

# Opioid-Related Fatalities Among Vermonters

## Key Points from the Opioid-related Fatalities Brief, 2017 Annual Data Publication

- 2017 opioid-related fatality data appears to show we are beginning to bend the curve on the upward spiral of opioid-related fatalities in Vermont. After a 30% increase from 2015 to 2016 (from 74 to 96 deaths among Vermont residents); we see a 5% increase in deaths from 2016 to 2017 (from 96 to 101 deaths among Vermont residents).
- Deaths involving fentanyl have increased by more than a third – 49 deaths in 2016 to 67 deaths in 2017. Fentanyl is involved in two-thirds of all opiate-related fatalities. The number of fatalities involving fentanyl has more than doubled 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 and 33 in 2017). Today prescription opiates are involved in about one-third of opioid-related deaths (33%).
- Fatalities involving heroin decreased from 2016 to 2017 (from 43 to 39 deaths). Heroin is present in about one-third of opioid-related deaths (31%).
- Opioid-related fatalities involving cocaine doubled in the past year (17 in 2016 to 32 in 2017). Cocaine is now present in one-third of accidental and undetermined opioid-related deaths (32%).

Please Note: The latest Drug- and Opioid- Related Fatality Briefs are presenting data in a different perspective than in the past. With this report, VDH will report on the total numbers of Vermont residents who died, regardless of where that death occurs (i.e. in Vermont or in another state). Previously, the Brief reported on the total number of deaths that occurred in Vermont, regardless of the decedent's state of residence. For a more comprehensive explanation of the changes, see the methodology notes at the end of the Brief.

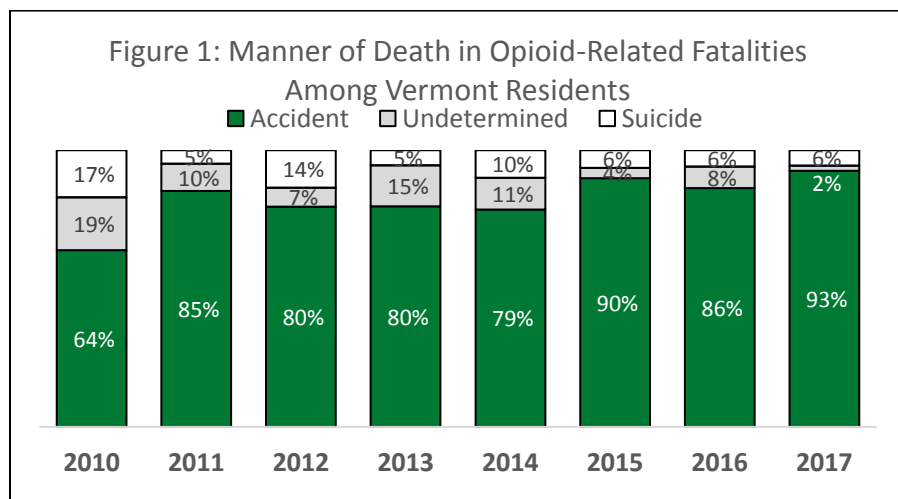
*Note: All of the fatalities assess and discussed above are “accidental and undetermined opioid-related fatalities”.*

# Opioid-Related Fatalities Among Vermonters

## Opioid-Related Fatality Overview

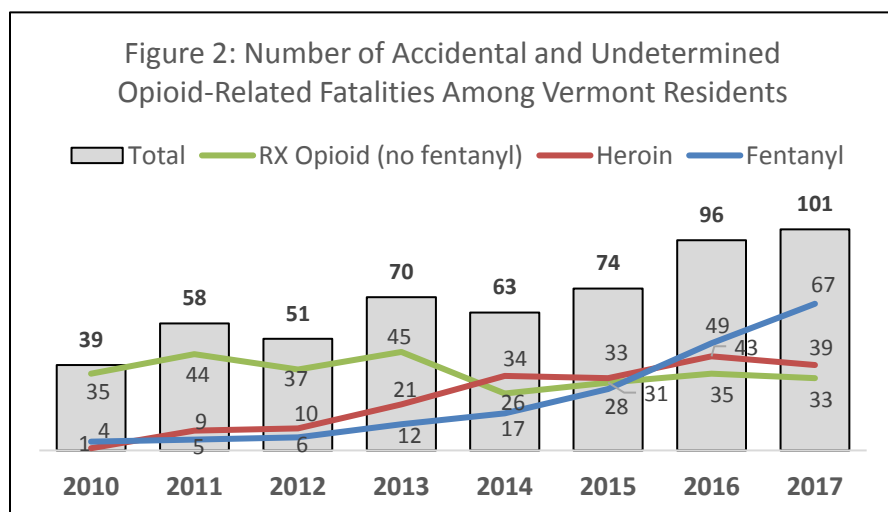
In 2017, there were 107 opioid-related fatalities among Vermont residents (see definition to the right). All 107 died in Vermont. Six non-Vermont residents died in Vermont in 2017 but are excluded from the descriptions below. At date of data analysis, the Vermont Office of the Chief Medical Examiner (OCME) has one pending death investigation.

Most of the deaths among Vermonters were determined to be accidental or undetermined. Six of those deaths were determined to be suicides (6% of all opioid-related deaths).



## 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.”



## 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 death 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.

Data from 2016 and 2017 are 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. Most deaths cannot be attributed to one substance.

In 2017, there were 101 accidental and undetermined opioid-related fatalities among Vermont residents – a 5% increase from the 96 reported in 2016. This equates to a rate of 16.2 fatalities per 100,000 Vermonters. Opioid-related fatality has more than doubled since 2010, when 39 of these deaths were recorded (6.2 per 100,000).

Males comprise 71% of accidental and undetermined opioid-related deaths among Vermont residents. Women comprise 29% of these deaths.

The average age of those who die from accidental or undetermined opioid-related cause is 39. Half of these opioid-related fatalities occur to those between 30 and 50 (50%). Nearly all accidental and undetermined opioid-related fatalities are among white, non-Hispanics (96%).

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

The involvement of multiple substances in opioid-related fatalities has changed significantly since 2016. Two-thirds (66%) involved fentanyl in 2017, up from half (51%) in 2016. Cocaine involvement nearly doubled from 18% to 32% of opioid-related fatalities.

Opioid-related fatalities involving heroin decreased from 45% to 39% between 2016 and 2017 while involvement of prescription opioids decreased from 36% to 33%. Half as many fatalities involved benzodiazepines in 2017 (5%) than in 2016 (10%). Fewer fatalities involved alcohol (from 17% to 14%), methadone (from 15% to 12%), and buprenorphine (from 1% to 0%) in 2017 than in 2016.

Substance*	2016		2017	
	Number	Percent	Number	Percent
Alcohol	16	17%	14	14%
Benzodiazepines	10	10%	5	5%
Buprenorphine	1	1%	0	0%
Cocaine	17	18%	32	32%
Fentanyl	49	51%	67	66%
Heroin	43	45%	39	39%
Methadone	14	15%	12	12%
RX opioid (no fentanyl)	35	36%	33	33%

\*Categories are not mutually exclusive as one death may involve multiple substances.

Most opioid-related fatalities involve multiple substances. As opioid-related fatalities involving cocaine and fentanyl have increased, those involving combinations of these substances with others have also increased. In 2017, nearly a quarter of all accidental and undetermined opioid-related fatalities involved a combination of cocaine and fentanyl (24%) – a four-fold increase from 2016 (6%). Twice as many involved both fentanyl and alcohol in 2017 (9%) than in 2016 (4%). Similarly, opioid-related fatalities involving a combination of fentanyl and prescription opioids nearly doubled from 6% to 11% between 2016 and 2017. Fatalities involving fentanyl and heroin accounted for slightly fewer than a third (29%) of opioid-related fatalities in 2017 – up from 22% in 2016. The percentage of fatalities involving both cocaine and heroin did not change between 2016 and 2017 (14%).

Table 2: Number and Percentage of Accidental and Undetermined Opioid-Related Fatalities Among Vermont Residents - Combinations of Substances Involved				
Substances*	2016		2017	
	Number	Percent	Number	Percent
Cocaine and Fentanyl	6	6%	24	24%
Cocaine and Heroin	13	14%	14	14%
Fentanyl and Alcohol	4	4%	9	9%
Fentanyl and Heroin	21	22%	29	29%
Fentanyl and RX Opioids (no fentanyl)	6	6%	11	11%

\*Combinations

Heroin- and fentanyl-related fatalities have risen sharply since 2013, however heroin-related fatalities decreased between 2016 and 2017. Prescription opioid fatalities (excluding fentanyl) have been decreasing, most sharply since 2013. In 2017, for the first time, the number of deaths from fentanyl is greater than the number of deaths from heroin; and both heroin and fentanyl deaths are higher than prescription drug-related deaths. (See Figure 2.)

### 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)), and Jeffrey Trites ([Jeffrey.Trites@vermont.gov](mailto:Jeffrey.Trites@vermont.gov)).

Table 3: Opioid-Related Fatalities		2012			2013			2014			2015			2016			2017		
		Number	Percent	Rate Per 100K VT-ers	Number	Percent	Rate Per 100K VT-ers	Number	Percent	Rate Per 100K VT-ers	Number	Percent	Rate Per 100K VT-ers	Number	Percent	Rate Per 100K VT-ers	Number	Percent	Rate Per 100K VT-ers
Total Occurring Among Vermont Residents in Vermont		57	--	9.1	71	--	11.3	66	--	10.5	74	--	11.8	99	--	15.9	107	--	17.1
Total Occurring Among Vermont Residents Outside of Vermont		2	--	0.3	3	--	0.5	4	--	0.6	5	--	0.8	3	--	0.5	0	--	0.0
Total Occurring Among Non-Vermont Residents in Vermont		1	--	0.2	3	--	0.5	2	--	0.3	6	--	1.0	13	--	2.1	6	--	1.0
		<u>% of All Opioid-Related Fatalities Occurring Among Vermont Residents</u>			<u>% of All Opioid-Related Fatalities Occurring Among Vermont Residents</u>			<u>% of All Opioid-Related Fatalities Occurring Among Vermont Residents</u>			<u>% of All Opioid-Related Fatalities Occurring Among Vermont Residents</u>			<u>% of All Opioid-Related Fatalities Occurring Among Vermont Residents</u>			<u>% of All Opioid-Related Fatalities Occurring Among Vermont Residents</u>		
Manner of Death of VERMONT Residents:																			
	Accidental	47	80%	7.5	59	80%	9.4	55	79%	8.8	71	90%	11.3	88	86%	14.1	99	93%	15.9
	Undetermined	4	7%	0.6	11	15%	1.8	8	11%	1.3	3	4%	0.5	8	8%	1.3	2	2%	0.3
	Suicide	8	14%	1.3	4	5%	0.6	7	10%	1.1	5	6%	0.8	6	6%	1.0	6	6%	1.0
	Homicide	0	0%	0.0	0	0%	0.0	0	0%	0.0	0	0%	0.0	0	0%	0.0	0	0%	0.0
		<u>% of Accidental and Undetermined Manner Opioid-Related Fatalities Occurring Among Vermont Residents</u>			<u>% of Accidental and Undetermined Manner Opioid-Related Fatalities Occurring Among Vermont Residents</u>			<u>% of Accidental and Undetermined Manner Opioid-Related Fatalities Occurring Among Vermont Residents</u>			<u>% of Accidental and Undetermined Manner Opioid-Related Fatalities Occurring Among Vermont Residents</u>			<u>% of Accidental and Undetermined Manner Opioid-Related Fatalities Occurring Among Vermont Residents</u>			<u>% of Accidental and Undetermined Manner Opioid-Related Fatalities Occurring Among Vermont Residents</u>		
Total VERMONT Residents Accidental and Undetermined OPIOID-Related Fatalities		51	--	8.1	70	--	11.2	63	--	10.1	74	--	11.8	96	--	15.4	101	--	16.2
Other Substances Involved																			
	Alcohol	10	20%	1.6	14	20%	2.2	10	16%	1.6	10	14%	1.6	16	17%	2.6	14	14%	2.2
	Benzodiazepines	9	18%	1.4	12	17%	1.9	5	8%	0.8	6	8%	1.0	10	10%	1.6	5	5%	0.8
	Buprenorphine	1	2%	0.2	4	6%	0.6	3	5%	0.5	2	3%	0.3	1	1%	0.2	0	0%	0.0
	Cocaine	5	10%	0.8	9	13%	1.4	11	17%	1.8	8	11%	1.3	17	18%	2.7	32	32%	5.1
	Fentanyl	6	12%	1.0	12	17%	1.9	17	27%	2.7	28	38%	4.5	49	51%	7.8	67	66%	10.7
	Heroin	10	20%	1.6	21	30%	3.4	34	54%	5.4	33	45%	5.3	43	45%	6.9	39	39%	6.2
	Methadone	18	35%	2.9	14	20%	2.2	5	8%	0.8	7	9%	1.1	14	15%	2.2	12	12%	1.9
	RX Opioid (excludes fentanyl)	37	73%	5.9	45	64%	7.2	26	41%	4.1	31	42%	5.0	35	36%	5.6	33	33%	5.3
				<u>Rate Per 100K of Sub Group</u>			<u>Rate Per 100K of Sub Group</u>			<u>Rate Per 100K of Sub Group</u>			<u>Rate Per 100K of Sub Group</u>			<u>Rate Per 100K of Sub Group</u>			<u>Rate Per 100K of Sub Group</u>
By Gender	Male	34	67%	11.0	44	63%	14.2	41	65%	13.3	51	69%	16.5	63	66%	20.4	72	71%	23.3
	Female	17	33%	5.4	26	37%	8.2	22	35%	6.9	23	31%	7.2	33	34%	10.4	29	29%	9.2
By Age	< 30	12	24%	5.3	13	19%	5.8	16	25%	7.1	15	20%	6.7	20	21%	9.0	25	25%	11.2
	30 - 39	10	20%	14.4	15	21%	21.4	22	35%	31.3	29	39%	40.9	32	33%	44.8	36	36%	50.4
	40 - 49	17	33%	19.7	17	24%	20.6	9	14%	11.3	11	15%	14.3	25	26%	33.5	15	15%	20.1
	50 +	12	24%	4.9	25	36%	10.1	16	25%	6.3	19	26%	7.5	19	20%	7.4	25	25%	9.8
Average Age				41			42			39			39			40			39
By Race/	White, Non-Hispanic	49	96%	8.3	66	94%	11.2	62	98%	10.6	70	95%	12.0	95	99%	16.3	97	96%	16.7
Ethnicity	Racial or Ethnic Minority	2	4%	5.4	4	6%	10.4	1	2%	2.5	4	5%	9.5	1	1%	2.3	4	4%	9.2

Table 4: Opioid-Related Fatalities by County of Residence and County of Death (Vermont and Non-Vermont Residents)		2012		2013		2014		2015		2016*		2017*							
		# 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	1	2%	2.7	5	7%	13.6	3	5%	8.1	1	1%	2.7	4	4%	10.8	1	1%	2.7
	Bennington	3	6%	8.2	4	6%	10.9	5	8%	13.7	2	3%	5.5	6	6%	16.6	3	3%	8.3
	Caledonia	0	0%	0.0	1	1%	3.2	5	8%	16.1	1	1%	3.2	4	4%	13.2	5	5%	16.5
	Chittenden	16	31%	10.1	17	24%	10.7	13	20%	8.1	17	21%	10.5	21	19%	13.0	28	26%	17.3
	Essex	2	4%	32.1	1	1%	16.1	1	2%	16.3	3	4%	48.7	0	0%	0.0	0	0%	0.0
	Franklin	3	6%	6.2	7	10%	14.5	6	9%	12.3	10	13%	20.5	7	6%	14.3	9	8%	18.4
	Grand Isle	1	2%	14.3	0	0%	0.0	1	2%	14.3	2	3%	29.2	2	2%	28.9	1	1%	14.5
	Lamoille	2	4%	8.0	3	4%	12.0	3	5%	12.0	0	0%	0.0	3	3%	11.8	3	3%	11.8
	Orange	1	2%	3.5	4	6%	13.8	1	2%	3.5	3	4%	10.4	4	4%	13.8	5	5%	17.3
	Orleans	5	10%	18.4	4	6%	14.7	3	5%	11.1	6	8%	22.1	6	6%	22.3	2	2%	7.4
	Rutland	2	4%	3.3	11	15%	18.1	7	11%	11.6	10	13%	16.7	13	12%	21.9	9	8%	15.2
	Washington	6	12%	10.1	7	10%	11.8	1	2%	1.7	4	5%	6.8	8	7%	13.7	12	11%	20.5
	Windham	4	8%	9.1	3	4%	6.8	8	12%	18.3	3	4%	6.9	3	3%	7.0	11	10%	25.5
	Windsor	5	10%	8.9	3	4%	5.4	6	9%	10.7	12	15%	21.5	14	13%	25.2	10	9%	18.0
	Non-VT Residents who Died in VT (Rate Per 100K Vermonsters)	1	2%	0.2	2	3%	0.3	2	3%	0.3	6	8%	1.0	13	12%	2.1	6	6%	1.0
<b>By County of Death</b>																			
	Addison	0	0%	0.0	4	6%	10.9	2	3%	5.4	0	0%	0.0	6	6%	16.2	1	1%	2.7
	Bennington	3	6%	8.2	4	6%	10.9	4	6%	11.0	1	1%	2.8	6	6%	16.6	3	3%	8.3
	Caledonia	0	0%	0.0	1	1%	3.2	5	8%	16.1	2	3%	6.5	5	5%	16.5	5	5%	16.5
	Chittenden	17	33%	10.7	18	25%	11.3	19	29%	11.8	20	25%	12.4	24	22%	14.9	35	33%	21.7
	Essex	2	4%	32.1	1	1%	16.1	0	0%	0.0	1	1%	16.2	1	1%	16.2	0	0%	0.0
	Franklin	4	8%	8.3	7	10%	14.5	5	8%	10.3	7	9%	14.3	7	6%	14.3	7	7%	14.3
	Grand Isle	0	0%	0.0	0	0%	0.0	0	0%	0.0	1	1%	14.6	1	1%	14.5	1	1%	14.5
	Lamoille	2	4%	8.0	3	4%	12.0	2	3%	8.0	1	1%	4.0	3	3%	11.8	3	3%	11.8
	Orange	1	2%	3.5	3	4%	10.4	1	2%	3.5	3	4%	10.4	4	4%	13.8	4	4%	13.8
	Orleans	4	8%	14.8	4	6%	14.7	2	3%	7.4	6	8%	22.1	6	6%	22.3	2	2%	7.4
	Rutland	2	4%	3.3	11	15%	18.1	7	11%	11.6	14	18%	23.4	11	10%	18.5	10	9%	16.9
	Washington	6	12%	10.1	7	10%	11.8	1	2%	1.7	4	5%	6.8	8	7%	13.7	10	9%	17.1
	Windham	4	8%	9.1	3	4%	6.8	7	11%	16.0	3	4%	6.9	6	6%	13.9	14	13%	32.4
	Windsor	5	10%	8.9	3	4%	5.4	6	9%	10.7	12	15%	21.5	18	17%	32.4	12	11%	21.6
	VT Residents who Died Out of State (Rate Per 100k Vermonsters)	2	4%	0.3	3	4%	0.5	4	6%	0.6	5	6%	0.8	3	3%	0.5	0	0%	0.0

\*Three deaths are indicated as Vermont residents; however, no county of residence is listed (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
Addison County	2	1	1	3	1	0	1	1
Bennington County	2	1	3	1	2	0	4	1
Caledonia County	1	0	0	1	4	1	3	3
Chittenden County	10	12	10	13	5	4	3	8
Essex County	0	1	1	1	0	0	0	0
Franklin County	3	5	3	5	2	6	5	3
Grand Isle County	0	0	1	0	0	0	0	1
Lamoille County	0	2	2	3	1	0	1	1
Orange County	2	2	0	2	1	2	0	2
Orleans County	0	1	5	4	1	2	3	0
Rutland County	4	4	0	4	4	4	3	3
Washington County	3	5	6	4	1	3	4	6
Windham County	3	6	2	1	2	1	0	2
Windsor County	5	4	3	3	2	8	8	1
<b>Total</b>	<b>35</b>	<b>44</b>	<b>37</b>	<b>45</b>	<b>26</b>	<b>31</b>	<b>35</b>	<b>32*</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>

\*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
Addison County	0	1	0	1	0	0	1	0
Bennington County	0	0	0	2	2	2	1	2
Caledonia County	0	0	0	0	2	0	2	1
Chittenden County	0	4	3	5	8	10	12	9
Essex County	0	0	0	0	1	1	0	0
Franklin County	0	0	0	2	3	2	2	3
Grand Isle County	0	0	1	0	1	2	1	0
Lamoille County	0	0	0	0	1	0	1	1
Orange County	0	1	1	2	1	1	3	3
Orleans County	0	0	0	0	1	3	1	2
Rutland County	0	3	2	6	5	7	6	5
Washington County	0	0	0	1	0	0	4	2
Windham County	1	0	2	2	4	1	1	5
Windsor County	0	0	1	0	5	4	7	5
<b>Total</b>	<b>1</b>	<b>9</b>	<b>10</b>	<b>21</b>	<b>34</b>	<b>33</b>	<b>42*</b>	<b>38*</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>

\*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
<b>Addison County</b>	1	0	0	2	3	1	3	0
<b>Bennington County</b>	0	0	0	1	1	0	3	2
<b>Caledonia County</b>	0	0	0	0	0	0	0	3
<b>Chittenden County</b>	1	0	3	1	5	8	13	20
<b>Essex County</b>	0	0	1	0	0	2	0	0
<b>Franklin County</b>	0	0	0	2	2	5	3	5
<b>Grand Isle County</b>	0	0	0	0	0	0	2	1
<b>Lamoille County</b>	0	1	0	1	1	0	1	2
<b>Orange County</b>	1	0	0	0	0	2	3	4
<b>Orleans County</b>	0	0	1	0	0	3	3	1
<b>Rutland County</b>	1	2	0	2	2	1	6	7
<b>Washington County</b>	0	0	0	3	0	2	3	7
<b>Windham County</b>	0	1	0	0	2	0	3	7
<b>Windsor County</b>	0	1	1	0	1	4	5	7
<b>Total</b>	4	5	6	12	17	28	48*	66*
<b>Total Non-Vermont Residents in Vermont</b>	1	0	0	0	1	3	4	3

\*In both 2016 and 2017, one death is 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 Opioid-Related Fatalities 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				
October				
November				
December				
<b>Total Vermont Residents</b>	<b>71</b>	<b>20</b>	<b>38</b>	<b>54</b>
<b>Vermonters in Vermont</b>	<b>70</b>	<b>20</b>	<b>38</b>	<b>53</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>5</b>	<b>1</b>	<b>1</b>	<b>4</b>

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

Table 9: Total Number of Opioid-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	1	0	0	0	0	0	0	0					1
Bennington County	0	1	1	0	2	0	1	0					5
Caledonia County	1	1	0	1	0	0	0	0					3
Chittenden County	2	1	0	0	1	2	2	0					8
Essex County	0	0	0	0	0	0	0	0					0
Franklin County	2	0	0	2	0	1	1	1					7
Grand Isle County	0	0	0	0	0	0	0	0					0
Lamoille County	0	0	0	0	0	0	2	0					2
Orange County	0	2	0	0	0	0	0	0					2
Orleans County	0	0	0	0	0	0	0	0					0
Rutland County	1	1	1	1	2	2	1	1					10
Washington County	2	1	1	1	2	0	1	1					9
Windham County	3	1	4	0	2	4	1	2					17
Windsor County	0	1	2	1	1	0	1	1					7
<b>VERMONT Total</b>	12	9	9	6	10	9	10	6					71
<b>Non-Vermont Residents</b>	0	1	0	0	2	1	1	0					5

*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
Bennington County	0	1	0	0	0	0	1	0					2
Caledonia County	0	0	0	0	0	0	0	0					0
Chittenden County	2	0	0	0	1	1	0	0					4
Essex County	0	0	0	0	0	0	0	0					0
Franklin County	1	0	0	1	0	0	1	0					3
Grand Isle County	0	0	0	0	0	0	0	0					0
Lamoille County	0	0	0	0	0	0	2	0					2
Orange County	0	0	0	0	0	0	0	0					0
Orleans County	0	0	0	0	0	0	0	0					0
Rutland County	0	1	0	0	1	1	0	0					3
Washington County	0	0	0	0	1	0	0	0					1
Windham County	2	0	0	0	2	0	0	0					4
Windsor County	0	0	0	0	0	0	0	1					1
<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>20</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>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.*

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
Bennington County	0	0	1	0	2	0	0	0					3
Caledonia County	0	0	0	0	0	0	0	0					0
Chittenden County	0	0	0	0	1	1	2	0					4
Essex County	0	0	0	0	0	0	0	0					0
Franklin County	2	0	0	1	0	0	0	1					4
Grand Isle County	0	0	0	0	0	0	0	0					0
Lamoille County	0	0	0	0	0	0	0	0					0
Orange County	0	2	0	0	0	0	0	0					2
Orleans County	0	0	0	0	0	0	0	0					0
Rutland County	0	0	1	1	0	1	1	1					5
Washington County	1	1	1	1	1	0	1	0					6
Windham County	0	1	3	0	1	3	1	1					10
Windsor County	0	0	1	1	1	0	1	0					4
<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>38</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>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 12: Total Number of Fentanyl-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	1	0	0	0	0	0	0	0					1
Bennington County	0	0	1	0	2	0	0	0					3
Caledonia County	1	1	0	1	0	0	0	0					3
Chittenden County	0	1	0	0	0	1	2	0					4
Essex County	0	0	0	0	0	0	0	0					0
Franklin County	2	0	0	1	0	1	1	1					6
Grand Isle County	0	0	0	0	0	0	0	0					0
Lamoille County	0	0	0	0	0	0	0	0					0
Orange County	0	1	0	0	0	0	0	0					1
Orleans County	0	0	0	0	0	0	0	0					0
Rutland County	1	1	1	1	1	1	1	1					8
Washington County	2	1	1	1	0	0	1	1					7
Windham County	2	1	4	0	1	4	1	2					15
Windsor County	0	1	2	1	1	0	1	0					6
VERMONT Total	9	7	9	5	5	7	7	5					54
<b>Non-Vermont Residents</b>	0	0	0	0	2	1	1	0					4

*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.*

## Methodology Notes

### A) Changes to Population Focus for Drug- and Opiate-Related Fatalities Data Briefs

Prior to March 2018, drug- and opioid-related fatalities were reported as the total number of deaths in Vermont, regardless of the residency of the individual who died. Therefore, previous briefs presented the total number of drug- and opiate-related fatalities that occurred in Vermont.

In order to be consistent with the Center for Disease Control (CDC) reporting and reporting of opioid death rates of most other states, VDH determined that it would be best to report these fatalities as the total number of Vermont residents who died, regardless of the location of the death. Thus, moving forward, the briefs will assess data for all Vermont residents who died of a drug- or opiate-related fatality – regardless of whether that death occurred in Vermont or in another state.

Due to significant interest in looking at both the total number of Vermont residents who died and the total number of people who died in Vermont (regardless of residency), we continue to present the numbers of all deaths in Vermont in specific tables (see Table 3 and Table 4). However, the main analysis within the brief has been shifted to provide comparability to CDC reporting and other states.

Therefore, what has traditionally been viewed as the “total” number of accidental and undetermined opioid-related fatalities has shifted. In 2016, we published the total number of accidental and undetermined opioid-related fatalities that occurred in Vermont (106). Using the same methodology, there have been 107 deaths in Vermont in 2017. Changing the focus to assess how many Vermont residents have died of an accidental/undetermined opioid-related fatality shows that there were 96 deaths in 2016 and a total of 101 deaths in 2017. See table below to assess the differences in these specific ways to view the data.

<b>All Drug-Related Fatalities</b>								
	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
<b>VT Residents who died in VT</b>	66	89	80	101	94	98	129	123
<b>VT Residents who died out of State</b>	3	3	3	4	8	5	3	1
<b>Out of State Residents who died in VT</b>	8	7	1	8	3	10	19	7
<b>Total Number of Deaths in Vermont*</b>	74~	96~	81	109	97~	108	148	130
<b>Total Number of Vermonters Who Died**</b>	69	92	83	105	102	103	132	124

<b>Accidental and Undetermined Opioid-related Fatalities</b>								
	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
<b>VT Residents who died in VT</b>	36	58	49	67	59	69	93	101
<b>VT Residents who died out of State</b>	3	0	2	3	4	5	3	0
<b>Out of State Residents who died in VT</b>	5	3	1	2	2	6	13	6
<b>Total Number of Deaths in Vermont*</b>	41	61	50	69	61	75	106	107
<b>Total Number of Vermonters Who Died**</b>	39	58	51	70	63	74	96	101

\*Includes out of state residents who died in Vermont; excludes Vermont residents who died in another state.

\*\*Includes Vermonters who died in Vermont and in other states; excludes non-residents who died in Vermont.

~Drug-Related fatalities that were determined to be homicides are not included in the totals where indicated. There was one in each of the years indicated.

## B) 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. 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 10-15% *more* fatalities on average 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	105
2014	83	102
2015	99	103
2016	125	132
2017	Pending	124