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Adult Psychiatric Bed Capacity, Need, and Shortage Estimates in California—2021

Summary

Psychiatric beds are essential infrastructure for meeting the needs of individuals with mental health conditions. However, not all psychiatric beds are alike: They represent infrastructure within different types of facilities, ranging from acute psychiatric hospitals to community residential facilities. These facilities, in turn, serve clients with different needs: some who have high-acuity, short-term

needs and others who have chronic, longer-term needs and may return multiple times for care.

California, like many parts of the United States, is confronting a shortage of psychiatric beds. This shortage manifests in high bed occupancy rates and long wait lists for placements. However, determining the primary drivers of this shortage—accounting for regional variation in psychiatric bed capacity at different levels of care—is a challenging problem to tackle. Nevertheless, California is committed to expanding the mental health infrastructure, including psychiatric bed capacity. How, where, and to what extent

KEY FINDINGS

- California faces an estimated 1.7-percent growth in its psychiatric bed need from 2021 to 2026.
- California faces shortages of psychiatric beds at all three major levels of adult inpatient and residential care.
- Significant regional differences in the estimated shortfall of beds were noted at each level of care.
- Growth in the need for psychiatric beds is projected to be largest in the Northern and Southern San Joaquin Valley.
- Hard-to-place populations contribute disproportionately to bottlenecks in the existing system.
- A majority of psychiatric facilities at all levels of care reported an inability to place individuals with comorbid dementia or traumatic brain injury, nonambulatory individuals, those requiring oxygen, and those who tested positive for COVID-19. Individuals involved in the criminal justice system were reportedly difficult to place in community residential settings.

these investments should be made remains an open question.

In this report, we estimated psychiatric bed capacity, need, and shortages for adults at each of three levels of care throughout California. These three levels of care are acute, subacute, and community residential services:

- Acute care is directed toward those with the highest acuity needs, is typically shorter term (days to weeks), and is intended to stabilize patients.
- Subacute care is directed toward those with moderate- to high-acuity needs for a longer duration (multiple months).
- Community residential services are intended to address lower acuity and longer-term care (often multiple years) that is focused on patient recovery.

We computed these estimates with and without the inclusion of state hospitals, which often provide care for unique subpopulations who may be hard to place in other settings, including those with high acuity, long-term needs. Additionally, we projected growth in the need for psychiatric beds in the period of 2021 to 2026.

Approach

Our population of interest comprised adults (18 years or older) throughout California. The corresponding sampling frame contained all psychiatric facilities with psychiatric beds serving adults throughout California's 58 counties. Because individuals might access psychiatric facilities (and beds) outside their county of residence, we aggregated estimates at a regional level using the U.S. Census Bureau classification.

To estimate psychiatric bed capacity, we synthesized an array of data sets from state agencies that are responsible for licensure of psychiatric beds. To supplement this information, we employed a stratified randomized sampling approach to administer a survey to collect data on the number of beds at facilities and the number of beds occupied. We provided estimates to county points of contact at behavioral health departments to review and revise them with an eye to improving accuracy.

To estimate psychiatric bed need, we used several approaches for the purpose of triangulation. First, we contacted psychiatric facilities throughout the state and spoke with administrative leaders at these facilities to quantify bed occupancy rates, wait list volume, average length of stay, and the number of individuals whom they would transfer to a higher or lower level of care if able to do so. Using the information gathered, we were able to compute the number of beds required—at each level of care in each region of the state—to reduce occupancy rates to 85 percent (a standard ceiling) and accommodate wait list volume and requested transfers. We calculated these estimates excluding state hospitals and, separately, including state hospitals, prioritizing the former approach. Our rationale for this is that state hospital beds are generally not considered part of the continuum of care at a local level in terms of decisionmaking purposes. Second, we moderated this bottom-up estimate by incorporating epidemiological information on regional variation in serious psychological distress (SPD) among adults, which serves as an indicator of psychiatric bed need. Third, as a top-down approach, we convened a Technical Expert Panel to deliberate and arrive at normative estimates of psychiatric bed need available from the research literature.

Lastly, we projected the need for psychiatric beds in the period from 2021 to 2026. To accomplish this, we first quantified the prevalence of SPD according to demographic categories (i.e., sex, race/ethnicity, and age group) among adults in California, using the California Health Information Survey. From this, we were able to estimate the regional prevalence of SPD in 2026, based on evolving demographic trends. Next, we cross-walked the estimated prevalence of SPD to the likelihood of requiring inpatient psychiatric services, based on the proportional need for inpatient psychiatric services among individuals with versus without SPD, according to the National Survey on Drug Use and Health (NSDUH).

Key Findings

Psychiatric bed capacity. We estimated that California has a total of 5,975 beds at the acute level (19.5 per 100,000 adults) and 4,724 at the subacute level (15.4 per 100,000 adults)—excluding state hospital

beds. If state hospital beds are included, these figures increase to 7,679 (25.1 per 100,000 adults) and 9,168 beds (29.9 per 100,000 adults), respectively. We also observed large regional variation. For example, excluding state hospitals, acute bed capacity ranged from 9.1 beds per 100,000 adults in the Northern San Joaquin Valley to 27.9 beds per 100,000 adults in the Superior region. For subacute bed capacity, regional estimates ranged from 7.4 to 31.8 beds per 100,000 adults. At the community residential level, we estimated that California has a total of 3,872 beds (12.7 per 100,000 adults).

Psychiatric bed need. Using observed occupancy rates, wait list volumes, and requested transfers, we estimated that California requires 50.5 inpatient psychiatric beds per 100,000 adults: 26.0 per 100,000 at the acute level and 24.6 per 100,000 at the subacute level, or 7,945 and 7,518 beds, respectively. At the community residential level, we estimated a need of 22.3 beds per 100,000 adults.

Estimated prevalence of SPD in California ranged from 7.9 percent in the San Francisco Bay Area to 9.3 percent in the Southern San Joaquin Valley. When we incorporated this epidemiological information into our psychiatric bed need estimates, this introduced regional variation in psychiatric bed need that ranged from 45.5 to 55.5 inpatient psychiatric beds per 100,000 adults. Lastly, we collected secondary estimates of psychiatric bed need from the academic literature and our Technical Expert Panel. Using median values, we generated a separate, top-down estimate of psychiatric bed need: 27.5 beds per 100,000 adults at the acute level and 25 per 100,000 at the subacute level. We were unable to provide a comparable top-down estimate of need for community residential beds because of the significant heterogeneity within this classification and the paucity of academic literature.

We estimate that the magnitude of need for psychiatric beds is expected to grow modestly over the next five years (2021 to 2026): by 1.7 percent. This is primarily due to shifting demographic trends, including adult population growth and increasing racial/ethnic diversity, because epidemiological data indicate that Hispanic and Black adults experience SPD at higher rates than do White adults. Growth in the need for psychiatric beds is projected to be largest in the Northern and Southern San Joaquin Valley—by about 4.0 percent.

Growth in the need for psychiatric beds is projected to be largest in the Northern and Southern San Joaquin Valley.

Psychiatric bed shortages. Synthesizing figures for bed capacity and bed need, we estimated that the state has a shortfall of approximately 1,971 beds at the acute level (6.4 additional beds required per 100,000 adults) and a shortage of 2,796 beds at the subacute level (9.1 additional beds required per 100,000 adults)—or 4,767 subacute and acute beds combined, excluding state hospital beds. If state hospitals were included in this estimate, the shortage of acute inpatient beds would shrink to 267, and there would be no observable shortage in beds at the subacute level. Separately, we estimated a shortage of 2,963 community residential beds.

The top-down estimates of psychiatric bed need—as drawn from the literature and our Technical Expert Panel—also indicated a bed shortage: 8.9 beds per 100,000 adults at the acute level and 10.6 beds per 100,000 adults at the subacute level. Therefore, our bottom-up and top-down estimates were closely aligned. The remaining discrepancy likely pertains to differences in the configuration of health systems throughout the United States and internationally, including availability of outpatient services and alternatives to hospitalization, that drive need.

When regional prevalence estimates for SPD were incorporated, the gap in beds required reduced modestly: by 4.5 percent. We also documented significant regional differences in the estimated shortfall of beds on the basis of the wide regional variation in psychiatric bed capacity. For example, two regions of the state appear to have sufficient acute inpatient psychiatric bed capacity, whereas the remaining eight regions

have a shortfall. At the subacute level, all regions (apart from the Northern San Joaquin Valley) appear to have a shortfall. However, the magnitude of this shortfall ranges from 5.1 additional beds required per 100,000 adults in the North Coast region of the state to 17.2 additional beds required per 100,000 adults in the Southern San Joaquin Valley.

Lastly, we inquired about hard-to-place populations. Here, we found that a majority of psychiatric facilities at all levels of care reported an inability to place individuals with comorbid dementia or traumatic brain injury, nonambulatory individuals, those requiring oxygen, and those who tested positive for the coronavirus disease 2019 (COVID-19). A majority of respondents from community residential facilities also reported an inability to place individuals involved in the criminal justice system—particularly those with arson or sex offense convictions.

Recommendations

Using these findings, we came up with three recommendations:

1. Prioritize psychiatric bed infrastructure in the areas with the greatest need. In terms of an absolute shortfall of beds, the shortfall was greatest in terms of subacute beds, driven partly by four regions (Los Angeles County, San Francisco Bay Area, Inland Empire, Superior region) that represented a shortfall of more than 2,000 beds—more than a quarter of all additional beds needed throughout the state. If policymakers examine the psychiatric bed shortfall as a proportion of regional adult population, this might lend greater weight to regions with smaller or more rural populations: For example, the shortfall of subacute beds is 5.2 beds per 100,000 adults in Los Angeles County compared with 17.2 per 100,000 adults in the Southern San Joaquin Valley. We also observed significant need for acute beds in such regions as the Northern and Southern San Joaquin Valley and Central Coast, while the shortfall at the community residential level was particularly notable in

such regions as the Central Coast, Inland Empire, and Southern San Joaquin Valley.

2. Consider focusing on building or remodeling infrastructure for the most hard-to-place populations. Specific subpopulations appear to contribute disproportionately to bottlenecks in the current system, including an inability to transfer patients with criminal justice involvement from the subacute level of care to community residential settings. Given this, the state might need to consider alternative arrangements for placing such populations, such as community-based and outpatient competency restoration programs. Here, California could learn from other mental health systems across the United States and internationally.
3. Set aside state funds for a system that reviews licensure data and periodically collects psychiatric facility-level information. Our analysis and conclusions contain numerous caveats, in large part because of poor data quality. We wish to be transparent about this fact, with the hope that this serves as an impetus for the state to consider investing in an adequate data review and monitoring system. If the state were to allocate funds to routinely monitor and purge licensure data, policymakers would be in a much stronger position to know what the existing capacity is at each level of care—particularly at the community residential level. Likewise, the state should consider establishing a mechanism by which psychiatric facilities report periodically on bed occupancy rates, wait list volume, number of requested transfers to higher and lower levels of care, and psychiatric patient boarding in emergency departments. The state should also consider collecting sociodemographic and clinical information on patients who use psychiatric beds. This would allow California to have a remarkably precise and sensitive system for tracking the impact of investments that seek to address psychiatric bed shortages.

Introduction

Role of Psychiatric Beds

Psychiatric beds are essential infrastructure for meeting the needs of individuals with serious mental health conditions.¹ These beds serve several functions—including enabling safe, stable, and supportive environments for individuals in acute mental health crises and for those with significant impairment who require ongoing medical monitoring.²

Not all psychiatric beds are alike, because they represent infrastructure within different types of facilities. For example, psychiatric beds in acute inpatient hospitals serve those in need of secure, 24-hour care and often include crisis stabilization units. The average length of stay in such states as California is one to two weeks.³ By contrast, psychiatric beds in such subacute facilities as mental health rehabilitation centers (MHRCs) or special treatment programs at skilled nursing facilities (SNFs)—which provide longer-term recovery-oriented services, such as independent life skills training—may remain occupied by the same individuals for many months.⁴

Ultimately, psychiatric beds represent an important component in a continuum of behavioral health care that includes integrated community services ranging from prevention and screening to emergency crisis response. Depending on the arrangement of services, the need for psychiatric beds may look different. For example, the CrisisNow model of emergency care instituted in Arizona has significantly reduced the state's volume of psychiatric emergency department (ED) boarding.⁵ Assertive Community Treatment and similar models, such as Full Service Partnership programs, may also be key contributors. These models employ transdisciplinary teams to provide comprehensive services to patients who have needs that have not been adequately met by traditional approaches.⁶ According to the Substance Abuse and Mental Health Services' Behavioral Health Treatment Services Locator, there are 133 mental health treatment facilities in California that offer these services, though these services may be underreported.⁷

With regard to psychiatric beds specifically, California embeds psychiatric beds within crisis

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resolution and triage services, acute inpatient services, subacute services, state hospitals, and community residential services. Clinical guidelines, such as the Level of Care Utilization System, enforced by the state of California through Senate Bill (SB) 855 (2020),⁸ provide a useful compass for matching an individual's needs with an appropriate level of care.

Psychiatric Bed Shortfall

Psychiatric bed capacity is severely strained in California, as it is in much of the United States.⁹ The present situation may be viewed, in part, as the long tail of an effort to deinstitutionalize psychiatric services throughout the United States during the latter half of the 20th century: from a peak of 337 psychiatric beds per 100,000 individuals in the United States in 1955 to a low of around 12 beds per 100,000 in 2016.¹⁰ This transition to community-based services—although well-intentioned—has resulted in a paucity of infrastructure to serve the needs of individuals who would otherwise benefit from a stable and supervised residence, particularly those with serious mental illness (SMI).¹¹

Today, hundreds of Californians in need of psychiatric beds are held in hospital EDs or county jails awaiting openings in inpatient care settings.¹² In addition, a sizable percentage of chronically homeless individuals have an SMI.¹³ As county jail and homeless populations continue to swell, these rising numbers have created an increasing urgency to take

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action. For example, in early 2021, an estimated 1,600 adults in need of psychiatric beds were residing in county jails because they had been deemed incompetent to stand trial and were unable to be placed by the Department of State Hospitals (DSH).¹⁴ Legislators, meanwhile, have called for an overhaul of state psychiatric services—particularly against the backdrop of the COVID-19 pandemic.¹⁵

Measuring Need for Psychiatric Beds

Estimating the need for psychiatric beds in California is essential for at least three reasons. First, when estimates on the need for psychiatric beds are paired with estimates on the existing bed capacity, evaluators can determine the magnitude of the shortfall in beds throughout the state, allowing policymakers to discuss investments accordingly. Second, the estimation process can serve a diagnostic function: Given the diversity and geographic distribution of both adults and psychiatric facilities in California, needs throughout the state are heterogeneous. Lastly, if the need for psychiatric beds is estimated at multiple intervals, these estimates can provide an ongoing feedback mechanism for fine-tuning investments. Because needs are dynamic, investments in infrastructure at any given time may only partially address problems. This factor should create an impetus to determine how effective initial investments were and to plan for new investments for new needs have arisen.

Estimating the need for psychiatric beds is a thorny undertaking. There are no standardized approaches or best practices, and health systems are constructed differently at the regional and state levels. However, prior literature outlines at least four methods for calculating the number of psychiatric beds that are needed to address population needs. These methods include (1) expert consensus, (2) a normative approach, (3) a population health approach, and (4) an observed outcomes approach.¹⁶ We briefly survey these approaches, including their strengths and limitations.

Expert consensus. Calculating psychiatric bed need by expert consensus relies on open discussion among content and methods experts—who operationally define a set of relevant principles, deliberate evidence, and then achieve mutual agreement on standards. A key example of this approach is a 2008 report by the Treatment Advocacy Center (TAC),¹⁷ which interviewed 15 experts to deliberate and arrive at a suggested benchmark for measuring psychiatric bed need: 40 to 60 beds per 100,000 in population.¹⁸

Although expert consensus is a helpful method for arriving at an estimate of psychiatric bed need, this approach has limitations. The report by TAC did not outline the precise deliberations that led experts to arrive at their conclusion, making it challenging to scrutinize the estimate or replicate the process. Furthermore, without a set of operational definitions for such terms as *psychiatric bed*, it remains unclear whether a specific benchmark would translate in other settings or how one would go about allocating 40 to 60 beds per 100,000 in population across different levels of care. The number and types of beds required are liable to depend on local context and resources.

Normative approach. The normative approach to calculating psychiatric bed need is predicated on an assumption that jurisdictions (or countries) with similar health systems and demographic characteristics are likely to require a similar number of psychiatric beds. In this scenario, a jurisdiction with more-robust psychiatric facility infrastructure has the potential to serve as a comparator for others. For example, the Organisation for Economic Co-operation and Development has employed this approach to compare mental health infrastructure across its 38 member countries, providing annual-

ized estimates of psychiatric beds per 100,000 in population—with a low of 3 beds per 100,000 in population in Mexico to 259 per 100,000 in population in Japan (the United States ranks seventh from the bottom at 25 per 100,000).¹⁹ The World Health Organization has followed a similar model with its Mental Health Atlas project.²⁰ Coupled with other indicators (e.g., hospital readmission rates), comparative analyses can be used to determine whether and to what extent more-robust infrastructure translates to improved population health outcomes.

The main challenge with the normative approach is that there are large differences in the number of psychiatric beds per capita even within countries that have similar health and economic systems. Furthermore, understanding the difference in reported numbers of psychiatric beds is difficult because there is no standard definition for *psychiatric bed*. Countries like Italy do not consider residential treatment facilities to constitute inpatient care, producing a much lower estimate per 100,000 in population compared with countries that include residential treatment facilities.²¹ Additionally, what works for some countries and systems in terms of psychiatric bed needs and mental health services may not work in others. Individual countries may first need to define their core mental health services and set data-driven targets to meet those needs. One recent study found that, out of 32 mental health plans developed across five countries, only four plans included specific targets for their core services—including psychiatric bed needs.²² These sorts of comparative metrics are also generally lacking within the United States across regions and counties.

Population health approach. A population health approach identifies the prevalence of mental health conditions within a geographic area and then applies a set of standards to meet population health needs in accordance with these prevalence estimates—including quantifying psychiatric services and corresponding infrastructure, such as psychiatric beds. One advantage of this approach is that prevalence estimates for particular mental health conditions (and, by extension, needs that derive from these conditions) are sensitive to the underlying demographic characteristics of the region—such as age, sex, and income distributions. In Tennessee,

for example, the Department of Health used population and demographic estimates to calculate the total psychiatric bed need as 30 beds per 100,000 in population.²³ Other states (Mississippi, Oklahoma, Missouri) have performed similar calculations, using a fixed population ratio to arrive at estimates of need ranging from 20 to 117 psychiatric beds per 100,000 in population.²⁴ This wide range in values is indicative of disconcerting variation in the parameters used to come up with these estimates.

Calculating the number of psychiatric beds needed from this population health approach assumes certain targets for specific mental health conditions, which may be more or less accurate. For example, there is a paucity of epidemiological data on the likelihood of an individual requiring specific services based on mental health diagnosis and illness severity, and on the optimal duration and intensity of service provision. Relying on limited information risks generating inaccurate predictions for the number of psychiatric beds needed and may underpin the wide variation observed in estimates across states—which are often using differing sets of assumptions.

Observed outcomes approach. The observed outcomes approach is based on the observation that heterogeneous psychiatric bed capacity across counties and states is liable to have observable effects on health systems and populations.²⁵ By looking at the relationship between psychiatric bed capacity and key performance indicators—such as wait times, occupancy rates, length of stay, emergency room boarding, and population health outcomes—researchers have the potential to calculate minimum and optimal psychiatric bed capacity requirements from an inductive perspective.²⁶ Along these lines, in 2020, the San Francisco Department of Public Health conducted a simulation to assess psychiatric bed need, which analyzed more than 25,000 mental health–related admissions and accounted for variable bed occupancy rates across different levels of care.²⁷ The authors of the report concluded that observed bed occupancy rates greater than 85 percent have the potential to contribute to bottlenecks and flow issues over the long run and suggested an additional 97 beds across four types of facilities to achieve zero wait time.

The observed outcomes approach has also been criticized.²⁸ Specifically, researchers have argued that

key performance indicators tend to concentrate on process measures pertaining to hospital administration, which may have little correspondence to patient outcomes. Furthermore, hospital functioning may be dependent on a wide array of factors, such as employment rates or social determinants of health within the local community. Therefore, these extraneous factors may function as confounders during analysis unless they are incorporated as covariates.

Ultimately, as noted earlier in this report, there are no consensus best practices for determining psychiatric bed needs. The most robust approach may therefore be to inspect the problem from multiple vantage points and methodologies to converge on a triangulated set of estimates for psychiatric bed needs. This includes—to the extent possible—pressure testing the approaches outlined above by performing sensitivity analyses. We have therefore elected to assume this triangulated approach in our analysis, as further described in the “Methods” section.

California’s Investment in Infrastructure

California has stated a commitment to expand mental health infrastructure, including psychiatric bed capacity.²⁹ In early 2020, California Health and Human Services announced the formation of a Behavioral Health Task Force, appointed to advise Governor Newsom on efforts to reform and advance behavioral health services throughout the state.³⁰ Since the onset of the COVID-19 pandemic in 2020, Newsom has signed numerous bills into law that aim to increase Californians’ access to mental health services. As noted earlier in this report, these bills include SB 855, which requires commercial health insurance plans outside Medi-Cal to provide medically necessary treatments for all mental health conditions and substance use disorders.³¹ The bill also requires that health plans provide services that comply with level of care determinations as outlined in the Level of Care Utilization System, American Society of Addiction Medicine criteria, and other clinical guidelines for pediatric populations.

Separately, Assembly Bill (AB) 2377—which was also ratified in 2020—sought to mitigate the impact of adult residential facility closures and help residents at risk of homelessness in California.³² Specifically, the

bill’s provisions allow local governments to purchase psychiatric facilities to prevent closures and require that facility owners give residents greater advanced notice prior to closure. Several complementary bills signed into law earlier this year, including AB 27, AB 362, AB 816, AB 977, AB 1220, AB 1443, and SB 400, represent part of a \$22 billion investment to address homelessness and the need for behavioral health services. The investments include \$3 billion dedicated to housing for those with acute behavioral and physical health issues—with an expectation of creating approximately 22,000 new beds and treatment slots.³³

Additional Assembly legislation, AB 2265, has focused on increasing access to treatment by allowing California counties to use mental health services funds to address not only mental health conditions but also substance use disorders, with the goals of enhancing care coordination and creating an integrated behavioral health care system.³⁴ In the context of psychiatric bed infrastructure, this legislation is particularly relevant for populations in need of longer-term rehabilitative services who are coping with comorbid substance use and mental health conditions. It was signed into law on September 24, 2020.

Purpose of This Report

In this report, we provide an estimate of current psychiatric bed capacity throughout the ten census regions of California, according to three overarching levels of care: acute inpatient care, subacute inpatient care, and community residential treatment. We then compare the measure of current psychiatric bed capacity with estimates of psychiatric bed need. Lastly, we project bed capacity needs over the next five years, based on evolving demographic trends throughout the state.

We note that the primary bed estimates provided in this report do not include state hospitals, although we provide secondary estimates for which state hospitals are included. This decision was based on three factors. First, more than 90 percent of psychiatric beds at state hospitals are occupied by individuals involved in the criminal justice system.³⁵ Thus, state hospitals serve a set of clients with unique constraints that do not apply to local behavioral health continuums that we examine in detail throughout this

report. In addition, the forensic population census has continued an upward trend that portends a continued reduction in beds available for non-forensic individuals. Second, the exclusion of state hospitals has the secondary benefit of modeling need for psychiatric beds if state hospitals were transitioned to local, community-based alternatives. Third, unlike other types of facilities, state hospitals are not broadly distributed throughout the state. This distribution results in computational challenges for determining psychiatric bed shortages in regions that contain state hospitals, especially because not all patients within state hospitals are residents from the region in which that state hospital is located. We discuss further details in the “Methods” section.

We supplement these quantitative analyses with input from our panel of technical experts. Using the combined results, we outline a series of recommendations. These recommendations pertain to the expansion of psychiatric bed capacity to address existing gaps, and they are situated in California’s context of ongoing legislative efforts to establish a holistic continuum of behavioral health care services.

Methods

Population and Scope

Our population of interest comprised all adults (18 years or older) in California, across all 58 counties. Because individuals may access psychiatric facilities (and beds) outside their county of residence, we aggregated estimates of population, capacity, and need at a regional level using the U.S. Census Bureau classification: Superior California, North Coast, San Francisco Bay Area, Northern San Joaquin Valley, Central Coast, Southern San Joaquin Valley, Inland Empire, Los Angeles County, Orange County, and San Diego-Imperial.³⁶ Although our denominator for the calculations in this report included all adults in California—because all adults have the potential to use inpatient psychiatric services—a disproportionate number of those using psychiatric beds are adults with SMIs, such as schizophrenia, bipolar disorder, and major depressive disorder.

There are many types of psychiatric facilities in California. Depending on the county, the character-

ization of these facilities and portfolio of services may vary. Given this factor, we assigned facilities to three levels of care—matching closely to a conceptual model established by the County Behavioral Health Directors Association of California.³⁷ The levels were defined by two axes: first, the acuity of need being attended to, ranging from emergent crises to nonemergent, ongoing supports; second, typical length of stay, ranging from short term (days to weeks) to long term (months to years). With the exception of community residential facilities, length of stay is usually time-delimited according to the particular type of facility.

Operationally, we defined the three levels of care as follows:

1. acute, representing highly structured, around-the-clock medically monitored inpatient care for individuals at heightened risk of harm to themselves or others, or those who are otherwise unable to care for themselves
2. subacute, representing around-the-clock inpatient care that includes specialized programming in a controlled environment with a significant degree of supervision but with less intensive medical monitoring and intervention than acute care
3. residential, representing nonhospital programs in which individuals live on the premises of a facility and are provided with consistent programming to promote interpersonal and independent living skills, with staff present 24 hours a day, seven days a week.

Table 1 details the types of facilities contained within each of these levels of care, based on facility licensure information.

State hospitals represent a unique type of institution. In other settings, acute care is short term and focused on stabilizing patients, whereas residential care is lower intensity and geared toward long-term medical and nonmedical supports.³⁸ In this sense, the two axes described above (acuity and length of stay) are aligned. The expectation is that patients may transition up and down the care continuum based on their needs at a given time point. However, state hospitals are less dynamic and often provide care for subcategories of patients with long-term, high acuity needs or based on medical necessity. For example,

TABLE 1
Levels of Care and Corresponding Adult
Psychiatric Bed Infrastructure

Level of Care	Types of Facilities Included
Acute (Level 3)	Acute psychiatric hospitals; psychiatric health facilities; general acute care hospitals with psychiatric wards; acute beds at state hospitals
Subacute (Level 2)	General or specialized subacute facilities; MHRCs; SNFs with specialized treatment programs; institutions for mental disease; subacute beds at state hospitals
Residential (Level 1)	Adult residential treatment facilities; enhanced or augmented board-and-care facilities; social rehabilitation facilities

NOTE: For a definition of *psychiatric health facilities*, see California Department of Health Care Services, 2021b. For a definition of *institutions for mental disease*, see California Department of Health Care Services, 2021c.

state hospitals often house forensic patients (i.e., those involved with the criminal justice system), and, in California, many state hospital beds are reserved for such patients.³⁹ This raises two questions: Should state hospitals be placed within the care continuum; and, if so, where? For the purposes of this report, we have remained agnostic to the first question, computing capacity and bed shortages with and without inclusion of state hospitals. For the latter, we allocated acute state hospital beds to the acute level and subacute beds to the subacute level, both of which are documented in licensure data sets.⁴⁰

Specific populations and bed categories were deemed to be outside the scope of our analysis. Regarding populations, we excluded children and adolescents, for whom there are subtle but important differences in the care continuum and who were therefore deemed to merit a separate analysis.⁴¹ Regarding bed categories, we omitted beds corresponding to permanent supportive housing, those in county jails, and those in EDs used for boarding patients with mental health conditions. These categories are seldom quantified as psychiatric beds because they are not exclusively reserved for populations with mental health conditions, though it may be the case that individuals with mental health conditions occupy one of these bed types.

For quantification of psychiatric bed need, we incorporated the number of jail units occupied by

individuals who are incompetent to stand trial and are awaiting transfer to an alternative care setting such as a state hospital.⁴² Our rationale for this was that, although jail units are not suitable to serve as psychiatric beds (and therefore should not factor into capacity), they are nevertheless housing individuals in need of psychiatric beds. This was not possible for ED boarding. Although California generates an annual hospital utilization report, these reports do not contain ED boarding rates among patients with mental health conditions.⁴³ Likewise, there are no formal tallies of the number of individuals with mental health conditions who are receiving permanent supportive housing and would otherwise benefit from alternative placement in a setting with psychiatric beds.

Procedures

Focus group discussions. As a preliminary step, we conducted focus group discussions with county leaders at behavioral health departments throughout the state and members at the California Mental Health Services Authority (CalMHSA) and County Behavioral Health Directors Association. These discussions focused on conceptual issues that these individuals were confronting with regard to supporting psychiatric bed needs. We focused on four topics: (1) perceived structural drivers of psychiatric bed shortages, (2) populations who were challenging to place in psychiatric facilities, (3) defining the care continuum, including which types of facilities correspond to which levels of care, and (4) other areas of note that would be important for RAND researchers to consider. We took detailed notes from each discussion and deliberated the feedback provided to us to develop our methodological approach, which is detailed below.

Estimation of capacity. We downloaded the most current licensure data available for each type of psychiatric facility, using public data sets from the California Department of Public Health,⁴⁴ California Department of State Hospitals,⁴⁵ California Department of Health Care Services,⁴⁶ and California Department of Social Services.⁴⁷ These data sets were then merged into a master file of facilities with psychiatric beds in California, and each facility was geocoded at the address and county levels using ArcGIS Desktop 10.8.⁴⁸

To validate facility licensure data, we executed two additional steps. First, we contacted behavioral health directors in all 58 counties in October 2021, providing them with an inventory of facilities within their county and soliciting revisions. Where discrepancies arose, we prioritized the revisions detailed by the county point of contact. Second, we reviewed 2,500 online entries for community residential facilities to estimate the percentage of these facilities within each county that provided services to individuals with mental health conditions rather than those with other types of disabilities or the elderly. For example, if we queried 60 community residential facilities in Orange County and found that 5 of 60 were psychiatric facilities with psychiatric beds, we inferred that this percentage ($5/60 = 8.3\%$) applied at the population level—that is, that 8.3 percent of Orange County’s community residential facilities and beds were psychiatric facilities that contained psychiatric beds.

Estimation of need, Approach 1: survey of psychiatric facilities. Using the observed outcomes approach described earlier in this report, we drew a random sample of psychiatric facilities throughout California using Stata’s `v17 runiform` command⁴⁹ and attempted to contact facility directors to inquire about bed occupancy, average length of stay, wait list volume, and the number of patients that facility directors recommended for transfer to a higher or lower level of care. In the event that we were unable to reach an administrative leader at a particular facility, we made up to four additional attempted contacts per facility. For facilities that we were unable to reach, we imputed estimates based on median values within the facility type and county, adjusting for total number of beds. Calls were made in October and November 2021. Appendix A provides the full set of the survey questions.

Estimation of need, Approach 2: expert consensus. In parallel with these efforts, we assembled a technical panel of content and methods experts to deliberate a focused set of questions that guided the direction of our work. This effort included (1) conceptual considerations when assessing psychiatric bed need, (2) guidance on methods for estimating psychiatric bed need, and (3) normative values to use as top-down estimates for assessing psychiatric bed

need. In total, the Technical Expert Panel consisted of four participants whose names and titles can be found in Appendix B, alongside all major prompts used during the panel’s discussion.

Estimation of need, Approach 3: population health assessment. Lastly, we drew from epidemiological data reported in the California Health Information Survey (CHIS) and NSDUH.⁵⁰ Both the CHIS and NSDUH employ the Kessler 6, which is a measure of psychological distress.⁵¹ A score of 13 or greater indicates SPD, which is a marker of probable SMI. This allowed us to rebalance regional need for psychiatric beds based on (1) estimated regional prevalence of SPD among adults, according to the CHIS, and (2) expected utilization of psychiatric inpatient services among adults with versus without SPD in the United States, based on NSDUH (which contains estimates of self-reported receipt of inpatient mental health services in the past year).⁵² A substantial body of literature has shown that SPD is a correlate of SMI and that those with SPD have a greater need for both outpatient and inpatient services.⁵³

Projection of need. In addition to estimating current need for psychiatric beds, we projected change in need over the next five years (2021 to 2026). These estimates drew from expected trends in population growth and demographic shifts in the age, sex, and racial/ethnic composition of the state according to U.S. Census Bureau information. The “Analysis” section provides a fuller description of the computations involved in this.

Measures

Psychiatric beds. We defined *psychiatric beds* as beds within psychiatric facilities that have the primary purpose of serving adults with psychiatric disorders—not limited to but including schizophrenia, bipolar disorder, psychosis not otherwise specified, major depressive disorder, and anxiety disorders.⁵⁴ We did not include beds that were primarily intended for individuals with developmental disorders, intellectual disabilities, or neurodegenerative disorders unless these were identified as *med-psych* beds—i.e., beds for individuals with comorbid mental health and physical health conditions. As noted earlier in this report, the psychiatric facilities from

which we drew these estimates were circumscribed to those outlined in Table 1. We also did not include beds in substance use disorder treatment facilities.

Psychiatric bed capacity. We defined *psychiatric bed capacity* as the total number of psychiatric beds for adults within a facility. This figure was summed across facilities within a specified level of care and defined region in California. We standardized estimates at the population level as the number of beds per 100,000 adults. Population estimates were taken from the U.S. Census Bureau for 2021 and 2026.⁵⁵

Psychiatric bed need. Our definition of *psychiatric bed need* was the total number of psychiatric beds within a level of care required to meet expressed demand for beds, in which *demand* is construed in economic terms as the quantity of a service requested by prospective consumers.⁵⁶ Although demand might exceed number of beds at a facility, optimal bed occupancy rates are typically set at or below 85 percent because of the high acuity of patient needs.⁵⁷ Although prior research has sometimes concluded that the optimal occupancy rate is below 85 percent (particularly for smaller hospitals), we elected to use 85 percent as a conservative threshold, above which facilities would be expected to incur strain on their workforce and be unable to accommodate variation in demand over time.

We note that demand is an imperfect proxy for need, and demand likely underestimates actual need—that is, the number of individuals who would substantively benefit from provision of a psychiatric bed. Many individuals who might otherwise benefit from overnight residency at a psychiatric facility do not seek care because of stigma, financial barriers, limited access, and/or limited knowledge about potential benefits.⁵⁸ However, relying on demand, as catalogued in a quantitative survey that included psychiatric facilities throughout the state, allowed us to generate a bottom-up estimate of existing short-term needs for beds that addresses bottlenecks within the infrastructure and supports the transition of individuals from wait lists to an appropriate level of care.

As a secondary measure, we adjusted need estimates based on the epidemiological indicator described above: regional prevalence of SPD. Our intention with this secondary measure was to recalibrate psychiatric bed need according to variation in

regional prevalence of SPD. The secondary measure was not intended to account for additional unmet need beyond that captured in our primary measure, because doing so would require additional epidemiological information that we did not have available to us. Rather, we used state-level prevalence of SPD and state-level psychiatric bed need (from our primary measure) as an anchor point for calibrating regional estimates (see Equation 2).

As a third measure of psychiatric bed need, we drew from top-down estimates offered by members of our Technical Expert Panel and prior literature defining normative estimates of psychiatric bed need in the United States.⁵⁹ We should note that several panel members expressed reservations about providing any ballpark figures, based on their views regarding the significant heterogeneity of psychiatric facility composition throughout the United States.

Analysis

As a first step, we conducted descriptive analyses to summarize the number of psychiatric beds, according to each of the three levels of care, for each of the ten regions in the state. Specifically, we quantified total bed capacity and the capacity per 100,000 adults, alongside measures of dispersion (e.g., standard deviation, range), at the regional level.

As a second step, we estimated psychiatric bed need (see Equation 1) based on the information obtained from our telephone survey, including used psychiatric bed capacity, wait list volume, average length of stay, and requested transfers to higher and lower levels of care. Specifically, the formula for Equation 1 was

$$\sum_{f=1}^n \left(\frac{UC_f}{0.85} + W_f - H_f - K_f \right) + \sum_{f=1}^n \left(H_{f[l-1]} + K_{f[l+1]} \right),$$

where f represents a facility within a level of care (l), UC represents used psychiatric bed capacity for a facility, W represents wait list volume, H represents requested bed transfers to a higher level of care, and K represents requested bed transfers to a lower level of care. Three levels of care are represented ($l, 2, 3$), with l indicating the lowest (community residential)

and 3 indicating the highest (acute). For the lowest level of care, the term $[l - 1]$ is fixed to 0 because there is no lower level of care within the continuum; for the highest level of care, the term that $[l + 1]$ is set to is likewise set to 0 because there is no higher level of care. For nonrespondent facilities, we imputed missing values based on median respondent values, weighted according to facility size as defined by number of psychiatric beds.

Descriptively speaking, the first half of the equation is summing psychiatric bed need across all facilities within a level of care based on utilized capacity (relative to a ceiling of 85 percent), after incorporating wait list volume and subtracting individuals who were requested for transfer to a higher or lower level of care. The second half of the equation reallocates transfers to the higher and lower levels of care requested. For example, if subacute facilities collectively requested 100 transfers to acute facilities (i.e., 100 transfers from level 2 to level 3), the term $H_{f[l-1]}$ would accordingly add 100 psychiatric beds to level 3. As a follow-on step to computation outlined in Equation 1, we incorporated beds at the subacute level for all patients in jail units who were incompetent to stand trial because of their mental health status.

As an adjusted alternative to Equation 1, we integrated the regional adjustment for prevalence of SPD, reported in NSDUH and CHIS data sets. In Equation 2, a multiplication factor incorporates the estimated need for psychiatric inpatient services as a proportion of the regional adult population with SPD, compared with the state average. Specifically, Equation 2 was

$$\sum_{f=1}^n \left(\frac{UC_{f,l}}{0.85} + W_{f,l} - H_{f,l} - K_{f,l} \right) \left(\frac{Q_r P_a + [1 - Q_r] P_b}{Q_s P_a + [1 - Q_s] P_b} \right) + \sum_{f=1}^n (H_{f[l-1]} + K_{f[l+1]})$$

where P refers to the percentage of adults estimated to require inpatient services among those with SPD (a) and among those without SPD (b), and Q refers to the estimated percentage of adults in the region (r) or state (s) with SPD.

As a fourth step, we estimated the difference between total psychiatric bed capacity and psychiatric bed need for each level of care across the ten regions. We considered Equation 1 as our main estimate for psychiatric bed need and conducted two sensitivity analyses. First, we substituted Equation 2 for Equation 1. Second, we compared capacity with need as represented by the top-down estimates offered by the Technical Expert Panel and in prior literature.

As a subsequent step, we projected psychiatric bed need over the next five years (2021 to 2026) based on demographic and population trends at the regional level. This involved a three-step procedure. First, we used CHIS data from 2011 to 2018 (the most recently available year) to estimate the mean prevalence of SPD among Californian adults over this period, according to three demographic categories: sex (female, male), race/ethnicity (Black, Hispanic, Asian, White non-Hispanic), and age group (younger versus older than age 65).⁶⁰ Second, we used U.S. Census Bureau information to project regional demographic and population trends in California from 2021 to 2026.⁶¹ This allowed us to compute the expected prevalence of SPD in 2026, based on these evolving trends. Third, we converted expected changes in prevalence of SPD over the five-year period to expected changes in utilization of psychiatric inpatient services (as described in the previous paragraph).

Lastly, we computed descriptive information on the percentage of facilities, at each level of care, reporting an inability or difficulty placing patients with certain demographic characteristics (e.g., body mass index [BMI] greater than 45 kg/m²), behavior patterns (e.g., history of arson), or concurrent diagnoses (e.g., eating disorder). This information was used to identify specific populations that may be contributing to bottlenecks across different levels of care.

Results

Psychiatric Beds and Bed Capacity

We estimate that, as of September 2021, there was a total of 21,046 psychiatric beds in the state of California, including the entire continuum of inpatient and residential care as defined above. Although this estimate was primarily based on facility licen-

sure information, we found that—when contacting facilities—there were frequently discrepancies between licensure information and what facilities themselves reported. Points of contact within counties from whom we received a response ($n = 35$ of 58 counties) requested 1,799 removals from the licensure data files of facilities that were closed or did not have psychiatric beds, representing a 29-percent reduction from our starting point. Furthermore, we excluded a large majority of community residential beds ($n = 26,554$) that provided assisted living for older adults or care for those with intellectual disabilities. Using the observed quality of these data, in the following paragraphs, we report estimates at the community residential treatment level separately from estimates reported at the acute and subacute levels, for which the data are more robust and we have the benefit of previous reports that serve as reference points.

After incorporating adjustments, we estimated a total of 7,679 acute inpatient beds at 67 psychiatric facilities, 9,168 subacute beds at 156 psychiatric facilities, 16,847 acute or subacute inpatient beds at 223 psychiatric facilities, and 3,872 community residential beds at 365 facilities. Excluding state hospitals, these figures were reduced to 5,975 acute psychiatric beds and 4,724 subacute psychiatric beds. Table 2 provides a breakdown of these psychiatric beds at a regional level.

We found that psychiatric bed capacity varied considerably throughout the state (Table 3), once we standardized using regional population estimates. At the acute level, estimates ranged from roughly 9 beds per 100,000 adults in the Northern San Joaquin Valley to 38 beds per 100,000 adults in Los Angeles County (26 per 100,000 adults of state hospitals are excluded). For subacute psychiatric beds, these estimates varied even more dramatically, in large part because of the location of state hospitals in a handful of regions throughout the state. Excluding state hospitals, subacute psychiatric bed capacity ranged from roughly 9 beds per 100,000 in the Superior region to 32 beds per 100,000 in the Northern San Joaquin Valley. For community residential beds, estimates ranged from 3 per 100,000 (Southern San Joaquin Valley) to 23 per 100,000 (San Diego County). The maps in Figure 1 provide further representation of this regional variation. (*Adult population* in Figure 1 is defined as those

who are 18 years of age and older as provided by the U.S. Census Bureau.)

Psychiatric Bed Need

In total, callers reached out to 1,927 psychiatric facilities throughout the state, including 110 facilities at the acute level of care, 55 facilities at the subacute level of care, and 1,762 facilities providing community residential treatment. Our overall response rate was 52 percent. Nonresponses were primarily due to phone numbers within licensure databases that were not operable and unsuccessful transfers from receptionists to facility directors (who were our target interviewees). Ultimately, we successfully contacted 52 facilities at the acute level of care (48 percent), 33 facilities at the subacute level of care (61 percent), and 903 facilities (51 percent) at the community residential level. Among facilities for which we were able to speak with a director ($n = 908$), 3 (6 percent) reported not having psychiatric beds at the acute level of care, none (0 percent) reported not having psychiatric beds at the subacute level of care, and 402 (44 percent) reported not having psychiatric beds at the community residential level.

Participant facilities reported current bed occupancy rates, average length of stay, current wait list volume, and whether facilities would transfer patients to a higher or lower level of care if they were able to do so. Estimates for these are reported in Table 4.

Using Equation 1 in the “Methods” section, we estimated that the state requires 25.95 acute inpatient psychiatric beds per 100,000 adults and 24.56 subacute psychiatric beds per 100,000 adults, or 50.51 inpatient psychiatric beds per 100,000 adults. Additionally, the state requires 22.33 community residential treatment beds per 100,000 in population. In absolute terms, this represents 7,945 psychiatric beds at the acute level, 7,518 at the subacute level, and 6,837 at the community residential level.

Table 5A provides estimates for bed need and bed-day need at the regional level. Additionally, we listed estimated bed need per 100,000 adults. Table 5B provides the same set of values using Equation 2, in which we adjusted expected psychiatric bed need according to adult prevalence of SPD within each region of the state. Using NSDUH estimates

TABLE 2

Psychiatric Beds for Adults in California, by Region, 2021

Region	Adult Population	Acute (Level 3)		Subacute (Level 2)		Community Residential (Level 1)
		Beds (including state hospitals)	Beds (not including state hospitals)	Beds (including state hospitals)	Beds (not including state hospitals)	Beds
Central Coast	1,826,132	456	183	1,204	274	191
North Coast	770,034	244	111	1,337	150	138
Superior	2,528,171	706	706	232	232	507
San Francisco Bay Area	5,669,517	785	785	750	750	762
N. San Joaquin Valley	1,414,806	128	128	450	450	246
S. San Joaquin Valley	1,808,361	278	234	1,532	134	59
Inland Empire	3,466,839	902	527	1,313	484	211
Los Angeles County	7,894,557	3,001	2,120	1,527	1,429	850
Orange County	2,486,016	538	538	428	428	273
San Diego-Imperial	2,753,149	643	643	394	394	635
Total	30,617,582	7,679	5,975	9,168	4,724	3,872

TABLE 3

Psychiatric Bed Capacity for Adults in California, by Region, 2021

Region	Adult Population	Acute (Level 3)		Subacute (Level 2)		Community Residential (Level 1)
		Bed Capacity (including state hospitals)	Bed Capacity (not including state hospitals)	Bed Capacity (including state hospitals)	Bed Capacity (not including state hospitals)	Bed Capacity
Central Coast	1,826,132	24.95	10.02	65.92	15.00	10.48
North Coast	770,034	31.66	14.46	173.62	19.43	17.98
Superior	2,528,171	27.91	27.91	9.19	9.19	20.06
San Francisco Bay Area	5,669,517	13.84	13.84	13.22	13.22	13.43
Northern San Joaquin Valley	1,414,806	9.05	9.05	31.84	31.84	17.39
Southern San Joaquin Valley	1,808,361	15.37	12.95	84.72	7.38	3.26
Inland Empire	3,466,839	26.01	15.21	37.88	13.95	6.08
Los Angeles County	7,894,557	38.01	26.86	19.34	18.10	10.77
Orange County	2,486,016	21.63	21.63	17.23	17.23	10.97
San Diego County	2,753,149	23.34	23.34	14.31	14.31	23.07
Population-weighted average	30,617,582	25.09	19.51	29.94	15.43	12.65

NOTE: Psychiatric beds per 100,000 adults.

FIGURE 1
Regional Variation in Psychiatric Bed Capacity

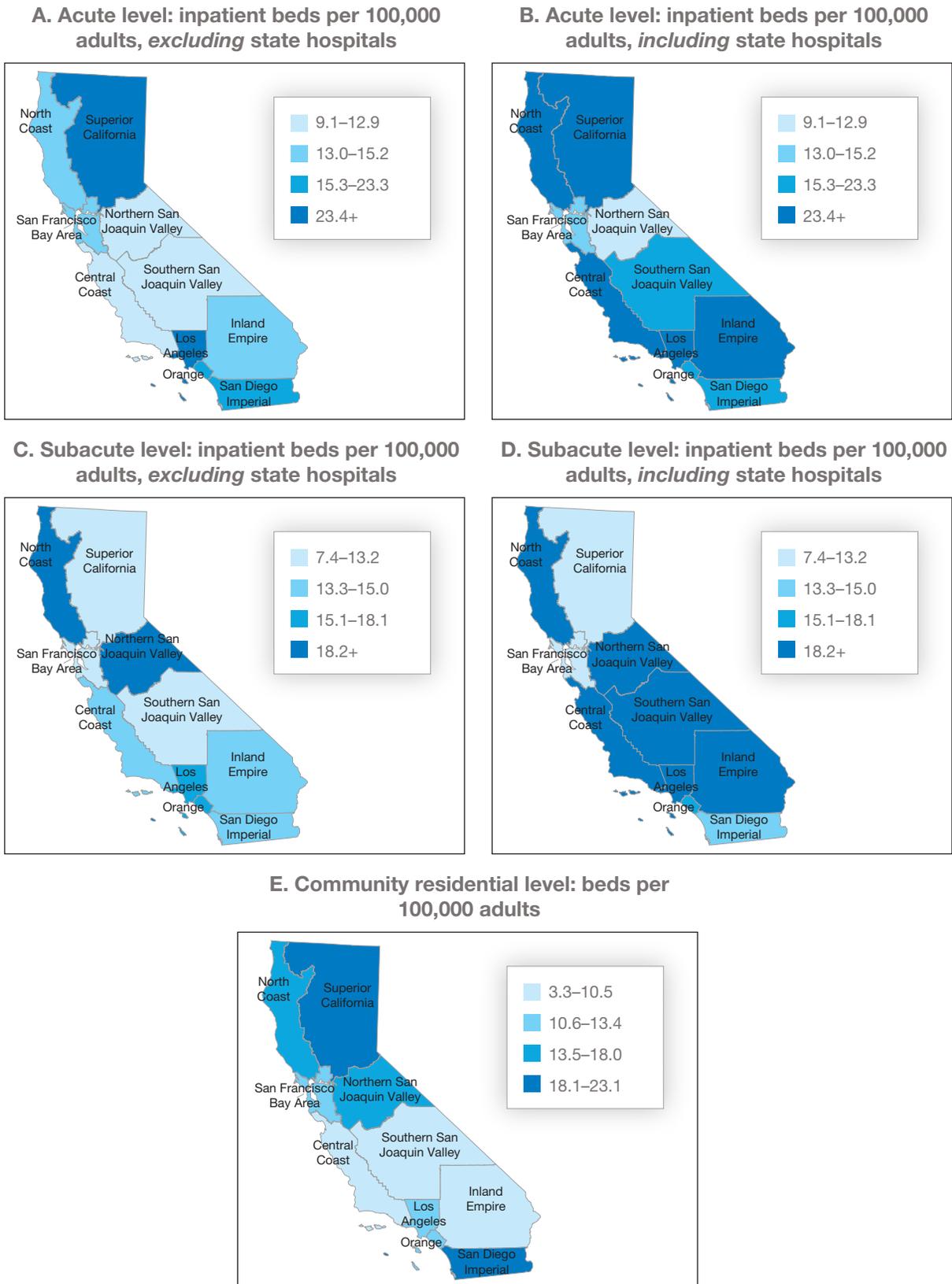


TABLE 4

Descriptive Characteristics of Psychiatric Facilities Serving Adults in California, 2021

	Level 3: Acute (n = 20)		Level 2: Subacute (n = 17)		Level 1: Community Residential (n = 106)	
	Average	IQR ^d	Average	IQR	Average	IQR
Bed occupancy rate (%) ^a	95.3	79.4–100.0	98.1	90.0–100.0	86.7	66.7–100.0
Length of stay (Days)	7.0	5.0–10.0	285.0	180.0–365.0	1,000.0	365.0–1,460.5
Wait list volume (%) ^b	9.5	0.0–4.8	24.2	0.0–28.9	15.1	0.0–12.5
Transfer requests, higher level of care (%) ^c	n/a	n/a	5.0	0.0–3.0	12.3	0.0–10.0
Transfer requests, lower level of care (%)	11.3	0.0–18.8	33.8	7.6–54.9	n/a	n/a

^a Bed occupancy rate is calculated as the percentage of adult psychiatric beds occupied last night at the facility.

^b Wait list volume is represented as a percentage of total psychiatric beds at the facility.

^c Transfer requests are represented as a percentage of total psychiatric beds at the facility.

^d IQR represents the interquartile range of responses (25th percentile, 75th percentile) among participant facilities within the defined level of care.

TABLE 5A

Psychiatric Beds, Bed-Days, and Beds per 100,000 Adults Needed (from Eq. 1), by Region, 2021

Region	Acute (Level 3)			Subacute (Level 2)			Community Residential (Level 1)		
	Beds	Bed-Days	Beds per 100,000	Beds	Bed-Days	Beds per 100,000	Beds	Bed-Days	Beds per 100,000
Central Coast	474	3,317	25.95	448	127,822	24.56	408	407,775	22.33
North Coast	200	1,399		189	53,899		172	171,949	
Superior	656	4,592		621	176,962		565	564,541	
San Francisco Bay Area	1,471	10,299		1,392	396,844		1,266	1,266,003	
Northern San Joaquin Valley	367	2,570		347	99,031		316	315,926	
Southern San Joaquin Valley	469	3,285		444	126,578		404	403,807	
Inland Empire	900	6,298		851	242,665		774	774,145	
Los Angeles County	2,049	14,340		1,939	552,587		1,763	1,762,855	
Orange County	645	4,516		611	174,011		555	555,127	
San Diego County	714	5,001		676	192,709		615	614,778	
Total	7,945	55,617	25.95	7,518	2,143,108	24.56	6,837	6,836,906	22.33

TABLE 5B

Psychiatric Beds, Bed-Days,^a and Beds per 100,000 Adults Needed (from Eq. 2), by Region, 2021

Region	% with SPD, Compared with State Average ^b	Acute (Level 3)			Subacute (Level 2)			Community Residential (Level 1)		
		Beds	Bed-Days	Beds per 100,000	Beds	Bed-Days	Beds per 100,000	Beds	Bed-Days	Beds per 100,000
Central Coast	-0.44	450	3,148	24.63	426	121,303	23.31	387	386,979	21.19
North Coast	+0.65	215	1,504	27.90	203	57,942	26.40	185	184,845	24.00
Superior	+0.18	670	4,689	26.49	634	180,678	25.08	577	576,396	22.80
San Francisco Bay Area	-0.70	1,351	9,454	23.82	1,278	364,302	22.55	1,162	1,162,191	20.50
Northern San Joaquin Valley	+0.21	376	2,632	26.57	356	101,408	25.15	324	323,509	22.87
Southern San Joaquin Valley	+0.69	507	3,551	28.05	480	1,368,301	26.55	437	436,515	24.13
Inland Empire	+0.04	904	6,329	26.08	856	243,878	24.68	778	778,016	22.44
Los Angeles County	+0.01	2,051	14,355	25.98	1,941	553,140	24.58	1,765	1,764,618	22.35
Orange County	-0.60	600	4,200	24.13	568	161,830	22.84	516	516,269	20.77
San Diego County	-0.18	699	4,896	25.41	662	188,662	24.04	602	601,868	21.86
Total	—	7,822	54,757	25.55	7,404	3,341,444	24.18	6,733	6,731,206	21.99

^a Bed-days estimated as reported mean length of stay times number of beds.

^b The state average prevalence of SPD among adults between 2011 and 2018 was 8.60 percent. Regional values are presented as percentage point differences. For example, regional prevalence of SPD in the San Francisco Bay Area was 7.90 percent, or 0.70 percentage points below the state average.

from 2019, we found that 0.41 percent of adults without SPD used inpatient psychiatric services in the past year, compared with 4.45 percent among those with SPD.⁶² CHIS data from 2011 to 2018, meanwhile, reported regional prevalence of SPD among adults ranging from 8.13 percent in the San Francisco Bay Area to 9.57 percent in the Southern San Joaquin Valley.

Lastly, as noted in the “Methods” section, several members of the Technical Expert Panel proposed (or pointed to previous) top-line estimates in the range of 40 to 60 psychiatric beds needed per 100,000 adults, with roughly 25 to 30 beds per 100,000 adults allocated at the acute level and 20 to 30 beds at the subacute level. (To reiterate, other members of the Technical Expert Panel [TEP] refrained from providing any top-line estimates.) Using this feedback, we proposed a third, comparative estimate using the midpoint values from these figures: 27.5 per 100,000

adults at the acute level and 25.0 per 100,000 adults at the subacute level.

Gap Analysis

To conduct the gap analysis, we first compared estimated psychiatric bed capacity with estimated psychiatric bed need by taking the difference between standardized bed capacity estimates at the regional level and standardized bed need estimates at the state level from Equation 1. Using these comparisons, we estimated that California has a shortfall of 1,971 acute psychiatric beds and 2,796 subacute psychiatric beds (4,767 total inpatient)—if state hospital beds are excluded. If state hospital beds are included, this shortfall shrinks to 267 acute psychiatric beds, with no shortage of subacute psychiatric beds. For community residential treatment facilities, the shortfall in beds was estimated to be 2,963. Standardized by population, this shortfall represents 6.4 additional

beds needed per 100,000 adults at the acute level (0.9 additional beds per 100,000 adults if state hospitals are included), 9.1 additional beds needed per 100,000 adults at the subacute level (0 additional beds per 100,000 adults if state hospitals are included), and 9.7 additional beds needed per 100,000 adults in community residential treatment facilities.

These top-level estimates mask substantial heterogeneity at the regional level (see Table 6). For example, although Los Angeles County appears to have a surplus of acute psychiatric beds, this is more than offset by a shortfall of subacute and community residential psychiatric beds. Table 6 also incorporates an additional sensitivity analysis (using Equation 2) in which we adjusted psychiatric bed need based on regional variation in prevalence of SPD among adults.

As a further sensitivity analysis, we drew from the benchmarks of psychiatric bed need provided by members of the Technical Expert Panel in conjunction with previous reports on psychiatric bed targets (see Table 7). Using this information, we found that the shortage of psychiatric beds at the acute level would be 8.9 additional beds required per 100,000 adults if state hospitals were excluded and 2.4 additional beds required per 100,000 adults if state hospitals were included. By comparison, the shortage of psychiatric beds at the subacute level would be 10.6 additional beds required per 100,000 adults if state hospitals were excluded. If state hospitals were included in this estimate, there would be no shortage of beds.

Projected Bed Need and Shortage

Using CHIS data from 2011 to 2018, we were able to examine the prevalence of SPD across three different demographic categories: age, sex, and race/ethnicity. We found that the prevalence of SPD was higher among females than males (9.9 percent versus 7.3 percent), among those younger versus older than age 65 (10.0 percent versus 5.9 percent), among Hispanic versus non-Hispanic residents (9.4 percent versus 8.4 percent), and among Black versus White residents (9.6 percent versus 8.4 percent). According to the California Department of Finance,⁶³ the adult population in each region of the state is expected to grow and—over the same period—become older and

more diverse in terms of representation among Hispanic and Black residents. By comparison, the ratio of females to males is projected to remain relatively static. Putting these trends together, we estimate that the need for psychiatric beds will grow by 1.7 percent over the next five years, from 50.5 acute and subacute psychiatric beds per 100,000 adults to 51.4 (see Table 8).

Hard-to-Place Populations

Lastly, we report survey responses from facility directors on hard-to-place populations. As noted in the “Methods” section, the results come from the survey question: “Does your facility place individuals who have . . .” Each facility director was asked about the full list of populations outlined in Table 9. Overall, we found that the most-difficult populations to place were those with dementia (74.83 percent unable to be placed), those who are COVID-19 positive (73.43 percent), and those who require oxygen (73.43 percent). The most-difficult populations to place also varied across levels of care. For example, 80.00 percent of acute facilities reported that it was difficult to place patients with dementia compared with 64.71 percent of subacute facilities who reported the same issue. Similarly, 95.00 percent of acute facilities were unable to place COVID-19-positive patients compared with 68.87 percent of community residential facilities who did so.

Discussion and Recommendations

Principal Findings

Total shortfall. We estimate that California’s total adult inpatient psychiatric bed need is 50.5 beds per 100,000 adults, inclusive of 26.0 acute beds and 24.6 subacute beds. This estimated target is in line with targets supported by expert panels and past computational exercises both within and outside the United States.⁶⁴ Compared with California’s current bed capacity of 34.9 inpatient beds at the acute and subacute levels (excluding state hospitals), this represents an estimated shortfall of 15.6 beds per 100,000 adults, or a total of 4,767 inpatient beds. At the community

TABLE 6

Estimated Regional Shortfall of Psychiatric Beds in California, 2021

Facility Type	Unadjusted for Regional Variation in SPD (Eq. 1)				Adjusted for Regional Variation in SPD (Eq. 2)			
	Total Shortfall ^a		Shortfall per 100,000 Adults ^a		Total Shortfall ^a		Shortfall per 100,000 Adults ^a	
	Including State Hospitals ^b	Excluding State Hospitals ^b	Including State Hospitals ^b	Excluding State Hospitals ^b	Including State Hospitals ^b	Excluding State Hospitals ^b	Including State Hospitals ^b	Excluding State Hospitals ^b
Acute								
Central Coast	-18	-291	-1.0	-15.9	6	-267	0.3	-14.6
North Coast	44	-88	5.7	-11.5	29	-103	3.8	-13.4
Superior	49	49	2.0	2.0	36	36	1.4	1.4
San Francisco Bay Area	-687	-687	-12.1	-12.1	-566	-566	-10.0	-10.0
Northern San Joaquin Valley	-239	-239	-16.9	-16.9	-248	-249	-17.5	-17.5
Southern San Joaquin Valley	-191	-235	-10.6	-13.0	-229	-273	-12.7	-15.1
Inland Empire	2	-372	0.1	-10.7	-2	-377	-0.1	-10.9
Los Angeles County	952	72	12.1	0.9	950	70	12.0	0.9
Orange County	-107	-107	-4.3	-4.3	-62	-62	-2.5	-2.5
San Diego County	-72	-72	-2.6	-2.6	-57	-57	-2.1	-2.1
Subacute								
Central Coast	755	-175	41.4	-9.6	778	-152	42.6	-8.3
North Coast	1,148	-40	149.1	-5.1	1,134	-54	147.2	-7.0
Superior	-388	-388	-15.4	-15.4	-401	-401	-15.9	-15.9
San Francisco Bay Area	-643	-643	-11.3	-11.3	-528	-528	-9.3	-9.3
Northern San Joaquin Valley	103	103	7.3	7.3	95	95	6.7	6.7
Southern San Joaquin Valley	1,088	-311	60.2	-17.2	1,052	-347	58.2	-19.2
Inland Empire	462	-368	13.3	-10.6	457	-372	13.2	-10.7
Los Angeles County	-412	-510	-5.2	-6.5	-413	-512	-5.2	-6.5
Orange County	-182	-182	-7.3	-7.3	-139	-139	-5.6	-5.6
San Diego County	-282	-282	-10.3	-10.3	-268	-268	-9.7	-9.7
Community residential								
Central Coast	-216	n/a	-11.9	n/a	-196	n/a	-10.7	n/a
North Coast	-33	n/a	-4.6	n/a	-46	n/a	-6.0	n/a
Superior	-57	n/a	-2.3	n/a	-69	n/a	-2.7	n/a

Table 6—Continued

Facility Type	Unadjusted for Regional Variation in SPD (Eq. 1)				Adjusted for Regional Variation in SPD (Eq. 2)			
	Total Shortfall ^a		Shortfall per 100,000 Adults ^a		Total Shortfall ^a		Shortfall per 100,000 Adults ^a	
	Including State Hospitals ^b	Excluding State Hospitals ^b	Including State Hospitals ^b	Excluding State Hospitals ^b	Including State Hospitals ^b	Excluding State Hospitals ^b	Including State Hospitals ^b	Excluding State Hospitals ^b
San Francisco Bay Area	-504	n/a	-8.9	n/a	-400	n/a	-7.1	n/a
Northern San Joaquin Valley	-70	n/a	-4.9	n/a	-77	n/a	-5.5	n/a
Southern San Joaquin Valley	-345	n/a	-19.1	n/a	-378	n/a	-20.9	n/a
Inland Empire	-563	n/a	-16.3	n/a	-567	n/a	-16.4	n/a
Los Angeles County	-913	n/a	-11.6	n/a	-914	n/a	-11.6	n/a
Orange County	-282	n/a	-11.4	n/a	-244	n/a	-9.8	n/a
San Diego County	20	n/a	0.7	n/a	33	n/a	1.2	n/a
Total	-2,963	n/a	-9.7	n/a	-2,858	n/a	-9.3	n/a

^a Values that are negative and color-coded in red represent shortfalls in the number of beds required to meet expected bed need. Values that are positive and color-coded in black represent surpluses in the number of beds required to meet expected bed need.

^b DSH bed values are included on a regional basis determined by their location. Therefore, some calculations (excluding DSH versus including DSH) may appear skewed. Although the limitations of this calculation are clear from a regional standpoint, there is a benefit to understanding total bed capacity calculations using the DSH beds as they are important for understanding and fully determining bed capacity at the intended levels.

residential level, the shortfall is 9.7 beds per 100,000 adults, or a total of 2,963 beds. It is important to note that our results change based on the inclusion versus exclusion of state hospitals. On the one hand, estimates that exclude state hospitals acknowledge that, for the most part, state hospitals operate independently from local continuums of care and provide services for a unique subset of the California population, including those with criminal justice involvement. Furthermore, these beds may not necessarily be occupied by residents of the county in which the hospital is located, and inclusion in bed counts could lead to overestimation of bed capacity in that county. On the other hand, estimates that include state hospitals account for the fact that these beds have provided and continue to provide supportive residence for many individuals throughout the state.

Looking more closely at types of facilities, we identified that the most significant shortage appears to be occurring at the subacute and community residential levels. Excluding state hospitals, the shortfall of subacute and community residential beds is

more than 5,700, representing almost three-quarters (74.5 percent) of all additional beds required. Survey responses indicated that the bottleneck at the subacute level produces unsustainably high bed occupancy rates (98 percent occupancy, on average) and lengthy wait lists. Acute inpatient psychiatric facilities reported that they would transfer, on average, 11.3 percent of their patients to subacute facilities if there were placements available to do so, while community residential treatment facilities report that they would transfer, on average, 12.3 percent of patients to the subacute level. By comparison, the average occupancy rate at community residential facilities was lower (86.7 percent); however, directors at subacute facilities expressed that—if they were able—they would transfer more than one-third (33.8 percent) of patients to the community residential level.

Regional variation. We found that the magnitude of this shortfall in psychiatric beds varied dramatically across regions of the state—particularly when viewed across all three levels of care. Several case examples are illustrative. In Los Angeles County,

TABLE 7

Estimated State-Level Shortfall of Psychiatric Beds in California, 2021

Method	Total Shortfall ^a		Shortfall per 100,000 Adults ^a	
	Including State Hospitals ^b	Excluding State Hospitals ^b	Including State Hospitals ^b	Excluding State Hospitals ^b
Baseline estimate^a				
Acute	-267	-1,971	-0.9	-6.4
Subacute	1,649	-2,796	5.39	-9.13
Community residential	-2,963	n/a	-9.7	n/a
Adjusted baseline estimate^b				
Acute	-144	-1,848	-0.5	-6.0
Subacute	1,767	-2,678	5.8	-8.6
Community residential	-2,858	n/a	-9.3	n/a
Top-down estimate^c				
Acute	-735	-2,439	-2.4	-8.9
Subacute	1,513	-2,932	4.9	-10.6
Community residential	n/a	n/a	n/a	n/a

^a Baseline estimates were generated from Equation 1 in the "Methods" section.

^b Adjusted baseline estimates were generated from Equation 2 in "Methods" section, which accounts for regional variation in SPD.

^c Top-down estimates were based on a review of the literature in discussion with the Technical Expert Panel.

TABLE 8

Estimated Shortfall of Psychiatric Beds in California, 2021 Versus 2026

Region	2021–2026 % Change in Adult Pop	2021–2026 % Change in Pop: Male	2021–2026 % Change in Pop: Black	2021–2026 % Change in Pop: Hispanic	2021–2026 % Change in Pop: Age 65+	% Change in Psychiatric Bed Need
Central Coast	+1.9	0.0	+0.1	+1.0	+3.3	+0.8
North Coast	+1.4	0.0	+0.1	+0.8	+3.5	+0.3
Superior	+3.9	+0.1	+0.3	+0.8	+2.9	+2.9
San Francisco Bay Area	+3.3	+0.1	+0.2	+0.5	+3.3	+2.1
Northern San Joaquin Valley	+4.8	+0.1	+0.5	+1.1	+2.8	+4.0
Southern San Joaquin Valley	+4.5	+0.1	+0.4	+0.9	+2.2	+3.9
Inland Empire	+5.1	0.0	+0.5	+0.8	+3.4	+4.0
Los Angeles County	+0.8	0.0	+0.4	+0.8	+3.2	-0.3
Orange County	+1.6	+0.1	+0.2	+0.9	+3.3	+0.5
San Diego County	+2.2	0.0	+0.3	+0.9	+3.1	+1.2
Total	+2.7	0.0	+0.3	+0.8	+3.1	+1.7

NOTE: Pop = population.

TABLE 9

Percentage of Psychiatric Facilities Unable to Place Specific Populations

Population Characteristic	Acute (%) (n = 20)	Subacute (%) (n = 17)	Community Residential (%) (n = 106)
Co-occurring conditions			
Dementia	80.0	64.7	75.5
Traumatic brain injury	65.0	29.4	64.2
Eating disorder	60.0	35.3	44.3
Co-occurring ID	50.0	23.5	24.5
Co-occurring SUD	25.0	5.9	38.7
Co-occurring health issues	40.0	23.5	44.3
Justice system involvement			
Arson conviction	25.0	35.3	68.9
Sex offense conviction	25.0	41.2	67.0
Other forensic category ^a	35.0	35.3	54.7
Incompetent to stand trial	40.0	17.7	36.8
History of violence	15.0	11.8	39.6
Murphy's conservatees ^b	25.0	17.7	32.1
Other characteristics			
Large size (BMI > 45kg/m ²)	40.0	35.3	28.3
Requiring oxygen	85.0	82.4	69.8
Nonambulatory	70.0	70.6	71.7
COVID-19 positive	95.0	76.5	68.9
Monolingual, Spanish-speaking	10.0	0.0	16.0
Monolingual, non-English-speaking (other) ^c	10.0	11.8	38.7
Insured by Medi-Cal	15.0	5.9	4.7

NOTES: ID = intellectual disability; SUD = substance use disorder.

^a *Other forensic category* includes forensic cases other than a conviction of arson or sexual assault.

^b Murphy's conservatees are individuals who have a conservator with the authority to place that individual in a state hospital or psychiatric facility involuntarily.

the estimated need for acute beds was matched by capacity, and capacity exceeded need if beds at the metropolitan state hospital were included. However, more than 400 beds appeared to be required in Los Angeles County at the subacute level, and 900 beds at the community residential level. By contrast, our model estimated that the San Francisco Bay Area had a shortfall of beds at both the acute and subacute levels, roughly equally split: 687 beds at the acute level and 643 at the subacute level.

In other regions, such as the Inland Empire and North Coast, the magnitude of the regional shortfall in psychiatric beds is heavily influenced by whether state hospitals are included in the estimate of psychiatric bed capacity. According to our conversations with counties and state agencies, it also might be the case that a region that appears to have a surplus in beds (when state hospitals are included) instead may be running a deficit because of (1) beds that are occupied by residents from outside the region or (2) the static, high volume of a state hospital in the region.

We also found from our model that when state hospitals were excluded, there was a uniform deficit of subacute psychiatric beds in every region of the state except the Northern San Joaquin Valley. Likewise, we estimate that every region of the state has a deficit in community residential facilities, apart from San Diego County.

Hard-to place populations. Lastly, we found that several populations were disproportionately hard to place in psychiatric beds throughout the state. At the acute level, a majority of facilities reported that they were unable to place individuals who had co-occurring dementia, a traumatic brain injury, or an eating disorder; required oxygen; were nonambulatory; or tested positive for COVID-19. At the subacute level, a majority of facilities likewise stated that they would be unable to place individuals who had co-occurring dementia, required oxygen, were nonambulatory, or tested positive for COVID-19.

When examining community residential facilities, we observed a somewhat different pattern. Although these facilities also frequently reported an inability to accept patients with dementia or a traumatic brain injury or who were nonambulatory or required oxygen, a majority also stated that they were unable to place individuals with a prior arson conviction, or sex offense conviction or who corresponded to other forensic categories. This is likely to present a particular challenge for transferring forensic patients from the subacute to the community residential level and may represent a significant driver in creating a bottleneck of patients at the subacute level who are not transferable.

Projections. We also found that the prevalence of SPD was higher in certain demographic groups, including among younger versus older adults, among Californians who are Black and Hispanic compared with those who are White, and among women compared with men. The prevalence of SPD in these demographic groups varied regionally and is projected to evolve in coming years as the state continues to grow and age.

Using demographic and population trends, we anticipate that the shortfall in psychiatric beds in the state will grow modestly from 7,730 in 2021 to 7,861 in 2026 (if state hospitals were not factored into this estimate and if bed capacity were to remain static over the period). Regions with the most sizable

uptick in psychiatric bed need during this period will include both the Northern and Southern San Joaquin Valley and the Inland Empire, in part because of faster and more racially/ethnically diverse population growth in these regions.

Quality of information. As stated earlier in this report, we chose to compute estimated psychiatric bed capacity and need from several vantage points to triangulate and cross-check our estimates. Overall, we found significant challenges with information quality throughout this process. Regarding psychiatric bed capacity, we based our estimates on licensure data from state agencies responsible for overseeing the licensure process. However, based on communication with county points of contact, almost 30 percent of facilities in these licensure data sets ($n = 1,799$) were requested for removal—these were largely residential beds that were removed because of such issues as the facility being closed, the facility not accepting patients with a mental health condition, or the facility not having licensed psychiatric beds. We did not receive a complete response from 23 counties. Therefore, our bed capacity figures for those counties may be an overestimate—particularly for community residential treatment facilities, some of which may focus on care for elderly adults (including those with neurodegenerative conditions, such as Alzheimer’s or Parkinson’s disease) and adults with intellectual disabilities. Although we attempted to manually remove such facilities, we recommend that our estimate at the community residential treatment level be viewed separately because of poor data quality.⁶⁵

Regarding psychiatric bed need, we called almost 2,000 psychiatric facilities throughout California in a two-month period and attained a response rate that was slightly better than 50 percent. However, for a large majority of those we contacted, we were unable to reach an administrative leader to complete the survey. Separately, among those facilities for which we spoke to an administrative official, many reported not having any psychiatric beds. This left us with 143 facilities (20 acute, 17 subacute, and 106 community residential) from which we accrued information on bed occupancy rates, wait list volume, length of stay, and requested transfers to higher and lower levels of care. This limited sample of 143 facilities introduced significant information uncertainty in our estimation

process. Nevertheless, we found that our estimates for beds needed at the acute and subacute levels—26.0 and 24.6 per 100,000, respectively—align with previous reports and the reference estimates provided by Technical Expert Panel members.⁶⁶

Recommendations

Using our findings, we outline three recommendations to CalMHSA and the state of California:

1. Prioritize Psychiatric Bed Infrastructure in the Areas with the Greatest Need

At the state level, our analysis indicates that a significant investment is needed at the subacute and community residential levels. Regarding subacute facilities, the absolute shortfall of beds is most considerable in the Superior region, San Francisco Bay Area, Inland Empire, and Los Angeles County. Collectively, these regions represent a shortfall of almost 2,000 beds, or more than one-quarter of all needed beds. As a proportion of the adult population, the deficit of subacute beds is most considerable in the Southern San Joaquin Valley and the Superior region.

Looking specifically at regional variation in psychiatric bed shortages, we also observe significant need for acute beds in such regions as the Northern and Southern San Joaquin Valleys and the Central Coast, while the shortfall at the community residential level is particularly severe in such regions as the Inland Empire, Southern San Joaquin Valley, and Central Coast. In short, we recommend that CalMHSA consider making investments in psychiatric bed infrastructure that are equitably balanced throughout the state by examining the types of beds needed within each region, along with the magnitude of absolute and proportional need. We also note that this need is likely to evolve over time in response to changes in California's broader behavioral health continuum, including in relation to developments in programs that have the potential to mitigate need for psychiatric beds—such as full service partnership programs and mobile crisis response teams.

2. Focus on Building or Remodeling Infrastructure for the Hard-to-Place Populations

We found that more than one-half of psychiatric facilities across all levels of care were unable to place adults with co-occurring conditions, such as dementia or a traumatic brain injury. Likewise, more than two-thirds of community residential facilities were unable to place individuals with criminal justice involvement—particularly those with an arson or sex offense conviction. These limitations in the current system are liable to contribute to significant bottlenecks, most notably to inhibit the successful transfer of patients from the subacute level (including state hospitals) to the community residential level.

Given this, the state may need to consider alternative arrangements for placing such populations. For example, many criminal justice-involved adults are currently detained in jails awaiting placement, or else they reside in state hospitals for extended periods.⁶⁷ Community-based and outpatient competency restoration programs vary throughout the United States, presenting an array of models that California might consider.⁶⁸ International guidance and best practices for modern forensic psychiatric hospital design have also been detailed in the literature,⁶⁹ if the state were to consider building new facilities as an option. Irrespective of the particulars, the three categories of individuals in need of specifically tailored infrastructure are those with co-occurring conditions, those with criminal justice involvement, and those with unique needs, such as requiring oxygen. Payment arrangements that incentivize facilities to create spaces for these individuals in community-based settings might also influence availability over time.⁷⁰

3. Set Aside Funds for a System That Reviews Licensure Data and Periodically Collects Psychiatric Facility-Level Information

Our analysis and conclusions should be viewed in the context of numerous caveats, in large part because of poor data quality. We wish to be wholly transparent about this fact, with the hope that this serves as an impetus for the state to consider investing in an adequate data review and monitoring system. If the

state were to allocate funds to routinely monitor and purge licensure data, policymakers would be in a much stronger position to know what the existing capacity is at each level of care—particularly at the community residential level. Feedback from counties resulted in us removing roughly 1,800 facilities from licensure databases, though we only received inputs from 60 percent of counties throughout the state. Through manual review, we purged thousands more community residential facilities that provided care for the elderly and those with intellectual disabilities.

Likewise, the state should consider establishing a mechanism by which psychiatric facilities report periodically on bed occupancy rates, wait list volume, number of requested transfers to higher and lower levels of care, and psychiatric patient boarding in emergency departments. The system should also collect detailed sociodemographic data on who uses the psychiatric beds, as recommended by the California Behavioral Health Planning Council.⁷¹ Presently, California Health and Human Services produces annual individual hospital and hospital system reports at the facility level.⁷² If facilities with psychiatric beds were required to incorporate the above information in their annual reports, California would have a more effective and sensitive system for tracking the impact of financial investments on psychiatric bed need and shortages. In addition, the state should consider collecting patient-level data on the types of populations at state hospitals. With more-robust data systems, the outcomes-based approach modeled by this report could be implemented at scale and at regular intervals to help ensure that investments are made in a sound and strategic manner.

For an example of how this sort of monitoring system could pay dividends, CalMHSA and other state actors might look to the national mental health service planning framework of Australia⁷³ and corresponding assessments of psychiatric bed need that have been conducted in Australia over the past decade.⁷⁴ Australia's bed-based modeling incorporates parameters, such as bed availability, occupancy, and readmission rates, and signals of system-level distress that include ED psychiatric patient boarding volume. Regular collection of these data allows fine-tuning over time. The Australian experience has also generated reflections on lessons learned and areas of debate that could pro-

vide valuable insights for California, including about the importance of data quality.⁷⁵

Limitations

We note several study limitations. First, our analysis of psychiatric bed capacity was limited by the quality of state licensing data. Licensing data did not contain all the information we required to categorize providers or discern the number of beds reserved for adults versus children and adolescents. Furthermore, it is possible that psychiatric beds within a facility are used interchangeably for acute and subacute care; however, this information was not available. Such information should be collected by facilities and reported to a state agency, such as CalMHSA, to aid future analyses.

When confirming the presence of psychiatric beds in each of the locations with individual counties, we encountered other issues: The location was closed, the location did not provide psychiatric care, or the provider had zero licensed beds. These issues indicate that the data may be outdated and require more frequent refreshing and updates. It is also possible that the data-quality issues differed by the level of care, and that (as noted in the “Methods” section) availability of data on the prison system and permanent supportive housing were scarce. We believe that future approaches should include verification of the licensure data by counties. This would increase the veracity of the data used for analysis.

Second, the response rate to our survey of providers was low. The low response rate precluded us from examining variation in need at the regional level, apart from incorporating regional prevalence estimates of SPD. However, we believe our survey was an innovative approach to collect the required information for a psychiatric bed needs assessment. Third, our estimation approach assumes that individuals receive care in their region of residence within California. This might not be the case. Future studies should examine psychiatric bed utilization rates based on where patients lived prior to admission; our equations could then incorporate this information.

Lastly, our analysis did not include information on insurance coverage. Past research shows that the type of insurance influences providers' disposition to take on more or fewer patients for psychiatric

services.⁷⁶ This analysis operates on the assumption that a majority of patients—because of their illness severity—are insured through Medi-Cal and that psychiatric facilities are amenable to taking these patients. However, some beds may be off the table for patients without commercial insurance or the ability to self-pay.

Conclusions

We estimate that California requires 50.5 inpatient psychiatric beds per 100,000 adults—26.0 at the acute level and 24.6 at the subacute level. Excluding state

hospitals, this represents a shortage of approximately 4,767 inpatient beds and, notably, 2,796 subacute beds. Although the data quality underpinning these estimates presents challenges, we sought to triangulate estimates from multiple vantage points and conducted sensitivity analyses to indicate the level of information uncertainty. We are hopeful that this approach not only supports state agency planning purposes for investments in psychiatric bed infrastructure but also illustrates a set of methodologies that could provide ongoing information and feedback about the success of these investments, particularly if additional resources are invested to enhance data quality.

APPENDIX A

Structured Survey

BRIEF ASSESSMENT OF PSYCHIATRIC BED CAPACITY IN CALIFORNIA

What: A brief 5-10-minute questionnaire on bed capacity at your facility to help the state of California with strategic budgeting and planning decisions in 2022 and beyond.

Who: This evaluation is being led by the RAND Corporation, a non-profit, non-partisan research institution based in Santa Monica, CA, and is sponsored by CalMHSA, the California Mental Health Services Authority.

How Long: The survey will take about 5-10 minutes to complete.

Compensation: You will be provided with a \$10 gift card code to Amazon for completing the survey.

- Yes, I would like to continue. (1)
- No, thank you. I prefer not to continue. (2)

Please note the definition for "Psychiatric Bed" that we are referring to throughout this survey:

By psychiatric or mental health beds, we are referring to beds that are intended for patients with psychiatric disorders such as major depressive disorder, schizophrenia, bipolar disorder, panic disorder, psychosis not otherwise specified, etc. We are NOT referring to beds that are exclusively for developmental or intellectual disabilities (like autism) or neurodegenerative disorders (like Alzheimer's or dementia). However, "psychiatric beds" may include individuals who have psychiatric disorders as well as co-occurring intellectual disabilities or neurodegenerative disorders.

Facility Name What facility in California do you work for?

Q1 Which of the following categories best describes your facility?

- Acute Inpatient Hospital (Locked Facility) (1)
- State Hospital (2)
- Subacute (Locked Facility) (3)
- Community Residential (Unlocked Facility) (4)
- Crisis Residential (5)
- Other (specify) 6) _____

Which of the following categories best describes your facility? = Acute Inpatient Hospital (Locked Facility)

Q1.1 Acute Inpatient Hospital (Locked Facility) Which of the following sub-categories best describes your facility?

- Acute Psychiatric Hospital (1)
- Psychiatric Health Facility (2)
- Other Acute Inpatient Hospital (4)

Which of the following categories best describes your facility? = Subacute (Locked Facility)

Q1.2 Subacute (Locked Facility): Which of the following sub-categories best describes your facility?

- Skilled Nursing Facility with Specialized Treatment Programs (1)
- Mental Health Rehabilitation Center (2)
- Other Subacute Facility (e.g., IMD) (3)

Which of the following categories best describes your facility? = Community Residential (Unlocked Facility)

Q1.3 Community Residential (Unlocked Facility): Which of the following sub-categories best describes your facility?

- Enriched Residential Treatment (1)
- Enhanced Board and Care/Augmented Board and Care (ABC) (2)
- Enhanced Residential Rehabilitation Center (3)
- Other Community Residential Services (4)

Which of the following categories best describes your facility? = Crisis Residential

Q1.4 Crisis Residential: Which of the following sub-categories best describes your facility?

- Crisis Residential Treatment Program (1)
- Psych ER/Crisis Stabilization Unit/Other Crisis Services (2)

Q2 We would like a brief inventory of your psychiatric beds. Please just ESTIMATE to the best of your ability. How many ADULT psychiatric beds does your facility have?

Q3 Are these psychiatric beds primarily for psychiatric disorders?

Yes (2)

No (3)

Skip To: Q4 If Are these psychiatric beds primarily for psychiatric disorders? = Yes

Q3.1 You indicated that the beds at your facility are not primarily for psychiatric disorders. What population are the beds primarily for?

Individuals with intellectual disabilities (1)

Individuals with neurodegenerative conditions (e.g., dementia) (2)

Individuals with developmental disabilities (e.g., autism) (3)

Other (specify) (4) _____

Q4 Does this facility have unique classifications for psychiatric beds—for example, separate designations for forensic beds, crisis stabilization beds, respite beds, or long-term beds?

Yes (3)

No (4)

Does this facility have unique classifications for psychiatric beds—for example, separate designation... = N

Q5 How many psychiatric beds in your facility are reserved as (check all that apply and indicate # of beds reserved for each one):

Forensic (2) _____

Crisis Stabilization (3) _____

Respite (4) _____

Long-Term (5) _____

Q6 Next, we would like to discuss occupancy rates. Again, please just ESTIMATE to the best of your ability.

How many psychiatric beds at your facility were occupied last night?

Q7 At this clinic specifically, what is the average wait time for a psychiatric bed, in days (please estimate)?

Q8 How many people are on the waitlist right now for a psychiatric bed (please estimate)?

Q9 How many people are unable to move out of your facility because they are unable to step down to a lower level of care that is more appropriate?

Q10 How many people are unable to move out of your facility because they are unable to step up to a higher level of care that is more appropriate?

Q11 At this clinic specifically, what is the average length of stay (in days), for a client in a psychiatric bed?

Q12 - 1 For many facilities we contact, beds are available for some but not all populations. We would like to ask you about a few populations specifically.

For each population in the table below, please indicate whether you are able to place this population and (if so) how many individuals.

	Does your facility place individuals who have...		Thinking about all psychiatric beds at this facility, not just those currently occupied, how many beds do you have for this population?
	Yes (1)	No (2)	# of beds (1)
Dementia (1)	<input type="radio"/>	<input type="radio"/>	
Traumatic brain injury (2)	<input type="radio"/>	<input type="radio"/>	
Eating Disorder (25)	<input type="radio"/>	<input type="radio"/>	
Co-occurring intellectual disability such as autism (26)	<input type="radio"/>	<input type="radio"/>	
Co-occurring substance use disorder (28)	<input type="radio"/>	<input type="radio"/>	

Q12 - Specific Populations, continued

For each population below, please indicate whether you are able to place this population (place a check mark next to those populations you are able to place at your facility). Check all that are applicable.

	Does your facility place individuals who have...		Thinking about all psychiatric beds at this facility, not just those currently occupied, how many beds do you have for this population?
	Yes (1)	No (2)	# of beds (1)
Co-occurring chronic health condition (med-psych bed) (23)	<input type="radio"/>	<input type="radio"/>	
Large size (BMI > 45kg/m2) (24)	<input type="radio"/>	<input type="radio"/>	
Requiring oxygen (25)	<input type="radio"/>	<input type="radio"/>	
Non-ambulatory (26)	<input type="radio"/>	<input type="radio"/>	
COVID-positive patients (28)	<input type="radio"/>	<input type="radio"/>	

Q12 Specific Populations, continued

For each population listed, please indicate whether you are able to place this population (place a check mark next to those populations you are able to place at your facility). Check all that are applicable.

	Does your facility place individuals who have...		Thinking about all psychiatric beds at this facility, not just those currently occupied, how many beds do you have for this population?
	Yes (1)	No (2)	# of beds (1)
History of violence (3)	<input type="radio"/>	<input type="radio"/>	
Arson conviction (23)	<input type="radio"/>	<input type="radio"/>	
Sex offense conviction (24)	<input type="radio"/>	<input type="radio"/>	
Forensic (other than arson, assault, sex offense) (25)	<input type="radio"/>	<input type="radio"/>	
Incompetent to stand trial (26)	<input type="radio"/>	<input type="radio"/>	
Murphy's conservatees (27)	<input type="radio"/>	<input type="radio"/>	

Q12 -4: Specific Populations, continued

For each population below, please indicate whether you are able to place this population (place a check mark next to those populations you are able to place at your facility). Check all that are applicable.

	Does your facility place individuals who have...		Thinking about all psychiatric beds at this facility, not just those currently occupied, how many beds do you have for this population?
	Yes (1)	No (2)	# of beds (1)
Monolingual, Spanish speaking (1)	<input type="radio"/>	<input type="radio"/>	
Monolingual, non-English other than Spanish (2)	<input type="radio"/>	<input type="radio"/>	
Insured by MediCal rather than private insurer or out of pocket (7)	<input type="radio"/>	<input type="radio"/>	

APPENDIX B

Technical Expert Panel Members and Prompts

The members of our Technical Expert Panel were

- Dr. Anita Everett, director of the Center for Mental Health Services at the Substance Abuse and Mental Health Services Administration
- Dr. Meredith Harris, principal research fellow with the School of Public Health at the University of Queensland
- Dr. Richard O'Reilly, scientist at the St. Joseph's: Parkwood Institute and professor of psychiatry at Western University and at the Northern Ontario School of Medicine
- Dr. Debra Anne Pinals, professor of psychiatry, University of Michigan Medical School; clinical adjunct professor in law, University of Michigan Law School; and medical director, Behavioral Health and Forensic Programs, Michigan Department of Health and Human Services
- Dr. Elizabeth Sinclair, director of research for the TAC.

Prompts

1. Creating a Top-Level Estimate of Need
 - What do you think of this the overall figure of 40-60 beds per 100,000 as a standard, as reflected in the TAC's 2008 report? Do you

think this figure is high, low, or about right? Why?

- For overall estimates, are you aware of any other estimates that you think may be preferable and which you would like to advocate for?
 - Of the total number of psychiatric beds, how do you think this number should be distributed across the three levels—acute, sub-acute, community residential? What about between State Hospitals, MHRCs, and STP/SNFs at subacute level?
2. RAND's Outcomes-Based Approach
 - We are curious to hear feedback on RAND's outcomes-based approach, including
 - What do you see as the strengths and/or shortcomings of RAND's approach?
 - How would you try to address these shortcomings if you were us, keeping in mind the limited timeframe we have?
 - Are there other considerations (or sensitivity analyses) we should include?
 3. Conceptual Considerations
 - Based on California's situation, what do you see as the most important considerations when estimating the size of the gap between psychiatric bed capacity and need?
 - What else might we have missed here?

Notes

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About This Report

Psychiatric beds are essential infrastructure for meeting the needs of individuals with mental health conditions. However, not all psychiatric beds are alike: They represent infrastructure within different types of facilities, ranging from acute psychiatric hospitals to community residential facilities. These facilities, in turn, serve clients with different needs: some who have high-acuity, short-term needs, and others who have chronic, longer-term needs and may return multiple times for care. California, much like many parts of the United States, is confronting a shortage of psychiatric beds. In this report, the authors estimated California's psychiatric bed capacity, need, and shortages for adults at each of three levels of care: acute, subacute, and community residential care. They used multiple methods for assessing bed capacity and need in order to overcome limitations to any single method of estimating the potential psychiatric bed shortfall. The authors identified statewide shortfalls in beds at all levels of inpatient and residential care. They also documented regional differences in the shortfall and identified special populations that contributed to bottlenecks in the continuum of inpatient and residential care in the state.

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The California Mental Health Services Authority (CalMHSA) is an organization of county governments working to improve mental health outcomes for individuals, families, and communities. Prevention and early intervention programs implemented by CalMHSA are funded by counties through the voter-approved Mental Health Services Act (Prop. 63). Prop. 63 provides the funding and framework needed to expand mental health services to previously underserved populations and all of California's diverse communities.

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