2024

The Impact of Mental Healthcare Access on Community Safety

David Buchinsky

Caroline Watts

The Impact of Mental Healthcare Access on Community Safety

David Buchinsky and Caroline Watts

Abstract

Mental health illness is a pressing American public health concern. Approximately one in five Americans is diagnosed with a mental health condition.[1] While cost, location, and physician shortage play a role in one's access to mental healthcare, research is still determining the effects of mental healthcare access on community safety. Using County Health Rankings (CHR), we analyze the changes in mental health providers between 2016 and 2022 in Alabama and Massachusetts, two states with differing rankings in access to mental healthcare and firearm legislation. We then investigate how access to mental health providers affects community safety (firearm fatalities, suicide rates, and homicide rates). We use paired t-tests, unpaired t-tests, and enter method linear regression analysis to explore our research questions. Our results suggest a statistically significant (p<0.005) increase in mental health providers in Alabama and Massachusetts between 2016 and 2022. However, these changes in mental health providers did not translate into statistically significant changes in community safety.

***Key Words**:* crime, mental health, healthcare access, gun violence, suicide, homicide

---

Introduction

Access to mental healthcare is one of the United States's greatest public health challenges. According to Mental Health America, 21% of American adults suffer from mental illness[1]. As a consequence of the COVID-19 pandemic, approximately 50% of Americans describe facing anxiety or depression.[2] Consequently, there is a need to understand how mental health disparities may affect American communities.

There are various challenges to receiving adequate mental healthcare. Cost is often a reason for inequitable access to mental healthcare.[3] Cost becomes exorbitant for individuals lacking medical insurance as only 56% of psychiatrists accept commercial insurance.[4] The location of mental health providers is another barrier for patients seeking care. Despite 60 million Americans living in rural areas,[5] a severe shortage of mental professionals exists within these communities. A 2022 survey found that 65% of rural communities lack a psychiatrist and 47% lack a psychologist.[6] Such lack of resources in rural communities may lead to longer waiting times and reduced access to care for these communities.[6] Consequently, individuals living in rural communities may seek care from their primary care physicians when faced with few other options for treatment.

Mental health plays a significant role in one's risk of self-harm. Individuals with serious psychotic disorders or substance abuse disorders are eight times as likely to commit suicide compared to individuals without these disorders.[7] The role of mental health in homicides has been closely reviewed; however, individuals with mental health illnesses are 10-20 times more likely to harm themselves compared to committing homicides.[8] Addressing mental health disparities is imperative in lowering the risk of self-harm but may be less effective in lowering homicide rates. Previous studies suggest that communities with increased access to mental health have lower rates of suicide.[9] Therefore, the expansion of mental healthcare at the population level may enhance efforts to lower suicide rates.

Firearm fatalities remain a prominent topic in public health. In 2021, firearms were responsible for approximately 49,000 deaths in the United States and are now the leading causes of death in pediatric patients.[10,11] Alabama, one of the states we analyze in our study, contains some of the highest rates of pediatric homicides in the nation.[12]

Few studies have examined the effect of access to mental healthcare on community safety. However, there is extensive research supporting the benefits of mental health treatment on one's mental health outcomes. Despite these benefits, access to mental healthcare varies widely across the United States. For example, Massachusetts generally has greater access to mental healthcare providers compared to Alabama.[13] We want to know if differential access to mental healthcare has implications on community safety as measured by suicide rates, homicide rates, and firearm fatalities. This research is intended to contribute to the ongoing conversation about mental health access and community safety.

Research Questions

RQ1. From 2016 to 2022, how has the number of mental health providers changed in Massachusetts?

RQ2. From 2016 to 2022, how has the number of mental health providers changed in Alabama?

RQ3. What is the suicide rate in Massachusetts compared to Alabama in 2022?

RQ4. What is the firearm fatality rate in Massachusetts compared to Alabama in 2022?

RQ5. What is the homicide rate in Massachusetts compared to Alabama in 2022?

RQ6. How does mental health provider availability affect the suicide rate in Alabama in 2022?

RQ7. How does mental health provider availability affect the firearm fatality rate in Alabama in 2022?

RQ8. How does mental health provider availability affect the homicide rate in Alabama in 2022?

RQ9. How does mental health provider availability affect the suicide rate in Massachusetts in 2022?

RQ10. How does mental health provider availability affect the firearm fatality rate in Massachusetts in 2022?

RQ11. How does mental health provider availability affect the homicide rate in Massachusetts in 2022?

Methods

Data Collection

Our data comes from County Health Rankings (CHR).[13] Our variables are all from CHR and include access to mental healthcare providers, crime-related variables such as homicide and firearm fatality rates, as well as suicide rates. We use the mental health provider rate to represent access to mental healthcare. CHR obtained data on suicides, homicides, and firearm fatalities from "National Center for Health Statistics - Mortality Files" and data on access to mental healthcare providers from "CMS, National Provider Identification". We are focusing on Massachusetts and Alabama as these are two states among the highest and lowest numbers respectively of mental healthcare providers relative to state population size.[13]

Data Analysis

We use CHR data from 2016 and 2022. Only one of our variables, mental health provider rate, has data from 2016 and 2022. We use available data from 2022 for the other three variables (firearm fatality rates, homicide rates, and suicide rates). We answer RQ1 and RQ2 using paired t-tests. We use unpaired t-tests to analyze RQ3, RQ4, and RQ5. To investigate the effect of

mental healthcare access on community safety in Alabama and Massachusetts in 2022, we perform enter method linear regressions for RQ6-RQ11.

Results

We find a statistically significant increase in mental healthcare provider access between 2016 (mean=497.03) and 2022 (mean=721.87) (t=11.16, p <0.001) **(RQ1, Table 1)**. Similarly, there is a significant increase in mental healthcare providers in Alabama between 2016 (mean=46.73) and 2022 (mean=76.02) (t=10.23, p<0.001) **(RQ2, Table 2)**.

Table 1: Number of Mental Health Providers in Massachusetts

Year	n	Mean	SD
2016	14	497.03	126.80%
2022	14	721.87[a]	194.60%

Abbreviation: SD, Standard Deviation

[a]Statistically significantly different from 2016 (p<0.001)

Table 2: Number of Mental Health Providers in Alabama

Year	n	Mean	SD
2016	63	46.73	53.96%
2022	63	76.02[a]	72.44%

Abbreviation: SD, Standard Deviation

[a]Statistically significantly different from 2016 (p<0.001)

Alabama has significantly higher rates of all three measures of community safety compared to Massachusetts. Alabama has a statistically higher rate of suicide (mean=17.75) compared to Massachusetts (mean=10.65) (t=5.71, p<0.001) in 2022 **(RQ3, Table 3)**. Alabama also has a statistically higher rate of firearm fatalities (mean=23.01) than Massachusetts

(mean=4.21) in 2022 (t=8.09, p<0.001) **(RQ4, Table 4)**. Lastly, Alabama has a statistically higher rate of homicide (mean=11.47) than Massachusetts (mean=2.41) in 2022 (t=3.58, p<0.001) **(RQ5, Table 5)**.

Table 3: Suicide Rates in Alabama and Massachusetts (2022)

State	n	Mean	SD
Alabama	55	17.75	4.24%
Massachusetts	13	10.65	2.89%

Abbreviation: SD, Standard Deviation

Table 4: Firearm Fatalities in Alabama and Massachusetts (2022)

State	n	Mean	SD
Alabama	65	23.01	7.98%
Massachusetts	12	4.21	1.67%

Abbreviation: SD, Standard Deviation

Table 5: Homicide Fatalities in Alabama and Massachusetts (2022)

State	n	Mean	SD
Alabama	54	11.47	7.93%
Massachusetts	10	2.41	1.66%

Abbreviation: SD, Standard Deviation

Our final research questions analyze how mental health provider availability affects community safety in Alabama. We proxy community safety with suicide rates, firearm fatalities, and homicide rates. An enter method linear regression model indicates that the best-fitting data model is statistically insignificant ($F_{1,53}$=17.77, p=.192), accounting for 3.2% of the variance in suicides in Alabama (**RQ6**). The mental health provider rate does not significantly contribute to the model (B = -0.013, p = 0.192). Using an enter method linear regression model, we determine

that the best-fitting data model is statistically insignificant ($F_{1,62}$= 3.65, p=0.062), accounting for 5.6% of the variance in firearm fatalities in Alabama **(RQ7)**. The mental health provider rate does not significantly contribute to the model (B = 0.021, p = 0.061). To determine whether there was a relationship between homicide rates and mental health provider availability **(RQ8)**, we use an enter method linear regression model that indicated the best-fitting model is statistically insignificant ($F_{1,51}$=3.96, p=0.052), accounting for 7.2% of the variance in homicides in Alabama. Again, the mental health provider rate does not significantly contribute to the model (B = 0.026, p = 0.052).

Similarly, the effect of mental health provider availability in 2022 in Massachusetts on suicide rates, firearm fatalities, and homicide rates was found through enter method linear regressions. The effect of mental health provider access on the suicide rate **(RQ9)** is not statistically significant ($F_{1,11}$ = 0.078, p = 0.785), only accounting for 0.7% of the variance in suicides. The mental health provider rate does not significantly contribute to the model (B = -0.001, p = 0.785). However, the model of the effect of mental health provider access on firearm fatality rate **(RQ10)** is significant ($F_{1,10}$ = 8.84, p = 0.014), accounting for 46.9% of the variance in firearm fatalities in Massachusetts. Mental health provider rate does significantly contribute to the model (B = 0.006, p = 0.014). Finally, there is a statistically significant result ($F_{1,8}$ = 13.10, p = 0.007) for the model of the effect of mental health provider access on homicide rates **(RQ11)** which accounted for 62.1% of the variance in homicides in Massachusetts. Mental health provider rate does significantly contribute to the model (B = 0.007, p = 0.007).

Discussion

Both Alabama and Massachusetts have statistically significant increases in mental health provider access from 2016 to 2022. Suicide, firearm fatality, and homicide rates were statistically higher in Alabama than in Massachusetts in 2022. The access to mental healthcare providers has no statistically significant effect on suicide, firearm fatality, or homicide rates in Alabama and Massachusetts in 2022. Access to mental healthcare providers has a statistically significant effect on the homicide and firearm fatality rate in Massachusetts in 2022. While mental healthcare providers increased in Alabama and Massachusetts, there is not a consistent effect of this increased mental healthcare access on community safety measures. Additional community safety factors may need to be considered to better determine this effect.

Establishing that both states experienced a significant increase in mental health provider access over six years provides a baseline for comparison between these states. Similarly, Alabama's significantly higher rates of suicide, firearm fatalities, and homicide also serve as foundational statistics for our comparisons. Despite Alabama's decreased community safety compared to Massachusetts, there is no significant effect of mental health provider rates on any of these community safety variables. This may be due to Alabama having considerably fewer mental health providers than Massachusetts, county-level differences in provider rates, and lack of transportation to healthcare facilities. Alabama may have an increased number of rural regions compared with Massachusetts which has been demonstrated to impact mental healthcare access. On the other hand, Massachusetts is a geographically smaller state than Massachusetts. There may be more suburban and urban areas in Massachusetts with higher mental health provider rates and increased public transportation to these offices.

Tadmon and Bearman examined access to mental health providers, including transportation to healthcare offices, and effects on suicide rates across the United States.[14] They report that there is a 6.9% increased risk for suicide in areas with lower access to psychiatrists. Our study focuses on two states and does not find significant effects of mental healthcare access on suicide rates in either Massachusetts or Alabama in 2022. Given that the Tadmon and Bearman study finds that increased access to mental healthcare has a strong impact on decreasing suicides when using a large sample size, it is possible that our study and its comparatively small sample size do not have sufficient power to pick up a potential effect.

Looking at a study on the effects of county-level access to psychiatrists and therapists on crime in the United States, Deza et al. find that for every 10 new healthcare offices in a county, there is a 0.4% decrease in violent crime.[15] Their study defines violent crime as a combination of rape, aggravated assault, robberies, and murder, yet murder accounts for the smallest percentage of the total violent crime at 1.1%. In the context of our study, we only examine homicide rates which is a potential limitation of our study. We find that mental health provider access has a statistically significant effect on homicide rates in Massachusetts in 2022, but not in Alabama. Mental health provider rate significantly contributes to the regression model, indicating that for every 1% increase in mental health provider rate, the homicide rate increases by 0.007%. This finding is contrary to the Deza et al. results but the increase in homicide rate is quite small and additional factors contributing to homicide rates should be investigated. While Alabama did have a statistically significant increase in mental health provider access from 2016 to 2022, there may still not be enough access to care in the state. In 2016 and 2022, Massachusetts had nearly 10.6 and 9.5 times more mental health providers respectively compared to Alabama despite the total population of Massachusetts only being 1.4 times greater than the population of Alabama in both

of these years.[15] Increased access to mental healthcare providers in Massachusetts compared to Alabama accounting for population size differences may explain why a significant effect on homicide rates is observed for Massachusetts but not Alabama.

According to a study looking at firearm fatalities, specifically firearm suicide and firearm homicide rates, as well as total suicide and homicide rates in the United States, Meszaros finds an inverse relationship between access to psychiatric services and firearm homicide and total homicide rates in 2005 but not in 2010.[16] As this study included multiple time points for comparison, our finding that mental health provider access has no statistically significant effect on firearm fatalities in Alabama in 2022 may also be limited by the year we examined. However, we find in 2022 in Massachusetts that access to mental health providers does have a significant effect on the firearm fatality rate. The mental health provider rate is a significant contributor to the regression model and for every 1% increase in mental health provider rate, the firearm fatality rate increases by 0.006%. This positive relationship is the opposite of the negative relationship between mental healthcare access and firearm fatalities in the Meszaros study, but the increase in firearm fatality is so small that other factors involved in firearm fatalities should be considered. The greater total access to mental healthcare services in Massachusetts compared to Alabama likely accounts for the significant effect on firearm fatalities in Massachusetts but not in Alabama.

CHR is our predominant obstacle in this study. While this data set helps quantify important public health parameters, the data was limited. There is minimal quantifiable information on community safety and mental healthcare access in CHR. Additionally, the data set is limited by representing data in only the years 2016 and 2022. Even though we have access to data on mental health provider rates to proxy mental healthcare access, access is also affected

by transportation, insurance coverage, and provider rates varying by county. These factors may cause our results to be skewed and to have limited generalizability. Additionally, our research is confined to only two states, further reducing the generalizability of our results.

Future research projects assessing the role mental health access plays in community safety could use larger databases and analyze additional community safety measures to ascertain the full effect of mental health provider access on community safety. Additional states should be included as well to increase the sample size and statistical power. Research examining the nuances of access to mental healthcare providers may benefit our understanding of current mental health access. If a region has increased access to mental healthcare but the local population has a low utilization of mental healthcare resources or low frequency of mental distress this adds another layer of complexity to our original research question.

Conclusion

Mental health is an often overlooked aspect of overall health that deserves more attention due to the potential for wide-reaching effects of untreated mental conditions on community safety. The significant effect of mental healthcare access on firearm fatalities and homicide rates in Massachusetts in 2022 warrants further research into access to mental healthcare resources and violence. Determining the full effect of mental healthcare access on community safety with additional studies will help inform policymakers and potentially expand access to mental health resources.

References

1. National Institutes of Health. COVID-19 mental health information and resources. NIH COVID-19 Research. Published March 20, 2023. https://covid19.nih.gov/covid-19-topics/mental-health#:~:text=In%20a%202021%20study%2C%20nearly
2. Reinert, M, Fritze, D. & Nguyen, T. (October 2022). "The State of Mental Health in America 2023" Mental Health America, Alexandria VA.
3. Coombs NC, Meriwether WE, Caringi J, Newcomer SR. Barriers to healthcare access among U.S. adults with mental health challenges: A population-based study. SSM - population health. June 15, 2021. Accessed November 7, 2023. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8214217/.
4. Leonhardt M. What you need to know about the cost and accessibility of mental health care in America. CNBC. May 10, 2021. Accessed November 7, 2023. https://www.cnbc.com/2021/05/10/cost-and-accessibility-of-mental-health-care-in-america.html.
5. Staff AC. One in five Americans live in rural areas. Census.gov. October 8, 2021. Accessed November 25, 2023. https://www.census.gov/library/stories/2017/08/rural-america.html.
6. Winton J. Confronting mental health challenges in rural America. NAMI. November 17, 2022. Accessed November 7, 2023. https://www.nami.org/Blogs/NAMI-Blog/November-2022/Confronting-Mental-Health-Challenges-in-Rural-America#:~:text=Rural%20areas%20have%20fewer%20primary,rural%20counties%20lack%20a%20psychologist.

7. Too LS, Spittal MJ, Bugeja L, Reifels L, Butterworth P, Pirkis J. The association between mental disorders and suicide: A systematic review and meta-analysis of record linkage studies. *Journal of Affective Disorders*. 2019;259:302-313. doi:10.1016/j.jad.2019.08.054
8. Leyton M. Are people with psychiatric disorders violent? *J Psychiatry Neurosci*. 2018;43(4):220-222. doi:10.1503/jpn.180058
9. Holliday SB. The relationship between mental health care access and suicide. Rand.org. March 2, 2018. Accessed April 1, 2024. https://www.rand.org/research/gun-policy/analysis/essays/mental-health-access-and-suicide.html
10. Provisional Mortality Statistics, 2018 through Last Week Request. Accessed April 1, 2024. https://wonder.cdc.gov/mcd-icd10-provisional.html
11. Goldstick Jason E., Cunningham Rebecca M., Carter Patrick M. Current Causes of Death in Children and Adolescents in the United States. *New England Journal of Medicine*. 2022;386(20):1955-1956. doi:10.1056/NEJMc2201761
12. Roberts BK, Nofi CP, Cornell E, Kapoor S, Harrison L, Sathya C. Trends and disparities in firearm deaths among children. *Pediatrics*. 2023;152(3):e2023061296. doi:10.1542/peds.2023-061296
13. University of Wisconsin Public Health Institute. Explore health rankings. County Health Rankings & Roadmaps. Accessed November 25, 2023. https://www.countyhealthrankings.org/explore-health-rankings.

14. Tadmon D, Bearman PS. Differential spatial-social accessibility to mental health care and suicide. *Proceedings of the National Academy of Sciences*. 2023;120(19). doi:10.1073/pnas.2301304120
15. Deza M, Maclean JC, Solomon K. Local access to mental healthcare and crime. *Journal of Urban Economics*. 2022;129:103410. doi:10.1016/j.jue.2021.103410
16. Meszaros J. Falling through the cracks: The decline of mental health care and firearm violence. *Journal of Mental Health*. 2017;26(4):359-365. doi:10.1080/09638237.2017.1340608