The immediate and long-term effects of COVID-19 stay-at-home orders on domestic violence calls for service across six U.S. jurisdictions *

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We assessed immediate and long-term trends in calls for police service regarding domestic violence following COVID-19 stay-at-home orders. Using open data from the Police Data Initiative, we performed interrupted time-series analyses of weekly calls for service for domestic violence in New Orleans (LA), Cincinnati (OH), Seattle (WA), Salt Lake City (UT), Montgomery County (MD), and Phoenix (AZ). Results indicate that five of the six jurisdictions experienced an immediate, significant spike in domestic violence calls for service (Cincinnati being the lone exception). As stayat-home orders were lifted throughout the remainder of 2020, domestic violence calls for service declined in every jurisdiction but Salt Lake City. These results illustrate (1) the importance of studying the localized effects of COVID-19 on criminal justice issues, (2) the need for more agencies to publish open data in a timely fashion, and (3) the caution researchers and the public must use when working with calls for service data, which are not uniform across agencies and require careful cleaning prior to analysis.

Keywords: policing, COVID-19, domestic violence, victims, calls for service

Introduction

Trends in calls for police service are at least partially a function of citizens' routine activities (Cohen & Felson, 1979; LeBeau & Corcoran, 1990; LeBeau, 2002), which changed drastically in the spring of 2020 amidst the COVID-19 pandemic. Schools and non-essential businesses closed, sporting events and concerts were cancelled, and in many places, state and local governments ordered residents to stay home (Moreland et al., 2020). In addition, there have been substantial increases in unemployment, evictions, and food insecurity (Center on Budget and Policy Priorities, 2021). With Americans staying at home more often, and many strained by financial uncertainty, it is possible that patterns in domestic violence (DV) have changed and DV-related calls for law enforcement service have increased.

Indeed, a handful of studies have assessed crime and calls for service trends in U.S. cities during the early days of the COVID-19 pandemic. Results have been decidedly mixed. In one of the earliest studies, Ashby (2020) examined crime trends in 16 large cities while controlling for seasonal

^{*}*Forthcoming at Police Practice & Research* (doi: 10.1080/15614263.2021.1883018). Corresponding author: jnix@unomaha.edu. Replication materials available on first author's GitHub.

fluctuation, and found that "serious assaults in residences" had remained relatively stable. However, Mohler et al. (2020) examined calls for police service from January to April 21st in Indianapolis and Los Angeles, and found that DV spiked significantly in both cities during stay-at-home orders. In Chicago, meanwhile, Bullinger et al. (2020) observed a decrease in total calls for police service, but an increase in DV-related calls for service. Piquero et al. (2020) similarly detected an increase in "family violence" incidents reported to police in Dallas after the implementation of a stay-athome order; however, this trend reversed after two weeks. Finally, Leslie and Wilson (2020) found that DV calls increased in the aggregate by 7.5% from March to May across 14 jurisdictions. A common theme among all of these studies is that they were conducted during the earliest days of the pandemic, before it was clear how long Americans' routine activities would be disrupted by COVID-19. As we enter what has been described as the "darkest days of the pandemic" (Duster, 2020, para. 1), law enforcement decision-makers would benefit from understanding both immediate and long-term changes in DV calls for service as they determine strategic planning and resource allocation.

Some evidence from the medical community suggests that severe DV has increased during the pandemic (Gosangi et al., 2021), and with schools closed many more children are sequestered at home increasing their opportunity for victimization. In addition, DV-related calls for law enforcement service from third parties have also likely increased given that many adults who would usually be at work are now at home and may witness DV between roommates, neighbors, and even extended family members in multi-generational households. Finally, the majority of victim service organizations have closed their buildings and are only operating in an online capacity. It is likely that some victims of DV who would have historically sought assistance have remained with abusive partners because victim services are less accessible or because they fear using an emergency shelter given COVID-related health risks. Taken together, we hypothesize that DV-related calls for law enforcement service have increased in association with COVID-19 restrictions and irrespective of seasonal trends. To test this hypothesis, we tested whether immediate and long-term trends in DV-related and other calls for service were disrupted by stay-at-home orders in six U.S. municipalities.

Data and Methods

We obtained 911 calls for service data for the following jurisdictions from the Police Data Initiative: Cincinnati (OH), Phoenix (AZ), Seattle (WA), New Orleans (LA), Salt Lake City (UT), and Montgomery County (MD).¹ Following Leslie and Wilson (2020), we coded calls as domestic violence if the incident description fields included the terms "domestic violence," "domestic disturbance," "family fight," "family disturbance," or some variation.² With these data, we constructed a weekly time series dataset that spans 156 seven-day periods beginning on January 1, 2018 and ending on December 27, 2020. In the early days of the COVID-19 pandemic, residents of these six jurisdictions were ordered to stay at home by their respective Governors sometime between March 22, 2020 (in the case of New Orleans) and March 31, 2020 (in the case of Phoenix). To estimate the effects of these stay-at-home orders on calls for police service pertaining to DV, we performed interrupted time-series analyses (ITSA; see Shadish et al., 2002) separately for each jurisdiction. Thus, depending on the jurisdiction being examined, we have 115 to 117 weeks of pre-interruption data and 38 to 40 weeks of post-interruption data.

A cursory review of our data suggests that on the one hand, DV calls for service noticeably increased around the time of the early days of the COVID-19 pandemic , then levelled off or declined in most jurisdictions. On the other hand, other calls for service declined around the same time, then fluctuated throughout the remainder of 2020 (see **Figure 1**).³ Less clear is whether these changes were statistically meaningful. Calls for service naturally fluctuate from week to week, and ostensible short-term trends can be deceptive as they are sometimes a function of seasonality (see e.g., Ashby, 2020). For a more methodologically rigorous assessment of these trends, we turn to the results of our ITSA models.

[Figure 1 here]

¹Data downloaded on 1/8/2021. See https://www.policedatainitiative.org/datasets/calls-for-service/.

²We defined as domestic violence any incident that was described as follows. In Cincinnati: *incident_type_id* = "DOMVIO," "U-DOMESTIC VIOL IN PROGRESS," "FAMTRB," or "DOMINP-COMBINED." In Phoenix: *final_call_type* included "DOMESTIC VIOLENCE." In New Orleans: *typetext* included "DOMESTIC." In Seattle: *initialcalltype* included "DV" but not "ORDER," "NO WELFARE CHK OR DV," "NON," or "NOT." In Salt Lake City: *case_type_translation* included "DOMESTIC." In Montgomery County: *initialtype* included "DOMESTIC." Replication materials are available on the first author's GitHub.

³Prior to analyses, we excluded traffic enforcement, directed patrol, and other officer-initiated calls from our *other calls for service* category.

Results

Table 1 displays the results of six ITSA models. In each panel:

- The *pre-trend* coefficient indicates the linear slope of weekly DV calls for service prior to the first week of the jurisdiction's stay-at-home order;
- The *immediate effect* coefficient indicates the change in the slope at the first week after stay-at-home orders went into effect; and
- The *post-trend* coefficient indicates the change in the linear slope of weekly DV calls for service in the weeks following the stay-at-home order *relative to* the pre-trend slope.

Figure 2 also depicts these results graphically. In New Orleans, domestic violence CFS had been trending downward significantly from January 2018 to just before the stay-at-home order went into effect, whereas in Phoenix, they were trending upward significantly over the same period. In the other four cities, the slopes were essentially flat during this period. The immediate effect of stay-at-home orders was a significant increase in DV calls for service in every jurisdiction except Cincinnati.⁴ Throughout the remainder of 2020, DV calls for service declined in every jurisdiction but Salt Lake City. However, among those five jurisdictions, the difference in the linear slope of weekly DV calls for service relative to that of the period before stay-at-home orders went into effect was only significant in Montgomery County (where the downward slope became more pronounced) and Phoenix (where the slope changed direction).

[Table 1 here]

[Figure 2 here]

Discussion

Domestic violence is a significant problem in the United States with more than one in four women and one in 10 men reporting experiencing DV victimization in their lifetime (S. Smith et al., 2018).

⁴An anonymous reviewer encouraged us to closely inspect Cincinnati's calls for service data, as the standard error was much larger than the coefficient for immediate effect (whereas the opposite was true for the other jurisdictions). Supplemental analyses (available on request) reveal that Cincinnati did see a noticeable spike in DV calls for service in the weeks leading up to the stay-at-home order. This could reflect societal disruptions caused by COVID-19, normal seasonal fluctuation, or both. In any event, ITSA returned substantively similar results when we changed the interruption week to 113, 114, 115, and 116.

DV is associated with a host of negative physical and psychological consequences for victims, including children (S. Smith et al., 2018), and DV-related homicide is the most prevalent type of homicide among female victims (Cooper & Smith, 2011). In response to both research and activism, law enforcement responses to DV-related calls for service have changed dramatically over the course of the last several decades, and these recent changes in citizens' routine activities has provided yet another opportunity to consider the methods of policing domestic violence.

This study compared DV-related and other calls for law enforcement service for six jurisdictions from January 1, 2018 to December 27, 2020 to assess trends during the COVID-19 pandemic, and specifically, after state and local governments initiated stay-at-home orders. As expected, findings showed that DV-related calls for service generally increased the week stay-at-home orders went into effect, and declined throughout the remainder of the year. At the same time there were two distinct outliers: Cincinnati did not experience a spike in DV calls for service, while Salt Lake City did not experience a decline in DV calls for service throughout the remainder of 2020. Moreover, longer-term trends in Montgomery and Phoenix were significantly different from their respective pre-stay-at-home trends, providing the most robust evidence that changes in these two jurisdictions were not seasonal, and were evidently the result of changes in daily life spurred by COVID-19.

One feasible explanation for the observed differences across jurisdictions is that the details of "stay-at-home orders" differed across states. According to a CDC Morbidity and Mortality Weekly Report, in five of these six states (Louisiana, Washington, Ohio, Maryland, and Arizona), Governors issued stay-at-home orders that were "mandatory for all" citizens with the exception of essential workers (e.g., grocery store employees) and essential activities (e.g., socially distanced outdoor exercise, trips to the pharmacy and grocery store; see Moreland et al. (2020)). However, there were some noteworthy differences within these five states' orders regarding essential activities. A primary example was religious services. In Ohio, religious services including weddings and funerals were deemed essential and continued without restrictions. In Louisiana, public and private gatherings, including religious services, were restricted to 10 or fewer people. In Washington, public and private gatherings including religious services of any size were prohibited. Meanwhile, the Governor of Utah issued a "Stay Safe, Stay Home" directive which indicated that "Utahns are expected to stay home whenever possible" and laid out specific instructions for individuals, high-risk groups, and businesses. Utah's Governor specifically noted that his directive "should not be confused with a shelter in place order," and it was identified by Moreland et al. (2020) as "advisory" only.

Findings advance limited prior research on changes in DV-related calls for law enforcement service during the COVID-19 pandemic and the impact of stay-at-home orders in several ways. First, this research examined "domestic violence" calls for service specifically, as opposed to previous work focused more broadly on serious assaults in residences (Ashby, 2020). Second, disaggregating these data by jurisdiction allowed us to highlight both overarching trends, as well as important jurisdictional-level differences. Continued research on the impacts of COVID-19 should ensure that findings are not impacted by aggregation bias and that policy makers have accurate and applicable information for their local stakeholders. The current research also extended the post-treatment observation period through the end of 2020. Furthermore, the presentation of three full years of data demonstrated differences in both rates and trends in DV-related CFS across these six jurisdictions, highlighting the importance of measuring and understanding local patterns. To this end, Campedelli et al. (2020)'s examination of COVID-19 related changes in reports of burglaries, assaults, narcotic crimes, and robberies in Chicago found that trends differed across communities and across crime types. Future research might focus on neighborhood-level changes in DV to further enhance our understanding of service needs across communities within jurisdictions.

Finally, these analyses provide a focused and statistically rigorous comparison of DV-related calls for service and calls for service for other crimes. This comparison suggests a pandemic-related "displacement effect" regarding law enforcement personnel resources: while fewer law enforcement officers were needed to respond to most call for service types while stay-at-home orders were in effect, more personnel were needed to respond to DV-related calls. As we are only in the beginning of "the darkest days of the pandemic," law enforcement decision-makers must be prepared for this trend to resurface should their jurisdictions implement new orders or advisories. DV-related calls for service are perceived by law enforcement officers as inherently more dangerous and challenging than other types of calls (see Nix et al., 2019); officers also report that DV calls require significant time and effort (McPhedran et al., 2017). As such, an increase in the number of DV calls for service may have negatively impacted officer well-being or detrimentally impacted victims' experiences with officers' responses to service calls. In addition, COVID-related health precautions have likely complicated both officer and victim responses to DV calls. Law enforcement officers may make

different calculations regarding arrests due to efforts to minimize close contact with citizens and/or to reduce jail occupancy (Lum et al., 2020), while victims may be less likely to seek shelter with friends or family or utilize emergency housing.

At the time of this writing, a new, more contagious strain of COVID-19 is spreading throughout the US population (Kaplan & Healy, 2021). As such, many jurisdictions may be forced to impose new stay-at-home orders in the interest of public health, and if so, the present findings suggest that we can expect new spikes in DV-related calls for service. As such, police departments might benefit from booster trainings on domestic violence incidents and trauma-informed interviewing techniques. In many jurisdictions, the local DV service provider has staff on hand to lead such trainings, and in the absence of a local provider, the National Coalition Against Domestic Violence can fill this void. In addition, officers should be reminded about services for victims of domestic violence in their jurisdiction and informed about any service changes (i.e., if shelters have reduced capacity, if providers have moved to online or remote services). Finally, law enforcement leaders should direct officers as to where and how they might access mental health supportive services given the potential negative consequences of responding to a greater number of DV incidents.

At present, there is significant, ongoing debate about defunding law enforcement and reimagining what law enforcement officers do and how they do it. This has included law enforcement responses to domestic violence. We must recognize that examining 911 calls as presented here only represent a portion of all DV incidents, and that other stakeholders such as community-based victim service agencies and emergency departments also hold important data on incidents that may go unreported to law enforcement. As we "reimagine" policing domestic violence, we might reconsider the role of data sharing and data-driven decision-making for domestic violence coordinated response teams (DVCRTs). While DVCRTs often bring together a diverse set of stakeholders to collaborate in the community's response to DV, DVCRTs have yet to establish a culture of data sharing across organizations to inform inter and/or intra-agency responses. A compstat 2.0?

Before closing, we must acknowledge the limitations of our work. First, and most important, it is well-established that DV is underreported to law enforcement. Research using data from the National Crime Victimization Survey demonstrates that only about half of all DV victimization is reported to police (Morgan & Truman, 2020). Victims of DV describe a range of barriers to reporting to law enforcement (Logan & Valente, 2015), and often use law enforcement as a

"last resort" - after multiple episodes of abuse and/or after violence escalates to a point where they fear their partner will use lethal violence or physically harm their children (Klein, 2009). It is well understood that victims of DV use community-based victim services such as emergency hotlines earlier and more often than they use law enforcement (see Logan & Valente, 2015). A more comprehensive examination of trends in DV help-seeking must include both calls for law enforcement service and calls to emergency hotlines. Second, the calls for service data we analyzed were messy, and required us to mine "incident description" fields for strings of text which referred to DV (Leslie & Wilson, 2020). It is possible that a small number of DV incidents slipped through the cracks, as well as that how agencies define and document "domestic violence" may have varied across our sample. Moving forward, agencies that share such data on the *Police Data Initiative* or their own websites should include, whenever possible, separate fields for "initial" and "final" incident descriptions, and include flags clearly indicating whether the incidents were officer- or citizeninitiated. Finally, our analysis was restricted to six jurisdictions, and we observed substantial variation across them. Thus, we make no claim that these results will generalize beyond our sample – in fact, we encourage researchers to be wary of aggregation bias when studying the effects of COVID-19, natural disasters, or other large-scale exogenous shocks on localized criminal justice matters.

There is significant, ongoing debate about defunding law enforcement and reimagining what law enforcement officers do and how they do it. This has included law enforcement responses to DV. We must recognize that examining 911 calls as presented here only represent a portion of all DV incidents, and that other stakeholders such as community-based victim service agencies and emergency departments also hold important data on incidents that may go unreported to law enforcement. More than three decades ago, the introduction of Compstat revolutionized policing by using technology to map crime statistics in real time to assist law enforcement decision-makers as they deployed resources and directed enforcement efforts for crime reduction and prevention (D. C. Smith & Bratton, 2001). As we "reimagine" policing DV, we might consider the role of data sharing and the opportunities for increased data-driven decision-making for domestic violence coordinated response teams (DVCRTs). DVCRTs across the country bring together diverse sets of stakeholders to collaborate in their community's response to DV, but they have yet to establish a culture of data sharing across organizations to inform inter and/or intra-agency responses and strategic planning. In the meantime, it is encouraging that police departments are increasingly sharing their data via platforms like the *Police Data Initiative*, which enables timely analysis of pressing issues.

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	Coef.	Std. Err.	t	-test	95% CI
New Orleans					
Pre-trend	770	.084	-	9.194***	936,605
Immediate effect	50.677	11.304		4.483***	28.343, 73.010
Post-Trend	.601	.493		1.218	374, 1.575
Intercept	369.487	6.173	5	9.856^{***}	357.291, 381.682
F-test			29.57***		
Cincinnati					
Pre-trend	.143	.099		1.452	052, .338
Immediate effect	3.707	12.552		.295	-21.093, 28.506
Post-Trend	492	.463	-	-1.062	-1.407, .423
Intercept	364.378	6.439	5	56.585^{***}	351.656, 377.101
F-test			1.14		
Seattle					
Pre-trend	049	.048	-	-1.022	144, .046
Immediate effect	17.592	5.951		2.956^{**}	5.834, 29.350
Post-Trend	378	.199	-	-1.899	772,015
Intercept	180.340	3.235	Ę	55.744***	173.948, 186.731
F-test			2.99^{*}		
Salt Lake City					
Pre-trend	.016	.034		.463	052, .083
Immediate effect	20.261	5.185		3.908^{***}	10.017, 30.505
Post-Trend	.164	.202		.813	235, .563
Intercept	98.643	2.352	4	1.942***	93.996, 103.289
F-test			36.33***		
Montgomery Co.					
Pre-trend	019	.069		269	155, .118
Immediate effect	21.974	9.258		2.373^{**}	3.682, 40.266
Post-Trend	768	.382	-	-2.010*	-1.524,013
Intercept	252.168	4.807	5	52.453***	242.670, 261.666
F-test			2.06		
Phoenix					
Pre-trend	.496	.075		6.615^{***}	.348, .644
Immediate effect	65.294	12.026		5.430***	41.535, 89.053
Post-Trend	-1.752	.456	-	-3.841**	-2.653,851
Intercept	363.556	4.779	7	76.066***	354.113, 372.999
F-test			76.67***		

Table 1. ITSA results for each jurisdiction.

* p < .05, ** p < .01, *** p < .001; Newey-West standard errors are displayed.



Figure 1. Domestic violence versus other calls for service in each jurisdiction over the 156-week study period.

*NOTE: Vertical lines indicate start of stay-at-home orders, which occurred as early as Week 116 or as late as Week 118 in our sample.



Figure 2. The effects of stay-at-home orders on domestic violence calls for service.

* Regressions with Newey-West standard errors - lag(0)