IMPACT OF ACCESS TO MENTAL HEALTH CARE ON MENTAL HEALTH OUTCOMES:
A COUNTY-LEVEL ANALYSIS USING SOCIOECONOMIC AND POLICY VARIABLES

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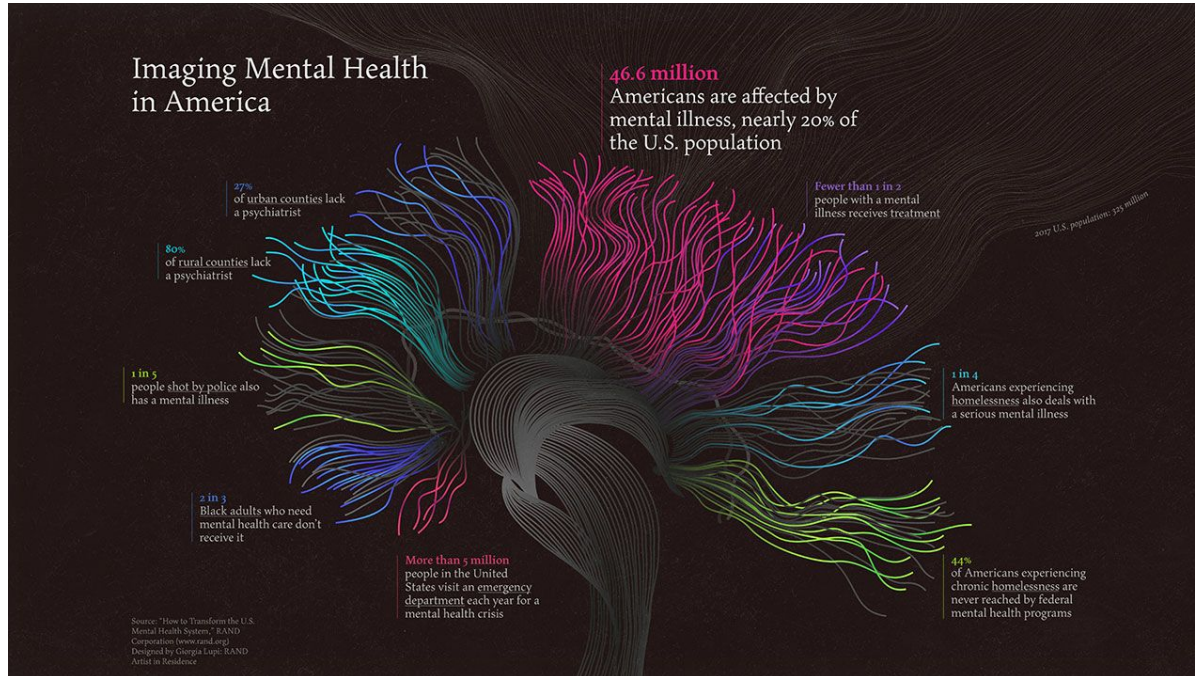
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Since 2020, mental health awareness has been at a **global all time high**.

Mental health is defined as a person's condition in regard to their psychological and emotional well-being.

Poor Mental Health is a Major Concern in the US

The demand for mental health professionals are due to a **reduction in stigma** regarding accessing care, lack of financial stability, and place of residence.

To bring awareness to these problems, **increasing mental health professional availability** is essential to lowering the number of mental health cases.

Imaging Mental Health in America

46.6 million
Americans are affected by mental illness, nearly 20% of the U.S. population

27%
of urban counties lack a psychiatrist

80%
of rural counties lack a psychiatrist

Fewer than 1 in 2
people with a mental illness receives treatment

2017 U.S. population: 325 million

1 in 5
people shot by police also has a mental illness

1 in 4
Americans experiencing homelessness also deals with a serious mental illness

2 in 3
Black adults who need mental health care don't receive it

More than 5 million
people in the United States visit an emergency department each year for a mental health crisis

44%
of Americans experiencing chronic homelessness are never reached by federal mental health programs

Source: "How to Transform the U.S. Mental Health System," RAND Corporation (www.rand.org) Designed by Giorgia Lupi: RAND Artist in Residence

County Health Rankings is our Primary Source

We use the **county-level** aggregated information about people's physical and mental health as well as other predictors, listed below:

Outcome

Poor Mental Health Days: Average number of **mentally unhealthy days** reported in past 30 days (age-adjusted)

**Mental Health Providers:** Ratio of population to mental health providers (per 100k people).

Predictors

Socioeconomic Status: The average percentage of **college graduates** in a given county, along with the **median household income.**

Affordable Care Act (ACA) implementation: Whether or not a state decided to implement the ACA into their state policy.

Does Availability of Mental Health Providers Affect People's Poor Mental Health Days?

Scatterplot of Poor Mental Health Days vs Mental Health Providers
County-Level Data
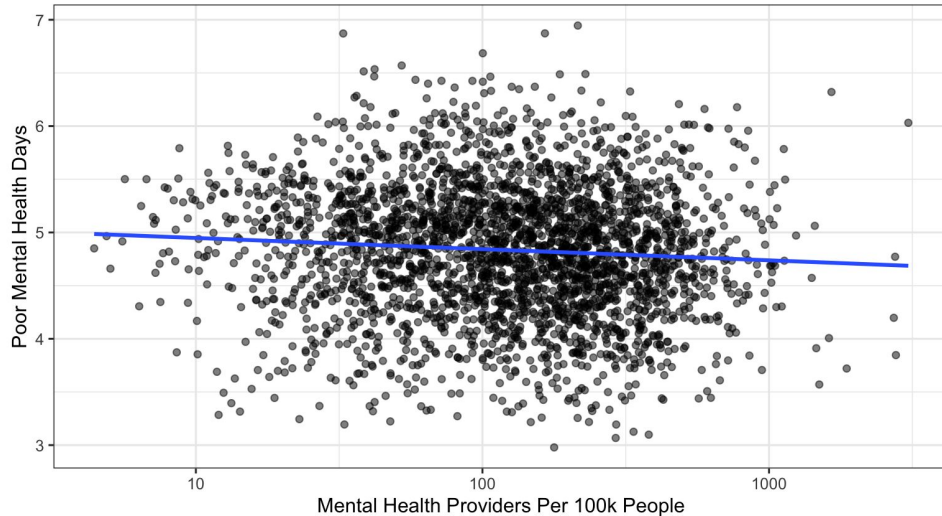
Poor Mental Health Days: average number of self-reported poor mental health days per county (in a 30-day span)

Mental Health Providers: number of available mental health providers per 100K people in the county

The slope displays a relatively flat linear relationship.

The flat slope indicates that more variables need to be accounted for in our analysis.

What impact does Education have on Access to Mental Healthcare and Poor Mental Health Days ?

Scatterplot of Mental Health Providers vs. Poor Mental Health Days
County-Level Data
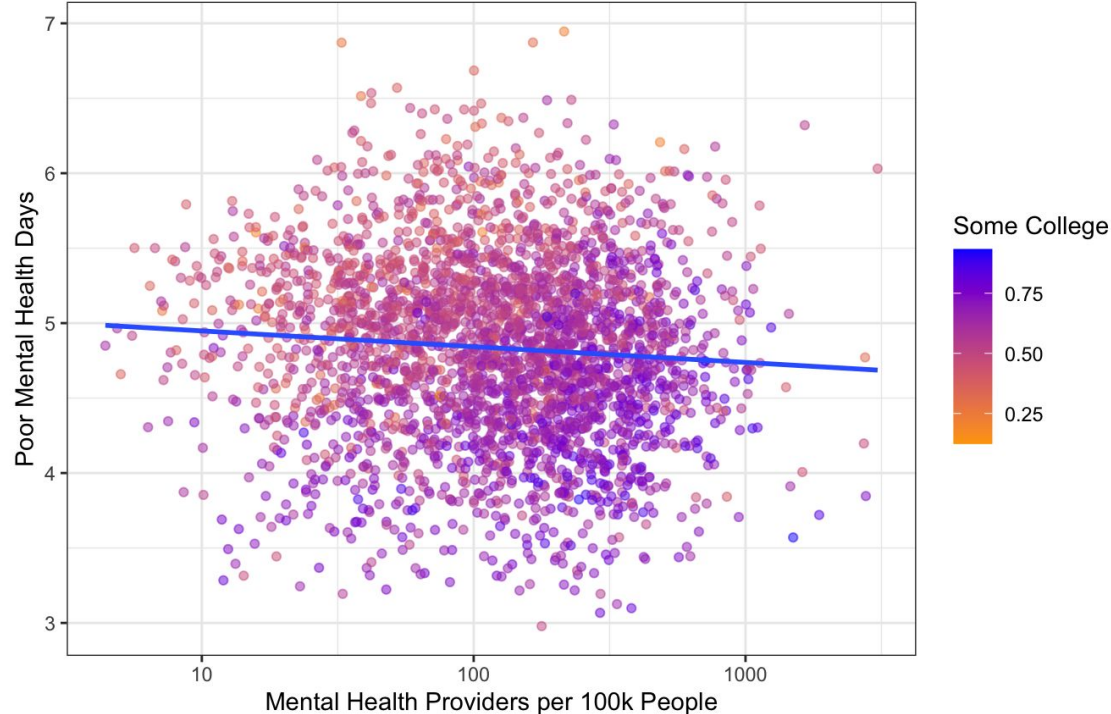
This naturally leads us to consider the impact of a wider variety of socioeconomic predictors on mental health..

Socioeconomic Status Clearly Impacts Mental Health

Poor Mental Health Days VS. Socioeconomic status
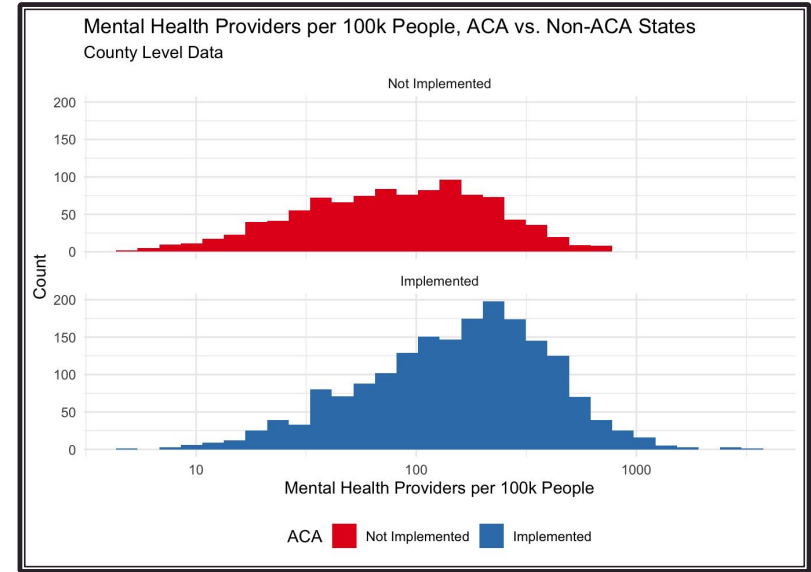County Health Data
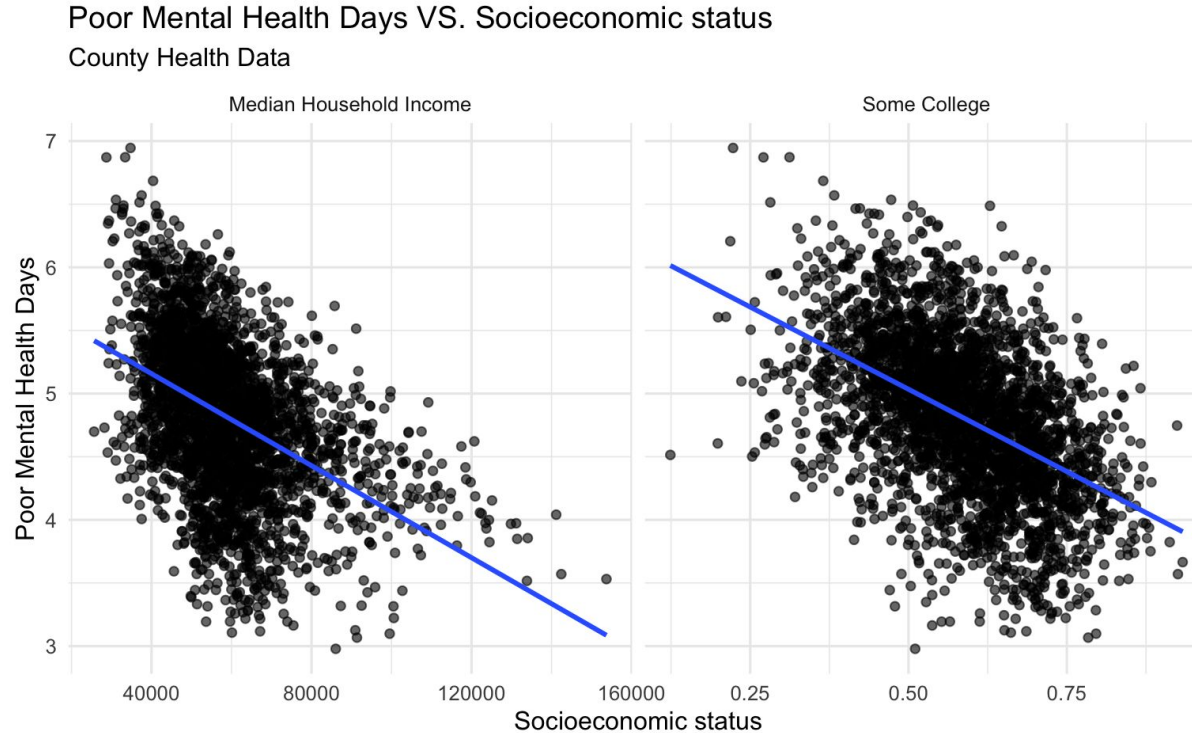
These socioeconomic status factors do appear to individually have a stronger negative relationship to one's mental health.

What Role Does the Affordable Care Act Play on Access To Mental Health Care?
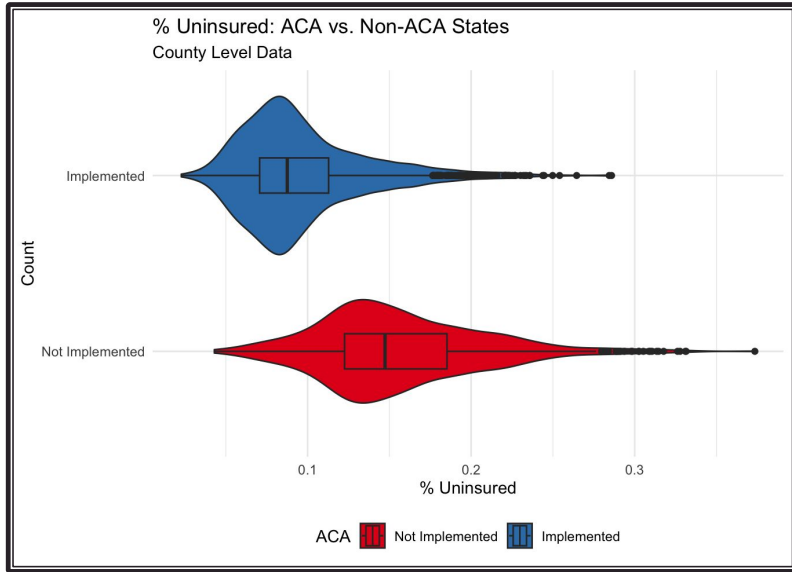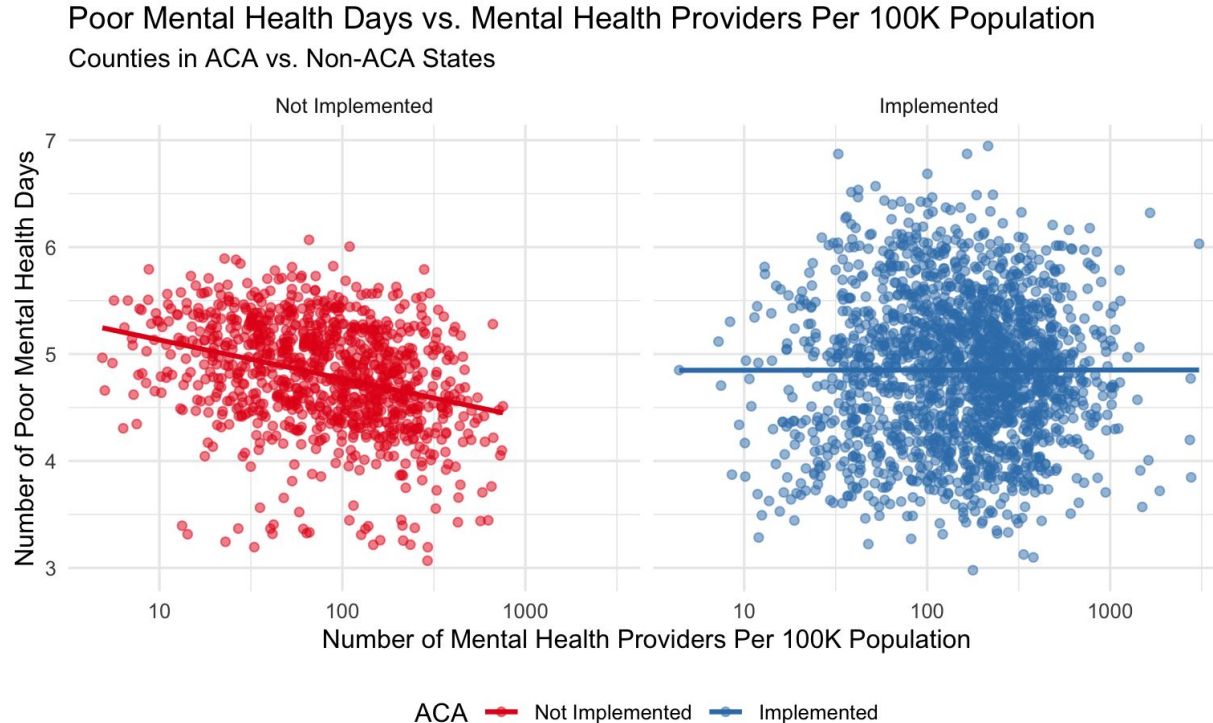
% Uninsured, ACA vs. non-ACA

Mental Health Providers per 100K People, ACA vs. non-ACA

A next step is to understand how augmenting mental health care providers by ACA implementation affects mental health

Impact of the Affordable Care Act (ACA)

Poor Mental Health Days vs. Mental Health Providers Per 100K Population
Counties in ACA vs. Non-ACA States

*The impact of the ACA on non-implemented states resulted as expected , however the lack of impact it had on the implemented states served as a surprise. **Focusing on non-ACA states, it appears that having more mental health providers may lead to an improved mental health status of the residents.***

Predictive Modeling via Random Forests

Variable Importance Plot, Random Forest
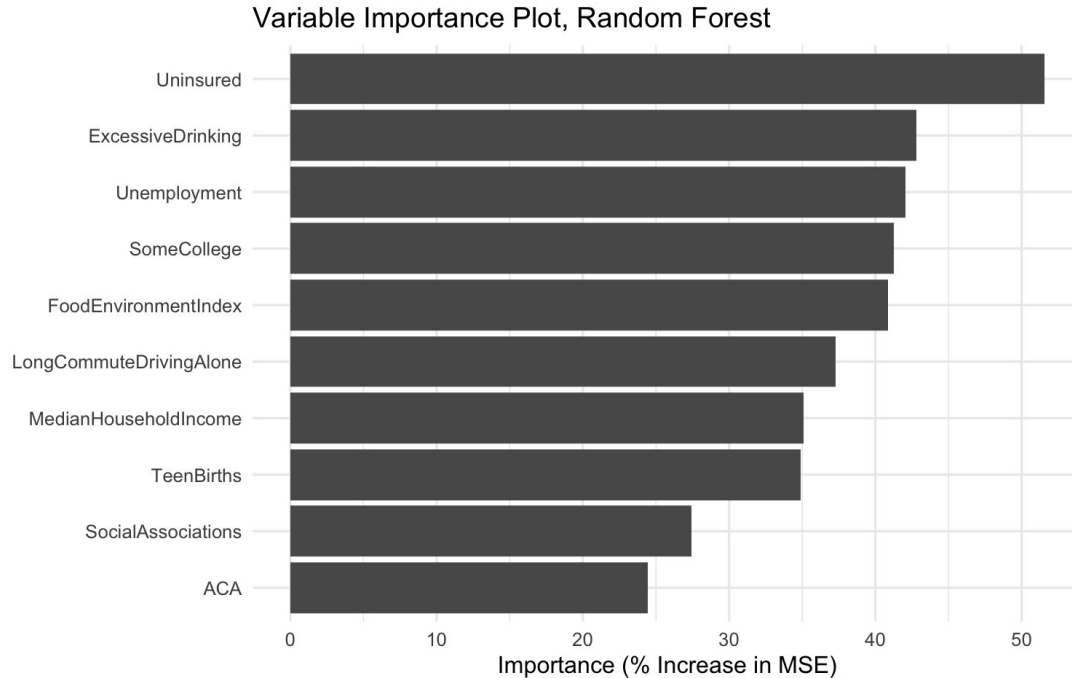
We chose **18 variables** related to income, education, geographic location, and access to care

We plot the importance of each variable in terms of % increase in the MSE

Mental health providers has a variable importance of **20%**

The out-of-bag mean squared error (MSE) is **0.156** (57% variance)

Discussion

Both our exploratory analysis and simple linear model analysis demonstrate a **significant relationship** between the number of mental health providers and the average number of poor mental health days in counties.

01.

As the number of mental health providers per 100,000 people **increases,** the number of poor mental health days **decreases.**

02.

We find that counties with **higher** percentage of **college graduates** have **more mental health providers** per 100K people and less reported poor mental health days.

CONCLUSION
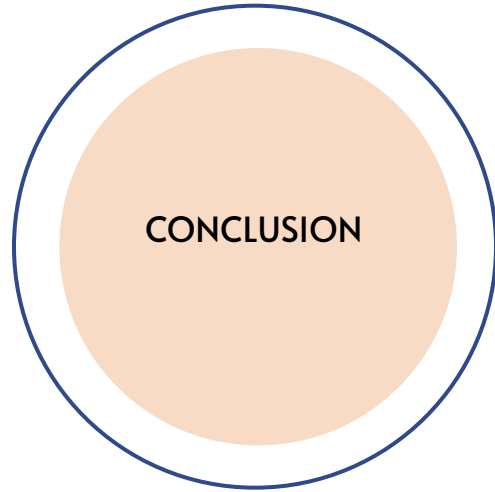
03.

Counties in states that **implemented ACA** tend to have a **higher number of mental health providers** per 100,000 people and a lower percentage of uninsured people.

04.

In states that **did not implement ACA**, the number of **poor mental health days decreases** as the number of **mental health providers** per 100K people **increases**, even after controlling for socioeconomic variables (college graduate % and median household income).