

# Opioid-Related Fatalities Among Vermonters

## Key Points from the Opioid-Related Fatalities Brief, 2018 Preliminary Data Publication

- The preliminary 2018 opioid-related accidental and undetermined fatality data appears to show Vermont continues to bend the curve on the upward spiral of opioid-related fatalities. There was a 30% increase from 2015 to 2016 (from 74 to 96 deaths among Vermont residents) and a 12% increase from 2016 to 2017 (from 96 to 108). As of February 2019, preliminary data shows a 2% increase in deaths (from 108 to 110).
- Deaths involving fentanyl continue to increase. Fentanyl was found in three out of four opioid-related accidental and undetermined fatalities in 2018 (compared to 69% in 2017). The number of fatalities involving fentanyl has nearly tripled since 2015.
- At the same time, the number of opioid-related deaths involving a prescription opioid has remained relatively consistent since 2015 (31 deaths in 2015, 35 in 2016, 33 in 2017 and 31 in 2018). Given that the number of overall deaths increased during this time, the proportion of deaths involving a prescription opioid has decreased considerably (from 41% in 2015 to 28% in 2018).
- Fatalities involving heroin increased in 2018 – heroin was found in 55% of all opioid-related accidental and undetermined fatalities (up from 39% in 2017).
- Opioid-related fatalities involving cocaine continued to increase. Cocaine was present in more than one-third of accidental and undetermined opioid-related deaths (37% in 2018, up from 31% in 2017).
- This brief shows seven additional deaths in 2017 than were reported in the Annual Brief released in March 2018. All seven deaths were Vermont residents who died out of state. Out of state deaths can take up to two years to be finalized in Vermont's Vital Statistics data system. Thus, data is considered preliminary until Vermont has received all out of state deaths. Due to these time lags, the Department of Health expects to revise the 2018 opioid-related death numbers in the future.
- Additionally, as the methodology for defining an opioid-related fatality continues to evolve, Health Department analysts occasionally review past years of data to ensure consistency. This year a review of years 2010 through 2016 resulted in slight changes in previous counts due to strengthened inclusion criteria necessary to define an "overdose."

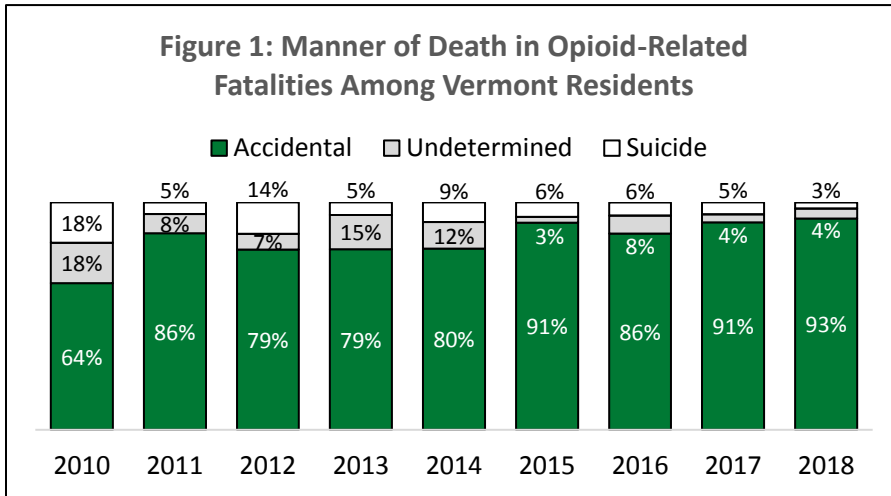
*Note: All of the fatalities assessed and discussed above are "accidental and undetermined opioid-related fatalities."*

# Opioid-Related Fatalities Among Vermonters

## Opioid-Related Fatality Overview

Preliminary data for 2018 currently shows that nearly all opioid-related fatalities among Vermont residents were of accidental or undetermined intent (see definition to the right). Three deaths were determined to be suicides (3% of all opioid-related deaths). Seven non-Vermont residents died in Vermont in 2018 but are excluded from the data analyzed below. At the date of this analysis, the Vermont Office of the Chief Medical Examiner (OCME) has one pending in-state death investigation and two cases pending for out of state deaths.

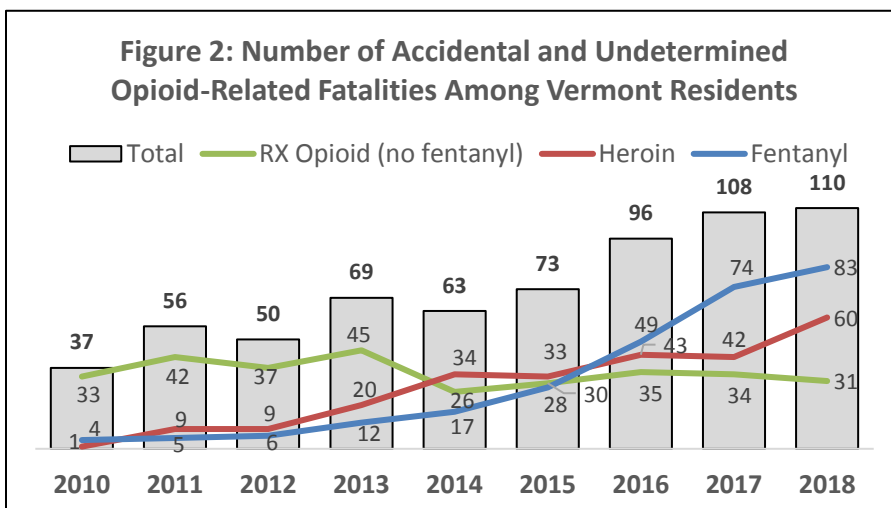
**Figure 1: Manner of Death in Opioid-Related Fatalities Among Vermont Residents**



## Accidental and Undetermined Opioid-Related Fatalities Among Vermonters

Public attention has been focused on opioid misuse and abuse. All data that follows are accidental and undetermined cause fatalities that involved an opioid. Deaths due to suicide were removed to show deaths more likely associated with abuse and dependence of opioids – the type of death some consider an “overdose.” Preliminary data shows 110 accidental and undetermined cause deaths among Vermont residents in 2018.

**Figure 2: Number of Accidental and Undetermined Opioid-Related Fatalities Among Vermont Residents**



## DRUG-RELATED FATALITY DATA

Vermont drug-related fatalities data come from the Vermont Department of Health Vital Statistics System. The data in this report primarily describes deaths of Vermonters occurring in-state and out-of-state. Data for out-of-state residents who died in Vermont is included only where explicitly stated.

The drug-related fatalities reported here include accidents, suicides, homicides and fatalities with undetermined intent unless otherwise stated. All deaths involved at least one legal or illicit opioid including heroin or prescription drugs.

This report does *not* include deaths due to chronic substance use (such as HIV, liver disease, or infection); death due to injury related to substance use (i.e., car accident or falls) or deaths due to medical professional error.

Since opioid-related death is an important topic today, this brief specifically examines deaths related to opioids.

It is important to note that most drug-related fatalities are due to combinations of substances (e.g., a prescription opioid and cocaine), not a single drug. Additionally, the circumstances under which each of these fatalities occurred are unique and cannot all be attributed to addiction and/or dependence.

2017 and 2018 data are considered preliminary.

## OPIOID-RELATED DEATH

- Categories of opioids assessed include:
- Total Opioids: prescription opioids, opioids not otherwise defined, heroin and fentanyl.
  - RX Opioids: prescription opioids (excluding fentanyl).
  - Heroin: includes heroin.
  - Fentanyl: includes both prescription and illicit fentanyl.

Prescription opioid, fentanyl and heroin deaths do not add to total opioid deaths because most deaths involve multiple substances.

At this time, that represents a 2% increase from 108 deaths in 2017. The rate of death in 2018 is 17.6 fatalities per 100,000 Vermonters – a rate that is not statistically different from the 2017 rate. Opioid-related fatality has nearly tripled since 2010, when 37 of these deaths were recorded (5.9 per 100,000). However, in the last few years the rate of increase has gone from 31% (2015 to 2016), to 12% (2016 to 2017) to the current rate of 2% with the preliminary data.

Males comprise 60% of accidental and undetermined opioid-related fatalities among Vermont residents. Women comprise 40% of these deaths. The average age of death is 40 (median 38). Half of these deaths occur among persons between 30 and 50 (51%). Nearly all accidental and undetermined opioid-related fatalities are among white, non-Hispanics (97%).

### Substances Involved in Opioid-Related Fatalities Among Vermonters

Fentanyl is currently the most prevalent substance involved in opioid-related deaths. In 2018 it was found in 75% of these fatalities and has been increasing each year since 2013. Heroin is the second most common drug, now found in more than half of these deaths (55%); cocaine was found in 37% and RX opioids was found in 28% of 2018 deaths.

Substance*	2013		2014		2015		2016		2017		2018	
	#	%	#	%	#	%	#	%	#	%	#	%
Alcohol	14	20%	10	16%	9	12%	16	17%	14	13%	18	16%
Benzodiazepines	12	17%	5	8%	6	8%	10	10%	6	6%	5	5%
Buprenorphine*	4	6%	3	5%	2	3%	1	1%	0	0%	5	5%
Cocaine	9	13%	11	17%	8	11%	17	18%	33	31%	41	37%
Fentanyl	12	17%	17	27%	28	38%	49	51%	74	69%	83	75%
Hallucinogens	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Heroin	20	29%	34	54%	33	45%	43	45%	42	39%	60	55%
Methadone	14	20%	5	8%	7	10%	14	15%	12	11%	10	9%
Methamphetamine	0	0%	0	0%	0	0%	0	0%	3	3%	3	3%
ALL RX opioid (no fentanyl)*	45	65%	26	41%	30	41%	35	36%	34	31%	31	28%
RX stimulants	2	3%	4	6%	0	0%	0	0%	5	5%	7	6%
Synthetic Cathinones ("Bath Salts")	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Tramadol*	2	3%	1	2%	3	4%	2	2%	1	1%	5	5%

\*Categories are not mutually exclusive as one death may involve multiple substances; certain RX opioids are shown separately (such as Tramadol and buprenorphine) but are also included in the "ALL RX opioid" category.

Opioid-related fatalities involving fentanyl have continued to increase since 2010. Fatalities involving heroin initially declined between 2016 and 2017, but Vermont saw an increase in these deaths from 2017 to 2018. Prescription opioid fatalities (excluding fentanyl) have been decreasing, most sharply since 2013. The number of deaths from fentanyl surpassed those involving heroin for the first time in 2016; and both heroin and fentanyl deaths are higher than prescription opioid-related deaths (See Figure 2).

Although the figures in this brief refer to increases in fentanyl and heroin separately, many deaths involve both drugs and others. The numbers reported above are specifically presented to indicate how often toxicology testing finds a particular drug in a decedent's blood.

As stated earlier, most opioid-related fatalities involve multiple substances. The most common combination of substances was involving fentanyl and heroin, which accounted for nearly half (47%) of all opioid-related fatalities. Over one-third of deaths involved fentanyl and cocaine (35%). The third most common combination was cocaine and heroin, found in 21% of deaths. These three substances together – fentanyl, heroin and cocaine – were found in 19% of opioid-related accidental and undetermined fatalities.

Substance Combination*	2013		2014		2015		2016		2017		2018	
	#	%	#	%	#	%	#	%	#	%	#	%
<b>Cocaine and Heroin</b>	1	1%	8	13%	5	7%	13	14%	14	13%	23	21%
<b>Cocaine and RX Opioids</b>	6	9%	2	3%	1	1%	5	5%	9	8%	9	8%
<b>Fentanyl and Cocaine</b>	3	4%	4	6%	3	4%	6	6%	25	23%	38	35%
<b>Fentanyl and Alcohol</b>	1	1%	0	0%	3	4%	4	4%	9	8%	13	12%
<b>Fentanyl and Heroin</b>	0	0%	6	10%	10	14%	21	22%	32	30%	52	47%
<b>Fentanyl and RX Opioids (no fentanyl)</b>	6	9%	5	8%	6	8%	6	6%	12	11%	13	12%
<b>Fentanyl and RX Stimulants</b>	2	3%	1	2%	0	0%	0	0%	3	3%	6	5%
<b>Heroin and RX Stimulants</b>	0	0%	0	0%	0	0%	0	0%	0	0%	3	3%
<b>Heroin, Cocaine, and Fentanyl</b>	0	0%	2	3%	1	1%	3	3%	10	9%	21	19%

\*Combinations are not mutually exclusive. For example, a death involving cocaine, fentanyl, and heroin would be counted three separate categories in the table above (cocaine and fentanyl; cocaine and heroin; fentanyl and heroin).

## Sources

All data are from the Vermont Vital Statistics System and only include deaths that occurred among Vermont residents unless otherwise stated. Data from 2016 and 2017 are preliminary. This brief is a product of the Vermont Department of Health, Division of Health Surveillance Analysts Lela Kretzer ([Lela.Kretzer@vermont.gov](mailto:Lela.Kretzer@vermont.gov)), Amanda Jones ([Amanda.Jones@vermont.gov](mailto:Amanda.Jones@vermont.gov)), Jeffrey Trites ([Jeffrey.Trites@vermont.gov](mailto:Jeffrey.Trites@vermont.gov)), and Caitlin Jelinek ([Caitlin.Jelinek@vermont.gov](mailto:Caitlin.Jelinek@vermont.gov)).

## Appendix 1: Data Tables

		2013			2014			2015			2016			2017			2018		
Table 3: Opioid-Related Fatalities Occurring Among Vermont Residents		% of Accidental and Undetermined Manner Opioid-Related Fatalities Occurring Among Vermont Residents			% of Accidental and Undetermined Manner Opioid-Related Fatalities Occurring Among Vermont Residents			% of Accidental and Undetermined Manner Opioid-Related Fatalities Occurring Among Vermont Residents			% of Accidental and Undetermined Manner Opioid-Related Fatalities Occurring Among Vermont Residents			% of Accidental and Undetermined Manner Opioid-Related Fatalities Occurring Among Vermont Residents					
		Number		Rate Per 100K VT-ers	Number		Rate Per 100K VT-ers	Number		Rate Per 100K VT-ers	Number		Rate Per 100K VT-ers	Number		Rate Per 100K VT-ers	Number		Rate Per 100K VT-ers
Total VERMONT Residents Accidental and Undetermined OPIOID-Related Fatalities		69	--	11.0	63	--	10.1	73	--	11.7	96	--	15.4	108	--	17.3	110	--	17.6
		Number	Percent	Rate Per 100K of Sub Group	Number	Percent	Rate Per 100K of Sub Group	Number	Percent	Rate Per 100K of Sub Group	Number	Percent	Rate Per 100K of Sub Group	Number	Percent	Rate Per 100K of Sub Group	Number	Percent	Rate Per 100K of Sub Group
By Gender	Male	44	64%	14.2	41	65%	13.3	51	70%	16.5	63	66%	20.4	76	70%	24.7	66	61%	21.4
	Female	25	36%	7.9	22	35%	6.9	22	30%	6.9	33	34%	10.4	32	30%	10.1	44	41%	14.0
By Age	< 30	12	17%	5.3	16	25%	7.1	15	21%	6.7	20	21%	9.0	28	26%	12.7	25	23%	11.3
	30 - 39	15	22%	21.4	22	35%	31.3	29	40%	40.9	32	33%	44.8	38	35%	52.6	38	35%	52.6
	40 - 49	17	25%	20.6	9	14%	11.3	11	15%	14.3	25	26%	33.5	16	15%	21.9	18	17%	24.6
	50 +	25	36%	10.1	16	25%	6.3	18	25%	7.1	19	20%	7.4	26	24%	10.1	29	27%	11.2
Average Age		43			39			39			40			39			40		
By Race/ Ethnicity	White, Non-Hispanic	65	94%	11.1	62	98%	10.6	69	95%	11.8	95	99%	16.3	104	96%	17.9	107	99%	18.4
	Racial or Ethnic Minority	4	6%	10.4	1	2%	2.5	4	5%	9.5	1	1%	2.3	4	4%	9.2	3	3%	6.9

Table 4: Opioid-Related Fatalities by County of Residence and County of Death (Vermont and Non-Vermont Residents)		2013			2014			2015			2016			2017			2018		
		# and % of All Accidental and Undetermined Opioid-Related Fatalities		Rate per 100k in County	# and % of All Accidental and Undetermined Opioid-Related Fatalities		Rate per 100k in County	# and % of All Accidental and Undetermined Opioid-Related Fatalities		Rate per 100k in County	# and % of All Accidental and Undetermined Opioid-Related Fatalities		Rate per 100k in County	# and % of All Accidental and Undetermined Opioid-Related Fatalities		Rate per 100k in County	# and % of All Accidental and Undetermined Opioid-Related Fatalities		Rate per 100k in County
		#	%		#	%		#	%		#	%		#	%		#	%	
<b>By County of Residence*</b>																			
	Addison	5	7%	13.6	3	5%	8.1	1	1%	2.7	4	4%	10.8	1	1%	2.7	2	2%	5.4
	Bennington	4	6%	10.9	5	8%	13.7	2	3%	5.5	6	6%	16.6	4	4%	11.2	10	9%	28.1
	Caledonia	1	1%	3.2	5	8%	16.1	1	1%	3.2	4	4%	13.2	5	4%	16.6	4	3%	13.3
	Chittenden	17	24%	10.7	13	20%	8.1	17	22%	10.5	21	19%	13.0	28	25%	17.2	14	12%	8.6
	Essex	1	1%	16.1	1	2%	16.3	3	4%	48.7	0	0%	0.0	0	0%	0.0	0	0%	0.0
	Franklin	7	10%	14.5	6	9%	12.3	10	13%	20.5	7	6%	14.3	9	8%	18.4	9	8%	18.4
	Grand Isle	0	0%	0.0	1	2%	14.3	2	3%	29.2	2	2%	28.9	1	1%	14.3	0	0%	0.0
	Lamoille	3	4%	12.0	3	5%	12.0	0	0%	0.0	3	3%	11.8	3	3%	11.8	3	3%	11.8
	Orange	4	6%	13.8	1	2%	3.5	3	4%	10.4	4	4%	13.8	5	4%	17.3	3	3%	10.4
	Orleans	4	6%	14.7	3	5%	11.1	6	8%	22.1	6	6%	22.3	3	3%	11.2	2	2%	7.5
	Rutland	11	15%	18.1	7	11%	11.6	10	13%	16.7	13	12%	21.9	11	10%	18.6	16	14%	27.1
	Washington	7	10%	11.8	1	2%	1.7	4	5%	6.8	8	7%	13.7	12	11%	20.6	12	10%	20.6
	Windham	2	3%	4.6	8	12%	18.3	2	3%	4.6	3	3%	7.0	13	11%	30.3	21	18%	49.0
	Windsor	3	4%	5.4	6	9%	10.7	12	15%	21.5	14	13%	25.2	11	10%	20.0	14	12%	25.4
	Non-VT Residents who Died in VT (Rate Per 100K Vermonters)	2	3%	0.3	2	3%	0.3	6	8%	1.0	13	12%	2.1	6	5%	1.0	6	5%	1.0
<b>By County of Death</b>																			
	Addison	4	6%	10.9	2	3%	5.4	0	0%	0.0	6	6%	16.2	1	1%	2.7	1	1%	2.7
	Bennington	4	6%	10.9	4	6%	11.0	1	1%	2.8	6	6%	16.6	3	3%	8.4	10	9%	28.1
	Caledonia	1	1%	3.2	5	8%	16.1	2	3%	6.5	5	5%	16.5	5	4%	16.6	4	3%	13.3
	Chittenden	18	25%	11.3	19	29%	11.8	20	25%	12.4	24	22%	14.9	35	31%	21.6	17	15%	10.5
	Essex	1	1%	16.1	0	0%	0.0	1	1%	16.2	1	1%	16.2	0	0%	0.0	0	0%	0.0
	Franklin	7	10%	14.5	5	8%	10.3	7	9%	14.3	7	6%	14.3	7	6%	14.3	7	6%	14.3
	Grand Isle	0	0%	0.0	0	0%	0.0	1	1%	14.6	1	1%	14.5	1	1%	14.3	0	0%	0.0
	Lamoille	3	4%	12.0	2	3%	8.0	1	1%	4.0	3	3%	11.8	3	3%	11.8	2	2%	7.9
	Orange	3	4%	10.4	1	2%	3.5	3	4%	10.4	4	4%	13.8	4	4%	13.8	2	2%	6.9
	Orleans	4	6%	14.7	2	3%	7.4	6	8%	22.1	6	6%	22.3	2	2%	7.5	2	2%	7.5
	Rutland	11	15%	18.1	7	11%	11.6	14	18%	23.4	11	10%	18.5	10	9%	16.9	15	13%	25.4
	Washington	7	10%	11.8	1	2%	1.7	4	5%	6.8	8	7%	13.7	10	9%	17.2	13	11%	22.3
	Windham	3	4%	6.8	7	11%	16.0	2	3%	4.6	6	6%	13.9	14	12%	32.7	24	21%	56.0
	Windsor	3	4%	5.4	6	9%	10.7	12	15%	21.5	18	17%	32.4	12	11%	21.8	18	16%	32.7
	Out of State (Rate Per 100k Vermonters)	2	3%	0.3	4	6%	0.6	5	6%	0.8	3	3%	0.5	7	6%	1.1	1	1%	0.2

\*There are three deaths that are missing county of residence information. They are included in the overall totals but are not included the table above (1 in 2016 and 2 in 2017).

## Annual Opioid-Related Deaths Among Vermonters by County of Residence

The following tables list the number of drug-related fatalities by county of residence. Please note that these numbers are very small and variable. Regional numbers should be interpreted with caution.

**Table 5: Number of Prescription Opioid-Related Accidental or Undetermined Fatalities (Excluding Fentanyl) by Year and County of Residence\***

	2010	2011	2012	2013	2014	2015	2016	2017	2018
Addison County	2	1	1	3	1	0	1	1	0
Bennington County	2	1	3	1	2	0	4	2	2
Caledonia County	1	0	0	1	4	1	3	3	0
Chittenden County	10	11	10	13	5	4	3	8	7
Essex County	0	1	1	1	0	0	0	0	0
Franklin County	2	4	3	5	2	6	5	3	4
Grand Isle County	0	0	1	0	0	0	0	1	0
Lamoille County	0	2	2	3	1	0	1	1	2
Orange County	2	2	0	2	1	2	0	2	0
Orleans County	0	1	5	4	1	2	3	0	1
Rutland County	4	4	0	4	4	4	3	3	5
Washington County	2	5	6	4	1	3	4	6	2
Windham County	3	6	2	1	2	0	0	2	4
Windsor County	5	4	3	3	2	8	8	1	4
<b>Total</b>	<b>33</b>	<b>42</b>	<b>37</b>	<b>45</b>	<b>26</b>	<b>30</b>	<b>35</b>	<b>34*</b>	<b>31</b>
<b>Total Non-Vermont Residents in Vermont</b>	<b>4</b>	<b>3</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>4</b>	<b>3</b>	<b>1</b>

\*In 2017, one death is indicated as a Vermont resident; however, no county of residence is listed.

**Table 6: Number of Heroin-Related Accidental or Undetermined Fatalities by Year and County of Residence\***

	2010	2011	2012	2013	2014	2015	2016	2017	2018
Addison County	0	1	0	1	0	0	1	0	0
Bennington County	0	0	0	2	2	2	1	2	6
Caledonia County	0	0	0	0	2	0	2	1	0
Chittenden County	0	4	2	5	8	10	12	9	7
Essex County	0	0	0	0	1	1	0	0	0
Franklin County	0	0	0	2	3	2	2	3	4
Grand Isle County	0	0	1	0	1	2	1	0	0
Lamoille County	0	0	0	0	1	0	1	1	1
Orange County	0	1	1	2	1	1	3	3	3
Orleans County	0	0	0	0	1	3	1	2	2
Rutland County	0	3	2	6	5	7	6	7	9
Washington County	0	0	0	1	0	0	4	2	7
Windham County	1	0	2	2	4	1	1	6	12
Windsor County	0	0	1	0	5	4	7	5	9
<b>Total</b>	<b>1</b>	<b>9</b>	<b>9</b>	<b>21</b>	<b>34</b>	<b>33</b>	<b>43*</b>	<b>42*</b>	<b>60</b>
<b>Total Non-Vermont Residents in Vermont</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>3</b>	<b>8</b>	<b>2</b>	<b>2</b>

\*In both 2016 and 2017, one death is indicated as a Vermont resident; however, no county of residence is listed.

**Table 7: Number of Fentanyl-Related Accidental or Undetermined Fatalities  
by Year and County of Residence**

	2010	2011	2012	2013	2014	2015	2016	2017	2018
<b>Addison County</b>	1	0	0	2	3	1	3	0	2
<b>Bennington County</b>	0	0	0	1	1	0	3	3	8
<b>Caledonia County</b>	0	0	0	0	0	0	0	3	4
<b>Chittenden County</b>	1	0	3	1	5	8	13	20	6
<b>Essex County</b>	0	0	1	0	0	2	0	0	0
<b>Franklin County</b>	0	0	0	2	2	5	3	5	7
<b>Grand Isle County</b>	0	0	0	0	0	0	2	1	0
<b>Lamoille County</b>	0	1	0	1	1	0	1	2	0
<b>Orange County</b>	1	0	0	0	0	2	3	4	2
<b>Orleans County</b>	0	0	1	0	0	3	3	2	2
<b>Rutland County</b>	1	2	0	2	2	1	6	9	13
<b>Washington County</b>	0	0	0	3	0	2	3	7	9
<b>Windham County</b>	0	1	0	0	2	0	3	9	18
<b>Windsor County</b>	0	1	1	0	1	4	5	8	12
<b>Total</b>	4	5	6	12	17	28	49*	74*	83
<b>Total Non-Vermont Residents in Vermont</b>	1	0	0	0	1	3	4	3	5

\* In 2016 (1) and 2017 (2), 3 deaths are indicated as a Vermont resident; however, no county of residence is listed.



## 2018 PRELIMINARY DATA Updates

The following data will be updated monthly with a 10- to 12-week time lag. Historic data may change if there are delays in reporting and all data in the following tables should be considered preliminary until final data is published. The following data includes fatalities of Vermont residents, regardless of place of death (i.e. in Vermont vs. out-of-state).

**Table 8: 2018 Preliminary Data by Month**

2018 Month of Death	Total Number of Opioid-Related Accidental and Undetermined Manner Fatalities			
	Total*	RX opioid (no fentanyl)	Heroin	Fentanyl
January	12	5	3	9
February	9	2	4	7
March	9	0	7	9
April	6	1	4	5
May	10	5	6	5
June	9	2	5	7
July	10	4	6	7
August	6	1	3	5
September	12	5	6	9
October	14	4	9	10
November	4	1	2	4
December	9	1	5	6
<b>Total Vermont Residents</b>	<b>110</b>	<b>31</b>	<b>60</b>	<b>83</b>
<b>Vermonters in Vermont</b>	<b>109</b>	<b>31</b>	<b>60</b>	<b>82</b>
<b>Vermonters Out of State</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>
<b>Non-Vermont Residents</b>	<b>6</b>	<b>1</b>	<b>2</b>	<b>5</b>

\*NOTE: Prescription opioid, fentanyl and heroin deaths are not mutually exclusive.

6+

<b>Table 9: Total Number of Opioid-Related Accidental and Undetermined Fatalities, Preliminary 2018 Data by County of Residence*</b>													
<b>County of Residence</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>June</b>	<b>July</b>	<b>Aug</b>	<b>Sept</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>	<b>Total</b>
<b>Addison County</b>	1	0	0	0	0	0	0	0	1	0	0	0	2
<b>Bennington County</b>	0	1	1	0	2	0	1	0	0	3	1	1	10
<b>Caledonia County</b>	1	1	0	1	0	0	0	0	0	0	0	1	4
<b>Chittenden County</b>	2	1	0	0	1	2	2	0	1	4	1	0	14
<b>Essex County</b>	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Franklin County</b>	2	0	0	2	0	1	1	1	0	0	0	2	9
<b>Grand Isle County</b>	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Lamoille County</b>	0	0	0	0	0	0	2	0	0	1	0	0	3
<b>Orange County</b>	0	2	0	0	0	0	0	0	0	1	0	0	3
<b>Orleans County</b>	0	0	0	0	0	0	0	0	1	1	0	0	2
<b>Rutland County</b>	1	1	1	1	2	2	1	1	3	3	0	0	16
<b>Washington County</b>	2	1	1	1	2	0	1	1	0	1	1	1	12
<b>Windham County</b>	3	1	4	0	2	4	1	2	2	0	0	2	21
<b>Windsor County</b>	0	1	2	1	1	0	1	1	4	0	1	2	14
<b>VERMONT Total</b>	<b>12</b>	<b>9</b>	<b>9</b>	<b>6</b>	<b>10</b>	<b>9</b>	<b>10</b>	<b>6</b>	<b>12</b>	<b>14</b>	<b>4</b>	<b>9</b>	<b>110</b>
<b>Non-Vermont Residents</b>	0	1	0	0	2	1	1	0	0	0	0	1	6

*The drug-related fatalities here include only opioid-related accidental and undetermined manner fatalities. They do not include suicide or homicide. This report does not include deaths due to the consequences of chronic substance use such as HIV, liver disease or infection; or deaths due to errors by medical professionals. This report also does not include deaths due to injury such as car crashes related to substance abuse. It is important to note that most drug-related fatalities are due to combinations of substances and cannot be attributed to a single drug. It is also important to note that the conditions under which each of these fatalities occurred are unique and cannot all be attributed to addiction and/or dependence.*

**Table 10: Total Number of Prescription Opioid-Related Accidental and Undetermined Fatalities (no fentanyl), Preliminary 2018 Data by County of Residence\***

County of Residence	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
Addison County	0	0	0	0	0	0	0	0	0	0	0	0	0
Bennington County	0	1	0	0	0	0	1	0	0	0	0	0	2
Caledonia County	0	0	0	0	0	0	0	0	0	0	0	0	0
Chittenden County	2	0	0	0	1	1	0	0	1	2	0	0	7
Essex County	0	0	0	0	0	0	0	0	0	0	0	0	0
Franklin County	1	0	0	1	0	0	1	0	0	0	0	1	4
Grand Isle County	0	0	0	0	0	0	0	0	0	0	0	0	0
Lamoille County	0	0	0	0	0	0	2	0	0	0	0	0	2
Orange County	0	0	0	0	0	0	0	0	0	0	0	0	0
Orleans County	0	0	0	0	0	0	0	0	0	1	0	0	1
Rutland County	0	1	0	0	1	1	0	0	1	1	0	0	5
Washington County	0	0	0	0	1	0	0	0	0	0	1	0	2
Windham County	2	0	0	0	2	0	0	0	0	0	0	0	4
Windsor County	0	0	0	0	0	0	0	1	3	0	0	0	4
<b>VERMONT Total</b>	<b>5</b>	<b>2</b>	<b>0</b>	<b>1</b>	<b>5</b>	<b>2</b>	<b>4</b>	<b>1</b>	<b>5</b>	<b>4</b>	<b>1</b>	<b>1</b>	<b>31</b>
<b>Non-Vermont Residents</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>

*The drug-related fatalities here include only opioid-related accidental and undetermined manner fatalities. They do not include suicide or homicide. This report does not include deaths due to the consequences of chronic substance use such as HIV, liver disease or infection; or deaths due to errors by medical professionals. This report also does not include deaths due to injury such as car crashes related to substance abuse. It is important to note that most drug-related fatalities are due to combinations of substances and cannot be attributed to a single drug. It is also important to note that the conditions under which each of these fatalities occurred are unique and cannot all be attributed to addiction and/or dependence.*

Table 11: Total Number of Heroin-Related Accidental and Undetermined Fatalities, Preliminary 2018 Data by County of Residence*													
County of Residence	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
Addison County	0	0	0	0	0	0	0	0	0	0	0	0	0
Bennington County	0	0	1	0	2	0	0	0	0	2	0	1	6
Caledonia County	0	0	0	0	0	0	0	0	0	0	0	0	0
Chittenden County	0	0	0	0	1	1	2	0	0	2	1	0	7
Essex County	0	0	0	0	0	0	0	0	0	0	0	0	0
Franklin County	2	0	0	1	0	0	0	1	0	0	0	0	4
Grand Isle County	0	0	0	0	0	0	0	0	0	0	0	0	0
Lamoille County	0	0	0	0	0	0	0	0	0	1	0	0	1
Orange County	0	2	0	0	0	0	0	0	0	1	0	0	3
Orleans County	0	0	0	0	0	0	0	0	1	1	0	0	2
Rutland County	0	0	1	1	0	1	1	1	2	2	0	0	9
Washington County	1	1	1	1	1	0	1	0	0	0	0	1	7
Windham County	0	1	3	0	1	3	1	1	1	0	0	1	12
Windsor County	0	0	1	1	1	0	1	0	2	0	1	2	9
<b>VERMONT Total</b>	<b>3</b>	<b>4</b>	<b>7</b>	<b>4</b>	<b>6</b>	<b>5</b>	<b>6</b>	<b>3</b>	<b>6</b>	<b>9</b>	<b>2</b>	<b>5</b>	<b>60</b>
<b>Non-Vermont Residents</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>2</b>

*The drug-related fatalities here include only opioid-related accidental and undetermined manner fatalities. They do not include suicide or homicide. This report does not include deaths due to the consequences of chronic substance use such as HIV, liver disease or infection; or deaths due to errors by medical professionals. This report also does not include deaths due to injury such as car crashes related to substance abuse. It is important to note that most drug-related fatalities are due to combinations of substances and cannot be attributed to a single drug. It is also important to note that the conditions under which each of these fatalities occurred are unique and cannot all be attributed to addiction and/or dependence.*

<b>County of Residence</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>June</b>	<b>July</b>	<b>Aug</b>	<b>Sept</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>	<b>Total</b>
Addison County	1	0	0	0	0	0	0	0	1	0	0	0	2
Bennington County	0	0	1	0	2	0	0	0	0	3	1	1	8
Caledonia County	1	1	0	1	0	0	0	0	0	0	0	1	4
Chittenden County	0	1	0	0	0	1	2	0	0	1	1	0	6
Essex County	0	0	0	0	0	0	0	0	0	0	0	0	0
Franklin County	2	0	0	1	0	1	1	1	0	0	0	1	7
Grand Isle County	0	0	0	0	0	0	0	0	0	0	0	0	0
Lamoille County	0	0	0	0	0	0	0	0	0	0	0	0	0
Orange County	0	1	0	0	0	0	0	0	0	1	0	0	2
Orleans County	0	0	0	0	0	0	0	0	1	1	0	0	2
Rutland County	1	1	1	1	1	1	1	1	2	3	0	0	13
Washington County	2	1	1	1	0	0	1	1	0	1	1	0	9
Windham County	2	1	4	0	1	4	1	2	1	0	0	2	18
Windsor County	0	1	2	1	1	0	1	0	4	0	1	1	12
<b>VERMONT Total</b>	<b>9</b>	<b>7</b>	<b>9</b>	<b>5</b>	<b>5</b>	<b>7</b>	<b>7</b>	<b>5</b>	<b>9</b>	<b>10</b>	<b>4</b>	<b>6</b>	<b>83</b>
<b>Non-Vermont Residents</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>5</b>

*The drug-related fatalities here include only opioid-related accidental and undetermined manner fatalities. They do not include suicide or homicide. This report does not include deaths due to the consequences of chronic substance use such as HIV, liver disease or infection; or deaths due to errors by medical professionals. This report also does not include deaths due to injury such as car crashes related to substance abuse. It is important to note that most drug-related fatalities are due to combinations of substances and cannot be attributed to a single drug. It is also important to note that the conditions under which each of these fatalities occurred are unique and cannot all be attributed to addiction and/or dependence.*

## Vermont Methodology for Calculating Drug-Related Fatalities

The Vermont Department of Health utilizes a unique methodology for calculating a drug-related fatality. The VDH method differs from the CDC methodology, as described in *MMWR: Increases in Drug and Opioid-Involved Overdose Deaths — United States, 2010–2015*:

“The National Vital Statistics System multiple cause-of-death mortality files were used to record drug overdose deaths. Drug overdose deaths were identified using the *International Classification of Disease, Tenth Revision* (ICD-10), based on the ICD-10 underlying cause-of-death codes X40–44 (unintentional), X60–64 (suicide), X85 (homicide), or Y10–Y14 (undetermined intent). Among deaths with drug overdose as the underlying cause, the type of opioid is indicated by the following ICD-10 multiple cause-of-death codes: opioids (T40.0, T40.1, T40.2, T40.3, T40.4, or T40.6); natural/semisynthetic opioids (T40.2); methadone (T40.3); synthetic opioids other than methadone (T40.4); and heroin (T40.1). Some deaths involved more than one type of opioid; these deaths were included in the rates for each subcategory. Therefore, categories of deaths presented are not mutually exclusive.”

<https://www.cdc.gov/mmwr/volumes/65/wr/mm655051e1.htm>

Determining a drug-related fatality is a multi-step process. Any death certificate with a pending investigation or natural death classification is removed before analyses. All causes of death, including any contributing conditions, are scanned to recognize any ICD code that represents a drug poisoning (including alcohol). Next, all literal text fields, including the injury description text are also examined to identify any listed alcohol or drugs. Fatalities related to chronic alcohol use, medical complications of medication administration, end of life care, intrauterine or gestational exposure, helium, or exposure/injury in the context of intoxication are excluded as they do not represent a likely “overdose”.

There are two main differences between the methodologies used by VDH and the CDC. First, VDH considers all causes of death, contributing conditions, and injury descriptions as opposed to underlying cause of death only. Second, VDH examines a broader list of ICD-10 codes than those used by the CDC. Beyond the list of ICD-10 codes used by the CDC, VDH examines the following additional ICD-10 codes to identify its initial list of drug-related fatalities:

ICD Codes Used in Drug-Related Fatalities Analysis (beyond those used by CDC)			
X45	F10.0	F14.0	F17.0
X65	F10.1	F14.1	F17.1
Y15	F11.0	F15.0	F18.0
T36-T50	F11.1	F15.1	F18.1
T51.0	F13.0	F16.0	F19.0
	F13.1	F16.1	F19.1

While the CDC does examine multiple cause-of-death codes for those described in the MMWR excerpt above (T40.0, T40.1, T40.2, T40.3, T40.4, or T40.6), they do so only for individuals who have an underlying cause-of-death code equal to X40-44, X60-64, X85, or Y10-Y14.

In an example of how the VDH and CDC methodologies differ based on use of ICD codes and literal text analysis, an underlying cause of death may be listed as cardiovascular disease and identified in the death record with the ICD-10 code I25.0 (CVD). This individual would not be included as a drug-related fatality using the CDC methodology. However, upon closer inspection of literal text and additional cause of death

fields, the injury description lists “substance abuse” with a contributing condition of “acute cocaine intoxication” and ICD codes indicating poisoning by narcotics (T45.0). Based on this additional information, VDH would classify this as a drug-related fatality.

As a result of its broader inclusion criteria, the Vermont Department of Health’s method of fatality identification reveals an average 5% *more* fatalities (range -1% to 14%) compared to the CDC’s findings for Vermont.

	<b>Number of Drug-Related Fatalities</b>	
	<b>CDC Methodology</b>	<b>Vermont Methodology</b>
2013	93	99
2014	83	96
2015	99	103
2016	125	127
2017	134	133
2018	Pending	138