Reply to Schimmack: Critique of Cesario et al. (2019)

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[With only minor revisions, the following is a copy of the reply posted to Uli Schimmack's blog by Joseph Cesario. Schimmack's original critique of Cesario, Johnson, and Terrell (2019) was posted on his blog [here](#).]

Hi, Uli:

Thanks for engaging with us on this work – I know it's important to you (and to us) that we get a good understanding of this question. I'll try to work through some general points and then reply to some specifics.

I. General Critique

I think one point that might be useful is to explore the idea of a benchmark in more detail. You state "There is no doubt that Black citizens of the United States are more likely to be killed by police gunfire than White citizens." To support this claim, you note that the odds ratio for being shot by police is 2.5, showing an anti-Black disparity. You also state:

"However, the notion of a benchmark is misleading. We have a statistic about the number of police killings in the population of the United States. This is not a benchmark, it is a population. In this population, Black citizens are disproportionately more likely to get killed by police. That is a fact."

But there is something missing here, which is that when you say "There is no doubt that Black citizens of the United States are more likely to be killed," you are choosing a benchmark. You don't get away from the benchmark problem by looking at population-levels odds ratios. Instead, you're making the implicit claim that the entire population is the relevant benchmark. When you say, "Black citizens are more likely to be killed" what you are actually saying is "Black citizens are more likely to be killed given the benchmark of population proportions" or equally, "Black citizens are more

likely to be killed given the expectation that all people will be shot in accordance with their population proportion."

Using population-level benchmarks requires the assumption that people from all groups have equal exposure to those situations where deadly-force can be used by police, or for which deadly force is relevant. We know this is false (more on this below), hence the population benchmark is misleading.

By way of analogy, consider the following four hypothetical examples:

- We want to understand the disparity in males being more likely to be killed by police than females (something like 95% of fatal police shootings are of men), wondering whether police might be biased in perceiving threat from males but not females for the same behavior. Suppose that men, despite making up 49% of the population, make up 99% of people who do dangerous things like shoot handguns at the police or swing bats at them. Is the relevant benchmark 49% or 99%? What would you expect, that men should be shot in accordance with their population proportions or in accordance with being in those situations where deadly force is relevant? If men make up 95% of fatal police shootings, do you take this as evidence of sex bias in the decision to shoot?
- We want to calculate the odds of being in the army, by racial group. In order to be in the army (in the U.S.) you are to be 18 years of age. Different racial groups have different distributions of ages. Is the relevant comparison the overall proportion of citizens from a given racial group or the overall proportion of citizens who are 18+ from a given racial group?
- We want to understand something about gender and becoming a Physics major, when women make up 20% of physics majors. One possibility is to compare this 20% to the 51% of women in the general population. However, women actually make up 70% of all undergraduates. You need to be an undergraduate to major in physics. Is the relevant comparison 51% or 70%?
- We want to know whether the best cancer treatments are being provided evenly across racial groups. We

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find out that 15% of patients receiving the top treatment are Black. Black citizens are about 15% of the total U.S. population. If we find out that Blacks make up 50% of all cancer patients, is there a racial disparity in administration of the best treatment?

In all cases, the relevant population of interest is not the entire U.S. population and computing odds ratios on this value will be misleading. In these four examples, it is clear that the population proportion fails as a benchmark because there are clear assumptions needed for using population proportions that are obviously false, e.g., people without cancer do not try to get cancer treatment.

In the case of police shootings, the same applies. Except in rare cases, fatal police shootings happen in the context of violent crime. (No one disputes that rare cases do occur... more on this below.) They are not events that occur equally across all situations. If people from different racial groups encounter the police (in situations for which deadly force is relevant) at different rates, then using population proportions as a benchmark will be misleading.

The question is not, "Should I look at the population-level odds ratios or benchmark on some value?" The question is, "On what value should I benchmark?" because the population level is itself a benchmark. As we laid out in the paper, there are strong reasons to believe the population-level benchmark is a poor one.

You state "The authors continue their misguided argument that we should use crime rates rather than population to examine racial bias. Once more, this is nonsense." Would it be nonsense to compare female physics majors to the percent of female undergraduates? Cancer treatment rates to those with cancer? It's the same analysis and logic across all these cases.

Broadly, this issue has a long history in criminal justice and benchmarking on some value is a standard practice. For example, let's take Dr. Goff's words:

"Population benchmarks provide only a crude method for estimating disproportionality. They allow for an inference that force is being used in a manner that is disproportionate to presence in the general population, but do not allow for a clear inference as to whether the force is disproportionate to presence in any particular area or to legitimately provocative behavior. A more direct, albeit still limited, proxy for level of provocative behavior would be actual offending. The closest available index of offending is arrest rates. While arrest rates are confounded by racial bias in policing practices, they provide a closer approximation than simple resident population."

Moreover, Dr. Goff's own analyses confirm exactly what we claim: no anti-Black disparity (in fact, anti-White disparity) in fatal shootings once violent crimes are taken into account, i.e., once shooting rates are benchmarked on violent crime. (Using a different method, this is also what Fryer found). (As a side note, the overall analyses on all kinds of use of force by Goff show the same patterns.)

You describe what we're doing at times as "substituting" one group for another, but this isn't how we see it. Instead we're working through an analysis of the conditions surrounding deadly force use and then asking, given these conditions, what is the most appropriate benchmark?

You state: "This is not a benchmark, it is a population. In this population, Black citizens are disproportionately more likely to get killed by police. That is a fact." This is somewhat correct but somewhat incorrect. Again, when you say, "Black citizens are disproportionately more likely to be killed" you mean that "according to the benchmark of the overall population, Black citizens are more likely to be killed."

II. Violent crime as a benchmark

In various ways you question whether violent crime is really the key factor for fatal police shootings. One way to first address this is to note that past work analyzing fatal police shootings makes it clear that violent crime is the relevant context for shootings. The choice of violent crime is not random, and of course leads directly the point that population benchmarks are misleading (given that people from different groups are not involved in violent crime to the same degree).

You say "While we started with the question why police officers in the United States are more likely to kill Black citizens than White citizens, we end with the conclusion that police officers only kill criminals and are more likely to kill White criminals than Black criminals." This is not quite right on several accounts. First, we aren't starting with the question of why police officers are more likely to kill Black citizens. That isn't a starting point in the sense of "this is the known fact to be explained." As described above, we start by noting that the greater odds for Black citizens are true when you benchmark on population values. However, this benchmark is a poor one, given (1) what we know about the nature of fatal police shootings and (2) what we know about the exposure of people from different groups to these situations.

Second, you say "we end with the conclusion that police officers only kill criminals," not only do we never say this, but we clearly state (e.g., in the abstract) that we when break down the shootings to look specifically at those cases where citizens are not aggressive, i.e., are not violent against police, the data are too uncertain to draw firm conclusions.

Third, we are not saying that police are more likely to kill White criminals. What we are saying is that, given rates of exposure to police in violent crime situations, there is not evidence of anti-Black disparity in fatal shooting rates.

“The fundamental problem of the article is that the authors think they can simply substitute populations. Rather than examining killings in the population of citizens, which the statistic is based on, they think they can replace it by another population, the population of criminals. But, the death counts apply to the population of citizens and not to the population of criminals.”

This is not quite correct. The counts apply to whatever subsample is the relevant subsample. We aren’t substituting populations, we’re using an analysis of the nature of deadly force decisions to determine which benchmarks are most appropriate. You say “killings in the population of citizens, which the statistic is based on” but as I noted above it’s only based on the population because you’ve implicitly chosen the population as the relevant benchmark. It is exactly this choice that the paper argues is inappropriate.

This misinterpretation is seen again when you say, “The missing piece is information about the contribution of crime to the probability of being killed by police.” This actually is not a piece of missing information. It is the case that the far majority of fatal police shootings involve criminal contexts. Here’s the first 10 shootings of Black or White men in 2015:

1. police respond to 911 call of domestic dispute, man shot by police when he emerged from the house pointing his gun at officers
2. police respond to 911 call of armed man, man threatened to shoot officers and was shot when he refused to drop his gun
3. police respond to 911 call of violent dispute, man was tased but did not comply with orders, reached for waistband and was shot
4. man pulled over in traffic stop, gun was discovered during pat down, he fought with the officer and was shot while reaching for his gun
5. man parked in restricted police lot, showed gun when officers made contact and was shot (suicide by cop — left suicide note)
6. man identified by police as robbery suspect while driving stolen vehicle, man opened door and fired his gun at officers
7. police respond to 911 call of “man armed with a gun threatening bar patrons and assaulting his girlfriend,” man shot when he refused to obey commands to drop weapon
8. police respond to 911 call of man threatening his son, was shot when man took out gun and pointed it at officers

9. police carrying out warrant for arrest of man accused of sexual assault of a teenage girl, man shot when he aimed his gun at officers

10. police respond to 911 call of home invasion, man stabs police dog when police arrive, was shot when he raised his knife over his head toward officers

This is not a random sample of U.S. citizens nor is it a random sample of daily life nor even is it a random sample of policing situations. It is heavily skewed toward violent crime situations and people from different racial groups do not occupy such situations at the same rate. This is the foundational fact on which our paper was based.

What is clear from the above examples (and also more systematic and full analyses by e.g., Nix, Campbell, Byers, and Alpert (2017) and Johnson, Tress, Burkel, Taylor, and Cesario (2019)), is that violent crime is the context of fatal police shootings. Yes, shootings of unarmed and nonviolent citizens do occur, but they are a small minority of cases. Somewhere between 85-90% of citizens shot by police are armed at the time of being shot, and of the roughly 800 black and white citizens shot by police in 2015, only ~45 could be defined as “not aggressing” against the police or other citizens at the time they were shot.

Do shootings outside the context of violent crime happen? Absolutely yes (see below). The point is that these are rare.

It’s not as though there are no data on this question, as you suggest. It isn’t a piece of missing information. To show this, you can just rerun the analyses removing those cases where violence wasn’t an issue. The results are not going to reveal anti-Black disparity.

“And once more the authors attribute racial differences in police shootings to crime rates and they ignore that the influence of crime rates on shootings is their own assumption and not an empirical finding that is supported by their statistical analyses.” Again, it is not our assumption – violent crime is the relevant context for fatal police shootings as analyses of such shootings have shown.

III. When it’s not violent crime

One thing that we are in agreement on is the possibility of racial disparity in unarmed shootings and shootings of citizens who are not acting aggressively. You are right to point out that not all shootings involve people currently in violent criminal situations, and we agree with you – which is why we did the analyses we did and were explicit up front that the data are too uncertain to draw strong conclusions. That is because these cases, while absolutely tragic, and thankfully very rare.

IV. Additional Points

You state “The statistical relationship implies that race is a contributing causal factor to being killed by police.” It does

not. For example, in an earlier submission of the manuscript, we explicitly noted that race may have nothing to do with fatal shootings and instead it is all driven by social class differences, with race as a third variable. This is also why we didn't frame the paper as "a search for mediators" and why I don't think that's the right way of approaching the question. At no point do we suggest we did any mediation analysis and so claims otherwise are not correct.

That is why, in the abstract, we clearly and unambiguously state that we're doing benchmarking analyses: "This is commonly answered by comparing the odds of being fatally shot for Blacks and Whites, with odds benchmarked against each group's population proportion. However, adjusting for population values..."

You state, "Instead they are conducting a number of hypothetical analyses that start with the premises that police officers only kill criminals." This is not quite correct on three counts. First, it doesn't require as a premise that police only kill criminals. It requires that criminal contexts, and in particular violent crime contexts, are the relevant situation for officers to be making deadly force decisions. The question is then the degree to which people from different groups occupy those situations. Second, this is why we break down the analysis in terms of shootings of armed v. unarmed & not aggressing individuals. We can redo the analyses removing all those cases of people who were not engaged in crime. This is a small number and will not impact the results. Finally, I don't know what a "hypothetical" analysis is – we're taking exactly the analysis done by everyone who calculates odds on the population benchmark and then repeating that with different benchmarks.

But more important, this illustrates a main point that is missing: The failure to appreciate the fact that most fatal police shootings – the far, far majority – happen in the context of violent crime. That is exactly why the correct benchmark is in terms of exposure to the police in violent crime situations, i.e., benchmarking against violent crime rates and not population values.

"We could also use other statistics that lead to different conclusions." Of course this is true. You would then need to justify why that statistic is the relevant statistic. We justify the crime rate statistic as the relevant one because that is the context of fatal police shootings.

"There are about 1000 police killings a year in the United States. If 5% of police killings started without any violation of the law, this means 50 people are killed every year by mistake. This may not be a meaningful number to statisticians for their data analysis, but it is a meaningful number for the victims and their families."

Of course this is correct and no one debates that having a family member killed by the police in such a manner is devastating.

A final slight correction; you state: "However, the notion of a benchmark is misleading. We have a statistic about the number of police killings in the population of the United States. This is not a benchmark, it is a population." We are not saying the number of police killings is a benchmark. It's the population of comparison that's a benchmark. The number of killings is a static quantity, it doesn't change across analyses.

I agree that the topic is important and that any shooting of citizens under conditions where the citizen is not a threat is tragic and, though rare, may have a large impact on police-community relationships. I appreciate you engaging with the work, but as laid out above in my view some of the main criticisms that you offer are a bit off the mark and may not "fundamentally" undermine the work in the way you suggest.

References

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