



# EVIDENCE ON MEASURES TO REDUCE EXCESSIVE USE OF FORCE BY THE POLICE

JANUARY 2023

By Trevor Bechtel, Mara C. Ostfeld, and H. Luke Shaefer

## KEY FINDINGS

- **Limited Evidence on Use of Force Policies:** A variety of policies seek to reduce police use of force but limited data, a lack of transparency with existing data, inconsistencies in measurement and definitions, and irregular implementation contribute to the lack of clarity about the impact of these policies. There is a clear need for more data as well as research that can measure the causal effect of narrowly defined policies.
- **Black and Women Officers are Less Likely to Use Force:** Black officers (and to a lesser degree, Latino officers) are significantly less likely to stop, arrest, and use force against civilians, especially Black civilians, relative to White officers. Women officers are also significantly less likely to arrest and use force against civilians, and especially against Black civilians, relative to men.
- **Gun Control Policies Matter:** Of all of the policies considered, stricter firearm policies had the most consistent relationship with reduced use of force among police. Additionally, the fact that many states and localities have relatively lenient gun control policies makes this an area with particularly strong potential for impact on police use of force rates.
- **Evidence on Body Worn Cameras Suggest Positive Impact:** While early research on the impact of body worn cameras pointed to an inconsistent relationship with police use of force, new evidence strongly suggests that these policies can reduce police use of force and civilian complaints when worn by officers who do not have discretion over when the cameras are turned on and off.

## INTRODUCTION

The tragic killings of a number of unarmed Black individuals by law enforcement officers, including [Tamir Rice](#), [George Floyd](#), [Philando Castile](#) and [Breonna Taylor](#), has brought the racialized nature of law enforcement to the forefront of reform efforts. Americans of every race and ethnicity are at risk of police violence. More White Americans are killed by police than people of color each year. However, Black Americans, in particular, are disproportionately at risk. Police are more likely to stop Black Americans than White Americans, to use higher levels of force with Black Americans than White Americans, and to kill Black Americans than White Americans.<sup>1</sup>

With approximately 1,000 individuals killed by police every year in the United States,<sup>2</sup> the rate at which civilians die by the hand of law enforcement is extremely high compared to other democracies.<sup>3</sup> Indeed, an analysis by the Guardian comparing police shootings across several countries found that U.S. police kill more people in days than other countries do in years.<sup>4</sup> Yet how best to turn the tide on this national challenge remains unclear. Due to inconsistent data and reporting practices, as well as limited research, there is actually little empirical evidence to tell us which of the commonly advocated reforms are effective at reducing police use of force rates. The goal of this report is to look at a number of the reforms currently being discussed and/or implemented across the country and identify the empirical evidence regarding their effectiveness.

## BACKGROUND

In this report, we focus on the reforms proposed in Campaign Zero's "8 Can't Wait" recommendations, some of the proposed reforms included in the George Floyd Justice in Policing Act of 2020 (HR 7120, passed by the House of Representatives in June 2020, but stalled in the Senate), and some of those included in the 2015 President's Task Force on 21st Century Policing.

The specific reforms to be addressed include: 1) De-escalation training and/or requirements; 2) Developing and/or adhering to a use of force continuum; 3) Restricting or banning chokeholds and strangleholds; 4) Requiring officers to give

verbal warnings before using deadly force; 5) Prohibiting shooting at moving vehicles; 6) Requiring that all reasonable alternatives be exhausted prior to the use of deadly force; 7) Implementing a duty to intervene if another officer is misbehaving; 8) Requiring use of force incidents be reported; 9) Banning or restricting no-knock warrants; 10) Requiring the use of body cameras; 11) Residency requirements; 12) Racial diversification; 13) Implicit bias training; and 14) Limiting the transfer of military equipment to law enforcement.

Additionally, we address the topic of gun control and evidence of its impact. The United States is again unique among advanced democracies in the extent to which civilians are armed. This has an impact on law enforcement officers, who approach nearly every encounter as a potential life or death situation.

This literature has sought to identify and account for all relevant research on each topic. We have weighted research more heavily that relied on comparisons of levels of police use of force within a particular area before and after the implementation of a specific policy, with a particular emphasis on randomized controlled trials. While there are many important studies that compare rates of police use of force in different departments or geographic areas, these studies face a higher risk of conflating the effects of the policy with the characteristics of the sites that opted to implement them.

## REFORMS PROPOSED TO REDUCE POLICE USE OF FORCE RATES

### 1. De-Escalation Training

De-Escalation training refers to a broad set of training programs designed to de-escalate encounters between the police and citizens so that less force is needed. Though anecdotally popular, there is very limited evidence on whether de-escalation training is effective at reducing use of force rates among police. While observational data illustrates that police departments that have required police to undergo de-escalation training have fewer police killings than those that have not, one cannot tell if this effect can be attributed to the types of police departments that might require de-escalation training.<sup>5</sup> The three studies that have sought to measure causal relationships between de-escalation training and use of force rates offer mixed results, with one finding a large and significant impact<sup>6</sup> and the others finding little or none.<sup>7</sup> This may be due, in part, to the lack of consistent definition of what constitutes “de-escalation” as well as the lack of standard protocol for what the trainings entail.<sup>8</sup>

### 2. Developing and/or adhering to a use of force continuum

Use of force continuums restrict the level and type of force that may be used to meet various levels of resistance and are widely used in police departments across the country.<sup>9</sup> The

evidence, while not robust, suggests that more restrictive use of force continuums (meaning there are more restrictions on when police are allowed to use more severe forms of force) are linked to less use of force. For example, restricting taser use by putting it higher on a use of force continuum is associated with a reduction in the frequency of taser use – though there was no clear relationship with the overall number of suspects injured.<sup>10</sup> Interestingly, however, the use of force continuums associated with fewer fatal shootings were actually *less restrictive*.<sup>11</sup> A less restrictive use of force continuum allows police officers to use more force in more situations; this means that a continuum that allows for *more* frequent taser use, for instance, ends up being associated with fewer fatal shootings.

This suggests that while more restrictive use of force continuums may reduce the frequency with which police resort to tactics higher on a use of force continuum, such as guns, they can also result in an increase in harmful, albeit less lethal, forms of force that are lower on the continuum, such as tasers or chokeholds. There is also some evidence suggesting injuries to both subjects and officers decrease when force incidents end quickly, suggesting that policies requiring incremental increase (as is the case with more restrictive use of force continuums) may not lead to harm reduction.<sup>12</sup> These findings suggest that making non-lethal forms of force more accessible will likely decrease reliance on lethal tools, but may increase the likelihood that harmful, albeit not typically lethal, tools will be used in police encounters.

### 3. Restricting or banning chokeholds and strangleholds

Law enforcement officers sometimes use chokeholds and strangleholds to gain control of suspects. These holds restrict the airway by applying pressure to the windpipe making it hard to breathe, and strangleholds temporarily cut off blood flow to the brain, rendering a subject unconscious.<sup>13</sup> Such restraints can go wrong, however, as was the case when police restrained Eric Garner by restricting his airway, which ultimately led to his death in 2014.

Jurisdictions that ban chokeholds and strangleholds have 22% fewer police killings per capita than those that do not.<sup>14</sup> However, this may be because places that ban chokeholds and strangleholds are simply less likely to use force of any kind. It is unclear whether bans on chokeholds and strangleholds lead to lower rates of police use of force.

### 4. Requiring officers to give verbal warnings before using deadly force

Most departments require officers to give verbal warnings, when possible, before using deadly force. However only half of these encourage or require verbal warnings before using non-lethal force – situations that often result in citizen injuries.<sup>15</sup> While departments that require verbal warnings before

shooting experience 5% fewer police killings per capita than those that do not, we did not find any research that assessed the causal effect of policies requiring verbal warnings on police use of force (lethal or non-lethal).<sup>16</sup>

### **5. Prohibiting shooting at moving vehicles**

Hitting a target in a moving vehicle is not only difficult, but missed shots can hit innocent passengers or bystanders.<sup>17</sup> Moreover, cars whose drivers have been hit may become out of control, posing additional threats. While some larger departments prohibit officers from shooting at people in moving vehicles, many other departments do not.<sup>18</sup> Observational evidence suggests that such restrictions likely matter; police departments that restrict shooting at moving vehicles have fewer policing killings per capita than those that do not.<sup>19</sup> Additionally, studies of departments prior to and after the implementation of such restrictions (albeit as part of a larger set of reforms) also provide evidence that they reduce police shootings, reduce racial disparities in police shootings, and do not increase officer injuries or death.<sup>20</sup> This offers suggestive support for these policies. However, there is very little research that explicitly analyzes the effects of this policy alone. More research is needed to determine the causal impact of moving vehicle policies on police use of force.

### **6. Requiring that all reasonable alternatives be exhausted prior to the use of deadly force**

Most departments in the United States do not require officers to attempt to use non-lethal force (or avoid force) before resorting to lethal force. The 2020 George Floyd Justice in Policing Act would require federal officers to use deadly force against a person only as a last resort in order to prevent imminent and serious bodily injury or death. While there are no studies comparing outcomes within the same officers or departments prior to and after the implementation of such requirements, an analysis of cities where officers were required to exhaust all other means before shooting offers suggestive evidence. Departments with the requirement had 25% fewer police killings per capita than those that had no such requirement.<sup>21</sup> Additional research needs to be conducted to determine the causal impact of these policies on police use of force.

### **7. Implementing a duty to intervene if another officer is misbehaving**

While virtually all police departments expect officers to take action to try to stop misconduct by their colleagues,<sup>22</sup> it generally has not been explicitly mandated until recently. Police departments that have a duty to intervene policy in place had 9% fewer police killings per capita than departments without those policies.<sup>23</sup> There is some evidence that training officers on how to respectfully and effectively intervene when they believe their colleagues may be

about to engage in dangerous, unwanted, or inappropriate behavior also reduces citizen complaints and increases officers confidence in their ability to intervene with peers and supervisors.<sup>24</sup> However, there is currently no evidence assessing a causal relationship between duty to intervene policies or training programs and policing behavior.

### **8. Requiring use of firearm incidents be reported**

Most law enforcement agencies do officially require documentation of discharged firearms, though as of 2013, fewer than half required that officers file a report when they point their guns but do not shoot.<sup>25</sup> An analysis comparing departments that do and do not have policies that require police officers to report when they point their weapon at a civilian, discharge a weapon, or use any form of physical force, found them to be associated with a 25% reduction in police killings per capita.<sup>26</sup> A more empirically rigorous analysis, albeit not a causal assessment, also offers evidence that policies requiring a written report for instances in which an officer points his/her firearm at a civilian had significantly lower rates of gun deaths by officers than those without such a policy.<sup>27</sup> Equally notable, departments with these policies did not have higher rates of gun deaths among police officers than those that did not. Additional research needs to be conducted to determine the causal impact of these policies on police use of force.

### **9. Banning or restricting no-knock warrants**

No-knock searches, whereby law enforcement is allowed to enter a residence without first announcing themselves, were first authorized by Congress in 1970, on the grounds that they decreased danger by giving police the element of surprise and limited the ability of suspects to destroy evidence. However, police raids have not been found to reduce crime rates.<sup>28</sup> Despite their original intent, no-knock and quick-knock raids on private residences are inherently dangerous as they are in direct conflict with the “castle doctrine” and “stand your ground” laws that allow citizens to protect themselves from intruders. With this in mind, there is also evidence that police departments that had implemented bans on no-knock warrants were associated with a lower likelihood of police killing people, relative to police departments that did not have these bans.<sup>29</sup> Again, additional research needs to be conducted to determine the causal impact of these policies on police use of force within a given area.

### **10. Requiring the use of body cameras**

Theorized to have a deterrent effect on officer misconduct, disrespect, and excessive use of force, as well as to aid in training, transparency, and accountability, the use of body-worn cameras (BWCs) has been widely adopted by law enforcement agencies across the United States. While early research indicated BWCs reduced the use of force by officers,

more recent findings have been mixed.<sup>30</sup> Specifically, a review of six empirically rigorous (experimental and quasi-experimental) studies indicate that officers wearing cameras use force less than officers not wearing them, but eight other similar studies show no statistically significant differences and one shows mixed effects.<sup>31</sup> That said, one recent study that employed a particularly robust experimental design in Brazil not only showed a large negative effect of BWCs on the likelihood of police use of force, but also offered compelling evidence that studies showing null or conflicting findings tended to have significant methodological flaws.<sup>32</sup>

When looking at the relationship between BWCs and citizen complaints against the police, the evidence is much stronger (although police are still significantly more likely to use more respectful language in interactions with White individuals than Black individuals, even when wearing BWCs).<sup>33</sup> At least 14 studies find that officers wearing BWCs receive fewer reported complaints than do those not wearing them, while just six find non-significant or unclear results.<sup>34</sup>

## **OFFICER DISCRETION IN WHEN THE CAMERA IS TURNED ON ALSO APPEARED TO PLAY AN IMPORTANT ROLE IN USE OF FORCE RATES, WITH OFFICERS WHO COULD CHOOSE WHEN TO TURN IT ON MORE LIKELY TO USE FORCE THAN THOSE WHO COULD NOT.<sup>35</sup>**

The lack of data on levels of officer discretion may have been a factor in the mixed results and should be considered in future work. Taken together, recent research on BWCs has offered promising results that they may in fact reduce rates of police use of force. Additional research that replicates and validates the most recent findings in the U.S. will strengthen the inferences that can be drawn from this body of evidence.

### **11. Residency requirements**

The popularity of requiring public employees to live in the municipalities they serve has waxed and waned over the years, having been viewed variously as a booster for the local economy, an infringement on freedom, a way to foster a stake in the community, and a barrier to attracting qualified workers. Analyses comparing evaluations of police that do and do not face residency requirements suggest the effects of such requirements are mixed, at best.<sup>36</sup> Characteristics of the community and police department, including the local unemployment rate, violent crime rate, use of force policies, and the size of the police department, appear to matter far more than residency requirements.

### **12. Diversifying law enforcement**

Increasing the racial diversity of police departments, and creating departments more representative of the communities they serve, is a commonly proposed police reform. Earlier research exploring the relationship between the racial composition of police departments and police behavior did not find strong evidence to support diversification as an effective means of reducing use of force or misconduct.<sup>37</sup> However, more recent work has highlighted that officers who are not White tend to receive vastly different patrol assignments than White officers, which can impact officer behavior. A few recent studies account for these differences by analyzing officers working in comparable places and times. They find that Black officers (and to a lesser degree, Latino officers) are significantly less likely to stop, arrest, and use force against civilians, especially Black civilians, relative to White officers.<sup>38</sup> These lower use of force rates among non-White officers, relative to White officers, appear to be driven by reduced discretionary stops and arrests for petty crimes, including drug offenses, which have long been thought to fuel mass incarceration.<sup>39</sup> Importantly, because White officers have been less responsive to Black crime victims relative to White crime victims, police departments that employ affirmative action plans to increase the number of non-White officers have also seen reduced rates of crime victimization among Black and other non-White civilians.<sup>40</sup>

New evidence suggests the ethnoracial identity of police *leadership* matters as well.

## **RATES OF FATAL SHOOTINGS BY OFFICERS ARE ALMOST 50% HIGHER IN CITIES WITH POLICE FORCES LED BY WHITE POLICE CHIEFS THAN IN CITIES WITH BLACK POLICE CHIEFS.<sup>41</sup>**

These differences remain strong even when accounting for city characteristics, suggesting that the race of those in the highest position of authority may have a powerful effect on the culture of a police department and its resulting behavior.

While this new body of research reflects a shift in our understanding of the relationship between the racial composition of police departments and police behavior, studies have consistently shown that women officers were significantly less likely to arrest and use force than officers who are men, particularly when interacting with Black civilians.<sup>42, 43</sup>

While these findings offer compelling evidence that women and non-White, and especially Black, officers are less likely to use force on civilians than White officers, this may

not necessarily hold for future cohorts of hired officers or leadership, particularly given recent challenges to hiring and retaining officers.<sup>44</sup> In turn, it is not clear that efforts to recruit more women and non-White officers will necessarily reduce use of force rates in the future.

### 13. Implicit bias training

A number of highly publicized police killings of unarmed Black individuals renewed interest in the issue of police bias, explicit and implicit. These killings were consistent with evidence that police officers more quickly perceive (and mis-perceive) Black suspects as carrying weapons than White suspects.<sup>45</sup> Police departments across the country have consequently begun incorporating implicit bias training of various types for their officers. While analyses of the impact of implicit bias trainings point to some evidence of attitudinal change among officers, there is little evidence it translates into changes in behavior.<sup>46</sup>

### 14. Limiting the transfer of military equipment to law enforcement

Militarization of the police refers to the adoption by law enforcement agencies, even in smaller cities and towns, of military-style tactics and equipment. One of the main ways police departments receive military-style apparatus is through the Federal 1033 program, whereby the U.S. Department of Defense donates excess equipment to law enforcement agencies. Many police defend the program, arguing that it saves lives. Critics counter that the equipment fosters a military mindset and encourages officers to act like “warriors” rather than “guardians.” Existing data exploring whether a police department’s acquisition of military equipment affects rates of police use of force is mixed.<sup>47</sup> Importantly, however, the research that points to positive and significant relationships between 1033 acquisition and fatal shootings by police officers suggests it is not necessarily the use of the military equipment that leads to increased use of force, but the effects they have on the psychology and culture of departments.<sup>48</sup>

### 15. Strengthening gun control policies

One intuitive explanation for why U.S. law enforcement officers shoot more people than law enforcement in other countries is that they are afraid the people they interact with may be armed and use lethal force against them.<sup>49</sup> According to David Kennedy, a criminologist at John Jay College, American police officers need to be conscious of, and in fact are trained to be conscious of, the fact that “literally every single person they come in contact with may be carrying a firearm.”<sup>50</sup> The theory is that this in turn affects behavior.<sup>51</sup>

This line of thinking is consistent with evidence that lower levels of gun ownership (on both a state and local level) are associated with lower levels of police shootings.<sup>52</sup> In fact, the rate of fatal police shootings in the 10 states with the highest

rate of gun ownership was estimated to be 3.6 times greater than the rate of fatal police shootings in the five states with the lowest rates of gun ownership.<sup>53</sup>

Others argue it is not mere gun prevalence, but gun control legislation that is associated with fewer police shootings. To this point, states with the strongest firearm laws (those in the top quartile of overall legislative strength) have a 51% lower incidence rate of fatal police shootings than do states in the lowest quartile.<sup>54</sup> Even after controlling for gun prevalence, firearms regulations are associated with significantly reduced numbers of fatal police shootings.

It is important to note, however, that states and localities that implement stricter gun regulations may simply be different than those with weaker gun regulations. For example, safer states may be more likely to implement restrictive gun laws. To address this possibility, some research looks at changes in the rates of police shootings before and after changes are made to state gun regulations. Those findings confirm that stricter firearms regulations are associated with significantly lower numbers of fatal police shooting cases.<sup>55</sup> Specifically, a one-point increase in the strength of the gun owner accountability laws is associated with a decrease in fatal police shootings of 3.7%. Another study considers the effect of adopting a permitless concealed carry weapon law, or the impact of removing the permit requirement to carry a concealed weapon, on the rates of police shooting and finds a similar pattern of results. On average,

**STATES THAT REMOVED THE PERMIT REQUIREMENT FOR CARRYING A CONCEALED WEAPON SAW A 12.9% INCREASE IN THE RATE OF OFFICER INVOLVED VICTIMIZATIONS OR AN ADDITIONAL FOUR OFFICER VICTIMIZATIONS PER YEAR, COMPARED TO ESTIMATES OF WHAT WOULD HAVE HAPPENED HAD THE LAW NOT BEEN ADOPTED.<sup>56</sup>**

## CONCLUSIONS

While all can agree that excessive use of force by law enforcement is problematic, how best to deal with it is unclear. A number of reforms have been proposed and/or promoted by, for example, the 2015 Presidential Task Force, the 2020 Justice in Policing Act, and Campaign Zero’s 8 Can’t Wait effort. However, due to poor data and a lack of research, there remains little empirical evidence to tell us which of the commonly advocated reforms are effective.

This report addresses 14 reforms. It does not address several others that are also being widely discussed, such as changes to qualified immunity; limiting the number of hours officers can work to reduce officer fatigue; external and/or civilian oversight; alternatives to the police for dealing with issues like homelessness, mental health, and substance abuse; early intervention systems and/or tracking of misconduct to weed out officers likely to misuse their position; officer recruitment and retention initiatives to reduce staffing shortages; and better pre-hire screening of potential officers.

A number of the included studies point out that many of the proposed reforms (chokehold bans, verbal warnings, exhaust reasonable alternatives, report firearm incident, and duty to intervene) are correlated with fewer police killings. This is an important signal in understanding the institutional factors that may be contributing to higher use of force rates. However, it is unclear whether it is the policy that drives the reduction in police use of force, or whether it is the culture and context of the police and the community they serve that lead to fewer police killings. Speaking to this latter point, a sheriff from Washtenaw County in Michigan, Jerry Clayton, said in an interview that:

*“We [Clayton’s administration] have been on a 10-year journey of changing the culture of the Sheriff’s office. And we’re not doing that by legislating behavioral changes through policy. Policy’s important. But we are committed to changing our organizational culture by changing our beliefs about why we exist, what our purpose is. Washtenaw County is a unique and special place in the sense that it has made a large commitment to building an inclusive and supportive community. And that’s why it’s an ideal place for us to create a model that can be used elsewhere.”<sup>57</sup>*

Here, Clayton argued that while policy mattered, it is cultural level influences that may determine how police officers perform their jobs, how policies and reforms are implemented, and therefore, how they affect individuals who come into contact with police officers. Some might even argue that it is because of the relationship between the racial and gender composition of a police department and the culture of that police department, that the racial and gender composition of a police department has the effect that it does. Put differently, one’s social identities - especially racialized and gendered identities - often affect an individual’s lived experiences and patterns of socialization, and those experiences and patterns of socialization shape how they view and interact with others.

Questions of institutional culture and diversity are also important in considering gun regulations. The public’s level of access to arms is strongly and consistently associated with use of force rates, and particularly fatal police shootings.<sup>58</sup> While conversations around gun regulations are typically debated in

the context of mass shootings in schools, movie theaters and other public venues, this research highlights that gun regulation is equally relevant to conversations around police shootings.

The relationship between more gun regulations and lower rates of police shootings is a strong argument for more restrictive gun policies. However, we worry that it would paint an overly simplistic picture and ignore important racial considerations in any reforms to gun policy if we didn’t mention racial disparities in legal access to arms/ the right to self protection. US policing and gun rights policies have been structured and employed in such a way that Black homes are both less protected by the police and can do less to protect themselves.<sup>59</sup> That is something that must be acknowledged in both policing and gun rights policies moving forward.

Finally, this analysis points to the paucity of research exploring the causal relationship between many of the proposed police reform policies and police behavior. This is due to two distinct challenges. First, and as noted throughout this brief, there are very few studies that isolate the causal effect of specific policies. This research is often difficult and costly to conduct. However, additional research that can better isolate the effects of clearly defined policies in specific contexts (e.g. through panel studies and/or experimental designs) could be particularly valuable in efforts to determine if we should be investing into reforming the culture of policing institutions or policing policies

Equally important, very few police departments or other law and order agencies release or even collect data on their work. The data that do exist are often partial, not standardized, and based on varying definitions. Most criminal justice data systems were developed with a case management approach and require significant cleaning and analysis before the data can be studied. Since the baseline data are so poor, any data on reform will also be poor. Increased transparency and accountability are necessary to understanding the effectiveness of any reform.

Efforts to reduce the rate at which police use force against Americans are complex and dependent on many factors. There is strong evidence that policies that lead to police forces that are more diverse in terms of their racial and gender composition will also lead to lower rates of police using force. However, that type of shift tends to take a long time to achieve. Existing research also strongly suggests that policies that reduce the rate of gun ownership will lead to lower rates of police using force. Of course, that type of change is beyond the scope of many police departments’ authority. At this juncture, the well-designed implementation of body worn cameras offers the most promise for reforms that police departments can implement relatively quickly to reduce police use of force rates. As police departments across the country commit to collecting and sharing more data about their operations, and more

researchers invest into robust analyses of the effectiveness of different policies, we hope to better understand how we can improve public safety for all Americans.

## ABOUT THE AUTHORS

Trevor Bechtel is the Student Engagement & Strategic Projects Manager at Poverty Solutions and an Adjunct Instructor in the School of Social Work at U-M.

Mara Cecilia Ostfeld is an associate faculty director of Poverty Solutions, the research director of the Center for Racial Justice, and an assistant research scientist at U-M.

H. Luke Shaefer is the faculty director of Poverty Solutions, the Hermann and Amalie Kohn Professor of Social Justice and Social Policy, and a professor of public policy and social work at U-M.

The authors are grateful to researcher Elizabeth Phillips who oversaw the early research leading to this brief, and students Ariella Stafanson, Katlin Brantley, Andrew Krantz, Keegan McCalmont, Madgean Joassaint, Piero Guerra, Erin Tolar and Madeira BooydeGraaff who participated in gathering articles for the brief. Additionally, the authors thank Reid Wilson and Brandon Romero for reading early drafts and offering comments. Many of the articles considered in this larger process are noted in an [online database available on our website](#).

## ENDNOTES

- 1 Pierson, E., Simoiu, C., Overgoor, J., Corbett-Davies, S., Jenson, D., Shoemaker, A., Ramachandran, V., Barghouty, P., Phillips, C., Shroff, R. & Goel, S., (2020). A large-scale analysis of racial disparities in police stops across the United States. *Nature of Human Behaviour*, 4(7), 736-745.  
Warren, P., Tomaskovic-Devey, D., Smith, W., Zingraff, M. & Mason, M. (2006). Driving while black: Bias processes and racial disparity in police stops. *Criminology*, 44(3), 709-738;  
Buehler, J. (2017). Racial/ethnic disparities in the use of lethal force by US police, 2010–2014. *American Journal of Public Health*, 107(2), 295-297.  
DeGue, S., Fowler, K. A., & Calkins, C. (2016). Deaths due to use of lethal force by law enforcement: Findings from the national violent death reporting system, 17 US states, 2009–2012. *American Journal of Preventive Medicine*, 51(5), S173-S187.  
Ross, C. (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(11), e0141854.  
Terrill, W., & Mastrofski, S. D. (2002). Situational and officer-based determinants of police coercion. *Justice Quarterly*, 19(2), 215-248.  
Gelman, A., Kiss, A., & Fagan, J. (2006). An analysis of the NYPD's Stop-And-Frisk Policy in the context of claims of racial bias. *Columbia Public Law Research Paper*, 05-95.
- 2 Jackman T and Morse D. (2020, October 27). Police de-escalation training gaining renewed clout as law enforcement seeks to reduce killings. *Washington Post*. [https://www.washingtonpost.com/local/deescalation-training-police/2020/10/27/3a345830-14a8-11eb-ad6f-36c93e6e94fb\\_story.html](https://www.washingtonpost.com/local/deescalation-training-police/2020/10/27/3a345830-14a8-11eb-ad6f-36c93e6e94fb_story.html)
- 3 Zimring F. (2017). *When Police Kill*. Cambridge, MA: Harvard U Press.
- 4 Lartey J. (2015, June 9). By the numbers: US police kill more in days than other countries do in years. *The Guardian*. <https://www.theguardian.com/us-news/2015/jun/09/the-counted-police-killings-us-vs-other-countries>.
- 5 McKesson D, Sinyangwe S, Elzie J. & Packnett B. (2016). Police Use of Force Policy Analysis. *Campaign Zero*. <https://8cantwait.org/files/police-use-of-force-report.pdf>.
- 6 Engel R., Corsaro N., Isaza G. & McManus H. (2020). Examining the Impact of Integrating Communications, Assessment, and Tactics (ICAT) De-escalation Training for the Louisville Metro Police Department: Initial Findings. *International Association of Chief of Police (IACP) / University of Cincinnati (UC) Center for Police Research and Policy*. [https://www.theiacp.org/sites/default/files/Research%20Center/LMPD\\_ICAT%20Evaluation%20Initial%20Findings%20Report\\_FINAL%2009212020.pdf](https://www.theiacp.org/sites/default/files/Research%20Center/LMPD_ICAT%20Evaluation%20Initial%20Findings%20Report_FINAL%2009212020.pdf).

7 Wolfe S, Rojek J, Mclean K, & Alpert G. (2020). Social interaction training to reduce police use of force. *The ANNALS of the American Academy of Political and Social Science*, 687(1), 124-145.

Giacomantonio C, Goodwin S & Carmichael G (2020). Learning to de-escalate: evaluating the behavioural impact of Verbal Judo training on police constables. *Police Practice & Research*, 21(4), 401-417.

8 Schumaker E. (2020, July 5). Police reformers push for de-escalation training, but the jury is out on its effectiveness. *ABC News*. <https://abcnews.go.com/Health/police-reformers-push-de-escalation-training-jury-effectiveness/story?id=71262003>; Engel et al. 2020.

9 Smith MR, Kaminski RJ, Alpert GP, Fridell LA, MacDonald J & Kubu B. (2010). A Multi-Method Evaluation of Police Use of Force Outcomes: Final Report to the National Institute of Justice, Document 231177. <http://internationalresponsestocrime.pbworks.com/w/file/fetch/86744632/smith%20kaminski%20alpert%20fridell%20macdonald%20and%20kubu%202010%20use%20of%20force%20and%20injury%20study.pdf>.

Terrill, W. & Paoline, III, E. (2013). Examining less lethal force policy and the force continuum: Results from a national use-of-force study. *Police Quarterly*, 16, 38-65.3; McKesson D. et al. 2016.

10 Thomas, K., Collins, P. & Lovrich, N. (2010). Conducted energy device use in municipal policing: Results of a national survey on policy and effectiveness assessments. *Police Quarterly*, 13(3), 290-315.

Miller, M.E. (2008). Examining the effect of organizational policy change on TASER utilizations. (doctoral dissertation). University of Central Florida.

11 Ferdik, F., Kaminski, R., Cooney, M., & Sevigny, E. (2014). The influence of agency policies on conducted energy device use and police use of lethal force. *Police Quarterly*, 17(4), 328-358.

12 Hickman, M. J., Strote, J. N., Scales, R. M., Parkin, W. S., & Collins, P. A. (2021). Police use of force and injury: Multilevel predictors of physical harm to subjects and officers. *Police Quarterly*, 24(3), 267-297.

13 Kaur, H. & Mack, J. (2020, June 16). The cities, states and countries finally putting an end to police neck restraints. *CNN*. <https://www.cnn.com/2020/06/10/world/police-policies-neck-restraints-trnd/index.html>

14 McKesson et al. 2016.

15 Garrett, B. & Stoughton, S. (2017). A Tactical Fourth Amendment. *Virginia Law Review* 103(2), 211-307.

16 McKesson et al. 2016.

17 Lopez G (2017, May 8). Police have known for 45 years they shouldn't shoot at moving cars. But they still do it. *Vox*. <https://www.vox.com/policy-and-politics/2017/5/8/15533536/police-shooting-moving-cars-jordan-edwards>

Police Executive Research Forum. (2016). Guiding principles on use of force. <https://www.policeforum.org/assets/guidingprinciples1.pdf>.

18 Police Executive Research Forum. (2016). Guiding principles on use of force. <https://www.policeforum.org/assets/guidingprinciples1.pdf>.

19 McKesson et al. 2016.

20 Walker, S. (2010). Police accountability and the central problem in American criminal justice. *Holding Police Accountable*, The Urban Institute, Washington, DC, 1-25.

Fyfe, J. (1979). Administrative interventions on police shooting discretion: an empirical examination. *Journal of Criminal Justice*, 7, 309-323.

21 McKesson et al. 2016.

22 Aronie, J. & Lopez, C. (2017). Keeping each other safe: An assessment of the use of peer intervention programs to prevent police officer mistakes and misconduct, using New Orleans' EPIC program as a potential national model. *Police Quarterly*, 20(3), 295-321.

23 McKesson et al. 2016.

24 Taniguchi, T., Vovak, H., Corder, G., Amendola, K., Yang, Y., Hoogesteyn, K. & Bartness, M. (2022). The impact of active bystander training on officer confidence and ability to address ethical challenges. *Policing: A Journal of Policy and Practice*.



- Novotney, A. (2017). Preventing police misconduct: Ervin Staub's research on "active bystanders" is the foundation of a program helping New Orleans police avert misconduct by fellow police officers. *American Psychological Association Monitor*, 48, 30-31.
- Sondel, J & Knowles, H. (2020, April 10). George Floyd died after officers didn't step in. These police say they did — and paid a price. *The Washington Post*. <https://www.washingtonpost.com/nation/2020/06/10/police-culture-duty-to-intervene/>.
- 25 Jennings, J. & Rubado, M. (2017). Preventing the use of deadly force: the relationship between police agency policies and rates of officer-involved gun deaths. *Public Administration Review* 77(2), 217-226.
- 26 McKesson et al. 2016.
- 27 Jennings & Rubado 2017.
- 28 Council on Criminal Justice Task Force on Policing. (2021). No-knock warrants and police raids. <https://counciloncj.foleon.com/policing/assessing-the-evidence/iii-no-knock-warrants-and-police-raids/>.
- 29 McKesson et al. 2016.
- 30 Lum, C., Stoltz, M., Koper, C.S. & Scherer, J. (2019). Research on body-worn cameras: What we know, what we need to know. *Criminology & Public Policy*, 18(1), 93-118;
- Zamoff, M., Greenwood, B. & Burtch, G. (2022). Who watches the watchmen: Evidence of the effect of body-worn cameras on New York City policing. *The Journal of Law, Economics, and Organization*, 38(1), 161-195.
- Gaub, J.E., Todak, N. & White, M. (2021). The distribution of police use of force across patrol and specialty units: A case study in BWC impact. *Journal of Experimental Criminology*, 17(4), 545-561.
- 31 Lum et al. 2019.
- 32 Barbosa, D., Fetzer, T., Souza, P.C. & Vieira, C. (2021). De-escalation technology: The impact of body-worn cameras on citizen-police interactions. Warwick Economics Research Papers. [https://warwick.ac.uk/fac/soc/economics/research/workingpapers/2021/twerp\\_1371\\_-\\_fetzer.pdf](https://warwick.ac.uk/fac/soc/economics/research/workingpapers/2021/twerp_1371_-_fetzer.pdf).
- 33 Voigt, R., Camp, N., Prabhakaran, V., Hamilton, W., Hetey, R., Griffiths, C., Jurgens, D., Jurafsky, D. and Eberhardt, J.. (2017). Language from police body camera footage shows racial disparities in officer respect. *Proceedings of the National Academy of Sciences*, 114(25), 6521-6526.
- 34 Lum et al. 2019.
- 35 Ariel, B., Sutherland, A., Henstock, D., Young, J., Drover, P., Sykes, J., Megicks, S. & Henderson, R. (2016). Report: Increases in police use of force in the presence of body-worn cameras are driven by officer discretion: A protocol-based subgroup analysis of ten randomized experiments. *Journal of Experimental Criminology*, 12(3), 453-463.
- 36 Hauck, G. & Nichols, M. (2020, June 13). Should police officers be required to live in the cities they patrol? There's no evidence it matters. *USA TODAY*. <https://www.usatoday.com/story/news/nation/2020/06/13/police-residency-data/5327640002/>.
- Murphy, D. & Worrall, J. (1999). Residency requirements and public perceptions of the police in large municipalities. *Policing: An International Journal of Police Strategies & Management* 22(3), 327-342.
- Smith, D. (1980). Police Attitudes and Performance: The impact of residency. *Urban Affairs Quarterly* 15(3), 317-334;
- Trochmann, M. & Gover A. (2016). Measuring the impact of police representativeness on communities. *Policing: An International Journal of Police Strategies & Management* 39(4), 773-790.
- 37 Herrera, J. (2019). No Easy Answer: Representative Bureaucracy and Police Use of Force. *Hatfield Graduate Journal of Public Affairs*, 3(2), 8.
- Hollis, M. & Jennings, W. (2018). Racial disparities in police use-of-force: A state-of-the-art review. *Policing: An International Journal*, 41(2), 178-193.
- Weitzer, R. (2015). American policing under fire: Misconduct and reform. *Society*, 52(5), 475-480.
- Walker, S. (2012). Police Accountability and the Central Problem in American Criminal Justice, chapter 1 in Holding Police Accountable (Candace McCoy, ed.), Washington DC: Urban Institute Press; National Research Council, 2004. *Fairness and effectiveness in policing: The evidence*. National Academies Press.

- 38 Ba, B. A., Knox, D., Mummolo, J., & Rivera, R. (2021). The role of officer race and gender in police-civilian interactions in Chicago. *Science*, 371(6530), 696-702.
- Hoekstra, M., & Sloan, C. (2022). Does race matter for police use of force? Evidence from 911 calls. *American Economic Review*, 112(3), 827-60.
- Ba, B., Bayer, P., Rim, N., Rivera, R., & Sidibé, M. (2021). Police officer assignment and neighborhood crime (No. w29243). *National Bureau of Economic Research*.
- 39 Ba, Knox, Mummolo & Rivera 2021.
- 40 Harvey, A., & Mattia, T. (2022). Reducing Racial Disparities in Crime Victimization: Evidence from Employment Discrimination Litigation. *Journal of Urban Economics*, 103459.
- 41 Wu, S. (2021). Leadership Matters: Police Chief Race and Fatal Shootings by Police Officers. *Social Science Quarterly*, 102(1), 407-419.
- 42 This research does not consider genders other than traditional binary between men and women and conflates gender and sex. For more on the connections between a “Women-Oriented” approach to policing and gender balance or gender mainstreaming, see: Strobl, S. (2020) Towards a ‘women-oriented’ approach to post-conflict policing: Interpreting national experience(s) and intergovernmental aspirations. *International Journal for Crime, Justice and Social Democracy* 9(1): 95-111.
- 43 Ba, Knox, Mummolo & Rivera 2021.
- Lonsway, K., Wood, M., Fickling, M., De Leon, A., Moore, M., Harrington, P., Smeal, E. & Spillar, K. (2002). Men, women, and police excessive force: A tale of two genders. *Feminist Majority Foundation*.
- Schuck, A. M., & Rabe-Hemp, C. (2005). Women police: The use of force by and against female officers. *Women & Criminal Justice*, 16(4), 91-117.
- This research does not consider genders other than traditional binary between men and women and conflates gender and sex. Staci Strobl explores the connections between a “Women-Oriented” approach to policing and gender balance or gender mainstreaming in:
- Strobl, S. (2020) Towards a ‘women-oriented’ approach to post-conflict policing: Interpreting national experience(s) and intergovernmental aspirations. *International Journal for Crime, Justice and Social Democracy* 9(1): 95-111. <https://doi.org/10.5204/ijcsd.v9i1.1465>.
- 44 Police Executive Research Forum. (2021). Survey on Police Workforce Trends. <https://www.policeforum.org/workforcesurveyjune2021>.
- International Association of Chiefs of Police (2020). The state of recruitment: A crisis for law enforcement. [https://www.theiacp.org/sites/default/files/239416\\_IACP\\_RecruitmentBR\\_HR\\_0.pdf](https://www.theiacp.org/sites/default/files/239416_IACP_RecruitmentBR_HR_0.pdf)
- 45 Burke KC (2020). Implicit bias, officer wellness, and police training, chapter 4, *Power: Police Officer Wellness, Ethics, and Resilience* (Konstantinos Papazoglou and Daniel M. Blumberg, eds) Cambridge, MA: Academic Press.
- Correll, J., Park, B., Judd, C. M., & Wittenbrink, B. (2007). The influence of stereotypes on decisions to shoot. *European Journal of Social Psychology*, 37(6), 1102-1117.
- 46 Jannetta J, Esthappan S, Fontaine J, Lynch M & LaVigne N (2019). Learning to Build Police-Community Trust: Implementation Assessment Findings from the Evaluation of the National Initiative for Building Community Trust and Justice. Washington, DC: Urban Institute.
- Worden RE, McLean SJ, Engel RS, Cochran H, Corsaro N, Reynolds D, Najdowski CJ & Isaza GT (2020). The impacts of implicit bias awareness training in the NYPD. International Association of Chiefs of Police. University of Cincinnati Center for Police Research and Policy, John F. Finn Institute for Public Safety. [https://www1.nyc.gov/assets/nypd/downloads/pdf/analysis\\_and\\_planning/impacts-of-implicit-bias-awareness-training-in-%20the-nypd.pdf](https://www1.nyc.gov/assets/nypd/downloads/pdf/analysis_and_planning/impacts-of-implicit-bias-awareness-training-in-%20the-nypd.pdf).
- 47 Ajilore, O. (2015). The militarization of local law enforcement: is race a factor? *Applied Economics Letters*, 22(13), 1089-1093.
- Harris, M. C., Park, J., Bruce, D. J., & Murray, M. N. (2017). Peacekeeping force: Effects of providing tactical equipment to local law enforcement. *American Economic Journal: Economic Policy*, 9(3), 291-313.

Delehanty, C., Mewhirter, J., Welch, R., & Wilks, J. (2017). Militarization and police violence: The case of the 1033 program. *Research & Politics*, 4(2).

Lawson Jr, E. (2019). Trends: Police militarization and the use of lethal force. *Political Research Quarterly*, 72(1), 177-189.

48 Delehanty et al 2017.

Lawson 2019.

49 Swedler, D. I., Simmons, M. M., Dominici, F., & Hemenway, D. (2015). Firearm prevalence and homicides of law enforcement officers in the United States. *American Journal of Public Health*, 105(10), 2042–2048.

50 Lopez G (2019, April 9). Police shootings are also part of America’s gun problem. *Vox*. <https://www.vox.com/2018/4/9/17205256/gun-violence-us-police-shootings>

51 Miller, L. (2015). Why cops kill: The psychology of police deadly force encounters. *Aggression and Violent Behavior*, 22, 97–111.

Geller, W. A., & Scott, M. (1992). *Deadly force: What we know: A practitioner’s desk reference on police-involved shootings*.

52 Nagin, DS. 2020. Firearm availability and fatal police shootings. *The Annals of the American Academy of Political and Social Science* 687(1): 49-57.

Hemenway, D., Azrael, D., Conner, A., & Miller, M. (2019). Variation in rates of fatal police shootings across US states: the role of firearm availability. *Journal of Urban Health*, 96(1), 63-73.

Sheppard, K. G., Zimmerman, G., & Fridel, E. E. (2022). Examining the relevance of contextual gun ownership on fatal police shootings. *Justice Quarterly*, 1214-1236.

53 Lopez 2019.

54 Kivisto AJ, Ray B, and Phalen PL. 2017. Firearm Legislation and Fatal Police Shootings in the United States. *American Journal of Public Health*, 107(7), 1068-1075.

55 Rogna, M., & Nguyen, B. D. (2022). Firearms law and fatal police shootings: a panel data analysis. *Applied Economics*, 54(27), 3121-3137.

Doucette, M.L., Ward, J.A., McCourt, A.D., Webster, D. and Crifasi, C.K., 2022. Officer-Involved Shootings and Concealed Carry Weapons Permitting Laws: Analysis of Gun Violence Archive Data, 2014–2020. *Journal of Urban Health*, 1-12.

56 Doucette et al. 2022.

57 Diehl, M. (2019, September 2). An Interview with Washtenaw County Sheriff Jerry Clayton on Holistic Approaches to Public Safety and Bias-free Policing. *Crazy Wisdom Journal*. <https://www.crazywisdomjournal.com/featuredstories/2019/9/1/an-interview-with-washtenaw-county-sheriff-jerry-clayton-on-holistic-approaches-to-public-safety-and-bias-free-policing>

58 Nagin, DS. 2020. Firearm availability and fatal police shootings. *The Annals of the American Academy of Political and Social Science* 687(1): 49-57;

Hemenway, D., Azrael, D., Conner, A., & Miller, M. (2019). Variation in rates of fatal police shootings across US states: the role of firearm availability. *Journal of Urban Health*, 96(1), 63-73;

Sheppard, K. G., Zimmerman, G., & Fridel, E. E. (2021). Examining the relevance of contextual gun ownership on fatal police shootings. *Justice Quarterly*, 1-23.

Kivisto AJ, Ray B, and Phalen PL. 2017. Firearm Legislation and Fatal Police Shootings in the United States. *American Journal of Public Health* 107(7), 1068-1075.

Rogna, M., & Nguyen, B. D. (2022). Firearms law and fatal police shootings: a panel data analysis. *Applied Economics*, 54(27), 3121-3137;

Doucette, M.L., Ward, J.A., McCourt, A.D., Webster, D. and Crifasi, C.K., 2022. Officer-Involved Shootings and Concealed Carry Weapons Permitting Laws: Analysis of Gun Violence Archive Data, 2014–2020. *Journal of Urban Health*, 1-12.

59 Franks, M. R. (2016). Racial Discrimination in Issuance of Concealed-Carry Permits. *Thurgood Marshall Law Review*, 42, 5.

Leonardatos, C. D. (1999). California’s Attempts to Disarm the Black Panthers. *San Diego Law Rev.*, 36, 947.

Swanson, J. W. (2020). The color of risk protection orders: gun violence, gun laws, and racial justice. *Injury Epidemiology*, 7(1), 1-6.

Harvey, A., & Mattia, T. (2022). Reducing Racial Disparities in Crime Victimization: Evidence from Employment Discrimination Litigation. *Journal of Urban Economics*, 103459.

Pierson, E., Simoiu, C., Overgoor, J., Corbett-Davies, S., Jenson, D., Shoemaker, A., Ramachandran, V., Barghouty, P., Phillips, C., Shroff, R. & Goel, S., (2020). A large-scale analysis of racial disparities in police stops across the United States. *Nature of Human Behaviour*, 4(7), 736-745.

Warren, P., Tomaskovic-Devey, D., Smith, W., Zingraff, M. & Mason, M. (2006). Driving while black: Bias processes and racial disparity in police stops. *Criminology*, 44(3), 709-738;

Buehler, J. (2017). Racial/ethnic disparities in the use of lethal force by US police, 2010–2014. *American Journal of Public Health*, 107(2), 295-297.

DeGue, S., Fowler, K. A., & Calkins, C. (2016). Deaths due to use of lethal force by law enforcement: Findings from the national violent death reporting system, 17 US states, 2009–2012. *American Journal of Preventive Medicine*, 51(5), S173-S187.