

CDC's Enhanced State Opioid Overdose Surveillance (ESOOS) Program

Archived Provisional Data Report from April 2018

All data are preliminary and may change as more data are received from state and jurisdiction health departments. Over time, methodology may be refined and impact these provisional percent change estimates. Please refer to the most recent data available at: cdc.gov/drugoverdose/data/nonfatal/cdc-esoos.html.

CDC's [Enhanced State Opioid Overdose Surveillance](#) (ESOOS) program captures different types of data for both fatal and nonfatal overdoses. Twelve states were initially funded in September 2016, and an additional 20 states and the District of Columbia were funded in September 2017, to share data on nonfatal overdoses with CDC on a quarterly basis. The most current data available comes from the most recent state data received during April 2018. CDC's ESOOS program captures some data via CDC's National Syndromic Surveillance Program ([NSSP](#)) [BioSense](#) platform.

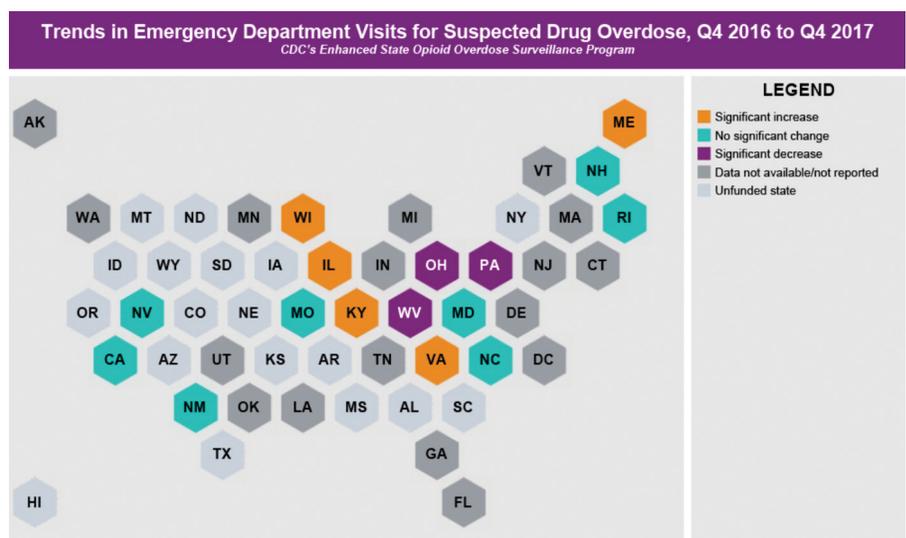
ESOOS collects hospital billing data, which are collected by hospitals and shared with state and local partners. Hospital billing data include a standardized discharge diagnostic code (i.e., International Classification of Diseases, Tenth Edition, Clinical Modification, ICD-10-CM) used to categorize a visit as an overdose. The time lag between the date of a particular emergency department (ED) visit and the availability of billing data varies widely by state (e.g., monthly to annually).

ESOOS also collects syndromic surveillance data, which include information on the purpose of an ED visit using the chief complaint free text field and a standardized discharge diagnostic code (i.e., ICD-10-CM) typically included in hospital billing data. These data can serve as an early warning system. They have become an important resource for tracking public health outbreaks, and can provide value in uncovering trends in suspected opioid overdoses quickly.

ALL DRUGS

Suspected overdose estimates for a given point in time may change as information on the ED visit is updated, so data should be interpreted with caution. For the most recent quarter change, the third quarter (July–September) of 2017 to the fourth quarter (October–December) of 2017, ESOOS states reported an 8% decrease in all drug overdoses. Decreases in all drug overdoses occurred among males, females, and all age groups, except those 11–24 years during this time period.

Overall, ESOOS states reported a 2% decrease in all drug overdoses from the fourth quarter (October–December) of 2016 to the fourth quarter (October–December) of 2017. Drug overdoses among males and people aged 55 years and older decreased by 3% during this time period. Three states (Ohio, Pennsylvania, and West Virginia) reported a decrease in all drug overdoses from the fourth quarter of 2016 to the fourth quarter of 2017. Increases in all drug overdoses during this time period occurred in five states (Illinois, Kentucky, Maine, Virginia, and Wisconsin).¹



Centers for Disease
Control and Prevention
National Center for Injury
Prevention and Control

CDC's Enhanced State Opioid Overdose Surveillance (ESOOS) Program:* Trends[†] in Emergency Department Visits for Suspected Drug Overdose[§] for Selected States Providing Data, Q4 2016 (October 1, 2016–December 31, 2016) to Q4 2017 (October 1, 2017–December 31, 2017),[¶] by State

	Yearly Percent Change		Quarterly Percent Change			
	Q4 2016 to Q4 2017 (16 states)	Category, Q4 2016 to Q4 2017	Q4 2016 to Q1 2017 (16 states)	Q1 2017 to Q2 2017 (19 states)	Q2 2017 to Q3 2017 (19 states)	Q3 2017 to Q4 2017 (21 states)
Overall	-2.09	Significant Decrease	0.51	10.19	-3.88	-8.03
State						
Alaska**	n/a	Data not available / not reported	n/a	n/a	n/a	n/a
California	-0.73	No Significant Change	-4.51	9.73	0.32	-5.55
Connecticut**	n/a	Data not available / not reported	n/a	n/a	n/a	n/a
Delaware ^{††}	n/a	Data not available / not reported	n/a	n/a	n/a	n/a
District of Columbia ^{††}	n/a	Data not available / not reported	n/a	n/a	n/a	n/a
Florida ^{§§}	n/a	Data not available / not reported	n/a	n/a	n/a	n/a
Georgia**	n/a	Data not available / not reported	n/a	8.41	-10.38	-2.28
Illinois	6.68	Significant Increase	0.93	6.33	12.04	-11.28
Indiana**	n/a	Data not available / not reported	n/a	n/a	n/a	3.58
Kentucky	5.62	Significant Increase	20.53	6.22	-11.06	-7.24
Louisiana**	n/a	Data not available / not reported	n/a	n/a	n/a	n/a
Maine	15.05	Significant Increase	2.77	15.22	-2.01	-0.84
Maryland	-0.61	No Significant Change	1.24	20.00	-12.73	-6.26
Massachusetts ^{††}	n/a	Data not available / not reported	n/a	n/a	n/a	n/a
Michigan**	n/a	Data not available / not reported	n/a	n/a	n/a	n/a
Minnesota**	n/a	Data not available / not reported	n/a	-1.20	13.95	-2.85
Missouri	2.47	No Significant Change	8.99	1.64	3.75	-10.84
Nevada	-4.07	No Significant Change	-8.87	2.47	7.63	-4.56
New Hampshire	-4.84	No Significant Change	-8.32	25.83	-9.61	-8.75
New Jersey**	n/a	Data not available / not reported	n/a	n/a	n/a	n/a
New Mexico	-5.99	No Significant Change	-0.49	4.40	-7.22	-2.47
North Carolina	-0.43	No Significant Change	-2.26	11.58	3.78	-12.03
Ohio	-9.32	Significant Decrease	12.18	15.93	-18.62	-14.31
Oklahoma ^{§§}	n/a	Data not available / not reported	n/a	n/a	n/a	n/a
Pennsylvania	-5.47	Significant Decrease	-1.02	12.11	-1.05	-13.91
Rhode Island	9.20	No Significant Change	-7.90	10.02	-2.43	10.45
Tennessee ^{††}	n/a	Data not available / not reported	n/a	n/a	n/a	n/a
Utah**	n/a	Data not available / not reported	n/a	-3.50	-15.04	22.16
Vermont**	n/a	Data not available / not reported	n/a	n/a	n/a	n/a
Virginia	5.24	Significant Increase	1.18	9.87	-5.03	-0.31
Washington**	n/a	Data not available / not reported	n/a	n/a	n/a	-1.09
West Virginia	-27.21	Significant Decrease	-15.55	4.11	-16.07	-1.37
Wisconsin	26.19	Significant Increase	29.30	8.80	9.31	-17.94

* Data come from states participating in CDC's Enhanced State Opioid Overdose Surveillance ([ESOOS](#)) program. Every four months, states share overdose data from emergency department (ED) visits to CDC, including syndromic or hospital billing data to identify all drug, opioid, and/or heroin overdoses that presented in the ED and demographic characteristics of those who overdosed, such as sex, age, and county of patient residence. States have several options for how they relay their ED data to CDC. States choose to share ED visits for suspected overdoses (e.g., all drug, opioid, and heroin) either directly with CDC using a secure server or they can allow CDC to have access to their state's data in the National Syndromic Surveillance Program's ([NSSP](#)) BioSense platform. The number of states included in the calculations of quarterly and yearly change will vary and will increase over time as additional states share data with CDC. Comparisons between states should not be made due to variations in data quality, completeness, and reporting across states.

† To account for changes occurring across time, quarterly and yearly trends for the rate of ED visits involving suspected drug overdoses (e.g., ED visits involving drug overdoses divided by total ED visits and multiplied by 10,000) were analyzed by U.S. state. Yearly change, controlling for seasonal effects, was estimated as the change from the final quarter of the previous year to the final quarter of the current year (e.g., fourth quarter 2016 to fourth quarter 2017). Quarterly rate changes were calculated for all quarters. Significance testing was conducted using chi-square tests. Data table provides the yearly and quarterly rate changes by state. Bolded estimates indicate statistically significant results between quarters.

‡ The case definitions used by states draw from multiple fields within emergency department (ED) data. For states with ED billing or discharge data visits assigned *International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM)* codes, *International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM)* codes, or [SNOMED](#) (Systematized Nomenclature of Medicine—Clinical Terms) codes consistent with any drug, opioid, or heroin overdose were included. In addition, states using syndromic ED data could use the ICD-9-CM, ICD-10-CM, or SNOMED codes to identify overdoses, along with free text fields such as chief complaint, clinical impression, or triage notes. Free text searches included text strings indicating an overdose or poisoning and text strings indicating the involvement of a drug (e.g., "drug overdose"). Common misspellings of key search terms were also included to increase specificity and sensitivity. States either developed their own definitions to capture the specific text and diagnoses used in their facilities or relied on pre-set queries developed by CDC (see [March 2018 Vital Signs](#)).

¶ The following are several important caveats to consider when interpreting the data presented. (1) Data sent from facilities to health departments may be delayed or may stop for a period of time. When facilities begin sharing data again, information about visits during the lapse may never be shared. (2) For syndromic data, information from ~70% of visits arrive within 48 hours as the chief complaint of the visit. However, the chief complaint field may be incomplete. As updates to visits arrive weeks later, relevant overdose discharge diagnosis codes or revised chief complaint text may be received. Therefore, rates may change over time as the visit records are completed and new drug overdose visits are identified. (3) Because these data are not finalized based on toxicological results, they are not considered confirmed cases, but "suspected" overdoses. Data collected from syndromic surveillance should not be interpreted or represented as exact counts. (4) Data likely represent an undercount, given inaccuracies in coding and missing chief complaint information.

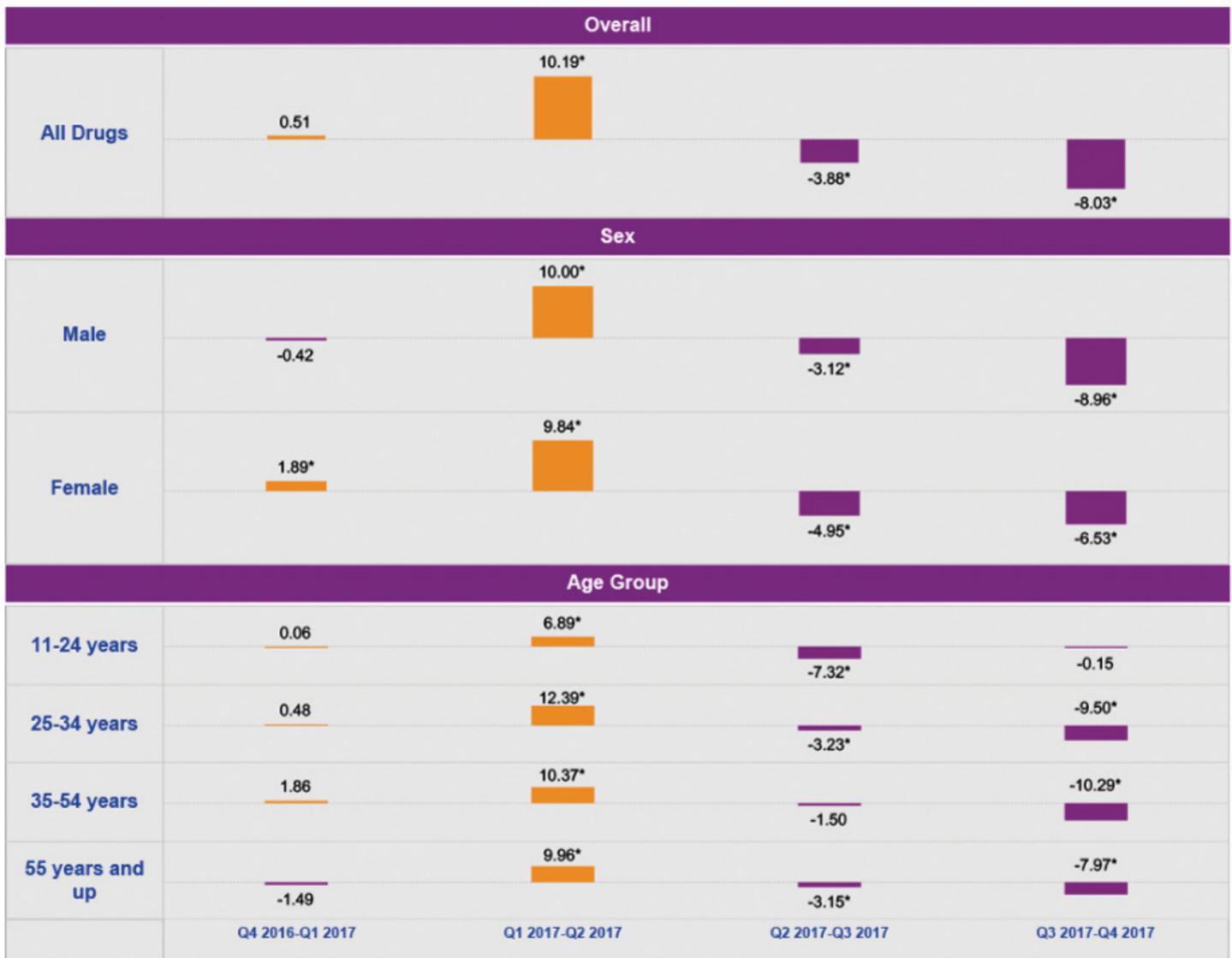
** The funded ESOOS state did not provide CDC enough quarters of data to calculate yearly percent change. Some states provided enough data to calculate some quarterly changes.

†† The funded ESOOS state does not provide CDC estimates for emergency department visits for suspected drug overdose.

‡‡ The funded ESOOS state does not provide CDC emergency department data.

Percent Changes in Suspected Drug Overdoses for Each Quarter, From Q4 2016 to Q4 2017, by Sex and Age Group

CDC's Enhanced State Opioid Overdose Surveillance Program



LEGEND

Decrease █ █ Increase

* Statistically significant

CDC’s Enhanced State Opioid Overdose Surveillance (ESOOS) Program:* Percent Changes[†] in All Drug Overdoses[§] for Selected States Providing Data,[¶] Q4 2016 (October 1, 2016–December 31, 2016) to Q4 2017 (October 1, 2017–December 31, 2017), by Sex and Age Group

	Quarterly Percent Change				Yearly Percent Change
	Q4 2016 to Q1 2017 (16 states)	Q1 2017 to Q2 2017 (19 states)	Q2 2017 to Q3 2017 (19 states)	Q3 2017 to Q4 2017 (21 states)	Q4 2016 to Q4 2017 (16 states)
Overall	0.51	10.19	-3.88	-8.03	-2.09
Sex					
Male	-0.42	10.00	-3.12	-8.96	-3.39
Female	1.89	9.84	-4.95	-6.53	-0.58
Age group					
11–24	0.06	6.89	-72.00	-0.15	-1.02
25–34	0.48	12.39	-3.23	-9.50	-0.85
35–54	1.86	10.37	-1.50	-10.29	-0.66
55 and up	-1.49	9.96	-3.15	-7.97	-3.46

* Data come from states participating in CDC’s Enhanced State Opioid Overdose Surveillance (ESOOS) program. Every four months, states share overdose data from emergency department (ED) visits to CDC, including syndromic or hospital billing data to identify all drug, opioid, and/or heroin overdoses that presented in the ED and demographic characteristics of those who overdosed, such as sex, age, and county of patient residence. States have several options for how they relay their ED data to CDC. States choose to share ED visits for suspected overdoses (e.g., all drug, opioid, and heroin) either directly with CDC using a secure server or they can allow CDC to have access to their state’s data in the National Syndromic Surveillance Program’s (NSSP) BioSense platform. The number of states included in the calculations of quarterly and yearly change will vary and will increase over time as additional states share data with CDC. Comparisons between states should not be made due to variations in data quality, completeness, and reporting across states.

[†] To account for changes occurring across time, quarterly and yearly trends for the rate of ED visits involving suspected drug overdoses (e.g., ED visits involving drug overdoses divided by total ED visits and multiplied by 10,000) were analyzed overall and by sex, age group, and U.S. state. Quarterly rate changes were calculated for all quarters. Yearly change, controlling for seasonal effects, was estimated as the change from the final quarter of the previous year to the final quarter of the current year (e.g., fourth quarter 2016 to fourth quarter 2017). Significance testing was conducted using chi-square tests. Data table provides quarterly and yearly estimates of change for all ESOOS states with available data overall, and by sex and age. Bolded estimates indicate statistically significant results between quarters.

[§] The case definitions used by states draw from multiple fields within emergency department (ED) data. For states with ED billing or discharge data visits assigned *International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM)* codes, *International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM)* codes, or *SNOMED* (Systematized Nomenclature of Medicine—Clinical Terms) codes consistent with any drug, opioid, or heroin overdose were included. In addition, states using syndromic ED data could use the ICD-9-CM, ICD-10-CM, or SNOMED codes to identify overdoses, along with free text fields such as chief complaint, clinical impression, or triage notes. Free text searches included text strings indicating an overdose or poisoning and text strings indicating the involvement of a drug (e.g., “drug overdose”). Common misspellings of key search terms were also included to increase specificity and sensitivity. States either developed their own definitions to capture the specific text and diagnoses used in their facilities or relied on pre-set queries developed by CDC (see [March 2018 Vital Signs](#)).

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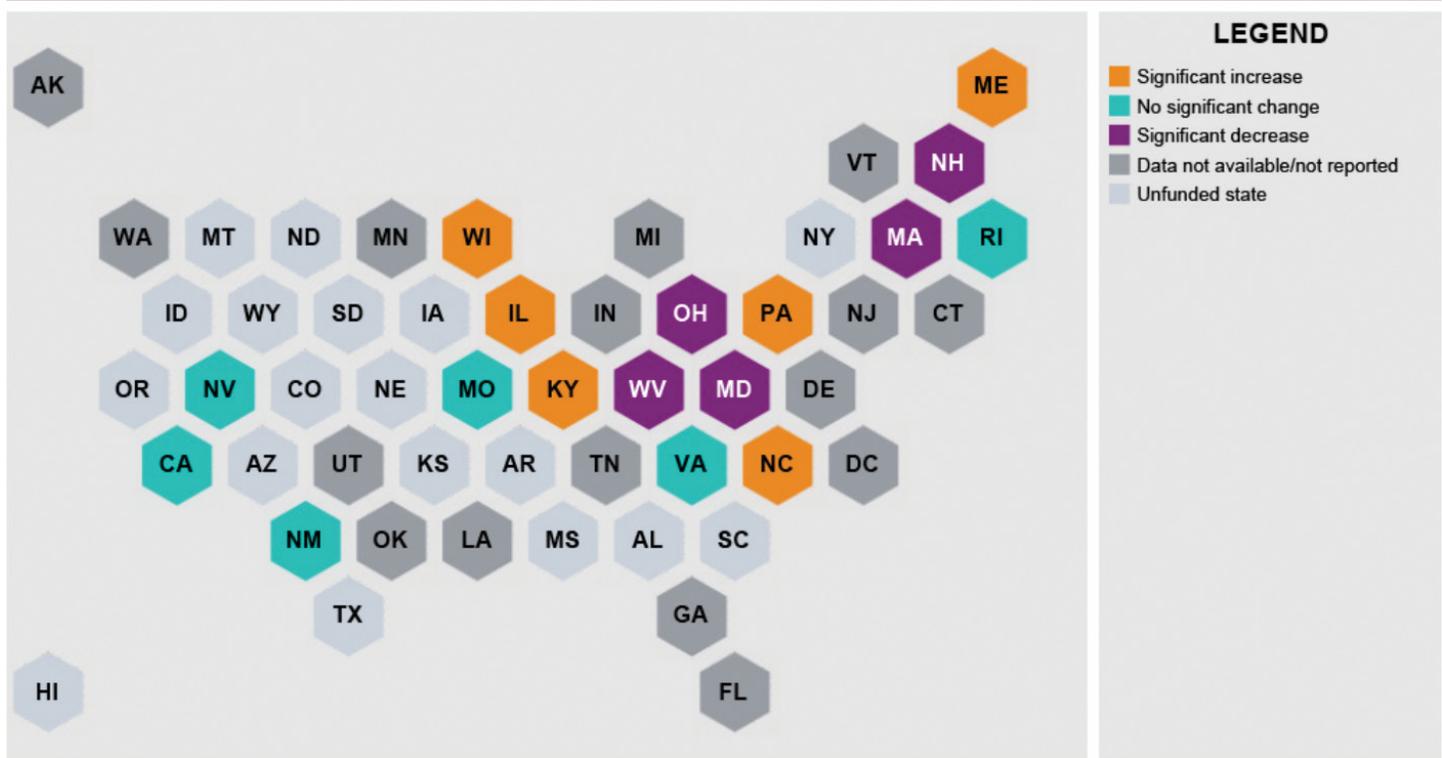
ALL OPIOIDS

Suspected overdose estimates for a given point in time may change as information on the ED visit is updated, so data should be interpreted with caution. For the most recent quarter change, the third quarter (July–September) of 2017 to the fourth quarter (October–December) of 2017, ESOOS states overall reported a 13% decrease in opioid overdoses. Decreases in opioid overdoses occurred among males, females, and all age groups during this period.

All ESOOS states reported a 5% decrease in opioid overdoses from the fourth quarter (October–December) of 2016 to the fourth quarter (October–December) of 2017. Overdoses among males, females, and people aged 11–24 years and 55 years and older decreased significantly during this period. Five states (Maryland, Massachusetts, New Hampshire, Ohio, and West Virginia) reported a decrease in opioid overdoses from the fourth quarter of 2016 to the fourth quarter of 2017. Increases in opioid overdoses during this period occurred in six states (Illinois, Kentucky, Maine, North Carolina, Pennsylvania, and Wisconsin).¹

Trends in Emergency Department Visits for Suspected Opioid Overdose, Q4 2016 to Q4 2017

CDC's Enhanced State Opioid Overdose Surveillance Program



CDC's Enhanced State Opioid Overdose Surveillance (ESOOS) Program:* Trends[†] in Emergency Department Visits for Suspected Opioid Overdose[§] for Selected States Providing Data, Q4 2016 (October 1, 2016–December 31, 2016) to Q4 2017 (October 1, 2017–December 31, 2017),[¶] by State

	Yearly Percent Change		Quarterly Percent Change			
	Q4 2016 to Q4 2017 (17 states)	Category, Q4 2016 to Q4 2017	Q4 2016 to Q1 2017 (17 states)	Q1 2017 to Q2 2017 (22 states)	Q2 2017 to Q3 2017 (22 states)	Q3 2017 to Q4 2017 (25 states)
Overall	-4.88	Significant Decrease	-1.69	14.11	-2.59	-12.96
State						
Alaska**	n/a	Data not available / not reported	n/a	n/a	n/a	n/a
California	-1.39	No significant change	-12.08	24.02	2.72	-11.96
Connecticut**	n/a	Data not available / not reported	n/a	n/a	n/a	n/a
Delaware**	n/a	Data not available / not reported	n/a	35.49	15.36	-6.11
District of Columbia**	n/a	Data not available / not reported	n/a	51.57	-13.23	-19.39
Florida ^{§§}	n/a	Data not available / not reported	n/a	n/a	n/a	n/a
Georgia**	n/a	Data not available / not reported	n/a	-6.41	-0.03	7.93
Illinois	15.94	Significant Increase	1.40	2.84	29.49	-14.14
Indiana**	n/a	Data not available / not reported	n/a	n/a	n/a	21.65
Kentucky	17.83	Significant Increase	43.26	-1.55	-10.54	-6.62
Louisiana**	n/a	Data not available / not reported	n/a	n/a	n/a	n/a
Maine	32.80	Significant Increase	-8.14	29.43	9.81	1.71
Maryland	-13.50	Significant Decrease	-0.72	24.45	-18.85	-13.73
Massachusetts	-14.16	Significant Decrease	-11.48	3.11	18.99	-20.96
Michigan**	n/a	Data not available / not reported	n/a	n/a	n/a	n/a
Minnesota**	n/a	Data not available / not reported	n/a	-2.50	33.27	-1.62
Missouri	7.51	No significant change	6.47	10.44	6.94	-14.50
Nevada	-6.18	No significant change	-9.50	11.28	2.89	-9.46
New Hampshire	-13.80	Significant Decrease	-17.91	29.67	-8.76	-11.24
New Jersey**	n/a	Data not available / not reported	n/a	n/a	n/a	n/a
New Mexico	-11.14	No significant change	2.05	-4.71	-11.46	3.21
North Carolina	13.12	Significant Increase	2.18	14.34	12.33	-13.81
Ohio	-4.40	Significant Decrease	25.72	21.62	-31.92	-8.15
Oklahoma ^{§§}	n/a	Data not available / not reported	n/a	n/a	n/a	n/a
Pennsylvania	19.98	Significant Increase	17.51	25.89	-5.66	-14.03
Rhode Island	22.46	No significant change	4.54	5.44	8.96	1.97
Tennessee**	n/a	Data not available / not reported	n/a	n/a	n/a	28.36
Utah**	n/a	Data not available / not reported	n/a	13.94	11.74	59.09
Vermont**	n/a	Data not available / not reported	n/a	n/a	n/a	n/a
Virginia	8.56	No significant change	8.08	11.65	-4.55	-5.75
Washington**	n/a	Data not available / not reported	n/a	n/a	n/a	-4.68
West Virginia	-43.57	Significant Decrease	-16.75	4.04	-22.88	-15.51
Wisconsin	31.85	Significant Increase	67.67	2.98	3.14	-25.96

* Data come from states participating in CDC's Enhanced State Opioid Overdose Surveillance ([ESOOS](#)) program. Every four months, states share overdose data from emergency department (ED) visits to CDC, including syndromic or hospital billing data to identify all drug, opioid, and/or heroin overdoses that presented in the ED and demographic characteristics of those who overdosed, such as sex, age, and county of patient residence. States have several options for how they relay their ED data to CDC. States choose to share ED visits for suspected overdoses (e.g., all drug, opioid, and heroin) either directly with CDC using a secure server or they can allow CDC to have access to their state's data in the National Syndromic Surveillance Program's ([NSSP](#)) BioSense platform. The number of states included in the calculations of quarterly and yearly change will vary and will increase over time as additional states share data with CDC. Comparisons between states should not be made due to variations in data quality, completeness, and reporting across states.

† To account for changes occurring across time, yearly and quarterly trends for the rate of ED visits involving suspected opioid overdoses (e.g., ED visits involving drug overdoses divided by total ED visits and multiplied by 10,000) were analyzed by U.S. state. Yearly change, controlling for seasonal effects, was estimated as the change from the final quarter of the previous year to the final quarter of the current year (e.g., fourth quarter 2016 to fourth quarter 2017). Quarterly rate changes were calculated for all quarters. Significance testing was conducted using chi-square tests. Data table provides the yearly and quarterly rate changes by state. Bolded estimates indicate statistically significant results between quarters.

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Percent Changes in Suspected Opioid Overdoses for Each Quarter, From Q4 2016 to Q4 2017, by Sex and Age Group

CDC's Enhanced State Opioid Overdose Surveillance Program



LEGEND

Decrease Increase

* Statistically significant

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	Quarterly Percent Change				Yearly Percent Change
	Q4 2016 to Q1 2017 (17 states)	Q1 2017 to Q2 2017 (22 states)	Q2 2017 to Q3 2017 (22 states)	Q3 2017 to Q4 2017 (25 states)	Q4 2016 to Q4 2017 (16 states)
Overall	-1.69	14.11	-2.59	-12.96	-4.88
Sex					
Male	-1.97	13.11	-2.70	-12.70	-5.81
Female	-0.47	14.14	-2.74	-12.55	-3.37
Age group					
11–24	-11.08	9.15	-4.41	-13.41	-19.67
25–34	1.34	12.01	-2.77	-9.77	-0.70
35–54	0.32	16.35	-1.91	-13.56	-1.03
55 and up	-2.45	14.36	-2.17	-12.11	-4.08

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REFERENCE

1. CDC’s Enhanced State Opioid Overdose Surveillance (ESOOS) Program, 32 states and the District of Columbia reporting, April 2018.