

## EMERGENCY DEPARTMENT VISITS FOR OVERDOSE BY OPIOID, UNSPECIFIED SUBSTANCE AND HEROIN AMONG VIRGINIA RESIDENTS

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**April 2017**

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**Please direct questions or comments to the Division of Surveillance and Investigation, Enhanced Surveillance Team: [syndromic@vdh.virginia.gov](mailto:syndromic@vdh.virginia.gov)**

## Background

The Virginia Department of Health (VDH) receives data on visits to 82 acute care hospital emergency departments (EDs) and 13 free-standing EDs in Virginia for purposes of public health surveillance. The purpose of this report is to characterize ED visit trends for acute unintentional overdose by opioids and heroin among Virginia residents.

Chief complaints and discharge diagnoses of ED visits are analyzed by VDH to identify and monitor issues of public health concern across Virginia. The chief complaint is a free-text field that captures the patient's primary reason for seeking medical care as interpreted by the ED registration staff. The discharge diagnosis is a coded field that uses standardized values outlined by the International Classification of Diseases (ICD) 9<sup>th</sup> and 10<sup>th</sup> Revision code sets.

## Methodology

ED visits that are identified as **unintentional overdose by opioid or unspecified substance** include those with medical and non-medical use of a prescription opioid or where the substance is not specified, given evidence that the majority of fatal overdoses are opioid-related.<sup>1</sup> These visits must meet the following inclusion and exclusion criteria:

- Inclusion terms from Chief Complaint or Discharge Diagnosis: *overdose, OD, sobredosis, opioid, opiate, opium, narcotic, Narcan, naloxone, E850.1, E850.2, 965.00, 965.02, 965.09, 977.9, T40.0X1, T40.0X4, T40.2X1, T40.2X4, T40.3X1, T40.3X4, T40.4X1, T40.4X4, T40.601, T40.604, T40.691, T40.694, T50.901, T50.904*
- Exclusions terms from Chief Complaint or Discharge Diagnosis: *suicide, alcohol overdose alone, withdrawal, detoxification, rehab, addiction, dependency, mental health or psychological evaluation, allergies, constipation, chronic pain, refill requests, and any specified non-opioid drug or medication*

ED visits that are identified as **unintentional overdose by heroin** must meet the following inclusion and exclusion criteria:

- Inclusion terms from Chief Complaint or Discharge Diagnosis: *heroin, herion, 965.01, E850.0, T40.1X1A, T40.1X4A*
- Exclusions terms from Chief Complaint or Discharge Diagnosis: *suicide, withdrawal, detoxification, rehab, and addiction*

These criteria were revised in September 2016 in order to improve specificity in the identification of ED visits for unintentional drug overdose. Readers are strongly encouraged to review [syndromic surveillance data limitations](#) when interpreting this report.

ED visits for unintentional overdose by opioid or unspecified substance and heroin are presented by count or rate per 100,000 population. Rates are calculated using U.S. Census Bureau 2015 population estimates. To protect confidentiality and maintain accurate rate calculations, ED visit counts of 1 to 4 and rates with numerators of 1 to 4 are suppressed in this report. Counts of 0 are included.

The geographic location is assigned based on the patient's residential zip code provided. A single zip code may span multiple city and county localities in Virginia. If a patient resides in such a zip code, the visit is assigned to the locality where the majority of the population resides. Places where the Virginia city and county populations have been combined to calculate a rate per 100,000 population due to zip codes spanning multiple localities can be found in [Appendix 1](#).

## Highlights for April 2017

Statewide ED visits for overdose by opioid or unspecified substance among Virginia residents increased by 34 visits (5%) in April compared to March 2017.

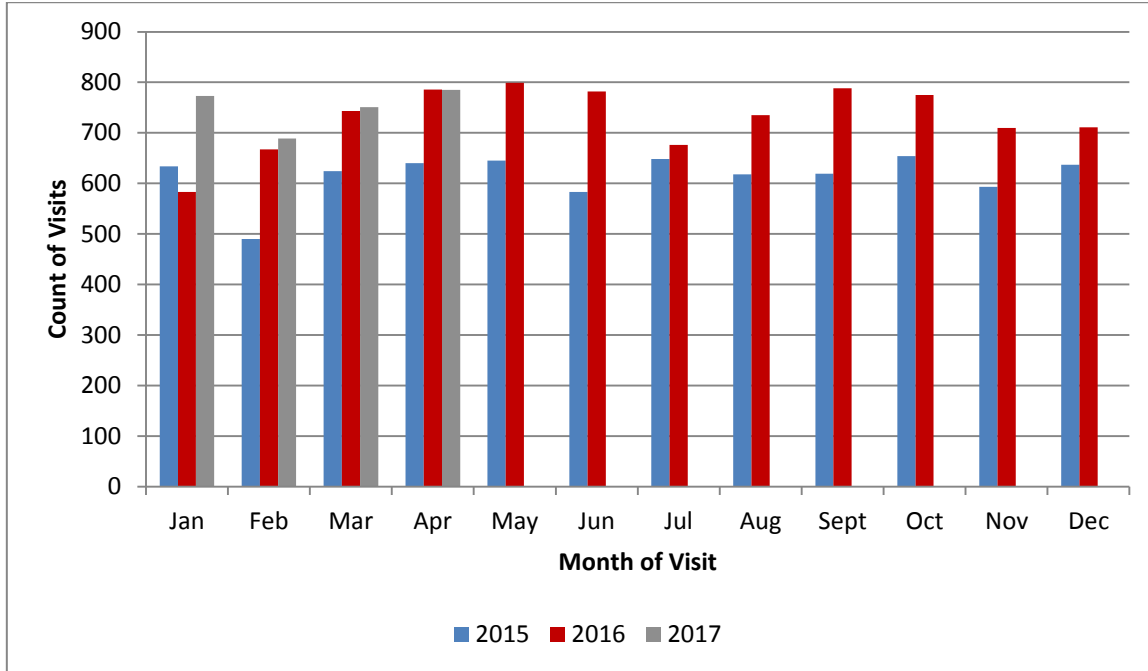
- Among the 5 [VDH health planning regions](#), visits for overdose by opioid or unspecified substance increased the most among the Central region (33 additional visits, 21%) followed by Southwest (19 additional visits, 13%), and Northern (6 additional visits, 5%). Visits decreased in the Northwest and Eastern regions. Central region remained the region with the highest rate per 100,000 population.
- By sex, visits for overdose by opioid or unspecified substance increased among both males (31 additional visits, 8%) and females (3 additional visits, <1%). While visits have increased among both sexes since reporting began in January 2015, the rate of change for males has been 2.3 times the rate of change for females.
- By age group, the greatest increase in visits for overdose by opioid or unspecified substance was observed among the 65 years and older age group with 15 additional visits (32%) followed by the 25-34 year (29 additional visits, 17%), 55-64 year (8 additional visits, 11%), and 15-24 year (15 additional visits, 11%) age groups.
- Among the 35 [VDH health districts](#), the largest increases in visits for overdose by opioid or unspecified substance were observed in Chickahominy (13 additional visits, 260%), Pittsylvania-Danville (11 additional visits, 183%), and Central Virginia (11 additional visits, 73%). Roanoke, however, remained the VDH health district with the highest rate per 100,000 population.

Statewide ED visits for overdose by heroin among Virginia residents decreased by 11 visits (8%) in April compared to March 2017.

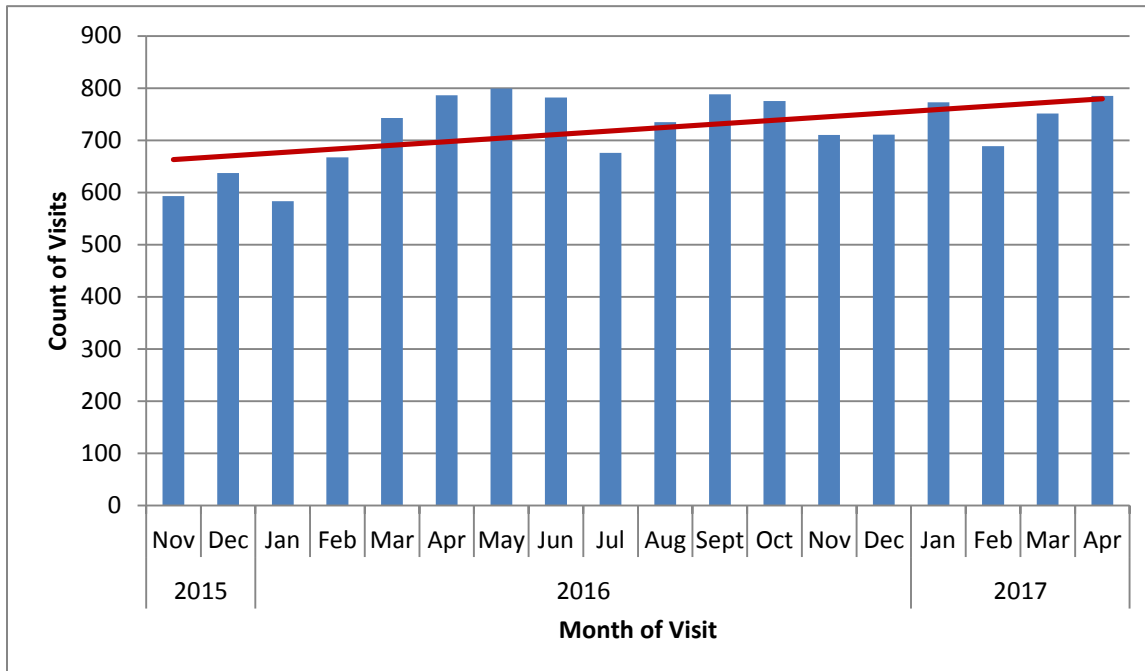
- Among the 5 [VDH health planning regions](#), visits for overdose by heroin increased in the Eastern (23 additional visits, 88%) and Northern (10 additional visits, 53%) regions, while decreasing in the Central, Northwest, and Southwest regions. Visits in the Northwest region decreased by more than half between March and April 2017 after a notable increase over the previous two months.
- By sex, visits for overdose by heroin decreased among females (13 fewer visits, 25%) and increased slightly among males (2 additional visits, 2%). Males continue to contribute approximately twice as many visits for overdose by heroin compared to females.
- By age group, visits for overdose by heroin increased among those aged 55-64 years (6 additional visits, 120%) and 15-24 years (2 additional visits, 8%). Visits decreased among all other age groups. The largest proportion of visits remained among those aged 25-34 years representing 42% of visits over the previous 12 months as well as the highest visit rate per 100,000 population.
- Among the 35 [VDH health districts](#), the largest increases in visits for overdose by heroin were observed in Virginia Beach (267%), Norfolk (200%), and Chesapeake (100%). The increased visits in Norfolk resulted in the highest rate per 100,000 population among VDH health districts. Roanoke, however, remained the second highest rate per 100,000 for the third consecutive month.

## Emergency Department Visits for Unintentional Overdose by Opioid or Unspecified Substance among Virginia Residents

**Figure 1A.** Count of ED Visits for Unintentional Overdose by Opioid or Unspecified Substance among Virginia Residents by Month, 2015 - 2017

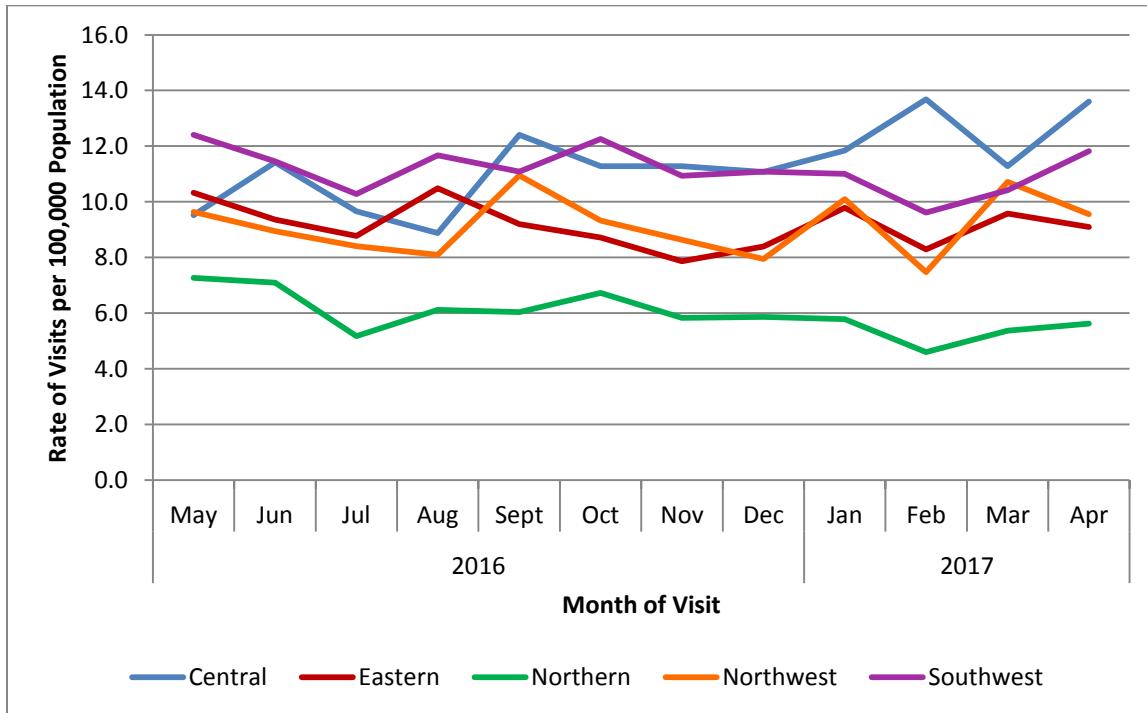


**Figure 1B.** Count of ED Visits for Unintentional Overdose by Opioid or Unspecified Substance among Virginia Residents by Month with Line of Best Fit, Previous 18 Months

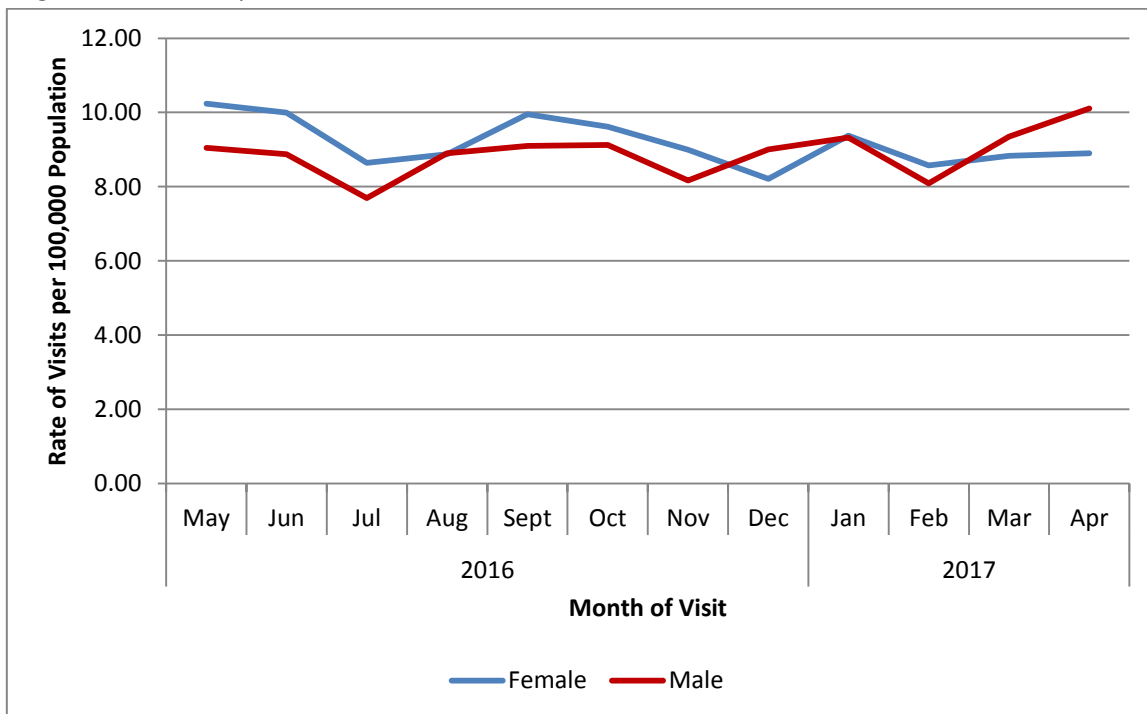


Note: A line of best fit is used to identify a trend in the relationship between two variables.

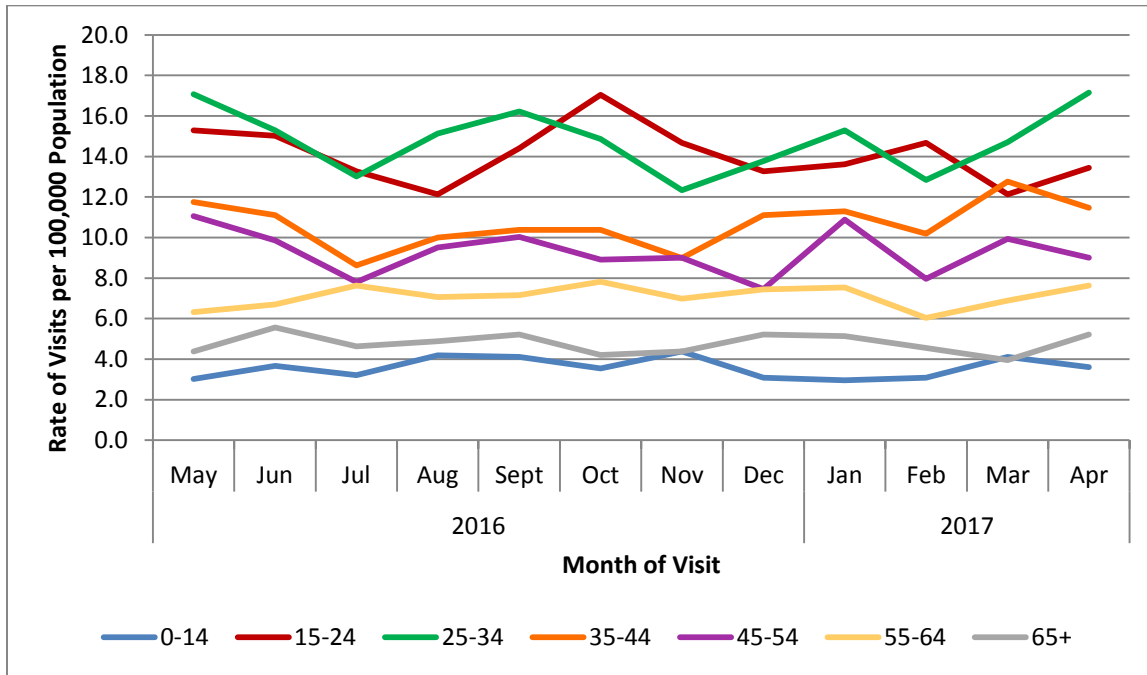
**Figure 1C.** Rate of ED Visits for Unintentional Overdose by Opioid or Unspecified Substance among Virginia Residents by Month and Health Region, Previous 12 Months



**Figure 1D.** Rate of ED Visits for Unintentional Overdose by Opioid or Unspecified Substance among Virginia Residents by Month and Sex, Previous 12 Months



**Figure 1E.** Rate of ED Visits for Unintentional Overdose by Opioid or Unspecified Substance among Virginia Residents by Month and Age Group (Years), Previous 12 Months



**Table 1A.** Count and Rate per 100,000 Population of ED Visits for Unintentional Overdose by Opioid or Unspecified Substance among Virginia Residents by Month and Health District, Previous 6 Months<sup>†\*</sup>

Health District	2015 Population Estimate	Nov 2016		Dec 2016		Jan 2017		Feb 2017		Mar 2017		Apr 2017	
		Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate
Alexandria	159,571	5	3.1	11	6.9	13	8.1	8	5.0	8	5.0	12	7.5
Alleghany	179,604	21	11.7	21	11.7	25	13.9	18	10.0	17	9.5	21	11.7
Arlington	234,678	10	4.3	14	6.0	12	5.1	13	5.5	9	3.8	6	2.6
Central Shenandoah	297,621	15	5.0	9	3.0	10	3.4	8	2.7	10	3.4	10	3.4
Central Virginia	259,900	21	8.1	28	10.8	12	4.6	16	6.2	15	5.8	26	10.0
Chesapeake	238,283	21	8.8	27	11.3	29	12.2	18	7.6	19	8.0	27	11.3
Chesterfield	379,107	28	7.4	36	9.5	46	12.1	40	10.6	39	10.3	39	10.3
Chickahominy	154,089	17	11.0	14	9.1	16	10.4	15	9.7	5	3.2	18	11.7
Crater	157,517	7	4.4	12	7.6	11	7.0	7	4.4	9	5.7	10	6.3
Cumberland Plateau	110,381	12	10.9	9	8.2	6	5.4	9	8.2	10	9.1	7	6.3
Eastern Shore	45,692	*	*	*	*	5	10.9	7	15.3	*	*	8	17.5
Fairfax	1,166,706	77	6.6	60	5.1	69	5.9	53	4.5	67	5.7	64	5.5
Hampton	138,626	11	7.9	16	11.5	25	18.0	13	9.4	17	12.3	9	6.5
Henrico	320,717	52	16.2	45	14.0	46	14.3	62	19.3	49	15.3	62	19.3
Lenowisco	91,830	10	10.9	13	14.2	14	15.2	11	12.0	11	12.0	13	14.2
Lord Fairfax	229,120	27	11.8	23	10.0	26	11.3	26	11.3	37	16.1	17	7.4
Loudoun	374,451	19	5.1	27	7.2	16	4.3	17	4.5	17	4.5	27	7.2
Mount Rogers	191,012	14	7.3	12	6.3	17	8.9	23	12.0	16	8.4	16	8.4
New River	182,991	17	9.3	11	6.0	12	6.6	16	8.7	19	10.4	15	8.2
Norfolk	247,189	20	8.1	15	6.1	18	7.3	20	8.1	18	7.3	22	8.9
Peninsula	353,464	34	9.6	29	8.2	49	13.9	40	11.3	50	14.1	37	10.5
Piedmont	104,667	9	8.6	9	8.6	7	6.7	9	8.6	9	8.6	8	7.6
Pittsylvania-Danville	105,799	10	9.5	12	11.3	13	12.3	9	8.5	6	5.7	17	16.1
Portsmouth	96,874	12	12.4	19	19.6	9	9.3	14	14.5	19	19.6	12	12.4
Prince William	500,740	31	6.2	31	6.2	31	6.2	21	4.2	30	6.0	28	5.6
Rappahannock	350,535	27	7.7	26	7.4	42	12.0	21	6.0	41	11.7	40	11.4
Rappahannock-Rapidan	171,228	21	12.3	28	16.4	31	18.1	25	14.6	33	19.3	33	19.3
Richmond City	217,938	38	17.4	32	14.7	36	16.5	54	24.8	42	19.3	50	22.9
Roanoke	99,681	25	25.1	24	24.1	21	21.1	15	15.0	27	27.1	23	23.1
Southside	84,304	9	10.7	9	10.7	6	7.1	7	8.3	7	8.3	6	7.1
Thomas Jefferson	248,500	22	8.9	17	6.8	22	8.9	17	6.8	18	7.2	24	9.7
Three Rivers	141,609	12	8.5	13	9.2	15	10.6	14	9.9	18	12.7	13	9.2
Virginia Beach	453,500	29	6.4	26	5.7	25	5.5	19	4.2	17	3.7	33	7.3
West Piedmont	141,119	19	13.5	21	14.9	30	21.3	14	9.9	21	14.9	23	16.3
Western Tidewater	153,950	6	3.9	9	5.8	8	5.2	10	6.5	17	11.0	9	5.8
<b>VIRGINIA TOTAL</b>	<b>8,382,993</b>	<b>710</b>	<b>8.5</b>	<b>711</b>	<b>8.5</b>	<b>773</b>	<b>9.2</b>	<b>689</b>	<b>8.2</b>	<b>751</b>	<b>9.0</b>	<b>785</b>	<b>9.4</b>

† Rate per 100,000 population based on 2015 U.S. Census estimates available at [www.census.gov/popest/](http://www.census.gov/popest/)

\* Visit counts of 1 to 4 and rates with numerators of 1 to 4 are suppressed to maintain confidentiality and accurate rate calculations.

**Table 1B.** Count and Rate per 100,000 Population of ED Visits for Unintentional Overdose by Opioid or Unspecified Substance among Virginia Residents by Month and City/County Locality, Previous 6 Months<sup>††\*</sup>

Locality	2015 Population Estimate	Nov 2016		Dec 2016		Jan 2017		Feb 2017		Mar 2017		Apr 2017	
		Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate
Accomack County	32,973	*	*	*	*	*	*	*	*	*	*	5	15.2
Albemarle County <sup>‡</sup>	152,300	11	7.2	9	5.9	9	5.9	11	7.2	10	7.2	14	9.2
Alleghany County <sup>‡</sup>	21,335	*	*	*	*	0	0	*	*	*	*	*	*
Amelia County	12,903	0	0	*	*	0	0	*	*	*	*	*	*
Amherst County	31,914	*	*	*	*	*	*	*	*	*	*	*	*
Appomattox County	15,414	*	*	*	*	0	0	0	0	0	0	*	*
Arlington County	229,164	10	4.4	14	6.1	12	5.2	13	5.7	9	3.9	6	2.6
Augusta County <sup>‡</sup>	120,221	*	*	0	0	*	*	0	0	0	0	*	*
Bath County	4,470	0	0	0	0	0	0	0	0	*	*	0	0
Bedford County	77,724	*	*	7	9.0	*	*	9	11.6	6	7.7	6	7.7
Bland County	6,561	0	0	0	0	0	0	0	0	0	0	0	0
Botetourt County	33,347	5	15.0	*	*	*	*	*	*	*	*	0	0
Brunswick County	16,698	*	*	0	0	*	*	*	*	*	*	*	*
Buchanan County	22,776	6	26.3	*	*	0	0	*	*	*	*	*	*
Buckingham County	17,032	*	*	*	*	*	*	*	*	*	*	*	*
Campbell County	55,086	*	*	6	10.9	*	*	0	0	0	0	6	10.9
Caroline County	29,984	*	*	*	*	*	*	*	*	*	*	*	*
Carroll County	29,724	*	*	*	*	*	*	*	*	*	*	*	*
Charles City County	7,040	0	0	*	*	0	0	0	0	0	0	0	0
Charlotte County	12,201	*	*	*	*	*	*	*	*	*	*	*	*
Chesterfield County <sup>‡</sup>	353,507	26	7.4	35	9.9	43	12.2	38	10.7	37	10.7	39	11.0
Clarke County	14,363	0	0	0	0	*	*	0	0	*	*	*	*
Craig County	5,211	0	0	0	0	*	*	*	*	*	*	*	*
Culpeper County	49,432	*	*	13	26.3	10	20.2	8	16.2	11	22.3	9	18.2
Cumberland County	9,719	*	*	*	*	0	0	0	0	*	*	0	0
Dickenson County	15,115	0	0	*	*	*	*	*	*	5	33.1	*	*
Dinwiddie County	27,852	*	*	*	*	0	0	0	0	0	0	0	0
Essex County	11,130	0	0	*	*	0	0	*	*	*	*	0	0
Fairfax County <sup>‡</sup>	1,180,139	77	6.5	60	5.1	69	5.8	53	4.5	67	5.7	64	5.4
Fauquier County	68,782	10	14.5	11	16.0	12	17.4	10	14.5	13	18.9	12	17.4
Floyd County	15,651	0	0	0	0	0	0	*	*	*	*	*	*
Fluvanna County	26,235	*	*	*	*	*	*	0	0	0	0	*	*
Franklin County	56,264	6	10.7	*	*	9	16.0	*	*	7	12.4	9	16.0
Frederick County <sup>‡</sup>	110,483	11	10.0	7	6.3	10	9.1	13	11.8	*	*	6	5.4
Giles County	16,708	*	*	*	*	*	*	*	*	*	*	*	*
Gloucester County	37,143	*	*	*	*	*	*	*	*	7	18.8	5	13.5
Goochland County	22,253	*	*	*	*	*	*	*	*	0	0	*	*



Locality	2015 Population Estimate	Nov 2016		Dec 2016		Jan 2017		Feb 2017		Mar 2017		Apr 2017	
		Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate
Grayson County <sup>‡</sup>	22,926	7	30.5	*	*	6	26.2	8	34.9	0	0	7	30.5
Greene County	19,162	5	26.1	*	*	*	*	*	*	0	0	*	*
Greensville County <sup>‡</sup>	17,381	*	*	*	*	*	*	*	*	*	*	*	*
Halifax County	35,125	*	*	*	*	*	*	*	*	*	*	*	*
Hanover County	103,227	12	11.6	8	7.7	10	9.7	12	11.6	5	4.8	15	14.5
Henrico County	325,155	52	16.0	45	13.8	46	14.1	62	19.1	49	15.1	62	19.1
Henry County <sup>‡</sup>	65,526	13	19.8	17	25.9	21	32.0	10	15.3	14	21.4	13	19.8
Highland County	2,214	0	0	0	0	0	0	0	0	0	0	0	0
Isle of Wight County	36,314	*	*	*	*	0	0	*	*	*	*	*	*
James City County	73,147	11	15.0	*	*	15	20.5	9	12.3	7	9.6	6	8.2
King and Queen County	7,158	0	0	0	0	*	*	0	0	0	0	0	0
King George County	25,515	*	*	*	*	6	23.5	*	*	*	*	6	23.5
King William County	16,269	*	*	*	*	*	*	*	*	*	*	*	*
Lancaster County	10,965	*	*	0	0	*	*	*	*	0	0	0	0
Lee County	24,742	*	*	0	0	*	*	*	*	*	*	*	*
Loudoun County	375,629	19	5.1	27	7.2	16	4.3	17	4.5	17	4.5	27	7.2
Louisa County	34,602	*	*	*	*	5	14.5	*	*	5	14.5	6	17.3
Lunenburg County	12,299	0	0	*	*	*	*	0	0	*	*	0	0
Madison County	13,134	*	*	*	*	*	*	0	0	*	*	*	*
Mathews County	8,862	0	0	*	*	0	0	0	0	*	*	*	*
Mecklenburg County	31,081	6	19.3	6	19.3	*	*	*	*	*	*	*	*
Middlesex County	10,606	0	0	*	*	*	*	0	0	*	*	*	*
Montgomery County <sup>‡</sup>	115,056	8	7.0	6	5.2	6	5.2	11	9.6	10	10.4	9	7.8
Nelson County	14,785	*	*	0	0	*	*	0	0	*	*	*	*
New Kent County	20,392	*	*	*	*	*	*	*	*	0	0	*	*
Northampton County	12,155	*	*	*	*	*	*	*	*	*	*	*	*
Northumberland County	12,232	*	*	0	0	*	*	*	*	*	*	*	*
Nottoway County	15,673	*	*	0	0	*	*	*	*	0	0	*	*
Orange County	35,385	5	14.1	*	*	7	19.8	7	19.8	5	14.1	8	22.6
Page County	23,726	*	*	*	*	5	21.1	*	*	*	*	*	*
Patrick County	18,045	0	0	0	0	0	0	0	0	0	0	*	*
Pittsylvania County <sup>‡</sup>	104,276	10	9.6	12	11.5	13	12.5	9	8.6	*	*	17	16.3
Powhatan County	28,031	*	*	*	*	*	*	*	*	*	*	0	0
Prince Edward County	22,952	*	*	*	*	*	*	*	*	0	0	*	*
Prince George County	92,717	5	5.4	8	8.6	8	8.6	6	6.5	*	*	6	6.5
Prince William County <sup>‡</sup>	509,211	31	6.1	31	6.1	31	6.1	21	4.1	28	5.9	28	5.5
Pulaski County	34,332	5	14.6	*	*	5	14.6	*	*	*	*	*	*
Rappahannock County	7,378	*	*	*	*	*	*	0	0	*	*	0	0
Richmond County	8,908	0	0	0	0	0	0	0	0	0	0	*	*
Roanoke County <sup>‡</sup>	219,738	38	17.3	40	18.2	44	20.0	29	13.2	6	16.8	41	18.7

Locality	2015 Population Estimate	Nov 2016		Dec 2016		Jan 2017		Feb 2017		Mar 2017		Apr 2017	
		Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate
Rockbridge County <sup>†</sup>	36,234	*	*	*	*	*	*	*	*	0	0	*	*
Rockingham County <sup>†</sup>	131,131	12	9.2	8	6.1	*	*	7	5.3	6	4.6	5	3.8
Russell County	27,891	*	*	*	*	*	*	*	*	*	*	*	*
Scott County	22,126	0	0	0	0	0	0	0	0	0	0	*	*
Shenandoah County	43,190	5	11.6	8	18.5	5	11.6	7	16.2	8	18.5	*	*
Smyth County	31,470	5	15.9	*	*	*	*	8	25.4	5	15.9	*	*
Southampton County <sup>†</sup>	26,599	*	*	0	0	0	0	*	*	*	*	0	0
Spotsylvania County	130,475	12	9.2	10	7.7	22	16.9	11	8.4	16	12.3	11	8.4
Stafford County	142,003	8	5.6	5	3.5	9	6.3	5	3.5	13	9.2	17	12.0
Surry County	6,709	0	0	0	0	0	0	0	0	0	0	0	0
Sussex County	11,715	0	0	0	0	0	0	0	0	0	0	0	0
Tazewell County	42,899	*	*	*	*	*	*	*	*	*	*	*	*
Warren County	39,083	8	20.5	5	12.8	5	12.8	*	*	9	23.0	*	*
Washington County <sup>†</sup>	71,732	*	*	*	*	5	7.0	*	*	5	8.4	*	*
Westmoreland County	17,629	*	*	*	*	*	*	*	*	*	*	*	*
Wise County <sup>†</sup>	43,657	8	18.3	13	29.8	12	27.5	9	20.6	9	22.9	10	22.9
Wythe County	29,119	0	0	0	0	0	0	*	*	0	0	0	0
York County	67,837	*	*	*	*	*	*	7	10.3	*	*	*	*
Alexandria City	153,511	5	3.3	11	7.2	13	8.5	8	5.2	8	5.2	12	7.8
Bristol City <sup>†</sup>	71,732	*	*	*	*	5	7.0	*	*	*	*	*	*
Buena Vista City <sup>†</sup>	36,234	*	*	*	*	*	*	*	*	*	*	*	*
Charlottesville City <sup>†</sup>	152,300	11	7.2	9	5.9	9	5.9	11	7.2	*	*	14	9.2
Chesapeake City	235,429	21	8.9	27	11.5	29	12.3	18	7.6	19	8.1	27	11.5
Colonial Heights City <sup>†</sup>	353,507	26	7.4	35	9.9	43	12.2	38	10.7	*	*	39	11.0
Covington City <sup>†</sup>	21,335	*	*	*	*	0	0	*	*	0	0	*	*
Danville City <sup>†</sup>	104,276	10	9.6	12	11.5	13	12.5	9	8.6	*	*	17	16.3
Emporia City <sup>†</sup>	17,381	*	*	*	*	*	*	*	*	0	0	*	*
Fairfax City <sup>†</sup>	1,180,139	77	6.5	60	5.1	69	5.8	53	4.5	0	0	64	5.4
Falls Church City <sup>†</sup>	1,180,139	77	6.5	60	5.1	69	5.8	53	4.5	0	0	64	5.4
Franklin City <sup>†</sup>	26,599	*	*	0	0	0	0	*	*	*	*	0	0
Fredericksburg City	28,118	*	*	*	*	*	*	*	*	5	17.8	5	17.8
Galax City <sup>†</sup>	22,926	7	30.5	*	*	6	26.2	8	34.9	*	*	7	30.5
Hampton City	136,454	11	8.1	16	11.7	25	18.3	13	9.5	17	12.5	9	6.6
Harrisonburg City <sup>†</sup>	131,131	12	9.2	8	6.1	*	*	7	5.3	0	0	5	3.8
Hopewell City <sup>†</sup>	92,717	5	5.4	8	8.6	8	8.6	6	6.5	5	7.5	6	6.5
Lexington City <sup>†</sup>	36,234	*	*	*	*	*	*	*	*	0	0	*	*
Lynchburg City	79,812	9	11.3	9	11.3	6	7.5	*	*	8	10.0	8	10.0
Manassas City <sup>†</sup>	509,211	31	6.1	31	6.1	31	6.1	21	4.1	*	*	28	5.5
Manassas Park City <sup>†</sup>	509,211	31	6.1	31	6.1	31	6.1	21	4.1	0	0	28	5.5
Martinsville City <sup>†</sup>	65,526	13	19.8	17	25.9	21	32.0	10	15.3	0	0	13	19.8

Locality	2015 Population Estimate	Nov 2016		Dec 2016		Jan 2017		Feb 2017		Mar 2017		Apr 2017	
		Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate
Newport News City	182,385	20	11.0	24	13.2	28	15.4	22	12.1	39	21.4	26	14.3
Norfolk City	246,393	20	8.1	15	6.1	18	7.3	20	8.1	18	7.3	22	8.9
Norton City <sup>‡</sup>	43,657	8	18.3	13	29.8	12	27.5	9	20.6	*	*	10	22.9
Petersburg City <sup>‡</sup>	92,717	5	5.4	8	8.6	8	8.6	6	6.5	0	0	6	6.5
Poquoson City	12,059	0	0	*	*	*	*	*	*	0	0	*	*
Portsmouth City	96,201	12	12.5	19	19.8	9	9.4	14	14.6	19	19.8	12	12.5
Radford City <sup>‡</sup>	115,056	8	7.0	6	5.2	6	5.2	11	9.6	*	*	9	7.8
Richmond City	220,289	38	17.3	32	14.5	36	16.3	54	24.5	42	19.1	50	22.7
Roanoke City <sup>‡</sup>	219,738	38	17.3	40	18.2	44	20.0	29	13.2	27	16.8	41	18.7
Salem City <sup>‡</sup>	219,738	38	17.3	40	18.2	44	20.0	29	13.2	*	*	41	18.7
Staunton City <sup>‡</sup>	120,221	*	*	0	0	*	*	0	0	*	*	*	*
Suffolk City	88,161	*	*	6	6.8	8	9.1	6	6.8	12	13.6	7	7.9
Virginia Beach City	452,745	29	6.4	26	5.7	25	5.5	19	4.2	17	3.8	33	7.3
Waynesboro City <sup>‡</sup>	120,221	*	*	0	0	*	*	0	0	*	*	*	*
Williamsburg City	15,052	0	0	0	0	*	*	*	*	0	0	0	0
Winchester City <sup>‡</sup>	110,483	11	10.0	7	6.3	10	9.1	13	11.8	11	13.6	6	5.4
<b>VIRGINIA TOTAL</b>	<b>8,382,993</b>	<b>710</b>	<b>8.5</b>	<b>711</b>	<b>8.5</b>	<b>773</b>	<b>9.2</b>	<b>689</b>	<b>8.2</b>	<b>751</b>	<b>9.0</b>	<b>785</b>	<b>9.4</b>

† Rate per 100,000 population based on 2015 U.S. Census estimates available at [www.census.gov/popest/](http://www.census.gov/popest/)

‡ The rate per 100,000 population for each locality within a combined group is based on the aggregated total population of the combined group. Refer to [Appendix 1](#) for the list of localities that are combined.

\* Visit counts of 1 to 4 and rates with numerators of 1 to 4 are suppressed to maintain confidentiality and accurate rate calculations.

**Table 1C.** Count and Rate per 100,000 Population of ED Visits for Unintentional Overdose by Opioid or Unspecified Substance among Virginia Residents by Month and Virginia State Police Division, Previous 6 Months<sup>†§</sup>

VSP Division	2015 Population Estimate	Nov 2016		Dec 2016		Jan 2017		Feb 2017		Mar 2017		Apr 2017	
		Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate
Division 1	1,403,431	158	11.3	152	10.8	178	12.7	198	14.1	164	11.7	195	13.9
Division 2	836,683	84	10.0	78	9.3	94	11.2	76	9.1	110	13.1	88	10.5
Division 3	655,338	54	8.2	52	7.9	37	5.6	31	4.7	36	5.5	53	8.1
Division 4	441,778	45	10.2	39	8.8	43	9.7	46	10.4	41	9.3	40	9.1
Division 5	1,823,018	140	7.7	155	8.5	177	9.7	147	8.1	175	9.6	170	9.3
Division 6	775,091	87	11.2	92	11.9	103	13.3	79	10.2	94	12.1	102	13.2
Division 7	2,447,654	142	5.8	143	5.8	141	5.8	112	4.6	131	5.4	137	5.6
VIRGINIA TOTAL	8,382,993	710	8.5	711	8.5	773	9.2	689	8.2	751	9.0	785	9.4

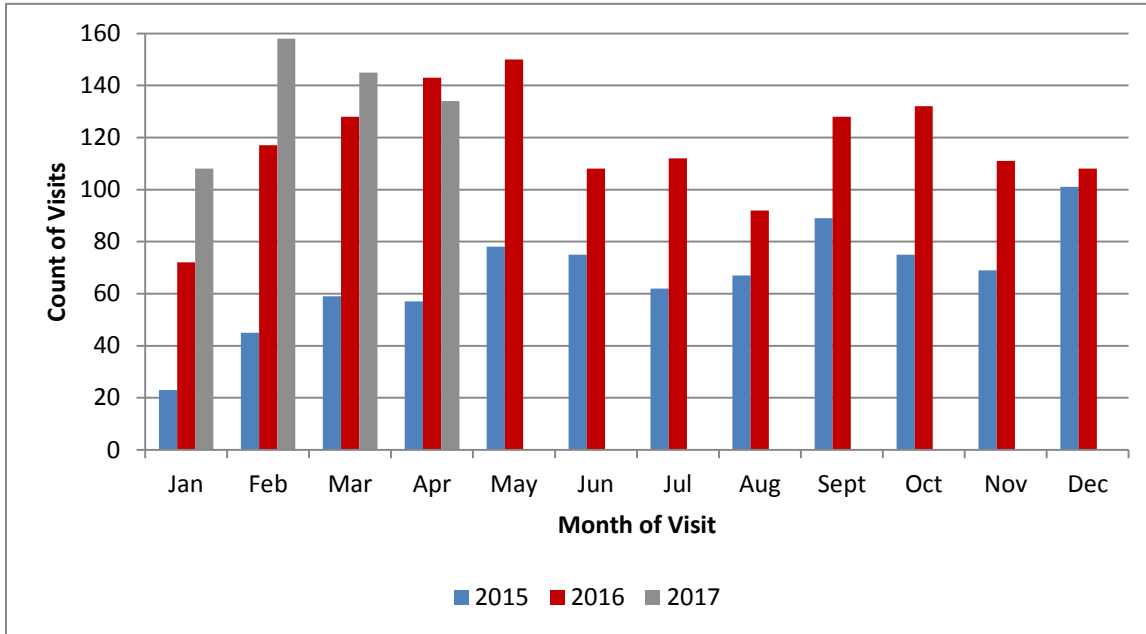
† Rate per 100,000 population based on 2015 U.S. Census estimates available at [www.census.gov/popest/](http://www.census.gov/popest/)

\* Visit counts of 1 to 4 and rates with numerators of 1 to 4 are suppressed to maintain confidentiality and accurate rate calculations.

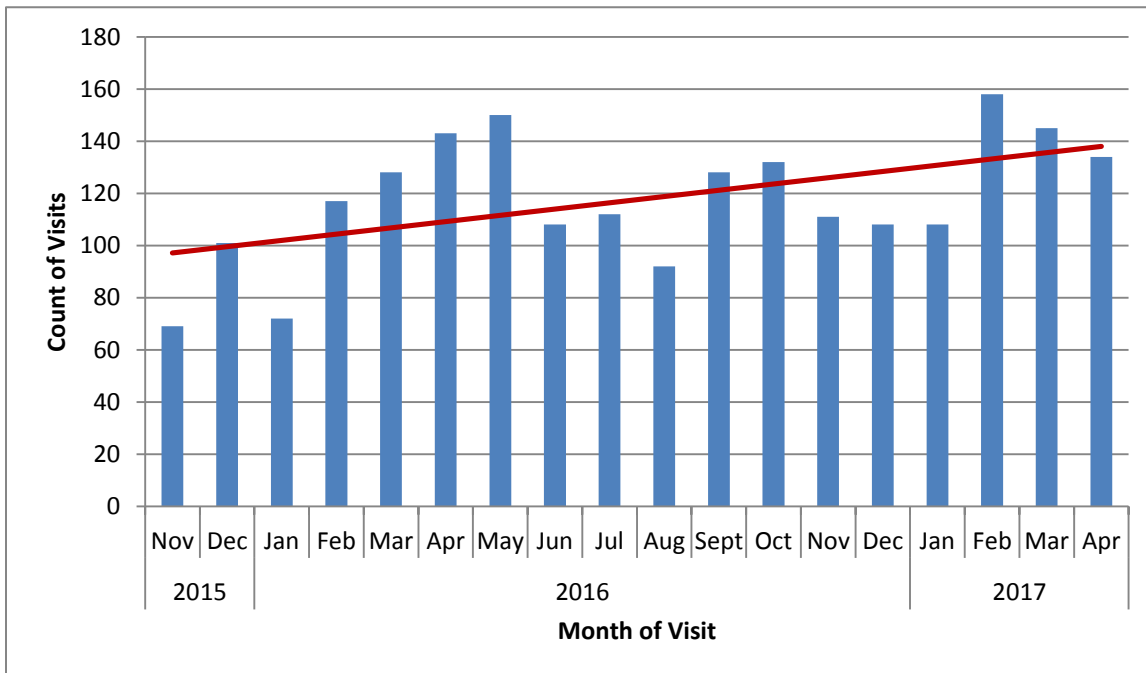
§ Virginia State Police Divisions available at [http://www.vsp.state.va.us/Office\\_Locations.shtm](http://www.vsp.state.va.us/Office_Locations.shtm)

**Emergency Department Visits for Unintentional Overdose by Heroin among Virginia Residents**

**Figure 2A.** Count of ED Visits for Unintentional Overdose by Heroin among Virginia Residents by Month, 2015 - 2017

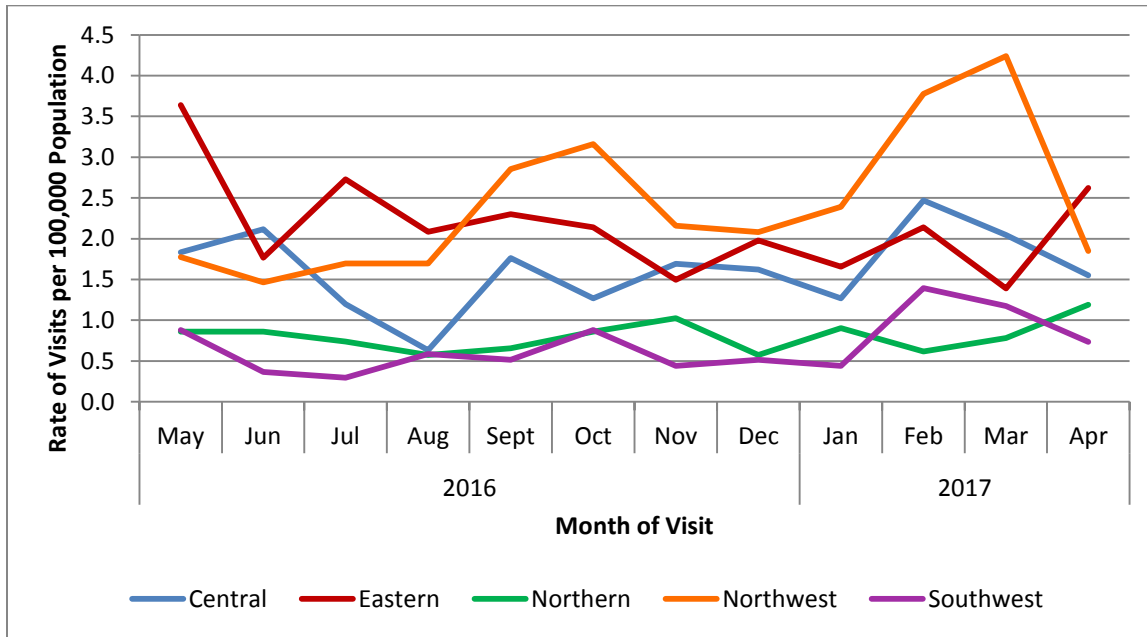


**Figure 2B.** Count of ED Visits for Unintentional Overdose by Heroin among Virginia Residents by Month with Line of Best Fit, Previous 18 Months

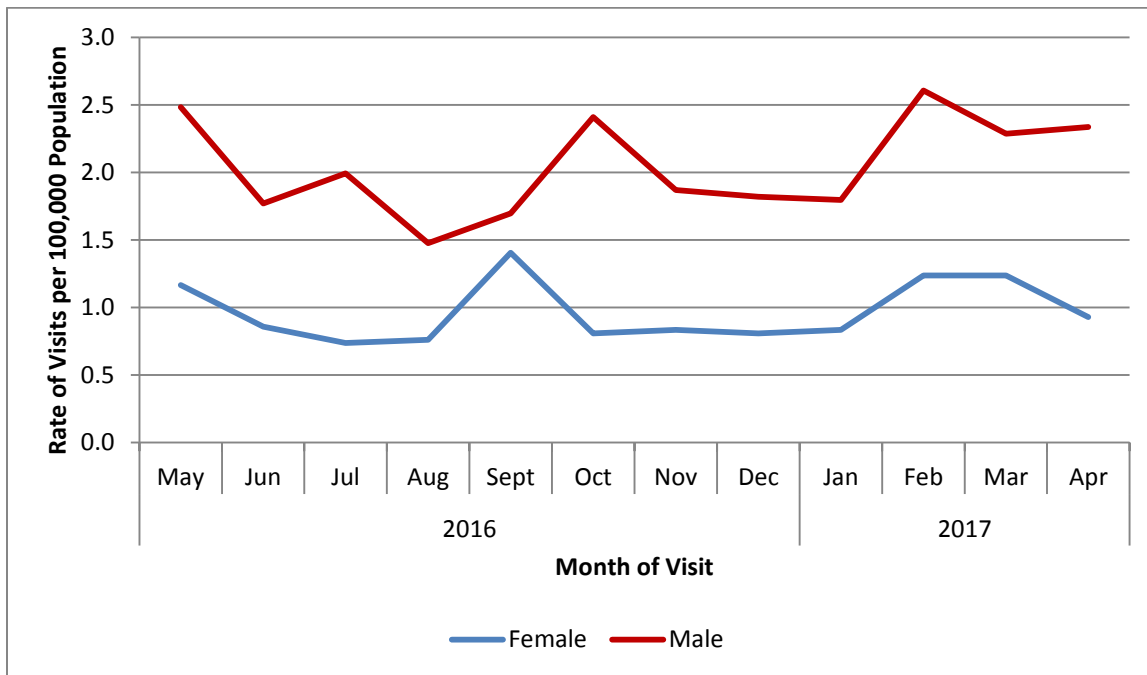


*Note: A line of best fit is used to identify a trend in the relationship between two variables.*

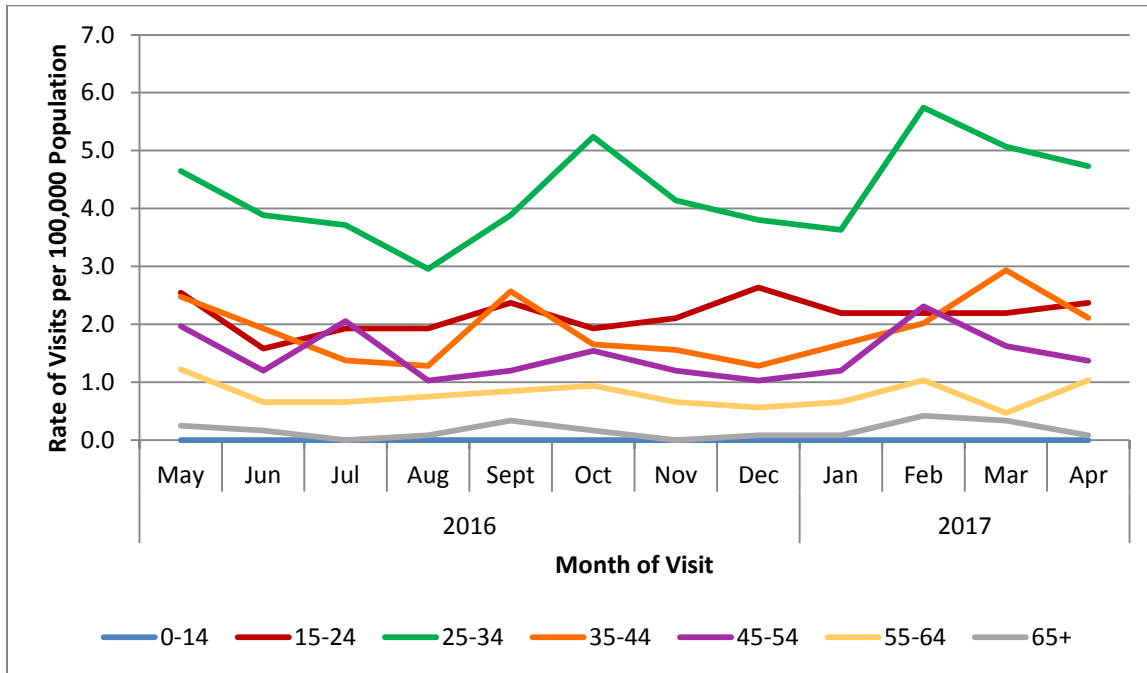
**Figure 2C.** Rate of ED Visits for Unintentional Overdose by Heroin among Virginia Residents by Month and Health Region, Previous 12 Months



**Figure 2D.** Rate of ED Visits for Unintentional Overdose by Heroin among Virginia Residents by Month and Sex, Previous 12 Months



**Figure 2E.** Rate of ED Visits for Unintentional Overdose by Heroin among Virginia Residents by Month and Age Group (Years), Previous 12 Months



**Table 2A.** Count and Rate per 100,000 Population of ED Visits for Unintentional Overdose by Heroin among Virginia Residents by Month and Health District, Previous 6 Months<sup>†\*</sup>

Health District	2015 Population Estimate	Nov 2016		Dec 2016		Jan 2017		Feb 2017		Mar 2017		Apr 2017	
		Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate
Alexandria	159,571	*	*	0	0	0	0	*	*	0	0	*	*
Alleghany	179,604	*	*	*	*	*	*	8	4.5	*	*	*	*
Arlington	234,678	0	0	*	*	*	*	*	*	0	0	*	*
Central Shenandoah	297,621	0	0	0	0	*	*	*	*	*	*	0	0
Central Virginia	259,900	*	*	0	0	*	*	0	0	*	*	*	*
Chesapeake	238,283	*	*	5	2.1	*	*	7	2.9	*	*	8	3.4
Chesterfield	379,107	*	*	7	1.8	6	1.6	8	2.1	*	*	7	1.8
Chickahominy	154,089	*	*	*	*	*	*	9	5.8	5	3.2	*	*
Crater	157,517	*	*	*	*	0	0	*	*	*	*	*	*
Cumberland Plateau	110,381	0	0	0	0	0	0	0	0	0	0	0	0
Eastern Shore	45,692	0	0	0	0	0	0	0	0	0	0	0	0
Fairfax	1,166,706	11	0.9	5	0.4	11	0.9	8	0.7	12	1.0	13	1.1
Hampton	138,626	*	*	6	4.3	7	5.0	*	*	*	*	*	*
Henrico	320,717	12	3.7	9	2.8	7	2.2	10	3.1	12	3.7	7	2.2
Lenowisco	91,830	0	0	0	0	0	0	0	0	0	0	0	0
Lord Fairfax	229,120	7	3.1	*	*	10	4.4	19	8.3	10	4.4	8	3.5
Loudoun	374,451	*	*	*	*	*	*	*	*	0	0	*	*
Mount Rogers	191,012	0	0	*	*	0	0	0	0	0	0	0	0
New River	182,991	*	*	0	0	0	0	*	*	*	*	0	0
Norfolk	247,189	6	2.4	5	2.0	7	2.8	7	2.8	5	2.0	15	6.1
Peninsula	353,464	*	*	*	*	*	*	7	2.0	*	*	*	*
Piedmont	104,667	0	0	0	0	0	0	*	*	0	0	0	0
Pittsylvania-Danville	105,799	0	0	0	0	0	0	0	0	0	0	0	0
Portsmouth	96,874	*	*	*	*	*	*	5	5.2	5	5.2	*	*
Prince William	500,740	10	2.0	*	*	9	1.8	*	*	7	1.4	12	2.4
Rappahannock	350,535	7	2.0	12	3.4	10	2.9	11	3.1	14	4.0	6	1.7
Rappahannock-Rapidan	171,228	10	5.8	9	5.3	5	2.9	11	6.4	22	12.8	8	4.7
Richmond City	217,938	7	3.2	*	*	*	*	5	2.3	5	2.3	5	2.3
Roanoke	99,681	*	*	*	*	*	*	8	8.0	7	7.0	6	6.0
Southside	84,304	0	0	0	0	0	0	0	0	*	*	0	0
Thomas Jefferson	248,500	*	*	*	*	*	*	7	2.8	6	2.4	*	*
Three Rivers	141,609	*	*	*	*	*	*	*	*	*	*	*	*
Virginia Beach	453,500	7	1.5	7	1.5	8	1.8	6	1.3	*	*	11	2.4
West Piedmont	141,119	0	0	*	*	0	0	0	0	*	*	0	0
Western Tidewater	153,950	*	*	*	*	0	0	*	*	*	*	*	*
<b>VIRGINIA TOTAL</b>	<b>8,382,993</b>	<b>111</b>	<b>1.3</b>	<b>108</b>	<b>1.3</b>	<b>108</b>	<b>1.3</b>	<b>158</b>	<b>1.9</b>	<b>145</b>	<b>1.7</b>	<b>134</b>	<b>1.6</b>

<sup>†</sup> Rate per 100,000 population based on 2015 U.S. Census estimates available at [www.census.gov/popest/](http://www.census.gov/popest/)

\* Visit counts of 1 to 4 and rates with numerators of 1 to 4 are suppressed to maintain confidentiality and accurate rate calculations.



**Table 2B.** Count and Rate per 100,000 Population of ED Visits for Unintentional Overdose by Heroin among Virginia Residents by Month and Virginia State Police Division, Previous 6 Months<sup>†\*§</sup>

VSP Division	2015 Population Estimate	Nov 2016		Dec 2016		Jan 2017		Feb 2017		Mar 2017		Apr 2017	
		Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate
Division 1	1,403,431	26	1.9	28	2.0	21	1.5	38	2.7	34	2.4	24	1.7
Division 2	836,683	24	2.9	23	2.7	27	3.2	41	4.9	44	5.3	21	2.5
Division 3	655,338	*	*	0	0	*	*	*	*	6	0.9	*	*
Division 4	441,778	0	0	*	*	0	0	0	0	0	0	0	0
Division 5	1,823,018	28	1.5	36	2.0	30	1.6	41	2.2	26	1.4	48	2.6
Division 6	775,091	6	0.8	6	0.8	6	0.8	19	2.5	16	2.1	10	1.3
Division 7	2,447,654	25	1.0	14	0.6	22	0.9	15	0.6	19	0.8	29	1.2
<b>VIRGINIA TOTAL</b>	<b>8,382,993</b>	<b>111</b>	<b>1.3</b>	<b>108</b>	<b>1.3</b>	<b>108</b>	<b>1.3</b>	<b>158</b>	<b>1.9</b>	<b>145</b>	<b>1.7</b>	<b>134</b>	<b>1.6</b>

† Rate per 100,000 population based on 2015 U.S. Census estimates available at [www.census.gov/popest/](http://www.census.gov/popest/)

\* Visit counts of 1 to 4 and rates with numerators of 1 to 4 are suppressed to maintain confidentiality and accurate rate calculations.

§ Virginia State Police Divisions available at [http://www.vsp.state.va.us/Office\\_Locations.shtm](http://www.vsp.state.va.us/Office_Locations.shtm)

## Appendix 1

Virginia Localities that were Combined for the Purposes of Calculating Rate per 100,000 Population

- Alleghany County and Covington City
- Albemarle County and Charlottesville City
- Augusta County, Staunton City, and Waynesboro City
- Chesterfield County and Colonial Heights City
- Frederick County and Winchester City
- Fairfax County, Fairfax City, and Falls Church City
- Grayson County and Galax City
- Greensville County and Emporia City
- Henry County and Martinsville City
- Montgomery County and Radford City
- Pittsylvania County and Danville City
- Prince George County, Hopewell City, and Petersburg City
- Prince William County, Manassas City, and Manassas Park City
- Roanoke County, Roanoke City, and Salem City
- Rockingham County and Harrisonburg City
- Rockbridge County, Buena Vista City, and Lexington City
- Southampton County and Franklin City
- Washington County and Bristol City
- Wise County and Norton City