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

Archived Provisional Data Report from October 2018

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 October 2018. CDC's ESOOS program captures some data via CDC's National Syndromic Surveillance Program (NSSP)'s BioSense platform.

ESOOS collects data from multiple sources, including ED hospital billing data and syndromic surveillance data:

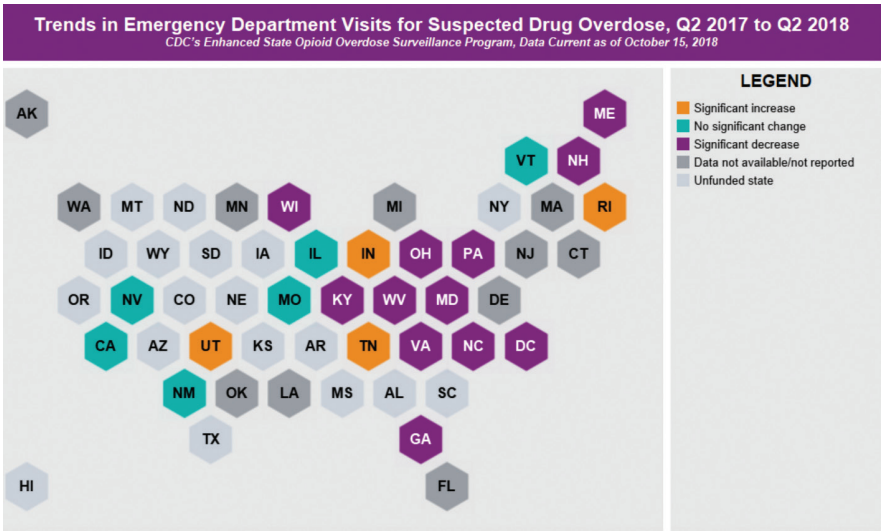
- Hospital billing data are collected by hospitals and shared with state and local partners. Hospital billing data include a standardized discharge diagnostic code (i.e., International Classification of Diseases, Tenth Edition, Clinical Modification, ICD-10-CM) used to categorize a visit as an overdose.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

See "Case Definition" tab for more detailed information on how the ESOOS program defines an overdose in their data.

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 first quarter (January–March) of 2018 to the second quarter (April–June) of 2018, ESOOS states, including the District of Columbia, reported a 9% increase in all drug overdoses. Increases in all drug overdoses occurred among males, females, and all age groups during this time period.

Overall, ESOOS states, including the District of Columbia, reported a 7% annual decrease in all drug overdoses from the second quarter of 2017 to the second quarter of 2018. Eleven states (Georgia, Kentucky, Maine, Maryland, New Hampshire, North Carolina, Ohio, Pennsylvania, Virginia, West Virginia, and Wisconsin) and the District of Columbia reported an annual decrease in all drug overdoses during this time period. Increases in all drug overdoses during this time period occurred in four states (Indiana, Rhode Island, Tennessee, and Utah).[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 Q2 2018 (April 1, 2018–June 30, 2018),¶ by State

	Yearly Percent Change				Quarterly Percent Change					
	Q4 2016 to Q4 2017 (19 states)	Q1 2017 to Q1 2018 (24 states)	Q2 2017 to Q2 2018 (22 states)	Category, Q2 2017 to Q2 2018	Q4 2016 to Q1 2017 (19 states)	Q1 2017 to Q2 2017 (24 states)	Q2 2017 to Q3 2017 (24 states)	Q3 2017 to Q4 2017 (25 states)	Q4 2017 to Q1 2018 (29 states)	Q1 2018 to Q2 2018 (27 states)
Overall	0.57	**-6.82**	**-6.72**	Significant decrease	**2.85**	**8.78**	**-2.38**	**-7.93**	**-4.7**	**8.91**
State										
Alaska**	n/a	n/a	n/a	Data not available/ not reported	n/a	n/a	n/a	n/a	-3.07	1.5
California	-0.73	**4.47**	0.47	No significant change	**-4.51**	**9.73**	0.32	**-5.55**	0.49	**5.52**
Connecticut**	n/a	n/a	n/a	Data not available/ not reported	n/a	n/a	n/a	n/a	**-7.18**	**34**
Delaware††	n/a	n/a	n/a	Data not available/ not reported	n/a	n/a	n/a	n/a	n/a	n/a
District of Columbia	-0.73	**-18.78**	**-23.73**	Significant decrease	2.63	**13.69**	**-8.56**	-6.96	**-16.03**	6.76
Florida§§	n/a	n/a	n/a	Data not available/ not reported	n/a	n/a	n/a	n/a	n/a	n/a
Georgia**	n/a	**-11.87**	**-6.41**	Significant decrease	n/a	1.22	-3.54	4.6	**-13.71**	**7.49**
Illinois	**4.55**	2.23	-0.48	No significant change	0.95	**6.8**	**9.88**	**-11.75**	-1.29	**3.96**
Indiana	**20.44**	**6.16**	**9.56**	Significant increase	**3.91**	**3.95**	**7.57**	**3.67**	**-8.41**	**7.27**
Kentucky	5.21	**-19.16**	**-28.39**	Significant decrease	**20.38**	**6.07**	**-11.11**	**-7.3**	**-7.51**	**-6.05**
Louisiana**	n/a	n/a	n/a	Data not available/ not reported	n/a	n/a	n/a	n/a	**105.37**	**-7.26**
Maine	8.78	1.92	**-8.95**	Significant decrease	1.34	**10.44**	-0.92	-1.9	-5.05	-1.34
Maryland	-0.93	1.78	**-8.78**	Significant decrease	0.96	**20.15**	**-12.9**	**-6.23**	3.72	**7.68**
Massachusetts††	n/a	n/a	n/a	Data not available/ not reported	n/a	n/a	n/a	n/a	n/a	n/a

Table of trends continues on next page.

Michigan**	n/a	n/a	n/a	Data not available/ not reported	n/a	n/a	n/a	n/a	**-5.6**	**6.56**
Minnesota**	n/a	-4.23	n/a	Data not available/ not reported	n/a	-1.2	**13.95**	-2.54	**-12.71**	n/a
Missouri	-6.13	**-7.17**	-1.21	No significant change	-0.15	1.81	3.4	**-10.7**	-1.25	**8.35**
Nevada	-3.02	1.02	1.49	No significant change	**-8.14**	7.57	3.74	-5.4	-4.31	**8.07**
New Hampshire	-4.46	-7.83	**-30.02**	Significant decrease	-8.32	**25.83**	**-9.61**	-8.38	**-11.55**	-4.46
New Jersey**	0.05	**-14.55**	n/a	Data not available/ not reported	**5.95**	**7.21**	-3.55	**-8.68**	**-9.52**	n/a
New Mexico	-6.08	-6.03	5.32	No significant change	-1.01	4.58	-7.1	-2.35	-0.96	**17.22**
North Carolina	-0.52	-2.92	**-8.83**	Significant decrease	-2.21	**11.45**	**3.75**	**-12.03**	**-4.57**	**4.66**
Ohio	**-9.3**	**-33.91**	**-38.46**	Significant decrease	**12.18**	**15.95**	**-18.63**	**-14.31**	**-18.25**	**7.97**
Oklahoma[§§]	n/a	n/a	n/a	Data not available/ not reported	n/a	n/a	n/a	n/a	n/a	n/a
Pennsylvania	**-5.54**	**-17.36**	**-16.07**	Significant decrease	-1.01	**12.18**	-1.18	**-13.92**	**-13.4**	**13.92**
Rhode Island	9.96	12.01	**22.67**	Significant increase	-3.04	6.71	-3	9.56	-1.24	**16.87**
Tennessee**	n/a	1.39	**8.97**	Significant increase	n/a	-2.57	-2.33	**6.45**	-2.47	**5.29**
Utah**	n/a	**9.36**	**9.79**	Significant increase	n/a	-0.74	**-11.67**	**20.57**	3.44	-0.35
Vermont**	n/a	-8.36	-14.55	No significant change	n/a	-0.12	-5.74	10.45	-11.88	-6.86
Virginia	**4.94**	**-6.61**	**-6.26**	Significant decrease	1.2	**9.82**	**-5.13**	-0.47	**-9.94**	**10.23**
Washington**	n/a	n/a	n/a	Data not available/ not reported	n/a	n/a	n/a	-4.32	-3.67	4.73
West Virginia	**-26.63**	**-22.06**	**-23.66**	Significant decrease	**-11.2**	-2.01	**-10.83**	-5.45	-5.66	-4.02
Wisconsin	**12.43**	**-20.41**	**-15.17**	Significant decrease	**29.43**	5.33	3.09	**-20.01**	**-8.37**	**12.27**

* Data come from states participating in CDC's Enhanced State Opioid Overdose Surveillance (ESOOS) program and are current as of October 15, 2018. Every three 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 states' 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 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. Please see more information in the "Case Definition" tab or CDC's 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; and (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 all drug overdose.

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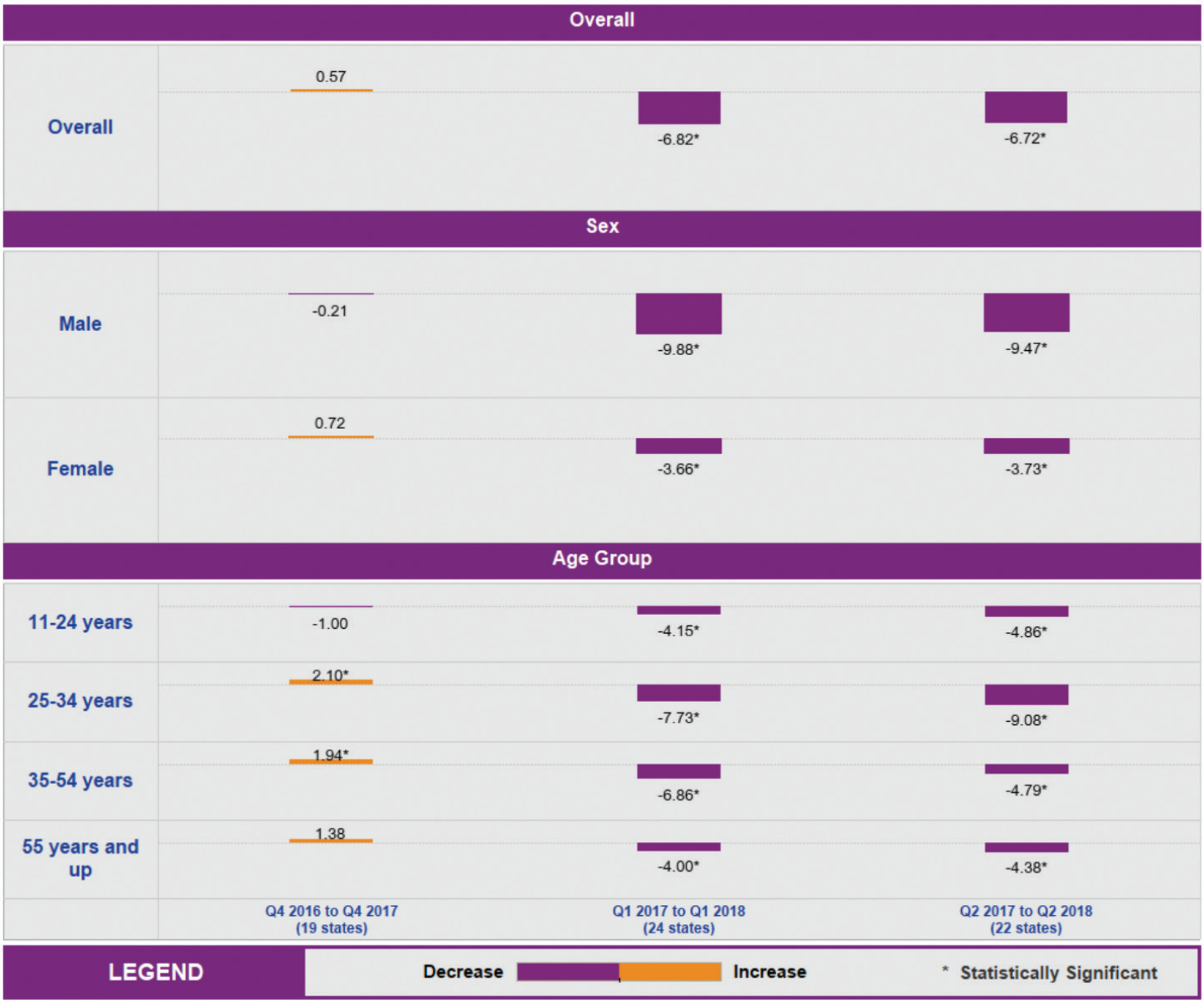
Annual Percent Changes in All Drug Overdoses for Selected States Providing Data, Q4 2016 (October 1, 2016-December 31, 2016) to Q2 2018 (April 1, 2018-June 30, 2018), by Sex and Age Group

CDC's Enhanced State Opioid Overdose Surveillance Program, Data Current as of October 15, 2018



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	Yearly Percent Change		
	Q4 2016 to Q4 2017 (19 states)	Q1 2017 to Q1 2018 (24 states)	Q2 2017 to Q2 2018 (22 states)
Overall	0.57	**-6.82**	**-6.72**
Sex			
Male	-0.21	**-9.88**	**-9.47**
Female	0.72	**-3.66**	**-3.73**
Age group			
11–24	-1	**-4.15**	**-4.86**
25–34	**2.1**	**-7.73**	**-9.08**
35–54	**1.94**	**-6.86**	**-4.79**
55 and up	1.38	**-4**	**-4.38**

* Data come from states participating in CDC's Enhanced State Opioid Overdose Surveillance (ESOOS) program. Every three 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 states' 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 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.

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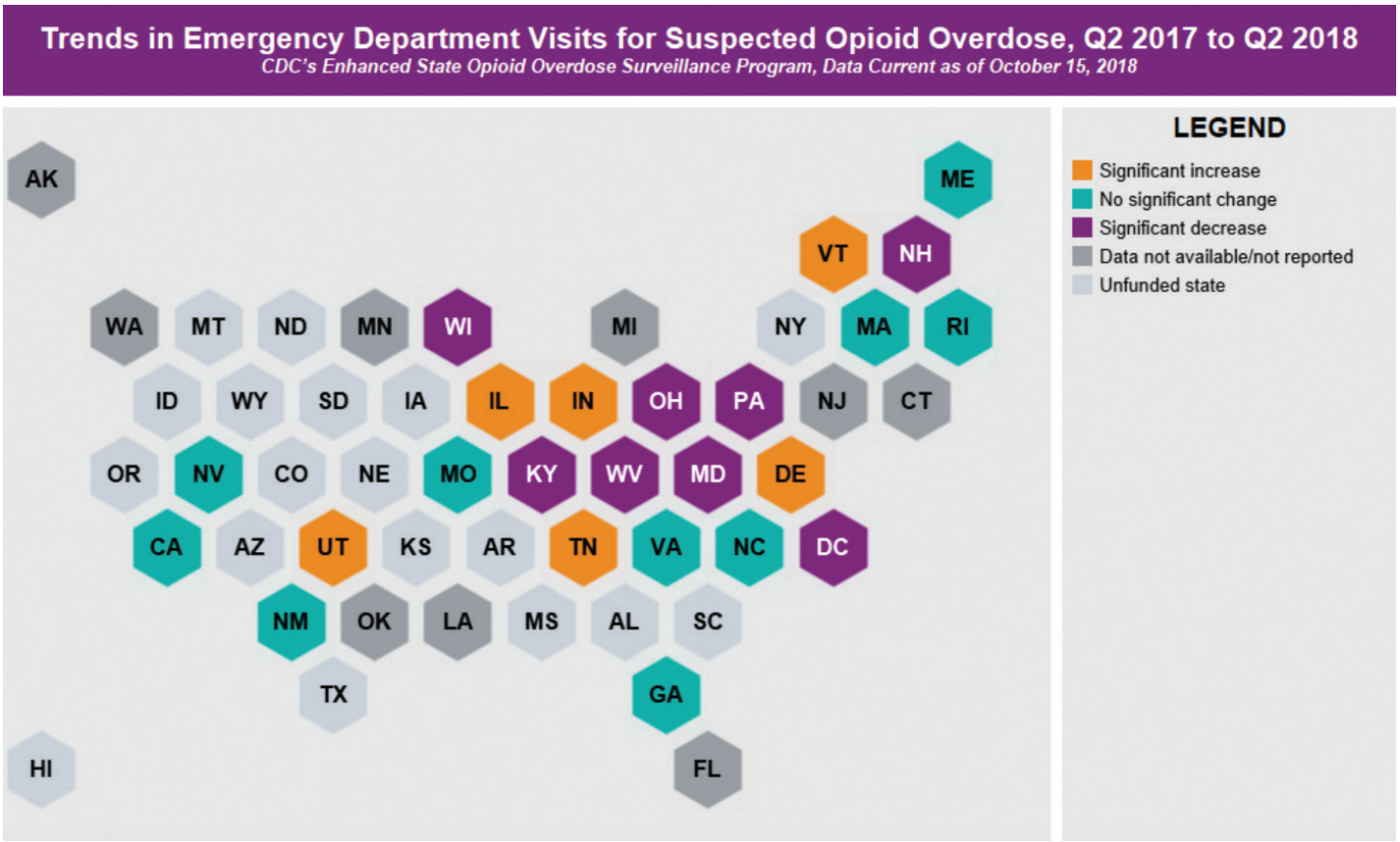
ALL OPIOIDS

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 first quarter (January–March) of 2018 to the second quarter (April–June) of 2018, ESOOS states, including the District of Columbia, reported an 11% increase in opioid overdoses. Increases in opioid overdoses occurred among males, females, and all age groups during this time period.

Overall, ESOOS states, including the District of Columbia, reported a 15% annual decrease in opioid overdoses from the second quarter of 2017 to the second quarter of 2018. Seven states (Kentucky, Maryland, New Hampshire, Ohio, Pennsylvania, West Virginia, and Wisconsin) and the District of Columbia reported an annual decrease in opioid overdoses during this time period. Increases in opioid overdoses during this time period occurred in six states (Delaware, Illinois, Indiana, Tennessee, Utah, and Vermont).[1]



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 Q2 2018 (April 1, 2018–June 30, 2018),¶ by State

	Yearly Percent Change				Quarterly Percent Change					
	Q4 2016 to Q4 2017 (17 states)	Q1 2017 to Q1 2018 (24 states)	Q2 2017 to Q2 2018 (24 states)	Category, Q2 2017 to Q2 2018	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 2017 to Q1 2018 (31 states)	Q1 2018 to Q2 2018 (29 states)
Overall	**4.02**	**-13.76**	**-14.63**	Significant decrease	**6.29**	**12.23**	-0.23	**-12.61**	**-11.88**	**11.11**
State										
Alaska**	n/a	n/a	n/a	Data not available/ not reported	n/a	n/a	n/a	n/a	-32.66	34.48
California	-1.39	**12.79**	1.47	No significant change	**-12.08**	**24.02**	2.72	**-11.96**	0.56	**11.58**
Connecticut**	n/a	n/a	n/a	Data not available/ not reported	n/a	n/a	n/a	n/a	**-9.11**	**49.68**
Delaware**	n/a	**35.36**	**21.24**	Significant increase	n/a	**35.49**	**15.36**	-6.14	-7.73	**21.36**
District of Columbia	3.15	**-25.33**	**-49.94**	Significant decrease	-2.98	**51.94**	**-13.47**	**-19.13**	**-29.77**	1.87
Florida§§	n/a	n/a	n/a	Data not available/ not reported	n/a	n/a	n/a	n/a	n/a	n/a
Georgia**	n/a	**-23.15**	13.57	No significant change	n/a	**-20.48**	**15.17**	**25.83**	**-33.31**	**17.51**
Illinois	**16.02**	**7.08**	**11.05**	Significant increase	3.83	1.66	**28.69**	**-14.59**	-4.17	5.43
Indiana	**81.75**	**34.71**	**31.14**	Significant increase	**10.7**	**10.49**	**21.97**	**21.83**	-17.96	7.56
Kentucky	**17.61**	**-25.72**	**-27.85**	Significant decrease	**43.21**	-1.68	**-10.65**	-6.51	**-9.56**	-4.49
Louisiana**	n/a	n/a	n/a	Data not available/ not reported	n/a	n/a	n/a	n/a	-0.49	-2.46
Maine	**22.49**	7.96	-4.77	No significant change	-4.14	**18.66**	5.87	1.71	**-15.51**	4.67
Maryland	**-13.53**	**-6.74**	**-25.92**	Significant decrease	-1.18	**24.71**	**-18.93**	**-13.45**	6.58	-0.94
Massachusetts	**-14.39**	**-7.58**	-1.17	No significant change	**-11.69**	3.1	**18.98**	**-20.98**	**-4.66**	**10.25**

Table of trends continues on next page.

Michigan**	n/a	n/a	n/a	Data not available/ not reported	n/a	n/a	n/a	n/a	-3.06	**8.77**
Minnesota**	n/a	-4.91	n/a	Data not available/ not reported	n/a	-2.5	**33.27**	-1.44	**-25.75**	n/a
Missouri	-1.52	0.20	4.08	No significant change	-2.18	**10.37**	6.91	**-14.69**	-0.46	**14.64**
Nevada	-6.4	3.34	1.57	No significant change	-8.06	10.62	1.83	-9.63	1.51	8.72
New Hampshire	**-13.43**	-7.06	**-32.46**	Significant decrease	**-17.91**	**29.67**	-8.76	-10.86	-11.87	-5.77
New Jersey**	1.32	**-18.73**	n/a	Data not available/ not reported	**9.29**	**6.13**	**-6.22**	**-6.85**	**-12.33**	n/a
New Mexico	-10.73	-11.65	10.42	No significant change	2.09	-4.7	-10.53	2.56	1.04	**19.1**
North Carolina	**13.55**	3.00	-2.85	No significant change	2.27	**14.35**	**12.69**	**-13.84**	**-7.23**	**7.85**
Ohio	**-4.37**	**-49.39**	**-54.26**	Significant decrease	**25.83**	**21.68**	**-31.99**	**-8.17**	**-33.41**	**9.99**
Oklahoma[§§]	n/a	n/a	n/a	Data not available/ not reported	n/a	n/a	n/a	n/a	n/a	n/a
Pennsylvania	**19.9**	**-21.90**	**-20.58**	Significant decrease	**18**	**25.54**	**-5.95**	**-13.95**	**-23.13**	**27.66**
Rhode Island	10.01	-9.33	1.66	No significant change	0.24	1.69	6.97	0.9	-17.38	14.01
Tennessee	n/a	4.18	**16.69**	Significant increase	n/a	-7.24	-0.52	**18.12**	**-7.58**	4.78
Utah**	n/a	**156.34**	**128.11**	Significant increase	n/a	15.67	13.05	**57.35**	**24.58**	2.93
Vermont**	n/a	-2.22	**33.50**	Significant increase	n/a	-14.02	**33.46**	-7.42	-7.96	17.39
Virginia	7.65	**-15.61**	-2.41	No significant change	8.09	**11.27**	-4.47	-6.31	**-15.26**	**28.68**
Washington**	n/a	n/a	n/a	Data not available/ not reported	n/a	n/a	n/a	-3.9	-7.58	**15.38**
West Virginia	**-40.98**	**-38.25**	**-34.77**	Significant decrease	**-14.42**	0.28	**-20.67**	**-13.31**	-10.46	5.93
Wisconsin	**16.11**	**-40.14**	**-24.40**	Significant decrease	**67.95**	-0.05	-3.89	**-28.03**	**-13.42**	**26.22**

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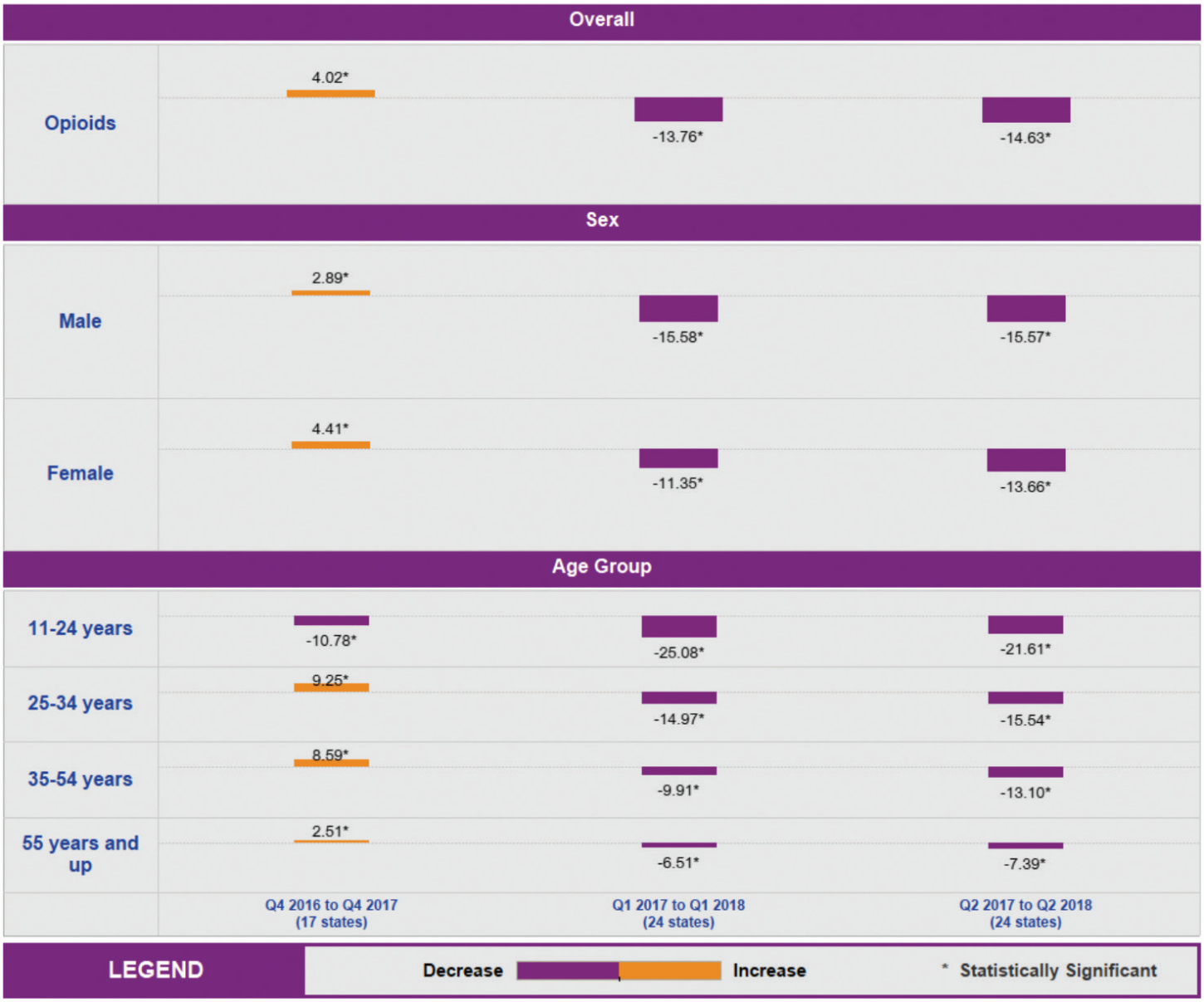
CDC's Enhanced State Opioid Overdose Surveillance Program, Data Current as of October 15, 2018



LEGEND Decrease Increase * Statistically Significant

CDC's Enhanced State Opioid Overdose Surveillance (ESOOS) Program:* Annual Percent Changes† in Opioid Overdoses§ for Selected States Providing Data,¶ Q4 2016 (October 1, 2016–December 31, 2016) to Q2 2018 (April 1, 2018–June 30, 2018), by Sex and Age Group

	Yearly Percent Change		
	Q4 2016 to Q4 2017 (17 states)	Q1 2017 to Q1 2018 (24 states)	Q2 2017 to Q2 2018 (24 states)
Overall	**4.02**	**-13.76**	**-14.63**
Sex			
Male	**2.89**	**-15.58**	**-15.57**
Female	**4.41**	**-11.35**	**-13.66**
Age group			
11–24	**-10.78**	**-25.08**	**-21.61**
25–34	**9.25**	**-14.97**	**-15.54**
35–54	**8.59**	**-9.91**	**-13.10**
55 and up	**2.51**	**-6.51**	**-7.39**

* Data come from states participating in CDC's Enhanced State Opioid Overdose Surveillance (ESOOS) program. Every three 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 states' 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 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. Please see more information in the "Case Definition" tab or CDC's 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; and (4) Data likely represent an undercount, given inaccuracies in coding and missing chief complaint information.

REFERENCE

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