

McLEAN COUNTY BEHAVIORAL HEALTH COORDINATING COUNCIL AGENDA

RM 400 Government Center

115 E. Washington ST.

Bloomington, IL 61701

7:30 AM

December 9, 2016

1. Introductions
2. Current Business
  - a. BJA Justice & Mental Health Collaboration Grant Application Status 2-4
  - b. HHS Final HIPPA Guidance 5-8
  - c. University of Chicago - Data Sharing Agreement 9-55
  - d. Childhood/Adolescent Services- SAMHSA Grant Application 56
  - e. BHCC Steering Group 57
3. Future Business
  - a. Provider Expansion
  - b. Assertive Community Treatment(ACT) or Intensive Case Management
  - c. Housing
  - d. Eligibility for Medicaid
  - e. Court Diversion programs
4. Resources Website
5. Future Meeting Dates and Times



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P.O. Box 2400

Bloomington, Illinois 61702-2400

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**TO:** Chairman and Members, Behavioral Health Coordinating Council  
**FROM:** Bill Wasson, County Administrator  
**DATE:** November 20, 2016  
**RE:** Department of Justice: Justice and Mental Health Collaboration Grant

Earlier this year, consistent with McLean County's participation in the White House-NACO Data Driven Justice Initiative and with the support of members of the McLean County Criminal Justice Coordinating Council, the City of Bloomington, Town of Normal and concurrence of the McLean County Behavioral Health Coordinating Council, McLean County applied for a Justice and Mental Health Collaboration Grant from the U.S. Department of Justice-Bureau of Justice Assistance.

Because of significant commitments of time and effort by a wide range of individuals, McLean County has been notified that it has been awarded a grant totaling \$215,596 to build upon previous community work in developing an integrated comprehensive approach to improving community response to behavioral health issues. The overarching goal of the project is to decrease criminal justice involvement of those with mental health disorders by providing six (6) trainings to first responders and related service providers in McLean County over a 36-month grant. McLean County will work with local justice and health partners to create and implement strategic policies/protocols to improve systemic and individual responses to mental health crisis situations so that justice involvement is decreased. This project hopes to:

- Improve understanding of the existing intersection of the criminal justice and behavioral health systems in McLean County, and each agency's responsibility in improving the systemic response to mental health crises.
- Improve response to justice involved persons with mental health disorders through evidence-based training of law enforcement first responders, emergency responders, correctional staff, and other crisis related staff.
- Improve behavioral health and criminal justice collaborations through data driven solutions.

In 2013, the National Institute of Corrections (NIC) studied McLean County's criminal justice and behavioral health systems. They noted a direct connection between deficiencies in the behavioral health system and the increase in jail detainees with behavioral health issues. Since then, McLean County has worked to address provisions for post-arrest mentally ill offenders and decreasing the number of mentally ill who enter the criminal justice system. By utilizing practices developed in concert with the Data Driven Justice Initiative, this project strives to intercept individuals at the earliest point possible and directing them toward community treatment rather than incarceration.

## ***Project Design and Implementation***

### **Purpose, Goals and Objectives**

*Purpose and Goals.* The overarching goal of the project is to decrease criminal justice involvement of those with mental health disorders by providing six (6) CIT or similar trainings to first responders and related service providers in McLean County over the 36-month grant. The BHCC, in conjunction with the CJCC, will create and implement a plan to improve systemic and individual responses to mental health crisis situations in McLean County so that justice involvement is decreased. This project hopes to:

- Improve understanding of the existing intersection of the criminal justice and behavioral health systems in McLean County, and each agency's responsibility in improving the systemic response to mental health crises.
- Improve response to justice involved persons with mental health disorders through evidence-based training of first responders, correctional staff, and other crisis related staff.
- Improve behavioral health and criminal justice collaborations through data driven solutions.

*Process Objectives.* Achievement of the goals will result in increased access to and availability of recovery support services which is directly tied to the outcome objectives below:

- Increase the number of mentally ill offenders diverted from jail (as measured by the number of bookings of mentally ill offenders per the county's Integrated Justice Information System--EJS)
- Decrease overall bed days for mentally ill offenders in the jail (as measured by EJS)
- Decrease the rate of new arrests and new convictions for mentally ill offenders 12 months following program implementation (as measured by arrest and conviction information from EJS)
- Decrease the overall number of mentally ill offenders incarcerated in the 12 months following program implementation (as measured by EJS)

### **Strategies**

Crisis Intervention Team (CIT) Training.

Source: Crisis Intervention Team Core Elements, The University of Memphis

Crisis Intervention Team (CIT) is a first-responder model of police-based crisis intervention with community, health care, and advocacy partnerships. CIT provides law enforcement-based crisis intervention training for assisting those individuals with a mental illness, and improves the safety of patrol officers, consumers, family members, and citizens within the community. CIT is a program that

provides the foundation necessary to promote community and statewide solutions to assist individuals with a mental illness. The CIT Model reduces both stigma and the need for further involvement with the criminal justice system. CIT provides a forum for effective problem solving regarding the interaction between the criminal justice and mental health care system and creates the context for sustainable change.

McLean County's goal in providing two additional CIT trainings per year is to develop a comprehensive collaborative county response to citizens in mental health crisis. Providing cross-training on CIT to both police officers and other emergency responders, including mental health service providers, will:

- Expand CIT training in the community from one training per year to three.
- Expand CIT training to non-police first responders to allow for a common platform, language, and understanding of police-based crisis intervention across agency types.
- Improve inter-agency relationships and collaboration regarding response to mental health crises.
- Decrease the number of persons brought into the criminal justice system due to a mental health crisis.
- Allow for the development of county-wide inter-agency protocols for the handling of mental health crises.

Six CIT or similar trainings will be contracted to provide training for up to 210 first responders over three years.



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TO: Chairman & Members, Behavioral Health Coordinating Council  
FROM: Bill Wasson, County Administrator  
DATE: 11/29/2016  
RE: Department of Health and Human Services Final HIPAA Guidance

The final HIPAA guidance, with clarification on “lawful custody” is provided at :  
<http://www.hhs.gov/hipaa/for-professionals/faq/2073/may-covered-entity-collect-use-disclose-criminal-data-under-hipaa.html> .

May a covered entity collect, use, and disclose criminal justice data under HIPAA?

1. Does HIPAA permit health care providers who are HIPAA covered entities to collect criminal justice data, such as data on arrests, jail days, and utilization of 911 services, and link the criminal justice data to their health data, for purposes of improving treatment and care coordination?

HIPAA does not limit the types of data that providers may seek or obtain about individual patients for treatment purposes. Treatment includes “the provision, coordination, or management of health care and related services by one or more health care providers, including the coordination or management of health care by a health care provider with a third party; consultation between health care providers relating to a patient; or the referral of a patient for health care from one health care provider to another.” 45 CFR 164.501. Other standards, such as professional ethics rules or state law, may address the scope of health care providers’ independent investigations and data collection pertaining to patients. Once a HIPAA covered provider obtains criminal justice data about an individual for treatment purposes, or otherwise combines the data with its PHI, the data held by the HIPAA covered entity is considered protected health information (PHI) and the HIPAA Rules would apply to protect the data.

2. Is criminal justice data protected health information (PHI) under HIPAA?

In some circumstances, yes. To the extent that criminal justice data is maintained by a HIPAA covered entity or its business associate and relates to the past, present, or future physical or mental health or condition of an individual or the provision of or payment for health care to an individual, it is PHI. For example, when a covered health care provider receives criminal justice data, either directly from the individual or from another source, in order to help inform the treatment and services that the provider will provide to that individual, or otherwise links the criminal justice data with its patient information, it is PHI.

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3. Does HIPAA permit health care providers to disclose PHI that includes criminal justice data on individuals to other treating providers without obtaining an authorization from the individuals?

Yes, HIPAA permits a covered health care provider to disclose PHI for treatment purposes to other providers without having to first obtain an authorization from the individuals. This may include the disclosure of PHI for purposes of coordinating an individual's care with other treatment facilities or emergency medical technicians (EMTs).

4. Does HIPAA permit multiple health care providers who are seeking to collect individuals' criminal justice data and link it to the individuals' health data to engage the services of or work with a third-party to do this on their behalf?

Yes. Multiple covered health care providers can contract with a third party to perform data aggregation and linkage services on their behalf, as long as the providers enter into a HIPAA-compliant business associate agreement (BAA) with the third party, and so long as the aggregation is for purposes permitted under HIPAA. (Such third parties are considered to be "business associates" (BAs) under HIPAA and have direct compliance obligations with certain aspects of the HIPAA Rules.) In these cases, the participating providers may enter into one, common business associate agreement with the third party.

The BAA then governs the subsequent uses and disclosures that the BA may make with the data. For example, the BA may be authorized by its BAA to share the PHI on behalf of the participating providers with each other or other providers for treatment purposes, including care coordination, or, subject to certain conditions, for health care operations purposes. For more information on exchanging PHI for treatment or health care operations purposes, please see:

Permitted Uses and Disclosures: Exchange for Treatment

[www.healthit.gov/sites/default/files/exchange\\_treatment.pdf](http://www.healthit.gov/sites/default/files/exchange_treatment.pdf) - PDF

Permitted Uses and Disclosures: Exchange for Health Care Operations

[https://www.healthit.gov/sites/default/files/exchange\\_health\\_care\\_ops.pdf](https://www.healthit.gov/sites/default/files/exchange_health_care_ops.pdf) - PDF

5. Does HIPAA permit a health care provider to share the PHI of an individual that may include criminal justice data with a law enforcement official who has the individual in custody and is looking to ensure the individual is seen by the proper treatment facility?

A covered entity is permitted to disclose PHI in response to a request by a law enforcement official having lawful custody of an individual if the official represents that such PHI is needed to provide health care to the individual or for the health and safety of the individual. For more information on permitted disclosures to law enforcement under HIPAA, see OCR's guidance on sharing protected health information with law enforcement:

<http://www.hhs.gov/hipaa/for-professionals/faq/505/what-does-the-privacy-rule-allow-covered-entities-to-disclose-to-law-enforcement-officials/index.html>

[http://www.hhs.gov/sites/default/files/ocr/privacy/hipaa/understanding/special/emergency/final\\_hipaa\\_guide\\_law\\_enforcement.pdf](http://www.hhs.gov/sites/default/files/ocr/privacy/hipaa/understanding/special/emergency/final_hipaa_guide_law_enforcement.pdf) - PDF

While HIPAA permits the disclosure of protected health information to law enforcement in these defined circumstances, other Federal and State laws may impose greater restrictions on the release of certain information, such as substance use disorder information, to law enforcement.

6. Does HIPAA permit health care providers to disclose PHI that includes criminal justice data to other public or private-sector entities providing social services (such as housing, income support, job training)?

In specified circumstances, yes. For example:

- A covered entity may disclose PHI for treatment of the individual without having to obtain the authorization of the individual. Treatment includes the coordination of health care or related services by one or more health care providers, including the coordination or management of health care by a health care provider with a third party. Thus, health care providers who believe that disclosures to certain social service entities are a necessary component of or may help further the individual's health care may disclose the minimum necessary PHI to such entities for treatment purposes without the individual's authorization. For example, a provider may disclose PHI about a patient needing health care supportive housing to a service agency that arranges such services for individuals.
  - A covered entity may also disclose PHI to such entities with an authorization signed by the individual. HIPAA permits authorizations that refer to a class of persons who may receive or use the PHI. Thus, providers could in one authorization identify a broad range of social services entities that may receive the PHI if the individual agrees. For example, an authorization could indicate that PHI will be disclosed to "social services providers" for purposes of "housing, public benefits, counseling, and job readiness."
7. Does HIPAA restrict the ability of law enforcement officials to use or disclose data they maintain on health or mental health indicators to help inform incident response (g., to ensure officers are prepared to stabilize individuals and/or to support diversion)?

In general, no. Most state and local police or other law enforcement agencies are not covered by HIPAA and thus, are not subject to HIPAA's use and disclosure rules. HIPAA, however, does apply to the disclosure of health information by most health providers to law enforcement. For more information, see OCR's HIPAA Guide for Law Enforcement at:

[http://www.hhs.gov/sites/default/files/ocr/privacy/hipaa/understanding/special/emergency/final\\_hipaa\\_guide\\_law\\_enforcement.pdf](http://www.hhs.gov/sites/default/files/ocr/privacy/hipaa/understanding/special/emergency/final_hipaa_guide_law_enforcement.pdf) - PDF

While HIPAA does not generally apply to use or disclosure of the data by law enforcement officials, other Federal and State laws may apply.

8. In the context of pre-arrest diversion, when does HIPAA permit a health care provider to share PHI with a law enforcement official without an individual's authorization?

**Calls for service dealing with attempted suicide or a mental health complaint.** Sometimes a family will call 911 for law enforcement response for a family member in a mental health crisis. Other times, a business owner or a bystander calls to report unusual behavior (which often is an individual in crisis) and responding officers would benefit from knowing if the individual has a mental health condition. This type of information may enable officers to employ crisis intervention and de-escalation techniques that could reduce the likelihood of injury to both officers and individuals in a mental health crisis.

HIPAA permits a health care provider to share PHI with law enforcement, in conformance with other applicable laws and ethics rules, in order to "prevent or lessen a serious and imminent threat to the health or safety of an individual or the public." 45 CFR 164.512(j). For example, if an individual makes a credible threat to inflict serious and imminent bodily harm, such as threatening to commit suicide, a provider may share with law enforcement the information needed to intervene. The provider may rely on a credible representation from a person with apparent knowledge of the situation or authority, such as a law enforcement official, when

determining that the disclosure permission applies. See: <http://www.hhs.gov/hipaa/for-professionals/faq/505/what-does-the-privacy-rule-allow-covered-entities-to-disclose-to-law-enforcement-officials/index.html>

**Other general calls:** An officer is trying to determine whether an individual has a mental illness, substance abuse problem, or both, and needs to gain information about his or her condition in order to decide whether jail, emergency room, or some other program is needed.

If the individual is in lawful custody, a health care provider may disclose PHI to law enforcement pursuant to 45 CFR 164.512(k)(5) if the official represents that the information is needed to provide health care to the individual or to provide for the individual's health and safety or the health and safety of the officers.

If the individual is not in lawful custody (see 45 CFR 164.512 (k)(5)), nor is a threat to self or others (see 45 CFR 164.512(j)), these provisions would not apply and the provider would need to obtain an authorization from the individual before disclosing PHI to law enforcement, unless another HIPAA provision applies (e.g., escaped inmate, apprehension of an admitted perpetrator of violent crime, etc.). See <http://www.hhs.gov/hipaa/for-professionals/faq/505/what-does-the-privacy-rule-allow-covered-entities-to-disclose-to-law-enforcement-officials/index.html> for additional provisions that may apply depending on the particular situation.

We note that substance use disorder treatment information may be subject to additional protections under 42 CFR part 2.

9. When is an individual, other than an inmate, considered to be within the "lawful custody" of law enforcement for purposes of 45 CFR 164.512(k)(5) of the HIPAA Privacy Rule? Is "lawful custody" limited to arrest and imminent arrest or does it apply to situations where an individual may be under the care or control of an officer, but not under arrest?

For purposes of the scope of permitted disclosures of PHI to law enforcement in custodial situations under 45 CFR 164.512(k)(5), HIPAA does not define the precise boundaries of "other persons in lawful custody." As defined in HIPAA at 45 CFR 164.501, the term includes, but is not limited to: juvenile offenders adjudicated delinquent, non-citizens detained awaiting deportation, persons committed to mental institutions through the criminal justice system, witnesses, or others awaiting charges or trial. In addition to these defined situations, lawful custody also includes those situations where an individual is under the care or control of an officer. This includes instances where an individual has been arrested, as well as situations where the individual has been detained by law enforcement and is not free to go, but is not under formal arrest. For example, this would include situations when an officer has detained an individual and seeks to determine whether diversion is appropriate. Lawful custody does not encompass pretrial release, probation, or parole.

10. Does HIPAA restrict a covered entity's disclosure of PHI for treatment purposes to only those health care providers that are themselves covered by HIPAA?

No. A covered entity is permitted to disclose PHI for treatment purposes to any health care provider, including those that are not covered by HIPAA. In addition, HIPAA permits a covered health care provider to disclose PHI for the treatment of an individual to a third party, such as a social service agency, that is involved in the coordination or management of health care of that individual.

Content created by Office for Civil Rights (OCR)



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**TO:** Chairman and Members, Behavioral Health Coordinating Council  
**FROM:** Bill Wasson, County Administrator  
**DATE:** November 20, 2016  
**RE:** Data Sharing Agreement with the University of Chicago

At the McLean County Board's October 18<sup>th</sup> meeting, the Board approved entering into a Data Sharing agreement with the University of Chicago, in anticipation of joining Johnson County, Kansas and Salt Lake City as jurisdictions working with the University of Chicago Center for Data Science & Public Policy on the White House/National Association of Counties Data Driven Justice Initiative. As we have discussed and presented in previous discussions and meetings, the ability to combine justice and healthcare related data can provide the building blocks upon which the University of Chicago can work to create predictive analytical tools to reduce the flow of individuals to emergency departments and jails; and to allow for institution of strategies that are focused on those individuals with the highest likelihood of need.

I have attached a copy of the agreement that the County has entered into with the University of Chicago and also a slide show on the work being completed by the University. We hope that community agencies will be able to join this activity and support the development of analytical tools for first responders.

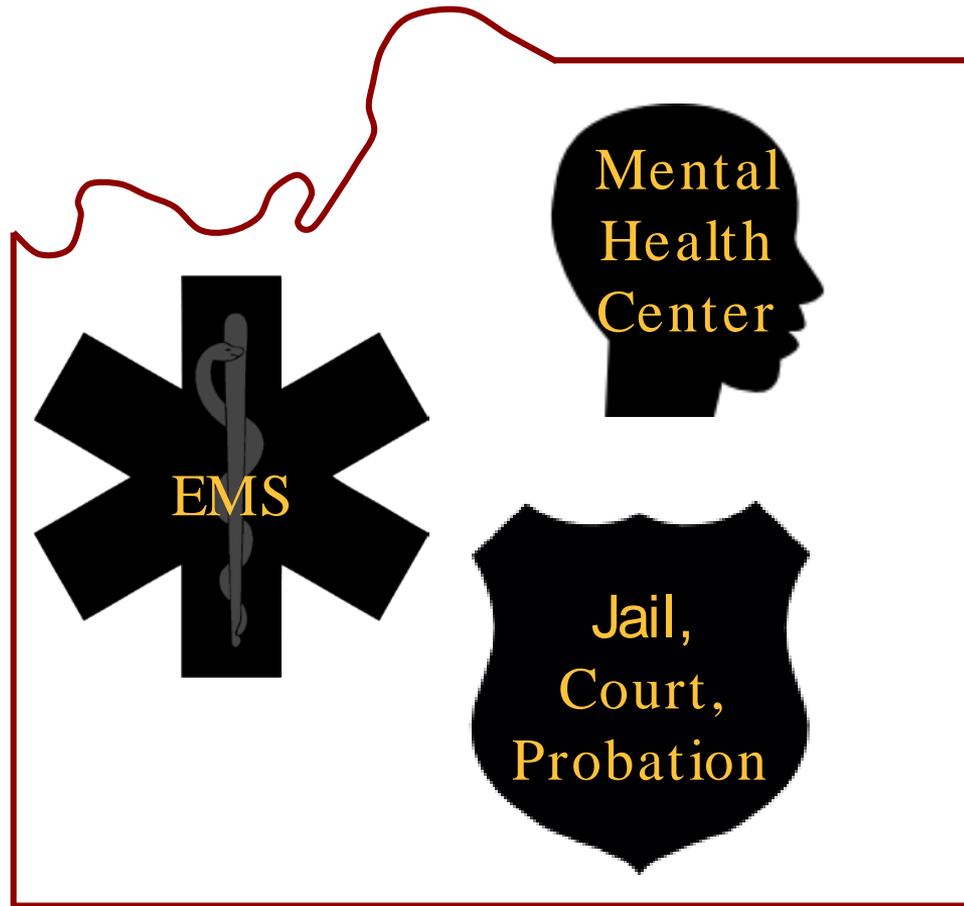
# Redirecting People with Complex Conditions to Effective Care

October 6, 2016

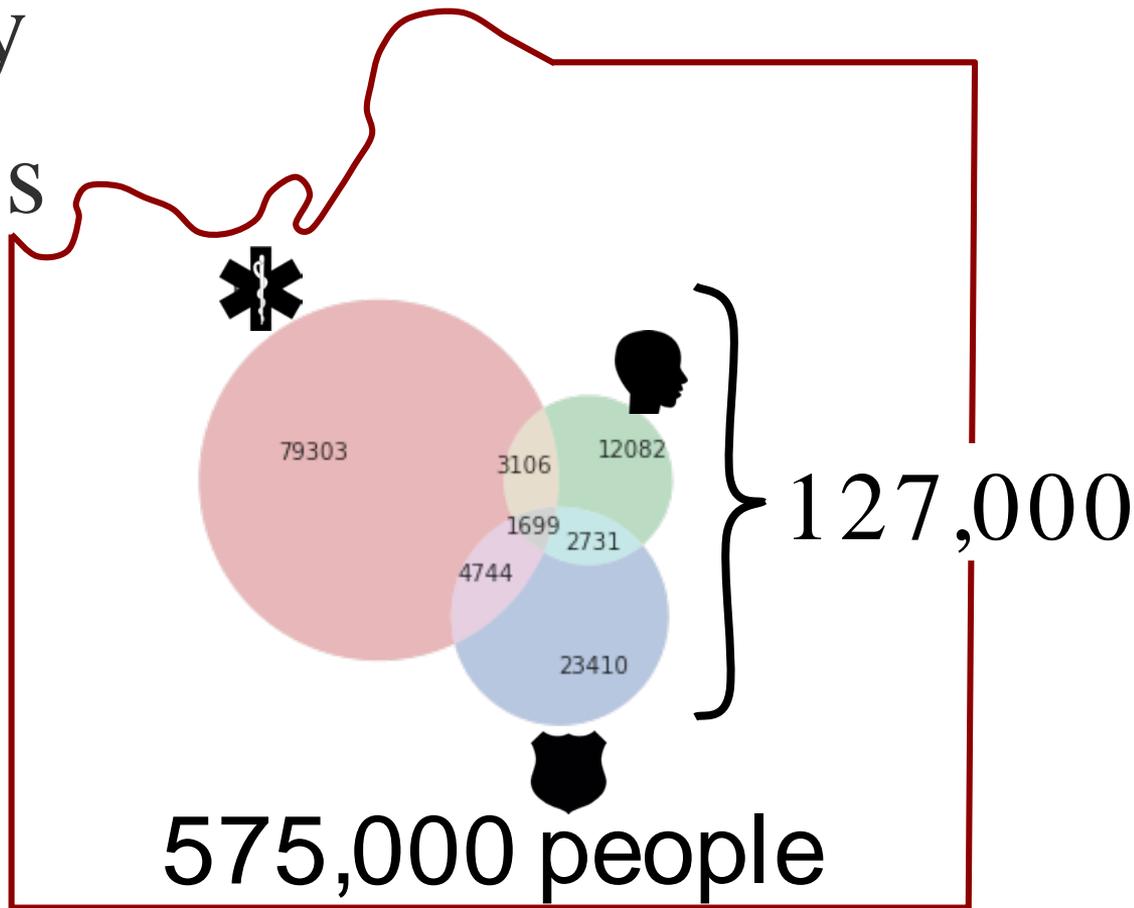
Center for Data Science & Public Policy



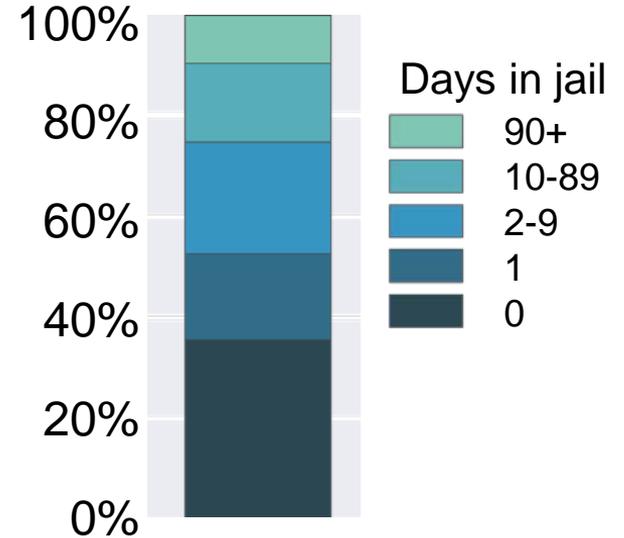
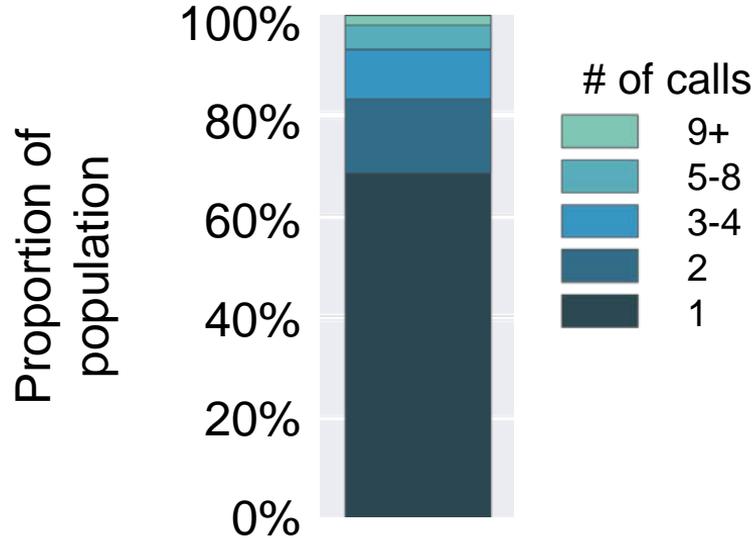
# Johnson County Services



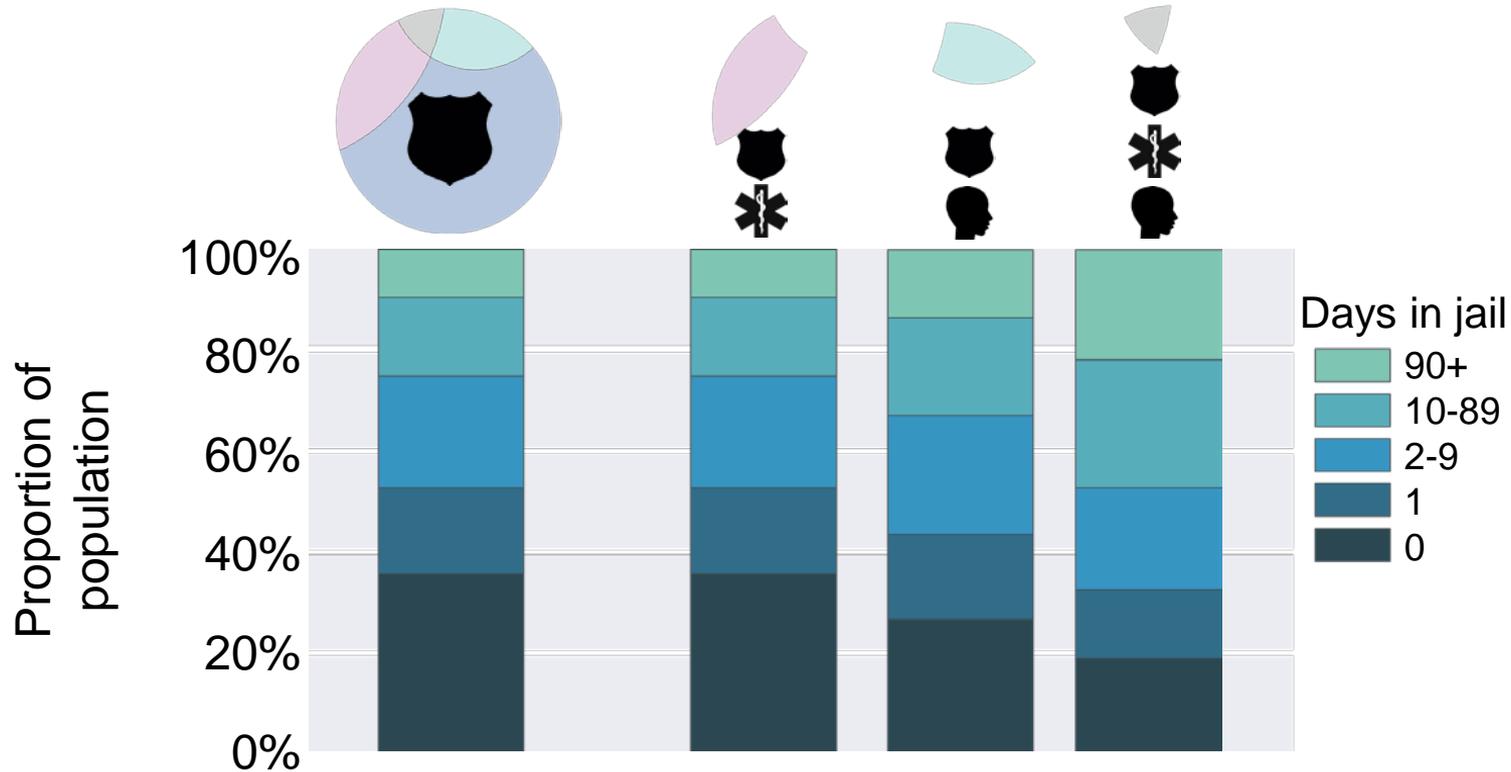
# County Services



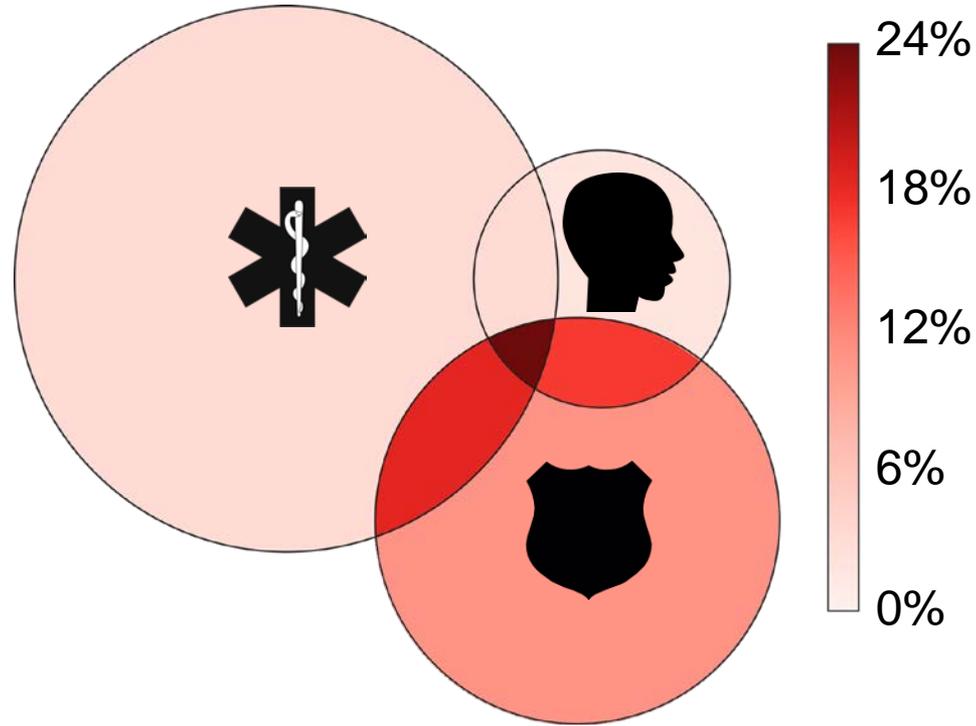
# “Frequent-flyer” explorations



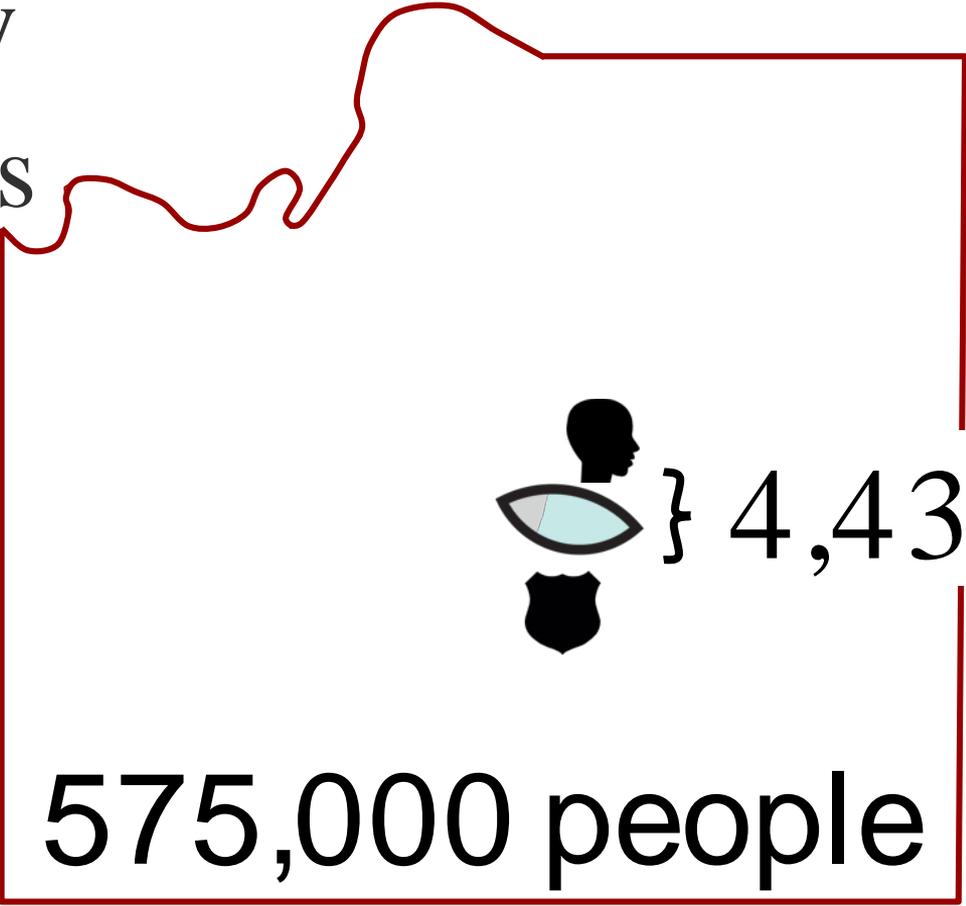
# Prolonged interactions: Jail



# Percent of population that entered jail in 2015



# County Services



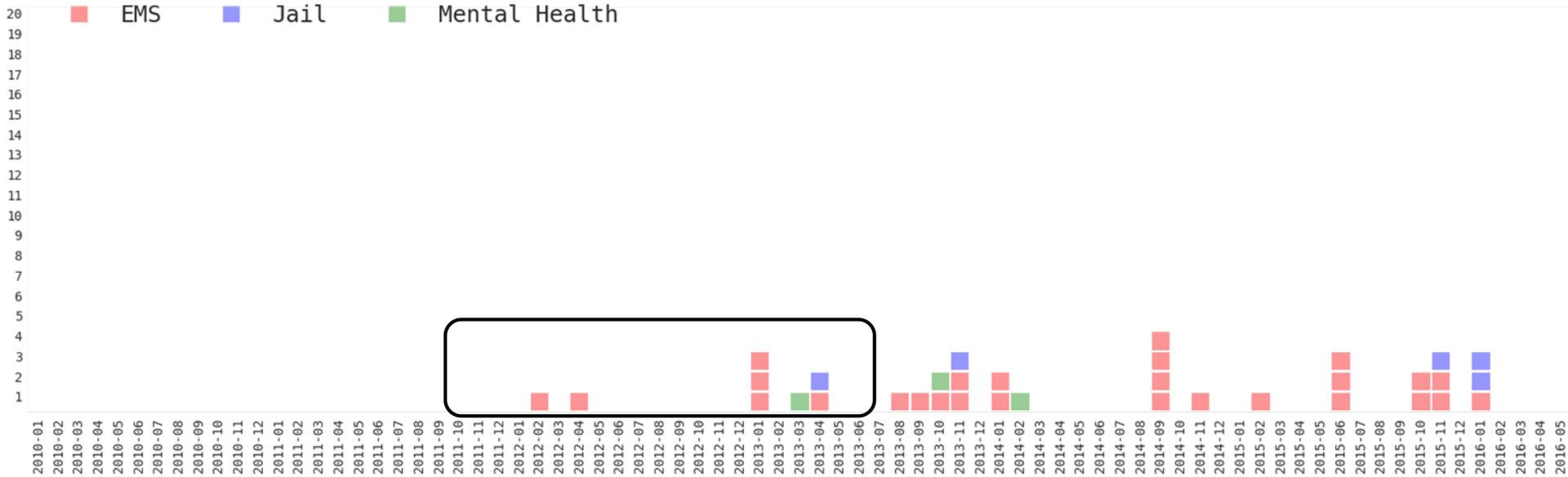
} 4,430

575,000 people

# Sequence Analysis

Service Path Order:

E → E → E → E → E → M → E → J



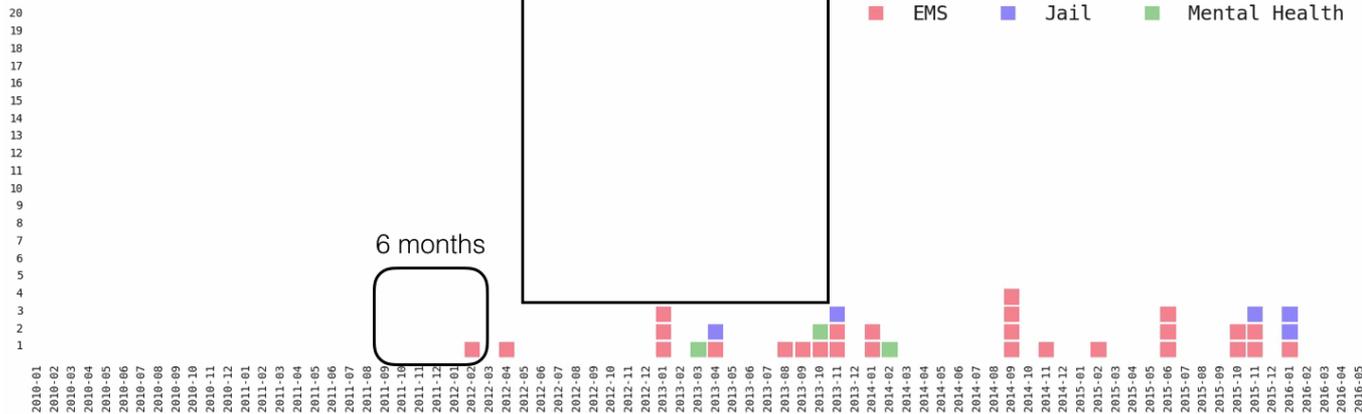
# Generalized Sequential Pattern

Specify time window size

2 years, 1 years, 6 months, 3 months, 1 weeks, 3 days, etc.

Generate subsequence dataset

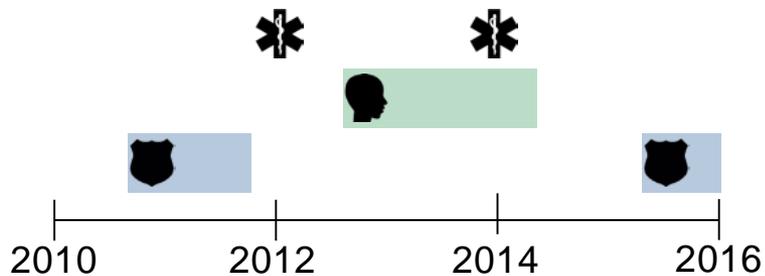
Subsequence dataset



## Data Source



## Aggregation



## Prediction

Machine Learning



## Risk Score

Risk score for next year





## Demographics

Age at earliest interaction with a public system  
Age group at last interaction with a public service



## Counts of Interactions

Number of bookings in last year  
Number of mental health entries in the last year  
Total number of bookings



## Interaction Context

Number of therapists seen  
Number of mental health services used  
Type of therapy  
Average bail amount



## Timeline

Standard deviation of time between public system interaction  
Had two bookings within a year



Matt Bauman	6.94
Eddie Lin	6.17
Kate Boxer	5.79
Erika Salomon	5.75
Lauren Haynes	5.02
Joe Walsh	4.72
Jen Helsby	4.49
Rayid Ghani	4.28
Steve Yoder	3.85
Chris Schnewies	3.64
Robert Sullivan	3.51

**Prioritized List: top 200 people**

# Johnson County : Outcomes



Matt Bauman	6.94
Eddie Lin	6.17
Kate Boxer	5.79
Erika Salomon	5.75
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V

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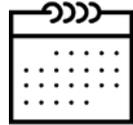
Prioritized List: top 200 people

52% (104) of the (top) 200  
predicted individuals end up  
going to Jail in the next year

Matt Bauman	6.94
Eddie Lin	6.17
Kate Boxer	5.79
Erika Salomon	5.75
Lauren Haynes	5.02
Joe Walsh	4.72
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Rayid Ghani	4.28
Steve Yoder	3.85
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Robert Sullivan	3.51



104 individuals



19 years total jail time



\$250,000 absolute minimum cost



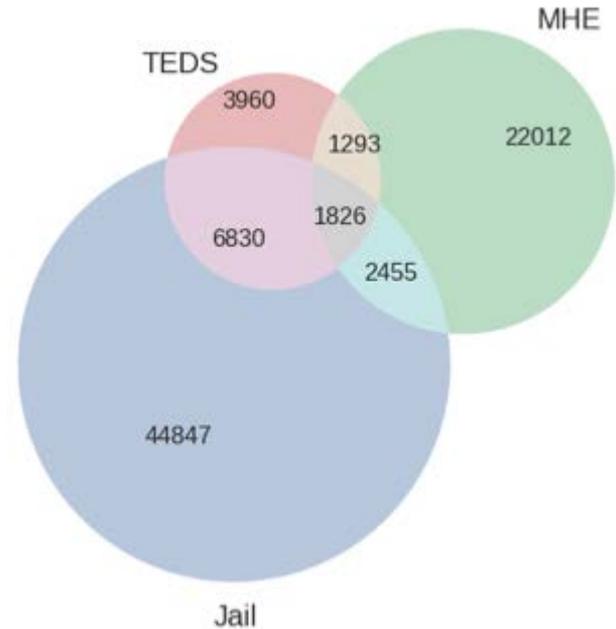
2 years since last mental health contact

# Joco: How we got there

- Data Use agreements internally & Consolidation of data
- Co-responders
- Matching
- Anonymization

# SLC: How we got there

- Data Use agreements internally & Consolidation of data
- Sharing data with UChicago

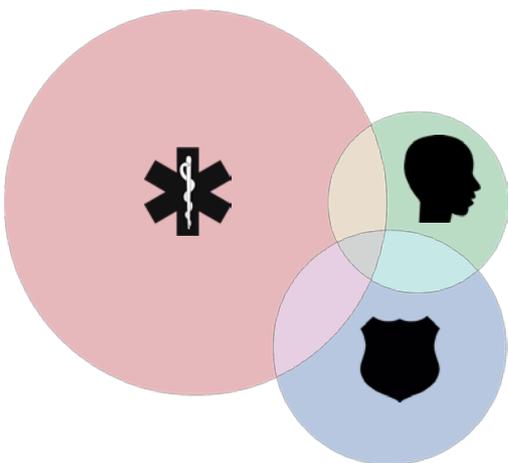




<p>Paramedic transport logs</p> <p>NOT: EMTs, ERs</p>	<p>Jail bookings Court records Probation records</p> <p>Not: arrests, dispatches</p>	<p>County mental health case management</p> <ul style="list-style-type: none"> <li>- Diagnoses</li> <li>- Services</li> <li>- Discharges</li> </ul>	
	<p>Jail bookings Court records Probation records</p> <p>Not: arrests, dispatches</p>	<p>Mental health billings</p> <ul style="list-style-type: none"> <li>- Services</li> <li>- Dates</li> </ul>	<p>Substance abuse treatment (TEDS)</p>

# Key data requirements

## Venn diagram



- Requires linking individuals across multiple systems
  - Consistent combinations of identifying information can be used to match afterwards (more is better, must be normalized across silos):
    - Name fields
    - Date of birth
    - SSN
    - Gender
    - Race
    - Address
- Important to ensure data covers similar time periods

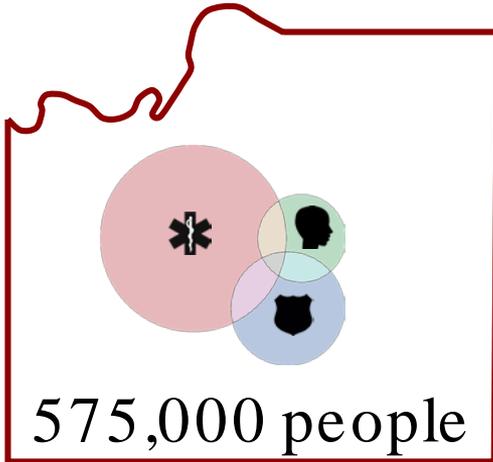
# Key data requirements

## Venn diagram

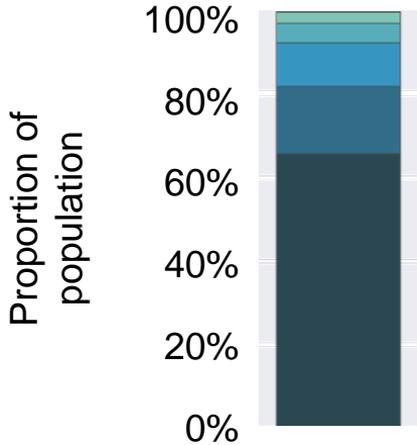
- Requires linking individuals across multiple systems
  - Consistent combinations of identifying information can be used to match afterwards (more is better, must be normalized across silos):

- Name fields
- Date of birth
- SSN
- Gender
- Race
- Address

- Important to ensure data covers similar time periods
- Additionally requires consistent collection and granularity of residence address to normalize by a total population



# Key data requirements



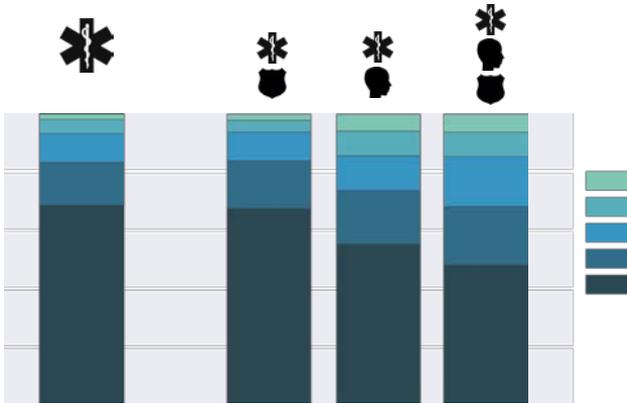
## Within-silo frequency

- One record per interaction
- Interaction type
- Consistent patient identifiers across interactions
  - Bonus points for linking repeated visits to the same ID at time of interaction
  - Otherwise, consistent combinations of identifying information can be used to match afterwards (more is better):
    - Name fields
    - Date of birth
    - SSN
    - Gender
    - Race
    - Address

# Key data requirements

## Across-silo frequencies

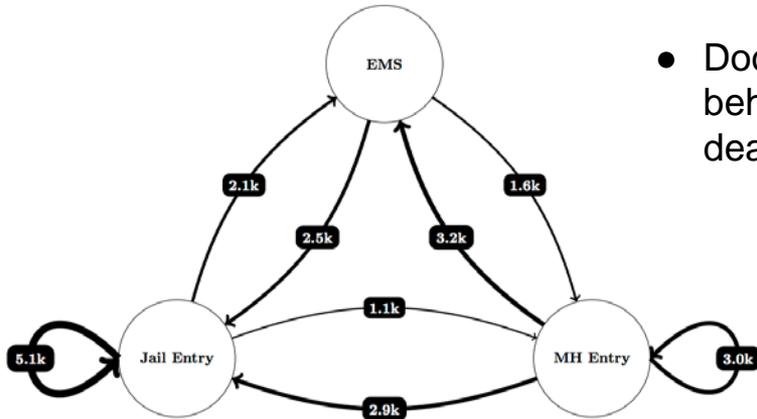
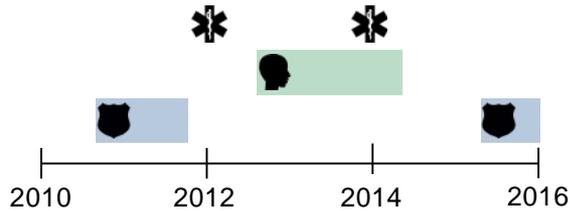
- One record per interaction
- Interaction type
- Date of interaction
- Duration of interaction
- Requires linking/matching from Venn diagram



# Key data requirements

## Sequence features

- Crucial to incorporate both start and stop dates of service/booking
- Note distinction between case management start/stop and interaction start/stop
- Documented reason of interaction end is valuable (good behavior, program drop out, administrative reasons, death)



# Key data requirements



Matt Bauman	6.94
Eddie Lin	6.17
Kate Boxer	5.79
Erika Salomon	5.75
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Joe Walsh	4.72
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## Predictive analytics

- **ALL** available data from each silo
- We used over 300 indicators for each individual that were generated from the richness of the datasets of each silo:
  - Bail amounts
  - Type of therapy
  - Number of therapists
  - EMS primary impression
- Several (>3) years of history for all silos
- Existing baselines (thresholds) used to identify super-utilizers

## Note:

- You can use the more robust “predictive” analysis to set more naive thresholds

# Next Steps

- Asking for new jurisdictions
  - Data Use Agreements, Data & Data Transfer
  - Funding
- Tech Consortium Work
  - Open platform with the de-identified data to expand access to other researchers & analysts

# Questions?

## Contact :

- UChicago : Lauren Haynes ([Lnhaynes@uchicago.edu](mailto:Lnhaynes@uchicago.edu))
- Johnson County :
  - Robert Sullivan (Robert.Sullivan@jocogov.org)
  - Chris Schneweis (Chris.Schneweis@jocogov.org)
  - Steve Yoder (Steve.Yoder@jocogov.org)
- Salt Lake County :
  - Fraser Nelson (Fnelson@slco.org)

## Appendix

# Removing Identifying Information: hashing

One-way only



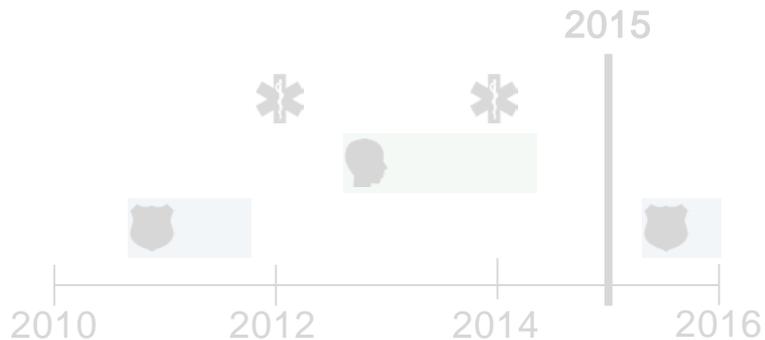
Lauren Haynes	e309c1ba03b22b72bc46cdf 4200e0d19
Jane Doe	73c01bf 88f eb18695bd65e611ef 1cf 26
Matthew Bauman	18750ae79e3e94df 96f dd4a354dbb2b0

655-82-8799	df e1f 020f 8b457792a628692a607f 94e
999-99-9999	007e3c1b311ec3848c878a420736c09f
000-00-0000	072f 1bbdf 1984f c0988be2d4b0c91803

Data Source



Aggregation



Feature1  
Feature2  
Feature3  
.  
.  
.

Prediction

Machine Learning



Random Forest  
Gradient Boost  
Logistic  
Regression  
Decision Tree  
Extra Tree  
...

Risk Score

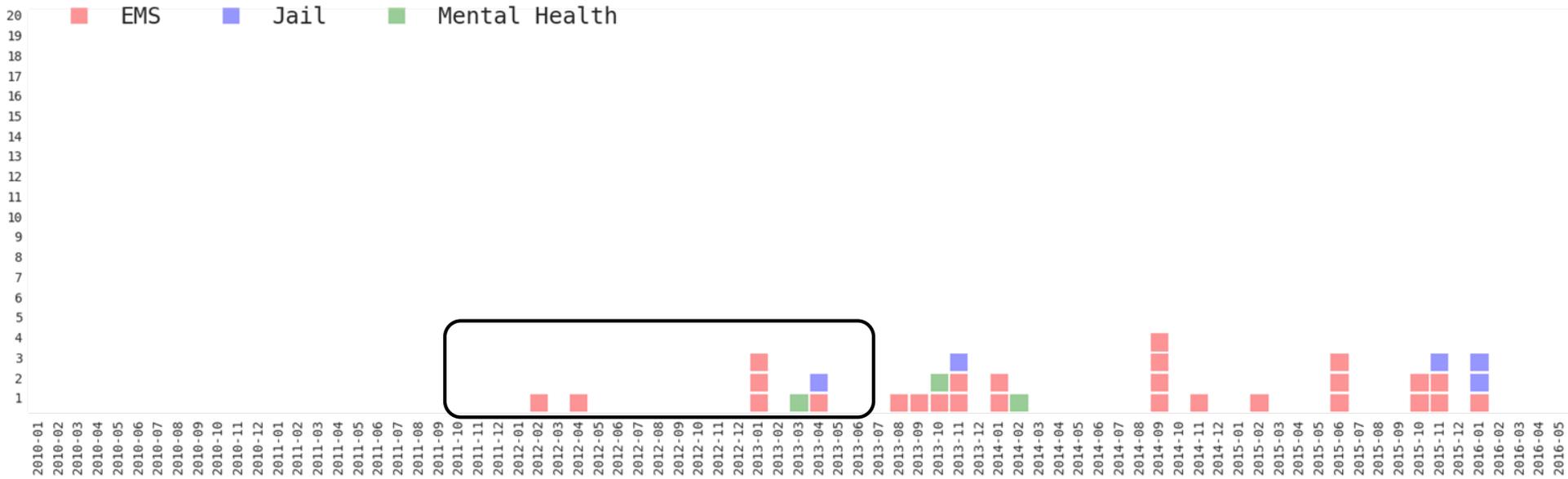
Risk score for next year



# Sequence Analysis

Service Path Order:

E → E → E → E → E → M → E → J



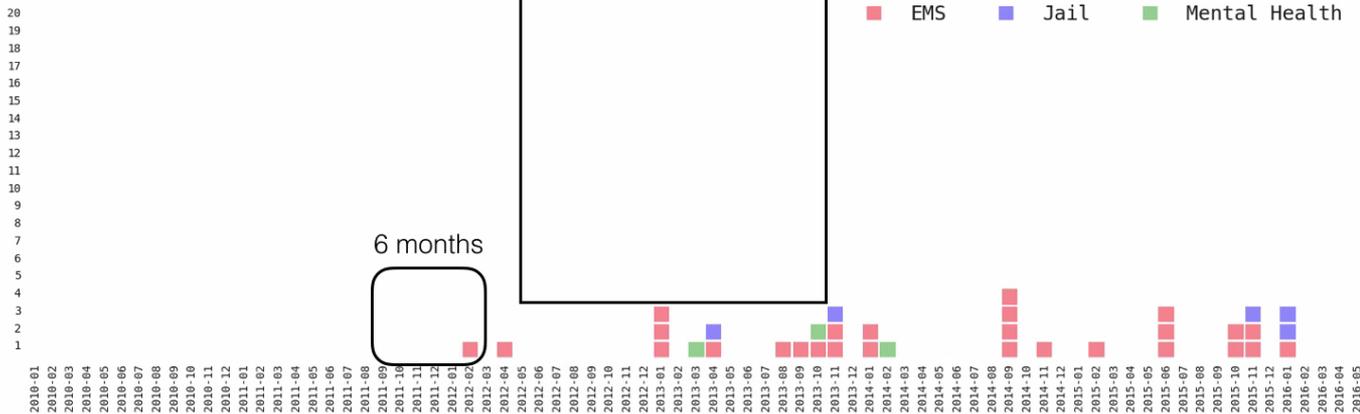
# Generalized Sequential Pattern

Specify time window size

2 years, 1 years, 6 months, 3 months, 1 weeks, 3 days, etc.

Generate subsequence dataset

Subsequence dataset



# Generalized Sequential Pattern

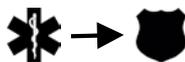
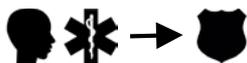
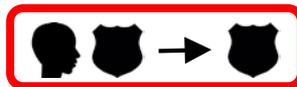
Specify time window size

Generate subsequence dataset

Break into subsets

Sequential pattern mining

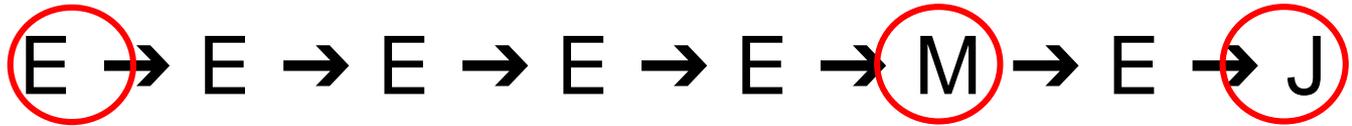
Subsequence Dataset



## GSP Algorithm

E → E → E  
E → E → E → M → E → J  
E → J → E → E  
E → M → E → E → J  
E → E → E → E → E → M  
E → E → E → E → F → E  
E → E → E → M → J  
E → E → E → E  
E → E → J → E → J → J  
E → M → J  
E → E → E → J  
E → J → M → E → J  
M → E → E → J  
E → E → J → E → J  
J → E → M → E → E → J  
J → E → E → E → E  
M → M  
E → E → J → E

# Generalized Sequential Pattern



?

# Generalized Sequential Pattern

Specify time window size

Generate subsequence dataset

Break into subsets

Sequential pattern mining

Choose patterns to be features

## Top-K Frequent Patterns in 6 months

  → 	  → 
E → E	E → E
J → J	E → J
<b>E → M → J</b>	<b>E → E → M</b>
J → E	E → E → E → E
E → E → E	E → E → E → E → E
...	...

	 E->M->J 	 E->E->M 	 E->E->E->E 
9	1	1	0
10	0	1	0
11	0	1	0
12	1	1	0
13	0	1	0

Frequent Closed Sequence Mining without Candidate Maintenance, J. Wang, J. Han, and C. Li, IEEE Trans. on Knowledge and Data Engineering 19(8):1042-1056, IEEE Press, Piscataway, NJ, USA 2007

Figure 2. The four most important predictors for officers flagged by DSaPP's system.

OFFICER 1	High number of rule of conduct violations in last 15 years	Officer was suspended in last 15 years	High number of counseling interventions after special investigations	High number of sustained complaints in last 15 years
OFFICER 2	High number of counseling interventions after special investigations	High number of rule of conduct violations in last 15 years	High number of rule of prior adverse incidents in last 15 years	High number of special investigations correctives written in last 15 years
OFFICER 3	High number of complaints against officer in last 15 years	High number of rule of conduct violations in last 15 years	Officer was suspended in last 15 years	High number of counseling interventions after special investigations
OFFICER 4	Officer has dealt with high number of domestic violence incidents	High number of special investigations correctives written in last 15 years	Officer was suspended in last year	High number of accidents in last year
OFFICER 5	Officer has dealt	High number	Officer was	Officer was

## Predictive analytics

- **ALL** available data from each silo
- We used over 300 indicators for each individual that were generated from the richness of the datasets of each silo:
  - Bail amounts
  - Type of therapy
  - Number of therapists
  - EMS primary impression
- Several (>3) years of history for all silos
- Existing baselines (thresholds) used to identify super-utilizers

## Anonymization, Hashing, Matching and Privacy

- The need for individual-level, linkable data
  - Anonymization Before Matching vs Anonymization after Matching
- Flow less sensitive information into more sensitive areas (Jail -> Mental Health)
- Hash anything that is otherwise public record (KDOC numbers) that would de-anonymize your data set
- Need a process owner for release of data (specific events that make the news can be de-anonymized)

# Removing Identifying Information: Hashing

One-way only



Matt	0d2be2948013b41626bb3a43620ecb1c
matt	98287a567825c576a510b3edbf aa771c
Matthew	52f 0f 510aea2496759a4aa322099c21b

## DATA SHARING AGREEMENT

### Center for Data Science and Public Policy

This Data Sharing Agreement (the “Agreement”) is entered into on October 4th, 2016 by and between The County of McLean, a body politic and corporate, (the “Participant”) and the University of Chicago (“UChicago”), an Illinois not-for-profit corporation with offices located at 5375 South Ellis Avenue, Suite 219A, Chicago IL 60637, each individually referred to herein as a “Party” and collectively as the “Parties”.

#### RECITALS

WHEREAS, Participant wishes to offer a current problem or set of problems (the “Project”) for the UChicago to consider, and by contributing data and other information so that Program fellows may endeavor to (through the development and use of analytical tools) offer solutions or suggestions to Participant’s identified problem(s);

WHEREAS, both Parties believe and represent that the activities conducted by the Participant will be funded by UChicago for the term of this Agreement, and that the activities do not involve encryption or classified technology;

**NOW, THEREFORE**, in consideration of the premises and mutual covenants herein contained, the Parties hereto hereby agree as follows:

1. PRINCIPAL CONTACTS.

- (a) UChicago’s supervisor for the Project will be Rayid Ghani (the “Project Supervisor”). The Project Supervisor will assign the Program fellows and mentors that will perform the Project. UChicago shall give Participant written notice of any change to its supervisor.
- (b) Participant’s principal contact for the Project is Craig Nelson. Participant shall give UChicago written notice of any change to its principal contact.

3. TERM. This Agreement is effective for the period from the date of its signing and execution through December 31, 2016, unless sooner terminated in accordance with section 8, Termination, of this Agreement. UChicago is not obligated to perform any work beyond the termination or expiration date of this Agreement.

4. EQUIPMENT.

- (a) Title to any equipment acquired or built by UChicago in order to perform the work under this Agreement vests with UChicago.
- (b) During the performance of the Project, Participant’s employees, agents or contractors (“Personnel”) may have the opportunity to use UChicago equipment. All such use of UChicago equipment must be under the guidance and oversight of the Project Supervisor or his/her designee. Any damage to UChicago

equipment caused by Participant Personnel will be repaired or replaced by UChicago, and Participant shall, upon demand, reimburse UChicago for the actual cost of such repair or replacement.

5. PROJECT OUTCOMES.

- (a) UChicago will own all intellectual property created or generated in the course of performing the Project, including any software applications (“Software”), inventions (whether or not patentable) conceived, made, developed, or reduced to practice and all rights therein (collectively, “Developed IP”). Developed IP does not include data sets prepared or otherwise generated directly from Confidential Information provided by Participant hereunder, or any reports that are deliverables to Participant pursuant to the Project conveying research outcomes, suggestions and/or solutions pertaining to Participant’s identified problem(s).
- (b) To the extent practicable, UChicago will try to release Software developed as analytical tools under the Project as open source software. In the event such Software cannot be made available as open source software, UChicago shall otherwise grant to Participant a non-exclusive, royalty-free license to use the Software for the purposes set forth in Exhibit A. Notwithstanding anything to the contrary, UChicago is not required to license or incorporate anything into Software that UChicago reasonably believes would infringe another party’s intellectual property rights or that UChicago is not authorized to license.
- (c) It is understood that UChicago retains the right to use for its own purposes any techniques to gather data, conduct research, or formulate solutions developed in the course of working on the Project, and, subject to its obligations under section 6, Confidentiality, UChicago reserves the right to use the results of any research conducted under this Agreement for its own teaching, research, and publication purposes.

6. CONFIDENTIALITY.

- (a) In performance of this Agreement the Parties may disclose to each other, either in writing or orally, information which the disclosing Party deems to be proprietary and/or confidential (hereinafter, “Confidential Information”). Confidential Information shall consist of (i) written information clearly marked as “proprietary” or “confidential” and (ii) oral information reduced to writing within thirty (30) days of oral disclosure and clearly marked as “proprietary” or “confidential.” Confidential Information shall be maintained in confidence during the term of this Agreement and for a period of two (2) years following the termination or expiration of this Agreement, except to the extent that it is required to be disclosed by law, regulation or judicial or administrative process. Receiving Party shall use Confidential Information solely for the purposes of this Agreement. Each Party shall protect the other Party’s Confidential Information from disclosure using at least the same degree of care as it uses to protect its own confidential information. The disclosure of Confidential Information to the receiving Party shall not of itself be construed as a grant of any right or license

with respect to the information. In the event the receiving Party is required by law, regulation or judicial or administrative process to disclose any Confidential Information, the receiving Party will promptly notify the disclosing Party in writing, if permitted by law, prior to making any such disclosure in order to facilitate the disclosing Party's seeking of a protective order or other appropriate remedy from the appropriate body.

- (b) Confidential Information does not include information which receiving Party can demonstrate and document: (i) was in its knowledge or possession prior to receipt from disclosing Party; (ii) was public knowledge or becomes public knowledge through no fault of receiving Party; (iii) is or has been properly provided to receiving Party by an independent third party who has no obligation of confidentiality to disclosing Party; or (iv) is thereafter independently developed by receiving Party without reference to the information from disclosing Party.
- (c) UChicago retains the right to refuse to accept any such information that is not considered to be essential to the completion of the Project.
- (d) Upon termination or expiration of this Agreement, the receiving Party will return to the disclosing Party all tangible copies of Confidential Information of the disclosing Party in the receiving Party's possession or control and will erase from its computer systems all electronic copies thereof.

- 7. EXPORT CONTROLS. Both Parties are subject to applicable U.S. export laws and regulations. Participant shall identify any export controlled information or materials as such prior to providing such information or materials to UChicago. UChicago shall have the right to limit or decline receipt of said export controlled information or materials.
- 8. TERMINATION. Either Party may terminate this Agreement at any time by giving the other Party not less than thirty (30) days prior written notice. UChicago may also terminate immediately if any of the reasons set forth in section 13, Force Majeure, prevent continuation of the Project. Termination or expiration of this Agreement will not affect either Party's rights and duties under sections 4, 5, 6, or 12 hereof.
- 9. NOTICES. Any notices given under this Agreement shall be in writing and delivered by certified or registered return receipt mail, postage prepaid, or by facsimile addressed to the Parties as follows:

For Participant:

Craig Nelson  
Director, Information Technology  
115 E. Washington  
Bloomington, Illinois 61701  
309-888-5110

For UChicago:

Rayid Ghani  
Center Director, University of Chicago  
Computation Institute, Searle Chem. Lab  
5735 S. Ellis Ave.  
Chicago, IL 60637

10. PUBLICITY. Neither Party shall make reference to the other Party in a press release or any other written statement in connection with the Project and the Program without the other Party's prior consent, which consent shall not be unreasonably withheld, if it is intended for use in the news media. If there is no notice of disapproval within 48 hours after delivery to the other party for its review, the materials shall be deemed approved. Notwithstanding the foregoing, UChicago shall be permitted to use Participant's name in a list of Program participants, which may also include a brief description of the Project.
11. WARRANTIES. **ANY RESEARCH OUTCOMES AND OTHER MATERIALS CREATED UNDER THIS AGREEMENT ARE PROVIDED "AS IS". UCHICAGO MAKES NO WARRANTIES, EXPRESS OR IMPLIED, AS TO THE WORK OR PRODUCTS OF WORK CREATED UNDER THIS AGREEMENT, INCLUDING THE NON-INFRINGEMENT, OWNERSHIP, MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE OF THE RESEARCH OR ANY INVENTION OR PRODUCT.** Participant acknowledges that research and other work performed under the Project will be conducted may not be subject to peer review or independent verification of results. Participant further acknowledges that UChicago will not guarantee any particular outcome or product.
12. LIABILITY.
  - (a) Participant agrees to hold harmless, indemnify and defend UChicago from all liabilities, demands, damages, expenses and losses arising out of the use or other disposition by Participant, or by any party acting on behalf or under the authorization of Participant, of any Project outcomes or deliverables or any items or materials derived from or related thereto.
  - (b) UChicago shall not be liable for any direct, consequential, or other damages resulting from the use of any Project outcomes or deliverables or any items or materials derived from or related thereto.
13. FORCE MAJEURE. UChicago shall not be liable for any failure to perform as required by this Agreement, to the extent such failure to perform is caused by any reason beyond UChicago's reasonable control, or by reason of any of the following occurrences: labor disturbances or labor disputes of any kind, accidents, failure of any governmental approval required for full performance, civil disorders or commotion's, acts of aggression, floods, earthquakes, acts of God, energy or other conservation measures, explosion, failure of utilities, mechanical breakdowns, material shortages, disease, or other such occurrences.
14. ASSIGNMENT. Neither Party shall assign its rights or duties under this Agreement to another without the prior express written consent of the other Party.
15. SEVERABILITY. In the event a court of competent jurisdiction holds any provision of this Agreement to be invalid, such holding shall have no effect on the remaining provisions of this Agreement, and they shall continue in full force and effect.

16. ENTIRE AGREEMENT. This Agreement with its incorporated exhibits, constitutes the entire agreement between the Parties and supersedes all prior negotiations, representations, commitments, offers, contracts and writings. Any amendments or further addenda hereafter made shall be in writing and executed with the same formality.
17. GOVERNING LAW. This Agreement shall be governed by the laws of the State of Illinois as adjudicated by a court of competent jurisdiction.

**IN WITNESS WHEREOF**, the Parties hereto have executed this Agreement in duplicate by proper persons thereunto duly authorized.

Participant's Name	University of Chicago
By: _____	By: _____
Name: John D. McIntyre	Name: _____
Title: McLean County Board Chair	Title: _____
Date: _____	Date: _____

EXHIBIT A  
PROJECT  
DESCRIPTION

**Overview**

Recently the White House team has started a new effort focused on scaling innovative data, driven criminal justice reform practices pioneered at the local level that will help meet the needs of two key populations:

- People held in jail before trial not because they are a risk to the community or a risk of flight but because they cannot afford to bond out and
- People who repeatedly cycle through multiple systems, including jails, hospital emergency rooms, shelters, and other services, sometimes called “super-utilizer,” often chronically homeless individuals, with mental illness, substance abuse, and health problems.

Working closely with criminal justice and health leaders and the state and local level, we have identified a significant opportunity to scale and expand three proven innovations at the local level using data-driven solutions to improve human outcomes, increase public safety, and generate significant cost savings by more effectively targeting existing resources. By crossing system silos between criminal justice, health, behavioral health, and social services, we see a significant opportunity to reduce the number of people who enter and stay in local jail system.

**Project Description**

The University of Chicago is partnering with a number of local agencies to develop predictive models that can flag individuals who are super utilizers of multiple public systems. By using advanced statistical and computational methods, U of Chicago will analyze behavior patterns to understand what factors best predict interactions with these systems and develop models so employees of these systems may reduce future interactions while providing quality services.

## Data

Predicting individual-level behaviors requires individual-level data. The University of Chicago requests a number of datasets for this study. These include the following:

### 1. Jail Booking Information

- a. Arrestee demographic information
- b. Unique identifier (may be combination of name, date of birth, and other identifying information or an anonymized ID, such as a hash)
- c. Gender
- d. Race
- e. Age
- f. Arresting agency
- g. Type and severity of charges
- h. Arrest/jail booking history
- i. Bail bond activity

### 2. Arrestee health information found in behavior health data sets

- a. Diagnoses
- b. Prognoses
- c. Treatments
- d. Substance abuse history
- e. Mental health history
- f. Health facilities used
- g. Health professionals who have treated the arrestee (can be anonymized)
- h. Referral source

### 3. State Attorney Case Information

4. Criminal Justice Services Information
  - a. Pre-Trial Supervision
  - b. County Probation Supervision
5. Specialty Court Information
  - a. Court Information
    - i. Cases and charges filed
    - ii. Disposition of cases and charges
    - iii. Prosecuting agency
  - b. Adult Parole and Probation Information
    - i. Information placements and exits
6. Dispatch data
  - a. How the call was initiated (911 call, officer initiated)
  - b. How many officers were deployed
  - c. How many ambulances were deployed
  - d. Whether a crisis intervention team was deployed
  - e. Whether the arrestee was violent
  - f. Whether the officers used force
7. Work in partnership with DSSG Fellows to obtain, if possible, other data that may be available from state and local agencies not currently in the county's data set. Specifically, Health information from all other providers (especially emergency room visits)
  - a. Diagnoses
  - b. Prognoses
  - c. Treatments
  - d. Substance abuse history

- e. Mental health history
  - f. Health facilities used
  - g. Health professionals who have treated the arrestee (can be anonymized)
8. Other datasets identified by experts.



OFFICE OF THE ADMINISTRATOR  
(309) 888-5110 FAX (309) 888-5111  
115 E. Washington, Room 401

P.O. Box 2400

Bloomington, Illinois 61702-2400

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TO: Chairman and Members, Behavioral Health Coordinating Council  
FROM: Bill Wasson, County Administrator  
DATE: November 20, 2016  
RE: Youth Stakeholders SAMHSA Grant Application Update

As many members of the Council are aware, members of the youth-centered services stakeholders group have been pursuing the application for the competitive Substance Abuse and Mental Health Services Administration (SAMHSA) Cooperative Agreements for Expansion and Sustainability of the Comprehensive Community Mental Health Services for Children with Serious Emotional Disturbances grant that was released this fall with a submission deadline of January 3, 2017. This grant has a \$1,000,000 maximum budget for political subdivisions of states and requires a local match of 1/3 the total grant budget. It was anticipated that in addition to in-kind participation by local agencies, a contribution would be required from the Public Safety/Mental Health dedicated sales tax to meet the local match requirements of this grant and that such request would be provided to the BHCC for review and consideration this quarter.

The Youth Stakeholder Group had begun collecting the necessary data and information from the County Mental Health Action plan, community needs assessment, providers and other entities that would be included in a formal submission. The group reviewed the required components of the plan, including staffing positions and services delivery, and discussed how to possibly structure the plan in a manner to maximize in-kind contributions as part of the local match that was required of the grant.

Upon further review and discussion at the most recent meeting, concerns were raised in the group that the grant requirements were so prescriptive that it would inhibit the ability to effectively deliver services in the County as outlined in the county plan as well as general best practices. Compounding the issue were time constraints that participants were balancing in with the application deadline and their regular work requirements. Ultimately, the group concluded this past week that the concerns were sufficient enough to discontinue pursuit of an application for the SAMHSA grant this round.

The group did recognize some strong ideas in the SAMHSA packet that will be considered for future planning and are committed to continuing to pursue other grant opportunities. They will be meeting again this month to further efforts to enhance behavioral health in the County.



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Bloomington, Illinois 61702-2400

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**TO:** Chairman and Members, Behavioral Health Coordinating Council  
**FROM:** Bill Wasson, County Administrator  
**DATE:** November 20, 2016  
**RE:** Steering Group Formation

During the past 6 months of BHCC existence, it has become apparent that a formal mechanism to provide evaluation and feedback for future projects such as the BJA -Justice and Mental Health Collaboration Grant and the SAMHSA Comprehensive Community Mental Health Services for Children with Serious Emotional Disturbances grant proposals, would be of assistance. During the periods between the quarterly Behavioral Health Coordinating Council meetings, the ability to provide preliminary review and comments would be of great assistance to working groups that may have short time periods to develop and submit grant proposals to private and public sector grantors.

Additionally, the Steering Group can assist to support critical unanticipated recommendations to the County Board with relationship to service delivery concerns which are time sensitive in nature. A steering group could provide individual review and comment on preliminary proposals that can aid and also assist in the development of prescriptive guidelines to assist both the Steering Committee and the BHCC in future of advisory recommendations to the County Board appears warranted at this time.

Individuals interested and willing to serve on the BHCC Steering group should contact County Administration Staff and those expressions of interest will be provided to Chairman McIntyre.