Mental Health and the Justice System in Durham County

Undergraduate Students: Will Lieber, Irene Biju, Foxx Hart
Graduate Project Manager: Garrett Baker
Faculty: Nicole Schramm-Sapyta, PhD and Maria Tackett, PhD

Bass Connections in Brain & Society

Introduction

Durham county has taken significant steps to support people within the criminal justice system who suffer from mental illness (MI). Our project team is using data from **Duke Health** and the **Durham County Detention Facility (DCDF)** to evaluate the efficacy and costs of existing support measures, in hopes of developing more effective methods of supporting vulnerable members of our community.

Data

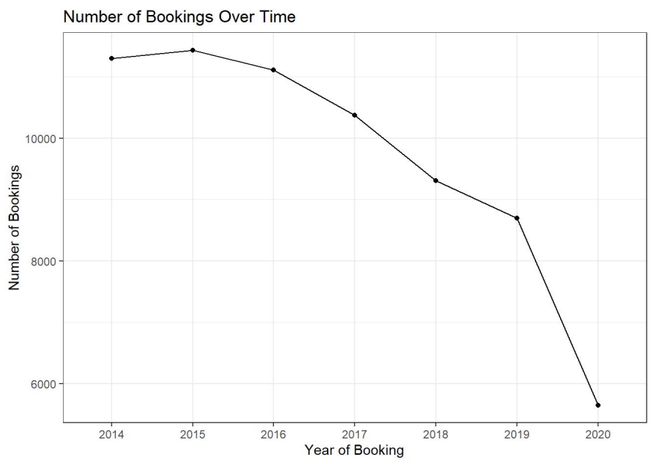
Bookings
- Observations: individual bookings into DCDF
- Variables: age, race, gender, charges, booking/release dates

Diagnoses
- Observations: Duke Health visits
- Variables: diagnoses, SMI (Serious Mental Illness: bipolar, schizophrenia, major depressive disorder) admission/discharge dates, census tracts, medical history, payor

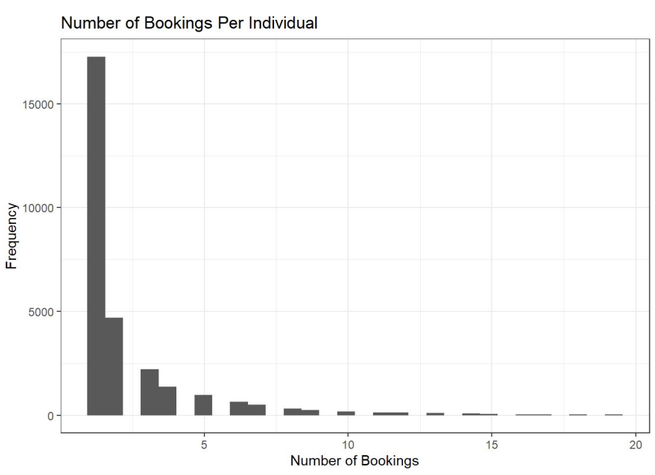
Costs
- Observations: Cost per procedure at Duke Health; assessed through charges to an individual's hospital account.
- Variables: total cost, fixed/variable cost, indirect/direct cost

Data Range: 2014-2020 for all measures

Exploratory Data Analysis



Bookings decreased from 2014-2020, consistent with the decrease in incarceration rate in Durham county.



Most individuals in the dataset have 1-3 bookings.

Objective 1: Mental Illness & Incarceration

Evaluate the relationship between the timing of incarceration and receiving a mental illness diagnoses (MI)

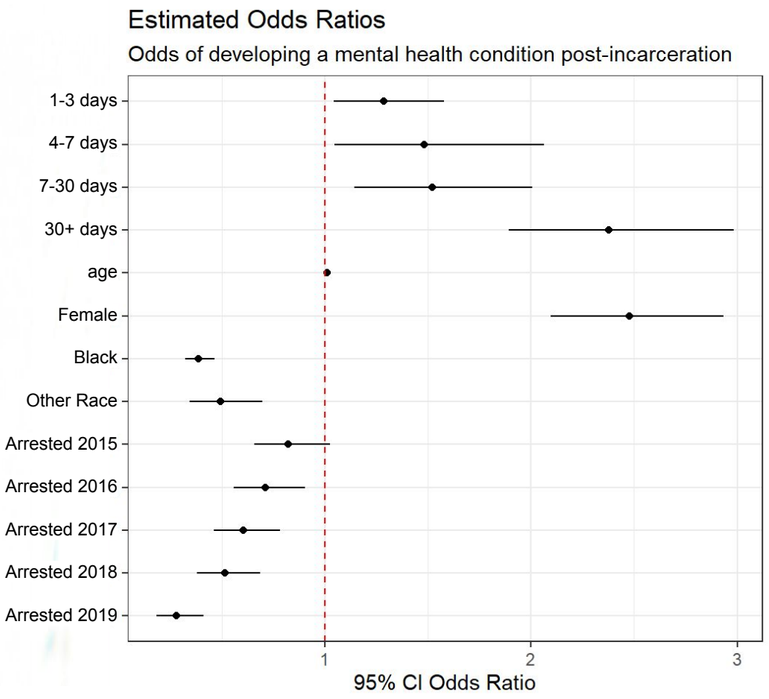
Methods

(1) Segment the sample into status changes of interest
(2) Inference using McNemar's test:
  (a) Evaluate **categorical outcomes** (MI status changes) for **paired data**
(3) Logistic modeling for odds of undergoing a MI status change conditional on no MI diagnosis prior

Results

	No MI after	MI after
No MI before	**6273**	**778**
MI before	**0**	**2086**

p-value: < 2.2e-16



Conclusions and Next Steps

Evidence suggests that, among a population of people who undergo incarceration, **the likelihood of being diagnosed with a mental illness is greater post-incarceration** than pre-incarceration.

Evidence suggests that, compared to incarcerations of less than 24 hours, longer incarceration increases the likelihood of **being diagnosed with a mental illness.** Being female and white was also associated with higher likelihood of developing an MI diagnosis

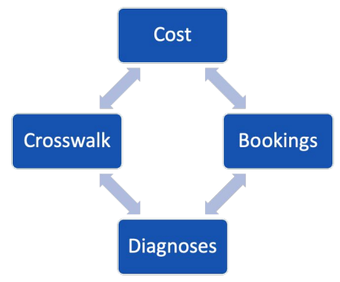
Next Steps
- Begin a causal analysis
- Compare similar time frame without incarceration

Objective 2: Cost Data Analysis

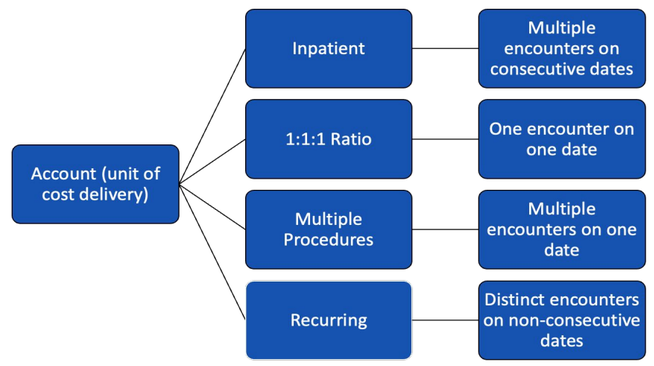
Describe the costs incurred by formerly incarcerated people with MI (mental illness) conditions in the Duke health system, in hopes of **identifying** policies that may reduce cost.

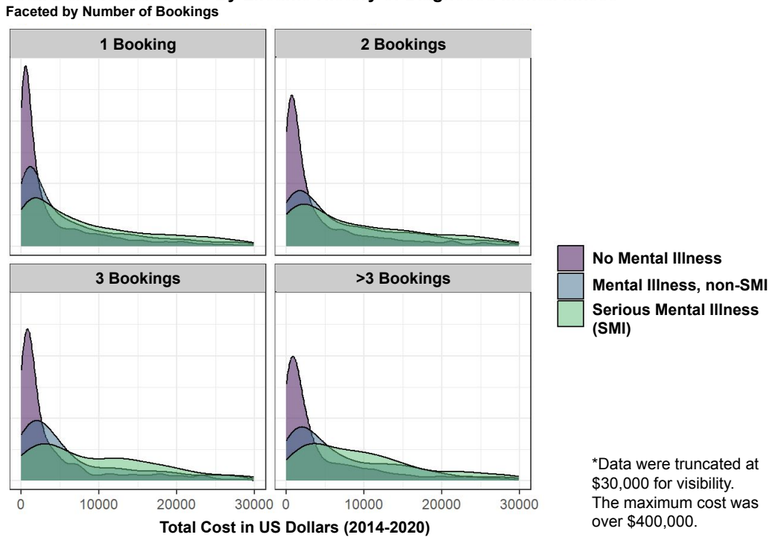
Methods

Descriptive analysis with cost data
a) **Consolidate** cost data by account, person, and encounter.
b) Add **identifying flags** to indicate mental illness status, appointment type, etc. for further analysis



Results





*Data were truncated at $30,000 for visibility. The maximum cost was over $400,000.

Conclusions and Next Steps

1. Increasing number of bookings and increasing severity of mental illness **increase variance** in Duke Health cost.
2. **Two datasets created** - by Hospital Account ID & by Encounter ID - for further analysis

Next Steps- evaluating proportion of health cost and implementing familiar face identifiers

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