

Kentucky Injury Prevention and Research Center

**Drug Overdose Deaths
among Kentucky
Residents, 1999-2017**

December, 2018

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Executive Summary

1. The age-adjusted drug overdose death rate among Kentucky residents was 37.2 deaths per 100,000 residents in 2017 (Figures 1 and 2), ranking 5th behind West Virginia, Ohio, Pennsylvania, and the District of Columbia.
2. Overall, there were 1,566 drug overdose deaths among Kentucky residents in 2017 (Figure 3). This is an increase of 10.3% from the 1,419 deaths in 2016, and marks the fourth straight year of increase in drug overdose deaths among Kentucky residents.
3. The age-adjusted drug overdose death rate among Kentucky residents of 37.2 deaths per 100,000 residents in 2017 was 71.4% higher than the national age-adjusted drug overdose death rate of 21.7/100,000 (Figure 4).
4. The 25-34, 35-44, and 45-54 age groups were the age groups in Kentucky with the highest drug overdose fatality rates compared to national rates for 2015-2017 (Figure 5). The rate of drug overdose deaths among the 25-34 age group was 58.0 per 100,000 Kentucky residents versus 33.3/100,000 nationally; the 35-44 age group was 74.1/100,000 versus 34.1/100,000 nationally, and the 45-54 age group was 59.5/100,000 versus 34.1/100,000 nationally.
5. The age group with the largest increase in the drug overdose death rate among Kentucky residents in 2017 over the last decade was the 35-44 age group (Figure 6).
6. The age-adjusted drug overdose death rate among male Kentucky residents was 46.3 per 100,000 residents in 2017, higher than the female rate of 28.1/100,000 (Figure 7), with both male and female drug overdose death rates significantly increased over the last decade (Figures 8); both rates were greater than their national counterparts of 29.1/100,000, and 14.4/100,000 respectively.
7. The age-adjusted heroin overdose death rate among Kentucky residents decreased from 2016-2017 (6.6 heroin overdose deaths per 100,000 residents in 2017 compared to 7.6/100,000 residents in 2016); the 2017 heroin overdose fatality rate was higher than the national rate of 4.9/100,000 (Figure 10).
8. The age-adjusted fatality rate for natural and semi-synthetic opioids remained steady from 2016-2017, at approximately 9.4 deaths/100,000 population (Figure 11).
9. The age-adjusted synthetic opioid (other than methadone) death rate was 19.1 per 100,000 Kentucky residents in 2017, higher than the national rate of 9.0/100,000, and a 66.1% increase from the rate of 11.5 per 100,000 Kentucky residents in 2016 (Figure 12).
10. The age-adjusted cocaine overdose fatality rate among Kentucky residents was 4.3 per 100,000 residents in 2017, equivalent to the national rate of 4.3/100,000 (Figure 13), increased from the rate of 3.5/100,000 observed in 2016.
11. The age-adjusted drug overdose death rate among Kentucky non-Appalachian residents was 37.8 per 100,000 residents in 2017, slightly above the Appalachian drug overdose fatality rate of 35.8/100,000. (Figure 14).

Figure 1: Age-adjusted Drug Overdose Mortality Rates by State, 2017

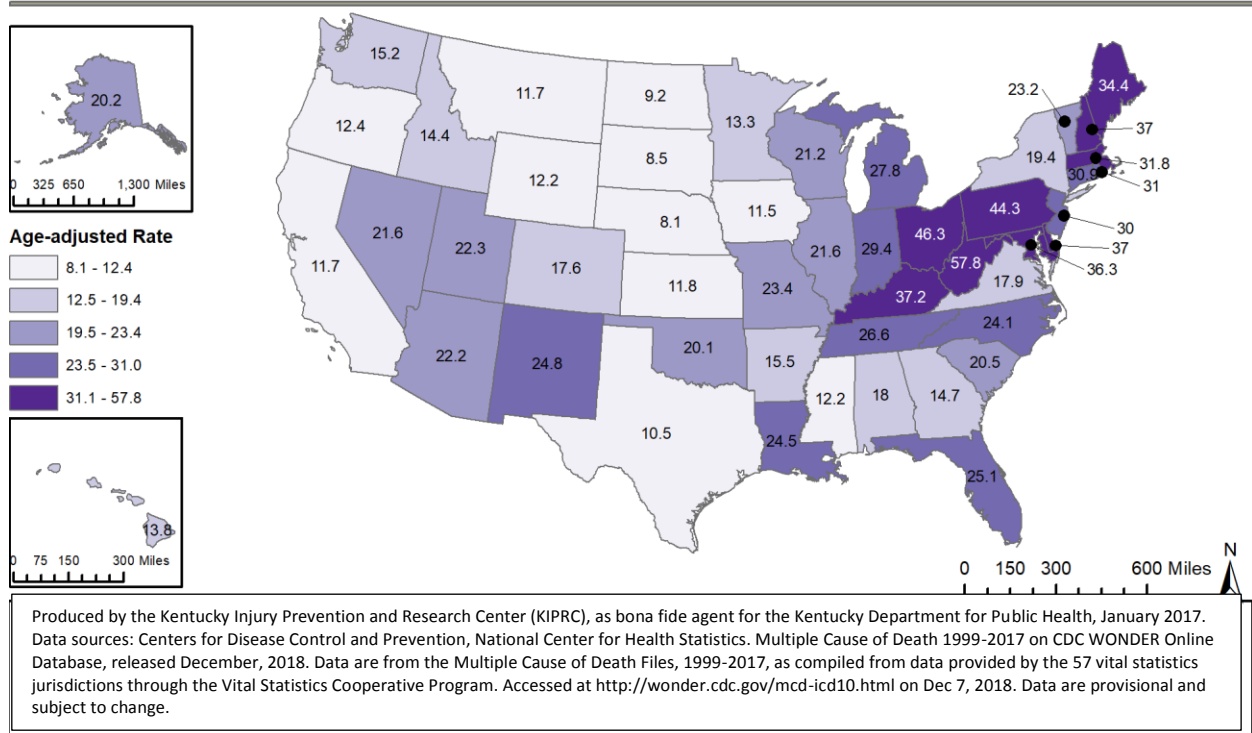
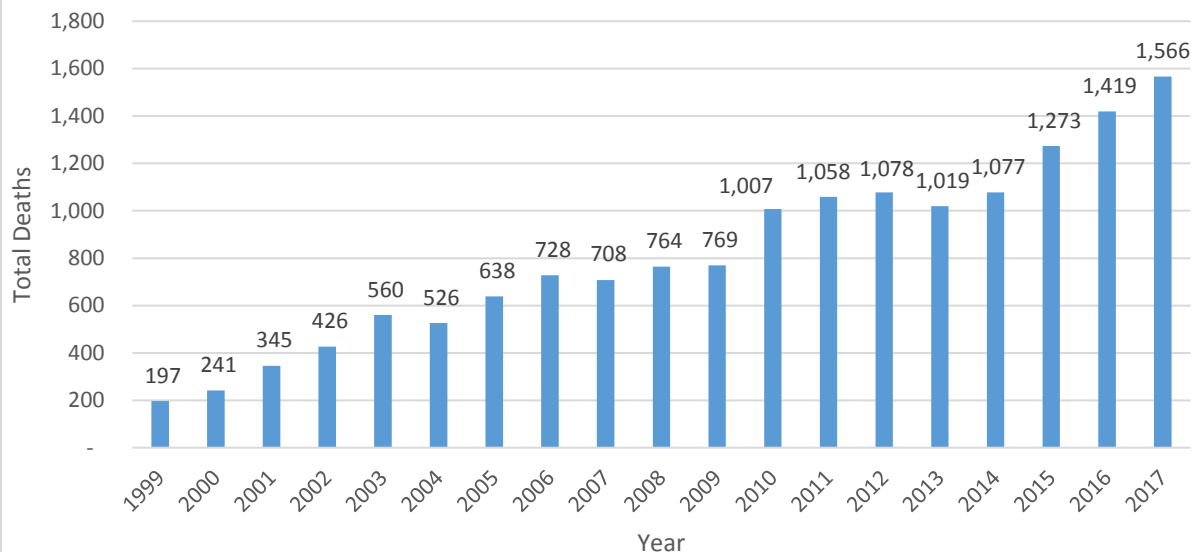


Figure 2: States (including the District of Columbia) with the Highest Age-adjusted Drug Overdose Death Rates, 2017

State	Total Drug Overdose Deaths	Population	Crude Rate per 100,000	Age Adjusted Rate per 100,000
1. West Virginia	974	1,815,857	53.6	57.8
2. Ohio	5,111	11,658,609	43.8	46.3
3. Pennsylvania	5,388	12,805,537	42.1	44.3
4. District of Columbia	310	693,972	44.7	44.0
5. Kentucky	1,566	4,454,189	35.2	37.2
6. Delaware	338	961,939	35.1	37.0
7. New Hampshire	467	1,342,795	34.8	37.0
8. Maryland	2,247	6,052,177	37.1	36.3
9. Maine	424	1,335,907	31.7	34.4
10. Massachusetts	2,168	6,859,819	31.6	31.8
11. Rhode Island	320	1,059,639	30.2	31.0
12. Connecticut	1,072	3,588,184	29.9	30.9
13. New Jersey	2,685	9,005,644	29.8	30.0
14. Indiana	1,852	6,666,818	27.8	29.4
15. Michigan	2,694	9,962,311	27.0	27.8

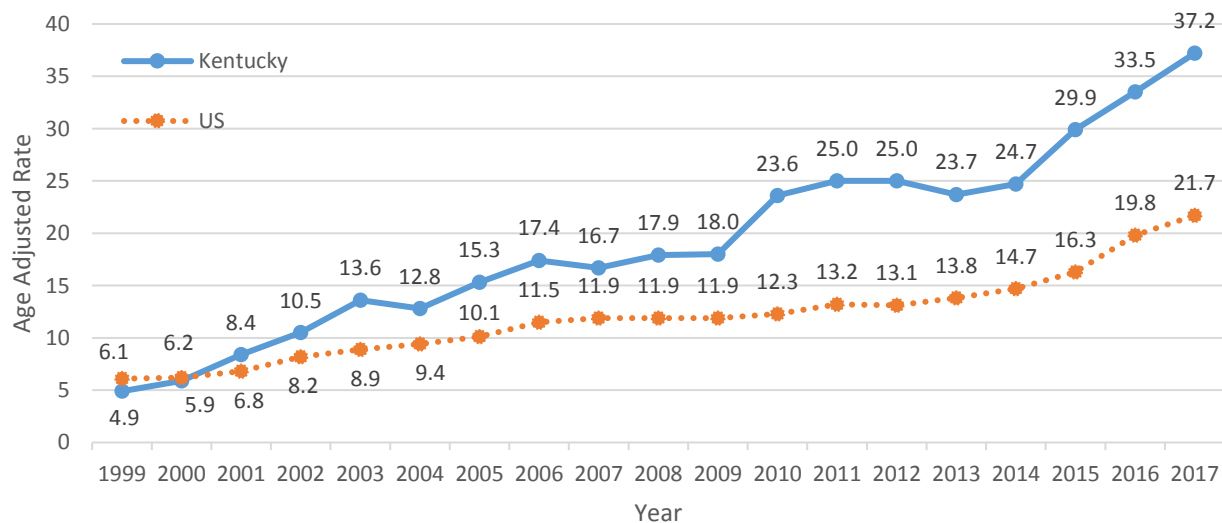
Produced by the Kentucky Injury Prevention and Research Center (KIPRC), as bona fide agent for the Kentucky Department for Public Health, December 2018. Data sources: Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2017 on CDC WONDER Online Database, released December, 2018. Data are from the Multiple Cause of Death Files, 1999-2017, as compiled from data provided by the 57 vital statistics jurisdictions through the Vital Statistics Cooperative Program. Accessed at <http://wonder.cdc.gov/mcd-icd10.html> on Dec 7, 2018.

Figure 3: Counts of Drug Overdose Deaths among Kentucky Residents, 1999-2017



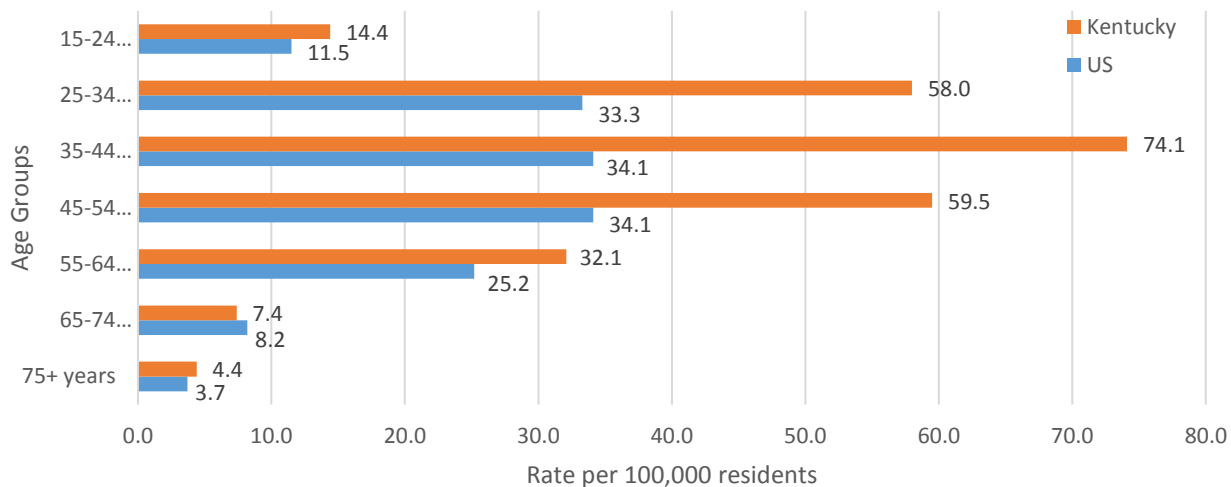
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Figure 4: Age-adjusted Drug Overdose Mortality Rates Among Kentucky and US Residents, 1999-2017



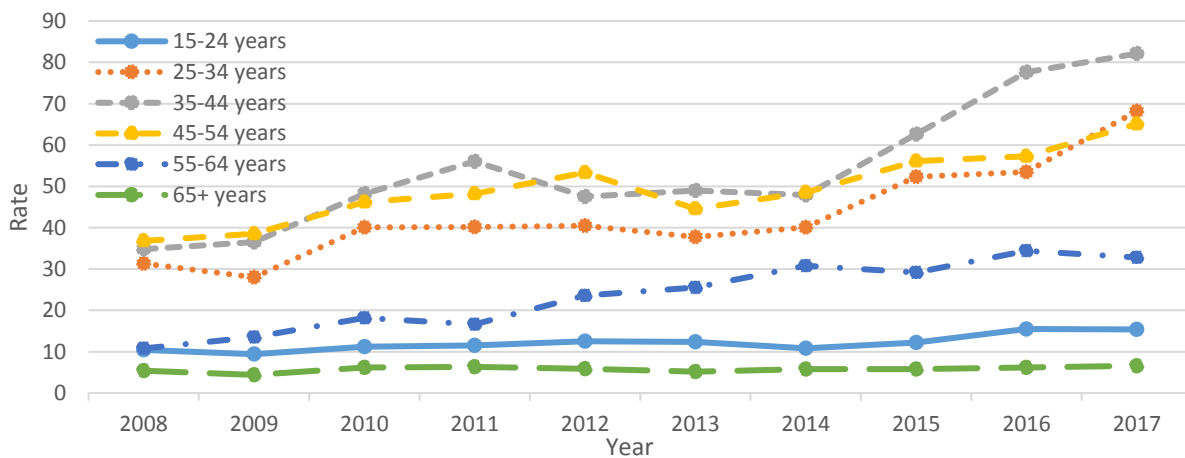
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Figure 5: Drug Overdose Death Rates per 100,000 among US and Kentucky Residents by Age Group, 2015-2017



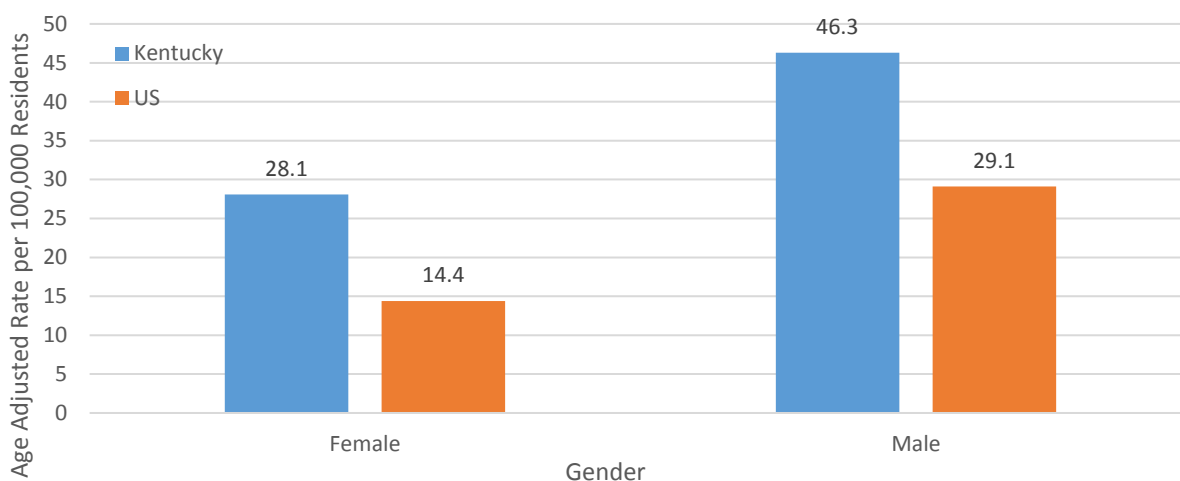
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Figure 6: Drug Overdose Death Rate by Age Group among Kentucky Residents, 2008-2017



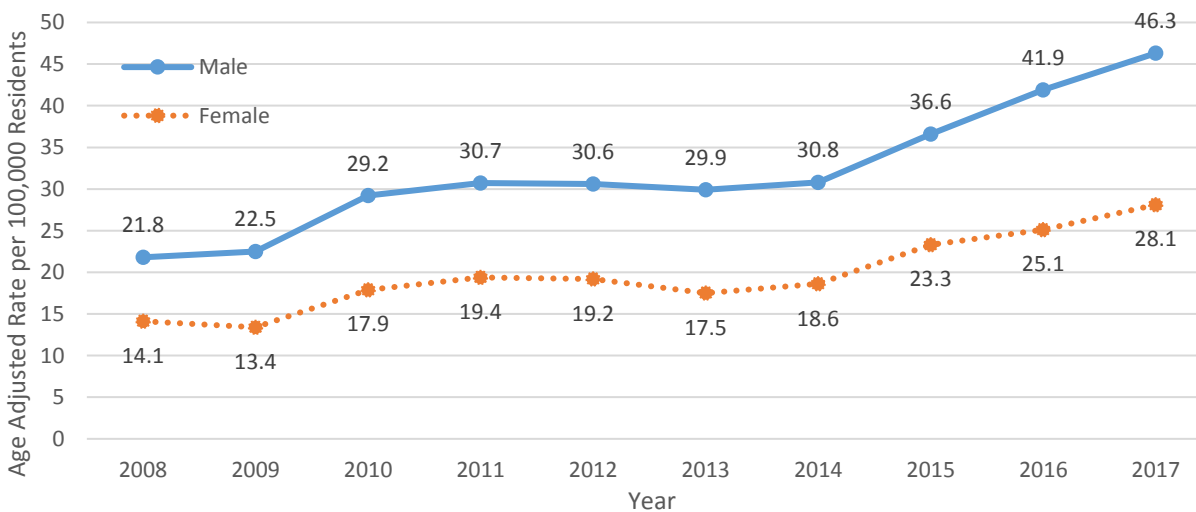
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Figure 7: Drug Overdose Age-adjusted Death Rates by Gender among Kentucky and US Residents, 2017



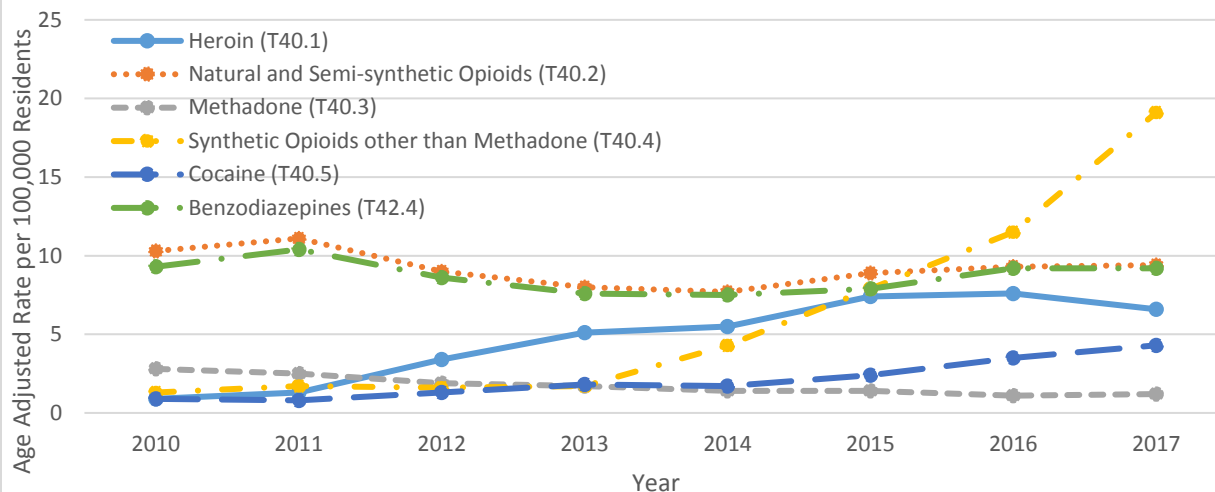
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Figure 8: Drug Overdose Age-adjusted Death Rates by Gender among Kentucky Residents, 2008-2017



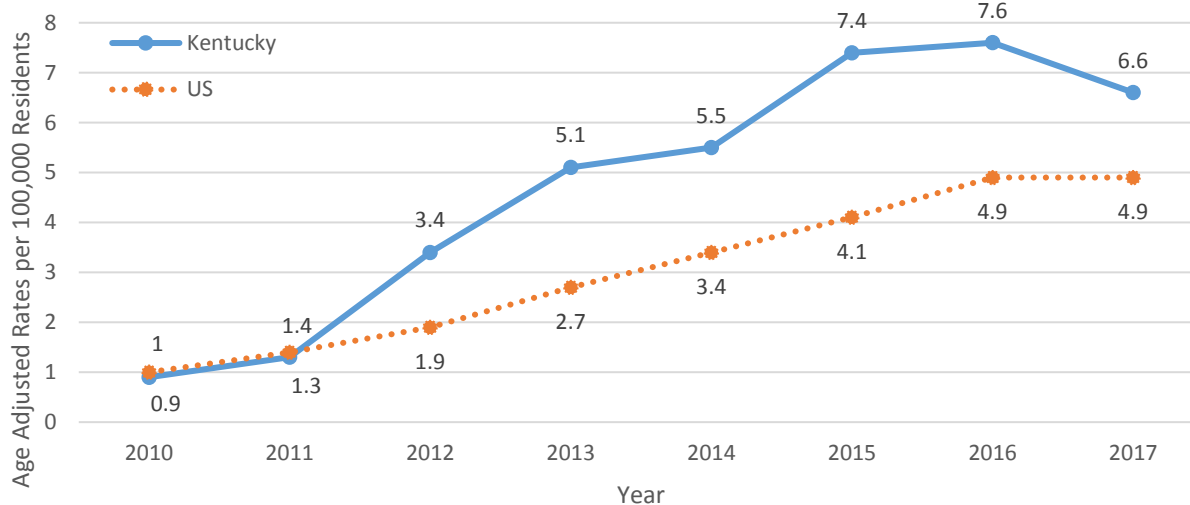
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Figure 9: Drug Overdose Death Rates by Drugs Involved among Kentucky Residents, 2010-2017



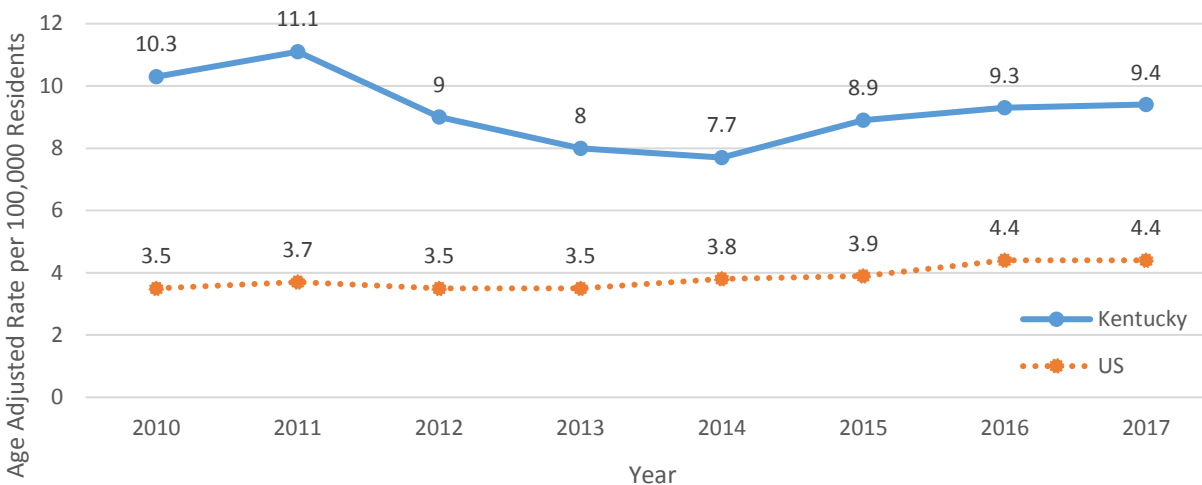
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Figure 10: Age-adjusted Rates for Deaths Involving Heroin (T40.1) among Kentucky and US Residents, 2010-2017



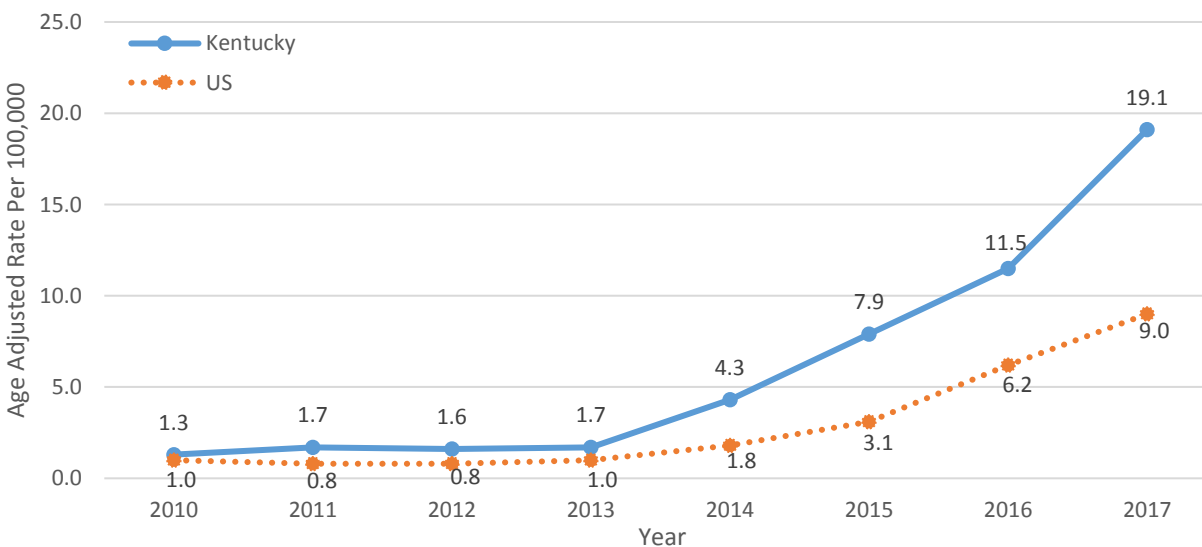
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Figure 11: Age-adjusted Rates for Deaths Involving Natural and Semi-synthetic Opioids (T40.2) among Kentucky and US Residents, 2010-2017



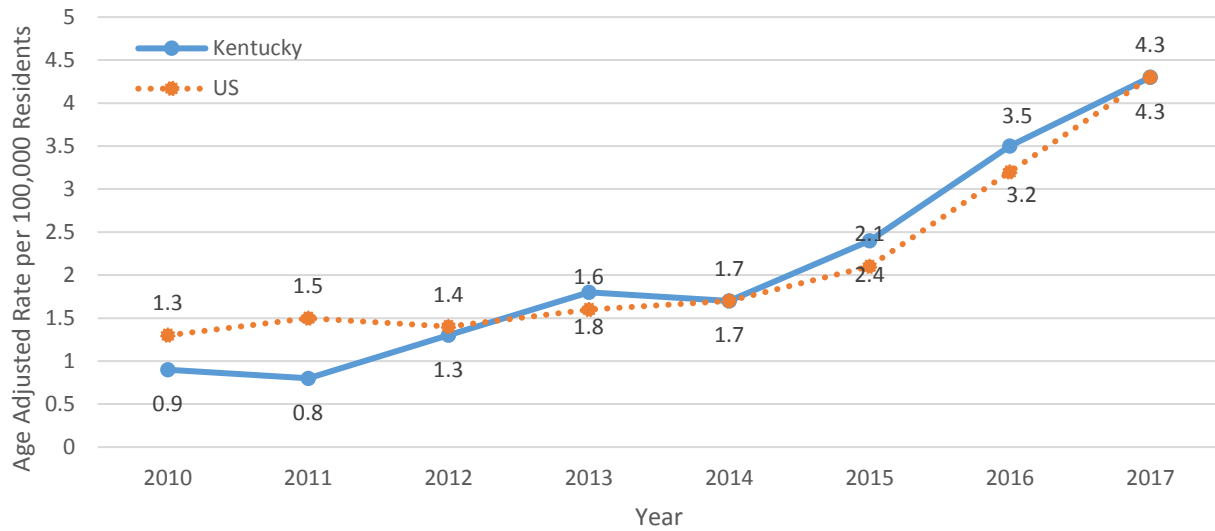
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Figure 12: Age-adjusted Rates for Deaths Involving Synthetic Opioids Other than Methadone (T40.4) among Kentucky and US Residents, 2010-2017



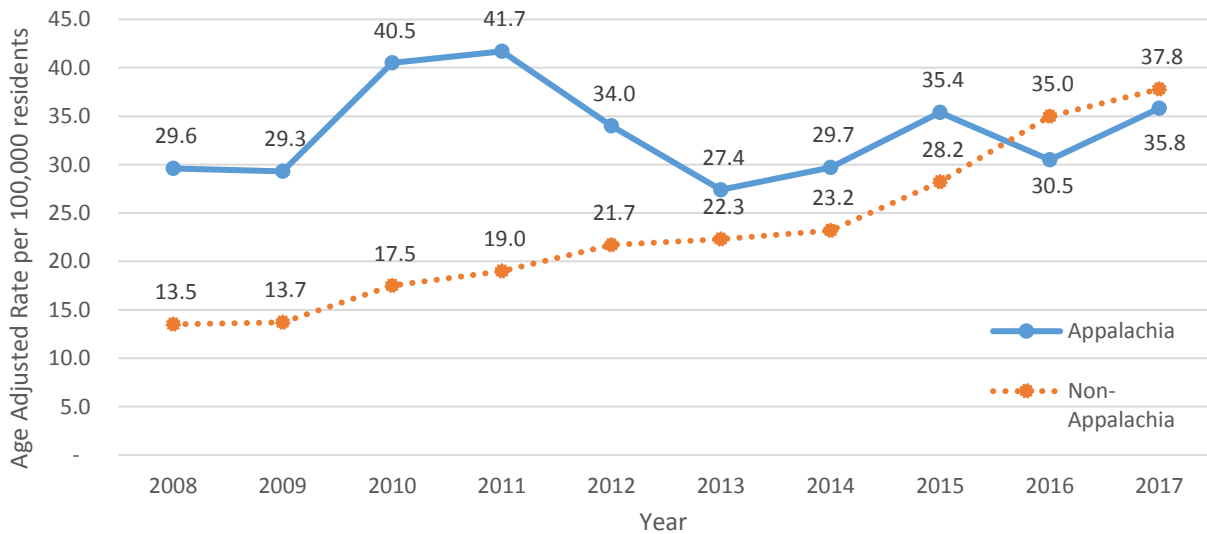
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Figure 13: Age-adjusted Rates for Deaths Involving Cocaine (T40.5) among Kentucky and US Residents, 2010-2017



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Figure 14: Drug Overdose Age-adjusted Rates among Kentucky Appalachian and Non-Appalachian Residents, 2008-2017



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Appendix

This report presents drug overdose mortality data for Kentucky residents. The data source for the report is the U.S. Multiple Cause of Death files, 1999-2017, accessible through the CDC WONDER online query system <http://wonder.cdc.gov/mcd-icd10.html>. The Multiple Cause of Death database contains mortality and population counts for all U.S. counties. Data are based on death certificates for U.S. residents.

Typically, when a drug overdose death occurs, the coroner completes a death certificate and lists the causes of death and information on how the death occurred. This information/text is then transferred in an electronic record that is sent to the National Center for Health Statistics (NCHS) at the Centers for Disease Control and Prevention (CDC) to be coded according to the guidelines of the Tenth Revision of the International Classification of Diseases (ICD-10) [www.who.int/classifications/icd10/] to allow standardized classification of the causes of death. Each death certificate is assigned a single underlying cause of death and up to twenty additional multiple causes of death. The underlying cause of death is defined as the reason that initiated the chain of events leading directly to death.

For example, the death described below is coded with an underlying cause of death being unintentional drug overdose (X42 Accidental poisoning and exposure to narcotics and psychodysleptics). The following additional multiple causes of death were assigned based on the information listed on the death certificate: T40.3 Methadone, G93.1 Anoxic brain damage, T50.9 Other and unspecified drugs.

CAUSE OF DEATH (See instructions and examples)		Approximate Interval: Onset to death
32. PART I. Enter the <u>chain of events</u> -- diseases, injuries, or complications -- that directly caused the death. DO NOT enter terminal events such as cardiac arrest, respiratory arrest, or ventricular fibrillation. <u>Abbreviate</u> . Enter only one cause on a line. Add additional lines if necessary.		
IMMEDIATE CAUSE (Final disease or condition resulting in death)		G93.1 Anoxic brain damage, NEC
a. ANOXIA BRAIN INJURY	Due to (or as a consequence of):	T40.3 Methadone
b. SECONDARY TO INGESTION OF METHADONE	Due to (or as a consequence of):	
c.	Due to (or as a consequence of):	
d.	Due to (or as a consequence of):	
PART II. Enter other significant conditions contributing to death but not resulting in the underlying cause given in Part I.		33. WAS AN AUTOPSY PERFORMED? <input type="checkbox"/> Yes <input type="checkbox"/> No
X42 Accidental poisoning and exposure to narcotics and psychodysleptics, NEC		34. WERE AUTOPSY FINDINGS AVAILABLE TO COMPLETE THE CAUSE OF DEATH? <input type="checkbox"/> Yes <input type="checkbox"/> No
35. DID TOBACCO USE CONTRIBUTE TO DEATH? <input type="checkbox"/> Yes <input type="checkbox"/> Probably <input type="checkbox"/> No <input type="checkbox"/> Unknown	36. IF FEMALE: <input type="checkbox"/> Not pregnant within past year <input type="checkbox"/> Pregnant at time of death <input type="checkbox"/> Not pregnant but pregnant within 42 days of death <input type="checkbox"/> Not pregnant but pregnant 43 days to 1 year before death <input type="checkbox"/> Unknown if pregnant within the past year	29. MANNER OF DEATH <input type="checkbox"/> Natural <input type="checkbox"/> Pending <input checked="" type="checkbox"/> Accident <input type="checkbox"/> Investigation <input type="checkbox"/> Suicide <input type="checkbox"/> Could not be Determined <input type="checkbox"/> Homicide
38. DATE OF INJURY (Mo/Day/YY)(Spel. Month)	39. TIME OF INJURY	40. PLACE OF INJURY (e.g., Decedent's home, construction site, restaurant, wooded area) HOME
42. LOCATION OF INJURY: State: _____ City or Town: _____ Street & Number: _____ Apartment No. _____ Zip Code: _____		41. INJURY AT WORK? <input type="checkbox"/> Yes <input type="checkbox"/> No
43. DESCRIBE HOW INJURY OCCURRED DRUG INGESTION		T50.9 Other and unspecified drug
TRANSPORTATION INJURY, SPECIFY <input type="checkbox"/> Driver/Operator <input type="checkbox"/> Passenger <input type="checkbox"/> Pedestrian <input type="checkbox"/> Other (Specify)		

When the information on the death certificate is not specific enough and there is no mention of a particular drug contributing to the death, the death cannot be associated with a drug/drug class. For example, about one third of the death certificates for drug overdose cases in Kentucky list only “drug overdose”, “drug toxicity”, “acute drug intoxication”, or “polypharmacy intoxication”, with no mention of particular drugs involved. Therefore, the involvement of pharmaceutical opioids or heroin in Kentucky resident overdose deaths could be underestimated as about one third of the overdose deaths are not associated with specific drugs. When an overdose death involves multiple drugs from different classes (for example heroin and methadone), each drug will receive appropriate ICD-10-coded cause of death (T40.1 for heroin, T40.3 for methadone) and the death will be counted under both categories of drugs (heroin-associated deaths and pharmaceutical opioid-associated deaths). If an overdose death involves multiple drugs from the same drug class, only one multiple cause of death ICD-10 code will be assigned. For example, if oxycodone and hydrocodone are both listed on a death certificate, their involvement will be coded with one ICD-10 code (T40.2) that represents the involvement of natural or semi-synthetic opioids.

Definition: Drug overdose deaths were identified as deaths with an underlying cause of death in the following ICD-10 code range: X40-X44(accidental/unintentional drug poisoning), X60-X64(suicide by drug poisoning), X85(homicide by drug poisoning), and Y10-Y14 (drug poisoning with undetermined intent).

- X40 (Accidental poisoning by and exposure to nonopioid analgesics, antipyretics and antirheumatics)
- X41 (Accidental poisoning by and exposure to antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs, not elsewhere classified)
- X42 (Accidental poisoning by and exposure to narcotics and psychodysleptics [hallucinogens], not elsewhere classified)
- X43 (Accidental poisoning by and exposure to other drugs acting on the autonomic nervous system)
- X44 (Accidental poisoning by and exposure to other and unspecified drugs, medicaments and biological substances)
- X60 (Intentional self-poisoning by and exposure to nonopioid analgesics, antipyretics and antirheumatics)
- X61 (Intentional self-poisoning by and exposure to antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs, not elsewhere classified)
- X62 (Intentional self-poisoning by and exposure to narcotics and psychodysleptics [hallucinogens], not elsewhere classified)
- X63 (Intentional self-poisoning by and exposure to other drugs acting on the autonomic nervous system)
- X64 (Intentional self-poisoning by and exposure to other and unspecified drugs, medicaments and biological substances)
- X85 (Assault by drugs, medicaments and biological substances)
- Y10 (Poisoning by and exposure to nonopioid analgesics, antipyretics and antirheumatics, undetermined intent)
- Y11 (Poisoning by and exposure to antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs, not elsewhere classified, undetermined intent)
- Y12 (Poisoning by and exposure to narcotics and psychodysleptics [hallucinogens], not elsewhere classified, undetermined intent)
- Y13 (Poisoning by and exposure to other drugs acting on the autonomic nervous system, undetermined intent)
- Y14 (Poisoning by and exposure to other and unspecified drugs, medicaments and biological substances, undetermined intent)

The types of drugs contributing to drug overdose deaths can be identified using ICD-10 codes T36-T50.9 listed in any of the multiple causes of death fields. In this report we included statistics on drug overdose deaths involving heroin (T40.1), other opioids (T40.2, T40.3, and

T40.4), cocaine (T40.5), or benzodiazepines (T42.4).

Age-adjusted morbidity and mortality rates were based on 2000 U.S. standard population data.

Previous reports (<http://www.mc.uky.edu/kiprc/projects/kdodhedv/index.html>) on Kentucky resident drug overdose deaths were based on data from the state Office of Vital Statistics and therefore the numbers do not necessarily match with the numbers presented in this report.