Police Officers are not Six Times more Likely to Shoot White Civilians than Black Civilians: A Coding Error in Johnson et al. (2019)

A recent article in PNAS claimed that "a person fatally shot by police was 6.67 times *less* [italics added] likely (OR = 0.15 [0.09, 0.27]) to be Black than White" (1). This surprising finding is explained with depolicing: officers may be "less likely to fatally shoot Black civilians for fear of public and legal reprisal" (p. 15880). The article also claims the results "do not depend on which predictors are used" (p. 15881). We found a mistake in the statistical model. In a reply, the authors acknowledge this mistake and redid the analyses with proper weighted effect coding of categorical variables (Table 1) (2). The new results show that the choice of predictor variables has a strong influence on the conclusions. The model that only uses homicide rates as predictor still show a strong anti-White bias. The model with population proportions as predictor shows the expected anti-Black bias that is found in other studies, including a study by the same authors (3,4). Thus, the results are no longer consistent, and it is important to examine which of these models should be used to make claims about racial disparities.

We argue that it is necessary to include population proportions in the model. To ignore the demographics would be a classic statistical mistake. A common example, is the surprising finding that Christians commit more homicides because homicide rates are positively correlated with the number of churches. This inference is wrong because the correlation between churches and homicides simply reflects the fact that counties with a larger population have more churches and more homicides. The fact that this bias is reduced when homicide rates are also includes as predictors may suggest that "racial disparity in fatal shootings is explained by non-Whites' greater exposure to the police through crime" (p. 15881). However, the data are too uncertain to say whether racial bias is reduced or eliminated. Moreover, the model ignores the authors' own finding that victims' age is a significant predictor of victims' race. Parity is obtained for the average age of 37, but the age effect implies that 20-year old victims are significantly more likely to be Black, OR(B/W) = 3.26, 95%CI = 1.26 to 8.43 while 55-year old victims are significantly more likely to be White, OR(B/W) = 0.24, 95%CI = 0.08 to 0.71. Thus, even when homicide rates are included in the model, the authors' data are consistent with the public perception that officers are more likely to use force with young Black men than with young White men. The new results are much more plausible than the original claim that officers are six times more likely to shot White civilians than Black civilians. Correcting this mistake shows the importance of post-publication peer review to ensure that scientific information that informs public policy is as objective and informative as it can be.

References

1. Johnson, D. J., Trevor T., Nicole, B., Carley, T., & Cesario, J. (2019). Officer characteristics and racial disparities in fatal officer-involved shootings. Proceedings of the National Academy of Sciences, 116(32), 15877–15882.

2. Johnson, D. J., & Cesario, J. (2019). Reply to Schimmack: Critique of Johnson et al. (2019).

3. J. Cesario, D. J. Johnson, W. Terrill, Is there evidence of racial disparity in police use of deadly force? Analyses of officer-involved fatal shootings in 2015–2016. Soc. Psychol. Personal. Sci. 10, 586–595 (2018).

4. Edwards, F., Lee, H., Esposito, M. (2019). Risk of being killed by police use of force in the United States by age, race-ethnicity, and sex. *Proceedings of the National Academy of Sciences, 116*(34), 16793-16798. doi: 10.1073/pnas.1821204116

Table 1

Racial Disparity in Race of Fatally Shot Civilans

Model	County Predictor	Odds-Ratio (Black/White), 95%CI
M1	Homicide Rates	0.31 (0.23, 0.42)
M2	Population Rates	2.03 (1.21, 3.41)
M3	Population & Homicide Rates	0.89 (0.44, 1.80)