

## **The Psychiatric Bed Crisis in the US:**

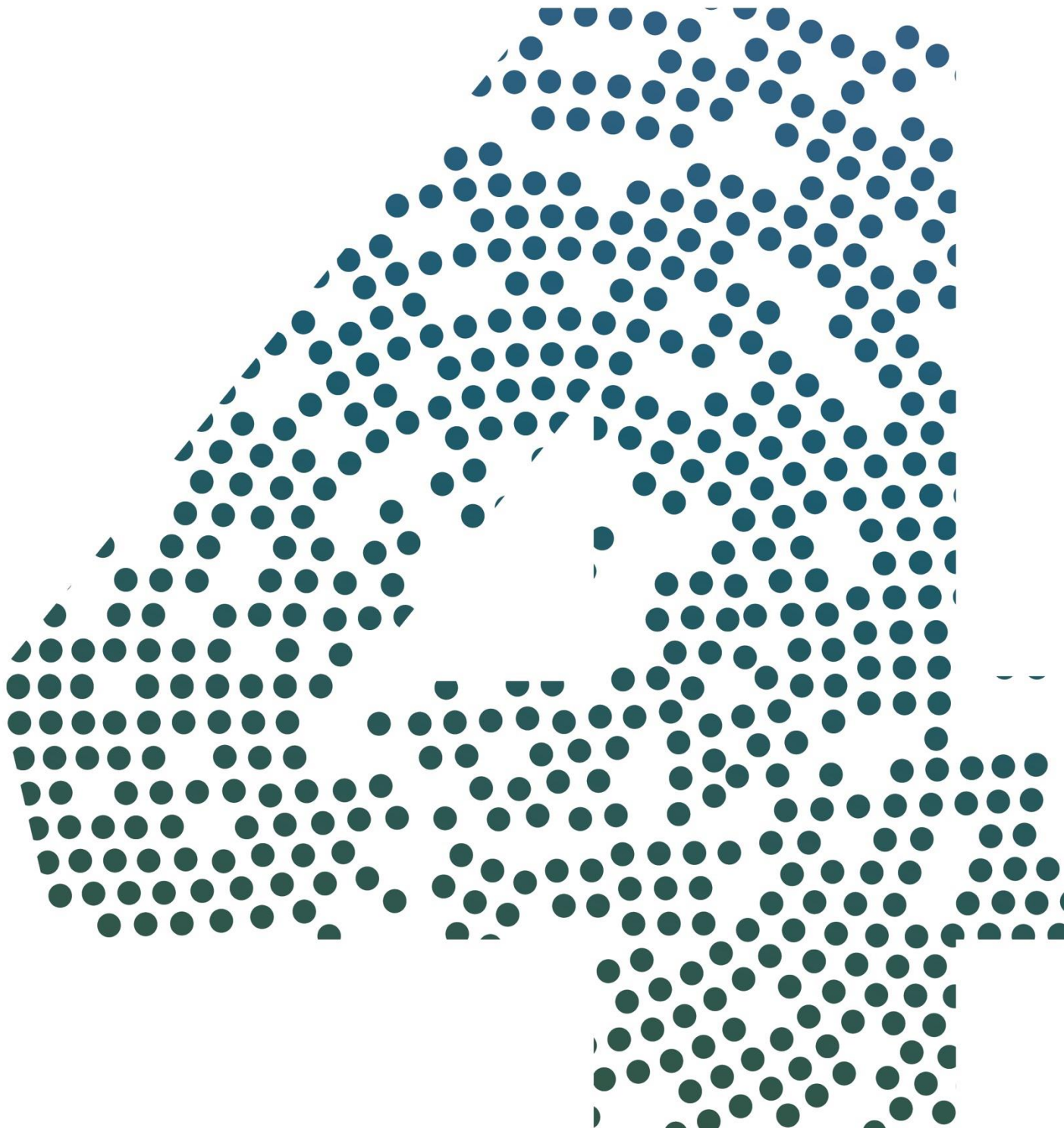
Understanding the Problem and Moving Toward Solutions

### **Section 4**

## Population Variables Affecting Use of Psychiatric Beds

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## **A. Introduction**

The challenge for this workgroup was to review and create a working description of what populations should be included in considering a community alternative to a psychiatric bed and make recommendations regarding how to account for portions of populations that include variabilities in the social determinants of health. In this section, the authors suggest the use of a tool for identifying variables for psychiatric bed need and prioritization of variables to be incorporated into the model.

## **B. Guiding Framework**

To provide a guide for identifying specific population variables, we identified the following key concepts:

1. The definition of need, psychiatric bed, mental illness, and social determinants of health.
2. The generally accepted criteria for inpatient admission to include agreed-upon risk factors that most need treatment available at an inpatient psychiatric unit.
3. The population variables which correlate to these agreed-upon risk factors.
4. How the variables change regarding voluntary and involuntary hospitalizations.
5. The populations currently included in decision making.
6. The populations currently not included, or traditionally not counted in terms of bed need or access (see Barriers to Care in Appendix).
7. The correlates of inpatient hospital bed use.
8. Recommendation after review of relevant databases.

## **C. Background**

Before the last third of the 20th century, psychiatric hospitals and units within general hospitals could be opened when administrators were convinced of a need for them. Convincing was, as historians tell us, largely a political process. In the 1970s, as health care costs were accelerating, policymakers who were looking for factors driving these increases identified excessive spending on what were in some cases unnecessary capital projects. In an effort to curb these excesses, states established “Determination of Need” or “Certificate of Need” (CON) processes, which required parties advocating any new capital expenditure on health care services to submit a statement demonstrating, among other things, that the proposed development did not duplicate existing resources in the healthcare market, and that there was a need for it within that market.

A variety of approaches were taken to the CON processes. With respect to mental health services, specifically hospital beds, applicants have typically relied on the use of an area’s socioeconomic and



sociodemographic characteristics to make their case for expansion. That such would be the case is not surprising; indeed, by the mid-1960s, the relationship between mental illness and social deprivation, social isolation, poverty, and other factors was becoming well-described in the psychiatric and social science literature. It seemed only logical that relevant attributes of an area's population, many of which were measured by the U.S. Census, could be used to make the case for implementation or expansion of services, and, moreover, with sound scientific grounding.

Published observations dating back more than two centuries have described a strong linkage between serious mental illness (SMI) and low socioeconomic status (SES) (Jarvis, 1865; Faris and Dunham, 1939; Draine et al., 2002). This view, which might be termed the "social determinants of mental health" perspective, sees poverty increasing one's risk of developing mental illness (Manseau, 2015). Others argue that poverty among persons with SMI is a consequence of developing an SMI, via the downward drift process (Faris & Dunham, 1939), and that only low levels of support are obtainable through public disability benefits. It might be argued as well that, along with the low income associated with carrying an SMI diagnosis, persons in this population experience many of the environmental features associated with low SES.

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The onset and course of all mental illness are mediated by a complex interaction between the person's biology/genetics, the community and environmental factors in which they were born and grew up in, and their unique life experiences. It is important to recognize that race is a social construct that has no scientific basis or biological reality, yet it continues to have a wide range of deleterious effects with respect to educational outcomes, criminal justice, and health institutions. Hence, it is reasonable to identify conditions that are the result of racism to be a risk factor for disease. Critical race theory is [defined](#) as a "framework based on the premise that race is not a natural, biologically grounded feature of physically distinct subgroups of human beings but a socially constructed (culturally invented) category that is used to oppress and exploit people of color." It has applications in population health research (Graham et al., 2011) and in consideration of how and where health resources and more specifically mental health hospitals and beds are developed.

Measures of racism include but are not limited to access to health care, access to education, housing stability, and interactions with the legal system. Attention to those variables influenced by racism requires consideration in mental health research and the determination of those population variables that affect inpatient psychiatric bed use. However, with respect to the need for psychiatric inpatient capacity, whatever the causal relationship, SES patterns in an area are inversely correlated with the



area's prevalence of mental illness and hence the need for mental health services.

For the purposes of this discussion, the key issue is defining the inpatient psychiatric bed needs of a given population. As noted in Section 2, an inpatient psychiatric hospital bed is defined here as a bed where individuals with mental illness receive 24/7 psychiatrically supervised care primarily for symptoms of psychiatric illness with ancillary supports for co-occurring medical conditions. An individual that is hospitalized in such a bed is also referred to as a patient or an inpatient.

## **D. Existing Databases and Correlates of Inpatient Psychiatric Bed Use**

### **1. Existing Databases**

The popularity of using variables that can be associated with the need for mental health services by various populations has contributed to the growth of databases that capture significant numbers of these factors. Notable among these is the Area Health Resource Files, developed by the U.S. Health Resources and Services Administration, which combines county-level U.S. Census data on socioeconomic and socioeconomic factors. These are the kinds of variables that are incorporated in needs assessment analyses by Maryland, Tennessee, and likely other states.

Other factors related to social disorganization that might be worth examining include how criminal justice activity and mental illness both relate to levels of social disorganization, and inclusion of arrest rates in a model of bed need could prove useful. Similarly, measures of neighborhood instability, such as the percentage of households in a county in which current residents had moved in the past year are often indicators of poverty and low SES neighborhoods. One author discussed using poverty as a proxy to narrow the number of variables that are captured in the Area Health Resource Files.

Clinical severity also has been used to measure the need for mental health services. The Finland (Ala-Nikkola, 2016) mental health index is an indicator of population mental health status that can be calculated for each catchment area using three years of data. The data includes: 1) the number of suicides and suicide attempts, 2) persons eligible for special reimbursement for antipsychotic medication, and 3) persons receiving disability benefits (18–64 years old) due to mental disorders.

## **E. Correlates of Inpatient Psychiatric Bed Use**

Several studies detail those statistically significant variables that correlate with inpatient hospital bed use, thus should be considered for inclusion as listed below. One can see the duplicity of measures such as welfare, as a source of income, is a measure of poverty (US Census). The more common population variables that are used in studies are listed in Table 1 below.



**Table 1: Common Population Variables**

• Address	• Life cycles (fertility, mortality, migration)	• Poverty
• Age	• Living situation	• Presence of mental health clinic
• Annual personal income	• Marital status	• Race/ethnicity
• Any lifetime homelessness	• Mental health disorders	• Region
• Any lifetime incarceration	• Mental illness severity	• Religion
• Any suicide attempts	• Mobility	• School enrollment
• Educational attainment level	• Nationality	• Sex or gender
• Employment	• Number of children	• Sexual orientation
• English language proficiency	• Occupation	• Substance-use disorders
• Ever served in the military	• Occupational status	• Urbanicity/county type
• Family size	• Overall health	• Hourly wage
• First language	• Ownership's (home, car, pet, etc.)	• Social support score
• Healthcare coverage/insurance	• Parenthood status	• Socioeconomic status
• Housing cost burden	• Past-year criminal justice involvement	• Welfare
• Immigration status		

Although several studies revealed that demographic data (e.g., race, gender, ethnicity, county type) showed no correlation to inpatient use (Miller, 2016), one study revealed counterevidence where age, gender, race/ethnicity, homelessness and employment status were all significantly related to hospitalization (Unick et al, 2011).

Another useful correlate is the level of impairment. Clinical severity was a consistent predictor of hospitalization (Unick et al, 2011). Suicidal ideation provided the greatest discriminating power in children and adolescents with eating disorders.

The legal status (i.e., involuntary vs. voluntary) of patients during psychiatric hospital admission and discharge is also a useful correlate. Legal status can significantly impact the likelihood of future hospital admission (Craw and Compton, 2006). The availability of involuntary outpatient commitment may also affect inpatient hospital bed usage.

Studies also reveal that certain SES characteristics correlate to inpatient use. These include school enrollment as measured by the education index (education years after primary school) (Ala-Nikkola, 2016), residential stability, and living situation. Those associated with higher rates of admission include employment status, overall health, and past year criminal justice system involvement, past year substance use as measured by alcohol sales - liters of 100% alcohol per person (Ala-Nikkola, 2016), and insurance status (Alegria, et al, 2012). Of note, ethnic differences in the use of inpatient mental health services were not significant in a generously insured population (Padgett, 1994).



## F. Recommended Priority Variables for Inclusion in Bed Needs Determination

The authors recommend the following:

1. High priority variables.
  - a. The Area Deprivation Index (ADI) was the greatest predictor of bed needs and correlated with other variables identified. (See discussion of ADI below.)
  - b. SES characteristics relating to poverty.
    - i. Employment status.
    - ii. Overall health.
    - iii. Past year criminal justice system involvement.
    - iv. Insured versus uninsured status.
    - v. Education status.
2. Low priority variables.
  - a. Number of actual suicides and suicide attempts per 100,000 people.
  - b. Persons eligible for coverage of antipsychotic medication.

Additional variables that may be important but require more research:

1. Homelessness or housing status.
2. Past year substance use (drug and alcohol use relate to poverty and could also account for people being readmitted or reentering the system if they are on probation) (Cerdá, 2010; Zgoba et al, 2020).
3. Rates of SMI in jail and prison population (Prins, 2014; Nowotny, 2017).
4. Emergency department wait times, psychiatric boarding, volume of service.
5. Number of psychiatric admissions per 100,000 people.
6. People admitted or readmitted with SMI.

## G. Recommended Tool for Identifying Variables

The authors recognize that inpatient bed needs center on lack of access to other community supports. Poverty and the associated variables (i.e., unemployment, income, education) have the most robust effect on inpatient admission and should be prioritized. The basis of the ADI is census data and can show where areas of deprivation and affluence exist within a community (Singh, 2003; Knighton, et al, 2016). The ADI has been well-studied in peer-reviewed literature and was created by and has been used for 20 years by the Health Resources and Services Administration (HRSA). Elevated levels of deprivation have been linked to health outcomes. The Neighborhood Atlas is built using these data (Kind and Buckingham, 2018; U. of Wisconsin, 2015). Therefore, the authors recommend the Area Deprivation Index as a tool for identifying variables for psychiatric bed need for the following reasons:





1. The ADI is a robust source of poverty data.
2. Some studies have looked at increased mortality and hospitalization rates, however there are no studies that have looked at psychiatric hospitalizations.
3. A study using ADI to show widening inequalities in U.S. mortality (Singh, 2003) used 21 SES indicators identified in the 1990 census including:
  - a. Education, population age, employed persons age 16 and over in white-collar occupations, median income, income disparity, median home value, median gross rent, median monthly mortgage, owner-occupied housing units, civilian labor force population 16 up who is unemployed (unemployment rate), families below poverty level, population below 150% of the poverty threshold, single-parent households with children under 18 years old, houses with motor vehicles, households without telephone, households without plumbing, households with more than one person per room (crowding), proportion of total variates explained by any particular factor.
  - b. The variables in this study coordinate with the variables identified by the subgroup as high priority and SES characteristics correlating with poverty.
4. Level of poverty is a priority correlate.
5. The current ADI is consistent with 2011 – 2015 data.
6. The ADI does not contain general demographic information. Some studies found higher correlation with SES than demographic information like race and age.

### See also

Appendix A: Glossary of Terms Related to Psychiatric Bed Needs

Appendix B: Barriers to Care

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