



THE UNIVERSITY OF
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Trends in Indicators of Opioid and Methamphetamine Use in New Mexico and Bernalillo County, 1999- 2016

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Introduction

This report provides a survey of trends in five key indicators of opioid and methamphetamine use in the United States, New Mexico, and Bernalillo County, for 1999 through 2016. First, the report describes mortality rates for all non-alcohol drug-induced causes of death, for unintentional overdose deaths alone, and for all drug-induced causes of death by substance type. Next, the report reviews trends in drug abuse violation arrest rates in conjunction with mortality and index crime rates. The report then addresses lifetime prevalence of opioid and methamphetamine use among public high school students. Total and opioid-related emergency department visit rates are discussed as a fourth indicator of use. Finally, the report analyzes trends in total, opioid-specific, and criminal justice client-serving substance abuse treatment facility rates.

Data and Methods

Trends are presented for 1999 through 2016 unless data are not available for the full 18-year period. Mortality rates were obtained using the Centers for Disease Control and Prevention's CDC WONDER Online Database. The mortality rate for all non-alcohol drug-induced causes of death contains four types of poisonings as identified by the *International Classification of Diseases, Tenth Revision* (ICD-10) underlying death codes X40-X44 (unintentional), X60-X64 (suicide), X85 (homicide), and Y10-Y14 (undetermined); the unintentional overdose death rate is limited to only those deaths categorized as X40-X44. Rates are presented as age-adjusted to the 2000 U.S. standard if available. When rates are presented by county, missing data for rates in Rio Arriba County are occasionally estimated using mean imputation. When rates are presented by substance type, the following categories are used: synthetic opioids other than methadone (e.g. fentanyl, fentanyl analogs, and tramadol); natural or semisynthetic opioids (e.g. oxycodone, hydrocodone, and hydromorphone); prescription opioids (any opioid drug prescribed by a doctor, usually natural or semisynthetic); heroin; and methamphetamine.

Drug abuse violation arrest rates and index crime rates were obtained using the FBI's Uniform Crime Reporting program's *Crime in the United States* reports. Lifetime prevalence estimates of substance use for public high school students in grades 9-12 were obtained from Youth Risk and Resiliency Survey (YRRS) data available from the New Mexico Indicator-Based Information System (NM IBIS) website. Emergency department visit rates for New Mexico were also collected using the NM IBIS. Lastly, rates of treatment facilities were obtained using data from the National Survey of Substance Abuse Treatment Services (N-SSATS) available at the Substance Abuse and Mental Health Data Archive (SAMHDA).

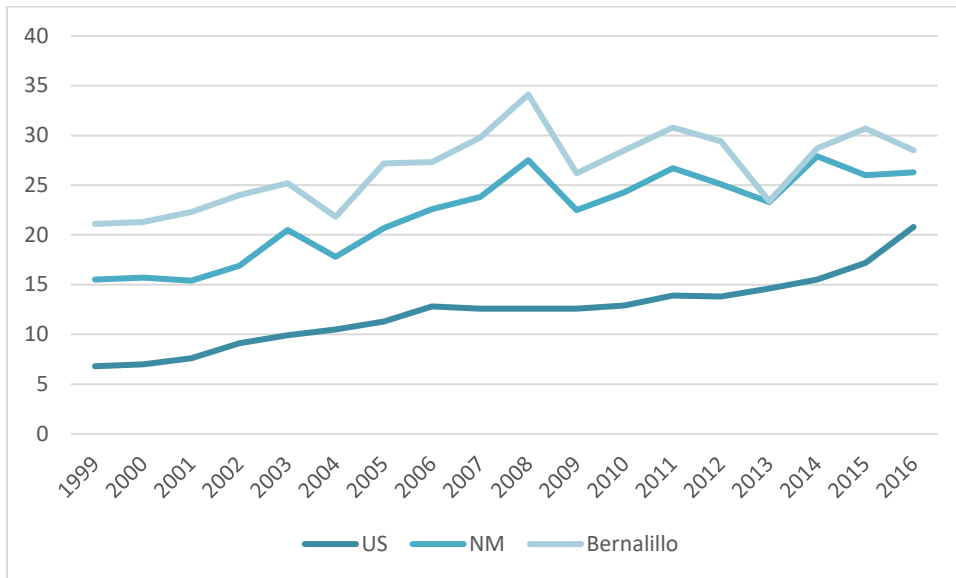
Indicators of Opioid and Methamphetamine Use in New Mexico and Bernalillo County

Mortality Rates for All Drug-Induced Causes of Death and Unintentional Overdoses

Figure 1 presents trends in the age-adjusted mortality rate for all non-alcohol drug-induced causes of death in the U.S., New Mexico, and Bernalillo County for 1999 through 2016. The U.S. rate increased gradually from 6.8 deaths per 100,000 in 1999 to 12.8 deaths per 100,000 in 2006, stabilized at around 12.6 through 2009, and then continued to rise to 20.8 in 2016 (a 206% increase over the full timeframe). Trends for New Mexico and Bernalillo County show more erratic change but they also reveal increases between 1999 and 2016 (from 15.5 to 26.3 in New Mexico, a 70% increase, and from 21.1 to 28.5 in

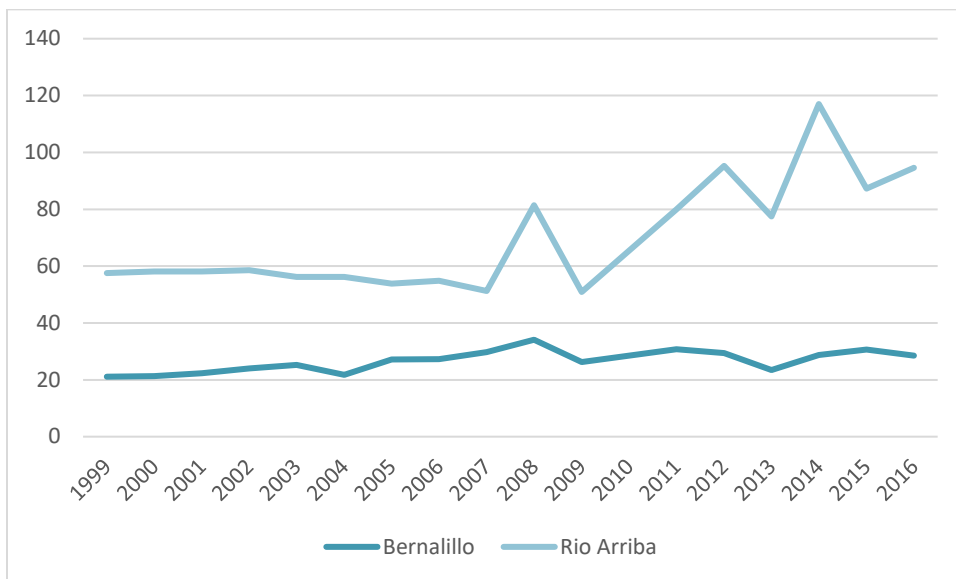
Bernalillo County, a 35% increase). Throughout the covered period, the drug-induced death rate is higher in Bernalillo County than in New Mexico, and the New Mexico rate is higher than the national rate.

Figure 1: Mortality Rates for Drug-Induced Causes of Death in the U.S., New Mexico, and Bernalillo County



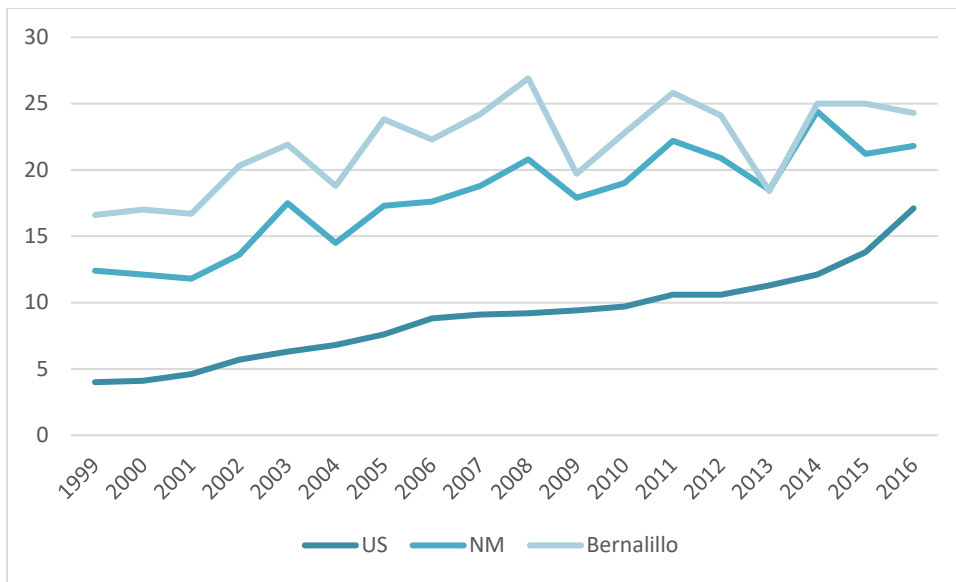
Although the drug-induced death rate in Bernalillo County is higher than in New Mexico, it is even greater in Rio Arriba County, the county with the largest drug-induced death rate in the state. Figure 2 compares Bernalillo and Rio Arriba counties by charting their respective age-adjusted drug-induced mortality rates for 1999 through 2016. The rate in Rio Arriba County was 57.5 per 100,000 in 1999 (almost three times the rate in Bernalillo County for the same year) and rose by 65% to reach 94.6 per 100,000 in 2016 (more than four times the rate in Bernalillo County for the same year).

Figure 2: Mortality Rates for Drug-Induced Causes of Death in Bernalillo and Rio Arriba Counties



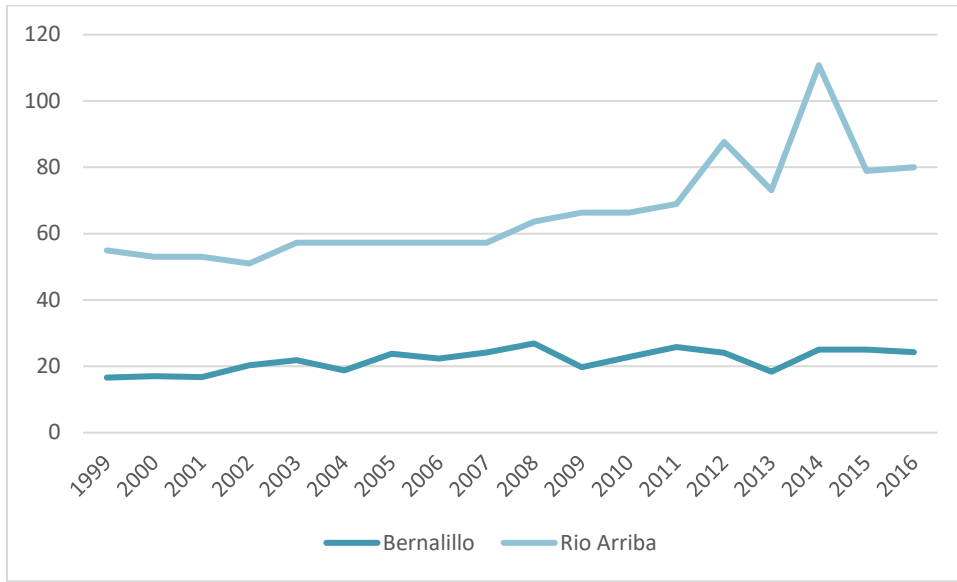
The drug-induced death rates presented in Figures 1 and 2 include deaths due to unintentional overdoses, suicides, homicides, and drug-induced deaths for all other reasons (CDC WONDER Online Database, 2017). Figures 3 and 4 present trends for the same places and years but limit the age-adjusted death rate to unintentional overdoses, which accounted for 86% of all drug overdose deaths in New Mexico between 2012 and 2016 (NMDOH, 2017). As in Figure 1, Figure 3 indicates that the unintentional overdose rates in the U.S., New Mexico, and Bernalillo County show net increases between 1999 and 2016 and that the rate in Bernalillo County is higher than in New Mexico or the U.S. Nationally, the unintentional overdose rate rose from 4 per 100,000 in 1999 to 17.1 per 100,000 in 2016, a 330% increase; in New Mexico the rate increased from 12.4 in 1999 to 21.8 in 2016, a 76% increase; and in Bernalillo County the rate climbed from 16.6 in 1999 to 24.3 in 2016, a 46% increase.

Figure 3: Mortality Rates for Unintentional Overdoses in the U.S., New Mexico, and Bernalillo County



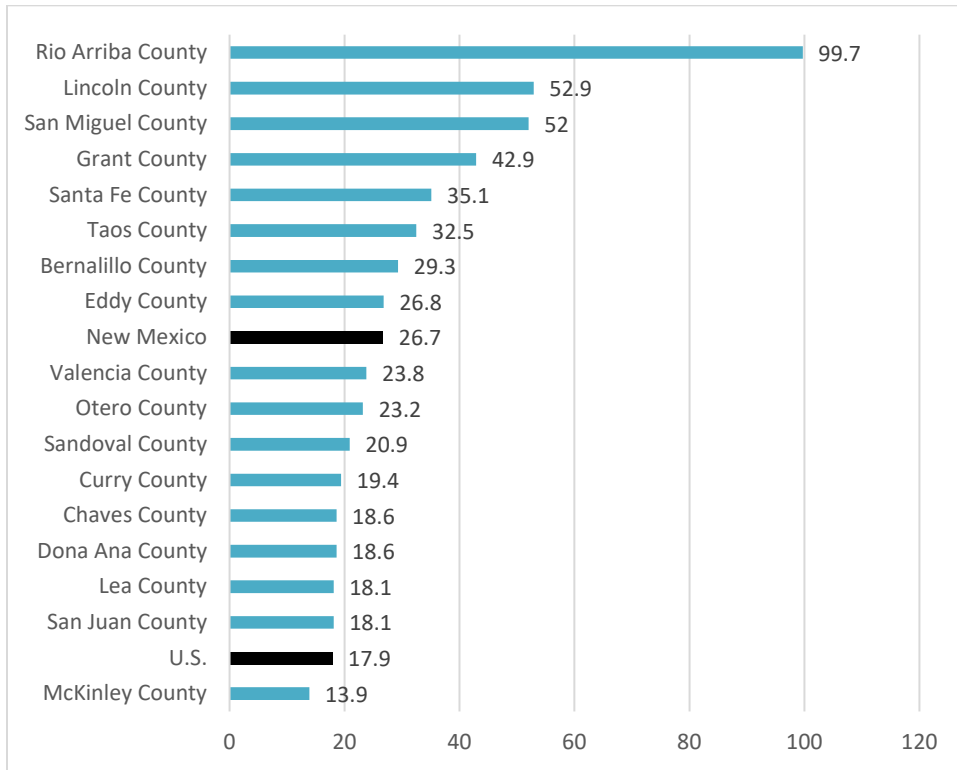
Similar to Figure 2, Figure 4 indicates that the age-adjusted unintentional overdose rate in Rio Arriba County remained higher than the rate in Bernalillo County over the full period. The rate in Rio Arriba County was 55 per 100,000 in 1999 and rose by 45% to reach 80 per 100,000 in 2016.

Figure 4: Mortality Rates for Unintentional Overdoses in Bernalillo and Rio Arriba Counties



Figures 5-7 return to age-adjusted mortality rates for all non-alcohol drug-induced causes of death and present these by county in New Mexico. Figure 5 presents drug-induced death rates averaged over 2014-2016 for all New Mexico counties with available data. Rio Arriba County had the highest rate at 99.7 deaths per 100,000 while McKinley County had the lowest at 13.9 deaths per 100,000. Bernalillo County’s drug-induced death rate was 29.3 per 100,000. For comparison, the corresponding figures for New Mexico and the U.S. were 26.7 and 17.9, respectively.

Figure 5: Mortality Rates for Drug-Induced Causes of Death in New Mexico by County, 2014-2016



Figures 6 and 7 map the severity of drug-induced mortality rates in New Mexico by county (these were generated using the CDC WONDER Online Database’s “Map” feature). Rates are averaged over 2014-2016. Figures 6 and 7 show that the highest concentrations of drug-induced deaths for 2014-2016 were located in the northern, southern, and southwestern parts of the state.

Figure 6: Mortality Rate Severity for Drug-Induced Causes of Death in New Mexico by County, 2014-2016, Map

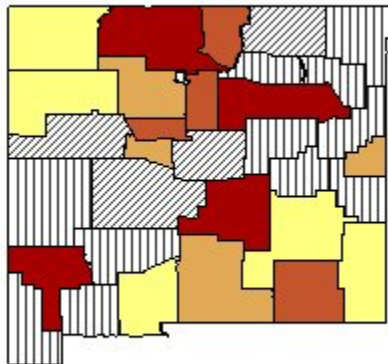


Figure 7: Mortality Rate Severity for Drug-Induced Causes of Death in New Mexico by County, 2014-2016, Key



Figures 8-10 present trends in age-adjusted mortality rates for all non-alcohol drug-induced causes of death in New Mexico for several demographic categories. Figure 8 charts trends in the drug-induced death rate by gender for 2010 through 2016. The male and female trends mirror each other in their stability, with only slight rate increases for both sexes beginning in 2011 and 2014 and slight rate decreases beginning in 2012 and 2015. However, the mortality rate for men rises from 28.6 per 100,000 in 2010 to 33 per 100,000 in 2016 (a 15% increase), while decreasing for women from 19.9 in 2010 to 19.5 in 2016 (a 2% decrease). Over the full seven-year period the drug-induced death rate for men was higher than for women.

Figure 8: Mortality Rates for Drug-Induced Causes of Death in New Mexico by Gender, 2010-2016

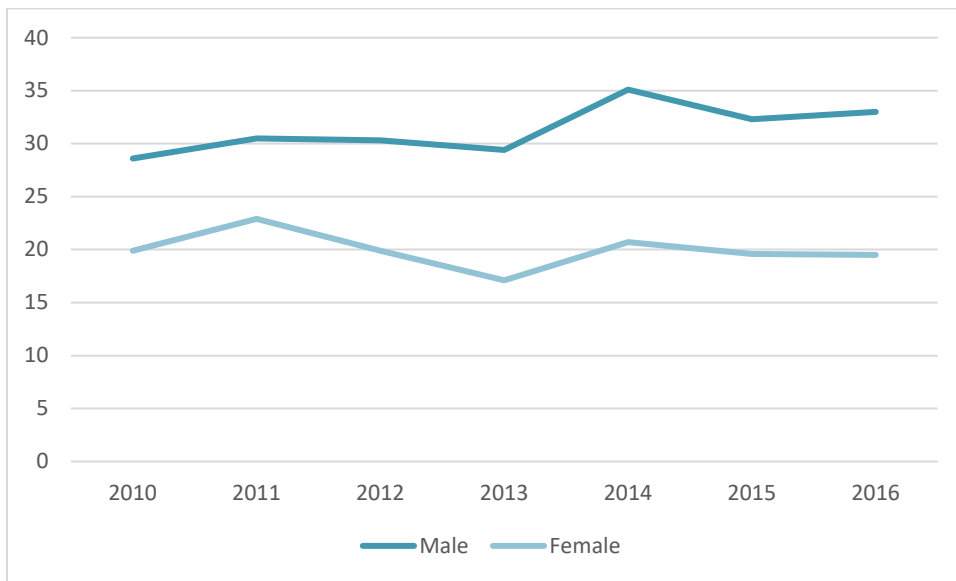


Figure 9 depicts trends in the drug-induced death rate in New Mexico by Hispanic origin status for 2010 through 2016. Although the Hispanic rate falls below that for non-Hispanics in 2010, it rises above the non-Hispanic rate in 2011 and remains greater through 2016. Between 2010 and 2016 the drug-induced death rate for Hispanics climbed from 22 per 100,000 to 27.7 per 100,000 (a 26% increase), while the rate for non-Hispanics fell from 24.4 per 100,000 to 22.4 per 100,000 (an 8% decrease).

Figure 9: Mortality Rates for Drug-Induced Causes of Death in New Mexico by Hispanic Origin, 2010-2016

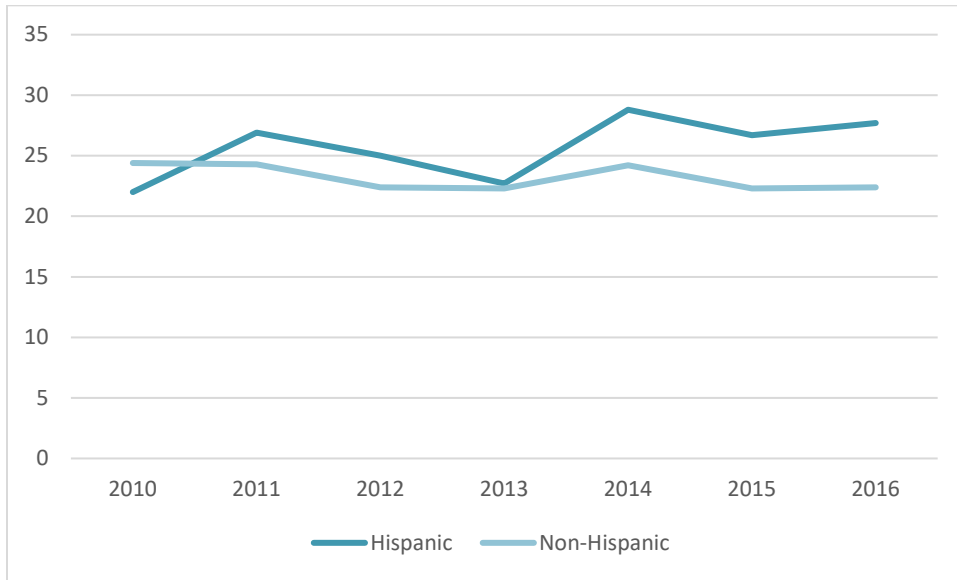
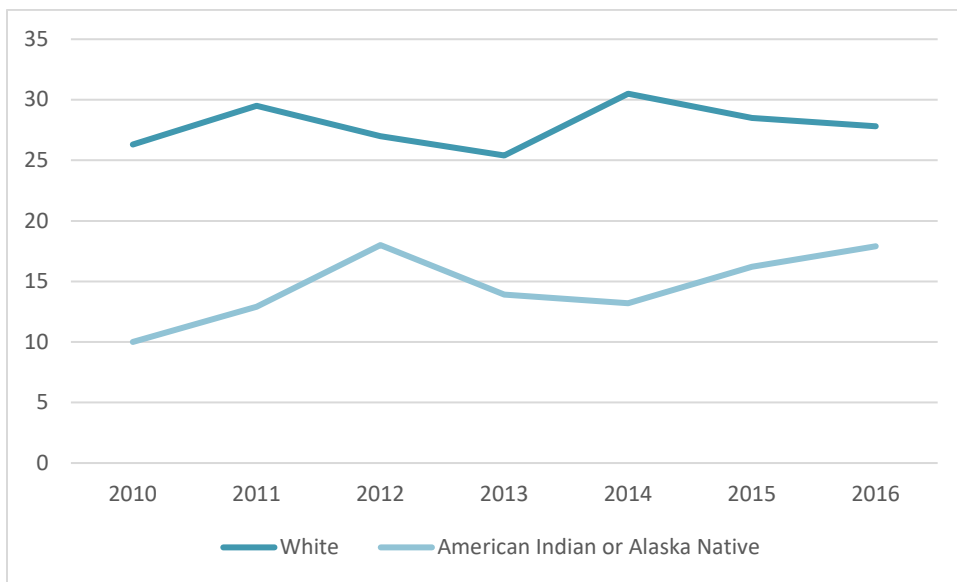


Figure 10 shows trends in the drug-induced death rate in New Mexico by race for 2010-2016. Trends are presented for Whites and American Indians/Alaska Natives, the only two racial groups for whom data were available every year between 2010 and 2016. Drug-induced death rate trends show net inclines for each group, with the White rate rising from 26.3 per 100,000 in 2010 to 27.8 per 100,000 in 2016 (a 6% increase) and the American Indian/Alaska Native rate climbing from 10 per 100,000 in 2010 to 17.9 per 100,000 in 2016 (an 80% increase). Over the full seven-year period the drug-induced death rate for Whites was higher than that for American Indians/Alaska Natives.

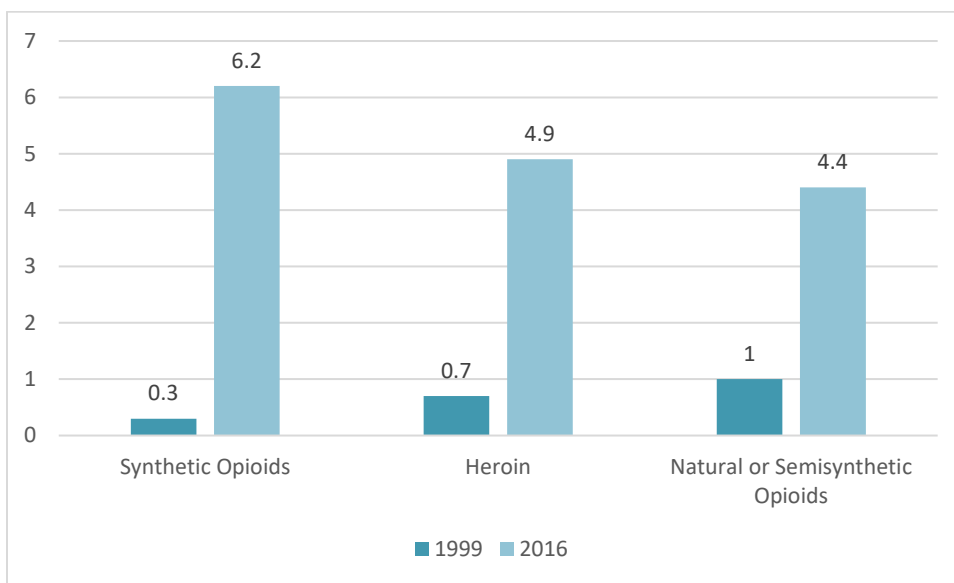
Figure 10: Mortality Rates for Drug-Induced Causes of Death in New Mexico by Race, 2010-2016



Mortality Rates for All Drug-Induced Causes of Death by Substance Type

According to data from the National Vital Statistics System, the sharpest increase in non-alcohol drug-induced causes of death over the 1999-2016 period in the United States occurred for synthetic opioids. Between 1999 and 2013, the national age-adjusted drug-induced death rate for synthetic opioids other than methadone increased gradually from 0.3 per 100,000 to 1.0 per 100,000; but over the next three years the rate rose rapidly to 6.2 in 2016, doubling between 2015 and 2016 alone (Hedegaard, Warner, and Miniño, 2017). Trends in age-adjusted mortality rates for heroin and natural or semisynthetic opioids are less extreme but still show sizable increases between 1999 and 2016, with the heroin mortality rate rising from 0.7 to 4.9 and the natural or semisynthetic opioid mortality rate climbing from 1.0 to 4.4 (see Figure 11). More recently, deaths from methamphetamine have increased as well. The national crude mortality rate for methamphetamine rose from 0.5 per 100,000 in 2010 to 3.3 per 100,000 in 2017 (NIDA, 2018b; Reichel, 2018).

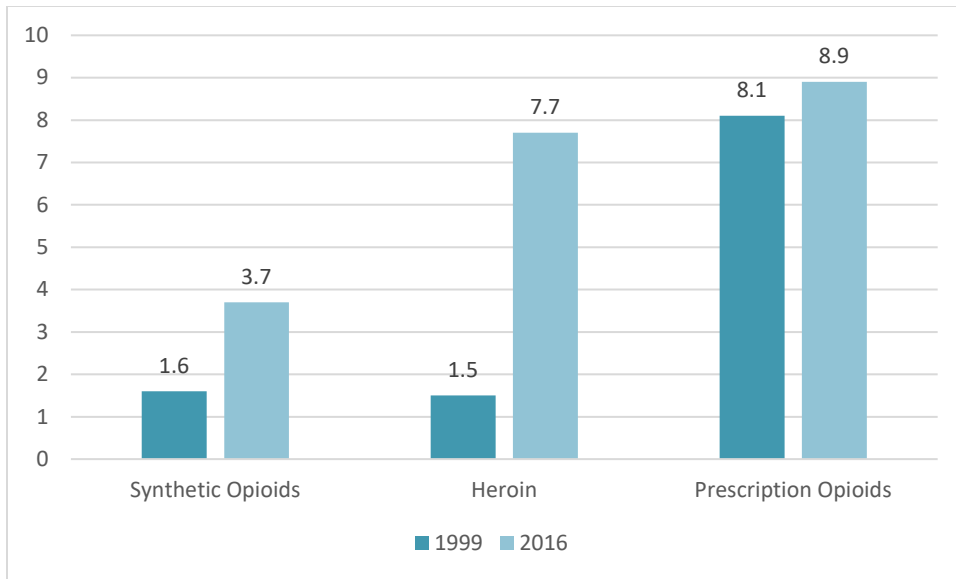
Figure 11: Mortality Rates for Drug-Induced Causes of Death in the U.S. for 1999 and 2016, by Substance Type



With the exception of synthetic opioids, mortality rates by substance type have remained higher in New Mexico than nationally, although trends have been somewhat more stable in the former. As presented in Figure 12, between 1999 and 2016 the New Mexico age-adjusted mortality rate per 100,000 rose from 1.6 to 3.7 for synthetic opioids; from 1.5 to 7.7 for heroin; and from 8.1 to 8.9 for prescription opioids (note, however, that the prescription opioid mortality rate peaked at 11.8 in 2014 and has declined thereafter) (NIDA, 2018a).¹ For methamphetamine, the age-adjusted mortality rate per 100,000 rose from 0.8 in 1999 to 5.5 in 2015 (Landen, 2016).

¹ The synthetic category includes fentanyl, fentanyl analogs, and tramadol only (excludes methadone). The prescription category includes any opioids prescribed by a doctor. They are mutually exclusive in Figure 12. The “prescription” category in Figure 12 and the “natural/semisynthetic” category in Figure 11 overlap but are not identical.

Figure 12: Mortality Rates for Drug-Induced Causes of Death in New Mexico for 1999 and 2016, by Substance Type



Connections to Drug Abuse Violation Arrest Rates and Index Crime Rates

To explore possible connections between opioid/methamphetamine use and crime over time, Figure 13 charts trends in the age-adjusted mortality rate for all non-alcohol drug-induced causes of death, the drug abuse violation arrest rate, and the index crime rate in New Mexico for 2000 through 2016. The drug-induced death rate is multiplied by 10 and the index crime rate is divided by 10 in Figure 13 so that trends in each rate are to scale with the drug abuse violation arrest rate.

The trends presented in Figure 13 suggest the indicator of substance use (the drug-induced death rate) and the two indicators of crime (the drug abuse violation arrest rate and index crime rate) are not closely related. While the drug-induced death rate increases gradually over the full period, the index crime rate declines between 2000 and 2010 (from 5,510 offenses per 100,000 to 4,010 offenses per 100,000, a 27% decrease) and then increases through 2016 (to 4,640, a 16% increase since 2010). Meanwhile the drug abuse violation arrest rate does not show any clear trend over the period examined, although it does indicate a net increase between 2000 and 2016 (from 243 arrests per 100,000 to 332 arrests per 100,000, a 37% increase).

Figure 13: Drug-Induced Mortality, Drug Abuse Violation Arrest, and Index Crime Rates in New Mexico

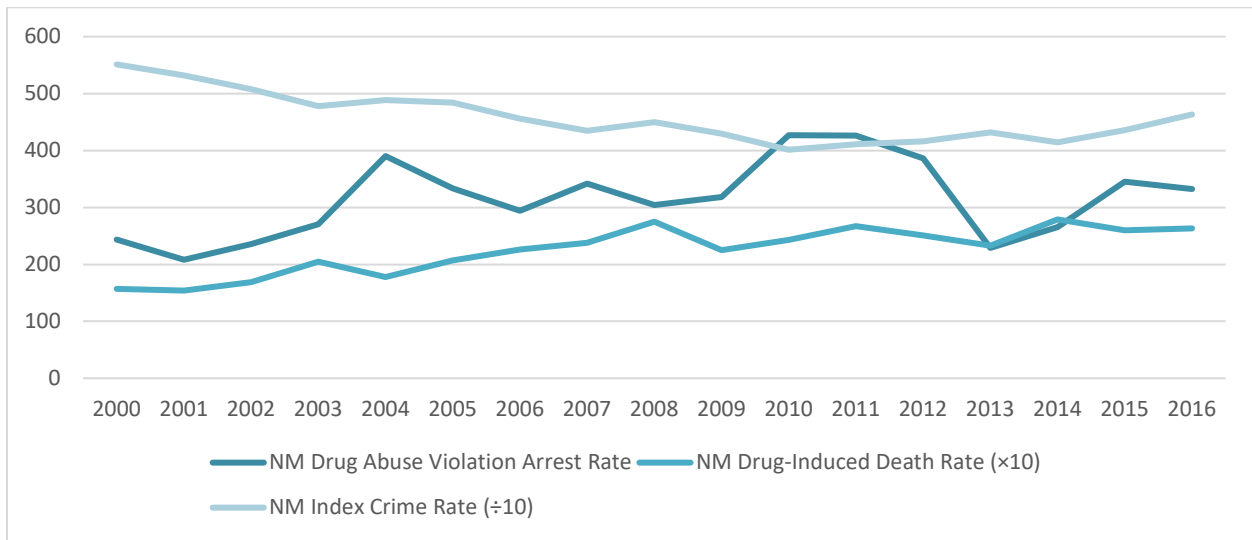
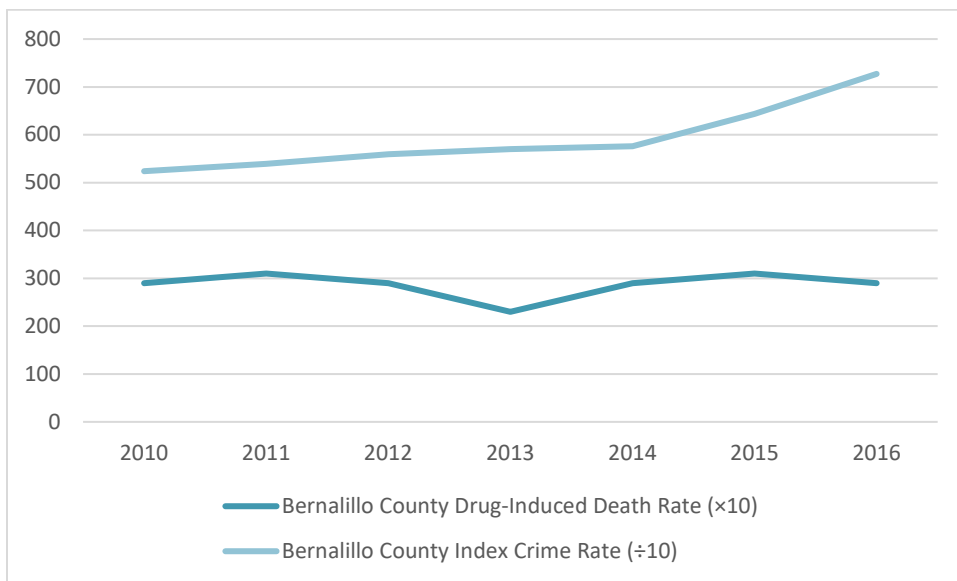


Figure 14 charts trends in the drug-induced death rate and index crime rate in Bernalillo County for 2010 through 2016. The two trends again do not track one another as the index crime rate increases every year while the drug-induced death rate remains fairly stable over the seven-year period.

Figure 14: Drug-Induced Mortality and Index Crime Rates in Bernalillo County

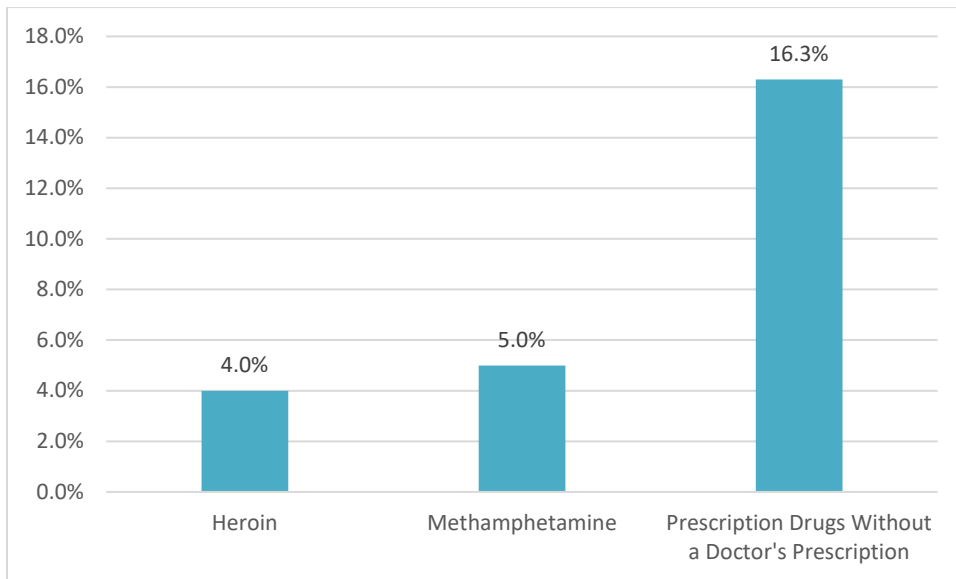


Lifetime Prevalence Estimates among Youth

Figure 15 presents lifetime prevalence estimates of heroin, methamphetamine, and prescription drug (without a doctor’s prescription) use for public high school students (grades 9-12) in New Mexico in 2013. While just 4% of surveyed youth claimed they had used heroin at least once in their lifetime, 5% admitted to having used methamphetamine and 16.3% admitted to having used prescription drugs without a doctor’s prescription at least once. According to the New Mexico Department of Health, there have been no significant trends among youth grades 9-12 either in lifetime use of painkillers to get high or in

lifetime heroin use, but the rate of lifetime methamphetamine use has declined from 7.7% in 2007 to 4.4% in 2015 (the corresponding U.S. rate declined during this period as well) (NMDOH 2017).

Figure 15: Lifetime Prevalence Estimates of Heroin, Methamphetamine, and Prescription Drug (Without a Doctor's Prescription) Use among Public High School Students in New Mexico in 2013



Figures 16-18 present lifetime prevalence estimates among public high school students in New Mexico in 2013 for the three illicit substance categories shown in Figure 13 by county. Figure 16 shows prevalence estimates of heroin use by county. The percentage of students who admitted to having used heroin at least once in their lifetimes ranged from 1% in Roosevelt and De Baca Counties to 9% in Valencia County. In Bernalillo County the estimate was 5%.

Figure 16: Lifetime Prevalence Estimates of Heroin Use among Public High School Students in New Mexico in 2013, by County

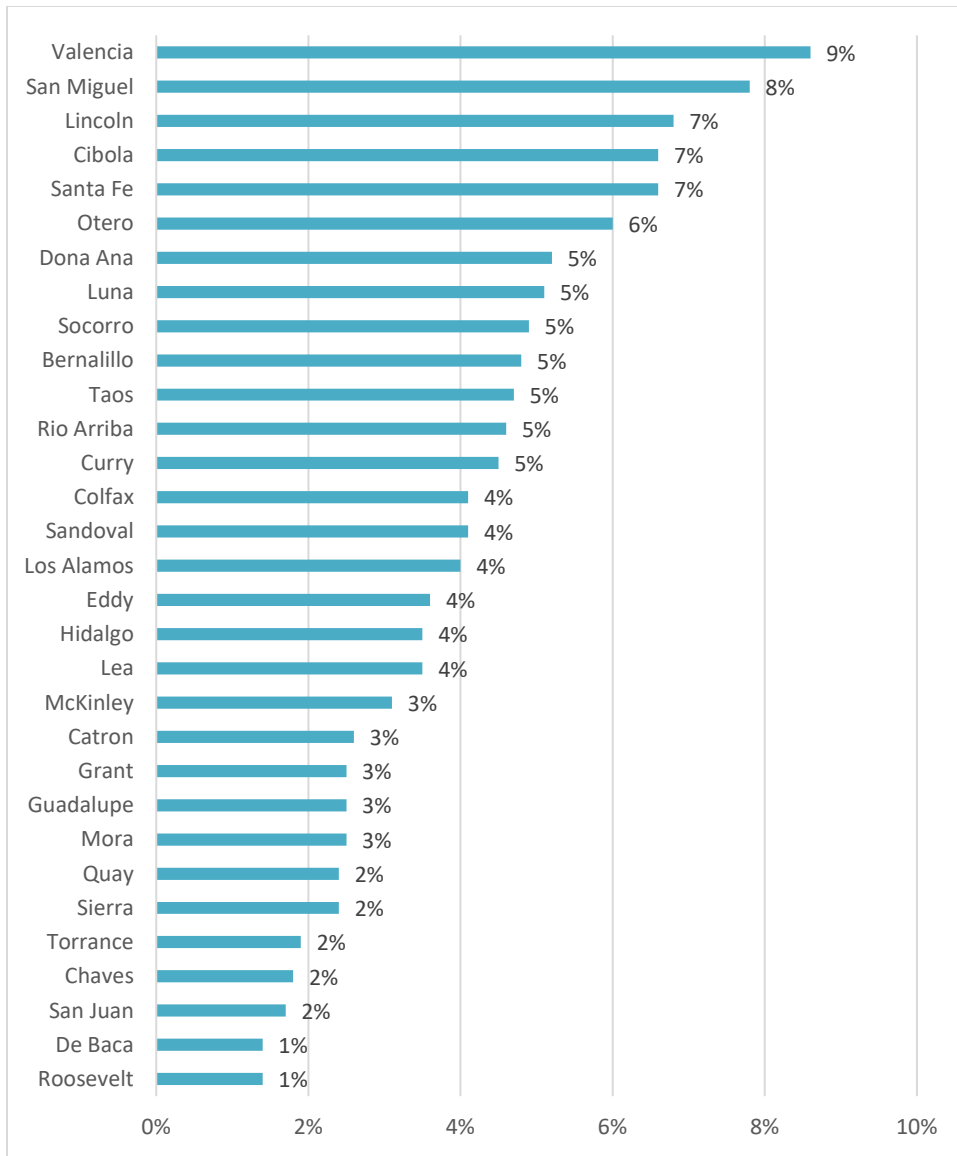
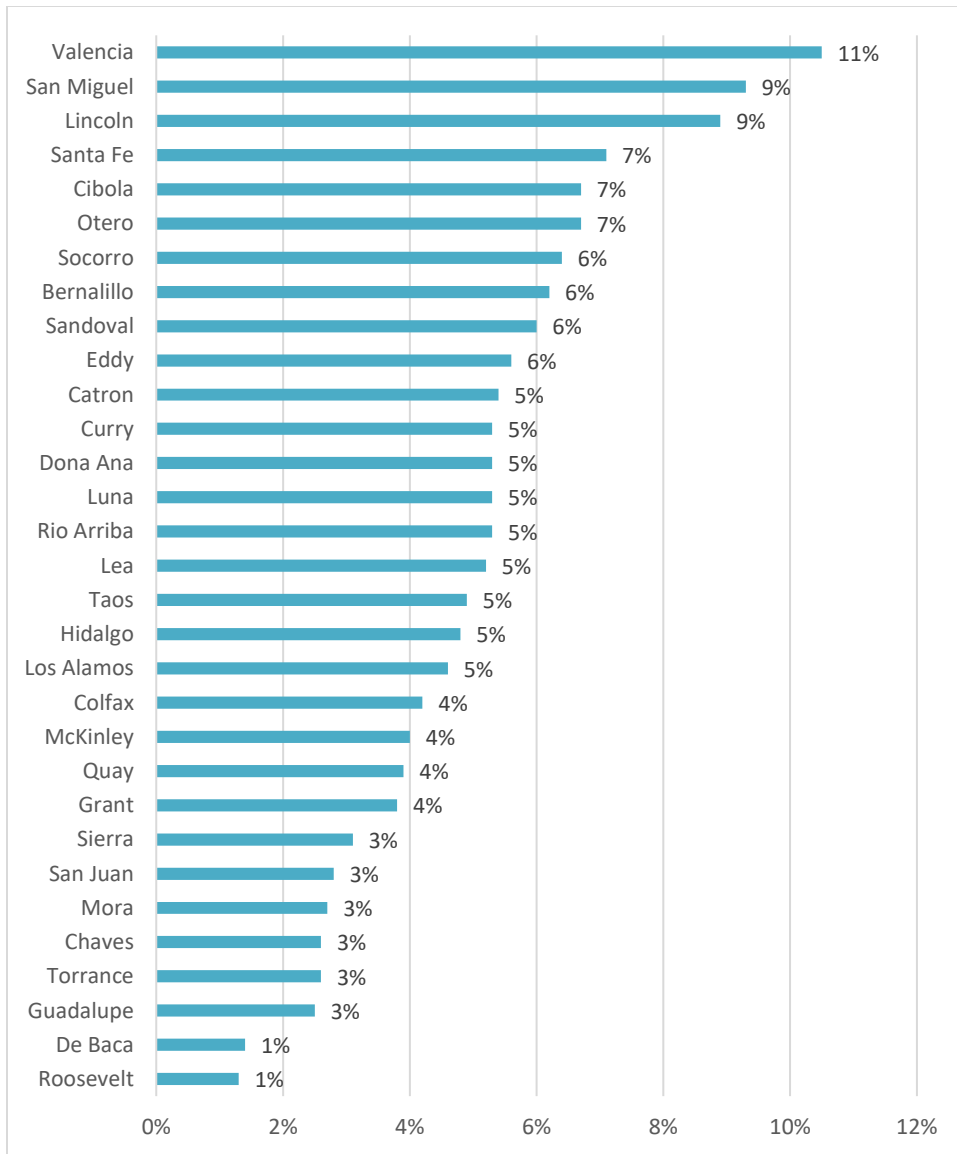


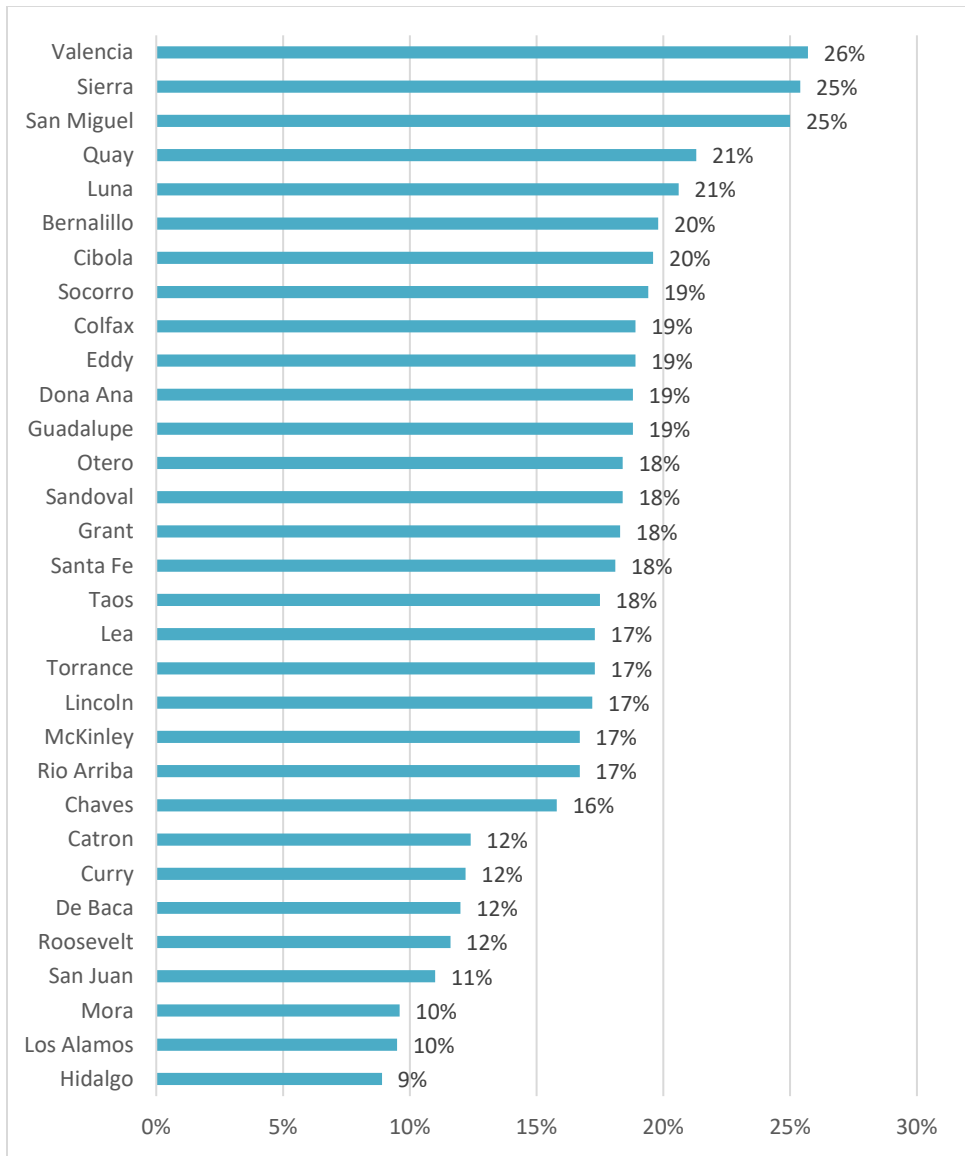
Figure 17 shows prevalence estimates of methamphetamine use by county. Once more estimates are lowest in Roosevelt and De Baca Counties (at 1% each) and highest in Valencia County (11%). In Bernalillo County the estimate was 6%.

Figure 17: Lifetime Prevalence Estimates of Methamphetamine Use among Public High School Students in New Mexico in 2013, by County



Finally, Figure 18 shows prevalence estimates of prescription drug use (without a doctor’s prescription) by county. The county with the lowest lifetime prevalence estimate is different from those for heroin and methamphetamine (Hidalgo at 9%), but again Valencia County has the highest prevalence estimate (at 26%). Bernalillo County’s estimate was 20%.

Figure 18: Lifetime Prevalence Estimates of Prescription Drug Use (Without a Doctor’s Prescription) among Public High School Students in New Mexico in 2013, by County



Emergency Department Visit Rates

Figure 19 depicts age-adjusted emergency department visit rates in New Mexico by county. Rates are averaged across 2014 through 2016. Catron County had the lowest rate at 13,437 visits per 100,000 residents and Sierra County had the highest at 73,038 visits per 100,000 residents; Bernalillo County’s rate was 34,319 visits per 100,000.

Figure 19: Emergency Department Visit Rates in New Mexico by County, 2014-2016

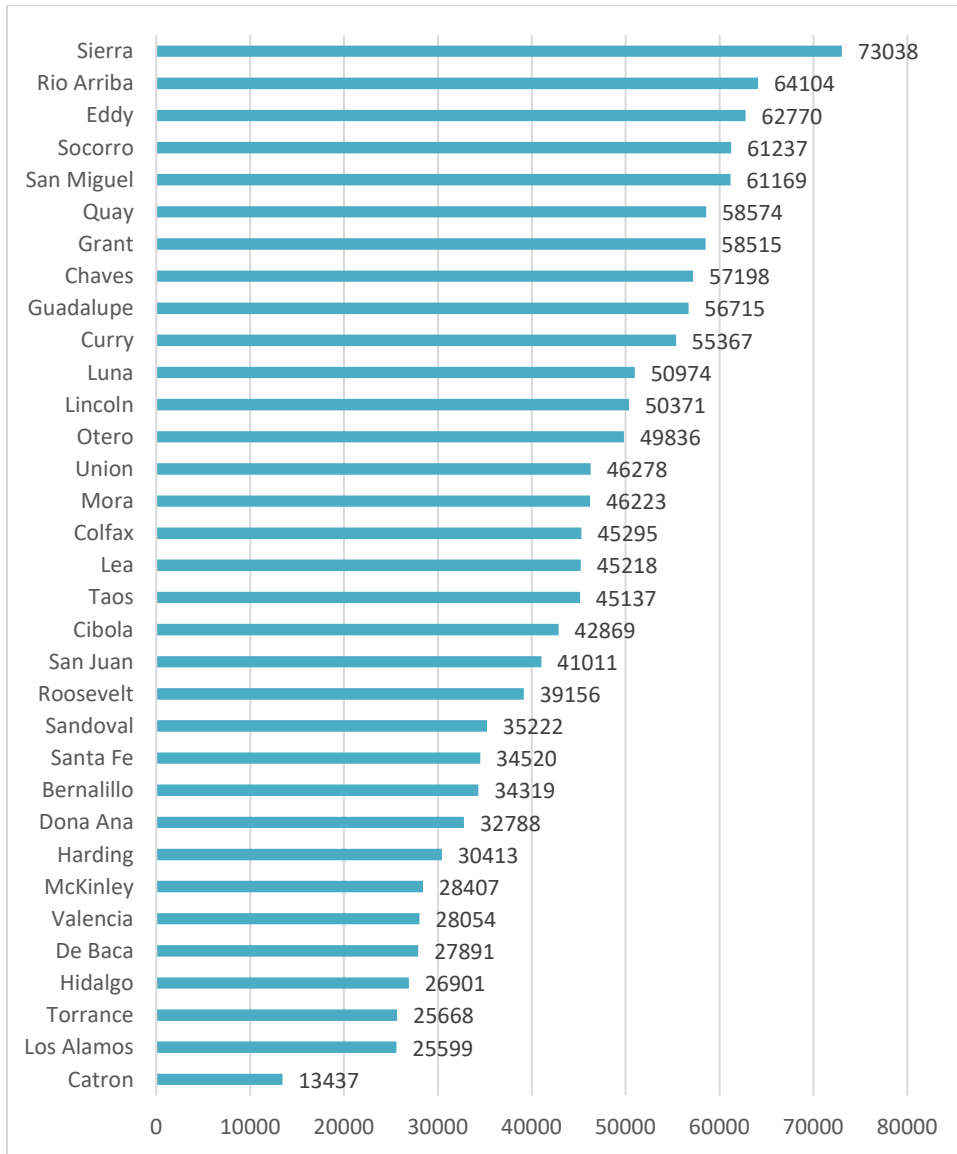
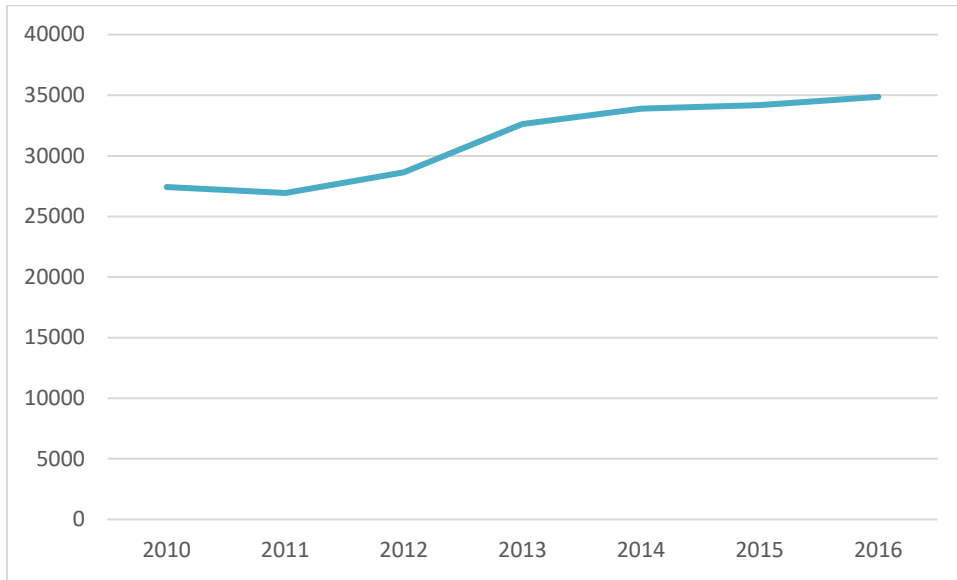


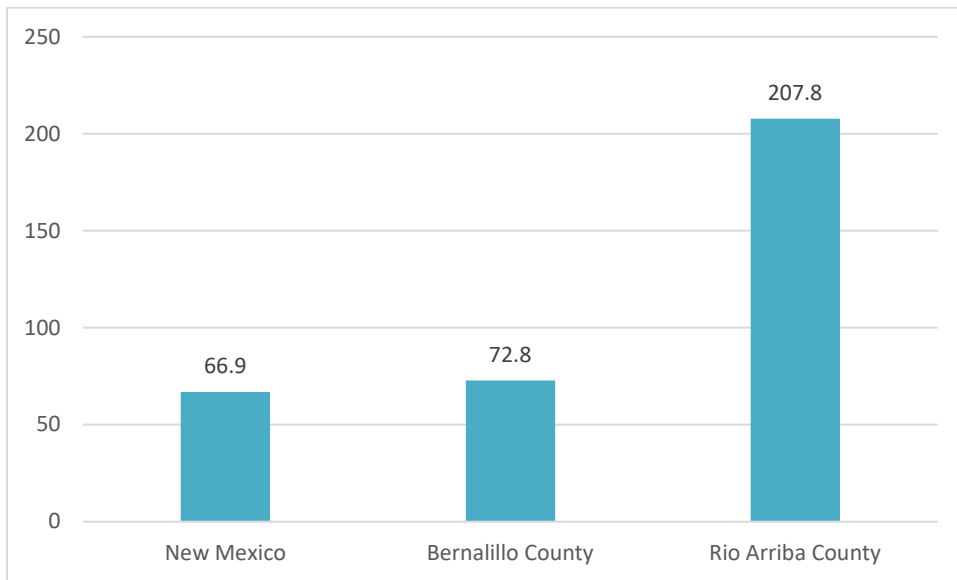
Figure 20 charts the trend in Bernalillo County’s age-adjusted emergency department visit rate for 2010 through 2016. The rate increases moderately in 2012, 2013, and 2014 and then stabilizes in 2015 and 2016. Over the seven-year period the emergency department visit rate in Bernalillo County rose from 27,418 per 100,000 in 2010 to 34,865 per 100,000, a 27% increase.

Figure 20: Emergency Department Visit Rate in Bernalillo County, 2010-2016



Out of an average of 222,028 emergency department visits per year in Bernalillo County over 2012-2016, 2,482 visits or 1.1% were opioid related (NMDOH, 2017). During this period, the age-adjusted opioid-related emergency department visit rate in Bernalillo County was 72.8 per 100,000. By comparison, the corresponding figure was 207.8 in Rio Arriba County and 66.9 for the state (see Figure 21).

Figure 21: Opioid-Related Emergency Department Visit Rate, 2012-2016

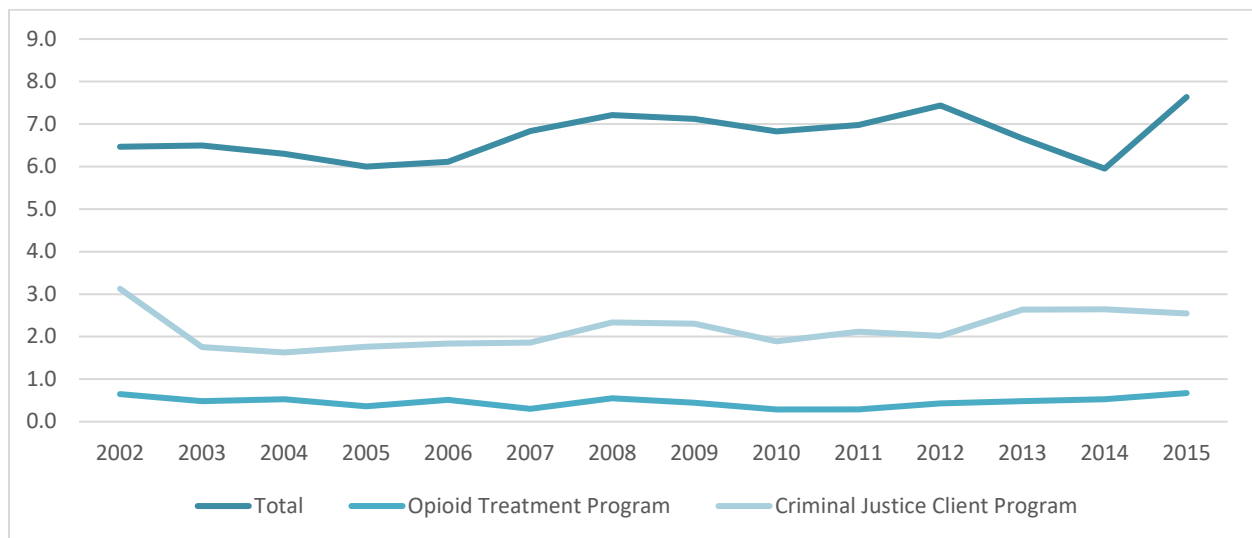


Treatment Facility Rates

To explore how treatment capacity in New Mexico has changed with time, Figure 22 presents the total drug and alcohol treatment facility, opioid treatment program facility, and criminal justice client (other than DUI/DWI) serving program facility rates in New Mexico for 2002 through 2015. The criminal

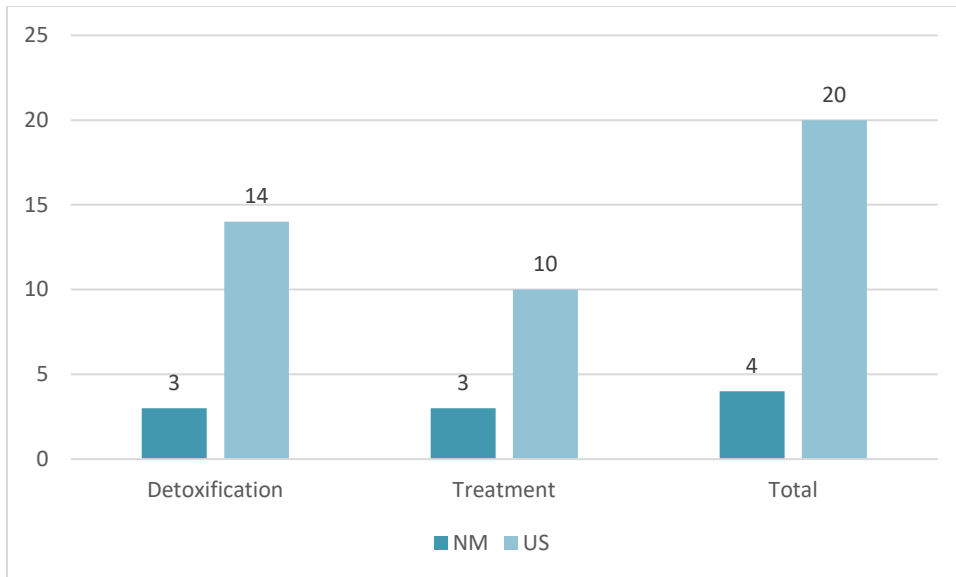
justice client-serving program facility rate declined between 2002 and 2015 (from 3.1 facilities per 100,000 residents to 2.5 facilities per 100,000 residents), but both the total and opioid treatment program facility rates rise slightly over the study timeframe. The total facility rate increases from 6.5 in 2002 to 7.6 in 2015, while the opioid treatment program facility rate rises from 0.6 to 0.7 over the same period. The criminal justice client-serving program facility rate remains consistently higher than the opioid treatment program facility rate throughout the 2002-2015 period.

Figure 22: Total, Opioid Treatment, and Criminal Justice Client-Serving Facility Rates in New Mexico



In 2015, the most recent year for which data from the National Survey of Substance Abuse Treatment Services (N-SSATS) are available, there were a total of 1,349 facilities with an opioid treatment program in the U.S. and 14 such facilities in New Mexico. The typical number of hospital inpatients that received substance abuse services from these facilities in 2015 was considerably lower in New Mexico than nationally. The N-SSATS data contain ranges of patients who received services at facilities with an opioid treatment program during March of 2015, and the midpoints of the averages of these ranges are presented in Figure 23 (rounded to the nearest whole number). The average range of hospital inpatients receiving detoxification, treatment, or any services at New Mexico facilities with an opioid treatment program on March 31, 2015, was 0-5, 0-5, and 0-7, respectively, while the corresponding ranges for the U.S. were 11-16, 6-13, and 16-24.

Figure 23: Midpoints of Average Ranges of Hospital Inpatients who Received Services from Facilities with an Opioid Treatment Program on March 31, 2015, for New Mexico and the U.S., by Service Type



Conclusion

This report surveyed trends in several key indicators of opioid and methamphetamine use in the United States, New Mexico, and Bernalillo County, using a variety of federal and state data sources. Overall, drug-induced mortality trends in Bernalillo County and New Mexico are consistent with the national trend but at higher levels; trends for all three rose steadily from 1999 to 2012 and then increased more sharply during the 2013-2016 period. By county, mortality rates over the 2014-2016 period were highest in Rio Arriba County and lowest in McKinley County; by demographic, males, Whites, and persons of Hispanic origin have the highest mortality rates. When mortality rates are disaggregated by opioid type in New Mexico, they remain highest for prescription opioids, but the largest rate increase between 1999 and 2016 was for heroin overdose deaths. This is distinct from the national mortality pattern where both the highest absolute rate in 2016 and largest relative rate increase since 1999 was for synthetic opioids like fentanyl, fentanyl analogs, and tramadol.

Arrest, crime, and lifetime prevalence of substance use among youth indicators were weak correlates of the drug-induced mortality rate in New Mexico. In both the state and Bernalillo County the drug-induced mortality rate remained essentially stable between 2010 and 2016, while the index crime rate rose and the drug abuse violation arrest rate did not show any clear trend. Reports from a state-representative sample of public high school students of having ever used heroin or taken prescription drugs (without a doctor’s prescription) also failed to evidence any clear trends in recent years (NMDOH, 2017), and the lifetime prevalence estimate for methamphetamine use among these students declined between 2007 and 2015. In 2013, Valencia County had the highest youth lifetime prevalence estimates of any New Mexico county for all three illicit substances.

Slightly better trackers of the New Mexico drug-induced mortality trend were the emergency department visit and substance abuse treatment facility rate trends. The total emergency department visit rate in the state rose between 2012 and 2014 and then stabilized thereafter, with Sierra County having the highest

rate of any New Mexico county for 2014-2016. When only opioid-related emergency department visits were considered, Rio Arriba County had the highest rate, although both Rio Arriba County and Bernalillo County had higher opioid-related emergency department visit rates than the state as a whole. Each of the total substance abuse and opioid treatment program facility rates increased slightly over 1999-2016, but the average number of hospital inpatients who received detoxification or treatment services from opioid treatment program facilities remained well below the corresponding figures at the national level.

If the non-alcohol drug-induced mortality rate is a valid proxy for opioid and methamphetamine use in New Mexico and Bernalillo County, the findings of this report generally suggest that indicators of emergency department visitation and treatment capacity are more reliable covariates than are indicators of arrest, crime, or lifetime prevalence of substance use among youth. The findings also suggest that cases of drug-induced mortality are high in New Mexico, and moderate in Bernalillo County, compared with other states or counties. Detoxification and treatment resources should target addiction to prescription opioids and heroin among higher-risk demographic groups such as adults, males, Whites, and persons of Hispanic origin.

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