Data-Driven Justice Incarceration Report

Identifying Super Utilizers with Incarceration and Prescription Monitoring Data

Presented by:

David Speights, PhD
Chief Data Scientist, Appriss
dspeights@appriss.com

July 2016

Overview and Objectives

Objectives

– Identify super utilizers using analytical methods applied to key data sources

Defining Super Utilizers

– Identify individuals on the top end of the spectrum in key areas

Overuse of Law Enforcement	Excessive Alcohol/ Drug Arrests	Overuse of Health Resources
Excessive Calls for Service	Excessive substance related arrests	Excessive ER Visits Mental Health Facilities
Overuse of Jails	**Homeless**	**Overuse of Prescription Narcotics**
Excessive Arrests	Arrests which indicate high likelihood of being homeless	High Abuse Risk

■ *Appriss has some or all of the information in this category. Appriss monitors arrest records for 48 states and prescription monitoring data for 24 states*

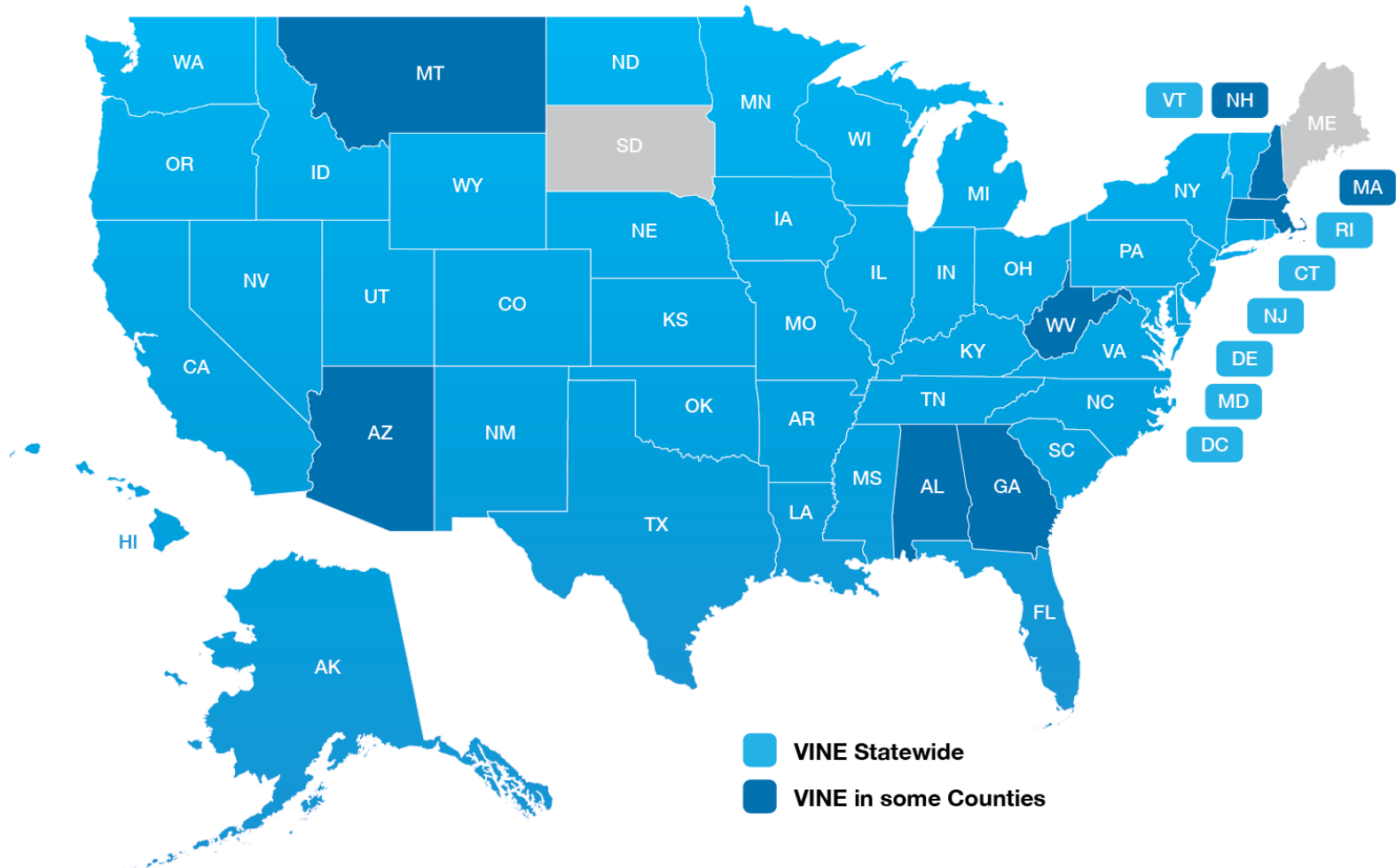■ *Other data sources which would help in identifying super utilizers*

Appriss Offender Data Overview

Appriss Offender Data Coverage

Appriss collects more than 9 million incarceration records annually (48 states)

- Collects data from over 2,000 facilities

VINE Statewide
VINE in some Counties

*** Appriss has limited rights to offender data from some states**

Analysis of 2015 Incarcerations

➤ 9,812,804 bookings from 2015 were used to analyze arrest patterns, repeated bookings and target offenses (described later) from 48 states.

➤ Appriss' proprietary consolidation logic was used to identify arrest records made on the same individual, but with only some or partially matching characteristics:

– Key identifiers: Name and address, Driver's license, SSN, phone number, FBI Number, Offender ID number, date of birth

– Represents 6,881,072 unique consolidated individuals
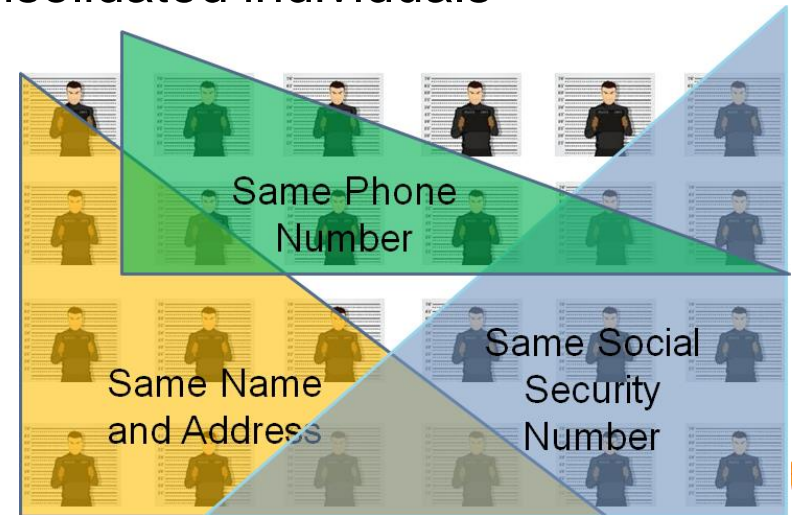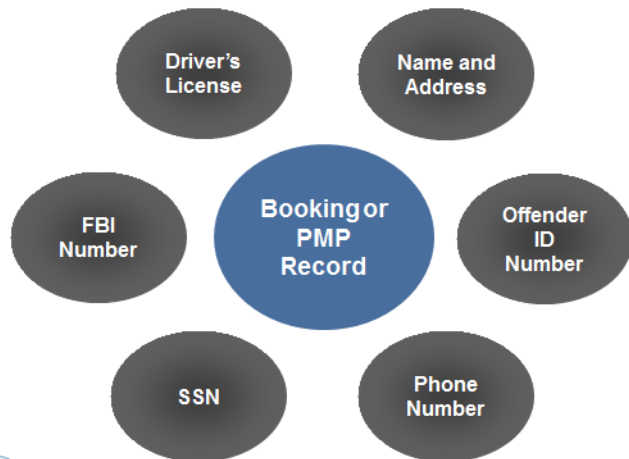
Additional Details of the Data Used in this Analysis

- ➢ Key areas were analyzed
  - Repeated bookings
  - Repeated bookings of target offenses
  - Multiple addresses (or homeless listed as address)
  - Hospital releases

- ➢ Data adjustments
  - If an individual is booked to serve out a scheduled term over many bookings which are identifiable (e.g. every weekend for two months they serve out the time), we consolidate those records into a single record.
  - If an individual is booked into two agencies at the same time (which can happen when one agency uses another agency to help accommodate some inmates), we only count that as a single incarceration.

Appriss
keeping communities safe and informed
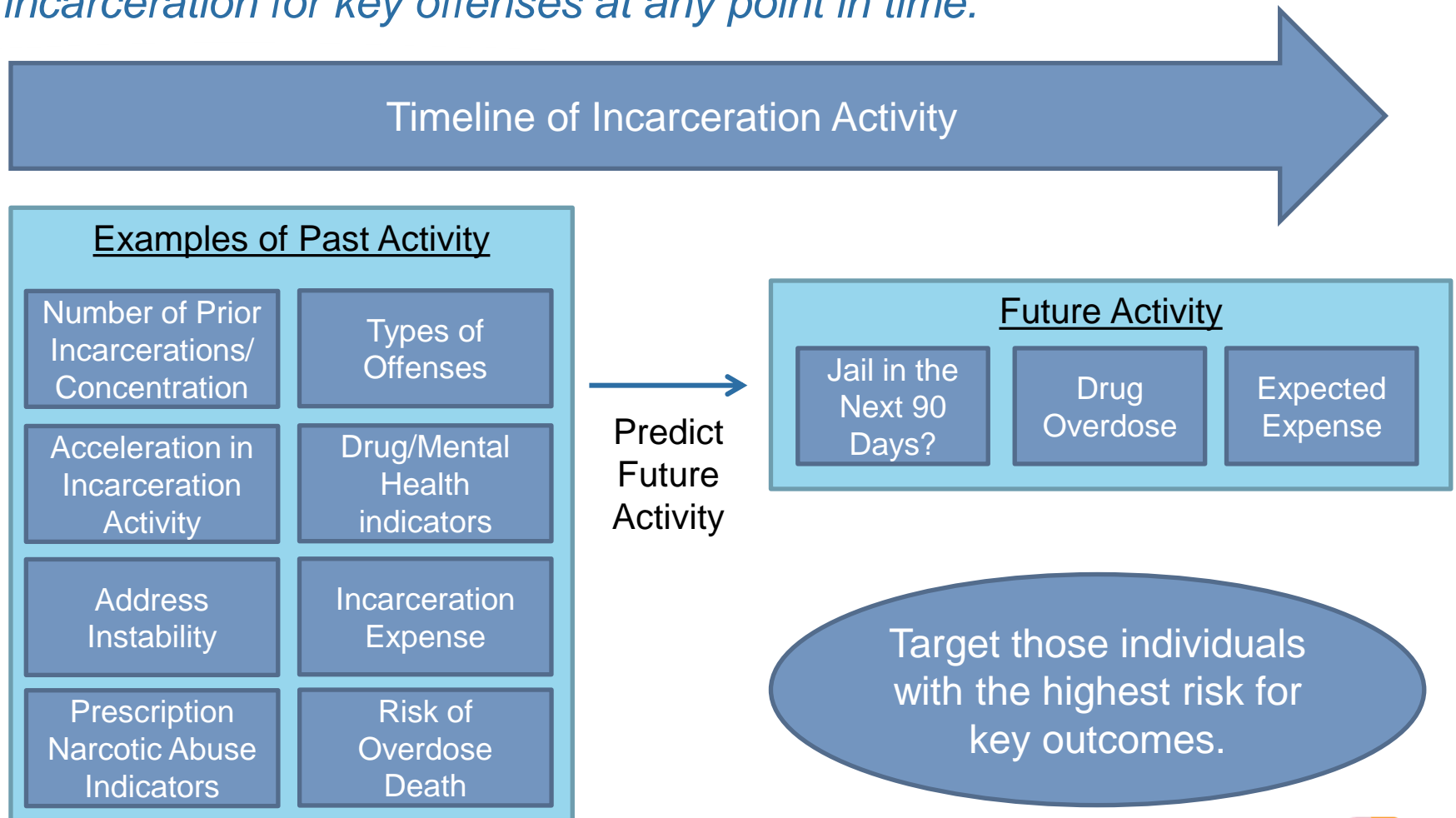
Target Charges of Interest (2015)

Appriss found 2.8 Million arrests for super-utilizer-type offenses in 2015. Super utilizers will have arrests across multiple target categories in a short period of time.

Target Charge	Number of Records in 2015
POSSESSION OF CONTROLLED SUBSTANCE	1,326,610
DRIVING UNDER INFLUENCE	643,318
PUBLIC INTOXICATION	196,807
DISTRIBUTION OF CONTROLLED SUBSTANCE	179,096
TRESPASSING	141,705
DISORDERLY CONDUCT	133,246
MINOR IN POSSESSION	31,505
OPEN CONTAINER	30,721
CITY ORDINANCE	28,888
DISTURBING THE PEACE	22,910
REFUSAL TO SUBMIT BREATHALYZER	8,220
LOITERING	5,871
INDECENT EXPOSURE	5,861
VAGRANCY	1,050
Total	**2,755,808**

* Target offenses were chosen which are associated with substance abuse or homelessness
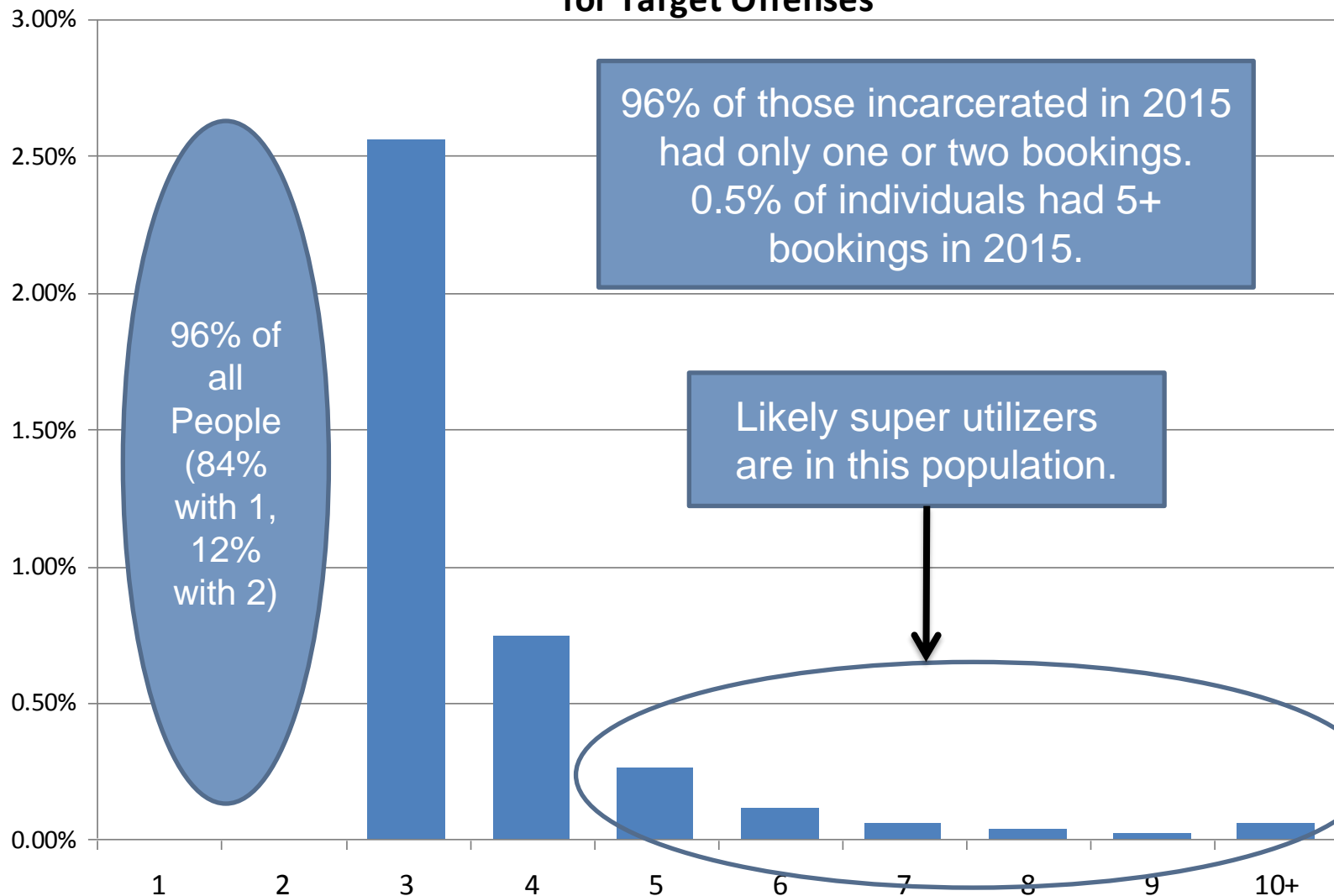
Probability-based Identification

Super Utilizers of jail facilities are identified by their probability of future incarceration for key offenses at any point in time.

Timeline of Incarceration Activity

Examples of Past Activity

Number of Prior Incarcerations/ Concentration	Types of Offenses
Acceleration in Incarceration Activity	Drug/Mental Health indicators
Address Instability	Incarceration Expense
Prescription Narcotic Abuse Indicators	Risk of Overdose Death

Predict Future Activity →

Future Activity

Jail in the Next 90 Days?	Drug Overdose	Expected Expense

Target those individuals with the highest risk for key outcomes.

Example Variable – Number of Target Incarcerations

**Number of Incarcerations in 2015
for Target Offenses**

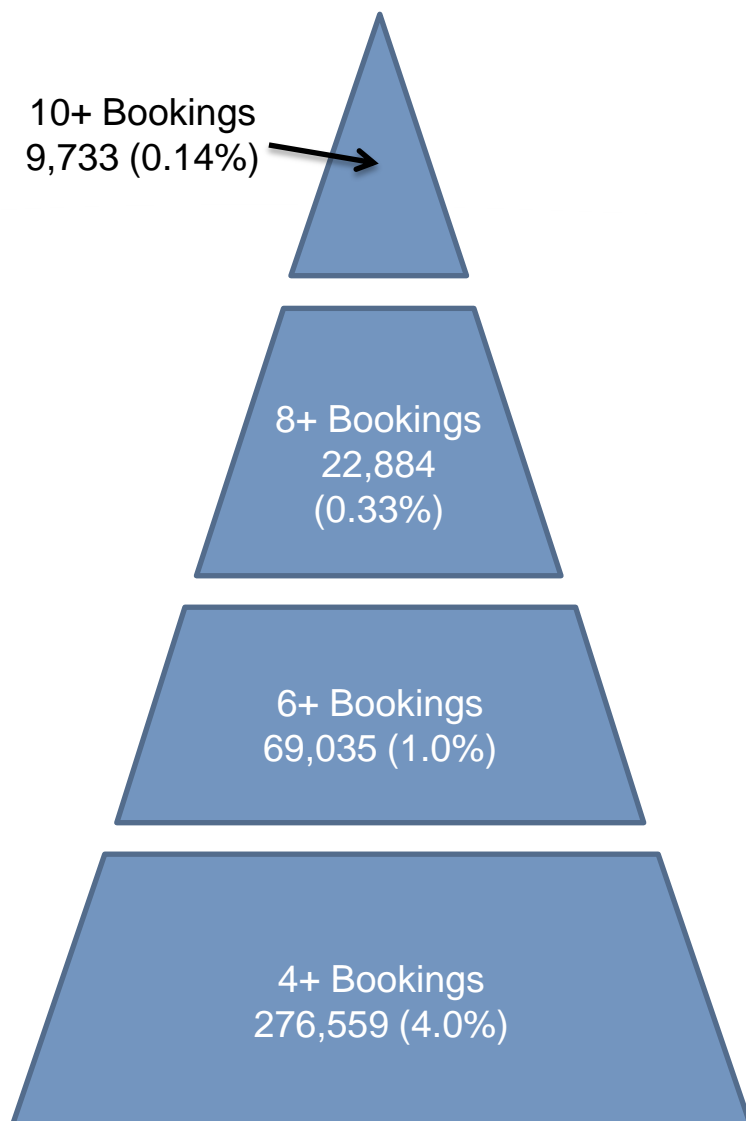96% of those incarcerated in 2015 had only one or two bookings. 0.5% of individuals had 5+ bookings in 2015.

96% of all People (84% with 1, 12% with 2)

Likely super utilizers are in this population.

Appriss
keeping communities safe and informed

Example Variable – Number of Addresses

Number of Addresses Recorded During Incarcerations in 2015

95% of those incarcerated in 2015 had only one or two addresses provided. 0.8% of individuals had 3+ addresses provided in 2015.

Possibly homeless or transient population.

**All Offenses included
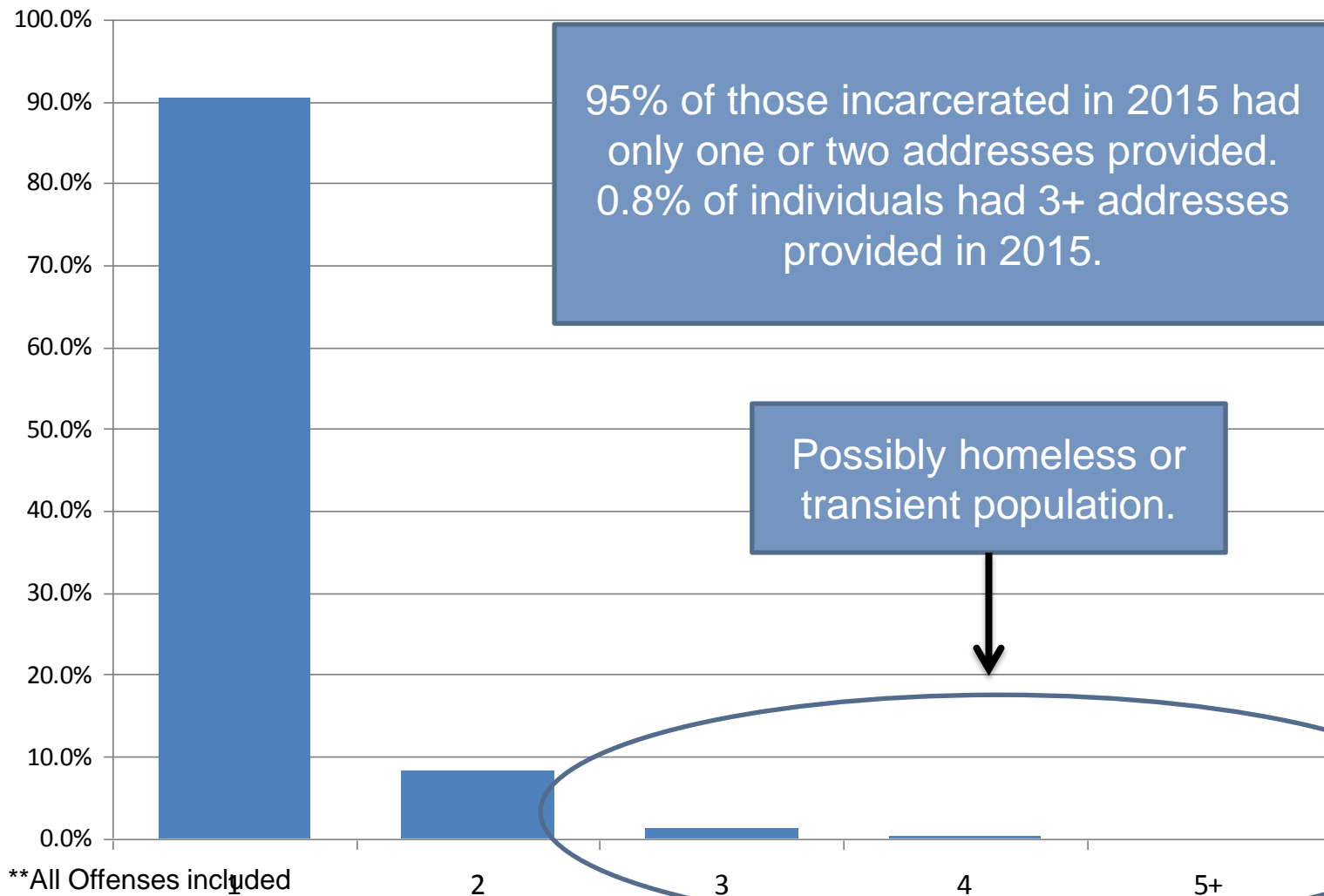
How many people over-utilize jail facilities?

10+ Bookings
9,733 (0.14%)

8+ Bookings
22,884
(0.33%)

6+ Bookings
69,035 (1.0%)

4+ Bookings
276,559 (4.0%)

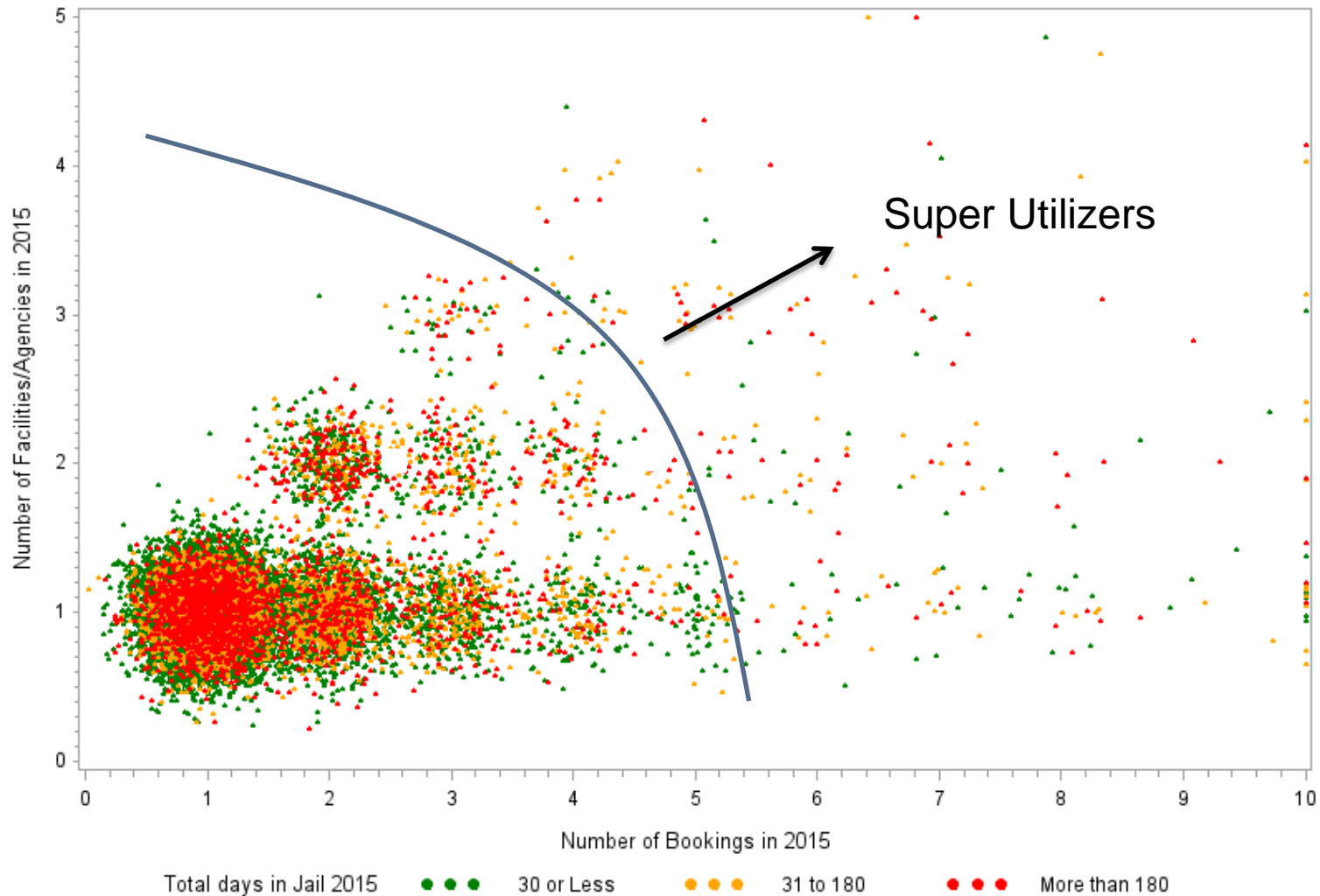A significant number of individuals have multiple bookings in jails annually and may be considered super utilizers.

Booking data analyzed from 2015

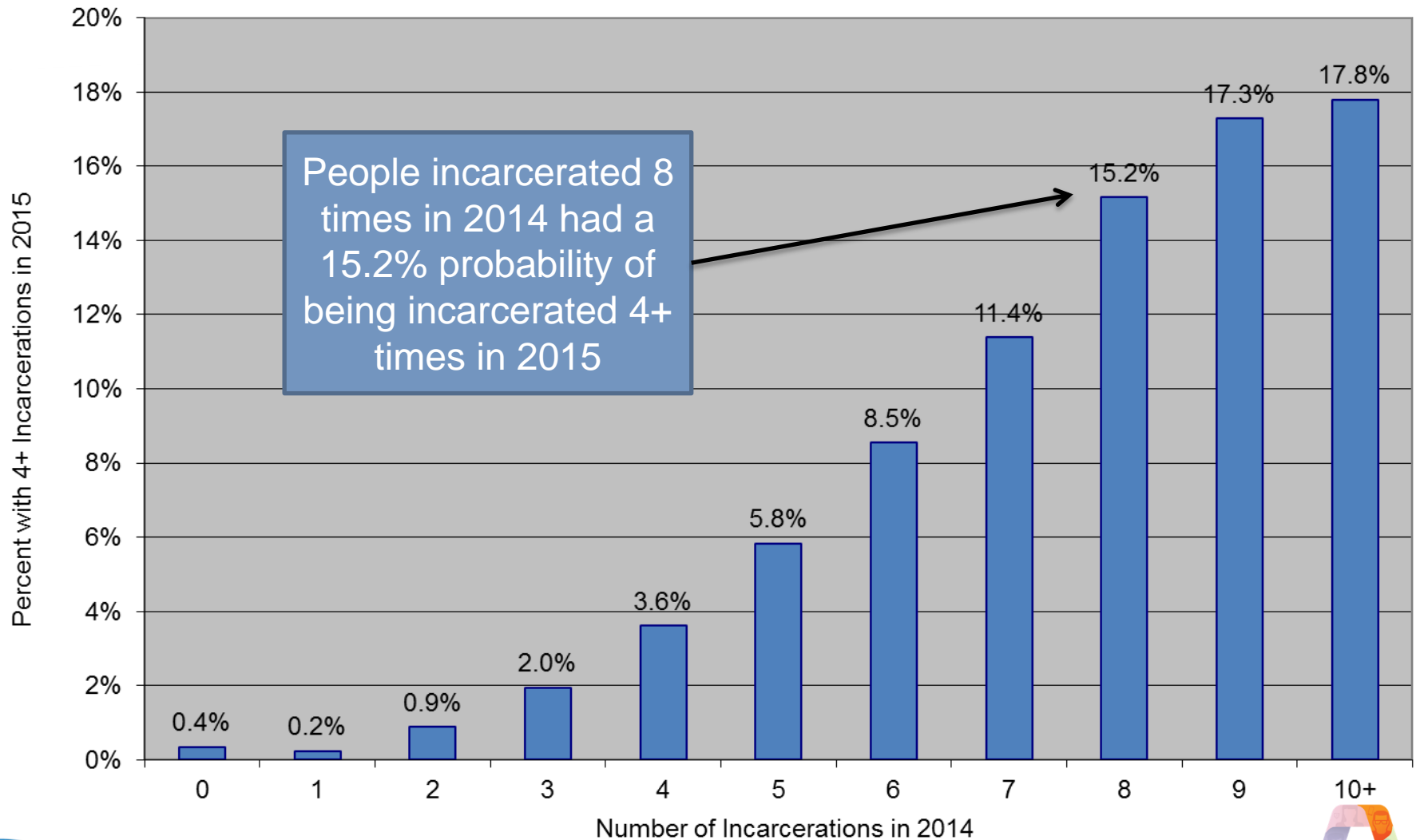Number of Bookings vs. Number of Agencies in 2015
Each dot represents a single individual

Super Utilizers

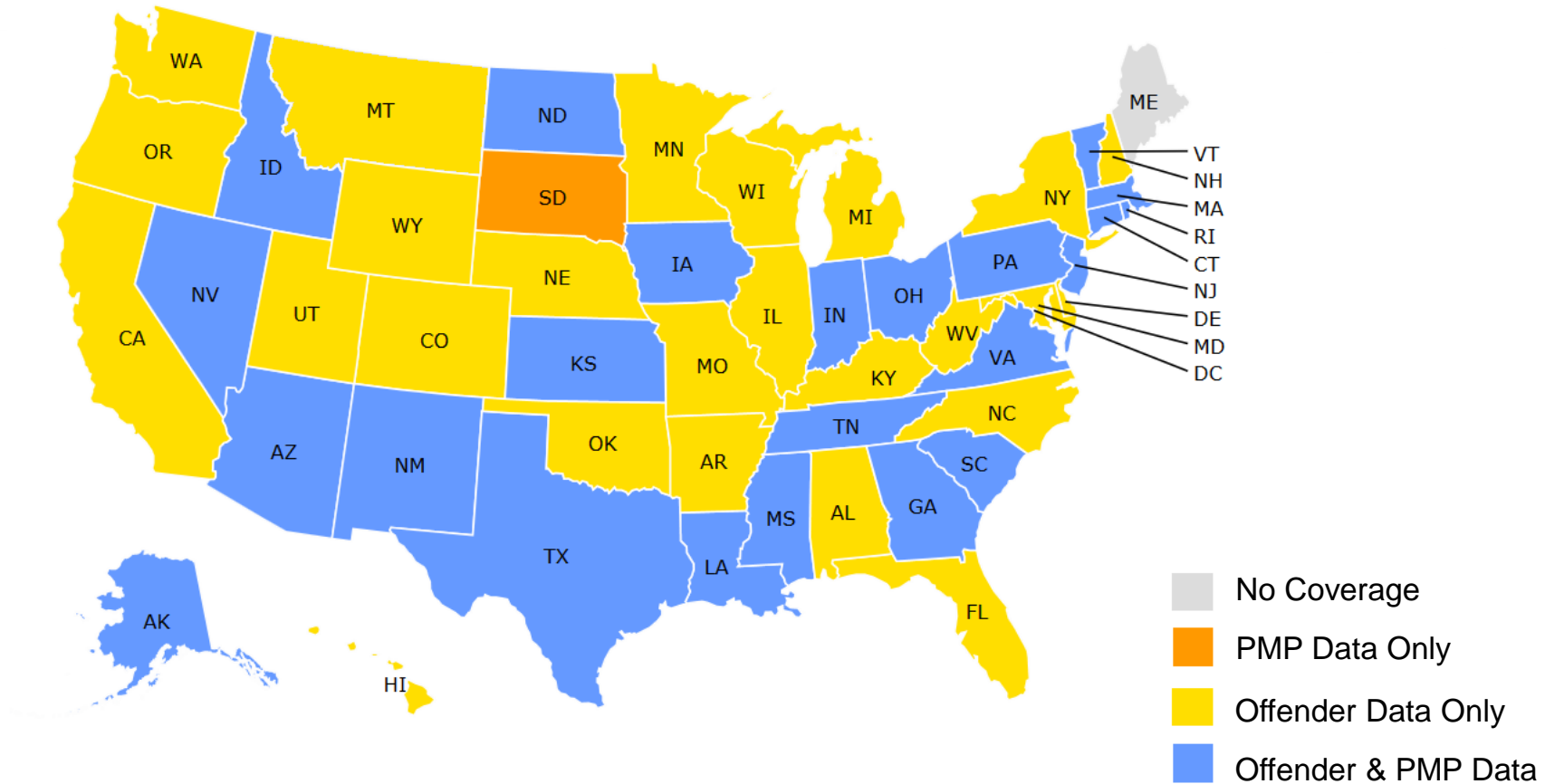Incarceration Activity in 2014 is Predictive of 2015

Identifying Super Utilizers

Using Narcotic Prescriptions Combined with Arrest Records

Appriss Data Overview

Appriss tracks prescriptions (PMP) for 24 states and Washington D.C.

Map legend:
- No Coverage (gray)
- PMP Data Only (orange)
- Offender Data Only (yellow)
- Offender & PMP Data (blue)

* Appriss has no rights to PMP data and very limited rights to offender data from some states

What is NARxCHECK?

➢ NARxCHECK is a patented algorithm that analyzes controlled substance data from PDMPs and provides easy-to-use insights into a patient's controlled substance use creating a predictive analysis of the likelihood of drug overdose death.

➢ NARxCHECK quantifies risk with a 3-digit score, termed a "Narx Score", which ranges from 000-999.

➢ Narx Scores have been computed for 3 different drug types,
  – Narcotics
  – Sedatives
  – Stimulants

➢ The distribution of the scores are such that in any given population, about 75% of scores will fall below 200, about 5% will be above 500, and only 1% will be above 650.

Appriss
keeping communities safe and informed

NARxCHECK as a Predictor of Risk of Opioid Related Death

- A study was conducted which overlaid the Ohio Prescription Drug Monitoring Program Data (PDMP) with a database from the State of Ohio on known unintentional overdose deaths to assess the predictive power of the NARxCHECK score.

- The study found that as the score increased, the risk of overdose death increased markedly.

Narx Score	Relative Odds of Overdose Death
000-099	1
100-199	8.4
200-299	10.8
300-399	10.6
400-499	17.5
500-599	33.8
600-699	59.7
700-799	80.7
800-899	106.6
900-999	185.9

- Appriss' proprietary narcotics abuse score is a good indicator of individuals with prescription abuse problems.

- As score increases, the risk of overdose increases dramatically

Target those individuals with the highest risk for overdose

Example Cases

Example 1 – Homeless in Oklahoma

- ➢ 185 bookings total between 2007 and 2016
- ➢ 68 bookings in 2015 alone

Charge	Number of Times Charged
Not Provided	12
ASSAULT AND BATTERY	79
DISORDERLY CONDUCT	4
FTA OR FAILURE TO APPEAR	5
INJURING A HOUSE OF WORSHIP	39
INDECENT EXPOSURE	39
LITTERING	1
OBSTRUCTING ROADWAY	24
PAROLE VIOLATION	1
PUBLIC INTOXICATION	222
THEFT	1
TRESPASSING	54

Number of Incarcerations Per Month
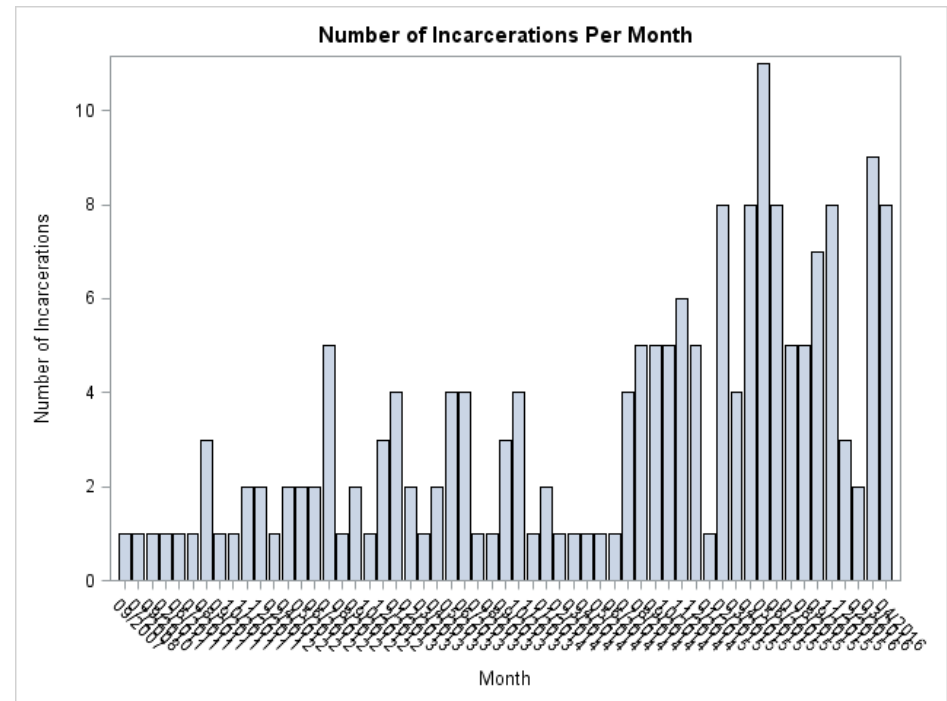
Information Provided at Booking				
Address	City	State	Number of Bookings	Notes
		OK	48	
5 N ON HWY 81 1 W	ANADARKO	OK	1	Address was not found in Google maps
HOMELESS	OKLA CITY	OK	36	
N/A	OKLAHOMA CTY	OK	1	
TRANSIANT	OKC	OK	83	
TRANSIENT	OKLAHOMA CITY	OK	11	
W 800 CALIFORNIA	OKLAHOMA CITY	OK	5	This is the address of a rescue mission

Example 2 – Homeless in Iowa

➢ 85 bookings total between 2010 and 2016

➢ 36 bookings in 2015

➢ Repeatedly used address that is not on google maps

Charge	Number of Times Charged
	18
ASSAULT AND BATTERY	2
INDECENT EXPOSURE	4
MALICIOUS MISCHIEF	1
PROBATION VIOLATION OR REVOCATION	1
PUBLIC INTOXICATION	62
THEFT	2
TRESPASSING	9

Number of Incarcerations Per Month
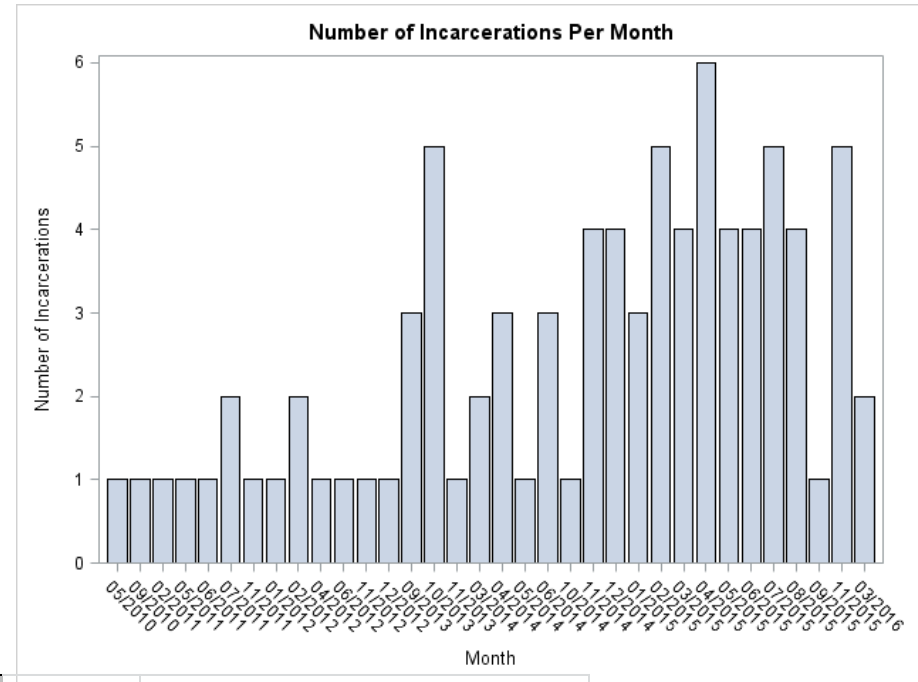
Information Provided at Booking				
Address	City	State	Number of Bookings	Notes
			17	
1236 13 ST SE#1	CEDAR RAPIDS	IA	1	Address was not found in Google maps
1236 13 ST SE#2	CEDAR RAPIDS	IA	1	Address was not found in Google maps
1236 13TH ST SE	CEDAR RAPIDS	IA	1	Address was not found in Google maps
1236 13TH ST SE #1	CEDAR RAPIDS	IA	1	Address was not found in Google maps
1236 13TH ST SE#1	CEDAR RAPIDS	IA	5	Address was not found in Google maps
1236 3RD AVE SE	CEDAR RAPIDS	IA	23	Address was not found in Google maps
1236 3RD AVE SE#4	CEDAR RAPIDS	IA	4	Address was not found in Google maps
1326 13 ST SW#1	CEDAR RAPIDS	IA	1	Address was not found in Google maps
13TH ST SE	CEDAR RAPIDS	IA	1	Address was not found in Google maps
AT LARGE		IA	22	
AT LARGE	CEDAR RAPIDS	IA	7	
AT LARGE 13TH ST SE	CEDAR RAPIDS	IA	1	