Do Officer-Involved Shootings Reduce Citizen Contact with Government?

Elisha Cohen, Emory University
Anna Gunderson, Emory University
Kaylyn Jackson, Emory University
Paul Zachary, Emory University
Tom S. Clark, Emory University
Adam N. Glynn, Emory University
Michael Leo Owens, Emory University

Police use of force bears on central matters of political science, including equality of citizen treatment by government. In light of recent high-profile officer-involved shootings (OIS) that resulted in civilian deaths, we assess whether, conditional on a shooting, a civilian's race predicts fatality during police-civilian interactions. We combine Los Angeles data on OIS with a novel research design to estimate the causal effects of fatal shootings on citizen-initiated contact with government. Specifically, we examine whether fatal OIS affect citizen contact with the municipal government via use of the emergency 911 and nonemergency 311 call systems in Los Angeles. We find no average effect of OIS on patterns of 911 and 311 call behavior across a wide range of empirical specifications. Our results suggest, contrary to existing evidence, that OIS, in and of themselves, do not substantively change civic behavior, at least not citizen-initiated contact with local government.

In the United States, high-profile deaths of civilians by police officers, particularly deaths by gunfire (e.g., Tamir Rice, Philando Castile, and Michael Brown), along with other forms of harm against civilians by police, draw public, media, policy, and academic attention to the "monopoly of violence" by the state and use of force by its police. Deaths of civilians by police, as well as nonfatal force against civilians by police, motivate scholarship to understand the prevalence and patterns of police use of force, both lethal and nonlethal. They also compel political scientists to consider the civic and democratic consequences of lethal and nonlethal police use of force. Observational data on police use of force, especially shootings, however, generally are inadequate for drawing strong inferences about, and demonstrating well the causal effects of, police violence (for some notable exceptions, see Mummolo 2017; Wheeler et al. 2017).

We couple data on officer-involved shootings (OIS) in Los Angeles with a research design that allows us to assess the causal effects of fatal OIS on citizen-initiated contact with local government. Specifically, we examine whether OIS, generally or by type (fatal versus nonfatal), as well as by race of civilian and race of officer during OIS, affect civilian use of the emergency 911 system or the nonemergency 311 system in Los Angeles. In contrast to previous analyses, we

Elisha Cohen, PhD student, Emory University. Anna Gunderson, PhD candidate, Department of Political Science, Emory University. Kaylyn Jackson, PhD student, Emory University. Paul Zachary, visiting research associate, Institute for Quantitative Theory and Methods, Emory University. Tom S. Clark (clark.jop@gmail.com), Charles Howard Candler Professor of Political Science, Emory University. Adam N. Glynn, associate professor of political science and quantitative theory and methods, Emory University. Michael Leo Owens, associate professor of political science, Emory University.

This article was solicited by the editors, was presented and critiqued in a workshop, and received one external review. Prepared for the *Journal of Politics* symposium on Race and Policing, October 30, 2018, University of Southern California. Data and supporting materials necessary to reproduce the numerical results in the article are available in the *JOP* Dataverse (https://dataverse.harvard.edu/dataverse/jop). An online appendix with supplementary material is available at https://dx.doi.org/10.1086/703539.

The Journal of Politics, volume 81, number 3. Published online June 18, 2019. http://dx.doi.org/10.1086/703539
 0022-3816/2019/8103-00XX$10.00

find no evidence that fatal OIS have a deleterious effect on citizen-initiated contact.

THEORETICAL FOUNDATIONS

Discretion to use force, even violence, against civilians that the police encounter sets the police apart from other domestic agencies and agents tasked with providing public services to civilians. Key empirical studies and reviews observe, however, "use-of-force incidents are relatively rare events compared to the overall number of police-citizen contacts. Research based on a whole variety of data sources, including police use-of-force reports, civilian complaints, victim surveys, and observational methods, consistently demonstrates that a very small number of police-to-citizen contacts include any use of force by the officers" (Taylor et al. 2011, 214; see also Eith and Durose 2011; Goff et al. 2016).

Police use of force: Extant empirical findings

Police use of force bears on central matters of political science, including equality of citizen treatment by government. It begins with the classical subjects of the power of the state to regulate the routines and punish the actions of citizens. It extends to contemporary matters of administrative discretion and democratic accountability of police (Lipsky 2010; Muir 1979; Wilson 1978), policy feedback effects of government actions on the civic attitudes and participation of citizens (Mettler and Soss 2004), and the ways police "exercise social control and [employ] various modes of coercion, containment, repression, surveillance, regulation, predation, discipline, and violence" (Soss and Weaver 2017, 567), among others. Yet, police use of force generally has not concerned political scientists, at least not those focused on the United States. As one review concludes, "The powers and practices of policing have received paltry attention in the study of American political life" (Soss and Weaver 2017, 573).

Traditionally, the focus of the social sciences on the use of force by the police is on its correlates and causes, not its consequences (e.g., Friddell 2017; Fryer 2016; Gelman, Fagan, and Kiss 2007; Goff et al. 2016; James, Vila, and Daratha 2013; Ross 2015). While extensive and broad in its focus, one area of central concern, particularly with OIS, is race. At a minimum, it is because of the troubled history of the policing of and police in communities of color (Soss and Weaver 2017). Also, the risk of "police-involved death" for civilians from racial minorities is high; African American men and Latinx men, for instance, may be least 3.2 times and 1.4 times, respectively, more likely to die from police-civilian encounters than white men (Edwards, Esposito, and Lee 2018). One potential explanation is that "racial biases may exist a priori in officers' decisions to draw their weapons. That is, officers may be more likely to draw their weapons when interacting with minority suspects" (Wheeler et al. 2017, 56). However, empirical research seeking to confirm racial bias as a correlate and cause of police use of force, particularly the use of firearms, against civilians (or subgroups of racialized civilians) lacks consensus on the effect of "race" on police use of force and even the measurement of race-as-bias (Goff et al. 2016; Hollis and Jennings 2018).

Furthermore, rigorously derived empirical findings about racial disparities in the use and receipt of force, especially shootings, by police generally are contradictory. On the one hand, several studies of use of force and OIS reports and citizen complaints of force by officers suggest that the police are more likely to use force and more of it (e.g., shoves, punches, and firearms) on black civilians and suspects than white ones (e.g., Baumgartner, Epp, and Shoub 2018; Eith and Durose 2011; Gelman et al. 2007; Nix et al. 2017; Paoline, Gau, and Terrill 2018). On the other hand, multiple studies fail to observe racial differences in the likelihood or degree of lethal or nonlethal force (e.g., shootings) by police during police-citizen encounters (e.g., Alpert and Dunham 2004; Lawton 2007; McElvain and Kposowa 2008; Wheeler et al. 2017). Or they report nonparallel findings about the effects of race for nonlethal force and lethal force, when means of force such as Tasers and firearms are considered (Fryer 2016). Plus, there is contradictory evidence whether race of officer influences use of force by officers against civilians by race (e.g., Alpert and Dunham 2004; Holmes, Painter, and Smith 2018; Jetelina et al. 2017; Nicholson-Crotty, Nicholson-Crotty, and Fernandez 2017; Paoline et al. 2018; Wheeler et al. 2017).

At the same time, a related literature examines the individual and aggregate consequences following use of force during police-civilian encounters, inclusive of the civic and democratic consequences of lethal use of force. Not unlike the broader effects of involuntary criminal justice contact generally (Burch 2013; Lerman and Weaver 2014; Owens and Walker 2018; Testa 2016; Walker 2014; Weaver and Lerman 2010), police use of force during police-civilian encounters, be it lethal or nonlethal, may influence citizen-initiated contact with government. Recent quantitative studies of emergency 911 calls in Milwaukee (Desmond, Papachristos, and Kirk 2016) and nonemergency 311 calls in New York City (Lerman and Weaver 2014) report that community-level use of those municipal systems varies following instances of use of force during police-civilian encounters, dropping in volume (*a*) where police use more force against civilians, and (*b*) for a considerable time, particularly in black communities, following media reports of police use of force (e.g., beatings or

killings of civilians).[1] Likewise, there is rigorous qualitative evidence from Philadelphia that police use of force can reduce willingness, at least by particular subgroups, to contact the police for assistance (Carr, Napolitano, and Keating 2007). Those findings cohere with emerging evidence from other countries that police use of force negatively affects the willingness of civilians to report crime to police agencies (e.g., Gingerich and Oliveros 2018).

Additionally, police use of force may correlate with changes (positive or negative) in electoral participation via voter registration and voting and may influence vote choice for candidates. There is evidence from New York City and cities in the United Kingdom that variation and changes in voter turnout may be a function of the residential density of persons experiencing or exposed to involuntary police-civilian contact, including use of force by police during contact (Laniyonu 2018, 2019). Furthermore, police use of lethal force, in particular, during police-civilian encounters may influence subsequent contentious political behavior such as protests, demonstrations, and pickets. Generally, police violence against civilians can catalyze spontaneous and organized, digital and physical, political protests against the police and public policy makers that govern them (Williamson, Trump, and Einstein 2018; Yun et al. 2017). For instance, police killings of black civilians in the United States positively correlate with the likelihood and frequency of Black Lives Matter demonstrations for police reform and abolition in cities (Williamson et al. 2018).

In sum, just as there may be "a powerful effect of [involuntary] criminal justice contact on a range of political behavior and attitudes" (Weaver and Lerman 2010, 818), civic and democratic behaviors and attitudes may change following police-civilian encounters marked by lethal or nonlethal use of force by police, inclusive of firearms, other potentially lethal devices, and police postures.

Theoretical mechanisms for civic effects

The literature provides a variety of theoretical foundations for expecting and predicting police use of force, especially shootings, against civilians to influence aggregate civic and democratic engagement. It provides, too, empirical findings that are potentially in theoretical tension with one another. For example, the finding that exposure to police violence decreases civic engagement and contact with government is hard to square with the finding that exposure to police violence is a motivator for protest behavior. We believe that two classes of studies—one on use of force as a dependent variable and one on use of force as an independent variable—help clarify why these conflicting findings might arise and highlight a way forward for the research.

We consider two possible reasons for the lack of empirical consensus, which we will evaluate using the research designs we lay out below. First, not only is civilian exposure, be it personal or proximal, to police violence not random, it is possible that exposure is subject to significant confounding effects for which past studies cannot account. For example, one of the important hypotheses and empirical claims in the literature is that racial bias drives a portion of police use of force. Bias is inherently internal; in the absence of preexisting measures of officers' bias, scholars cannot control for it in an empirical analysis of the effects of police use of force (James et al. 2013). Similarly, the literature affirms that civilian-suspect behavior is an important determinant of the type and degree of use of force. However, because officers subjectively evaluate civilian-suspect behavior in the moment, adequately accounting for its role when evaluating the effects of police use of force is similarly problematic.

Given these concerns, the nonrandomness of police violence and the possibility for empirical confounds, any given empirical study that focuses on instances of police use of force, in comparison to the absence of police use of force, is likely to produce an inaccurate estimate of both the causal effect of exposure to police violence and the direction of its association with civic engagement. An approach to untangling the causal effects of exposure to police violence is to collect data on an important dimension of police use of force—namely, instances of officers discharging their firearms. Such data will allow for making powerful comparisons of similar situations that greatly mitigate the risk of empirical confounding.

Second, civilian exposure to police violence has heterogeneous effects on citizen behavior, which we could categorize in a classic behavioral sense as *voice* and *exit*. Following use of force, including shootings, during police-civilian encounters and civilian deaths by police, some citizens may feel emboldened and decide to engage government, seeking, for instance, reforms of police behavior and public accountability (Williamson et al. 2018). They may become more likely, for example, to show up at protests or engage in other forms of citizen-initiated contact with government. (Of course, it is possible such citizens are more likely participatory in the first place as, say, voters, whereby the effects of police behavior on their voting behavior would be limited.) Other citizens, after police-civilian encounters marred by civilian deaths, might feel alienated from or distrustful of government or otherwise disaffected (Soss and Weaver 2017). For them, the primary effect of exposure to police violence might be to retreat from

1. There is evidence that the majority of OIS resulting in civilian fatalities in the United States may begin with 911 calls (Frankham 2017).

civic life. The extant literature provides theoretical and empirical evidence of both kinds of effects. Precisely because of the existing results, we do not know the true causal effects of exposure to police violence or the net effect of police use of force on civic and political behavior. The data collection and research designs we describe below facilitate our ability to empirically evaluate different effects of police use of force, particularly shootings.

RESEARCH DESIGN AND DATA COLLECTION

Empirical challenges

One of the major challenges to studying the determinants and consequences of use of force is a lack of systematic and public data on police behavior during police-civilian encounters (Wheeler et al. 2017). While the FBI maintains data on lethal and nonlethal *civilian* violence against police officers in the line of duty, no systematic data are maintained on lethal and nonlethal *police* violence against civilians.[2] A consequence is that a count of how many civilians are killed by police officers each year can vary wildly, depending on the sources used to count fatalities (Zimring 2017). Some recent efforts to crowdsource records of civilian deaths have made important headway, such as the *Washington Post*'s data on fatal shootings or the Fatal Encounters project.[3] However, their reliance on crowdsourced and media reports undermines their comprehensiveness of instances of fatal shootings. Moreover, because they focus solely on fatal incidents during police-civilian encounters, the data underreport the use of force by police during police-civilian encounters. As a merely descriptive matter, focusing on fatal shootings alone masks substantial and consequential amounts of nonlethal force by police against civilians (Wheeler et al. 2017). That point is particularly important because it speaks directly to our ability to learn from fatal shootings about the consequences of use of lethal force for democratic and civic outcomes.

Because fatal shootings of civilians by police do not occur randomly (and are rare events), not knowing the distribution of officers' use of firearms more generally, both lethally and nonlethally, creates significant inferential challenges. Ideally, when studying fatal instances of police use of force, whether by guns or other means, we need a set of observations we can identify as a comparison group (nonfatal shootings) where the "treatment" of fatality would have been as likely to occur (Wheeler et al. 2017). But there is a dearth of data for identifying such a set.

We address each of these two challenges below. First, we describe a research design that allows us to credibly assess the causal effect of a fatal shooting on two forms of citizen-initiated contact with government—emergency 911 calls and nonemergency 311 calls. Second, we detail the contents of an original data set we compiled, one that provides a more comprehensive description of police shootings than we can generally derive from existing data.

Research designs for the civic effects of police shootings

We focus on citizen-initiated contact, particularly use of 911 and 311 call systems after OIS. Neither 911 calls nor 311 calls are expressly political behavior, but both 911 and 311 systems provide citizens with a simple way to contact government and report public problems, from property crimes and robberies to potholes and graffiti. And they create "low-transaction-cost access to government that have been shown to instill a sense of trust and offer the promise of increased bureaucratic responsiveness" (Minkoff 2016, 212). They also foster individual and collective efficacy that contribute to the social "maintenance of the urban commons" (O'Brien 2016, 123). Plus, data from them permit us to credibly estimate the effect of lethal use of force by police on citizen-initiated contact with government.

We borrow a research design from comparative politics scholarship. Specifically, we draw from studies that compare outcomes after a successful assassination attempt to outcomes after an unsuccessful assassination attempt (Jones and Olken 2009). In our case, we compare outcomes after fatal shootings of civilians by police officers to outcomes after nonfatal shootings of civilians by police officers. To be clear, we do not equate police killings of civilians with political assassinations. We merely borrow a theoretical intuition and empirical approach from the study of a different type of lethal use of force in a polis. Because there is an element of randomness to whether an assassination attempt or an OIS is fatal (due to the fact that even a highly trained police officer may not be a perfect shot), the approach produces quasi-experimental evidence about the effects of fatal versus nonfatal shootings of civilians by police. The value of that randomness is that we can compare similar situations with different treatments of police use of force—fatal versus nonfatal—while dealing in a principled manner with unobserved confounds, which others have done using "situations in which deadly force may have been authorized but was not ultimately used" (Wheeler et al. 2017, 54). Our design allows us to overcome the most salient limitation to studies relying

2. See https://ucr.fbi.gov/leoka.

3. For the *Washington Post*'s data, see https://github.com/washingtonpost/data-police-shootings; for the Fatal Encounters project, see https://www.fatalencounters.org/.

on instances of fatal police shootings only, because we have a valid comparison set of instances in which there was no fatal shooting. Furthermore, our data, described below, allow us to control for the most important nonrandom factors that might influence whether a shooting is fatal, such as the distance between the location of an OIS of a civilian and trauma centers (Crandall et al. 2013). Plus, our data permit us to show that fatal shootings and nonfatal shootings of civilians by police officers take place in similar locations, ruling out a concern that fatality is driven by the socioeconomic conditions of the neighborhoods where police shoot civilians.

Officer-involved shooting data

As part of a broader multicity OIS data collection project in progress, we assembled an original data set that includes all OIS in the city of Los Angeles by officers from the Los Angeles Police Department (LAPD) between 2010 and 2017.[4] Aside from being the second largest city in the United States, Los Angeles has long been an important site for the systematic study of OIS (Meyer 1980). We obtained contemporary OIS data from the LAPD by filing a request under the California Public Records Act in September 2017. We requested data on every OIS, including the exact date and location, as well as whether the civilian shot was wounded fatally or nonfatally. Also, unlike police departments in many other cities, the LAPD provided data on the race of civilians shot by its officers and the race of the officers involved in the shootings of civilians, among other information. However, the LAPD data are limited because they do not include (*a*) instances of officers drawing but not firing their guns, (*b*) details about the behavior, criminal or otherwise, of civilians during the encounters, (*c*) histories of prior shootings by police involved in the encounters, or (*d*) administrative findings regarding the reasonableness of shootings.

One challenge arising from the LAPD data is that it contains information on each civilian-officer pair associated with an OIS, for which there sometimes are multiples of pairs. This makes it impossible to discern whether, for example, a shooting involved one civilian and multiple officers or, instead, multiple civilians and a single officer. To address that challenge, we collapse data into what we call "incidents"—single events in which either multiple civilians or officers may have been involved. As we describe below, our inferences are robust to myriad variations on how we treat incidents involving multiple individuals.

In all, our OIS data from Los Angeles comprise 693 officer-civilian pairs across 311 distinct incidents. Of those shootings, 138 (44%) were fatal. While the majority of OIS in Los Angeles are nonfatal, the percent of fatal OIS is greater now than the 22% observed four decades ago, suggesting that the lethality of OIS in Los Angeles has increased (Meyer 1980). Table 1 shows the breakdown of shootings, including fatalities, across the five demographic categories provided to us by the LAPD. It reveals that, relative to the population of the entire city, the population of civilians shot during police-civilian encounters is less white and Asian, and more black. Additionally, among those civilians shot by LAPD officers, black civilians were less likely to die than were white, Hispanic, or Asian civilians, variation we can examine more systematically.

Figure 1 shows the locations of each of the OIS incidents in our Los Angeles data. The dark circles identify fatal shootings and the lighter circles identify nonfatal shootings. The black triangles show locations of Level I trauma centers. A variety of patterns stand out. First, we see that OIS occur across the city but cluster in the central and northwest parts of the city. Second, and most important for our purposes, there is no clear pattern of sorting among the OIS, whereby fatal and nonfatal shootings systematically take place in different areas of the city. Were that the case, our ability to treat fatality conditional upon a shooting as a quasi-random outcome would be suspect.

DESCRIPTIVE ANALYSIS: OFFICER-INVOLVED SHOOTINGS

We begin our analysis with a descriptive question: What are the correlates of civilian fatalities in OIS? Not only is this question normatively and descriptively important, but know-

Table 1. Distribution of Racial Groups in Sample of Officer-Involved Shootings and Los Angeles Population

Characteristic	In Sample	In Population	Fatal
White civilian	.15	.29	.50 (23/46)
Black civilian	.34	.09	.33 (35/105)
Hispanic civilian	.48	.49	.50 (75/149)
Asian civilian	.02	.12	.60 (3/5)
Other/unknown	.02	.01	.33 (2/6)

Source. Population proportions from the US Census Bureau, https://www.census.gov/quickfacts/losangelescitycalifornia.

Note. Final column shows the proportion of the officer-involved shootings in which the civilian was fatally wounded, for each racial group.

4. During this period, the LAPD implemented a 2009 revised use of force policy (i.e., Directive No. 1) that authorized officers to use deadly force without regard for creating or leveraging opportunities to de-escalate police-civilian encounters. It later adopted a new use of force policy—Special Order No. 5—in 2017 that directed officers to "control an incident by using time, distance, communications, and available resources, in an effort to de-escalate the situation."

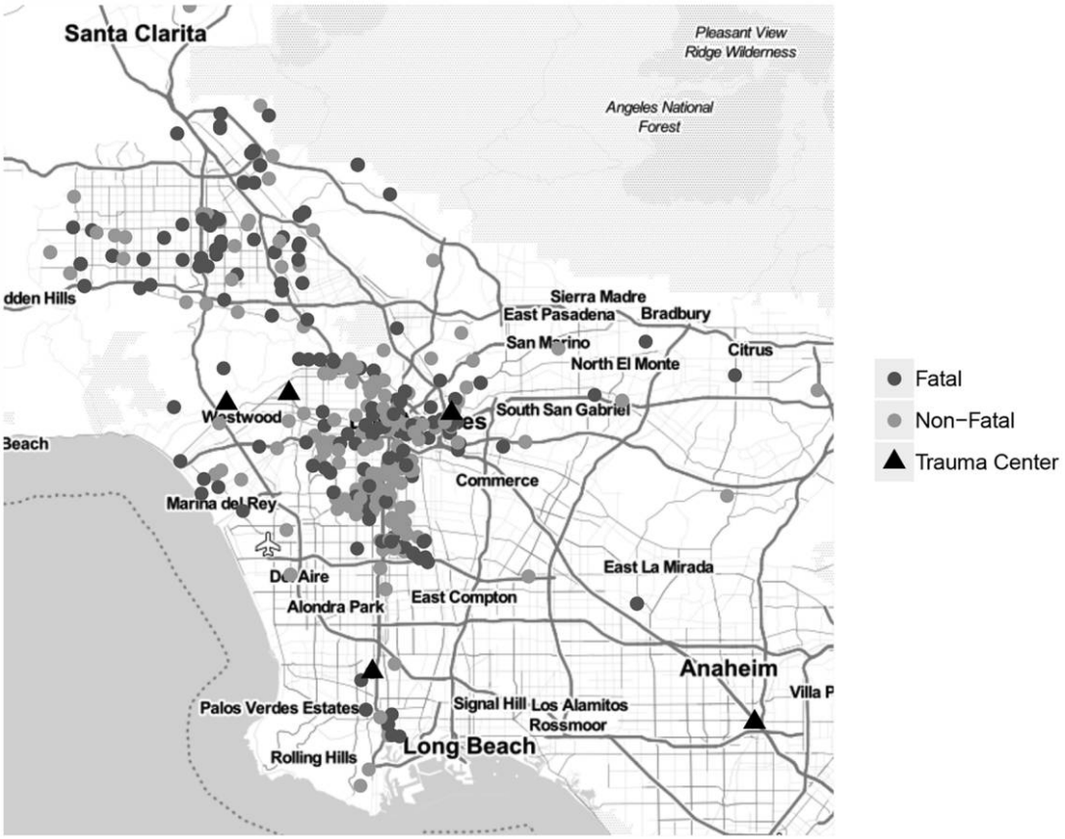

Figure 1. Locations of officer-involved shootings in Los Angeles, 2010–17. Points show the location of each shooting, distinguishing between fatal and nonfatal shootings of civilians by Los Angeles Police Department officers.

ing whether there is systematic variation in death, conditional on being shot in the first place, can implicate our research design with regard to assessing the causal effects of a fatal shooting. That is, our design relies on a belief that fatality is quasi-random, especially with respect to factors we think might affect how other civilians behave after fatal shootings during police-civilian encounters.

Because of the intense interest in discerning patterns in police use of force, as well as concerns about racial bias in the use of force against racial minorities, we place particular emphasis on evaluating whether there are discernible patterns in civilian fatalities related to racial characteristics. Past work has set out to evaluate whether force is used disproportionately against racial minorities, especially African Americans (Hollis and Jennings 2018). In observational settings, analyses have offered conflicting findings (e.g., Alpert and Dunham 2004; Engel and Calnon 2004; Fryer 2016; Gelman et al. 2007; Lawton 2007; Schuck 2004). In experimental settings, results, too, are mixed as to whether police officers exhibit racial bias when drawing and firing their weapons (e.g., Correll et al. 2007; James et al. 2013; Mekawi and Bresin 2015).

Using our data, we can ask a slight variant on the typical question social scientists have asked. Rather than asking whether a civilian's race predicts the use of force, we ask whether, conditional on an OIS, a civilian's race predicts fatality. Specifically, we ask whether the race of a civilian is predictive of whether she dies in an OIS. Our question is informed by the results of Fryer (2016) and Wheeler et al. (2017), who found no evidence of racial disparities in the civilians shot by police officers. However, Fryer (2016) suggests racial minority civilians are more likely to be subject to some kind of force during police-civilian encounters. The logic underlying that finding suggests that, conditional upon being shot, we might expect civilians who are racial minorities to be more likely to die from shots fired by police during police-civilian encounters.

To answer our question, we estimate a logit model, where the outcome variable is an indicator whether a civilian is fatally shot during an OIS. We focus on a small set of explanatory variables that past empirical work or theoretical arguments predict should be related to the probability of a fatality. First, some research finds that the distance to a trauma center from the location of any type of shooting is predictive of

survival (Crandall et al. 2013). We include a continuous measure for the distance (in miles) from the shooting to the nearest Level I trauma center. Second, we include the race of the civilian shot. That predictor allows us to evaluate whether the previously examined racial disparities in the use of force produce racial patterns of fatality. Third, to assess whether racial bias in policing manifests in shooting outcomes, we include an indicator whether the officer involved in the shooting was the same race as the civilian shot, as well as an interaction between that indicator and each of the racial categories.[5] Table 2 shows the estimated relationships.

Several findings stand out. First, with respect to racial disparities, the one statistically significant source of variation concerns black civilians in Los Angeles, who are less likely to die in an OIS than are civilians of other races. In our analysis, white civilians are the excluded category; the estimated coefficients should be interpreted as differences with respect to that group. However, comparing the estimates for the black civilians to each of the other groups, we find that black civilians are less likely to die than are each of the other groups, except the "Unknown" group. While not conclusive, and outside of our research scope here, this finding is consistent with a pattern in which officers are willing to shoot black civilians in a wider range of circumstances. In other words, the decision to shoot black civilians is made in situations where officers may not find it necessary to fatally wound the civilian.[6] When combined with the pattern we saw in table 1, where black civilians are overrepresented in the population of those shot, this evidence provides at least preliminary and suggestive evidence of a lower threshold for deciding to shoot when a civilian is black.

Second, the racial alignment between the officer involved in the shooting and the civilian is not related to the probability of a fatality, nor does it condition the relationship between a civilian's race and the probability of fatality. In sum, other than the lower fatality rate for black civilians shot by an officer, there does not appear to be racial variation in fatality, nor does there appear to be any interactive effect with the race of the officer who has shot the civilian.

Table 2. Correlation between Race of Civilian Shot and Probability of a Fatality

	(1)	(2)	(3)	(4)
Distance to trauma center	.05	.05*	.05	.05
	(.03)	(.03)	(.03)	(.03)
Black civilian		−.71**	−.86**	−.97**
		(.36)	(.37)	(.43)
Hispanic civilian		.003	.09	−.09
		(.34)	(.34)	(.44)
Asian civilian		.36	.20	.08
		(.96)	(.97)	(.99)
Unknown civilian race		−.82	−.97	−1.10
		(.92)	(.92)	(.95)
Officer same race as civilian			−.48*	−.83
			(.29)	(.64)
Black civilian × same race officer				.08
				(1.30)
Hispanic civilian × same race officer				.47
				(.72)
Intercept	−.54**	−.32	−.11	−.01
	(.23)	(.35)	(.37)	(.41)
AIC	428.68	427.50	426.60	430.12

Note. Logit coefficients with standard errors in parentheses. $N = 311$ for all models. AIC = Akaike information criterion.
* $p < .05$.
** $p < .01$.

Third, as contrasted with previous work, we find that within Los Angeles, the distance from an OIS to a Level I trauma center does not predict the likelihood of a fatality. There may be several reasons for this discrepancy. It may be that OIS are different from other kinds of shootings, as many officers may shoot with the intention of killing the civilian while some others, per their training, may shoot to incapacitate.[7] However, a "shoot to kill" account is difficult to

5. In the event a civilian is shot by multiple officers, we code our indicator as one only if each of the officers involved was of the same race as the civilian. If any of the officers involved was of a different race, then this indicator is coded as zero. In addition, we do not include an interaction between this variable and the indicators for an Asian civilian or a civilian of an unknown race, because we have no such observations.

6. The logic here is similar to analyses of racial bias in mortgage lending in which lower default rates by African Americans were found to be evidence that lenders used higher standards for lending to African American, as opposed to white, applicants (Berkovec et al. 1996). However, this type of outcome test analysis is subject to concerns about inframarginality (Ayres 2002).

7. There is, in theory, no choice between shoot to kill and shoot to incapacitate, from the perspective of the cops and courts. Generally, the norm and policy of most police departments is that, when using lethal force via firearms, police are expected to shoot to neutralize civilians police perceive as threats, on the basis of the standard of "objectively reasonable" use of lethal force (*Graham v. Connor*, 490 U.S. 386 [1989]). Use of firearms, from the perspective of the police and the courts, is neither for incapacitation nor wounding threatening civilians. However, some police departments (e.g., the Dallas Police Department) train and expect their officers "to shoot for center mass to 'incapacitate' threatening civilians," whereby they "sometimes injure suspects rather kill them," intentionally or accidentally (Wheeler et al. 2017, 49). Plus, some de-

square with the finding from Los Angeles that less than half of OIS are fatal. But it does fit with an intended-incapacitation account. Alternatively, it might be that the previous studies uncovered a spurious relationship and that most variation in fatalities is due to cross-city variation in the distribution of trauma centers. Indeed, using a larger data set we have collected, covering two dozen cities, we find that the distance to a trauma center is predictive of fatality but only when we exclude city-level fixed effects (results available from authors). When we include city-level fixed effects, the distance to a trauma center is not predictive of fatality.

EVALUATING CIVIC EFFECTS OF OFFICER-INVOLVED SHOOTINGS: 911 AND 311 CALLS

As we discussed above, previous research suggests exposure to lethal use of force by the police may have a deleterious effect on civilians' willingness to contact government, especially in nonemergency situations. In addition, some research has found that exposure to lethal use of force can reduce civilians' willingness to report crime. To evaluate how fatal shootings affect citizen-initiated contact with government, we rely on data from the emergency 911 and nonemergency 311 call for assistance systems in Los Angeles. We obtained these data from data.gov, and they include records of all individual 911 and 311 calls made within the city of Los Angeles.

Because we examine all fatal shootings, not only those that generate a great deal of attention from the media, we look for effects in the immediate vicinity of the shooting (with the logic that people in this geographic area are most likely to have heard of the shooting). With this in mind, a limitation of the 911 call data is the absence of an exact location for the call. Instead, each call is spatially located by reporting district. A reporting district is a geographical area smaller than a police beat within a police precinct. There are 1,135 reporting districts in Los Angeles. They range in size from less than 1/1,000 square miles to approximately eight square miles, in which the smallest districts tend to be more densely populated. There is a different limitation with the 311 call data, however. Before mid-2015, the 311 call system recorded only the zip code associated with each nonemergency request. In 2016, however, the system began to record the exact location associated with each 311 request. Therefore, our 911 call data are comprehensive from 2010 to 2017, whereas the 311 call data are only complete from 2016 to 2017.

Figure 2 shows the number of 911 and 311 calls each day in Los Angeles for the period covered by our data. A number of patterns emerge. First, in both the 911 and 311 call data, there appears to be a secular upward trend over time. This is more apparent in the 911 call data, which cover a longer period of time. Second, there is a seasonality to the data, which is much more pronounced in the 911 call data, with calls increasing during the summer months and decreasing during the winter. That seasonality is important for our analysis. If OIS take place disproportionately in the summer months, then a subsequent decrease in calls could be due to an exogenous seasonality in the data.

The effect of a shooting

We first consider the effect of any shooting taking place. To do this, we must identify the universe of "nonshootings" to evaluate. We compare Los Angeles reporting districts in which a shooting took place to those in which a shooting did not take place, using instances of shootings to construct our sample. Specifically, we identify every OIS and measure the change in the number of 311 and 911 calls during the 30 days following the shooting from the 30 days prior to the shooting. The 311 OIS took place in 250 unique reporting districts. We then construct a set of "pure control" units, which comprises every single reporting district that had never experienced any OIS during our period of study and record the same outcome variable—the change in 311 and 911 calls during the same period. We have 884 such pure control reporting districts.

To evaluate the effect of the shooting on the number of calls, we adopt a difference-in-differences design in which we assume that but for the shooting, the number of calls in the district with the shooting would have trended the same way as the number of calls in the districts without shootings. Our treatment variable is an indicator for whether a shooting took place on the given day. Notably, 15 of the 311 shooting incidents in our data occurred on the same day as another shooting, meaning there are 15 dates for which we have more than one treated unit.

Our empirical model is given by

$$\Delta\text{Calls}_{it} = \beta\text{Shooting}_{i[t]} + \gamma X_t + \varepsilon_i, \quad (1)$$

where ΔCalls_{it} is the change in the number of calls in the 30-day period after time t from the 30-day period before time

partments emphasize and expect judicious restraint and de-escalation by officers during police-civilian encounters, which may decrease use of firearms, reducing civilian fatalities but increasing incapacitation and bodily harm. Plus, incapacitation is expected and more likely during the substitution of the use of firearms by other means of force during police-civilian encounters (e.g., Tasers, pepper spray, batons). Furthermore, intentional incapacitation via firearm is difficult for police officers, particularly under duress (Pinizzotto et al. 2012; Wheeler et al. 2017; White 2006).

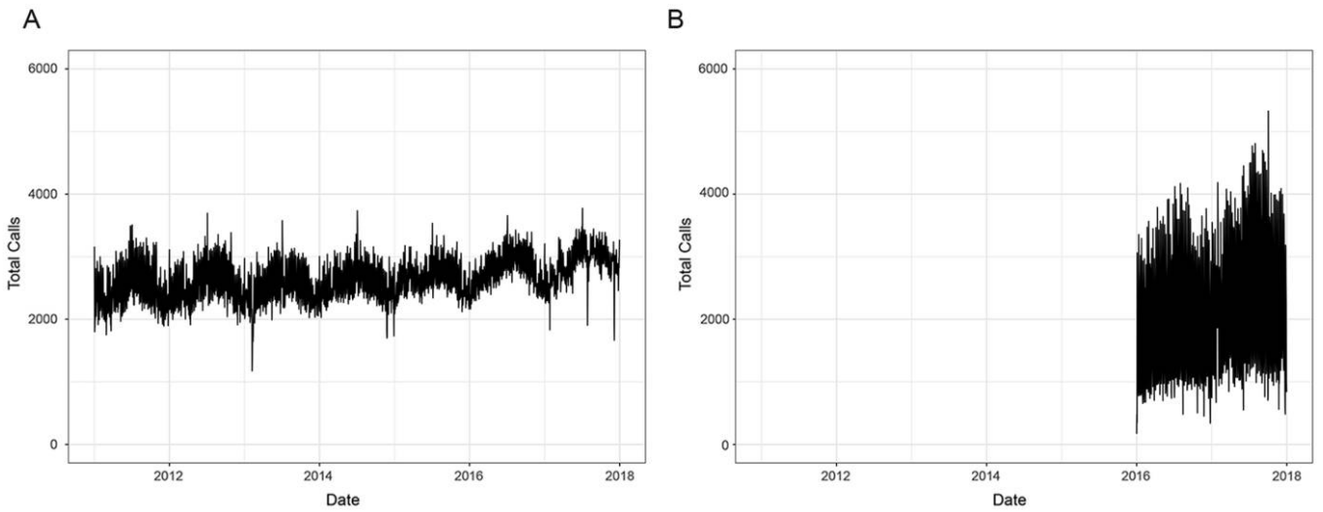

Figure 2. Daily calls to Los Angeles 911 and 311 centers, 2011–17. *A*, Daily 911 calls in Los Angeles, January 2011–December 2017; *B*, daily 311 calls in Los Angeles, January 2016–December 2017.

t in reporting district i, $\text{Shooting}_{i[t]}$ is an indicator variable for whether reporting district i was the district that had the shooting in time t, and X_t is a matrix of fixed effects for the set of unique dates at which shootings took place. Our estimate of β recovers the effect of a shooting on the number of calls made from a district in which a shooting took place.

We summarize our results in table 3. Here, we find no evidence that OIS decrease citizen calls for either emergency (911) or nonemergency (311) service. In none of our models is the coefficient associated with a shooting having taken place statistically distinguishable from zero. Moreover, the coefficients in the models of 311 calls are signed positively, while the coefficients in the models of 911 calls are signed negatively. In short, these estimates provide no evidence of a deleterious effect of a shooting, as opposed to a nonshooting, on the propensity of civilians to call 911 or 311 for government service.

Unfortunately, this analysis has two features that warrant scrutiny. First, because we are comparing reporting districts in which shootings took place to those in which no shooting took place, we might be worried that the districts are fundamentally different in ways that are not time invariant. For example, economic circumstances might be trending differently in places where shootings take place than in

Table 3. Effect of Police Shootings on 911 and 311 Calls

	Difference in 311 Calls 30 Days before and after Shooting		Difference in 911 Calls 30 Days before and after Shooting	
	(1)	(2)	(3)	(4)
Treated reporting district	.572	.523	−1.320	−1.302
	(2.752)	(2.235)	(1.016)	(.889)
Constant	.061		.066*	
	(.094)		(.035)	
Observation	60,263	60,263	227,541	227,541
R^2	.00000	.342	.00001	.235
Adjusted R^2	−.00002	.341	.00000	.234
Residual standard error	23.179	18.820	16.835	14.737
Date fixed effects	No	Yes	No	Yes

Note. Ordinary least squares coefficients with standard errors in parentheses.
* $p < .05$.
** $p < .01$.

places where shootings never take place. Our difference-in-differences model cannot address that kind of variation across districts. Second, we might worry that, because shootings are not random, there are qualitative differences between places where shootings take place and those where they do not take place that could either exacerbate or mask variation in how districts change after a shooting. In the next section, we turn to an alternative research design that overcomes these challenges.

The effect of a fatal shooting

To overcome these limitations of the preceding analysis, we turn to a second empirical specification that offers, in our view, the strongest and most credible opportunity to infer the causal effect of police use of force, because it allows us to compare fatal, as opposed to nonfatal, shootings, focusing on only places where shootings do in fact take place. However, this model only allows us to infer the causal effect of a fatal shooting (versus a nonfatal shooting), rather than the effect of any shooting at all. Specifically, to model the causal effect of a fatal shooting we adopt a difference-in-differences design that considers the change in calls before and after fatal and nonfatal shootings. The assumption underlying a causal interpretation of this specification is that, conditional on a shooting and other pretreatment covariates, fatality is random. Formally, our empirical model is given by

$$\Delta\text{Calls}_i = \alpha + \beta\text{Fatal}_i + \gamma X_i + \varepsilon_i, \quad (2)$$

where ΔCalls_i is the number of calls after shooting i minus the number of calls before shooting i, Fatal_i is an indicator variable for whether shooting i was fatal, γ is a vector of parameters to be estimated, and X is a matrix of control variables. As we saw in tables 1 and 2, black civilians are less likely to die after being shot by an officer, and so, at a minimum, it will be important to control for that covariate.

Table 4 reports the results of 12 separate specifications of model 2. The comparison category is a wounded or killed white civilian. We have six specifications where the change in 911 calls is the outcome variable and six where the change in 311 calls is the outcome variable. We include controls for the civilian's race, the distance to the nearest Level I trauma center, and fixed effects for the month and year of the shooting. In none of the specifications is our estimate of the effect of a fatality—β—statistically distinguishable from zero. That is, there is no evidence that a fatal shooting causes a change in citizen contact with government as measured by 911 or 311 calls.

These findings are in tension with other case study–based analyses that claim to find that exposure to police violence can decrease citizen contact with government and willingness to report crime (e.g., Carr et al. 2007; Desmond et al. 2016). In addition, as we described above, some past research has argued that deaths caused by police use of force motivate protest activity (Williamson et al. 2018). To the extent that civilian calls for government service, both 311 and 911, reflect their sense of connectedness with government, the existing literature suggests OIS should have a deleterious effect on those calls. However, we do not find this pattern. One reason might be that we are examining a larger, more systematic set of OIS, many of which are not high profile. The research demonstrating that police violence deters civilian contact with government typically examines a single high-profile event (e.g., Desmond et al. 2016), conducts a qualitative analysis of a limited number of neighborhoods (Carr et al. 2007), or focuses only on patterns associated with fatal killings across cities that vary in potentially meaningful ways (Williamson et al. 2018). However, by examining variation within a city, and taking advantage of a quasi experiment arising from a fatal versus nonfatal shooting incident, we are able to credibly isolate the causal effect of a fatal shooting on at least one kind of civilian response to police violence.

One potential concern with these results could be spillover effects: perhaps the volume of 311 and 911 calls change not only in the reporting district, which may be geographically small, but in neighboring districts as well. That is, our treatment area is the reporting district and its neighboring districts and not just the reporting district. Importantly, the results do not change if we use an alternative dependent variable: the 311 and 911 calls both in the reporting district in which a shooting occurred and in its neighboring reporting districts. The results of this analysis, reported in the appendix (available online), show no statistically significant evidence of a reduction in citizen contact caused by a fatal OIS.

DISCUSSION AND CONCLUSION

Our analysis provides fresh insight into a normatively challenging empirical question: Does exposure to the use of lethal force by police undermine citizen trust in government? The extent of citizen-initiated contact with government is an indicator of the health of their relationship with government, and our results do not uncover symptoms of an inherently fraught relationship. In an era where mass outrage has followed high-profile OIS, especially of young black men, it is important to understand whether the use of force, in general, is contributing to an erosion of the authority and integrity of the state's law enforcement institutions.

While our analysis moves beyond past work in the ways we have described, we anticipate several future avenues for advancing the state of knowledge about how police use of

Table 4. Effect of Fatal Police Shootings on 911 and 311 Calls

	Difference in 911 Calls 30 Days before and after Shooting						Difference in 311 Calls 30 Days before and after Shooting					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Fatal shooting	2.091	2.735	2.859	2.410	10.813	9.103	−.484	−.781	−.456	3.656	3.816	2.685
	(2.842)	(2.892)	(2.909)	(8.955)	(10.288)	(11.254)	(1.755)	(1.782)	(1.783)	(3.323)	(3.811)	(4.050)
Black civilian		2.409	2.483	1.305	−15.968	−10.547		−3.024	−2.830	.786	−2.941	.798
		(4.443)	(4.452)	(17.435)	(19.852)	(21.228)		(2.738)	(2.729)	(6.470)	(7.354)	(7.639)
Hispanic civilian		−1.455	−1.421	−1.437	−10.528	−4.360		−1.949	−1.860	10.117	7.471	9.221
		(4.213)	(4.220)	(17.581)	(18.796)	(19.886)		(2.597)	(2.586)	(6.524)	(6.963)	(7.156)
Asian civilian		−5.234	−5.097	−9.942	−32.067	−15.488		−2.587	−2.227	−4.822	−2.885	−4.092
		(11.766)	(11.786)	(24.485)	(27.702)	(29.668)		(7.252)	(7.224)	(9.086)	(10.262)	(10.676)
Unknown race civilian		6.862	7.293	7.834	23.665	30.931		−10.695	−9.560	−.666	−12.480	−24.365
		(10.853)	(10.912)	(49.243)	(53.845)	(57.070)		(6.689)	(6.688)	(18.274)	(19.947)	(20.536)
Distance to trauma center			−.174	−9.761	−25.551	−27.563			−.458*	−12.272	−18.390*	−24.327**
			(.396)	(25.100)	(26.906)	(30.765)			(.243)	(9.314)	(9.967)	(11.071)
Constant	−1.156	−1.607	−.638				.121	2.456	5.002*			
	(1.893)	(3.957)	(4.533)				(1.169)	(2.439)	(2.779)			
R^2	.002	.009	.009	.704	.763	.798	.0002	.010	.022	.893	.915	.931
Residual standard error	24.903	24.980	25.013	32.149	32.133	32.342	15.373	15.396	15.331	11.930	11.903	11.638
Reporting district fixed effects	No	No	No	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes
Month fixed effects	No	No	No	No	Yes	Yes	No	No	No	No	Yes	Yes
Year fixed effects	No	No	No	No	No	Yes	No	No	No	No	No	Yes

Note. Ordinary least squares coefficients with standard errors in parentheses. $N = 311$ for all models.

* $p < .05$.

** $p < .01$.

force affects democratic health and coproduction of law enforcement. First, it is possible that even if there is no significant effect of OIS on all 311 and 911 calls on average, there may be an effect on some category of calls (e.g., domestic violence) or for some subsets of the population. Future work might try to search for such categories, while remaining mindful of multiple testing concerns. Second, as discussed the 311 call data had limited time coverage. Future work could extend the time series to test the robustness of our nonfinding. Third, it is plausible that OIS may (or may not) influence voter behavior following shootings of civilians. It may be possible to determine the causal relationship between OIS and participation in local elections, especially in cities like Los Angeles that have elections for neighborhood councils, not just city council and mayoral elections. Finally, our analysis is necessarily limited in its scope. To answer the larger question—whether the use of force by police undermines citizen confidence in the institution—requires a more elaborate theoretical structure and empirical approach than we can provide here. However, we anticipate the findings reported here can contribute along the way.

REFERENCES

Alpert, Geoffrey P., and Roger G. Dunham. 2004. *Understanding Police Use of Force: Officers, Suspects, and Reciprocity*. Cambridge: Cambridge University Press.

Ayres, Ian. 2002. "Outcome Tests of Racial Disparities in Police Practices." *Justice Research and Policy* 4 (1–2): 131–42.

Baumgartner, Frank, Derek A. Epp, and Kelsey Shoub. 2018. *Suspect Citizens: What 20 Million Traffic Stops Tell Us about Policing and Race*. Cambridge: Cambridge University Press.

Berkovec, James A., Glenn B. Canner, Stuart A. Gabriel, and Timothy H. Hannan. 1996. "Mortgage Discrimination and FHA Loan Performance." *Cityscape* 2 (1): 9–24.

Burch, Traci. 2013. *Trading Democracy for Justice: Criminal Convictions and the Decline of Neighborhood Political Participation*. Chicago: University of Chicago Press.

Carr, Patrick J., Laura Napolitano, and Jessica Keating. 2007. "We Never Call the Cops and Here Is Why: A Qualitative Examination of Legal Cynicism in Three Philadelphia Neighborhoods." *Criminology* 45 (2): 445–80.

Correll, Joshua, Bernadette Park, Charles M. Judd, Bernd Wittenbrink, Melody S. Sadler, and Tracie Keesee. 2007. "Across the Thin Blue Line: Police Officers and Racial Bias in the Decision to Shoot." *Journal of Personality and Social Psychology* 92 (6): 1006–23.

Crandall, Marie, Douglas Sharp, Erin Unger, David Straus, Karen Brasel, Renee Hsia, and Thomas Esposito. 2013. "Trauma Deserts: Distance from a Trauma Center, Transport Times, and Mortality from Gunshot Wounds in Chicago." *American Journal of Public Health* 103 (6): 1103–9.

Desmond, Matthew, Andrew V. Papachristos, and David S. Kirk. 2016. "Police Violence and Citizen Crime Reporting in the Black Community." *American Sociological Review* 5:857–76.

Edwards, Frank, Michael H. Esposito, and Hedwig Lee. 2018. "Risk of Police-Involved Death by Race/Ethnicity and Place, United States, 2012–2018." *American Journal of Public Health* 108 (9): 1241–48.

Eith, Christine, and Matthew R. Durose. 2011. "Contacts between Police and the Public, 2008." Bureau of Justice Statistics, US Department of Justice.

Engel, Robin Shepard, and Jennifer Calnon. 2004. "Examining the Influence of Drivers' Characteristics during Traffic Stops with Police: Results from a National Survey." *Justice Quarterly* 1:49–90.

Frankham, Emma. 2017. "How Were Encounters Initiated That Resulted in the Fatal Shooting of Civilians by Police?" SocArXiv, February 14. doi:10.31235/osf.io/jsg5h.

Friddell, Lorrie. 2017. "Explaining the Disparity in Results across Studies Assessing Racial Disparity in Police Use of Force: A Research Note." *American Journal of Criminal Justice* 3:502–13.

Fryer, Roland G., Jr. 2016. "An Empirical Analysis of Racial Differences in Police Use of Force." Working paper no. 22399, National Bureau of Economic Research, Cambridge, MA.

Gelman, Andrew, Jeffrey Fagan, and Alex Kiss. 2007. "An Analysis of the New York City Police Department's 'Stop-and-Frisk' Policy in the Context of Claims of Racial Bias." *Journal of the American Statistical Association* 102 (479): 813–23.

Gingerich, Daniel W., and Virginia Oliveros. 2018. "Police Violence and the Underreporting of Crime." *Economics and Politics* 1:78–105.

Goff, Phillip Atiba, Tracey Lloyd, Amanda Geller, Steven Raphael, and Jack Glaser. 2016. "The Science of Justice: Race, Arrests, and Police Use of Force." Technical report, Center for Policing Equity, University of California, Los Angeles.

Hollis, Meghan E., and Wesley G. Jennings. 2018. "Racial Disparities in Police Use-of-Force: A State-of-the-Art Review." *Policing: An International Journal* 41 (2): 178–93.

Holmes, Malcolm, Matthew Painter, and Brad Smith. 2018. "Race, Place, and Police-Caused Homicide in U.S. Municipalities." *Justice Quarterly* (forthcoming).

James, Lois, Bryan Vila, and Kenn Daratha. 2013. "The Influence of Suspect Race and Ethnicity on Decisions to Shoot in a Deadly Force Judgment and Decision-Making Simulator." *Journal of Experimental Criminology* 9 (2): 189–212.

Jetelina, Katelyn K., Wesley G. Jennings, Stephen A. Bishopp, Alex R. Piquero, and Jennifer M. Reingle Gonzalez. 2017. "Dissecting the Complexities of the Relationship between Police Officer–Civilian Race/Ethnicity Dyads and Less-Than-Lethal Use of Force." *American Journal of Public Health* 107 (7): 1164–70.

Jones, Benjamin F., and Benjamin A. Olken. 2009. "Hit or Miss? The Effect of Assassinations on Institutions and War." *American Economic Journal: Macroeconomics* 1 (2): 55–87.

Laniyonu, Ayobami. 2018. "Police, Politics and Participation: The Effect of Police Exposure on Political Participation in the United Kingdom." *British Journal of Criminology* 58 (5): 1232–53.

Laniyonu, Ayobami. 2019. "The Political Consequences of Policing: Evidence from New York City." *Political Behavior* 41 (2): 527–58.

Lawton, Brian A. 2007. "Levels of Nonlethal Force: An Examination of Individual, Situational, and Contextual Factors." *Journal of Research in Crime and Delinquency* 44 (2): 163–84.

Lerman, Amy E., and Vesla M. Weaver. 2014. "Staying out of Sight? Concentrated Policing and Local Political Action." *Annals of the American Academy of Political and Social Science* 651 (1): 202–19.

Lipsky, Michael. 2010. *Street-Level Bureaucracy: Dilemmas of the Individual in Public Service*. 30th anniversary ed. New York: Russell Sage.

McElvain, James P., and Augustine K. Kposowa. 2008. "Police Officer Characteristics and the Likelihood of Using Deadly Force." *Criminal Justice and Behavior* 35 (4): 505–21.

Mekawi, Yara, and Konrad Bresin. 2015. "Is the Evidence from Racial Bias Shooting Task Studies a Smoking Gun? Results from a Meta-analysis." *Journal of Experimental Social Psychology* 61:120–30.

Mettler, Suzanne, and Joe Soss. 2004. "The Consequences of Public Policy for Democratic Citizenship: Bridging Policy Studies and Mass Politics." *Perspectives on Politics* 2 (1): 55–73.

Meyer, Marshall W. 1980. "Police Shootings at Minorities: The Case of Los Angeles." *Annals of the American Academy of Political and Social Science* 452 (1): 98–110.

Minkoff, Scott L. 2016. "NYC 311: A Tract-Level Analysis of Citizen-Government Contacting in New York City." *Urban Affairs Review* 52 (2): 211–46.

Muir, William K. 1979. *Police: Streetcorner Politicians*. Chicago: University of Chicago Press.

Mummolo, Jonathan. 2017. "Modern Police Tactics, Police-Citizen Interactions, and the Prospects for Reform." *Journal of Politics* 80 (1): 1–15.

Nicholson-Crotty, Sean, Jill Nicholson-Crotty, and Sergio Fernandez. 2017. "Will More Black Cops Matter? Officer Race and Police-Involved Homicides of Black Citizens." *Public Administration Review* 77 (2): 206–16.

Nix, Justin, Bradley Campbell, Edward H. Byers, and Geoffrey P. Alpert. 2017. "A Bird's Eye View of Civilians Killed by Police in 2015: Further Evidence of Implicit Bias." *Criminology and Public Policy* 16 (1): 1–32.

O'Brien, Daniel Tumminelli. 2016. "311 Hotlines, Territoriality, and the Collaborative Maintenance of the Urban Commons: Examining the Intersection of a Coproduction Policy and Evolved Human Behavior." *Evolutionary Behavioral Sciences* 10 (2): 123–41.

Owens, Michael Leo, and Hannah Walker. 2018. "The Civic Voluntarism of 'Custodial Citizens': Involuntary Criminal Justice Contact, Associational Life, and Political Participation." *Perspectives on Politics* 16:1–24.

Paoline, Eugene A., Jacinta M. Gau, and William Terrill. 2018. "Race and the Police Use of Force Encounter in the United States." *British Journal of Criminology* 58 (1): 54–74.

Pinizzotto, Anthony J., Edward F. Davis, Shannon B. Bohrer, and Benjamin J. Infanti. 2012. "Law Enforcement Restraint in the Use of Deadly Force within the Context of 'the Deadly Mix.'" *International Journal of Police Science and Management* 14 (4): 285–98.

Ross, Cody T. 2015. "A Multi-Level Bayesian Analysis of Racial Bias in Police Shootings at the County-Level in the United States, 2011–2014." *PLoS One* 10:e0141854.

Schuck, Amie M. 2004. "The Masking of Racial and Ethnic Disparity in Police Use of Physical Force: The Effects of Gender and Custody Status." *Journal of Criminal Justice* 32 (6): 557–64.

Soss, Joe, and Vesla Weaver. 2017. "Police Are Our Government: Politics, Political Science, and the Policing of Race-Class Subjugated Communities." *Annual Review of Political Science* 20 (1): 565–91.

Taylor, Bruce, Geoffrey Alpert, Bruce Kubu, Daniel Woods, and Roger Dunham. 2011. "Changes in Officer Use of Force over Time: A Descriptive Analysis of a National Survey." *Policing: An International Journal of Police Strategies and Management* 34 (2): 211–32.

Testa, Paul Franz. 2016. "The Politics of Race and the Criminal Justice System." PhD diss., University of Illinois at Urbana-Champaign.

Walker, Hannah. 2014. "Extending the Effects of the Carceral State: Proximal Contact, Political Participation, and Race." *Political Research Quarterly* 67 (4): 809–22.

Weaver, Vesla, and Amy Lerman. 2010. "Political Consequences of the Carceral State." *American Political Science Review* 104 (4): 817–33.

Wheeler, Andrew P., Scott W. Phillips, John L. Worrall, and Stephen A. Bishopp. 2017. "What Factors Influence an Officer's Decision to Shoot? The Promise and Limitations of Using Public Data." *Justice Research and Policy* 18 (1): 48–76.

White, Michael D. 2006. "Hitting the Target (or Not): Comparing Characteristics of Fatal, Injurious, and Noninjurious Police Shootings." *Police Quarterly* 9 (3): 303–30.

Williamson, Vanessa, Kris-Stella Trump, and Katherine Levine Einstein. 2018. "Black Lives Matter: Evidence That Police-Caused Deaths Predict Protest Activity." *Perspectives on Politics* 16 (2): 400–415.

Wilson, James Q. 1978. *Varieties of Police Behavior: The Management of Law and Order in Eight Communities, with a New Preface by the Author*. Cambridge, MA: Harvard University Press.

Yun, Hsuan, Ted Chen, Chris Fariss, and Paul Zachary. 2017. "Who Protests? Using Social Media Data to Solve Ecological Inference Problems in Studies of Mass Behavior." Presented at the Midwest Political Science Association Annual Meeting, Chicago, April 6–9.

Zimring, Franklin E. 2017. *When Police Kill*. Cambridge, MA: Harvard University Press.