

## Methods Report: Documentation and Analysis of Fatal Overdose Data

*Updated January 2024*

### Introduction

Public Health – Seattle & King County (PHSKC) presents close to real-time information about overdose incidence and trends on the [Fatal Overdose Dashboard](#), a public-facing Tableau dashboard. This dashboard is widely used by PHSKC, community partners, and concerned residents to monitor the overdose crisis in King County.

Important updates to the fatal overdose dashboard went live on November 16, 2022. The updates to the dashboard aim to:

- More accurately represent the demographic background of overdose decedents
- Better visualize disparities and sub-group specific trends in overdose fatalities
- Show information about overdose trends from two data systems: King County Medical Examiner's Office (KCMEO) and Washington State Vital Statistics<sup>1</sup>

This report describes the procedures in place to monitor overdose death trends, known methodological limitations, and recently implemented changes to improve the accuracy of the information presented on the [Fatal Overdose Dashboard](#).

### Data Collection and Processing

The King County Medical Examiner's Office (KCMEO) investigates and certifies all deaths that occur in King County that are unexpected, sudden, violent, suspicious, unnatural, and/or lack a known cause. Drug overdose deaths typically meet at least one of these criteria. After analysis of the death scene, autopsy, and toxicology evaluation, KCMEO completes the death certificate literal fields indicating cause of death (COD), other significant conditions, and circumstances of death.<sup>1-3</sup> The completed death certificate is submitted to the Washington State Department of Health (WADOH) via the Electronic Death Registration System. WADOH compiles all death certificates from across the state and submits them to the National Center for Health Statistics (NCHS), which uses a software program, SuperMICAR, to assign ICD-10 codes to the literal text fields. Although all literal COD text fields are given ICD-10 codes and considered contributing causes of death, only one COD and corresponding ICD-10 code is assigned as the underlying COD, i.e. the cause that initiated the sequence of events leading to death. This process for assigning ICD-10 codes is standardized for all jurisdictions and states.

### Overdose Death Case Definition

The updated dashboard makes it possible to view overdose statistics based on two varying case definitions that correspond to their underlying data sources: 1) Vital Statistics death data and 2) Medical Examiner's Office data. Table 1 summarizes the differences between the two case definitions and more detail about the two definitions is provided hereafter.

To identify drug poisoning deaths in vital statistics records, many public health agencies, including CDC and the WADOH, query death certificates for ICD-10 codes that indicate the underlying COD was drug

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<sup>1</sup> Previously, only data from KCMEO was presented in the dashboard.

poisoning, including X40-X44 (unintentional), X60-X64 (suicide), X85 (assault), and Y10-Y14 (undetermined intent). The residential address listed on the death certificate, typically provided by an informant to the funeral home, is used to attribute overdose deaths to sub-jurisdictions. This approach narrows the case definition of “King County Drug Overdose Death” to decedents with an underlying ICD-10 code indicative of drug poisoning and a King County residential address. Due to the inherent delays involved in the submission of death certificates, issuance of ICD-10 codes, and release of processed data to local health jurisdictions, Vital Statistics data is available to PHSKC 10-21 months after the death occurred.

PHSKC primarily uses data directly from the KCMEO to monitor overdose incidence and trends, because information about a suspected or confirmed overdose death is available within days of the death’s occurrence. As described elsewhere<sup>4</sup>, KCMEO reviews information from autopsy examination, bystander report, and description of death scene and documents whether the death is a suspected (probable) overdose. During investigations of suspected overdose deaths, biological samples (e.g. blood, urine) and drug evidence collected at the death scene (if any) undergo toxicology testing conducted by KCMEO *and* an accredited toxicology laboratory (Washington State Patrol (WSP) Toxicology Laboratory or NMS Labs).<sup>5,6</sup> If two or more KCMEO toxicology test results are positive for the same drug class, the cause of death is preliminarily attributed to “*acute (combination) drug intoxication including [specific drug(s) identified]*” and is represented as a confirmed drug overdose death on the Fatal Overdose Dashboard and other reports. The cause of death is amended (as needed) once additional results are released by WSP or NMS Laboratories.<sup>5,6</sup> Suspected overdose deaths with <2 consistent KCMEO toxicology results that are undergoing toxicology evaluation by WSP or NMS Laboratories are classified as “suspected overdose, pending toxicology” until MEO receives toxicology results from WSP or NMS Laboratories.

PHSKC evaluated the implications of each case definition on how overdose incidence is measured and characterized.<sup>7</sup> The estimated number of overdose deaths occurring in King County is 5-15% greater when based upon the KCMEO data rather than the Vital Statistics data, which is largely due to discrepancies between the county of death versus county of residence indicated on the death certificate. Overdose deaths that met the MEO case definition but not the Vital Statistics definition were significantly more likely to have occurred among persons living homeless, at a hospital, and involved multiple modes of injury or disease.

|   | KC Medical Examiner Office  | Washington State Vital Statistics<br>Washington State Department of Health,<br>Center for Health Statistics, Death Certificate<br>Data |
|---|---|--|
| Data Source:                                | In King County  | Among King County residents  |
| Includes overdose deaths that occurred .... | Searching across literal cause of death text fields for key words connoting acute drug intoxication or poisoning. | Searching the underlying cause of death field for ICD-10 codes indicative of drug poisoning (X40-X44, X60-X64, X85, Y10-Y14)           |
| Defined “drug overdose” by...               | Available in real-time  | Standardized across health jurisdictions, facilitating cross-jurisdiction comparisons  |
| Advantages                                  |   |  |

|               |  |   |
|---------------|--|---|
|               | Overdose locations, rather than official residence, may serve as better proxy for overdose risk locations  | Facilitated estimation of mortality rates, given the alignment of the numerator (# of overdose deaths in King County) and denominator (# of King County residents).   |
| Disadvantages | <p>Non-standardized definition, complicating comparisons with other jurisdictions</p> <p>Imperfect estimates of mortality rates given the discrepancy between numerator (# of overdose deaths in King County) and denominator (# of King County residents)</p> | <p>Delayed availability</p> <p>May inadvertently exclude deaths resulting from multiple contributing causes</p> <p>Official residence may poorly align with actual residence, especially in the context of unstable housing</p> |

**Ascertainment of Decedent Characteristics**

Since it is impossible to ascertain decedents’ self-reported racial, ethnic, and gender identities at time of death, demographic information is ascertained through other means. KCMEO documents age, gender, race, and ethnicity in its internal database based upon information that is available at the time of death investigation and autopsy, which includes: information provided by next of kin and others present at the death scene, review of available medical records and driver’s license, and autopsy examination. The demographic fields on the official death certificate and Vital Statistics record are entered by funeral directors in consultation with the family-designated agent responsible for coordinating the decedent’s funeral-related services.

PHSKC linked the KCMEO records with the Vital Statistics records to assess the degree of concordance of sex, race, and ethnicity fields between the two data sources. This examination provided evidence that ascertainment of demographic information was more complete in the Vital Statistics records compared to the KCMEO records. PHSKC attempts to present demographic information from the Vital Statistics record when possible. When it is not available and/or accessible, the demographic information is drawn from the KCMEO record.

Race/Ethnicity

The Fatal Overdose Dashboard presents ‘Hispanic’ as a category of race and treats all race categories as mutually exclusive (e.g. American Indian/Alaskan Native (AI/AN) is comprised of non-Hispanic AI/AN alone). Multiple evaluations have suggested that misclassification of race/ethnicity is particularly high for the American Indian/Alaska Native (AI/AN) population. In an evaluation of overdose deaths in Washington, the estimated drug overdose rate was 36% greater in a dataset that linked Vital Statistics records with the Northwest Tribal Registry compared to the Vital Statistics data alone.<sup>8</sup> In a national evaluation of all-cause mortality data, 51% of decedents who had self-reported AI/AN as their race when they participated in a national survey were indicated as AI/AN on their

death certificate.<sup>9</sup> This same evaluation suggested that misclassification also biases mortality rate estimates for Hispanic/Latinos and Asian and Pacific Islanders, albeit to a lesser degree.<sup>9</sup>

### Sex/Gender

There is growing heterogeneity in as to whether the single “sex” field in Vital Statistics and MEO death records reflects gender at time of death or sex assigned at birth. The current dashboard reflects whatever information is indicated in the Vital Statistics record and, if it is unavailable, the MEO record. PHSKC plans to explore alternative approaches to capturing and presenting gender for future mortality risk assessments.

### Housing Status

The King County Medical Examiner’s Office (KCMEO) documents housing status for all deaths investigated by their office. Although Washington State Vital Statistics recently added a field to capture housing status on the Electronic Death Registration System, this information is not readily available to PHSKC analysis.<sup>10</sup> KCMEO Medicolegal death investigators categorize housing status based on information inferred from place and circumstances and/or testimony from witnesses or next of kin.” The housing categories include:

- **A location not meant for human habitation OR emergency shelter:** Encampments, vehicles, abandoned buildings, parks, other outdoor locations, emergency shelter.
- **Temporary housing situations:** reflects a number of housing situations including short-term stays with friends/acquaintances.
- **A location operated or subsidized by governmental or social service agency:** Permanent supportive housing, income-restricted units, recovery housing.
- **A privately owned or rented location:** Properties without known connections to governmental or social service programs.
- **Unknown or missing**

## **Incidence Measures**

The new dashboard presents the following measures of overdose incidence:

- **Counts:** The estimated number of overdose deaths that occurred in a specified period. This information can be helpful for understanding the magnitude of the problem.
- **Rates:** Rate represents the number of overdose deaths that occurred in a specified population over a specified period. Rates facilitate comparisons across sub-groups and over time by accounting for varying population sizes between groups and over time. Rates presented for King County (overall) and stratified by gender, race/ethnicity, and region are adjusted for the distribution of age in the underlying population, minimizing the likelihood that observed differences between groups or across years are due to differences in the distribution of age in the underlying population. The calculation of age-adjusted rates is described here: <https://doh.wa.gov/sites/default/files/legacy/Documents/5300/TechnicalNotes.pdf>

When only 1 to 9 overdose deaths occurred in a certain sub-group in a specified period, the count and rate information is not shown in order to protect decedent confidentiality.

Population estimates from the WA State Office of Financial Management (OFM) are used to calculate rates. Population estimates for 2021 are not yet available, so 2020 population data are used to calculate rates for 2021.

#### To view fatal overdose trends:

Go to the [Fatal Overdose Dashboard](#). If you hover over graphs, an interpretation of the data point will be visible. The [2022 Overdose Death Report](#) describes key findings embedded in the Fatal Overdose Dashboard.

#### References

1. Council for State and Territorial Epidemiologists Recommendations and Lessons Learned for Improved Reporting of Drug Overdose Deaths on Death Certificates. [https://cdn.ymaws.com/www.cste.org/resource/resmgr/PDFs/PDFs2/4\\_25\\_2016\\_FINAL-Drug\\_Overdos.pdf](https://cdn.ymaws.com/www.cste.org/resource/resmgr/PDFs/PDFs2/4_25_2016_FINAL-Drug_Overdos.pdf). In.
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4. Vannice K, Hood J, Yarid N, Kay M, Harruff R, Duchin J. Accuracy of Medical Examiner's Assessment for Near-Real-Time Surveillance of Fatal Drug Overdoses, King County, Washington, March 2017-February 2018. *Public Health Rep.* 2022;137(3):463-470.
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9. Arias E, Heron M, National Center for Health S, Hakes J, Bureau USC. The Validity of Race and Hispanic-origin Reporting on Death Certificates in the United States: An Update. *Vital Health Stat 2.* 2016(172):1-21.
10. PHSKC. Report On Deaths Among Presumed Homeless Individuals Investigated By The King County Medical Examiner January 1, 2012-December 31, 2021 2022; <https://kingcounty.gov/~media/depts/health/medical-examiner/documents/presumed-homeless-deaths.ashx>.