

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

**THE ETHICAL CONSIDERATIONS OF CRIMINAL PREDICTIVE TECHNOLOGY**

An Undergraduate Thesis Portfolio  
Presented to the Faculty of the  
School of Engineering and Applied Science  
In Partial Fulfillment of the Requirements for the Degree  
Bachelor of Science in Systems Engineering

By

Claire Deaver

April 28, 2020

## **SOCIOTECHNICAL SYNTHESIS**

The abundance of individuals with serious mental illness in the criminal justice system requires nationwide attention. The technical project undertakes unprecedented research by connecting criminal justice organization data with mental health screening and treatment data to better understand and serve the mentally ill inmate population and establish best practices for resource allocation and management. The STS project analyzes the ethical usage of Big Data technologies in the criminal justice system. The STS project also identifies whose role it is to minimize biases present with the usage of criminal predictive technologies. The two projects coupled together provides a holistic analysis of the criminal justice system.

The mentally ill inmate population makes up nearly a third of the Albemarle-Charlottesville Regional Jail cohort. Currently, individuals with severe mental illness, such as major depression, schizophrenia, and bipolar disorder, are not receiving the support they need, often resulting in cycles of recidivism, taking them repeatedly through the criminal justice system. The technical research team collected data from four community organizations: Albemarle-Charlottesville Regional Jail (ACRJ), Region Ten Community Service Board (R10), Offender Aid and Restoration probationary services (OAR), and the Thomas Jefferson Area Coalition for the Homeless (TJACH). The team also acquired from the regional jail The Brief Jail Mental Health Screener, an eight question screener that indicates whether an inmate should be “screened in”, meaning they should be referred for further mental health evaluation or “screened out”. The individual databases were cleaned, analyzed and merged to allow analyses spanning multiple organizations. The team’s findings were presented back to the Charlottesville community in hopes to help policy makers make informed decisions regarding the treatment of the mentally ill inmate population.

To better understand how the screened-in and screened-out population experience probation differently, a general linear model was created to predict probation success at Offender Aid and Restoration probationary services. The results showed that among screened-out individuals, a low recidivism risk score, was the only statistically significant predictor of successful probation. On the other hand, for individuals with a serious mental illness, charges classified as assault were more than twice as likely to successfully complete probation. Another key area of analysis was understanding how to better connect individuals who screened in at Albemarle-Charlottesville Regional Jail to treatment at Region Ten Community Service Board, a Charlottesville organization that provides treatment for both mental health and substance abuse. The first geocoding analysis done in the history of this 10+ year project illustrated how linkage can be strongly affected by where individuals live.

Predictive technologies are used in the criminal justice system to identify geographic areas with probabilities of higher crime. The STS project looked to identify the ethical biases present with criminal predictive technologies and who should ensure the technology's usage benefits society. The STS paper draws on sources that analyze the Atlanta Police Department's employment of criminal predictive technology and an evaluation of England and Wales' predictive policing behaviors. The sources' conclusions arose from interviews with law enforcement agencies, academic and legal experts and police representatives.

The STS research revealed several critiques about criminal predictive technology. The paper outlines three arguments against the usage of predictive policing: the start and finish of a criminal procedure is blurred, the technologies can cause contextual information during an arrest to be disregarded, and that inaccuracy of predictions can occur due to ground truth criminality data not being fully reported or accurate. The paper maps the solution to the STS problem using

an adaptation of Carlson's Social Constructivism framework. The framework includes the addition of multiple stakeholders like health care providers and government legislators, in hopes that the chance of biases and inconsideration of human rights are decreased.

In conclusion, the technical and STS topics coupled together complement each other by providing a more comprehensive view of the injustices within the criminal justice system. Technologies, whether it be data analysis or predictive tools, hold the ability to both greatly benefit and greatly harm society. It is the stakeholder's role to shape the technologies and ensure they are used to their full ethical potential.

## **TABLE OF CONTENTS**

### **SOCIOTECHNICAL SYNTHESIS**

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

with Henry Bramham, Sean Domnick, Emma Hand, Emily Ledwith, Noah O'Neill, Carolyn Weiler

Technical advisor: Michael Smith, Department of Systems Engineering and K. Preston White, Department of Systems Engineering

#### **THE ETHICAL CONSIDERATIONS OF CRIMINAL PREDICTIVE TECHNOLOGY**

STS advisor: Catherine D. Baritaud, Department of Engineering and Society

### **PROSPECTUS**

Technical advisor: Michael Smith, Department of Systems Engineering

STS advisor: Catherine D. Baritaud, Department of Engineering and Society