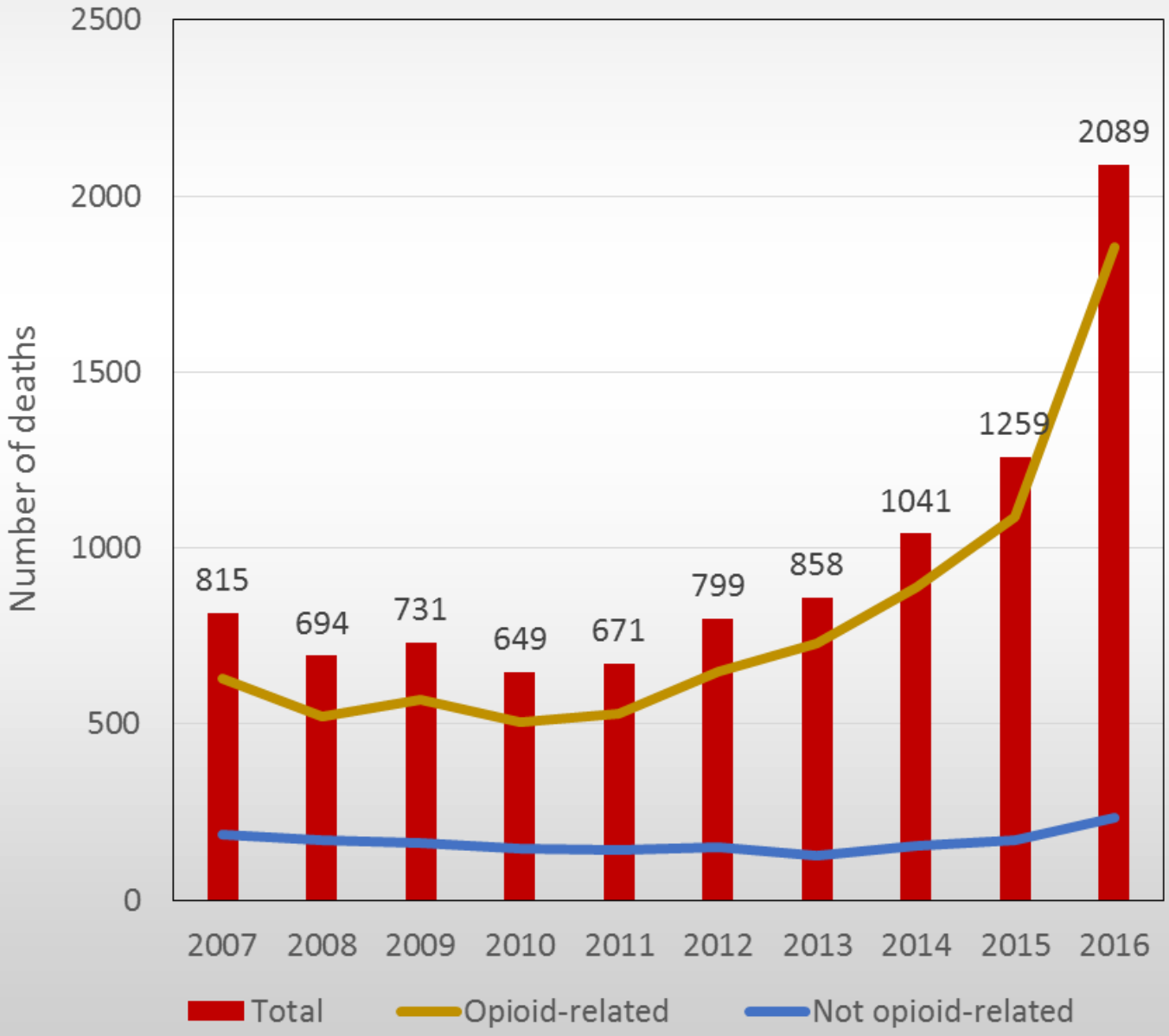
Maryland Department of Health and Mental Hygiene
Larry Hogan, Governor – Boyd Rutherford, Lt. Governor – Dennis R. Schrader Secretary
April 2017

CHANGING Maryland for the Better

Drug- and Alcohol-Related Intoxication Deaths in Maryland, 2016



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METHODS

Introduction

The purpose of this report is to describe trends in the number of unintentional drug- and alcohol-related intoxication deaths occurring in Maryland during the period 2007-2016. Trends are examined by age at time of death, race/ethnicity, gender, place of death and substances related to death.

This report was prepared using drug and alcohol intoxication data housed in a registry developed and maintained by the Vital Statistics Administration (VSA) of the Maryland Department of Health and Mental Hygiene (DHMH). The methodology for reporting on drug-related intoxication deaths in Maryland was developed by VSA with assistance from the DHMH Behavioral Health Administration, the Office of the Chief Medical Examiner (OCME) and the Maryland Poison Control Center. Assistance was also provided by authors of a Baltimore City Health Department report on intoxication deaths.[1]

Sources of data

The data included in this report were obtained mainly from OCME. Maryland law requires OCME to investigate all deaths occurring in the State that result from violence, suicide, casualty, or take place in a suspicious, unexpected or unusual manner. In these instances, information compiled during an investigation is used to determine the cause or causes of death. Depending on the circumstances, an investigation may involve a combination of scene examination, review of witness reports, review of medical and police reports, autopsy, and toxicological analysis of autopsy specimens. Toxicological analysis is routinely performed when there is suspicion that a death was the result of drug or alcohol intoxication.

A small number of death records involving intoxication deaths were filed by sources other than OCME and were identified through death records maintained by VSA. This included records filed by medical facilities rather than OCME, and records filed by federal investigators following deaths involving U.S. military personnel. Information available on these cases was included in the registry.

Information on place of death and race/ethnicity was missing for a small number of records provided by OCME and was obtained through death certificate data. Death certificate data were also used to update demographic information on records that were amended after the records were filed with the Division of Vital Records.

[1] Office of Epidemiology and Planning, Baltimore City Health Department. Intoxication Deaths Associated with Drugs of Abuse or Alcohol. Baltimore City, Maryland: Baltimore City Health Department. January 2007.

Identification of drug-related intoxication deaths

For the purpose of this report, an intoxication death was defined as a death that was the result of recent ingestion or exposure to alcohol or another type of drug, including heroin, fentanyl, cocaine, prescription opioids, benzodiazepines, phencyclidine (PCP), methamphetamines, and other prescribed and unprescribed drugs. OCME provided all records to VSA for which the text of the cause of death included one or more of the following terms: poisoning, intoxication, toxicity, inhalation, ingestion, overdose, exposure, chemical, effects, or use. Any records provided by OCME that were not unintentional drug-related intoxication deaths, such as deaths due to smoke inhalation, carbon monoxide intoxication, cold exposure, and chronic use of alcohol or other drugs, were excluded in the registry. Also excluded from the registry were deaths for which the manner of death was determined to be natural, suicide, or homicide.

Analyses

Trends in the number of drug- and alcohol-related intoxication deaths occurring in Maryland during the years 2007-2016 were analyzed by age group, race/ethnicity, gender, place of occurrence of death, and substances related to the death. Changes over time were examined for deaths related to the following substances:

1. Opioids
    a. Heroin
    b. Prescription opioids
    c. Fentanyl (prescribed and illicit)
2. Cocaine
3. Benzodiazepines and related drugs
4. Alcohol

The number of deaths by place of occurrence was computed by jurisdiction and by region, categorized as follows:

Northwest Area	Baltimore Metro Area	National Capital Area	Southern Area	Eastern Shore Area
Garrett Co. Allegany Co. Washington Co. Frederick Co.	Baltimore City Baltimore Co. Anne Arundel Co. Carroll Co. Howard Co. Harford Co.	Montgomery Co. Prince George's Co.	Calvert Co. Charles Co. St. Mary's Co.	Cecil Co. Kent Co. Queen Anne's Co. Caroline Co. Talbot Co. Dorchester Co. Wicomico Co. Somerset Co. Worcester Co.

Trends in deaths for the period 2007-2016 are shown in Figures 1 through 30. Data on intoxication deaths related to a combination of substances are shown in Figures 31 and 36. Counts of the number of total deaths and deaths related to classes of substances or specific substances by place of occurrence are shown in Tables 1 through 9.

<u>*Since an intoxication death may involve more than one substance, counts of deaths related to specific substances do not sum to the total number of deaths in this report.***</u>

<u>Opioid-related deaths</u>

Opioids include heroin and prescription opioid drugs such as oxycodone, hydrocodone, hydromorphone, methadone, tramadol and codeine, and prescribed and illicit fentanyl. In this report, an opioid was considered to be associated with a death if a specific opioid drug was indicated in the cause of death. If the cause of death did not identify a specific drug (e.g., the cause of death indicated "Narcotic Intoxication"), OCME toxicology results were reviewed to determine whether the presence of any opioid drug was detected. If so, the cause of death was considered to be opioid-related, regardless of the level of the drug. Scene investigation notes were also reviewed in an attempt to better categorize death records with non-specific causes of death.

Since heroin is rapidly metabolized into morphine, the records of many deaths that are likely to be heroin-related do not list "heroin" as a cause of death, and therefore cannot be identified using only information listed in the cause of death. Therefore, a combination of information contained in the cause of death field, toxicology results, and scene investigation notes is used to identify heroin-related deaths. In this report, a death was considered to be heroin-related if:

1. "Heroin" was mentioned in the cause of death; <u>or</u>
2. The toxicology screen showed a positive result for 6-monacetylmorphine; <u>or</u>
3. The toxicology screen showed positive results for both morphine and quinine; <u>or</u>
4. The cause of death was nonspecific and the scene investigation notes indicated that heroin was likely to have been involved in the death; or
5. The death was associated with morphine through either cause of death information or toxicology results, unless information contained in the investigation notes did not support this assumption.

A record was not coded as heroin-related, despite the presence of morphine, if OCME determined that another substance caused the death.

Prescription opioid-related deaths were defined as deaths that involve one or more prescription opioids, as identified through cause of death information when a specific drug was indicated and through toxicology results when the cause of death was nonspecific. Prescription opioids include buprenorphine, codeine, hydrocodone, hydromorphone, meperidine, methadone, morphine, oxycodone, pentazocine, propoxyphene, tramadol and

prescribed fentanyl. Prescribed fentanyl is an opioid analgesic approved for patient use to manage severe or chronic pain. There is also a form of fentanyl that is produced illicitly in clandestine laboratories and mixed with (or substituted for) heroin or other illicit drugs. Although in some cases it was difficult to determine whether a prescribed or illicit form of fentanyl was related to a death, the count of prescription opioid-related drugs in this report includes only fentanyl deaths in which a prescription form of the drug was clearly involved.

Fentanyl-related deaths began increasing in late 2013 as a result of overdoses involving nonpharmaceutical fentanyl, that is, nonprescription fentanyl produced in clandestine laboratories and mixed with, or substituted for, heroin or other illicit substances. Nearly all fentanyl-related deaths occurring in recent years have involved the use of nonpharmaceutical fentanyl. Fentanyl is many times more potent than heroin, and greatly increases the risk of an overdose death.

Benzodiazepine-related deaths

Benzodiazepines are a class of depressants that include drugs such as alprazolam, clonazepam, diazepam, and multiple related drugs. The category of benzodiazepine-related drugs in this report includes both benzodiazepines and related drugs, such as zolpidem, which have similar sedative effects.

Age-adjusted death rates

Age-adjusted death rates were calculated in order to allow for the comparison of drug death rates among Maryland jurisdictions. Unlike all other data included in this report, these rates are based on place of residence of the decedent rather than place where the drug-related incident occurred. Since out of state data are generally not available until approximately six months after the close of a calendar year, only data through 2015 were available at the time this report was prepared. Therefore, age-adjusted rates cover the period 2011 through 2015. Since the number of drug deaths is relatively small in many Maryland jurisdictions, it was necessary to calculate rates for a five year period in order to obtain counts that were large enough to be used to calculate stable rates.

Drug death information received from other states is far less detailed than the data available from OCME and often does not include information on the substances involved in a death. For that reason, rates could only be calculated for total deaths and not deaths related to individual substances.

SUMMARY OF TRENDS IN DRUG INTODEATHS—2007 TO 2016

Total alcohol and drug intoxication deaths

- The number of drug- and alcohol-related intoxication deaths occurring in Maryland increased in 2016 for the sixth year in a row, reaching an all-time high of 2089 deaths. This represented a 66% increase over the number of deaths (1259) in 2015, and the largest single year increase that has been recorded. The number of intoxication deaths has more than tripled in Maryland since 2010.
- Although intoxication deaths have been increasing among all age groups, the increase has been most rapid among individuals 55 years of age and above. The number of deaths among this age group increased five-fold between 2010 and 2016, from 86 to 424.
- The number of deaths increased by 55% among Whites and by 87% among African Americans between 2015 and 2016. Although the number of deaths among Hispanics had been at a relatively low level in earlier years, the number of deaths among this group more than doubled between 2015 and 2016, from 21 to 53.
- Deaths increased by 69% among men and by 57% among women between 2015 and 2016. The number of deaths has been rising steadily among both groups.
- Although the number of deaths increased substantially in nearly all areas of the State between 2015 and 2016, deaths declined in Cecil and St. Mary's Counties.

Opioid-related deaths

- Eighty-nine percent of all intoxication deaths that occurred in Maryland in 2016 were **opioid**-related. **Opioid**-related deaths include deaths related to **heroin**, **prescription opioids**, and nonpharmaceutical **fentanyl**.
- The number of **opioid**-related deaths increased by 70% between 2015 and 2016, and has nearly quadrupled since 2010. Non opioid-related drug deaths have also been increasing, but at a slower rate.
- Large increases in the number of **heroin** and **fentanyl**-related deaths were largely responsible for the overall rise in opioid-related deaths. Between 2015 and 2016 the number of **heroin**-related deaths increased by 62% (from 748 to 1212), and the number of **fentanyl**-related deaths more than tripled (from 340 to 1119). The number of **prescription-opioid** related deaths increased by 19% (from 351 to 418); many of these deaths occurred in combination with heroin and/or fentanyl.
- The number of **heroin**-related deaths in Maryland increased five-fold between 2010 and 2016. Heroin deaths have increased among all age groups, Whites and African Americans, men and women, and in all regions of the State.
- Fifty-eight percent of **heroin**-related deaths in 2016 occurred in combination with **fentanyl,** 26% in combination with **alcohol**, 22% in combination with **cocaine,** and 13% in combination with **prescription opioids**.
- The number of **prescription opioid**-related deaths has been rising since 2012, in large part as a result of the use of these drugs in combination with heroin and/or fentanyl. The number of **prescription opioid**-related deaths has been rising most quickly among the

55+ year age group, and falling steadily among individuals below the age of 25. Deaths have been increasing among Whites, African Americans, men, and women.

- **Fentanyl**-related deaths have been increasing rapidly since 2013. There were an average of 29 deaths per year between 2007 and 2012; the number of deaths increased 38-fold since that time.
- **Fentanyl**-related deaths have increased substantially among all age groups, among Whites and African Americans, among both men and women, and in all regions of the State.
- Sixty-three percent of **fentanyl**-related deaths in 2016 occurred in combination with **heroin**, 26% in combination with **alcohol**, and 23% in combination with **cocaine**.

Cocaine-related deaths

- The number of **cocaine**-related deaths remained relatively stable between 2008 and 2013, and began rising in 2014. The number of **cocaine**-related deaths more than doubled between 2015 and 2016, from 221 in 2015 to 464 in 2016.
- **Cocaine**-related deaths increased substantially between 2015 and 2016 among all age and race/ethnicity groups, as well as among both men and women. The largest increases occurred in the National Capital and Eastern Shore areas of the State, where the number of deaths tripled.
- The overall increase in **cocaine**-related deaths is largely the result of deaths occurring in combination with opioids. Fifty-eight percent of **cocaine**-related deaths in 2016 occurred in combination with **heroin**, and 55% in combination with **fentanyl**.

Benzodiazepine-related deaths

- The number of **benzodiazepine**-related deaths have generally been increasing since 2007 among all demographic groups.
- The increases are the result of benzodiazepines used in combination with opioids. Fifty-three percent of all **benzodiazepine**-related deaths in 2016 occurred in combination with **prescription opioids,** 45% in combination with **fentanyl,** and 43% in combination with **heroin**.

Alcohol-related deaths

- The number of **alcohol**-related deaths has been rising steadily in Maryland since 2010. Deaths nearly doubled between 2015 and 2016, increasing from 310 to 582.
- **Alcohol**-related deaths have been increasing in all regions of the State and among all age groups, race/ethnicity groups, men, and women.
- The increase in **alcohol**-related deaths is related to the use of opioids; approximately half occurred in combination with **heroin** or **fentanyl** in 2016.

Age-adjusted death rates

- Age-adjusted death rates for the period 2011-2015 ranged from lows of 5.7 and 5.8 per 100,000 population in Montgomery and Prince George's Counties, respectively, to a high of 33.9 per 100,000 population in Baltimore City.

TOTAL INTOXICATION DEATHS

Figure 1. Total Number of Drug- and Alcohol-Related Intoxication Deaths Occurring in Maryland, 2007-2016.

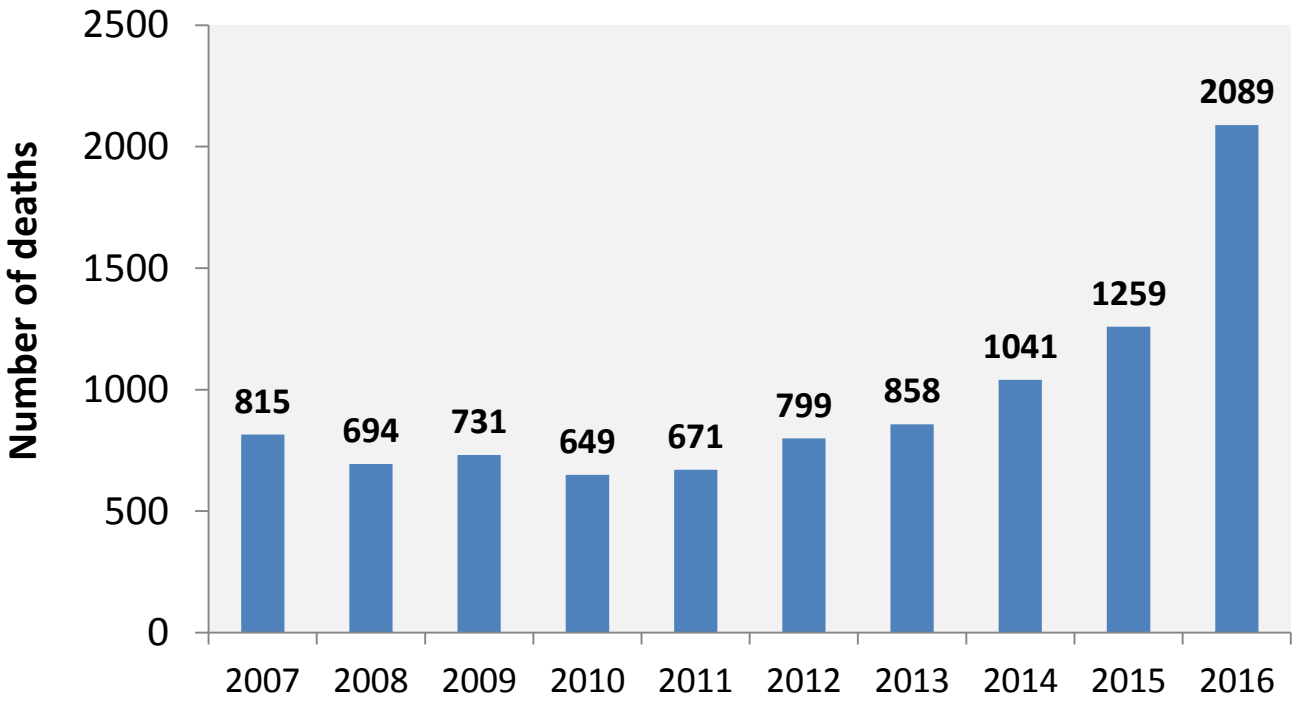


Figure 2. Total Number of Intoxication Deaths Occurring in Maryland by Place of Occurrence, 2016.

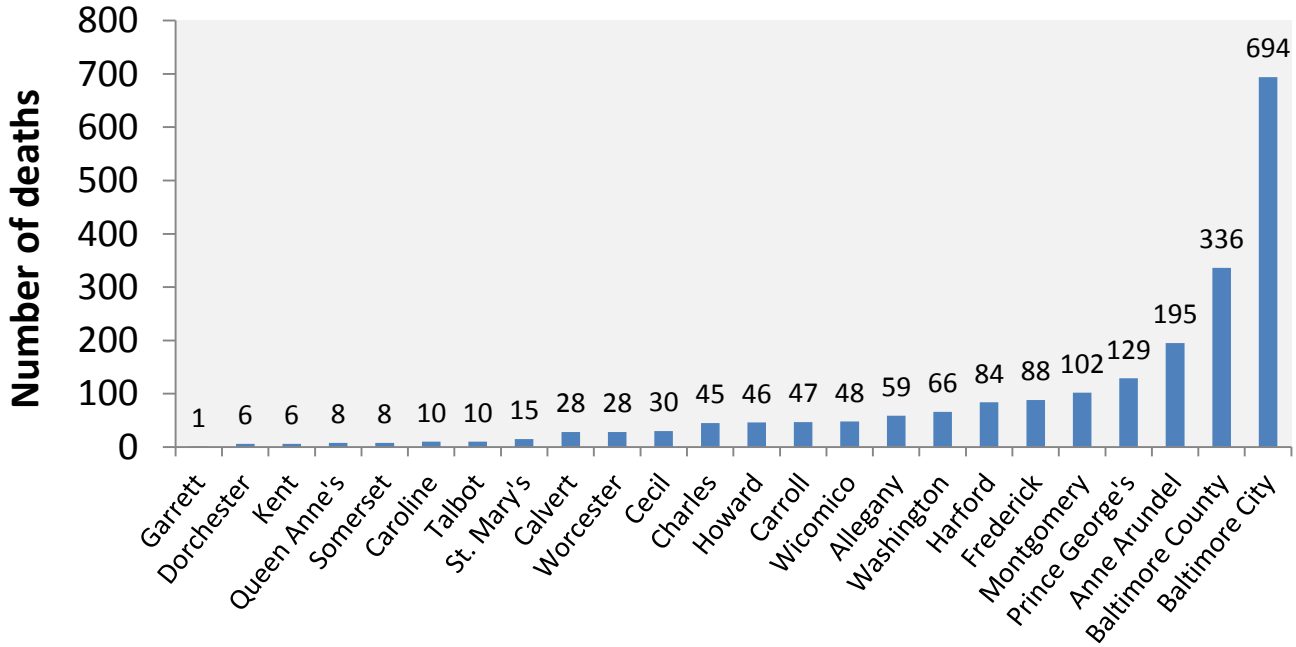
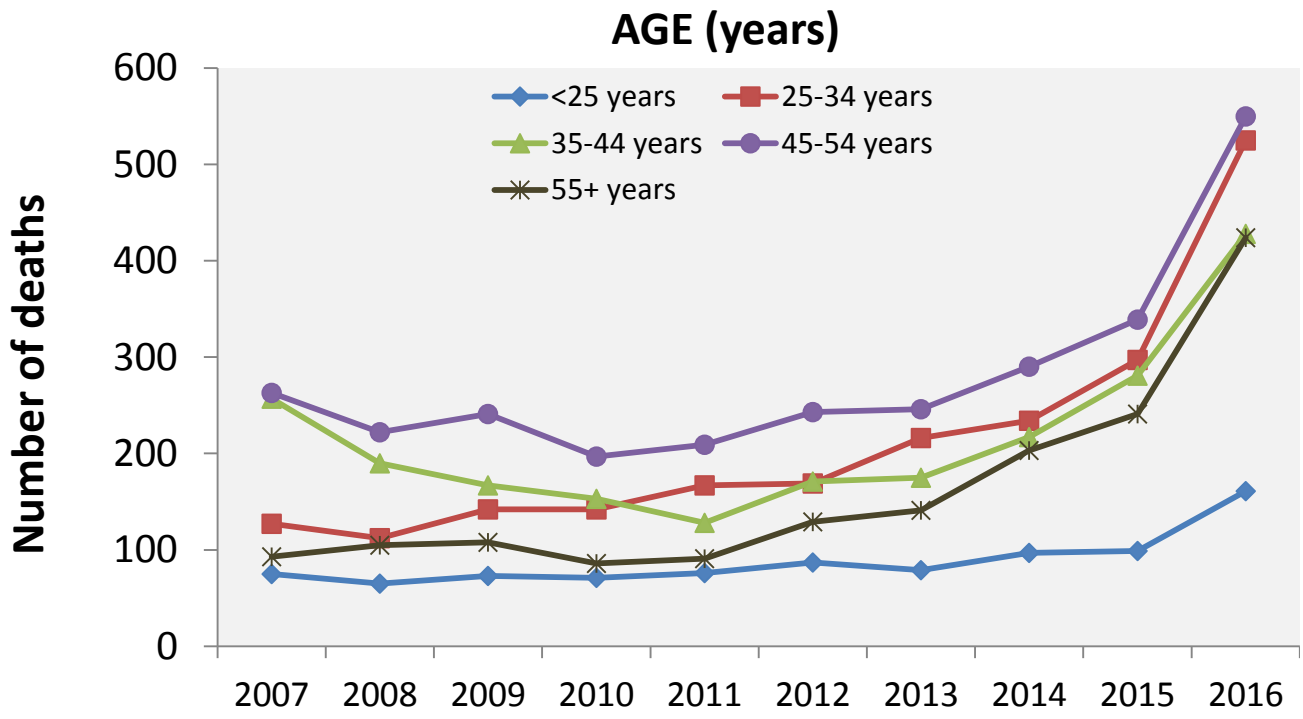
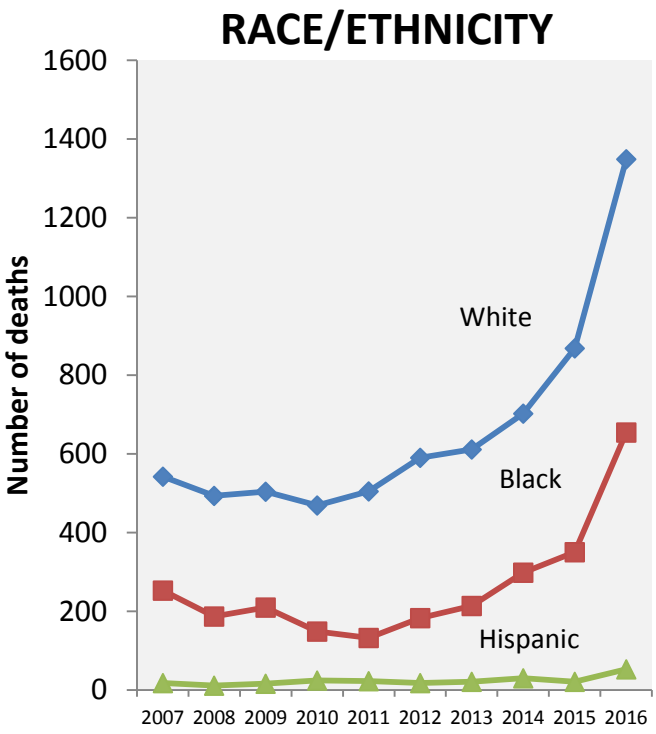


Figure 3. Total Number of Drug- and Alcohol-Related Intoxication Deaths Occurring in Maryland by Age Group,* Race/Ethnicity and Gender, 2007-2016.





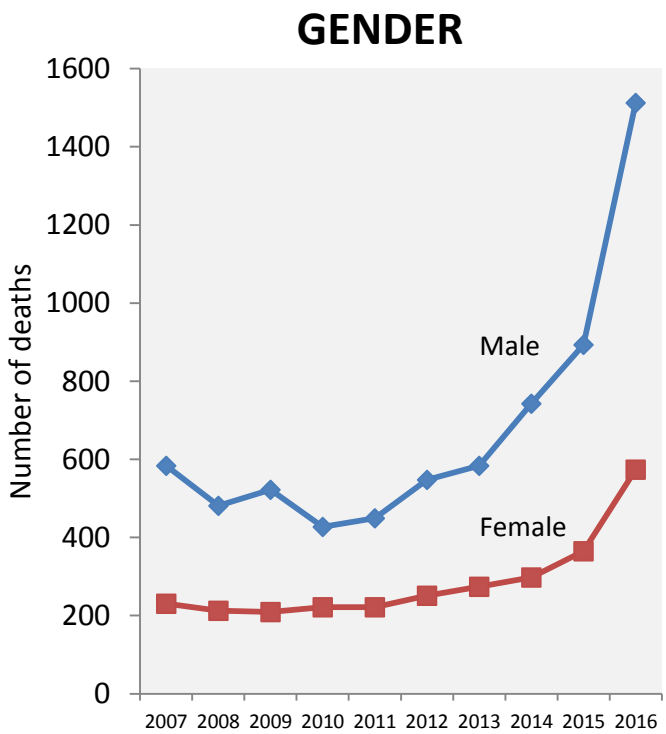
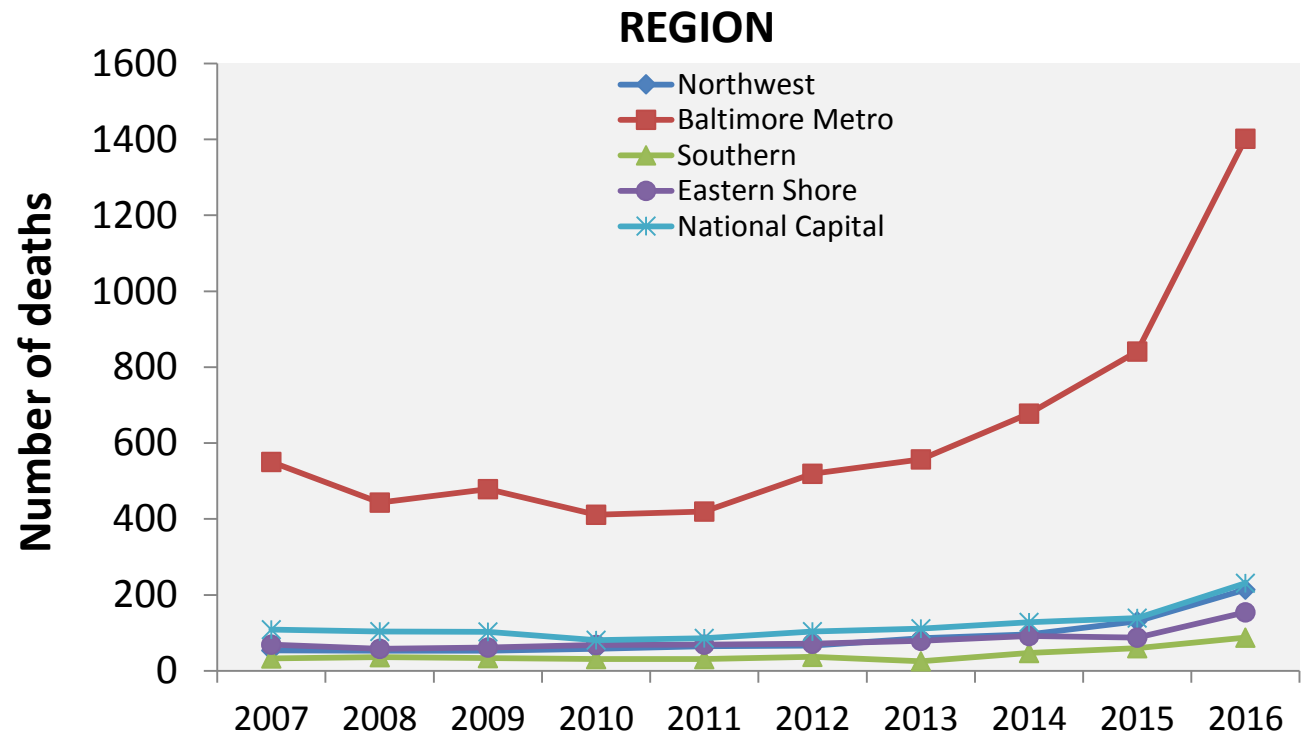
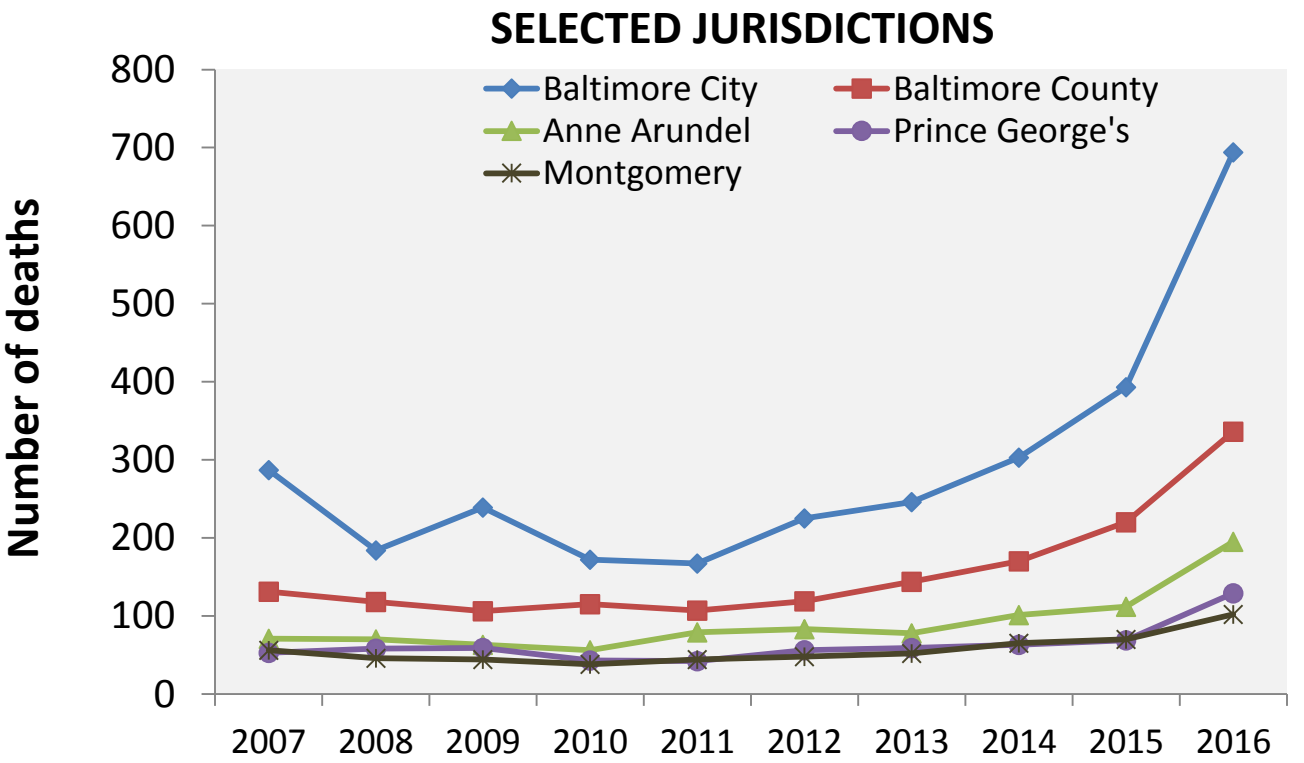


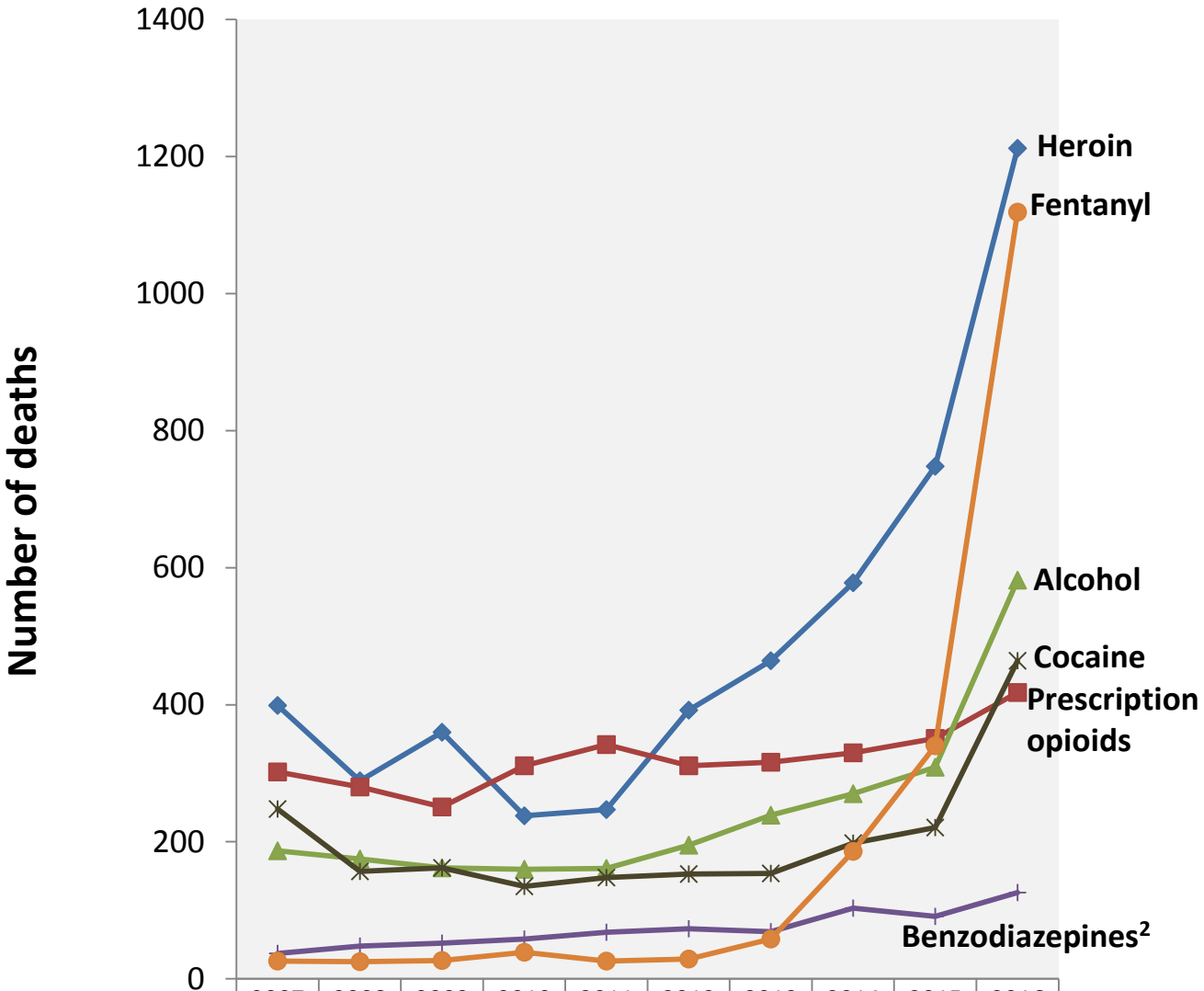
Figure 4. Total Number of Drug- and Alcohol-Related Intoxication Deaths by Place of Occurrence, Maryland, 2007-2016.





DRUG- AND ALCOHOL-RELATED INTOXICATION DEATHS BY SUBSTANCE

Figure 5. Total Number of Drug- and Alcohol-Related Intoxication Deaths by Selected Substances[1], Maryland, 2007-2016.



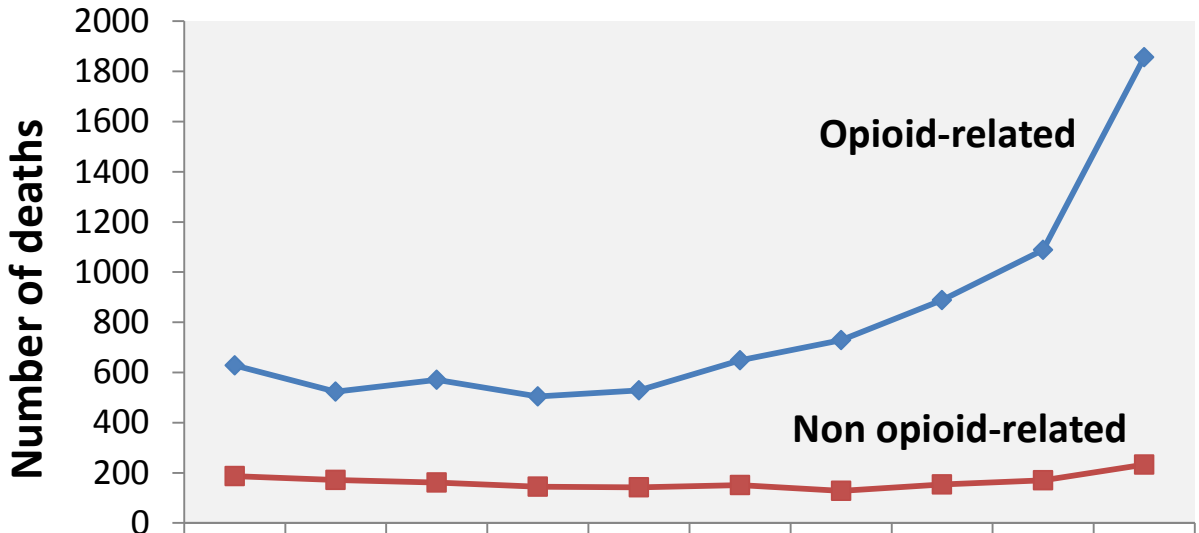
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Heroin	399	289	360	238	247	392	464	578	748	1212
Prescription opioids	302	280	251	311	342	311	316	330	351	418
Alcohol	187	175	162	160	161	195	239	270	309	582
Benzodiazepines	37	48	52	58	68	73	69	103	91	126
Cocaine	248	157	162	135	148	153	154	198	221	464
Fentanyl	26	25	27	39	26	29	58	186	340	1119

[1]Since an intoxication death may involve more than one substance, counts of deaths related to specific substances do not sum to the total number of deaths.

[2]Includes deaths caused by benzodiazepines and related drugs with similar sedative effects.

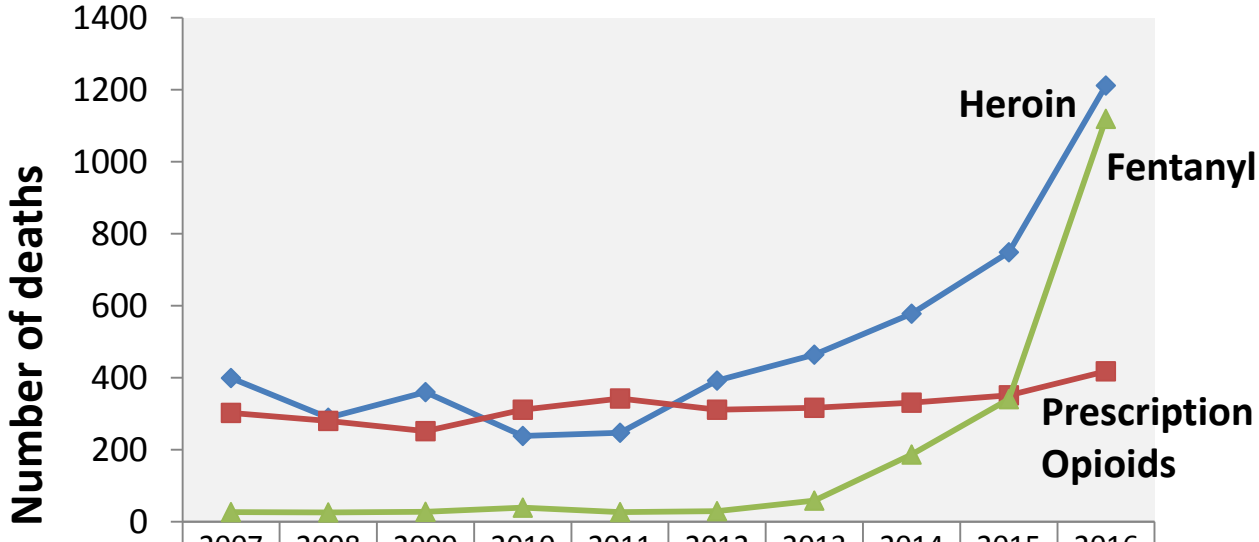
OPIOID-RELATED DEATHS

Figure 6. Total Number of Opioid* and Non-Opioid-Related Deaths Occurring in Maryland, 2007-2016.



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Opioid-related	628	523	570	504	529	648	729	888	1089	1856
Non opioid-related	187	171	161	145	142	151	128	153	170	233

Figure 7. Number of Opioid-Related Deaths Occurring in Maryland by Substance, 2007-2016.



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Heroin	399	289	360	238	247	392	464	578	748	1212
Prescription opioids	302	280	251	311	342	311	316	330	351	418
Fentanyl	26	25	27	39	26	29	58	186	340	1119

*Total opioids include heroin, prescription opioids, and illicit forms of fentanyl.

Figure 8. Number of Heroin-Related Deaths Occurring in Maryland, 2007-2016.

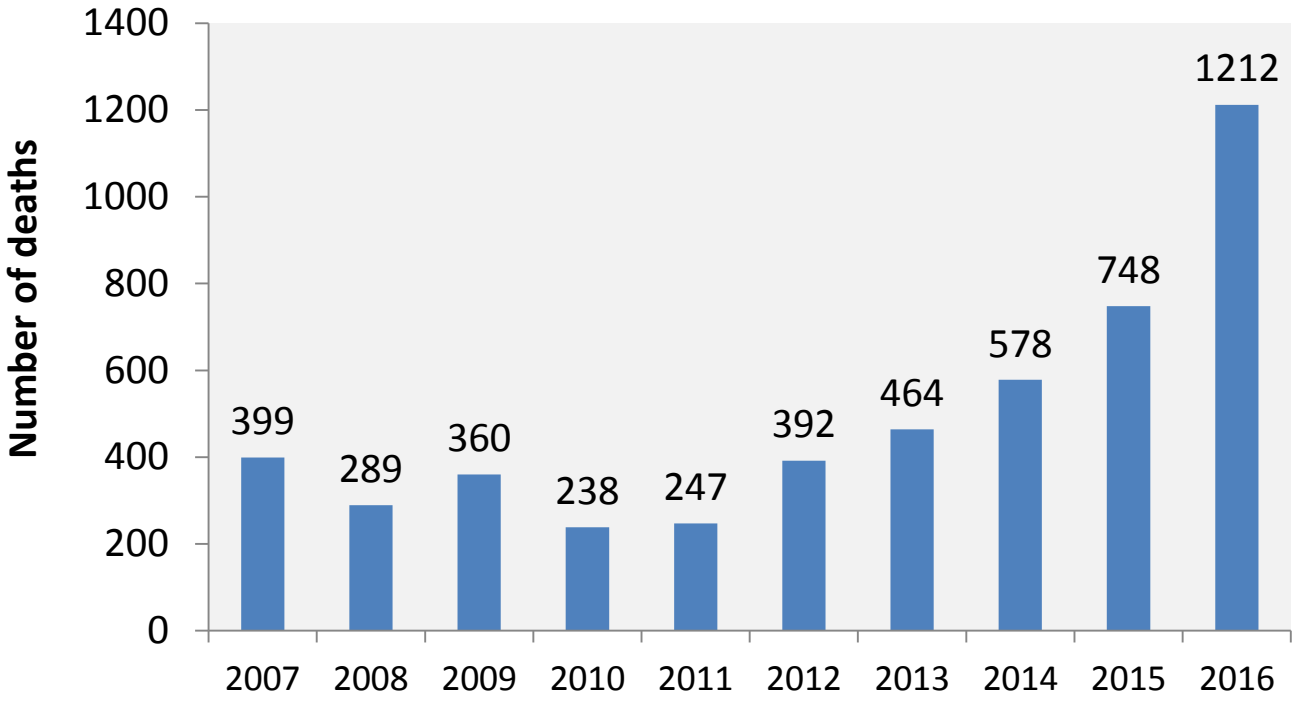


Figure 9. Number of Heroin-Related Deaths Occurring in Maryland by Place of Occurrence, 2016.

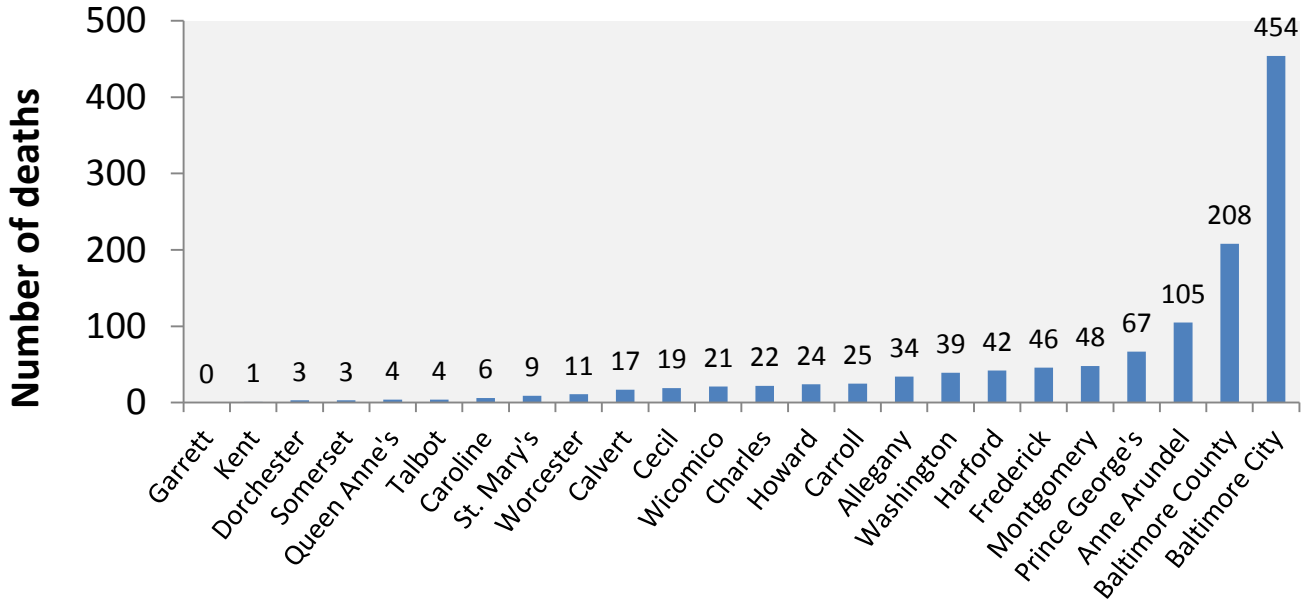
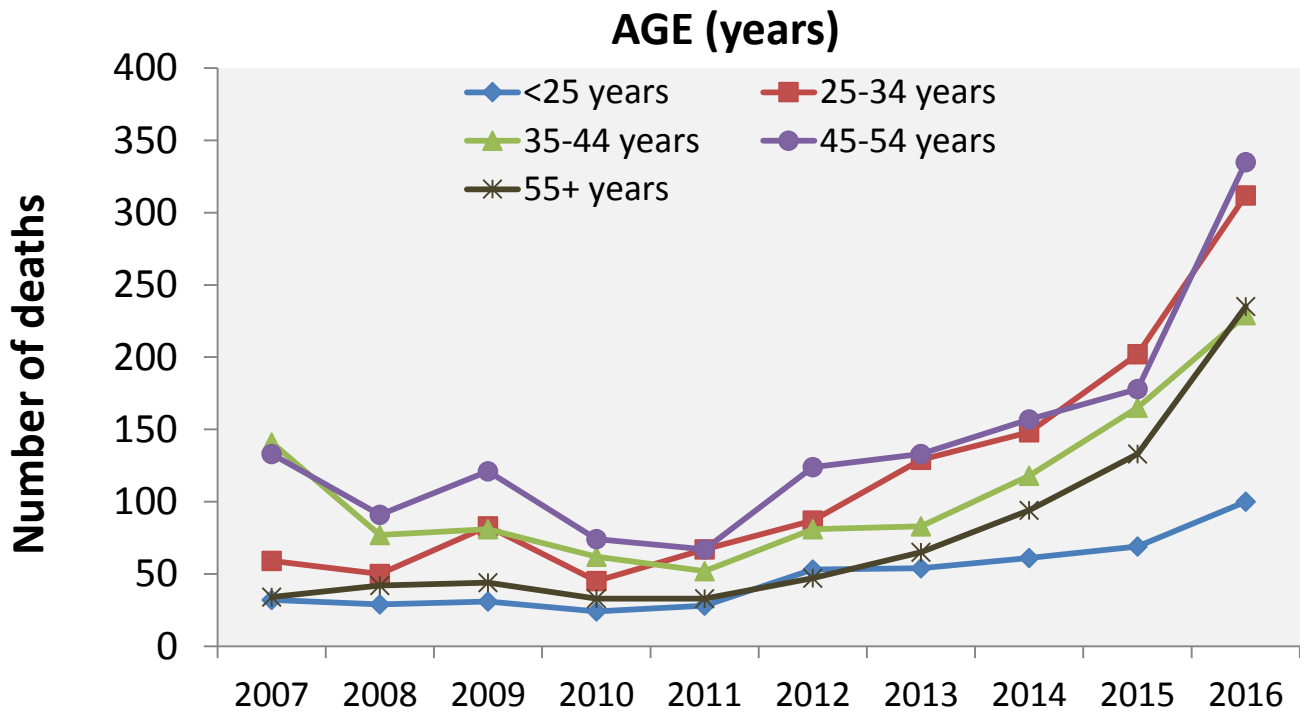
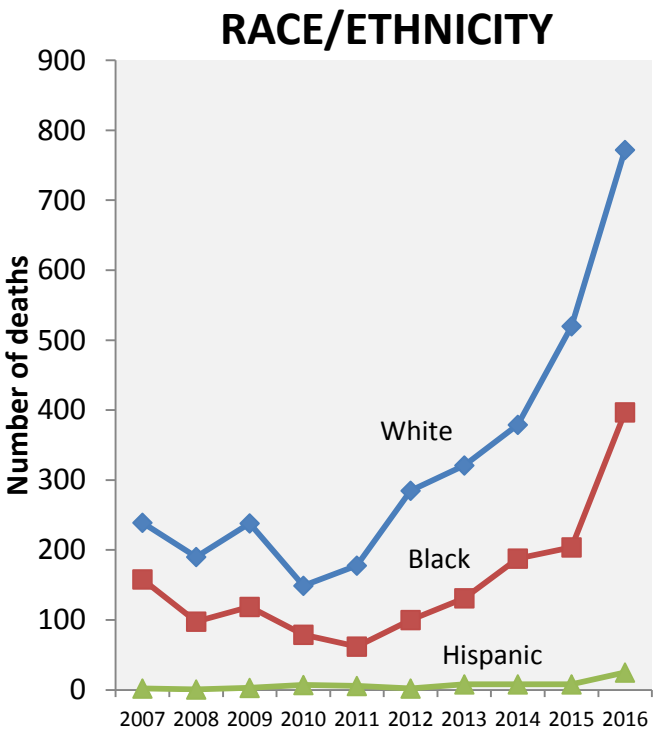


Figure 10. Number of Heroin-Related Deaths Occurring in Maryland by Age Group,* Race/Ethnicity and Gender, 2007-2016.





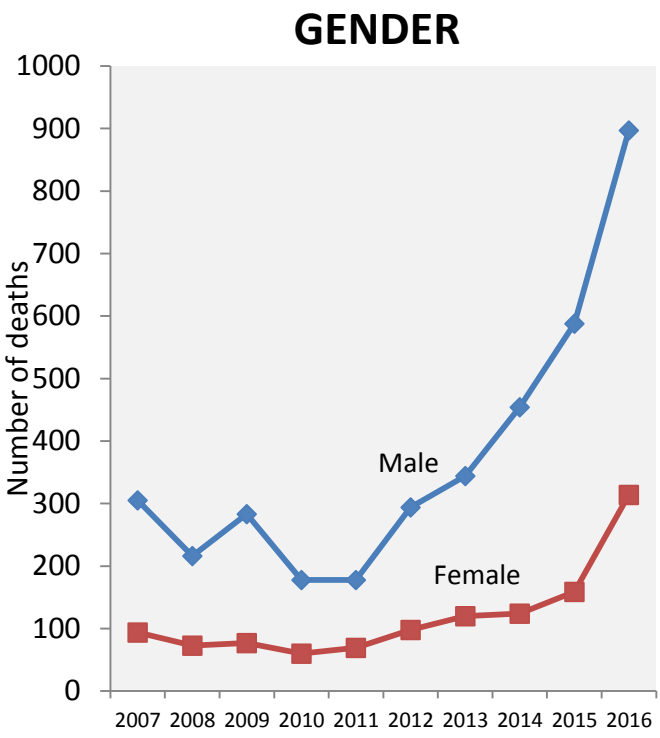
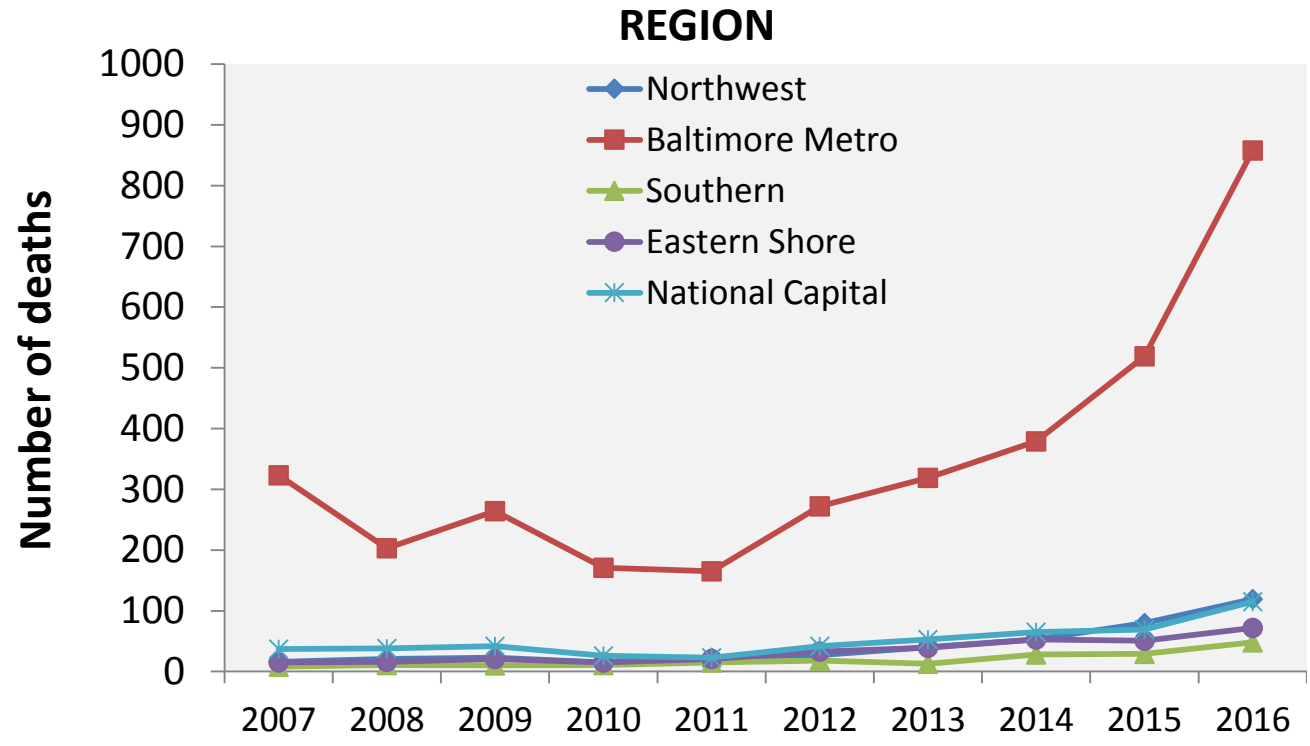


Figure 11. Number of Heroin-Related Deaths by Place of Occurrence, Maryland, 2007-2016.



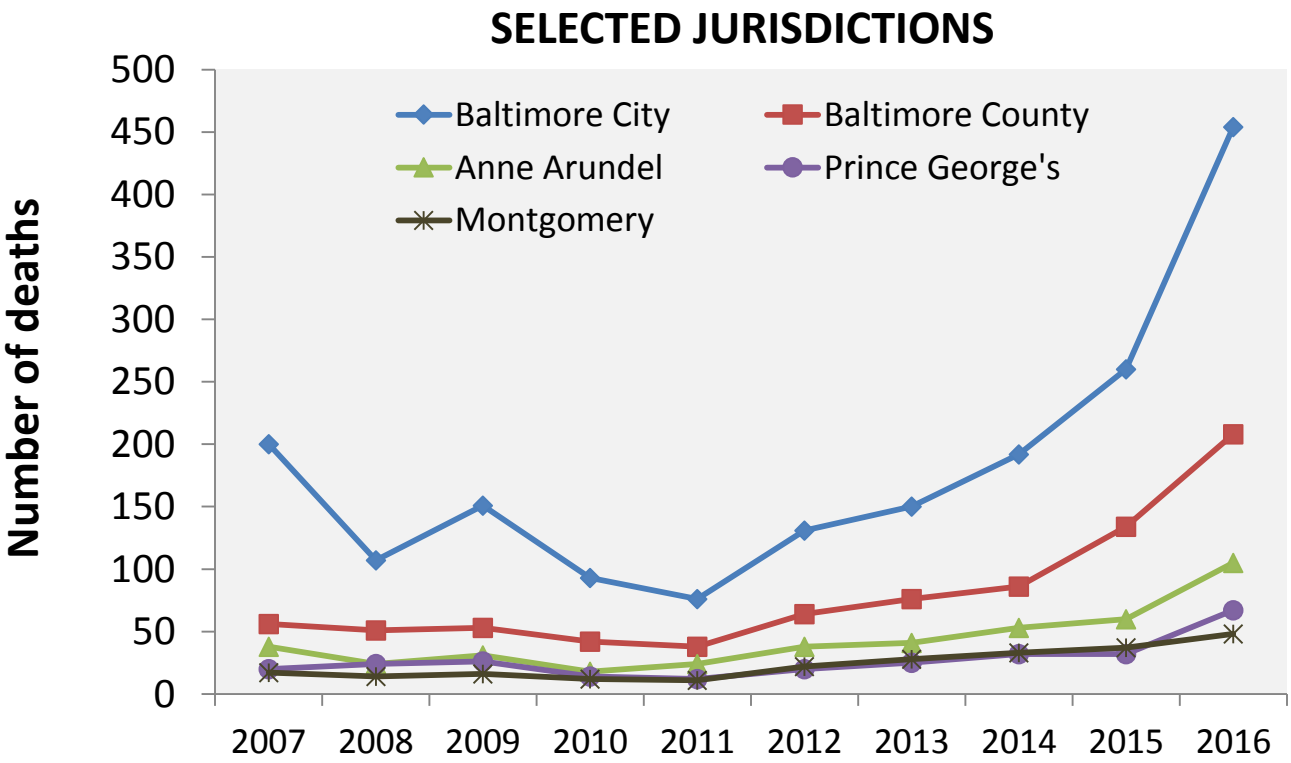
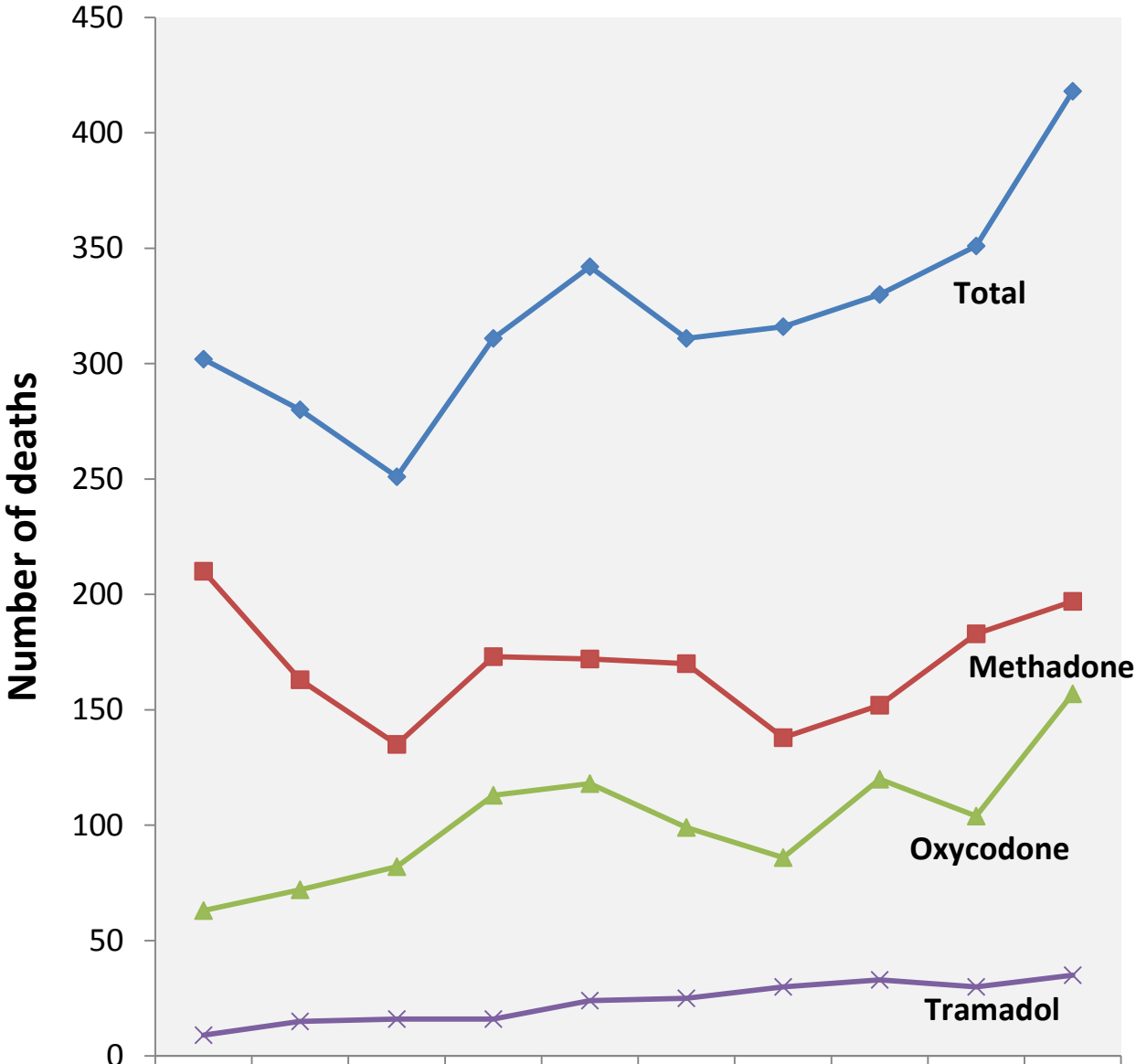


Figure 12. Number of Deaths Occurring in Maryland by Selected Prescription Opioids, 2007-2016.



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Total	302	280	251	311	342	311	316	330	351	418
Methadone	210	163	135	173	172	170	138	152	183	197
Oxycodone	63	72	82	113	118	99	86	120	104	157
Tramadol	9	15	16	16	24	25	30	33	30	35

Figure 13. Number of Prescription Opioid-Related Deaths Occurring in Maryland, 2007-2016.

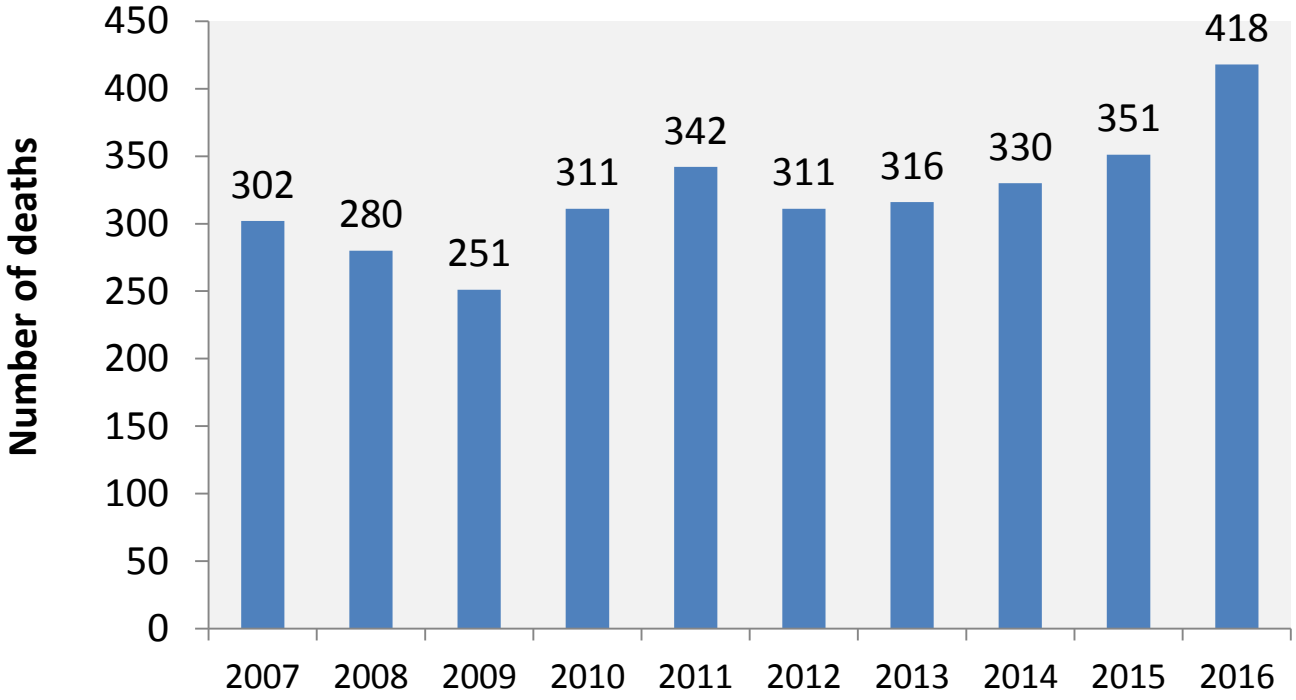


Figure 14. Number of Prescription Opioid-Related Deaths Occurring in Maryland by Place of Occurrence, 2016.

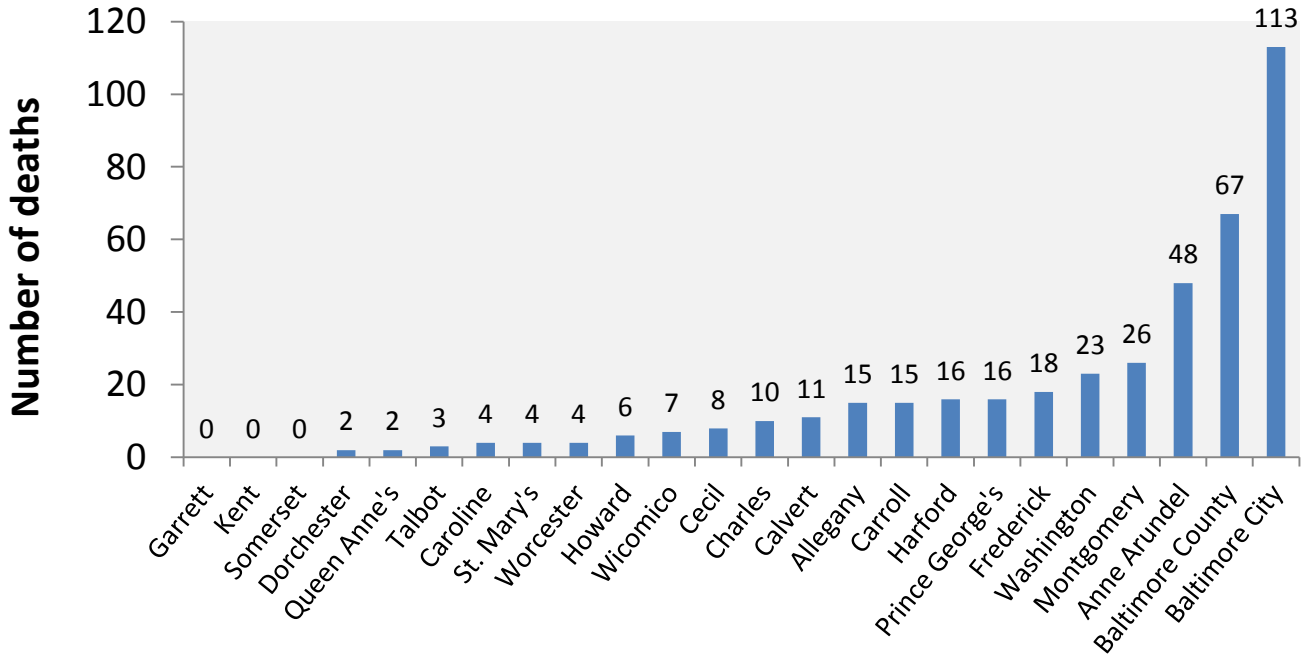
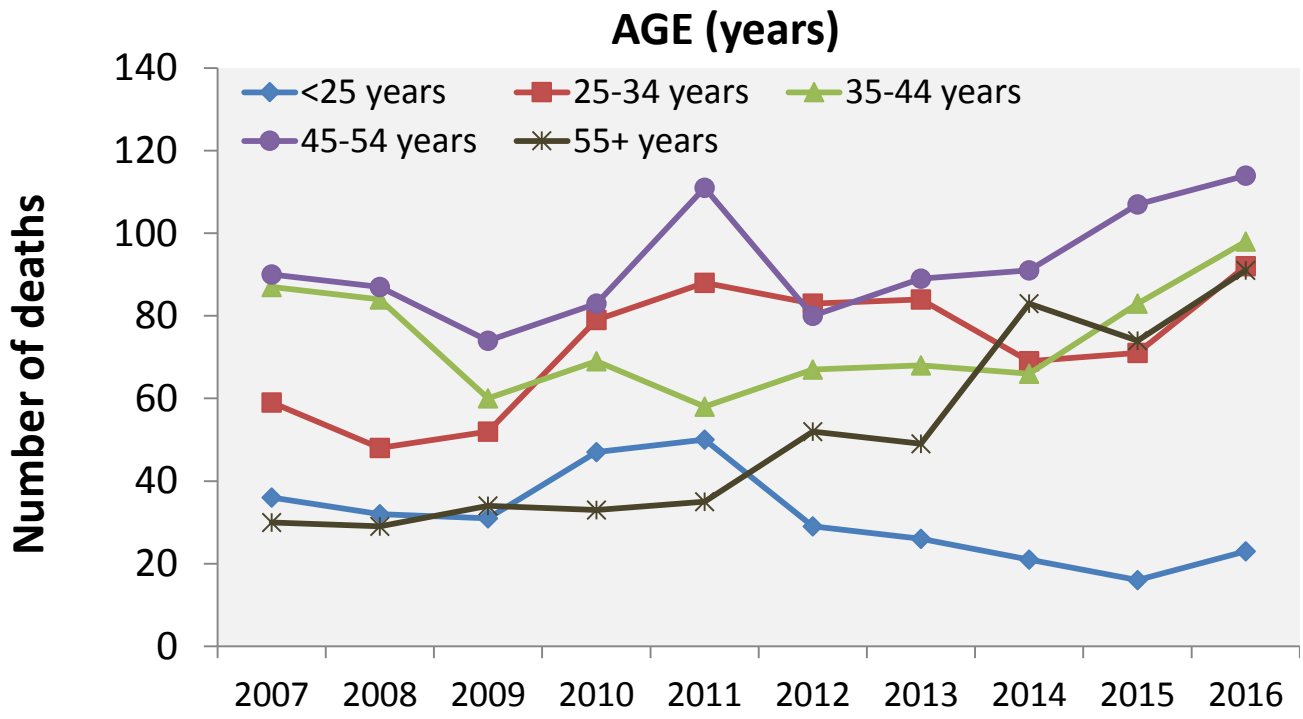
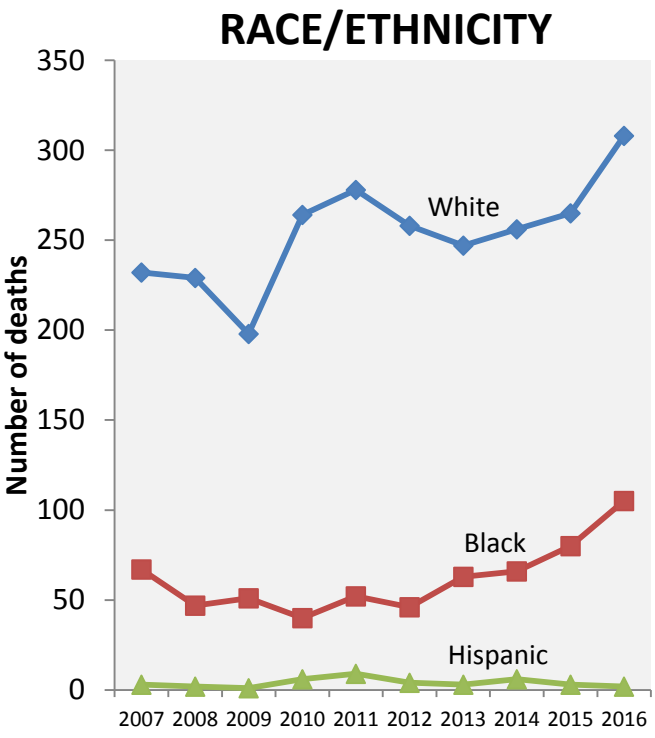


Figure 15. Number of Prescription Opioid-Related Deaths Occurring in Maryland by Age Group,* Race/Ethnicity and Gender, 2007-2016.





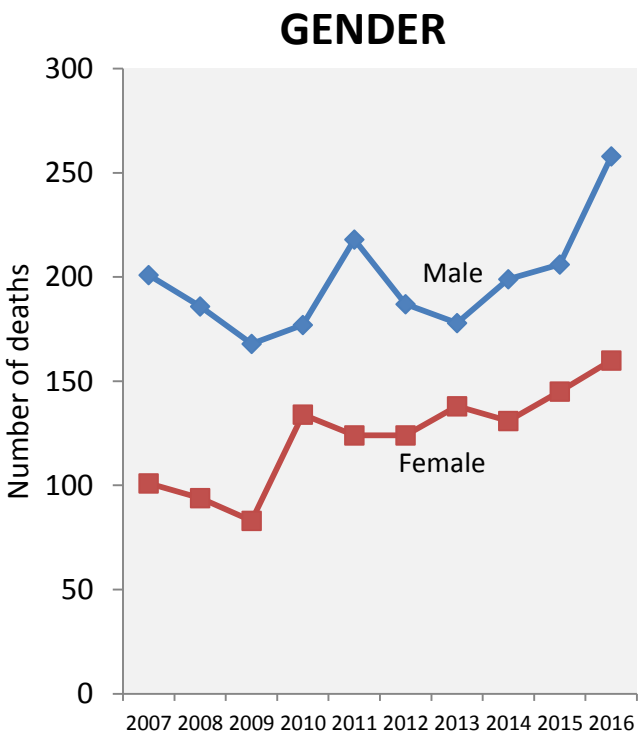
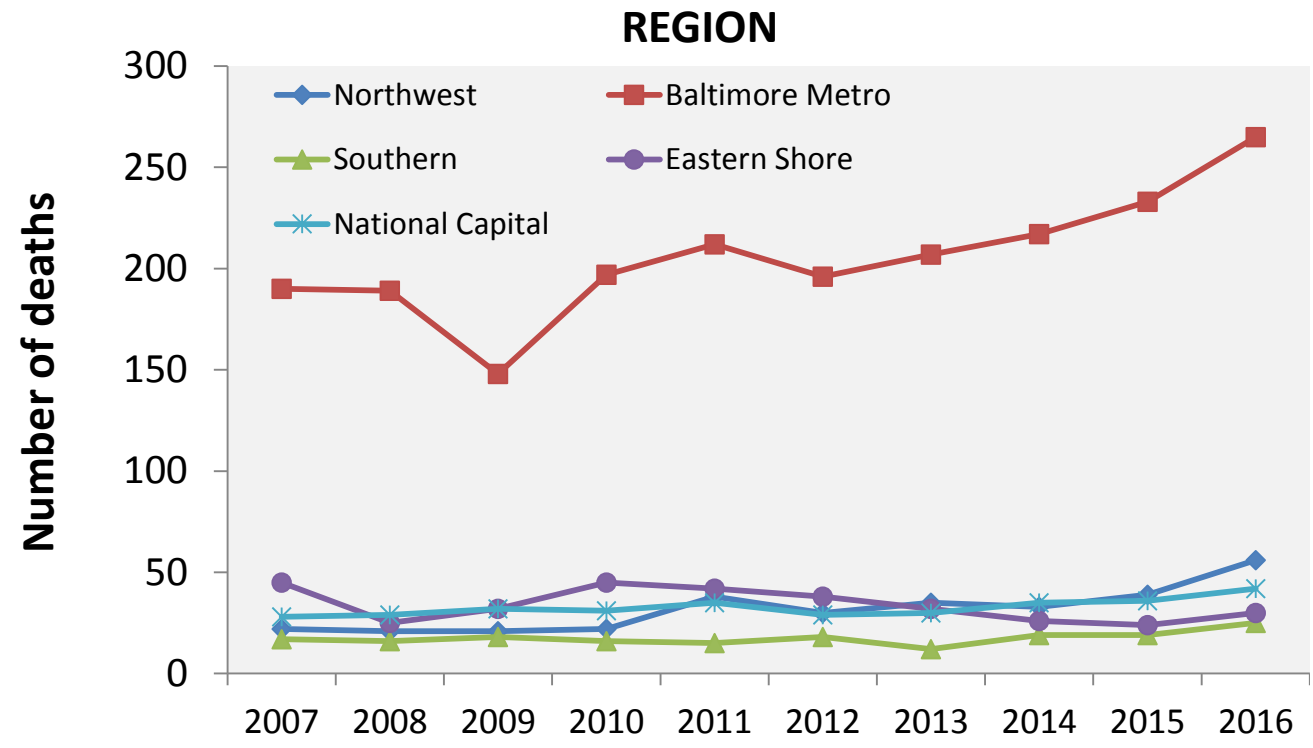


Figure 16. Number of Prescription Opioid-Related Deaths by Place of Occurrence, Maryland, 2007-2016.



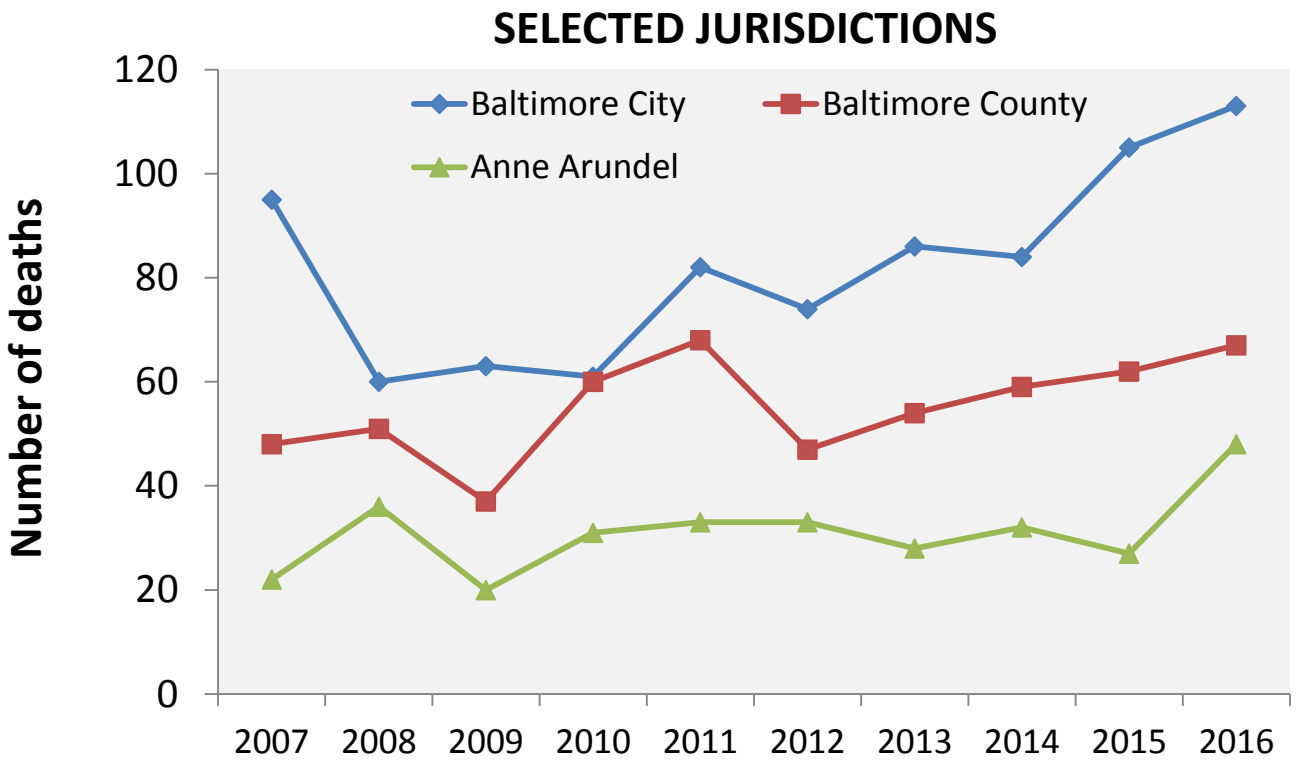


Figure 17. Number of Fentanyl-Related Deaths Occurring in Maryland, 2007-2016.

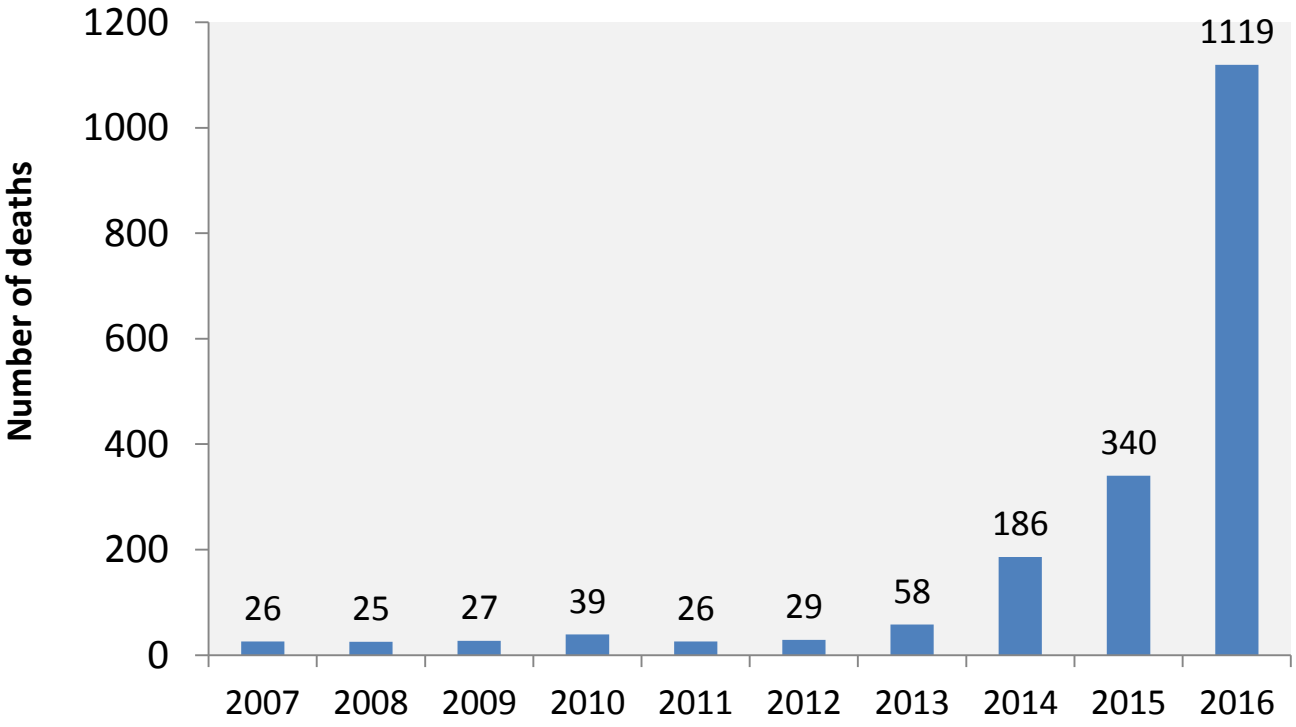


Figure 18. Number of Fentanyl-Related Deaths Occurring in Maryland by Place of Occurrence, 2016.

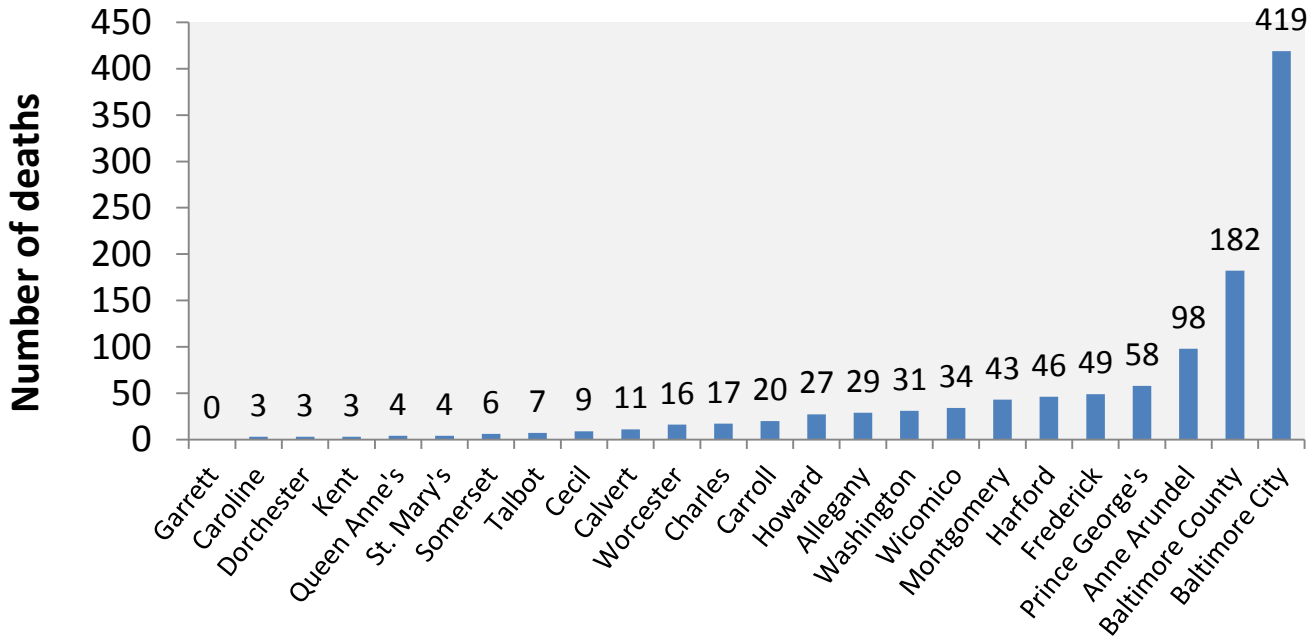
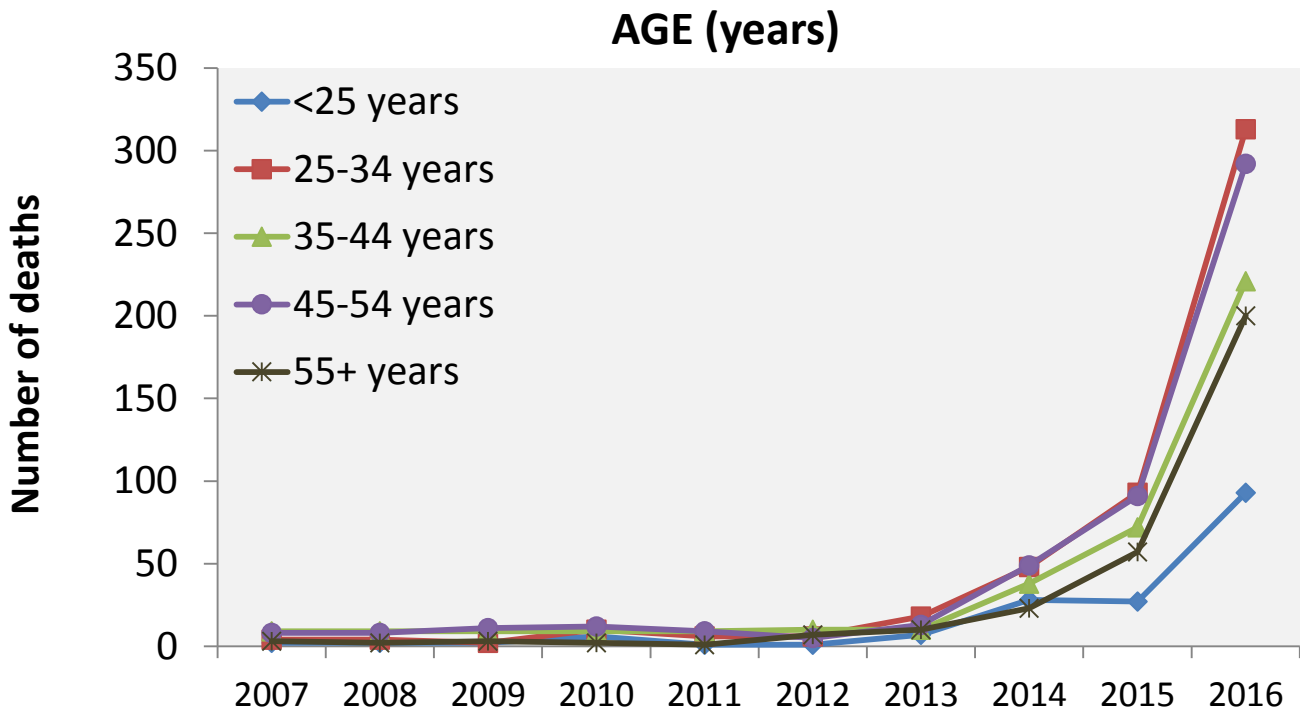
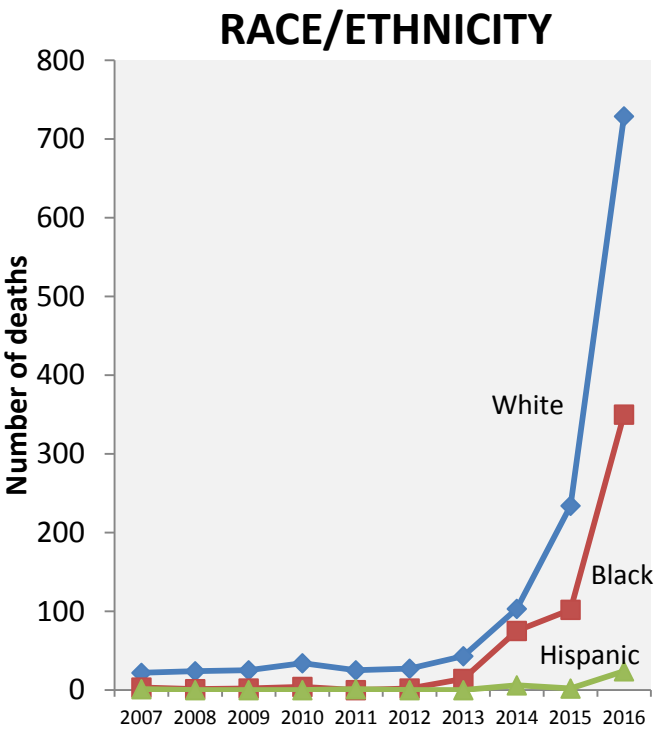


Figure 19. Number of Fentanyl-Related Deaths Occurring in Maryland by Age Group,* Race/Ethnicity and Gender, 2007-2016.





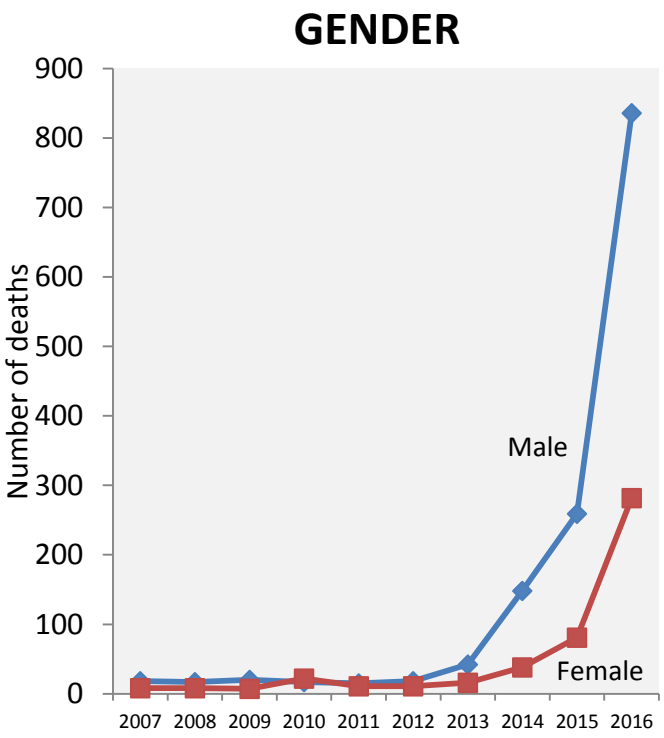
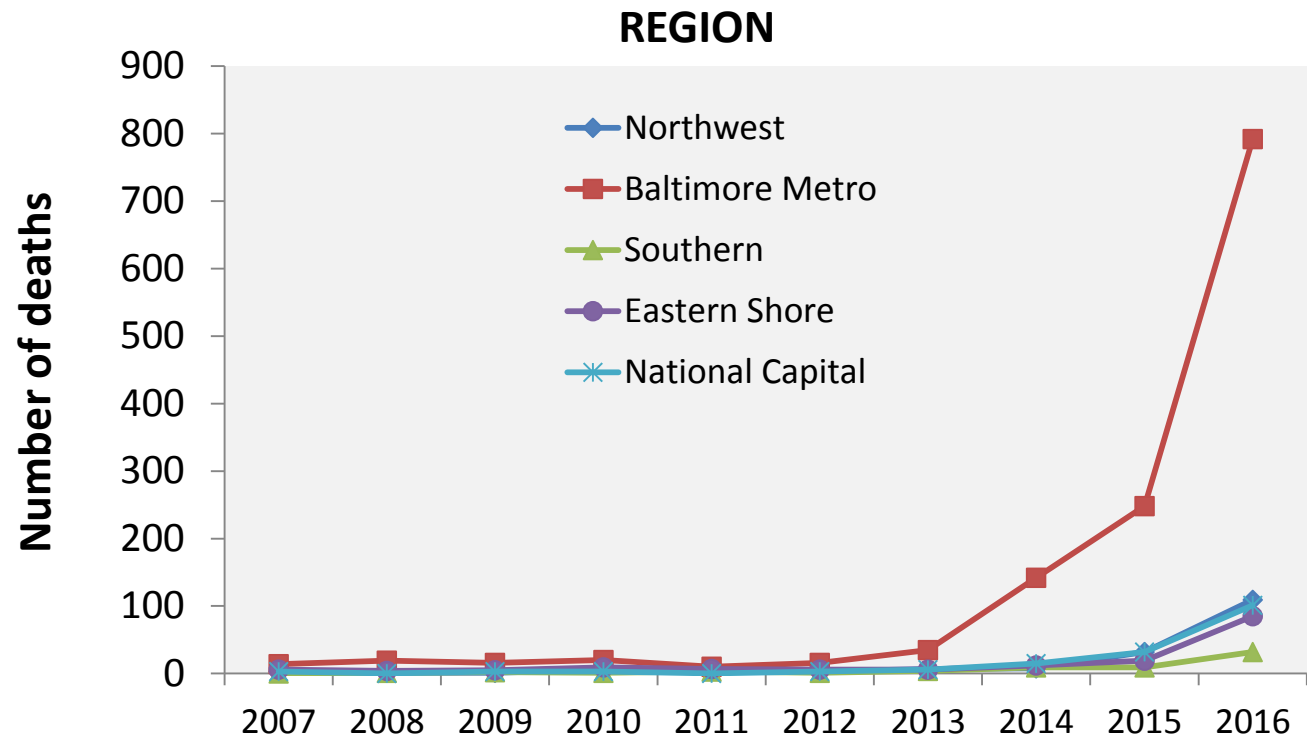
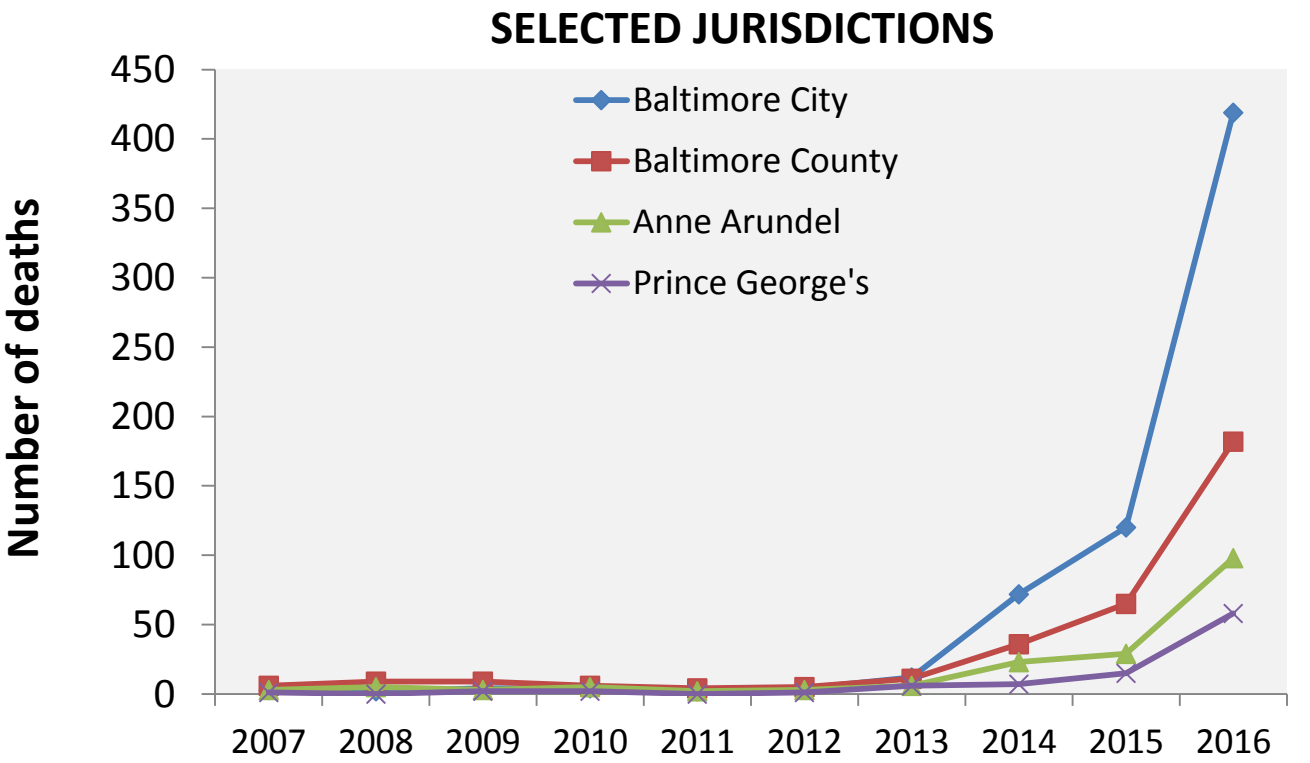


Figure 20. Number of Fentanyl-Related Deaths by Place of Occurrence, Maryland, 2007-2016.





COCAINE-RELATED DEATHS

Figure 21. Number of Cocaine-Related Deaths Occurring in Maryland, 2007-2016.

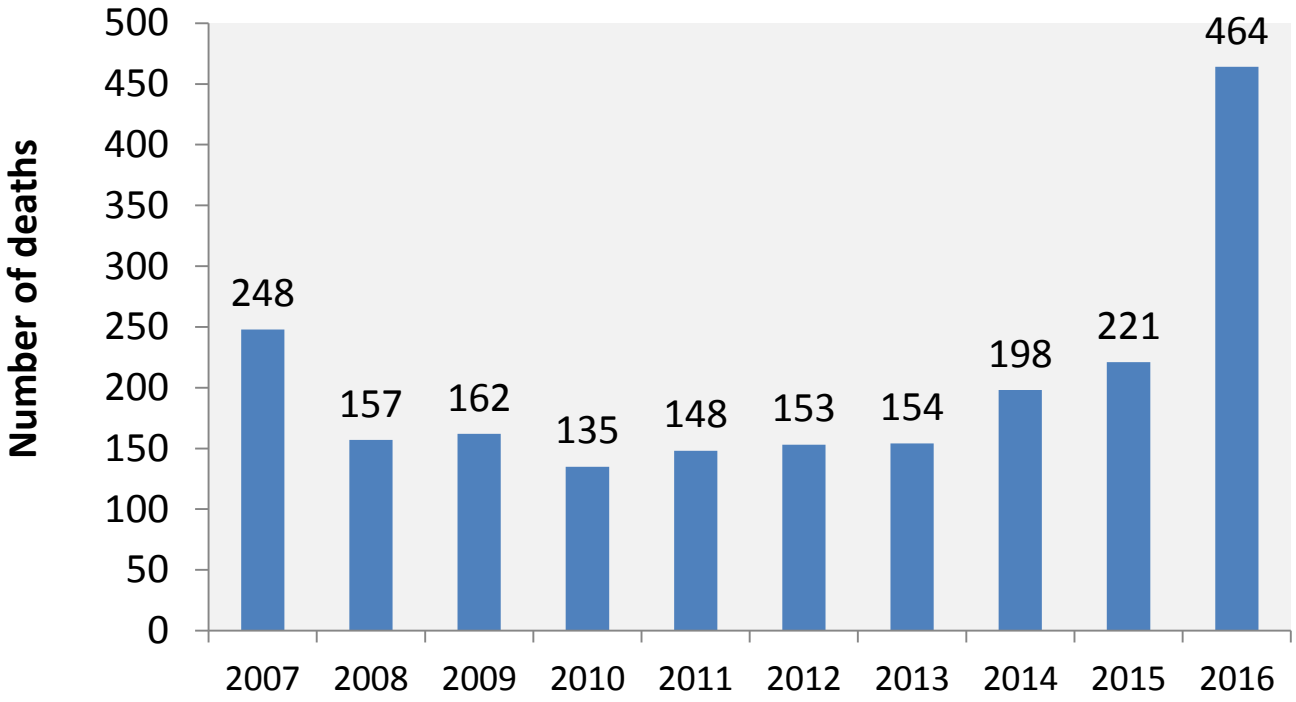


Figure 22. Number of Cocaine-Related Deaths Occurring in Maryland by Place of Occurrence, 2016.

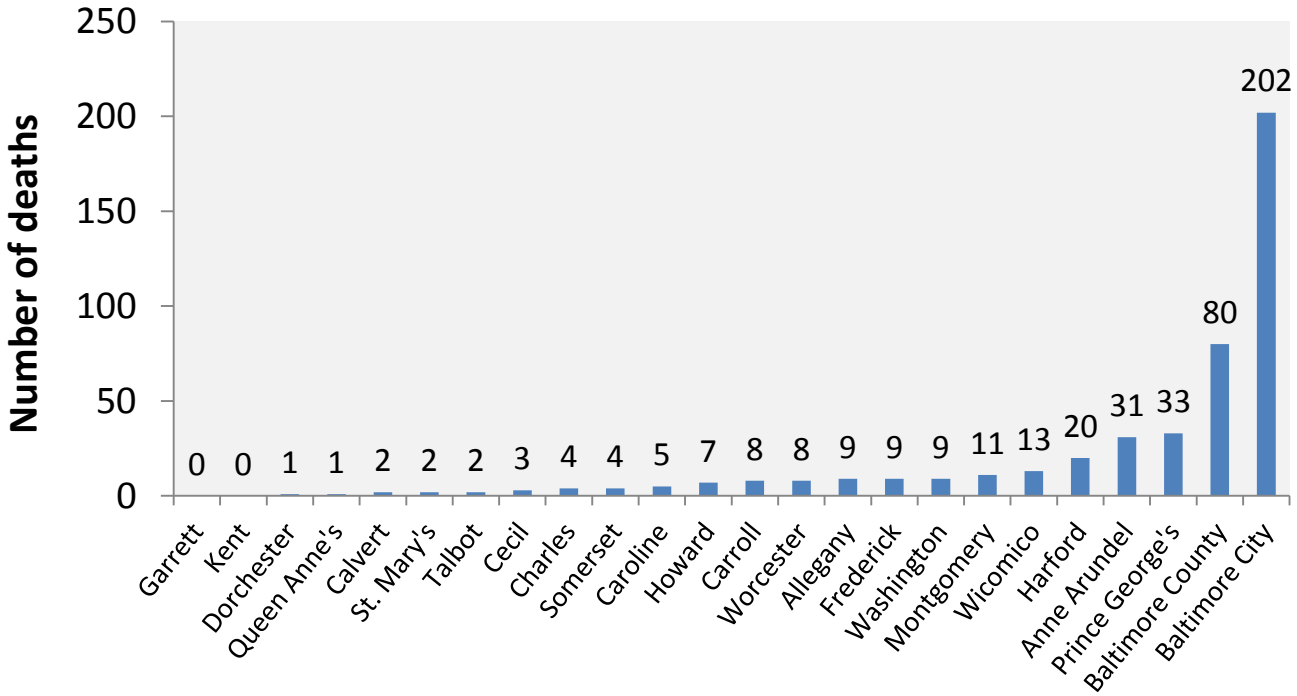
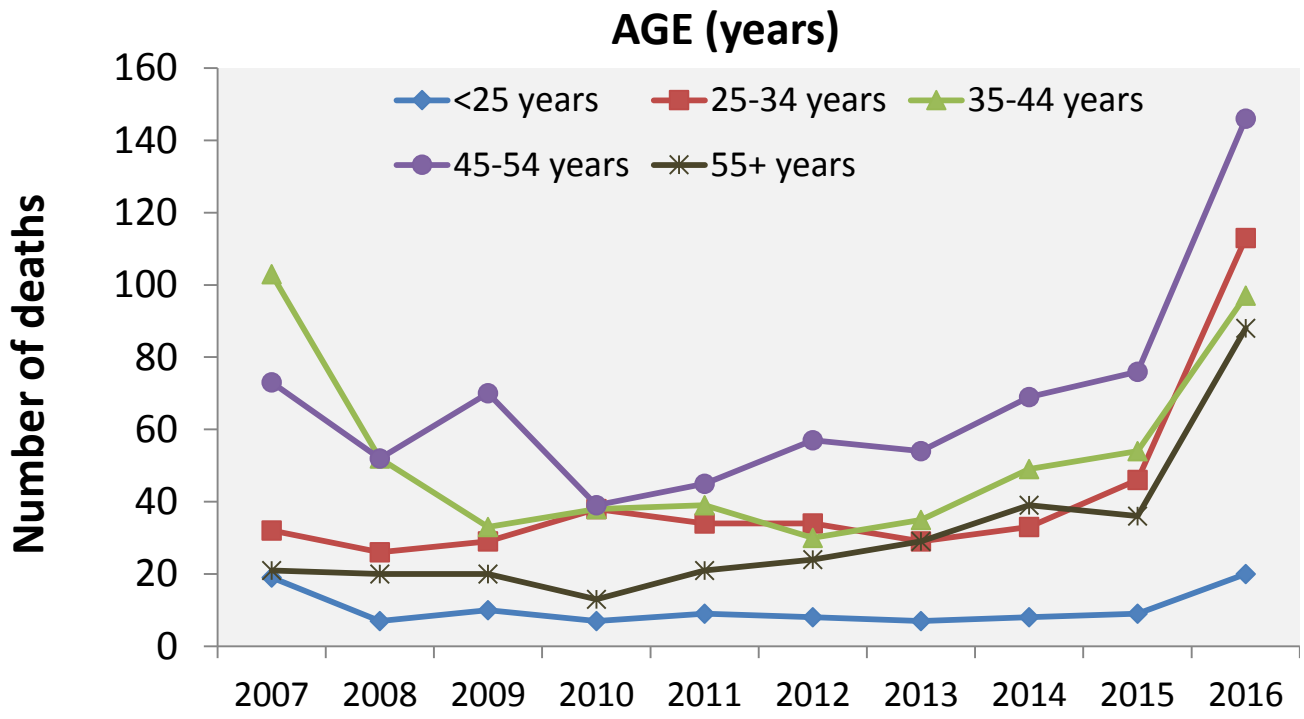
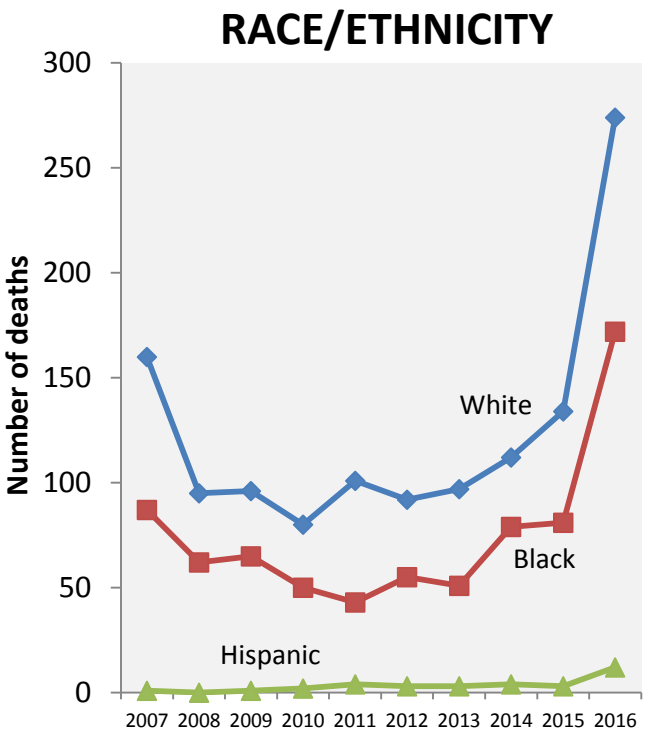


Figure 23. Number of Cocaine-Related Deaths Occurring in Maryland by Age Group,* Race/Ethnicity and Gender, 2007-2016.





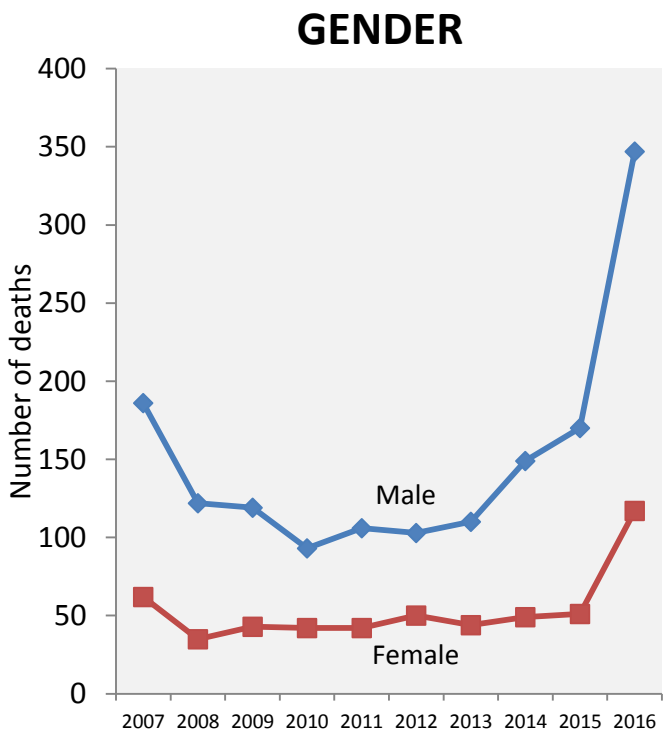
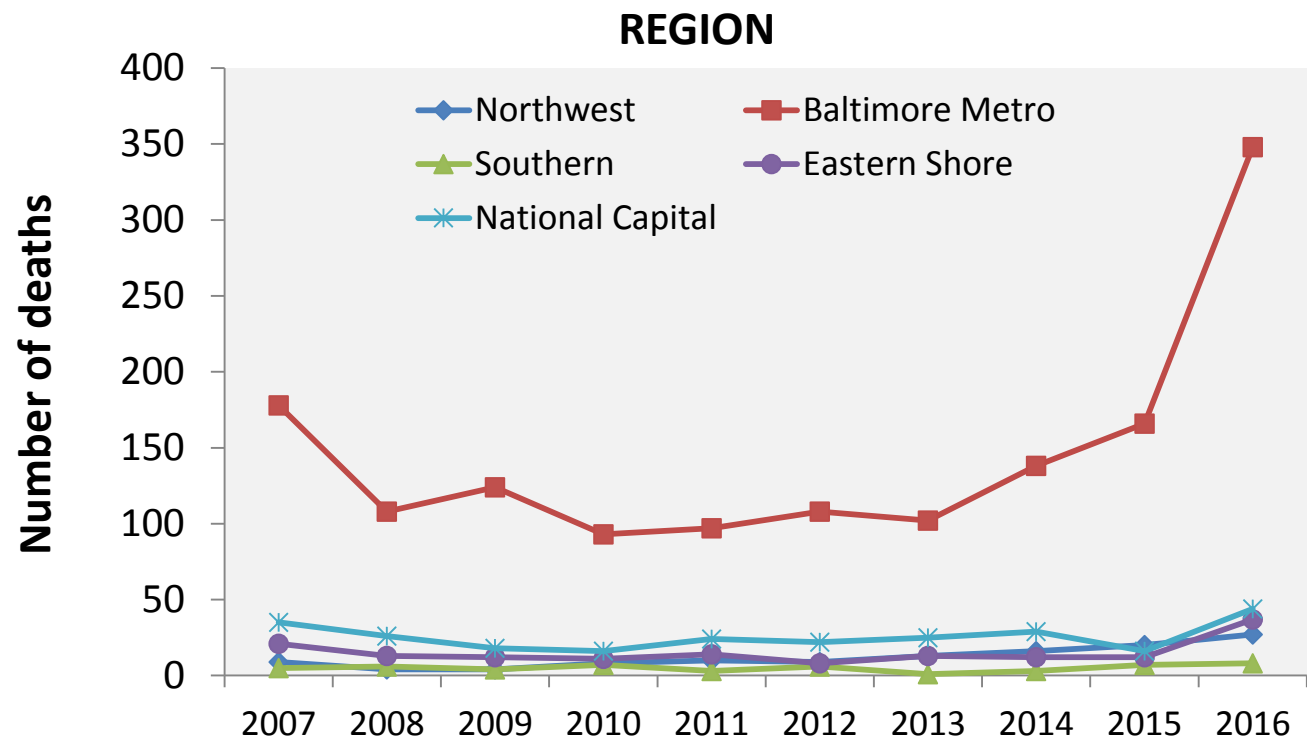
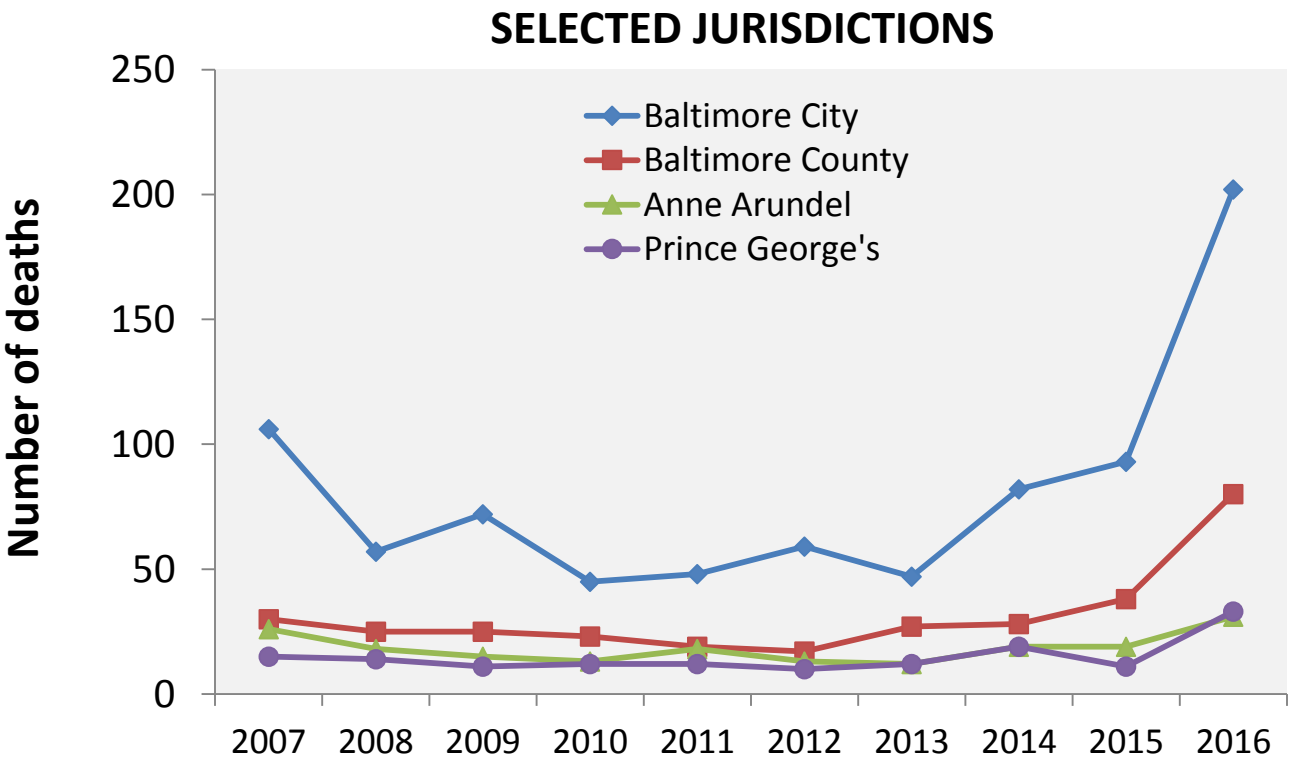


Figure 24. Number of Cocaine-Related Deaths by Place of Occurrence, Maryland, 2007-2016.





BENZODIAZEPINE-RELATED DEATHS

Figure 25. Number of Benzodiazepine-Related Deaths Occurring in Maryland, 2007-2016.

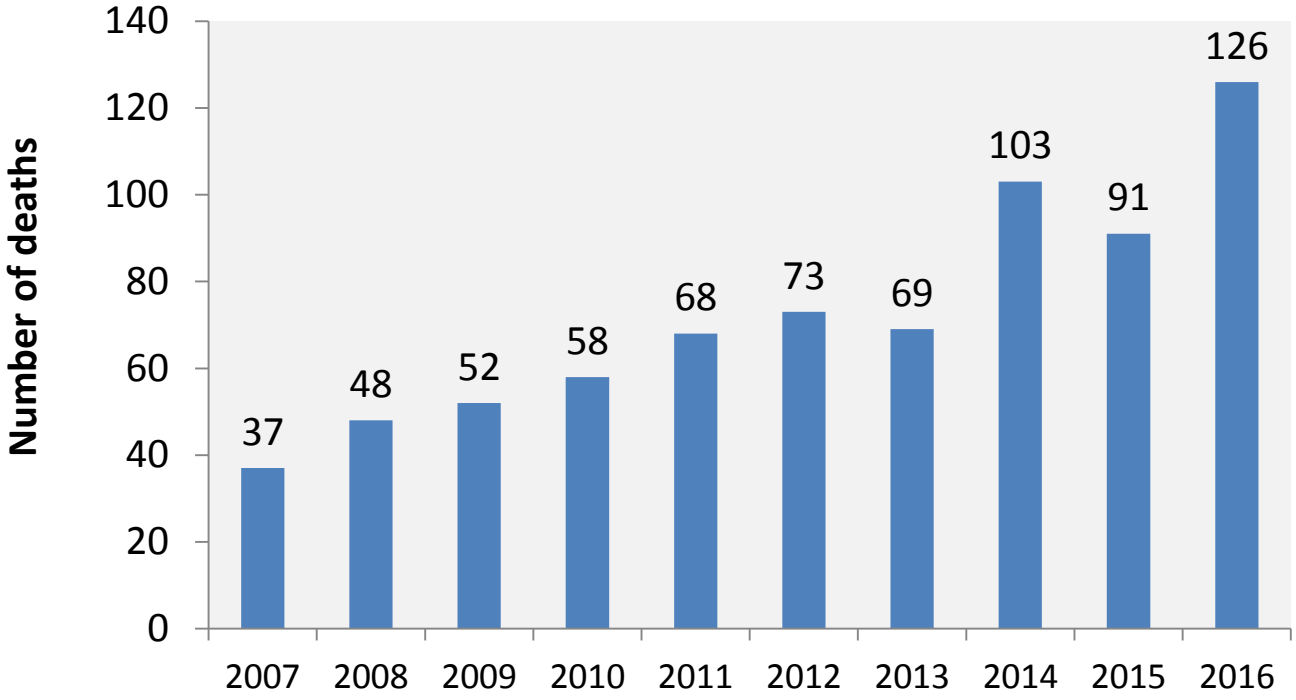


Figure 26. Number of Benzodiazepine-Related Deaths Occurring in Maryland by Place of Occurrence, 2016.

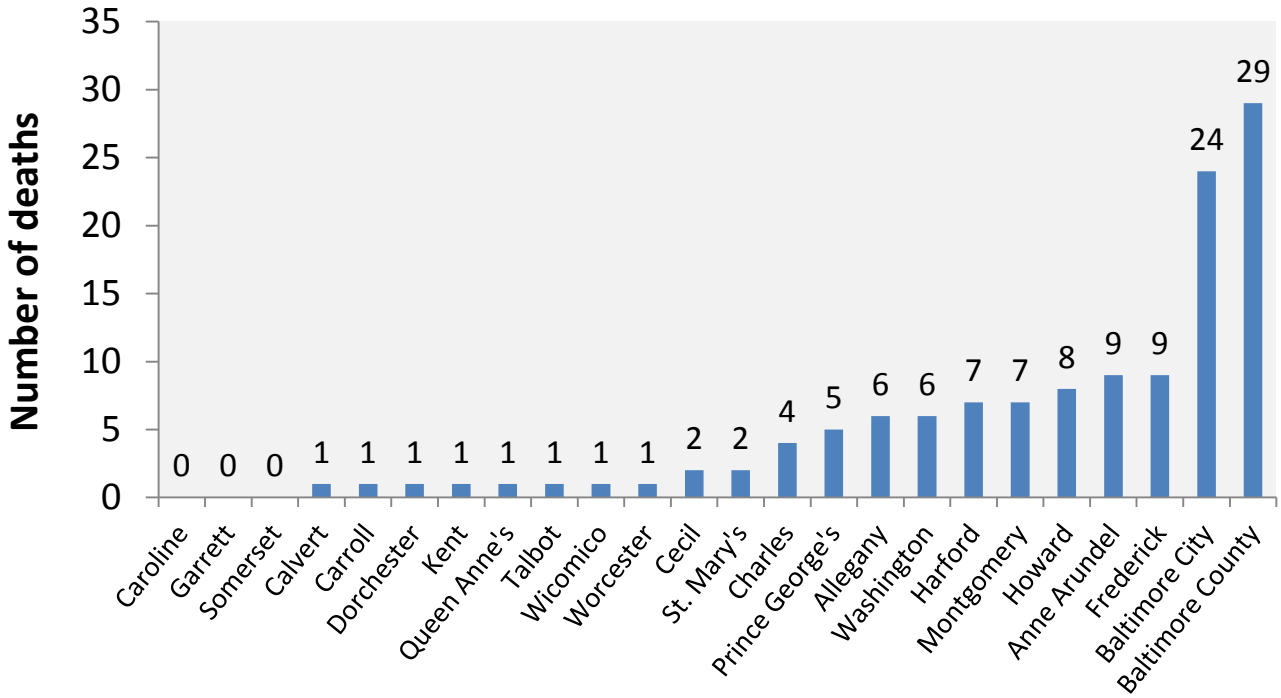
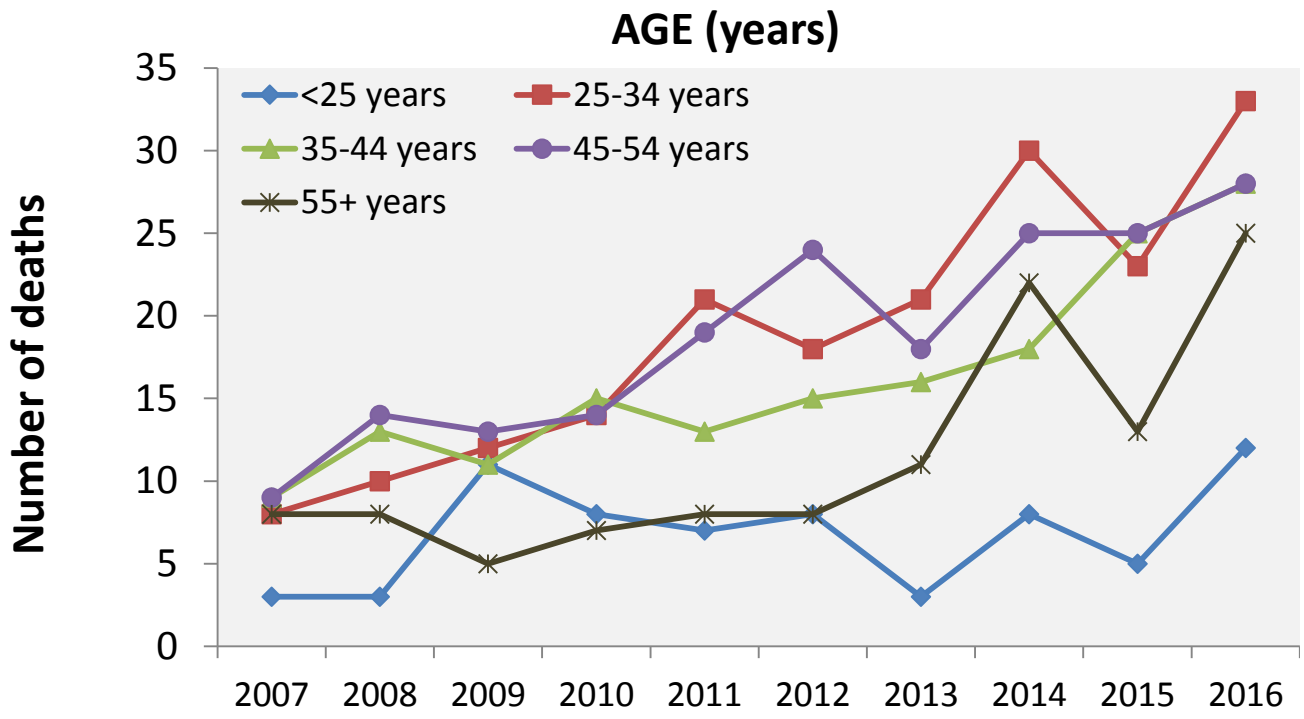
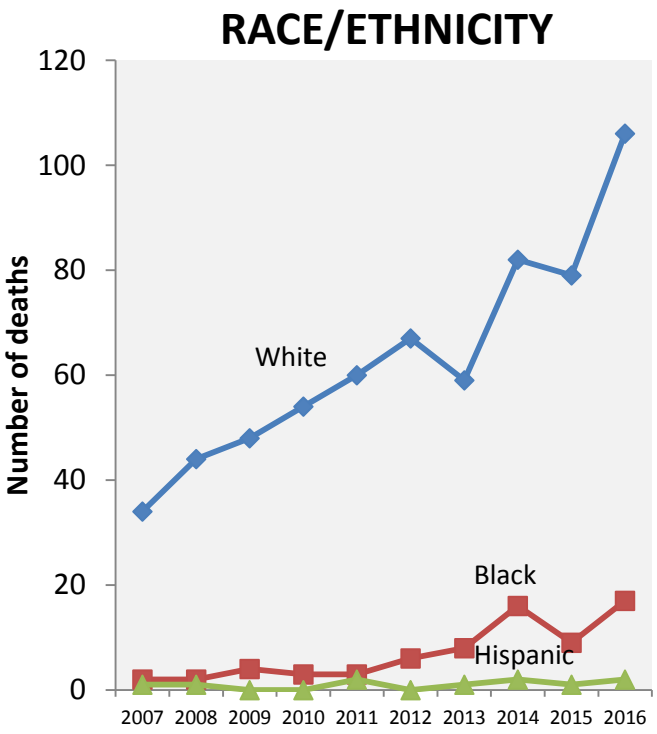


Figure 27. Number of Benzodiazepine-Related Deaths Occurring in Maryland by Age Group,* Race/Ethnicity and Gender, 2007-2016.





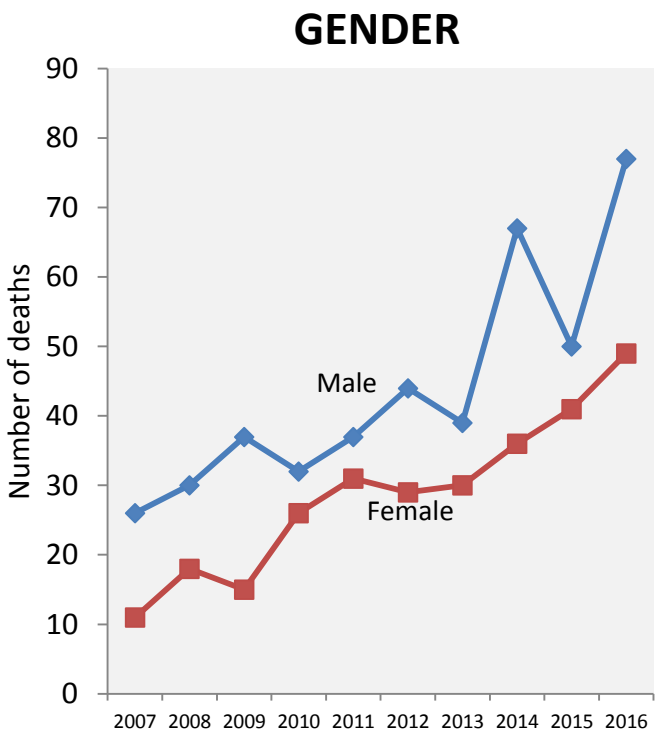
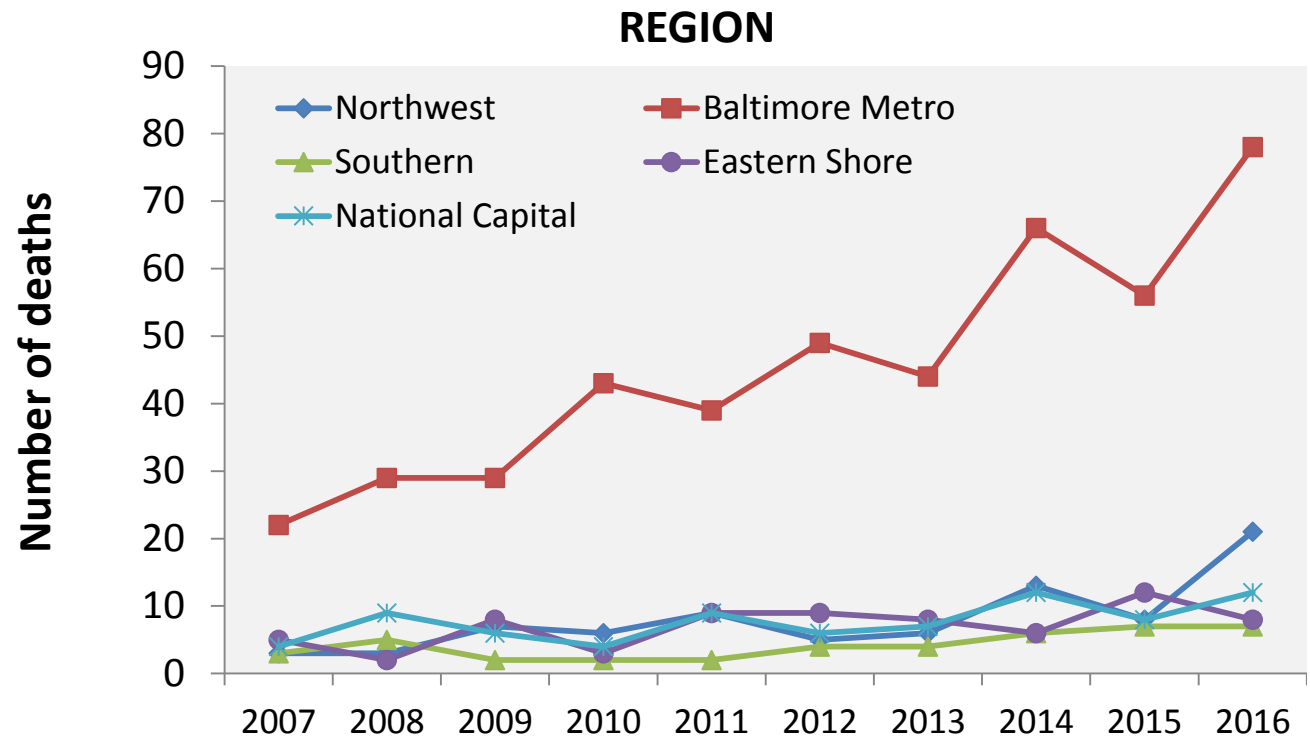
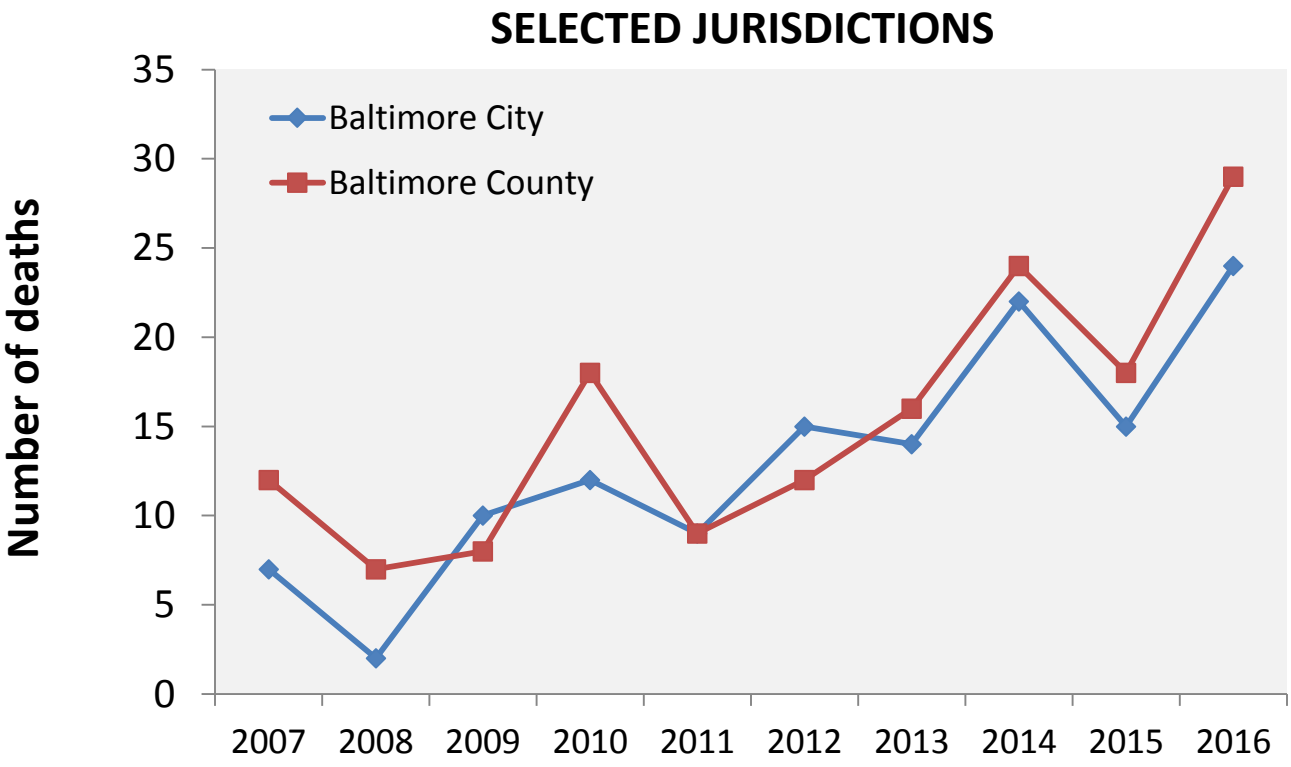


Figure 28. Number of Benzodiazepine-Related Deaths by Place of Occurrence, Maryland, 2007-2016.





ALCOHOL-RELATED DEATHS

Figure 29. Number of Alcohol-Related Deaths Occurring in Maryland, 2007-2016.

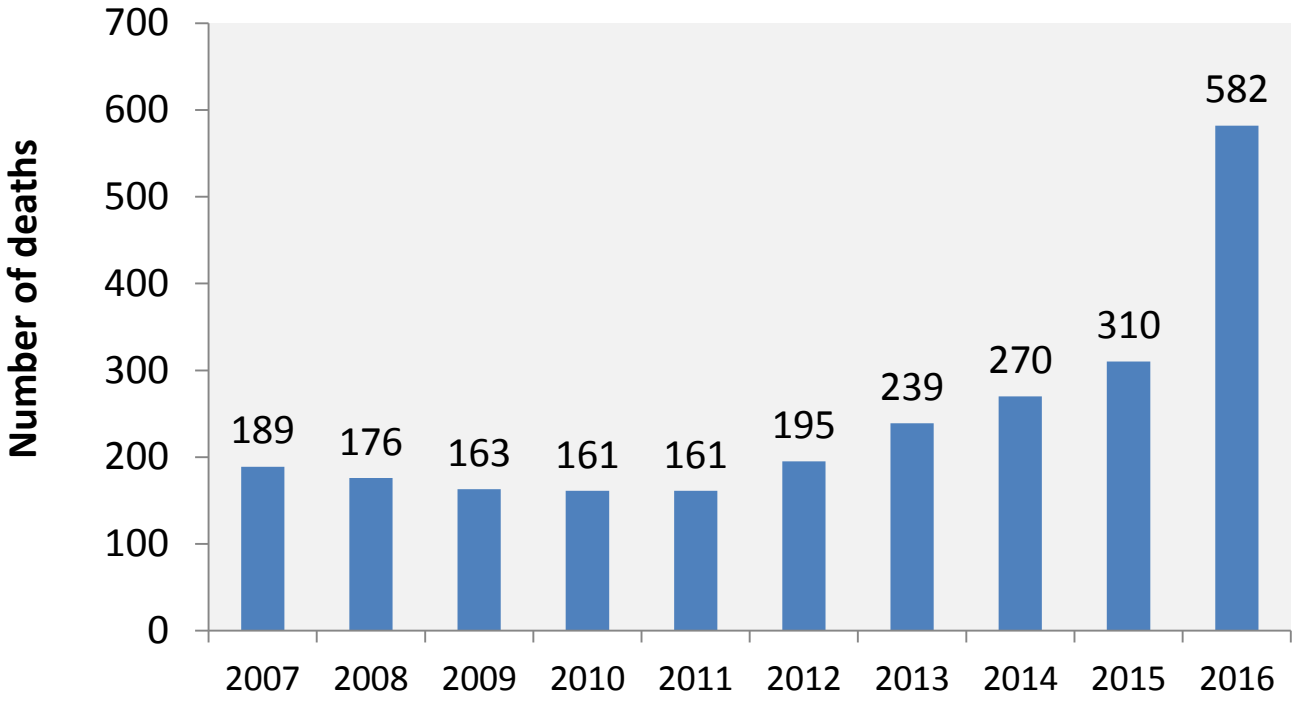


Figure 30. Number of Alcohol-Related Deaths Occurring in Maryland by Place of Occurrence, 2016.

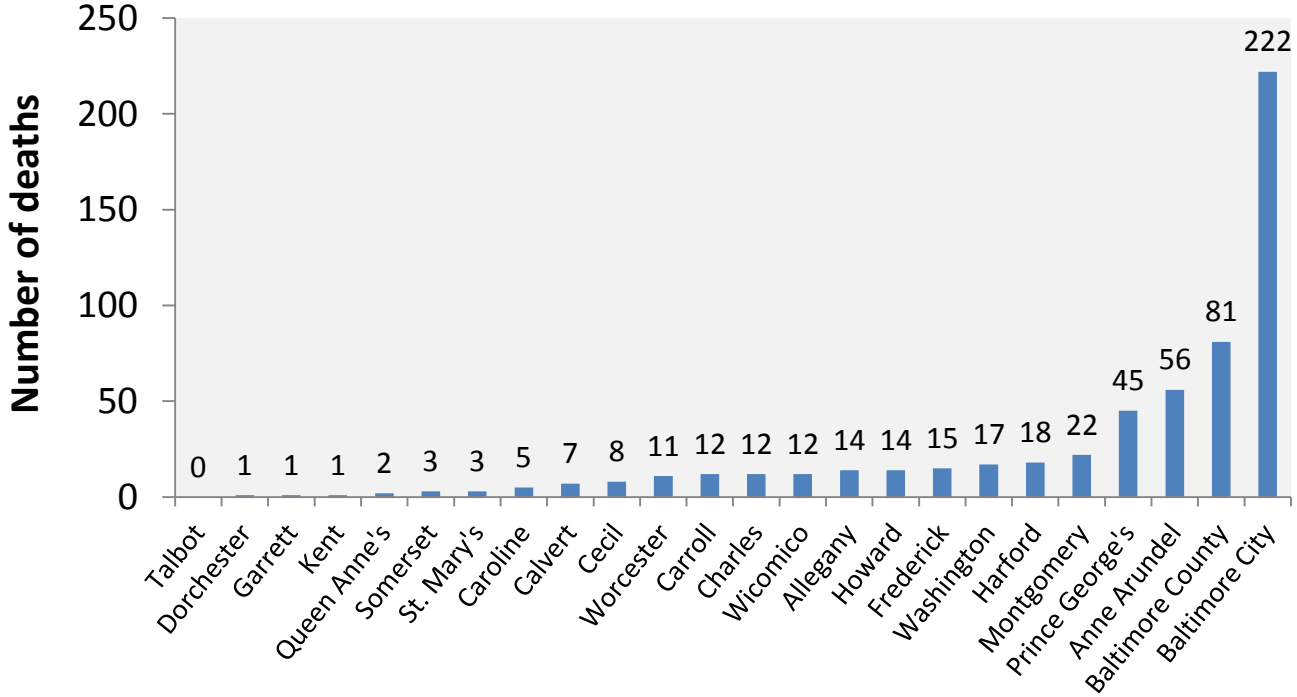
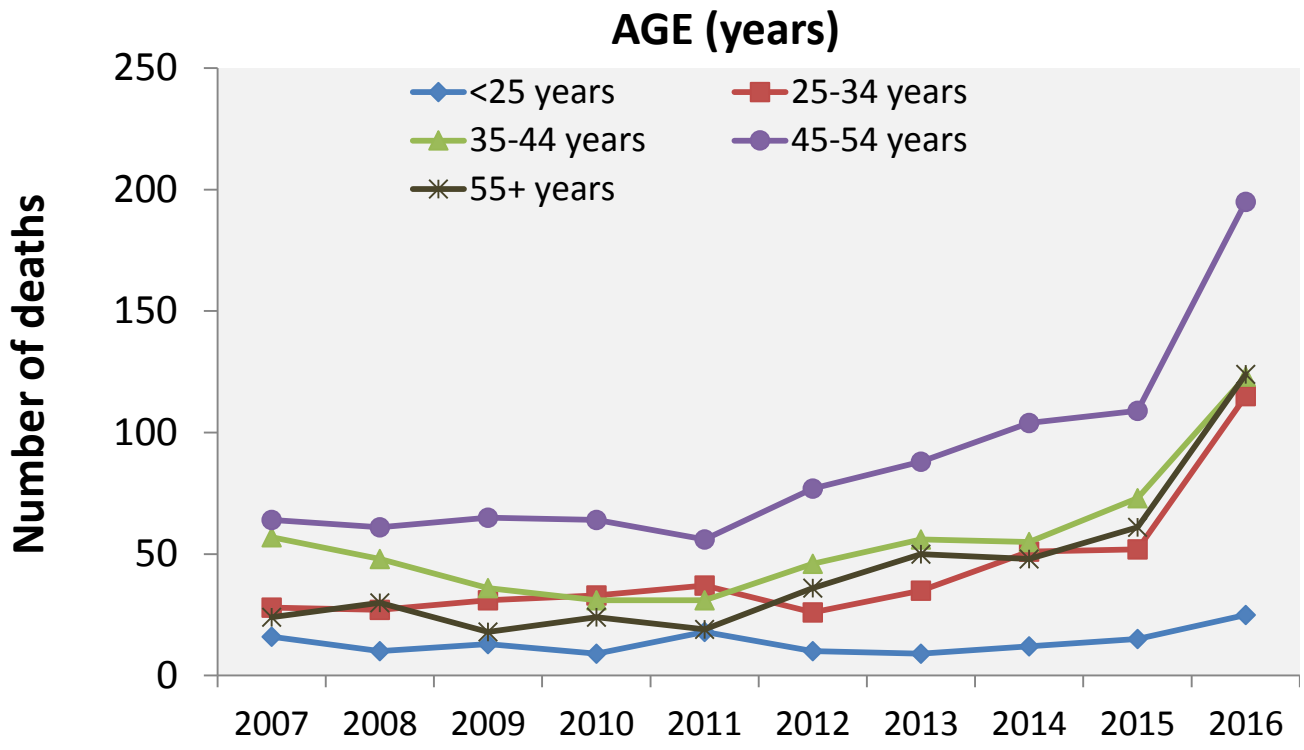
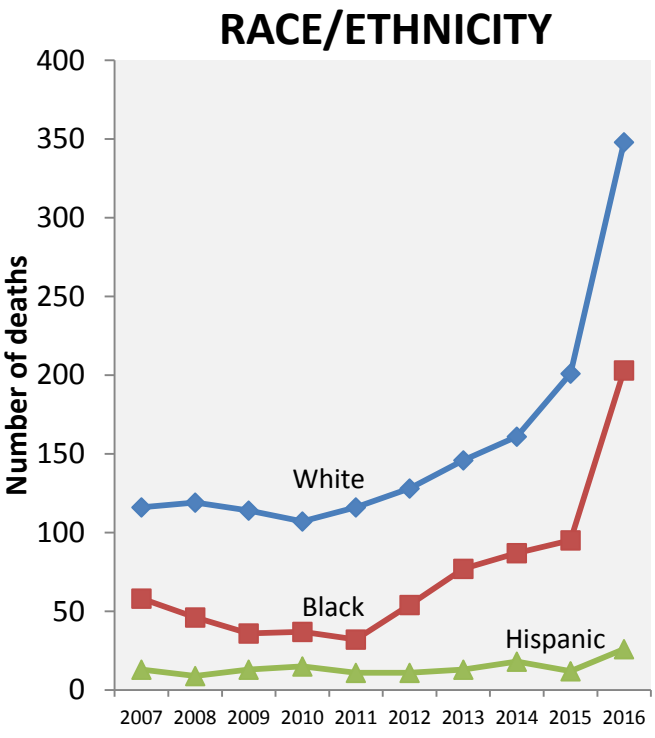


Figure 31. Number of Alcohol-Related Deaths Occurring in Maryland by Age Group,* Race/Ethnicity and Gender, 2007-2016.





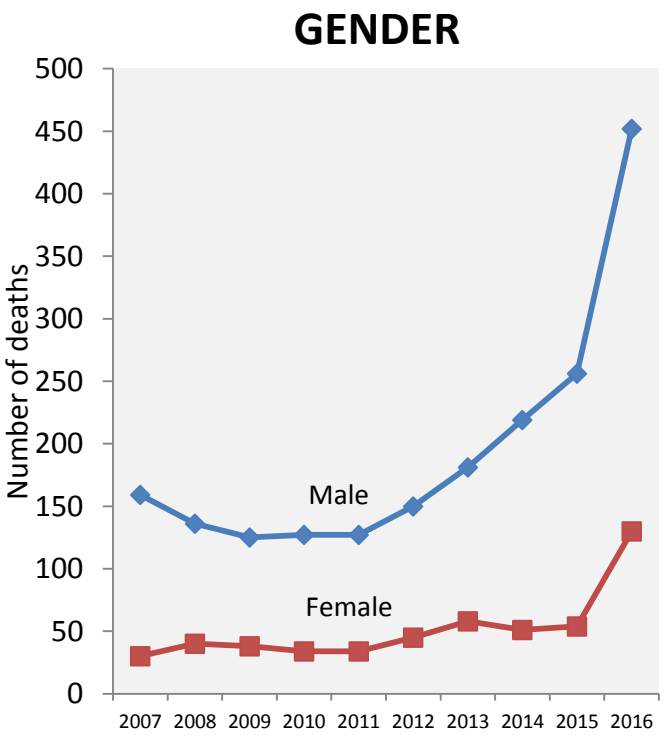
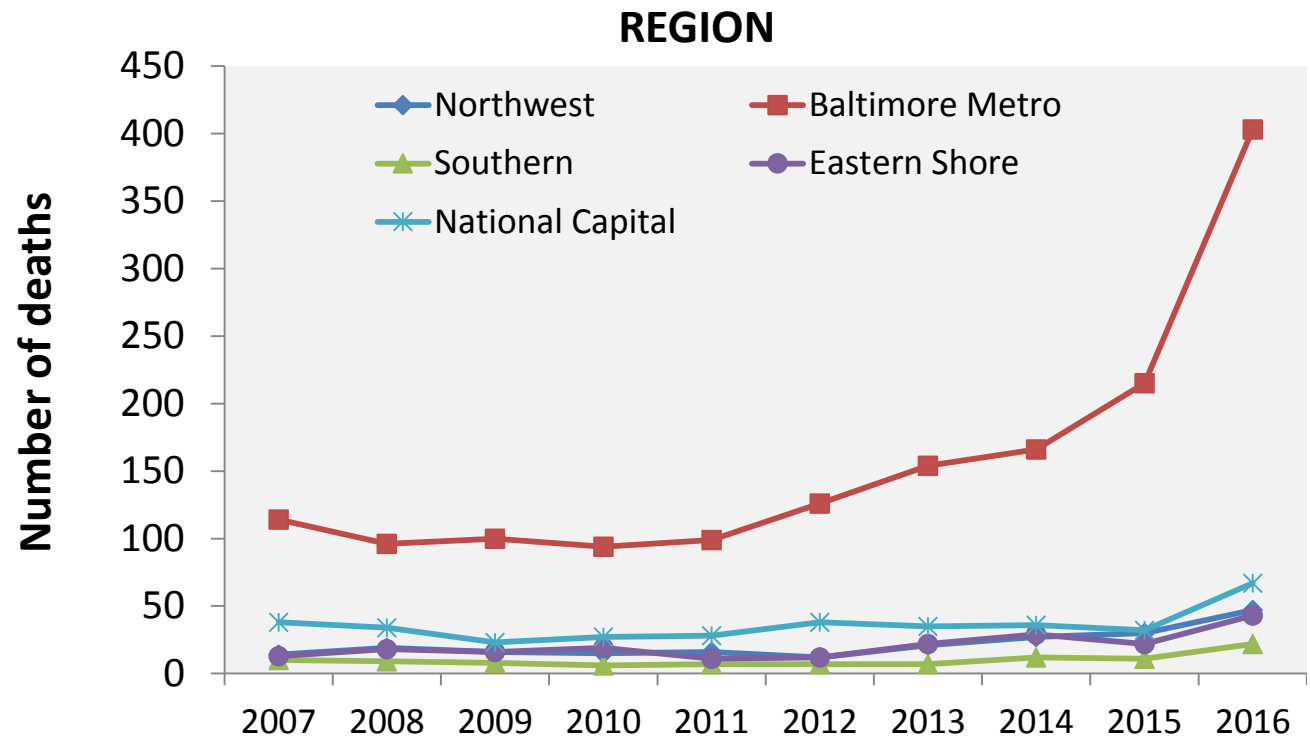
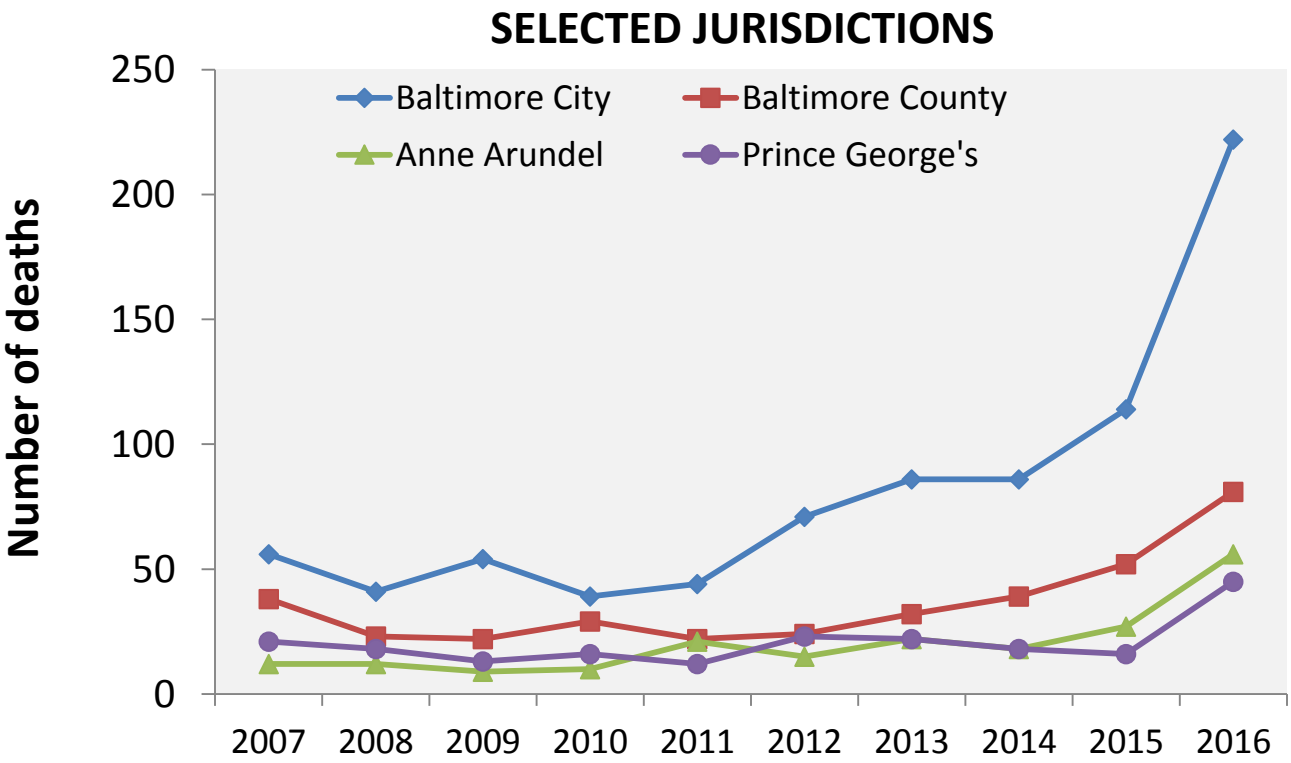


Figure 32. Number of Alcohol-Related Deaths by Place of Occurrence, Maryland, 2007-2016.





DRUG COMBINATIONS

Figure 33. Number of Drug- and Alcohol-Related Intoxication Deaths Involving Opioids, 2007-2016.

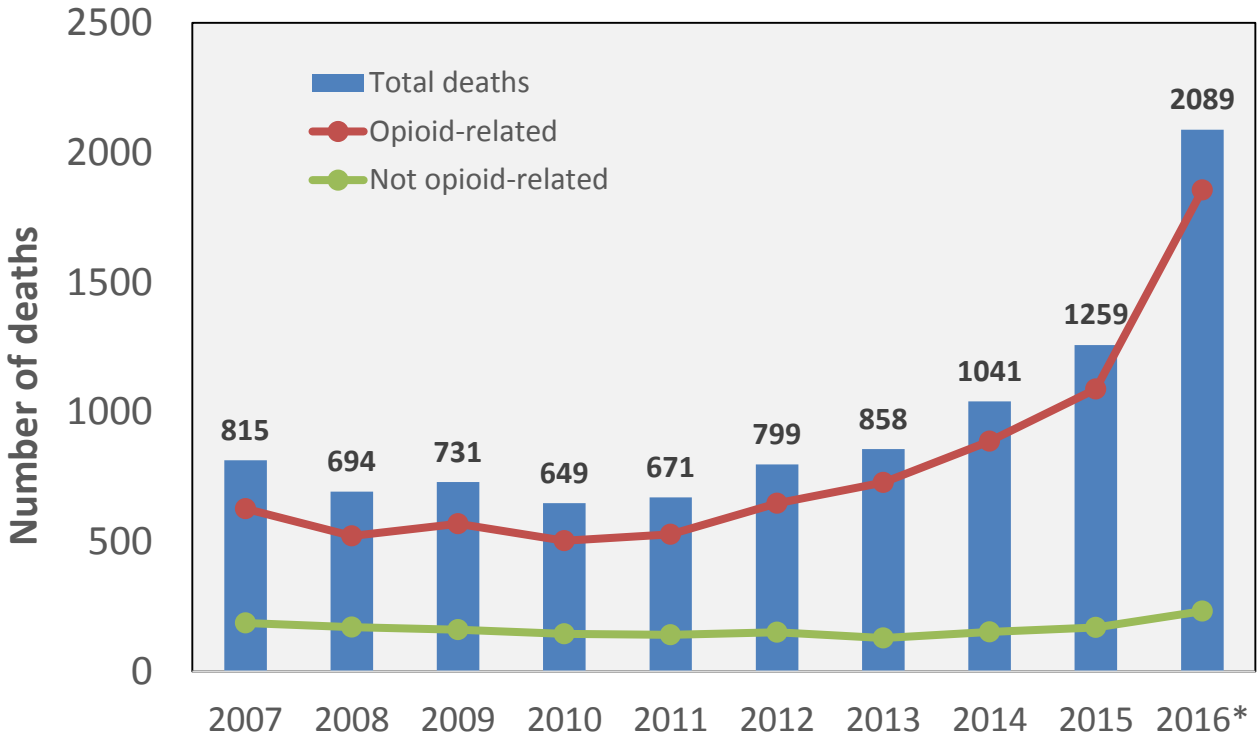


Figure 34. Number of Intoxication Deaths by Presence of Heroin and/or Fentanyl, 2007-2016.

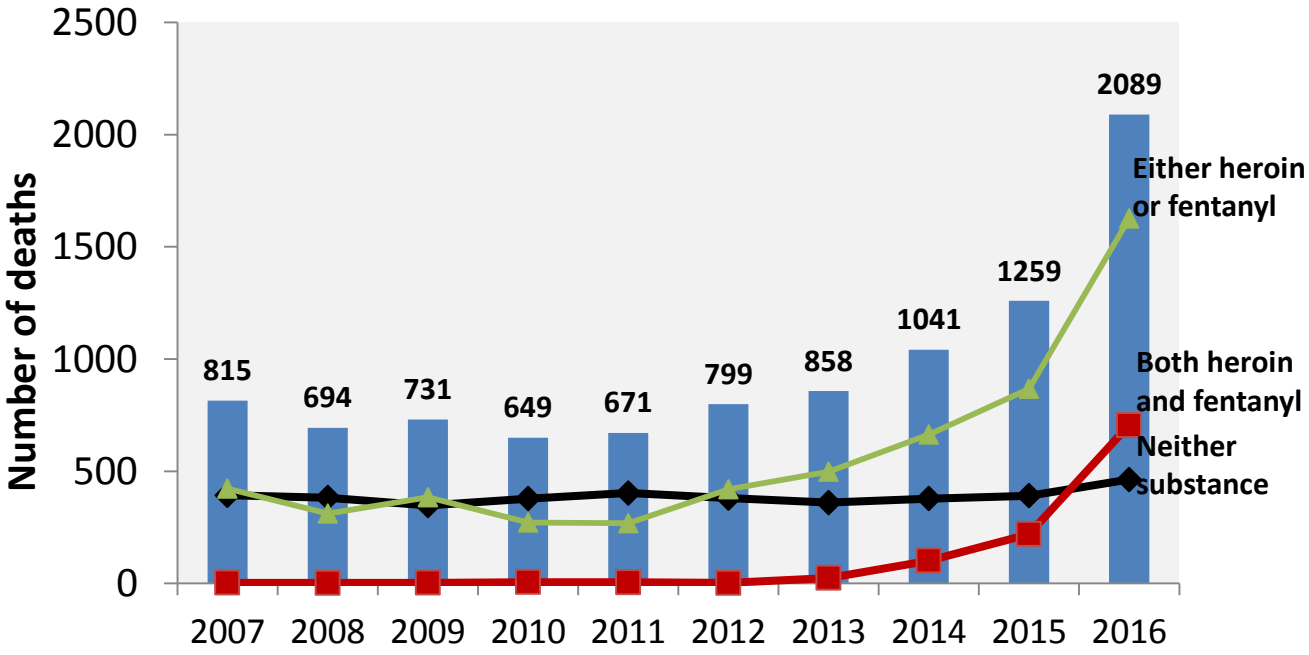


Figure 35. Number of Prescription Opioid-Related Intoxication Deaths Involving Heroin or Fentanyl, 2007-2016.

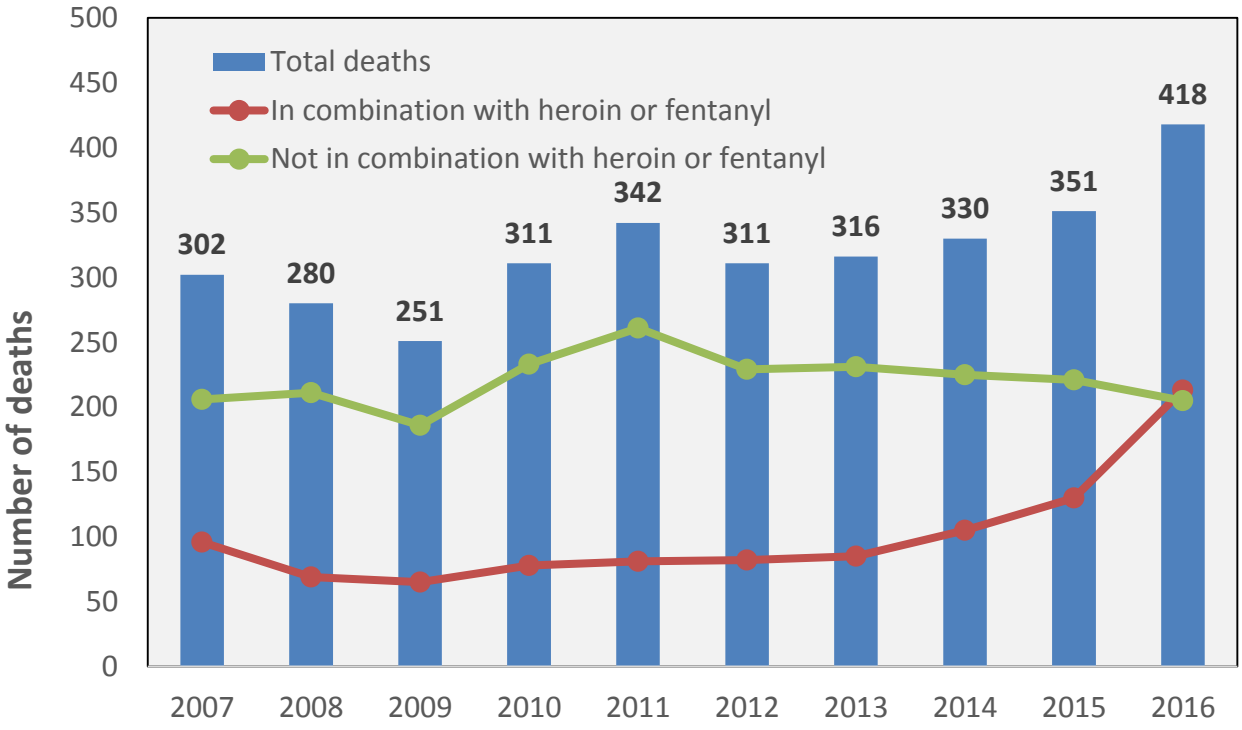


Figure 36. Number of Cocaine-Related Intoxication Deaths Involving Heroin or Fentanyl, 2007-2016.

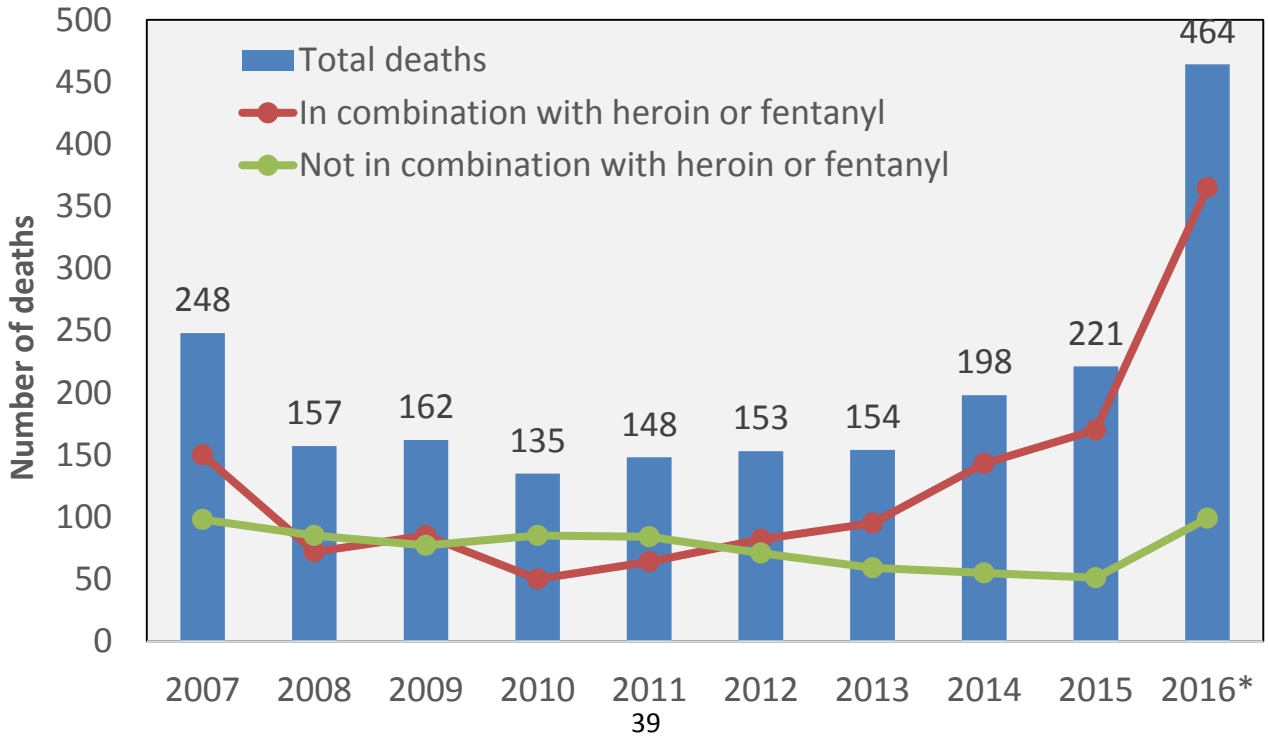


Figure 37. Number of Benzodiazepine-Related Intoxication Deaths Involving Heroin or Fentanyl, 2007-2016.

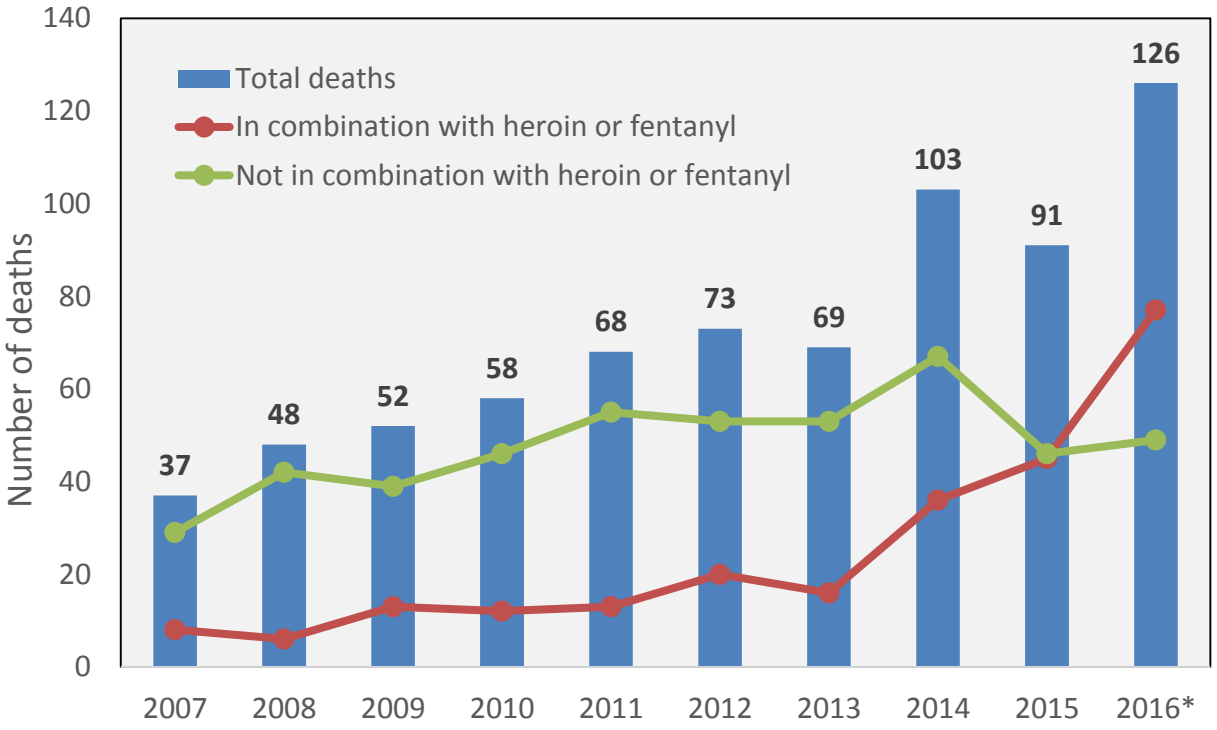


Figure 38. Number of Alcohol-Related Intoxication Deaths Involving Heroin or Fentanyl, 2007-2016.

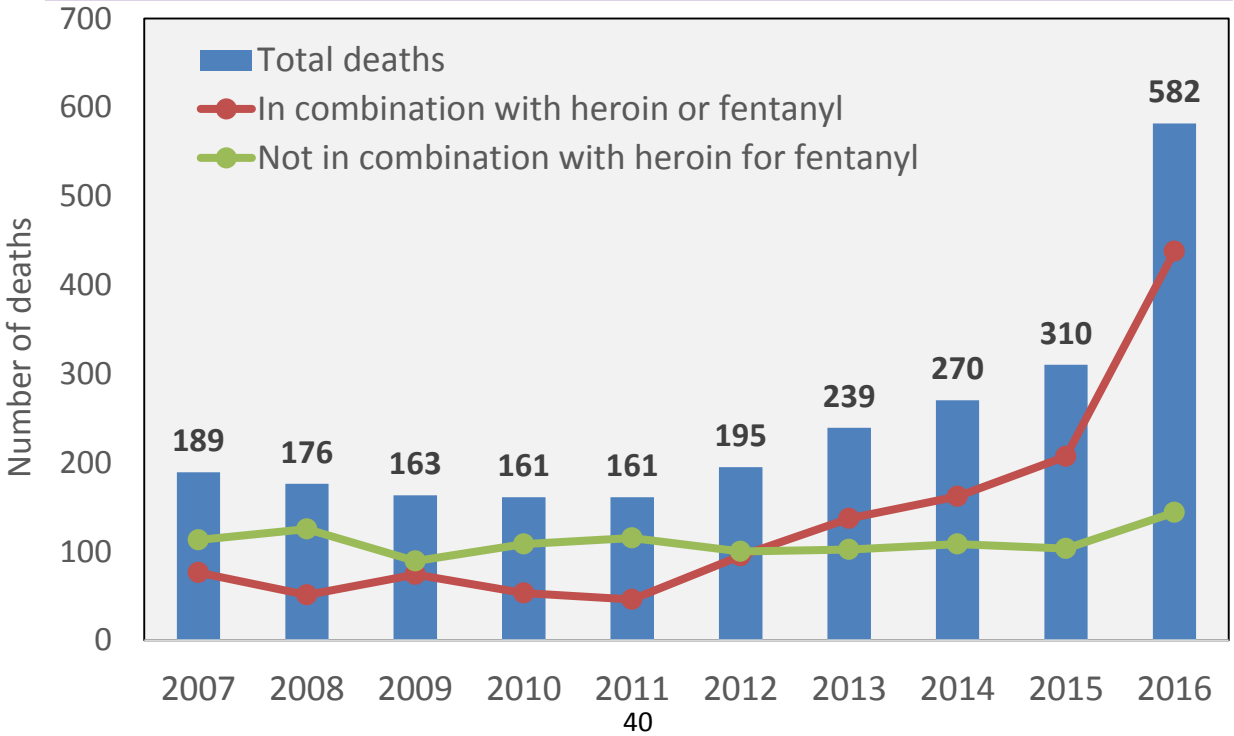
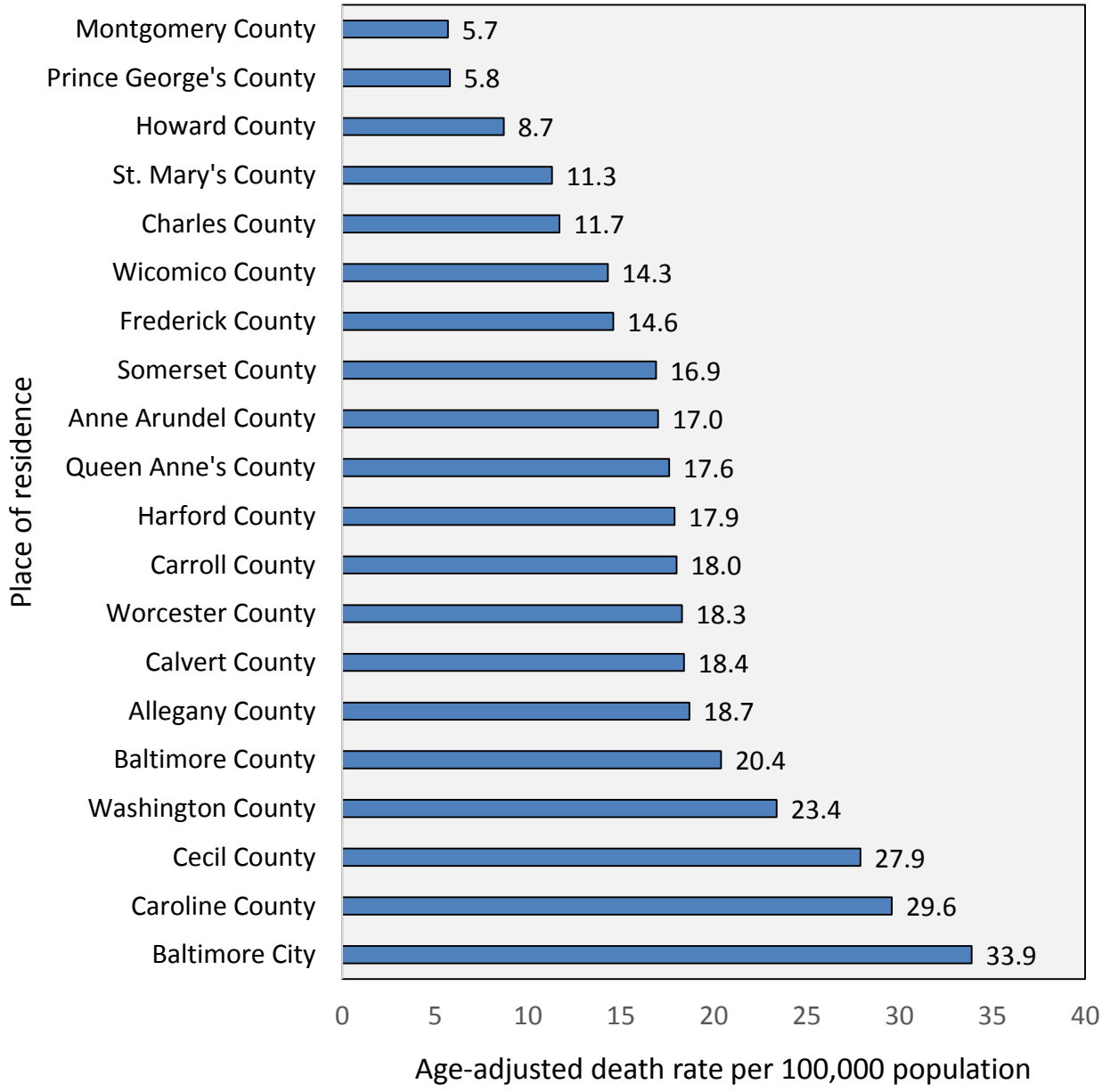


Figure 39 . Combinations of Substances Related to Unintentional Drug- and Alcohol-Relation Intoxication Deaths, Maryland, 2016.

		Number	Percent
Heroin			
	Total	**1212**	
	In combination		
	With fentanyl	705	58.2
	With alcohol	316	26.1
	With cocaine	269	22.2
	With prescription opioids	156	12.9
	With benzodiazepines	54	4.5
Prescription opioids			
	Total	**418**	
	In combination		
	With heroin	156	37.3
	With fentanyl	137	32.8
	With alcohol	94	22.5
	With benzodiazepines	67	16.0
	With cocaine	63	15.1
Cocaine			
	Total	**464**	
	In combination		
	With heroin	269	58.0
	With fentanyl	254	54.7
	With alcohol	111	23.9
	With prescription opioids	63	13.6
	With benzodiazepines	19	4.1
Benzodiazepines			
	Total	**126**	
	In combination		
	With prescription opioids	67	53.2
	With fentanyl	57	45.2
	With heroin	54	42.9
	With alcohol	23	18.3
	With cocaine	19	15.1
Fentanyl			
	Total	**1119**	
	In combination		
	With heroin	705	63.0
	With alcohol	289	25.8
	With cocaine	254	22.7
	With prescription opioids	137	12.2
	With benzodiazepines	57	5.1
Alcohol			
	Total	**582**	
	In combination		
	With heroin	316	54.3
	With fentanyl	289	49.7
	With cocaine	111	19.1
	With prescription opioids	94	16.2
	With benzodiazepines	23	4.0

Figure 40. Age-Adjusted Death Rates[1,2] for Total Unintentional Intoxication Deaths by Place of Residence,[3] Maryland, 2011-2015.



[1]Age-adjusted to the 2000 U.S. standard population by the direct method.
[2]Since age-adjusted rates based on fewer than 20 deaths are considered unreliable, rates are only show for jurisdictions with 20 or more intoxication deaths over the five-year period.
[3]Rates are based on place of residence, not place of occurrence.

TABLES

TABLE 1. TOTAL NUMBER OF DRUG AND ALCOHOL-RELATED INTOXICATION DEATHS BY PLACE OF OCCURRENCE, 2007-2016.[1,2]

REGION AND POLITICAL SUBDIVISION	TOTAL INTOXICATION DEATHS										
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	TOTAL
MARYLAND	815	694	731	649	671	799	858	1,041	1,259	2,089	9,606
NORTHWEST AREA	54	53	53	58	65	67	86	96	131	214	877
GARRETT	1	3	3	3	2	0	6	2	5	1	26
ALLEGANY	14	9	9	15	12	14	15	12	22	59	181
WASHINGTON	16	26	18	20	21	27	28	40	64	66	326
FREDERICK	23	15	23	20	30	26	37	42	40	88	344
BALTIMORE METRO AREA	550	443	479	411	420	519	557	678	841	1,402	6,300
BALTIMORE CITY	287	184	239	172	167	225	246	305	393	694	2,912
BALTIMORE COUNTY	131	118	106	115	107	119	144	170	220	336	1,566
ANNE ARUNDEL	71	70	63	56	79	83	78	101	112	195	908
CARROLL	14	17	22	15	8	29	24	38	40	47	254
HOWARD	16	19	16	10	21	24	29	21	26	46	228
HARFORD	31	35	33	43	38	39	36	43	50	84	432
NATIONAL CAPITAL AREA	109	104	103	81	86	104	111	128	140	231	1,197
MONTGOMERY	56	46	44	38	44	48	52	65	70	102	565
PRINCE GEORGE'S	53	58	59	43	42	56	59	63	70	129	632
SOUTHERN AREA	33	36	34	31	31	37	25	47	59	88	421
CALVERT	14	9	14	6	12	12	6	17	20	28	138
CHARLES	13	16	11	13	11	13	9	21	22	45	174
ST. MARY'S	6	11	9	12	8	12	10	9	17	15	109
EASTERN SHORE AREA	69	58	62	68	69	72	79	92	88	154	811
CECIL	25	10	24	24	28	25	26	29	32	30	253
KENT	3	4	2	5	2	0	4	6	3	6	35
QUEEN ANNE'S	4	5	4	4	5	2	8	10	4	8	54
CAROLINE	1	4	2	2	11	4	2	7	3	10	46
TALBOT	5	4	3	3	1	5	7	4	5	10	47
DORCHESTER	4	5	2	6	2	5	5	0	1	6	36
WICOMICO	9	13	12	13	11	21	17	20	18	48	182
SOMERSET	6	3	4	1	3	3	4	3	6	8	41
WORCESTER	12	10	9	10	6	7	6	13	16	28	117

[1]Includes deaths that were the result of recent ingestion or exposure to alcohol or another type of drug, including heroin, cocaine, prescription opioids, benzodiazepines, and other prescribed and unprescribed drugs.
[2]Includes only deaths for which the manner of death was classified as accidental or undetermined.

TABLE 2. NUMBER OF HEROIN-RELATED INTOXICATION DEATHS BY PLACE OF OCCURRENCE, 2007-2016.[1,2]

REGION AND POLITICAL SUBDIVISION	HEROIN-RELATED DEATHS										
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	TOTAL
MARYLAND	399	289	360	238	247	392	464	578	748	1,212	4,927
NORTHWEST AREA	16	21	23	15	23	27	40	53	80	119	417
GARRETT	0	0	1	0	1	0	2	1	3	0	8
ALLEGANY	3	4	2	3	3	6	3	5	13	34	76
WASHINGTON	5	13	11	6	8	11	14	21	38	39	166
FREDERICK	8	4	9	6	11	10	21	26	26	46	167
BALTIMORE METRO AREA	323	203	264	171	165	272	319	379	519	858	3,473
BALTIMORE CITY	200	107	151	93	76	131	150	192	260	454	1,814
BALTIMORE COUNTY	56	51	53	42	38	64	76	86	134	208	808
ANNE ARUNDEL	38	24	31	18	24	38	41	53	60	105	432
CARROLL	9	5	7	3	2	13	14	16	22	25	116
HOWARD	8	8	7	3	10	12	16	9	16	24	113
HARFORD	12	8	15	12	15	14	22	23	27	42	190
NATIONAL CAPITAL AREA	37	38	42	26	23	42	53	65	69	115	510
MONTGOMERY	17	14	16	12	11	22	28	33	37	48	238
PRINCE GEORGE'S	20	24	26	14	12	20	25	32	32	67	272
SOUTHERN AREA	8	11	10	11	15	18	13	28	29	48	191
CALVERT	5	3	7	1	5	6	2	13	15	17	74
CHARLES	2	5	3	6	6	5	5	10	8	22	72
ST. MARY'S	1	3	0	4	4	7	6	5	6	9	45
EASTERN SHORE AREA	15	16	21	15	21	33	39	53	51	72	336
CECIL	8	4	12	4	8	11	11	15	16	19	108
KENT	1	1	0	0	1	0	0	2	1	1	7
QUEEN ANNE'S	0	1	3	2	2	2	5	7	1	4	27
CAROLINE	0	0	0	0	3	3	2	6	2	6	22
TALBOT	1	2	0	0	1	2	2	4	3	4	19
DORCHESTER	1	2	0	2	1	3	3	0	1	3	16
WICOMICO	1	3	3	5	3	9	11	12	13	21	81
SOMERSET	2	1	1	0	1	2	1	1	3	3	15
WORCESTER	1	2	2	2	1	1	4	6	11	11	41

[1]Includes deaths confirmed or suspected to be related to recent heroin use.
[2]Includes only deaths for which the manner of death was classified as accidental or undetermined.

TABLE 3. NUMBER OF PRESCRIPTION OPIOID-RELATED INTOXICATION DEATHS BY PLACE OF OCCURRENCE, 2007-2016.[1,2]

REGION AND POLITICAL SUBDIVISION	PRESCRIPTION OPIOID-RELATED DEATHS										
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	TOTAL
MARYLAND	302	280	251	311	342	311	316	330	351	418	3,212
NORTHWEST AREA	22	21	21	22	38	30	35	33	39	56	317
GARRETT	0	2	2	1	1	0	2	2	1	0	11
ALLEGANY	9	5	6	8	5	5	8	6	6	15	73
WASHINGTON	7	10	4	7	11	9	11	16	20	23	118
FREDERICK	6	4	9	6	21	16	14	9	12	18	115
BALTIMORE METRO AREA	190	189	148	197	212	196	207	217	233	265	2,054
BALTIMORE CITY	95	60	63	61	82	74	86	84	105	113	823
BALTIMORE COUNTY	48	51	37	60	68	47	54	59	62	67	553
ANNE ARUNDEL	22	36	20	31	33	33	28	32	27	48	310
CARROLL	4	11	10	9	5	17	12	15	14	15	112
HOWARD	6	6	4	6	9	5	13	7	9	6	71
HARFORD	15	25	14	30	15	20	14	20	16	16	185
NATIONAL CAPITAL AREA	28	29	32	31	35	29	30	35	36	42	327
MONTGOMERY	20	17	19	14	20	18	16	19	23	26	192
PRINCE GEORGE'S	8	12	13	17	15	11	14	16	13	16	135
SOUTHERN AREA	17	16	18	16	15	18	12	19	19	25	175
CALVERT	8	3	4	3	7	6	3	7	6	11	58
CHARLES	6	6	7	4	5	7	5	9	8	10	67
ST. MARY'S	3	7	7	9	3	5	4	3	5	4	50
EASTERN SHORE AREA	45	25	32	45	42	38	32	26	24	30	339
CECIL	19	6	10	20	20	18	12	12	10	8	135
KENT	2	3	2	3	1	0	4	2	2	0	19
QUEEN ANNE'S	4	1	1	2	2	0	3	3	3	2	21
CAROLINE	0	2	1	2	5	1	0	1	0	4	16
TALBOT	2	1	2	2	0	1	4	0	2	3	17
DORCHESTER	2	1	1	4	1	3	3	0	0	2	17
WICOMICO	5	4	8	7	7	9	4	3	5	7	59
SOMERSET	4	3	1	1	3	2	2	1	1	0	18
WORCESTER	7	4	6	4	3	4	0	4	1	4	37

[1]Includes deaths that were related to recent ingestion of one or more prescription opioids.
[2]Includes only deaths for which the manner of death was classified as accidental or undetermined.

TABLE 4. NUMBER OF OXYCODONE-RELATED INTOXICATION DEATHS BY PLACE OF OCCURRENCE, 2007-2016.[1,2]

REGION AND POLITICAL SUBDIVISION	OXYCODONE-RELATED DEATHS										
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	TOTAL
MARYLAND	63	72	82	113	118	99	86	120	104	157	1,014
NORTHWEST AREA	4	7	9	7	11	13	12	10	11	25	109
GARRETT	0	1	0	0	0	0	1	0	0	0	2
ALLEGANY	3	0	1	2	0	2	3	3	2	7	23
WASHINGTON	0	4	3	2	5	2	5	5	6	11	43
FREDERICK	1	2	5	3	6	9	3	2	3	7	41
BALTIMORE METRO AREA	31	44	34	59	63	51	44	69	56	77	528
BALTIMORE CITY	7	6	10	5	15	15	11	20	18	22	129
BALTIMORE COUNTY	8	14	14	21	22	12	14	22	16	22	165
ANNE ARUNDEL	5	9	4	9	14	11	9	10	12	23	106
CARROLL	2	3	3	6	3	6	3	4	3	3	36
HOWARD	3	2	0	4	2	2	4	4	4	2	27
HARFORD	6	10	3	14	7	5	3	9	3	5	65
NATIONAL CAPITAL AREA	10	10	14	15	14	11	13	17	16	25	145
MONTGOMERY	7	8	10	7	9	8	7	11	8	16	91
PRINCE GEORGE'S	3	2	4	8	5	3	6	6	8	9	54
SOUTHERN AREA	9	7	11	7	10	10	6	11	13	13	97
CALVERT	3	1	2	2	4	5	3	3	3	7	33
CHARLES	5	3	4	2	4	3	1	5	8	4	39
ST. MARY'S	1	3	5	3	2	2	2	3	2	2	25
EASTERN SHORE AREA	9	4	14	25	20	14	11	13	8	17	135
CECIL	3	0	3	13	9	4	6	6	3	2	49
KENT	0	0	1	2	0	0	1	0	1	0	5
QUEEN ANNE'S	1	0	1	1	1	0	1	1	2	1	9
CAROLINE	0	0	1	1	0	0	0	0	0	3	5
TALBOT	0	0	0	1	0	1	1	0	0	2	5
DORCHESTER	1	0	0	2	1	1	0	0	0	2	7
WICOMICO	1	2	4	2	5	5	1	2	1	5	28
SOMERSET	0	0	1	1	2	1	1	1	0	0	7
WORCESTER	3	2	3	2	2	2	0	3	1	2	20

[1]Includes deaths that were related to recent ingestion of oxycodone.
[2]Includes only deaths for which the manner of death was classified as accidental or undetermined.

TABLE 5. NUMBER OF METHADONE-RELATED INTOXICATION DEATHS BY PLACE OF OCCURRENCE, 2007-2016.[1,2]

REGION AND POLITICAL SUBDIVISION	METHADONE-RELATED DEATHS										
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	TOTAL
MARYLAND	210	163	135	173	172	170	138	152	183	197	1,693
NORTHWEST AREA	15	9	7	8	14	14	8	20	14	12	121
GARRETT	0	0	1	1	0	0	1	1	0	0	4
ALLEGANY	3	4	2	3	4	1	1	3	2	4	27
WASHINGTON	6	4	0	3	5	4	3	10	6	5	46
FREDERICK	6	1	4	1	5	9	3	6	6	3	44
BALTIMORE METRO AREA	141	118	97	128	128	122	110	112	145	158	1,259
BALTIMORE CITY	80	47	50	53	65	54	57	54	78	82	620
BALTIMORE COUNTY	34	29	18	37	32	28	29	31	34	36	308
ANNE ARUNDEL	15	19	13	17	17	15	6	14	9	21	146
CARROLL	1	7	4	2	2	12	7	5	9	9	58
HOWARD	2	1	4	2	5	1	5	2	5	2	29
HARFORD	9	15	8	17	7	12	6	6	10	8	98
NATIONAL CAPITAL AREA	11	16	12	12	13	13	7	6	9	13	112
MONTGOMERY	8	8	7	5	6	7	3	5	6	7	62
PRINCE GEORGE'S	3	8	5	7	7	6	4	1	3	6	50
SOUTHERN AREA	9	7	7	7	3	5	2	7	6	6	59
CALVERT	5	0	2	1	2	2	0	2	3	2	19
CHARLES	2	4	2	1	0	1	1	4	2	2	19
ST. MARY'S	2	3	3	5	1	2	1	1	1	2	21
EASTERN SHORE AREA	34	13	12	18	14	16	11	7	9	8	142
CECIL	16	3	6	9	9	10	4	4	3	3	67
KENT	2	2	1	2	1	0	2	1	1	0	12
QUEEN ANNE'S	2	1	1	1	1	0	1	0	1	1	9
CAROLINE	0	0	0	1	1	1	0	1	0	2	6
TALBOT	2	0	2	1	0	1	2	0	1	1	10
DORCHESTER	1	1	0	0	0	1	0	0	0	0	3
WICOMICO	3	2	1	3	1	1	2	0	2	0	15
SOMERSET	3	2	0	0	1	0	0	0	1	0	7
WORCESTER	5	2	1	1	0	2	0	1	0	1	13

[1]Includes deaths that were related to recent ingestion of methadone.
[2]Includes only deaths for which the manner of death was classified as accidental or undetermined.

TABLE 6. NUMBER OF FENTANYL-RELATED INTOXICATION DEATHS BY PLACE OF OCCURRENCE, 2007-2016.[1,2]

REGION AND POLITICAL SUBDIVISION	FENTANYL-RELATED DEATHS										
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	TOTAL
MARYLAND	26	25	27	39	26	29	58	186	340	1,119	1,875
NORTHWEST AREA	3	1	1	6	6	3	7	8	32	109	176
GARRETT	0	1	0	0	1	0	0	0	2	0	4
ALLEGANY	3	0	1	2	1	1	1	1	5	29	44
WASHINGTON	0	0	0	2	1	1	4	1	14	31	54
FREDERICK	0	0	0	2	3	1	2	6	11	49	74
BALTIMORE METRO AREA	14	19	16	20	10	16	35	142	248	792	1,312
BALTIMORE CITY	3	2	4	4	2	4	12	72	120	419	642
BALTIMORE COUNTY	6	9	9	6	4	5	11	36	65	182	333
ANNE ARUNDEL	3	5	3	5	2	3	6	23	29	98	177
CARROLL	0	2	0	2	0	1	2	4	11	20	42
HOWARD	1	0	0	0	0	2	3	5	7	27	45
HARFORD	1	1	0	3	2	1	1	2	16	46	73
NATIONAL CAPITAL AREA	3	0	3	3	0	3	6	15	32	101	166
MONTGOMERY	2	0	1	1	0	2	0	8	17	43	74
PRINCE GEORGE'S	1	0	2	2	0	1	6	7	15	58	92
SOUTHERN AREA	0	1	2	1	3	1	4	9	9	32	62
CALVERT	0	1	1	0	1	0	0	5	2	11	21
CHARLES	0	0	0	0	1	1	3	1	4	17	27
ST. MARY'S	0	0	1	1	1	0	1	3	3	4	14
EASTERN SHORE AREA	6	4	5	9	7	6	6	12	19	85	159
CECIL	2	1	0	2	2	0	0	1	7	9	24
KENT	0	0	0	0	0	0	0	1	0	3	4
QUEEN ANNE'S	1	0	0	0	0	0	1	1	0	4	7
CAROLINE	0	0	0	1	4	0	0	0	1	3	9
TALBOT	1	1	0	1	0	1	0	2	2	7	15
DORCHESTER	0	0	0	2	0	0	2	0	1	3	8
WICOMICO	1	1	3	1	1	4	1	7	1	34	54
SOMERSET	1	1	0	1	0	0	2	0	1	6	12
WORCESTER	0	0	2	1	0	1	0	0	6	16	26

[1]Includes deaths that were related to recent ingestion or exposure to pharmaceutical or nonpharmaceutical fentanyl.
[2]Includes only deaths for which the manner of death was classified as accidental or undetermined.

TABLE 7. NUMBER OF COCAINE-RELATED INTOXICATION DEATHS BY PLACE OF OCCURRENCE, 2007-2016.[1,2]

REGION AND POLITICAL SUBDIVISION	COCAINE-RELATED DEATHS										
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	TOTAL
MARYLAND	248	157	162	135	148	153	154	198	221	463	2,039
NORTHWEST AREA	9	4	4	8	10	9	13	16	20	27	120
GARRETT	0	0	0	1	0	0	0	0	1	0	2
ALLEGANY	2	1	1	1	0	2	2	2	5	9	25
WASHINGTON	3	1	0	3	3	5	6	6	10	9	46
FREDERICK	4	2	3	3	7	2	5	8	4	9	47
BALTIMORE METRO AREA	178	108	124	93	97	108	102	138	167	348	1,463
BALTIMORE CITY	106	57	72	45	48	59	47	82	93	202	811
BALTIMORE COUNTY	30	25	25	23	19	17	27	28	38	80	312
ANNE ARUNDEL	26	18	15	13	18	13	12	19	19	31	184
CARROLL	2	2	3	6	3	7	7	2	6	8	46
HOWARD	6	1	4	1	5	7	5	3	6	7	45
HARFORD	8	5	5	5	4	5	4	4	5	20	65
NATIONAL CAPITAL AREA	35	26	18	16	24	22	25	29	16	43	254
MONTGOMERY	20	12	7	4	12	12	13	10	5	11	106
PRINCE GEORGE'S	15	14	11	12	12	10	12	19	11	32	148
SOUTHERN AREA	5	6	4	7	3	6	1	3	6	8	49
CALVERT	1	2	1	3	2	3	0	2	0	2	16
CHARLES	3	3	2	2	1	1	0	0	2	4	18
ST. MARY'S	1	1	1	2	0	2	1	1	4	2	15
EASTERN SHORE AREA	21	13	12	11	14	8	13	12	12	37	153
CECIL	5	3	4	3	7	2	5	4	3	3	39
KENT	1	2	0	1	0	0	0	1	1	0	6
QUEEN ANNE'S	3	0	2	0	1	0	0	0	0	1	7
CAROLINE	0	0	1	0	1	1	0	1	0	5	9
TALBOT	4	0	1	0	0	0	3	0	1	2	11
DORCHESTER	1	1	0	1	1	1	1	0	0	1	7
WICOMICO	2	5	2	3	3	4	3	4	7	13	46
SOMERSET	1	0	1	1	0	0	0	0	0	4	7
WORCESTER	4	2	1	2	1	0	1	2	0	8	21

[1]Includes deaths that were related to recent use of cocaine.
[2]Includes only deaths for which the manner of death was classified as accidental or undetermined.

TABLE 8. NUMBER OF BENZODIAZEPINE-RELATED INTOXICATION DEATHS BY COUNTY OF OCCURRENCE, 2007-2016.[1,2]

REGION AND POLITICAL SUBDIVISION	BENZODIAZEPINE-RELATED DEATHS										
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	TOTAL
MARYLAND	37	48	52	58	68	73	69	103	91	126	725
NORTHWEST AREA	3	3	7	6	9	5	6	13	8	21	81
GARRETT	0	0	1	0	0	0	1	0	1	0	3
ALLEGANY	1	0	1	3	1	0	1	3	1	6	17
WASHINGTON	1	2	2	2	4	3	2	5	3	6	30
FREDERICK	1	1	3	1	4	2	2	5	3	9	31
BALTIMORE METRO AREA	22	29	29	43	39	49	44	66	56	78	455
BALTIMORE CITY	7	2	10	12	9	15	14	22	15	24	130
BALTIMORE COUNTY	12	7	8	18	9	12	16	24	18	29	153
ANNE ARUNDEL	1	8	4	6	14	11	3	9	11	9	76
CARROLL	0	4	3	3	0	1	3	3	4	1	22
HOWARD	1	2	2	2	4	2	5	0	6	8	32
HARFORD	1	6	2	2	3	8	3	8	2	7	42
NATIONAL CAPITAL AREA	4	9	6	4	9	6	7	12	8	12	77
MONTGOMERY	1	5	4	4	6	4	4	10	7	7	52
PRINCE GEORGE'S	3	4	2	0	3	2	3	2	1	5	25
SOUTHERN AREA	3	5	2	2	2	4	4	6	7	7	42
CALVERT	1	1	1	1	1	1	1	3	1	1	12
CHARLES	1	3	1	0	0	2	1	2	4	4	18
ST. MARY'S	1	1	0	1	1	1	2	1	2	2	12
EASTERN SHORE AREA	5	2	8	3	9	9	8	6	12	8	70
CECIL	4	0	3	2	6	7	3	3	5	2	35
KENT	0	0	0	0	0	0	0	0	0	1	1
QUEEN ANNE'S	0	0	0	1	1	0	0	0	1	1	4
CAROLINE	0	0	0	0	0	0	0	0	0	0	0
TALBOT	0	1	0	0	0	0	3	0	1	1	6
DORCHESTER	0	0	1	0	0	1	1	0	0	1	4
WICOMICO	0	0	0	0	1	0	0	1	2	1	5
SOMERSET	1	0	1	0	0	1	1	0	0	0	4
WORCESTER	0	1	3	0	1	0	0	2	3	1	11

[1]Includes deaths that were related to recent ingestion of a benzodiazepine or related drug with sedative effects.
[2]Includes only deaths for which the manner of death was classified as accidental or undetermined.

TABLE 9. NUMBER OF ALCOHOL-RELATED INTOXICATION DEATHS BY PLACE OF OCCURRENCE, 2007-2016.[1,2]

REGION AND POLITICAL SUBDIVISION	ALCOHOL-RELATED DEATHS										
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	TOTAL
MARYLAND	189	176	163	161	161	195	239	270	310	582	2,446
NORTHWEST AREA	14	19	16	15	16	12	21	27	30	47	217
GARRETT	1	2	1	1	1	0	2	1	1	1	11
ALLEGANY	5	0	3	4	2	4	2	3	6	14	43
WASHINGTON	3	10	4	5	4	3	6	11	10	17	73
FREDERICK	5	7	8	5	9	5	11	12	13	15	90
BALTIMORE METRO AREA	114	96	100	94	99	126	154	166	215	403	1,567
BALTIMORE CITY	56	41	54	39	44	71	86	86	114	222	813
BALTIMORE COUNTY	38	23	22	29	22	24	32	39	52	81	362
ANNE ARUNDEL	12	12	9	10	21	15	22	18	27	56	202
CARROLL	3	4	5	4	4	4	4	9	6	12	55
HOWARD	2	7	5	3	4	6	6	6	5	14	58
HARFORD	3	9	5	9	4	6	4	8	11	18	77
NATIONAL CAPITAL AREA	38	34	23	27	28	38	35	36	32	67	358
MONTGOMERY	17	15	9	10	16	15	13	18	15	22	150
PRINCE GEORGE'S	21	19	14	17	12	23	22	18	17	45	208
SOUTHERN AREA	10	9	8	6	7	7	7	12	11	22	99
CALVERT	3	3	4	0	2	2	1	4	3	7	29
CHARLES	5	5	1	4	3	2	4	5	4	12	45
ST. MARY'S	2	1	3	2	2	3	2	3	4	3	25
EASTERN SHORE AREA	13	18	16	19	11	12	22	29	22	43	205
CECIL	5	4	7	6	3	6	9	5	8	8	61
KENT	0	0	0	1	0	0	1	1	0	1	4
QUEEN ANNE'S	1	2	0	1	3	0	1	7	0	2	17
CAROLINE	1	0	1	0	1	0	1	2	0	5	11
TALBOT	0	3	0	0	0	2	2	0	0	0	7
DORCHESTER	2	0	0	1	0	1	0	0	1	1	6
WICOMICO	1	6	3	4	2	2	6	7	3	12	46
SOMERSET	0	0	1	0	1	1	1	2	2	3	11
WORCESTER	3	3	4	6	1	0	1	5	8	11	42

[1]Includes deaths that were related to recent ingestion of alcohol.
[2]Includes only deaths for which the manner of death was classified as accidental or undetermined.