



## Data quality considerations when using county-level opioid overdose death rates to inform policy and practice



To the Editor

We commend Dr. McClellan for his recent article “Disparities in opioid related mortality between United States counties from 2000 to 2014” (McClellan, 2019), but have concerns about data limitations relevant to all research using National Vital Statistics System (NVSS) mortality data.

Given the worsening overdose crisis in the U.S., policymakers and researchers are eager for information to guide overdose prevention efforts. Examining how and where county-level opioid-involved overdose deaths have changed is important. Indeed, others have examined county-level opioid overdose deaths to help explicate the impacts of various policies and have populated dashboards based on these data (Langabeer et al., 2019; U.S. Department of Agriculture and NORC at the University of Chicago, 2019).

Unfortunately, users of NVSS data often lack awareness about the pitfalls of comparing opioid-related overdose death rates at the state and county level. Of fundamental concern is the substantial variation in whether the specific drug(s) involved is reported on the death certificate. This variation exists across states and counties, as well as over time, and makes comparisons of specific types of drugs involved in overdose deaths problematic (Warner and Hedegaard, 2018). Changes in the specificity of drug reporting can lead to erroneous conclusions about actual drug-specific death rates based on apparent, but potentially misleading, increases or decreases.

A stark example of this can be found in comparing Allegheny (i.e., Pittsburgh metropolitan area) and Philadelphia counties in Pennsylvania. In 2017, the percentage of drug overdose deaths with at least one specific drug reported on the death certificate was 98.3% in Allegheny county compared to 5.1% in Philadelphia county (Centers for Disease Control and Prevention, 2019). This difference would significantly distort any comparison of drug-specific overdose death rates. Without consideration of the differences in reporting, in 2017, the age-adjusted rate of opioid-involved drug overdose deaths in Allegheny county appears to be more than 18 times higher than that in Philadelphia county, despite Philadelphia county having a higher overall age-adjusted drug overdose death rate, 66.5 versus 63.0 per 100,000 (Centers for Disease Control and Prevention, 2019).

Inappropriate use of mortality data has real-world implications, including decisions to deploy resources to jurisdictions that are in fact not experiencing the greatest mortality burden. Reflective of these concerns, CDC does not present county-level drug-specific overdose death rates in publications using data from NVSS, or as part of provisional monthly drug overdose death estimates at the state level when a state does not meet quality and, in the case of monthly provisional estimates, timeliness standards (Ahmad et al., 2019).

In recent years, significant investments from CDC and other federal agencies have helped states, vital registrars, and medical examiners/

coroners improve death certification. Signs of progress are emerging. In 2017, 88% of drug overdose death certificates in the U.S. listed  $\geq 1$  specific drug, up from 75% in 2008. However, differences in documentation on death certificates go beyond reporting issues and are impacted by differential investigation practices stemming from inadequate resources, workforce constraints, and lack of standardized institutional operations. To produce reliable scientific findings that guide policy and resource deployment, efforts to improve the medico-legal death investigation system should continue and researchers and policy-makers must be aware of the limitations when using mortality data.

### Author contributions

All authors conceived the study. Jones outlined the manuscript and wrote the first draft. Warner and Jones acquired the data and conducted the analysis. Hedegaard, Compton, and Warner critically reviewed and provided edits on the manuscript. Jones was responsible for submission of the manuscript to the journal. All authors read and approved the final letter.

### Author disclosures

Drs. Jones, Warner, and Hedegaard report no conflicts of interest. Dr. Compton reports ownership of stock in General Electric Co., 3 M Co., and Pfizer Inc., unrelated to the submitted work.

### Disclaimer

The findings and conclusions in this article are those of the authors and do not necessarily represent the official position of the National Center for Injury Prevention and Control or the National Center for Health Statistics at the Centers for Disease Control and Prevention, or the National Institute on Drug Abuse at the National Institutes of Health.

### References

- Ahmad, F.B., Escobedo, L.A., Rossen, L.M., Spencer, M.R., Warner, M., Sutton, P., 2019. Provisional Drug Overdose Death Counts. Retrieved from: <https://www.cdc.gov/nchs/nvss/vsrr/drug-overdose-data.htm> Accessed May 28, 2019. .
- Centers for Disease Control and Prevention, 2019. Wide-ranging Online Data for Epidemiologic Research (WONDER). Retrieved from: <https://wonder.cdc.gov/mcd.html> Accessed July 26, 2019. .
- Langabeer, J.R., Gourishankar, A., Chambers, K.A., Giri, S., Madu, R., Champagne-Langabeer, T., 2019. Disparities between opioid overdose deaths and treatment capacity: a geospatial and descriptive analysis. *J. Addict. Med.* 4 (Mar). <https://doi.org/10.1097/ADM.0000000000000523>.
- McClellan, C.B., 2019. Disparities in opioid related mortality between United States counties from 2000 to 2014. *Drug Alcohol Depend.* 199, 151–158.

<https://doi.org/10.1016/j.drugalcdep.2019.107549>

Received 26 July 2019

Available online 30 August 2019

0376-8716/ Published by Elsevier B.V.

U.S. Department of Agriculture and NORC at the University of Chicago, 2019. Opioid Overdose Deaths in the United States. Retrieved from. <https://opioidmisuse-tool.norc.org/>.

Warner, M., Hedegaard, H., 2018. Identifying opioid overdose deaths using vital statistics data. *Am. J. Public Health* 108, 1587–1589 (Accessed 25 May 2019).

Christopher M. Jones\*

*National Center for Injury Prevention and Control, Centers for Disease Control and Prevention, 4700 Buford Highway, Atlanta, GA, 30341, United States*

*E-mail address:* [fjr0@cdc.gov](mailto:fjr0@cdc.gov).

Margaret Warner, Holly Hedegaard  
*National Center for Health Statistics, Centers for Disease Control and Prevention, Hyattsville, MD, United States*

Wilson Compton  
*National Institute on Drug Abuse, National Institutes of Health, Rockville, MD, United States*

---

\* Corresponding author.