A Concept Model for Acute Crisis Mental Health System Capacity Planning and Management

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Extended Abstract

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Problem: In the United States (US), the number of public beds used to provide inpatient care for individuals with serious mental illness peaked in 1955 with nearly 560,000 beds, or 337 per 100,000 people (Bachrach, 1999; Davis et al., 2012; Fuller et al., 2016). This peak coincided with the introduction of the first effective antipsychotic medication, chlorpromazine, which enabled the deinstitutionalization of those with mental illness (Davis et al., 2012; Fuller et al., 2016). Later, newly formed Medicare and Medicaid government programs sought to install cost control around the delivery of medical services (Davis et al., 2012; Fuller et al., 2016). Because of a combination of medical, social, political, and economic factors, the bed capacity for adults decreased by 97% as of 2011 (Fuller et al., 2016). Similar trends in reducing psychiatric bed capacity over the past 70 years have been observed in other developed countries as well. In 2011, the Organization for Economic Co-operation and Development (OECD) reported an average of 68 psychiatric beds per 100,000 people for the 38 member nations. Including both private and public bed capacity, the US ranked 29th with only 25 beds per 100,000 people (OECD, 2013). This poor ranking among developed nations, and the observed chronic difficulties with accessing care, suggest that the US has perhaps gone too far and maintains inadequate inpatient capacity for individuals with serious mental health issues.

Because of the chronic bed capacity limitations and imbalances for both civil and forensic capacities, access to acute mental health treatment may be delayed, potentially causing some individuals to remain in an acute crisis much longer than necessary. A consequence of this bed capacity shortfall is the burden placed on emergency departments (EDs), with individuals in acute crisis arriving and waiting to board into the hospital (Swartz, 2016; Zun, 2012). Individuals experiencing acute mental health crises cannot be turned away from these medical facilities according to the Emergency Medical Treatment and Labor Act (EMTALA) despite the fact they would be better served through mental health resources (CMS, 2020). Additionally, there is a substantial burden placed on criminal justice systems, with individuals having been arrested while in a state of acute crisis out in the community. These individuals are often held in community jails and detention centers while waiting for competency restoration and prolonging their access to needed mental health care. In 2016, nearly 50% of public beds were occupied by forensic patients charged or convicted of crimes (Fuller et al., 2016). With underfunded civil mental health capacity, criminal involvement of individuals with mental illness continues to grow. This has also resulted in the prioritization of state investment toward forensic treatment, over community mental health programs, to address concerns over maintaining civil liberties and freedoms for the individual. Cases also exist where communities have needed to reallocate a portion of their civil inpatient bed capacity for use as forensic inpatient bed capacity. Still, many states have wait lists for forensic beds measured in weeks and months (Fuller et al., 2016).

Methodology: Motivation for this research work has been driven by the need to strengthen the civil acute mental health crisis system and reduce the demand for competency restoration. The research hypothesis is focuses on the need to reallocate civil inpatient capacity to address shortages in forensic beds for competency restoration may have short-term benefits with long-term negative consequences (i.e., fixes that fail). Figure 1 illustrates the causal loop diagram which describes the dynamic relationships and demand competition for civil and forensic inpatient bed capacity. Using system dynamics, a conceptual model is developed to quantify the acute mental health bed needs and develop decision-making insight and intuition.
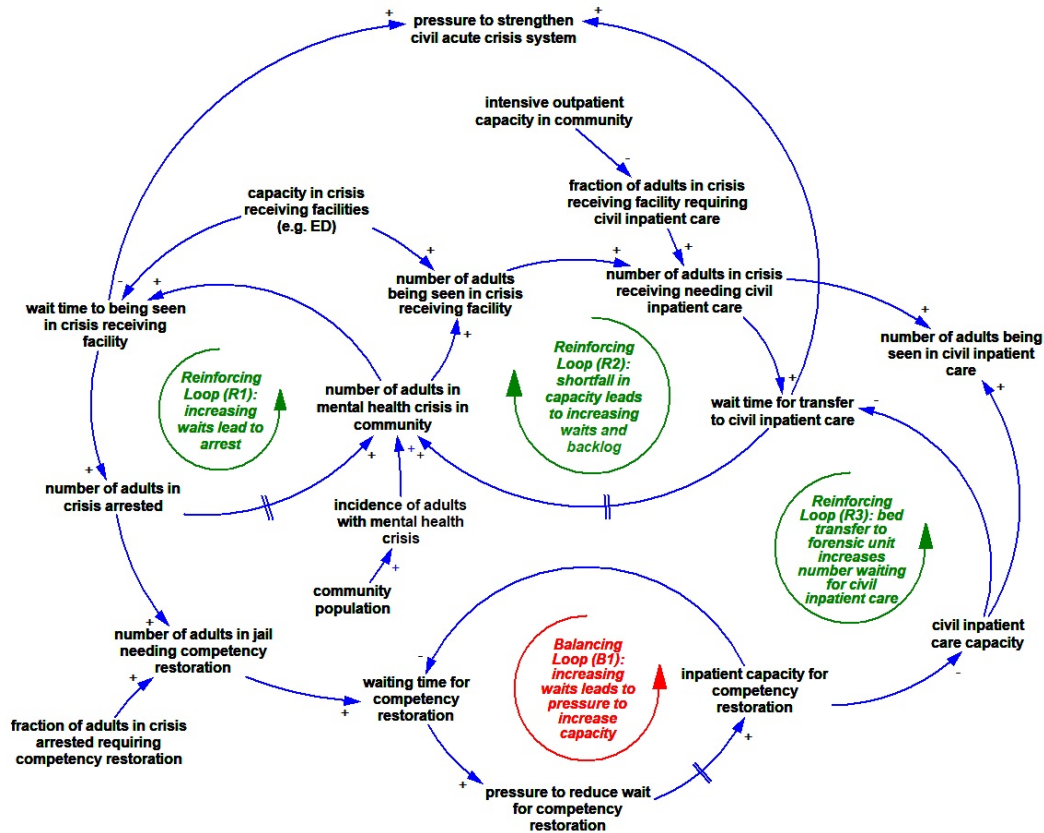

Figure 1. The causal loop diagram for civil and forensic inpatient bed capacities and demand behavior

Results: The results for this work are in the early stages with the development of the concept model now complete. The concept model provides a hypothetical community representation known as "Anytown, USA," where the parameters were obtained through engagement with subject matter experts in the field. This hypothetical community does not reflect a specific community but rather a generalized acute crisis mental health system with characteristics similarly found in most communities. This effort was completed in conjunction with the American Psychiatric Association (APA) Presidential Task Force on Assessment of Psychiatric Bed Needs in the United States, where the goal was to "accurately calibrate the number of inpatient hospital beds per community" to facilitate the repair of the nation's mental health system (Moran, 2020). Details about the concept model are presented in the task force report (APA, 2022) in Section 6, Creating Models for Estimating the Number of Needed Psychiatric Beds (Lich et al., 2022). Future work will include the configuration, customization, and parameterization of the concept model for a specific community to develop decision-making insight and estimate needed bed capacity (Psychiatric News, 2022).

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