

**Title:** Comparing Trends of Fatal and Non-Fatal Drug Overdoses in Marin County, California, Mid-2018–2021

**Authors:** Ou Suk (Andrew) Kwon, Jasmine Soriano, Maura Nakahata, Lee Ann Prebil, Matthew Willis

**Background:** Since 2019, fatal drug overdoses have increased nationwide. While non-fatal overdoses are a risk factor for a subsequent fatal event, effective surveillance for non-fatal overdoses remains a challenge. Better understanding the characteristics of fatal and non-fatal overdoses at a local level can help inform prevention strategies. We aimed to compare the characteristics of people who experience overdose events and to characterize overdose trends across three data sources.

**Method:** We used data from the California Vital Records Business Investigation System (deaths), ImageTrend (EMS), and California Department of Health Care Access and Information (ED) to examine demographic characteristics and overall rates of fatal and non-fatal drug overdoses among data sources from mid-2018 through 2021 in Marin County, California. We calculated rates per 100,000 residents and proportions of overdose events by age category, sex, and race/ethnicity. The demographic distribution of overdose events was compared with the distribution of the overall 2021 Marin County population based on California Department of Finance estimates. EMS and death data identified potential overdoses by a combination of ICD-10 codes and text-field searches. ED data drug overdose criteria were defined by a primary drug toxicity ICD-10 code.

**Results:** From mid-2018 through 2021, there were 173 overdose deaths, 2,183 non-fatal overdose EMS calls and 688 non-fatal overdose ED visits (2018–2020). The rates of fatal drug overdoses increased from July-December, 2018 (9.4 per 100,000) through 2021 (25.5 per 100,000). There was a non-significant change in non-fatal overdose-related EMS calls (239.6 per 100,000 to 242.4 per 100,000) and ED visits (107.6 per 100,000 to 115.1 per 100,000) over the same time period. Of fatal overdoses, 22% were among people younger than 35 years old, compared to 41% of EMS calls and 57% of ED visits. The race/ethnicity and sex distributions were similar among fatal and non-fatal events. Fatal events were more likely to be among residents of non-Hispanic white race and male sex.

**Conclusion:** The vast majority of overdose events in Marin County are non-fatal. Tracking non-fatal events through diverse data sources provides a more complete understanding of local substance use burden and opportunities to intervene to prevent overdose deaths. This more holistic approach to overdose surveillance can provide more targeted intervention opportunities in an ever-changing drug overdose landscape.