Political violence, risk aversion, and population health: Evidence from the US Capitol riot

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Abstract
This study is the first to explore the impact of the January 6, 2021 Capitol riot on risk avoidance behavior and the spread of COVID-19. First, using anonymized smartphone data from SafeGraph, Inc., and an event-study approach, we document a substantial increase on January 6 in non-resident smartphone pings at the sites of the protest: the Ellipse, the National Mall, and the US Capitol Building. Then, using data from the same source and a synthetic control approach, we find that the Capitol riot led to an increase in stay-at-home behavior among District of Columbia residents, consistent with risk avoidance behavior and post-riot policies designed to limit large in-person gatherings. Finally, while we find no evidence that the Capitol riot substantially increased the spread of COVID-19 in the District of Columbia, we do find that counties with the highest inflows of out-of-town protesters experienced a 0.004 to 0.010 increase in the rate of daily cumulative COVID-19 case growth during the month following the event. These findings are exacerbated in counties without COVID-19 mitigation policies in place.

Keywords Capitol riot · Stay-at-home behavior · COVID-19 spread

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1 Introduction

I do think you have to anticipate that this is another [COVID-19] surge event… You had largely unmasked individuals in a non-distanced fashion, who were all through the Capitol. Then these individuals all are going in cars and trains and planes going home all across the country. So this is an event that is going to have public health consequences.

Center for Disease Control and Prevention
Director Robert Redfield, January 11, 2021

On January 6, 2021, thousands of supporters of President Donald J. Trump gathered in Washington, D.C., to protest the US Congress’s certification of Joseph R. Biden’s election as the 46th president of the USA. The protest was part of a series of so-called Stop the Steal events held throughout the country following the November 4, 2020 elections. Organized by right-wing populist activists, the January rally was designed to delegitimize President Biden’s election with claims of widespread voter fraud (Sardarizadeh and Lussenhop 2021).

While some media reports suggest that the Capitol attack was planned days in advance (Hsu et al. 2021), thousands did heed the President’s call on the afternoon of January 6 to “take back our country” and marched to the Capitol Building. There, the violent intentions of some protesters became known through their physical assaults on Capitol police, penetration of multiple police barricades, and destruction of property in the US Capitol Building (Peñaloza 2021). As of December 2, 2021, 604 individuals involved in the riot were charged with federal crimes (United States Department of Justice 2021).1

As much of the public discussion surrounding the Capitol riot was coalescing on its effects on democracy and national unity during the peaceful transition of executive power, public health officials also warned of another threat from the riot: a surge of COVID-19 infections (Ellis 2021). In early January, the USA was in the midst of one of the worst periods of contagion since the onset of the pandemic (Zraick and Robbins 2021). Compared to the 7-day average of US coronavirus cases during the summer of 2020, which was below 100,000, the COVID-19 daily case rate more than doubled to 200,000 per week by early 2021, with over 25 million confirmed COVID-19 cases and nearly 420,000 COVID-19-related deaths by January 25 (Centers for Disease Control and Prevention 2021).2

In the midst of this national surge, there was justifiable public health concern that the January 6 Capitol protest could be a “superspreader” event for COVID-19. COVID-19 is spread via droplets from respiratory expulsion such as breathing,

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1 In addition, it was learned that domestic terrorists connected to the rally planted pipe bombs around locations throughout the District of Columbia, including at headquarters of the Republican and Democrat National Committees (Balsamo 2021).

2 In Washington, D.C., the rate of confirmed COVID-19 cases increased by 40 percent during the week of January 14, while COVID-19 cases spiked by nearly 20 percent over the same period in nearby Maryland and Virginia (Wines and Bosman 2021). By late January, the USA began showing signs that the worst of the late 2020/early 2021 surge had crested (Centers for Disease Control and Prevention 2021).
speaking, coughing, or sneezing (Centers for Disease Control and Prevention 2020a; Fineberg 2020). With widespread distribution of an effective vaccine not yet a reality, public health experts continued to recommend social distancing from non-household members and mask-wearing in public as the most effective strategies to mitigate spread of the novel coronavirus (Centers for Disease Control and Prevention 2020b). According to media reports, however, very few Capitol protesters wore masks at the event (Ellis 2021), and fewer still socially distanced from non-household members while protesting (Mandavilli 2021). Moreover, the victims of those who broke federal law by violently entering the Capitol Building often were sometimes forced to choose between their immediate physical safety and their health. Lawmakers, congressional staff members, and law enforcement officials stationed at the Capitol were forced to break social distancing and mask-wearing rules as they attempted to flee violent attack by rioters and sought cover together in small, locked rooms in the Capitol (Cochrane 2021).

Dr. Robert Redfield, Director of the Centers for Disease Control and Prevention, predicted that the Capitol riot would spur a surge of COVID-19, not only from the increased risk posed to local residents of Washington, D.C., but also for those who have traveled long distances to attend the event and then returned back to their homes (Wilner 2021). While epidemiologists have nearly uniformly predicted that large gatherings during the COVID-19 pandemic would lead to community-level spread, the actual public health impacts of such events have been far more heterogeneous (Dave et al. 2020a, 2021a, 2021b; Ahammer et al. 2020; Carlin et al. 2020). This is, in part, because narrow epidemiological arguments often fail to consider health- or violence-related risk avoidance behaviors of non-participants (Dave et al. 2020a), the impact of increased congestion on stay-at-home-behavior, or the relative risk of counterfactual behaviors in which participants and non-participants would have been engaged in the absence of the gathering (Dave et al. 2020a).

This study is the first to estimate the impact of the January 6 Capitol riot on mobility and community-level COVID-19 spread. First, using data on anonymized smartphone pings from SafeGraph, Inc., from January 1 through January 12 and an event-study framework, we document that the January 6 events increased total and non-resident cellphone pings by almost 500 percent in the census block groups (CBGs) that contained the Ellipse, the National Mall, and the US Capitol Building. While some of this increase in pings may be explained by the gathering of US representatives (Congresspersons and Senators) for the presidential election certification, the size of protesting crowds — numbered in the thousands — vastly dwarfs the number of federal representatives and staffers, and, as America learned, the number

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3 Leading public health experts echoed this prediction and argued that the conditions for COVID-19 superspread were nearly ideal (Ellis 2021). For instance, Dr. Jonathan Fielding at UCLA told the Washington Post that “If you wanted to organize an event to maximize the spread of COVID it would be difficult to find one better than the one we witnessed” (Ellis 2021).

4 See also, Cronin and Evans (2020) and Gupta et al. (2020) for other examples of health-related risk-avoidance behavior. There is also a wide literature on violence-related risk avoidance (Bennett et al. 2007; Stafford et al. 2007; Roman and Chalfin 2008; Janke, Propper and Shields 2016; Yu and Lippert 2016; Stolzenberg, D’Alessio and Flexon 2019; Fe and Sanfelice 2022).
of Capitol police. When we examine the home resident counties from which January 6 protesters came, we find that 2.4 percent of total smartphone “pings” came from Washington, D.C., residents, 21.9 percent came from bordering Maryland and Virginia, and 75.7 percent came from outside of these judications.

Turning to stay-at-home behavior, we detect some evidence of risk avoidance in response to the Capitol Riot, as local residents increased full-time stay-at-home behavior and percent of time spent at home in the period surrounding and following the Riot. This finding is consistent with violence- or health-related risk-averting behavior. Moreover, some of the increase in stay-at-home behavior appeared to continue beyond the days surrounding the protest, consistent with “lockdown conditions” in many quarters of the District in the period leading up to the inauguration of President Biden.

Finally, we explore local and nationwide community spread of COVID-19 following the Capitol riot. To explore local spread in Washington, D.C., we use a synthetic control design, creating a “synthetic Washington” using counties with similar urbanicity rates, COVID-19 policy (and testing) environments, and pre-treatment rates of COVID-19 cases and growth rates. We omit from the donor pool those counties with residents whose smartphones were detected at the Capitol riot on January 6 to avoid spillovers. Our results provide no evidence of community-level COVID-19 spread in the month following the Capitol riot. This may be explained, in part, by risk-averting behavior by local residents and the partial District lockdown.

Then, we use a dose–response “difference-in-differences” approach to explore whether county-level COVID-19 cases spread faster in counties outside of the District that drew larger shares of residents to the protest relative to counties without attendees represented in Washington, D.C. Our results provide evidence that the Capitol riot may have contributed to COVID-19 spread in resident counties with relatively higher inflows of Capitol protest participants. For the highest inflow counties, we find that the Capitol riot was associated with a 0.004 to 0.010 increase in the rate of daily cumulative COVID-19 case growth in the month following the event. We conclude that the Capitol riot may have contributed to non-localized community-level COVID-19 spread.

Together, our findings document the health impact of the January 6 Capitol protests, which contributes to a more complete accounting of the event’s societal impact. Our findings also add to evidence on differences in behavioral responses that may affect contagious disease spread. Among communities that engage in risk avoidance behaviors (i.e., District residents in the face of the January 6 protests, local communities in the face of Black Lives Matter protests, and residents of Tulsa, Oklahoma following President Trump’s June 2020 campaign rally), infectious disease spread may be curbed. On the other hand, large in-person gatherings among individuals and home communities who do not endogenously engage in risk-offsetting behaviors (i.e., 2020 Sturgis Motorcycle Rally participants and 2021 Capitol protest participants) can generate “super spreader” non-localized disease spread.

In addition, we omit from the donor pool those counties with a state capital to ensure that smaller local January 6 protests in state capitals did not contaminate our estimates.
2 Background

Large social/political rallies from each end of the political spectrum — for example, the Summer 2020 Black Lives Matter protests (Dave et al. 2020a) and President Trump’s May 2020 Presidential campaign rally in Tulsa, Oklahoma (Dave et al. 2021a) — have invariably prompted concerns from public health experts of causing COVID-19 superspread. However, neither of these gatherings did. Empirical analyses of each event produced evidence that local residents increased stay-at-home behavior and reduced foot traffic at restaurants and bars in response to perceived increases in the risks of violence and infectious disease contagion associated with the events. These offsetting risk avoidance behaviors, in conjunction with risk avoidance behaviors by gatherers themselves (i.e., temperature taking upon entrance into the Bank of Oklahoma Arena in Tulsa, OK, and mask-wearing among BLM protesters), resulted in no net change in community-level COVID-19 cases.

On the other hand, in the case of the Sturgis Motorcycle Rally in South Dakota, public health experts proved largely correct. In this case, there was evidence of COVID-19 superspread both locally and nationally because there was no offsetting risk avoidance by the local community (Sturgis residents were active participants in the event) and the event attracted a uniquely large gathering (nearly 500,000 individuals) from all corners of the USA with almost no mitigation. Participants largely did not wear masks, did not socially distance, and were permitted to dine and congregate in indoor venues. These conditions, coupled with the scope of the event, facilitated superspread. Similar evidence of COVID-19 spread has been found with local sporting events (Ahammer et al. 2020; Wing et al. 2020) and subsequent Trump rallies (Bernheim et al. 2020), for which there is also little evidence of offsetting mitigation.

At the time of the Capitol Riot, leading public health experts were echoing the CDC Director’s prediction and contended that the conditions set in motion were nearly ideal for COVID-19 superspread (Ellis 2021). However, actual public health impacts of such events are not always clear cut or uniform, and depend on the risk avoidance and mitigation behaviors of both participants as well as non-participants.

How does the Capitol riot compare to these prior events under study? The Capitol riot is unique in a number of ways. On the one hand, like BLM protests, the Stop the Steal rally and subsequent riot was largely an outdoor event, which would tend to mitigate COVID-19 contagion (Wei and Li 2016). Moreover, as was seen with President Trump’s Tulsa campaign rally — as well as with BLM protests — violence- and health-related risk avoidance associated with the Capitol riot (which included heavy media coverage of these threats) could lead to increases in stay-at-home behavior by local District of Columbia residents and less mixing of local residents with non-household members, which would tend to mute community-level COVID-19 spread. And while media reports suggest that thousands of individuals

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6 For instance, Dr. Jonathan Fielding at UCLA told the Washington Post that “If you wanted to organize an event to maximize the spread of COVID it would be difficult to find one better than the one we witnessed” (Ellis 2021).
may have attended the January 6 Capitol protests (Doig 2021), the upper bound estimates of the crowd size (approximately 10,000) was nearly 50 times less than the crowd seen at Sturgis and much closer to the crowd size at President Trump’s May 2020 Tulsa Rally, an event that produced little evidence of COVID-19 superspread. Finally, many areas in the District of Columbia near the Capitol were essentially locked down following the Capitol Rally, as local police and the National Guard sought to restore order and protect elected officials from further attack in the weeks leading to President Biden’s inauguration.

On the other hand, some features of the Capitol riot could lead to a greater risk of spread. First, because some rioters breached the US Capitol Building — leading to crowds gathering indoors — and most protesters did not wear masks, greater COVID-19 spread may be observed with the riot than was seen for prior events. Second, those who were trapped in the Capitol Building fleeing the “insurrection” were unable to socially distance as they sought refuge from physical violence (Chappell 2021). Third, while the events in Tulsa and in cities that held BLM protests appeared to supplant riskier indoor restaurant and bar-going, during the Capitol Riot in early January, the District of Columbia had closed all restaurants and bars for indoor dining, limiting food service to take-out and outdoor dining only (Office of the Mayor, Washington D.C. 2021). Entertainment venues and museums were also closed via the Mayor’s Order 2020–127. Thus, activities supplanted by the protests may not necessarily have been riskier than the protests themselves. Finally, because of the stark dichotomy between the protesters and participants in the riot (who were drawn from the political (far) right and staunch supporters of former President Trump) and the resident population of the District (which leans heavily to the left politically), any localized within-D.C. community spread due to the riot may be quite heterogeneous from the event’s non-localized public health impact as the rioters travel back to their home counties. The reason for this is that social distancing behaviors and compliance with COVID-19 mitigation orders have been strongly associated with political preferences.

Consequently, whether the Capitol riot’s effects on risk averting behavior and COVID-19 spread were larger or smaller than prior prominent large gatherings remains open questions as does the public health impact of the event. Moreover,

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7 Participants in the Capitol Rally of January 6th and the subsequent riot were drawn from the political (far) right, supporters of former President Trump, and studies have documented that jurisdictions with relatively larger shares of Trump voters are much less likely engage in social distancing behavior and to comply with COVID-19 mitigation orders (Kaushal et al. 2022; Barrios and Hochberg 2020).

8 Motivated by the surge in COVID-19 cases in D.C. since Thanksgiving, the Order became effective and paused these activities from 10:00 pm December 23 onwards. Initially scheduled to be lifted at on January 15, the moratorium was further extended, in the aftermath of the Capitol riot, to January 22, two days after the inauguration.

9 Along the same lines, with regard to nationwide superspread, stay-at-home orders and restrictions on restaurants and bars were far more prevalent in early January throughout the USA than in June during the president’s Tulsa campaign rally or during the Sturgis Motorcycle Rally.

10 Notably, jurisdictions with relatively larger shares of Trump voters are much less likely to engage in social distancing behavior and to comply with COVID-19 mitigation orders than jurisdiction with more liberal-leaning and progressive voters (Kaushal et al. 2022; Barrios and Hochberg 2020).
in the process of assessing these effects, our analyses shed further light on how the effects of COVID-19 mitigation policies and in-person gatherings may differ based on political/ideological preferences of the affected community.

3 Data

3.1 SafeGraph data

Our empirical analyses of the effect of the January 6th Capitol riot on mobility and COVID-19 spread make use of two central datasets. The first is the social distancing metrics (SDM) dataset provided by SafeGraph, Inc. These anonymized smartphone data permit us to measure mobility into the areas in which the Capitol protests took place (the Ellipse near the White House, the National Mall, and the US Capitol Building), the home resident counties of those whose smartphones pinged in the jurisdictions where the protests took place, and stay-at-home behavior among residents of the District of Columbia.

We begin our analysis using anonymized cellphone data for the period December 26, 2021, through January 16, 2021, a period that envelopes the Capitol protests. SafeGraph provides data at census-block-group (CBG) level from 45 million anonymized cell phones. These data, which have been widely by economists examining the impacts of stay-at-home orders (Abouk and Heydari 2020; Lasry et al. 2020; Friedson et al. 2021; Dave et al. 2020a, 2021a, 2021b) and large gatherings (Dave et al. 2020b, 2020c, 2022) on stay-at-home behavior, allow researchers to examine mobility behavior tied to home residences.

In the SafeGraph data, an individual’s “home” is defined as the 153-by-153-m area in which his/her smartphone “pinged” most often between the hours of 6:00PM and 7:00AM during a six-week baseline period. Mobility is measured by documenting when (and for how long) an individual smartphone pings outside of their home residence location. While these data can measure stay-at-home behavior at the extensive (i.e., stay-at-home full-time) and intensive (i.e., hours at home or percent of time at home) margins, these data do not permit us to measure other dimensions of social distancing, including social distancing outside of the residence.

Our first purpose in using the SafeGraph data is to explore whether there was an increase in foot traffic in the CBG where the Capitol Riot took place, namely the CBG containing the Ellipse, White House, National Mall, and US Capitol Building. This is our definition of the “core protest CBG.” In addition, we also explore the “protest CBG cluster,” which includes border census block groups to the core protest CBG.

11 To obtain SafeGraph data, see: https://www.safegraph.com/covid-19-data-consortium.
12 These data have been used commonly by the Centers for Disease Control and Prevention.
13 In addition, we would have difficulty measuring mobility for those who work non-standard night shifts. However, any cross-spatial measurement error should not affect our results because we primarily focus on changes within jurisdictions over time.
In Fig. 1, we show the natural log of total pings (panel a) and non-resident pings (panel b) in the core protest CBG, the protest CBG cluster, and all other CBGs in Washington, D.C., during the period from January 1 through January 11. Relative to the period prior to the riot (January 1 through 4), the total number of pings (panel a) in the “core protest CBG” rose by 59 percent on January 5 (a day when many traveled to the rally) and by 675 percent on January 6 when the protest took place. After January 6, we see a sharp decline in smartphone pings. This pattern of smartphone pings is largely driven by non-resident pings (panel b).

A similar pattern is observed when we examine the “protest CBG cluster.” However, in CBGs outside of the protest areas, the increase in smartphone foot traffic is much smaller, though we do note that some protesters undoubtedly traveled in these jurisdictions, accounting for some increases in movement on January 6.

In Fig. 2, we present a map of home counties of individuals who visited the core protest CBG on January 4 (panel a), January 6 (panel b), and January 8 (panel c), capturing the periods before, during, and after the Capitol riot. The heat map reflects the intensity of inflows into the protests. Following Dave et al. (2022), we explore five categories of inflows: high, moderate-high, moderate, low, and none. As illustrated, the events of January 6 (including the protest and certification vote) garnered attendees from all over the USA. While most high inflow counties were in the neighboring jurisdictions (i.e., Prince George’s County, MD; Fairfax County, VA), Harris County, TX, and Wake County, NC, also contributed significant attendees. Moreover, in the moderate-high category, counties in Pennsylvania, California, New York, New Jersey, and Illinois were represented. Attendees at the January 6 events at the Ellipse, National Mall, and Capitol Building were largely not residents of the District of Columbia. Only 2.4 percent of all pings at the core protest CBG were residents of the District. A full 97.6 percent came from outside of D.C., with 75.7 percent coming from outside of D.C., Maryland, and Virginia.

A similar pattern of findings emerges in Fig. 3 where we measure inflows to the core protest CBG by the ratio of total smartphone pings at the protest to total county resident pings overall. As noted in Dave et al. (2022), this measure is designed to control for county population size (to ensure high inflows do not simply capture large populations) and to account for resident smartphone coverage in the SafeGraph data. In the main, the pattern of high and low inflow counties is relatively similar in Fig. 3 as compared to Fig. 2.

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14 High absolute inflows correspond to 30 or more pings (13 counties), moderate-high absolute inflows correspond to 15 to 29 pings (44 counties), moderate inflows correspond to 5 to 14 pings (205 counties), low inflows correspond to 1 to 4 pings (813 counties), and zero inflows correspond to 0 pings (2,061 counties).

15 High relative inflows correspond to 0.0025 or more relative pings (43 counties), moderate-high relative inflows correspond to [0.0005 to 0.0025) relative pings (417 counties), moderate relative inflows correspond to [0.00025 to 0.0005) relative pings (313 counties), low relative inflows correspond to (0 to 0.00025) relative pings (302 counties), and zero relative inflows correspond to 0 pings (2,061 counties).

16 In Appendix Fig. 1, we show a very similar pattern to Fig. 2 if we use smartphone pings in the CBG protest cluster.
The SafeGraph data also permit us to measure stay-at-home behavior among residents of the District of Columbia. Given insights of prior research on risk-averting behavior in response to violence and health risks (Dave et al. 2020a), we measure stay-at-home behavior of residents of the District of Columbia to capture potential compensatory or avoidance behaviors on the part of the local residents.

Our stay-at-home analysis covers a longer window than our “ping” analysis given that the impacts on stay-at-home behavior in the period leading up to President Biden’s inauguration may have been longer-lasting. We use daily data between December 26 and January 16 (using two-day rolling averages) on two measures of stay-at-home behavior from the SafeGraph data: full-time stay-at-home, which measures the mean percent of smartphones that ping exclusively at the home residence for the entire day, and percent of time spent at home, which measures the percent of time that the smartphone pings at the home residence. In Washington, D.C., we find that in the days leading up to the protest/certification of President Biden’s victory (January 1 through 4), 39.0 percent of District residents remained at home full-time. During the period from January 5 (an important arrival day for protesters, as reported in the D.C. media17) through 7, 42.8 percent of D.C. residents stayed at home full-time. The median percent of time rose by 7.5 percentage-points during the same windows. These pre-post trends are consistent with some risk averting behaviors in response to the Capitol protests.

### 3.2 COVID-19 case data

We measure county-level cumulative COVID-19 cases using county-level data collected from state and local health agencies by the New York Times.18 COVID-19 cases are analyzed over the period from December 26, 2020, through February 3, 2021, which includes approximately one month of post-protest COVID-19 data. During this time frame, the mean number of cumulative COVID-19 cases per 100,000 population in the District of Columbia was 4,669.9 cases. An over-four-week post-riot period, while clearly only capturing shorter-run effects, is well beyond the median incubation period for COVID-19 symptoms to emerge (5 days). Thus, during this window, we expect to be able to detect COVID-19 case growth in response to the Capitol riot for the period under study (Lauer et al. 2020). Indeed, studies on the COVID-19 community-spread effects of the Sturgis Motorcycle Rally (Dave et al. 2021b) and spring break travel (Mangrum and Niekamp 2022) have detected differential growth in COVID-19 after two weeks following the end of a large event.

In Fig. 4A, we show trends in weighted cumulative COVID-19 cases per 100,000 population from January 1 through January 20 in high, moderate-high, moderate, low, and no inflow counties, as measured by absolute inflows. And in Fig. 4B, we show smoothed trends in daily cumulative COVID-19 case growth across these

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17 See Carless (2021).
18 To obtain county- and state-level COVID-19 case and mortality data, see: https://github.com/nytimes/covid-19-data.
same inflow counties. In the pre-riot period, the average cumulative COVID-19 case rate per 100,000 population was 5332.3 in high absolute inflow counties and the daily cumulative case growth rate was 0.0101; this compares to 6943.6 cases per 100,000 population and a daily cumulative COVID-19 case growth rate of 0.0087

19 These trends are generated from a best non-linear curve fit applied to high variance day-over-day daily case growth measures in order to better optically document trends over the sample period. (See: https://ggplot2.tidyverse.org/reference/geom_smooth.html). Our regression analyses use the raw, unsmoothed daily growth data.
Panel (a): January 4, 2021 (Before Riot)

Panel (b): January 6, 2021 (Day of Capitol Riot)

Panel (c): January 8, 2021 (After Riot)

Fig. 2 Distribution of home counties for smartphones that “pinged” in the protest CBG on January 4, 6, and 8, 2021: absolute measure. (a) January 4, 2021 (Before Riot), (b) January 6, 2021 (Day of Capitol Riot), (c) January 8, 2021 (After Riot)
Panel (a): January 4 (Before Riot)

Panel (b): January 6 (Day of Riot)

Panel (c): January 8 (After Riot)

Fig. 3 Distribution of home counties for smartphones that “pinged” in the protest CBG on January 4, 6, and 8, 2021: relative measure. (a) January 4 (Before Riot), (b) January 6 (Day of Riot), (c) January 8 (After Riot)
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in non-inflow counties. The patterns across these figures provide some descriptive evidence that, in the post-January 6 period, average COVID-19 cumulative case growth was faster in higher inflow as compared to lower or no inflow counties.

Fig. 4 Trends in COVID-19 cases, by county inflows into the District of Columbia on January 6, 2021. (a) Cumulative COVID-19 Case Rate, (b) Daily Cumulative COVID-19 Case Growth

In the pre-riot period, the average cumulative COVID-19 case rate per 100,000 population was 5332.3 in high relative inflow counties and the daily cumulative COVID-19 case growth rate was 0.0095.
4 Methods

4.1 Effect of January 6 Capitol protest on non-resident travel to event

We begin by estimating the effect of the January 6 Capitol events on total and non-resident cell phone pings in the CBG including the Ellipse, the National Mall, and the US Capitol Building, where the day’s protests as well as the election certification took place. We pool 449 CBGs available in the SafeGraph data in Washington, D.C., over a 12-day period and begin by estimating the following simple difference-in-differences specification:

\[ Y_{gt} = \beta_0 + \sum_p \beta_{1,p} \text{Capitol Protest}_{gp} + \sum_g \beta_{2,g} \alpha_g + \sum_t \beta_{3,t} \tau_t + \epsilon_{gt} \]  

(1)

where \( Y_{gt} \) measures the natural log of the total number of smartphones that pinged in census block group \( g \) in the District of Columbia on day \( t \) and the total number of non-resident smartphones that pinged in census block group \( g \) in the District of Columbia on day \( t \), \( \alpha_g \) is a time-invariant CBG fixed effect, and \( \tau_t \) is a CBG-invariant day effect that controls for intra-day cyclicity in travel behavior in addition to secular trends. Capitol Protest\(_{gp}\) is a set of dummies encompassing the post-treatment period, including a single day dummy for January 6, with \( \beta_{1,p} \) representing the associated vector of coefficients to be estimated. Moreover, given that the Capitol was cleared rapidly following the riots and resumption of the Congressional session to certify the Electoral College Results, we expect that the lagged effect of the protest to fall to zero in the period following January 6. With regard to statistical inference, because we have a single treated CBG in our sample, we conduct permutation-based tests wherein we randomly assign the treatment to each control CBG and estimate the number of times we would expect a treatment effect as large as the “true” treatment effect (Buchmueller et al 2011; Cunningham and Shah 2018).

The fact that our sample is restricted to the District of Columbia creates both advantages and disadvantages. For instance, in terms of unobserved heterogeneity bias, we avoid the possibility that unmeasured District-wide policy shocks could contaminate our estimates. In terms of disadvantages, our control CBGs may see spillover effects on mobility to the extent that non-resident travelers to the January 6 events ping across other CBGs as they travel to the US Capitol, biasing our estimates toward zero. To mitigate some of these behavioral effects, we explore the robustness of our findings to omitting “border” CBGs from the analysis sample. We also explore the sensitivity of our estimates to defining the treatment jurisdictions as the CBG protest cluster.

In addition, to guard against estimates being biased by unmeasured CBG-specific time trends, we augment the right-hand side variables to include CBG-specific time trends:

\[ Y_{gt} = \beta_0 + \sum_p \beta_{1,p} \text{Capitol Protest}_{gp} + \sum_g \beta_{2,g} \alpha_g + \sum_t \beta_{3,t} \tau_t + \sum_g \beta_{4,g} \alpha_g \ast t + \epsilon_{gt} \]  

(2)

where \( \alpha_g \ast t \) is a CBG-specific linear time trend.
Finally, we conduct event study analyses to explore whether mobility patterns were common in the period leading up to the January 6 Capitol events. A pattern of common pre-trends provides at least descriptive evidence in support of the common trends assumption.

4.2 Effect of Capitol protest on stay-at-home behavior and COVID-19

To examine the impact of the January 6 Capitol events on stay-at-home behavior and COVID-19 cases among the District of Columbia’s resident population, we undertake a synthetic control approach (Abadie et al. 2010). Our local COVID-19 spread analysis focuses on the District of Columbia, where the event took place and the location of the largest number of smartphone pings in the SafeGraph data, and covers the period from December 26, 2020, to January 16, 2021.21

To conduct our synthetic control analysis, it is necessary to choose a donor pool and “match” observables to generate our “synthetic Washington D.C.” The District of Columbia includes approximately 700,000 residents within the jurisdiction (U.S. Census Bureau 2019) and according to the U.S. Census has an urbanicity rate of 100 percent (U.S. Census Bureau 2010). Our donor pool is comprised of similar counties that meet the following criteria:

- Counties are not located in Virginia or Maryland, where spillovers are most likely given the distribution of smartphone pings shown in Fig. 2.
- Counties have no residents whose smartphone pings in the core treatment CBG in Washington, D.C., on January 6, 2021.
- The county urbanicity rate was at least 80 percent.
- Counties do not include a state capitol, where local protests may have taken place on January 6 (sensitivity checks).

These restrictions help to select on factors that may be important to COVID-19 spread (Friedson et al. 2021; Dave et al. 2021a, 2021b).22 We also explored the sensitivity of results to alternate urbanicity cutoffs as well as the use of a measure of county population density but our findings were not sensitive to these choices.

In addition to the construction of our donor pool, to further ensure that “synthetic DC” is a credible counterfactual to the District of Columbia, our primary estimation strategy matches on outcomes (stay-at-home behaviors, COVID-19 cases per capita) on each day prior to the January 6 event. We also explore the sensitivity of our synthetic control estimates to use of an alternative matching strategy of matching

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21 This method has been used by several recent studies to investigate how shelter-in-place orders (Friedson et al. 2021; Dave et al. 2020b, 2020c) and large gatherings (Dave et al. 2020a, 2021a, 2021b) have affected stay-at-home behavior, foot traffic, and community-level COVID-19 growth.

22 The imposition of each of these restrictions yields 150 donor counties. The inclusion of counties that include state Capitols yields a donor pool of 154 counties.
on five days of pre-treatment COVID-19 case rates\(^{23}\) and adding observable matching characteristics that could affect COVID-19 case growth (or stay-at-home behavior): the county urbanicity rate, county weighted population density, the number of days a mask-wearing policy was in effect, whether the state had a stay-at-home advisory,\(^ {24}\) whether the state had imposed restrictions on indoor dining/drinking at restaurants and bars, and in the case of COVID-19 cases, a COVID-19 testing rate trend.\(^ {25}\) In supplementary analyses, we show that our findings and the quality of the match remain robust to incorporating additional observable measures such as socioeconomic factors as matching variables.\(^ {26}\) Our synthetic control estimate is then calculated as the difference in average post-treatment COVID-19 cases between the treated jurisdiction and its synthetic control.\(^ {27}\)

### 4.3 Estimating non-localized “superspread” from Capitol riot

To examine the nationwide spread effects of the January 6 Capitol riot, we pool a panel of 3,137 counties and 40 days from all US states except the District of Columbia (which is analyzed in the above local spread analysis) and estimate the following dose–response difference-in-differences (DD) model:

\[
\text{COVIDGrowth}_{ct} = \alpha_0 + \sum \alpha_{k,p} \text{Travelers}_c \ast \text{Post Protest}_p + X_{ct} + \alpha_2 \sum \alpha_{p1} \delta_1 + \sum \alpha_{p3} \gamma_p \ast t + \epsilon_{ct}
\]

\(^{23}\) For stay at home behavior, these days are December 27, December 29, December 31, January 2, and January 4. We allow January 5 (a travel day to attend the event) for stay-at-home behavior to diverge. For our COVID-19 case analysis, these days are December 28, December 30, January 1, January 3, and January 5.

\(^{24}\) Over the sample period, California lifted their stay-at-home advisory and curfew policy. However, given that there were relatively few days of post-treatment data over our analysis period, we treat this policy as time-invariant over our sample window for the synthetic control analysis. However, our results do not qualitatively change with an alternate coding. Our dose–response analysis allows this policy to vary daily.

\(^{25}\) The days on which the testing rate is matched include December 31, January 5, January 15, and January 30.

\(^{26}\) Median household income in D.C. in 2019 was substantially higher ($90,395) than the US average ($68,857), as was the percent of the population with a college degree (58.5% vs. 32.1%); share of White residents is lower in D.C (38.1%) compared to the US average (61.2%). When we compare D.C. to synthetic controls generated across alternate matching strategies — along these and other observable dimensions — these differences are considerably attenuated. D.C. is now largely observationally similar to its synthetic controls, and as shown below the synthetic controls track D.C. virtually identically prior to the riot, across all outcomes that we study.

\(^{27}\) For instance, the unobserved counterfactual for COVID-19 case rate for the District of Columbia is given by $$\sum \{w_j \ast \text{COVID}_{jt}\}$$, where $$w_j$$ is the weight allocated to donor county $$j$$ on day $$t$$. The estimated weights are selected for all pre-treatment days to minimize the absolute difference between $$\sum \{w_j \ast \text{COVID}_{jt}\}$$ and $$\sum \{w_j \ast \text{COVID}_{jt}\}$$. The treatment effect $$\text{COVID}_{jt} - \sum \{w_j \ast \text{COVID}_{jt}\}$$ is assessed for $$t$$ = January 6, February 3, which is used to construct the average treatment effect over the post-treatment window.
where COVID Growth\textsubscript{cst} is the daily growth in cumulative COVID-19 cases (following Courtemanche et al. 2020).\textsuperscript{28} Travelers\textsubscript{c} is a set of seven indicators of intensity of inflows to the core treatment CBGs in Washington, D.C., on January 6 from resident county \textit{c} relative to counties that had zero inflow (reference). These categories correspond to the inflow categories shown in the heat maps depicted in Fig. 2. The PostProtest\textsubscript{p} measure captures lagged windows of the post-treatment period beginning on January 6 and ending February 3, nearly one month following the Capitol riot.\textsuperscript{29, 30} The parameter vector of interest is \(\alpha_{1 \cdot \cdot \cdot \cdot p}\), which represent the impact of the Riot on COVID-19 case growth over various time windows following the event, separately across groups of counties supplying attendees to the riot.

Our controls are as follows: \(X_{st}\) includes the COVID-19 testing rate per 100,000 population, whether the state has a shelter-in-place advisory in effect, whether the state has a mask mandate, and whether the state allows opening of indoor dining for restaurants and bars. Finally, \(\gamma_{c}\) is a time-invariant county effect, \(\tau\) are county-invariant day effects, and \(\gamma_{c \cdot \cdot \cdot t}\) is a county-specific linear time trend. The latter helps to control for differential growth trends of COVID-19 across counties.\textsuperscript{31} Our primary strategy of assessing the common trends assumption is, again, to conduct event study analysis across each of our inflow groups relative to no inflow counties.\textsuperscript{32}

5 Results

Our main findings appear in Table 1 through Table 5 and Fig. 5 through Fig. 9. Supplemental results are shown in the appendix.

5.1 SafeGraph results on mobility

We begin by exploring the impact of the January 6 Capitol riot on mobility. Table 1 presents estimates of \(\beta_{1}\) from Eqs. (1) and (2). We find that relative to non-protest

\textsuperscript{28} In approximately 1 percent of county-days, cumulative COVID-19 cases are reported as falling, likely due to reclassification of cases across time and jurisdictions. In unreported robustness checks, we find that our main findings are qualitatively unchanged if we recode these declines in cumulative cases as missing or use the methodology outlined by Courtemanche et al. (2020) to recode declining county-days to 0 (along with adjacent days of the decline in some cases).

\textsuperscript{29} This model also includes controls for leads for the Capitol riot of up to 10 days prior to the event, mirroring the event studies shown in Figs. 8 and 9. All regressions are weighted by the county population (though we also present unweighted estimates for comparison), and we cluster standard errors at the state level in order to be conservative and allow for correlated errors across counties within each state and over time. Expectedly, county-clustered standard errors are somewhat smaller, and inferences and conclusions are not materially altered.

\textsuperscript{30} As noted above, this post-treatment window captures a period well past the median incubation period (5 days) for COVID-19, and surpasses the point where 99 percent of individuals who are infected would have started showing symptoms (Lauer et al. 2020).

\textsuperscript{31} When we estimated dose response models that excluded county linear time trends, the pattern of results was quite similar to those we report.

\textsuperscript{32} Our main tables and figures present results from weighted dose–response difference-in-differences estimates.
CBGs in the District of Columbia, the total number of pings increased in the core protest CBG by 478 percent on January 6 (panel I, column 1). Following the 6th, the number of pings in the protest CBG fell to match non-protest CBG foot traffic. This result is consistent with police dispersal of protest crowds and the conclusion of Congressional business. Our findings are largely unchanged when we include controls for CBG-specific linear time trends (panel I, column 2).

In panel II, we explore whether the effects we observe in panel I are muted by the inclusion of border CBGs to the core treatment CBG in the control group. Consistent with this hypothesis, we find slightly larger increases in the total number of smartphone pings associated with the January 6 events (panel II, columns 1 and 2).

We find that January 6-induced increases in cell phone pings at the Ellipse, National Mall, and Capitol were largely driven by non-residents of the District (columns 3 and 4). Specifically, we find that the January 6 Capitol riots are associated with a 402 to 452 percent increase in non-resident smartphone pings. Together, the results in Table 1 are consistent with a large protest event at the US Capitol.

Figure 5 shows the event study analyses associated with the main estimates in Table 1. We find that in the period prior to the January 6 Capitol riots, total (panel a) and non-resident (panel b) smartphone pings trended similarly in the treatment and control CBGs. However, on January 6, the day of the election certification and protests, foot traffic in the treatment CBGs rose by almost 500 percent relative to the control CBGs before falling back to statistical equivalence in the days following the protest. A similar pattern of results is detected when we omit CBGs that border the core treatment CBGs from the analysis sample (see panels c and d). These results are consistent with a causal interpretation of the estimates shown in Table 1.

In Fig. 6 and Table 2, we explore whether there was local risk averting behavior in response to the January 6 riot. Specifically, we examine the impact of the January 6 Capitol riot on stay-at-home behavior by local residents of the District of Columbia. Panel (a) shows synthetic control estimates on full-time stay-at-home behavior when we generate “synthetic D.C.” by matching on each pre-treatment day of the outcome under study. Our results show that D.C. and synthetic D.C. track each other nearly identically in the pre-treatment period. However, beginning on the day on which many non-resident protesters arrived in the city (January 5) and continuing/peaking on the day of the protest (January 6), we see that full-time stay-at-home behavior sharply rises in the District of Columbia relative to its synthetic control. The largest divergence in full-time stay-at-home behavior is seen between January 5 and 7 before converging again.

When we examine median percent of time at home (panel b), we also see a relative increase in stay-at-home behavior among local District residents, though this

33 The effect is $e^{1.755} - 1 = 4.78 = 478\%$.
34 In Appendix Table 1, we show estimated effects when we include border CBGs as part of the treatment group.
35 We note that in this model, Denver, CO, which had a state Capitol protest on January 6, is a minority “matching county” for Washington, D.C. This could bias estimated stay-at-home behavior toward zero if there were risk-averting behavior in Denver as well. In a subsequent specification shown in Table 2 that excluded Denver, CO, from the donor pool, we detect a qualitatively similar pattern of results.
increase appears to be more “long-term,” perhaps suggesting that the intensive margin of stay-at-home behavior is affected by the riot and its aftermath. Indeed, Washington, D.C., appeared to enter “virtual lockdown” in the turbulent period leading to President Biden and Vice President Kamala Harris’s inauguration on January 20 (Baldwin et al. 2021) and the moratorium on indoor dining and other restrictions as per the Mayor’s Order were extended to two days following the inauguration.

In panels (c) and (d) of Fig. 6, we repeat the exercise with an alternate matching procedure, matching on the pre-treatment outcome on every other pre-treatment day, beginning on December 26 and adding matching controls for: the county urbanicity rate, county population density, the average state COVID-19 testing trend, and the number of days the state had a mask mandate, a stay-at-home order, and banned indoor dining/drinking at restaurants and bars. Our synthetic control results in panels (c) and (d) produce a pattern of results similar to panels (a) through (b), and consistent with the hypothesis of risk averting behavior in response to the riot.

Table 2 shows synthetic control estimates of the effect of the Capitol riot on stay-at-home behavior. Columns (1) and (3) correspond to the panels shown in Fig. 6. Column (2) shows results from a model that matches on the outcome in every other pre-treatment day plus the county urbanicity rate and population density. And in column (4), we drop counties that included a state Capitol, which may have had a local protest scheduled at a State House (Cremen 2021; Reuters 2021). Across
these specifications, we show that the Capitol riots are associated with a 3.6 to 4.5 percentage-point increase in full-time stay-at-home behavior during the January 5 to 6 period. Standard permutation-based $P$-values do not allow us to definitively claim that this difference is statistically distinguishable from zero at conventional levels though this pattern is suggestive.

Turning to median percent of time at home (columns 5–8), we find consistent evidence that the riot led to longer-run risk averting behavior. We find that the riot was associated with a 9 to 11 percentage-point increase in median percent of time at home among D.C. residents during the January 5 to 6 period ($P$-values = 0.02 to 0.07). Moreover, there is evidence that the effect on median percent time at home persists and increases over the longer run as well (January 7 and later). This is consistent with the “virtual lockdown” in Washington, D.C., following the Capitol riot in the period leading up to President Biden’s inauguration.

36 This finding of an increase in social-distancing behavior is robust to additionally matching on socioeconomic and demographic characteristics (median household income, percent of the population that is non-Hispanic white, percent college graduates) (see Appendix Fig. 3, panel A) and allowing the matching algorithm to place a larger weight on the vector of observables relative to pre-treatment outcomes. It is validating that the alternate synthetic control tracks D.C. very similarly prior to the riot, and the estimates continue to indicate a marked divergence and an increase in stay-at-home behaviors (on the order of 2.1 to 4.1 percentage points) in D.C. relative to the counterfactual, over the period following the riot.
Political violence, risk aversion, and population health:

Together, the findings in Fig. 6 and Table 2 are consistent with the hypothesis of risk-averting increases in stay-at-home behavior in D.C. This result may suggest that any community-level spread of COVID-19 in the District may be muted. We explore this below.

5.2 COVID-19 spread in the District of Columbia

In Fig. 7 and in Table 3, we explore whether the Capitol riots contributed to local community spread of COVID-19. Panel (a) of Fig. 7 shows synthetic control estimates for the model where we match on all pre-treatment days of cumulative COVID-19 cases while panel (b) shows estimates where we match on every other pre-treatment day beginning on December 26 as well as on other predictors of community spread described above. Across both sets of figures, we find very little evidence that the Capitol riot led to significant COVID-19 spread in the District up to approximately one month following the riot.

Table 3 presents the synthetic control estimates of the effect of the Capitol riots on cumulative COVID-19 cases (columns 1 through 4) as well as the natural log of cumulative COVID-19 cases (columns 5 through 8). Panel I shows a single estimate over the full post-treatment period, while panel II divides the post-treatment period into windows that capture the early (January 6–12) and later (January 13 to 19) 14-day-incubation period and the post-incubation period (January 20 and later). Across specifications focusing on COVID-19 case levels (columns 1 through 4), we generally find that over the full post-treatment period, the Capitol riot was associated with a statistically insignificant and economically small decline in COVID-19 cases per 1,000
Table 2  Synthetic control estimates of effect of Capitol riot on stay-at-home behavior among local residents

|                      | Percent staying at home full-time | Median percent time at home |
|----------------------|----------------------------------|------------------------------|
|                      | (1) (2) (3) (4)                  | (5) (6) (7) (8)              |
| Panel I: Full post-treatment period |                                |                              |
| Capitol riot         | 2.216 1.946 1.949 2.242          | 7.143 5.508* 6.876* 7.633** |
| P-value              | [0.826] [0.716] [0.688] [0.689]  | [0.431] [0.165] [0.083] [0.047] |
| One-sided P-value    | [0.394] [0.367] [0.349] [0.377]  | [0.165] [0.092] [0.055] [0.028] |
| Pre-treatment mean of DV | 36.06 36.06 36.06 36.06         | 72.38 72.38 72.38 72.38      |
| Panel II: Lagged post-treatment windows |                                |                              |
| Capitol riot (1/5 to 1/6) | 4.154 3.641 3.644 4.502          | 11.558 9.655** 11.876** 12.321** |
| P-value              | [0.606] [0.394] [0.367] [0.349]  | [0.321] [0.073] [0.037] [0.038] |
| One-sided P-value    | [0.303] [0.211] [0.202] [0.189]  | [0.119] [0.037] [0.028] [0.028] |
| Capitol riot (1/7 +) | 1.828 1.607 1.609 1.790          | 6.260 4.679 5.876* 6.696**   |
| P-value              | [0.853] [0.789] [0.780] [0.755]  | [0.450] [0.220] [0.092] [0.075] |
| One-sided P-value    | [0.422] [0.404] [0.385] [0.406]  | [0.165] [0.119] [0.064] [0.038] |
| Pre-treatment mean of DV | 36.06 36.06 36.06 36.06         | 72.38 72.38 72.38 72.38      |

Matching variables

|                      | All pre-treatment days | Match on 12/27, 12/29, 12/31, 1/2, 1/4 outcome, urbanicity, restaurant/bar closure | Match on stay-at-home advisory, mask mandate, curfew mandate | State Capitol counties omitted |
|----------------------|------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------|-------------------------------|
|                      | Yes                    | No                                                                                   | No                                                               | No                            |
|                      | No                     | Yes                                                                                   | Yes                                                              | Yes                           |
|                      | No                     | No                                                                                   | Yes                                                              | No                            |
|                      | No                     | No                                                                                   | Yes                                                              | Yes                           |

*Significant at the 10% level
**Significant at the 5% level
***Significant at the 1% level

Notes: The donor pool is comprised of counties with urbanicity rate above 80%, and excludes counties in border states, as well as counties with any residents that pinged in the census block group of the United States Capitol Building on 1/6
residents in the District during the full post-treatment window (panel I). These estimated effects are not statistically distinguishable from zero using permutation-based \( P \)-values generated from placebo tests. In columns (5) through (8), we use the natural log of COVID-19 cases as the outcome measure. Note that by matching on pre-riot days of the \( \log \) COVID-19 cases, we assure that “synthetic D.C.” has the same rate of pre-riot COVID-19 case growth as the District. Our pattern of findings is very similar.

In panel II, we explore the longer-run impact on community-level COVID-19 spread to be sure that our findings do not mask important divergence on COVID-19 case growth in the post-14-day incubation period. We continue to find little evidence that the riot increased COVID-19 spread in the near month-long period following the riot.\(^{37}\)

### 5.3 Local COVID-19 spread and mobility: capitalizing on within-D.C. variation

As a check on the robustness of our localized findings for D.C., we undertake an alternate yet complementary DD approach by exploiting sub-District variation in exposure to the riot. Specifically, if the Capitol riot increased risk-averting

\(^{37}\) Appendix Fig. 3 (panel B) shows trends in confirmed cases between DC and an alternate synthetic control, generated from additional matching on socio-economic and demographic characteristics. The results continue to show no evidence that the Capitol riot led to increased COVID-19 spread in D.C.
Table 3  Synthetic control estimates of effect of Capitol riot on cumulative COVID-19 cases per 100,000 population

| Panel I: Full post-treatment period | Cases per 100,000 population | Log (cases per 100,000 population) |
|------------------------------------|------------------------------|-----------------------------------|
|                                    | (1)                          | (2)                               | (3)      | (4)      | (5)      | (6)      | (7)      | (8)      |
| Full Capitol riot treatment effect (1/6–1/21) | –20.381                      | –24.016                           | –28.850  | –12.726  | –0.001   | –0.005   | –0.005   | –0.016   |
| P-value                            | [0.936]                      | [0.899]                           | [0.807]  | [0.915]  | [0.853]  | [0.835]  | [0.761]  | [0.679]  |
| One-sided P-value                  | [0.349]                      | [0.596]                           | [0.651]  | [0.594]  | [0.459]  | [0.615]  | [0.670]  | [0.387]  |
| Pre-treatment mean of DV           | 4130.0                       | 4130.0                            | 4130.0   | 4130.0   | 8.33     | 8.33     | 8.33     | 8.33     |

| Panel II: Lagged post-treatment windows | Cases per 100,000 population | Log (cases per 100,000 population) |
|----------------------------------------|------------------------------|-----------------------------------|
| First post-treatment window (1/6–1/12) | 5.653                        | –27.968                           | –58.875  | –25.394  | –0.007   | –0.014   | –0.013   | –0.014   |
| P-value                                | [0.881]                      | [0.706]                           | [0.394]  | [0.642]  | [0.661]  | [0.312]  | [0.394]  | [0.387]  |
| One-sided P-value                      | [0.321]                      | [0.706]                           | [0.817]  | [0.745]  | [0.560]  | [0.853]  | [0.844]  | [0.236]  |
| Middle post-treatment window (1/13–1/19) | –29.561                      | –45.838                           | –56.750  | –31.152  | –0.006   | –0.011   | –0.011   | –0.019   |
| P-value                                | [0.853]                      | [0.789]                           | [0.706]  | [0.811]  | [0.761]  | [0.706]  | [0.734]  | [0.528]  |
| One-sided P-value                      | [0.294]                      | [0.633]                           | [0.679]  | [0.642]  | [0.495]  | [0.679]  | [0.670]  | [0.292]  |
| Longer-run post-treatment window (1/20+) | –28.246                      | –11.988                           | –1.818   | 1.785    | 0.004    | 0.001    | 0.002    | –0.015   |
| P-value                                | [0.927]                      | [0.917]                           | [0.917]  | [0.915]  | [0.862]  | [0.908]  | [0.807]  | [0.698]  |
| One-sided P-value                      | [0.339]                      | [0.569]                           | [0.578]  | [0.575]  | [0.440]  | [0.596]  | [0.661]  | [0.406]  |
| Pre-treatment mean of DV              | 4130.0                       | 4130.0                            | 4130.0   | 4130.0   | 8.33     | 8.33     | 8.33     | 8.33     |

Matching variables

| All pre-treatment days | Yes | No | No | No | Yes | No | No | No |
| Match on 12/28, 12/30, 1/1, 1/3 | No | Yes | Yes | Yes | No | Yes | Yes | Yes |
| Urbanicity, pop-density, testing trend, restaurant/bar closure, pre-1/6 SAH behavior | Match on stay-at-home advisory, mask mandate, curfew | No | No | Yes | Yes | No | No | Yes | Yes |
| State Capitol counties omitted | No | No | No | Yes | No | No | Yes | No |

*Significant at the 10% level
**Significant at the 5% level
***Significant at the 1% level

Notes: The donor pool is comprised of counties with urbanicity rate above 80%, and excludes counties in border states, as well as counties with any residents that pinged in the census block group of the US Capitol Building on 1/6
stay-at-home behaviors among non-participating local residents, it is plausible to expect more pronounced effects in certain D.C. jurisdictions surrounding the Capitol riot than in D.C. jurisdictions further away. To implement this DD strategy and capitalize on within-D.C. variation in the intensity of the “treatment,” we turn to two wards within the District: Wards 2 and 6. These are sub-D.C. jurisdictions (there are a total of 8 Wards in D.C.) in which we might plausibly expect differentially greater stay-at-home responses because these wards have substantial residential populations (approximately 25 percent of the total D.C. population) and more closely envelop the areas where the Capitol Riot occurred.38

In identifying differential effects for Wards 2 and 6 — the sub-section of D.C. that is likely to have elicited a larger response to the Riot — we choose two sets of controls: (1) CBGs outside of Wards 2 and 6 in D.C. as well as in Maryland and Virginia and (2) CBGs outside of Wards 2 and 6 in D.C. and in the surrounding metropolitan area. Our findings from this analysis produce consistent evidence of risk avoidance behaviors by those jurisdictions most intensely exposed to and treated by the Capitol riot. First, with regard to full-time stay-at-home behavior (Appendix Fig. 4A), there is little evidence of any differential pre-treatment trends across treatment and control CBGs. In contrast, following the riot, we detect a large, statistically significant 7 percentage-point increase in full-time stay-at-home behavior on the day of and following the Capitol riot in Wards 2 and 6 CBGs relative to comparison jurisdictions. This effect size is roughly similar across our two control groups. Moreover, in each case, the magnitude of this effect drops to about 50 percent of its initial size in subsequent days, but still remains significantly above the rate of full-time stay-at-home behavior in the control CBGs. With regard to median percent time spent at home (Appendix Fig. 4B), there is also evidence of an increase in relative stay-at-home behavior following the riot, though there is more evidence of an anticipatory effect as well, perhaps reflecting intensive margin risk-avoiding behavior in response to intense media coverage surrounding the upcoming riot.

It is validating that, after zeroing in on the sub-areas of D.C. that would plausibly be expected to elicit the largest behavioral responses on social distancing and stay-at-home behaviors, we find very consistent evidence of such a response based on a DD estimation strategy as with our main synthetic control analyses applied to all of D.C. That we detect a marked increase in social distancing behaviors is especially notable given the potential attenuation of these effects. This is because residents of “comparison jurisdictions” are also likely affected by the Capitol riot since (1) many of the precautionary policies enacted in the District in the lead up to and following the protests applied to all residents of the District, (2) residents of comparison jurisdictions may be employed by entities tied to the treatment jurisdictions (i.e., agencies of the executive and legislative branches of the federal government, and (3) residents of comparison jurisdictions are in the same media markets as residents of treatment jurisdiction, and are therefore exposed to similar information about the Capitol riot and its potential public health effects.

To explore whether there was COVID-19 spread in jurisdictions within D.C. that were most exposed to the riot, we collect ward-specific COVID-19 data from the

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38 Appendix Fig. 2 shows a map of D.C. and the greater metropolitan area, along with the CBGs in Wards 2 and 6 within D.C. where one might expect larger behavioral responses.
5.4 Non-localized spread of COVID-19 cases

Our results showing no evidence of localized infection spread in D.C. could suggest that this specific event had no impact on infections, or that self-protective behaviors among D.C. residents restrained this spread. The increase in social-distancing behaviors within the resident D.C. population is consistent with the latter explanation and points to the important role played by risk-avoidance behaviors. This risk avoidance may not be especially surprising given that the D.C. population has a substantial share of registered Democrats, who are more likely to engage in COVID-19 mitigating behaviors (Kaushal et al. 2022; Barrios and Hochberg 2020). But is this the case in the counties from which Trump supporters traveled to the District?

In order to further tease out the channels, we widen the lens and assess the degree to which the Capitol riots of January 6 contributed to COVID-19 spread in counties with relatively higher inflows of attendees to the Capitol protests. For this purpose, we exclude the District of Columbia from the analysis sample, as this jurisdiction was examined in our local spread analysis above. We use our dose–response difference-in-differences model (Eq. 3) to assess whether counties with relatively higher numbers of residents attending Capitol events saw greater COVID-19 spread following the event, when many protesters returned home. Figure 8 and Table 4 present the results of this exercise.

Figure 8 presents event-study analyses of the effect of absolute inflows into the Capitol events of January 6 on cumulative daily COVID-19 case growth in attendees’ resident counties. Note that the estimates show COVID-19 effects relative to counties with no inflows to the Capitol on January 6. Our event study results show little evidence of differential pre-treatment county-level COVID-19 case growth trends, consistent with the hypothesis that the treatment and control counties were quite similar in the days leading up to the Capitol Rally. Moreover, we find that across the lowest inflow groups, there is very little evidence of more rapid

39 To obtain these data, see: https://opendata.dc.gov/datasets/dc-covid-19-cases-by-ward/explore.
40 We note that, to the best of our knowledge, there were no important Ward-specific COVID-19 policies implemented in the District of Columbia, outside of specific road closures in the period between the Capitol riot and the inauguration of newly-elected President Biden. Nevertheless, to account for any local supply-side responses with respect to private business closures or decisions regarding in-person vs. hybrid school attendance across communities, we draw on point-of-interest (POI) data from SafeGraph, Inc., which allow us to measure county-by-day smartphone foot traffic (number of smartphone “pings”) at specific locations as identified by five-digit NAICS codes. We focus on smartphone foot traffic at “private business services” and “schools” to capture areas where there may be local activity in policy or community responses. Our estimates for social distancing behaviors (Appendix Table 2) and localized community spread within D.C. (Appendix Table 3) are robust to further matching on these granular controls for localized movements. Additionally, matching on county-level movements at private businesses and schools does not change the finding of no discernible or substantial localized community spread based on our synthetic control estimates (see Appendix Fig. 6).
COVID-19 case growth, including in the period following COVID-19’s full 14-day incubation period and even up to three or more weeks following the Rally. However, in the highest inflow counties, we find that the Capitol riot is associated with a 0.004 to 0.010 increase in daily cumulative COVID-19 case growth. The effects begin in the period including the 50th to 75th percentile of the incubation period for COVID-19 and continue through approximately one month following the riot.

Table 4 presents the lagged effects of absolute Capitol riot inflows on COVID-19 case growth. Column (1) includes the full set of fixed effects and county linear time trends and column (2) adds the observable control variables mentioned above. Across these specifications, we find consistent evidence that COVID-19 cases grew faster in higher inflow counties relative to counties that did not contribute any protest participants. In our most saturated specification (column 2), we find that the riot was associated with a 0.004 to 0.010 increase in daily COVID-19 case growth.\footnote{For high absolute inflow counties, we estimate a pre-riot cumulative COVID-19 daily case growth mean of 0.0101. For high relative inflow counties, we estimate a pre-riot cumulative COVID-19 case growth rate mean of 0.0095.} \footnote{In Appendix Table 4, we replicate columns (1) and (2) of Table 4 using the inverse hyperbolic sine transformation of daily COVID-19 cases. While less precisely estimated, the results are qualitatively similar to those shown in Table 4.} In column (3), we omit counties
### Table 4 Dose–response difference-in-differences estimates of the effect of the Capitol Riot on daily rate of cumulative COVID-19 case growth

|                        | Absolute inflow | Relative inflow |
|------------------------|-----------------|-----------------|
|                        | (1)            | (2)            | (3) | (4)    | (5)    | (6)    |
| **Panel I: Counties with high inflow** |                |                |     |        |        |        |
| January 6–8 (0–2 days after Capitol riot) | $-0.002$ | $-0.002$ | $-0.001$ | $0.001$ | $0.001$ | $0.001$ |
|                         | $(0.001)$ | $(0.0014)$ | $(0.001)$ | $(0.001)$ | $(0.001)$ | $(0.001)$ |
| January 9–13 (3–7 days after Capitol riot) | $0.004^{**}$ | $0.004^{**}$ | $0.005^{***}$ | $0.006^{***}$ | $0.006^{***}$ | $0.005^{***}$ |
|                         | $(0.002)$ | $(0.002)$ | $(0.001)$ | $(0.002)$ | $(0.002)$ | $(0.001)$ |
| January 14–15 (8–9 days after Capitol riot) | $0.007^{*}$ | $0.007^{*}$ | $0.008^{**}$ | $0.006^{**}$ | $0.006^{**}$ | $0.005^{**}$ |
|                         | $(0.003)$ | $(0.003)$ | $(0.003)$ | $(0.002)$ | $(0.002)$ | $(0.002)$ |
| January 16–19 (10–13 days after Capitol riot) | $0.008$ | $0.008^{*}$ | $0.011^{***}$ | $0.011^{***}$ | $0.011^{***}$ | $0.010^{***}$ |
|                         | $(0.004)$ | $(0.004)$ | $(0.002)$ | $(0.003)$ | $(0.003)$ | $(0.003)$ |
| January 20–23 (14–17 days after Capitol riot) | $0.007^{*}$ | $0.007^{*}$ | $0.008^{**}$ | $0.008^{**}$ | $0.008^{**}$ | $0.007^{**}$ |
|                         | $(0.003)$ | $(0.003)$ | $(0.001)$ | $(0.003)$ | $(0.003)$ | $(0.003)$ |
| January 24–26 (18–20 days after Capitol riot) | $0.010^{*}$ | $0.011^{*}$ | $0.013^{***}$ | $0.011^{**}$ | $0.012^{***}$ | $0.011^{**}$ |
|                         | $(0.004)$ | $(0.004)$ | $(0.002)$ | $(0.003)$ | $(0.003)$ | $(0.003)$ |
| January 27+(21+ days after Capitol riot) | $0.010^{*}$ | $0.010^{*}$ | $0.013^{***}$ | $0.012^{**}$ | $0.012^{**}$ | $0.011^{**}$ |
|                         | $(0.005)$ | $(0.005)$ | $(0.002)$ | $(0.004)$ | $(0.004)$ | $(0.004)$ |
| **Panel II: Counties with moderate-high inflow** |                |                |     |        |        |        |
| January 6–8 (0–2 days after Capitol riot) | $-0.001$ | $-0.001$ | $-0.000$ | $-0.001$ | $-0.001$ | $-0.0004$ |
|                         | $(0.0015)$ | $(0.002)$ | $(0.001)$ | $(0.002)$ | $(0.002)$ | $(0.002)$ |
| January 9–13 (3–7 days after Capitol riot) | $0.001$ | $0.001$ | $0.001$ | $0.001$ | $0.001$ | $0.001$ |
|                         | $(0.001)$ | $(0.001)$ | $(0.001)$ | $(0.002)$ | $(0.002)$ | $(0.002)$ |
| January 14–15 (8–9 days after Capitol riot) | $0.000$ | $0.001$ | $0.001$ | $0.001$ | $0.001$ | $0.001$ |
|                         | $(0.002)$ | $(0.001)$ | $(0.002)$ | $(0.002)$ | $(0.002)$ | $(0.002)$ |
| January 16–19 (10–13 days after Capitol riot) | $0.002$ | $0.002$ | $0.002$ | $0.003$ | $0.003$ | $0.003$ |
|                         | $(0.002)$ | $(0.002)$ | $(0.002)$ | $(0.003)$ | $(0.003)$ | $(0.003)$ |
| January 20–23 (14–17 days after Capitol riot) | $0.001$ | $0.001$ | $0.001$ | $0.003$ | $0.003$ | $0.003$ |
|                         | $(0.001)$ | $(0.002)$ | $(0.002)$ | $(0.003)$ | $(0.003)$ | $(0.003)$ |
| January 24–26 (18–20 days after Capitol riot) | $0.003$ | $0.003$ | $0.003$ | $0.004$ | $0.004$ | $0.005$ |
|                         | $(0.002)$ | $(0.003)$ | $(0.003)$ | $(0.003)$ | $(0.003)$ | $(0.003)$ |
| January 27+(21+ days after Capitol riot) | $0.003$ | $0.003$ | $0.003$ | $0.005$ | $0.005$ | $0.006$ |
|                         | $(0.003)$ | $(0.003)$ | $(0.003)$ | $(0.004)$ | $(0.004)$ | $(0.004)$ |
| **Panel III: Counties with moderate inflow** |                |                |     |        |        |        |
| January 6–8 (0–2 days after Capitol riot) | $-0.002$ | $-0.002$ | $-0.002$ | $-0.001$ | $-0.001$ | $-0.002$ |
|                         | $(0.001)$ | $(0.001)$ | $(0.002)$ | $(0.002)$ | $(0.002)$ | $(0.002)$ |
| January 9–13 (3–7 days after Capitol riot) | $-0.001$ | $-0.000$ | $-0.001$ | $-0.001$ | $-0.001$ | $-0.001$ |
|                         | $(0.001)$ | $(0.001)$ | $(0.002)$ | $(0.002)$ | $(0.002)$ | $(0.002)$ |
| January 14–15 (8–9 days after Capitol riot) | $-0.002$ | $-0.002$ | $-0.002$ | $-0.002$ | $-0.001$ | $-0.002$ |
|                         | $(0.002)$ | $(0.002)$ | $(0.001)$ | $(0.002)$ | $(0.002)$ | $(0.002)$ |
| January 16–19 (10–13 days after Capitol riot) | $-0.000$ | $0.000$ | $-0.000$ | $-0.000$ | $0.000$ | $-0.001$ |
|                         | $(0.002)$ | $(0.002)$ | $(0.001)$ | $(0.002)$ | $(0.002)$ | $(0.002)$ |
### Table 4  (continued)

|                          | Absolute inflow | | Relative inflow | | |
|--------------------------|-----------------|-----------------------------------------------------|
|                          | (1)            | (2)                  | (3)              | (4)               | (5)               | (6)               |
| January 20–23 (14–17 days after Capitol riot) | −0.001          | −0.001                | −0.001           | −0.000            | −0.000            | −0.001            |
|                          | (0.001)        | (0.002)               | (0.0012)        | (0.002)          | (0.002)          | (0.002)          |
| January 24–26 (18–20 days after Capitol riot) | −0.001          | 0.000                 | −0.000           | 0.000             | 0.001             | −0.000           |
|                          | (0.002)        | (0.002)               | (0.001)         | (0.002)          | (0.002)          | (0.002)          |
| January 27+(21+ days after Capitol riot) | −0.001          | −0.001                | −0.001           | 0.000             | 0.000            | −0.001           |
|                          | (0.002)        | (0.002)               | (0.002)         | (0.002)          | (0.003)          | (0.003)          |

**Panel IV: Counties with low inflow**

|                          | Absolute inflow | | Relative inflow | | |
|--------------------------|-----------------|-----------------------------------------------------|
|                          | (1)            | (2)                  | (3)              | (4)               | (5)               | (6)               |
| January 6–8 (0–2 days after Capitol riot) | −0.001          | −0.001                | −0.001           | −0.002            | −0.002            | −0.002            |
|                          | (0.001)        | (0.001)               | (0.001)         | (0.001)          | (0.001)          | (0.001)          |
| January 9–13 (3–7 days after Capitol riot) | 0.001           | 0.001                 | 0.001           | 0.000             | 0.001             | 0.001             |
|                          | (0.001)        | (0.001)               | (0.002)         | (0.001)          | (0.001)          | (0.001)          |
| January 14–15 (8–9 days after Capitol riot) | −0.000          | 0.000                 | −0.000           | −0.001            | −0.000            | −0.000            |
|                          | (0.002)        | (0.002)               | (0.002)         | (0.001)          | (0.002)          | (0.002)          |
| January 16–19 (10–13 days after Capitol riot) | 0.001           | 0.001                 | 0.001           | 0.001             | 0.001             | 0.001             |
|                          | (0.002)        | (0.002)               | (0.002)         | (0.002)          | (0.002)          | (0.002)          |
| January 20–23 (14–17 days after Capitol riot) | 0.001           | 0.001                 | 0.001           | −0.000            | 0.000             | 0.000             |
|                          | (0.002)        | (0.002)               | (0.002)         | (0.002)          | (0.002)          | (0.002)          |
| January 24–26 (18–20 days after Capitol riot) | 0.002           | 0.002                 | 0.002           | 0.001             | 0.001             | 0.001             |
|                          | (0.002)        | (0.002)               | (0.002)         | (0.002)          | (0.002)          | (0.002)          |
| January 27+(21+ days after Capitol riot) | 0.002           | 0.002                 | 0.002           | 0.001             | 0.001             | 0.001             |
|                          | (0.002)        | (0.002)               | (0.002)         | (0.002)          | (0.002)          | (0.002)          |

**Observable policy & testing controls**

|                          | Absolute inflow | | Relative inflow | | |
|--------------------------|-----------------|-----------------------------------------------------|
|                          | (1)            | (2)                  | (3)              | (4)               | (5)               | (6)               |
| State Capitol counties omitted | No            | No                    | Yes              | No                | No                | Yes               |
| \textit{N}              | 125,400        | 125,400               | 123,400          | 125,400           | 125,400           | 123,400           |
| Baseline outcome mean—high inflow | 0.010         | 0.010                  | 0.010            | 0.010             | 0.010             | 0.010             |
| Baseline outcome mean—moderate-high inflow | 0.014       | 0.014                 | 0.014            | 0.012             | 0.012             | 0.012             |
| Baseline outcome mean—moderate inflow | 0.011       | 0.011                | 0.011           | 0.012             | 0.011             | 0.011             |
| Baseline outcome mean—low inflow | 0.011         | 0.011                 | 0.011            | 0.012             | 0.012             | 0.012             |

* Significant at the 10% level
** Significant at the 5% level
*** Significant at the 1% level

Note: Standard errors are clustered at the state level. All estimates include county and day fixed effects as well as county-specific linear time trends.
from the sample that include state capitols where there may have been, albeit smaller, protests. Our results show a slightly larger increase in daily COVID-19 case growth, reaching 0.013 in the longest lag window (21 or more days following the riot).\textsuperscript{43}

To place these magnitudes into context, we can compare them to the average rates of COVID-19 growth during the week leading up to the first set of lockdown orders over the first COVID-19 wave (March 10 through March 20; mean daily growth of 0.2762), the period at the start of the second US wave (June 15 through July 1; mean daily growth of 0.0237), and the period at the start of the third US wave (October 15 through October 29; mean daily growth of 0.0091). The estimated increases in community spread (in percentage-point terms, in high inflow Capitol riot counties, 2–3 weeks after the Capitol riot) amount to about a one percentage point increase, which is substantially lower than the average county growth seen during the early weeks of the pandemic’s first wave, but similar to the average growth that counties were experiencing during the third wave (starting in the fall). Moreover, compared to the average daily growth in confirmed cases during the week immediately preceding the riot (shown at the bottom of Table 4), the non-localized spread from the riot amounts to almost doubling the growth in infections in the high-inflow counties in 2–3 weeks following the event.

To ensure that the estimates shown in columns (1) through (3) of Table 4 were not driven by high population counties or by idiosyncratic SafeGraph coverage differences across counties, we next use our relative inflow measure that normalizes absolute inflows by the total resident pings in the county. Figure 9 shows event-study analyses of the effects of relative inflows into the US Capitol on the natural log of COVID-19 cases. Consistent with our absolute inflow measure, we find no evidence that COVID-19 grew faster in lower inflow counties relative to counties without inflows. However, in moderate-high and high inflow counties, we find consistent evidence that the Capitol riot was associated with an increase in daily COVID-19 case growth, beginning in the period after the median incubation period of COVID-19 and continuing through approximately one month following the rally.

In columns (4) through (6) of Table 4, we show dose–response estimates using the relative inflow measure. We find that in moderate-high and high inflow counties, the riot was associated with a 0.006 to 0.011 increase in COVID-19 case growth. These findings, consistent with our absolute inflow results, suggest that the January 6 Capitol events contributed to non-localized COVID-19 spread and generated potentially important public health costs.\textsuperscript{44, 45}

\textsuperscript{44} The estimates shown in Table 4 are weighted using the county population. In Appendix Table 7, we show results from unweighted regressions. The pattern of results is qualitatively similar.

\textsuperscript{45} In Appendix Table 8A and B, we explore the impact of the Capitol Riot on COVID-19-related deaths. Consistent with our findings on COVID-19 cases in the District of Columbia, we find no evidence that the riot contributed to additional local COVID-19 deaths. However, while imprecisely estimated, our dose response results suggest that the riot may have contributed to increased non-localized COVID-19-related mortality.
Could home county mitigating policies have blunted non-localized COVID-19 spread from the Capitol riot? In Table 5, we explore whether the effects of the Capitol riot on nationwide spread differed by whether, on January 6, the state had imposed restrictions on indoor dining at restaurants or bars (capacity constraints or outright bans). There is evidence that indoor dining/drinking among non-household members may play an important role in the spread of COVID-19 (Courtemanche et al. 2020; Dave et al. 2021b, 2022). In the context of other large gatherings involving participants who have traveled long distances, community-level spread of COVID-19 when protesters return home appears to be muted by mitigation policies such as restrictions on indoor dining at restaurants (Dave et al. 2021b). Thus, in Table 5, we interact Travelers with an indicator for whether the state restricted indoor dining or drinking at restaurants or bars and required mask wearing in public places. For our absolute inflow measure, the strongest mitigation policy for which we have sufficient variation for identification in our highest inflow category is a state mandate for partial (or greater) restrictions on indoor dining at restaurants and drinking at bars. For our relative inflow measure, we can construct a stricter

Fig. 9 Event-study analysis of effect of Capitol riot on log (county-level COVID-19 cases), by relative inflow of county residents to protest CBG on January 6. (a) High Relative Inflows, (b) Moderate-High Relative Inflows, (c) Moderate Relative Inflows, (d) Low Relative Inflows

5.5 COVID-19 mitigating policies
Table 5: Heterogeneity in the effects of the Capitol riot on daily rate of cumulative COVID-19 case growth, by mitigation policies in home county

| Absolute inflow | Relative inflow |
|-----------------|-----------------|
|                 | No mitigation   | Mitigation policies | No mitigation | Mitigation policies |
|                 | (1)             | (2)                | (3)           | (4)                |

**Panel I: Counties with high inflow**

|                      | January 6–8 (0–2 days after Capitol riot) | January 9–13 (3–7 days after Capitol riot) | January 14–15 (8–9 days after Capitol riot) | January 16–19 (10–13 days after Capitol riot) | January 20–23 (14–17 days after Capitol riot) | January 24–26 (18–20 days after Capitol riot) | January 27 + (21+ days after Capitol riot) |
|----------------------|------------------------------------------|-------------------------------------------|---------------------------------------------|-----------------------------------------------|---------------------------------------------|----------------------------------------------|---------------------------------------------|
| Absolute inflow      | −0.001                                   | 0.004**                                   | 0.003                                       | 0.012**                                       | 0.005                                       | 0.011**                                     | 0.009                                       |
| Relative inflow      |                                         | 0.002                                     | 0.007***                                    | 0.013***                                     | 0.010**                                     | 0.014***                                    | 0.014**                                     |
| Absolute inflow      | −0.002                                   | 0.004                                     | 0.0073**                                    | 0.005                                         | 0.006*                                      | 0.009                                       | 0.009                                       |
| Relative inflow      |                                         |                                          | 0.007**                                     | 0.013                                         | 0.010**                                     | 0.014                                       | 0.014**                                     |

**Panel II: Counties with moderate-high inflow**

|                      | January 6–8 (0–2 days after Capitol riot) | January 9–13 (3–7 days after Capitol riot) | January 14–15 (8–9 days after Capitol riot) | January 16–19 (10–13 days after Capitol riot) |
|----------------------|------------------------------------------|-------------------------------------------|---------------------------------------------|-----------------------------------------------|
| Absolute inflow      | 0.000                                    | 0.000                                     | −0.000                                      | 0.000                                         |
| Relative inflow      |                                         |                                           |                                             |                                              |
Table 5 (continued)

|                          | Absolute inflow |            |                   |
|--------------------------|-----------------|------------|-------------------|
|                          | No mitigation   | Mitigation policies | No mitigation   |
|                          |                 |             | Mitigation policies |
| January 16–19 (10–13 days after Capitol riot) | −0.001         | 0.002       | 0.003             |
|                          | (0.003)         |             | (0.003)           |
| January 20–23 (14–17 days after Capitol riot) | −0.002         | 0.001       | 0.003             |
|                          | (0.003)         |             | (0.003)           |
| January 24–26 (18–20 days after Capitol riot) | −0.001         | 0.003       | 0.004             |
|                          | (0.004)         |             | (0.004)           |
| January 27 + (21 + days after Capitol riot) | −0.002         | 0.003       | 0.005             |
|                          | (0.004)         |             | (0.004)           |

Panel III: Counties with moderate inflow

|                          | Absolute inflow |            |                   |
|--------------------------|-----------------|------------|-------------------|
|                          | No mitigation   | Mitigation policies | No mitigation   |
|                          |                 |             | Mitigation policies |
| January 6–8 (0–2 days after Capitol riot) | −0.001         | −0.003     | −0.002             |
|                          | (0.001)         |             | (0.002)           |
| January 9–13 (3–7 days after Capitol riot) | −0.002         | −0.001     | −0.001             |
|                          | (0.002)         |             | (0.002)           |
| January 14–15 (8–9 days after Capitol riot) | −0.003         | −0.003     | −0.002             |
|                          | (0.003)         |             | (0.002)           |
| January 16–19 (10–13 days after Capitol riot) | −0.004         | −0.000     | −0.000             |
|                          | (0.004)         |             | (0.003)           |
| January 20–23 (14–17 days after Capitol riot) | −0.004         | −0.002     | −0.001             |
|                          | (0.004)         |             | (0.003)           |
| January 24–26 (18–20 days after Capitol riot) | −0.005         | −0.001     | 0.000              |
|                          | (0.005)         |             | (0.003)           |
| January 27 + (21 + days after Capitol riot) | −0.006         | −0.002     | 0.000              |
|                          | (0.006)         |             | (0.003)           |
Table 5 (continued)

| Absolute inflow | Relative inflow |
|-----------------|-----------------|
|                 | No mitigation   | Mitigation policies | No mitigation   | Mitigation policies |
|                 | 0.001           | −0.001              | 0.000           | 0.002              |
|                 | (0.001)         | (0.001)             | (0.001)         | (0.002)            |
| January 6–8 (0–2 days after Capitol riot) |                |                    |                |                    |
| January 9–13 (3–7 days after Capitol riot) | 0.000           | 0.001              | −0.001          | 0.002              |
|                 | (0.001)         | (0.002)             | (0.001)         | (0.002)            |
| January 14–15 (8–9 days after Capitol riot) | −0.001          | −0.000             | −0.001          | 0.000              |
|                 | (0.001)         | (0.002)             | (0.002)         | (0.002)            |
| January 16–19 (10–13 days after Capitol riot) | −0.001          | 0.002              | −0.000          | 0.002              |
|                 | (0.001)         | (0.002)             | (0.002)         | (0.002)            |
| January 20–23 (14–17 days after Capitol riot) | −0.002          | 0.001              | −0.001          | 0.001              |
|                 | (0.001)         | (0.002)             | (0.002)         | (0.002)            |
| January 24–26 (18–20 days after Capitol riot) | −0.003          | 0.002              | 0.000           | 0.002              |
|                 | (0.002)         | (0.002)             | (0.003)         | (0.003)            |
| January 27 + (21+ days after Capitol riot) | −0.003          | 0.003              | −0.000          | 0.002              |
|                 | (0.002)         | (0.002)             | (0.003)         | (0.003)            |

Restrictions on restaurants or bars?
No: 19,440
Yes: 105,960

\* Significant at the 10% level
\*\* Significant at the 5% level
\*\*\* Significant at the 1% level

Note: Standard errors are clustered at the state level. All estimates include county and day fixed effects as well as county-specific linear time trends. For columns (1) and (2), the mitigation policy under study is whether there was any restriction on indoor dining at restaurants or bars. For columns (3) and (4), where we have more mitigation policy variation, the mitigation policy under study is whether there were full indoor dining/drinking bans at bars and some capacity restriction or full indoor dining ban at restaurants.
mitigation policy: full bans on indoor dining/drinking at bars and some restrictions or a full ban on dining at restaurants.

The results in Table 5 provide evidence that existing mitigation policies in the home state of Capitol protesters may have played an important role in reducing spread of COVID-19 following the riot. This result is especially stark in the case of our strongest mitigation policy using our relative ping measure. In the highest inflow category, we find that that the riot was associated with a 0.006 to 0.013 increase in county-level COVID-19 case growth when the rally attendee’s home state did not ban indoor dining at restaurants and drinking at bars. However, when such activities were banned, the riot had a small and statistically insignificant effect on COVID-19 spread. While we are cautious in our interpretation given that the policy variation we exploit is cross-sectional, these findings suggest that there is scope for public policy to mitigate community-level spread of COVID-19, consistent with recent findings in the literature (Courtemanche et al. 2020; Dave et al. 2020a; Friedson et al. 2021; Hsiang et al. 2020; Chernozhukov et al. 2021; McLaren and Wang 2020).46

6 Conclusions

On January 6, 2021, one of the most dramatic political events in modern American history took place when supporters of outgoing President Donald J. Trump stormed the US Capitol Building to protest the certification of the elections of President Joseph Biden and Vice President Kamala Harris. Termed an “insurrection” by the US Congress, this event challenged the nation’s tradition of a peaceful transition of political power across executives. But in addition to the threats posed to the nation’s democracy, some public health experts, including the Director of the Centers for Disease Control and Prevention, argued that the Capitol riot could cause a resurgence of COVID-19 in Washington, D.C., and nationwide.

First, using data from SafeGraph, we document that non-resident smartphone presence at the Ellipse, National Mall, and US Capitol Building rose substantially on January 6, 2021. Moreover, we find evidence that local residents of Washington, D.C., engaged in risk avoidance behavior in response to this event. Stay-at-home behavior at the extensive margin (full-time stay at home behavior) and the intensive margin (percent of time spent at home) rose in response to the event. This result is consistent with risk-averting behavior in response to, perhaps, risks of violence and COVID-19 spread. Risk aversion may also rise in response to congestion effects as, during and after the protests, many streets were closed and traffic was rerouted as the Capitol police regained control of the city and the National Guard was called out. Moreover, some of the stay-at-home behavior induced by the riot appeared to continue long past the event itself, owed to the “virtual lockdown” of Washington, D.C., in the period leading up to President Biden’s inauguration.

Perhaps in part because of this increase in social distancing, evidence from our synthetic control models provide no evidence of local COVID-19 spread in

46 In unreported results, we explore whether state mask mandates mitigated the COVID-19-spread effects of the Capitol riot. We find no evidence that such policies were associated with slower case growth in high inflow counties.
Washington, D.C., in the month following the event. However, when we explore whether there were non-localized spillover effects of the Capitol riot, our dose response models suggest that counties that contributed higher inflows to Washington, D.C., on January 6 saw larger increases in daily COVID-19 case growth. This result is consistent with Center for Disease Control and Prevention warning that large gatherings of non-household members who do not engage in mitigation generates the conditions for substantial risk for community-level COVID-19 spread.

Descriptive evidence suggests that there may be an important role for policy in blunting the adverse public health consequences of risky large gatherings. Restrictions in Washington, D.C., and in counties that contributed relatively higher inflows to the Capitol may have helped curb COVID-19 spread following the riot, moderating interactions outdoors and risky activities (for instance, going to restaurants and bars) once protesters traveled back to their resident communities. This finding is consistent with the literature on the effectiveness of non-pharmaceutical interventions (NPIs) in combating community spread.47

Moreover, the pattern of results that we uncover also points to the importance of self-protective behaviors. Specifically, the lack of localized infection spread in D.C. prima facie is consistent with this specific event not having any impact on infections, or with the possibility that the event does lead to community spread. But self-protective behaviors among D.C. residents resulted in net spread being unchanged. That we find significant evidence of non-localized spread from the event to high-inflow counties, mitigation of these effects when the home counties had stronger NPIs in place, and no discernible spread within D.C. after the Riot favors the latter hypothesis. Risk-avoidance behaviors in D.C., which may include increases in stay-at-home behavior of which we find direct evidence in this study, may have helped cap COVID-19 growth.

Moreover, in the process of assessing these effects, our analyses shed light on how the effects of COVID-19 mitigation policies and in-person gatherings may differ based on political/ideological preferences of the affected community. For instance, gatherings of politically conservative individuals tend to lead to greater COVID-19 spread because they are less likely than politically liberal individuals to engage in mitigating behaviors (i.e., mask wearing, preventative vaccine care, social distancing) and are more likely to live in communities without strong NPIs (Kaushal et al. 2022; Barrios and Hochberg 2020). This insight complements the results of Bernheim et al. (2020) and has important, ongoing implications for designing effective policy strategies to curb COVID-19 spread among high-risk populations.48

47 See for instance: Chernozhukov et al. (2021); Dave, Friedson, et al. (2021); Friedson et al. (2020); Gupta et al. (2020); Hsiang et al. (2020); and McLaren and Wang (2020). All of these studies generally find NPIs to have played some role in curbing the growth in COVID infections, with some heterogeneity in the policy response and some variance in the relative importance of the policy response vs. voluntary private responses to the information shock as the pandemic unfolded.

48 First, we find little evidence of localized spread, likely because of an increase in risk-averting behaviors among the local residents who largely identify as Democrats, in contrast to most of the counties hosting the Trump rallies studied by Bernheim et al. (2020) that lean Republican and thus are less likely to engage in such behaviors. Together, our findings highlight the importance of the composition of participants vs. non-participants in explaining how mass gatherings may impact COVID spread. Second, we find non-localized spillovers as the visitors who attended the protest and traveled back to their home counties, especially if these home counties had weaker NPIs and hence were less politically liberal.
Our analysis, of course, only captures short-run estimates of the effect of the Capitol riot on community-level COVID-19 spread. While our post-treatment window captures a period beyond the incubation window of COVID-19, additional weeks of data will provide a fuller picture of the public health impacts of the event. Importantly, we note that our COVID-19 data do not allow us to specifically measure disease spread among those protesting or among those working in the Capitol Building on the day of the riot. Precise and complete contact tracing would be required to document person-to-person spread among those who had contact with rioters. Our estimates should, therefore, be interpreted as the event’s net effect on community-level COVID-19 cases. Distributional effects may, of course, be important as well.

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