

Montgomery County Poisoning Death Review: 2010 -2013

Center for Interventions, Treatment, and Addictions Research

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April 16, 2014

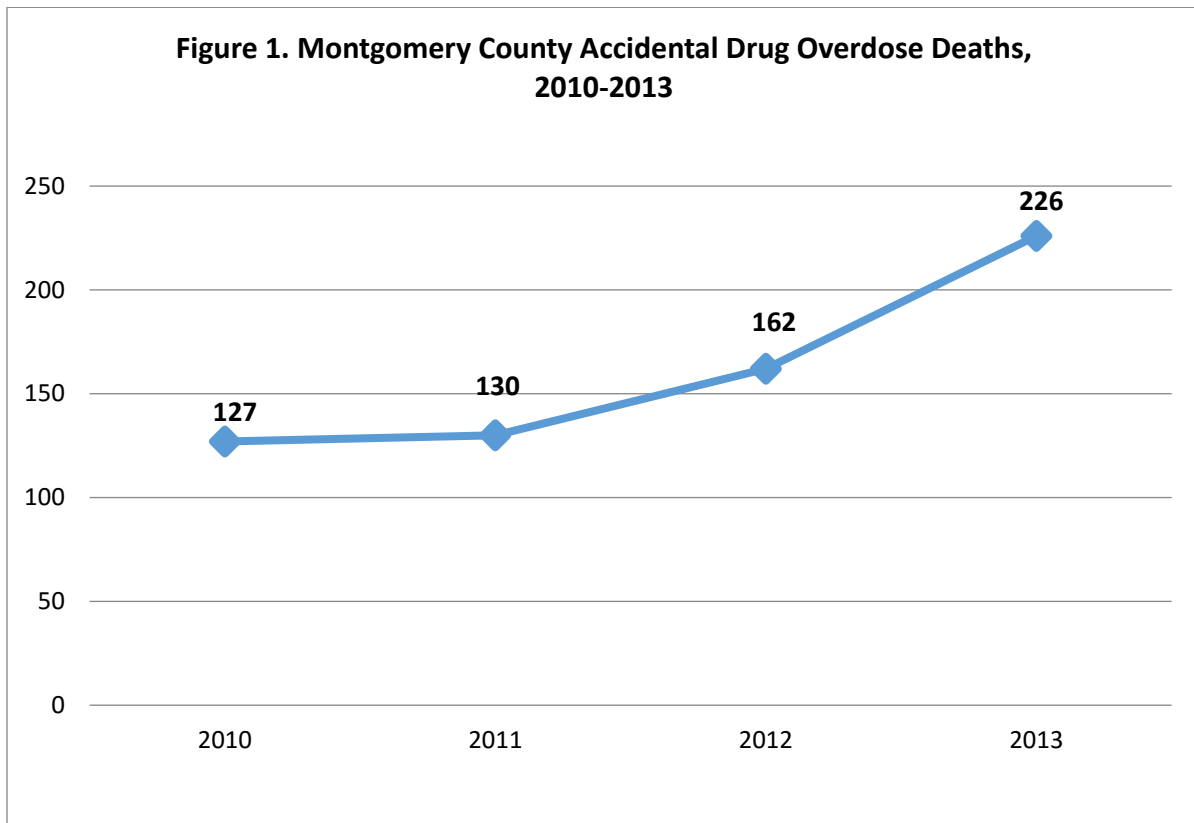
The PDR is conducted by the WSU Boonshoft School of Medicine Center for Interventions, Treatment & Addictions Research (CITAR), in collaboration with the Montgomery County Coroner's Office, under contract with Public Health – Dayton & Montgomery County. The PDR was part of the Preventing Unintentional Drug Poisoning Project, which was funded by PHDMC and the ODH, with injury prevention block funds from the U.S. Centers for Disease Control.

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Montgomery County Poisoning Death Review – 2013

Overview

In 2013, 226 unintentional drug overdose deaths occurred in Montgomery County, Ohio. This is the highest number on record, surpassing the number of unintentional overdoses in 2012 by 64 deaths. This finding comes from the Poisoning Death Review (PDR), a process involving the compilation and interpretation of multiple data sets from the Montgomery County Coroner's Office. The PDR, funded by Public Health Dayton and Montgomery County, is carried out by faculty and staff at the Wright State University Boonshoft School of Medicine in collaboration with the Montgomery County Coroner's Office. The designation of deaths being either unintentional (accident) or intentional (suicide) is made by the Montgomery County Coroner. This is the fourth year the PDR has been conducted. In 2012, 162 unintentional drug overdose deaths occurred in Montgomery County; in 2011, 130; and in 2010, 127 (see Figure 1). A numerical summary of the PDR data, including 2013 data and comparisons to 2010-2012, is attached to this narrative.



Demographic and Health Characteristics of Decedents

Of the 226 decedents, 87% were Montgomery County residents, and 20 were residents of other Ohio counties (4 Greene, 3 Miami, 2 Butler, 2 Clinton, 2 Darke, 2 Franklin, and 1 each from Highland, Logan, Mercer, Preble, and Warren). Six were out-of-state residents (California, Florida (2), Illinois, Indiana and Texas). One decedent had no fixed address.

As in previous years, a majority of the decedents were white (87%), male (67%), and had at least a high school education (71%).

The three age groups with the highest proportion of deaths were 35-44 year olds (28%), 45-54 year olds (27%), and 25-34 year olds (26%), together accounting for 81% of the 2013 decedents, nearly unchanged from 2012. However, there were noteworthy changes in the proportions among these groups: the 35-44 year old group increased 9% from 2012, and the 45-54 year old group decreased 6%.

Autopsy results revealed most decedents had a history of physical illness or disability (78%), with heart disease common (58%). The coroner investigator reports indicate a majority (78%) had a history of substance abuse. About one-fifth of decedents had a history of mental illness. Reports made by family, friends, or witnesses are the source of the documentation of a history of substance abuse or mental illness. There may be additional instances of substance abuse and mental illness that were not recorded.

As in previous years, most of the deaths (74%) occurred in the decedents' home or that of a friend or relative.

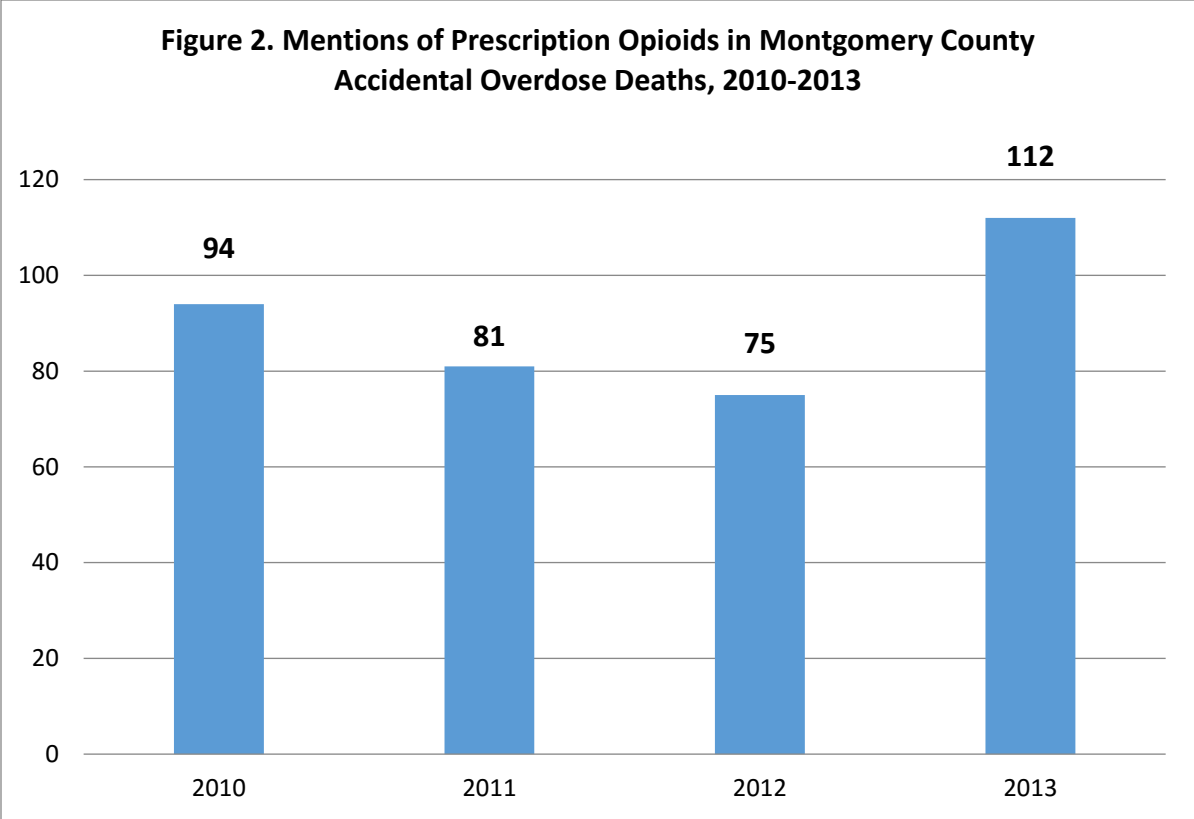
Drug Toxicology Data

Definition of Drug "Mentions"

A drug "mention" means that a specific drug was found in a bodily system or fluid of a decedent, not that that drug was necessarily the sole cause of death. The presence of more than one drug can result in more than one mention from a single decedent.

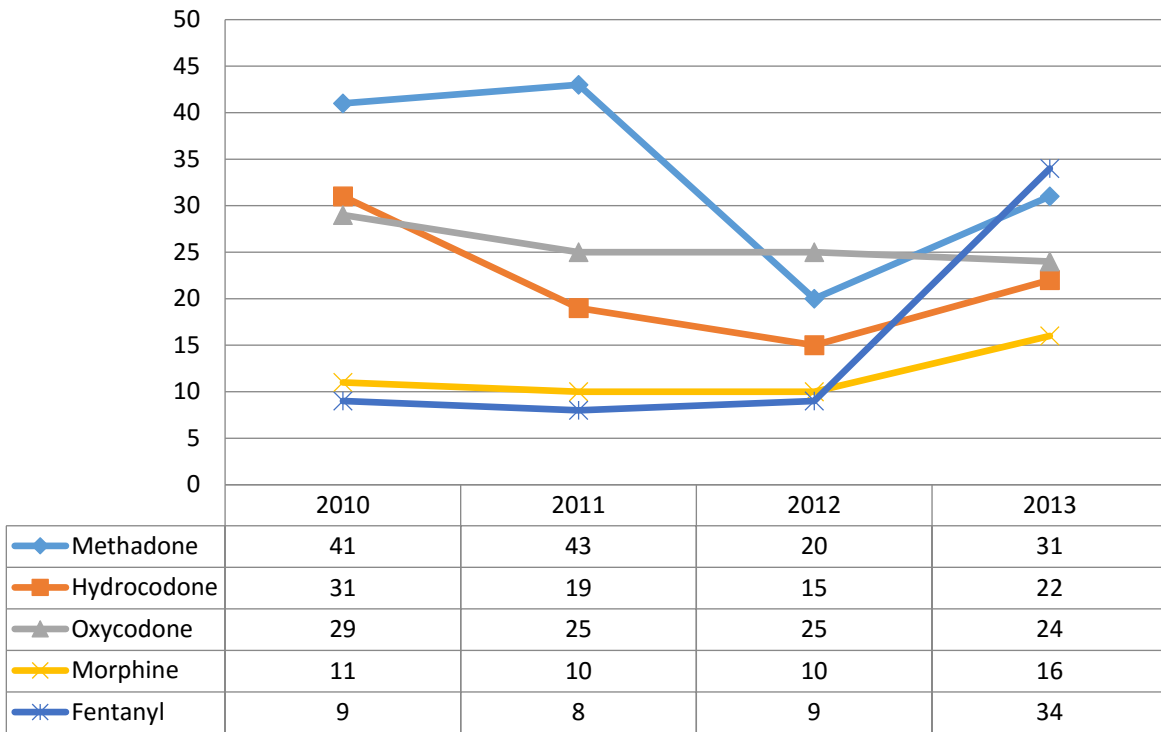
Prescription Opioids

Prescription opioids (drugs used to treat pain and/or "get high") continue to be a significant factor in unintentional drug overdose deaths. This class of drugs was mentioned in 112 cases in 2013, up from 75 cases in 2012 (see Figure 2). This is a significant increase of the actual number of prescription opioid mentions in 2013, even though the *percentage* of mentions in Montgomery County's overall accidental drug overdose deaths increased only slightly—from 45% in 2012 to 50% in 2013. **This appears to represent a resurgence in prescription opioid mentions that had been declining slightly over the previous two years. However, this finding should be interpreted cautiously, as described below.**



Prescription opioids mentioned most frequently in 2013 toxicology reports were: fentanyl, 34 mentions (15% of all overdose death cases); methadone, 31 (14%); oxycodone, 24 (11%); and hydrocodone, 22 (10%). From 2010 through 2013, mentions of oxycodone remained fairly stable, ranging from 29 in 2010 to 24 in 2013 (see Figure 3). However, hydrocodone and methadone mentions showed significant decreases from 2011 to 2012, and then significant increases in 2013. (The methadone identified in toxicological analyses had almost certainly been prescribed for pain, *not* diverted from drug abuse treatment programs.) Morphine mentions were fairly stable from 2010 through 2012, and then also increased in 2013. Finally, **fentanyl**, remained fairly stable with about 9 cases each year from 2010 through 2012 and then showed a **precipitous increase to 34 in 2013**. We discuss the substantial increase in fentanyl below

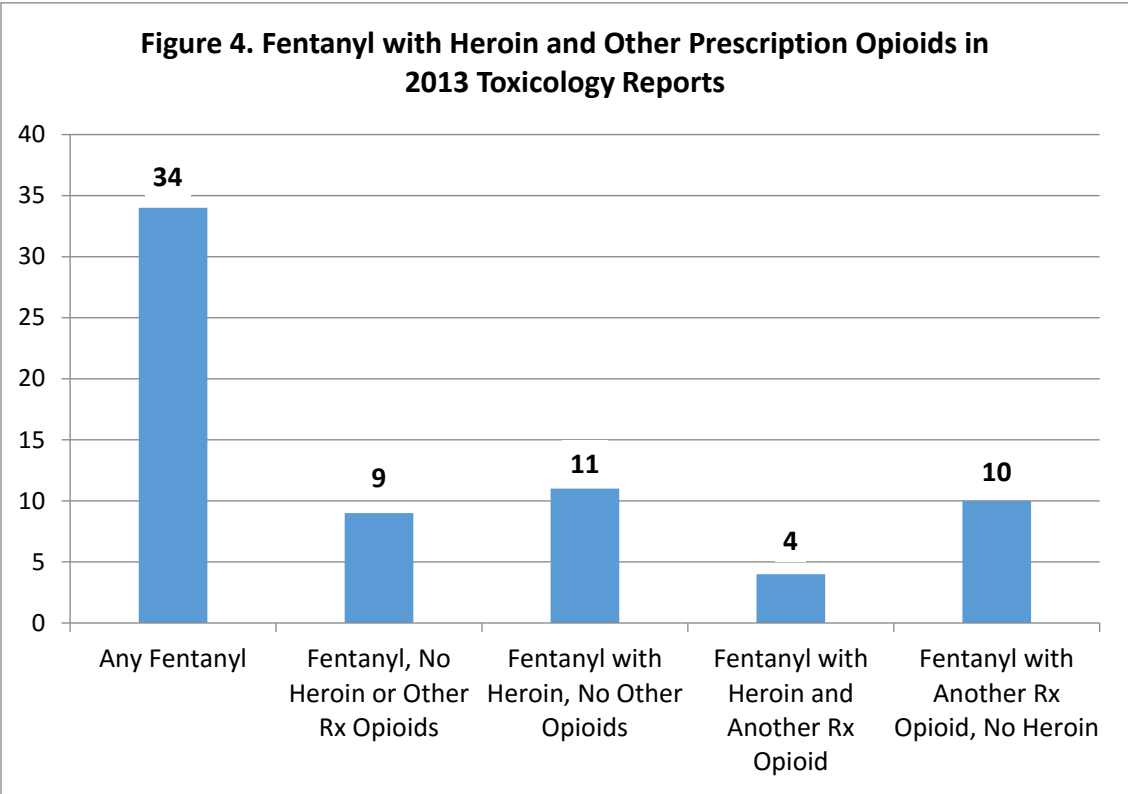
Figure 3. Mentions of Selected Prescription Opioids in Montgomery County Accidental Drug Overdose Deaths, 2010-2013



Fentanyl

There was a significant increase in the presence of fentanyl in 2013 (Figure 3). There were 34 fentanyl mentions, more than any other prescription opioid (15% of all decedents), and up significantly compared to 9 fentanyl mentions in 2012, 8 in 2011, and 9 in 2010. Most of the fentanyl mentions occurred in the last quarter of 2013, and almost half of the fentanyl mentions occurred in the presence of heroin.

As shown in Figure 4, 9 of the 34 fentanyl mentions were without heroin or any other opioid. There were a total of **15 mentions of fentanyl when heroin was also present**—11 of fentanyl and heroin alone, and 4 of fentanyl, heroin and another prescription opioid. **In previous years, the majority of fentanyl mentions also contained another prescription opioid (18 of a total of 26 fentanyl mentions from 2010-2012), and heroin in combination with fentanyl was quite rare—only 2 cases from 2010-2012.**



In toxicology reports, fentanyl mentions may result from ingestion through prescription transdermal patches, lozenges, injectable liquid form (most likely very rare, or an illicitly manufactured powder form of fentanyl). **Due to the problems in classifying fentanyl as a prescription opioid or illicitly made drug, the interpretation of the 2013 findings is challenging. In particular, while we have chosen to define fentanyl as a prescription opioid, it may in fact have been made in clandestine labs, then mixed with heroin and sold as heroin. In addition, drug users purchasing what they thought was heroin could, in fact, be purchasing clandestinely made fentanyl only.**

The increase in prescription opioid mentions in 2013 may be due, at least in part, to the presence of clandestinely made fentanyl in heroin overdose deaths, rather than an increase in legally produced pharmaceutical fentanyl (in the form of transdermal patch, or lozenge). However, independent of the significant increase in mentions of fentanyl in 2013, there were increases in mentions of methadone, hydrocodone and morphine, compared to 2012 (Figure 3).

Benzodiazepines

In 2013, mentions of benzodiazepines exhibited a trend that was similar to that observed with prescription opioids. **The number of mentions of benzodiazepines was up significantly, from 70 in 2012 to 118 in 2013,** even though the percentage of benzodiazepine mentions in accidental drug overdose deaths was up only slightly, from 54% in 2012 to 59% in 2013. Figure 5 illustrates the trend of declining

mentions of benzodiazepines and prescription opioids in 2011 and 2012, followed by a significant increase in 2013.

While 2013 saw increases in mentions of all four of the most frequently occurring benzodiazepines, there were notable increases in mentions of alprazolam (from 40 in 2012 to 75 in 2013) and clonazepam (from 23 in 2012 to 46 in 2013). These increases are illustrated in Figure 6. Figure 7 shows the increases in prescription opioid and benzodiazepine mentions in 2013, almost paralleling each other.

There was also a significant increase in the number of mentions in which a prescription opioid and a benzodiazepine were present together (Figure 8). In 2012, there were 43 cases (27% of all accidental drug overdose deaths) involving both a prescription opioid and a benzodiazepine, compared to 72 cases (32%) in 2013. Prescription opioids and benzodiazepines are particularly dangerous in combination, because they increase the risk of respiratory depression.

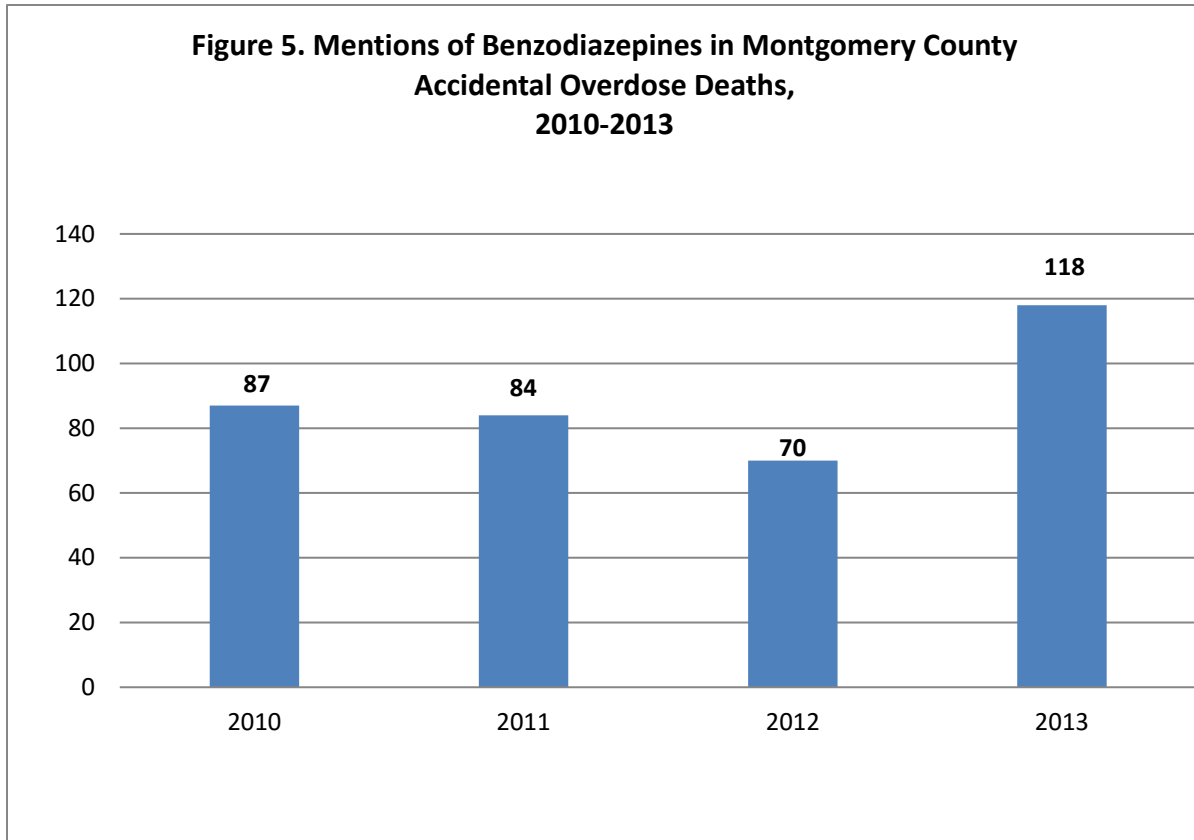


Figure 6. Most Frequently Mentioned Benzodiazepines in Montgomery County Accidental Drug Overdose Deaths, 2010-2013

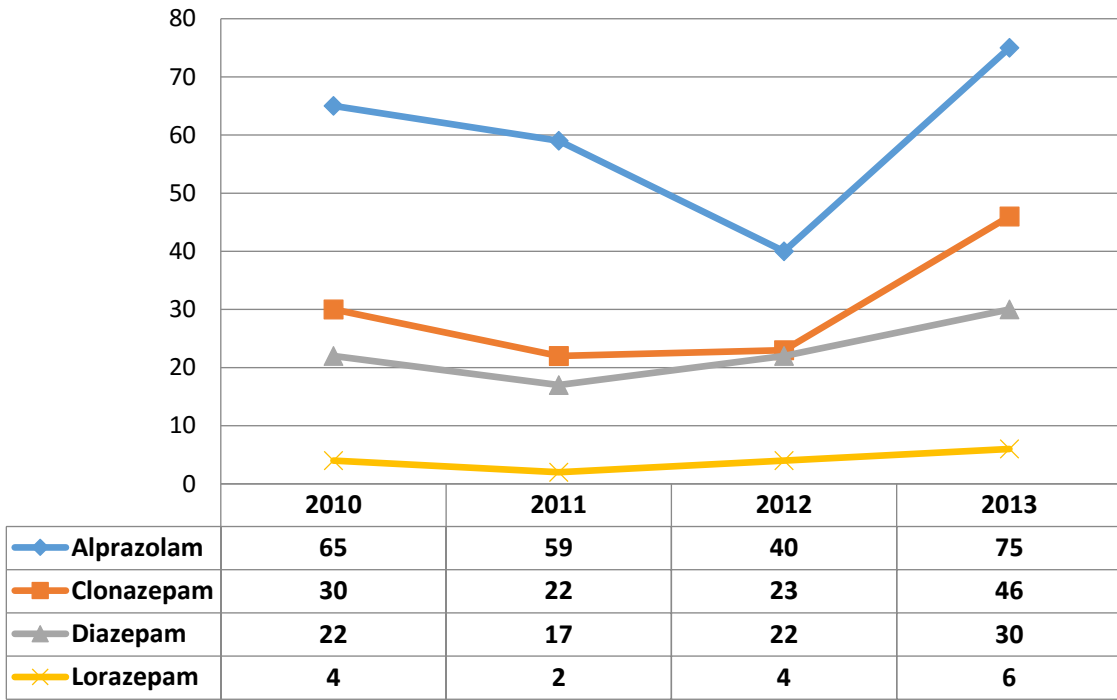
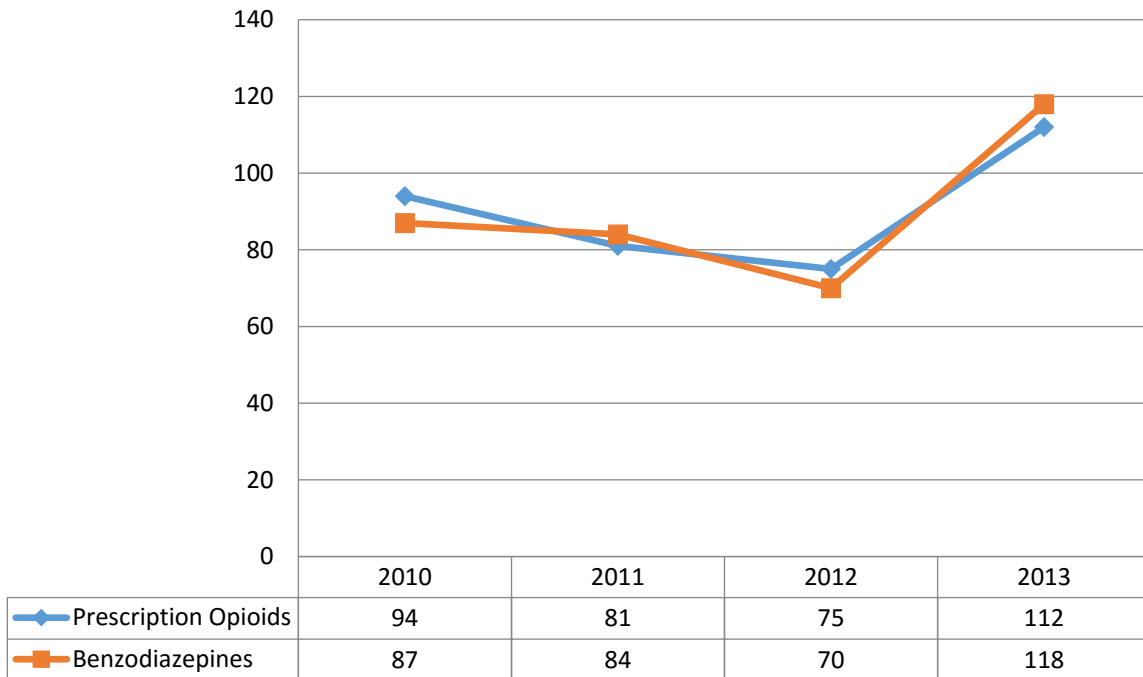
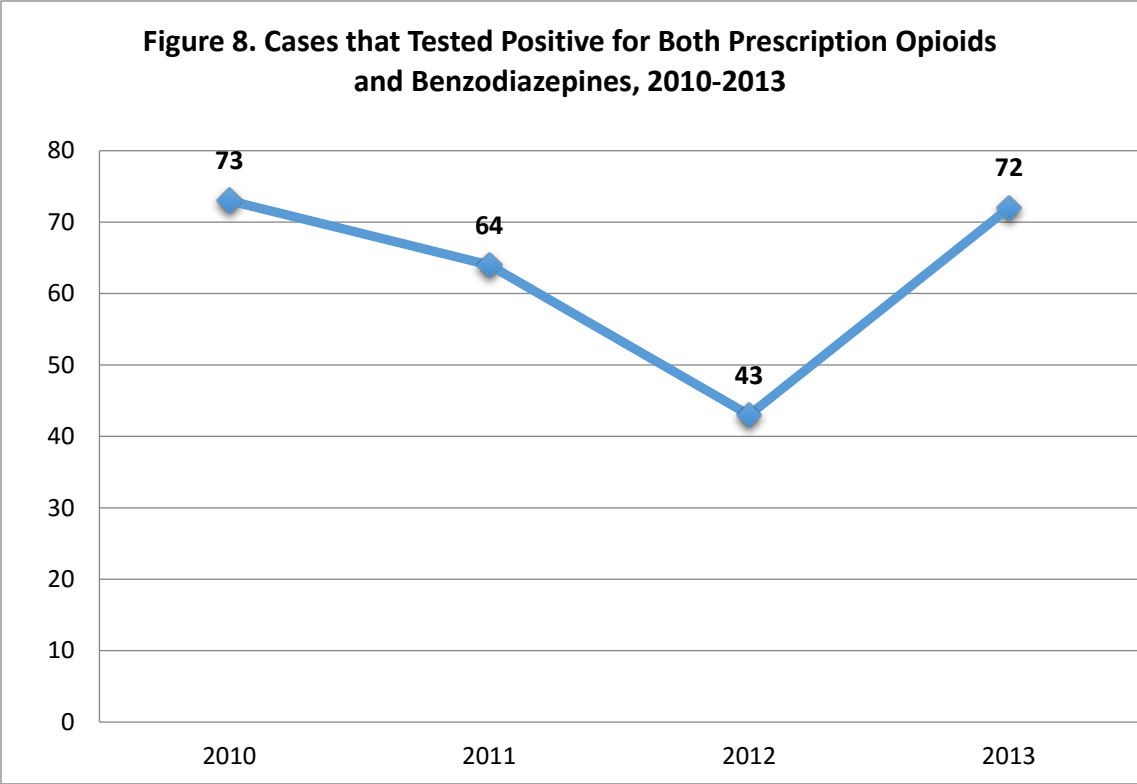


Figure 7. Total Mentions of Prescription Opioids and Benzodiazepines, 2010-2013





Heroin:

Total mentions (and overall percent) of heroin continued to increase dramatically. Heroin was present in 132 cases in 2013, up from 92 in 2012 (see Figure 9). Figure 10, shows the heroin trend line along with the mentions of benzodiazepines and prescription opioids, illustrating the significant increase in the mentions of these three classes of drugs in 2013. **Strikingly, the decline in prescription opioids and benzodiazepines in 2012 co-occurred with dramatic increases in heroin mentions.** Figure 11 shows the *percentage* mentions of heroin, along with percentage mentions of prescription opioids and benzodiazepines. Heroin was present in 58% of all cases in 2013. This is consistent with the percentage increase first seen in 2012, when heroin was mentioned in 59% of the cases—a large and significant increase from the first two years of the PDR, when heroin was found in the bodily systems or fluids of 31% (2010) and 35% (2011) of the decedents. The increase in heroin mentions was initially seen in the last quarter of 2011. In addition, 27% of all decedents with heroin mentions also had prescription opioids in their systems in 2013. This dangerous combination comprised 15% of all 2013 overdose death cases.

Figure 9. Mentions of Heroin in Montgomery County Accidental Overdose Deaths, 2010-2013

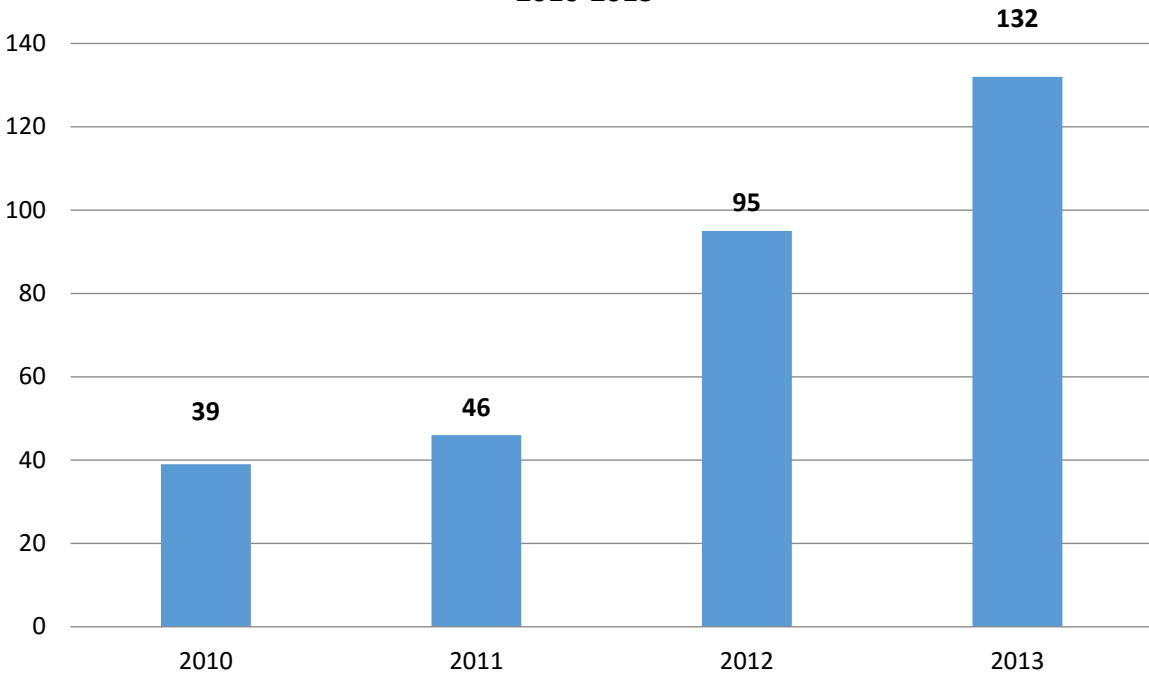
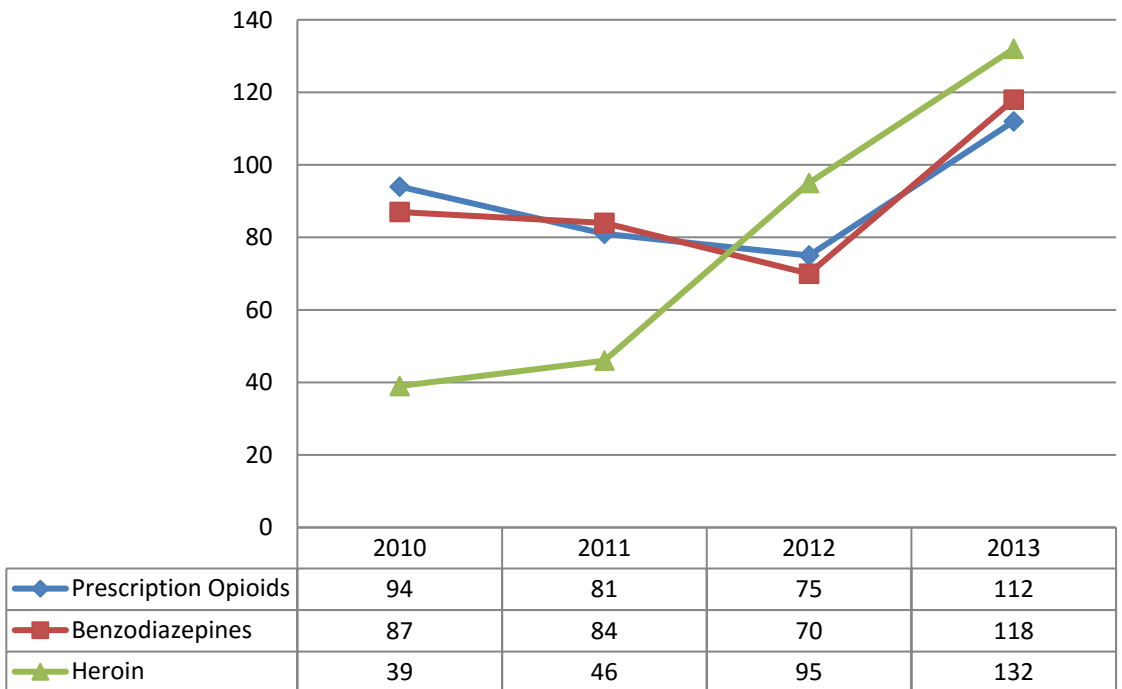


Figure 10. Total Mentions of Prescription Opioids, Benzodiazepines and Heroin, 2010-2013

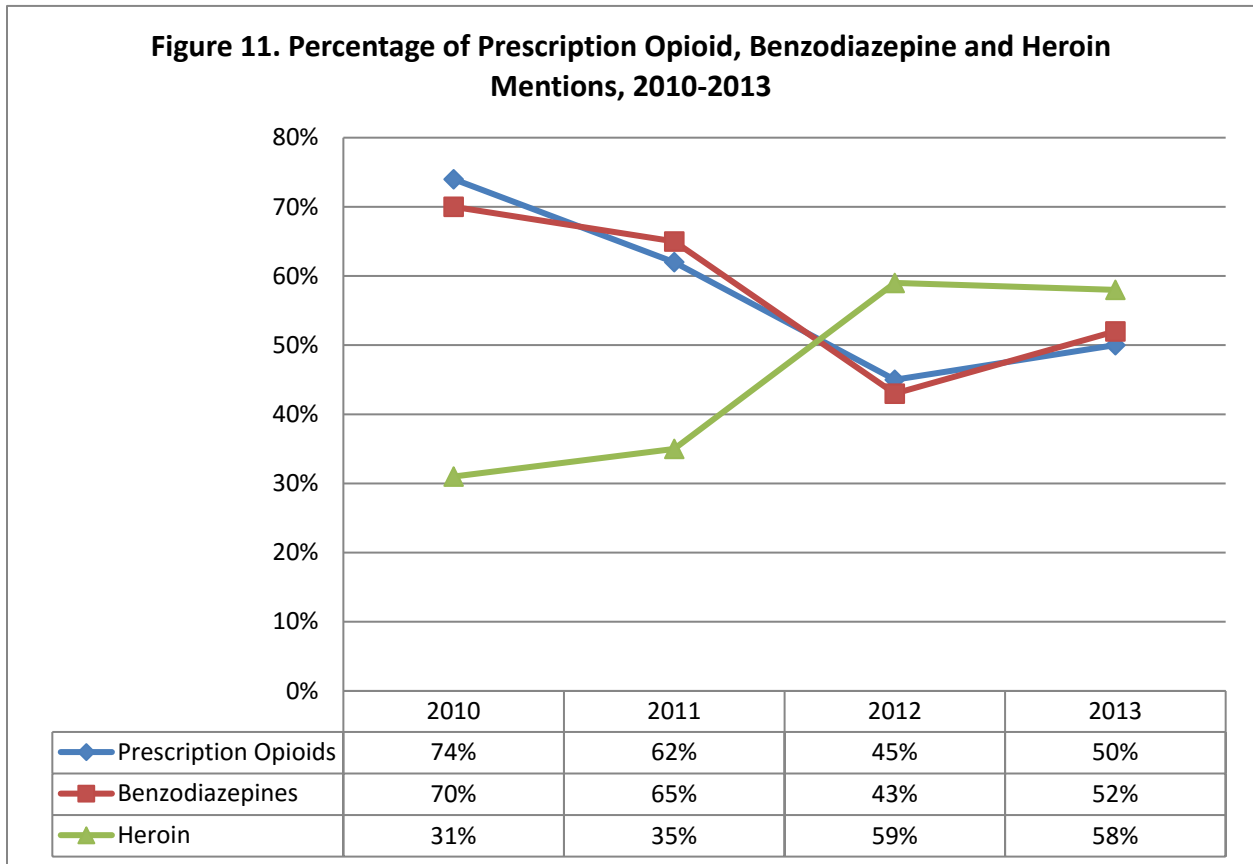


Other Drugs:

Other drugs frequently found in decedents' bodily system or fluids include: alcohol (28%); cocaine (26%); and anti-depressants, such as citalopram (Celexa) and amitriptyline (Elavil), (27%). With one exception, there are no noteworthy trends in the mentions of these substances. The number of alcohol mentions in 2013 (63) is noticeably higher than in 2012 (46). However, the percentage of alcohol mentions was unchanged in 2012 (28%) and 2013 (28%); there is no evidence that there has been a change in availability or use of alcohol, and alcohol is seldom the principal cause of an overdose death.

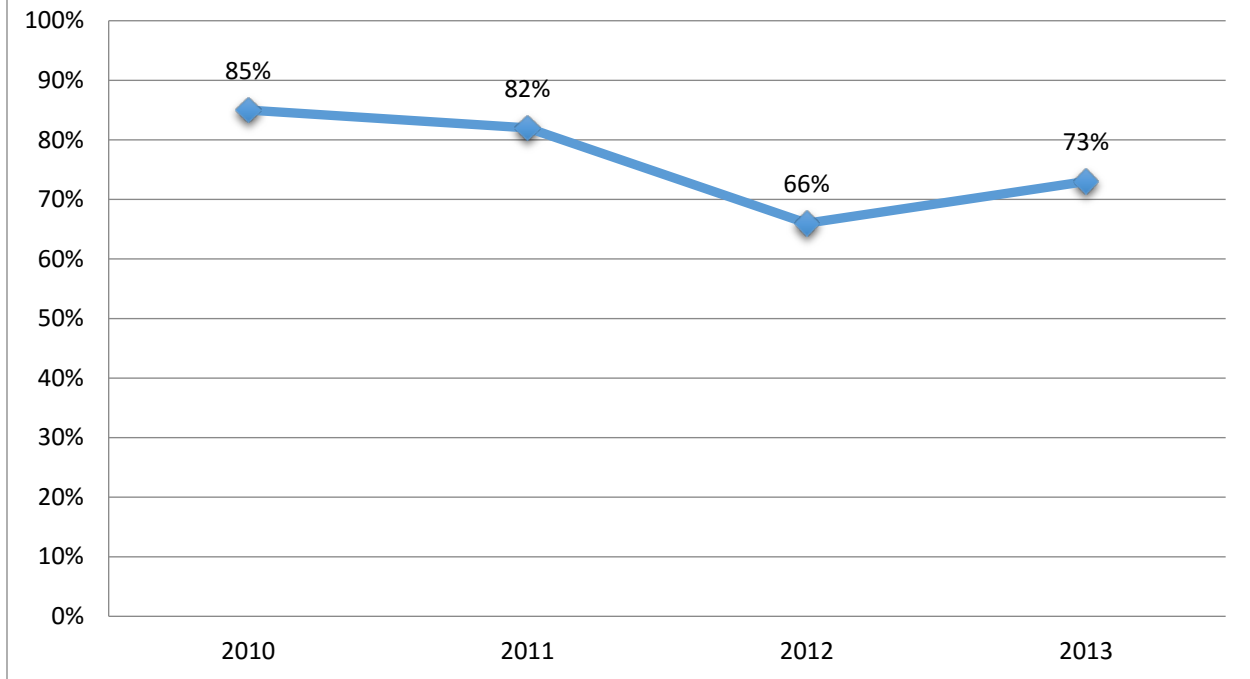
Powerful Combinations:

In addition to the dangerous combination of prescription opioids and benzodiazepines, addressed



earlier in this report, another powerful combination is frequently observed in Montgomery County accidental drug overdose death cases: multiple central nervous system (CNS) depressants. Nearly three-quarters of the decedents had two or more CNS depressant drugs in their systems at the time of death in 2013 (see Figure 12). It is well-established that the concurrent or simultaneous use of drugs that depress the CNS, such as alcohol, prescription opioids, alcohol, sedatives (including benzodiazepines) and heroin, can be extremely hazardous and result in death from profound respiratory depression.

Figure 12. Percentage of Cases Involving Two or More CNS Depressants, 2010-2013



Conclusions

Data from the 2013 PDR reveal a dramatic increase in the overall number of unintentional drug overdose deaths in Montgomery County, from 162 deaths in 2012 to 226 in 2013. This increase is driven, in part, by the increasing number of deaths involving heroin, a trend that began in late 2011. Also significant is the increase in the number of deaths involving prescription opioids (e.g., fentanyl, methadone, oxycodone, hydrocodone) and benzodiazepines (e.g., alprazolam, clonazepam, diazepam), compared to 2012.

Some caution is needed in interpreting the dramatic increase in prescription opioid mentions from 75 (45%) in 2012 to 112 (50%) in 2013. The substantial increase in fentanyl mentions from 9 in 2012 to 34 in 2013 is likely responsible, in part, for the increase in prescription opioid mentions in 2013. However, it is difficult to determine how many of the fentanyl mentions are the result of fentanyl in prescription form or the result of fentanyl made illegally in clandestine labs. Nevertheless, 2013 saw increases in mentions of hydrocodone, methadone, and morphine. It is clear that the non-medical use of prescription opioids remains a serious public health problem in Montgomery County.

It appears the prescription drug abuse epidemic has been augmented by a significant increase in heroin use that began in late 2011. It is also interesting to note there has been no noticeable change in the *proportion* of accidental drug overdose cases in which opioids (either heroin or prescription opioids or both) are involved. As indicated on page 4 of the attached *Poisoning Death Review Summary Report*, "Any Opiate (Heroin or Prescription Opioid)", the occurrence of heroin and prescription opioids has

hovered at 90% for the past 4 years. Prescription opioids and heroin continue to exert the primary influence on Montgomery County's accidental drug overdose deaths. The dramatic increases in unintentional overdoses in Montgomery County is an urgent public health problem that calls for additional public health intervention.