

County level data resources, measures, and characteristics used in a nation-wide initiative

Second in a Series of Webinars



IMJusticeBH@ucf.edu



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The National Institute of Mental Health, National Institute of Health (R01 MH118680, MPIs Taxman and Johnson).

All opinions are those of the research team and not of the funding agency.



Study Team Leaders (there are others)



Faye S. Taxman
George Mason U PI
Criminologist



Jennifer Johnson
Michigan State U PI
Psychologist



Jill Viglione
U of Central Florida
Criminologist



Niloofar Ramezani
George Mason U.
Statistician



Alex Breno
George Mason U
Statistician

OUR TEAM IS WORKING WITH:



**Justice
Center**

NATIONAL
ASSOCIATION
of COUNTIES



AMERICAN
PSYCHIATRIC
ASSOCIATION

FOUNDATION



CSG

Kati Habert

Rise Haneberg

Mark Stovell

NACo

Nastassia Walsh

Khea Pollard

APAF

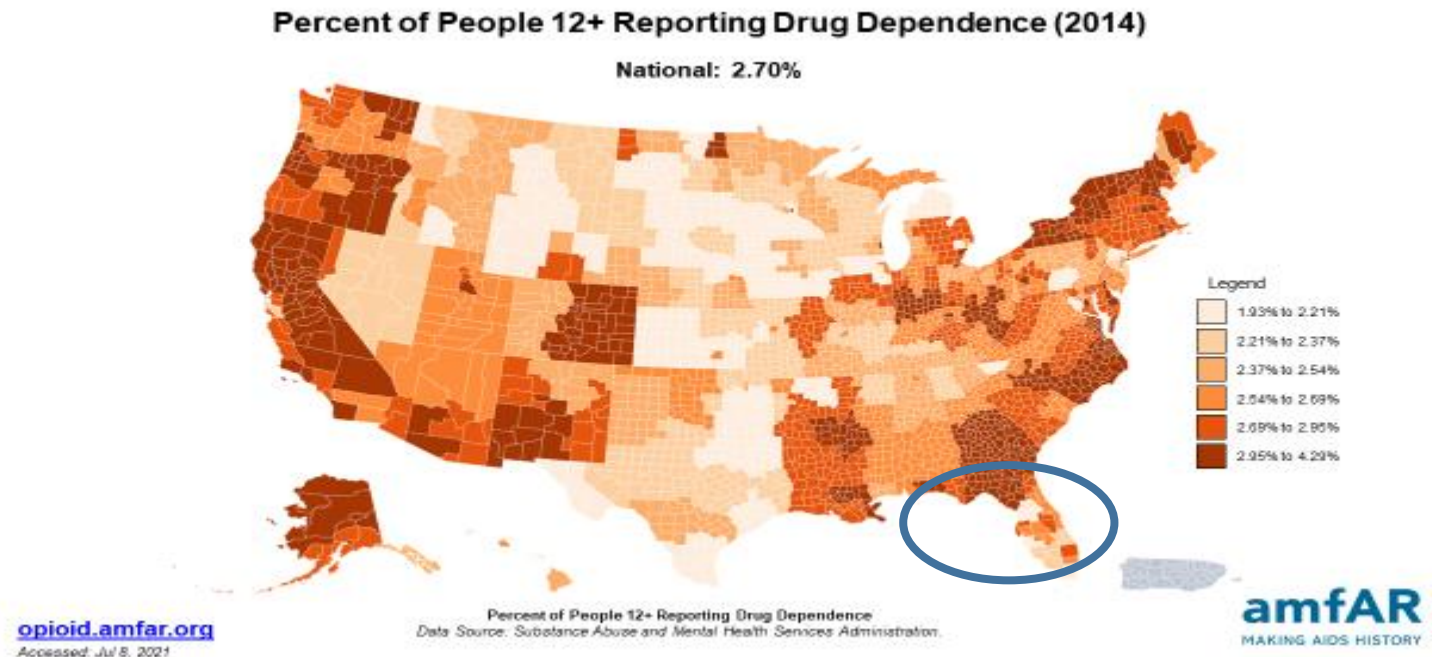
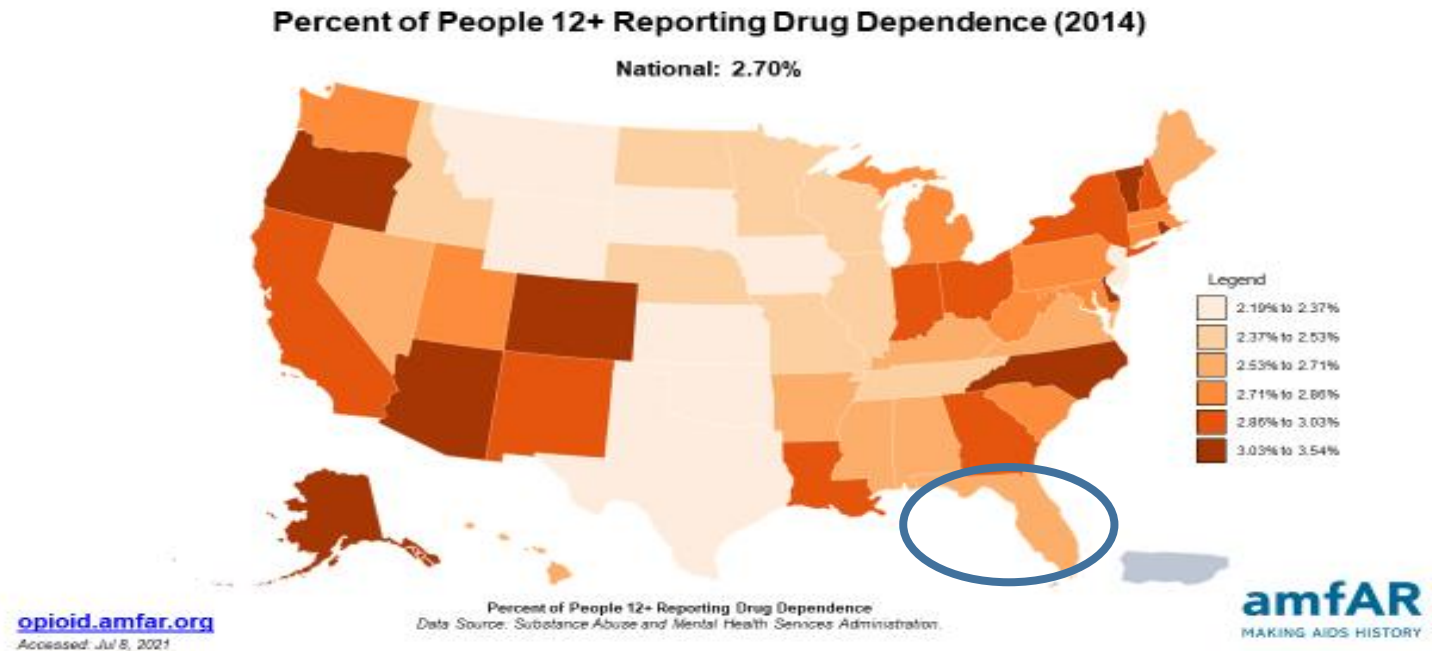
Christopher D. Chun-Seeley

Goals for today

1. Describe publicly available datasets on county-level characteristics, used in the prior webinar (June 23, 2021 *Improving mental health services to reduce jail populations*)
2. Discuss how county-level data can be used to identify patterns and trends in jail populations and mental health services
3. Identify the key factors that influence policy and practice and how these unique issues may influence reform efforts in justice and mental health arenas

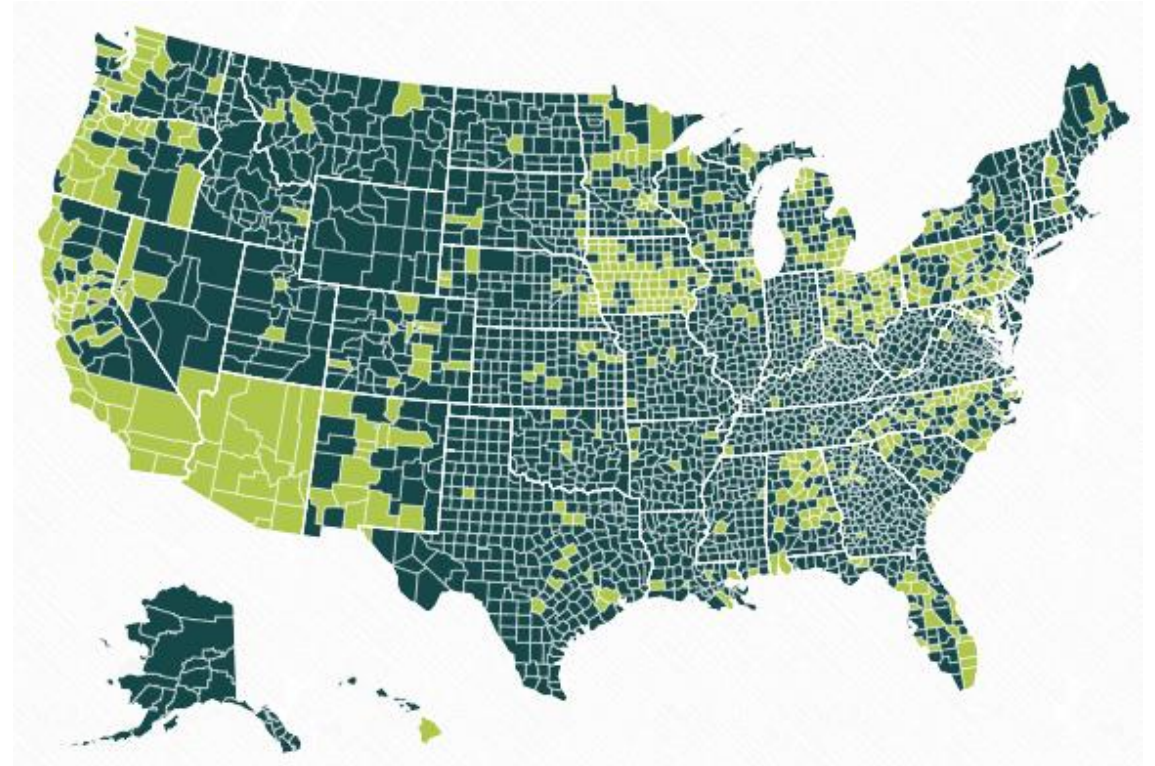
County-level differences?

- 3,142 counties in the US, vary in population size, demographics, and location
- National statistics show:
 - 19% of US adults have a mental illness (<https://mhanational.org/issues/state-mental-health-America>)
 - In 2019, 10.1 million people misused opioids (<https://www.hhs.gov/opioids/about-the-epidemic/opioid-crisis-statistics/>)
 - 8.3% of adults did not receive medical care due to cost (<https://www.cdc.gov/nchs/fastats/access-to-health-care.htm>)
- The question becomes: how do counties vary?
The answer may help us understand how jails are being used.



Understanding county indicators can better inform policy and practice

- 27% (848) of the 3,142 counties in the US receive CSAT, BJA, and/or NIH HEAL and JCOIN grants and also are involved in the Stepping Up initiative
- Stepping Up accounts for 68% of 848 counties participating in the goal to improve mental health infrastructure
 - Led by CSG Justice Center, NACo, and APAF
 - Goal is to reduce the number of individuals with mental illness in jails
- The **I.M.JusticeBH** study will explore how Stepping Up and 'other' counties improve local policies and practices.



Stepping up counties
Other counties

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1. What county level data sources are publicly available?
2. How does county size affect socio-demographic, health, and justice characteristics?
3. What county characteristics affect a greater likelihood of participating in the Stepping Up initiative (an example of reform)?
4. Final thoughts

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County Health Rankings & Roadmaps

Robert Wood Johnson Foundation and the University of Wisconsin

<https://www.countyhealthrankings.org/>

- **Advantages:**

- Uses numerous sources
- Contains state and county name
- FIPS = numerical code identifying county and state

- **Disadvantages:**

- Not all data are collected annually
- Varying data collection periods depending on the source

# of physically unhealthy days	Health care costs	HIV incidence rate	# and per capita rate of primary care physicians
# mentally unhealthy days	Mental health provider rate		
Violent crime rate	Homicide rate	Firearm fatality rate	
Population size	% of population that are Hispanic	% of population that are Black	% of population living in a rural area
High school graduation rate	Income inequality ratio	Median household income	# of children living in poverty

Health Care

Criminal Justice

Demographics

The Vera Institute Incarceration Trends Database

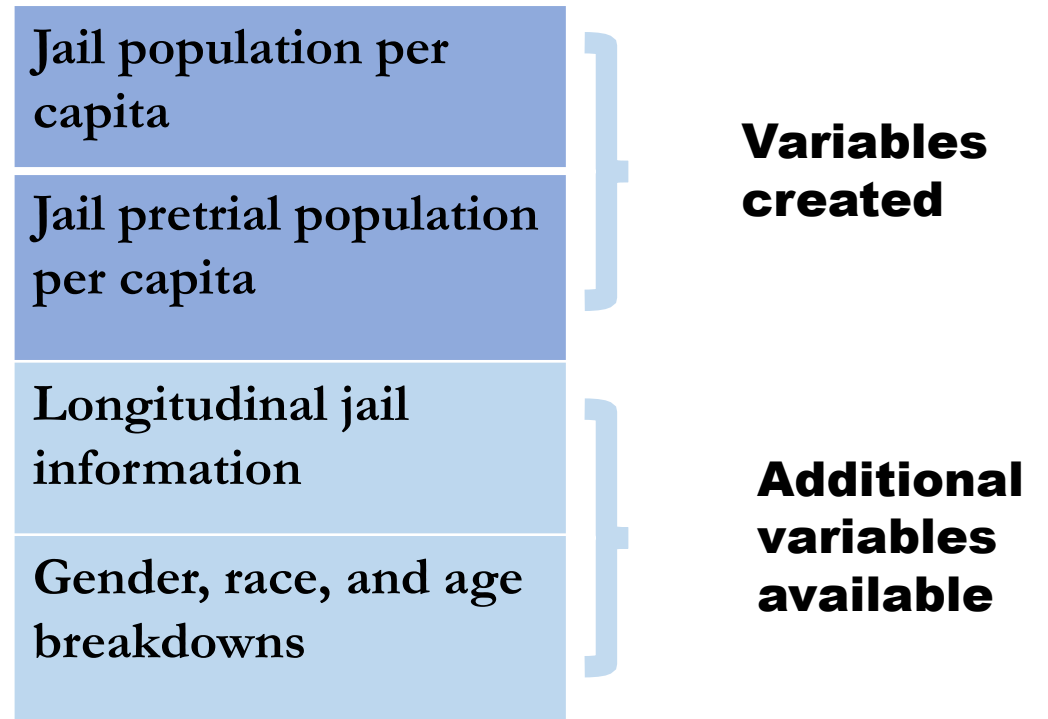
<https://www.vera.org/projects/incarceration-trends>

- **Advantages:**

- Contains state and county name along with FIPS code
- Longitudinal jail information (over time)
- Jail populations by demographic subgroups

- **Disadvantages:**

- Does not contain any information on types of crime that result in incarceration
- Some counties do not have a jail



Uniform Crime Report Police Employee Data

<https://ucr.fbi.gov/crime-in-the-u.s>

- **Advantages:**

- Identifies sworn and civilian officers for each county/city in the US

of police officers per

- County
- City

Variables Used

Police Officers per capita

Variable created

- **Disadvantages:**

- Must create an aggregate county measure of county and city police officers

American Foundation for AIDS Research (amfAR) health data

<https://opioid.amfar.org/>

- **Advantages:**

- Compiles longitudinal drug related data

- **Disadvantages:**

- Some variables are specific to certain drugs (i.e. opioid death rate)
- Many variables do not refer to a specific drug (i.e. % that are dependent on any drug)

% of drug treatment paid by Medicaid

Opioid death rate

% that are drug dependent

% that use non-prescribed pain killers

% of people needing but not receiving drug treatment

Variables used

Other variables available

How do we select variables that matter?

1. The study team identified variables believed to be closely related, conceptually and theoretically, to the outcome variable(s)
2. Machine learning techniques, such as Random Forest and LASSO, are very helpful at sorting the variables by their level of importance and relevancy

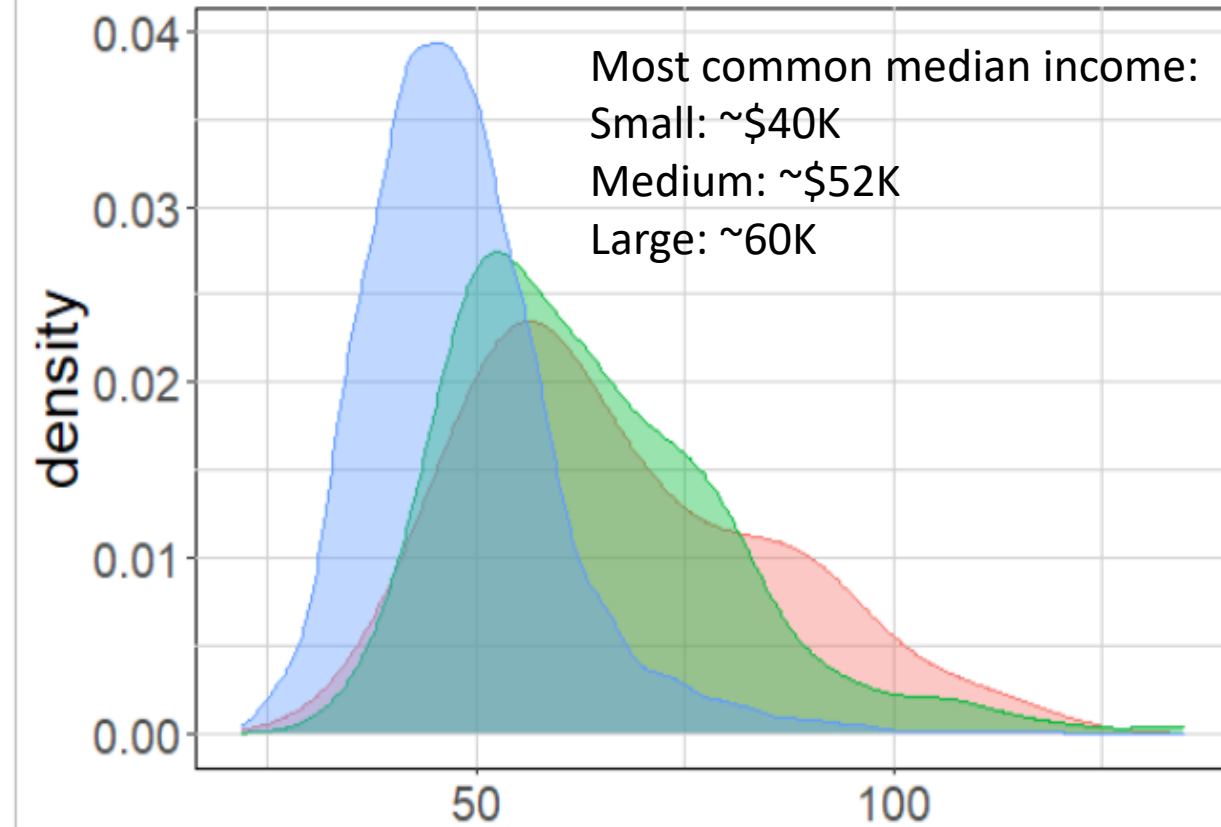
Health Care	# physically unhealthy days in a month	Primary care physician rate	Healthcare costs/expenditure	% drug treatment paid by Medicaid
	Psychiatrists per capita	Psychologists per capita	Community MH centers per capita	Presence of medical schools
Criminal Justice	Violent crime rate	Police per capita	Homicide rate	Firearm fatality rate
Demographics	High school graduation rate	Income inequality ratio	Median household income	% population is Black
	% population is Hispanic	County size	% rural area	

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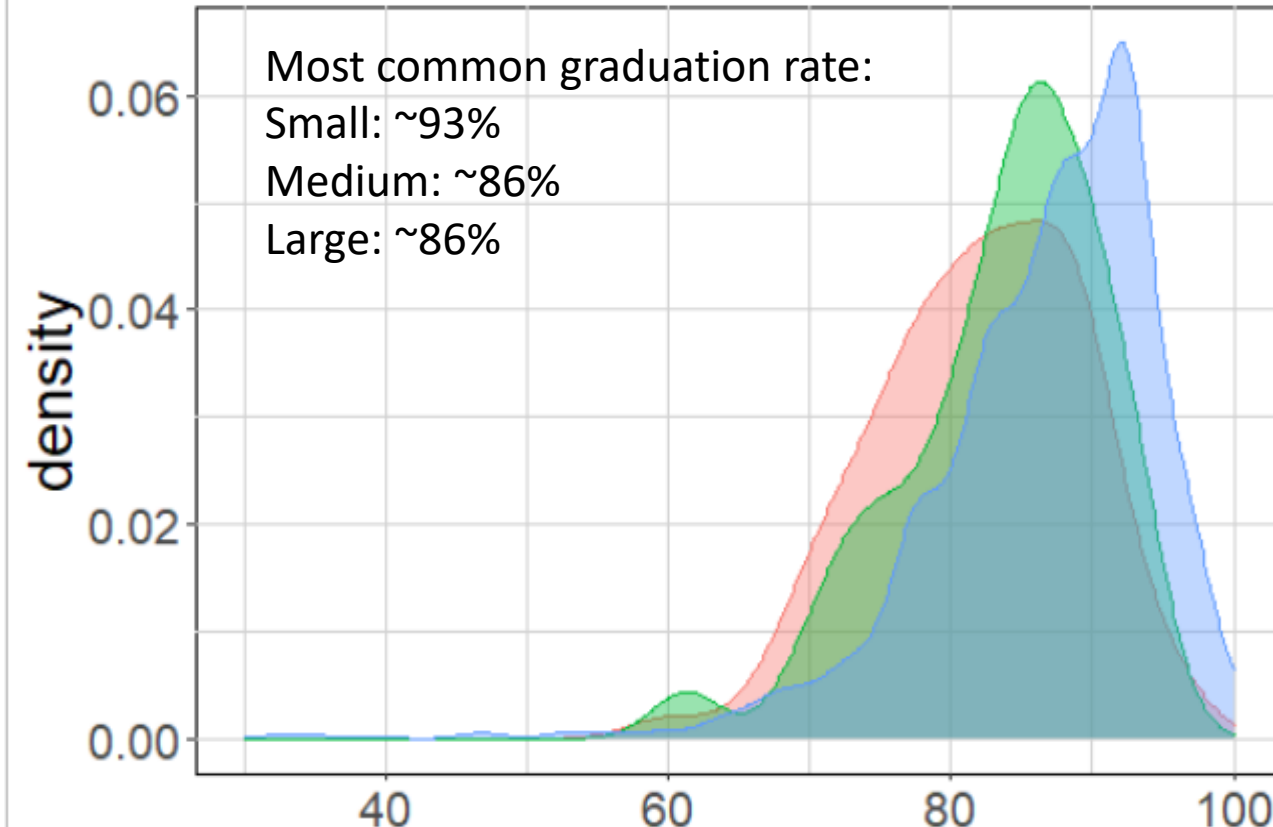
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Smaller counties have lower median household incomes and higher graduation rates

Median household income (K)



% that graduated high school



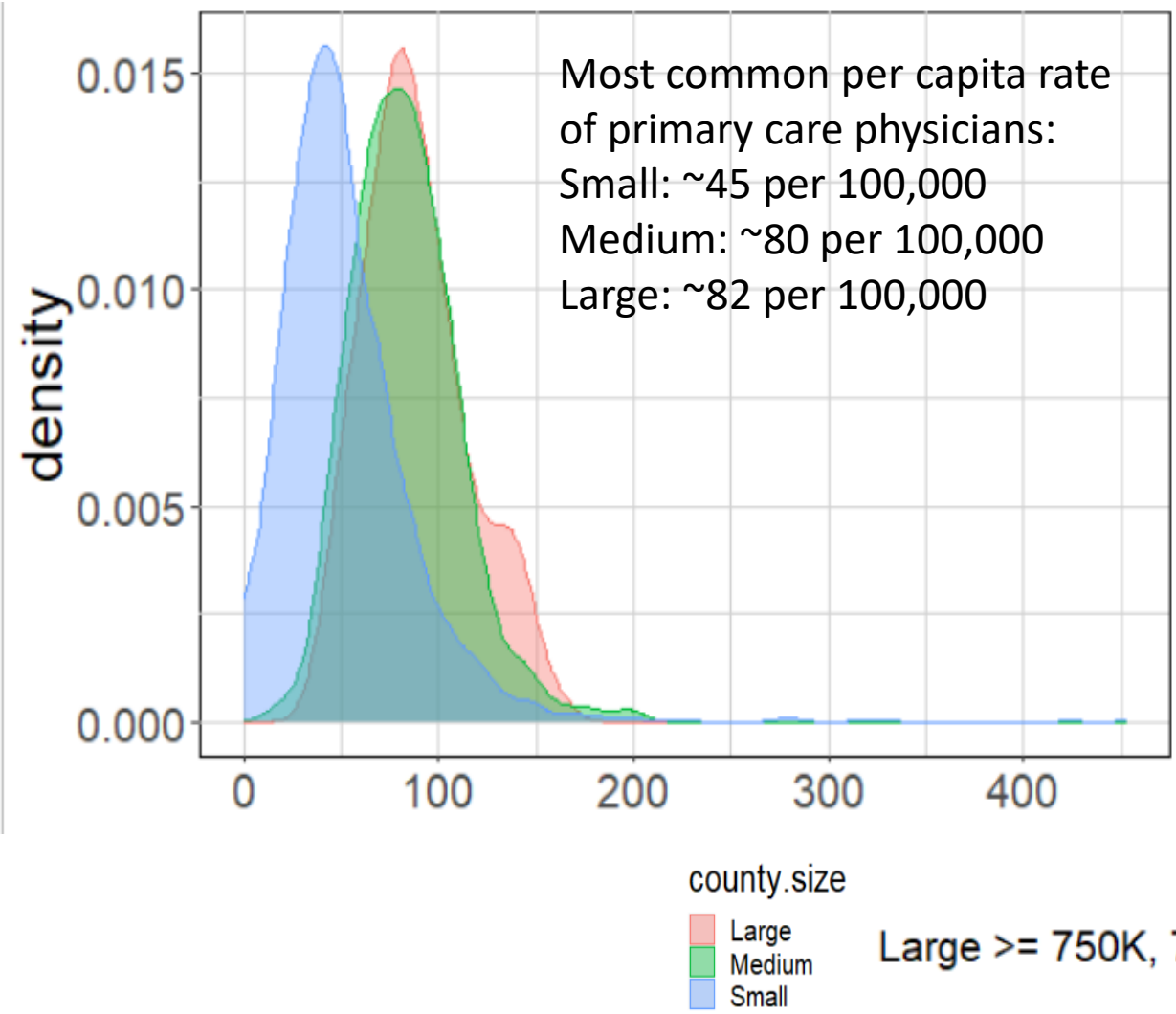
county.size

Large
Medium
Small

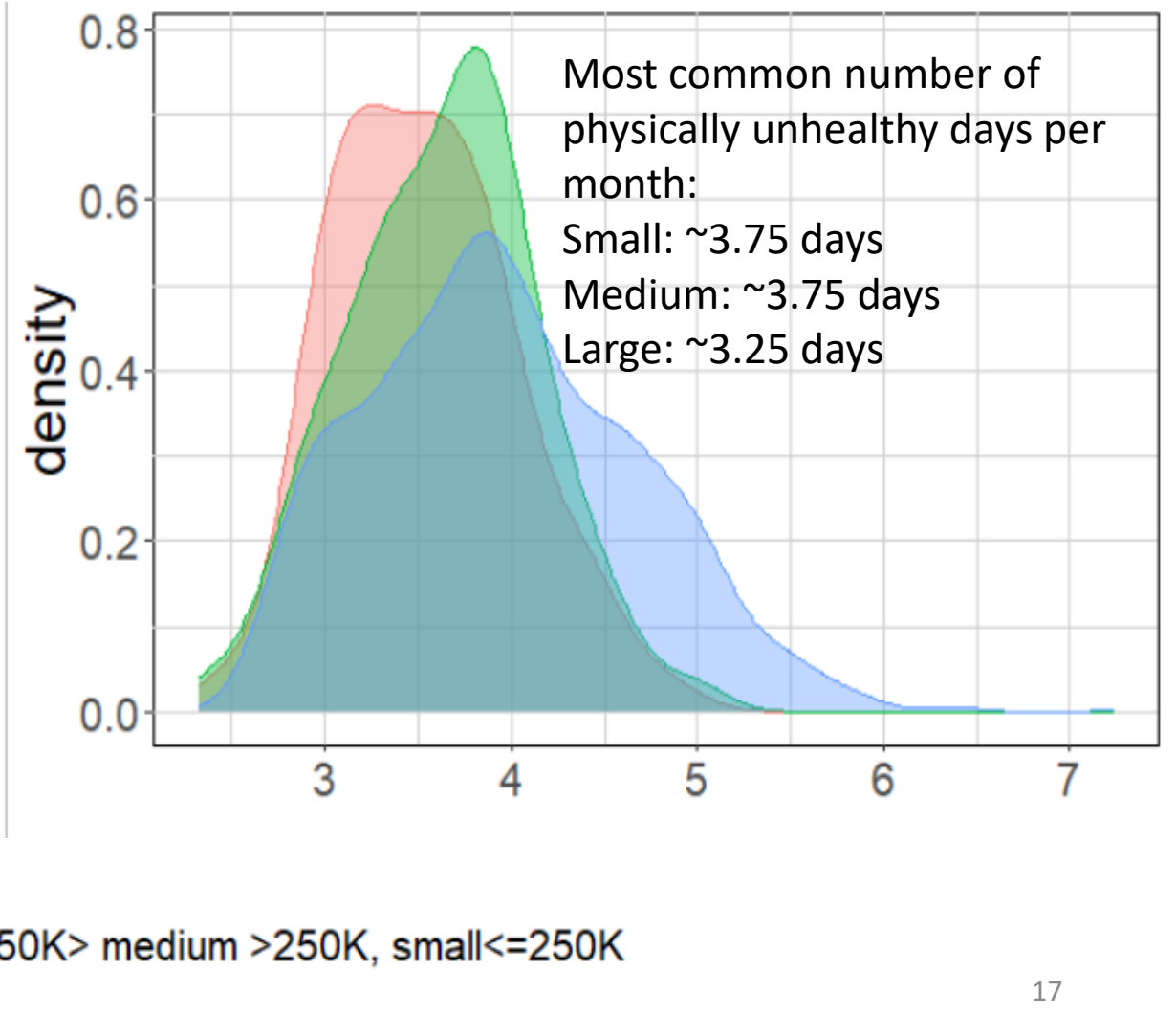
Large $\geq 750K$, $750K > \text{medium} > 250K$, $\text{small} \leq 250K$

Smaller counties have lower per capita rates of primary care physicians, yet have a greater need (higher reported average/concentration of physical unhealthiness)

Primary care physician rate

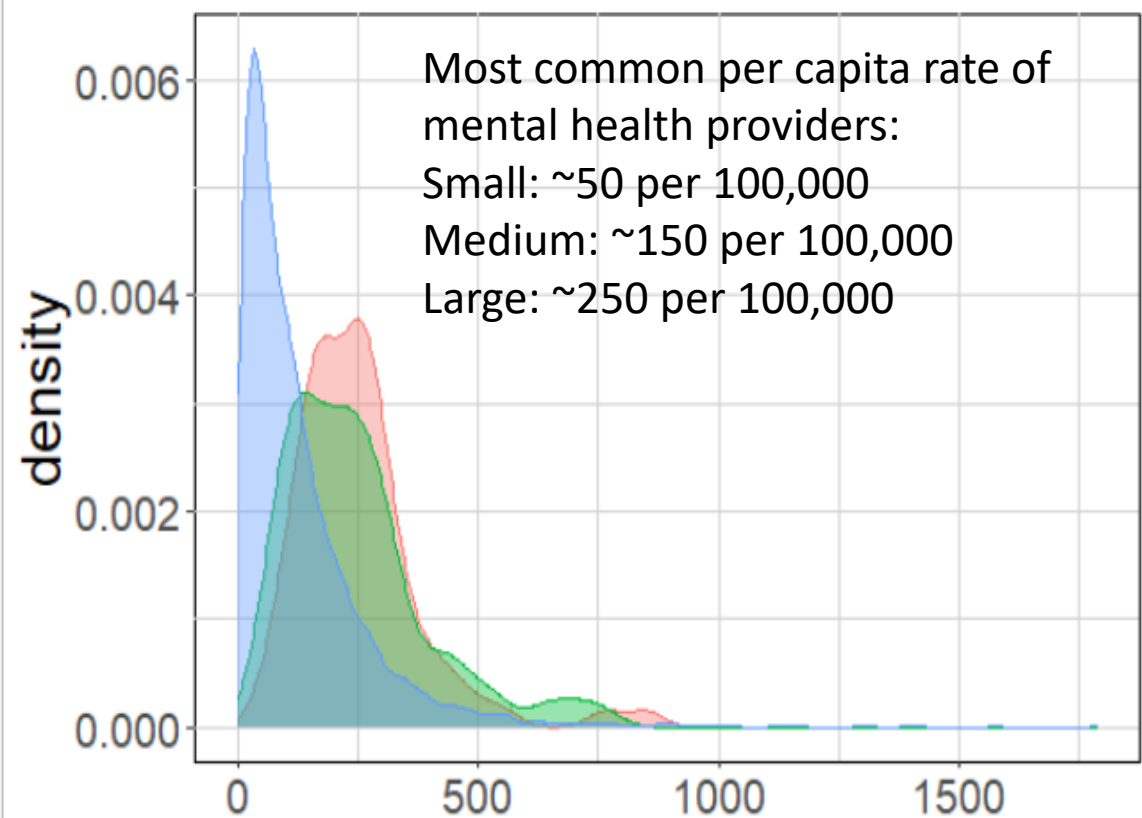


Number of Physically Unhealthy days per month

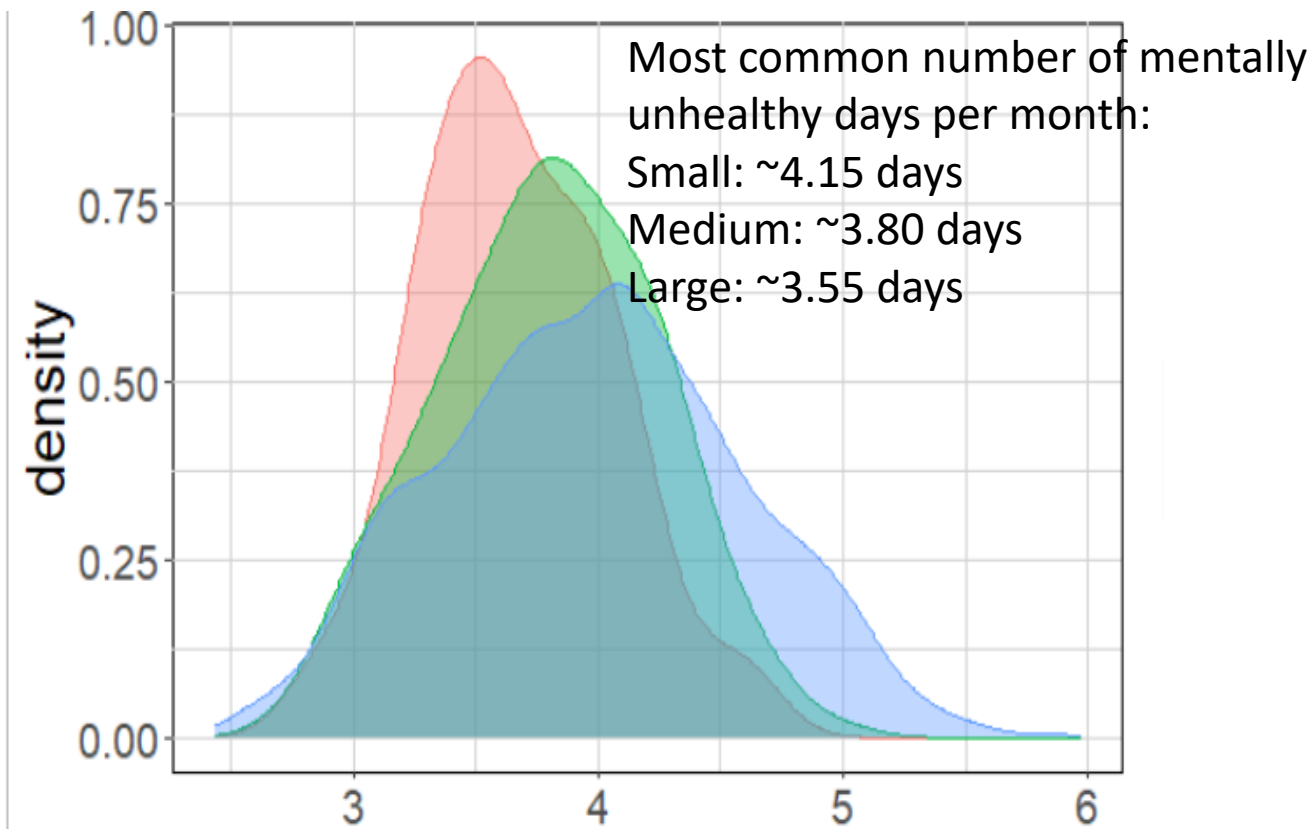


Smaller counties have lower per capita rates of mental health providers and a higher monthly need for mental health services

Mental health provider rate (per 100,000)



Number of mentally unhealthy days per month



county.size

Large
Medium
Small

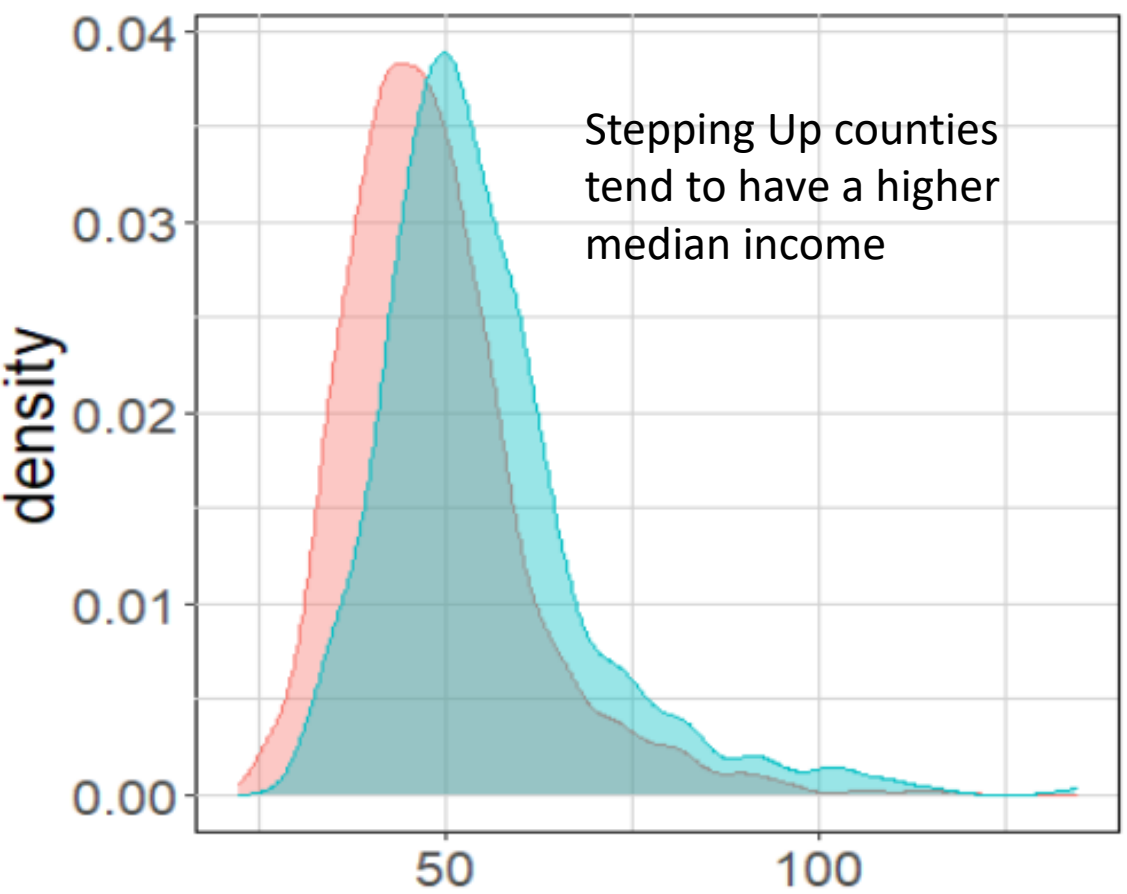
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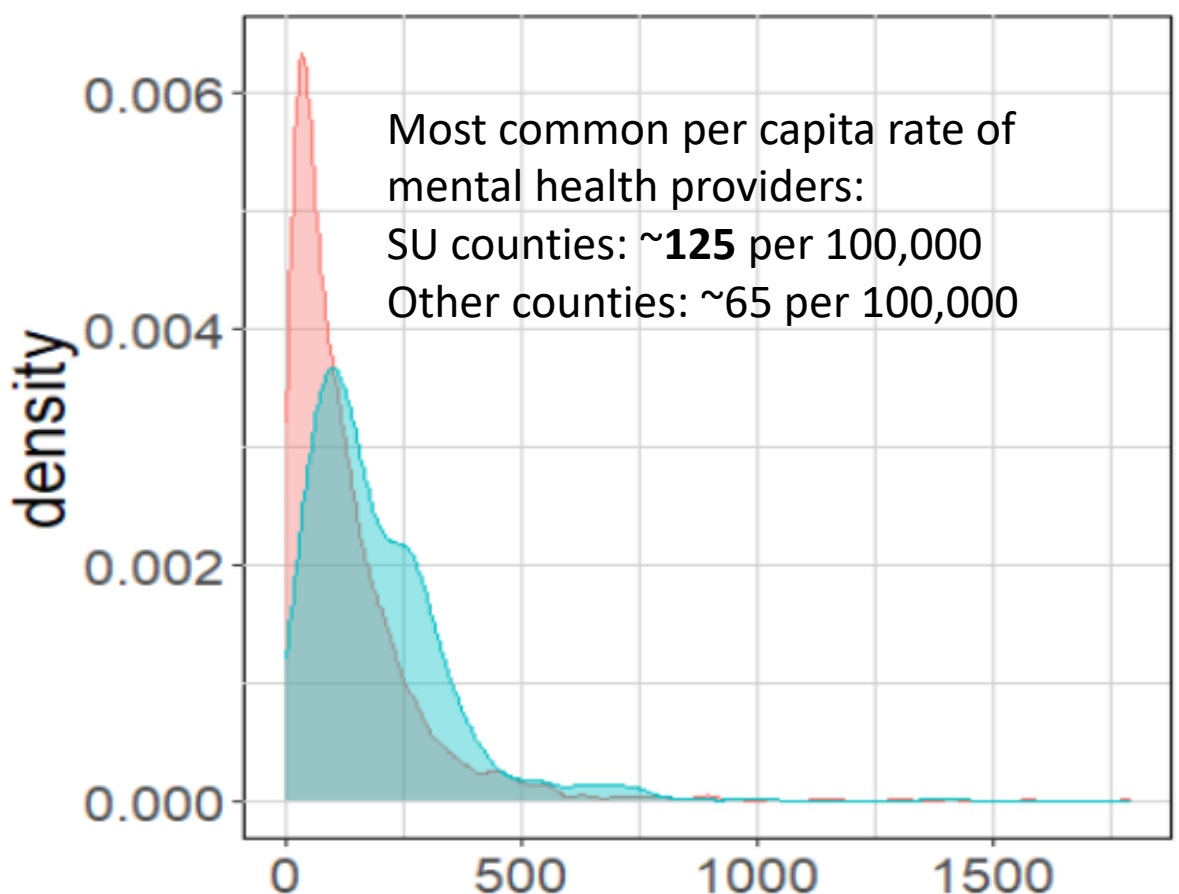
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Counties participating in a data driven strategy to affect how the jail is used have on higher incomes and more mental health providers

Median household income (K)

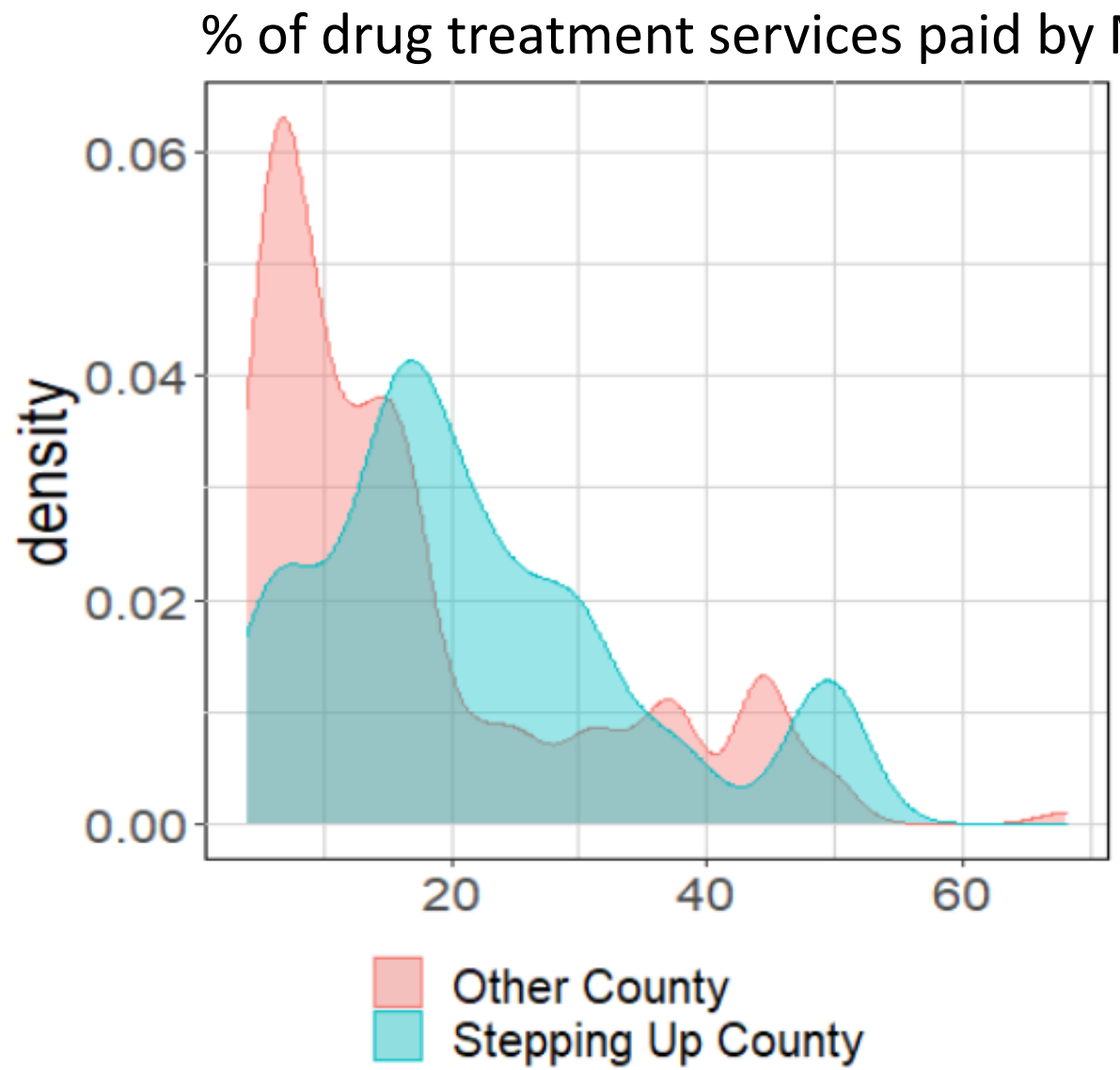


Mental health provider rate (per 100,000)



Other County
Stepping Up County

Counties participating in a data driven strategy to affect how the jail is used report more drug treatment services paid by Medicaid



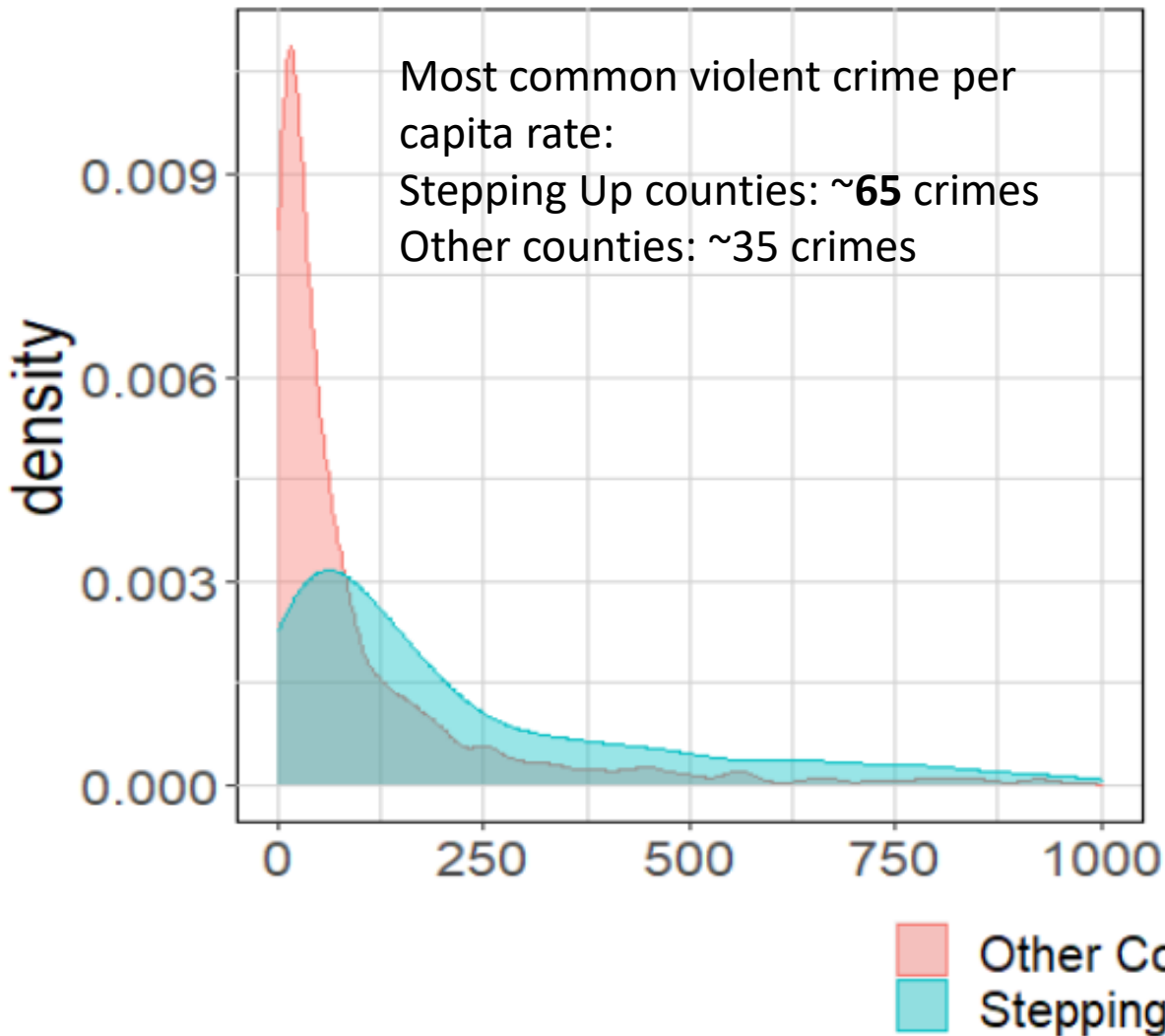
- 91% of counties in non-Medicaid expansion states are in the 'other' group
- Counties in non-Medicaid expansion states report that less than 15% of drug treatment services are paid by Medicaid

States not expanding Medicaid:

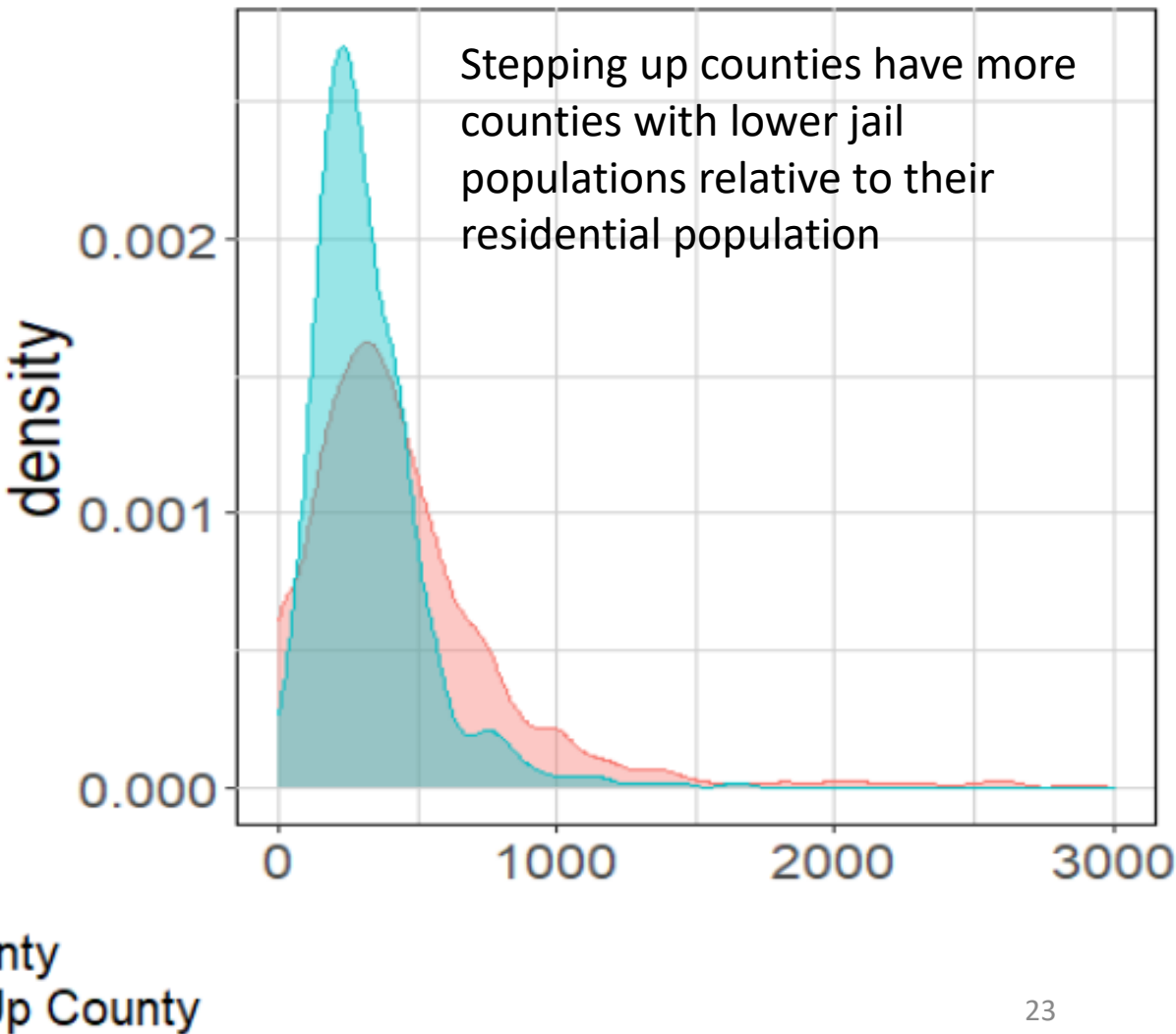
- Alabama
- Florida
- Georgia
- Kansas
- Mississippi
- North Carolina
- South Carolina
- South Dakota
- Tennessee
- Texas
- Wisconsin
- Wyoming

Counties participating in a data driven strategy to affect how the jail is used have slightly higher rates of violent crime but lower per capita size of the jail population

Violent crime per 100,000 residents



Jail population per 100,000 residents



Discovering what county characteristics result in a higher likelihood of participating in the SU initiative?

Step 1. Consulted experts regarding factors that may differentiate whether counties choose to participate in SU initiative.

Step 2. Factors were entered into Machine learning methods to select both **important** and **relevant** county characteristics

Step 3. Important factors were entered into **statistical models** to identify significant variables that predict group membership

Random Forest

- Used to find important variables that explain the classification of counties as SU or non-SU

LASSO

- Used to ensure only relevant variables that do not overlap with other variables are selected.

Logistic Regression

- Fitted to find significant factors that best estimate the likelihood of being part of the SU Initiative.

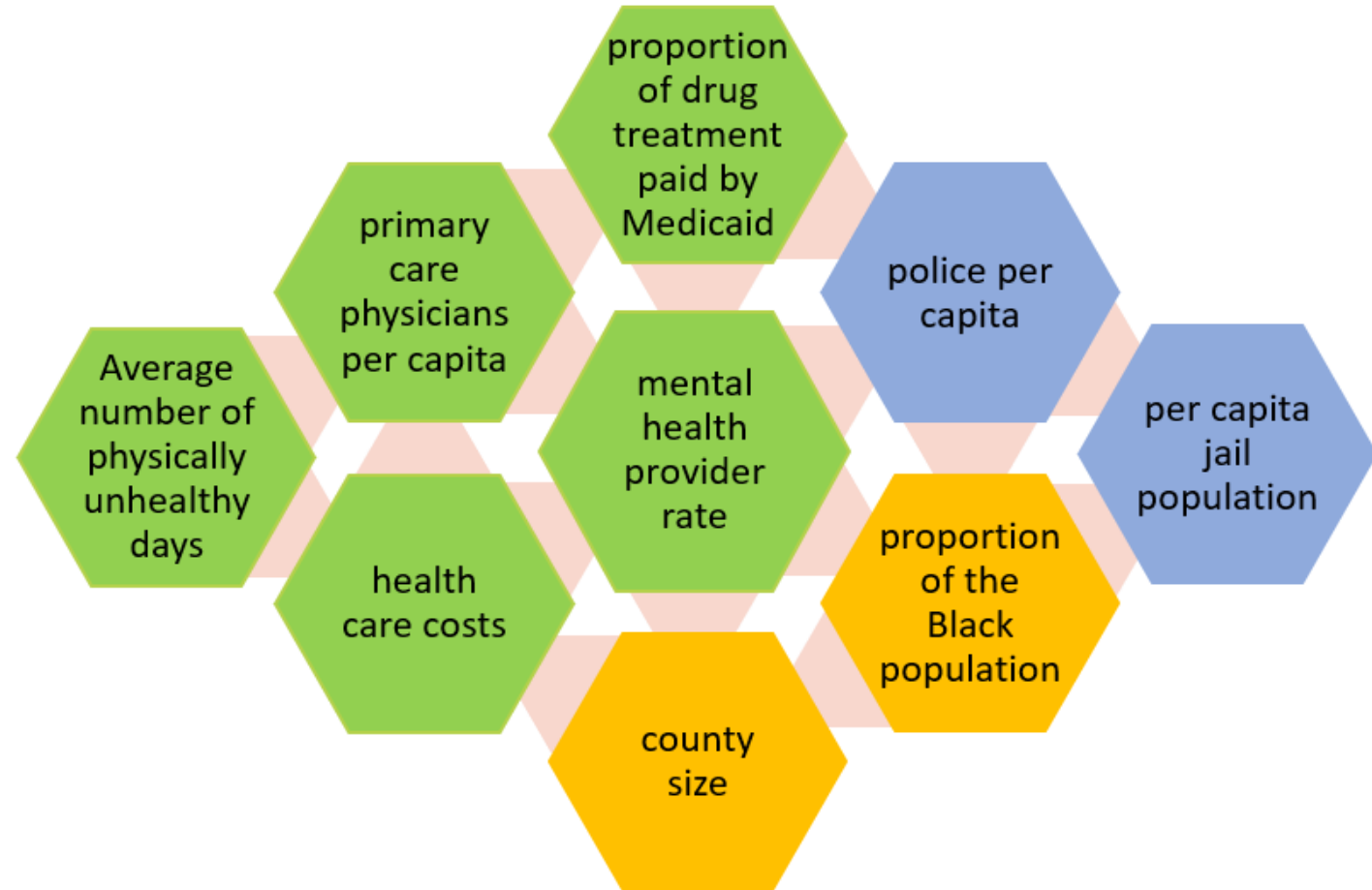
Random Forest Results: Important factors are selected first

Important variables to define membership in SU or non-SU counties:

Step 1: 34 of the most potentially relevant variables were selected based on expert knowledge

Step 2a: Using **random forest**, these variables were reduced to 22 predictors and 7 variables reflecting jail populations and mental health providers in the area

The top most important variables selected using random forest are listed here



LASSO Results: Most relevant factors are selected next

Step 2b: Using **LASSO**, 12 most relevant variables were selected for models predicting the likelihood of a county participating in SU

Health-related Factors

Average number of physically unhealthy days

Primary care physician per capita

Total health care expenditures

% drug treatment paid Medicaid

Licensed psychologists per capita

Community MH providers per capita

Presence of medical school

Justice-related Factors

Police per capita

County Demographic Factors

High school graduation rate

Income inequality ratio

% Black population

County size

In general, what factors contribute to higher likelihood of taking part in SU initiative?

Step 3: Logistic regression results illustrates that county-level public health factors are key contributors influencing whether a county is involved in SU or not:

Health Related Factors

- Lower number of physically unhealthy days within a given month
- Lower health care costs
- Higher percent of drug treatment paid by Medicaid
- Presence of a medical school

Criminal Justice Variables

- Smaller jail population (Lower rate of per capita jail population)
- Higher per capita rate of pretrial jail population
- Lower per capita rate of police officers

Demographic Variables

- Lower high school graduation rate
- Medium or large size of counties

What are **the most important factors** contribute to higher likelihood of taking part in SU initiative?

Health Related Factors

- Lower number of physically unhealthy days within a given month
- Lower health care costs
- Higher percent of drug treatment paid by Medicaid
- Higher rate of mental health providers

Criminal Justice Variables

- Smaller jail population (Lower rate of per capita jail population)
- Lower per capita rate of police officers

Demographic Variables

- Medium or large size of counties

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Final thoughts

How you can help further this work?

- 1 in 4 counties receive some grant funding to improve behavioral health services. Counties with healthier populations and better public health infrastructure are more likely to participate in these efforts, using SU as an example.
 - We want to know what issues are driving your decisions for participating or not participating in efforts to improve service delivery in your county.
- By responding to our survey, your county can help us better understand the specific issues of your county and how this impacts your policies and practices.
 - With a response to the survey, your county will receive a **feedback report** that will summarize your counties work and how you can utilize this information in your future efforts
- Building community capacity for services of individuals with mental illness in the justice system can facilitate reducing the demand on the justice system.
 - Less populous counties have a greater need for increasing the amount of mental health infrastructure
 - More populous counties have different needs that affect funding services to help keep mentally ill individuals out of jail

How can you help....

- **Contact us at IMJusticeBH@ucf.edu to see if you are part of this study**
- If you receive an invitation to be part of the study....
 - **Complete the Survey**
 - Tell us who else in your county is active in your efforts
- If you are asked to be interviewed, join us--
 - **Tell us your story**





Questions?

For more information on the creation and merging of our dataset(s), please contact abreno@gmu.edu

Thank you!

