The Impact of COVID-19 on Access to Mental Healthcare Services

By BENJAMIN HARRELL, LUCA FUMARCO, PATRICK BUTTON, DAVID J. SCHWEGMAN, AND KYLA DENWOOD

*Harrell: Vanderbilt LGBTQ Policy Lab, Vanderbilt University, Nashville, TN, 37240 (e-mail: benjamin.harrell@vanderbilt.edu). Fumarco: Masaryk University, IZA, and GLO, Lipová 41a, 602 00 Brno-střed, Czechia (email: luca.fumarco@econ.muni.cz). Button: Tulane University, NBER, J-PAL, and IZA, 6823 St. Charles Avenue, New Orleans, LA 70118 (email: pbutton@tulane.edu). Schwegman: School of Public Affairs, American University, 4400 Massachusetts Ave NW, Washington, DC 20016 (email: schwegma@american.edu). Denwood: Carnegie Endowment for International Peace, 1779 Massachusetts Ave NW, Washington, DC 20036 (email: kyla.denwood@ceip.org). We also thank the National Institutes of Health via a postdoctoral training grant for Patrick Button (5T32AG000244-23), which funded his early research on this project at the RAND Corporation. The views expressed are our own and not those of any funders. This study was approved by the Tulane University IRB (2019-1122-TU Uptown). This experiment is pre-registered at the American Economic Association's registry for randomized controlled trials (RCT ID: AEARCTR-0006560). Luca Fumarco acknowledges the generous support from the NPO "Systemic Risk Institute" number LX22NPO5101, funded by European Union - Next Generation EU (Ministry of Education, Youth and Sports, NPO: EXCELES) and from the CERGE-EI Foundation Teaching Fellowship Program.

The COVID-19 pandemic increased the rate of mental health disorders, as well as demand for mental health services. It remains unclear, however, the extent to which the pandemic impacted access to mental health services. Using data from an audit field experiment, we examine the impact of COVID-19 on access to mental health care appointments in the United States. This experiment ran from January to May 2020 and overlapped with the initial onset of the COVID-19 pandemic. We find that increased intensity of COVID-19—measured by daily cases, daily fatalities, and weekly excess deaths—is associated with decreased access to mental health care appointments.

I. COVID-19 & Mental Health Providers

The COVID-19 pandemic—both the threat of the virus itself and the disruptions in daily life due to public health responses to the virus affected both the demand and supply sides of the mental healthcare market. On the demand side, local COVID-19 intensity is linked to increased rates of mental illness, including depression, anxiety, insomnia, and suicidal ideation (Killgore et al. 2020). COVID-19 also affected the supply side. In some ways, MHPs could increase supply faster than other health practitioners: MHPs generally have autonomy over hours and patients, since they are more likely to be in solo or small practices. COVID-19 also likely restricted the ability of some MHPs to offer appointments due to illness, COVID-19 or otherwise, and barriers in their ability to provide care, such as being unable to offer in-person therapy.

It is largely assumed that COVID-19 increased the demand for mental health services while, most likely, reducing the supply of these services. In equilibrium, this suggests that access was lower. However, this is important to quantify, particularly using

evidence that tracks real access across time and geography.

II. Experimental Design

We use an audit field experiment- the "gold standard" for measuring discrimination (Gaddis 2018). This experimental design allows researchers to study actual behavior in markets, such as who gets appointments.

A. Design of the Field Experiment

We used a popular online therapist search database to send appointment request emails to a nationally representative sample of MHPs who provide general therapy to adults. See Button et al. (2020) for additional details on our experimental design and the MHP sampling frame. We created 100 randomized prospective patients, and each of them emailed 10 MHPs from January 28, 2020, to May 15, 2020, for 1,000 appointment requests overall. In our appointment request emails, we introduced the prospective patient and disclosed symptoms of anxiety, depression, or stress as a reason for requesting an appointment.

We received non-automated responses to 56.6% of our appointment request emails. Our outcome variable measuring appointment access is a binary variable equal to one if the MHP offers an appointment, consultation, or a phone call.

B. Measuring COVID-19 Intensity

We use three measures of state-level COVID-19 intensity: (1) the standardized sum of daily COVID-19 infections; (2) COVID-19 deaths from the New York Times (2020); and (3) standardized weekly excess deaths—including those associated with COVID-19—from the CDC (2020). Data on weekly excess deaths complements data on daily COVID-19 infections and deaths as a measure of COVID-19 intensity by accounting for potential measurement error in observed and recorded deaths due to misclassification.

III. Empirical Model

Our regression model is:

$$y_{ist} = \boldsymbol{COVID19}_{st}\beta + \mathbf{X_i} + \boldsymbol{\lambda_{st}} + \varepsilon_{ist}$$

where *i* indexes each email, *s* indexes state, and *t* indexes time. $\boldsymbol{COVID19}_{st}$ is a set of COVID-19 intensity measures. We run two versions: one with both COVID-19 infections and deaths, and one with just excess deaths. In all regressions, we include a vector of randomized

email components ($\mathbf{X_i}$),[1] as well as calendar day, week, and state fixed effects. The coefficient(s) β thus measure if higher COVID-19 intensity within a state affects the likelihood of receiving an appointment. We cluster our regressions at the state level.

IV. Results

Table 1 presents the regression results.

TABLE 1: STATE-LEVEL COVID-19 INTENSITY AND APPOINTMENT OFFER RATES

	(1)	(2)
Daily Cases	-0.075*	
	(0.044)	
Daily Deaths	0.051	
	(0.050)	
Weekly Excess Deaths		-0.056
		(0.083)
Std Dev of Daily Cases	11,121.9	
Std Dev of Daily Deaths	489.4	
Std Dev of Weekly Excess Deaths		355.2
Observations	1,000	1,000
Adj. R-squared	0.042	0.043

Notes: Standard errors, clustered at the state level, in parentheses. All (linear probability) models include demographic controls as in column (2) of Table 7 in Button et al. (2020), calendar day fixed effects, week fixed effects, and state fixed effects. *** Significant at the 1%level. ** Significant at the 5% level. * Significant at the 10% level.

For daily cases (column 1), we find a negative impact of COVID-19 intensity on the likelihood of receiving an appointment offer. Specifically, a one standard deviation increase in daily cases decreases the probability of receiving an appointment offer by 7.5 percentage points (statistically significant at the 10% level), a 13.3% decrease compared to the average appointment offer rate of 56.6%. The standardized quantity of state-wide daily deaths has no statistically significant effect on the outcome. There is a positive sign, which suggests that COVID-19 cases that do not result in death are the ones associated with reduced access to appointments, but this could be due to unobserved heterogeneity by state rather than non-fatal cases necessarily being the causal mechanism.[2] Similarly, it could be the case that counts of deaths due to COVID-19 is subject to more or different measurement error than counts of cases.[3]

We also find that excess weekly deaths measured by the CDC, which proxies for mortality that was higher than expected and may better capture the intensity of the pandemic at a given moment, has a negative impact on the likelihood of receiving an appointment offer. A one standard deviation increase in weekly excess deaths is associated with a 5.6 percentage point, or 9.9%, decrease in the appointment offer rate (although this estimate is not statistically significant).[4]

[1] We include patient demographic characteristics corresponding to the model specification in Table 7, Column (2), in Button et al. (2020).

[2] COVID-19 case and deaths by state are not random, so this association may not be causal. It could be the case that, for example, states that experienced COVID-19 cases, but fewer deaths, tended to also experience reduced access to appointments for other reasons.

[3] For example, deaths of patients *with* COVID-19 may be mis-counted as deaths *due* to COVID-19 even if the ultimate cause of death were something else. Alternatively, a patient may have been killed by COVID-19 even if they never received a diagnosis.

[4] We conduct a more detailed analysis in Fumarco et al. (2023), which includes using lagged COVID-19 measures and estimating

V. Discussion and Conclusion

Our results, while somewhat imprecise, suggest that access to mental healthcare appointments may have decreased with COVID-19. Thus, the likely overall effect of COVID-19 on supply and demand in the mental healthcare market was to reduce access. Future research could explore to what extent this equilibrium level of reduced access was driven by increases in demand versus decreases in supply. Similarly, since our results focus on the early days of the COVID-19 pandemic, which does not capture the mid and long-term effects on access to care during the winter 2020-21 and summer 2021 surges, future research could take on broader time horizons to uncover these effects.

Our results are policy relevant: COVID-19 reduced available mental health appointments, and it may continue to do so if providers exited the market due to the pandemic or if demand stays elevated. Decreased access may delay or prevent treatment, which can negatively impact mental and physical health. Delayed treatment can also increase future treatment costs.

differential effects of COVID-19 by prospective patient minority status. We do not find clear relationships between lagged COVID-19 measures and appointment access, but do find that when accounting for differential effects of COVID-19 by prospective patient minority status, that there is stronger evidence of a negative relationship between COVID-19 intensity and access to appointments. Though these results are not reported here, they can be replicated with the posted replication files.

REFERENCES

American Psychological Association (APA). Worsening mental health crisis pressures psychologist workforce. 2021 COVID-19 Practitioner Survey. Washington, D.C.: American Psychological Association. https://www.apa.org/pubs/reports/practitioner/covid-19-2021 (Accessed 10/20/22)

Button, Patrick, Eva Dils, Benjamin Harrell, Luca Fumarco, and David Schwegman. 2020. Gender identity, race, and ethnicity discrimination in access to mental health care: Preliminary evidence from a multi-wave audit field experiment. NBER Working Paper 28164. https://10.0.13.58/w28164.

Centers for Disease Control and Prevention. (2020). Excess Deaths Associated with COVID-19. Retrieved Nov. 21, 2020 from: https://www.cdc.gov/nchs/nvss/vsrr/covid19/excess_deaths.htm

Gaddis, S. Michael. 2018. "An Introduction to Audit Studies in the Social Sciences." In Audit Studies: Behind the Scenes with Theory, Method, and Nuance, edited by S. Michael Gaddis. New York: Springer.

Killgore, William D. S., Sara A. Cloonan, Emily C. Taylor, and Natalie S. Dailey. 2020. "Loneliness: A Signature Mental Health Concern in the Era of COVID-19." Psychiatry Research 290 (May). https://doi.org/10.1016/j.psychres.2020.113117.

The New York Times. (2020). Coronavirus (COVID-19) Data in the United States. Retrieved November 21, 2020 from https://github.com/nytimes/covid-19-data.