**Data** **Brief:** **Opioid1-Related** **Overdose**

**Deaths** **Among** **Massachusetts** **Residents**

Massachusetts Department of Public Health

REVISED: DECEMBER 2017

This report contains both confirmed and estimated data through September 2017.

**Figure** **1.** **Opioid1-Related** **Deaths,** **All** **Intents** **by** **Month**

**Massachusetts** **Residents:** **January** **2016** **-** **September** **2017**

250

Confirmed

Estimated

200

 20

159

150

23

24

23

67

32

32

100

50

107

114

97

37

0

January February March April May June July August September October November December January February March April May June July August September

2016 2017

130

141

148

15

153

10

153

4

157

163

5

7

166

6

169

6

174

7

178

6

172

5

175

185

7

181

7

189

11

195

**Number** **of** **deaths**

The chart above shows month-by-month estimates for fatal opioid-related overdoses, all intents from January 2016 through September 2017. For the first 9 months of 2017, there are 932 confirmed opioid-related overdose deaths and DPH estimates that there will be an additional 491 to 582 deaths.

**Figure** **2.** **Opioid1-Related** **Deaths,** **All** **Intents**

**Massachusetts** **Residents:** **2000** **-** **2016**

2,400

2,200

2,000

1,800

1,600

1,400

1,200

1,000

800

600

400

200

0

Confirmed

Estimated

2,190

1,811

2,094

1,687

2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016

379

514

526

506

560

575

638

622

614

642

656

660

742

961

1,364

**Number** **of** **deaths**

The figure above shows the number of confirmed cases of all intents opioid-related overdose deaths for 2016 (n=2094). This represents a 24% increase over confirmed cases in 2015 (n=1687) and a 54% increase over 2014. In order to obtain timelier estimates of the total number of opioid-related overdose deaths in Massachusetts - confirmed and probable - DPH used predictive modeling techniques for all cases not yet finalized by the Office of the Chief Medical Examiner (OCME). Based on the data available as of October 12, 2017 DPH estimates that there will be an additional 116 to 132 deaths in 2015, and an additional 89 to 103 deaths in 2016, once these cases are finalized.

# Opioid-Related Overdose Death Rates, All Intents

The increase in estimated death rates is slowing year over year: in 2014, there was a 40% increase from the prior year; in 2015, there was a 32% increase from the prior year; and in 2016, there was a 21% increase from the prior year.

**Figure** **3.** **Rate** **of** **Opioid1-Related** **Deaths,** **All** **Intents**

**Massachusetts** **Residents:** **2000-2016**

35

32.2

30

25

26.7

20

20.2

15

10.3

10

7.9

9.6

10.0

9.7

11.2

14.4

8.2

8.9

9.6

10.0

8.0

5

8.0

6.0

0

**2000** **2001** **2002** **2003** **2004** **2005** **2006** **2007** **2008** **2009** **2010** **2011** **2012** **2013** **2014** **2015** **2016**

**Rate**

**per** **100,000** **Residents**

1 Opioids include heroin, opioid-based prescription painkillers, and other unspecified opioids.

# Technical Notes

Beginning with the May 2017 report, DPH started reporting opioid-related deaths for all intents, which includes unintentional/undetermined and suicide. This report tracks opioid-related overdoses due to difficulties in identifying heroin and prescription opioids separately. The Department regularly reviews projections as more information becomes available. Information from the Office of the Chief Medical Examiner and the Massachusetts State Police are now incorporated into the predictive model. This additional information has improved the accuracy of the models that predict the likelihood that the cause of death for any person was an opioid-related overdose. DPH applied this model to death records for which no official cause of death was listed by the OCME. The model includes information from the death certificate, Medical Examiner’s notes, and the determination by the State Police of a suspected heroin death. DPH added this estimate to the number of confirmed cases in order to compute the total number of opioid-related overdoses. Should new information become available that changes the estimates to any significant degree, updates will be posted. Please note that there is rounding of counts for 2015-2017.

# Toxicology Analysis: Fentanyl and Other Drugs

Fentanyl is a synthetic opioid that has effects similar to heroin. It can be prescribed for severe pain. According to the

U.S. Department of Justice, Drug Enforcement Administration’s 2015 Investigative Reporting, while pharmaceutical fentanyl (from transdermal patches or lozenges) is diverted for abuse in the United States at small levels, much of the fentanyl in Massachusetts is due to illicitly-produced fentanyl, not diverted pharmaceutical fentanyl.

The standard toxicology screen ordered by the Office of the Chief Medical Examiner includes a test for the presence of fentanyl. Among the 747 individuals whose deaths were opioid-related in 2017 where a toxicology screen was also available, 603 of them (81%) had a positive screen result for fentanyl. In the second quarter of 2017, heroin or likely heroin was present in approximately 48% of opioid-related deaths that had a toxicology screen. Cocaine was present in approximately 39% of these deaths; and benzodiazepines were present in approximately 45%\*.

While screening tests can be used to note the rate at which certain drugs are detected in toxicology reports, they are insufficient to determine the final cause of death without additional information. The cause of death is a clinical judgement made within the Office of the Chief Medical Examiner.

**Figure** **4.** **Percent** **of** **Opioid** **Deaths** **with** **Specific** **Drugs** **Present**

**MA:** **2014-2017**

100

90

80

70

60

50

40

30

20

10

0

Fentanyl¹

Likely Heroin

Prescription Opioid² Benzodiazepine

Cocaine

1 2 3 4 1 2 3 4 1 2 3 4 1 2

2014

2015

2016

2017

**Year** **and** **Quarter**

**Percent**

1. This is most likely illicitly produced and sold, **not** prescription fentanyl
2. Prescription opioids include: hydrocodone, hydromorphone, oxycodone, oxymorphone, and tramadol

**Please** **note** **that** **previous** **estimates** **may** **change** **slightly** **as** **DPH** **routinely** **receives** **updated** **toxicology** **data** **from** **the** **Office** **of** **the** **Chief** **Medical** **Examiner** **and** **the** **Massachusetts** **State** **Police.**

The percentage of opioid-related overdose deaths where prescription drugs were present has trended downward since the beginning of 2014, when approximately a quarter of deaths with a toxicology screen showed evidence of a prescription opioid. In the second quarter of 2017, prescription opioids were present in approximately 16% of opioid- related overdose deaths where a toxicology result was available. Also notable, the rate of heroin or likely heroin present in opioid-related deaths has been decreasing while the presence of fentanyl is still trending upward.

\*The benzodiazepine percentage and trend line in Figure 4 were updated as of December 1, 2017.