

Integrating Data to Better Understand Fatal Overdoses and Service System Engagement

DCHS Data Insights Series



There is a [national trend of sharp increases in overdose deaths](#) due to opioids and stimulants. King County is experiencing [a similar increase](#). This analysis examines 1,114 overdose deaths between January 2019 and May 2021.

After integrating data across local service systems like hospital emergency departments, behavioral health providers and jails, **this analysis finds that fewer than half (48%) of people who had contact with local service systems and who experienced a fatal overdose in King County (Jan 2019 - May 2021) had received substance use disorder (SUD) services in the year before their overdose.** In other words, a majority of people who experienced a fatal overdose appear not to have had engagement with SUD services prior to that overdose but did have contact with other systems where SUD services could be made available. The urgent utility of this analysis is that it can inform additions of SUD services to other public systems in a way that could reduce future overdose deaths. The end of this brief outlines several specific strategies that may be effective in improving these treatment connections.

These integrated data findings show us which systems people access before a fatal overdose and can inform efforts to increase SUD services access to reduce future deaths.

King County's ongoing work to integrate data provides insights into what services people do or do not receive prior to fatally overdosing. Specifically, the Department of Community and Human Services (DCHS) examined system engagement in the days, weeks, and months prior to a fatal overdose. Our key takeaways include:

- Mental health providers, medical providers, substance use treatment programs, and jails each provide opportunities to reach people who are not receiving SUD services and conduct overdose prevention and engagement or referral into SUD treatment.
- The majority of people who experienced a fatal overdose had recent engagement (within the prior year) with publicly-funded health care, mental health, or jail services.
- At least 52 percent of people who experienced a fatal overdose and had contact with publicly-funded services in King County (Jan 2019-May 2021) were not receiving substance use disorder services in the year prior to their death.
- The most common last contacts were emergency department visits or healthcare visits where a substance use disorder was identified.
- When people's last engagement was being released from a local jail, it was often days or weeks between the release and fatal overdose.

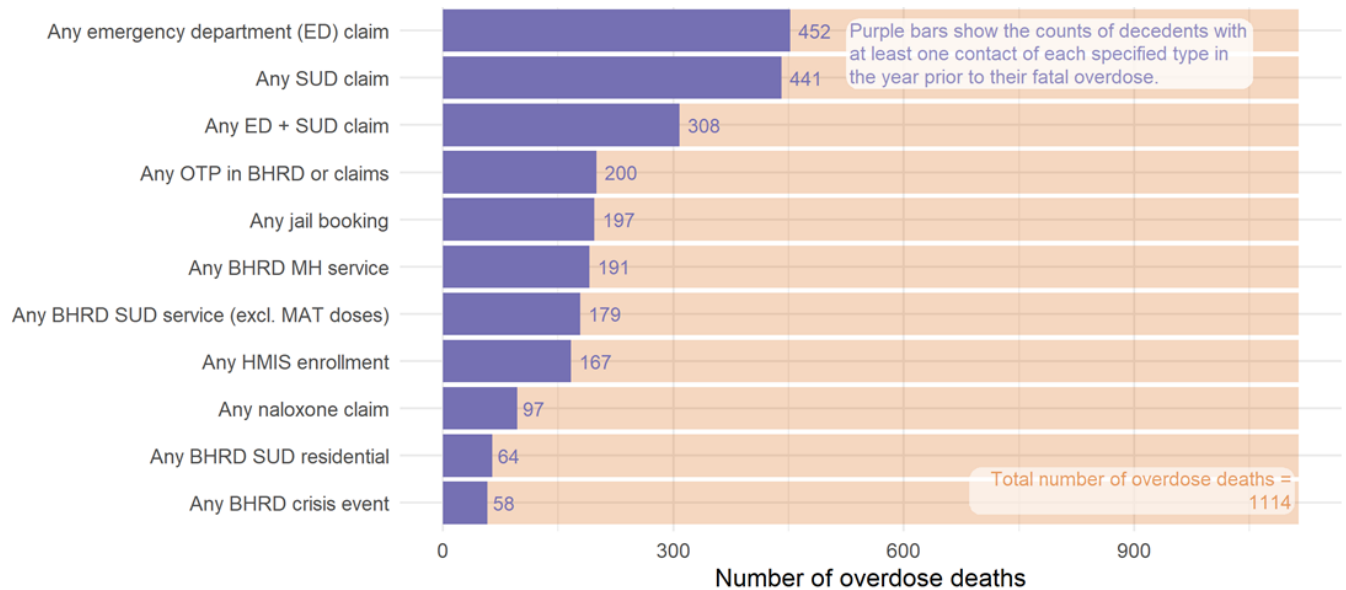
Background

Since 2018, King County DCHS and Public Health—Seattle & King County (PHSKC), in partnership with King County Information Technology (KCIT), have worked to build new, secure infrastructure to link historically siloed administrative databases across the two departments. After coming online early in 2020, this new integrated resource was immediately used to plan for pandemic response and to focus resources to support our most vulnerable neighbors. Linking data from Medicaid, King County’s Behavioral Health and Recovery Division (BHRD), Homeless Management Information System (HMIS) and local jails, DCHS used this new resource to reveal important context for over 1,100 King County overdose deaths since 2019, examining which systems of care people who died of an overdose engaged with in the year prior to their overdose. See the Appendix for more details on our methodology.

Analysis

As illustrated in Figure 1, **decedents were engaged in a wide variety of types of system contact**, and most were *not* receiving services from SUD treatment programs in the year prior to their fatal overdose.

FIGURE 1: PRIOR YEAR SYSTEM ENGAGEMENT TYPES FOR 2019-2021 KING COUNTY OVERDOSE DECEDENTS



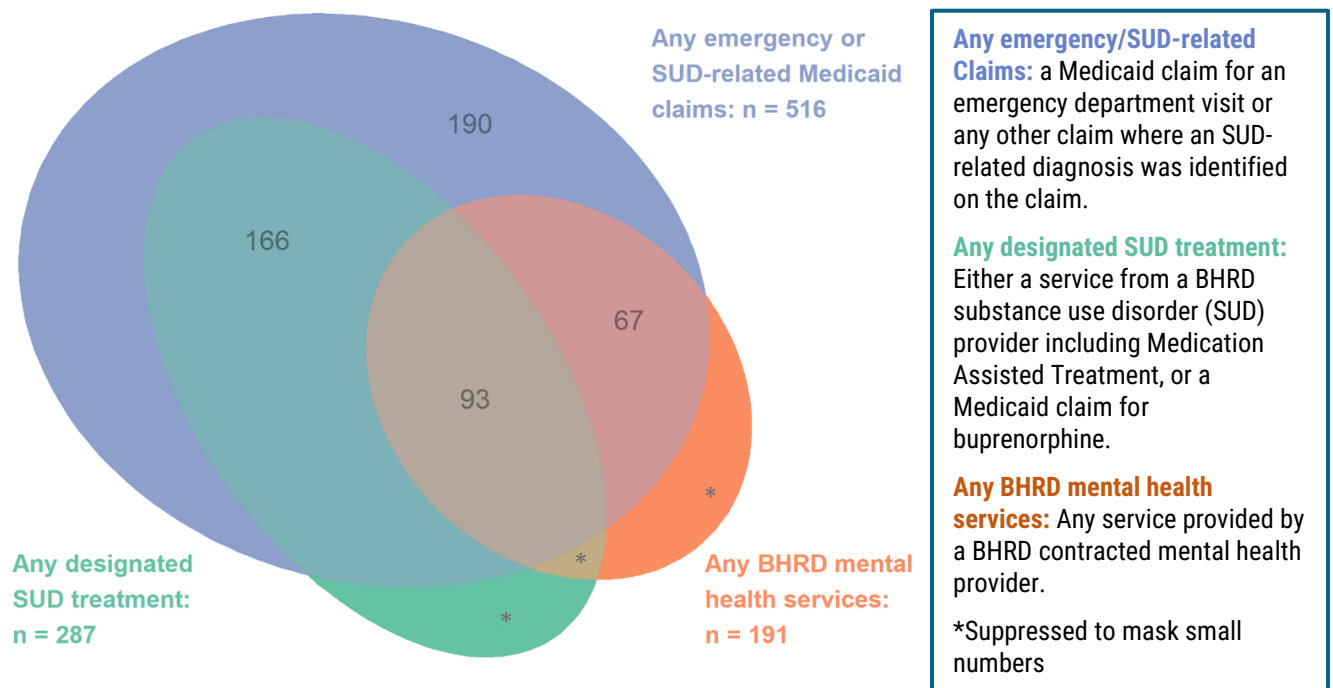
For this analysis, we looked at a targeted subset of services accessed during the year preceding an individual’s death. This included Medicaid-paid emergency department (ED) visits, Medicaid claims with an SUD diagnosis attached, Medicaid claims for Naloxone doses, BHRD-provided opioid treatment programs (OTP), Medicaid prescription claims for OTP, all BHRD SUD or mental health (MH) treatment services, and local jail bookings.

No single public service serves everyone, so improvements should be widely adopted

Decedents may have engaged with zero, one, or many different service systems in the year before their fatal overdose. As Figure 2 illustrates, individuals' contacts with different services overlap, and no one system touches everyone. For example, nearly 300 decedents received services from specialized SUD treatment providers in BHRD or opioid treatment programs while nearly as many received no specific SUD treatment, instead receiving emergency and/or substance use related care only from medical providers (e.g., hospitals or primary care). Some of these decedents without SUD treatment did interact with King County's publicly-funded behavioral health system, but only with mental health providers.

There is no one service system that touches all the different people who suffer fatal overdoses in King County. Mental health providers, medical providers, substance use treatment programs, and jails (often through jail health services) each provide opportunities to support people who are not connected to other systems of care.

FIGURE 2: OVERLAP OF SUD TREATMENT, MEDICAID CLAIMS, AND MENTAL HEALTH CARE FOR KING COUNTY OVERDOSE DECEDENTS 2019-2021

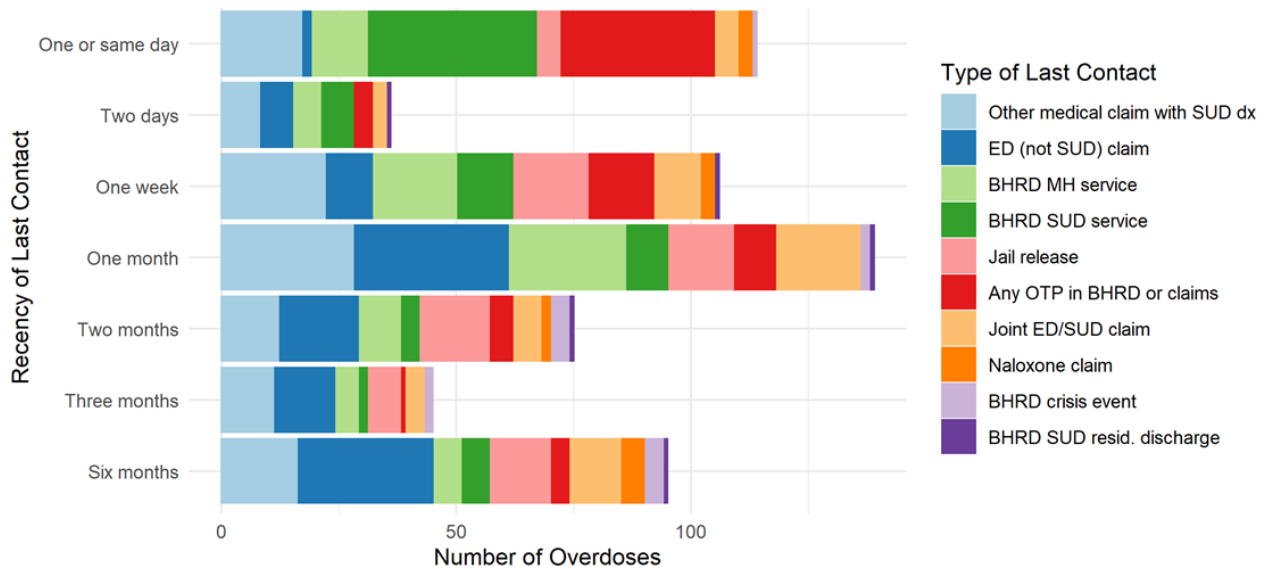


Most decedents’ last system contact was more than a week before their fatal overdose. SUD treatment services are most likely to happen very close to overdose date, while other types of last contact like jail release are more likely to happen weeks or months before overdose.

Knowing which system a decedent last contacted before overdose can highlight which intervention strategies may be effective. Of decedents with any public system engagement in the six months before their fatal overdose, nearly half had some system contact within one week of their fatal overdose. Further, as Figure 3 illustrates, about 125 decedents had a system contact between one week and one month prior to their fatal overdose, while another 200 had last engaged two to six months before overdose.

Overall, the most common system contacts prior to fatal overdose involved medical claims for either SUD-related conditions or emergency department visits. These are most common at all time frames more than a day or two prior to overdose. About 150 decedents had a system contact within a day or two of their death. Opioid Treatment Programs and other SUD services funded by BHRD together make up the most common contact type in the day or two preceding fatal overdose. This may be because many of these programs, such as receiving methadone or intensive outpatient treatment, involve frequent or daily contact.

FIGURE 3: TIMING AND DISTRIBUTION OF TYPES OF LAST CONTACT FOR KING COUNTY OVERDOSE DECEDENTS 2019-2021



Other types of system engagement are more likely when the gap between last contact and fatal overdose is longer. BHRD-funded mental health services are the last system engagement for 79 decedents; these last contacts are more likely within a week or a month of death, though not uncommon several months prior to overdose. Releases from local (municipal or County) jails are a prominent last event for many decedents, with 70 decedents’ last contact with any system

being a release from jail. Notably, jail releases as a decedent's last system contact are less likely to be within a week of fatal overdose. Most people for whom a release from jail is their last system contact go days or weeks without any other system engagement before their overdose.

In summary, we see that, prior to a fatal overdose, many people had recent contact with physical and/or mental health services but were not engaged with designated substance use disorder (SUD) treatment programs.

King County and Its Partners Can Address These Gaps By:

- Sharing data analysis with cross-system partners, identifying additional opportunities along the continuum of care to increase client engagement and improving overdose prevention interventions in medical, jail and mental health settings.
- Increasing provision of overdose prevention trainings within the King County Integrated Care Network.
- Ensuring patients who present at EDs and patients enrolled in behavioral health care with opioid use disorder are prescribed opiate overdose reversal medication (Naloxone), in accordance with SB 5195.
- Creating more opportunities to support transitions of care linkages in settings like the ED and jails with Certified Peer Support Specialists.
- Expanding the Jail Health Services Medication for Opioid Use Disorder program.
- Continuing support of Laced and Lethal Overdose Prevention Campaign that offers direct access to Naloxone and community education for those at risk.
- Periodically updating this analysis to assess trends and whether interventions are working to reduce overdose deaths.

Release Notes

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Appendix: Methodology

Since 2018, DCHS, Public Health Seattle-King County (PHSKC), and King County Information Technology (KCIT) have collaborated to build new data infrastructure that integrates client data from the Behavioral Health and Recovery Division, King County Medicaid enrollments and claims, local jail bookings, and other health and human services datasets on an ongoing basis. This technology uses highly customized identity linkage algorithms to create a unique person identifier that allows analysts to securely and consistently identify a unique individual across previously siloed databases.

Separately, the King County Medical Examiner's Office (MEO) maintains records of their investigations into "sudden, unexpected and unnatural deaths". Overdose deaths usually fall into this category and are investigated, so can be identified within these MEO records. Using personal identifiers from the MEO investigation, people recorded with a death from overdose were linked to their individual records in other systems, where available, via our secure, integrated client database. We then queried each system's source database to identify which types of system engagement decedents had during the year prior to their fatal overdose. We included any events with a date within one year of an individual's recorded date of death.

Some system contact is inevitably not included in this analysis. We only identify medical care that was paid through Medicaid; it is likely that there are more interactions with hospitals and the health care system for some individuals than we record. Variability in names or other personal identifiers mean some decedents may not link to records in our administrative databases despite the existence of a corresponding record. In addition, it is important to note that decedents who have not been receiving publicly funded services will not link to our administrative records; this does not mean that they did not receive privately funded similar care from providers prior to overdose.

Source Data Systems

MEO OVERDOSE DEATHS: All overdose deaths 1/1/2019 to 5/28/2021 that involved euphoric drugs (including opioids, meth, cocaine or crack, benzodiazepines, other prescription depressants, antidepressants, muscle relaxants, and hallucinogens). PHSKC maintains a [public dashboard](#) presenting high level trends within these overdose deaths.

BEHAVIORAL HEALTH (BHRD): Database including mental health, substance use, and crisis care authorizations and services delivered to clients through King County's contracted behavioral health providers.

MEDICAID CLAIMS: Medicaid claims data extract for King County residents available through a data sharing agreement with the Washington State Health Care Authority.*

JAIL BOOKINGS: Jail booking start and end dates from King County Dept. of Adult and Juvenile Detention facilities and five regional municipal jails, all available through data sharing agreements with relevant authorities.

HOMELESS MANAGEMENT INFORMATION SYSTEM (HMIS): Database that secures information about homeless crisis response, homeless housing programs, and housing stability programs in King County.

TABLE 1: SYSTEM ENGAGEMENT DEFINITIONS

Type of system contact	Source: Description
Any ED claim	Medicaid Claims: Any claim with a date within one year before death identified as an emergency department visit by claim source and procedure and/or place of service.
Any SUD claim	Medicaid Claims: Any claim with a date within one year before death with a substance use disorder diagnosis (dx) code. This excludes SUD-related claims with a service start date of the day of death as overdose itself may generate SUD-related Medicaid claims.
Any OTP	BHRD and/or Medicaid claims: With a date within one year of death, either a methadone dose reported the OTP program in the BHRD database or a Medicaid Claim for a MAT dose or a filled Buprenorphine or Naltrexone prescription.
Any jail booking	DAJD or municipal jails data extracts: A booking in any of King County adult and juvenile detention centers or in one of the local municipal jails with a booking release date within one year of death.
Any BHRD MH service	BHRD database: Any service with a mental health treatment focus reported by a BHRD mental health provider on a date within one year of death.
Any BHRD SUD service (excl. MAT)	BHRD database: Any service with a substance use disorder treatment focus reported by a BHRD substance use treatment provider with a date within one year of death, excluding OTP methadone doses
Any HMIS enrollment	Homeless Management Information System (HMIS): Any enrollment active with an HMIS participating agency providing housing or services in the year prior to death. Includes homeless crisis response, homeless housing programs (e.g. permanent supportive housing), and housing stability programs.
Any naloxone claim	Medicaid claims: Any pharmacy claim for Naloxone within one year before overdose
Any BHRD SUD residential	BHRD database: Any enrollment in a BHRD funded SUD residential treatment program with a discharge date within one year of death
Any BHRD crisis event	BHRD database: Any BHRD crisis system service or engagement within one year of death.