NBER WORKING PAPER SERIES

EFFECTS OF THE COVID-19 PANDEMIC ON DOMESTIC VIOLENCE IN LOS ANGELES

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NBER Working Paper No. 28068
November 2020, Revised May 2023
JEL No. I18,J12,J16,K14,K42

ABSTRACT

Around the world, policymakers and news reports warned that the COVID-19 pandemic, and attendant restrictions on individual mobility and commercial activity, could lead to a surge in domestic violence (DV). Some prominent initial studies of the effects of the pandemic showed evidence of greater DV incidence, but findings were inconsistent across locations and DV measures. This paper focuses on a single major city, Los Angeles, to measure the impact of the initial pandemic shutdown on three DV measures based on police data (911 calls, crime incidents, and arrests) as well as measures based on two non-police administrative sources (the county DV hotline and hospital records). After confirming the prior finding of an increase in DV calls to police during the shutdown, we also show that calls to the hotline increased. However, we find that DV crimes recorded by police and hospital visits by female assault (and DV) victims both decreased significantly, suggesting that the increase in calls came from higher reporting rates, possibly for verbal disputes. Arrests per population for DV crimes were unaffected by the shutdown, but a higher share of DV crimes led to arrests. This points against a decrease in the intensity of policing of DV crimes driving the lower crime rate. We conclude that the initial LA shutdown increased the rates at which people contacted authorities about domestic-related concerns, but decreased the overall incidence of physical DV crimes in the population.

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1. INTRODUCTION

Using high-frequency administrative data from both police and non-police sources, this paper measures the effects of the initial COVID-19 pandemic shutdown on domestic violence (DV) in Los Angeles (LA), California. Drawing on multiple data sources and measures of DV allows us to provide a more comprehensive view of how pandemic shutdowns affected DV than is possible by focusing exclusively on calls to police or hotlines as proxies for DV incidence. Our examination of additional measures turns out to be important because it overturns the findings from proxies based on calls for help. Although we find increases in DV calls for help to the police and county hotline during the initial LA shutdown, we find the opposite effect for other, more reliable DV measures: both crime rates and hospital emergency department visits were significantly reduced.

Our motivation for this analysis is the widespread concern, voiced from the start of the pandemic, that government-mandated restrictions on economic activity and personal mobility could potentially increase DV incidence and trap victims with their abusers. The concern featured prominently in news coverage (Graham-Harrison et al. 2020; Vanderklippe 2020; Allen-Ebrahimian 2020; Taub 2020; Townsend 2020) and in policy responses by international organizations (UN Women 2020; FIFA, EC and WHO 2020) and governments around the world (Kottasová and Di Donato 2020).[1] In the US, the Coronavirus Aid, Relief, and Economic Security (CARES) Act, passed on March 27, 2020, included $47 million of supplemental funding to support public policy responses to DV under the 1984 Family Violence Prevention and Services Act (FVPSA; Title III of P.L. 98-457) Program, an increase of 24% relative to appropriations from FY2020 and FY2019 (Fernandes-Alcantara and Sacco 2020).[2] The expectation that pandemic shutdowns would increase DV was also commonly cited as a reason against imposing or sustaining restrictions (Biggs 2020; Lomborg 2020).

Predictions that pandemic shutdowns might increase DV incidence were based on observed effects of the pandemic on mental health (Pfefferbaum and North 2020; Galea, Merchant, and Lurie 2020), unemployment and financial distress (Bitler, Hoynes, and Schanzenbach 2020), and

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[1] Concerns about DV incidence relate to victims' safety and well-being as well as the significant social and economic costs of violence (Fearon and Hoeffler 2014; Garcia-Moreno and Watts 2011; Max et al. 2004).

[2] The FVPSA allocation entailed $45 million to formula grants for shelters and support services for DV survivors (26% increase) and $2 million to the National Domestic Violence Hotline (17% increase), but no funding for the Domestic Violence Prevention Enhancement and Leadership Through Alliances (DELTA) program. The CARES Act also included a moratorium on evictions of certain tenants, including some covered under the 1994 Violence Against Women Act (VAWA; Title IV of P.L. 103-322), though it did not provide funding for VAWA programs or for crime victim support under the 1984 Victims of Crime Act (VOCA; P.L. 98-473).

gender inequality (Alon et al. 2020), factors that could increase DV rates (Card and Dahl 2011; Berg and Tertilt 2012). There were further concerns that the pandemic could depress reporting rates by victims, because of higher costs of leaving the home or accessing support services. Decreased reporting rates would then further increase incidence by reducing the expected punishment for abusers (e.g., as in Becker, 1968).

Despite these important concerns, the theoretical effect of shutdowns on DV was uncertain. Shutdowns could lower rates of violence among former partners and non-cohabiting couples by reducing their time together. They could also slow the rate of new relationship formation (which would in turn reduce or delay violence) and reduce the frequency of common DV triggers, such as infidelity and alcohol consumption outside the home (Nemeth et al. 2012), or stress from workplace conflict and commuting. Deterrence could also have increased if the expected costs to abusers were higher, because of the risk of contracting the virus in jail. Reporting rates might have increased because of greater public attention to the issue of DV, driven by the increase in news coverage and publicity of public health information about DV risks, and because of expanded funding of support services. Reporting of DV by neighbors and other witnesses may have increased because people spent more time at home. Because of these potentially offsetting effects, it was unclear *a priori* whether pandemic shutdowns would increase or decrease DV incidence and reporting in any particular location.

This ambiguity is reflected in the inconsistency in the initially observed effects of the pandemic on DV. Some cities experienced increases in DV measures, while others saw decreases (Taub 2020). Prominent academic studies early in the pandemic found increased rates of DV calls to police (Leslie and Wilson, 2020; McCrary and Sanga, 2021) and hotlines (Agüero, 2021; Perez-Vincent et al., 2020; Ravindran and Shah, 2020), but this finding has not been universal. Outside of the US, for example, Silverio-Murillo et al. (2020) finds significant drops in both hotline calls for DV legal aid and in DV police reports across 16 municipalities in Mexico City. Studies in the US focusing on DV crime rates, such as Abrams (2021) in Austin, Chicago, Nashville, and San Francisco, also found reductions in DV.

This paper contributes to the literature by providing evidence on multiple measures of DV from Los Angeles (LA), including both police and non-police sources. By focusing on a single major city, we avoid questions that arise in the early literature about whether the variation in initial estimates comes from examining different measures or different locations. This is a feature we

share with Ivandic et al. (2020), who study calls and crimes in London, and Bullinger et al. (2021), who study calls, crimes and arrests in Chicago. Police calls reflect 911 or emergency calls while crimes reflect police-documented criminal incidents. Both of those papers find increased DV calls at the start of the pandemic, but they find different effects on DV crime rates: Bullinger et al. (2021) finds a drop (and corresponding drop in arrests), while Ivandic et al. (2020) finds an overall increase (but a decrease in crimes involving ex-partners).

The anlaysis in Miller et al. (2022) of police data from 18 major US cities, including Chicago and LA, finds an overall increase in DV calls to police and reduction in DV assault crimes, but with heterogeneous effects. While the decrease in crimes is present in both larger and smaller cities, the increase in DV calls is limited to the largest cities. This variation supports the presence of hetergeneous effects across locations. Because results from other cities might not generalize, examining LA on its own is therefore essential to quantifying what happened in that city. The heterogeneity across locations also highlights the importance of focusing on a fixed location to meaningfully compare effects of the pandemic across different outcomes. The potential limitation, that our results from LA may not translate directly to other cities or countries, is a consistent problem across all studies in the literature, whether they draw from a single city, set of cities, or even from a particular country.[3] Beyond contributing to the understanding of the pandemic, our examination of the variability of its effects across alternative DV data sources allows us to contribute to a broader understanding of the uses and limitations of available DV measures, which is important even outside of the COVID-19 pandemic.

Our analysis encompasses three measures of DV based on LA police data (calls, crimes, and arrests). We differ from the prior literature by also estimating effects of the pandemic on DV using daily measures derived from two non-police adminstrative sources: Calls to the county DV hotline and hospital emergency department (ED) visits for assaults against adult women. The hospital data, which were not available in real-time to help guide early pandemic policy, are particularly useful because they are strongly linked to DV events and victims. In contrast, 911 calls and hotline calls could be reflective of third-party reporting or requests for information. ED visits and hotline calls also provide us with measures of DV that are not affected by selection into police

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[3] One dimension that varies across cities and that could affect the impact of the pandemic in police data is the density of police officers per population. The LA police department (LAPD) ranks second in the US by population served, but third in the number of full-time sworn officers. LA has 2.5 officers per 1,000 population, which is significantly lower than New York (4.2) or Chicago (4.8) and even lower than London (3.7).

records (by callers or police officers). Avoiding this selection problem is a key design challenge in DV research, which prior studies have addressed by using health data (e.g., Aizer 2010; Miller and Segal 2019) or victimization surveys (Stevenson and Wolfers 2006; Miller and Segal 2019), or by focusing on fatal outcomes, such as homicide and suicide, that are reported nearly universally (Stevenson and Wolfers 2006; Miller and Segal 2019; Iyengar 2009; Aizer and Dal Bó 2009).

We empirically measure separate effects of the initial shutdown on each of our DV outcomes using a difference-in-differences model that compares average changes in 2020 between the pre-shutdown period and the initial shutdown (March 19 – May 28) to changes in prior years, controlling for variation across months and by day of the week. We find significant effects of the initial shutdown on DV in LA, but with significant variation across outcomes: DV calls to police and to the hotline both increased (by 13% and 153%, respectively), but DV crimes and ED visits both decreased (by 9% and 43%). Arrests per population for DV crimes were unchanged, but the arrest rate for recorded DV crimes was higher.

The divergence that we find in the impact of the initial COVID-19 shutdown, across DV outcomes and within a single city, suggests that caution is warranted before extrapolating from any single outcome measure to changes in the other measures or to changes in the underlying rate of DV incidence in the population. While the measures we study should each be related to DV incidence, they are not equally reliable proxies for DV. We introduce a theoretical framework that describes how the relationships between each of our measures and underlying DV incidence in the population are mediated by other uncontrolled factors, such as reporting rates and police effort. Measures based on calls for service, either to police or to hotlines, are particularly concerning because they have not been validated by police or medical providers and can include an unknown and varying share of calls that are not related to DV crimes. Furthermore, unlike hospital and crime records, there are no state or federal data standards for recording or reporting service calls that ensure consistency or quality.

Despite these limitations, calls may provide a better measure than crime reports if we are concerned about changes in police effort and the intensity of investigating and recording DV crimes. We are not able to examine reporting rates or police effort directly, but we are able to examine effort indirectly using data on arrests. There we find no support for a decrease in policing intensity for DV crimes. Arrest rates for DV crimes were stable relative to the population and increased relative to DV crime rates. We conclude that the police data are supportive of a decrease

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in DV incidence (or at least a decrease in DV crimes that are reported to police), rather than an increase in DV, but we are uncertain about DV crimes that are not reported to police.

We therefore turn to hospital data, which we use to measure the universe of serious DV events leading to injuries. We find a significant drop of 0.13 ED visits for assaults against female victims per 100,000 population, which corresponds to a 43% drop relative to the prior mean. We find a similar decrease (of 34%) when we focus on the most serious ED visits for assault that lead to an inpatient hospital admission. These visits are less common, but they are important because there is less self-selection in deciding to seek medical treatment. The decrease in ED visits for these severe injuries is less likely to be explained by people avoiding the hospital due to the risk of COVID infection. We further find a decline of 60% when we focus on the subset of ED visits for assaults that hospital records indicate are confirmed or suspected cases of intimate partner violence. These results from hospitals provide support from non-police data that rates of physical violence causing serious injuries did not increase during the shutdown. This further suggests that the decline in serious DV crimes was not coming from police neglecting their duties in investigating and responding to those calls, but was instead coming from a reduction in those crimes.

In addition to the primary contribution of the paper, presenting estimated effects of the pandemic on a more comprehensive set of measures within a single city, our paper also extends the literature by estimating changes in outcomes after the initial re-opening date (May 29 – August 24, in our sample). In theory, this could allow us to test if DV reporting rates were temporarily depressed during the shutdown, which might appear as an increase in calls following the re-opening. Although we do find significant changes in DV outcomes between the initial shutdown and initial re-opening periods in LA, the findings do not support the hypothesis of suppressed reporting during the shutdown. Instead, we find the previous growth in calls to police and to the hotline recedes during reopening, while the decline in DV crimes further deepens. ED visits for assault are higher after re-opening, compared to during the shutdown, but remain lower than expected relative to the start of the year. However, we are cautious in interpreting the estimated impacts of the initial re-opening in LA due to the fact that it coincided with the murder of George Floyd. Any observed effects of re-opening are likely confounded with increased public attention to racial justice and policing behavior. We therefore present both estimates, but focus our attention on interpreting the effects of the shutdown rather than re-opening.

Finally, we contribute to the literature by examining a few key mechanisms through which the pandemic shutdowns could potentially affect rates of DV. We do this by examining the contributions of other explanatory variables related to the pandemic to our overall estimated effects of the shutdown and re-opening. We find negligible effects of recent COVID-19 cases on our DV outcomes, suggesting that illness or risk of illness was not a key contributor to our overall effects. Higher unemployment increases hotline calls, but not the police measures or ED visits, which is consistent with rising homelessness increasing demand for emergency shelter. Most interestingly, we find that school closures consistently and significantly increase all of our measures of DV in LA. This pattern differs from those found in reporting of child abuse and neglect, which is often done by school staff, and depressed when children are not in school (Fitzpatrick, Benson, and Bondurant 2020). Accounting for these factors leaves the estimated effects of the shutdown qualitatively unchanged. Our estimate of the decrease in crimes and ED visits due to the initial shutdown becomes larger in magnitude after controlling for these other factors, while the increase in calls becomes smaller. Taken together, our findings fail to support the conventional narrative that shutdowns increased DV; they indicate instead that the initial LA shutdown increased reporting rates and lowered DV incidence.

2. DATA DESCRIPTION

We focus on LA because of its large population, early COVID restrictions, and the depth of publicly available real-time data on measures of DV. Nearly 4 million people live in the city of LA with an additional 6 million in the surrounding county. Relative to the rest of the country, LA experienced early exposure to the COVID-19 pandemic and responded quickly with strict restrictions. One of the earliest confirmed COVID-19 cases in the US was in LA in late January (Fox11 News 2020). On March 19th, California implemented a stay-at-home order and closed all non-essential businesses (California 2020). The city of LA also publishes real-time data from the LA Police Department (LAPD) on individual 911 calls, crime incidents and arrests that allows researchers to distinguish between domestic and non-domestic cases. LA is also unusual among major US cities in providing information that categorizes both DV calls and crimes by severity. In addition to the police data, we also obtained two measures of DV in LA county: calls to the DV hotline and hospital emergency room visits for assaults. These measures capture DV cases that are not necessarily reported to police.

2.1   *DV Hotline Calls*

The LA County Domestic Violence Hotline, housed within the LA County Department of Public Health, acts as a switchboard to connect domestic violence victims with local agencies (i.e., shelters, legal aid, etc.). Callers to the hotline are prompted to enter their zip code. This information is then used to transfer their call to a designated DV agency in their area. The hotline is completely computer operated; callers only speak directly with a person after they are connected with a local agency. We have data from the hotline on hourly call counts going back to January 2018.[4] Because the hotline serves the entire county, we use the county population to compute our measure of calls per 100,000 population.[5]

2.2   *Police Dispatches*

Our data source for LAPD dispatches (also referred to as 911 calls or calls for service) is the Los Angeles Open Data Portal.[6] The data are updated weekly and include dispatch-level information on call type, dispatch date and time, reporting district, and area of occurrence. We use call type codes and textual information on call type descriptions to identify domestic-related dispatches. Specifically, we define a domestic-related call as any call for which the description contains the phrases "Dom Viol" or "Family." Within the set of domestic-related calls, we are able to further identify the nature of calls using call type codes. Domestic-related calls with codes 245 and 242 indicate assault, and 620 indicates dispute. We use this information to create three variables: all domestic-related 911 calls, domestic and family dispute calls, domestic assault calls. Call counts are aggregated at the daily level and presented per 100,000 people within the LAPD jurisdiction. Data on population served are from the Uniform Crime Report's 2018 Law Enforcement Officers Killed and Assaulted (LEOKA).

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[4] We are missing hotline data from April 1-7 and July 1-14 in 2018.

[5] Note that 911 call and crime incident data is for the city of Los Angeles, while the Hotline serves both the city and the county of Los Angeles.

[6] The calls for service data used in this analysis is publicly available at <https://data.lacity.org/A-Safe-City/LAPD-Calls-for-Service-2020/84iq-i2r6>. Data presented here were downloaded on August 17, 2022. A previous version of this paper used data downloaded in September 2020. Dispatch data and results are unchanged across the two download dates.

2.3   *Crime Incidents and Arrests*

Our data source for LAPD crime incidents and arrests is also the Los Angeles Open Data Portal.[7]
We use data on police criminal incident reports, which are available at the incident-level and are
updated weekly. Criminal incident reports by police do not necessarily lead to conviction or arrest.
For each incident, we observe up to four different crime codes, the date the incident was reported,
and modus operandi (MO) codes. We make use of all available information to determine if a crime
is domestic (i.e., using all four crime codes plus the MO code). We categorize the severity of
incidents by type of crime based on the most severe crime reported for each incident.

Based on conversations with the LAPD, we have determined that there are two ways that
domestic incidents will appear in the data. The first is with a DV-specific crime code: DV assaults
are indicated as code 236 or 626. The second is using the MO code of 2000. An MO code of 2000
accompanied by a crime code indicates that the crime was domestic. We split these crimes into
two groups: crimes that are more severe than assault and crimes that are less severe than assault.
The more severe crimes are homicide, rape, robbery, and kidnapping. The less severe category
includes thefts, vandalism, threats, and other misdemeanor crimes.

Crime incident counts are aggregated at the daily level and presented per 100,000 people
within the LAPD jurisdiction. To ensure comparability across our outcomes, we define the date
for police measures using the date at which the incident was reported to police.[8] We also track
whether crimes resulted in an arrest and examine arrest rates per population, as well as per incident,
for various types of DV crimes.

2.4   *Emergency Department Visits for Injuries from Assaults*

Our final data source covers hospital emergency department (ED) visits by adult women (aged 18
and over), residing in LA county, for injuries from assaults. These data were obtained through an

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[7] The crime incident data used in this analysis is publicly available at <https://data.lacity.org/A-Safe-City/Crime-Data-from-2010-to-2019/63jg-8b9z> and <https://data.lacity.org/A-Safe-City/Crime-Data-from-2020-to-Present/2nrs-mtv8>. Data presented here were downloaded on August 17, 2022. A previous version of this paper used data downloaded in September 2020. The crime data have only minor differences and our main results are unchanged (quantitatively and qualitatively) across the two download dates. However, arrest information appears to be added to the public files with some delay. As a result, the earlier download did not accurately reflect the ultimate arrest outcomes for crimes that were recorded later in our sample period. See Appendix Figure A1 for more information.
[8] This may not be the same as the date in which crimes occurred, as some victims may report after a lag. Appendix Figure A2 compares trends in DV crimes using occurrence and reporting rates. Table A1 shows estimates when the crime occurrence date is used instead. We again find significant declines in DV crimes during and after the shutdown, indicating that delayed crime reporting during the shutdown does not explain our crime results.

agreement with the California Department of Health Care Access and Information (HCAI). They were not available in real-time during the shutdown, because data are processed and released to researchers on an annual basis. This approach to measuring DV resembles the one in Aizer (2010), who studies annual in-patient hospitalization rates among women for assault. Because we examine daily rates, our primary measure is broader and includes all ED visits by women for assault.[9] We also examine two narrower measures of DV that help address potential concerns with the primary measure. The first measure includes only the more serious ED visits that lead to hospital admissions, in order to address the concern that the risk of COVID infection might have deterred some women with less serious DV injuries from visiting the ED to seek treatment. The second concern we address is the fact that assaults could include non-DV events, and that these other sources of injury might have declined during the shutdown. We therefore consider a third measure of ED visits that is limited to diagnosis codes for assaults that are either confirmed or suspected to be from intimate partner violence.[10] This category might be too narrow and miss some cases of DV that were not identified as such by clinicians, but it should not be affected by changes in assaults from other sources.

2.5   *Contextual Variables*

Our primary explanatory variables for this analysis are the dates of initial shutdown (March 19) and re-opening (May 29). We pool together the period from May 29 to August 24 as following the initial shutdown, though we note that there was another shutdown on July 13, followed by re-opening on September 2, right after our sample period. The additional contextual variables used to study mechanisms are from several sources. Our data on school closures are from the Los Angeles Unified School District instructional calendars and cover the full sample period. We measure MSA-level unemployment for non-institutionalized civilians aged 16 and older from the CPS monthly files (Flood et al. 2020).[11] We also control for direct effects of the COVID-19 pandemic due to higher health risks, which we measure using new infections in the prior 14 days

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[9] We identify assaults using external cause of morbidity (ECM) codes: X92, X93, X94, X95, X96, X97, X98, X99, Y00, Y01, Y02, Y03, Y04, Y06, Y07, Y08, Y09.

[10] We identify these using the diagnosis codes: T74.11*, T74.21*, T74.31*, T74.91*, T76.11*, T76.21*, T76.31*, T76.91* or O9A.3, O9A.4, O9A.5.

[11] Because the reference week for the CPS is generally the calendar week that contains the 12th day of the month, we match the first 18 days of the month with the prior month's CPS and the rest of the days with the current month.

in LA County, based on data on daily county-level counts of new COVID-19 infections from the *New York Times*.[12]

Descriptive statistics for our outcome and contextual variables are presented in Table 1. We provide means and standard deviations for outcome variables in 2018 and 2019 to show the pre-pandemic rates.

3. CONCEPTUAL FRAMEWORK AND EMPIRICAL APPROACH

The major challenge that all DV research must address is that fact that DV incidents, which often occur in private, are not directed observable by researchers and are only imperfectly captured in administrative data sources. This section presents our conceptual framework for how each of our administrative measures is related to the underlying incidence of DV in the population and to changes in reporting rates to that source, as well as changes in policing intensity. It further develops the framework employed in Miller et al. (2022) for calls and crimes in police data.

3.1   *Conceptual Framework*

Let δ be the share of the population that experiences a DV incident on a given day. Given our data, we limit δ to the subset of DV incidents that violate California penal code. These incidents could include physical violence, threats of physical violence, violations of DV protective orders, or other crimes perpetrated against a domestic partner. We model the daily rate of DV calls to the police as a function of the daily population share that experiences a DV incident (δ) and two reporting rates:

(1) $[DV\ police\ call\ rate] = \alpha_C^P \delta + \alpha_N^P (1 - \delta)$

α_C^P is the reporting rate to police of DV crimes (where P is for police and C is for crime). This is the average number of DV calls to police per DV criminal incident. Some incidents can produce multiple calls to police, but significant under-reporting implies that $\alpha_C^P < 1$. In addition, α_N^P is the rate at which calls arrive from the population that is not experiencing DV $(1 - \delta)$. These are categorized as DV calls in the police records, but they are not associated with DV incidents (and will not be related to DV crimes in equation 2). These calls could come from incidents that are not domestic in nature or from non-criminal incidents such as verbal disputes that involve intimate

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[12] <https://github.com/nytimes/covid-19-data>

partners. We expect that $\alpha_C^P > \alpha_N^P$, which implies that increases in δ will also increase call rates (by a factor of $\alpha_C^P - \alpha_N^P$), if reporting rates are unchanged. However, this monotonic relationship between population incidence and calls to police can be broken if either of the reporting rates is affected by the pandemic.

The second outcome we model is the rate of DV crimes officially recorded by police, which is determined by the equation:

$$(2)\ [DV\ crime\ rate] = \alpha_C^P \beta_C \delta + \alpha_O^P \beta_O (1 - \alpha_C^P)\delta$$

where δ and α_C^P are defined as in Equation 1 for calls to police. The first term captures DV crimes that were reported to police as DV calls. It includes the call rate for DV crimes from equation (1), multiplied by an additional β_C parameter that captures police effort. We do not assume that $\beta_C = 1$ because police can make mistakes or invest insufficient effort into pursing a case.[13] The second term in the equation covers criminal DV incidents that were not reported to police through DV calls (which amount to $(1 - \alpha_C^P)\delta$), but were nonetheless reported through other calls, at a rate of α_O^P. A fraction β_O of these other "incidental" DV calls will be recorded as DV crimes; like β_C, the level of β_O depends on police effort. In addition to the direct effects through the β terms in the equation, changes in police effort can also indirectly affect DV incidence (δ) or reporting (α terms), through crime deterrence.

Equation 2 shows that, if reporting rates and police activity stay the same, then changes in rates of δ will move recorded crime rates in the same direction. The first two equations also allow us to identify three potential sources of divergence between DV calls to police and DV recorded crimes. The first is from changes in the level of DV calls that do not represent DV crimes (α_N^P in Equation 1), so are not counted among DV crimes in Equation 2. The second is from changes in police effort (the β terms in Equation 2) that do not directly affect calls (in Equation 1). The third is from changes in the incidental reporting rate α_O for DV crime reports that come from non-DV calls (and are missing from Equation 1).

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[13] It is also possible that police can err in the opposite direction and record as DV crimes incidents reported to them that do not meet the criteria. We expect this rate to very low, so we omit this from our model for brevity.

Noting that only about a quarter of DV crimes in our sample lead to arrest, we therefore model the daily rate of DV arrests as the product of the daily DV crime rate from Equation 2, crime severity (S) and police effort for arrests (β_A):

(3) $[DV\ arrest\ rate] = S_C \beta_A [DV\ crime\ rate]$

Conditional on a DV crime taking place and being recorded as such by police, an arrest will take place if the severity of the incident exceeds the arrest threshold, which is higher than the threshold for recording a crime and happens for a fraction S_C of recorded crimes. Arrests also require additional effort from police (for investigation and intervention), which is provided for a fraction β_A of crimes that meet the severity threshold. Although β_A is not a parameter in Equation 2 for DV crimes, it is natural to expect the measures of police effort (β_A, β_C, and β_O) to be correlated across the margins of recording crimes and arresting perpetrators.

We next turn to hospital ED visits. As with arrests, the rate of DV hospital visits also depends on the severity of the violence. We model the daily rate of these visits as:

(4) $[DV\ ED\ rate] = \gamma\delta[S_I + (1 - S_I)\alpha_H]$

where γ is the fraction of DV incidents that causes injuries. A fraction S_I of these injuries requires immediate and serious medical attention. All victims with these serious injuries seek emergency hospital treatment. A fraction α_H of victims with less serious injuries also visits the ED for care.

There is also a legally mandated relationship between hospital visits and police reports for cases where clinicians identify the source of the injury as confirmed or suspected DV. However, because not all DV hospital visits will be identified as such, it is possible that some victims will seek medical care that will not be captured in police records at all (for calls, crimes, or arrests). The fact that most DV cases in police data do not lead to an ED visit ($\gamma < 1, S_I < 1, \alpha_H < 1$) is reflected in the much lower rates of ED visits than police records of DV. ED visits for assaults against female victims (from all sources) occur at 7% of the frequency of DV calls to police, 22% of DV crimes, and 86% of DV arrests. Focusing on ED visits for assaults with suspected or confirmed DV reduces those shares to 0.9%, 2.7%, and 10.4%, respectively.

Two key features of DV data are important for the current analysis. The first is that ED visits reflect an administratively validated measure of DV that does not depend on the effort of police. The second is that there is a subset of ED visits ($S_I\gamma\delta$) where we expect near-universal

reporting. If those cases can be identified in the data, then any changes in their frequency can be attributed to changes in their population incidence. However, these cases may not be representative of the overall rates of DV across all severity levels or including verbal and emotional abuse or coercive control. One possible way to assess changes in less severe DV is to use our final measure, DV hotline calls.

Finally, we model the daily rate of DV hotline calls as:

$$(5)\ [DV\ hotline\ call\ rate] = \alpha_C^{HL}\delta + \alpha_O^{HL}(1-\delta)$$

δ is defined as the share of the population experiencing a criminal DV incident, as above. A fraction α_C^{HL} of these DV incidents lead to hotline calls, either from victims or from friends or family. The first term in the sum captures these calls, which are related to recent or ongoing abuse, from people seeking emergency shelter referral or other support services, such as counseling or legal support. The hotline also receives other calls that are not related to the criminal DV incidents included in δ, that arrive at a rate of α_O^{HL}. These calls can be related to psychological abuse or other situations that are excluded from δ and our other measures of DV, including past DV survivors seeking access support services. However, these other calls can also include calls from those without a history of DV. During the initial shutdown, calls to the hotline among people seeking emergency shelter may have increased in LA in response to the well-publicized initiative to provide hotel rooms as needed to supplement emergency shelter beds. The program, called Project Safe Haven, was announced by the LA mayor Eric Garcetti in his daily briefing on April 29, 2020 and funded in part by a $4.2 million donation from the singer Rihanna and Twitter CEO at the time Jack Dorsey. [14] The advertisement of this program could have increased calls from those experiencing homelessness unrelated to DV or from past DV. As such, hotline calls could be both a broader measure of DV in that they could capture psychological and past abuse, but also a noisier measure in that we lack any information on the nature of calls to the hotline. [15]

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[14] See local news coverage at <https://losangeles.cbslocal.com/2020/04/09/rihanna-twitter-ceo-donate-4-2m-to-shelter-domestic-violence-victims-amid-coronavirus-pandemic/>.

[15] We lack data on the nature of hotline calls in LA or in the US more broadly. However, data on the 17,043 calls to the Italian national domestic violence hotline between April-June of 2020, show that 24% were invalid nuisance calls, 32.8% were calls from victims of DV, and the rest were primarily informational requests and third-party reports (https://www.istat.it/en/archivio/278051).

Because we are not able to identify the type of call from our data, we are not able to separately identify changes in δ, α_C^{HL}, or α_O^{HL}. We do expect calls related to recent victimization to arrive the hotline at a higher rate per population than those that are not ($\alpha_C^{HL} > \alpha_O^{HL}$), which implies that, if reporting is unchanged, increases in δ will also increase call rates (by a factor of $\alpha_C^{HL} - \alpha_O^{HL}$). However, if reporting rates by either group changes, there is no necessary link between the direction of change in δ and in hotline calls.

While calls to police and the hotline are similar in that they are recorded before being substantiated by official sources and in that they depend on reporting rates, it is not necessary that calls to the hotline and to the police will move in the same direction. Factors that shift attitudes towards police would affect α_C^P and α_N^P directly, but their spillover effects on α_C^{HL} and α_O^{HL} would depend on the unknown degree of substitution or complementarity that victims experience between the two types of services. The converse is also true for factors that improve the quality of community-based services available through the hotline; they will produce direct effects on α_C^{HL} and α_O^{HL} and possible spillover effects on α_C^P and α_N^P.

There are two primary implications of this conceptual framework. First, if DV incidence increases in isolation, with no contemporaneous changes in reporting rates, severity, or police effort, then all measures of DV will increase. Second, for each of our measures, the relationship between DV incidence and the measured rate of DV is mediated by unobserved factors. Any changes in reporting rates, severity, or police effort can confound the relationship between DV incidence in the population and different measures of DV. By characterizing these factors, and how they relate to the different outcome measures, this conceptual framework helps us interpret the variation in observed effects of the initial COVID-19 shutdown across our measures of DV.

3.2   *Empirical Model*

Our empirical analysis estimates the overall effects of the COVID-19 shutdown in LA on each of our measures of DV. We do this by comparing outcomes in the beginning of the year to outcomes during the initial shutdown, and also by comparing the shutdown period to the initial period of re-opening. In our main model, the shutdown period starts on March 19, 2020, which was when substantial restrictions to business and personal activity were imposed in LA. It ends on May 28, when restrictions on non-essential business activity (visits to hair salons and restaurants) were first

lifted. Our sample ends on August 24, 2020, and we refer to May 29 through August 24 as the post-shutdown period.[16]

Our main empirical model takes a day as the unit of analysis and regresses various DV outcomes, scaled to population, on indicators for days that follow the start of the initial shutdown (*InitialShutdown*$_t$) or that follow the initial re-opening (*PostInitialShutdown*$_t$). The estimation equation is:

(6) $DV_t = \beta_1 InitialShutdown_t + \beta_2 PostInitialShutdown_t + \mathbf{y_t} + \mathbf{m_t} + \mathbf{d_t} + \varepsilon_t$

The β_1 coefficient is a difference-in-differences estimate of the average change in outcomes between the initial shutdown in 2020 and the earlier part of the same year, compared to the average seasonal variation between those periods in the two prior years. The β_2 coefficient is the difference-in-differences estimate for the change in the post-shutdown period, relative to the initial shutdown period, between 2020 and the two prior years. We include a vector of year fixed effects $\mathbf{y_t}$ and account for seasonal and within-week variation with month ($\mathbf{m_t}$) and day of week ($\mathbf{d_t}$) fixed effects.[17]

Our model considers each shutdown period as a whole, notwithstanding the variation in restrictions during the initial period and following the initial re-opening. We therefore supplement our regressions with figures that plot daily variation in outcomes and to depict the variability within each of the three main time periods.

While our focus is on the overall effect of the pandemic shutdown, we also explore the underlying mechanism by estimating an expanded model that includes key contextual variables related to the pandemic that might have affected DV rates:

(7) $DV_t = \beta_1 InitialShutdown_t + \beta_2 PostInitialShutdown_t + \boldsymbol{\beta_3 X_t} + \mathbf{y_t} + \mathbf{m_t} + \mathbf{d_t} + \varepsilon_t$

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[16] Our results are robust to alternative definitions of the reopening timeline. See Appendix Table A2.
[17] Because the entire city was subject to a shutdown at the same time, we rely on 2018 and 2019 to provide "control" years that were unaffected by the pandemic and define the "pre" and "post" periods based on calendar date (month and day) within the year. While it would be possible to compare locations within the city with larger and smaller drops in voluntary mobility, it is not obvious that measure would captures meaningful variation in the severity of the pandemic or shutdown (i.e., places with smaller drops in mobility, possibly because they contain more essential workers, are not necessarily less affected by the stress, health impact, or other hardships).

The vector of controls X_t contains these elements: an indicator for school closure, including weekends and holidays; the MSA-level monthly unemployment rate; and the number of new COVID-19 cases in the county over the prior 14 days, scaled to population. The interpretation of the β_1 and β_2 coefficients in this model is shifted from the overall effect of the pandemic policies (in Equation 6) to the unexplained portion of the effect that is not attributable to changes in these factors.

In addition to allowing us to estimate the impact of the shutdown, net of the effects of the explanatory variables, the model also provides estimates for the effects of those factors on the various measures of DV in the β_3 coefficient estimates. Of particular interest is the estimated effect of school closures, which is likely to increase the time that children spend at home, and may increase stress and conflict in some households. Our estimate for COVID-19 infection rates will measure the extent to which DV outcomes are affected by illness or by the increased risk of infection among healthy people. In this analysis, which is focused on the early part of the pandemic, we expect that the impact of increased risk is likely to be more relevant overall than the direct disease burden. California was among the first states to experience local COVID-19 transmission and deaths, but cumulative reported case numbers were still below 2.5% of the county population by the end of our sample period (August 24, 2020). Given these low transmission rates, it is likely that shutdown policies themselves played a significant role in shifting public perceptions about the risk and seriousness of the pandemic, in addition to their direct effects of proscribing certain activities.

4. RESULTS

4.1 *The Shutdown Increased DV Calls for Police and Community Services*

This section starts with our two measures of DV incidence based on calls for service, either to the DV hotline or to the LAPD. As described in Section 3.1, the limited information available to authorities at the time of a call makes these measures noisier than ones based on information recorded by police or medical providers, and more likely to include non-criminal (α_N^P in Equation 2) or other (α_O^{HL} in Equation 1) reports that are not related to current DV crimes. Researchers studying US data are typically unable to identify the type of caller from either calls-based data source, which makes it impossible to distinguish calls that are related to recent DV incidents from other calls. As a result, the volume of service calls is only a reliable proxy for the population

incidence of DV (δ) if reporting rates are unaffected by the pandemic. If reporting rates changed, as was predicted, then calls for service would provide insight into the combined effects of COVID-19 on reporting and incidence.

Despite these limitations, service calls to police have been the most common measure used in the economics literature on the effects of the pandemic on DV in the US, and they have been the primary basis for the empirical findings that DV rates increased during pandemic shutdowns. Our analysis of calls data confirms these prior results in LA.

Trends in daily calls to the LA county DV hotline are depicted in Figure 1 by calendar date from January 1 through August 24. The measured are scaled to county-population and shown in the figure with a 7-day moving average to smooth within-week variation. The separate lines in the figure are for the 3 years in the sample, with the pandemic year of 2020 shown in solid red, and the prior years in solid black (2019) and dashed grey (2018). The vertical lines in the figure show the start and end dates of the initial COVID-19 shutdown in LA in 2020.

Figure 1 shows that calls to the hotline were similar across the three years in the early months of the year, but that they diverged significantly in 2020 after the COVID-19 shutdown. There was a substantial increase in hotline call volume at the start of the shutdown period with no counterpart in the prior years. The call level continued to grow during the shutdown period and then decreased sharply around the time of the initial re-opening. However, the level of hotline calls remained well above average through the month of August.

Regression estimates (using the model in Equation 6), presented in column 1 of Table 2, confirm the significant increase of 0.22 calls (s.e. 0.02), the significant drop of 0.08 calls (s.e. 0.03) and the persistence of the elevated calls level in the post-shutdown period relative to the pre-shutdown period (0.22-0.08 = 0.14, significant at $p < 0.000$). The size of the initial increase corresponds to a 153% increase relative to the mean of 0.15 calls in 2018-2019. Even the smaller 0.14 increase in the post-shutdown period reflects 98% more daily calls than the average in the prior two years.

Our findings for DV calls to police also show significant relative growth during the initial shutdown, echoing similar findings of increased volume of DV calls to police found in other papers. Figure 2 follows the format of Figure 1, but it shows the volume of DV-related service calls, scaled to 100,000 population. DV calls were initially lower in 2020 than in the two earlier years, but there was a clear relative increase following the initial shutdown. Similar to the pattern

for hotline calls, re-opening was associated with a significant drop in calls to police, but the drop in police calls was even larger than the increase during the shutdown, leaving calls somewhat lower in the period immediately following the initial shutdown.

The corresponding regression results using the total number of DV-related calls to the LAPD are reported in column 2 of Table 2. DV calls per 100,000 population increased by an average of 0.54 per day (s.e. 0.08; a 13% increase relative to the 2018-2019 mean of 4.12) during the initial shutdown period and then declined by 0.69 (s.e. 0.08) from that relative peak. Comparing the post-shutdown period to the period before the initial shutdown, we find a significant ($p = 0.054$) decrease in call volume of 0.15, corresponding to 4% of the mean from the prior two years.

The LAPD data also provide sufficient detail to allow us to distinguish between calls for incidents that appeared more severe at the time of the initial service call. When we estimate separate models for different types of DV calls, we find the increase in calls is primarily (75%) driven by the increase in calls for less severe domestic disputes (of 0.41 per 100,000 population per day; column 3 of Table 2), the category that accounts for 60% of DV calls in the baseline period. Calls for DV assaults also increased, by a more modest 0.13 (column 4). The magnitude of the impact is also substantially larger for disputes than for assaults, as a proportion of their respective 2018-2019 baseline rates (16% versus 8.4%). This pattern is consistent with the increase in DV calls coming mainly from verbal disputes rather than physical assaults, as recorded in the initial dispatch record, and possibly from incidents that are not criminal DV cases.

The consistent pattern across the measures of calls in Table 2 is of a significant increase during the shutdown period, followed by a significant decrease after re-opening. Notwithstanding the caveats about the timing of the re-opening in LA (and its coincidence with the murder of George Floyd, discussed in Section 1), the lack of a further increase in calls following the relaxation of pandemic restrictions suggests that the restrictions themselves did not significantly suppress reporting rates.

Despite the qualitative similarities between the two types of calls, it is also notable that the relative increase in hotline calls was far greater (153% compared to 13% for calls to police) and that hotline calls remained elevated (at twice the usual level) during the re-opening period. One reason for this may be that reporting rates to the hotline were elevated because of an increase in community resources available to DV victims and survivors during the pandemic. To the extent that the increased hotline calls in our data also reflect greater use of non-police community

resources, they could have resulted in lower incidence of DV. However, because of the contemporaneous increase in the value of reporting DV to the hotline, in particular, it is difficult to attribute the increase in calls to greater incidence.

4.2   *The Shutdown Decreased DV Crimes*

We next turn to LAPD data on DV crime reports. These records are submitted by officers after they investigate and determine that a DV crime has likely occurred. As such, they have been assessed as DV crimes by police and are less likely to include records that are not related to DV criminal incidents. At the same time, it is important to note that these records are not limited to cases that lead to arrests, criminal charges, or convictions.

Despite their common source, we find opposite effects of the pandemic shutdown on DV calls to the LAPD and on DV crimes. This is evident in Figure 3, where DV crime rates at the start of 2020 resemble prior years, but drop significantly relative to prior years, starting in late March. The relative drop in DV crimes during the shutdown persists after the restrictions are lifted and through June and July. The regression estimates in Table 3 (column 1) show an average drop of 0.13 (s.e. 0.04) DV crimes per 100,000 population per day in the initial shutdown period, corresponding to a 9.2% reduction in DV crimes compared to the 2018-2019 average of 1.36.

After declining during the shutdown, DV crimes declined by another 0.08 (s.e. 0.04) after re-opening, for a total drop, of 0.21 ($p < 0.001$), relative to the pre-shutdown period, for a 15% decline. This shows that the opposite effects of the shutdown on DV calls to police and DV crimes is present for both the initial shutdown and the initial reopening. For calls, the initial increase during the shutdown was completely reversed during the post-shutdown period. Although the effect of re-opening on DV crimes was also negative, relative to the shutdown period, this was instead a continuation and amplification of the effect of the shutdown itself.

When we examine the severity of DV crimes recorded by the LAPD, we find significant reductions in all categories (columns 2-4 of Table 3). The point estimate for DV crimes more severe than assault (-0.012) is smaller than the point estimates for DV assaults (-0.082) or for less severe DV crimes (-0.031) in absolute terms, but the more severe crimes are less common overall. Relative to their average levels in 2018-2019, the more severe DV crimes declined by 21%, which is larger than the percentage declines in assaults (8%) and less severe crimes (14%).

4.3   *What Can We Learn about Effects on DV Incidence from LAPD Data?*

The finding (in Section 4.2) that DV crimes declined suggests that the increase in DV calls (in Section 4.1) may not have come entirely from increased population incidence of DV (δ). Instead, it is possible that incidence was lower but that crime reporting rates were higher. The model in Section 3.1 allows us to characterize the situations in which the pandemic will have opposite effects on calls and crimes. Both Equation 2 and 3 are related to the common δ term, but they are differentially affected by changes in reporting rates (α_i, for $i = C, N, O$, which affects both calls and crimes, but in different ways) or police effort (β_j, for $j = C, O, A$, which only affects crimes directly).

The first possibility we consider is that the decline in crimes comes from a decrease in DV cases that are reported to police, which could come from a decline in δ or in the share of DV crimes that are reported to police. DV crime incidence may have declined during the shutdown because of increased policy and news attention to DV and because of additional resources available to DV victims and survivors that helped prevent escalation and repeated violence. Shutdowns may have reduced exposure to DV triggers such as infidelity and alcohol consumption outside the home (Nemeth et al. 2012), limited contact between non-cohabiting and former couples, and even strengthened some relationships (Sachser et al. 2021). It is also possible that federal government support to families and businesses in response to the pandemic (through the CARES Act and other programs), which lowered overall poverty rates, also lowered economic stress.

If reported DV crimes were lower during the shutdown, the source of the increase in DV calls would need to come from a higher rate of reports for disturbances or conflicts that were not actually criminal DV incidents or from a higher frequency of duplicate reports for DV incidents. This could happen if there was an increase in reports from third parties (such as neighbors), who had more limited information about the events inside the home. These callers might have been more likely to contact police during the shutdown because they were spending more time at home or because of exposure to informational campaigns about the danger of increased DV during the pandemic.

We are not able to identify the type of caller in our data, but it is useful to note that the increase in DV calls found in Greater London in Ivandic et al. (2020) came entirely from third-party callers. We did however find indirect evidence in support of this mechanism in our data. Column 1 of Table 4 repeats the estimate from column 2 of Table 2 showing that DV dispute calls

to police were significantly higher during the shutdown and declined after re-opening. The remaining columns show that the same pattern was present for non-domestic calls related to disputes (column 2) and noise complaints about parties (column 3).

A related possibility is that increased publicity around the issue of DV (or heightened concern about being shut-in with a potential abuser) increased the propensity of first-time (or low severity) victims to report abuse to police before it escalated to a criminal incident.[18] This is consistent with the heterogeneous effects found in Leslie and Wilson (2020) and McCrary and Sanga (2021), where the increased DV calls in US cities came primarily from addresses without prior DV calls.

If crime reporting increased, even if the reporting was concentrated on non-criminal DV verbal disputes, the increased police intervention could itself reduce future DV crime rates. This could be because police help victims access supportive social and legal resources in the community and break the cycle of violence.[19] Or it could be that having the police arrive for a dispute increases deterrence by raising potential abusers' expectations that the police will be called for future incidents.

Although the interpretation that DV incidence decreased is consistent with the evidence, we also consider the possibility that the increase in DV calls came from higher DV incidence in the population. In that case, the most likely source for the reduction in crimes rates is a reduction in police effort (β_C, β_O or β_A) in response to DV calls which caused police to record a smaller share of criminal domestic incidents as DV crimes in official data.[20]

Why would police effort for DV decline? It is unlikely to come from greater overall demand for police resources to address assault crimes because non-DV assaults were significantly lower during the shutdown (Abrams 2021).[21] Instead, it is possible that police may have responded

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[18] Prior to the pandemic, Colagrossi et al. (2023) find evidence in Italy that DV reporting to both police and the national hotline increased in response to greater news coverage and attention to DV following local femicides.

[19] This could happen, for example, through the Domestic Abuse Response Team (DART) partnership program between the LAPD and local victim advocacy organizations.

[20] In our model, it also possible to see a reduction in DV crimes, but not in DV calls, if there was decline in the rate of incidental reporting of DV crimes from non-DV calls (α_O^P) during the shutdown. We consider this unlikely, however, because there is no reason to expect DV reporting to increase (as shown in the calls data) and non-DV incidental reporting to decrease without there being a reduction in crime. Furthermore, because most DV crimes come from DV calls, the opposite reporting effect for incidental calls would also have to be even larger to reverse the overall direction for crimes.

[21] When we estimate the effects of the initial shutdown on non-DV assaults (codes 230, 624, and 625) in the LAPD data, using the model in Equation 6, we find a significant decline of 0.391 (s.e. 0.0581). This decline was larger than

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less to DV crimes during the shutdown because they were reluctant to record DV crimes and arrest DV abusers during the pandemic. This could be due to the increased risk of COVID-19 infections in jails (Hawks, Woolhandler, and McCormick 2020) or from a desire to minimize their own exposure to potentially infected individuals. However, as noted above, and shown in Table 1, not all DV crimes lead to arrest.

We can therefore separately examine data on DV arrests per population to test for a decline during the shutdown that would support a reduction in police intensity with an aim of lowering arrest rates. That is not what we find. Figure 4 shows no discernable impact of the shutdown on DV arrests per population. This is confirmed in column 1 of Table 5, where the point estimate for the shutdown is < 0.01 (s.e. 0.02; less than 2% of the 2018-2019 mean). The declining DV crime rate, combined with a stable arrest rate, implies that the likelihood of arrest per DV crime was higher during the shutdown. That is what we find in column 2 of Table 5, where the arrest rate for DV crimes was 3.1 percentage points (or 12%) higher during the shutdown. The remaining columns of the table show that arrest rates were significantly higher for assaults and less severe crimes; the point estimate is also positive for more severe crimes, but the effect is not statistically significant. The data on DV arrests therefore show no evidence of lower policing intensity for DV crimes. As noted in Section 3.1, β_A does not directly affect crime rates, but as a measure of police effort in addressing DV, it is likely to be correlated with other measures that do affect crime reporting (β_C and β_O). It is unlikely that police would increase effort in making arrests while also decreasing effort in recording crimes.

Regardless of the relationship between β_A and the other dimensions of police effort, a reduction of police effort as the source of the decline in DV crimes is hard to reconcile with the substantial declines in both DV assaults and in more serious DV crimes, as shown in Section 4.3 (and Table 3). Although the model in Equation 2 does not vary by crime type, it is reasonable to assume that police effort (β_C) is higher, and less likely to drop in response to the pandemic, for more serious crimes. Any increase in failure to investigate or record crimes in official records during the pandemic should be concentrated among the least severe crimes. The fact that we observe significant and substantial drops in assaults and more serious crimes (which together

the drop in DV assaults, which increased the DV share of assaults by 3 percentage points during the initial shutdown. See Appendix Table A3.

account for 75% of the total drop in DV crimes) makes it less likely that reductions in police effort are an important part of the explanation.

As a whole, the LAPD data do not support a drop in the quality of policing as the primary reason for the drop in DV crimes recorded by police, and therefore do not support the conclusion that DV crimes increased in the population.[22] There is indirect evidence that supports the possibility that increase DV reporting rates were the source of the increase in DV calls, but we are unable to observe those rates directly with police data. The concern about changes in DV crimes that are not reported to police, and in changes in reporting rates to police, is both of first-order important and impossible to resolve with police data alone. We therefore turn to hospital data for a measure of DV that does not require police reporting.

4.4 *Effects on Emergency Department Visits and Fatal Outcomes*

This section presents estimates for the effects of the pandemic shutdown in LA county on hospital ED visits by adult women for treatment of injuries from assaults. These data were not available in real-time until 2021, so were not part of the initial body of evidence on shutdown effects. As described above, ED visits are an important outcome to consider because they come from a non-police source and are therefore not subject to the same measurement problems stemming from changes in police effort or changes in reporting rates to police by victims and witnesses.

The smoothed daily trends in ED visits, per 100,000 population, in Figure 5 show a dramatic drop during the shutdown period that is not reflected in the earlier part of the year (when 2018, 2019 and 2020 visit rates were remarkably similar) or in the seasonal variation in the earlier years. In the two prior years, ED visits for assaults were lower in the first two months of the year, but that trend was reversed in 2020. This is captured in the estimates from our main regression model (Equation 6) shown in Table 6. Column 1 shows a significant drop of 0.13 ED visits for assaults against adult female victims, which corresponds to a 43% reduction relative to the prior mean. The next two columns of the table address potential concerns with interpreting the decline in ED visits as a reduction in DV.

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[22] Another measure of police effort is response times for DV calls. We are not able to observe this in LA, but Miller et al. (2022) examined this outcome for 4 cities (Chandler, AZ; Cincinnati, OH; Mesa, AZ; St. Louis, MO; and Virginia Beach, VA), finding 17% faster response times during the initial shutdowns, which implies increased effort.

The first concern is that victims might have been less likely to visit hospitals during the initial phase of the pandemic, either to avoid exposure to the coronavirus or because hospital resources were being taxed by the pandemic. This is an important concern that could provide an explanation for lower ED visits even if population incidence of DV with injuries (δ_I) was higher. We therefore compute a second measure of ED visits for assault that is limited to more serious cases that lead to an inpatient hospital admission. These visits are less discretionary and less likely to be affected by the pandemic, conditional on having a significant injury (corresponding to the 100% rate of DV visits for S_I injuries in our model). The disadvantage of focusing on these visits is that, as shown in Table 1, they are far less common (average daily rate of 0.014 per 100,000 population) than all ED visits for assaults (0.301). Nevertheless, as shown in column 2 of Table 6, we also find a significant decline of 0.005 in those visits during the pandemic, corresponding to a 34% reduction.

The second issue we address is that not all assaults against women are perpetrated by domestic partners and it is possible that the decline in ED visits comes from a decline in the rates of non-DV assaults. We first note that the literature often uses a more general definition of assaults to study DV (e.g., Aizer 2010) to address the fact that not all DV cases are identified by hospital staff as such. However, because of the specific concern in our setting that the rate of non-DV assaults (and therefore fraction of assaults coming from DV) might also be changing, we also consider a measure of DV based only on the subset of ED visits for assaults that hospital records indicate are either confirmed or suspected cases of intimate partner violence. As shown in column 3 of Table 6, these cases were also significantly lower during the initial shutdown, by 0.022 visits per 100,000 people per day, which is a full 60% reduction from the baseline pre-pandemic level.

We conclude that the hospital data supports the interpretation in the prior section that the drop in DV crimes recorded by the LAPD came from a decline in population incidence rather than reduction in police effort. If police were reducing their effort in investigating and responding to DV calls, we would expect to see greater escalation and continued violence and increases in injuries leading to hospitalization, which is not what the data show.

4.5   *Exploration of Mechanisms*

This section evaluates the mechanisms underlying the overall estimated effects of the initial pandemic shutdown by presenting exploratory estimates from Equation 7 including additional

contextual variables. We decompose the overall effects into components attributable to key features of the pandemic and associated policy response. The estimates are in columns 1-4 of Table 7 for each of our main DV outcomes: hotline calls, police calls, crimes, and ED visits.

The main finding from Table 7 is that, unlike the conflicting effects of the overall shutdown, school closures have a robust and significant positive effect on each of our DV measures. This suggests having children at home increases the frequency or severity of DV incidents, possibly because of child-related stress and conflict. This is particularly notable for its contrast with the literature on the impact of school attendance on child abuse detection (Fitzpatrick et al. 2020). It is even possible that school closures increased reporting rates for DV or increased police effort in enforcement, but unlike the shutdown itself, the impact of school closure is consistently positive for all the examined outcomes. Because the initial shutdown increased the frequency of school closures, this channel partially explains that increased 911 and hotline calls, but it does not explain the decrease in DV crimes or ED visits.

The other contextual variables have less consistent effects on the DV outcomes. Increased unemployment in the metropolitan area is not statistically related to any of the 3 main police outcomes, though it is positively associated with more calls to the DV hotline. This last effect could come from increased demand for emergency shelter services if victims are financially hurt by economic downturns and less able to find alternative housing arrangements on their own. COVID-19 cases (per 1,000 population; new cases in the prior 2 weeks) in the county are not significantly associated with any of our outcome variables.

Accounting for these various mechanisms reduces the size of the unexplained impact of the shutdown on hotline calls by 48% and DV calls to police by 20%. However, the explained mechanism tends to go against the direction of the overall effects for DV crimes and ED visits, so accounting for them increases the residual effect of the shutdown by 58% for crimes and 18% for ED visits. In all cases, the residual impact of the shutdown is large and significant.

5. CONCLUSIONS

We measured the effects of the COVID-19 pandemic on DV outcomes in LA, using high-frequency, administrative data from the LAPD, the county's DV hotline, and California hospital records. The measured effects are all large and significant, but they vary in direction and size across the outcome measures. We find the initial shutdown increased DV calls to the police and to

the DV hotline, but it decreased DV crimes and ED visits for assaults. The re-opening period showed a continued decrease in DV crimes, as well as decreases in calls to police and to the hotline, but an increase in ED visits.

This variation across outcome measures, within a single city, highlights the challenge that researchers face in attempting to measure the impacts of factors that affect DV rates, even beyond pandemic shutdowns. We caution against relying on any single proxy as a complete measure of DV incidence. Our results suggest particular risk in relying on calls to police or hotlines as the only measures of DV. This is because our analysis shows that the increase in calls for help may have come from higher reporting rates rather than greater DV incidence. We find evidence in data on crimes and ED visits that there was a decrease in DV during the shutdown. This does not rule out the possibility of an increase in cases that were not reported to authorities, or that did not rise to the level of a crime or a hospital visit. It does, however, challenge the dominant narrative about the pandemic that administrative data sources show DV increased during shutdowns.

Because call data were more readily available at the outset of the pandemic, they received the majority of attention from academic researchers and journalists. This led to a widely accepted conclusion that the pandemic caused measurable increases in DV. This narrative, based on anecdotes and early studies that relied mainly on 911 data, continues to be presented as established fact in 2022 press articles (e.g., St. George 2022) and even in a *Nature* article (Lewis 2022).[23] However, in understanding the effects of the pandemic and designing new policies to address DV, it is important to update beliefs as more reliable data become available and be willing to revise the narrative in response to new empirical evidence based on these data.

The decline in recorded DV during the LA shutdown occurred at a time of increased provision of federal and local resources to support DV victims and survivors. It is likely that these public sector efforts, combined with similar initiatives by non-profit and community organizations, contributed to the improved outcomes we find. The narrative that DV increased during shutdowns despite the significant increase public spending and informational campaigns implies that these investments are not effective. Our results suggest the opposite: that the additional attention to DV

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[23] The *Nature* article is a retrospective on the evolving state of evidence about the effects of COVID-19 lockdowns that includes the assertion (with no citations to support the DV impact): "And lockdown policies did bring costs. […] they also brought significant social isolation and associated mental-health problems, rising rates of domestic violence and violence against women […]" (Lewis 2022).

during the pandemic was effective both in increasing reporting and in decreasing incidence of DV, and that there may unrealized opportunities to reduce DV outside of the pandemic.

REFERENCES

Abrams, David S. 2021. "COVID and Crime: An Early Empirical Look." *Journal of Public Economics* 194 (February): 104344. https://doi.org/10.1016/j.jpubeco.2020.104344.

Agüero, Jorge M. 2021. "COVID-19 and the Rise of Intimate Partner Violence." *World Development* 137 (January): 105217. https://doi.org/10.1016/j.worlddev.2020.105217.

Ahmad, FB, and JA Cisewski. 2021. "Quarterly Provisional Estimates for Selected Indicators of Mortality, 2019-Quarter 1, 2021." *National Center for Health Statistics. National Vital Statistics System, Vital Statistics Rapid Release Program.* https://www.cdc.gov/nchs/nvss/vsrr/mortality-dashboard.htm#.

Aizer, Anna. 2010. "The Gender Wage Gap and Domestic Violence." *American Economic Review* 100 (4): 1847–59. https://doi.org/10.1257/aer.100.4.1847.

Aizer, Anna, and Pedro Dal Bó. 2009. "Love, Hate and Murder: Commitment Devices in Violent Relationships." *Journal of Public Economics* 93 (3): 412–28. https://doi.org/10.1016/j.jpubeco.2008.09.011.

Allen-Ebrahimian, Bethany. 2020. "China's Coronavirus Quarantines Raise Domestic Violence Fears." Axios. March 7, 2020. https://www.axios.com/china-domestic-violence-coronavirus-quarantine-7b00c3ba-35bc-4d16-afdd-b76ecfb28882.html.

Alon, Titan, Matthias Doepke, Jane Olmstead-Rumsey, and Michèle Tertilt. 2020. "The Impact of COVID-19 on Gender Equality." w26947. National Bureau of Economic Research. https://doi.org/10.3386/w26947.

Becker, Gary S. 1968. "Crime and Punishment: An Economic Approach." *Journal of Political Economy* 76 (2): 169–217.

Berg, Gerard van den, and Michele Tertilt. 2012. "Domestic Violence over the Business Cycle." 1171. *2012 Meeting Papers*. 2012 Meeting Papers. Society for Economic Dynamics. https://ideas.repec.org/p/red/sed012/1171.html.

Biggs, Andy. 2020. "Text - H.Res.955 - 116th Congress." Legislation. 2019/2020. May 8, 2020. https://www.congress.gov/bill/116th-congress/house-resolution/955/text.

Bitler, Marianne, Hilary Hoynes, and Diane Whitmore Schanzenbach. 2020. "The Social Safety Net in the Wake of COVID-19." w27796. Cambridge, MA: National Bureau of Economic Research. https://doi.org/10.3386/w27796.

Bullinger, Lindsey Rose, Jillian B. Carr, and Analisa Packham. 2021. "COVID-19 and Crime: Effects of Stay-at-Home Orders on Domestic Violence." *American Journal of Health Economics* 7 (3): 249–80. https://doi.org/10.1086/713787.

California. 2020. "Executive Order N-32-20." March 19, 2020. https://www.gov.ca.gov/wp-content/uploads/2020/03/3.19.20-attested-EO-N-33-20-COVID-19-HEALTH-ORDER.pdf.

Card, David, and Gordon B. Dahl. 2011. "Family Violence and Football: The Effect of Unexpected Emotional Cues on Violent Behavior." *The Quarterly Journal of Economics* 126 (1): 103–43.

Colagrossi, M., Deiana, C., Dragone, D., Geraci, A., Giua, L., & Iori, E. 2023. Intimate partner violence and help-seeking: The role of femicide news. *Journal of Health Economics,* 87, 102722.

Fearon, James, and Anke Hoeffler. 2014. "Benefits and Costs of the Conflict and Violence Targets for the Post-2015 Development Agenda." *Conflict and Violence Assessment Paper, Copenhagen Consensus Center*, 1–65.

Fernandes-Alcantara, Adrienne L, and Lisa N Sacco. 2020. "Domestic Violence in the Context of COVID-19." *Congressional Research Service Report*, no. IN11323 (April).

FIFA, EC and WHO Press Release. 2020. "FIFA, European Commission and World Health Organization Launch #SafeHome Campaign to Support Those at Risk from Domestic Violence." May 26, 2020. https://www.who.int/news/item/26-05-2020-fifa-european-commission-and-world-health-organization-launch-safehome-campaign-to-support-those-at-risk-from-domestic-violence.

Fitzpatrick, Maria D., Cassandra Benson, and Samuel R. Bondurant. 2020. "Beyond Reading, Writing, and Arithmetic: The Role of Teachers and Schools in Reporting Child Maltreatment." Working Paper 27033. Working Paper Series. National Bureau of Economic Research. https://doi.org/10.3386/w27033.

Flood, Sarah, Miriam King, Renae Rodgers, Steven Ruggles, and J. Robert Warren. 2020. "Integrated Public Use Microdata Series, Current Population Survey: Version 8.0 [Dataset]." https://cps.ipums.org/cps/citation.shtml.

Fox11 News. 2020. "First Case of Coronavirus Confirmed in L.A. County." Text.Article. Fox 11 Los Angeles City News Service. FOX 11 Los Angeles. January 26, 2020. https://www.foxla.com/news/first-case-of-coronavirus-confirmed-in-l-a-county.

Galea, Sandro, Raina M. Merchant, and Nicole Lurie. 2020. "The Mental Health Consequences of COVID-19 and Physical Distancing: The Need for Prevention and Early Intervention." *JAMA Internal Medicine* 180 (6): 817–18.

Garcia-Moreno, Claudia, and Charlotte Watts. 2011. "Violence against Women: An Urgent Public Health Priority." *Bulletin of the World Health Organization* 89 (1): 2–2. https://doi.org/10.2471/BLT.10.085217.

Graham-Harrison, Emma, Angela Giuffrida, Liz Ford, and Helena Smith. 2020. "Lockdowns around the World Bring Rise in Domestic Violence." *The Guardian*, March 28, 2020, sec. Society. https://www.theguardian.com/society/2020/mar/28/lockdowns-world-rise-domestic-violence.

Hawks, Laura, Steffie Woolhandler, and Danny McCormick. 2020. "COVID-19 in Prisons and Jails in the United States." *JAMA Internal Medicine* 180 (8): 1041. https://doi.org/10.1001/jamainternmed.2020.1856.

Ivandic, Ria, Tom Kirchmaier, and Ben Linton. 2020. "Changing Patterns of Domestic Abuse during COVID-19 Lockdown." SSRN Scholarly Paper ID 3686873. Rochester, NY: Social Science Research Network. https://doi.org/10.2139/ssrn.3686873.

Iyengar, Radha. 2009. "Does the Certainty of Arrest Reduce Domestic Violence? Evidence from Mandatory and Recommended Arrest Laws." *Journal of Public Economics* 93 (1): 85–98. https://doi.org/10.1016/j.jpubeco.2008.09.006.

Iyer, Lakshmi, Anandi Mani, Prachi Mishra, and Petia Topalova. 2012. "The Power of Political Voice: Women's Political Representation and Crime in India." *American Economic Journal: Applied Economics* 4 (4): 165–93.

Kaplan, Jacob. 2021. "Jacob Kaplan's Concatenated Files: Uniform Crime Reporting (UCR) Program Data: Supplementary Homicide Reports (SHR), 1976-2020." Inter-university Consortium for Political and Social Research (ICPSR). https://doi.org/10.3886/E100699V11.

Kottasová, Ivana, and Valentina Di Donato. 2020. "Women Are Using Code Words at Pharmacies to Escape Domestic Violence." CNN. April 6, 2020.

https://www.cnn.com/2020/04/02/europe/domestic-violence-coronavirus-lockdown-intl/index.html.

Leslie, Emily, and Riley Wilson. 2020. "Sheltering in Place and Domestic Violence: Evidence from Calls for Service during COVID-19." *Journal of Public Economics* 189 (September): 104241. https://doi.org/10.1016/j.jpubeco.2020.104241.

Lewis, Dyani. 2022. "What Scientists Have Learnt from COVID Lockdowns." *Nature* 609 (7926): 236–39.

Li, Weihua, and Beth Schwartzapfel. 2020. "Is Domestic Violence Rising During the Coronavirus Shutdown? Here's What the Data Shows." The Marshall Project. April 22, 2020. https://www.themarshallproject.org/2020/04/22/is-domestic-violence-rising-during-the-coronavirus-shutdown-here-s-what-the-data-shows.

Lomborg, Bjorn. 2020. "Save Lives And Avoid A Catastrophic Recession." Forbes. April 9, 2020. https://www.forbes.com/sites/bjornlomborg/2020/04/09/save-lives-and-avoid-a-catastrophic-recession/.

Max, Wendy, Dorothy P. Rice, Eric Finkelstein, Robert A. Bardwell, and Steven Leadbetter. 2004. "The Economic Toll of Intimate Partner Violence against Women in the United States." *Violence and Victims* 19 (3): 259–72.

McCrary, Justin, and Sarath Sanga. 2021. "The Impact of the Coronavirus Lockdown on Domestic Violence." *American Law and Economics Review*, no. ahab003 (May). https://doi.org/10.1093/aler/ahab003.

Miller, Amalia R., and Carmit Segal. 2019. "Do Female Officers Improve Law Enforcement Quality? Effects on Crime Reporting and Domestic Violence." *The Review of Economic Studies* 86 (5): 2220–47.

Miller, Amalia R., Carmit Segal, Melissa Spencer. 2022. "Effects of COVID-19 shutdowns on domestic violence in US cities." *Journal of Urban Economics* 131: 103476.

Muchow, Ashley N., and Catalina Amuedo-Dorantes. 2020. "Immigration Enforcement Awareness and Community Engagement with Police: Evidence from Domestic Violence Calls in Los Angeles." *Journal of Urban Economics* 117 (May): 103253. https://doi.org/10.1016/j.jue.2020.103253.

Nemeth, Julianna M., Amy E. Bonomi, Meghan A. Lee, and Jennifer M. Ludwin. 2012. "Sexual Infidelity as Trigger for Intimate Partner Violence." *Journal of Women's Health* 21 (9): 942–49. https://doi.org/10.1089/jwh.2011.3328.

Perez-Vincent, Santiago M., Enrique Carreras, María Amelia Gibbons, Tommy E. Murphy, and Martín Rossi. 2020. "COVID-19 Lockdowns and Domestic Violence: Evidence from Two Studies in Argentina." Inter-American Development Bank. https://doi.org/10.18235/0002490.

Pfefferbaum, Betty, and Carol S. North. 2020. "Mental Health and the Covid-19 Pandemic." *New England Journal of Medicine*.

Ravindran, Saravana, and Manisha Shah. 2020. "Unintended Consequences of Lockdowns: COVID-19 and the Shadow Pandemic." w27562. National Bureau of Economic Research. https://doi.org/10.3386/w27562.

Sachser, Cedric, Gabriel Olaru, Elisa Pfeiffer, Elmar Brähler, Vera Clemens, Miriam Rassenhofer, Andreas Witt, and Jörg M. Fegert. 2021. "The Immediate Impact of Lockdown Measures on Mental Health and Couples' Relationships during the COVID-19 Pandemic - Results of a Representative Population Survey in Germany." *Social Science & Medicine* 278 (June): 113954. https://doi.org/10.1016/j.socscimed.2021.113954.

Silverio-Murillo, Adan, Jose Roberto Balmori de la Miyar, and Lauren Hoehn-Velasco. 2020. "Families under Confinement: COVID-19, Domestic Violence, and Alcohol Consumption." SSRN Scholarly Paper ID 3688384. Rochester, NY: Social Science Research Network. https://doi.org/10.2139/ssrn.3688384.

Stevenson, Betsey, and Justin Wolfers. 2006. "Bargaining in the Shadow of the Law: Divorce Laws and Family Distress." *The Quarterly Journal of Economics* 121 (1): 267–88.

Stone, Alex, Alexander Mallin, and Matt Gutman. 2020. "Fewer Domestic Violence Calls during COVID-19 Outbreak Has California Officials Concerned." *ABC News*, April 25, 2020. https://abcnews.go.com/US/fewer-domestic-violence-calls-covid-19-outbreak-california/story?id=70336388.

St. George, Donna. 2022. "Teen girls 'engulfed' in violence and trauma, CDC finds." *The Washington Post*, February 13, 2023. https://www.washingtonpost.com/education/2023/02/13/teen-girls-violence-trauma-pandemic-cdc/

Taub, Amanda. 2020. "A New Covid-19 Crisis: Domestic Abuse Rises Worldwide." *The New York Times*, April 14, 2020, sec. World. https://www.nytimes.com/2020/04/06/world/coronavirus-domestic-violence.html.

Townsend, Mark. 2020. "Domestic Abuse Cases Soar as Lockdown Takes Its Toll." *The Observer*, April 4, 2020, sec. World news. https://www.theguardian.com/world/2020/apr/04/domestic-abuse-cases-soar-as-lockdown-takes-its-toll.

UN Women. 2020. "UN Policy Brief: The Impact of COVID-19 on Women." UN Women. April 9, 2020. https://www.unwomen.org/en/digital-library/publications/2020/04/policy-brief-the-impact-of-covid-19-on-women.

Vanderklippe, Nathan. 2020. "Domestic Violence Reports Rise in China amid COVID-19 Lockdown." *The Globe and Mail*, March 29, 2020.

Weinberger, Daniel M., Jenny Chen, Ted Cohen, Forrest W. Crawford, Farzad Mostashari, Don Olson, Virginia E. Pitzer, Nicholas G. Reich, Marcus Russi, and Lone Simonsen. 2020. "Estimation of Excess Deaths Associated with the COVID-19 Pandemic in the United States, March to May 2020." *JAMA Internal Medicine* 180 (10): 1336–44.
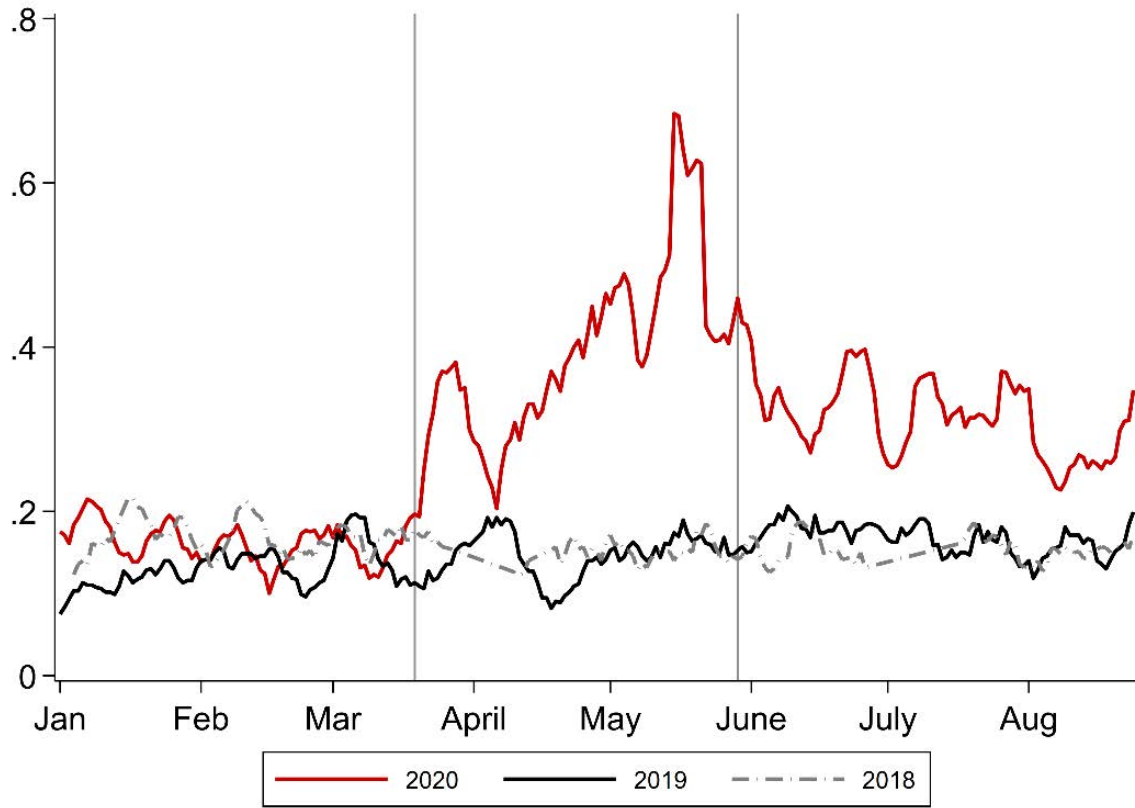
Figure 1: LA County Domestic Violence Hotline Calls

Notes: The figure shows daily calls to the LA County Domestic Violence Hotline between January 1 and August 24 in 2020, 2019, and 2018. Calls are presented as 7-day moving averages per 100,000 population in Los Angeles County Vertical lines indicate the timing of the initial shutdown: beginning March 19th and ending May 28th.
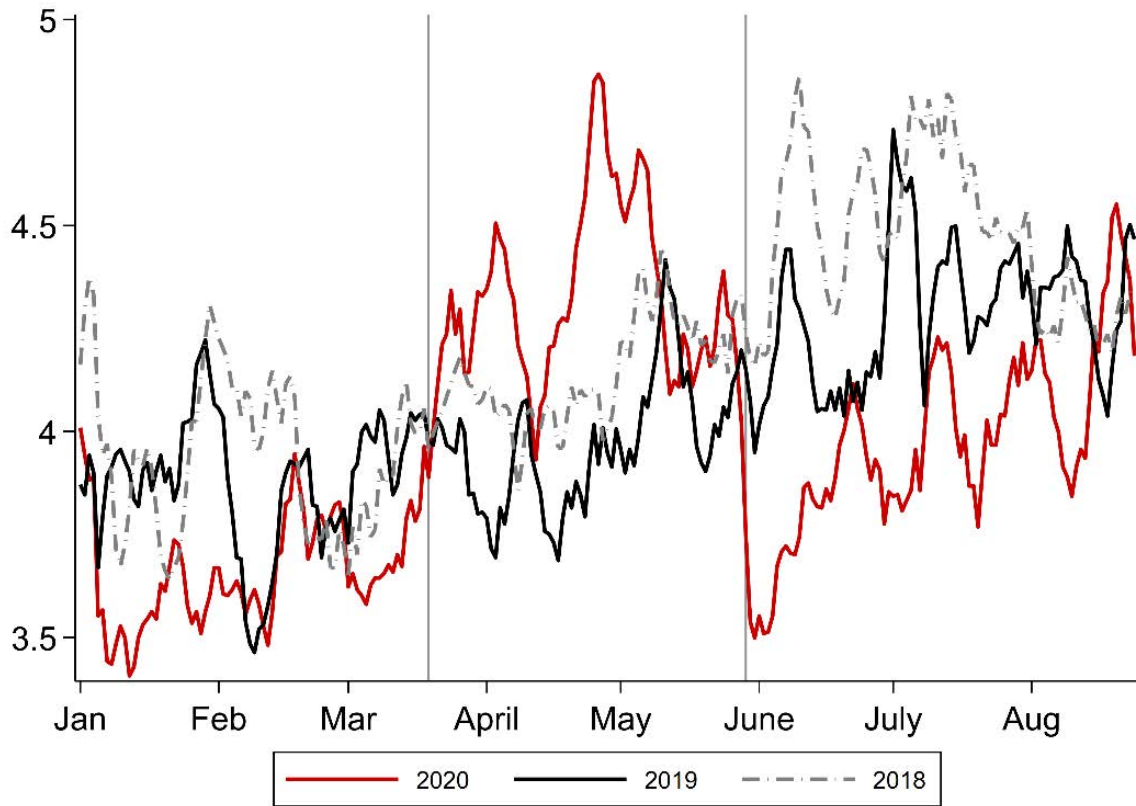
Figure 2: LAPD Domestic Dispatches

Notes: The figure shows LAPD dispatches for domestic-related 911 calls between January 1 and August 24 in 2020, 2019, and 2018. Calls are presented as 7-day moving averages per 100,000 population served by the LAPD. Vertical lines indicate the timing of the initial shutdown: beginning March 19th and ending May 28th.
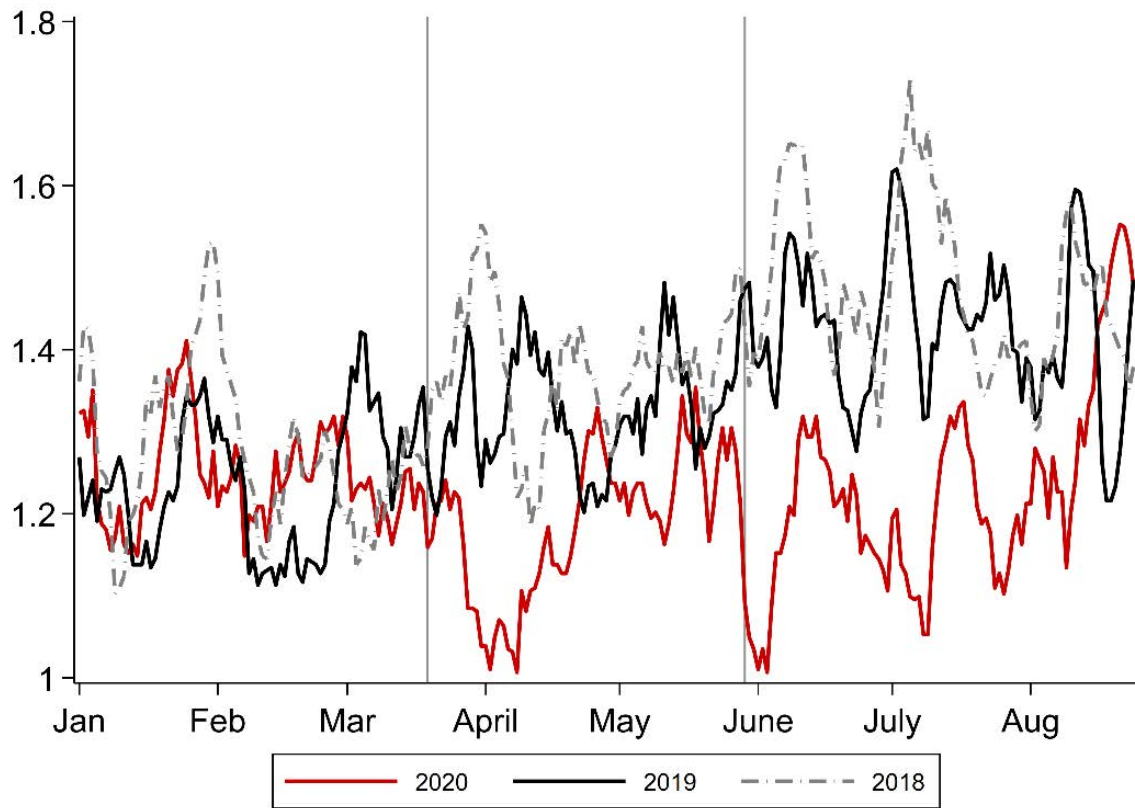
Figure 3: LAPD Domestic Crimes

Notes: The figure shows domestic crime incidents recorded by the LAPD between January 1 and August 24 in 2020, 2019, and 2018. Crimes are presented as 7-day moving averages per 100,000 population served by the LAPD. Vertical lines indicate the timing of the initial shutdown: beginning March 19th and ending May 28th.
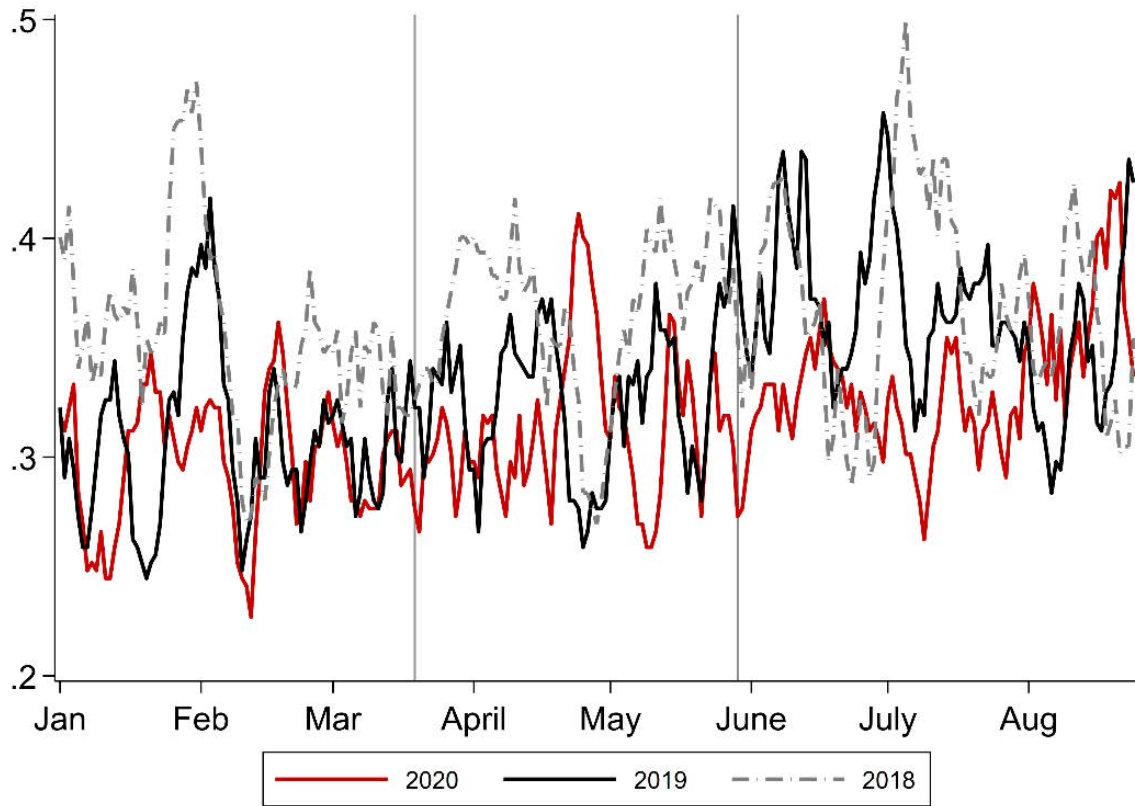
Figure 4: LAPD Arrests for Domestic Crimes

Notes: The figure shows total LAPD arrests for domestic crimes between January 1 and August 24 in 2020, 2019, and 2018. Arrests are presented as 7-day moving averages per 100,000 population served by the LAPD. Vertical lines indicate the timing of the initial shutdown: beginning March 19th and ending May 28th.
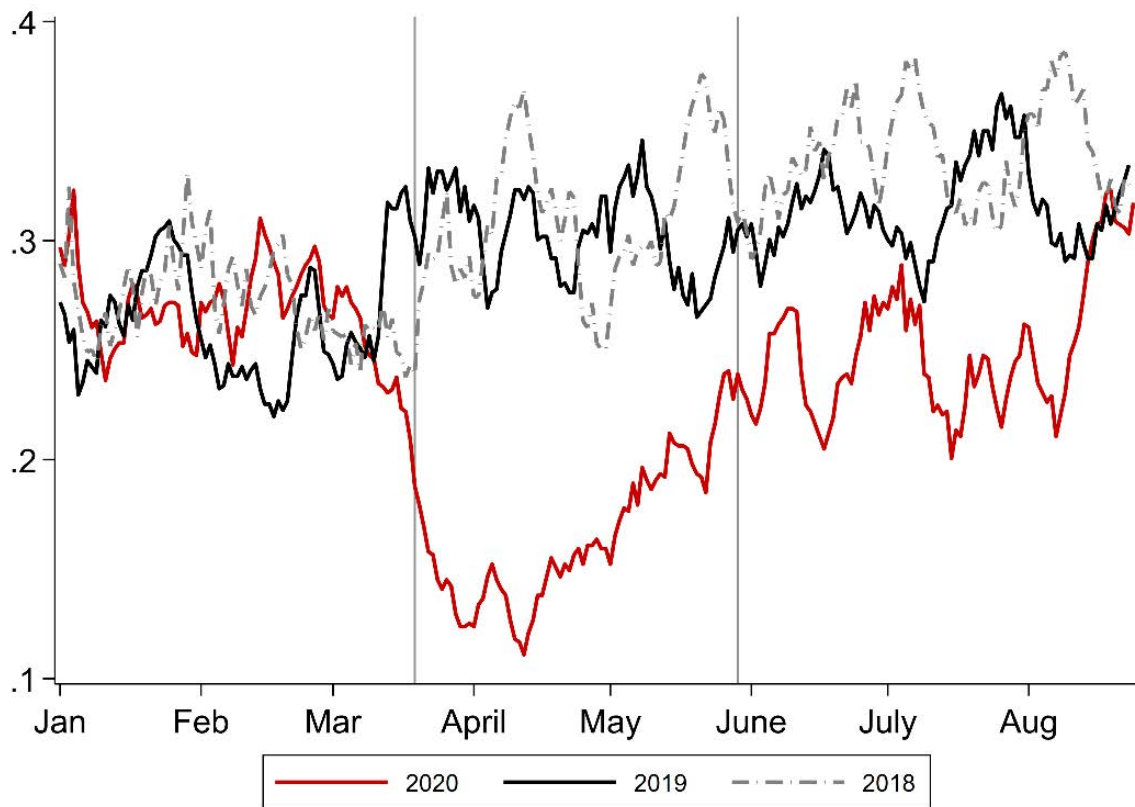
Figure 5: LA County Emergency Department Visits by Female Assault Victims

Notes: The figure shows emergency department visits by female assault victims in Los Angeles County between January 1 and August 24 in 2020, 2019, and 2018. Visits are presented as 7-day moving averages per 1 million population in Los Angeles County. Vertical lines indicate the timing of the initial shutdown: beginning March 19th and ending May 28th.

Table 1: Summary Statistics

	Mean	Std. Dev
	2018-2019	
Calls to LA county DV hotline	0.146	0.073
911 Calls to Police		
All DV calls	4.127	0.549
DV assault calls	1.611	0.308
Domestic dispute calls	2.514	0.340
Crime Incidents		
All DV crime	1.355	0.253
DV assaults	1.072	0.224
DV crime, more severe than assault	0.058	0.038
DV crime, less severe than assault	0.225	0.078
Arrests for DV crime		
Total DV crime with arrests	0.349	0.111
Share DV crime with arrest	0.258	0.437
Share DV assaults with arrest	0.269	0.443
Share DV more severe with arrest	0.256	0.436
Share DV less severe with arrest	0.207	0.405
Emergency Department Visits		
Female w/ assault injuries	0.301	0.070
Female w/ severe assault injuries	0.014	0.013
DV suspected or confirmed	0.036	0.020
Contextual Variables 2018-2019		
Monthly MSA unemployment rate	0.043	0.004
Public schools closed	0.544	0.499
	2020	
Contextual Variables 2020		
New COVID-19 cases, prior 14 days	1.297	1.353

Notes: Data on 911 calls, crime incidents, and arrests are from the LAPD and computed as daily rates per 100,000 city population. Hotline calls are daily per 100,000 county population and from the LA county public health department. Emergency department visits are daily per 100,000 county population. Unemployment rate is MSA-level from the CPS. Public school closure is a daily indicator for public K-12 schools not being in session. COVID19 case data are at the county-level from the New York Times and per 1,000 county population.

Table 2: Effect of COVID-19 Shutdown on Hotline Calls and DV Calls to Police

| | Hotline Calls | DV Calls to Police | | |
| | | All | Disputes | Assaults |
	(1)	(2)	(3)	(4)
Initial shutdown	0.223***	0.540***	0.406***	0.133***
	[0.0247]	[0.0834]	[0.0585]	[0.0451]
Post initial shutdown	-0.0806***	-0.691***	-0.534***	-0.156***
	[0.0272]	[0.0829]	[0.0631]	[0.0420]
Pr(shutdown + post) = 0	0.000	0.054	0.026	0.589
Outcome variable 2018-2019 mean	0.146	4.127	2.514	1.611
Observations	709	709	709	709
Month, year, and day of week FEs	X	X	X	X

Notes: Unit of observation is a day. Outcomes are scaled to 100,000 population in county (column 1) or city (columns 2, 3, 4). Sample includes January 1 to August 24 in years 2018, 2019 and 2020. Initial shutdown begins March 19, 2020. Post-initial shutdown begins May 29, 2020. Robust standard errors in brackets. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table 3: Effect of COVID-19 Shutdown on DV Crimes

	All	Assaults	More Severe than Assault	Less Severe than Assault
	(1)	(2)	(3)	(4)
Initial shutdown	-0.125***	-0.0822**	-0.0121*	-0.0307**
	[0.0375]	[0.0343]	[0.00687]	[0.0135]
Post initial shutdown	-0.0834**	-0.0771**	-0.00405	-0.00225
	[0.0408]	[0.0364]	[0.00682]	[0.0137]
Pr(shutdown + post) = 0	0.000	0.000	0.017	0.022
Outcome variable 2018-2019 mean	1.355	1.072	0.058	0.225
Observations	709	709	709	709
Month, year, and day of week FEs	X	X	X	X

Notes: Unit of observation is a day. Outcomes are scaled to 100,000 population in city. Sample includes January 1 to August 24 in years 2018, 2019 and 2020. Initial shutdown begins March 19, 2020. Post-initial shutdown begins May 29, 2020. Robust standard errors in brackets.
 *** p<0.01, ** p<0.05, * p<0.1.

Table 4: Effect of COVID-19 Shutdown on Calls to Police

	DV Disputes (1)	Non-DV Disputes (2)	Parties (3)
Initial shutdown	0.406***	1.196***	0.678***
	[0.0585]	[0.0936]	[0.166]
Post initial shutdown	-0.534***	-1.686***	-0.656***
	[0.0631]	[0.146]	[0.227]
Pr(shutdown + post) = 0	0.026	0.000	0.914
Outcome variable 2018-2019 mean	2.514	3.47	1.789
Observations	709	709	709
Month, year, and day of week FEs	X	X	X

Notes: Unit of observation is a day. Outcomes are scaled to 100,000 population in city. Sample includes January 1 to August 24 in years 2018, 2019 and 2020. Initial shutdown begins March 19, 2020. Post-initial shutdown begins May 29, 2020. Robust standard errors in brackets.
*** p<0.01, ** p<0.05, * p<0.1.

Table 5: Effect of COVID-19 Shutdown on DV Arrests

		I(Arrest for DV Crime)			
	DV Arrests	All	Assaults	More Severe than Assault	Less Severe than Assault
	(1)	(2)	(3)	(4)	(5)
Initial shutdown	0.00590	0.0312***	0.0277**	0.0320	0.0463*
	[0.0171]	[0.0118]	[0.0134]	[0.0570]	[0.0276]
Post initial shutdown	-0.00560	0.0123	0.0152	-0.0194	0.00777
	[0.0181]	[0.0118]	[0.0133]	[0.0605]	[0.0275]
Pr(shutdown + post) = 0	0.986	0.000	0.001	0.820	0.042
Outcome variable 2018-2019 mean	0.349	0.258	0.269	0.262	0.204
Observations	709	37,469	29,732	1,564	6,173
Month, year, and day of week FEs	X	X	X	X	X

Notes: Unit of observation is a day. Column 1 outcome is scaled to 100,000 population in city. Sample includes January 1 to August 24 in years 2018, 2019 and 2020. Initial shutdown begins March 19, 2020. Post-initial shutdown begins May 29, 2020. Robust standard errors in brackets. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table 6: Effect of COVID-19 Shutdown on DV Emergency Department Visits

	Female w/ Assault Injuries (1)	Female w/ Severe Assault Injuries (2)	DV Suspected or Confirmed (3)
Initial shutdown	-0.130***	-0.00479**	-0.0216***
	[0.011]	[0.00221]	[0.00352]
Post initial shutdown	0.0549***	0.00355	0.00935***
	[0.0109]	[0.0022]	[0.0035]
Pr(shutdown + post) = 0	0.000	0.567	0.000
Outcome variable 2018-2019 mean	0.301	0.014	0.036
Observations	709	709	709
Month, year, and day of week FEs	X	X	X

Notes: Unit of observation is a day. Outcomes are scaled to 100,000 population in county. Sample includes January 1 to August 24 in years 2018, 2019 and 2020. Initial shutdown begins March 19, 2020. Post-initial shutdown begins May 29, 2020. Robust standard errors in brackets. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table 7: Mechanisms for Effect of COVID-19 Shutdown on DV Outcomes

	Hotline Calls	DV Calls to Police	DV Crimes	Female ED w/ Assault Injuries
	(1)	(2)	(3)	(4)
Initial shutdown	0.116***	0.432***	-0.197***	-0.154***
	[0.0277]	[0.125]	[0.0544]	[0.0154]
Post initial shutdown	-0.111**	-0.674***	-0.0630	0.0602***
	[0.0489]	[0.145]	[0.0750]	[0.0187]
School closed	0.0243***	0.183***	0.0826***	0.0200***
	[0.00876]	[0.0537]	[0.0257]	[0.00687]
Unemployment rate	1.124***	-0.341	0.257	0.157
	[0.290]	[0.932]	[0.398]	[0.118]
COVID-19 recent cases	0.00317	0.0404	0.00535	-0.000387
	[0.0150]	[0.0563]	[0.0287]	[0.00765]
Pr(shutdown + post) = 0	0.945	0.234	0.008	0.000
Outcome variable 2018-2019 mean	0.146	4.127	1.355	0.301
Observations	709	709	709	709
Month, year, and day of week FEs	X	X	X	X

Notes: Unit of observation is a day. Outcomes are scaled to 100,000 population in county (columns 1 and 4) or city (columns 2 and 3). Sample includes January 1 to August 24 in years 2018, 2019 and 2020. Initial shutdown begins March 19, 2020. Post-initial shutdown begins May 29, 2020. Robust standard errors in brackets. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.
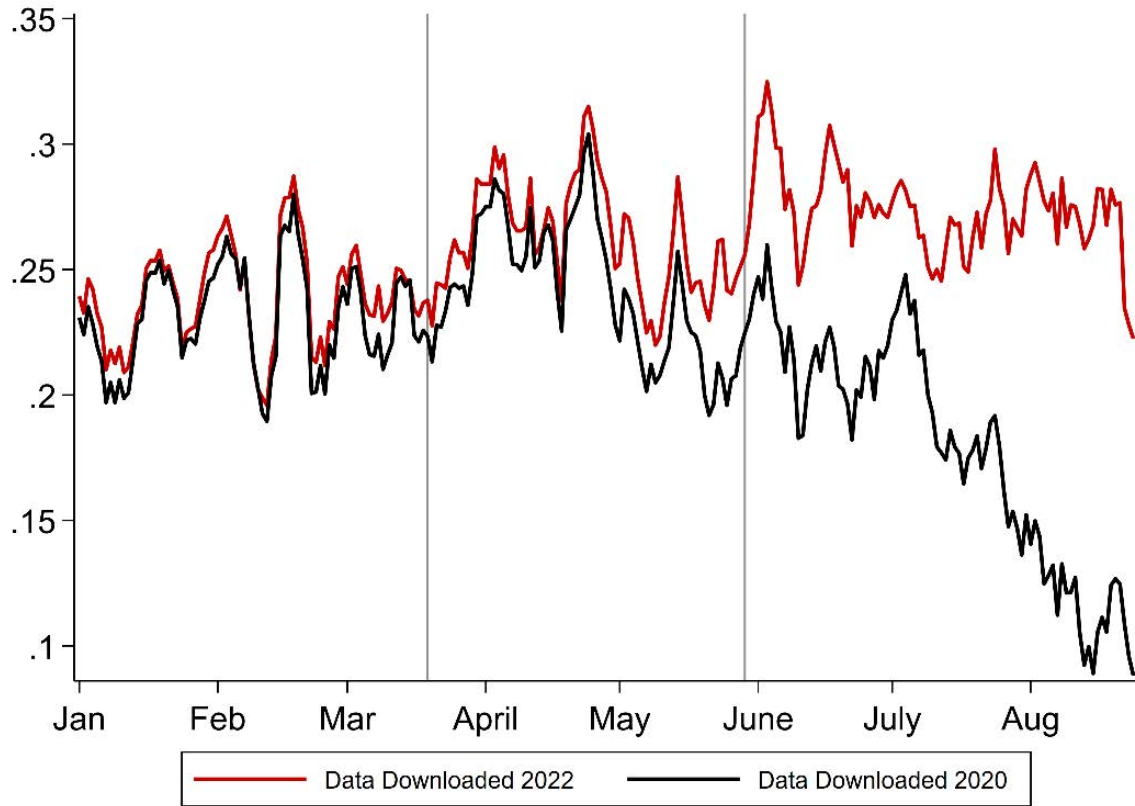
Figure A1: LAPD Arrests for Domestic Crimes by Data Access Date

Notes: The figure shows total LAPD arrests for domestic crimes between January 1 and August 24 in 2020, by date the crime was reported. We show data separately based on the date when the data were accessed from LA Open Data. Data downloads were on September 14, 2020 and August 17, 2022. Arrests are presented as 7-day moving averages per 100,000 population served by the LAPD. Vertical lines indicate the timing of the initial shutdown: beginning March 19th and ending May 28th.
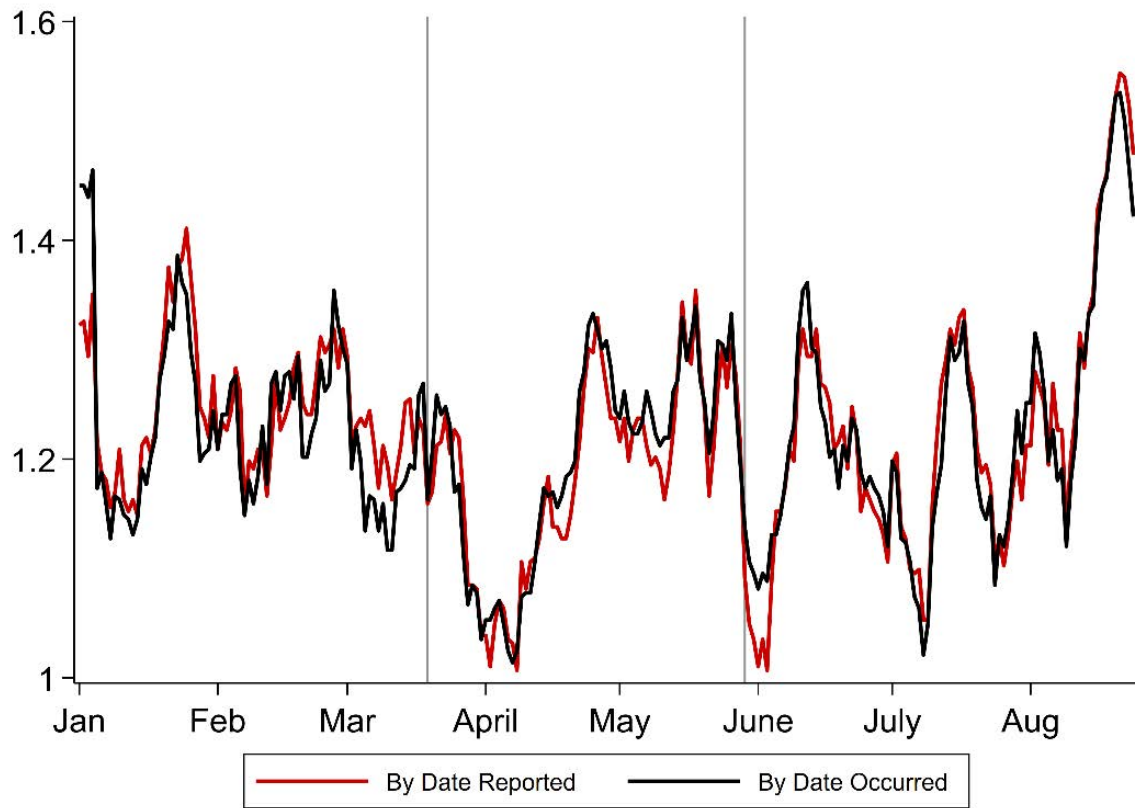
Figure A2: LAPD Domestic Crimes in 2020 by Date Reported versus Date Occurred

Notes: The figure compares domestic crime incidents recorded by date the crime was reported to the LAPD versus date the crime occurred. The sample includes January 1 to August 24 in 2020. Crimes are presented as 7-day moving averages per 100,000 population served by the LAPD. Vertical lines indicate the timing of the initial shutdown: beginning March 19th and ending May 28th.

Table A1: Effect of COVID-19 Shutdown on DV Crimes

	By Date Reported (1)	By Date Occurred (2)
Initial shutdown	-0.125*** [0.0375]	-0.0938** [0.0449]
Post initial shutdown	-0.0834** [0.0408]	-0.0971** [0.0411]
Pr(shutdown + post) = 0	0.000	0.000
Outcome variable 2018-2019 mean	1.355	1.352
Observations	709	709
Month, year, and day of week FEs	X	X

Notes: Unit of observation is a day. Outcomes are scaled to 100,000 population in city. Sample includes January 1 to August 24 in years 2018, 2019 and 2020. Initial shutdown begins March 19, 2020. Post-initial shutdown begins May 29, 2020. Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1.

Table A2: Alternative Reopening Definition

	Hotline Calls (1)	DV Calls to Police (2)	DV Crimes (3)	Female ED w/ Assault Injuries (4)
Panel A: Reopening May 13th				
Initial shutdown	0.181***	0.580***	-0.146***	-0.140***
	[0.0201]	[0.0900]	[0.0378]	-0.0115
Post initial shutdown	0.000943	-0.650***	-0.0367	0.0623***
	[0.0275]	[0.0870]	[0.0386]	-0.011
Panel B: No Reopening				
Shutdown	0.181***	0.183**	-0.168***	-0.102***
	[0.0149]	[0.0723]	[0.0329]	-0.00961
Outcome variable 2018-2019 mean	0.146	4.127	1.355	0.301
Observations	709	709	709	709
Month, year, and day of week FEs	X	X	X	X

Notes: Unit of observation is a day. Outcomes are scaled to 100,000 population in county (columns 1 and 4) or city (columns 2 and 3). Sample includes January 1 to August 24 in years 2018, 2019 and 2020. Initial shutdown begins March 19, 2020. Post-initial shutdown begins May 13, 2020 in Panel A, instead of May 29, 2020 as in main tables. Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1.

Table A3: Effect of COVID-19 Shutdown on Non-DV Assaults

	Non-DV Assaults (1)	Share Assaults DV (2)
Initial shutdown	-0.391***	0.0297***
	[0.0581]	[0.00936]
Post initial shutdown	0.219***	-0.0439***
	[0.0620]	[0.00941]
Pr(shutdown + post) = 0	0.003	0.121
Outcome variable 2018-2019 mean	2.099	0.338
Observations	709	709
Month, year, and day of week FEs	X	X

Notes: Unit of observation is a day. Non-DV assaults (column 1) are scaled to 100,000 population in city. Column 2 shows the share of all assault crimes that are domestic. Sample includes January 1 to August 24 in years 2018, 2019 and 2020. Initial shutdown begins March 19, 2020. Post-initial shutdown begins May 29, 2020. Robust standard errors in brackets. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.