PATTERNS AND TRENDS OF SUBSTANCE USE WITHIN AND ACROSS THE REGIONS OF FLORIDA
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Table of Contents

SECTION I. INTRODUCTION .......................................................................................................... 1
  Report Highlights .................................................................................................................... 1
  Florida’s Managing Entity Regions ...................................................................................... 3

SECTION II. PATTERNS AND TRENDS IN ALCOHOL USE ....................................................... 6
  Underage Alcohol Use ............................................................................................................ 6
  Underage Alcohol Use in General ........................................................................................... 6
  Underage Binge Drinking ...................................................................................................... 8
  Underage Drinking by Managing Entity Regions ..................................................................... 9
  Alcohol Use in Adults ............................................................................................................ 12

SECTION III. PATTERNS AND TRENDS IN TOBACCO USE ....................................................... 15
  Cigarette Smoking in Adolescents ........................................................................................ 15
  Cigarette Smoking in Adults .................................................................................................. 17
  Electronic Cigarette Use in Adolescents ............................................................................... 18
  Electronic Cigarette Use in Adults ......................................................................................... 19

SECTION IV. PATTERNS AND TRENDS IN MARIJUANA USE ................................................... 21
  Marijuana Use in Adolescents ............................................................................................... 21
  Prevalence of Lifetime Marijuana Use ................................................................................... 21
  Prevalence of Marijuana Use in the Past 30 Days ................................................................. 22
  Marijuana Use in Adolescents within Florida and Across ME Regions .................................. 23
  Marijuana Use by ME Regions .............................................................................................. 25
  Marijuana Use in Adults ........................................................................................................ 27

SECTION V. PATTERNS AND TRENDS IN NOVEL PSYCHOACTIVE SUBSTANCE USE .......... 30
  Tryptamines .......................................................................................................................... 30
  Phenethylamines and Piperazines ........................................................................................ 31
  Synthetic Cathinones ............................................................................................................ 32
  Fentanyl Analogs .................................................................................................................. 32

SECTION VI. PATTERNS OF AND TRENDS IN OPIOID USE ...................................................... 34
  Nonmedical Use of Prescriptive Opioids ............................................................................... 34
  Heroin Use ............................................................................................................................ 37
    Low Rate of Heroin Use in Adolescents ........................................................................... 37
    Heroin Use in Adults ........................................................................................................... 37

SECTION VII. PATTERNS AND TRENDS IN COCAINE USE ...................................................... 39
  Cocaine Use in Adolescents ................................................................................................. 39
    Trend in Cocaine Use in Adolescents ............................................................................... 39
    Trend in Adolescent Cocaine Use by Gender and School Grade ..................................... 40
    Adolescent Cocaine Use by ME Regions .......................................................................... 41
  Cocaine Use in Adults ........................................................................................................... 42
    Time Trends in Adult Cocaine Use ................................................................................. 42
    Patterns and Trends of Adult Cocaine Use across ME Regions ........................................ 43
Patterns and Trends of Substance Use
Within and Across the Managing Entity Regions of Florida

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SECTION I. INTRODUCTION

This report provides a statewide and regional overview of substance use for Floridians over the past decade, including patterns of use among adolescents and adults, overall and by gender. Regional patterns and differences are presented for the Department of Children and Families’ seven Managing Entity Regions. When possible, Florida’s substance use trends were compared with national trends to identify improvements for substance use prevention and treatment in Florida.

Data used for this report were derived from diverse resources available as of February 19, 2019. Population data were obtained from the Bureau of Economic and Business Research of Florida. Substance use rates for Florida and the United States were derived from the well-known National Survey on Drug Use and Health (NSDUH), sponsored by the Substance Abuse and Mental Health Services Administration (SAMHSA), and the Centers for Disease Prevention and Control’s Behavioral Risk Factor Surveillance System (BRFSS) and Youth Risk Behavior Surveillance System (YRBSS). Levels and patterns of substance use within the State of Florida were assessed using data from the Florida Department of Children and Families’ 2018 Florida Youth Substance Abuse Survey (FYSAS) and data from the 2017 annual report, Drugs Identified in Deceased Persons by Florida Medical Examiners Report, prepared by the Florida Medical Examiners Commission, Florida Department of Law Enforcement.

Report Highlights

The key points of this report are highlighted below:

- **YRBS data** indicate a lower rate of underage drinking for adolescents in Florida than in the nation in 2017 (lifetime drinking 56.5% vs. 60.4%), but more adolescents started drinking by age 13 in Florida than in the United States as a whole (16.8% vs. 15.5%). **NSDUH data** indicate a lower rate of binge drinking among adolescents aged 12-17 in Florida than in the nation (5.1% in 2016-17 vs. 5.3% in 2017)
The 2018 FYSAS data indicate small cross-ME Region differences in underage lifetime alcohol use, varying from 34.6% (Central Florida Cares Health System) to 38.7% (Southeast Florida Behavioral Network); but the rate of underage drinking in the past 30 days and the rate of underage binge drinking showed large differences across the ME Regions.

The 2018 FYSAS data also indicate that overall girls were more likely than boys to use alcohol in Florida, including lifetime drinking (38.9% for girls and 34.1% for boys) and drinking in the past 30 days (16.8% for girls and 13.8% for boys). The differences were consistent across all ME Regions.

The NSDUH data indicate a continued decline in cigarette smoking in Florida and the United States with lower lifetime smoking rates among adolescents in Florida than in the nation in 2017 (18.6% vs. 28.9%). The 2018 FYSAS data indicate that only 2.5% of adolescents in Florida smoked cigarettes in the past 30 days, with the lowest rate observed in the region served by the Broward Behavioral Health Coalition (1.3%) and the highest rate in Big Bend Community Based Care’s region (3.7%). However, the 2016 BRFSS data indicate that 15.5% of the adults in Florida were still smoking cigarettes.

The 2016 and 2018 FYSAS data indicate increases in electronic cigarette use among Florida adolescents, overall, by gender and school grade, no matter whether measured by lifetime or past 30-day use. There were greater increases observed among girls than boys. Substantial cross-ME Region differences in the rate of use also exist.

The 2017 YRBSS data indicate a lower rate of lifetime marijuana use (34.5% vs. 25.6%) but a higher rate of past 30-day marijuana use (7.5% in 2016-17 vs. 6.6% in 2017) among adolescents in Florida than in the nation in the most recent year. The 2016 and 2018 FYSAS data revealed cross-ME Region differences in marijuana use for Florida adolescents. The NSDUH data indicate a continued increase in marijuana use among adults in Florida and the United States.

Data from Florida Medical Examiners Commission Reports indicate an increase in the use of fentanyl analogs and a slow-down in nonmedical opioid and heroin use. However, the use of fentanyl has increased progressively since 2013 while other types of opioids have slowed down.

While FYSAS data indicate a progressive decline in cocaine use among adolescents with meager rates of past 30-day use (0.4%); data from Florida Medical Examiners Commission Reports indicate continued increases in cocaine use in adults. A slow-down in the increasing trend from 2016 to 2017 was observed. A similar pattern was also observed for methamphetamine use.

Medical use of prescribed benzodiazepines in adults also tended to decline from 2016 to 2017 based on the data from Florida Medical Examiners Commission Reports.
Florida’s Managing Entity Regions

The Florida Department of Children and Families (DCF) Office of Substance Abuse and Mental Health (SAMH) provides and manages publicly-funded behavioral healthcare services through seven Managing Entities (Figure 1). Geographically, some Managing Entity Regions overlap and differ from the six geographic regions commonly used in Florida, including the Northwest, Northeast, Central, Suncoast, Southeast, and Southern.

Figure 1. The Managing Entity Regions of Florida

There are 67 counties in Florida’s publically-funded behavioral health services. They are managed at the regional level by seven Managing Entities (ME). The seven ME regions and corresponding counties are listed below.
1. **Big Bend Community Based Care, Inc. (BBCBC)** (18 counties, including 16 counties in the Northwest and 2 from Northeast Florida): Bay, Calhoun, Escambia, Franklin, Gadsden, Gulf, Holmes, Jackson, Jefferson, Leon, Liberty, Madison, Okaloosa, Santa Rosa, Taylor, Wakulla, Walton, and Washington;


3. **Central Florida Cares Health System, Inc. (CFCHS)** (4 counties Central Florida): Brevard, Orange, Osceola, and Seminole;

4. **Central Florida Behavioral Health Network, Inc. (CFBHN)** (14 counties, including three from Central Florida and 11 from Suncoast Florida): Charlotte, Collier, DeSoto, Glades, Hardee, Hendry, Highlands, Hillsborough, Lee, Manatee, Pasco, Pinellas, Polk, and Sarasota;

5. **Southeast Florida Behavioral Health Network, Inc. (SEFBHN)** (5 counties): Indian River, Martin, Okeechobee, Palm Beach, and St. Lucie;

6. **Broward Behavioral Health Coalition, Inc. (BBHC)** (1 county from Southeast Florida): Broward; and


**Figure 2** displays the Bureau of Economic and Business Research population estimates for the seven DCF Managing Entity (ME) Regions using the same color coding as depicted in **Figure 1**. The estimated total population in Florida by April 2018 was 20,840 568, excluding inmates. Of the seven ME Regions, Central Florida Behavioral Health Network, Inc., represents the largest population of 5.84 million, accounting for 28% of the total and Big Bend Community Based Care, Inc. covers the smallest population of 1.52 million scattered in a large geographic area, accounting for 7% of the state total.
Figure 2. The Estimated Population by the Managing Entity Regions of Florida (inmates excluded). Note: Updated on February 19, 2019, with data from the 2018 Bureau of Economic and Business Research.
SECTION II. PATTERNS AND TRENDS IN ALCOHOL USE

To assess substance use patterns and trends in Florida against the national average, data was used from national surveys that also reported state-level data, such as the National Survey on Drug Use and Health (NSDUH, annual), the Youth Risk Behavior Surveillance System (YRBSS, every other year), and the Behavioral Risk Factor Surveillance System (BRFSS, every year). To assess within Florida differences in adolescent substance use by the Managing Entity Regions, data from the Florida Youth Substance Abuse Survey (FYSAS) was used.

Underage Alcohol Use

Underage Alcohol Use in General

Among people of different ages, drinking under age 21 is most problematic. To assess the prevalence of underage drinking, we compared four measures of alcohol use among adolescents in Florida and the United States, including drinking lifetime use, the age of first drinking, drinking in the past 30 days, and binge drinking using national data from NSDUH and YRBSS. We also analyzed the differences across DCF Managing Entity Regions in lifetime use and the past 30-day alcohol use and binge drinking with FYSAS data collected for Florida.

![Figure 3. Prevalence of lifetime alcohol use among high school students in Florida and the United States](image)

Note: No state data available from YRBS during 2007-2015.

Lifetime use is a vital indicator for surveillance. Lifetime alcohol use measures the number of persons who ever used alcohol in their lifetime. Results in Figure 3 indicate that the
prevalence rate (%) of lifetime alcohol use among high school students in Florida was lower than the national average during 2001-2017. It declined progressively from 74.5% in 2001 to 56.5% in 2017 with an annual reduction of 1.13%, quicker than 1.11%, the declining rate for the nation.

Age, when an adolescent uses alcohol the first time (also known as age onset), is a sensitive indicator for monitoring alcohol abuse among adolescents. Figure 4 presents the data from YRBSS on the percentage of first alcohol use by age 13 for adolescents in Florida and the United States. Overall, the trend of alcohol use onset in Florida adolescents was similar to that of the nation—a progressive decline since 2005. However, an increasing trend since 2015 was observed for Florida adolescents, but no such trend was found for adolescents nationally as a whole.

![Figure 4](image.png)

**Figure 4. Percentage of Adolescents Who Initiated Alcohol Use by 13 Years of Age in Florida and the United States, 2006-17** Note: Updated with data from the 2017 YRBS.

Prevalence rates of alcohol use in the past 30 days are conventionally used in monitoring alcohol use. Alcohol use among adolescents aged 12-17 years from the NSDUH provides valuable data to measure underage drinking in Florida compared with U.S. adolescents as a whole. Results in Figure 5 indicate that, consistent with the trend in lifetime alcohol use in Figure 3, the rate of past 30-day alcohol use among Florida adolescents mimicked declining national trends, with some fluctuations during the past decade.

However, despite the long-term declining trend, it is worth noting a slight increase in alcohol use among adolescents in Florida since 2015-16 which does not correspond with the national trend in that period.
Figure 5. Prevalence Rate of Past 30-Day Alcohol Use among Adolescents 12-17 Years of Age in Florida and the United States. Note: State rates from NSDUH were obtained by aggregating data from two consecutive years to ensure robust estimates. For example, the rate for Florida between 2015 and 2016 was an average of 2015 and 2016.

Underage Binge Drinking

Binge drinking is one of the most commonly used indicators of problematic drinking in adolescents. Figure 6 compares the prevalence rates of binge drinking for adolescents aged 12-17 years in Florida and the United States based on the report from NSDUH. Similar to the results in Figures 4 and 5, time trends in the percentage rate of binge drinking for Florida adolescents during the 2006-07 to 2016-17 were similar to those of adolescents in the nation – declining progressively during the entire period with an upward trend beginning 2015-16 for Florida adolescents and in 2016 for adolescents in the nation. The time difference is due to the different methods used to estimate state and national rates.
Figure 6. Prevalence Rate of Binge Drinking among Adolescents 12-17 Years of Age in Florida and the United States, 2006-17. Note: Updated with data from the 2017 NSDUH.

Data in Figure 6 further show that adolescent in Florida were less likely than their counterparts in the nation to engage in binge drinking between 2009 and 2015. However, the rate of binge drinking among Florida adolescents increased from 4.9% to 5.1% from 2015-16 to 2016-17, close to the national rate of 5.3%.

Underage Drinking by Managing Entity Regions

Data on differences in alcohol use by the Managing Entity Region are important for further improvements in prevention of underage alcohol use. Compared to national data, the 2018 FYSAS provides more detailed and updated data to assess underage drinking more accurately. FYSAS provides data for adolescents 11-18 while data from the national report, including those from NSDUH, only provides data for adolescents 12-17. Also, FYSAS is the only source of data to assess alcohol use by the Managing Entity Regions.

Figure 7 compares the levels of lifetime alcohol use, overall and by sex for the State of Florida as a whole and by the seven Managing Entity regions. Among all adolescents under age 18 in Florida, 36.5% reported having used alcohol in their lifetime. Girls were more likely than boys to have used alcohol in lifetime (38.9% vs. 34.1% with a rate ratio of 1.14). The rate of underagel lifetime drinking was the highest for adolescents in the regions covered by the Southeast Florida Behavioral Health Network (38.7%, 6% higher than the state average) and the lowest for adolescents in the region covered by the
Central Florida Care Health Systems (34.6%, 95% of the state average). Sex differences in the underage lifetime drinking was largest for adolescents covered by South Florida Behavioral Health Network with 30.6% for boys and 41.7% for girls (female-male ratio=1.36) and the lowest for adolescents covered by Big Bend Community Based Care with 34.6% for boys and 38.0% for girls (female-male ratio=1.10).

Figure 7. Prevalence Rate of Lifetime Alcohol Use among Adolescents 11-18 Years of Age in Florida (Total and by Sex), Overall and By Managing Entity Regions. Note: Updated with data from the 2018 FYSAS.

Likewise, Figure 8 presents the prevalence rates of past 30-day drinking among adolescents 11-18, overall and by sex for the State of Florida and the seven Managing Entity Regions. Based on the data from the 2018 FYSAS, 15.3% of Florida adolescents under legal age reported having used alcohol in the past 30 days prior to the survey, with the rate higher for females than for males (16.8% vs. 13.8%) with the risk ratio=1.22. Compared to data in Figure 7, among those who reported having ever used alcohol in their lifetime, 42% (15.3% over 36.5%) used alcohol in the past 30 days.

Among the seven ME Regions, underage drinking in the past 30 days was most prevalent among adolescents in the counties covered by the Big Bend Community Based Care, Inc. Data discloses 16.9% of BBCBC adolescents reported having used alcohol in the past 30 days, while underage drinking in the past 30 days was the least prevalent in Broward County covered by the Broward Behavioral Health Coalition, Inc., with 13.1% of adolescents reported using in the past 30 days. There were also large sex differences in the past 30-day underage drinking, with the largest difference for adolescents in counties covered by South Florida Behavioral Health Network, Inc. (12.9% for male and 18.3% for female) and smallest difference for adolescents in counties covered by Central Florida Cares Health System, Inc. (12.5% vs. 14.5%).
Binge drinking among adolescents below the legal age of 21 is the most problematic drinking behavior. Data from the 2018 FYSAS in Figure 9 indicate that 6.8% of adolescents under age 19 in Florida reported binge drinking at least once in the past 30 days. Furthermore, the rate was slightly higher for males than for females (6.9% vs. 6.7%), different from lifetime use and the past 30-day underage alcohol use. There were substantial differences in the prevalence of underage binge drinking across the seven ME Regions. The rate was the highest among adolescents in the counties served by the South Florida Behavioral Health Network, Inc., where 8.8% of adolescents reported binge drinking, 1.28 times higher than the state average. The rate was the lowest for adolescents in Broward County covered by the Broward Behavioral Health Coalition, Inc. with 5.8% of adolescents reported binge drinking.
Sex differences in the prevalence rate of adolescent binge drinking differed among ME Regions. Of the seven ME Regions, three regions had higher rates of binge among females than males (South Florida Behavioral Health Network, Inc., Southeast Florida Behavioral Network, Inc., and Lutheran Services Florida, Inc.). However, the findings were reversed in the remaining four ME Regions showing higher rates of binge drinking among adolescent males than females.

### Alcohol Use in Adults

**BRFS Data** were used to assess the level of alcohol use for adults in Florida and the national average. We preferred national data only rather than data from national sources and the State of Florida to ensure a valid comparison of a drinking behavior measure between adults in Florida and the nation. We selected two most common alcohol use measures for this report, one measuring the prevalence of alcohol use in the past 30 days prior to and including the survey day and another measuring binge drinking.

**Figure 10** presents the prevalence rate of past 30-day alcohol use for adults 18 years of age and older from 2006 to 2016 in Florida and the United States. Overall, changes in levels of past 30-day alcohol use among Floridians and the US population were small during the 11-year period. Although the prevalence rate in Florida was higher than the national average between 2009 and 2015, there was a declining trend in the rate of past
30-day alcohol use among Floridians since 2014, compared to an increasing trend among the total U.S. population.

Figure 10. Prevalence of Past 30-Day Alcohol Use among Adults in Florida and the United States, 2006-2016. Note: Updated with data from the 2016 BRFSS.

Binge drinking for adults poses a high risk for both personal health (including alcohol addiction, poor mental health, and cancer) and public health threat such as unintentional injuries, traffic accidents, and crimes. Likewise, Figure 11 contrasts the prevalence rates of binge drinking for Floridians and the total U.S. population during 2006-2016 with data also reported by the BRFSS. Overall, the prevalence rate of binge drinking among adults in Florida was lower than that of the national average during the 2006-2016 period.

The trends in adult binge drinking showed certain characteristics between Florida and the nation that may be worth understanding. Before 2012, the prevalence rate, although lower than the national average, began increasing in 2008. From 2012 to 2014, the prevalence rate of binge drinking declined for adults both nationally and statewide with the rate in Florida declining more quickly than the national average. From 2014 to 2016, an increasing trend in binge drinking appeared for both the national average and for Florida with the increasing rate for Florida slightly slower than that of the nation. Attention should be paid to this current increasing trend in binge drinking among adults in Florida and the nation.
The 2017 Florida Medical Examiners Commission Report indicated that among the 12,439 deaths in Florida investigated postmortem using the toxicology method; ethanol was detected in 5,258 (42%) at the time of death. This rate was 44% with 5,318 occurrences in 2016, representing a 1.1% reduction of the deaths in 2017. Of the total 2017 ethanol cases, 975 (18.5%) were caused by alcohol. This was an increase of 27 cases (2.8%) compared to the Florida Medical Examiner’s 2016 report.

According to the Florida Uniform Crime Report, the number of arrests due to driving under the influence (DUI) of substances in Florida in 2017 was 32,684 and 35,042 in 2016, representing a 6.7% reduction. Although no substance was specified in the reported arrests, most of such arrests were due to alcohol intoxication. For all arrests of DUI among adults, 73% of them were male with 23,681 cases. Among the total 20 Judicial Circuits, two counties in Judicial Circuit 13, Pinellas and Hillsborough, served by CFBHN, had the most DUI arrests with 3,747 arrests. The least number of DUI arrests was reported in Judicial Circuit 3 (Columbia, Dixie, Hamilton, Lafayette, Madison, Suwannee, and Taylor counties) served by BBCBC.
SECTION III. PATTERNS AND TRENDS IN TOBACCO USE

Tobacco use is one of the most preventable causes of many diseases and premature death. Data from diverse sources at the national and state level indicate that fewer and fewer people use conventional tobacco products such as cigarettes while more and more people are now using new tobacco products, particularly electronic cigarettes. This same pattern was true for adolescents and adults in Florida. To inform Florida’s tobacco use prevention efforts, we examined data on the use of conventional cigarettes and electronic cigarettes for adolescents from the 2017 YRBSS and evaluated data from the 2017 NSDUH Report for adults. In addition to comparing Florida data with national patterns, levels and patterns of use by ME Regions are presented with data reported from the 2018 FYSAS.

Cigarette Smoking in Adolescents

Despite declines in cigarette smoking, high rates of lifetime smoking - ever smoked cigarettes in lifetime remains to be a sensitive measure for future smoking in adolescents. We used data from YRBSS for this report rather than NSDUH because reported studies by Substance Abuse and Mental Health Services Administration (SAMHSA) indicate that the rates estimated with NSDUH data are often much lower than that from the YRBSS.

Figure 12. Prevalence of Lifetime Cigarette Smoking Among High School Students in Florida and the United States, 2001-2017. Note: Updated with data from 2017 YRBS.
Figure 12 presents the updated prevalence rates of lifetime cigarette smoking among high school students in Florida and the United States from 2001 to 2017. Data from 2017 indicates that Florida high school students are less likely to start smoking cigarettes than U.S. high school students with the lifetime smoking rate of 18.6% for Florida and 28.9% for the U.S. with the risk ratio = 0.64. In other words, high school students in Florida are 64% less likely to start smoking cigarettes compared with all high school students in the nation. In addition, the speed of decline in lifetime smoking rates during 2001-2017 in Florida was 2.4% \([(57.4-18.6)/16]\) per year; faster than 2.2% \([(63.9-28.9)/16]\), the declining speed for the nation.

![Graph showing cigarette smoking rates](image)

Figure 13. Cigarette Smoking among Adolescents 11-18 Years of Age (Total and by Sex) in Florida, Overall and By Managing Entity Regions. Note: Updated with data from the 2018 FYSAS.

Despite low prevalence rates of cigarette smoking among adolescents in Florida, from the [2018 Annual Update Report](#) we updated this measure for our state as a whole and assessed the differences by ME Regions (Figure 13). As shown in Figure 13, in 2018 only 2.5% of adolescents in Florida reported having smoked cigarettes in the past 30 days at least once, with the rate slightly higher among girls (2.6%) than among boys (2.4%).

Although the overall rates were low in 2018, there were large differences in the rate of past 30-day cigarette smoking across the seven ME Regions. Of the seven regions, smoking rates among adolescents in counties served by Big Bend Community Based Care (3.9%) and by Lutheran Services Florida, Inc. (3.4%) were higher than the state average of 2.5%. Further reduction may be possible in the future by strengthening adolescent tobacco use prevention efforts in these two regions.
Cigarette Smoking in Adults

Relative to adolescents, cigarette smoking, remained prevalent among adults in the United States and the State of Florida. With the 2016 BRFSS data, we updated the prevalence of cigarette smoking among people aged 18 years and older from 2006 to 2016. As shown in Figure 14, the rate of past 30-day smoking among adults in Florida continued to be lower than the national level in 2016 with 15.5% of Floridians reporting having smoked in the past 30 days at least once, while the same rate for the total U.S. population was 16.3%.

![Figure 14: Cigarette Smoking among Adults 18 Years of Age and Older in the United States and Florida, 2009-2016. Note: Updated with data from 2016 BRFSS.](image)

According to data in Figure 14 and the 2016 population data, the rate of 15.5% of adult smokers in Florida means that a total of 2,641,000 Floridians are still smoking cigarettes. According to research, more efforts are needed to reduce tobacco use among adults in Florida as parental smoking and early-emerging nicotine dependence symptoms are well-documented risk factors for adolescent smoking. Therefore, to prevent adolescent smoking, a sustained effort for tobacco cessation among adults is a must.
Electronic Cigarette Use in Adolescents

Electronic cigarettes (e-cigarettes for short) refers to a large number of devices that deliver nicotine by vaporizing a fluid that contains nicotine and numerous flavors. Along with declines in conventional cigarette smoking, using e-cigarettes, particularly among young people is increasing rapidly in many countries across the globe, including the United States in general as well as the State of Florida in particular. Although e-cigarettes may be safer than the conventional combustible cigarettes with regard to the toxicants from burning the cigarettes, nicotine in the e-cigarette is addictive. The U.S. Food and Drug Administration (FDA) is currently in the process of developing rules to regulate the production and distribution of e-cigarette products.

Data from the 2018 FYSAS was used to compare the prevalence of lifetime e-cigarette use for the total sample as well as e-cigarette use in the past 30 days by sex, middle and high schools in 2016 and 2018. As shown in Figure 15, a total of 27.1% of adolescents aged 12-20 in Florida ever used e-cigarettes in 2018 higher than 25.8% rate reported in 2016.

Consistent with the lifetime use measure, 13.7% of Florida adolescents reported having used e-cigarettes in the past, which is 1.3 times higher than 9.6%, the reported rate of past 30-day use in 2016. The increasing trend between 2016 and 2018 was observed among both male and female and in middle and high school students. It is worth noting that relative to males, the 2-year speed of increase was greater for female adolescents.
(1.6 vs. 1.3 times); and relative to middle school students, the speed of increase was higher for high school students (1.5 vs. 1.2 times).

**Figure 16** presents the rate of e-cigarette use in the past 30 days among adolescents in Florida overall and by the ME Regions with data from the 2018 FYSAS. Results in the figure show large differences in the past 30-day e-cigarette use among adolescents in Florida across the ME Regions. In 2018, the rates among adolescents living in counties covered by three ME Regions were higher than the state average in 2018: The Central Florida Behavioral Health Network, Inc., the Southeast Florida Behavioral Health Network, Inc., and the Big Bend Community Based Care, Inc. On the contrary, the rate of past 30-day e-cigarette use among adolescents in Broward Behavioral Health Coalition, Inc. in 2018 was 11.1%, the lowest among all seven ME Regions.

**Figure 16. Prevalence of Electronic Cigarette Use in the Past 30 days among Adolescents 11-18 Years Old in Florida, 2018, State Total and by ME Regions.** Note: Prepared with data from the 2018 FYSAS.

With regard to sex differences, boys are more likely than girls to use e-cigarettes, although the differences were much smaller compared to those for alcohol use. Also, data in **Figure 15** showed a quicker increase in e-cigarette use among females than males. If that trend continues, more girls than boys may use e-cigarettes in future years.

**Electronic Cigarette Use in Adults**

Compared to young people, e-cigarette use among adults is less prevalent. As for monitoring purposes, we contrasted a lifetime use and past 30-day e-cigarette use for
adults 18 years of age and older in Florida with that of the total population in the United States with the 2016 BRFSS data. As shown in Figure 17, the prevalence rates for both the lifetime use and the past 30-day use in Florida were very close to the national averages – 20.2% of Floridians reported ever using e-cigarettes in lifetime use, and 4.7% reported using in the past 30 days, while the same rates for Americans in the United States were 21.6% and 4.5% respectively.

![Figure 17. Prevalence of E-Cigarette Use among Adults 18 Years of Age and Older in Florida and the United States, 2016. Note: Prepared with data from 2016 BRFSS](image-url)
According to data from the NSDUH, marijuana is one of the most commonly used drugs in the United States, including Florida. Federal laws have classified marijuana as a Schedule I Drug in the Controlled Substance Act since 1970. To date, a total of 33 states and the District of Columbia have legalized medical marijuana use for medical purposes, including ten states that also permit marijuana use for recreational purposes. Florida medical marijuana law was passed in 2016. Data on patterns of and trends in marijuana use are important to monitor marijuana use before and after the passage of the State’s medical marijuana law. In this section, we examine marijuana use for adolescents using data from the 2017 YRBSS, and adults using data from 2017 NSDUH. Furthermore, we present the prevalence levels and patterns of marijuana use in Florida, overall and by ME Regions using the 2018 FYSAS data.

**Marijuana Use in Adolescents**

Marijuana use for adolescents in Florida was compared with national data from YRBSS. Patterns and time trends of marijuana use in Florida, overall and by the ME Regions was then examined using 2018 FYSAS data.

**Prevalence of Lifetime Marijuana Use**

Starting with the 2018 Annual Report and data from the 2017 YRBS, we updated the lifetime marijuana use for adolescents in Florida and the United States and presented the results in Figure 18. Data from the figure indicate that the prevalence of lifetime marijuana use among high school students in Florida was lower than the national average rate during 2007-2017. By the year 2017, the lifetime use prevalence rate was 34.5% for Florida high school students, lower than 35.6%, the rate for all high school students in the United States. However, the lifetime use prevalence rate for Florida high school students declined slower than the national average (36.6-34.5=2.01% vs. 38.6-35.6=3.0%) during 2015-2017. Attention should be paid to this slowing down in lifetime use prevalence among high school students in Florida in light of the 2016 passage of the state medical marijuana law.
Prevalence of Marijuana Use in the Past 30 Days

Marijuana use in the past 30 days has been commonly used to reflect current levels of use in a population. With the most recently available data from the NSDUH, the prevalence rates of marijuana use in the past 30 days among adolescents aged 12-17 years in Florida and the United States are presented in Figure 19. During the past 30-day marijuana use among adolescents in both Florida and the United States as a whole showed an increasing trend during 2006-2017, although the rates were below 8%. Second, during the period from 2015 to 2017, the prevalence rate of 30-day marijuana use among Florida adolescents changed from a declining trend to an increasing trend with a below-national prevalence rate of 6.8% in 2014-15, then increased to 7.5% in 2016-17, higher than the national average. Third, changes in past 30-day marijuana use among adolescents in Florida and the US were small during the whole 2006-2017 period. The prevalence rates in Florida were lower in 2007-2012 and 2014-2015 periods compared to the national average. Also, a recent increasing trend was observed during 2015-2017 in Florida. The increasing trend in marijuana use among adolescents in Florida was consistent with the period when the state passed and implemented the state medical marijuana law.
Figure 19. Prevalence of Past 30-Day Marijuana Use among Adolescents 12-17 Years of Age in Florida and the United States, 2006-2017. Note 1) Updated with data from NSDUH 2017; 2) State rates from NSDUH were obtained by aggregating data from two consecutive years to ensure robust estimates.

Marijuana Use in Adolescents within Florida and Across ME Regions

Using the 2018 FYSAS data, rates of adolescents’ marijuana use (lifetime use and past 30-day use), including levels and time trends of use from 2006 to 2018, overall, by gender and school grades, were examined. Figure 20 presents the data on lifetime marijuana use among adolescents in Florida, overall, by gender and middle/high school. As opposed to information in Figure 19, the FYSAS data indicates a progressive decline in lifetime use marijuana use since 2010. The declining trend was more pronounced in high school boys; with the declining trend being smaller for girls and middle school students. The declining trends persisted between 2016 and 2018 overall and by gender and grades except for middle school students, for whom a slightly increasing trend was observed. As expected, high school students were more likely to use marijuana than middle school students. However, the sex differences in lifetime marijuana use reversed in 2016—girls were less likely than boys to use before 2016 but more likely than boys to use after 2016.
The updated prevalence rates of past 30-day marijuana use with the FYSAS data are presented in Figure 21. Consistent with lifetime use as presented in Figure 20, the rate of past 30-day marijuana use also showed a declining trend during 2010-2018. High school students were more likely than middle school students to use marijuana in the past 30 days. Additionally, there was a progressive decline in gender differences in marijuana use with the 30-day prevalence for girls in 2018 higher than that of boys.
Figure 21. Trends in Past 30-Day Marijuana Use among Adolescents 11-18 Years Old in Florida, 2006-2018, Overall and by Gender and Middle/High School Note: Updated with data from FYSAS 2018.

Marijuana Use by ME Regions

Using data from the 2018 FYSAS data, Figure 22 compares the levels of past 30-day marijuana use, overall and by sex, and by Managing Entity Regions in 2018. Overall, 10.9% of adolescents aged 11-18 years in Florida ever used marijuana, and girls were more likely to use marijuana than boys (11.0% vs. 10.7%). Among the seven Managing Entity Regions, the prevalence rate of past 30-day marijuana use was highest for the adolescents in the region covered by Southeast Florida Behavioral Network (13.2%), and lowest in the region covered by Central Florida Cares Health System (8.5%). Girls had higher prevalence rates than boys in five of the seven regions except the regions covered by Central Florida Behavioral Health Network and Central Florida Cares Health System.
Figure 22. Prevalence of Past 30-Day Marijuana Use among Adolescents 11-18 Years Old in Florida and By Managing Entity Regions, 2018, Overall and by Gender. Note: Updated with data from FYSAS 2018.

Figure 23. Sex Differences in Adolescents who Reported Having Used Marijuana the First Time by age 13 in Florida, Overall and by the Managing Entity Regions. Note: Updated with data from FYSAS 2018.

Results in Figure 23 show the percentage of adolescents in Florida reporting first used marijuana by 13 years of age or younger by ME Regions. Overall, more boys than girls-
initiated marijuana use before age 13 across five of the seven ME Regions. For adolescents covered by South Florida Behavioral Health Network where a reverse pattern appeared—girls in this region were nearly two times more likely to initiate marijuana use than boys (10.7% for girls and 5.9% for boys).

**Figure 24** reflects the trend of lifetime use and past 30-day synthetic marijuana use among high school students by using the [FYSAS data from 2012 to 2018](#). A consecutive decline was observed for lifetime synthetic marijuana use with the prevalence rates changing from 13.0% in 2012 to 3.5% in 2018. Past 30-day use of synthetic marijuana dipped in 2016 (1.0%).

![Figure 24: Prevalence of Lifetime and Past 30-Day Synthetic Marijuana Use among High School Students in Florida](image)

**Figure 24. Prevalence of Lifetime and Past 30-Day Synthetic Marijuana Use among High School Students in Florida.** Note: Updated with data from FYSAS 2018.

### Marijuana Use in Adults

Data from the [NSDUH](#) were used to examine the levels and trends of past 30-day marijuana use among adults in Florida and to compare them with the national average from 2006-07 to 2016-17. Results are presented in **Figure 25**. Of note, the reported marijuana use in the past 30 days was lower for persons 18 years of age and older in Florida than those in the United States overall for the entire period. Additionally, reported marijuana use for adults in the United States increased from 8.5% in 2015 to 9.8 in 2017 (0.65% increase per year) while Florida’s rate increased from 7.7% in 2015-16 to 8.8% in...
2016-17 (1.1% increase per year). In other words, the rate of marijuana use among Florida adults, though lower than the United States in the past decade, is increasing faster than the national trend after 2015. Part of this faster increase in adult marijuana use could be in part due to more people using medical marijuana. Additional data are needed to exam this quicker-than-national increasing rate in marijuana use.

Data from the 2017 Florida Medical Examiners Commission Report captures data regarding marijuana use in adults by detecting cannabinoids (active component of marijuana) using the postpartum toxicology method. Data from the 2017 report indicate that cannabinoids were detected in 2,367 (19%) among the 12,439 deaths in Florida in 2017, and marijuana was the fourth of seven most frequently detected drugs in Florida. Compared to the 2,292 cases in 2016, there was a 3.3% increase in detected marijuana exposure in 2017.

The 2017 Florida Medical Examiners Commission Report also revealed that synthetic cannabinoids were detected in 76 (0.6) of all the deceased and of those, 69 (90.8%) were caused by synthetic cannabinoids. In 2016, synthetic cannabinoids were detected only in 22 deceased persons, this number increased by 54 to 76, or a 245% increase in 2017.
Furthermore, deaths caused by synthetic cannabinoids increased from 17 in 2016 to 69 in 2017, a net increase of 52 cases or 306% increase.

The alarming increase in synthetic marijuana exposure among deceased persons in Florida is an important piece of information. One reason for the substantial increase in synthetic cannabinoids use could be due to the increased testing in 2017 as indicated in the [2017 Florida Medical Examiners Commission Report](#). In addition to increases in testing, other factors should be considered in future monitoring efforts because data from the NSDUH presented in Figure 25 indicate a faster increase in marijuana use among adults in Florida than in the United States.

Research findings indicated that using marijuana will increase the risk factor for adolescents to use other substances ([Yu, Chen, Wang, 2018](#)). To protect adolescents, attention should also be directed toward reducing marijuana use among adults in Florida since there was a quicker-than-national increasing rate in marijuana use among adolescents in Florida as indicated in Figure 19.
SECTION V. PATTERNS AND TRENDS IN NOVEL PSYCHOACTIVE SUBSTANCE USE

A challenge to substance use prevention in Florida as well as the United States is the spread of synthetic drugs, collectively known as novel psychoactive substances. They include a large group of new drugs that have been designed to mimic illicit drugs, including marijuana, cocaine, and ecstasy. These substances are newly developed chemicals to replace legally-banned substances. The psychoactive substances develop at an unprecedented rate with 643 new substances registered in December 2015 in the United Nations Office of Drugs and Crime Early Warning Advisory. The novel psychoactive substances have been reported globally since 2016. Synthetic cannabinoids use among adults was reported in the previous section. In this section, we examine the use of five synthetic drugs (tryptamines, piperazines, synthetic cathinones, phenethylamines, and synthetic opioids-fentanyl analogs) using the FYSAS data for adolescents and data from the 2017 Florida Medical Examiners Commission Report for adults.

Tryptamines

Tryptamines are a group of hallucinogens. Natural tryptamines are common in prepared dried or brewed mushrooms, and tryptamine derivatives are sold in various formats, including capsule, tablet, powder, or liquid. The commonly known products of tryptamines include LSD, DMT, and Psilocybin, or 5-MeO-DiPT.

The 2018 FYSAS provides data on lifetime use and past 30-day use of LSD, PCP or hallucinogenic mushrooms. Figure 26 presents the prevalence rates of using these synthetic substances among adolescents in Florida from 2010 to 2018. There was a continuous decline in tryptamine type of synthetic drug use among Florida adolescents measured with both lifetime use and past 30-day use with more reductions in lifetime use than in past 30-day use.

Detected tryptamine exposure in a deceased person through postmortem laboratory testing provided objective data on tryptamine use. Data from the 2017 Florida Medical Examiners Commission Report with postmortem test results indicate tryptamines were detected in 4 of the 12,439 deaths in Florida in 2017 while in 2016 tryptamines was detected only in one death.
Figure 26. Prevalence of Lifetime and Past 30-Day Use of LSD, PCP or Hallucinogenic Mushrooms among adolescents in Florida. Note: Updated with data from FYSAS 2018.

**Phenethylamines and Piperazines**

Phenethylamines are a class of substances with psychoactive and stimulant effects. Typical phenethylamines include amphetamine, methamphetamine, and MDMA. Street names for some phenethylamines include ‘Europa’ for 2C-E; ‘4-FMP’, ‘para-fluoroamphetamine,’ ‘RDJ’ for 4-FA; and ‘4-MMA’, ‘Methyl-MA’ for PMMA. Phenethylamines are usually available in the form of pills, and ingestion is the most common route of administration of phenethylamines.

Piperazines are another group of chemical compounds that mimic the effects of Ecstasy. The most prevalent piperazines in Florida and the United States include BZP, TFMPP, DBZP, and MCPP.

Data from the [2017 Florida Medical Examiners Commission Report](#) indicates phenethylamines/piperazines were detected in 36 persons among the total 12,439 deaths in Florida in 2017; of these cases, 18 were caused by the use of phenethylamines/piperazines. In 2016, piperazines were detected in 46 cases of all the deaths examined. The number of deaths decreased from 46 to 36, or 21.7%, in cases of laboratory-detected piperazines exposure from 2016 to 2017.
Synthetic Cathinones

Synthetic cathinones are human-made stimulants chemically related to cathinone, which is found in the khat plant. The khat plant is a shrub growing in East Africa and Southern Arabia. Synthetic cathinones are commonly known as “bath salts” and are sold in the form of a white or brown crystal-like powder. Flakka is a version of synthetic cathinones. Based on previous reports, synthetic cathinone use is less prevalent in adolescents than in adults in Florida.

Data from the FYSAS 2018 report indicates that 0.8% of Florida high school students reported using Flakka in their lifetime and 0.4% reported having used Flakka in the past 30 days. With regard to synthetic cathinone exposure in adults, data from the 2017 Florida Medical Examiners Commission Report indicates that among the 12,439 deaths examined in 2017, cathinones were detected in 183 (1.5%) deceased persons. Among these 183 deaths with cathinone exposure, 100 deaths (54.6%) were caused by the drug. Cathinones were detected in 102 deaths in 2016, compared to the 183 cases in 2017, suggesting a 79.4% increase in the number of detected persons with cathinone exposure from 2016 to 2017.

Fentanyl Analogs

Fentanyl analogs is a group of synthetic opioids structurally similar to fentanyl. Many analogs of fentanyl are pharmacologically more potent than fentanyl. Carfentanyl (Wildnil), one of the fentanyl analogs, is an odorless, white powder, and is one of the most potent opioids known and used commercially. It has a potency approximately 10,000 times that of morphine, 100 times that of fentanyl, and 50 times that of heroin. Carfentanil is also the analog of fentanyl approved for veterinary use.

Based on data from the 2017 Florida Medical Examiners Commission Report, fentanyl analogs remained the number one of seven most frequently detected drugs among deceased persons in Florida. As shown in Figure 27, in 2017, fentanyl analogs were detected in 1,685 (13.5%) deceased persons among the 12,439 that went through the laboratory toxicology testing. Of the 1,685 fentanyl analogs positive, 1,588 (94.2%) deaths were caused by the drug. Compared to the data in 2016, the number of deaths positive for fentanyl analogs in 2017 increased by 64.2%, and the number of deaths caused by the drug increased by 65%.
Figure 27. Fentanyl Analogs Detected from Postmortem Toxicology Tests and Deaths Caused by Fentanyl Analogs in Florida, 2016 and 2017. Note: Updated with data from 2017 Florida Medical Examiners Commission Report.
SECTION VI. PATTERNS OF AND TRENDS IN OPIOID USE

Opioids are a class of drugs that include heroin, fentanyl and pain relievers available legally by prescription, such as oxycodone (OxyContin®), hydrocodone (Vicodin®), codeine, morphine, and many others. As reported by the National Institute on Drug Abuse, every day, more than 130 persons in the United States die after overdosing on opioids. The misuse of and the addiction to opioids—including prescription pain relievers, heroin, and synthetic opioids such as fentanyl—is a serious national crisis that affects public health as well as social and economic welfare. In Florida, the opioid-related overdose death rate was 14.40 per 100,000 population in 2016, and the rate of opioid prescription per 100 persons was 62.80.

Deaths due to opioid overdose have been recognized as the main cause of the life expectancy decline in the United States since 2016. The 2017 Florida Medical Examiners Commission Report indicates that there were a total of 6,178 opioid-related deaths in 2017 compared to 5,725 in 2016 - an increase of 8% in one year. In addition, the number of deaths attributed to opioids was 4,280 in 2017 compared to 3,922 in 2016, which suggests an increase of 9% from 2016 to 2017.

Nonmedical Use of Prescriptive Opioids

Detected opioids from deceased persons through postmortem toxicological tests provide partial evidence of approximate nonmedical use of prescription opioids. Data results from the 2013-2017 Florida Medical Examiners Commission reports are presented in Figure 28. Data in the figure shows both the total number and percentage of deceased persons who were detected opioids positive increased over time. The number of cases detected opioids positive increased from 5,085 in 2013 to 8,855 in 2017. From 2016 to 2017, there was an increase of 283 (from 8,572 in 2016 to 8,855 in 2017) cases or a 3% increase from 2016 to 2017.

Likewise, the percentage of deceased persons who were detected opioids positive increased from 61.4% in 2013 to 71.2% in 2017 with an annual increase of 2.5%. However, this percentage showed a slightly declining trend during 2016-2017. Epidemiologically, relative to the total number of cases detected opioid positive, the percentage provides a better measure of the time trends in nonmedical use of opioid use. Data in Figure 28 thus indicate that nonmedical opioid use in Florida declined during 2016-17.
To obtain knowledge on different types of opioid use, data was analyzed from the 2013-2017 Florida Medical Examiners Commission reports on 11 types of opioids detected among the deceased persons during 2013-2017. Results are presented in Figure 29. Of the 11 opioids, the three most frequently detected were fentanyl, morphine, and oxycodone. Of these three, the number of cases detected fentanyl positive increased from the very low level in 2013 to the highest level in 2017. Among the less frequently detected opioids, hydromorphone, codeine, meperidine, buprenorphine, and oxymorphone also showed an increasing trend in 2013-17.

There was a distinctive trend in the 11 opioids detected between 2016 and 2017. Among the three most commonly detected opioids, there was a sharp increase in the number of cases with fentanyl during the period while the number of cases with morphine and oxycodone declined. Of the eight less frequently detected opioids, four (hydromorphone, meperidine, tramadol, and oxycodone) showed declining trends and three (hydrocodone, codeine, and meperidine) showed an increasing trend between 2016 and 2017.

Figure 30. Number of Deaths with Opioids Detected, and the Number of Deaths and % Attributed to the Detected Opioids in Florida, 2017. Note: Updated with data from 2017 Florida Medical Examiners Commission Report.
In addition to the total cases detected positive for specific opioids, data on causes of death attributing to individual opioid types are also useful. Data results in Figure 30 indicate that the two most frequently detected opioids, fentanyl, and morphine, were also associated with the greatest number of deaths. For example, among all those deaths whose toxicological test was positive for fentanyl, 83.5% were due to an overdose of the drug; and among all those deaths whose toxicological test was positive for morphine, 64.5% were due to an overdose of the drug. One opioid with a low frequency but a high rate of death was methadone. Although the number of deaths with methadone positive was among the lowest (below 500), 58.8% of the deaths among these persons were attributed to methadone overdoses.

Heroin Use

Heroin is an opioid drug made from morphine, a natural substance extracted from the seed pod of the various opium poppy plants grown in Southeast and Southwest Asia, Mexico, and Colombia. The common ways heroin is used includes injecting, sniffing, snorting and smoking.

Low Rate of Heroin Use in Adolescents

The NSDUH and the FYSAS reported heroin use among adolescents in Florida and the United States as below 0.5%. Among the ME Regions in Florida, the most recent 2018 FYSAS indicated that there was no reported heroin use for adolescents in counties covered by the Broward Behavioral Health Coalition, Inc. and Central Florida Cares Health System, Inc.

Heroin Use in Adults

Data from the report of Patterns and Trends of Substance Use within and Across the Regions of Florida, May 2018, indicated rapid increases in a number of deaths detected heroin positive through postmortem toxicological testing since 2011. In this report, heroin trends were examined from 2013 to 2017 using data from the 2013-2017 Florida Medical Examiners Commission reports, with results presented in Figure 31. Results in Figure 31 indicate that the increasing trends in the total number of deaths with heroin detected increased slower from 2016 to 2017 compared to the increasing trend before 2016. From 2013 to 2016, the number of deaths with heroin detected increased from 199 in 2013 to 1,023 in 2016 with an average annual increase of 206; while there were only 34 more deaths with heroin detected from 2016 to 2017.
Relative to the total number of deaths detected with heroin, the increasing trend in the number of deaths attributed to heroin before 2016 was replaced by a slight decline from 2016 to 2017. The total number of deaths attributed to heroin in 2016 was 952, accounting for 93% of the total deaths detected heroin positive; and this number declined to 944 in 2017, accounting for 89% of the total.

**A Caveat**

It is worth noting that caution is needed when interpreting data reported in Figure 30 regarding heroin use. After intake, heroin is rapidly metabolized to morphine. At the time when the postmortem test was conducted, many of the persons who used heroin might not be detected leading to underreporting of heroin use, and consequently, an overestimate of morphine use and morphine-related death as cautioned in the 2017 Florida Medical Examiners Commission Report.
Cocaine is a highly addictive stimulant drug, and it is made from the leaves of the coca plant which is native to South America. Cocaine looks like a fine, white, crystal powder. Drug dealers often mix it with other drugs, including the stimulant amphetamine, and the synthetic opioids (e.g., fentanyl). Cocaine has some popular nicknames, including blow, coke, crack, rock, and snow. The overdose of cocaine could lead to death.

**Cocaine Use in Adolescents**

**Trend in Cocaine Use in Adolescents**

To check levels and trends of cocaine use among adolescents in Florida, we compared the reported use from NDSUH data for 2006-17 period (see Figure 32). In the figure below, the rates for Florida reflect the two-year average to ensure robust estimates as used by the NSDUH. For example, the rate of 1.7 for Florida was estimated as an average of 2006 and 2007.

![Figure 32. Prevalence of Past-Year Cocaine Use among Adolescents 12-17 Years of Age in Florida and the United States. Note 1) Updated with data from NSDUH 2017; 2) State rates from NSDUH were obtained by aggregating data from two consecutive years to ensure robust estimates.](image-url)
Overall, the prevalence rates of past-year cocaine use among adolescents aged 12-17 years were decreasing during 2006-2017 in both Florida and the US. Adolescents in Florida had lower prevalence rates of cocaine use than the national average except for the years before 2008, and between years 2012-14. It is worth noting that the quicker-than-national decline rates discovered in 2013-14 leveled off since 2015-16.

**Trend in Adolescent Cocaine Use by Gender and School Grade**

Using the **FYSAS** data, the prevalence of lifetime cocaine use in adolescents 11-18 years old in Florida was examined from 2010 to 2018, overall and by gender and school grade. As shown in **Figure 33**, the overall trend of lifetime cocaine use shows a declining trend during the period with a slightly accelerated decline from 2016 to 2018. The lifetime rate of cocaine use was 1.8% in 2016, and this rate declined to 1.4% in 2018.

![Figure 33. Prevalence Rate of Lifetime Cocaine Use among Adolescents 11-18 Years Old in Florida, 2010-2018, Overall, and by Gender and Middle/High School](image)

Note: Updated with data from FYSAS 2018.

With regard to gender differences, from 2010-2018, boys were more likely to report having ever used cocaine in their lifetime than were girls, although the gender difference tended to shrink over time. With regard to school grade, as expected, high school students were 2-3 times more likely to have ever used cocaine in life compared to middle school students during this period and in 2018.
Adolescent Cocaine Use by ME Regions

Prevalence rates of cocaine use among adolescents in different ME Regions are useful for substance use prevention and treatment planning. Figure 34 presents the data from the 2018 FYSAS on the prevalence rates of adolescent cocaine use in the past 30 days by ME Regions within Florida. The FYSAS reported data of the seven ME Regions. The prevalence rates reported in the past 30 day use for adolescent in counties covered by four regions (the Big Bend Community Based Care, the Central Florida Behavioral Health Network, the Lutheran Service Florida and the Southeast Florida Behavioral Network) were higher than the state average. Adolescents in the BBHC reported no cocaine use in the past 30 days with the prevalence rate of 0. There were also gender differences in cocaine past 30-day use across the ME Regions. Statewide, boys were more likely to use cocaine than girls. With regard to ME Regions, boys were more likely to use cocaine than girls in three (the Central Florida Behavioral Health Network, the Lutheran Services Florida, and South Florida Behavioral Health Network) and a reverse gender pattern was observed in two ME Regions (Big Bend Community Based Care and Southeast Florida Behavioral Health Network).

Figure 34. Prevalence of Past 30-day Cocaine Use among Adolescents 11-18 Years of Age in Florida, Overall, by Gender and ME Regions. Note: Updated with data from FYSAS 2018.
Cocaine Use in Adults

Time Trends in Adult Cocaine Use

Data from the [Florida Medical Examiners Commission Report](#) was used to provide updated information on cocaine use among adults in Florida. As shown in Figure 35, Florida’s postmortem tests indicate the number of deceased persons with cocaine use showed an increase from 1337 to 3129 between 2013 – 2017. This means the number of deceased persons with cocaine use doubled in this five-year period. Likewise, the number of deaths caused by cocaine use increased from 607 to 2,012 between 2013-2017. This statistic more than tripled during the same period. Consistent with the increased counts in the number of deaths with detected cocaine use, the percentage of death attributed to cocaine use in adults in Florida also increased progressively over time.

![Figure 35. Number of Deaths with Cocaine Detected, and the Number and % of Deaths Attributed to Cocaine in Florida, 2013-2017. Note: Updated with data from 2017 Florida Medical Examiners Commission Report.](#)

We have to point out that relative to the increasing trend from 2013 to 2016, there was a slowing down in cocaine use among adults in Florida from 2016 to 2017. There was a 9%
increase in the number of deaths with cocaine detected in 2017 relative to 2016, and 14% increase in the number of deaths attributed to cocaine use in 2017 relative to 2016.

Patterns and Trends of Adult Cocaine Use across ME Regions

Figure 36 provides detailed patterns and time trends of cocaine used detected through postmortem toxicological tests derived from 2003-2017 Florida Medical Examiners Commission reports. The time trends in cocaine use during the period varied by ME Regions. While the number of deaths detected with cocaine in regions served by Lutheran Services Florida remained the lowest, the number in the regions served by Central Florida Behavioral Health Network remained the highest with other regions remaining between the two.

Figure 36. Number Deaths with Cocaine Detected through Postmortem Toxicological Tests by ME Regions in Florida, 2013-2017. Note: Updated with data from 2017 Florida Medical Examiners Commission Report.

The data in Figure 36 can be used to review trends per ME region but should not be used for comparisons between ME regions. When comparing regions with different population numbers, rates are the appropriate measure.

While Figures 35 and 36 show that Florida experienced an increase in numbers and rates of deaths with Cocaine detected, the rate of increase has slowed when compared with previous periods, meaning it is increasing at a lower rate. These changes indicate there
were apparent reductions in cocaine use among adults across all seven ME Regions except CFCHS. Of the remaining ME regions, cocaine use in three showed a declining trend (i.e., LSF, SFBHN, and BBHC), and three showed a slowing down in the increasing trends (i.e., CFBHN, BBCBC and SEFBHN).
SECTION VIII. PATTERNS AND TRENDS IN METHAMPHETAMINE USE

Methamphetamine is a stimulant drug in a white, bitter-tasting powder or a pill. It is also known as “chalk,” “crystal,” “ice,” “meth,” “crank,” “speed” and “tina.” Methamphetamine is chemically similar to amphetamine, and it will be metabolized to amphetamine. The common ways to use methamphetamine include inhaling/smoking, swallowing, snorting and injecting the powder that has been dissolved in water/alcohol. The overdose of methamphetamine can result in stroke, heart attack, or organ problems, such as kidney failure, or even death.

Methamphetamine Use in Adolescents

Relative to alcohol, marijuana, tobacco, methamphetamine use is less prevalent in adolescents. By adding the 2018 FYSAS data, Figure 37 depicts the time trends in methamphetamine use in lifetime and past 30 days for middle and high school students from 2006 to 2018 in Florida.

Figure 37. Prevalence of lifetime and past 30-day methamphetamine use in Florida. Note: Updated with data from 2018 FYSAS.

Results in Figure 37 indicate that after a 10-year progressive decline in lifetime use from 2006 to 2016, the prevalence rate remained at 0.7%, a low level from 2016 to 2017. Meanwhile, the prevalence rate of methamphetamine use remained at 0.5% from 2010 to 2014, then declined to 0.4% in 2016 and remained at the same level till 2018.
Methamphetamine Use in Adults

Data from the 2013-2017 Florida Medical Examiners Commission Reports are used to update the trends in methamphetamine use among adults in Florida. As the results in Figure 38 indicate, there was a decline in both the number of deaths with toxicologically detected methamphetamine use and deaths attributed to methamphetamine from 2016 to 2017 compared to the trend from 2015 to 2016. In 2017, there were a total of 858 deaths with methamphetamine detected in their body, and of those, 464 deaths were attributed to the drug, accounting for 54.0% of the total.

Figure 38. Number of Deaths with Methamphetamine Detected, and the Number and % of Deaths Attributed to the Drug Florida, 2013-2017. Note: Updated with data from 2017 Florida Medical Examiners Commission Report.
SECTION IX. PATTERNS AND TRENDS IN MEDICAL USE OF PRESCRIPTION BENZODIAZEPINES

Benzodiazepines are a group of prescription sedative-hypnotic drugs which are commonly prescribed for stress, anxiety, seizures, alcohol withdrawal or insomnia. Benzodiazepines help to calm or sedate a person by improving the inhibitory neurotransmitter GABA located in the brain. Most commonly seen benzodiazepines include alprazolam, diazepam, and clonazepam.

Time Trends in Use

Use of benzodiazepines prescribed for medical purposes among adults in Florida is also measured with data from the 2013-17 Florida Medical Examiners Commission reports. Results in Figure 39 indicate a reduction in benzodiazepine use among people in Florida from 2016 to 2017. The number of deaths with benzodiazepine detected declined from 5,167 in 2016 to 5064 in 2017. Similarly, the number (from 1,421 in 2016 to 1,374 in 2017) and percentage (from 27.5% in 2016 to 27.1% in 2017) of deaths attributed to benzodiazepine declined.

Figure 39. Number of Deaths with Benzodiazepines Detected, the Number and % of Deaths Attributed to the Drug in Florida, 2013-2017. Note: Updated with data from 2017 Florida Medical Examiners Commission Report.
Use of Different Types of Benzodiazepines

According to data from the 2017 Florida Medical Examiners Commission Report on the types of benzodiazepines detected through postmortem toxicological tests, the proportion of 10 benzodiazepines is presented in Figure 35. Results in the figure indicate that alprazolam was the prominent benzodiazepine used in 2017. Alprazolam was detected in 1,889 deaths, accounting for 37% of the total. The next five benzodiazepines were: nordiazepam (638, 13%), diazepam (607, 12%), clonazepam (543, 11%), Temazepam (457, 9%), and oxazepam (335, 7%). These six most commonly used benzodiazepines account for 81% of the total. Three benzodiazepines detected but not shown in Figure 39 were: estazolam (4), triazolam (4) and flunitrazepam (1).

Figure 40. Number and Proportion of Different Benzodiazepines Detected among Deceased Persons in Florida, 2017. Note: Updated with data from 2017 Florida Medical Examiners Commission Report.

Changes in Alprazolam and Diazepam Use in 2016-17

Since alprazolam and diazepam were the two most commonly prescribed drugs in 2017, Table 1 presents changes in these two benzodiazepines from 2016 to 2017 in Florida, overall and by ME Regions.
Table 1. Number of occurrences and percent change of Alprazolam and Diazepam in decedents in Florida and by the managing entity regions

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<th>ME Regions</th>
<th>Alprazolam</th>
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<th>Diazepam</th>
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Note: Updated with data from 2017 Florida Medical Examiners Commission Report.

Results in the table show that overall, there was a 2.1% increase in alprazolam use with the number of deaths being detected with alprazolam increasing from 1851 in 2016 to 1889 in 2017. When compared by ME Regions, substantial increases were observed in three ME Regions (the Southeast Florida Behavioral Network, 26% increase; the Lutheran Services Florida, 15.4% increases; and the Central Florida Cares Health System, 10.0% increase). Contrary to the state trend, small to moderate declines were observed in the remaining four ME Regions, with the largest decline (15.3%) being observed in the counties covered by the Big Bend Community Based Care, Inc.

Relative to alprazolam, the use of diazepam in Florida showed a declining trend from 2016 to 2017. When examined by ME Regions, half of the regions had a declining trend, and half showed an increasing trend. Of the seven ME Regions, the largest reduction was observed in the Big Bend Community Based Care (42.9% reduction), followed by the Lutheran Services Florida (18.1% reduction).
SECTION X. DATA SOURCES


Centers for Disease Control and Prevention. Youth Risk Behavior Surveillance System (YRBSS). Youth Online Data Analysis Tool.

Patterns and Trends of Substance Use within and Across the Regions of Florida. Annual Update Report June 2018

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