Social Distancing, Stimulus Payments, and Domestic Violence: Evidence from the U.S. during COVID-19[*]

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Abstract

We examine the effects of government-mandated or self-imposed social distancing in response to the COVID-19 pandemic on the reporting of domestic violence to the police in the United States. Using a large dataset of daily domestic violence calls from 31 police departments for the January–September 2020 period (compared to 2019), we find that the early spike in police calls from the beginning of social distancing disappears around mid-April, when the distribution of CARES Act stimulus payments began. We observe that domestic violence calls for areas with higher concentration of Hispanics and noncitizens remain elevated even after the stimulus payments were delivered since these groups faced greater barriers in accessing the social welfare system. These results highlight the importance of improved access to social safety net programs in combating domestic violence and reconcile earlier findings in the literature of mixed evidence of the impact of COVID-19-induced social distancing on domestic violence.

JEL Classifications: J12, J15, I18
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1 Introduction

Intimate partner violence is widely recognized as a major social problem associated with poor health and economic outcomes for women and their children. Worldwide, 30 percent of women aged 15 or older have experienced physical or sexual violence from their partners during their lifetime (Devries et al. 2013). In the United States alone, the lifetime economic costs of intimate partner violence amount to $3.6 trillion, with $1.3 trillion attributed to productivity losses (Peterson et al. 2018).

Starting in early March 2020, COVID-19 dramatically altered everyday lives, as several countries implemented strict lockdown or stay-at-home (SAH) measures. Anecdotal evidence suggests a considerable increase in cases of domestic violence worldwide after the introduction of such social distancing restrictions (The New York Times, April 6 2020).[1,] [2] Building on this descriptive evidence, academic research on this topic has produced mixed results. While earlier studies generally find an increase in the reporting of domestic violence incidents (Agüero 2021; Arenas Arroyo et al. 2020; Bullinger et al. 2020; Hsu and Henke 2020; Leslie and Wilson 2020; Ravindran and Shah 2020; Sanga and McCrary 2020), subsequent studies report either no significant changes or some decline in domestic violence incidents (Gerell et al. 2020; Ivandic et al. 2020; Miller et al. 2020; Payne and Morgan 2020; Piquero et al. 2020; Silverio-Murillo et al. 2020).[3] Despite a growing body of research, scant evidence exists on how these results can be reconciled.

We help fill this gap by examining the changes in domestic violence police calls for service in 31 U.S. cities before and after social distancing restrictions from January to September of 2020, in comparison to trends for the same period in 2019. As Figure 1 illustrates, the daily number of domestic violence-related service calls to police departments in

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[1] Taub, Amanda. "A New Covid-19 Crisis: Domestic Abuse Rises Worldwide," The New York Times, April 6 2020.

[2] The United Nations Population Fund projected that for every three months the lockdown continues, an additional 15 million cases of gender-based violence are expected (United Nations Population Fund 2020).

[3] Appendix B provides an overview of studies that focus on the effects of the COVID-19 pandemic on domestic violence.

the United States started to diverge from its 2019 levels immediately after March 9, 2020. This change overlaps with the substantial decline in physical mobility across the country, as shown by the red line in Figure 1. In line with the findings of Maloney and Taskin (2020), this decline occurs before the first mandated SAH orders were issued on March 19, suggesting that it was driven mostly by fear and the voluntary actions of individuals. Moreover, we observe that the divergent trends between 2020 and 2019 seem to close starting in mid-April. In fact, domestic violence calls in 2020 follow very similar trends to those in 2019 from that point onward.

Government mandated or self-imposed social isolation in the wake of the COVID-19 crisis could have negative consequences for domestic violence experienced by women for many reasons, but two are the most prominent. First, SAH orders force women to spend more time with their potential perpetrators and mechanically cause an increase in intimate partner violence (Andrew 2020). Second, tighter financial constraints might increase domestic violence. For instance, the employment rate in the United States fell by approximately 13 percent between February and April (Forsythe et al. 2020). COVID-19-induced employment losses may "trap" couples in already-troubled relationships since it is more difficult to exit such relationships when outside options are reduced (Stevenson and Wolfers 2006). Financial hardship also acts as a stressor for many households by unexpectedly lowering their disposable income and triggering aggression. Several studies report a negative correlation between family income and domestic violence (Hindin et al. 2008; Raphael 2015; Vyas and Watts 2009).[4]

Consistent with these potential channels, our difference-in-difference estimates indicate that social distancing led to a 7.1 percent increase in domestic violence calls, and this effect remained significant until the stimulus payments were made around April 15.

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[4]An additional complication arises if social restrictions decrease the ratio of female to male income. This can be particularly damaging if these restrictions have a larger impact on service occupations with high female employment shares. In fact, Alon et al. (2020) show that contrary to prior recessions, female unemployment rose more than male unemployment during the current economic downturn. A decline in women's economic conditions relative to their partners might increase the prevalence of domestic violence even further by decreasing female bargaining power in the household (Aizer 2010; Anderberg et al. 2016).

Interestingly, when we link the domestic violence calls to census tract demographic characteristics, we observe that in census tracts with a high concentration of Hispanics and noncitizens, domestic violence calls to police remain high in 2020 relative to the corresponding 2019 rates even after the stimulus payments were made. In contrast, we find no significant increase in domestic violence calls in census tracts with a high share of Whites or Blacks after these cash transfers were delivered. Similarly, we also find no significant changes in domestic violence calls in lower-income or lower-education census tracts after the stimulus payments.

We contribute to the growing literature on the effects of the COVID-19 crisis on domestic violence by reconciling some of the mixed findings. On the one hand, studies focusing on the first months of the lockdowns generally document stronger increases in domestic violence reporting compared to those that study a longer time period. These differences can partly be accounted for by the gradual relaxation of government-imposed restrictions over time and the introduction of certain welfare programs that mitigated some of the initial earnings losses through cash transfers.[5] On the other hand, it is possible that some of the null findings in the short- to medium-run analyses mask the heterogeneity in the effects of the COVID-19 crisis for different subpopulations. It is a well-documented fact that the adverse labor market effects of the crisis have disproportionately affected minorities and immigrants (Borjas and Cassidy 2020). Similarly, most welfare programs exclude noncitizen immigrants. Most notably, noncitizens were not eligible for CARES Act benefits or national unemployment benefits (Bitler et al. 2020; Clark et al. 2020). Our results support the view that access to safety net programs can partly relieve financial stress within the family and thereby decrease domestic violence incidents following the initial spike.

The remainder of this paper is organized as follows. In Section 2, we provide background information on COVID-19 movement restrictions and the CARES Act stimulus

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[5]We cannot, of course, dismiss the fact that it is possible that relationship dynamics evolve and adjust to a new normal over time.

payments. Section 3 discusses the data and the empirical strategy we employ in our analysis. Section 4 presents the empirical results, and Section 5 concludes the paper.

2   Background

In a desperate effort to halt the further spread of COVID-19, Americans were instructed to stay home. California was the first state to order all residents to stay home on March 19, 2020. Other states quickly followed suit, and a flurry of state instructions to stay home as much as possible quickly swept the nation. By April 20, 2020, these restrictions involved 42 states, three counties, 10 cities, the District of Columbia and Puerto Rico and accounted for 95 percent of the U.S. population (Mervosh et al. 2020).

State-level SAH orders and reopenings had modest impacts on economic activity. Both spending and employment dropped well before the imposition of state-mandated restrictions. Furthermore, employment trends are similar in states that reopened earlier relative to comparable states that reopened later (Chetty et al. 2020). Nevertheless, COVID-19 had a negative impact on the U.S. labor market due to a massive reduction in mobility caused by virus-related concerns (Bartik et al. 2020; Villas-Boas et al. 2020).

To support American households, the CARES Act was signed into law on March 27, 2020, authorizing $300 billion in direct stimulus payments via Economic Impact Payments (EIPs) and additional unemployment insurance. The first EIPs were deposited in mid-April, two weeks after the CARES act was signed.[6] In addition, the CARES Act authorized $260 billion for enhanced unemployment insurance. Unemployed workers received $600 per week in addition to the base level of unemployment insurance their state offered. While the roll-out was quick for people already on unemployment, for those applying for unemployment, the process was much slower due to the massive volume of applications and state-dependent processing constraints. Hence, newly unemployed Americans could

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[6]By April 17, 89.5 million EIPs worth $160 billion had been issued (i.e., 53% of the budget allocated for EIPs) (IRS 2020). By May 31, 160.4 million payments worth $269 billion had been issued, 90% of the budget allocated for EIPs (GAO 2020).

have had to wait longer then 2–3 weeks (from March 28) to receive the $600 supplemental unemployment insurance. Overall, receiving the EIPs and the expectation of receiving the additional unemployment benefits had the effect of alleviating budget constraints. Empirical studies have shown that households increased their spending in response to stimulus payments received in mid-April 2020, which restored their spending to pre-COVID levels by late April (Baker et al. 2020; Chetty et al. 2020).

Despite providing financial relief for large segments of the population, the social safety programs had significant coverage gaps (Bitler et al. 2020). Most notably, noncitizens and undocumented immigrants were deemed ineligible for unemployment insurance, and almost all benefits, including the Supplemental Nutrition Assistance Program (SNAP) and the CARES Act stimulus payments, including EIPs and additional unemployment insurance (Bitler et al. 2020; East et al. 2020).[7] Furthermore, even Hispanics with proper documentation had lower rates of take-up for social safety benefits in U.S. cities where recent immigration programs were strongly enforced due to network effects that perpetuate fear of deportation (Alsan and Yang 2018).

3   Methods

3.1   Data

Our primary source of data comes from domestic violence calls to police for service in the United States. We contacted the largest police departments in the 200 most populous U.S. cities. To the data we obtained, we added the police departments reporting to the Police Data Initiative. This data collection effort yielded a sum of 31 police departments. Appendix Table A1 provides a list of police departments in our dataset, including the observation period, the domestic violence parsing terms, and the state-level dates of

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[7]For instance, the CARES Act excludes immigrant families from receiving EIPs if any adult or spouse in the family does not have a Social Security Number unless the family has a member of the military (Bitler et al. 2020).

SAH orders and reopenings. All of these police departments provided data on individual calls with the geocode or address information needed to match the calls to census tracts. We note upfront that which police departments responded to our data inquiry, made their data publicly available, or provided geographic information may not be random. However, we do not have any reason to believe that they are systematically different from a representative sample in terms of the underlying characteristics correlated with domestic violence cases. Police calls span the period from January 2019 to September 2020. To the best of our knowledge, our data represent the largest coverage of police departments for the longest time period in the literature to date, allowing us to capture not only initial changes in calls but also the subsequent decline.

Although the information in the police service calls dataset is not standardized, it is possible to construct similar measures of domestic violence calls at the city-day level. Unless the data was only compiled for domestic violence cases, the data include "keyword identifier" variables that allow us to parse the data and select for calls related to domestic and intimate partner violence such as "domestic violence" or "DOMVIO".[8]

We also use information on the timing of SAH orders at the state level from the New York Times (Mervosh et al. 2020). The reopening dates at the state level were obtained from the GitHub repository made available by Nguyen et al. (2020).[9] In addition, when examining the effects of the COVID-19 crisis on the labor market, we employ data from the Current Population Survey (CPS) from January 2019 to September 2020.

3.2 Empirical Strategy

We use difference-in-difference and event-study methods to estimate the impact of social distancing and economic anxiety associated with the COVID-19 pandemic. Figure 1 shows

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[8]Appendix Table A1 provides the list of every police department in our dataset, the relevant key words, and the beginning and the data time span.

[9]https://github.com/nguyendieuthuy/ReOpeningPlans.

that there is a drastic decline in time spent away from home beginning March 9.[10] Leslie and Wilson (2020) use this data point as the initial date of social distancing in their analysis. Maloney and Taskin (2020) also show that social distancing behavior began around the same time across many countries as news about COVID-19 spread.

First, we use a simple difference-in-differences specification to separately examine the differential effects of self-imposed social distancing from March 9 to SAH orders and the state-mandated social distancing imposed after SAH orders. Our model takes the following form:

$$y_{cdt} = \beta_1 Mar9toSAH_{cdt} + \beta_2 SAH_{cdt} + \gamma_c + \mu_t + \phi_{week} + \delta_{dow} + \epsilon_{cdt} \tag{1}$$

where y_{cdt} is the number of domestic violence calls to police departments in city c on day d in year t, $Mar9toSAH_{cdt}$ is an indicator that takes value one if the day is after March 9 and before the SAH order issued for the state where city c is located, SAH_{cdt} is an indicator that takes value one if the day is after the SAH order issued for the state where city c is located, γ_c denotes city fixed effects, μ_t denotes year fixed effects, ϕ_{week} denotes week fixed effects, and δ_{dow} denotes day-of-week fixed effects. The sample covers the January–September period in both 2019 and 2020. We are interested in the coefficient estimates for β_1, which capture the changes in domestic violence calls after mobility declines on March 9 until the issue of formal SAH orders, and in the estimates for β_2, which represents the changes in calls after mandated SAH orders are implemented for days in 2020 relative to the same period of time in 2019. The standard errors are clustered at the city level.

Second, many states began to relax their SAH orders after the first wave of COVID-19 ended. To examine whether state-level reopenings had any significant impacts on the

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[10]This series covers the average change in time spent outside of residential locations indexed to the January 3 – February 6, 2020 period. The data come from the Economic Tracker, which collects data from Google's COVID-19 Community Mobility reports and is available from `https://tracktherecovery.org/`.

reporting of domestic violence to the police, we use the following specification:

$$y_{cdt} = \alpha_1 Mar9toSAH_{cdt} + \alpha_2 SAHtoReopening_{cdt} + \alpha_3 Reopening_{cdt}$$
$$+ \gamma_c + \mu_t + \phi_{week} + \delta_{dow} + \epsilon_{cdt}$$

(2)

where $SAHtoReopening_{cdt}$ is an indicator capturing the time period between the implementation of SAH orders and the reopening of the economy, $Reopening_{cdt}$ is an indicator for the time period after the reopening of the economy, and other terms are the same as in Eq.1.

Third, households began to receive the stimulus payments associated with the CARES Act in mid-April. To examine whether these stimulus payments had a significant impact on domestic violence, we estimate the following specification:

$$y_{cdt} = \theta_1 Mar9toSAH_{cdt} + \theta_2 SAHtoApr15_{cdt} + \theta_3 Apr15toReopening_{cdt}$$
$$+ \theta_4 Reopening_{cdt} + \gamma_c + \mu_t + \phi_{week} + \delta_{dow} + \epsilon_{cdt}$$

(3)

where $SAHtoApr15_{cdt}$ is an indicator for the time period between the implementation of SAH orders and April 15, $Apr15toReopening_{cdt}$, is an indicator of the time period from April 15 to the reopening of the economy. The other terms are the same as in Eqs. 1 and 2.

Finally, we do not expect any significant changes in domestic violence calls prior to the beginning of social distancing in 2020 relative to the same period in 2019. To examine whether the parallel trends assumption holds, we estimate the following event-study specification:

$$y_{cdt} = \sum_{\tau=0}^{37} \beta_\tau (Week\tau)_d * Y2020_t + \gamma_c + \mu_t + \phi_{week} + \delta_{dow} + \epsilon_{cdt}$$

(4)

where the coefficient estimates for β_τ capture the weekly changes in the daily number of domestic violence calls from January to September of 2020 relative to the same months in 2019. $Y2020_t$ is an indicator variable that takes the value of one for the year 2020. The

first week of January is the reference week and is therefore omitted. We examine whether the parallel trends hold for the months of January and February prior to the beginning of social distancing.

The inclusion of year fixed effects controls for any macroeconomic shocks at the national level that coincide with social distancing policies, while the week fixed effects account for seasonal trends in domestic violence. City fixed effects control for any time-invariant heterogeneity across counties and enable us to examine within-city variation in domestic violence calls. The cities that took early action in implementing more restrictive policies differ from others that were late in implementing such policies. However, as long as the outcome variables observed for these cities follow parallel trends prior to the beginning of social distancing, our difference-in-difference estimator will provide a consistent estimate of the impact of social isolation on the risk of experiencing intimate partner violence.

4 Domestic Violence Outcomes

4.1 Difference-in-Difference Estimates

We proceed by examining the difference-in-difference estimates presented in Table 1. Columns (1)–(3) present coefficient estimates for Eqs. (1)–(3). The estimates in column (1) indicate that there were, on average, more domestic violence calls from March 9, 2020, until the implementation of the SAH restrictions relative to the same time period in 2019. The magnitude of the estimate of the $Mar9toSAH_{cdt}$ coefficient corresponds to a 7.0 percent increase in calls relative to the outcome mean. This effect size is close to the 7.5 percent increase estimated by Leslie and Wilson (2020), although we consider a longer time period and a larger set of police departments. We find no evidence of a significant impact on domestic violence calls after the SAH orders were issued.

As column (2) shows, dividing the post-SAH order period into two periods to account for the potential effects of reopening makes no meaningful difference in the coefficient

estimates. These difference-in-difference estimates indicate that domestic violence calls increased from March 9 to the SAH orders, with no evidence of significant changes from the SAH orders to reopening or the post-reopening period. However, the estimates in column (3) indicate that there was, on average, a significant increase in domestic violence calls from the SAH orders until April 15 and no significant changes in calls after April 15, when the households began receiving the stimulus payments associated with the CARES Act. This evidence suggests that such payments may have reduced domestic violence-related police calls by alleviating economic anxiety. Our results are consistent with Chetty et al. (2020), who find that stimulus payments sharply increased household spending and nearly restored it to the consumption levels prior to COVID-19.

In Table 2, we examine whether the effects of social distancing on domestic violence calls vary by race, ethnicity, citizenship status by estimating Eq. 3.[11] We use the distribution of these demographic characteristics at the census tract level and compare census tracts above the 75th percentile and below the 25th percentile for the shares of Whites, Blacks, Hispanics, and noncitizens in the population. The difference-in-difference estimates in columns (3), (5), and (7) show evidence of a significant increase in domestic violence calls from March 9 to the SAH orders for census tracts where the shares of Blacks, Hispanics, and noncitizens in population are above the 75th percentile. In contrast, column (1) estimates indicate no evidence of a significant increase in predominantly white areas where the share of Whites is above the 75th percentile.[12]

Moreover, estimates in columns (5) and (7) of Table 2 show that the increase in domestic violence calls from the SAH orders to April 15 for areas with high concentrations of Hispanics and noncitizens does not disappear in the aftermath of April 15 as stimulus payments were disbursed. In fact, we observe significant increases in domestic violence

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[11]If we conduct the same analysis by shares of foreign-born at the census tract level, the results are very similar to those by shares of noncitizens.

[12]If we compare census tracts above and below the median shares of noncitizens, the results remain consistent. We focus on differences by 75th and 25th percentiles to capture greater differences by demographic characteristics at the census tract level.

calls primarily among Hispanics and noncitizens from April 15 to the reopening of the economy. In contrast, estimates in columns (6) and (8) indicate no evidence of a significant change in domestic violence calls for areas with low shares of Hispanic and noncitizen population from April 15 to reopening of the economy.[13]

Appendix Tables A2 and A3 show that these results are robust to estimating a fully interacted model in which we interact year, week, and day-of-week fixed effects with city fixed effects. On the other hand, when we explore heterogeneity by income and education levels in Appendix Table A4, we find no evidence of significant differences by average income level. Note that for lower-income regions (i.e. census tracts below the 25th percentile of income distribution), the estimates are imprecise, and the coefficients reverse their sign from positive to negative in the post-April 15 period, when stimulus payments began to be delivered.[14]

These differences can be explained by the fact that as the economic situation worsened, Hispanics and noncitizens were disproportionately affected in terms of employment losses and access to safety programs. In Figure 2, we examine changes in the probability of employment during February–September 2020 (relative to 2019) using an event-study estimation.[15] The Economic Tracker data suggest that social distancing began in early to mid-March. We observe that across all demographic groups, there were no significant dif-

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[13]We cannot rule out the possibility that there might have been underreporting of domestic violence incidents by Blacks due to concerns about potential police violence during this time period (Desmond et al. 2020).

[14]For regions with lower levels of education, we observe a significant increase in domestic violence calls from March 9 to the SAH orders. However, these effects dissipate thereafter, particularly in the post-April 15 period.

[15]In particular, we estimate the following specification:

$$y_{ist} = \sum_{\tau=0}^{9} \beta_\tau (Month_\tau) * Y2020_t + \delta X_{ist} + \gamma_s + \mu_t + \phi_{month} + \epsilon_{st} \tag{5}$$

where the coefficient estimates for β_τ capture the monthly changes in the probability of employment from January to September of 2020 relative to the same months in 2019, γ_s denotes state fixed effects, μ_t denotes year fixed effects, and ϕ_{month} denotes month fixed effects. We omit the month of January, which is taken as the reference month. We include controls for individual-level covariates, X_{ist}, including having a child under 6 years old, indicator variables for ages 21-25, 26-30, 31-40, 51-60, 61-70, and over 71, and indicator variables for education levels including not having a high school degree, having some college education, having a bachelor's degree, having a post graduate degree, and an indicator variable for being in a metropolitan area.

ferences in February for employment changes in 2020 compared to 2019.[16] The probability of employment begins to decline slightly in March for all groups, and a sharp decline occurs in April 2020 relative to 2019. While the negative employment shock affects Whites the least, Hispanics and noncitizens experience a much larger decline in their probability of employment.[17] Blacks also suffer from an employment loss, but the estimates are considerably smaller than those for Hispanics and noncitizens. Moreover, women experience greater employment losses than men among Whites, Hispanics, and noncitizens.

Finally, noncitizens and undocumented immigrants suffered a double burden: not only did they suffer disproportionately from employment losses, but they could also not obtain access to several social safety programs. Bitler et al. (2020) report that undocumented immigrants did not receive unemployment benefits, and East et al. (2020) note that noncitizens are ineligible for unemployment insurance, as well as almost all benefits, including the SNAP and stimulus payments under the CARES Act (i.e., EIPs and additional unemployment insurance). Moreover, the take-up of social safety programs have been relatively low among Hispanics, particularly in places where immigration enforcement programs have been strongly enforced (Alsan and Yang 2018). East et al. (2020) also note that food insecurity among Hispanics increased more than among Whites after the pandemic. Thus, it is not surprising that the stimulus payments delivered around mid-April did not lead to significant declines in domestic violence calls for areas with high concentrations of Hispanics and noncitizens given that these groups could not take advantage of financial relief programs.

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[16]We focus on monthly employment changes for four demographic groups: Whites, Blacks, Hispanics, and noncitizens, in Panels A, B, C, and D, respectively. While the first three categories are mutually exclusive, the last category comprises a mixed group by race and ethnicity. In other words, noncitizens may have any racial/ethnic identity.

[17]Borjas and Cassidy (2020) document that both initially employed and unemployed immigrants are less able to retain their jobs or find new ones. In addition, undocumented immigrants were the most severely affected, with nearly one-third of them losing their jobs between March and May 2020.

4.2 Event-Study Analysis

In this section, we examine whether the parallel trends assumption holds for domestic violence calls. Figure 3 presents event-study estimates from Eq. 4. Panel A shows the results for the full sample. During the months of January and February and the first week of March before distancing began, the estimated event-study coefficients are not significantly different zero, indicating no evidence of significant pretrends in our outcome of interest. Consistent with the difference-in-difference results, we observe that domestic violence calls begin to increase in the week of March 9 and remain elevated until mid-April. However, starting the week of April 13, we find no evidence of a robust change in domestic violence calls until mid-September.[18] This evidence is consistent with the difference-in-difference estimates, indicating that the initial spike in domestic violence calls disappears with the disbursement of stimulus payments in mid-April, which potentially alleviated the financial burden of the pandemic on households.

Panel B examines the heterogeneity in event-study estimates by race, ethnicity, and citizenship status. These estimates show no evidence of significant pretrends in domestic violence calls in 2020 relative to 2019 prior to the beginning of social distancing.[19] Moreover, we observe that the estimated effects indicate that the sharp increases in domestic violence calls from March 9 to April 15 are driven by census tracts with a high concentration of Hispanics and noncitizens, i.e. those above the 75th percentile of the respective population shares. In addition, even after the majority of CARES Act stimulus payments were disbursed in mid-April, the domestic violence calls from these census tracts remained elevated until the reopening of the economy began around the end of April and early May. Once again, these results are consistent with the fact that noncitizens are ineligible for several forms of transfers, including unemployment benefits and stimulus payments (Bitler

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[18]The estimates are significant for only three out of 22 weeks from April 12 to September 13.

[19]Similarly, Appendix Figure A1 indicates no evidence of significant pretrends in domestic violence calls when we examine heterogeneity by income or education.

et al. 2020; East et al. 2020).[20]

5 Conclusion

We provide evidence from 31 police departments across the United States to examine the effects of the COVID-19 pandemic on domestic violence-related police calls. Using a longer time period than prior studies covering January to mid-September 2020 in comparison to 2019, our study helps reconcile the mixed evidence in the growing literature. We first document that the early spike in domestic violence calls from the beginning of social distancing around March 9 begins to fade away around mid-April, particularly after the introduction of CARES Act stimulus payments.

Examining heterogeneity across demographic groups, we also show that the effects are concentrated among regions with high shares of Hispanics and noncitizens, most of whom were particularly vulnerable to job losses. Moreover, since noncitizens were, to a large extent, not eligible for unemployment benefits or stimulus payments, these groups suffered particularly significant financial strain, which might explain the elevated levels of domestic violence calls even after the stimulus payments were disbursed. Overall, our results highlight the importance of improved access to social safety net programs in combating domestic violence.

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[20]One concern could be that the results are driven by increased third-party reporting since neighbors spend more time at home. To address this concern, we report event-study estimates by the intensity of multiunit housing. Appendix Figure A2 shows no evidence of significant differences in the reporting of domestic violence incidents to the police by the intensity of multiunit housing.

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FIGURE 1: TRENDS IN DOMESTIC VIOLENCE CALLS AND MOBILITY IN THE UNITED STATES
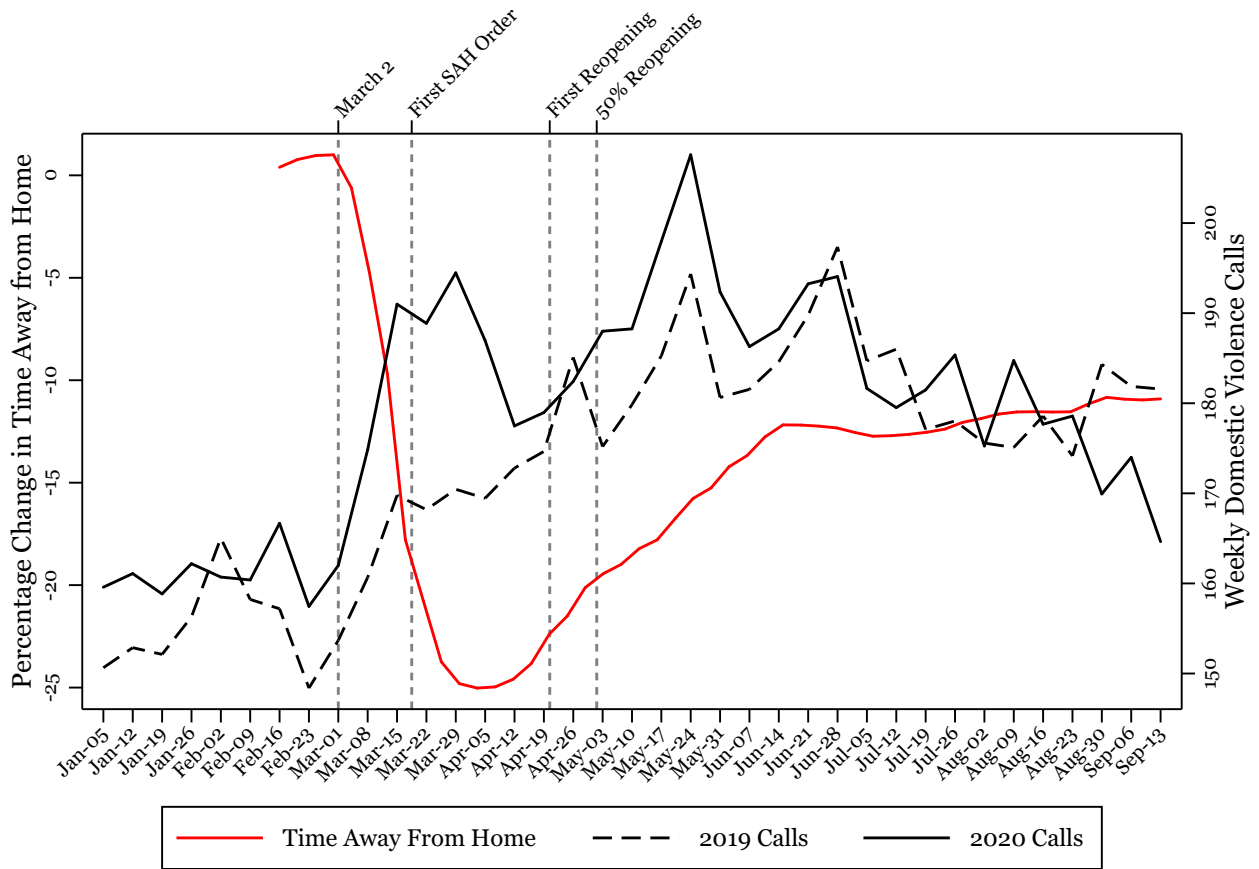
Note: The figure plots the average number of weekly domestic violence calls across 31 cities by week of year for 2019 and 2020. The red line shows the average change in time spent outside of residential locations indexed to the period between January 3 - February 6, 2020 as reported by the Economic Tracker, available at `https://tracktherecovery.org/`. The first vertical dashed line falls on the week of March 2, 2020, one week prior to the beginning of social distancing. The other vertical lines represent the dates for first SAH orders implemented in March 19, the first reopening date implemented in April 20, and 50% of cities in our sample began reopening their economies in May 1, 2020.

FIGURE 2: EVENT STUDY: PROBABILITY OF EMPLOYMENT IN 2020 RELATIVE TO 2019
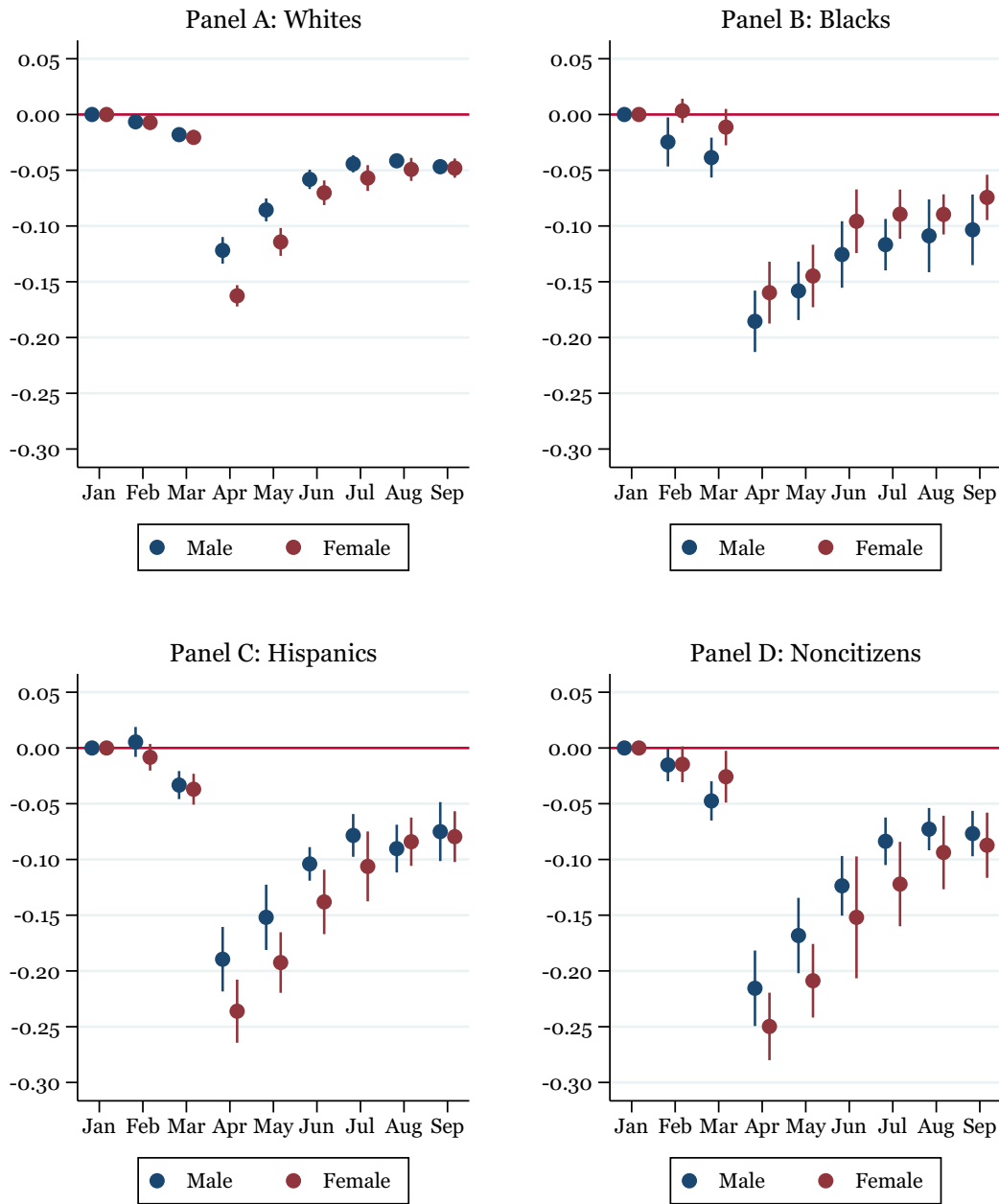
Note: The figures plot the estimated coefficients from Eq. 5 for the outcome of being employed using data from the Current Population Surveys. The sample covers January to September 2020, and the same months for 2019. Panel A reports the estimates for Whites, Panel B reports them for Blacks, Panel C reports them for Hispanics, and Panel D reports them for noncitizens. The groups in first three panels are mutually exclusive, while the noncitizen group includes individuals across different race and ethnicity categories. The blue lines show estimates for males, and the red ones show estimates for females. The vertical lines for each estimate show 95% confidence intervals. The standard errors are clustered at the state level.

FIGURE 3: EVENT STUDY: DOMESTIC VIOLENCE CALLS IN 2020 RELATIVE TO 2019

Panel A: Full Sample

Panel B: Heterogeneity by Race, Ethnicity and Citizenship

Whites

- Above 75% Share   - Below 25% Share

Blacks

- Above 75% Share   - Below 25% Share

Hispanics

- Above 75% Share   - Below 25% Share

Noncitizens

- Above 75% Share   - Below 25% Share
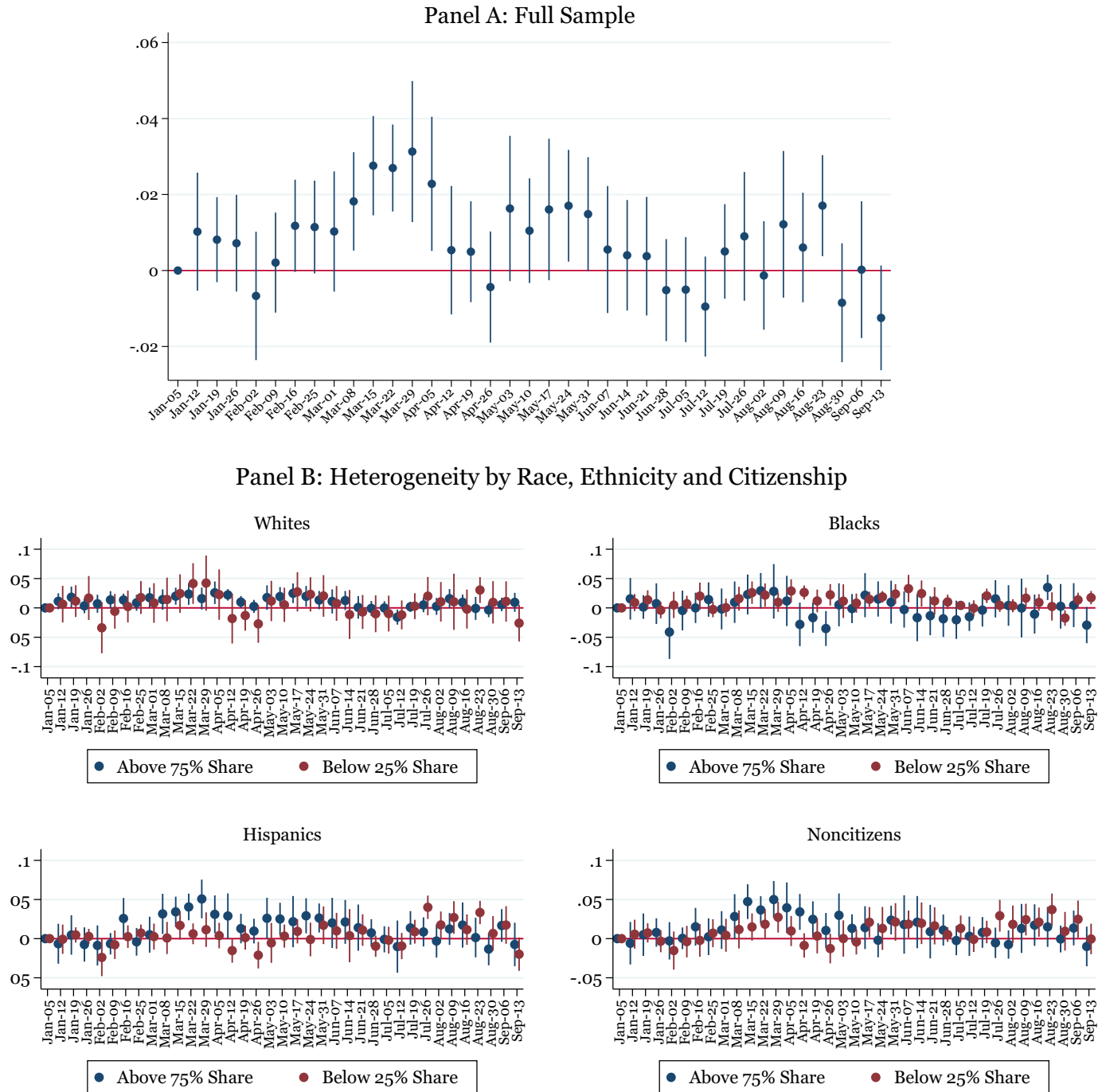
Note: Panel A plots the estimated coefficients from Eq. 4 for the full sample of 31 cities where the outcome is the number of domestic violence calls at the census tract-by-day level. Panel B plots the estimated from Eq. 4 for census tracts above 75th percentile and below 25th percentile for the shares of Whites, Blacks, Hispanics, and noncitizens in population. The time period spans the first 37 weeks of 2019 and 2020, ending by the second week of September. The vertical lines for each estimate show 95% confidence intervals. The standard errors are clustered at the city level.

23

TABLE 1: EFFECTS OF SOCIAL DISTANCING ON DOMESTIC VIOLENCE CALLS DURING COVID-19

	(1)	(2)	(3)
March 9 to SAH	0.016***	0.018***	0.020***
	(0.004)	(0.005)	(0.005)
SAH	-0.003		
	(0.007)		
SAH to reopening		0.006	
		(0.005)	
Reopening		-0.004	-0.003
		(0.007)	(0.007)
SAH to April 15			0.016**
			(0.006)
April 15 to reopening			-0.000
			(0.005)
Observations	2,064,427	2,064,427	2,064,427
Outcome mean	0.23	0.23	0.23

Notes: This table presents the difference-in-difference estimates from Eqs. 1, 2, and 3 in columns (1), (2), and (3), respectively. The outcome is the daily number of domestic violence service calls. Observations are at the census tract-by-day level for 31 cities. The variables and controls are defined in Section 3.2. Standard errors are clustered at the city level. ***, **, and * denote significance at the 1, 5, and 10 percent levels, respectively.

TABLE 2: HETEROGENEOUS EFFECTS OF SOCIAL DISTANCING ON DOMESTIC VIOLENCE CALLS DURING COVID-19 BY RACE, ETHNICITY, AND CITIZENSHIP

	Above 75% Share White (1)	Below 25% Share White (2)	Above 75% Share Black (3)	Below 25% Share Black (4)	Above 75% Share Hispanic (5)	Below 25% Share Hispanic (6)	Above 75% Share Noncitizen (7)	Below 25% Share Noncitizen (8)
March 9 to SAH	0.008	0.027**	0.023**	0.004	0.032***	0.005	0.034***	0.009
	(0.005)	(0.011)	(0.009)	(0.005)	(0.007)	(0.007)	(0.006)	(0.006)
SAH to April 15	0.011**	0.010	0.007	0.011**	0.027***	-0.002	0.029***	0.011*
	(0.005)	(0.010)	(0.010)	(0.005)	(0.008)	(0.004)	(0.010)	(0.006)
April 15 to reopening	0.001	-0.016*	-0.021**	0.004	0.017**	-0.019***	0.020***	-0.011*
	(0.006)	(0.008)	(0.008)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Reopening	-0.004	-0.002	-0.004	0.001	0.007	0.006	0.002	0.012*
	(0.004)	(0.020)	(0.019)	(0.005)	(0.006)	(0.006)	(0.008)	(0.007)
Observations	482,260	549,720	583,763	446,188	517,452	594,540	500,100	569,073
Outcome mean	0.11	0.33	0.33	0.14	0.30	0.21	0.28	0.21

Notes: This table presents the difference-in-difference estimates from Eq. 3 for census tracts above 75th percentile and below 25th percentile for shares of different demographic groups. Columns (1)-(2) report these estimates by shares of Whites, columns (3)-(4) report them for shares of Blacks, columns (5)-(6) report them for shares of Hispanics, and columns (7)-(8) report them for shares of noncitizens. The outcome is the daily number of domestic violence service calls. Observations are at the census tract-by-day level for 31 cities. The variables and controls are defined in Section 3.2. Standard errors are clustered at the city level. ***, **, and * denote significance at the 1, 5, and 10 percent levels, respectively.

25

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Appendix A Additional Figures and Tables

FIGURE A1: HETEROGENEITY BY INCOME AND EDUCATION
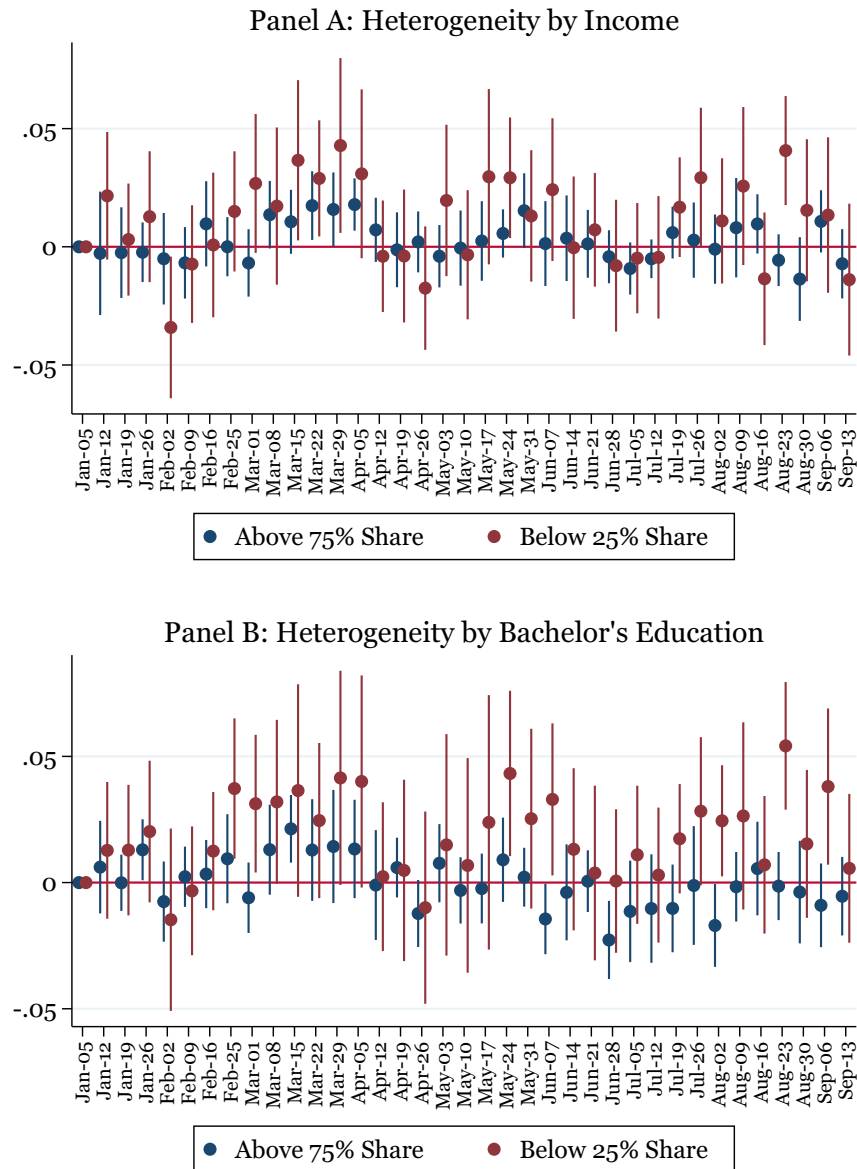
Panel A: Heterogeneity by Income

Panel B: Heterogeneity by Bachelor's Education

Note: Panel A plots the estimated from Eq. 4 for census tracts above 75th percentile and below 25th percentile for distribution of median income at the census tract level. Panel B plots the estimated from Eq. 4 for census tracts above 75th percentile and below 25th percentile for the completion rates of Bachelor's degree at the census tract level. The time period spans the first 37 weeks of 2019 and 2020, ending by the second week of September. The vertical lines for each estimate show 95% confidence intervals. The standard errors are clustered at the city level.

FIGURE A2: HETEROGENEITY BY MULTI-UNIT HOUSING
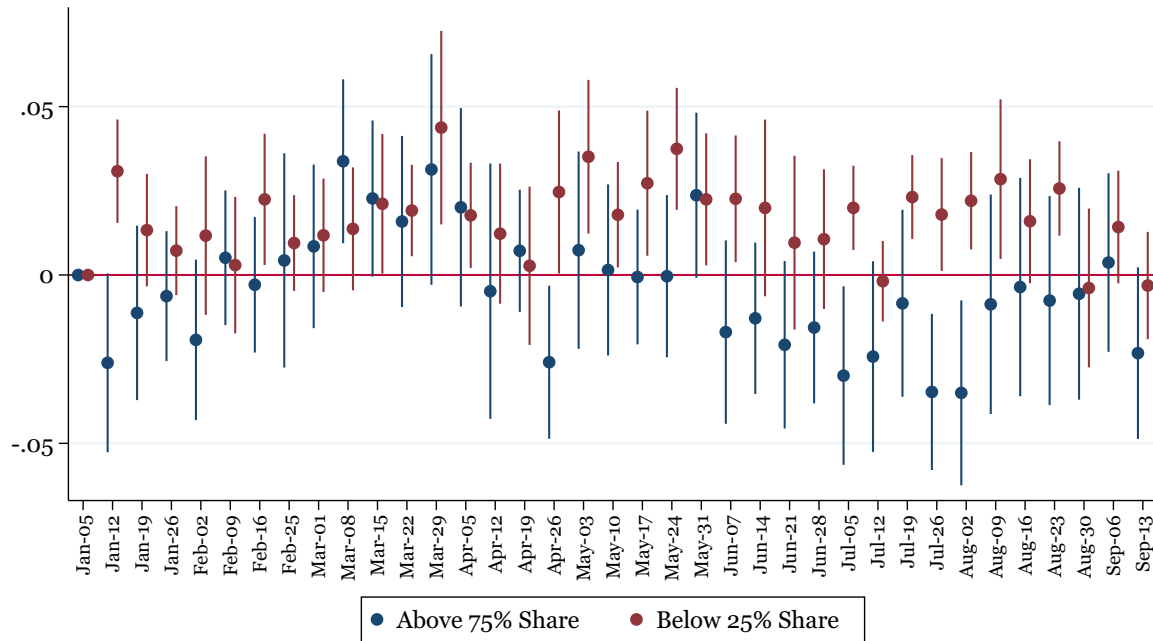
Note: Note: The figure plots the estimated from Eq. 4 for census tracts above 75th percentile and below 25th percentile for shares of multi-unit housing at the census tract level. The time period spans the first 37 weeks of 2019 and 2020, ending by the second week of September. The vertical lines for each estimate show 95% confidence intervals. The standard errors are clustered at the city level.

TABLE A1: THE LIST OF CITIES, TIME PERIOD, STATE SAH ORDERS AND REOPENING DATES, AND DOMESTIC VIOLENCE TERMS IN PD DATA

City	First Date	Last Date	SAH Order Date[a]	Reopening Date	Domestic Violence Parsing Terms[b]
Albany, GA	1/1/2019	9/13/2020	4/3/2020	4/24/2020	-
Billings, MT	1/1/2019	9/12/2020	3/28/2020	4/26/2020	-
Cedar Rapids, IA	1/1/2019	9/13/2020	-	-	-
Chandler, AZ	1/1/2019	9/13/2020	4/1/2020	5/8/2020	"Domestic Disturbance/Fight"
Charleston, SC	1/1/2019	9/13/2020	4/8/2020	4/20/2020	"Dom Disturb/Viol" "Family" "Domestic"
Cincinnati, OH	1/1/2014	9/13/2020	3/24/2020	5/1/2020	"Domestic Violence" "Family Trouble"
Columbus, OH	1/1/2019	9/13/2020	3/24/2020	5/1/2020	-
Davenport, IA	1/1/2019	9/13/2020	-	-	-
Dayton, OH	1/1/2019	9/13/2020	3/24/2020	5/1/2020	-
Detroit, MI	9/20/2016	9/13/2020	3/24/2020	5/7/2020	"DV"
El Paso, TX	1/1/2019	9/13/2020	4/2/2020	5/1/2020	-
Gaithersburg, MD	5/1/2017	9/13/2020	3/31/2020	5/15/2020	"Domestic"
Greensboro, NC	1/1/2019	9/13/2020	3/31/2020	5/8/2020	-
Greenville, SC	1/1/2019	9/13/2020	4/8/2020	4/20/2020	-
Indianapolis, IN	1/1/2019	9/13/2020	3/25/2020	5/4/2020	-
Jonesboro, AR	1/1/2019	9/13/2020	-	-	-
Lafayette, LA	1/1/2019	9/13/2020	3/24/2020	5/15/2020	-
Lima, OH	1/1/2019	9/13/2020	3/24/2020	5/1/2020	-
Mesa, AZ	1/1/2017	9/13/2020	4/1/2020	5/8/2020	"Family Fight"
Miami, FL	1/1/2019	9/13/2020	4/3/2020	5/4/2020	-
New Orleans, LA	1/1/2019	9/13/2020	3/24/2020	5/15/2020	"DOMESTIC"
Peoria, IL	1/1/2019	9/13/2020	3/22/2020	5/1/2020	-
Sacramento, CA	1/1/2019	9/13/2020	3/19/2020	5/8/2020	"Domestic" "Disturbance-Family"
Salt Lake City, UT	1/13/2019	9/13/2020	3/30/2020	5/1/2020	"Family" "Domestic"
St. Louis, MO	1/1/2019	9/13/2020	4/6/2020	5/4/2020	-
Terre Haute, IN	1/1/2019	9/13/2020	3/25/2020	5/4/2020	-
Topeka, KS	1/1/2019	9/13/2020	3/30/2020	5/4/2020	-
Tucson, AZ	1/1/2019	9/13/2020	4/1/2020	5/8/2020	"DV" "Family"
Waco, TX	1/1/2019	9/13/2020	4/2/2020	5/1/2020	-
West Palm Beach, FL	1/1/2019	9/13/2020	4/3/2020	5/4/2020	-
Zanesville, OH	1/1/2019	9/13/2020	3/24/2020	5/1/2020	-

[a] The sign "-" in SAH Order Date indicates that the state never introduced SAH orders.

[b] The sign "-" in Domestic Violence Parsing Terms indicates that the data set obtained from the police department contained only domestic violence related calls.

TABLE A2: EFFECTS OF SOCIAL DISTANCING ON DOMESTIC VIOLENCE CALLS DURING COVID-19 USING A FULLY INTERACTED MODEL

	(1)	(2)	(3)
March 9 to SAH	0.014***	0.014***	0.015***
	(0.004)	(0.004)	(0.004)
SAH	-0.002		
	(0.007)		
SAH to reopening		0.007	
		(0.005)	
Reopening		-0.005	-0.005
		(0.008)	(0.007)
SAH to April 15			0.015***
			(0.005)
April 15 to reopening			-0.002
			(0.005)
Observations	2,064,427	2,064,427	2,064,427
Outcome mean	0.23	0.23	0.23

Notes: This table presents the difference-in-difference estimates from Eqs. 1, 2, and 3 in columns (1), (2), and (3), respectively. The city-interacted controls include city-by-year, city-by-week, and city-by-day-of-week fixed effects. The outcome is the daily number of domestic violence service calls. Observations are at the census tract-by-day level for 31 cities. The variables and controls are defined in Section 3.2. Standard errors are clustered at the city level. ***, **, and * denote significance at the 1, 5, and 10 percent levels, respectively.

TABLE A3: HETEROGENEOUS EFFECTS OF SOCIAL DISTANCING ON DOMESTIC VIOLENCE CALLS DURING COVID-19 BY RACE, ETHNICITY AND CITIZENSHIP USING A FULLY INTERACTED MODEL

	Above 75% Share White (1)	Below 25% Share White (2)	Above 75% Share Black (3)	Below 25% Share Black (4)	Above 75% Share Hispanic (5)	Below 25% Share Hispanic (6)	Above 75% Share noncitizen (7)	Below 25% Share noncitizen (8)
March 9 to SAH	0.004	0.022***	0.019**	0.007	0.032***	0.005	0.031***	0.005
	(0.004)	(0.008)	(0.008)	(0.005)	(0.007)	(0.006)	(0.007)	(0.006)
SAH to April 15	0.009*	0.014*	0.010	0.014**	0.029***	0.001	0.030***	0.016**
	(0.005)	(0.007)	(0.007)	(0.006)	(0.008)	(0.006)	(0.008)	(0.006)
April 15 to reopening	-0.001	-0.012	-0.018**	0.008	0.018**	-0.015***	0.021***	-0.008
	(0.004)	(0.008)	(0.007)	(0.005)	(0.008)	(0.006)	(0.007)	(0.006)
Reopening	-0.005**	-0.002	-0.004	0.002	0.007	0.006*	0.001	0.012***
	(0.002)	(0.005)	(0.005)	(0.003)	(0.005)	(0.003)	(0.004)	(0.003)
Observations	482,260	549,720	583,763	446,188	517,452	594,540	500,100	569,073
Outcome mean	0.11	0.33	0.33	0.14	0.30	0.21	0.28	0.21

Notes: This table presents the difference-in-difference estimates from Eq. 3 for census tracts above 75th percentile and below 25th percentile for shares of different demographic groups. The city-interacted controls include city-by-year, city-by-week, and city-by-day-of-week fixed effects. Columns (1)-(2) report estimates by shares of Whites, columns (3)-(4) report them for shares of Blacks, columns (5)-(6) report them for shares of Hispanics, and columns (7)-(8) report them for shares of noncitizens. The outcome is the daily number of domestic violence service calls. Observations are at the census tract-by-day level for 31 cities. The variables and controls are defined in Section 3.2. Standard errors are clustered at the city level. ***, **, and * denote significance at the 1, 5, and 10 percent levels, respectively.

30

TABLE A4: HETEROGENEOUS EFFECTS OF SOCIAL DISTANCING ON DOMESTIC VIOLENCE CALLS
DURING COVID-19 BY INCOME AND EDUCATION

	Above 75% Share Income Level (1)	Below 25% Share Income Level (2)	Above 75% Share Bachelor's Degree (3)	Below 25% Share Bachelor's Degree (4)
March 9 to SAH	0.008	0.020	0.004	0.028**
	(0.007)	(0.012)	(0.008)	(0.012)
SAH to April 15	0.007	0.013	0.006	0.016
	(0.005)	(0.012)	(0.008)	(0.012)
April 15 to reopening	0.000	-0.016	-0.001	-0.005
	(0.005)	(0.009)	(0.006)	(0.012)
Reopening	-0.002	0.001	-0.011*	0.006
	(0.004)	(0.015)	(0.006)	(0.012)
Observations	428,623	618,211	466,949	575,018
Outcome mean	0.09	0.37	0.11	0.33

Notes: This table presents the difference-in-difference estimates from Eq. 3 for census tracts above 75th percentile and below 25th percentile for the distribution of income level and completion of bachelor's degree at the census tract level. Columns (1)-(2) report these estimates by income level, columns (3)-(4) report them for completion of bachelor's degree. The outcome is the daily number of domestic violence service calls. Observations are at the census tract-by-day level for 31 cities. The variables and controls are defined in Section 3.2. Standard errors are clustered at the city level. ***, **, and * denote significance at the 1, 5, and 10 percent levels, respectively.

Appendix B   A review of the literature on the effects of COVID-19 on domestic violence

Study	Sample	Main Finding
Agüero (2021)	Monthly call volumes to a national DV hotline in Peru through July 2020	48% increase in calls during lockdowns, which was uniform across demographic characteristics and states.
Arenas Arroyo et al. (2020)	Online survey of 13,000 women in Spain conducted in late May and early June 2020	23% increase in DV during the lockdown, with economic harms being the primary driver of the increase.
Béland et al. (2020)	Online survey of 4,600 Canadians conducted in late March and early April 2020	Financial stress increased concerns of experiencing DV, but receiving financial relief did not reduce concern levels.
Bullinger et al. (2020)	911 calls and crime data from Chicago, Illinois from January to April 2020	7.5% increase in DV calls for service due to stay at home order, but an 8.2% decrease in police reports and 27.1% decrease in arrests for DV.
Hsu and Henke (2020)	Police data from 36 US cities from January to May 2020	5% increase in DV from March 13th to May 24th 2020.
Ivandic et al. (2020)	Crime records and calls for service for greater London through May 2020	8.1% and 17.1% increase in DV by current partners and family members, respectively, but 11.4% decline by ex-partners over the lockdown period.
Leslie and Wilson (2020)	Police calls for service from 15 US cities through March 2020	10.2% increase in DV calls through March 2020.
Miller et al. (2020)	911 calls, DV hotline calls, and crime data in Los Angeles, California through August 2020	During lockdown, 911 and DV hotline calls increased but DV crime incident reports and arrests decreased. During re-opening all 4 fell.
Payne and Morgan (2020)	Violent crime rates in Queensland, Australia through March 2020	Rates of DV in March 2020 were statistically identical to expected values based on ARIMA model estimates.
Piquero et al. (2020)	DV incident reports in Dallas, Texas from January to April 2020	DV incidents increased for 2 weeks after the stay-at-home order, but that trend started before the stay-at-home order.
Ravindran and Shah (2020)	DV complaints received by the Indian National Commission for Women through May 2020	0.47 SD (131%) increase in DV complaints in districts with the strictest lockdowns.

Sanga and McCrary (2020)	Police calls for service from 14 cities through April 2020	12% increase in DV calls that subsided by late April. The largest increases occurred in houses with no history of DV.
Silverio-Murillo et al. (2020)	DV hotline calls and police reports from Mexico City, Mexico through August 2020	30% increase in DV hotline calls but 27% decrease in official police reports of DV.