Name: Police Killings

Short Description: Estimated incidence of police killings per 100,000 people.

Data Source(s):

- Name: Mapping Police Violence
- Link to Source: https://mappingpoliceviolence.org/

Year(s): 2015 – 2019

Source Geographic Level: ZIP Code

Stratification: Black populations

Selection Rationale: Police killings fundamentally undermine a community's sense of safety. The influence of police-related fear on the day-to-day stress of community members is an important determinant of community mental wellness.

Strengths and Limitations:

- **Strengths:**
  - [*Importance*] Incidents that exacerbate discrimination (and perceived discrimination) accumulate to increase the community's overall level of chronic stress.[1]
  - [*Equity*] This measure captures disparities experienced between population groups. The rate of police killings for Black individuals is three times the rate for White individuals, and they are more likely to be unarmed at the time of the killing.[2] Research indicates that police violence leads to negative mental health outcomes for Black populations, especially in the immediate aftermath of a killing.[3] Police killings exacerbate historical inequities faced by Black populations as a result of social and structural racism and contribute to chronic stress in Black communities. The "weathering" hypothesis suggests that exposure to chronic stress may be linked to early deterioration of health – or "weathering" – among Black populations.[4]

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[1] Chandra, A., Cahill, M., Yeung, D., & Ross, R. (2018). *Toward an Initial Conceptual Framework to Assess Community Allostatic Load: Early Themes from Literature Review and Community Analyses on the Role of Cumulative Community Stress*. RAND Corporation. https://doi.org/10.7249/rr2559

[2] Mapping Police Violence. (2021). *Police Violence Map*. https://mappingpoliceviolence.org/

[3] Bor, J., Venkataramani, A. S., Williams, D. R., & Tsai, A. C. (2018). Police killings and their spillover effects on the mental health of black Americans: a population-based, quasi-experimental study. *The Lancet*, *392*, 302–310. https://doi.org/10.1016/s0140-6736(18)31130-9

[4] Geronimus, A. T., Hicken, M., Keene, D., & Bound, J. (2006). "Weathering" and Age Patterns of Allostatic Load Scores Among Blacks and Whites in the United States. *American Journal of Public Health, 96*(5), 826–833. https://doi.org/10.2105/ajph.2004.060749

- [*Relevance and Usability*] Exposure to police violence is shown to be associated with higher self-reports of psychological distress, suicidal ideations, and suicide attempts. Additionally, exposure to police violence is higher for men, people of color, and sexual or gender minorities.[5] Police killings have been shown to have spillover effects on the mental health of Black Americans, even for exposures aggregated at the state-level.[6] Tracking police killings allows for a more detailed understanding of this relationship and can allow communities and decision makers to better understand where policies are needed to reduce police violence.
- [*Feasibility*] The Mapping Police Violence database actively maintains and updates data monthly. Police use of force data from state and national databases are aggregated with additional sources from social media, obituaries, criminal records databases, and police reports to identify the race of the person killed.
- [*Scientific Soundness*] Police killings have a varying radius of impact on mental health, affecting both the local community as well as broader community. Accordingly, this measure combines the incidence of police killings in the immediate neighborhood (Zip Code Tabulation Area or ZCTA) with the incidence in the County in which the ZCTA is located.

- **Limitations:**
  - [*Scientific Soundness*] Data on police killings are not consistently reported across jurisdictions, which is why organizations like Mapping Police Violence use various methods to accurately this data. Despite concentrated efforts, the data are likely not fully comprehensive though it is estimated that this database captures 92% of police killings since 2013.[7]
  - [*Relevance and Usability*] Because the Mapping Police Violence dataset only captures data on police killings, this measure does not capture other forms of non-fatal violence or injuries resulting from police encounters. Additional data on these other types of encounters would provide a more complete picture of the impacts of police violence on a community.

Calculation:

[5] DeVylder, J. E., Jun, H.-J., Fedina, L., Coleman, D., Anglin, D., Cogburn, C., Link, B., & Barth, R. P. (2018). Association of Exposure to Police Violence With Prevalence of Mental Health Symptoms Among Urban Residents in the United States. *JAMA Network Open*, *1*(7), Article e184945. https://doi.org/10.1001/jamanetworkopen.2018.4945

[6] Bor, J., Venkataramani, A. S., Williams, D. R., & Tsai, A. C. (2018). Police killings and their spillover effects on the mental health of black Americans: a population-based, quasi-experimental study. *The Lancet*, *392*, 302–310. https://doi.org/10.1016/s0140-6736(18)31130-9

[7] Mapping Police Violence. (2021). *Police Violence Map*. https://mappingpoliceviolence.org/

Definition of Police Killing: Mapping Police Violence defines a "police killing" as when "a person dies as a result of being shot, beaten, restrained, intentionally hit by a police vehicle, pepper sprayed, tasered, or otherwise harmed by police officers, whether on-duty or off-duty."[8]

We estimate the impact of police killings within a ZCTA by calculating the weighted harmonic average of the ZCTA incidence (I_z) and the county incidence $(I_c)$for the county the ZCTA is in over 5 years. This accounts for the fact that individuals in a ZCTA are also impacted by the occurrence of police killings within their larger vicinity (in this case their county). In our calculations, the ZCTA incidence (I_z) contributes 75% to the weight, while the county incidence (I_c) contributes to the remaining 25%.

To calculate the harmonic mean:

$$Estimated\ impact\ of\ police\ killings\ = \frac{1}{0.25\left(\frac{1}{I_z}\right) + 0.75\left(\frac{1}{I_c}\right)}$$

Overall Population:

$$I_{z,Overall} = \frac{sum\ of\ police\ killings\ in\ ZCTA\ from\ 2015\ to\ 2019}{total\ person\ years\ (sum\ of\ ZCTA\ population\ estimates\ from\ 2015\ to\ 2019)}$$

$$I_{c,Overall} = \frac{sum\ of\ police\ killings\ in\ county\ from\ 2015\ to\ 2019}{total\ person\ years\ (sum\ of\ county\ population\ estimates\ from\ 2015\ to\ 2019)}$$

Black Populations:

$$I_{z,Black} = \frac{sum\ of\ police\ killings\ in\ ZCTA\ from\ 2015\ to\ 2019\ where\ the\ person\ killed\ was\ Black}{Black\ person\ years\ (sum\ of\ ZCTA\ Black\ population\ estimates\ from\ 2015\ to\ 2019)}$$

$$I_{c,Black} = \frac{sum\ of\ police\ killings\ in\ county\ between\ 2015\ and\ 2019\ where\ the\ person\ killed\ was\ Black}{Black\ person\ years\ (sum\ of\ county\ Black\ population\ estimates\ from\ 2015\ to\ 2019)}$$

[8] Ibid.