last year							31.0	30.7, 31.3
Substance Use Disorder							0.2	0.1, 0.4
HIV status								
Negative							0.0	0.0, 0.0

Any Mental Health Treatment								
	Bivariate		Controlling for predisposing		Controlling for predisposing and enabling		Controlling for predisposing, enabling, and need	
	Model 1		Model 2		Model 3		Model 4	
Characteristic	AME	95% CI	AME	95% CI	AME	95% CI	AME	95% CI
Positive							0.0	-0.5, 0.5
Unknown							-0.5	-0.6, -0.4
Physical Health Condition							2.4	2.3, 2.5
History of Abuse							2.8	2.7, 3.0
Offense Type								
Violent							0.0	0.0, 0.0
Property							-4.3	-4.5, -4.2
Drug							-5.6	-5.7, -5.4
Public Order							-5.5	-5.8, -5.3
Unknown							-3.7	-3.9, -3.5
Hours spent in cell last 24							0.0	0.0, 0.0
Observations	15841		15841		15841		15841	

Note: NH (Non-Hispanic) AI/AN (American Indian/Alaskan Native) AME (Average Marginal Effect)

Table C5: Weighted Logistic Regression of Race/Ethnicity on Psychotropic Medication since Admission to Prison using the Survey of Inmates in State and Federal Correctional Facilities, 2004

	Psychotropic Medication											
	Bivariate			Controlling for predisposing			Controlling for predisposing and enabling			Controlling for predisposing, enabling, and need		
	Model 5			Model 6			Model 7			Model 8		
Characteristic	AME	95 CI		AME	95 CI		AME	95 CI		AME	95 CI	
Race/Ethnicity												
NH White	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NH Black	-11.6	-11.8	-11.5	-10.7	-10.9	-10.6	-10.5	-10.6	-10.3	-4.2	-4.3	-4.1
Hispanic	-12.8	-13.0	-12.7	-11.9	-12.1	-11.7	-10.3	-10.5	-10.1	-3.5	-3.6	-3.3
NH AI/AN	-10.6	-11.1	-10.2	-10.6	-11.0	-10.2	-10.6	-11.0	-10.2	-6.3	-6.6	-6.0
NH Other	-2.8	-3.2	-2.4	-2.2	-2.6	-1.8	-1.4	-1.8	-1.0	-1.7	-2.0	-1.5
Predisposing												
Male				-16.7	-17.0	-16.4	-18.1	-18.4	-17.8	-5.8	-6.0	-5.6
Age				0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1
Enabling												
Work Assignment							-4.5	-4.7	-4.4	-1.0	-1.1	-0.9
Education												
Less than HS							1.7	1.5	1.8	0.8	0.7	0.9
HS/GED							0.0	0.0	0.0	0.0	0.0	0.0
Some College							1.4	1.2	1.6	0.0	-0.2	0.1
College or Higher							1.7	1.2	2.1	0.6	0.3	1.0
Months incarcerated							0.0	0.0	0.0	0.0	0.0	0.0
Marital Status												
Married							-1.5	-1.6	-1.3	-1.7	-1.9	-1.6

Psychotropic Medication									
	Bivariate		Controlling for predisposing		Controlling for predisposing and enabling			Controlling for predisposing, enabling, and need	
	Model 5		Model 6		Model 7			Model 8	
Characteristic	AME	95 CI	AME	95 CI	AME	95 CI		AME	95 CI
Widowed					0.7	0.3	1.2	1.2	0.8 1.5
Divorced					1.6	1.5	1.8	1.1	1.0 1.2
Separated					4.0	3.7	4.3	0.2	0.0 0.4
Single					0.0	0.0	0.0	0.0	0.0 0.0
Phone Calls					-0.6	-0.7	-0.5	1.1	1.0 1.2
Visits in Past Month					-2.6	-2.7	-2.5	-0.7	-0.9 -0.6
Veteran					3.5	3.2	3.7	0.6	0.4 0.7
US Citizen					8.1	7.9	8.3	0.9	0.6 1.3
Federal Facility					-3.6	-3.8	-3.3	1.2	0.9 1.4
Need Variables									
Mental Health Disorder								13.1	13.0 13.3
History of Medication								4.3	4.2 4.5
Ever Hospitalized								17.7	17.5 17.9
Diagnosed within last year								24.9	24.6 25.1
Substance Use Disorder								0.5	0.3 0.6
HIV status									
Negative								0.0	0.0 0.0
Positive								0.6	0.1 1.0

	Psychotropic Medication								
	Bivariate		Controlling for predisposing		Controlling for predisposing and enabling		Controlling for predisposing, enabling, and need		
	Model 5		Model 6		Model 7		Model 8		
Characteristic	AME	95 CI	AME	95 CI	AME	95 CI	AME	95 CI	
Unknown							-0.5	-0.6	-0.4
Physical Health Condition							1.8	1.7	1.9
History of Abuse							1.8	1.7	2.0
Offense Type									
Violent							0.0	0.0	0.0
Property							-3.4	-3.6	-3.3
Drug							-4.2	-4.4	-4.1
Public Order							-4.7	-5.0	-4.5
Unknown							-3.1	-3.3	-2.9
Hours spent in cell last 24							0.1	0.0	0.1
Observations	15841		15841		15841		15841		

Table C6: Weighted Logistic Regression of Race/Ethnicity on Receipt of Psychotherapy since Admission to Prison using the Survey of Inmates in State and Federal Correctional Facilities, 2004

	Psychotherapy											
	Bivariate			Controlling for predisposing			Controlling for predisposing and enabling			Controlling for predisposing, enabling, and need		
	Model 9			Model 10			Model 11			Model 12		
Characteristic	AME	95 CI		AME	95 CI		AME	95 CI		AME	95 CI	
Race/Ethnicity												
NH White	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NH Black	-7.7	-7.8	-7.5	-7.0	-7.1	-6.9	-6.8	-6.9	-6.6	-2.2	-2.3	-2.0
Hispanic	-9.2	-9.3	-9.0	-8.5	-8.7	-8.3	-6.6	-6.8	-6.4	-1.4	-1.5	-1.2
NH AI/AN	-5.0	-5.4	-4.5	-5.1	-5.5	-4.6	-4.9	-5.4	-4.5	-2.1	-2.5	-1.7
NH Other	0.2	-0.2	0.5	0.6	0.2	0.9	1.4	1.1	1.7	0.6	0.4	0.9
Predisposing												
Male				-13.8	-14.1	-13.5	-16.3	-16.6	-16.0	-6.2	-6.4	-6.0
Age				0.1	0.1	0.1	-0.1	-0.1	-0.1	0.0	0.0	0.0
Enabling												
Work Assignment							-2.2	-2.3	-2.0	0.2	0.1	0.4
Education												
Less than HS							0.4	0.3	0.5	-0.2	-0.3	-0.1
HS/GED							0.0	0.0	0.0	0.0	0.0	0.0
Some College							1.6	1.4	1.8	0.5	0.4	0.7
College or Higher							3.6	3.1	4.0	2.9	2.5	3.3
Months incarcerated							0.0	0.0	0.0	0.0	0.0	0.0
Marital Status												
Married							-0.7	-0.8	-0.5	-0.8	-1.0	-0.7
Widowed							-1.4	-1.8	-1.0	-1.3	-1.7	-1.0
Divorced							0.9	0.7	1.0	0.5	0.3	0.6

	Psychotherapy								
	Bivariate		Controlling for predisposing		Controlling for predisposing and enabling			Controlling for predisposing, enabling, and need	
	Model 9		Model 10		Model 11			Model 12	
Characteristic	AME	95 CI	AME	95 CI	AME	95 CI		AME	95 CI
Separated					2.5	2.2	2.8	-0.3	-0.6 -0.1
Single					0.0	0.0	0.0	0.0	0.0 0.0
Phone Calls					-0.2	-0.3	0.0	1.1	1.0 1.2
Visits in Past Month					-1.7	-1.9	-1.6	-0.3	-0.4 -0.2
Veteran					4.0	3.7	4.2	1.5	1.3 1.6
US Citizen					7.2	6.9	7.4	2.1	1.7 2.4
Federal Facility					-4.3	-4.4	-4.1	-0.4	-0.6 -0.2
Need Variables									
Mental Health Disorder								11.3	11.2 11.4
History of Medication								1.1	1.0 1.3
Ever Hospitalized								16.3	16.1 16.5
Diagnosed within last year								18.7	18.5 18.9
Substance Use Disorder								0.0	-0.2 0.1
HIV status									
Negative								0.0	0.0 0.0
Positive								0.1	-0.4 0.5
Unknown								-1.5	-1.6 -1.4
Physical Health Condition								1.7	1.6 1.8

	Psychotherapy								
	Bivariate			Controlling for predisposing			Controlling for predisposing and enabling			Controlling for predisposing, enabling, and need		
	Model 9			Model 10			Model 11			Model 12		
Characteristic	AME	95 CI		AME	95 CI		AME	95 CI		AME	95 CI	
History of Abuse										2.1	2.0	2.2
Offense Type												
Violent										0.0	0.0	0.0
Property										-3.3	-3.5	-3.2
Drug										-4.9	-5.0	-4.7
Public Order										-5.6	-5.9	-5.4
Unknown										-3.2	-3.4	-3.0
Hours spent in cell last 24										0.0	0.0	0.0
Observations	15841			15841			15841			15841		

Table C7: Weighted Logistic Regression Results of Race/Ethnicity on Receipt of Psychotropic Medication and Psychotherapy since Admission to Prison using the Survey of Inmates in State and Federal Correctional Facilities, 2004

	Receipt of Psychotropic Medication and Psychotherapy											
	Bivariate			Controlling for predisposing			Controlling for predisposing and enabling			Controlling for predisposing, enabling, and need		
	Model 13			Model 14			Model 15			Model 16		
Characteristic	AME	95 CI		AME	95 CI		AME	95 CI		AME	95 CI	
Race/Ethnicity												
NH White	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NH Black	-6.5	-6.6	-6.3	-5.9	-6.0	-5.8	-5.7	-5.8	-5.6	-1.9	-2.0	-1.8
Hispanic	-7.9	-8.0	-7.7	-7.3	-7.4	-7.2	-6.0	-6.1	-5.8	-1.7	-1.9	-1.6

Receipt of Psychotropic Medication and Psychotherapy												
	Bivariate			Controlling for predisposing			Controlling for predisposing and enabling			Controlling for predisposing, enabling, and need		
	Model 13			Model 14			Model 15			Model 16		
Characteristic	AME	95 CI		AME	95 CI		AME	95 CI		AME	95 CI	
NH AI/AN	-4.5	-4.9	-4.1	-4.6	-4.9	-4.2	-4.6	-4.9	-4.2	-1.9	-2.2	-1.6
NH Other	-1.2	-1.5	-0.9	-0.8	-1.1	-0.5	-0.2	-0.4	0.1	-0.5	-0.8	-0.3
Predisposing												
Male				-10.9	-11.2	-10.7	-12.7	-13.0	-12.4	-4.0	-4.2	-3.8
Age				0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1
Enabling												
Work Assignment							-2.5	-2.6	-2.4	-0.4	-0.5	-0.3
Education												
Less than HS							0.5	0.4	0.6	-0.1	-0.2	0.0
HS/GED							0.0	0.0	0.0	0.0	0.0	0.0
Some College							1.0	0.8	1.1	0.1	-0.1	0.2
College or Higher							0.7	0.4	1.1	0.4	0.1	0.7
Months incarcerated							0.0	0.0	0.0	0.0	0.0	0.0
Marital Status												
Married							-0.7	-0.9	-0.6	-0.8	-0.9	-0.6
Widowed							-1.5	-1.8	-1.2	-1.1	-1.4	-0.8
Divorced							0.6	0.4	0.7	0.3	0.2	0.5
Separated							1.8	1.6	2.1	-0.6	-0.8	-0.4
Single							0.0	0.0	0.0	0.0	0.0	0.0
Phone Calls							-0.2	-0.3	-0.1	1.0	0.9	1.0
Visits in Past Month							-1.5	-1.6	-1.4	-0.3	-0.4	-0.2
Veteran							3.0	2.8	3.1	0.9	0.8	1.1

Receipt of Psychotropic Medication and Psychotherapy										
	Bivariate		Controlling for predisposing		Controlling for predisposing and enabling			Controlling for predisposing, enabling, and need		
	Model 13		Model 14		Model 15			Model 16		
Characteristic	AME	95 CI	AME	95 CI	AME	95 CI		AME	95 CI	
US Citizen					6.0	5.9	6.2	2.3	2.0	2.6
Federal Facility					-2.5	-2.6	-2.3	0.7	0.5	1.0
Need Variables										
Mental Health Disorder								9.7	9.6	9.8
History of Medication								2.3	2.2	2.4
Ever Hospitalized								-0.4	-0.6	-0.3
Diagnosed within last year								12.0	11.8	12.2
Substance Use Disorder								13.7	13.6	13.9
HIV status								0.2	0.1	0.3
Negative										
Positive								0.0	0.0	0.0
Unknown								0.2	-0.1	0.6
Physical Health Condition								-1.6	-1.7	-1.5
History of Abuse								0.9	0.8	1.0
Offense Type								0.8	0.7	0.9
Violent										
Property								0.0	0.0	0.0
Drug								-2.4	-2.6	-2.3

Receipt of Psychotropic Medication and Psychotherapy								
	Bivariate		Controlling for predisposing		Controlling for predisposing and enabling		Controlling for predisposing, enabling, and need	
	Model 13		Model 14		Model 15		Model 16	
Characteristic	AME	95 CI	AME	95 CI	AME	95 CI	AME	95 CI
Public Order							-3.3	-3.4 -3.2
Unknown							-4.9	-5.0 -4.7
Hours spent in cell last 24							-2.5	-2.7 -2.4
Observations	15841		15841		15841		15841	

Appendix D: Complete regression models for sensitivity analyses

Table D4: Weighted Logistic Regression of Race/Ethnicity on Any Mental Health Treatment since Admission to Prison using the Survey of Inmates in State and Federal Correctional Facilities, 2004

Any Mental Health Treatment								
	Bivariate		Controlling for predisposing		Controlling for predisposing and enabling		Controlling for predisposing, enabling, and need	
Characteristic	AME	95% CI	AME	95% CI	AME	95% CI	AME	95% CI
Race/Ethnicity								
NH White	0.00	[0.00,0.00]	0.00	[0.00,0.00]	0.00	[0.00,0.00]	0.00	[0.00,0.00]
NH Black	-0.13	[-0.13,-0.13]	-0.12	[-0.12,-0.12]	-0.12	[-0.12,-0.11]	-0.04	[-0.04,-0.04]
Hispanic	-0.14	[-0.14,-0.14]	-0.13	[-0.13,-0.13]	-0.11	[-0.11,-0.11]	-0.03	[-0.03,-0.03]
NH AI/AN	-0.11	[-0.12,-0.11]	-0.11	[-0.12,-0.11]	-0.11	[-0.11,-0.11]	-0.06	[-0.07,-0.06]
NH Other	-0.01	[-0.02,-0.01]	-0.01	[-0.01,-0.00]	0.00	[-0.00,0.01]	-0.00	[-0.01,-0.00]
Predisposing								
Male			-0.20	[-0.20,-0.19]	-0.22	[-0.22,-0.21]	-0.08	[-0.08,-0.07]
Age			0.00	[0.00,0.00]	-0.00	[-0.00,-0.00]	0.00	[0.00,0.00]
Enabling								
Work					-0.04	[-0.04,-0.04]	-0.00	[-0.00,-0.00]

Any Mental Health Treatment								
	Bivariate		Controlling for predisposing		Controlling for predisposing and enabling		Controlling for predisposing, enabling, and need	
Characteristic	AME	95% CI	AME	95% CI	AME	95% CI	AME	95% CI
Assignment								
Education								
Less than HS					0.02	[0.01,0.02]	0.01	[0.01,0.01]
HS/GED					0.00	[0.00,0.00]	0.00	[0.00,0.00]
Some College					0.02	[0.02,0.02]	0.00	[0.00,0.01]
College or Higher					0.04	[0.04,0.05]	0.03	[0.03,0.03]
Months incarcerated					0.00	[0.00,0.00]	0.00	[0.00,0.00]
Marital Status								
Married					-0.01	[-0.02,-0.01]	-0.02	[-0.02,-0.02]
Widowed					0.01	[0.00,0.01]	0.01	[0.00,0.01]
Divorced					0.02	[0.02,0.02]	0.01	[0.01,0.01]
Separated					0.05	[0.04,0.05]	0.00	[0.00,0.01]
Single					0.00	[0.00,0.00]	0.00	[0.00,0.00]
Phone Calls					-0.01	[-0.01,-0.00]	0.01	[0.01,0.01]
Visits in Past Month					-0.03	[-0.03,-0.03]	-0.01	[-0.01,-0.00]
Veteran					0.04	[0.04,0.05]	0.01	[0.01,0.01]
US Citizen					0.09	[0.09,0.10]	0.01	[0.00,0.01]
Federal Facility					-0.05	[-0.06,-0.05]	0.00	[-0.00,0.00]
Need Variables								
Mental Health Disorder							0.13	[0.13,0.14]
Any History of Treatment							0.08	[0.08,0.08]
Ever Hospitalized							0.20	[0.19,0.20]

Any Mental Health Treatment								
	Bivariate		Controlling for predisposing		Controlling for predisposing and enabling		Controlling for predisposing, enabling, and need	
Characteristic	AME	95% CI	AME	95% CI	AME	95% CI	AME	95% CI
Diagnosed within last year							0.31	[0.31,0.31]
Substance Use Disorder							0.00	[0.00,0.00]
HIV status								
Negative							0.00	[0.00,0.00]
Positive							0.00	[-0.00,0.00]
Unknown							-0.00	[-0.01,-0.00]
Physical Health Condition							0.02	[0.02,0.02]
History of Abuse							0.03	[0.03,0.03]
Offense Type								
Violent							0.00	[0.00,0.00]
Property							-0.04	[-0.04,-0.04]
Drug							-0.06	[-0.06,-0.05]
Public Order							-0.06	[-0.06,-0.05]
Unknown							-0.04	[-0.04,-0.03]
Hours spent in cell last 24							0.00	[0.00,0.00]
Observations	15836		15836		15836		15836	

Note: NH (Non-Hispanic) AI/AN (American Indian/Alaskan Native) AME (Average Marginal Effect)

Table D5: Weighted Logistic Regression of Race/Ethnicity on Psychotropic Medication for Mental Health Treatment since Admission to Prison using the Survey of Inmates in State and Federal Correctional Facilities, 2004

	Psychotropic Medication							
	Bivariate		Controlling for predisposing		Controlling for predisposing and enabling		Controlling for predisposing, enabling, and need	
Characteristic	AME	95% CI	AME	95% CI	AME	95% CI	AME	95% CI
Race/Ethnicity								
NH White	0.00	[0.00,0.00]	0.00	[0.00,0.00]	0.00	[0.00,0.00]	0.00	[0.00,0.00]
NH Black	-0.12	[-0.12,-0.11]	-0.11	[-0.11,-0.11]	-0.10	[-0.11,-0.10]	-0.04	[-0.04,-0.04]
Hispanic	-0.13	[-0.13,-0.13]	-0.12	[-0.12,-0.12]	-0.10	[-0.11,-0.10]	-0.03	[-0.04,-0.03]
NH AI/AN	-0.11	[-0.11,-0.10]	-0.11	[-0.11,-0.10]	-0.11	[-0.11,-0.10]	-0.06	[-0.07,-0.06]
NH Other	-0.03	[-0.03,-0.02]	-0.02	[-0.03,-0.02]	-0.01	[-0.02,-0.01]	-0.02	[-0.02,-0.01]
Predisposing								
Male			-0.17	[-0.17,-0.16]	-0.18	[-0.18,-0.18]	-0.06	[-0.06,-0.06]
Age			0.00	[0.00,0.00]	0.00	[-0.00,0.00]	0.00	[0.00,0.00]
Enabling								
Work Assignment					-0.05	[-0.05,-0.04]	-0.01	[-0.01,-0.01]
Education								
Less than HS					0.02	[0.02,0.02]	0.01	[0.01,0.01]
HS/GED					0.00	[0.00,0.00]	0.00	[0.00,0.00]
Some College					0.01	[0.01,0.02]	-0.00	[-0.00,0.00]
College or Higher					0.02	[0.01,0.02]	0.01	[0.00,0.01]
Months incarcerated					0.00	[0.00,0.00]	0.00	[0.00,0.00]
Marital Status								
Married					-0.01	[-0.02,-0.01]	-0.02	[-0.02,-0.02]
Widowed					0.01	[0.00,0.01]	0.01	[0.01,0.02]
Divorced					0.02	[0.01,0.02]	0.01	[0.01,0.01]
Separated					0.04	[0.04,0.04]	0.00	[-0.00,0.00]

	Psychotropic Medication							
	Bivariate		Controlling for predisposing		Controlling for predisposing and enabling		Controlling for predisposing, enabling, and need	
Characteristic	AME	95% CI	AME	95% CI	AME	95% CI	AME	95% CI
Single					0.00	[0.00,0.00]	0.00	[0.00,0.00]
Phone Calls					-0.01	[-0.01,-0.00]	0.01	[0.01,0.01]
Visits in Past Month					-0.03	[-0.03,-0.02]	-0.01	[-0.01,-0.01]
Veteran					0.03	[0.03,0.04]	0.01	[0.00,0.01]
US Citizen					0.08	[0.08,0.08]	0.01	[0.01,0.01]
Federal Facility					-0.04	[-0.04,-0.03]	0.01	[0.01,0.01]
Need Variables								
Mental Health Disorder							0.13	[0.13,0.13]
Any History of Treatment							0.04	[0.04,0.04]
Ever Hospitalized							0.18	[0.17,0.18]
Diagnosed within last year							0.25	[0.25,0.25]
Substance Use Disorder							0.00	[0.00,0.01]
HIV status								
Negative							0.00	[0.00,0.00]
Positive							0.01	[0.00,0.01]
Unknown							-0.00	[-0.01,-0.00]
Physical Health Condition							0.02	[0.02,0.02]
History of Abuse							0.02	[0.02,0.02]
Offense Type								
Violent							0.00	[0.00,0.00]
Property							-0.03	[-0.04,-0.03]

	Psychotropic Medication							
	Bivariate		Controlling for predisposing		Controlling for predisposing and enabling		Controlling for predisposing, enabling, and need	
Characteristic	AME	95% CI	AME	95% CI	AME	95% CI	AME	95% CI
Drug							-0.04	[-0.04,-0.04]
Public Order							-0.05	[-0.05,-0.04]
Unknown							-0.03	[-0.03,-0.03]
Hours spent in cell last 24							0.00	[0.00,0.00]
Observations	15836		15836		15836		15836	

Note: NH (Non-Hispanic) AI/AN (American Indian/Alaskan Native) AME (Average Marginal Effect)

Table D6: Weighted Logistic Regression of Race/Ethnicity on Counseling/Psychotherapy for Mental Health Treatment since Admission to Prison using the Survey of Inmates in State and Federal Correctional Facilities, 2004

	Counseling/Psychotherapy							
	Bivariate		Controlling for predisposing		Controlling for predisposing and enabling		Controlling for predisposing, enabling, and need	
Characteristic	AME	95% CI	AME	95% CI	AME	95% CI	AME	95% CI
Race/Ethnicity								
NH White	0.00	[0.00,0.00]	0.00	[0.00,0.00]	0.00	[0.00,0.00]	0.00	[0.00,0.00]
NH Black	-0.08	[-0.08,-0.08]	-0.07	[-0.07,-0.07]	-0.07	[-0.07,-0.07]	-0.02	[-0.02,-0.02]
Hispanic	-0.09	[-0.09,-0.09]	-0.09	[-0.09,-0.08]	-0.07	[-0.07,-0.06]	-0.01	[-0.02,-0.01]
NH AI/AN	-0.05	[-0.05,-0.05]	-0.05	[-0.06,-0.05]	-0.05	[-0.05,-0.05]	-0.02	[-0.02,-0.02]
NH Other	0.00	[-0.00,0.01]	0.01	[0.00,0.01]	0.01	[0.01,0.02]	0.01	[0.00,0.01]
Predisposing								
Male			-0.14	[-0.14,-0.14]	-0.16	[-0.17,-0.16]	-0.06	[-0.06,-0.06]
Age			0.00	[0.00,0.00]	-0.00	[-0.00,-0.00]	0.00	[0.00,0.00]
Enabling								
Work Assignment					-0.02	[-0.02,-0.02]	0.00	[0.00,0.00]
Education								
Less than HS					0.00	[0.00,0.01]	-0.00	[-0.00,-0.00]
HS/GED					0.00	[0.00,0.00]	0.00	[0.00,0.00]
Some College					0.02	[0.01,0.02]	0.01	[0.00,0.01]
College or Higher					0.04	[0.03,0.04]	0.03	[0.03,0.03]
Months incarcerated					0.00	[0.00,0.00]	0.00	[0.00,0.00]
Marital Status								
Married					-0.01	[-0.01,-0.01]	-0.01	[-0.01,-0.01]
Widowed					-0.01	[-0.02,-0.01]	-0.01	[-0.02,-0.01]
Divorced					0.01	[0.01,0.01]	0.00	[0.00,0.01]
Separated					0.02	[0.02,0.03]	-0.00	[-0.01,-0.00]

	Counseling/Psychotherapy							
	Bivariate		Controlling for predisposing		Controlling for predisposing and enabling		Controlling for predisposing, enabling, and need	
Characteristic	AME	95% CI	AME	95% CI	AME	95% CI	AME	95% CI
Single					0.00	[0.00,0.00]	0.00	[0.00,0.00]
Phone Calls					-0.00	[-0.00,-0.00]	0.01	[0.01,0.01]
Visits in Past Month					-0.02	[-0.02,-0.02]	-0.00	[-0.00,-0.00]
Veteran					0.04	[0.04,0.04]	0.01	[0.01,0.02]
US Citizen					0.07	[0.07,0.07]	0.02	[0.02,0.02]
Federal Facility					-0.04	[-0.04,-0.04]	-0.00	[-0.01,-0.00]
Need Variables								
Mental Health Disorder							0.11	[0.11,0.11]
Any History of Treatment							0.01	[0.01,0.01]
Ever Hospitalized							0.16	[0.16,0.16]
Diagnosed within last year							0.19	[0.18,0.19]
Substance Use Disorder							-0.00	[-0.00,0.00]
HIV status								
Negative							0.00	[0.00,0.00]
Positive							0.00	[-0.00,0.00]
Unknown							-0.02	[-0.02,-0.01]
Physical Health Condition							0.02	[0.02,0.02]
History of Abuse							0.02	[0.02,0.02]
Offense Type								
Violent							0.00	[0.00,0.00]
Property							-0.03	[-0.03,-0.03]

	Counseling/Psychotherapy							
	Bivariate		Controlling for predisposing		Controlling for predisposing and enabling		Controlling for predisposing, enabling, and need	
Characteristic	AME	95% CI	AME	95% CI	AME	95% CI	AME	95% CI
Drug							-0.05	[-0.05,-0.05]
Public Order							-0.06	[-0.06,-0.05]
Unknown							-0.03	[-0.03,-0.03]
Hours spent in cell last 24							-0.00	[-0.00,-0.00]
Observations	15836		15836		15836		15836	

Note: NH (Non-Hispanic) AI/AN (American Indian/Alaskan Native) AME (Average Marginal Effect)

Table D7: Weighted Logistic Regression of Race/Ethnicity on Receipt of Psychotherapy and Psychotropic Medication for Mental Health Treatment since Admission to Prison using the Survey of Inmates in State and Federal Correctional Facilities, 2004

	Both Psychotropic Medication and Psychotherapy							
	Bivariate		Controlling for predisposing		Controlling for predisposing and enabling		Controlling for predisposing, enabling, and need	
Characteristic	AME	95% CI	AME	95% CI	AME	95% CI	AME	95% CI
Race/Ethnicity								
NH White	0.00	[0.00,0.00]	0.00	[0.00,0.00]	0.00	[0.00,0.00]	0.00	[0.00,0.00]
NH Black	-0.06	[-0.07,-0.06]	-0.06	[-0.06,-0.06]	-0.06	[-0.06,-0.06]	-0.02	[-0.02,-0.02]
Hispanic	-0.08	[-0.08,-0.08]	-0.07	[-0.07,-0.07]	-0.06	[-0.06,-0.06]	-0.02	[-0.02,-0.02]
NH AI/AN	-0.05	[-0.05,-0.04]	-0.05	[-0.05,-0.04]	-0.05	[-0.05,-0.04]	-0.02	[-0.02,-0.02]
NH Other	-0.01	[-0.02,-0.01]	-0.01	[-0.01,-0.01]	-0.00	[-0.00,0.00]	-0.01	[-0.01,-0.00]
Predisposing								
Male			-0.11	[-0.11,-0.11]	-0.13	[-0.13,-0.12]	-0.04	[-0.04,-0.04]
Age			0.00	[0.00,0.00]	-0.00	[-0.00,-0.00]	0.00	[0.00,0.00]
Enabling								
Work Assignment					-0.03	[-0.03,-0.02]	-0.00	[-0.01,-0.00]
Education								
Less than HS					0.01	[0.00,0.01]	-0.00	[-0.00,-0.00]
HS/GED					0.00	[0.00,0.00]	0.00	[0.00,0.00]
Some College					0.01	[0.01,0.01]	0.00	[-0.00,0.00]
College or Higher					0.01	[0.00,0.01]	0.00	[0.00,0.01]
Months incarcerated					0.00	[0.00,0.00]	0.00	[0.00,0.00]
Marital Status								
Married					-0.01	[-0.01,-0.01]	-0.01	[-0.01,-0.01]
Widowed					-0.01	[-0.02,-0.01]	-0.01	[-0.01,-0.01]
Divorced					0.01	[0.00,0.01]	0.00	[0.00,0.00]
Separated					0.02	[0.02,0.02]	-0.01	[-0.01,-0.00]

Both Psychotropic Medication and Psychotherapy								
	Bivariate		Controlling for predisposing		Controlling for predisposing and enabling		Controlling for predisposing, enabling, and need	
Characteristic	AME	95% CI	AME	95% CI	AME	95% CI	AME	95% CI
Single					0.00	[0.00,0.00]	0.00	[0.00,0.00]
Phone Calls					-0.00	[-0.00,-0.00]	0.01	[0.01,0.01]
Visits in Past Month					-0.02	[-0.02,-0.01]	-0.00	[-0.00,-0.00]
Veteran					0.03	[0.03,0.03]	0.01	[0.01,0.01]
US Citizen					0.06	[0.06,0.06]	0.02	[0.02,0.03]
Federal Facility					-0.02	[-0.03,-0.02]	0.01	[0.01,0.01]
Need Variables								
Mental Health Disorder							0.10	[0.10,0.10]
History of Medication							0.02	[0.02,0.02]
History of Psychotherapy							-0.00	[-0.01,-0.00]
Ever Hospitalized							0.12	[0.12,0.12]
Diagnosed within last year							0.14	[0.14,0.14]
Substance Use Disorder							0.00	[0.00,0.00]
HIV status								
Negative							0.00	[0.00,0.00]
Positive							0.00	[-0.00,0.01]
Unknown							-0.02	[-0.02,-0.02]
Physical Health Condition							0.01	[0.01,0.01]
History of Abuse							0.01	[0.01,0.01]
Offense Type								

Both Psychotropic Medication and Psychotherapy								
	Bivariate		Controlling for predisposing		Controlling for predisposing and enabling		Controlling for predisposing, enabling, and need	
Characteristic	AME	95% CI	AME	95% CI	AME	95% CI	AME	95% CI
Violent							0.00	[0.00,0.00]
Property							-0.02	[-0.03,-0.02]
Drug							-0.03	[-0.03,-0.03]
Public Order							-0.05	[-0.05,-0.05]
Unknown							-0.03	[-0.03,-0.02]
Hours spent in cell last 24							0.00	[-0.00,0.00]
Observations	15836		15836		15836		15836	

Note: NH (Non-Hispanic) AI/AN (American Indian/Alaskan Native) AME (Average Marginal Effect)