

Methods Report: Documentation and Analysis of Fatal Overdose Data

November 2022

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 Statistics¹

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, 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.¹⁻³ 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

¹ 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 9-24 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 elsewhere⁴, KCMEO reviews information from autopsy examination, bystander report, and description of death scene and documents whether the death is a “probable overdose”. All probable overdoses and other deaths that potentially could have also involved drug consumption (“possible overdoses”) subsequently undergo toxicology testing. Once toxicological test results are available, the cause of death fields are completed on the death certificate. A death will be classified as a “confirmed overdose” when the cause of death fields contain phrases indicating acute intoxication of a specified drug.

PHSKC evaluated the implications of each case definition on how overdose incidence is measured and characterized.⁵ 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.

| Data Source: | KC Medical Examiner Office | Washington State Vital Statistics Washington State Department of Health, Center for Health Statistics, Death Certificate Data |
|---|---|--|
| Includes overdose deaths that occurred | In King County | Among King County residents |
| Defined “drug overdose” by... | 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) |
| Advantages | Available in real-time Overdose locations, rather than official residence, may serve as better proxy for overdose risk locations | Standardized across health jurisdictions, facilitating cross-jurisdiction comparisons Facilitated estimation of mortality rates, given the alignment of the numerator (# of overdose deaths in King County) and denominator (# of King County residents). |

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| 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> |
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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. Starting November 16, 2022, PHSKC will present demographic information from the Vital Statistics record rather than the MEO record, even when presenting data that utilizes the KCMEO overdose case definition. If the Vital Statistics record is not available, the demographic information will be drawn from the KCMEO record. Although this change will improve the accuracy of the demographic information corresponding to overdose decedents, the ascertainment of race, ethnicity, and gender will still be imperfect.

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.⁶ 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.⁷ This same evaluation suggested that misclassification also biases mortality rate estimates for Hispanic/Latinos and Asian and Pacific Islanders, albeit to a lesser degree.⁷

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.⁸ KCMEO Medicolegal death investigators determine housing status based on information inferred from place and circumstances and/or testimony from witnesses or next of kin. KCMEO’s working definition of “presumed homeless persons” is individuals without permanent housing who lived on the streets or stayed in a shelter, vehicle, or abandoned building at the time preceding death. Decedents who were living in transitional or supportive housing, or in a doubled-up/couch surfing situation treated as a separate category, “living in temporary or supportive housing”.

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.
- **Crude Rates:** Defined as the number of overdose deaths divided by the total number of people in the underlying population.
- **Age-Adjusted Rates:** Minimizes 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>
- **Age-Specific Rates:** Crude rates that are calculated for specific age groups.

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

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8. 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>.