

ABSTRACT

Title of Dissertation: MENTAL HEALTH TREATMENT
UTILIZATION: THE INTERSECTIONAL
EFFECTS OF RACE, SEX, AND AREA-
LEVEL DEPRIVATION AMONG VETERANS
WITH PTSD

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Abstract:

Background: PTSD is a debilitating disorder impacting approximately 10-30% of veterans within their lifetime. While multiple efficacious treatment for PTSD have been developed, access to and utilization of mental health care remains a significant barrier. Models of health care utilization (e.g., Andersen, 1995; Fortney, 2011) implicate predisposing and enabling factors such as sex, race and/or ethnicity, and socioeconomic status (SES) or socioeconomic deprivation in healthcare access and utilization decisions. Although each of these factors has been examined in isolation, research on race and/or ethnicity and SES is limited, and almost no studies have examined the intersectional impacts of these factors on mental health service utilization among veterans. This study does so, hypothesizing that each will predict mental health service utilization individually, as well as show two and three-way interaction effects.

Methods: All variables of interest were derived from the VA medical record, excepting area-level deprivation and geospatial access. Area-level deprivation was determined by linking veteran

residential address to the Area Deprivation Index. Geospatial access was calculated by employing kernel density estimation, and linking ZIP-code level values to veteran residential address. All hypotheses were tested using negative binomial regression. Multiple imputation was employed for missingness.

Results: Of the 245,574 veterans newly diagnosed with PTSD in 2017 or 2018, 75% attended at least one mental health appointment following diagnosis. The average number of follow-up appointments was 8.9 (mode = 1, median = 3). Sex, race-ethnicity, and area-level deprivation all predicted mental health service utilization individually. There was only one significant two-way interaction effect: identifying as a Black or African American male was positively associated with greater mental health service utilization following diagnosis (0.68, $p=.007$). There were no three-way interaction effects.

Discussion: 1 in 4 veterans with PTSD in this sample did not attend any mental health appointments following diagnosis, highlighting the formidable gap between need and utilization. Furthermore, of those who did attend a follow up appointment, the modal number of appointments was 1, suggesting that entering care is not sufficient to ensure adequate treatment. Sex, race-ethnicity, and area-level deprivation all predicted mental health service utilization individually, but, with a singular exception, did not do so in combination with one another. It is possible that any variance explained by the well-documented compounding effects of societal bias, injustice, and disparities on (mental) health determinants and (mental) healthcare outcomes is more accurately measured by the covariates included in our models, rather than the socially-constructed identities themselves. Taken together, these study findings highlight the need for continued work in lowering barriers to mental health care for this population, as well as a greater understanding of the multitude of factors that influence access to and utilization of services.

MENTAL HEALTH TREATMENT UTILIZATION: THE INTERSECTIONAL
EFFECTS OF RACE, SEX, AND AREA-LEVEL DEPRIVATION AMONG
VETERANS WITH PTSD

by

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Dedication

This work is dedicated to Veterans throughout the United States: those who are represented within these pages and those who are not; those who have shared their stories and those who are not yet ready or do not want to do so. This work would not be possible without you.

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The list of those without whom this work could not be done is long. A Ph.D. truly takes a village, and I am exceptionally fortunate to have mine.

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port in a storm. I owe so much of my reaching this point to you. Thank you for the normalization, commiseration, laughter, and love.

My family and friend have been exceptional during this time. I cannot overstate the ways in which they have made this road possible. Thank you for love and laughter and music and food and drinks and just... everything. Thank you.

To my grandparents, who instilled a soul-deep love a learning: I hope this journey made you proud. I promise to never stop.

To my brother, Dr. Joshua Arenson: thank you for lighting the way. I love you to the moon and back.

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Table of Contents

Dedication.....	ii
Acknowledgements.....	iii
Table of Contents.....	v
List of Tables	vi
List of Figures	vii
List of Abbreviations	viii
Chapter 1: Introduction.....	1
Section 1: General background.....	1
Section 2: Modeling health care utilization	2
Section 3: Factors influencing mental health care utilization.....	5
Section 4: Intersectional approaches.....	6
Section 5: The current study	7
Chapter 2: Methods.....	9
Section 1: Data Sources	9
Healthcare Data.....	9
Neighborhood Atlas Data	9
Section 2: Study Population.....	9
Section 3: Measures	10
Outcome.....	10
Primary Predictors	10
Covariates	11
Section 4: Missing Data.....	14
Section 5: Data Analysis.....	14
Chapter 3: Design Considerations	16
Section 1: Variable Selection.....	16
Section 2: Neighborhood Atlas Data	16
Section 3: Geographic Access	16
Section 4: Negative Binomial Regression	17
Chapter 4: Results.....	18
Chapter 5: Discussion	28
Appendices.....	35
Bibliography	45

List of Tables

Table 1: Participant characteristics

Table 2: Univariate models

Table 3: Multivariate two-way interaction models

Table 4: Multivariate three-way interaction model

List of Figures

Figure 1: Health Care Utilization Models

Figure 2: VAs Providing Mental Health Care

Figure 3: Geospatial Access by ZIP Code

List of Abbreviations

Area Deprivation Index (ADI)

Care Assessment Needs (CAN)

Cognitive Processing Therapy (CPT)

Corporate Data Warehouse (CDW)

Electronic Medical Record (EMR)

Evidence-based treatments (EBPs)

Eye Movement Desensitization and Reprocessing (EMDR)

International Classification of Diseases, Ninth Revision (ICD-9)

International Classification of Diseases, Tenth Revision (ICD-10)

Kernel Density Estimation (KDE)

Military Sexual Trauma (MST)

Posttraumatic Stress Disorder (PTSD)

Prolonged Exposure (PE)

Rural Urban Commuting Area (RUCA)

Socioeconomic Status (SES)

Veteran Administration (VA)

Veteran Health Administration (VHA)

Chapter 1: Introduction

Section 1: General background

Posttraumatic stress disorder (PTSD) is a debilitating disorder, impacting 8.3% of people in the United States throughout their lifetime (Kilpatrick et al., 2013). Left untreated, it is associated with increased morbidity, mortality, and healthcare utilization (Cohen et al., 2010; Glaesmer et al., 2011; Pacella et al., 2013; Possemato et al., 2010; Zhang et al., 2014), as well as decreased functioning (Arenson et al., 2019; Fang et al., 2015; Jackson et al., 2021; Zatzick et al., 1997), quality of life (Balayan et al., 2014), and mental health (Ginzburg et al., 2010; Goldberg et al., 2014; Wisco et al., 2014). PTSD also carries a significant financial burden to both the individual and society (Kessler, 2000; Tanielian et al., 2008).

Rates of PTSD are particularly high among veterans (Eisen et al., 2004; Fulton et al., 2015; Lehavot et al., 2018; Schnurr et al., 2009; Weiss et al., 1992). In fact, a meta-analysis of PTSD in Iraq and Afghanistan veterans estimated prevalence rates of 23% (Fulton et al., 2015), and studies among Vietnam era veterans estimate lifetime prevalence rates ranging from 10-30% (Eisen et al., 2004; Schnurr et al., 2009; Weiss et al., 1992). As such, veterans are up to three times as likely as the general population to experience PTSD, and therefore represent an at-risk population in need of targeted attention.

There has been substantial work in intervention development and refinement for those experiencing PTSD, including veterans. These efforts have been fruitful, resulting in multiple efficacious evidence-based treatments (EBPs), including

Cognitive Processing Therapy (CPT), Prolonged Exposure Therapy (PE), and Eye Movement Desensitization and Reprocessing (EMDR; Cusack et al., 2016; Reisman, 2016; Rosen et al., 2017; Weber et al., 2021). Many of these treatments have been rolled out in Veteran Administration (VA) medical centers across the country, with national implementation of CPT and PE beginning in 2005 (Karlin & Cross, 2014).

Yet, access to care (e.g., the ability to obtain services) remains a significant barrier for many veterans (Blais et al., 2015; Pietrzak et al., 2009), and mental health care utilization (e.g., the receipt of mental health services) is low among those diagnosed with PTSD (Doran et al., 2017; Dufort et al., 2020; Kintzle et al., 2015; Seal et al., 2010; Valenstein-Mah et al., 2019). For example, Seal and colleagues (2010) found that among Iraq and Afghanistan veterans newly diagnosed with PTSD, 20% did not attend any mental health appointments within the first year of their diagnosis, and only 27% received an adequate dose of treatment within that same time frame. Rates of those who receive evidence-based care are even lower, with only 4.8% of those with a PTSD diagnosis receiving at least one session of an EBP in a two-year period (Dufort et al., 2020). It is therefore critical to understand who is able to access and utilize care, as well as identify barriers to access and utilization for those who are not able to do so.

Section 2: Modeling health care utilization

Health care access and utilization are impacted by a multitude of variables, and understanding how they relate to each other and predict outcomes is critical for researchers, clinicians, administrators, and policy makers. Theoretical models proposed by Andersen (1968, 1995) and later by Fortney (2011) provide conceptual

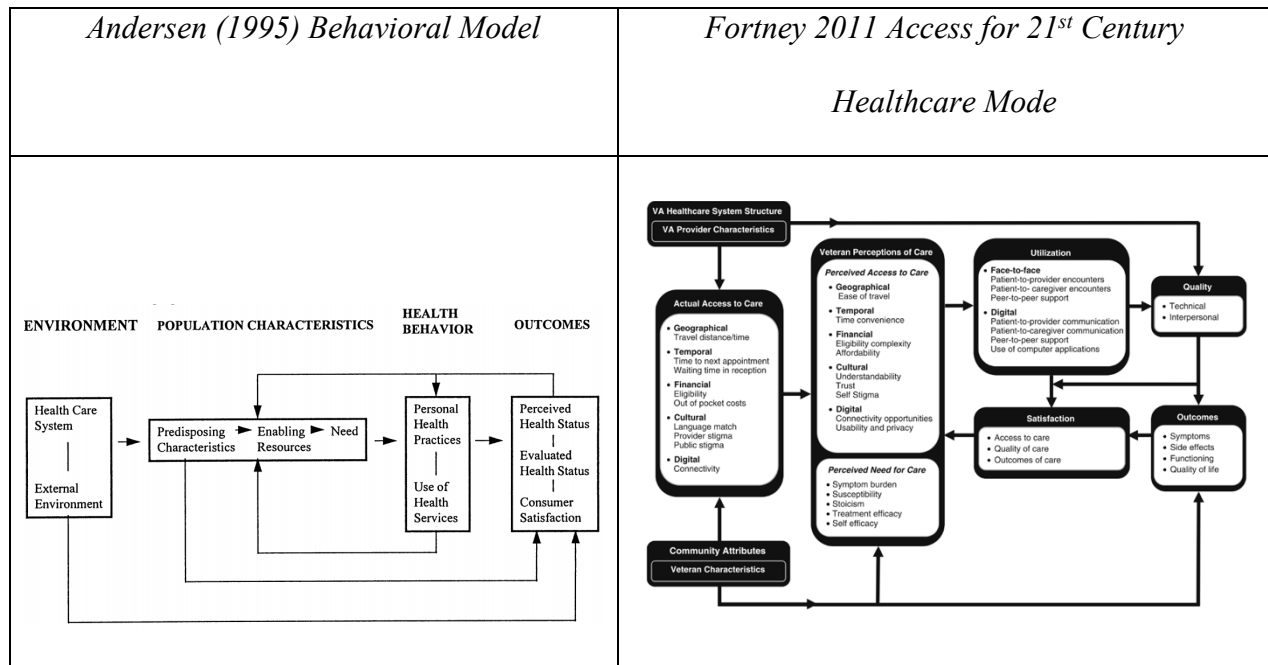
foundations for understanding factors that impact health care access and utilization, including those specific to military personnel and veterans.

Andersen's 1968 Behavioral Model posits three sets of factors that impact healthcare utilization: "predisposing factors" (e.g., demographics, social structures, and health-related beliefs), "enabling factors" (e.g., financial access, geographic access, wait times), and "need factors" (e.g., presence of a mental health condition; Andersen, 1968). This initial model was expanded in 1995 to include environmental factors, health behaviors, and outcomes that influence health care utilization; it also importantly acknowledges that many of these factors contribute to health care utilization in a dynamic, sometimes bi-directional, and often recursive manner (see Figure 1; Andersen, 1995; Bradley et al., 2002). The 1995 model has been particularly influential in modern utilization research.

Fortney's 2011 Access for 21st Century Healthcare Model was designed within the context of the VA healthcare system (see Figure 1). It importantly focuses on factors implicated in *access* to care, in contrast to Andersen's focus on *utilization* of care, above. The full model includes veteran characteristics (e.g., demographics; similar to "predisposing factors," above), structural factors (e.g., financial and geographic resources; similar to "enabling factors," above), and veteran perceptions of and need for care (similar to "need factors," above; Fortney et al., 2011). Finally, mimicking Andersen's 1995 model, it incorporates feedback from healthcare service utilization (e.g., satisfaction, outcomes, quality).

These two models have provided strong conceptual and theoretical frameworks within which to examine inequities in access to and use of care. They are used as the theoretical basis for the current work.

Figure 1: Health Care Utilization Models



For the purposes of this study, we focus on three main predisposing and enabling variables that can impact care utilization: sex, race-ethnicity, and socioeconomic status (SES) or socioeconomic deprivation. In prior work, these variables have been examined individually, but rarely in combination, despite evidence that suggests they may have important interaction effects (Crenshaw, 1989, 1991; Finley et al., 2017). In addition, following prior research (see Johnson & Possemato, 2019 for review) and using the Andersen (1995) and Fortney (2011) models as guides, we will control for other variables theorized to impact mental health care utilization outcomes (e.g., additional predisposing, enabling, and need variables).

Section 3: Factors influencing mental health care utilization

Substantial research suggests that sex influences health care utilization broadly, as well as among veterans (Blais et al., 2015; Davis et al., 2014; Hom et al., 2017; Johnson & Possemato, 2019; Nichter et al., 2020; Valenstein-Mah et al., 2019). In fact, much of the existing literature has found that female veterans and military service members are more likely to be open to seeking mental health care (Hom et al., 2017), as well as to engage with and complete treatment (Blais et al., 2015; Johnson & Possemato, 2019; Seal et al., 2010; Valenstein-Mah et al., 2019). This is particularly noteworthy, given that the majority of the existing literature on veterans has been conducted on primarily male samples.

While race and ethnicity have often been included in utilization research, the results are much more mixed, perhaps stemming from differences in study methods, samples, and definitions of race and/or ethnicity (e.g., some dichotomize white/nonwhite, whereas others are powered to examine a larger variety of identities). Some studies have found lower use among individuals with minoritized racial or ethnic identities (e.g. Byers et al., 2012; Davis et al., 2014; Johnson & Possemato, 2019; Koo et al., 2015), whereas others have found lower treatment engagement (e.g. Blais et al., 2015) or use of outpatient services (e.g. Koo et al., 2015) among white/not-Hispanic patients, and a third group have found no racial or ethnic differences in engagement with mental health services (e.g. Elhai et al., 2004; Nichter et al., 2020; Seal et al., 2010; Washington et al., 2013). In fact, a systematic review revealed mixed support, with 11 studies suggesting racial disparities in mental health

and/or substance use treatment utilization, and 10 studies finding no such differences (Saha et al., 2008).

Finally, SES may be an important enabling factor that influences decisions about if, when, and where to seek treatment. Unfortunately, studies that examine SES among veterans are relatively scarce, and those studies that have included it report mixed findings; specifically, some studies have reported differences in utilization by income or education (e.g. Byers et al., 2012; Fikretoglu et al., 2006) while others have reported no effect of income or education (e.g. Elhai et al., 2004; Nichter et al., 2020). As with those studies examining racial and ethnic disparities, methodological variations among studies limit the interpretability of these findings in aggregate, and thus additional work is needed.

Taken together, these mixed findings point to the potential value of more “holistic” approaches to understanding identity factors like sex, race, ethnicity, and SES and their links with mental health treatment utilization, namely intersectional approaches.

Section 4: Intersectional approaches

To date, the majority of treatment utilization research either examines factors such as sex, race, ethnicity, or SES as covariates or in isolation of one another. As empirical tests of healthcare utilization models, this means that the preponderance of the existing literature essentially “pits” these factors against each other for competition in explaining variance on key outcomes. In contrast, models of intersectionality (Crenshaw, 1989, 1991) leveraged extensively in disciplines as diverse as sociology, criminology, and healthcare demonstrate that not only do sex,

race, ethnicity, and SES all impact important outcomes, but that, by construction, these factors do not impact people universally or in the same way (Cairney et al., 2014; Crenshaw, 1989, 1991; Finley et al., 2017; Penner et al., 2013; Seng et al., 2012). Indeed, from an intersectional perspective, disparity often arises from an *array* of intersecting identities, and requires that researchers, clinicians, and policy makers consider these factors in combination, rather than isolation. In this respect, intersectional effects should be considered within the context of the larger social structures that give rise to observed, identity-related group differences (Buchanan et al., 2020).

Unfortunately, very limited research has examined intersecting identities and their impact on mental health service utilization within veteran populations. In fact, to my knowledge, only two studies have done so, and their results are contradictory. Koo and colleagues (2015) found that sex importantly moderated the effect of race-ethnicity on outpatient mental healthcare utilization. In contrast, Davis and colleagues (2014) found no interaction effects between sex and race-ethnicity on the use of specialty mental health services, antidepressant use, or engagement with psychotherapy, although it should be noted that their study was limited by small sample size and large confidence intervals. That said, these limited findings highlight the importance of examining identity factors such as sex, race, ethnicity, and SES from an intersectional perspective.

Section 5: The current study

Using national VA data, the current study examined the individual and intersectional impacts of sex, race-ethnicity, and area-level deprivation on mental

health service utilization among veterans diagnosed with PTSD. I hypothesized that female veterans would evidence greater utilization than male veterans, white veterans would evidence greater utilization than those holding historically marginalized racial and ethnic identities, and veterans from higher area-level deprivation backgrounds would evidence lower rates of mental healthcare utilization than their lower area-level deprivation counterparts. Finally, I hypothesized interacting effects of sex, race-ethnicity, and area-level deprivation on mental healthcare utilization, above-and-beyond the main effects of these identity-relevant factors (i.e., significant two-way, and three-way interaction effects). However, due to the unique characteristics of the veteran population (e.g., stigma surrounding help-seeking behavior, oddities in SES due to service connection and the G.I. Bill, hypermasculinity, etc.) and the limited and/or contradictory studies available, probing the exact nature of these interaction effects remained an exploratory aim.

Chapter 2: Methods

Section 1: Data Sources

Healthcare Data

Data was extracted from the Veteran Health Administration Corporate Data Warehouse, which houses national data associated with all clinical visits to VA facilities, as well as facilities outside of the VA that are reimbursed by the VA, in one centralized location.

Neighborhood Atlas Data

I cross-walked information from the Area Deprivation Index (ADI) with the above-mentioned healthcare data to incorporate relative socioeconomic deprivation at the 9-digit ZIP code level within each state (Kind & Buckingham, 2018; University of Wisconsin School of Medicine and Public Health. 2019 Area Deprivation Index. Downloaded from <https://www.neighborhoodatlas.medicine.wisc.edu/>).

Section 2: Study Population

I identified the study population using national electronic medical record (EMR) data from the VA. Veterans were included in the study if they had a new diagnosis of PTSD, identified via *International Classification of Diseases, Ninth Revision* or *Tenth Revision* (ICD-9 and ICD-10) codes in either 2017 or 2018. PTSD diagnosis was defined as at least 1 inpatient or outpatient visit with an associated ICD-9 or ICD-10 code for PTSD. Once the cohort was selected, I retrospectively followed the identified veterans for one year after their PTSD diagnosis.

This study was approved by the San Francisco VA Medical Center’s Research and Development Committee, and both the University of California, San Francisco and the University of Maryland, College Park’s Institutional Review Boards.

Section 3: Measures

Outcome

Mental health service utilization was the primary outcome, defined as any clinic visit in which mental health care was delivered by a mental health provider at a VA facility or reimbursed by the VA. This definition included PTSD, mood disorder, alcohol or substance use, psychiatry, and primary care clinic visits. The visits were identified using both procedure codes and stop codes (Gottlieb et al., 2021; Maguen et al., 2018; see Appendix A). Count data was used to quantify mental health service utilization, with each appointment counting as 1 visit.

Primary Predictors

Sex was extracted from the VA medical record and defined as male or female.

Race-ethnicity was similarly extracted, and included six mutually exclusive categories: White, Black or African American, Latino/a or Hispanic, Asian, Native Hawaiian, and American Indian or Alaskan Native. Data extraction and coding for this variable followed recommendations by Peltzman and colleagues (2022), although only Corporate Data Warehouse (CDW) and MedSAS datasets were included due to data access restrictions. Race and ethnicity information was then combined to create the above-indicated categories.

Area-level deprivation was defined using the ADI. The ADI uses a range of factors (including income, housing quality, education, etc.) to estimate a relative level of deprivation experienced by persons living within a specific ZIP code, compared to others within the same state. Using this index, each 9-digit ZIP code is assigned a decile rank from 1 to 10 (1 is low-deprivation, 10 is high-deprivation). To aid in interpretation, those ZIP codes with percentile ranks 1-3 were defined as “low deprivation,” 4-6 were defined as “middle deprivation” and 7-10 were defined as “high deprivation.” I then joined this information with the ZIP code associated with the veteran’s home address (see definition, below). This approach mirrors that of prior work utilizing national VA datasets (Shiner et al., 2021).

Covariates

To account for additional predisposing, enabling, and need factors, I included age, military history, spatial access to services, and co-occurring conditions. They are defined, below:

Age and military history variables (e.g., service era, service branch, percentage of service connection, history of military sexual trauma [MST], and history of combat) were extracted from the VA medical record. History of military sexual trauma was defined as the presence of a positive MST screen in the medical record. Military combat history was derived using the “combat flag” within the VA medical record. I obtained total VA service-connected disability rating from the VA enrollment data at the time of diagnosis.

Spatial Access: I employed kernel density estimation (KDE) to measure spatial access. KDE is a non-parametric approach that estimates densities of specific features

(e.g., VA facilities providing mental health services) at given locations (Spencer & Angeles, 2007; X. Zhang et al., 2011). KDE has previously been used in health care access research (de Mello-Sampayo, 2018; Shi et al., 2012; Spencer & Angeles, 2007; Yang et al., 2006) and depends on three factors: 1) kernel size, 2) kernel density, and 3) grid size.

Kernel size is determined by the radius, known as kernel bandwidth, that represents how far from the point (e.g., the VA facility) the boundaries of the kernel should be drawn. For this analysis, I employed an adaptive kernel density approach (Carlos et al., 2010; Shi, 2010), which allowed me to use background data (e.g., population) to select kernel size, limiting bias in kernel size due to geographical differences in population density. Specifically, I cross-walked Rural-Urban Commuting Area (RUCA) Codes (United States Department of Agriculture) with VA facility ZIP codes, in order to each VA as “metropolitan,” “micropolitan,” “small town,” or “rural” (RUCA codes 1-3 = metropolitan, 4-5=micropolitan, 7-9=small town, 10=rural areas). I then assigned bandwidth to each RUCA category (metropolitan = 0.1449 degrees or ~10 miles, micropolitan = .2174 degrees or ~15 miles, small town = 0.5797 or ~40 miles and rural areas = .8696 or ~60 miles). These bandwidths were selected based on prior health access studies related to primary care, generalized health care, specialty care, dental care, and pharmacies (Arcury, Gesler, et al., 2005; Arcury, Preisser, et al., 2005; Buzza et al., 2011; Card et al., 2018; Lam et al., n.d.; McGrail et al., 2015; Probst et al., 2007; Schmitt et al., 2003; Schuurman et al., 2010).

Kernel density is a representation of the effect of distance from the center of the kernel (e.g., distance from the VA facility). Following prior work using this approach, I employed a Gaussian distribution, which placed greater weight at the center, and lesser weight at the perimeter of the kernel (Spencer & Angeles, 2007). Data for the distribution over each point was transformed such that the mean of the distribution was 1.

Grid size refers to the size of the location for which KDE is being estimated. In this case, I used 0.0145 degrees² (or ~1 square mile) as my grid size.

Importantly, KDE allows for overlapping kernels. In such a case, the value for that grid will be the sum of the overlapping kernels. In order to ensure that this analysis focuses on facilities that are capable of providing mental health services, VA facilities were only included in this analysis if they provided mental health services to more than 100 individuals between January 1, 2017 and December 31, 2018. Once the KDE was complete, I took the mean of the grid squares within each ZIP code, thereby creating an “access score” for each ZIP code, which I then joined with each veteran’s residential address ZIP codes. ArcGIS Pro was used for all geospatial analyses.

Veteran residential address: Veteran residential address was extracted from the enrollment files. Because address data is only geocoded quarterly within the CDW’s files, I selected the address and ZIP code temporally closest to the date of diagnosis. Any addresses that were Post Office boxes were removed from the dataset, as they may not indicate the patient’s residential ZIP code.

Co-occurring mental health conditions: All mental health diagnoses were categorized using ICD-9 and ICD-10 diagnostic codes associated with either two outpatient or

one inpatient VA encounter, following methods developed by the Northeast Regional Evaluation Center (NEPEC). Diagnoses were included as covariates if they occurred within the year prior to the veteran's PTSD diagnosis. Diagnoses were grouped to represent presence or absence of: substance use disorders, depression, anxiety, bipolar disorder, psychosis, personality disorders, and other mental health disorders. For parsimony, the number of mental health diagnoses across these categories was summed and entered as a single count variable into final models.

Overall Health: Overall health was defined using Care Assessment Needs (CAN) scores (Wang et al., 2013). Developed by the Veteran Health Administration (VHA) and generated from the electronic medical record, CAN scores are a predictive analytic tool that reflects the likelihood of hospitalization or death in an individual patient over the next one year or 90 days. This score is then expressed as a percentile rank (1-lowest to 99-highest). One-year CAN scores, calculated within the year prior to diagnosis, were extracted from the VA medical record.

Section 4: Missing Data

I used multiple imputation to impute missing values for all possible variables. Imputation was not completed for geographic access or CAN scores, due to high missingness and concerns for multicollinearity. Imputed values were used for all regressions but were not included for descriptive statistics.

Section 5: Data Analysis

I conducted independent negative binomial regressions to describe univariate relationships between my predictors of interest and mental health care utilization.

Then, I conducted a final negative binomial regression to examine the main and interactive effects of race-ethnicity, sex, and area-level deprivation on mental health service utilization, while controlling for all covariates. Due to the size of the sample and number of contrasts, significance was set at $p < .01$. Due to very high rates of missingness (29.3%), CAN scores were not included in final regression models.

Post-hoc sensitivity analyses were conducted to understand the individual impact of the predictors of interest on mental health care utilization, while controlling for all covariates.

All analyses were conducted in R statistical package.

Chapter 3: Design Considerations

Section 1: Variable Selection

As the theoretical models that this work is built on demonstrate, there are a multitude of variables to consider when examining mental health care access and utilization (Andersen, 1995; Fortney et al., 2011). Therefore, in order to appropriately model mental health care utilization and attempt to isolate the intersectional nature of sex, race-ethnicity, and area-level deprivation, I have included variables addressing additional predisposing (e.g., age, service era and branch), enabling (e.g., service connection, geographic access, facility type), and need (e.g., comorbidities, history of MST, history of combat, CAN score) factors.

Section 2: Neighborhood Atlas Data

The ADI is uniquely positioned to operationalize area-level deprivation within the context of national VA data. Unfortunately, income data is often only available within the VA record if a veteran is service connected, indicating that they receive compensation from the VA for a service-related (mental) health condition. As a result, income data within the VA is plagued by systematic missingness that is difficult to account for. In addition, the ADI uses multiple indicators of area-level deprivation to derive its values, allowing for a more robust estimation of area-level deprivation than income or education alone (Kind & Buckingham, 2018).

Section 3: Geographic Access

Spatial access to health services can be measured in numerous ways ranging from straight-line distance through complex gravity-model based approaches (Neutens, 2015; Yang et al., 2006). Unfortunately, many of these approaches have limitations that make them impractical for the current investigation. For example, Euclidian distance (e.g., distance as the crow flies) is not always a good measure of geographic

distance, particularly within the context of rural addresses. Road distance or drive-time is a more nuanced measure of distance between a person's address and a VA facility, but is reliant upon accurate street network data and must incorporate traffic conditions; this data, unfortunately, is extremely difficult to obtain for the entirety of the United States. While drive time to a primary, secondary, and tertiary facility can be obtained through the VA enrollment data, those selected facilities do not always represent the facility at which the veteran is currently receiving care and may not represent the facility at which the veteran receives mental health care.

Given these limitations, I opted to use KDE to measure access, as this approach allows for variability in access *and* accounts for a person receiving services from multiple facilities (rather than assigning a person to a "primary" facility).

Section 4: Negative Binomial Regression

Multiple statistical approaches could be used to answer the proposed research questions. For example, one might suggest the use of a Poisson regression. However, I expected a high proportion of zero count outcomes (e.g. zero mental health visits within one year of diagnosis), which violates the assumptions of a Poisson regression (Ismail & Zamani, 2013). As such, I selected a negative binomial regression, given its ability to adjust the variance independently of the mean, and its flexibility in the face of excessive zero count outcomes.

Chapter 4: Results

245,574 veterans over the age of 18 were newly diagnosed with PTSD in 2017 or 2018. Of those, 38,551 (15.7%) were female. 140,385 (57.2%) identified as white, 58,221 (23.7%) identified as Black or African American, 3,857 (1.6%) identified as Asian, 2,359 (1%) identified as Native American or American Indian, 2,322 (0.9%) identified as Native Hawaiian, and 24,788 (10.1%) identified as Hispanic or Latino/a. Via the ADI, 79,160 (32.2%) veterans were classified as “high deprivation,” 75,990 (30.9%) as “middle deprivation,” and 61,268 (24.9%) as “low deprivation.”

Of this sample, 75% (n=184,272) attended at least one mental health appointment following diagnosis, with an average number of 11.84 appointments attended (mode = 1, median = 6, range: 1-453). Including those who did not attend any mental health appointments, the average number of appointments attended was 8.89 (mode = 0, median = 3, range: 0-453). See Table 1 for full sample characteristics.

856 VA facilities were included in the geospatial analysis. Of those, 594 were classified as “metropolitan,” 210 as “micropolitan,” 46 as “small town” and 7 as “rural area” (see Figure 2). Average access to a VA for the sample was 0.313 (range=0-4.195; see Table 1). Figure 3 depicts access by zip code for VAs across the United States and Puerto Rico.

Table 1: Participant characteristics

Variable:	n (%) OR mean median range
Age:	47.73 46 18-102
Sex:	
Male:	207,022 (84.3%)
Female:	38,551 (15.7%)
Missing:	1 (0.0%)
Race:	
White	157,618 (64.2%)
Black/AA	59,497 (24.2%)
Asian	4,002 (1.6%)
American Indian/Alaskan Native	2,890 (1.2%)
Native HI	2,845 (1.2%)
Missing	18,720 (7.6%)
Ethnicity:	
Not Hispanic/Latino	213,641 (86.9%)
Hispanic/Latino	24,788 (10.1%)
Missing	7,144 (2.9%)
Combined Race-ethnicity:	
White	140,385 (57.2%)
Black/AA	58,221 (23.7%)
Asian	3,857 (1.6%)
American Indian/Alaskan Native	2,359 (1.0%)
Native HI	2,322 (0.9%)
Hispanic/Latino	24,788 (10.1%)
Missing	13,642 (5.6%)
Era:	
WWII	962 (0.4%)
Korea	2,015 (0.8%)
Vietnam	47,327 (19.3%)
Gulf	19,340 (7.9%)
OIF/OEF/OND	109,757 (44.7%)
Multiple	33,498 (13.6%)
Peace	32,202 (13.1%)
Missing	473 (0.2%)
Branch:	
Army	134,259 (54.7%)
Marine Corps	35,208 (14.3%)
Air Force	27,676 (11.3%)
Navy	38,796 (15.8%)
Coast Guard	1,814 (0.7%)
Other	101 (<0.1%)

Branch cont.	
Multiple	7,170 (2.9%)
Missing	550 (0.2%)
Combat:	
Yes	199,410 (81.2%)
No	46,164 (18.8%)
MST:	
Yes	40,056 (16.3%)
No	203,120 (82.7%)
Missing/Decline	2,398 (1.0%)
Service Connection:	
Yes	95,053 (38.7%)
No	150,539 (61.2%)
Connection %	68.69 70 0-100
Co-occurring MH diagnosis:	
Any SUD	27,665 (11.3%)
Depression	64,930 (26.4%)
Anxiety	40,155 (16.4%)
Bipolar Disorder	7,012 (2.9%)
Any Personality Disorder	2,703 (1.1%)
Psychosis	4,266 (1.7%)
Other MH dx	27,501 (11.2%)
# MH co-occurring dx	0.71 0 0-7
1-year CAN:	39.88 35 0-99
Area-level deprivation	
High	79,160 (32.2%)
Middle	75,990 (30.9%)
Low	61,268 (24.9%)
Missing	29,156 (11.9%)
ADI state decile:	5.47 5 0-10
Geospatial access:	0.33 0.091 0-4.195
Number of MH visits	8.89 3 0-453
Latency to first visit (in days)	45.74 20 0-365

Figure 2: VAs providing mental health care

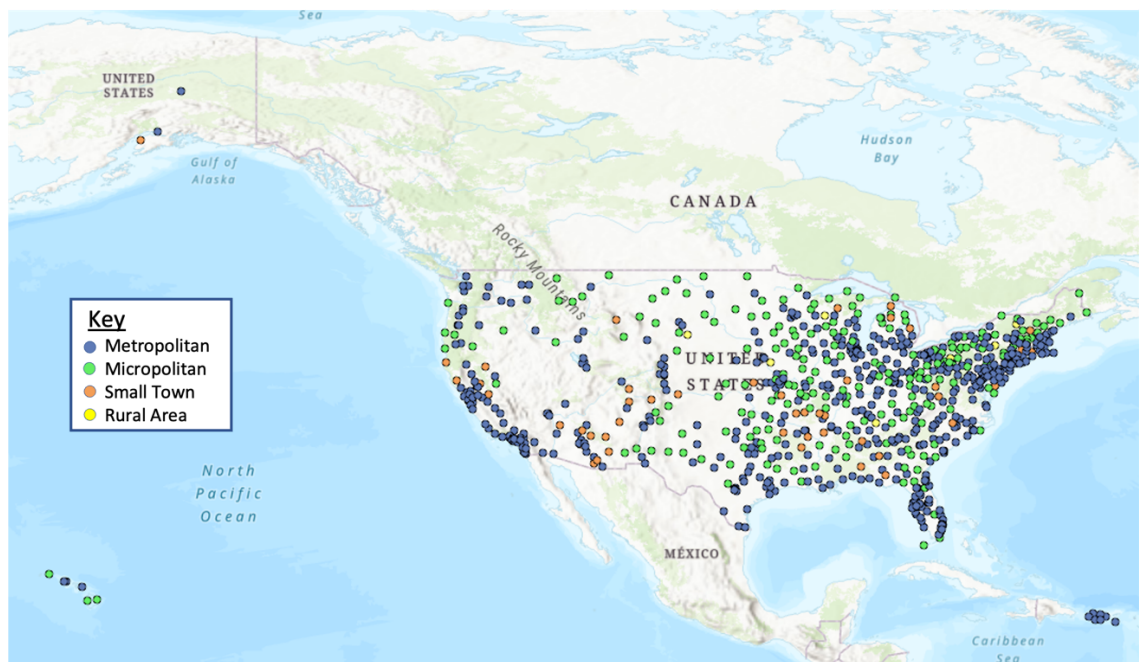
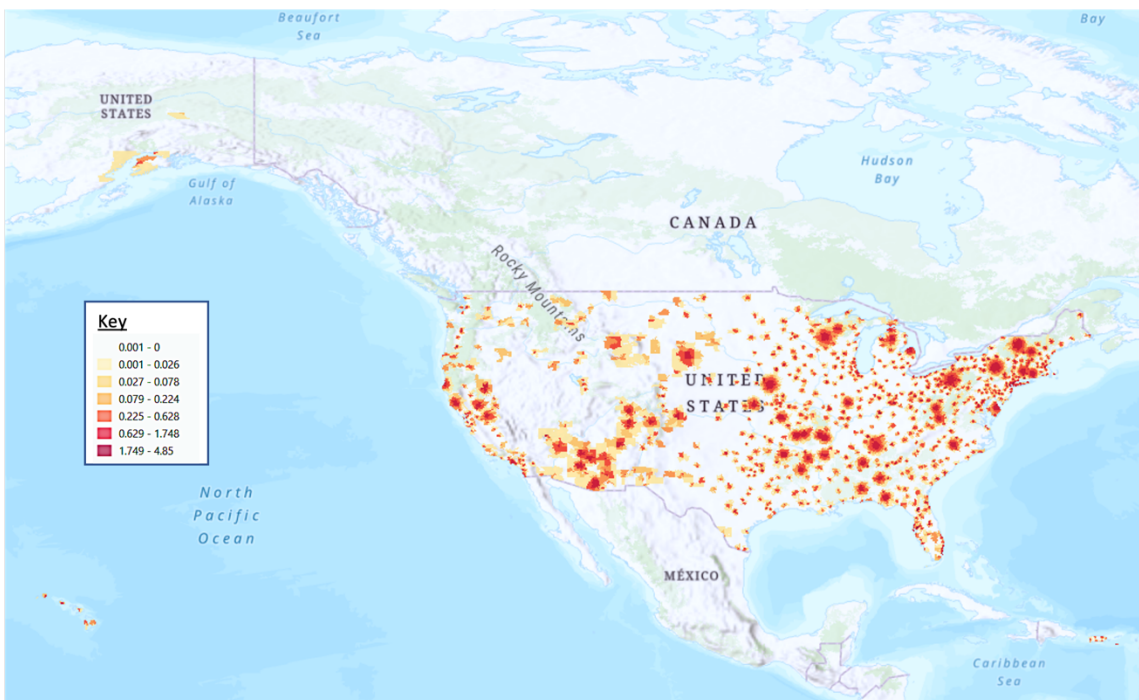


Figure 3: Geospatial access by ZIP code



Unadjusted, sex, race-ethnicity, and area-level deprivation all significantly predicted the number of mental health appointments a veteran attended following their diagnosis. Specifically, being male was negatively associated with the number mental health visits following diagnosis, relative to female (-0.16, $p<.001$). Relative to veterans identifying as white, identifying as Asian or Hispanic or Latino/a was negatively associated mental health visits following diagnosis (-0.14 and -0.09, respectively, $ps<.001$), and identifying as Black or African American was positively associated with mental health visits following diagnosis (0.02, $p=.003$). There was no significant difference for those identifying as American Indian or Native American nor Native Hawaiian. Finally, relative to low deprivation, high deprivation was positively associated with mental health visits following diagnosis (0.11, $p<.001$); there was no difference for middle SES. See Table 2.

Table 2: Univariate models

Model	
Contrast	Coefficient, Odds Ratio (OR) and p-value
Sex ¹	
Male	$b = -0.16$ [CI: -0.18 to -0.15] OR = 0.85 [CI: 0.83 to 0.86] p<.001
Race-ethnicity ²	
Black/African American	$b = 0.02$ [CI: 0.01 to 0.04] OR = 1.02 [CI: 1.01 to 1.04] p=.003
Asian	$b = -0.14$ [CI: -0.19 to -0.08] OR = 0.87 [CI: 0.83 to 0.92] p<.001
American Indian/Alaskan Native	$b = 0.00$ [CI: -0.06 to 0.07] OR = 1.00 [CI: 0.94 to 1.07] p=.932
Native Hawaiian	$b = 0.00$ [CI: -0.06 to 0.07] OR = 1.00 [CI: 0.94 to 1.07] p=.934
Hispanic/Latino	$b = -0.09$ [CI: -0.11 to -0.07] OR = 0.91 [CI: 0.29 to 0.93] p<.001
Area-level deprivation ³	
Middle	$b = 0.00$ [CI: -0.02 to 0.02] OR = 1.00 [CI: 0.98 to 1.02] p=.841
High	$b = 0.11$ [CI: 0.09 to 0.13] OR = 1.12 [CI: 1.10 to 1.13] p<.001

¹Female as reference

²White as reference

³Low area-level deprivation as reference

After controlling for covariates, there was one significant two-way interaction effect: identifying as a Black or African American male was positively associated with greater mental health service utilization following diagnosis (0.07, p<.001). Probing this interaction revealed that, for both veterans identifying as Black or African American and those identifying as white, men evidenced greater utilization than women, but this relationship was stronger for those identifying as Black or

African American (0.05, $p < .001$ and 0.13, $p < .001$, respectively). There were no significant three-way interaction effects (see Tables 3 and 4).

Table 3: Multivariate two-way interaction models

Model	Coefficient, Odds Ratio (OR) and p-value
Contrast	
Sex x Race-ethnicity	
Male x Black/African American	$b = 0.07$ [CI: 0.03 to 0.11] OR = 1.07 [CI: 1.04 to 1.11] $p < .001$
Male x Asian	$b = -0.03$ [CI: -0.16 to 0.10] OR = 0.97 [CI: 0.85 to 1.11] $p = .683$
Male x American Indian/Alaskan Native	$b = 0.09$ [CI: -0.06 to 0.24] OR = 1.09 [CI: 0.93 to 1.27] $p = .247$
Male x Native Hawaiian	$b = -0.08$ [CI: -0.24 to 0.08] OR = 0.92 [CI: 0.79 to 1.08] $p = .329$
Male x Hispanic/Latino	$b = 0.03$ [CI: -0.03 to 0.08] OR = 1.03 [CI: 0.97 to 1.09] $p = .312$
Sex x Area-level deprivation	
Male x Middle deprivation	$b = 0.00$ [CI: -0.04 to 0.04] OR = 1.00 [CI: 0.96 to 1.04] $p = .963$
Male x High deprivation	$b = 0.01$ [CI: -0.03 to 0.05] OR = 1.01 [CI: 0.97 to 1.05] $p = .583$
Race-ethnicity x Area-level deprivation¹	
Black/African American x Middle deprivation	$b = 0.03$ [CI: -0.01 to 0.06] OR = 1.02 [CI: 0.99 to 1.07] $p = .221$
Asian x Middle deprivation	$b = -0.03$ [CI: -0.15 to 0.08] OR = 0.97 [CI: 0.86 to 1.08] $p = .569$
American Indian/Alaskan Native x Middle deprivation	$b = -0.12$ [CI: -0.29 to 0.05] OR = 0.89 [CI: 0.75 to 1.05] $p = .160$
Native Hawaiian x Middle deprivation	$b = 0.01$ [CI: -0.16 to 0.17] OR = 1.01 [CI: 0.85 to 1.19] $p = .920$

Hispanic/Latino x Middle deprivation	$b = -0.02$ [CI: -0.07 to 0.03] OR = 0.98 [CI: 0.93 to 1.03] p=.447
Black/African American x High deprivation	$b = 0.01$ [CI: -0.02 to 0.06] OR = 1.02 [CI: 0.98 to 1.06] p=.389
Asian x High deprivation	$b = -0.05$ [CI: -0.17 to 0.07] OR = 0.95 [CI: 0.84 to 1.08] p=.426
American Indian/Alaskan Native x High deprivation	$b = -0.02$ [CI: -0.18 to 0.14] OR = 0.98 [CI: 0.84 to 1.15] p=.835
Native Hawaiian x High deprivation	$b = 0.17$ [CI: -0.03 to 0.37] OR = 1.19 [CI: 0.97 to 1.45] p=.093
Hispanic/Latino x High deprivation	$b = -0.01$ [CI: -0.06 to 0.04] OR = 0.99 [CI: 0.94 to 1.04] p=.693

¹Female as reference

²White as reference

³Low area-level deprivation as reference

Table 4: Multivariate three-way interaction model

Contrast	Coefficient, Odds Ratio (OR) and p-value
Male x Black/African American x Middle deprivation	$b = 0.02$ [CI: -0.08 to 0.12] OR = 1.02 [CI: 0.93 to 1.13] p=.663
Male x Asian x Middle deprivation	$b = 0.09$ [CI: -0.23 to 0.40] OR = 1.09 [CI: 0.80 to 1.50] p=.587
Male x American Indian/Alaskan Native x Middle deprivation	$b = 0.11$ [CI: -0.37 to 0.59] OR = 1.11 [CI: 0.69 to 1.80] p=.650
Male x Native Hawaiian x Middle deprivation	$b = -0.32$ [CI: -0.75 to 0.11] OR = 0.70 [CI: 0.47 to 1.12] p=.148
Male x Hispanic/Latino x Middle deprivation	$b = -0.09$ [CI: -0.24 to 0.05] OR = 0.73 [CI: 0.79 to 1.05] p=.210
Male x Black/African American x High deprivation	$b = 0.05$ [CI: -0.05 to 0.16] OR = 0.91 [CI: 0.95 to 1.17] p=.299
Male x Asian x High deprivation	$b = 0.04$ [CI: -0.30 to 0.38] OR = 1.04 [CI: 0.74 to 1.47] p=.807
Male x American Indian/Alaskan Native x High deprivation	$b = 0.11$ [CI: -0.28 to 0.50] OR = 1.12 [CI: 0.75 to 1.65] p=.585
Male x Native Hawaiian x High deprivation	$b = 0.10$ [CI: -0.34 to 0.54] OR = 1.10 [CI: 0.71 to 1.72] p=.661
Male x Hispanic/Latino x High deprivation	$b = 0.01$ [CI: -0.13 to 0.16] OR = 1.01 [CI: 0.88 to 1.17] p=.850

¹Female as reference

²White as reference

³Low area-level deprivation as reference

Post-hoc sensitivity analyses revealed that, after controlling for all covariates, being male was associated with a greater amount of mental health service utilization (0.09, <.001). area-level deprivation did not significantly predict mental health service utilization following diagnosis (middle: -0.02, p=.04; low: -.02, p=.06).

Finally, race-ethnicity predicted mental health service utilization such that, relative to veterans identifying as white, identifying as Black or African American (0.04, $p=.001$) or Hispanic or Latino/a (-0.04, $p<.001$) predicted the number of mental health visits following diagnosis.

Chapter 5: Discussion

One in four veterans diagnosed with PTSD in this sample *did not* attend a mental health follow up visit within the VA in the year after their diagnosis, mirroring prior findings (Johnson & Possemato, 2019; Seal et al., 2010). While that does mean that 75% of veterans attended at least one mental health appointment, there clearly remains a formidable gap between mental health need and mental health service utilization that must be addressed.

Compounding difficulties, the modal number of appointments attended in the year following diagnosis was 0 and the median was three; this finding also mirrors that of prior studies (for example, Seal et al., 2010). Importantly, this number reflects *any* visit in which care was provided by a mental health provider, but does not necessarily indicate that the veteran received first-line treatments targeting PTSD (e.g., EBPs for PTSD). In fact, the current literature would suggest that the vast majority did not, with rates of EBP receipt ranging from 4-15% (Dufort et al., 2021; Maguen et al., 2018). As such, the number of veterans accessing and utilizing evidence-based care is exceedingly small, leaving far too many veterans and their families struggling with the burden of PTSD.

The results regarding appointment attendance following diagnosis for those that attend at least one session are both promising and concerning. On the one hand, among those who attended at least one appointment following diagnosis, both the average and median number of sessions attended doubled, suggesting that initiating care may be an important first step toward participating in treatment; this step then increases the likelihood of attending a greater number of appointments within the next

year. On the other hand, the modal number of appointments attended was 1, suggesting that initial follow up appointment attendance may be a necessary, but not sufficient, step in increasing mental health care utilization. Additional work is desperately needed to increase implementation, uptake, access, use, and completion of evidence-based care.

Within the current study sample, sex, race-ethnicity, and area-level deprivation all individually predicted mental health service utilization. Specifically, identifying as male, Asian and Hispanic or Latino/a were all individually associated with decreased mental health service utilization following diagnosis. In contrast, identifying as Black/African American or having a high deprivation background were each individually associated with increased mental health service utilization. The finding regarding sex (e.g., greater utilization among female veterans) replicates that of the existing literature (e.g., Blais et al., 2015; Hom et al., 2017; Valenstein-Mah et al., 2019). However, it should be noted that after controlling for important predisposing, enabling and need factors, this finding reversed such that males were more likely to have increased mental health service utilization, relative to females. It is therefore possible that sex differences observed in mental health service utilization are due to other important covariates, and that properly addressing those can be used to mitigate sex differences in mental health service utilization.

This study's examination of race, ethnicity and area-level deprivation is nuanced and importantly expands the work of prior researchers. Specifically, this study was able to leverage the medical records of over 245,000 veterans to reveal important insights into the potential impacts of both race and ethnicity on mental

health service utilization. Importantly, two identities that are frequently under-reported or mislabeled in administrative data (Asian and Latino/a or Hispanic) evidenced fewer mental health treatment visits in the year following diagnosis relative to their white, not-Hispanic or Latino/a counterparts. Unsurprisingly, these findings mirror some of those previously reported (Byers et al., 2012; Davis et al., 2014; Johnson & Possemato, 2019; Koo et al., 2015), while disagreeing with others (Blais et al., 2015; Nichter et al., 2020). This is likely due to variations in measurement, as well as study size and population. Furthermore, many of these studies were conducted on smaller samples or included more limited race and ethnicity categories, which may have limited the power available to detect effects.

These study methods and findings also highlight the need for accurate assessment of a person's racial and ethnic identity (Peltzman et al., 2022), as well as the ways in which that identity may uniquely interact with mental health care systems. Race and ethnicity are both complex constructs, and most administrative data to date is woefully unable to accurately capture that complexity. In fact, the majority of the existing data (including the data utilized in this study) suffers from limitations in the breadth of identities captured, as well as the ability to select multiple identities. As a result, we as researchers, providers, and policies makers are operating with an incomplete picture that likely obscures the individual needs of a multitude of groups. A change to this method of measurement is desperately needed.

This study also importantly examined the impact of area-level deprivation on mental health service utilization among veterans using novel measurement tools. Prior research has largely been unable to examine this variable among VA users, and

the few studies that have been able to have revealed mixed findings and/or relied upon one aspect of area-level deprivation to represent the entire construct (Byers et al., 2012; Elhai et al., 2004; Fikretoglu et al., 2006; Nichter et al., 2019). In contrast, I employed the Area Deprivation Index, which allowed me to incorporate multiple factors outside of income or education alone and more robustly estimate area-level deprivation for my sample. By doing so, I was able to elucidate the positive relationship between area-level deprivation and mental health care utilization among veterans (e.g., those with higher deprivation were more likely to access mental health care in the year following diagnosis). These findings match those of other investigations of SES (e.g., therapy and/or medication; Fikretoglu et al., 2006; Giebel et al., 2020; Von Soest et al., 2012), but stand in contrast to a study by the World Health Organization World Mental Health surveys (Evans-Lacko et al., 2018). Within the context of our theoretical models, it is possible that lower area-level deprivation is associated with greater financial *access* to care (Steele et al., 2007), while higher area-level deprivation is associated with a greater number of stressors leading to greater *need* for care (Von Soest et al., 2012), which may explain some of these conflicting findings. As with race and ethnicity above, this body of research is complicated by variance in measurement, study design, and study population.

Contrary to my hypotheses, there were minimal observed interaction effects. In fact, only one combination of identities (Black or African American and male) was associated with mental health service utilization. These findings may suggest that the interactive impacts that sex, race, ethnicity, and area-level deprivation have on mental health care utilization are better explained by other covariates. Prior research has

well-documented the compounding effects of societal bias, injustice, and disparities on (mental) health determinants and (mental) healthcare outcomes (Barr, 2019; Giebel et al., 2020). It is therefore possible that the variance *caused* by those disparities and the prejudiced societal values that drive them is more accurately measured by those covariates included in our models, rather than the socially-constructed identities themselves.

In addition, this study modeled mental health care utilization, not access. In fact, attendance of at least one VA visit was required for inclusion in the study, as that visit is where a PTSD diagnosis could be made. It could therefore be argued that participants in the study sample have already demonstrated access to mental health care, and it is possible that the intersectional effect of sex, race, ethnicity, and area-level deprivation are more apparent within the context of mental health care access, rather than utilization. Thoughtful future research is needed in order to more accurately tease these components apart, and unfortunately is beyond the scope of the current study.

Finally, while this study importantly expands the considerable work that has been conducted on mental health care utilization, further research is desperately needed to better understand what determines who initiates care, who receives a minimally adequate doses of care, and what increases dissemination and uptake of said care. For example, a recent systematic review revealed that while practical concerns and younger age are consistently found to increase the likelihood of treatment dropout in veterans receiving EBPs, multiple other factors that have been investigated (e.g., demographic factors, psychological factors, cognitive factors) have

shown mixed effects study-to-study (Sciarrino et al., 2021). Differences in study samples and methods complicate this picture. It also should not be forgotten that it is likely that mental health service access and utilization are most strongly impacted by *cumulative* effects across *multiple* domains, and that the factors most impacting veteran decisions about and ability to access and utilize care vary considerably depending upon both the veteran themselves and the context. As such, future research may benefit from careful measurement and model construction that allows researchers to account for these multiple factors *across time*.

This study has several important limitations. First, it relies upon VHA data, which necessarily limits the generalizability of our findings to veterans who receive care through the VA system. Second, while my measure of area-level deprivation importantly incorporates a multitude of indicators, it could only be joined by 9-digit zip-code and it is therefore possible that some individuals were misclassified. This is similarly true for geospatial access. Third, while my measure of geospatial access is novel and accounts for many limitations in other methods of measurement, KDE was initially designed for regional analyses and cannot account for geographic features on a national scale (e.g., mountain ranges, rivers, lakes, etc.). As such, it's possible that there are rural areas for which access to a VA facility is overestimated. It is similarly possible that there are areas surrounding a metropolitan VA for which access to a VA facility is *underestimated*. In addition, the bandwidths selected were pulled from the existing literature, including primary care and pharmacy distance data in the general population. While these bandwidths are therefore based on the preponderance of the existing evidence, we did not test sensitivity to distance bands, and it's possible that

the current literature may not reflect distances traveled for mental health care by veterans. Given these points, future research is needed in order to refine this approach. Fourth, as discussed above, race and ethnicity were both extracted from the VA record, the limitations of which have been extensively discussed elsewhere (see Peltzman et al., 2022). Finally, my sample included veterans with a new PTSD diagnosis attached to any visit, rather than requiring one inpatient or two outpatient visits as other studies have done (e.g., Cohen et al., 2010; Gravelly et al., 2011; Holowka et al., 2014; Maguen et al., 2020). This distinction avoided biasing my sample towards veterans who had already attended two outpatient visits, but also may have therefore included veterans for whom PTSD was a rule-out diagnosis.

Despite these limitations, this study derives considerable strength from its size and ability to measure and account for a multitude of factors implicated by the preeminent theoretical models on healthcare access and utilization. It also importantly investigated both the individual and intersectional effects of race, ethnicity, sex, and area-level deprivation. While each of these identity factors individually predicted mental health treatment utilization among veterans with PTSD (and should therefore continue to be included in models of health care access and utilization), they had limited intersectional impacts, particularly above and beyond those of other covariates (e.g., military service history, MST, combat, mental and physical health comorbidities). Future research is needed to continue to investigate who is able to access and receive care, as well as remove barriers to mental health treatment initiation, utilization, and completion.

Appendices

APPENDIX A: STOP CODES

Stop codes, 2017

156	HBPC - PSYCHOLOGIST	537	TELEPHONE/PSYCHOSOCIAL REHAB	574	MH CWT GROUP
157	HBPC - PSYCHIATRIST	538	PSYCHOLOGICAL TESTING	574	MH CWT/TWE FACE TO FACE
182	TELEPHONE CASE MANAGEMENT	539	MH INTGRD CARE GRP	575	MH VOCATIONAL ASSISTANCE-GRP
292	OBSERVATION PSYCHIATRY	540	PCT POST-TRAUMATIC STRESS-IND	576	PSYCHOGERIATRIC - INDIVIDUAL
501	HOMELESS MENTALLY ILL OUTREACH	540	PTSD CLINICAL TEAM PTS IND	577	PSYCHOGERIATRIC - GROUP
502	ANNISTON MH	541	PTSD POST-TRAUMATIC STRESS	578	PSYCHOGERIATRIC DAY PROGRAM
502	DECATUR/MADISON MH	542	TELEPHONE/PTSD	579	TELEPHONE/PSYCHOGERIATRICS
502	GADSDEN MH	543	TELEPHONE/ALCOHOL DEPENDENCE	580	PTSD DAY HOSPITAL
502	HUNTSVILLE MH	544	TELEPHONE/DRUG DEPENDENCE	581	PTSD DAY TREATMENT
502	MENTAL HEALTH CLINIC - IND	545	TELEPHONE SUD	582	PRRC INDIVIDUAL
503	MH RESIDENTIAL CARE IND	546	TELEPHONE/MHICM	583	PRRC GROUP
504	GRANT & PER DIEM GROUP	547	INTNSE SUB USE DSRDR GRP	584	TELEPHONE PRRC
504	IPCC MEDICAL CENTER VISIT	548	INTNSE SUB USE DSRDR IND	588	RRTP AFTERCARE IND
505	DAY TREATMENT-INDIVIDUAL	550	MENTAL HEALTH CLINIC-GROUP	589	NON-ACTIVE DUTY SEXUAL TRAUMA
506	DAY HOSPITAL-INDIVIDUAL	550	ZZMENTAL HEALTH CLINIC-GROUP	590	COMM OUTREACH HOMELESS VETS
507	DRUG DEPENDENCE-INDIVIDUAL	551	IPCC COMM CLN/DAY PROGRAM VST	591	INCARCERATED VETERANS RE-ENTRY
507	HUD/VASH GROUP	552	MHICM - INDIVIDUAL	592	VETERANS JUSTICE OUTREACH
508	HCHV/HCM I GROUP	553	DAY TREATMENT-GROUP	593	RRTP OUTREACH SERVICES
509	PSYCHIATRY	553	ZZDAY TREATMENT-GROUP	595	RRTP AFTERCARE GRP
510	PSYCHOLOGY	554	DAY HOSPITAL-GROUP	596	RRTP ADMISSION SCREENING SRVCS
511	GRANT & PER DIEM INDIV	554	zzDAY HOSPITAL-GROUP	597	TELEPHONE - RRTP
512	MENTAL HEALTH CONSULTATION	555	DRUG DEPENDENCE-GROUP	598	RRTP OUTPATIENT INDIVIDUAL
513	SUBSTANCE ABUSE - INDIVIDUAL	555	HOMELESS VT COM EMP SVC INDIV	599	RRTP OUTPATIENT GROUP
513	SUBSTANCE USE DISORDER IND	556	HOMELESS VT COM EMP SVC GRP		
513	ZZ-SUBSTANCE ABUSE - INDIV	557	PSYCHIATRY - GROUP		
514	SUB USE DISORDER HOME VST	557	ZZPSYCHIATRY-GROUP		
515	CWT/TR-HCMI	558	PSYCHOLOGY-GROUP		
516	PTSD - GROUP	558	ZZPSYCHOLOGY-GROUP		
516	ZZPTSD - GROUP	559	PSYCHOSOCIAL REHAB - GROUP		
517	CWT SUBSTANCE ABUSE	560	SUBSTANCE ABUSE - GROUP		
518	CWT/TR-SUBSTANCE ABUSE	560	SUBSTANCE USE DISORDR GRP		
519	SUB USE DISORDER PTSD TEAM	561	PCT-POST TRAUMATIC STRESS-GRP		
520	LONG-TERM ENHANCEMENT, INDIVID	562	PTSD - INDIVIDUAL		
521	LONG-TERM ENHANCEMENT, GROUP	562	ZZPTSD - INDIVIDUAL		
522	HUD/VASH INDIV	563	MH PRIMARY CARE - GROUP		
523	OPIOID SUBSTITUTION	564	MH TEAM CASE MANAGEMENT		
524	ACTIVE DUTY SEXUAL TRAUMA	565	MH INTERVENTION BIOMED GRP		
525	WOMEN'S STRESS DISORDER TEAMS	566	MH RISK-FACTOR-REDUCTION ED GR		
526	TELEPHONE/SPECIAL PSYCHIATRY	567	MHICM - GROUP		
527	TELEPHONE MH	568	MH CWT/SE FACE TO FACE		
528	TELEPHONE HCMI	569	MH CWT/SE NON-F TO F (MAS NONC		
529	HCHV/HCM I INDIV	570	MH CWT/TWE NON-F TO F (MAS NON		
530	TELEPHONE/HUD-VASH	571	RVOEC Individual		
531	MH MED PRI CARE IND 2ND TO 323	571	SERV-MH INDIVIDUAL		
532	PSYCHOSOCIAL REHAB - IND	571	ZZREADJUSTMENT COUNSELING-IND		
533	MH INTERVNTION BIOMED CARE IND	572	RVOEC GROUP		
534	MH INTGRD CARE IND	572	SERV-MH GROUP		
535	MH VOCATIONAL ASSISTANCE - IND	572	ZZREADJUSTMENT COUNSELING-GRO		
536	TELEPHONE/MH VOC ASSISTANCE	573	MH INCENTIVE THERAPY F TO F		

Stop Codes 2018

156	HBPC - Psychologist	560	Substance Use Disorder- Group
157	HBPC - Psychiatrist	562	PTSD- Individual
182	Telephone Case Management	564	Mental Health Team Case Management
183	Peer Specialist	565	MH Intervention Biomedical Care- Group
502	Mental Health Clinic Individual	566	Mental Health Risk-Factor
504	Grant and Per Diem- Group		Reduction Educational- Group
507	HUD/VASH- Group	567	Intensive Community Mental Health Recovery Services (ICMHR)- Group
508	HCHV/HCMI- Group	568	Mental Health Compensated Work Therapy/Supported Employment (CWT/SE) Face-to-Face
509	Psychiatry	573	Mental Health Incentive Therapy Face-to-Face
510	Psychology	574	Mental Health Compensated Work Therapy/Transitional Work Experience (CWT/TWE) Face-to-Face
511	Grant and Per Diem- Individual	575	Mental Health Vocational Assistance- Group
513	Substance Use Disorder Individual	576	Psycho-Geriatric Clinic- Individual
514	Substance Use Disorder - Home Visit	577	Psycho-Geriatric Clinic- Group
516	PTSD - Group	579	Telephone Psycho-Geriatrics
519	Substance Use Disorder/PTSD Teams	582	Psychosocial Rehabilitation Recovery Center (PRRC)- Individual
522	Department of Housing and Urban Development (HUD)-VA Supported Housing (VASH) Individual	583	Psychosocial Rehabilitation Recovery Center (PRRC)- Group
523	Opioid Substitution	584	Telephone Psychosocial Rehabilitation Recovery Center (PRRC)
524	Active Duty Sexual Trauma	586	Residential Rehabilitation Treatment Program (RRTP)- Individual
525	Women's Stress Disorder Treatment Teams	587	Residential Rehabilitation Treatment Program (RRTP)- Group
527	Telephone Mental Health	591	Incarcerated Veterans Re-Entry
528	Telephone/Homeless Chronically Mentally Ill (HCMI)	592	Veterans Justice Outreach
529	HCHV/HCMI- Individual	593	Residential Rehabilitation Treatment Program (RRTP) Outreach Services
530	Telephone/HUD-VASH	596	Residential Rehabilitation Treatment Program (RRTP) Admission Screening Services
533	Mental Health Intervention Biomedical Care- Individual	598	Residential Rehabilitation Treatment Program (RRTP) Outpatient - Individual
534	Mental Health Integrated Care - Individual	599	Residential Rehabilitation Treatment Program (RRTP) Outpatient - Group
535	Mental Health Vocational Assistance Individual	706	Alcohol Screening
536	Telephone Mental Health Vocational Assistance	713	Gambling Addiction
538	Psychological Testing	721	Opioid Safety Individual Education
539	MH Integrated Care Group	722	Opioid Safety Group Education
542	Telephone PTSD	723	Tele-Opioid Safety Education- Patient Site
545	Telephone Substance Use Disorder	724	Tele-Opioid Safety Education- Provider Site
546	Telephone Intensive Community Mental Health Recovery Services (ICMHR)		
550	Mental Health Clinic (Group)		
552	Intensive Community Mental Health Recovery Services (ICMHR)- Individual		
555	Homeless Veteran Community Employment Services- Individual		
556	Homeless Veteran Community Employment Services- Group		

Stop Codes 2019

156	HBPC - Psychologist	560	Substance Use Disorder- Group
157	HBPC - Psychiatrist	562	PTSD- Individual
183	Peer Specialist	564	Mental Health Team Case Management
502	Mental Health Clinic Individual	565	MH Intervention Biomedical Care- Group
504	Grant and Per Diem- Group	566	Mental Health Risk-Factor
507	HUD/VASH- Group		Reduction Educational- Group
508	HCHV/HCMH- Group	567	Intensive Community Mental Health Recovery Services (ICMHR)- Group
509	Psychiatry	568	Mental Health Compensated Work Therapy/Supported Employment (CWT/SE) Face-to-Face
510	Psychology	573	Mental Health Incentive Therapy Face-to-Face
511	Grant and Per Diem- Individual	574	Mental Health Compensated Work Therapy/Transitional Work Experience (CWT/TWE) Face-to-Face
513	Substance Use Disorder Individual	575	Mental Health Vocational Assistance- Group
514	Substance Use Disorder - Home Visit	576	Psycho-Geriatric Clinic- Individual
516	PTSD - Group	577	Psycho-Geriatric Clinic- Group
519	Substance Use Disorder/PTSD Teams	579	Telephone Psycho-Geriatrics
522	Department of Housing and Urban Development (HUD)-VA Supported Housing (VASH) Individual	582	Psychosocial Rehabilitation Recovery Center (PRRC)- Individual
523	Opioid Treatment Program	583	Psychosocial Rehabilitation Recovery Center (PRRC)- Group
524	Active Duty Sexual Trauma	584	Telephone Psychosocial Rehabilitation Recovery Center (PRRC)
525	Women's Stress Disorder Treatment Teams	586	Residential Rehabilitation Treatment Program (RRTP)- Individual
527	Telephone Mental Health	587	Residential Rehabilitation Treatment Program (RRTP)- Group
528	Telephone/Homeless Chronically Mentally Ill (HCMH)	591	Incarcerated Veterans Re-Entry
529	HCHV/HCMH- Individual	592	Veterans Justice Outreach
530	Telephone/HUD-VASH	593	Residential Rehabilitation Treatment Program (RRTP) Outreach Services
533	Mental Health Intervention Biomedical Care- Individual	596	Residential Rehabilitation Treatment Program (RRTP) Admission Screening Services
534	Mental Health Integrated Care - Individual	597	Telephone/Residential Rehabilitation Treatment Program (RRTP)
535	Mental Health Vocational Assistance Individual	598	Residential Rehabilitation Treatment Program (RRTP) Outpatient - Individual
536	Telephone Mental Health Vocational Assistance	599	Residential Rehabilitation Treatment Program (RRTP) Outpatient - Group
538	Psychological Testing	706	Alcohol Screening
539	MH Integrated Care Group	713	Gambling Addiction
542	Telephone PTSD	721	Opioid Safety Individual Education
545	Telephone Substance Use Disorder	722	Opioid Safety Group Education
546	Telephone Intensive Community Mental Health Recovery Services (ICMHR)	723	Tele-Opioid Safety Education- Patient Site
550	Mental Health Clinic (Group)	724	Tele-Opioid Safety Education- Provider Site
552	Intensive Community Mental Health Recovery Services (ICMHR)- Individual		
555	Homeless Veteran Community Employment Services- Individual		
556	Homeless Veteran Community Employment Services- Group		

APPENDIX B: CPT CODES

Stop codes, 2017

0291U	Psychiatry (mood disorders), mrna, gene expression profiling by rna sequencing of 144 genes, whole blood, algorithm reported as predictive risk score
0292U	Psychiatry (stress disorders), mrna, gene expression profiling by rna sequencing of 72 genes, whole blood, algorithm reported as predictive risk score
0293U	Psychiatry (suicidal ideation), mrna, gene expression profiling by rna sequencing of 54 genes, whole blood, algorithm reported as predictive risk score
4060F	Psychotherapy services provided (mdd, mdd adol)
4065F	Antipsychotic pharmacotherapy prescribed (mdd)
4306F	Patient counseled regarding psychosocial and pharmacologic treatment options for opioid addiction (sud)
4320F	Patient counseled regarding psychosocial and pharmacologic treatment options for alcohol dependence (sud)
90791	Psychiatric diagnostic evaluation
90792	Psychiatric diagnostic evaluation with medical services
90801	Psychiatric diagnostic interview examination
90802	Interactive psychiatric diagnostic interview examination using play equipment, physical devices, language interpreter, or other mechanisms of communication
90804	Individual psychotherapy, insight oriented, behavior modifying and/or supportive, in an office or outpatient facility, approximately 20 to 30 minutes face-to-face with the patient;
90805	Individual psychotherapy, insight oriented, behavior modifying and/or supportive, in an office or outpatient facility, approximately 20 to 30 minutes face-to-face with the patient; with medical evaluation and management services
90806	Individual psychotherapy, insight oriented, behavior modifying and/or supportive, in an office or outpatient facility, approximately 45 to 50 minutes face-to-face with the patient;
90807	Individual psychotherapy, insight oriented, behavior modifying and/or supportive, in an office or outpatient facility, approximately 45 to 50 minutes face-to-face with the patient; with medical evaluation and management services
90808	Individual psychotherapy, insight oriented, behavior modifying and/or supportive, in an office or outpatient facility, approximately 75 to 80 minutes face-to-face with the patient;
90809	Individual psychotherapy, insight oriented, behavior modifying and/or supportive, in an office or outpatient facility, approximately 75 to 80 minutes face-to-face with the patient; with medical evaluation and management services
90810	Individual psychotherapy, interactive, using play equipment, physical devices, language interpreter, or other mechanisms of non-verbal communication, in an office or outpatient facility, approximately 20 to 30 minutes face-to-face with the patient;
90811	Individual psychotherapy, interactive, using play equipment, physical devices, language interpreter, or other mechanisms of non-verbal communication, in an office or outpatient facility, approximately 20 to 30 minutes face-to-face with the patient; with medical evaluation and management services
90812	Individual psychotherapy, interactive, using play equipment, physical devices, language interpreter, or other mechanisms of non-verbal communication, in an office or outpatient facility, approximately 45 to 50 minutes face-to-face with the patient;
90813	Individual psychotherapy, interactive, using play equipment, physical devices, language interpreter, or other mechanisms of non-verbal communication, in an office or outpatient facility, approximately 45 to 50 minutes face-to-face with the patient; with medical evaluation and management services
90814	Individual psychotherapy, interactive, using play equipment, physical devices, language interpreter, or other mechanisms of non-verbal communication, in an office or outpatient facility, approximately 75 to 80 minutes face-to-face with the patient;
90815	Individual psychotherapy, interactive, using play equipment, physical devices, language interpreter, or other mechanisms of non-verbal communication, in an office or outpatient facility, approximately 75 to 80 minutes face-to-face with the patient; with medical evaluation and management services

90816	Individual psychotherapy, insight oriented, behavior modifying and/or supportive, in an inpatient hospital, partial hospital or residential care setting, approximately 20 to 30 minutes face-to-face with the patient;
90817	Individual psychotherapy, insight oriented, behavior modifying and/or supportive, in an inpatient hospital, partial hospital or residential care setting, approximately 20 to 30 minutes face-to-face with the patient; with medical evaluation and management services
90818	Individual psychotherapy, insight oriented, behavior modifying and/or supportive, in an inpatient hospital, partial hospital or residential care setting, approximately 45 to 50 minutes face-to-face with the patient;
90819	Individual psychotherapy, insight oriented, behavior modifying and/or supportive, in an inpatient hospital, partial hospital or residential care setting, approximately 45 to 50 minutes face-to-face with the patient; with medical evaluation and management services
90820	Interactive medical psychiatric diagnostic interview examination
90821	Individual psychotherapy, insight oriented, behavior modifying and/or supportive, in an inpatient hospital, partial hospital or residential care setting, approximately 75 to 80 minutes face-to-face with the patient;
90822	Individual psychotherapy, insight oriented, behavior modifying and/or supportive, in an inpatient hospital, partial hospital or residential care setting, approximately 75 to 80 minutes face-to-face with the patient; with medical evaluation and management services
90823	Individual psychotherapy, interactive, using play equipment, physical devices, language interpreter, or other mechanisms of non-verbal communication, in an inpatient hospital, partial hospital or residential care setting, approximately 20 to 30 minutes face-to-face with the patient;
90824	Individual psychotherapy, interactive, using play equipment, physical devices, language interpreter, or other mechanisms of non-verbal communication, in an inpatient hospital, partial hospital or residential care setting, approximately 20 to 30 minutes face-to-face with the patient; with medical evaluation and management services
90826	Individual psychotherapy, interactive, using play equipment, physical devices, language interpreter, or other mechanisms of non-verbal communication, in an inpatient hospital, partial hospital or residential care setting, approximately 45 to 50 minutes face-to-face with the patient;
90827	Individual psychotherapy, interactive, using play equipment, physical devices, language interpreter, or other mechanisms of non-verbal communication, in an inpatient hospital, partial hospital or residential care setting, approximately 45 to 50 minutes face-to-face with the patient; with medical evaluation and management services
90828	Individual psychotherapy, interactive, using play equipment, physical devices, language interpreter, or other mechanisms of non-verbal communication, in an inpatient hospital, partial hospital or residential care setting, approximately 75 to 80 minutes face-to-face with the patient;
90829	Individual psychotherapy, interactive, using play equipment, physical devices, language interpreter, or other mechanisms of non-verbal communication, in an inpatient hospital, partial hospital or residential care setting, approximately 75 to 80 minutes face-to-face with the patient; with medical evaluation and management services
90830	Psychological testing (includes psychodiagnostic assessment of personality, psychopathology, emotionality, intellectual abilities, eg, wais-r, rorschach, mmpi) with interpretation and report, per hour
90831	Telephone consultation with or about patient for psychiatric therapeutic or diagnostic purposes
90832	Psychotherapy, 30 minutes with patient
90833	Psychotherapy, 30 minutes with patient when performed with an evaluation and management service (list separately in addition to the code for primary procedure)
90834	Psychotherapy, 45 minutes with patient
90835	Narcosynthesis for psychiatric diagnostic and therapeutic purposes (eg, sodium amobarbital (amytal) interview)
90836	Psychotherapy, 45 minutes with patient when performed with an evaluation and management service (list separately in addition to the code for primary procedure)
90837	Psychotherapy, 60 minutes with patient

90838	Psychotherapy, 60 minutes with patient when performed with an evaluation and management service (list separately in addition to the code for primary procedure)
90839	Psychotherapy for crisis; first 60 minutes
90840	Psychotherapy for crisis; each additional 30 minutes (list separately in addition to code for primary service)
90841	Individual medical psychotherapy by a physician, with continuing medical diagnostic evaluation, and drug management when indicated, including insight oriented, behavior modifying or supportive psychotherapy (face-to-face with the patient); time unspecified
90842	Individual medical psychotherapy by a physician, with continuing medical diagnostic evaluation, and drug management when indicated, including insight oriented, behavior modifying or supportive psychotherapy (face-to-face with the patient); approximately 75 to 80 minutes
90843	Individual medical psychotherapy by a physician, with continuing medical diagnostic evaluation, and drug management when indicated, including insight oriented, behavior modifying or supportive psychotherapy (face-to-face with the patient); approximately 20 to 30 minutes
90844	Individual medical psychotherapy by a physician, with continuing medical diagnostic evaluation, and drug management when indicated, including insight oriented, behavior modifying or supportive psychotherapy (face-to-face with the patient); approximately 45 to 50 minutes
90845	Psychoanalysis
90846	Family psychotherapy (without the patient present), 50 minutes
90847	Family psychotherapy (conjoint psychotherapy) (with patient present), 50 minutes
90849	Multiple-family group psychotherapy
90853	Group psychotherapy (other than of a multiple-family group)
90855	Interactive individual medical psychotherapy
90857	Interactive group psychotherapy
90862	Pharmacologic management, including prescription, use, and review of medication with no more than minimal medical psychotherapy
90863	Pharmacologic management, including prescription and review of medication, when performed with psychotherapy services (list separately in addition to the code for primary procedure)
90865	Narcosynthesis for psychiatric diagnostic and therapeutic purposes (eg, sodium amobarbital (amytal) interview)
90875	Individual psychophysiological therapy incorporating biofeedback training by any modality (face-to-face with the patient), with psychotherapy (eg, insight oriented, behavior modifying or supportive psychotherapy); 30 minutes
90876	Individual psychophysiological therapy incorporating biofeedback training by any modality (face-to-face with the patient), with psychotherapy (eg, insight oriented, behavior modifying or supportive psychotherapy); 45 minutes
90887	Interpretation or explanation of results of psychiatric, other medical examinations and procedures, or other accumulated data to family or other responsible persons, or advising them how to assist patient
90899	Unlisted psychiatric service or procedure
96100	Psychological testing (includes psychodiagnostic assessment of personality, psychopathology, emotionality, intellectual abilities, eg, wais-r, rorschach, mmpi) with interpretation and report, per hour
96101	Psychological testing (includes psychodiagnostic assessment of emotionality, intellectual abilities, personality and psychopathology, eg, mmpi, rorschach, wais), per hour of the psychologist's or physician's time, both face-to-face time administering tests to the patient and time interpreting these test results and preparing the report
96102	Psychological testing (includes psychodiagnostic assessment of emotionality, intellectual abilities, personality and psychopathology, eg, mmpi and wais), with qualified health care professional interpretation and report, administered by technician, per hour of technician time, face-to-face

96103	Psychological testing (includes psychodiagnostic assessment of emotionality, intellectual abilities, personality and psychopathology, eg, mmpi), administered by a computer, with qualified health care professional interpretation and report
96127	Brief emotional/behavioral assessment (eg, depression inventory, attention-deficit/hyperactivity disorder [adhd] scale), with scoring and documentation, per standardized instrument
96130	Psychological testing evaluation services by physician or other qualified health care professional, including integration of patient data, interpretation of standardized test results and clinical data, clinical decision making, treatment planning and report, and interactive feedback to the patient, family member(s) or caregiver(s), when performed; first hour
96131	Psychological testing evaluation services by physician or other qualified health care professional, including integration of patient data, interpretation of standardized test results and clinical data, clinical decision making, treatment planning and report, and interactive feedback to the patient, family member(s) or caregiver(s), when performed; each additional hour (list separately in addition to code for primary procedure)
96136	Psychological or neuropsychological test administration and scoring by physician or other qualified health care professional, two or more tests, any method; first 30 minutes
96137	Psychological or neuropsychological test administration and scoring by physician or other qualified health care professional, two or more tests, any method; each additional 30 minutes (list separately in addition to code for primary procedure)
96138	Psychological or neuropsychological test administration and scoring by technician, two or more tests, any method; first 30 minutes
96139	Psychological or neuropsychological test administration and scoring by technician, two or more tests, any method; each additional 30 minutes (list separately in addition to code for primary procedure)
96146	Psychological or neuropsychological test administration, with single automated, standardized instrument via electronic platform, with automated result only
99492	Initial psychiatric collaborative care management, first 70 minutes in the first calendar month of behavioral health care manager activities, in consultation with a psychiatric consultant, and directed by the treating physician or other qualified health care professional, with the following required elements: outreach to and engagement in treatment of a patient directed by the treating physician or other qualified health care professional; initial assessment of the patient, including administration of validated rating scales, with the development of an individualized treatment plan; review by the psychiatric consultant with modifications of the plan if recommended; entering patient in a registry and tracking patient follow-up and progress using the registry, with appropriate documentation, and participation in weekly caseload consultation with the psychiatric consultant; and provision of brief interventions using evidence-based techniques such as behavioral activation, motivational interviewing, and other focused treatment strategies.
99493	Subsequent psychiatric collaborative care management, first 60 minutes in a subsequent month of behavioral health care manager activities, in consultation with a psychiatric consultant, and directed by the treating physician or other qualified health care professional, with the following required elements: tracking patient follow-up and progress using the registry, with appropriate documentation; participation in weekly caseload consultation with the psychiatric consultant; ongoing collaboration with and coordination of the patient's mental health care with the treating physician or other qualified health care professional and any other treating mental health providers; additional review of progress and recommendations for changes in treatment, as indicated, including medications, based on recommendations provided by the psychiatric consultant; provision of brief interventions using evidence-based techniques such as behavioral activation, motivational interviewing, and other focused treatment strategies; monitoring of patient outcomes using validated rating scales; and relapse prevention planning with patients as they achieve remission of symptoms and/or other treatment goals and are prepared for discharge from active treatment.
99494	Initial or subsequent psychiatric collaborative care management, each additional 30 minutes in a calendar month of behavioral health care manager activities, in consultation with a

	psychiatric consultant, and directed by the treating physician or other qualified health care professional (list separately in addition to code for primary procedure)
A9291	Prescription digital behavioral therapy, fda cleared, per course of treatment
G0072	Individual psychotherapy, insight oriented, behavior modifying and/or supportive, in an office or outpatient facility, approximately 20 to 30 minutes face-to-face with the patient; with medical evaluation and management services
G0073	Individual psychotherapy, insight oriented, behavior modifying and/or supportive, in an office or outpatient facility, approximately 45 to 50 minutes face-to-face with the patient
G0074	Individual psychotherapy, insight oriented, behavior modifying and/or supportive, in an office or outpatient facility, approximately 45 to 50 minutes face-to-face with the patient; with medical evaluation and management services
G0075	Individual psychotherapy, insight oriented, behavior modifying and/or supportive, in an office or outpatient facility, approximately 75 to 80 minutes face-to-face with the patient
G0091	Individual psychotherapy, interactive, in an inpatient hospital, partial hospital, or residential care setting, approximately 45 to 50 minutes face-to-face with the patient
G0092	Individual psychotherapy, interactive, in an inpatient hospital, partial hospital, or residential care setting, approximately 45 to 50 minutes face-to-face with the patient; with medical evaluation and management services
G0093	Individual psychotherapy, interactive, in an inpatient hospital, partial hospital, or residential care setting, approximately 75 to 80 minutes face-to-face with the patient
G0094	Individual psychotherapy, interactive, in an inpatient hospital, partial hospital, or residential care setting, approximately 75 to 80 minutes face-to-face with the patient; with medical evaluation and management services
G0176	Activity therapy, such as music, dance, art or play therapies not for recreation, related to the care and treatment of patient's disabling mental health problems, per session (45 minutes or more)
G0177	Training and educational services related to the care and treatment of patient's disabling mental health problems per session (45 minutes or more)
G0409	Social work and psychological services, directly relating to and/or furthering the patient's rehabilitation goals, each 15 minutes, face-to-face; individual (services provided by a corf-qualified social worker or psychologist in a corf)
G0410	Group psychotherapy other than of a multiple-family group, in a partial hospitalization setting, approximately 45 to 50 minutes
G0411	Interactive group psychotherapy, in a partial hospitalization setting, approximately 45 to 50 minutes
G0443	Brief face-to-face behavioral counseling for alcohol misuse, 15 minutes
G0469	Federally qualified health center (fqhc) visit, mental health, new patient; a medically-necessary, face-to-face mental health encounter (one-on-one) between a new patient and a fqhc practitioner during which time one or more fqhc services are rendered and includes a typical bundle of medicare-covered services that would be furnished per diem to a patient receiving a mental health visit
G0470	Federally qualified health center (fqhc) visit, mental health, established patient; a medically-necessary, face-to-face mental health encounter (one-on-one) between an established patient and a fqhc practitioner during which time one or more fqhc services are rendered and includes a typical bundle of medicare-covered services that would be furnished per diem to a patient receiving a mental health visit
G0502	Initial psychiatric collaborative care management, first 70 minutes in the first calendar month of behavioral health care manager activities, in consultation with a psychiatric consultant, and directed by the treating physician or other qualified health care professional, with the following required elements: outreach to and engagement in treatment of a patient directed by the treating physician or other qualified health care professional; initial assessment of the patient, including administration of validated rating scales, with the development of an individualized treatment plan; review by the psychiatric consultant with modifications of the plan if recommended; entering patient in a registry and tracking patient follow-up and progress using the registry, with appropriate documentation, and participation in weekly caseload consultation with the psychiatric consultant; and

	provision of brief interventions using evidence-based techniques such as behavioral activation, motivational interviewing, and other focused treatment strategies
G0503	Subsequent psychiatric collaborative care management, first 60 minutes in a subsequent month of behavioral health care manager activities, in consultation with a psychiatric consultant, and directed by the treating physician or other qualified health care professional, with the following required elements: tracking patient follow-up and progress using the registry, with appropriate documentation; participation in weekly caseload consultation with the psychiatric consultant; ongoing collaboration with and coordination of the patient's mental health care with the treating physician or other qualified health care professional and any other treating mental health providers; additional review of progress and recommendations for changes in treatment, as indicated, including medications, based on recommendations provided by the psychiatric consultant; provision of brief interventions using evidence-based techniques such as behavioral activation, motivational interviewing, and other focused treatment strategies; monitoring of patient outcomes using validated rating scales; and relapse prevention planning with patients as they achieve remission of symptoms and/or other treatment goals and are prepared for discharge from active treatment
G0504	Initial or subsequent psychiatric collaborative care management, each additional 30 minutes in a calendar month of behavioral health care manager activities, in consultation with a psychiatric consultant, and directed by the treating physician or other qualified health care professional (list separately in addition to code for primary procedure); (use g0504 in conjunction with g0502, g0503)
G0512	Rural health clinic or federally qualified health center (rhcfqhc) only, psychiatric collaborative care model (psychiatric cocm), 60 minutes or more of clinical staff time for psychiatric cocm services directed by an rhcfqhc practitioner (physician, np, pa, or cnm) and including services furnished by a behavioral health care manager and consultation with a psychiatric consultant, per calendar month
G2000	Blinded administration of convulsive therapy procedure, either electroconvulsive therapy (ect, current covered gold standard) or magnetic seizure therapy (mst, non-covered experimental therapy), performed in an approved ide-based clinical trial, per treatment session
G2121	Psychosis, depression, anxiety, apathy, and impulse control disorder assessed
G2214	Initial or subsequent psychiatric collaborative care management, first 30 minutes in a month of behavioral health care manager activities, in consultation with a psychiatric consultant, and directed by the treating physician or other qualified health care professional
G9742	Psychiatric symptoms assessed
H0002	Behavioral health screening to determine eligibility for admission to treatment program
H0004	Behavioral health counseling and therapy, per 15 minutes
H0017	Behavioral health; residential (hospital residential treatment program), without room and board, per diem
H0018	Behavioral health; short-term residential (non-hospital residential treatment program), without room and board, per diem
H0019	Behavioral health; long-term residential (non-medical, non-acute care in a residential treatment program where stay is typically longer than 30 days), without room and board, per diem
H0023	Behavioral health outreach service (planned approach to reach a targeted population)
H0024	Behavioral health prevention information dissemination service (one-way direct or non-direct contact with service audiences to affect knowledge and attitude)
H0025	Behavioral health prevention education service (delivery of services with target population to affect knowledge, attitude and/or behavior)
H0027	Alcohol and/or drug prevention environmental service (broad range of external activities geared toward modifying systems in order to mainstream prevention through policy and law)
H0030	Behavioral health hotline service
H0031	Mental health assessment, by non-physician
H0032	Mental health service plan development by non-physician
H0035	Mental health partial hospitalization, treatment, less than 24 hours

H0036	Community psychiatric supportive treatment, face-to-face, per 15 minutes
H0037	Community psychiatric supportive treatment program, per diem
H0046	Mental health services, not otherwise specified
H2012	Behavioral health day treatment, per hour
H2013	Psychiatric health facility service, per diem
H2017	Psychosocial rehabilitation services, per 15 minutes
H2018	Psychosocial rehabilitation services, per diem
H2019	Therapeutic behavioral services, per 15 minutes
H2020	Therapeutic behavioral services, per diem
H2027	Psychoeducational service, per 15 minutes
H2030	Mental health clubhouse services, per 15 minutes
H2031	Mental health clubhouse services, per diem
H5020	Psychotherapy, group (maximum 8 persons per group, 45-50 minutes, per person, per session)
H5025	Psychotherapy, group (maximum 8 persons per group; 90 minutes, per person, per session)
M0064	Brief office visit for the sole purpose of monitoring or changing drug prescriptions used in the treatment of mental psychoneurotic and personality disorders
M0600	Psychologic testing, psychometric and/or projecting test, with, written report, given by or under the supervision of physician per hour
M0601	Psychological testing, with written report, per hour
M0605	Psychologic testing, with written report, given by or under supervision of the physician, per hour, psychometric tests, in-patient
M0610	Psychological testing, with written report, given by or under supervision of the physician, per hour, projective tests, identify tests used, out-patient
M0620	Psychological testing, with written report given by or under supervision of physician, per hour-projective tests, identify tests used, in-patient
M0625	Psychologic testing with written report given by or under the supervision of the physician, per hour
Q0044	Brief office visit for the sole purpose of monitoring or changing drug prescriptions used in the treatment of mental, psychoneurotic and personality disorders
S9480	Intensive outpatient psychiatric services, per diem
S9484	Crisis intervention mental health services, per hour
S9485	Crisis intervention mental health services, per diem
T2048	Behavioral health; long-term care residential (non-acute care in a residential treatment program where stay is typically longer than 30 days), with room and board, per diem
W0105	Psychiatry exam, per hour, va facility
W5010	Psychiatric exam, non-v a facility

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