

Thesis Portfolio

Linkages Between Community Mental Health Services, Homelessness, and Inmates and Probationers with Severe Mental Illness: An Evidence-Based Assessment
(Technical Report)

Evaluation of Emerging Technologies in Augmenting Treatment for Serious Mental Illness
(STS Research Paper)

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SOCIOTECHNICAL SYNTHESIS

LINKAGES BETWEEN COMMUNITY MENTAL HEALTH SERVICES, HOMELESSNESS, AND INMATES AND PROBATIONERS WITH SEVERE MENTAL ILLNESS: AN EVIDENCE-BASED ASSESSMENT

with Henry Bramham, Claire Deaver, Sean Domnick, Emily Ledwith, Noah O'Neill, Callie Weiler

Technical advisor: Michael C. Smith, Department of Engineering Systems and Environment

EVALUATION OF EMERGING TECHNOLOGIES IN AUGMENTING TREATMENT FOR SERIOUS MENTAL ILLNESS

STS advisor: Kent Wayland, Department of Engineering and Society

PROSPECTUS

Technical Advisor: Michael C. Smith, Department of Engineering Systems and Environment

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Current treatments and existing models of care fail to properly address the complex challenges associated with severe mental illness, which affected nearly 12 million Americans last year. Despite the ubiquity and prevalence of serious mental illness in the United States, the ability to link an individual to mental health services and prevent disengagement from treatment is deficient. Without receiving proper treatment, individuals diagnosed with severe mental illness often suffer from reduced quality of life, increased relapse rates, and premature mortality. Additionally, these issues become further exacerbated as individuals with a serious mental illness are more likely to face barriers to receiving mental health services, including the inability to afford care and issues related to treatment accessibility. These circumstances call for change in the paradigm of mental health care, including efforts to help improve successful linkage to mental health treatment, improve engagement in mental health treatment services, and increase the availability and range of current treatment options.

Over the past decade, research teams in Charlottesville, Virginia, have analyzed data from the region to better understand the nature and extent of individuals in the criminal justice system who suffer from severe mental illnesses. This year's technical project advances ongoing research to identify relevant issues and best practices for managing the mentally ill inmate population. The goals of this year's work included characterizing the dynamic paths individuals follow through various periods of incarceration, mental health services, homelessness, and probation, and incorporating geocoding to explore how an individual's proximity to treatment centers has an impact on linkage to mental health services. To analyze individuals within the Charlottesville criminal justice system, the research team collected data from four participating agencies: Albemarle-Charlottesville Regional Jail (ACRJ), Region Ten Community Service Board (R10), Offender Aid and Restoration (OAR), and the Thomas Jefferson Area Coalition for

the Homeless (TJACH). Individual databases were cleaned, analyzed, and merged to allow analyses spanning multiple organizations. Using this merged data, a model was created to better understand the relationship between the likelihood of screening-in for further mental health evaluation on the Brief Jail Mental Health Screener (BJMHS) and other attributes. Individuals who felt the reason they were incarcerated was associated with drugs or alcohol were significantly more likely to screen-in, highlighting the importance of treatment that addresses the intersection between mental health and the abuse of drugs and alcohol. Geolocation analysis revealed how proximity to treatment is correlated with linkage to mental health services, and individuals who were successfully linked to services were located closer to the treatment center. These findings help Charlottesville decision makers gain insight into the needs of the region's mentally ill inmate population, ultimately leading to more evidence-based decision-making regarding the treatment of these individuals within and beyond their periods of incarceration.

Emerging health technologies, such as web or mobile-based applications, offer a unique way to assess and treat mental illness. More recently, there had been a growing effort to invest in treatment options other than inpatient therapy in an attempt to address gaps in mental health services and improve patient outcomes. Since the development of these technologies is so recent, the extent to which various technologies can be used to treat serious mental illness is largely unknown. The STS research paper analyzes the range of technologies used to treat mental illnesses, and then focuses specifically on how virtual reality has been used within the treatment process for serious mental illness. Four clinical studies were examined to help determine virtual reality's potential to be used as an alternative treatment option, and findings from the studies provide preliminary evidence for the effectiveness of virtual reality therapy to be used to help treat serious mental illnesses such as schizophrenia and post-traumatic stress disorder. As with

any technology, limitations such as affordability and ease of use exist and prevent the widespread use and adoption of virtual reality therapy. Virtual reality offers one way to augment treatment for individuals diagnosed with severe mental illness, and similar emerging technologies have the potential to grow as the demand for remote treatment options continues to surge.

Overall, both the technical project and STS research paper were successful first steps in better understanding the complex treatment process for individuals suffering from severe mental illness. In terms of the technical project, the team made great headway in further characterizing the mentally-ill inmate population in Charlottesville, and provided our clients with valuable findings so that more evidence-based decisions can be made within the local criminal justice system. Although the findings in the technical project are limited in scope to the greater Charlottesville area, they emphasize the effort that should be placed on researching the mentally ill population in the criminal justice system at large. Similarly, although the STS research paper focused primarily on one form of technology, virtual reality, future work should continue to research similar emerging technologies and explore their potential to augment treatment for serious mental illness.