

The Economics of Policing and Public Safety

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Police are the first point of contact that most people have with the criminal justice system. In the interest of public safety, police in the United States have a broad mandate to define exactly what actions may constitute a crime and what behaviors suggest that someone may have participated in one of those actions. Governments grant police the right to engage with the public, which we define broadly as any police action that is intended to increase safety, including the right to display, threaten, or use force in order to coerce civilians into complying with police demands. These state-granted rights of engagement have both benefits and costs to society.

There is consistent evidence of a substantively large and negative elasticity of crime with respect to the number of police in an area (Levitt 1997, 2002; McCrary 2002; Di Tella and Schargrodsky 2004; Evans and Owens 2007; Draca, Machin, and Witt 2011; Fu and Wolpin 2018; Mello 2019; Weisburst 2018). There is also evidence that certain police practices can reduce crime, including problem-solving and (some) proactive policing strategies (National Academies of Sciences, Engineering, and Medicine 2018). Reducing crime is good for society. The direct costs associated with being a crime victim include lost wages, medical bills, and lost or destroyed property (for a recent review, see Bindler, Ketel, and Hjalmarsson 2020). In addition to direct costs of being a crime victim, civilians who are worried about the possibility of being victimized also incur costs of private actions taken to reduce their exposure to crime and costs associated with the stress of potential victimization

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(Cohen 2014). While these indirect costs may be small in per capita terms, when summed across individuals, total indirect social costs are almost certainly larger than the total direct costs to the 1.68 percent of people who are crime victims each year (Bentham 1789).¹ Comparing estimates of direct costs to victims to survey evidence on people's willingness-to-pay to reduce their probability of victimization by, for example, living close to a registered sex offender, confirms this belief (Cohen 2014).

The ways in which police engage with the public to reduce crime include being present in a neighborhood, formal surveillance, issuing a citation, making an arrest, or using physical force to obtain compliance. Being the subject of police engagement is costly, in particular by decreasing the physical and mental well-being of the involved civilian (Geller et al. 2014; Geller and Fagan 2019; Mello 2018; Legewie and Fagan 2019; Harris, Ash, and Fagan 2020; Ang 2020). Other costs of police engagement are borne indirectly by others. An important component of these indirect costs include decreased trust in police, particularly if witnesses or communities may consider the engagement to be evidence of underlying illegitimacy of the police department or bias on the part of individual officers. As police officers are representatives of the government, decreased police legitimacy may also threaten civilians' trust and engagement with other political processes and governmental institutions (Lerman and Weaver 2014; Brayne 2014; Ba 2018; Ang and Tebes 2018). Much like the benefits of crime reduction, the roughly 24 percent civilians who are directly involved with the police each year bear the largest per capita costs.² We are not aware of empirical research on the indirect costs of police engagement—for example, how much do members of the public, on average, change their behavior in order to avoid police who may be racially biased? But the increased visibility of incidents of police aggression via cellphone technology and social media likely means these indirect costs are increasing (Owens 2019).

Some police actions, in certain contexts, will provide more benefit to society in terms of crime reduction than they cost in terms of police legitimacy, and some actions will not. Socially optimal policing occurs when police take the actions that provide a net social benefit, and when they refrain from actions that result in net costs. In practice, differentiating between costly and beneficial actions in the heat of an encounter between police and civilians is not easy, but describing optimal policing as merely balancing social benefits and costs actually understates the complexity of providing welfare-enhancing public safety through police.

This is because the distribution across people of the *direct* net benefits of police engagement is not obviously correlated with the distribution of *indirect* net benefits. Criminologists have long noted that fear of crime (an indirect benefit) is only weakly correlated with actual crime incidence (a direct benefit), and many police policies reduce either one or the other (Weisburd and Eck 2004). This pattern complicates the “ideal” provision of public safety through police; when the indirect benefits of

¹This victimization rate estimated from the 2018 National Crime Victimization Survey (data series NCJ 253043).

²This estimate comes from the rate at which people in the 2018 Police Public Contact Survey (data series NCJ 255730) report being stopped by the police.

crime reduction are so large relative to the direct benefits, even a police action that is technically socially optimal can actually result in a welfare loss to people who are directly affected, as offenders and/or victims, by police engagement.

Policing does not exist in a vacuum, and the concentration of victims and offenders in US society is almost certainly the result of historic and persistent institutional discrimination. To the extent that police engagement occurs within communities already impacted by discrimination in other sectors, the marginal legitimacy cost of police engagement can be particularly high relative to engagement with groups of people who more firmly trust in the police (Hinton 2016). Police chiefs sometimes refer to the costs of using excessive force as “spending down community capital,” a phrase which intuitively reflects this underlying idea. Not only is it the case that policies which appeal to a majority of voters and actually balance overall costs and benefits can be misprovided at local levels, the same people and places that bear the largest burden of misprovision of police engagement also tend to be the most historically disadvantaged. Attending to the distribution of direct and indirect net benefits adds an additional layer of complexity to the standard social welfare maximization problem.

As we will show, civilian feedback suggests that in practice, police engagement frequently is perceived by the public to reduce crime by less than it reduces legitimacy, and there is also evidence that police actions that provide net local benefits do not always occur. The local misprovision of policing is more likely to be reported by people who are Black or Hispanic. This outcome is not surprising when viewed in the context of the organizational and individual incentives of police.

External pressure on police departments tends to encourage crime reduction, with less attention to legitimacy costs. Even if a department was able to identify socially optimal police policies that carefully consider the distribution of direct and indirect benefits, it is not obvious those policies would be implemented by individual police officers. Current tools available to police managers to encourage individual officers to behave in the interest of the department are, from a personnel perspective, limited, and have been only rarely shown to alter police behavior in the field. Instead, many compensation and oversight strategies tend to encourage individual officers to make arrests and to emphasize officer’s personal safety. While these goals are both important and laudable, they are different from engaging with the public in a socially optimal way.

Municipal Police Departments Are Funded like First Responders, Not Crime Reducers

Police departments are one of many government institutions, along with schools, social welfare organizations, and housing providers, that can benefit society by reducing crime. One way to think about how much municipal governments have chosen to provide public safety by increasing the cost of crime, versus reducing the perceived benefits of crime, is by comparing how many police there are relative to other local government employees, and how much those employees are paid.

In Figure 1, we compare the number of people employed by local police departments, primary and secondary schools, housing authorities, and social welfare organizations, from 1993 to 2016, as recorded in the Annual Survey of Public Employment Payroll. We also include the employment of firefighters: as first responders in emergencies, police and firefighters are tightly linked in the public mind. From 1993 to 2016, the numbers of people employed by police departments, schools, and fire departments have grown at roughly the same rate—29 percent for police and educators and 35 percent for firefighters. The number of people employed in social safety net organizations that have also been shown to reduce crime has not kept pace. Overall, in terms of number of people employed, it does not appear to be the case that municipal governments have reduced their investment in education relative to deterrence over time.

In contrast, if local investment is inferred from growth in salary, police officers have been treated more like firefighters than other public employees. Monthly police salaries have grown in lockstep with firefighters since 1993. In contrast, educators' salaries have been stagnant, or even falling. Trends in wages over time suggest the budgeting decisions regarding paying and hiring police assume their primary role in the community is to respond to emergencies. However, other first responders do not wield the discretionary influence that police officers have in the daily lives of civilians. From a budgetary perspective, allocating funds to officers in a way that focuses only on their role as first responders oversimplifies their role in society—as noted earlier, rapid response to crimes that have already occurred is only one of the many benefits of police engagement (Weisburd 2018).

What Do Civilians Think about Police?

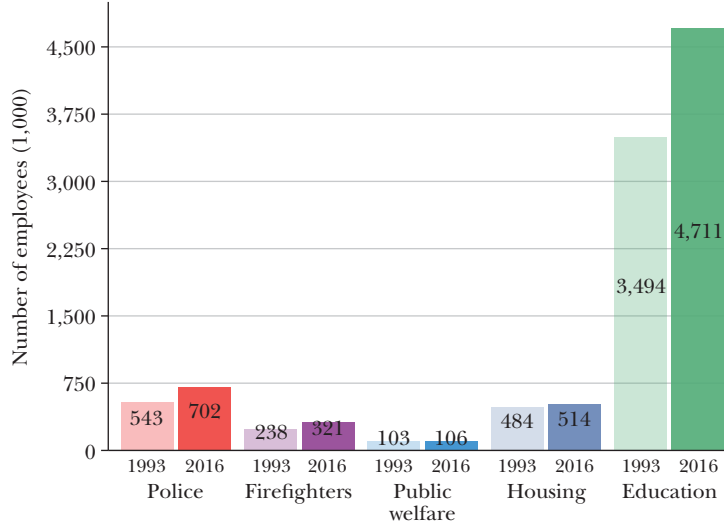
One way to evaluate the extent to which policing decisions are maximizing social welfare is to ask people about their perceptions of law enforcement. According to Gallup polling, between 1995 and 2013, the percent of adults with a great deal of confidence in the police was between 54 percent and 64 percent. Since 2013, this has fallen, and in June 2020, only 48 percent of adults expressed strong support for law enforcement. In the 1990s and early 2000s, there was a persistent racial gap in public confidence, with about 60 percent of White Americans and 35 percent of Black Americans expressing a great deal of confidence in the police. In 2020, this racial gap grew (primarily due to reduced confidence among Black Americans) to almost 40 percentage points (as reported by Jones 2020).

The persistent and increasing difference in the amount of confidence that Black and White Americans have in police is not consistent with crime reductions being the only dimension along which police impact people's lives. Since 1993, crime in the United States has declined enormously. Sharkey (2018) points out that victimization was once a central fact of life for people living in large cities, and this is simply no longer the case. In addition, Black people have disproportionately benefited from the great crime decline, with violent victimization rates falling from 6 percent for Black adults in 1995 to 1.9 percent in 2019. For White adults,

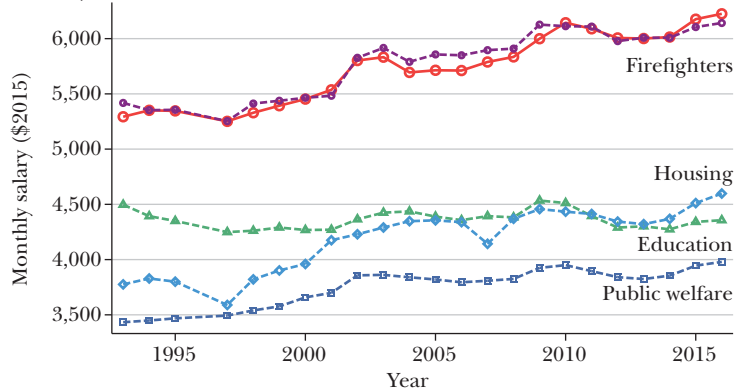
Figure 1

Public Employment from 1993 to 2016

A: Number of Employees in 1993 and 2016



B: Salary



Source: Annual Survey of Public Employment Payroll (Kaplan 2021).

Note: These panels provide public employment patterns from 1993 to 2016. Data are missing for the year 1996. Panel A presents the number of full-time employees in 1993 and 2016. Panel B shows salary trends by sectors for full-time workers. For police and fire protection, we report the numbers associated with officers and firefighters. Elementary and secondary instructional comprise the education sector. The housing sector includes community development.

the comparable change was 4.3 percent to 2.1 percent. There are many contributors to the great crime decline of the 1990s, but an increase in police engagement, as measured by the number of police per capita in the United States, was almost certainly an important one (Levitt 2004). However, the 60 percent reduction in crime victimization risk was not enough to increase the confidence that Black adults had in police officers. As economists, this should not be a total surprise, because

simply quantifying the crime-reducing benefits of policing informs only half of the crime-legitimacy tradeoff that police officers must make. Indeed, Black Americans are also more likely to bear large direct costs of police engagement: based on the Uniform Crime Reporting data over the same time period, adult arrest rates were at least twice as high for Black Americans than White Americans, and have only slightly converged.³

In order to better understand the temporal and racial dynamics of trust in the police over such a long period of reduced victimization risk, we now provide descriptive information about allegations of misconduct by officers from the Philadelphia Police Department (PPD) between January 2015 and November 2019 (for details about the complaint process, see PAC 2021). Philadelphia is the sixth-most populous city in the United States, but here, we focus on Philadelphia for reasons of data availability: we can observe the race of the complainant and what they specifically were complaining about. Filed complaints are an imperfect measure of officer performance, as we will discuss, but for the purposes of this section we interpret the act of filing a complaint as an expression of a preference for a different sort of police engagement, even if supervisors ultimately decided there was no evidence that the officer violated departmental policy.

Among the 6,300 sworn officers in the Philadelphia Police Department, about 13–16 percent receive at least one complaint each year. According to Figure 2, civilians most frequently complain about police engagement that provides too little crime reduction relative to the imposed costs, 36.7 percent of the complaints allege a departmental violation or policing outside of the law, and 25 percent of the complaints allege verbal and/or physical abuse, all of which correspond to over-policing. However, concluding that the Philadelphia Police Department should simply reduce the amount it engages with the public is not clear: 20.5 percent of the complaints allege a lack of service, meaning that the civilian believes that not enough engagement was provided and would be a sign of under-policing).

Relative to the population of Philadelphia, Black people are overrepresented among complainants. About 60 percent of the complaints were filed by Black complainants, who make up 40 percent of the city population, and about 17 percent of the allegations were filed by White complainants, who make up 34 percent of the population. Taken at face value, Black Philadelphia's residents appear to be less satisfied with the quality of policing provided to them.

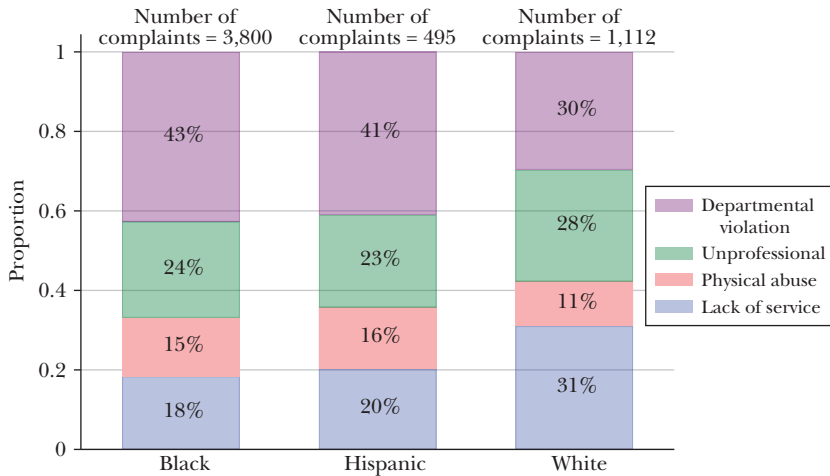
Whether civilians perceive over- or under-policing as the main problem varies by race. Almost 40 percent of Black civilian complaints allege a departmental violation while only 17 percent allege a lack of service. This pattern of complaints made by Hispanic civilians is similar, but inverted for White complainants. Almost one-third (27 percent) of complaints made by White civilians allege a departmental violation while 30 percent allege an officer's lack of service. When it comes to verbal and/or physical abuse, Black and Hispanic complaints make a higher

³OJJDP Statistical Briefing Book. Trends in arrest rates by race for all offenses (rates are per 100,000 in age group). Available: https://www.ojjdp.gov/ojstatbb/crime/ucr_trend.asp?table_in=2. Released on November 16, 2020.

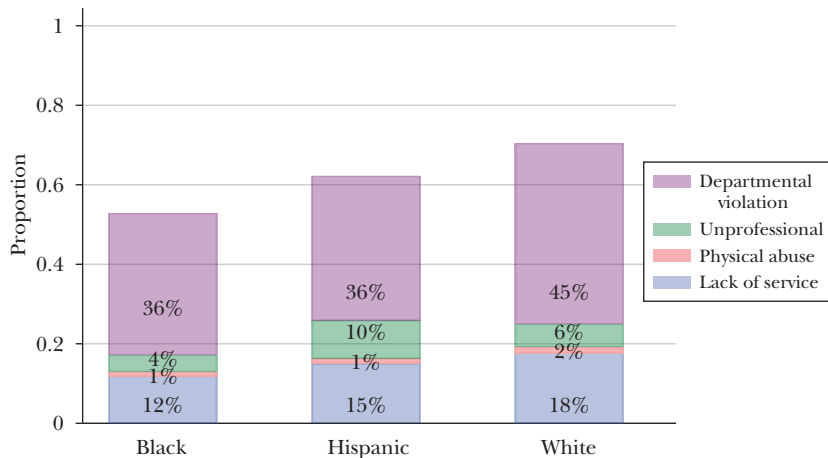
Figure 2

Complaint Patterns by Complainant's Race in Philadelphia

A: Allegation category



B: Sustained rate



Source: Open Data Philly

Note: These figures provide information on allegations of misconduct by Philadelphia police officers between January 2015 and November 2019. We restrict the analysis to Black, Hispanic, and White complainants. Panel A presents the distribution of the allegation category. Panel B presents the sustained rates for investigated allegations, specifically, complaints that might lead to potential disciplinary action or training.

share of allegations (about 26–27 percent) compared to White complainants (23 percent). Overall, Black and Hispanic civilians are more likely to perceive that officers are overpolicing—taking relatively more actions that do not reduce crime by as much as they erode trust in the police. In contrast, White civilians are more likely to demand that police officers engage in more crime-reducing actions.

Are the complaints indicative of rogue officers or dissatisfaction with department policies? One way to understand this is to consider what happens after a complaint is made. Officers who have complaints filed against them are not immediately sanctioned; instead, complaints generally trigger an investigation process where the officer's supervisors determine if the officer violated policy. Of the overall complaints in our sample, only 18.1 percent are sustained; over 80 percent of the time that a civilian complains, the officer's actions were considered to be consistent with how their supervisor expected them to behave.⁴ The fact that officers are determined to be out of policy in fewer than one out of five complaints filed is consistent with a misallocation of police engagement at the organizational level, rather than individual officers not following departmental guidelines. Officers appear to be acting in accordance with what their superiors in the department have instructed them to do, but those instructions do not appear to be delivering the balance of crime reduction and civil rights protections that the public desires. This appears to be of particular concern for the policing of Black civilians, whose complaints are sustained the least often.

This case study of civilian complaints in Philadelphia suggests that Black and White civilians have different preferences about current police engagement. However, it is not obvious that one group wants more engagement while another wants less; White civilians are more likely to demand more police engagement (complaining about lack of service at three times the rate as physical abuse), and Black and Hispanic civilians appear to primarily demand different type of engagement than what is being offered, complaining about under- and over-policing at roughly equal rates. In the remainder of the paper, we describe how this misprovision of services, which varies across racial and ethnic identity, can be understood as an outcome of the structure of incentives facing police departments and individual officers.

What Are the Organizational Priorities of the Police?

In practice, the elected officials who lead or appoint the leaders of policing agencies have two incentives: 1) to provide the type of police engagement preferred by the median voter; and 2) to raise municipal revenue. Neither of these goals is necessarily consistent with striking the appropriate balance between under- and over-policing, or with attention to the varying incidence of the indirect and direct net benefits of police engagement. The organizational priorities of local police can also be affected by incentives created by the federal government and the communities they serve. The federal government can manipulate the choices of local policing agencies, and primarily does so through providing grants that subsidize specific police practices or conditioning access to federal resources on certain types of community engagement. Community preferences can also lead departments to adopt different kinds of police engagement; qualitative evidence suggests that at

⁴The categories of complaints sustained most often are departmental violations and officer lack of service. The category that is sustained the least is for physical abuse (less than 2 percent).

least some of the mechanisms through which departments solicit actual community feedback is more likely to include community members who favor more police engagement in an absolute sense.

Elected Officials and Re-election Incentives

Policing in the United States is highly decentralized; the primary law enforcement entity in most of the United States is a municipal authority. Local elected officials are responsible to voters.

A voter's beliefs about the cost of crime likely differ from their objective risk of direct victimization. For example, while US crime rates were falling dramatically after 1995, a majority of Americans have consistently reported thinking that the crime problem in the United States was getting worse each year (Sharkey 2018). Hiring more police officers is a salient example of the local government "doing something" about crime (Webb and Katz 2014), so much so that Levitt (1997) was able to use the timing of mayoral elections as an instrument for the number of police in an early paper identifying the causal impact of police staffing on crime. But do these electoral incentives improve the social efficiency of policing? Ornaghi (2019) finds that limiting the ability of mayors to influence police personnel decisions leads to substantial reductions in reported property offenses. This suggests that political pressure on law enforcement may be focused on providing indirect benefits—taking a visible action that increases perceived safety—a goal which may only overlap in part with actually providing direct benefits of reduced crime.

To the extent that race provides a rough proxy for the incidence of direct costs and benefits of police engagement, the aftermath of the 1964 Civil Rights Act provides an example of how changes in the electoral power of people directly affected by policing influences departmental incentives. The Civil Rights Act increased the ability of Black Americans to vote in specific counties, making the preferences of Black civilians about policing more important in local elections. Facchini, Knight, and Testa (2020) finds that (elected) sheriff's deputies reduced their level of engagement in response to this increased electoral power. Specifically, in the affected counties, fewer Black people were arrested for low-level offenses—the kinds of incidents for which the benefit of crime reduction is likely lower relative to the direct legitimacy cost of arrests. When political power is concentrated among people who are not directly affected by crime and police, elected officials do not have an incentive to identify or promote police actions that maximize the net direct benefits of police engagement.

Police Engagement Affects Local Municipal Budgets

Issuing citations or making arrests for offenses that are penalized by fines can provide revenue for local government officials. Criminal fines generally accrue to the local government through the court system. Anecdotal concerns about police issuing traffic tickets as a means of revenue generation are increasingly supported by some empirical evidence (Makowsky and Stratmann 2009, 2011; Makowsky, Stratmann, and Tabarrok 2019). One notable finding of this emergent literature is that municipal budget deficits seem to affect policing enough to motivate very specific types of engagement. Traffic citations, arrests for sex work, and drug arrests of Black

and Hispanic people appear to be the most responsive to local budget needs. An extension of this result, if confirmed by later research, is that the individual police officers who issue these citations and make these arrests do not always view their safety-enhancing benefit as sufficient to outweigh the costs—instead, the municipal financial need is pivotal.

Of course, police engagement can also create costs for the government, which we will discuss in detail in the next section. Most cost-benefit calculations of policing in the economics literature focus on salary and pension obligations but do not account for monetary costs associated with police behavior that could impact credit risk for local governments (for example, Chalfin and McCrary 2018). A recent report by Moody's noted that police operations contribute several credit risks, including high police pension burdens, expensive settlements and consent decrees, and expenditure pressures (Strungis et al. 2020). In addition, the extent of police misconduct also affects taxpayer-funded settlements and reform efforts (Schwartz 2016; Rushin 2017; Ouss and Rappaport 2020). Moody's also notes that poor quality of public safety is a signal of city defaults and bankruptcy, as in the case of Detroit, Michigan, and Stockton, California (Strungis et al. 2020). There is some evidence that municipalities may encourage police engagement in order to raise revenue, but it is unclear how much local governments constrain police actions in order to minimize budgetary costs.

Departmental Incentives Created by the Federal Government

The federal government can and does affect the decisions made by local law enforcement. There are many reasons why the federal government might want to do so. Policies adopted by individual municipal police departments can have implications for the well-being of residents outside of its jurisdiction—this is particularly true for cities with far-reaching suburbs. To the extent that high crime rates are one consequence of an underfunded municipality, the federal government may subsidize certain law enforcement decisions (like hiring) that more fiscally constrained local governments are unable to afford. The US Constitution also places legal constraints on how police officers, as government agents, can interact with civilians, most notably through the Fourth (regulating police stops and searches) and Fourteenth Amendments (requiring equal protection of law).

Of course, there are also reasons to limit the federal government's ability to manipulate decisions about local policing. Local governments tend to be more responsive to heterogeneity in the demand for police engagement, for example, where there is geographic variation in preferences about the use of intoxicating substances. Even further, experimental evidence from criminology suggests that understanding the specific local causes of a crime problem is critical to solving it. The strategies whose crime-reducing benefits are most generalizable to different contexts are the least prescriptive: as one example, the Scanning, Analysis, Response, and Assessment model (SARA) directs officers to identify what the particular cause of conflict is in a specific place and subsequently take steps to address that issue (National Academies of Sciences, Engineering, and Medicine 2018).

In practice, the primary way in which the federal government affects local policing is by creating financial incentives for departments to enact specific policies. Historians have documented the emergence of federal control of local law enforcement through grant-making in the Johnson and Nixon administrations, shifting the local response to crime from investments in education and job creation to increased police engagement, particularly in Black neighborhoods (Hinton 2016). In addition, the high rate of voluntary participation with the Federal Bureau of Investigation's Uniform Crime Reporting program can be attributed, at least in part, to the fact that these data are used to calculate eligibility for federal block grants that go towards policing (a program which has existed under various names since the 1980s).

Most economic research on federal grants for law enforcement has focused on the role of the Violent Crime Control Act of 1994 in increasing the number of police officers (Evans and Owens 2007; Cook et al. 2017; Weisburst 2018; Mello 2019) and the number of police officers placed in schools (Owens 2017; Weisburst 2019). The law accomplished this by offering short-term wage subsidies for newly hired officers through the Community Oriented Police Services office. These subsidies were found to be associated with increases in the number of local police, and substantial reduction in crime, which is consistent with, but not necessarily proof of, previous underinvestment in police by local governments.

The federal government has more recently used financial incentives to increase local law enforcement's efforts on people who may be in violation of the 1952 Immigration and Nationality Act. Participation in Secure Communities, a federal program aimed at identifying and detaining immigrants held in local jails who lack legal authority to remain in the United States, is necessary for local authorities to be able to access the national fingerprint repository maintained by the Federal Bureau of Investigation. In addition, the federal government can condition the receipt of federal grants for policing, specifically, the Edward Byrne Memorial Justice Assistance Grant Program, on a local law enforcement's cooperation with Immigration and Customs Enforcement.

Involvement of local law enforcement with immigration enforcement is an area where the tension between local and federal incentives is perhaps the most salient; being able to take advantage of the specific knowledge that local law enforcement has about the community clearly benefits federal immigration officials who seek to identify and remove people in violation of federal immigration law. However, aggressive enforcement of immigration law may reduce the willingness of immigrants, particularly those without legal authority to remain in the United States, to cooperate with local police in preventing local crime (Comino, Mastobuoni, and Nicolò 2020; Jácome 2020).

Departmental Incentives Created by Community Members

Police were discouraged from regularly engaging with the public in non-enforcement contexts under the "professional" model of policing, pushed in the first half of the 20th century by leaders like August Vollmer and O.W. Wilson. One of the responses to the 1980s crime wave was a return to "community

oriented policing,” in which departments seek input from the people they serve in identifying the optimal amount and form of police engagement. Examples of community oriented policing activities include: 1) holding regular meetings with community members to discuss crime-related issues, generate potential solutions to those problems, and evaluate the efficacy of those solutions (commonly referred to as the SARA model); 2) forming a partnership with a local business or neighborhood organization; 3) making officers available to the public at specific times and locations; or 4) including local residents in policing activities by holding “citizens academies” or civilian-police neighborhood safety walks. According to the 2016 Law Enforcement Management and Administrative Statistics (LEMAS), 42 percent of all US law enforcement agencies, and more than 70 percent of the agencies serving populations of more than 250,000 people, have written policy statements that explicitly incorporate community-oriented policing.

However, the information gathered from community-oriented policing may not be socially optimal from a local or jurisdictional perspective. As ethnographers have documented, not all members of a community are equally likely to participate in outreach events. Individuals who show up for community meetings are more likely to be White and wealthier than the average resident, and members of marginalized groups who have had negative encounters with police officers can feel particularly unwelcome in these spaces (Muniz 2012). Moreover, officers in these meetings may be more likely to formally document community requests for increased police engagement than requests for lower levels of engagement (Cheng 2019).⁵

What Causes Officers to Behave in the Department’s Interest?

Supervising the individual police officers who interact with the public is a complicated and high stakes personnel problem. Individual police officers are people with their own set of incentives, which may differ from the objectives of their employers. To the extent that people who choose to become police officers are interested in promoting the well-being of society, one would expect officers to think carefully about the legitimacy costs and crime-reducing benefits of their engagement with the public, perhaps asking themselves, “what would the people I serve like me to do right now?” However, potential police officers who were attracted to the job because of their desire to be forceful warriors may provide

⁵This selection issue is even more prominent when policing is provided by, or in cooperation with, the private sector. Security guards employed by private companies or associations can frequently provide more targeted and “nimble” engagement than would be possible for a governmental agency, and can sometimes provide more crime reduction than the existing public police (Brooks 2008; Cook and MacDonald 2011; Heaton et al. 2016; Cheng and Long 2018). This increased crime reduction is consistent with private interests bearing relatively less of the social legitimacy costs of police engagement, as a government should. In addition, private officers are not always bound by the same constitutional restrictions that police are, in particular Fourth Amendment limits on search and seizures (Meares and Owens 2019).

more engagement than a benevolent social planner would prefer. Currently, the standard set of tools available to police departments to solve this principal-agent problem is limited. As of 2021, the existing evidence base on how different screening, training, and monitoring strategies affect officer behavior in the field is minimal, let alone research on the specific question of what personnel strategies help officers to better balance legitimacy costs with crime-reducing benefits. That said, we can explore, using the 2016 Law Enforcement Management and Administrative Statistics Survey, what personnel tools departments currently use. We focus on departments that employ more than 100 officers, with jurisdictions that are large enough to have demographic information reported in the 2018 American Community Survey.

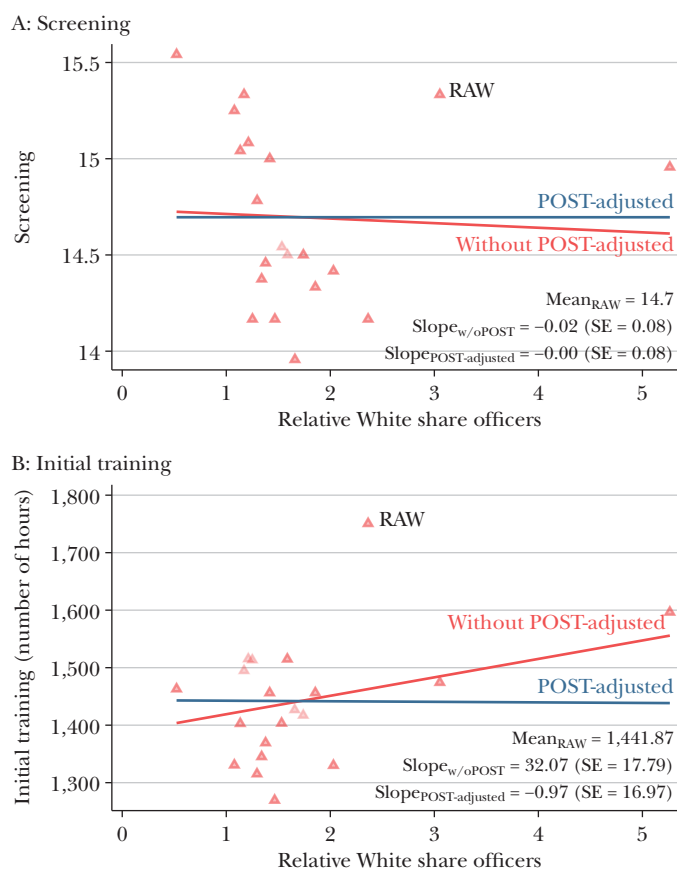
Screening Job Candidates

On average, the police departments in our sample use almost 15 tests to screen candidates. Many of these screening practices are recommended or required by a state-level oversight body, commonly a Peace Officer Standards and Training (POST) commission. Requiring officers to have attended some college is rare, but multidimensional screening is common. Of the 485 police agencies for which we have city-level demographic information, 27 percent require more than a high school degree, and the departments on average use 4.8 (out of 5) different types of background checks, 5.17 (out of 7) personality tests, 0.6 (out of 2) tests of ability to manage community relationships, and 3.86 (out of 4) physical tests. Very little is currently known about whether these tests identify the type of officers desired by the public.

One additional screening tool available to departments that, while not included in the Law Enforcement Management and Administrative Statistics Survey but remains the subject of policy attention, is the use of racial and ethnic identity in the selection of officers. Diversifying the police force is often proposed as a solution to improve police-civilian interactions (Ba et al. 2021b), but its impact is difficult to assess and is sometimes criticized as requiring a reduction in other important hiring standards. In contrast, Figure 3 suggests police departments that use more of the screening procedures measured in the Law Enforcement Management and Administrative Statistics Survey do not appear to have “Whiter” police forces, which is not consistent with the assertion that efforts to increase police officer diversity necessarily require a relaxation of other standards.

Unlike other screening tools, there is some evidence that more diverse departments are able to police with lower legitimacy costs, and weakly lower crime rates. Donohue and Levitt (2001) document that same-race policing is associated with a reduction in the number of arrests where the officer and the suspect appear to be of the same race, especially for minor offenses. Several studies have considered the after effects of court-ordered affirmative action programs, which can be viewed as an exogenous shock to the share of officers who are Black and/or female. McCrary (2007) does not find evidence that crime rates were affected by successful affirmative action lawsuits, but arrests per crime and the number of Black civilians among people arrested for serious crimes dropped. Further, Harvey and Mattia (2019)

Figure 3
Screening and Training



Source: 2016 Law Enforcement Management and Administrative Statistics.

Note: These panels show the relationship between officers' training and screening as a function of the relative White share officers. Each binned scatter plot (RAW) is constructed by dividing the data into 20 equal-sized bins, ranking by the x -axis variable. The relative White share officers is the ratio between the share of White officers in the jurisdiction divided by the share of White residents. Each panel reports the slope coefficient and standard error of the corresponding linear ordinary least squares regression with and without controlling for the Peace Officer Standards and Training (POST) dummy. For regression details, see online Appendix available with this article at the *JEP* website.

show Black crime victimization decreased after the previously mentioned court orders. Miller and Segal (2018) also find that the number of crime reports involving violence against women increases, reducing the actual rates of domestic violence, after lawsuits intended to increase the employment of female officers.

While diversifying policing does seem to make a difference at the city-level, less is known about the micro-level. The tasks given to police officers vary on a day-to-day basis, often according to gender and race. For instance, Ba et al. (2021b) document that Black officers in Chicago work different shifts, districts, and beats

than non-Black officers. They also find similar patterns across different genders. As a result, actions taken by police of different races or genders may reflect both variation in who officers in different identity groups interact with, as well as how those different officers make engagement decisions. When comparing officers who work in similar shifts, districts, and beats, the authors find that minority officers make far fewer stops and arrests and they use less force relative to their White counterparts, especially when interacting with Black civilians. There is no evidence that Hispanic officers exhibit different behaviors when interacting with co-ethnic civilians relative to their White counterparts.

Training Cadets

Conditional on passing the department's screening tests, officers must complete an average of 1,441 hours of training, in both academy setting and in the field. Training is heavily influenced by the state-level Peace Officer Standards and Training commissions; in 2013, 95 percent of training academies were certified by POST or other state certification agencies, and 93 percent of agencies use POST developed curriculum for basic training. POST certification can also be awarded directly to trainers: 73 percent of training academies require full time trainers to be POST-certified (27 percent of the academies who are not certified on their own require full time trainers to be POST-certified).⁶ Rather than being substitutes, each additional screening measure used by a department is associated with a 2.3 percent increase in required hours of training, which appears to be driven entirely by variation in state standards; within a state, there is essentially no correlation between the number of screening tests used and the number of training hours required. Evaluation of the quality of academy courses is generally based on cadet performance on an in-class exam, or virtual simulation environment, rather than the on-the-job performance of officers who completed the course.

Unlike screening, we find some evidence that departments with more mandated training by their Peace Officer Standards and Training commissions have departments that are disproportionately White; without accounting for state-level POST standards, 50 more hours of training is associated with a 0.6 percent increase in the relative Whiteness of the police force.⁷ To the extent that racial composition matters, this may place downward pressure on the ability of those departments to reduce crime at low cost. However, we do not find evidence that departments that require more training than is mandated by POST are more relatively White than other departments in their state.

Monitoring Officers on the Job

Once screened and trained, police officers are tasked with implementing the policies and priorities set by their department's command staff, and that

⁶ Author's calculations from the Census of State and Local Law Enforcement Training Academies, 2013 (Bureau of Justice Statistics 2018).

⁷ The mean ratio of the percent of a police force that is White and the percent of the jurisdiction that is White is 1.711. On average, $\text{White Ratio} = 1.40 + .0002122 \times \text{Initial Training}$, and $(50 \times .0002122) / 1.711 = .0058$.

implementation is largely unsupervised in real time. In most departments, officers directly report to a sergeant who is generally in charge of multiple officers working a shift. After a sergeant's "roll call" meeting at the start of each shift, officers operate with very little direct oversight of their specific tasks. This leaves open the possibility of individual officer preferences playing a large role in their decisions. For example, to the extent that this discretion may include multiple forms of racial bias, it can distort that officer's community engagement away from the departmentally preferred or socially optimal balance of crime reduction and legitimacy (Lum et al. 2020; Knowles, Persico, and Todd 2001; Durlauf 2006; Goncalves and Mello 2017; Knox, Lowe, Mummolo 2020).

Officers who observe potential criminal activity are expected to intervene "on view," although it is not always obvious that command staff would be aware of failure to intervene in a situation that an officer discovered. Police officers also learn of potential crimes from dispatchers (who are called by civilians). Dispatchers affect how much discretion an officer has in responding to an incident. A low priority event, like a report of a small amount of stolen property, may be something where an officer is expected to be on scene as soon as is practical given other priorities. Top priority events, like a violent crime in progress, must be responded to immediately. Dispatched calls are, almost as a rule, observed by an officer's supervisor, and so the individual officer has less discretion over their level of engagement than in an "on view."

After a potential crime is reported to or observed by an officer, the officer is expected to identify and respond to any likely perpetrator(s), thus "clearing" the incident. Incidents can be cleared in many ways: determining there was no appropriate police response, rendering assistance, issuing a verbal warning or written citation, or making an arrest. The last form of clearance—clearance by arrest—tends to be rare. Both the official record of a crime and how it was cleared are the basic administrative record of an officer's daily activities. A combination of clearance rates and local crime reductions are frequently used as performance metrics by supervisors. Clearances by arrest (and only by arrest) are reported to the FBI as part of the Uniform Crime Reports, which in turn is covered in the news media.

Technological change has dramatically increased the ability of departments (and the public) to monitor police officers on the job, because more of what officers do is recorded electronically. On average, departments had 5.67 different electronic databases that measured different aspects of officer engagement in 2016, including crimes responded to, complaints, arrests, stops, motor vehicle accidents, and uses of force. While there are start-up and maintenance costs for this increased use of technology to record officer activity, it holds enormous potential in terms of minimizing principal-agent problems, which conversely are exacerbated by reliance on paper records.

One particular technological innovation in policing in the 1990s was the introduction of CompStat, initially created by the New York Police Department. CompStat is essentially a regular compilation and reporting of crimes and arrests by beat to police supervisors. Sherman (1998) found that prior to the introduction of CompStat, there was an average of 90 days between when an NYPD officer made an arrest and when the captain for that officer became aware of it. Digitization reduced that

lag to roughly one week. The ability of command staff to track non-arrest actions is both more nascent, and arguably more important, than electronically tracking arrests, given that fewer than 10 percent of most police-civilian interactions end in an arrest (Owens et al. 2018).

In addition to monitoring capacity, the 2016 Law Enforcement Management and Administrative Statistics Survey also asks about the actual use of a particular type of officer supervision—an Early Intervention System, sometimes called an Early Warning System. An Early Intervention System monitors potentially problematic officer behavior that is captured in an agency’s administrative data and can include both the earlier mentioned records of field activity as well as personnel information like overtime and approved secondary jobs. Officers who appear to be unusual in any one of these dimensions (or an aggregated value) relative to a predetermined peer group can be flagged for a supervisory meeting and potential department action. In 2016, over 70 percent of large police agencies used an Early Intervention System: since 1998, the US Department of Justice has recommended that agencies adopt one. Again, despite the increased use of an Early Intervention System and similar approaches, there is scant evidence, primarily consisting of case studies, evaluating whether adopting these systems reduces potentially problematic engagement by police officers (Shjarback and Nix 2020).

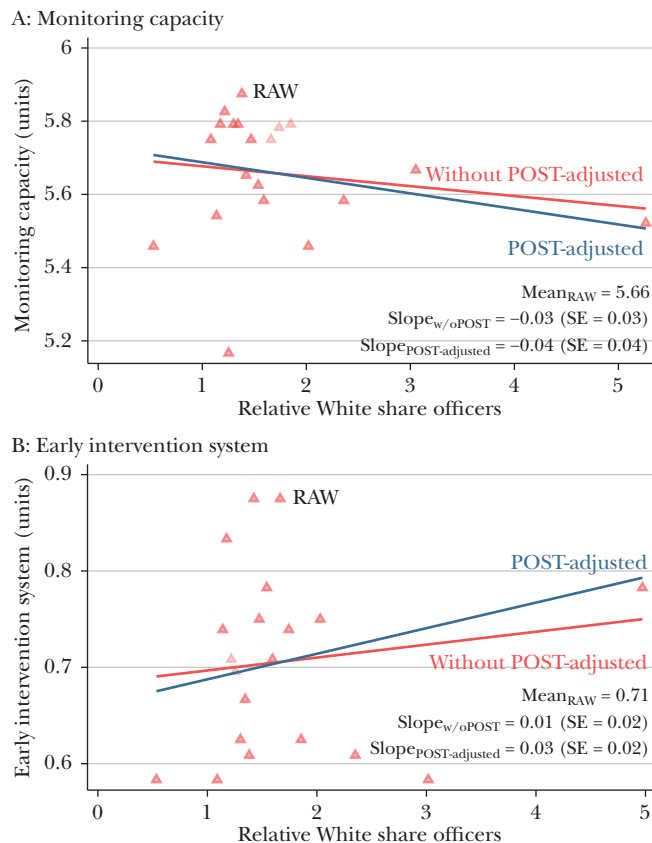
Given the potential role that officer race plays in both perceived and actual legitimacy costs and crime-reducing benefits of police encounters, command staff overseeing White officers working in non-White communities might disproportionately benefit from additional information about those officer’s actions (Ba et al. 2021). Despite this potential benefit, as shown in Figure 4, we do not find evidence that departments where the cost of principal-agent problems may be larger currently have either higher capacity for electronic monitoring or are more likely to monitor their officers with an Early Intervention System in practice.

Civilian Feedback on Training and Monitoring

There is currently little credible causal evidence from the field on whether-screening, training, or monitoring strategies can provide officers with the tools they need to identify the socially optimal level of engagement in any particular civilian encounter. Until the research community provides such evidence, departments do have the option of soliciting feedback from the community about what sort of policies or practices they would like to see. In 2016, just over one-third of large agencies solicited civilian feedback about the performance of specific officers (35 percent), or potential officer training initiatives (24 percent), via a formal survey.

As shown in Figure 5, departments whose officers are less representative of the population appear to be less likely to seek out community input regarding training and monitoring. To the extent that the racial composition of these departments puts them at greater risk for allegations of bias or perceptions of illegitimacy, the observation that these same departments are also less likely to have a mechanism to identify civilian preferences on how officers are trained or supervised creates a large scope for socially inefficient policing to persist.

Figure 4
Monitoring Capacity and Early Intervention



Source: 2016 Law Enforcement Management and Administrative Statistics.

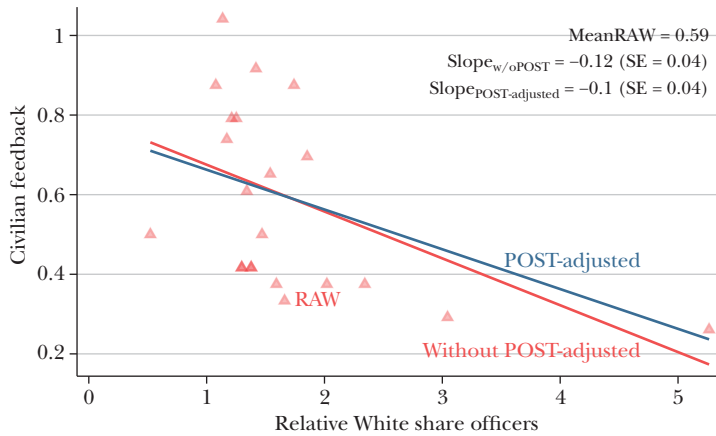
Note: These figures show the relationship between monitoring capacity and early intervention as a function of the relative White share officers. Each binned scatter plot (RAW) is constructed by dividing the data into 20 equal-sized bins, ranking by the x -axis variable. The relative White share officers is the ratio between the share of White officers in the jurisdiction divided by the share of White residents. Each panel reports the slope coefficient and standard error of the corresponding linear ordinary least squares regression with and without controlling for the Peace Officer Standards and Training (POST) dummy. See online Appendix for regression details.

Payment and Promotion

A final mechanism departments could use to encourage officers to implement departmental policies is through pay, promotion, or sanctions. Unfortunately, policing institutions are generally limited in their ability to use these reactive mechanisms to alter officer incentives.

While there are certainly exceptions, pay and promotion in law enforcement agencies, like all government agencies, is standardized, and can be subject to union rules. Pay is generally based on tenure (Ba et al. 2021a) and, as noted in Figure 1, has tended to track other first responders rather than compensation or employment in other social welfare organizations. After a certain number of years in their

Figure 5
Civilian Feedback



Source: 2016 Law Enforcement Management and Administrative Statistics.

Note: This figure shows the relationship between civilian feedback as a function of the area demographics and the relative White share officers. Each binned scatter plot (RAW) is constructed by dividing the data into twenty equal-sized bins, ranking by the x -axis variable (that is, racial concentration and relative White are officer). The racial concentration is calculated by squaring the share of each racial group (Black, Hispanic, White, and other) for residents in the jurisdiction and then summing the resulting numbers. The relative White share officers is the ratio between the share of White officers in the jurisdiction divided by the share of White residents. Each panel reports the slope coefficient and standard error of the corresponding linear ordinary least squares regression with and without controlling for the Peace Officer Standards and Training (POST) dummy. For details of regression, see online Appendix.

current position, officers generally become eligible to take a test on law and police procedure. This test is sometimes written by the state-level Peace Officer Standards and Training commissions or an equivalent agency. There is typically a minimum qualifying score an officer must earn on this exam to become eligible for a promotion. When a position becomes available, promotion decisions are then based on at least one round of interviews with candidates who have met the testing threshold. It is at the interview stage that traditional performance metrics like clearance rates and arrests could come up along with the broader social welfare impacts of that officer's decision in the field.

As a general rule, supervisor feedback on specific tasks is “stick-based” and occurs after an officer is involved in a potentially problematic event: a complaint is filed or an officer uses force or engages in a vehicular pursuit. Finding that an officer violated policy can be grounds for dismissal, although only in rare cases are officers “decertified” by the Peace Officer Standards and Training commission—meaning that other agencies would be made aware of the reason for job separation. A few papers look at how officers respond to departmental sanctions (Prendergast 2001; Benoît and Dubra 2004; Rozema and Schanzenbach 2018), and in practice, the expected cost of a sanction, given that an officer violates a departmental policy, is

probably quite low. This is particularly true when union regulations generally require a high burden of proof before sanctioning officers. Officers who are not involved in potentially sanctionable events will generally not receive specific feedback, although Owens et al. (2018) finds that non-investigative performance reviews can potentially reduce the rate at which officers choose to engage with an arrest or use of force.

As previously mentioned, the Fourth Amendment to the US Constitution defines how and when officers can restrict the liberty of the public. However, the direct cost of Fourth Amendment violations primarily fall on prosecutors who cannot use evidence gathered during an illegal search or seizure in court. A finding by federal investigators of a “Pattern or Practice” of repeat Fourteenth Amendment violations within a department can lead to a federal monitor asserting control over agency decisions. The increased oversight follows creates substantial time costs for command staff. The federal monitor can require that departments institute policies that impact officers, like requiring additional training, reporting requirements, or departmental reviews. However, the presence of a federal monitor and costs associated with implementing policies adopted during the consent decree likely impose a second order impact on the daily tasks of beat officers relative to the impact that the monitor has on their supervisors. Overall, while the Constitution does allow for federal oversight of individual officers, in practice the “sticks” it creates primarily do not affect individual officers. Further, in many jurisdictions police officers are formally protected from being held personally liable for unconstitutional conduct. Since 2009, “qualified immunity” statutes require that an officer’s actions must violate a “clearly established law” (*Harlow v. Fitzgerald*, 457 US 800 [1982]). In practice, the requirement for “clearly established” law generally gives deference to officers (Michelman 2018).

Police Officers Are Incentivized to Get Home Safely, Clear Offenses, and Avoid Complaints

With the current lack of evidence on how hiring and training practices influence the pool of police officers, and in the absence of strong mechanisms to alter the incentives of police officers on the job, what do we know about what actually drives police officer decision making? We highlight three plausible candidates.

Staying Safe

Policing is an often-mundane job punctuated by bursts of extraordinary intensity and mortal peril, thus requiring a particular “hypervigilance” while on the job (Gilmartin 2002). Personal safety and survival are central and critical incentives guiding officer decision-making. Departmental policies will generally allow police to use force, even deadly force, when officers reasonably believe that their physical safety is threatened, or if officers reasonably believe that force is necessary to gain control of a situation.

Civilian encounters that are particularly high risk from an officer’s perspective include traffic stops or domestic disturbances, where civilians may have access to

weapons the officer can't see, or situations involving a civilian who is acting in a way that appears unpredictable to the officer (potentially due to a mental health crisis, substance use, or cultural differences) (Sierra-Arevalo 2021). Policy interventions that lower perceived threats to officer safety may reduce the frequency with which officers decide to use force. Such interventions generally receive strong backing from law enforcement organizations, if not the broader public, and include limiting the likelihood a civilian has a firearm or having trained health care professionals respond to situations involving someone experiencing a mental health crisis.⁸

Making Arrests

Agencies that use CompStat-style reviews in which individual officers are asked in front of their peers to justify the observed number crimes occurring in their beats create strong incentives for officers to provide a high level of engagement—in particular, to make arrests, issue citations, and lower crime (Sherman 1998). Conversely, failure to make arrests or issue citations is generally viewed as “depolicing” and adversarial to the department’s interests (Prendergast 2001, 2021; Mas 2006; Shi 2009; Heaton 2010).

In 2019, approximately 46 percent of serious violent offenses and 17 percent of property crimes were cleared by an officer making an arrest, which is the required resolution for reporting a crime as “cleared” to the Federal Bureau of Investigation.⁹ While it can be tempting to compare the “percent crimes cleared by arrest” over time or across agencies as a measure of officer productivity, this can be misleading for at least two reasons. First, a large fraction of arrests are made because the police observe a crime in progress, and these crimes in the “wide open” may be easier for police to deter than crime that occurs behind closed doors. Lower crime through increased deterrence would then reduce the average clearance rate (Cook 1979). Second, arrests may not be socially optimal in all situations. Not every public safety problem is best resolved with a criminal justice response, although this is the primary “hammer” in an officer’s toolkit. Dangerous situations created by an individual in mental health crisis are an example. Police officers may be able to provide critical assistance in these situations. As government employees, officers frequently have better access to and information about other social services that are better suited to a specific crisis than a civilian would have (for example, police have direct communication with emergency medical services). But when the number of arrests, or arrests per crime, are the metrics used in supervisory meetings and published by the Federal Bureau of Investigation, officers are incentivized to appear active along these dimensions, rather than seeking to maximize the frequency with which they successfully connected someone with needed social services.

⁸For example, see the Firearms Policy Position Statement by the International Association of Chiefs of Police at [https://www.theiacp.org/sites/default/files/2019-05/IACP%20Firearms%20Position%20Paper_2018%20\(1\).pdf](https://www.theiacp.org/sites/default/files/2019-05/IACP%20Firearms%20Position%20Paper_2018%20(1).pdf), and in particular the recommendations for responses to mental illness.

⁹For details, see any version of FBI guidance to law enforcement agencies on completion of the Uniform Crime Reports or National Incident Based Reporting System: for example, the 2021 NIBRS manual at <https://www.fbi.gov/file-repository/ucr/ucr-2019-1-nibrs-user-manua-093020.pdf/view>.

Avoiding Complaints

Being the subject of a civilian complaint, even if it is ultimately not sustained, can create psychological stress for officers (Gilmartin 2002). To the extent that the chances of the complaint being sustained are small, as appears to be the case in Philadelphia and Chicago (Ba 2018), most of the actual utility loss for an officer occurs during the investigation process. Departmental level policies and practices, including the amount of unionization in an agency, can affect the intensity of this loss. How much of an officer's time is required during the investigation and are "real police work" activities otherwise limited? If a complaint is sustained, will the department require additional training, reassignment, suspension, or termination? Is there a possibility that the relevant Peace Officer Standards and Training commission will revoke a credential required for employment? Rivera and Ba (2019) document that the number of civilian complaints filed in Chicago significantly dropped after the police union notified officers of the seriousness of being involved in a complaint, which suggests that officers can and do respond to changes in the expected cost of complaints.

Exactly how the officers achieve those reduced complaints may or may not be welfare enhancing. Prendergast (2021) provides one way to think about this by modeling officer behavior towards crime suspects and crime victims, focusing on complaints as an outcome. A desire to avoid complaints can make officers less likely to use force against suspects but can also reduce the likelihood that officers will engage at all. What is critical is how likely a suspect subject to excessive force is to complain versus a victim who does not receive services. If the probability that a victim or suspect complains can vary with race and ethnicity, as suggested by Ba (2018) in racially segregated jurisdictions, an officer's incentive to avoid complaints will create spatial variation in how much police engagement occurs during any civilian encounter.

Conclusion

Police are the day-to-day physical embodiment of the government's coercive authority over its civilians. As such, police departments and officers are tasked with engaging civilians enough to reduce crime and promote feelings of safety, while not appearing to use force in an indiscriminate or biased way. This task is a complicated one, which officers are in some cases asked to solve in mere seconds, in uncertain and dangerous conditions.

The provision of any public good is likely to be suboptimal for some groups of individuals within a society. However, the context in which policing occurs means that the burden of over-provision of police engagement—that is, actions which make the general public feel safe, but may not reduce victimization by more than it reduces police legitimacy—will disproportionately be borne by minority groups. Variation in taste for police involvement is confirmed by a case study of complaints about over- and under-policing by racial and ethnicity of the complainant.

While police departments and officers are tasked with solving a complicated social welfare problem, the structure of institutional incentives is relatively simple. The dominant incentives faced by police departments are to develop policies which provide indirect benefits—to make civilians feel safe and to see the police “doing something” about crime. As long as only a small fraction of the population is directly affected by criminal victimization and only a small fraction of the population bears the cost of achieving the direct and indirect benefits of crime reduction, we would expect that rational, vote-maximizing politicians might not object to policies that either under-provided or over-provided police engagement in specific areas of concentrated disadvantage. The fact that crime rates, and the social cost of crime, rather than the frequency with which departments misallocate police engagement, are the primary metrics by which the police are publicly judged provides further incentives for crime reduction beyond what is socially optimal.

On top of truly optimal social policies being difficult to identify, individual officers within a department have substantial discretion in how they engage with the public. Standard strategies that organizations use to provide incentives for workers are limited by structured wage and promotion mechanisms, high monitoring costs, and limits on the ability to sanction employees. There is currently little evidence base with which one might identify screening, training, or monitoring strategies that support a department of officers who are able to make welfare enhancing decisions about civilian engagement.

With that in mind, we find that at least in large departments, more intensive screening of recruits, or more lengthy training requirements, is not obviously associated with the creation of a force that racially mirrors the civilian population, although there may be some scope for state-mandated training programs to actually reduce the diversity of the force. We also find little evidence that police departments attempt to compensate for relatively non-diverse police forces by providing more monitoring of officer behavior. Indeed, we also find that, in general, departments with more White officers relative to the patrolled population are less likely to formally solicit civilian feedback on training and monitoring procedures.

Given all of the structural challenges facing governments that want to provide public safety with police, it is not a surprise that civilian satisfaction with law enforcement is at a record low. The costs of police engagement as well as simply benefits, are becoming increasingly visible to departments and the public more broadly. The next challenge is to identify ways to incorporate those costs more explicitly into organizational and individual incentives of the police.

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References

- Ang, Desmond. 2020. "The Effects of Police Violence on Inner-City Students." *Quarterly Journal of Economics* 136 (1): 115–68.
- Ang, Desmond, and Jonathan Tebes. 2018. "Civic Responses to Police Violence." Unpublished.
- Ba, Bocar A. 2018. "Going the Extra Mile: The Cost of Complaint Filing, Accountability, and Law Enforcement Outcomes in Chicago." Unpublished.
- Ba, B., P. Bayer, N. Rim, R. Rivera, and M. Sidibe. 2021a. "Police Officer Assignment and Neighborhood Crime." Unpublished.
- Ba, Bocar A., Dean Knox, Jonathan Mummolo, and Roman Rivera. 2021b. "The Role of Officer Race and Gender in Police-Civilian Interactions in Chicago." *Science* 371 (6530): 696–702.
- Benoît, Jean-Pierre, and Juan Dubra. 2004. "Why Do Good Cops Defend Bad Cops?" *International Economic Review* 45 (3): 787–809.
- Bentham, Jeremy. 1789. *The Principles of Morals and Legislation*. Franklin Classics.
- Bindler, Anna, Nadine Ketel, and Randi Hjalmarsson. 2020. *Costs of Victimization*. Cham: Springer International Publishing.
- Brayne, Sarah. 2014. "Surveillance and System Avoidance: Criminal Justice Contact and Institutional Attachment." *American Sociological Review* 79 (3): 367–91.
- Brooks, L. 2008. "Volunteering to Be Taxed: Business Improvement Districts and the Extragovernmental Provision of Public Safety." *Journal of Public Economics* 92 (1–2): 388–406.
- Bureau of Justice Statistics. 2018. "Census of State and Local Law Enforcement Training Academies, 2013." Inter-university Consortium for Political and Social Research [distributor]. <https://doi.org/10.3886/ICPSR36764.v1> (accessed September 15, 2021).
- Chalfin, Aaron, and Justin McCrary. 2018. "Are US Cities Underpoliced? Theory and Evidence." *Review of Economics and Statistics* 100 (1): 167–86.
- Cheng, Cheng, and Wei Long. 2018. "Improving Police Services: Evidence from the French Quarter Task Force." *Journal of Public Economics* 164: 1–18.
- Cheng, Tony. 2019. "Input without Influence: The Silence and Scripts of Police and Community Relations." *Social Problems* 67 (1): 171–89.
- Cohen, Mark A. 2014. *Costs of Crime*. <https://onlinelibrary.wiley.com/doi/full/10.1002/9781118517390.wbetc204>.
- Comino, Stefano, Giovanni Mastrobuoni, and Antonio Nicolò. 2020. "Silence of the Innocents: Undocumented Immigrants' Underreporting of Crime and Their Victimization." *Journal of Policy Analysis and Management* 39 (4): 1214–45.
- Cook, Philip J. 1979. "The Clearance Rate as a Measure of Criminal Justice System Effectiveness." *Journal of Public Economics* 11 (1): 135–42.
- Cook, Philip J., and J. MacDonald. 2011. "Public Safety through Private Action: An Economic Assessment of BIDS." *Economic Journal* 121 (552): 445–62.
- Cook, Philip J., Max Kapustin, Jens Ludwig, and Douglas L. Miller. 2017. *The Effects of COPS Office Funding on Sworn Force Levels, Crime, and Arrests: Evidence from a Regression Discontinuity Design*. Washington, DC: Office of Community Oriented Policing Services.
- Di Tella, Rafael, and Ernesto Schargrodsky. 2004. "Do Police Reduce Crime? Estimates Using the Allocation of Police Forces after a Terrorist Attack." *American Economic Review* 94 (1): 115–33.
- Donohue, J. J., and S. D. Levitt. 2001. "The Impact of Race on Policing and Arrests." *Journal of Law and Economics* 44 (2): 367–94.
- Draca, Mirko, Stephen Machin, and Robert Witt. 2011. "Panic on the Streets of London: Police, Crime, and the July 2005 Terror Attacks." *American Economic Review* 101 (5): 2157–81.
- Durlauf, Steven N. 2006. "Assessing Racial Profiling." *Economic Journal* 116 (515): F402–26.
- Evans, Williams N., and Emily G. Owens. 2007. "COPS and Crime." *Journal of Public Economics* 91 (1–2): 181–201.
- Facchini, Giovanni, Brian G. Knight, and Cecilia Testa. 2020. "The Franchise, Policing, and Race: Evidence from Arrests Data and the Voting Rights Act. NBER Working paper 27463.
- Fu, Chao, and Kenneth I. Wolpin. 2018. "Structural Estimation of a Becker–Ehrlich Equilibrium Model of Crime: Allocating Police across Cities to Reduce Crime." *Review of Economic Studies* 85 (4): 2097–2138.
- Geller, Amanda, and Jeffrey Fagan. 2019. "Police Contact and the Legal Socialization of Urban Teens."

- RSF: Russell Sage Foundation Journal of the Social Sciences 5 (1): 26–49.
- Geller, Amanda, Jeffrey Fagan, Tom Tyler, and Bruce G. Link.** 2014. “Aggressive Policing and the Mental Health of Young Urban Men. *American Journal of Public Health* 104: 2321–27.
- Gilmartin, Kevin M.** 2002. *Emotional Survival for Law Enforcement: A Guide for Officers and Their Families*. Casas Adobes, AZ: E-S Press.
- Goncalves, Felipe, and Steven Mello.** 2017. “A Few Bad Apples? Racial Bias in Policing.” *American Economic Review* 111 (5): 1406–41.
- Harris, Allison P., Elliott Ash, and Jeffrey Fagan.** 2020. “Fiscal Pressures and Discriminatory Policing: Evidence from Traffic Stops in Missouri.” *Journal of Race, Ethnicity, and Politics* 5 (3): 450–80.
- Harvey, A., and T. Mattia.** 2019. “Reducing Racial Disparities in Crime Victimization. Unpublished.
- Heaton, Paul.** 2010. “Understanding the Effects of Antiprofiling Policies.” *Journal of Law and Economics* 53 (1): 29–64.
- Heaton, Paul, Priscillia Hunt, John MacDonald, and Jessica Saunders.** 2016. “The Short- and Long-Run Effects of Private Law Enforcement: Evidence from University Police.” *Journal of Law and Economics* 59 (4): 889–912.
- Hinton, Elizabeth.** 2016. *From the War on Poverty to the War on Crime: The Making of Mass Incarceration in America*. Cambridge, MA: Harvard University Press.
- Jacome, Elisa.** 2020. “The Effect of Immigration Enforcement on Crime Reporting: Evidence from Dallas.” https://elisajacome.github.io/Jacome/Draft_PEP.pdf.
- Jones, Jeffrey M.** 2020. “Black, White Adults’ Confidence Diverges Most on Police.” *Gallup*, August 12. <https://news.gallup.com/poll/317114/black-white-adults-confidence-diverges-police.aspx>.
- Kaplan, Jacob.** 2021. “Annual Survey of Public Employment Payroll (aspep) 1992–2016.” Inter-university Consortium for Political and Social Research [distributor]. <https://www.openicpsr.org/openicpsr/project/101399/version/V5/view> (accessed September 25, 2021).
- Knowles, John, Nicola Persico, and Petra Todd.** 2001. “Racial Bias in Motor Vehicle Searches: Theory and Evidence.” *Journal of Political Economy* 109 (1): 203–29.
- Knox, Dean, Will Lowe, and Jonathan Mummolo.** 2020. “Administrative Records Mask Racially Biased Policing.” *American Political Science Review* 114 (3): 619–37.
- Legewie, Joscha, and Jeffrey Fagan.** 2019. “Aggressive Policing and the Educational Performance of Minority Youth.” *American Sociological Review* 84 (2): 220–47.
- Lerman, Amy E., and Vesla 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.
- Levitt, S. D.** 1997. “Using Electoral Cycles in Police Hiring to Estimate the Effect of Police on Crime. *American Economic Review* 87 (3): 270–90.
- Levitt, S. D.** 2002. Using Electoral Cycles in Police Hiring to Estimate the Effects of Police on Crime: Reply. *American Economic Review* 92 (4): 1244–50.
- Levitt, Steven D.** 2004. “Understanding Why Crime Fell in the 1990s: Four Factors that Explain the Decline and Six that Do Not.” *Journal of Economic Perspectives* 18 (1): 163–90.
- Lum, Cynthia, Christopher S. Koper, Xiaoyun Wu, William Johnson, and Megan Stoltz.** 2020. “Examining the Empirical Realities of Proactive Policing through Systematic Observations and Computer-Aided Dispatch Data.” *Police Quarterly* 23 (3): 283–310.
- Makowsky, Michael D., and Thomas Stratmann.** 2009. “Political Economy at any Speed: What Determines Traffic Citations?” *American Economic Review* 99 (1): 509–27.
- Makowsky, Michael D., and Thomas Stratmann.** 2011. “More Tickets, Fewer Accidents: How Cash-Strapped Towns Make for Safer Roads.” *Journal of Law and Economics* 54 (4): 863–88.
- Makowsky, Michael D., Thomas Stratmann, and Alex Tabarrok.** 2019. “To Serve and Collect: The Fiscal and Racial Determinants of Law Enforcement.” *Journal of Legal Studies* 48 (1): 189–216.
- Mas, Alexandre.** 2006. “Pay, Reference Points, and Police Performance.” *Quarterly Journal of Economics* 121 (3): 783–821.
- McCrary, Justin.** 2002. “Using Electoral Cycles in Police Hiring to Estimate the Effect of Police on Crime: Comment.” *American Economic Review* 92 (4): 1236–43.
- McCrary, Justin.** 2007. “The Effect of Court-Ordered Hiring Quotas on the Composition and Quality of Police.” *American Economic Review* 97 (1): 318–53.
- Meares, Tracey L., and Emily Owens.** 2019. “Third-Party Policing: A Critical View.” In *Police Innovation: Contrasting Perspectives*, edited by David Weisburd and Anthony Braga. Cambridge, UK: Cambridge University Press.
- Mello, Steven.** 2018. “Speed Trap or Poverty Trap? Fines, Fees, and Financial Wellbeing. Unpublished.

- Mello, Steven.** 2019. "More COPS, Less Crime." *Journal of Public Economics* 172: 174–200.
- Michelman, Scott.** 2018. "The Branch Best Qualified to Abolish Immunity." *Notre Dame Law Review* 93 (5).
- Miller, Amalia R., and Carmit Segal.** 2018. "Do Female Officers Improve Law Enforcement Quality? Effects on Crime Reporting and Domestic Violence." *Review of Economic Studies* 86 (5): 2220–47.
- Muniz, Ana.** 2012. "Disorderly Community Partners and Broken Windows Policing." *Ethnography* 13 (3): 330–51.
- National Academies of Sciences, Engineering, and Medicine.** 2018. *Proactive Policing: Effects on Crime and Communities*. Washington, DC: The National Academies Press.
- Ornaghi, Arianna.** 2019. "Civil Service Reforms: Evidence from US Police Departments." Unpublished.
- Ouss, Aurélie, and John Rappaport.** 2020. "Is Police Behavior Getting Worse? Data Selection and the Measurement of Policing Harms." *Journal of Legal Studies* 49 (1): 153–98.
- Owens, Emily.** 2017. "Testing the School-to-Prison Pipeline." *Journal of Policy Analysis and Management* 36 (1): 11–37.
- Owens, Emily.** 2019. "Economic Approach to 'De-policing'." *Criminology & Public Policy* 18 (1): 77–80.
- Owens, Emily, David Weisburd, Karen L. Amendola, and Geoffrey P. Alpert.** 2018. "Can You Build a Better Cop?" *Criminology & Public Policy* 17 (1): 41–87.
- PAC.** 2021. *Collaborative Review and Reform of the PPD Police Board of Inquiry: Policy Practice, and Custom Report*. Philadelphia: Police Advisory Commission.
- Prendergast, Canice.** 2001. "Selection and Oversight in the Public Sector, with the Los Angeles Police Department as an Example." NBER Working Paper 8664.
- Prendergast, Canice.** 2021. "'Drive and Wave': The Response to LAPD Police Reforms after Rampart." University of Chicago, Becker Friedman Institute for Economics Working Paper 2021–25.
- Rivera, Roman G., and Bocar A. Ba.** 2019. "The Effect of Police Oversight on Crime and Allegations of Misconduct: Evidence from Chicago." Faculty Scholarship at Penn Law 2109.
- Rozema, Kyle, and Max Schanzenbach.** 2018. "Good Cop, Bad Cop: Using Civilian Allegations to Predict Police Misconduct." *American Economic Journal: Economic Policy* 11 (2): 225–68.
- Rushin, Stephen.** 2017. *Federal Intervention in American Police Departments*. Cambridge, UK: Cambridge University Press.
- Schwartz, Joanna C.** 2016. "How Governments Pay: Lawsuits, Budgets, and Police Reform." *UCLA Law Rev* 63.
- Sharkey, Patrick.** 2018. *Uneasy Peace: The Great Crime Decline, the Renewal of City Life, and the Next War on Violence*. New York: W. W. Norton Company.
- Sherman, L.** 1998. "American Policing." In *The Handbook of Crime and Punishment*, 429–541. Oxford: Oxford University Press.
- Shi, Lan.** 2009. "The Limit of Oversight in Policing: Evidence from the 2001 Cincinnati Riot." *Journal of Public Economics* 93 (1): 99–113.
- Shjarback, John A., and Justin Nix.** 2020. "Considering Violence against Police by Citizen Race/Ethnicity to Contextualize Representation in Officer-Involved Shootings." *Journal of Criminal Justice* 66.
- Sierra-Arevalo, Michael.** 2021. "American Policing and the Danger Imperative." *Law & Society Review* 55 (1): 70–103.
- Strungis, D., K. Lyons, D. Kowalski, R. Cortez, N. Richman, L. Jones, and A. Parker.** 2020. "Cities Shift Funds as Focus on Policing Grows: Credit Impact Hinges on Costs, Social Risks." Unpublished.
- Webb, V. J., and C.M. Katz.** 2014. "A Study of Police Gang Units in Six Cities." In *The Modern Gang Reader*, edited by Cheryl L. Mason, Arlen Egle, Jr., Jody Miller, and Malcolm W. Klein, 467–74. Oxford: Oxford University Press.
- Weisburd, David, and John E. Eck.** 2004. "What Can Police Do to Reduce Crime, Disorder, and Fear?" *Annals of the American Academy of Political and Social Science* 593 (1): 42–65.
- Weisburd, Sarit.** 2018. "Police Presence, Rapid Response Rates, and Crime Prevention." Unpublished.
- Weisburst, Emily K.** 2018. "Safety in Police Numbers: Evidence of Police Effectiveness from Federal COPS Grant Applications." *American Law and Economics Review* 21 (1): 81–109.
- Weisburst, Emily K.** 2019. "Patrolling Public Schools: The Impact of Funding for School Police on Student Discipline and Long-Term Education Outcomes." *Journal of Policy Analysis and Management* 38 (2): 338–65.