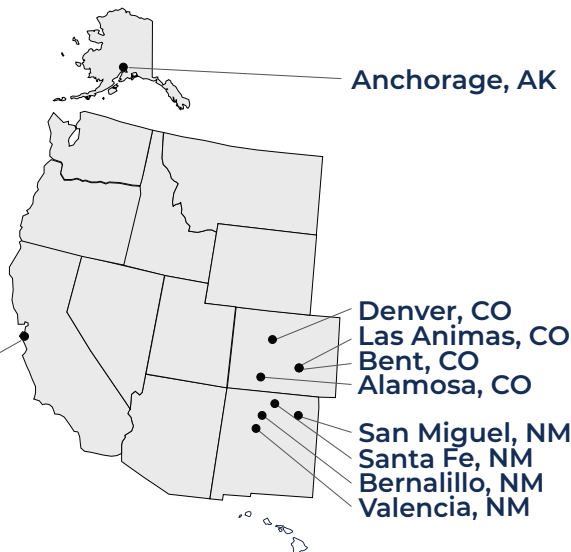


NDEWS Special Report EMS encounters involving nonfatal fentanyl overdoses January 1, 2023 - December 31, 2025

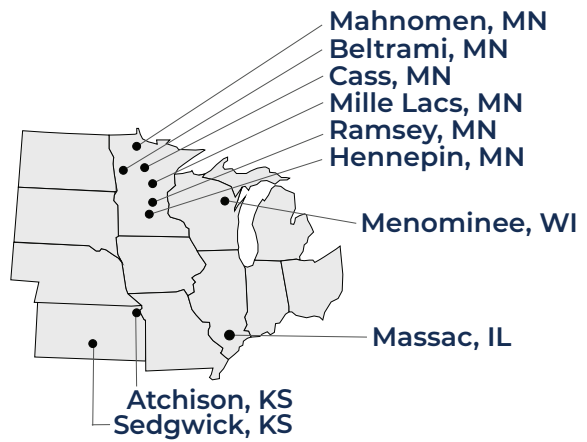
Out of 229,083 EMS encounters involving nonfatal fentanyl overdoses from January 1, 2023 to December 31, 2025, 101,518 (44.3%) occurred in Western states, 23,975 (10.5%) in Midwestern states, 79,676 (34.8%) in Southern states and 23,914 (10.4%) in Northeastern states.

US counties with the highest rates of EMS encounters involving nonfatal fentanyl overdoses per 10,000 population January 1, 2023 - December 31, 2025

Western States n = 101,518



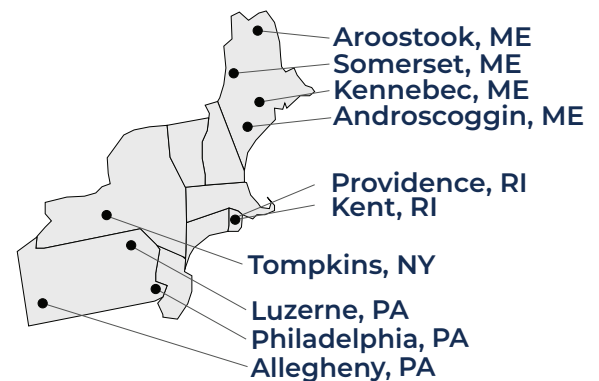
Midwestern States n = 23,975



Southern States n = 79,676



Northeastern States n = 23,914



**US counties with the highest rates of EMS encounters involving nonfatal
fentanyl overdoses per 10,000 population
January 1, 2023 - December 31, 2025
n = 229,083**

**Western States
n = 101,518**

**Midwestern States
n = 23,975**

County*	EMS encounters per 10,000 population	County*	EMS encounters per 10,000 population
Denver, CO	84.97	Mahnomen, MN	52.99
San Francisco, CA	82.07	Hennepin, MN	43.31
Bernalillo, NM	71.15	Ramsey, MN	36.58
Las Animas, CA	58.25	Beltrami, MN	34.57
Anchorage, AK	56.39	Mille Lacs, MN	29.07
Alamosa, CO	53.15	Sedgwick, KS	27.64
Bent, CO	52.28	Atchison, KS	23.73
San Miguel, NM	49.37	Cass, MN	23.72
Santa Fe, NM	48.96	Menominee, WI	22
Valencia, NM	48.21	Massac, IL	22

**Southern States
n = 79,676**

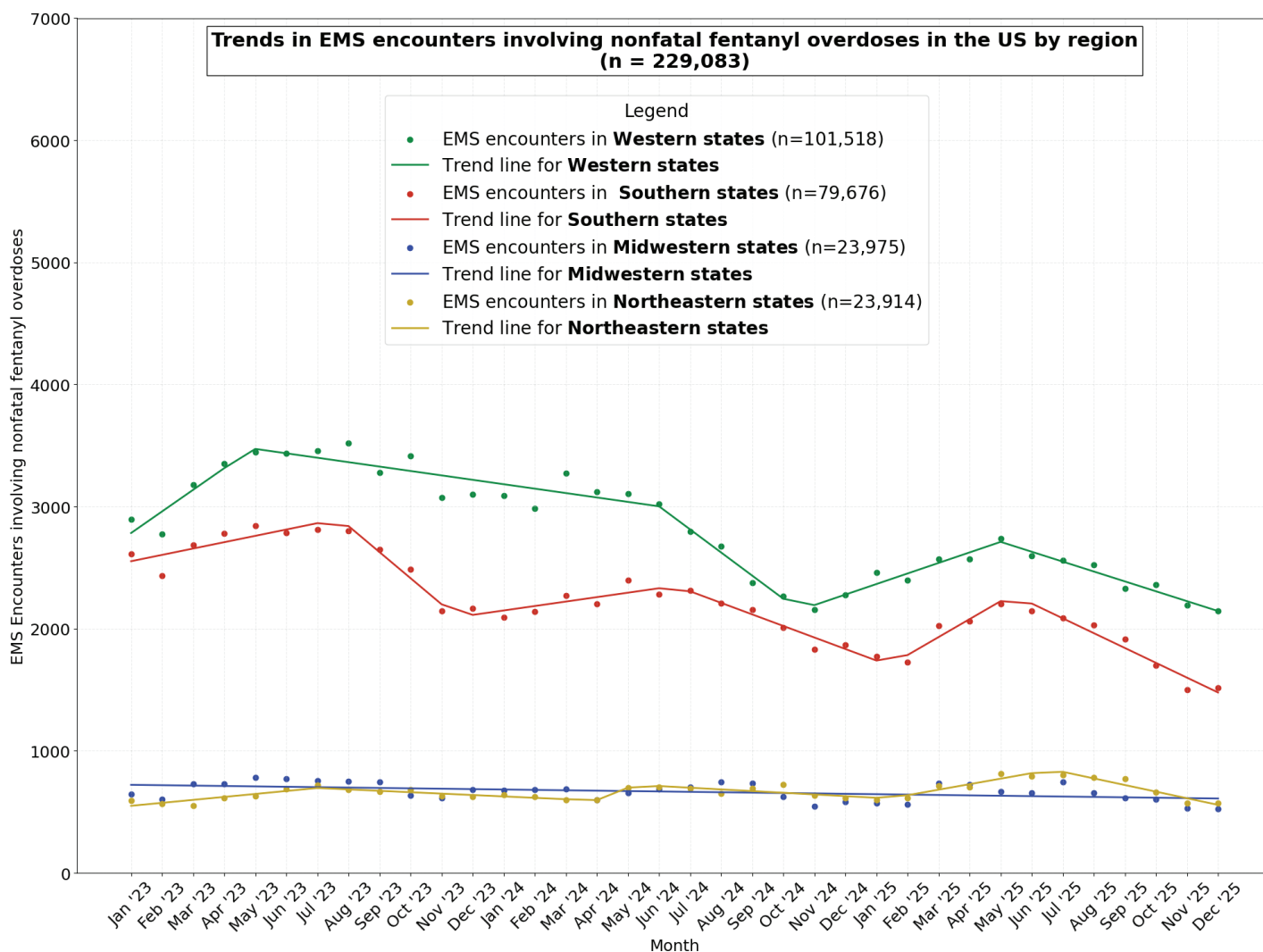
**Northeastern States
n = 23,914**

County*	EMS encounters per 10,000 population	County*	EMS encounters per 10,000 population
Gaston, NC	53.41	Allegheny, PA	41.05
Clarke, GA	51.57	Providence, RI	23.16
Swain, NC	50.78	Tompkins, NY	17.67
Rutherford, NC	38.76	Somerset, ME	16.19
York, SC	36.32	Kent, RI	14.58
Pinellas, FL	36.3	Aroostook, ME	13.77
Burke, NC	35.83	Androscoggin, ME	13.08
Buncombe, NC	32.98	Kennebec, ME	13.01
Caldwell, NC	32.89	Philadelphia, PA	12.94
Walker, AL	31.83	Luzerne, PA	12.4

*Note: Colors reflect EMS encounters grouped by state

Continued on the next page

Regional Trends in EMS encounters involving nonfatal fentanyl overdoses in the US by month



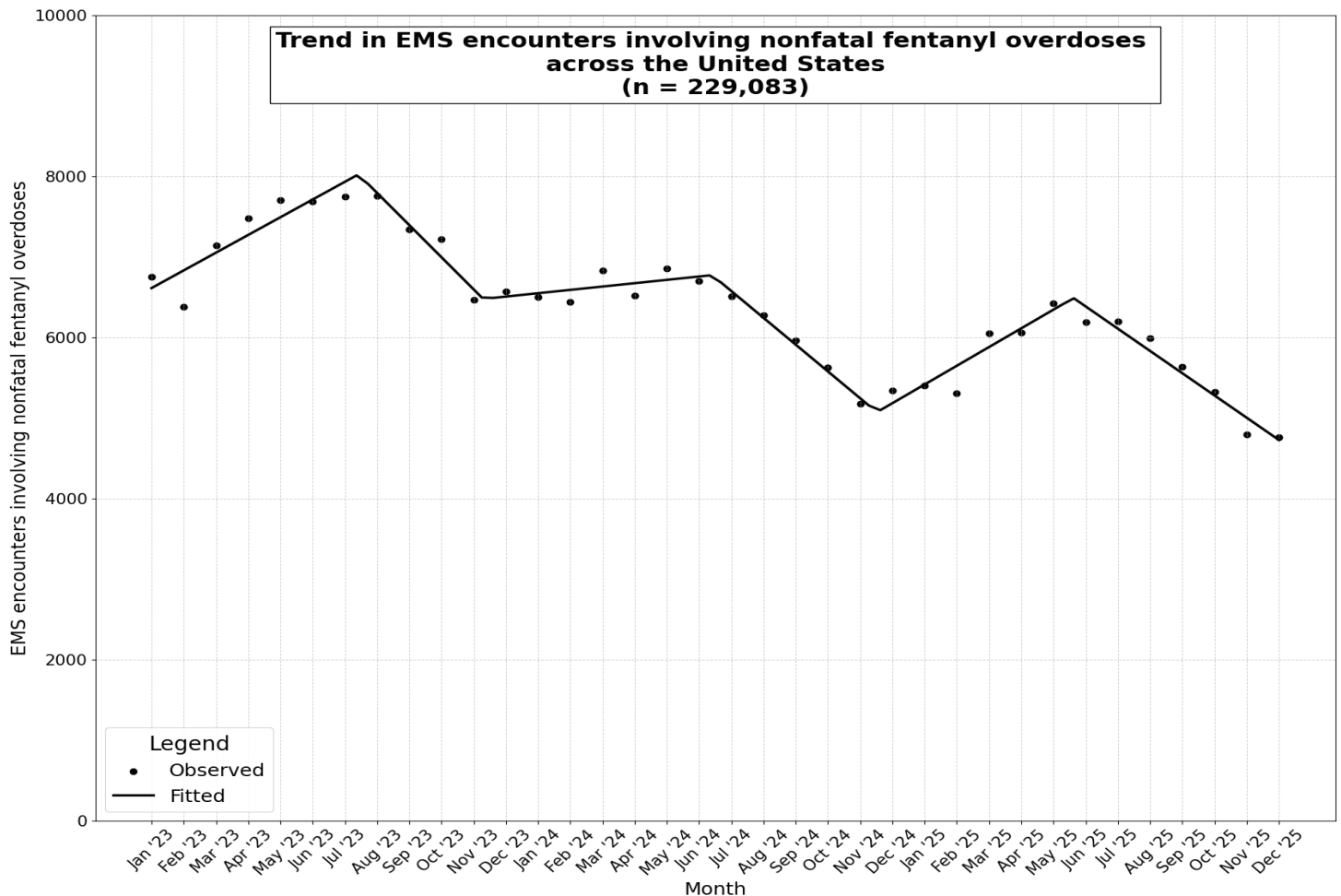
In the Western region, monthly EMS encounters involving nonfatal fentanyl overdoses increased significantly from January to May 2023 ($\beta = 0.05$, SE = 0.016, $p = 0.002$), followed by a slight but significant decline from May 2023 to June 2024 ($\beta = -0.07$, SE = 0.02, $p < 0.001$). A more pronounced decrease was observed from June to November 2024 ($\beta = -0.05$, SE = 0.02, $p = 0.003$). The trend then increased from November 2024 to May 2025 ($\beta = 0.10$, SE = 0.02, $p < 0.001$), before declining again from May through December 2025 ($\beta = -0.07$, SE = 0.01, $p < 0.001$).

In the Southern region, monthly EMS encounters involving nonfatal fentanyl overdoses increased from January to August 2023 ($\beta = 0.018$, SE = 0.007, $p = 0.02$). This was followed by a significant decline from August to November 2023 ($\beta = -0.120$, SE = 0.05, $p = 0.04$). The trend then shifted to a significant increase from November 2023 to July 2024 ($\beta = 0.12$, SE = 0.05, $p = 0.049$). A pronounced decrease was observed from July 2024 to January 2025 ($\beta = -0.06$, SE = 0.01, $p < 0.001$). Encounters subsequently increased from January to June 2025 ($\beta = 0.01$, SE = 0.02, $p < 0.001$), before declining sharply from June through December 2025 ($\beta = -0.012$, SE = 0.02, $p < 0.001$).

In the Midwestern region, monthly EMS encounters involving nonfatal fentanyl overdoses followed a single, statistically significant downward trend from January 2023 through December 2025, with no detected joinpoints. Encounters declined steadily over the study period ($\beta = -0.005$, SE = 0.002, $p = 0.004$).

In the Northeastern region, monthly EMS encounters involving nonfatal fentanyl overdoses increased from January to July 2023 ($\beta = 0.04$, SE = 0.01, $p = 0.003$), followed by a significant decline from July 2023 to March 2024 ($\beta = -0.058$, SE = 0.01, $p < 0.001$). Although from March to June 2024, this rise was not significant ($\beta = 0.08$, SE = 0.07, $p = 0.3$). Encounters then decreased from June 2024 to January 2025 and were also not significant ($\beta = -0.08$, SE = 0.07, $p = 0.3$). However, from January to July 2025, encounter significantly rose ($\beta = 0.08$, SE = 0.02, $p < 0.001$). Encounters then significantly decreased during July 2025 to December 2025 ($\beta = -0.14$, SE = 0.02, $p < 0.001$).

Continued on the next page



Monthly EMS encounters involving nonfatal fentanyl overdoses exhibited multiple significant trend changes from January 2023 through December 2025. Encounters initially increased from January to July 2023 ($\beta = 0.033$, $SE = 0.007$, $p < 0.001$), followed by a significant decrease from July to November 2023 ($\beta = -0.08$, $SE = 0.02$, $p = 0.001$). From November 2023 to July 2024, encounters rose significantly ($\beta = 0.05$, $SE = 0.02$, $p = 0.028$). A decline was observed from July to November 2024 ($\beta = -0.07$, $SE = 0.02$, $p = 0.006$), followed by an increase from November 2024 to June 2025 ($\beta = 0.1$, $SE = 0.02$, $p = 0.003$). Encounters then significantly decreased again from June through December 2025 ($\beta = -0.08$, $SE = 0.01$, $p < 0.001$).

****Methodology:** Trends in EMS encounters involving nonfatal fentanyl overdoses were examined using joinpoint regression also known as broken line, piecewise, multiphase or segmented regression. This method fits weighted least-square regression models to EMS encounters on a log transformed scale. It also uses Monte Carlo permutation tests with a Bonferroni correction for multiple testing and identifies models with the best-fit set of joinpoints. These are points (or knots) in trends that indicate significant shifting points. Poisson models were specified under the assumption of non-constant variance or heterogeneity over time. Separate models were run for each US region and for the national total to detect region-specific trends. Both national and regional models demonstrated statistically significant changes over the study period.

EMS encounters involving nonfatal fentanyl overdoses were included if the encounter involved an emergency response with patient contact, contained a documented mention of fentanyl in the patient complaint or narrative (including common misspellings), with no fentanyl recorded as having been administered by EMS. The EMS encounters were defined based on the Enhanced State Opioid Overdose Surveillance (ESOOS) criteria as defined by the state of Florida.

All dispatch types above follow the guidelines set by the National Emergency Medical Services Information System (NEMSIS).

Limitations: Biospatial.io data reflect pre-hospital EMS encounters and do not include hospital outcomes, toxicology confirmation, medical history, or prescription information. Much of the data relies on clinical impressions, self-report, or bystander accounts. Additionally, EMS encounters involving nonfatal fentanyl overdoses may be underreported, overreported, or misclassified.

Continued on the next page

EMS Encounters Involving Nonfatal Fentanyl Overdoses by Incident Patient Disposition

January 1, 2023 - December 31, 2025
n = 220,083

