Michigan Epidemiological Profile

December 2021

Behavioral Health and Developmental Disabilities Administration

Office of Recovery Oriented Systems of Care

M**DHHS
Michigan Department OF Health & Human Services

Executive Summary

The Michigan Epidemiological Profile describes Michigan residents' substance use consequences, consumption patterns and intervening variables and mental health well-being and establishes a method for monitoring and improving outcomes. The profile is organized by five different topic areas with 42 different indicators. The data reported in this document are based on numbers provided by state and federal sources. The profile provides the most current information, with trend data, if available.

The findings for Michigan youth include:

- Between 2011 and 2020, alcohol-related traffic crashes involving at least one driver, 16 to 20 years of age, who had been drinking, caused an annual average of 98 deaths and serious injuries.

- In 2019, an estimated 25.4 percent of Michigan ninth through 12th graders were current drinkers and 11.2 percent of them were binge drinkers.

- In 2019, 4.5 percent of Michigan ninth through 12th graders smoked cigarettes on one or more of the past 30 days and 0.6 percent of students had smoked daily.

- In 2019, 20.8 percent of Michigan ninth through 12th graders use electronic vapor products in the last 30 days.

- In 2020, 608 youths 12 to 17 years of age, were admitted to treatment for marijuana as the primary substance use in Michigan, accounting for 60.7 percent of all substance use disorder treatment admissions.

- In 2019, 36.4 percent of Michigan youth reported having depressive feelings, and 7.8 percent of students reported having attempted suicide one or more times.

The findings for Michigan's adult population include:

- Between 2011 and 2020, alcohol-related traffic crashes involving at least one driver, 21 years of age or older, who had been drinking, caused an annual average of 1,077 deaths and serious injuries.

- In 2019, an estimated 6.2 percent of individuals 18 years of age or older were heavy drinkers and 17.9 percent of them were binge drinkers.

- In 2019, the opioids and prescription drug overdose death rates were much higher for adults 35 to 54 years of age and adults 21-34 years of age, compared to other age groups.

- In 2020, opioid prescription rate was 67.9 per 100 people and 37 percent lower than the peak rate at 107.7 per 100 in 2015.

- In 2020, opioids (heroin or other opiates) totaled 23,168 treatment entrances for individuals 21 years of age or older, accounting for 36.1 percent of all substance use disorder treatment admissions.

- According to 2018/2019 estimates, 8.2 percent of adults 18 years of age and older reported experiencing a major depressive episode and 5.0 percent of adults reported serious mental illness.

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Introduction

The data reported in this document is based on numbers provided by state and federal sources. The types of data examined include: magnitude (the number of people affected), prevalence (substance use rates), trends (change in rates over time), and comparison data (with nation, other states, per gender and age, etc.). The data are organized by substance and then by age group. The format reflects the same organizational pattern as the state's planning tool, and the logic model. Logic models present a systematic picture of the relationships between substance use and adverse outcomes. Both use and outcomes are influenced by intervening variables, such as risk and protective factors, reflected in the logic models. Thus, this document reflects the logic model and presents information in the following order:

- **Substance** (the magnitude of the problem; the drug of choice).

- **Consequences** (the effects of use, misuse, and abuse of a substance on quality-of-life: health, mortality, crime, dependence, and accidents).

- **Consumption Patterns** (prevalence, use patterns).

- **Intervening Variables** (risk/protective factors, and other mediating resources).

Additionally, several mental health indicators were included in this document. Depressive disorders commonly occur together with an anxiety disorder or substance use disorder.[1] For the past decade, the high prevalence of co-morbidity of substance use disorders with mental or emotional disorders has been significantly recognized in research and treatment.[2] In addition, depression and other psychiatric illnesses are the most common risk factors of suicide.[2] Almost all people who commit suicide have a diagnosable mental disorder, most commonly a depressive disorder or a substance use disorder.[3] Depressive disorders are a significant public health issue. Current predictions indicate that by 2030 depression will be the leading cause of disease burden globally.[4,5]

The creation of the Michigan Epidemiological Profile was based upon the collaborative effort of Michigan's State Epidemiological Outcomes Workgroup (SEOW). The SEOW consists of representatives from state departments, agencies, and local organizations. Each organization and individual in the SEOW provided their expertise in effectively collecting, analyzing, interpreting, and communicating these data throughout the development of the profile. The SEOW is grateful for the time and attention given to the inception of the profile by the Bureau of Epidemiology and Population Health.

1. National Institute on Drug Abuse (NIDA). (2021). Common Comorbidities with Substance Use Disorders Research Report. Retrieved from https://www.drugabuse.gov/publications/research-reports/common-comorbidities-substance-use-disorders/part-1-connection-between-substance-use-disorders-mental-illness
2. National Institute on Drug Abuse. (2010). Comorbidity: addiction and other mental illnesses. Retrieved from http://www.nida.nih.gov/PDF/RRComorbidity.pdf
3. Johns Hopkins Medicine. (2021). Mental Health Disorder Statistics. Retrieved from https://www.hopkinsmedicine.org/health/wellness-and-prevention/mental-health-disorder-statistics
4. Cassano P, Fava M. Depression and public health: an overview. J Psychosom Res. 2002 Oct;53(4):849-57. doi: 10.1016/s0022-3999(02)00304-5. PMID: 12377293.
5. World Health Organization (WHO). (2011). Global burden of mental disorders and the need for comprehensive, coordinated response from health and social sectors at the country level. Retrieved from https://apps.who.int/gb/ebwha/pdf_files/EB130/B130_9-en.pdf

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Data Sources

Table 1. Available Indicators and Data Sources		
Areas of Focus	**Youth Indicators and Data**	**Adult Indicators and Data**
Alcohol Use	• Fatal Traffic Crashes of Alcohol Impaired Underage Drivers (Univ. of Michigan Transportation Research Institute {UMTRI}/Department of State {DOS}) • Current Alcohol Use and Binge Drinking (Michigan Youth Risk Behavior Survey {MiYRBS}) • Early Initial Use (MiYRBS) • Perceived Risk of Binge Drinking (National Survey on Drug Use and Health{NSDUH}) • Drinking and Driving (MiYRBS) • Riding with a Drinking Driver (MiYRBS) • Alcohol Primary Substance Use (Treatment Episode Data Set {TEDS})	• Fatal Traffic Crashes of Alcohol Impaired Drivers (UMTRI/DOS) • Current Alcohol Use, Binge Drinking, and Heavy Drinking (Michigan Behavioral Risk Factor Surveillance System{MiBRFS}) • Drove After Drinking (MiBRFS) • Alcohol Primary Substance Use (TEDS)
Tobacco Use	• Current Tobacco Use and Daily Cigarettes Use (MiYRBS) • Perceived Risk of Smoking (NSDUH) • Early Initial Use (MiYRBS) • Electronic Vapor Product Use (MiYRBS)	• Current Tobacco Use (MiBRFS) • Electronic Vapor Products Use (MiBRFS) • Lung Cancer Mortality and Morbidity (Michigan Vital Statistics)
Opioid and Other Drug Use	• Nonmedical Use of Pain Relievers (NSDUH) • Opioid/Prescription Drug Primary Substance Use (TEDS) • Fatal Traffic Crashes of Drug Impaired Underage Drivers (UMTRI/DOS)	• Opioid Prescriptions (Michigan Automated Prescription System) • Opioid/Prescription Drug Overdose Death Rate (vital statistics) • Opioid/Prescription Drug Primary Substance Use (TEDS) • Fatal Traffic Crashes of Drug Impaired Drivers (UMTRI/DOS)
Marijuana Use	• Past Month Marijuana Use (NSDUH) • Perceived Great Risk (NSDUH) • First Use of Marijuana (NSDUH) • Marijuana treatment (TEDS)	• Past Month Marijuana Use (NSDUH) • Perceived Great Risk (NSDUH) • Marijuana treatment (TEDS)
Mental Health Indicators	• Depressive feelings (MiYRBS) • Suicide Attempts (MiYRBS)	• Major Depressive Episode (National Survey on Drug Use and Health {NSDUH}) • Serious Mental Illness (NSDUH) • Suicidal Thoughts (NSDUH)

Michigan Overview

In 2019, the estimated population of Michigan was 9,986,857.[1] Approximately, 81.0 percent of the state's population is white, 15.3 percent African American, 5.3 percent Hispanic, 4.1 percent Asian/Pacific Islander, and 1.5 percent Native American. English is the primary language spoken at home by 90.0 percent of the residents of Michigan, followed by languages other than English at 10.0 percent, which includes 2.9 percent Spanish speaking.[1] An estimated 47 percent of Michigan's population resides in Southeast Michigan, according to the 2010 Census. Although minority populations reside throughout the state, there are concentrated sectors as follows: about 70 percent of all African Americans reside in Southeast Michigan, primarily in Wayne and Oakland counties; 43 percent of the total Hispanic population resides in the Southeastern area; and higher densities of Asian-Americans reside in Western and Southeast Michigan. In addition, many of the 12 federally recognized Native American tribes live in the Upper Peninsula of Michigan, northern tip of Lower Peninsula, Central Michigan, and Southwest Michigan as well as in Southeast urban area including the city of Detroit.[2] Almost 17.7 percent of the state's population is over 65 years of age, with 21.5 percent under 18 years of age. An estimated 50.8 percent of the state's population is female; 49.2 percent is male.[1]

Twenty-nine percent of Michigan's residents, 25 years of age and older, possess a high school diploma or equivalent, and 17.6 percent have attained an bachelor's degree. Over 90 percent of Michigan residents 25 years and older have attained high school graduate or higher.[1]

The percentage of individuals living below the poverty line in Michigan has changed over the past decade. Individual poverty rates for Michigan changed from 16.8 percent in 2010 to 13.0 percent in 2019, while the U.S. individual poverty rate was 15.3 percent and 12.3 percent respectively. The percentage of families living below the poverty line showed a similar trend. The family poverty rate for Michigan was 12.1 percent, while the U.S. family poverty rate was 11.3 percent in 2010. In 2019, Michigan's family poverty rate was estimated as 8.8 percent and that of the U.S. was 8.6 percent.[1]

The Behavioral Health and Developmental Disabilities Administration is located within the Michigan Department of Health and Human Services (MDHHS). The administration carries out responsibilities specified in the Michigan Mental Health Code and administers Medicaid waivers for people with developmental disabilities, mental illness, serious emotional disturbance and substance use disorders. The Office of Recovery Oriented Systems of Care (OROSC) coordinates substance use disorders services through 10 regional Prepaid Inpatient Health Plans (PIHP). OROSC, along with 10 PIHPs (See Appendix for PIHP map), contracts public funds for substance use prevention, treatment, and recovery initiatives.

1. U.S. Bureau of the Census. (2019). American community survey 1-Year Estimates. Retrieved from https://data.census.gov/cedsci/table?g=0400000US26&tid=ACSDP1Y2019.DP05
2. State of Michigan. (2014). Michigan Tribal Governments. Retrieved from http://www.michigan.gov/som/0,4669,7-192-29701_41909---,00.html.

Alcohol Consequences Among Youth

Indicator Description:

- **Motor Vehicle Crash Deaths and Serious Injuries Involving Alcohol**. Alcohol-related traffic crashes involving at least one driver 16 to 20 years of age who had been drinking and caused a death or incapacitating injury.

Why Indicator is Important: Youth may be killed or seriously injured as an impaired driver, and they may kill or severely injure others. Among drivers between 16 and 20 years of age from 2011 and 2020, the average alcohol-related traffic crash deaths was 0.04 per 1,000 licensed drivers, and the average alcohol-related traffic crash injuries reported was 0.17 per 1,000 licensed drivers during the same period.

Source: University of Michigan Transportation Research Institute/Center for the Management of Information for Safe and Sustainable Transportation and Michigan Department of State, 2011-2020.

Summary: The rate of alcohol-related traffic crash deaths among youth has decreased by 30 percent from 2011 to 2020. The rate of alcohol-related traffic crash serious injuries has decreased by 29 percent from 2011 to 2020. Alcohol-related traffic crashes involving at least one driver 16 to 20 years of age who had been drinking, caused an annual average of 98.3 deaths and serious injuries in Michigan each year between 2011 and 2020.

Figure 1. Alcohol-Related Traffic Crash Deaths and Serious Injuries Among Youth: 2011-2020

Alcohol Consequences Among Youth

Indicator Description:

- **Reporting Alcohol as a Primary Substance Use.** Percent of youth (16 to 20 years of age) admitted for substance use disorder treatment who reported alcohol as their primary substance use.

Why Indicator is Important: Substance use disorder treatment admissions data is an indicator of how many individuals received treatment for their substance use problems. It is not an indicator of actual substance use, but rather an indication of the capacity and resources needed for a behavioral health system to address substance use disorders.

Source: Treatment Episode Data Set, 2010-2020.

Summary: The percent of youth who reported alcohol as their primary substance use when seeking treatment has steadily declined from 2010 to 2020, with an overall decrease of 26 percent during that time period.

Figure 2. Percent of Youth Admitted for Substance Use Disorder Treatment Who Reported Alcohol as Primary Substance Use: 2010-2020
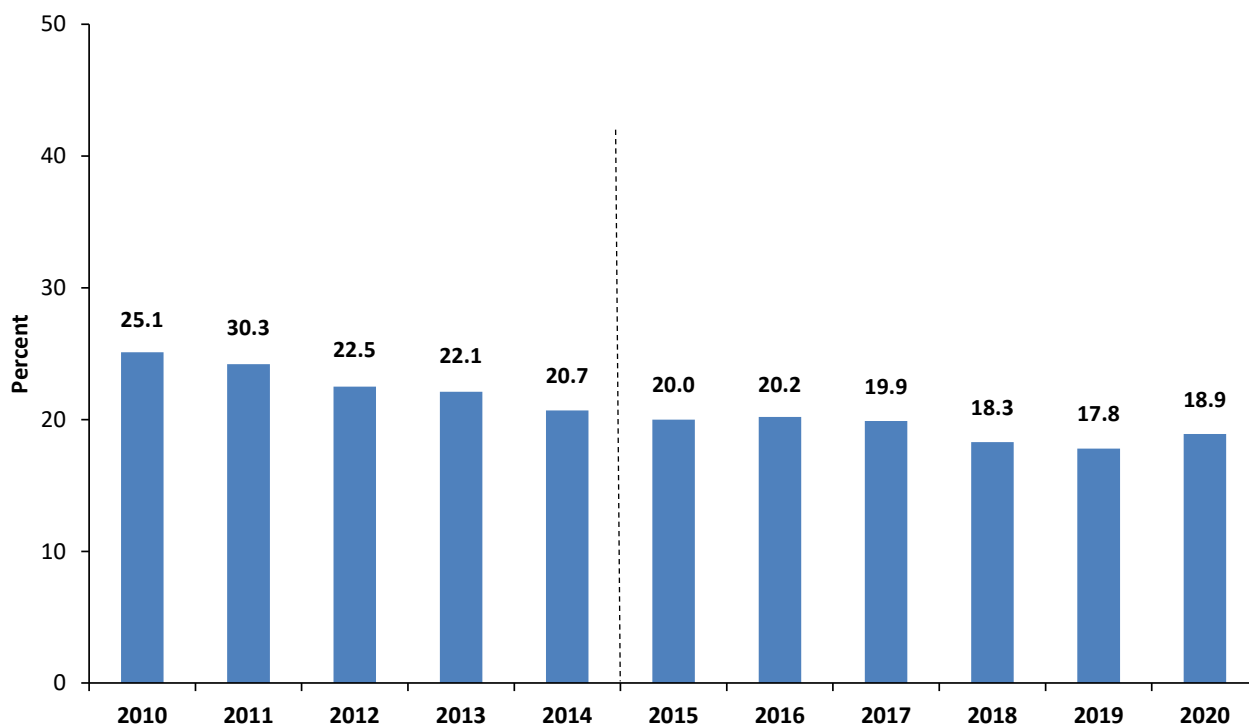
Note: Substance Use TEDS system was replaced with Behavioral Health TEDS system in 2015.

Alcohol Use Among Youth

Indicator Description:

- **Current Alcohol Consumption Among Youth.** Percent of students (ninth to 12th graders) who reported having had at least one drink of alcohol on one or more of the past 30 days.

- **Current High-Risk Alcohol Use Among Youth.** Percent of students (ninth to 12th graders) who reported having five or more drinks of alcohol in a row, that is, within a couple of hours, on one or more of the past 30 days (i.e., binge drinking). Gender-specific measures of five drinks for males and four drinks for females adopted in 2017.

Why Indicators are Important: A multitude of research has documented the negative effects of alcohol on the developing brain, including damage to nerve tissues leading to attention deficit disorder in boys and faulty vision in girls. Binge drinking is most common in late teens and early 20s; however, it is reported as continuing well into the 30s and 40s. Binge drinking leads to several adverse outcomes which include intentional and unintentional injuries, unplanned sexual intercourse, unprotected sex, sexually transmitted diseases, and unintentional pregnancy.

Source: Michigan Youth Risk Behavior Survey, 2009-2019.

Summary: From 2009 to 2019, the percent of students who reported consuming at least one alcoholic drink within the past 30 days decreased significantly from 37.0 percent to 25.4 percent. For binge drinking, the percent of students who reported binge drinking within the past 30 days significantly decreased from 2009 to 2019, from 23.2 percent to 11.2 percent.

Figure 3. Percent of Youth Who Reported Consuming Alcohol in the Past 30 Days: 2009-2019
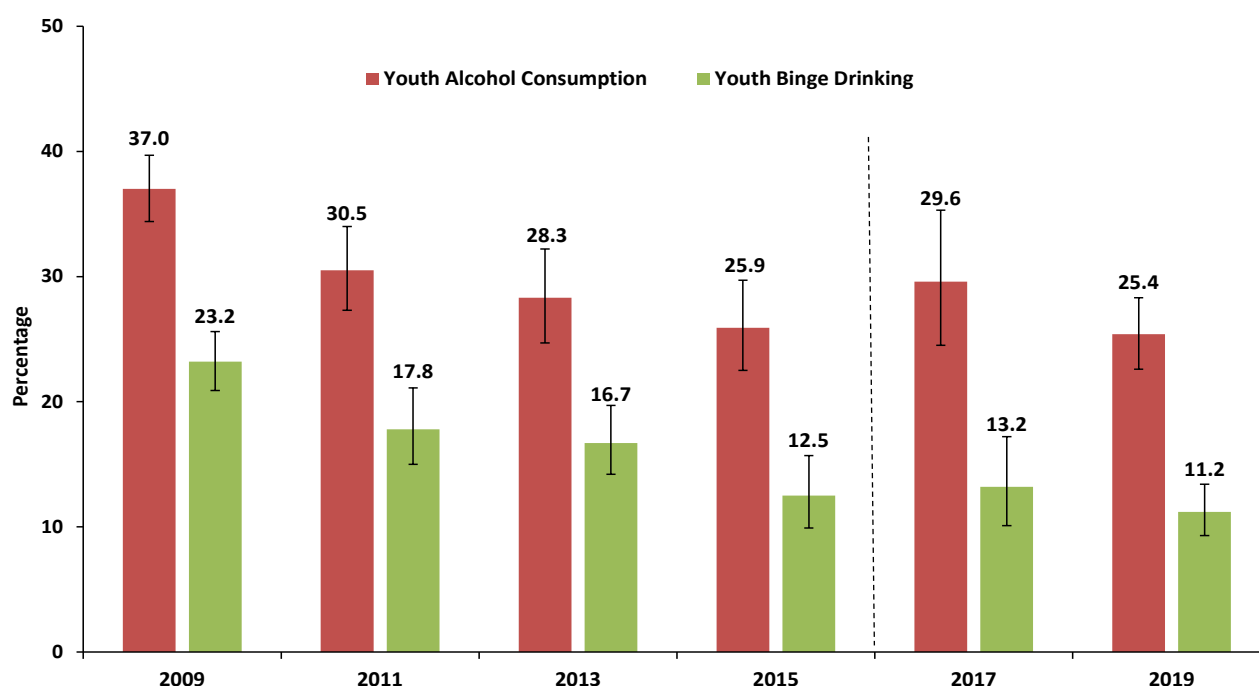
Note: Error bars represent 95% confidence intervals for percent. The line represents the introduction of gender specific binge drinking.

Alcohol Use Among Youth

Indicator Description:

- **Underage Drinking and Driving.** Percent of high school students (ninth to 12th graders) who during the past 30 days drove a car or other vehicle one or more times when they had been drinking alcohol.

- **Riding with a Drinking Driver.** Percent of high school students (ninth to 12th graders) who during the past 30 days rode one or more times in a car or other vehicle driven by someone who had been drinking alcohol.

Why Indicator is Important: Youth may be killed or seriously injured as an impaired driver, and they may kill or severely injure others.

Source: Michigan Youth Risk Behavior Survey, 2009-2019.

Summary: From 2009 to 2019, the percent of students who drove a car or other vehicle one or more times when they had been drinking alcohol significantly decreased from 8.4 percent to 3.6 percent. Similarly, the percent of students who rode one or more times in a car or other vehicle driven by someone who had been drinking alcohol significantly decreased from 27.5 percent to 14.6 percent.

Figure 4. Percent of Youth Who Drove a Car While Drinking or Rode in a Car With a Drinking Driver in the Past 30 Days: 2009-2019
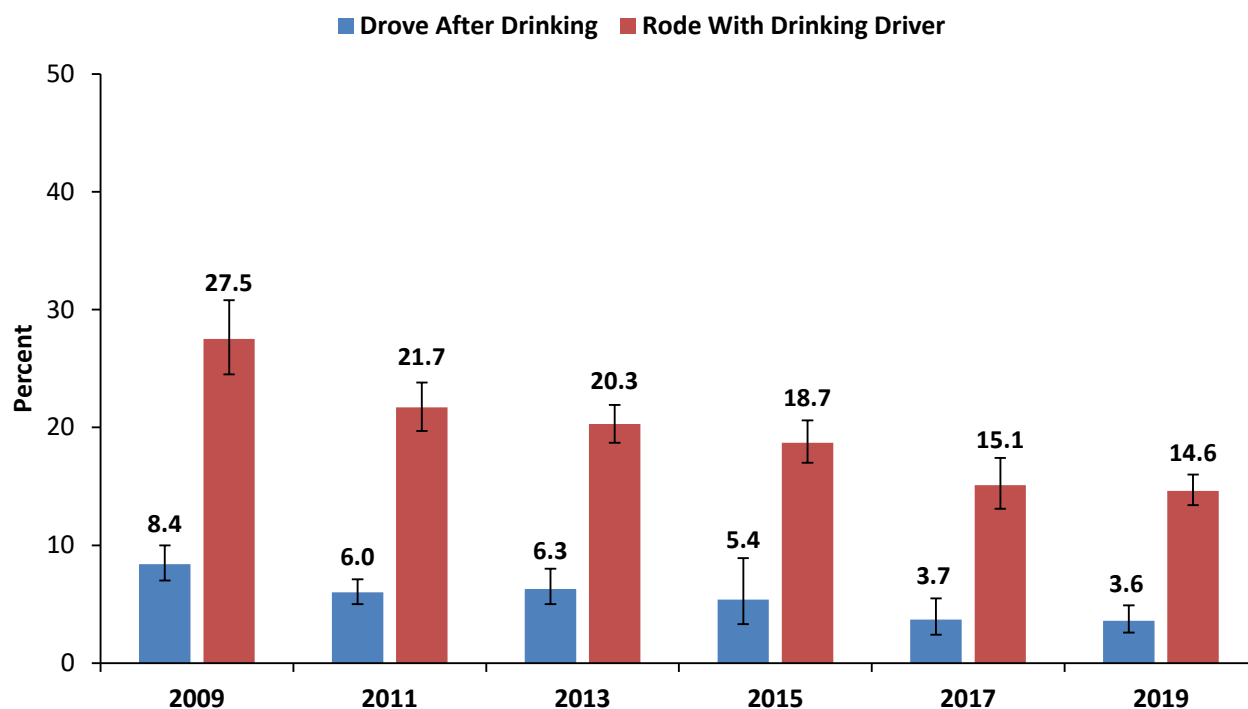
Note: Error bars represent 95% confidence intervals for percent.

Factors Contributing to Alcohol Use Among Youth

Indicator Description:

- **Early Initial Use.** Percent of students (ninth to 12th graders) who had their first drink of alcohol, other than a few sips, before age 13.

Why Indicator is Important: Young people who begin drinking before the age of 15 are four times more likely to develop alcohol dependence and are two and a half times more likely to become abusers of alcohol, than those who begin drinking at 21 years of age.[1]

Source: Michigan Youth Risk Behavior Survey, 2009-2019.

Summary: The percent of youth who reported having consumed their first drink of alcohol prior to the age of 13 has significantly decreased from 18.8 percent in 2009 to 14.8 percent in 2015. The percentage increased in 2017 to 16.2 percent only to drop to 13.6 percent in 2019.

Figure 5. Percent of Youth Who Reported Consuming Their First Drink of Alcohol Before Age 13: 2009-2019
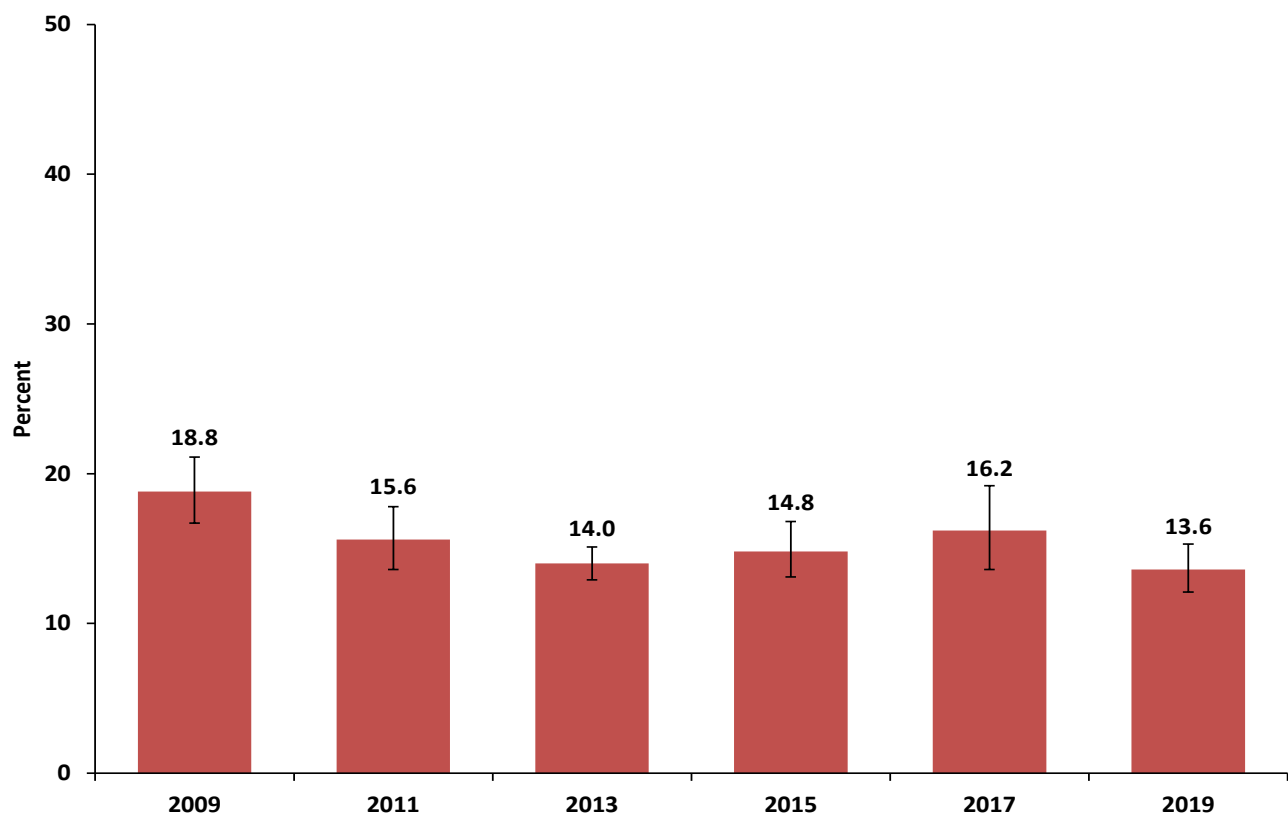
Note: Error bars represent 95% confidence intervals for percent.

1.   Grant, B., & Dawson, D. (1997). Age at onset of alcohol use and its association with DSM-IV alcohol abuse and dependence: results from the National Longitudinal Alcohol Epidemiologic Survey. *Journal of Substance Abuse*. 9:103-10.

Factors Contributing to Alcohol Use Among Youth

Indicator Description:

- **Perceived Risk of Binge Drinking.** Percent of youth (12 to 17 years of age) who perceived great risk from having five or more alcoholic drinks once or twice a week.

Why Indicator is Important: Youth perception of the risks associated with alcohol use is a crucial determining factor in whether he or she engages in substance use. Youths who perceive high risk of harm are less likely to use drugs than youths who perceive low risk or harm.

Source: National Survey on Drug Use and Health, 2009-2019.

Summary: Over one-third of youth continue to perceive great risk from having five or more alcoholic drinks once or twice a week from 2009-2010 to 2013-2014. The percentage of youth who perceive great risk has increased to over 40 percent in 2016-2017 and remained steady in 2018-2019.

Figure 6. Percent of Youth Who Perceived Great Risk From Having Five or More Alcoholic Drinks Once or Twice a Week: 2009-2019
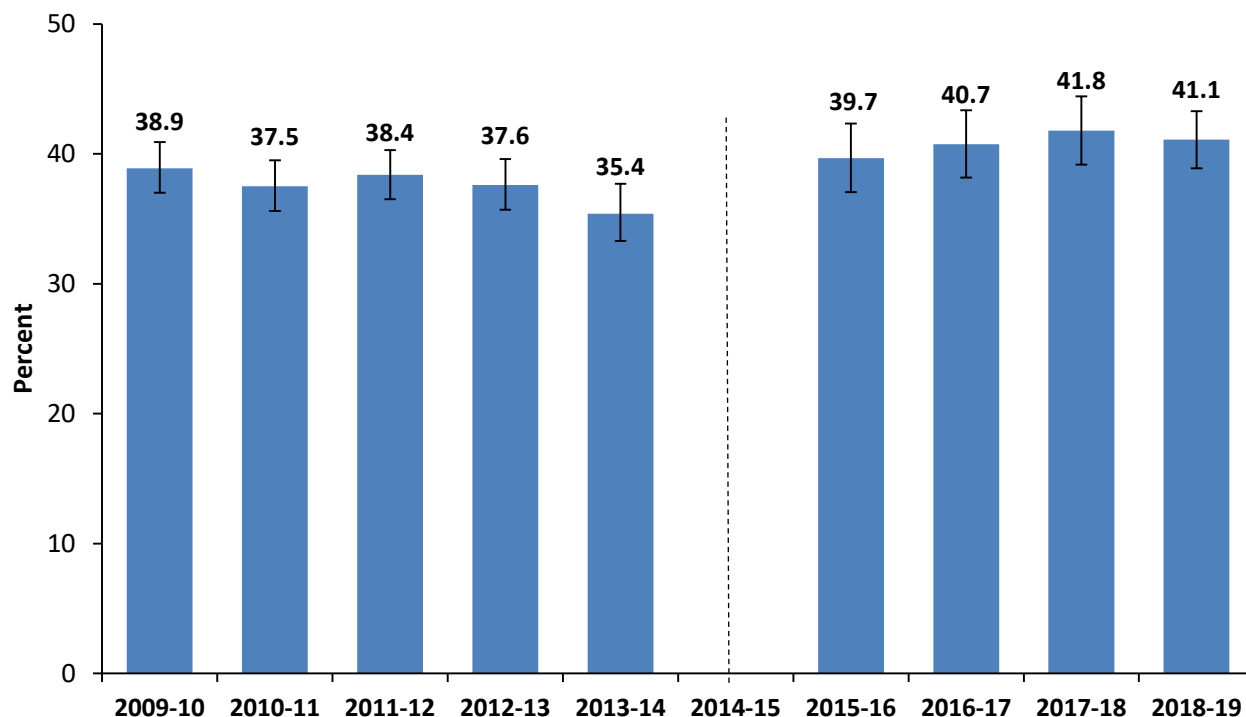
Note: Error bars represent 95% confidence intervals for percent. Due to methodology changes in 2015, NSDUH estimates from 2015 and moving forward cannot be compared to NSDUH estimates from 2014 and earlier.

Alcohol Consequences Among Adults

Indicator Description:

- **Drove Vehicle After Drinking.** Percent of adults (age 18 or older) who reported that they had driven a motor vehicle after they had too much to drink at least once in the previous month.

Why Indicator is Important: Adults may be killed or seriously injured as an impaired driver, and they may kill or severely injure others.

Source: Michigan Behavioral Risk Factor Surveillance System, 2008-2018

Summary: From 2008 to 2010 the percent of adults who reported that they had driven a motor vehicle after they had too much to drink at least once in the previous month stayed relatively constant, with no significant difference. Since 2012, the prevalence of driving a motor vehicle after drinking has increased, but the percent was dropped to 2.1 percent in 2018.

Figure 7. Percent of Adults Who Reported Driving After Drinking Too Much Alcohol in the Past 30 days: 2008-2018
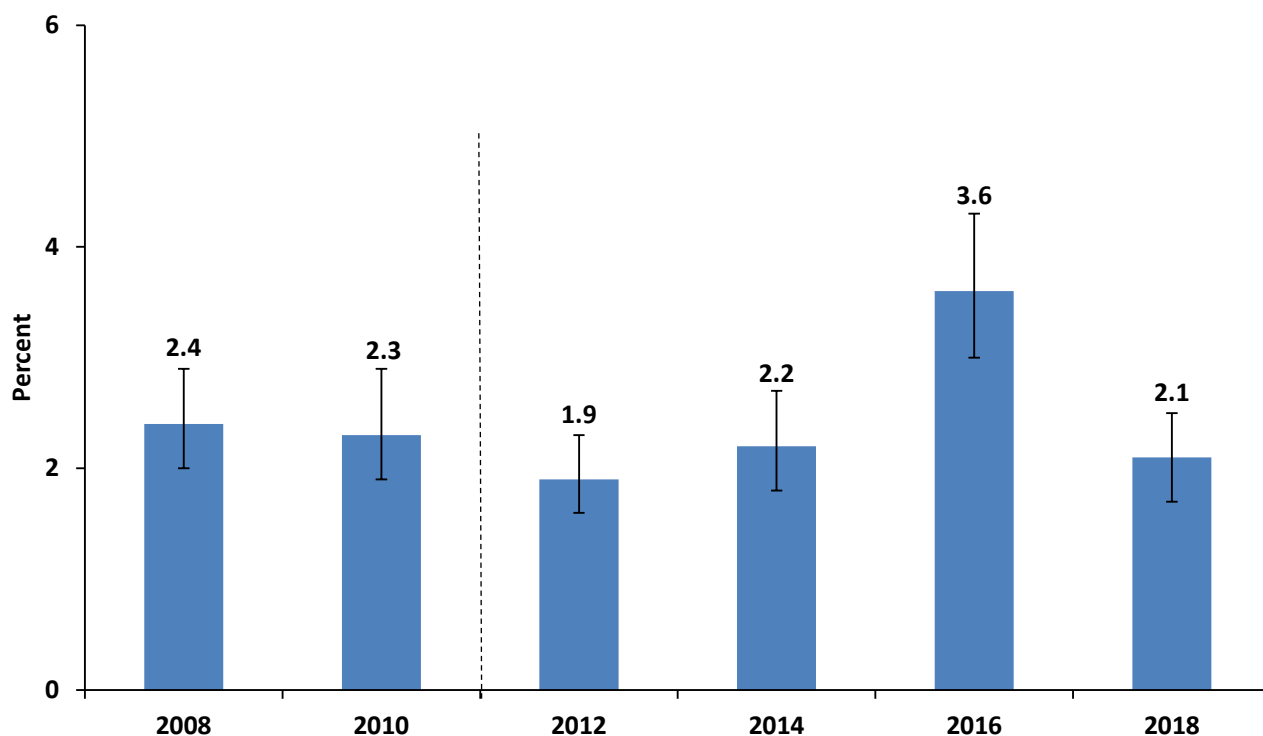
Note: Error bars represent 95% confidence intervals for percent. Due to methodology changes that took place in 2011, BRFSS estimates from 2011 and moving forward cannot be compared to BRFSS estimates from 2010 and earlier.

Alcohol Consequences Among Adults

Indicator Description:

- **Motor Vehicle Crash Deaths and Serious Injuries Involving Alcohol**. Alcohol-related traffic crashes involving at least one driver 21 years of age or older who had been drinking and caused a death or incapacitating injury.

Why Indicator is Important: Intoxicated individuals may be killed or seriously injured as an impaired driver, and they may kill or severely injure others. Among adult drivers between 2011 and 2020, the average alcohol-related traffic crash mortality rate was 0.04 per 1,000 licensed drivers, and the average alcohol-related traffic crash injuries rate reported was 0.13 per 1,000 licensed drivers during the same period.

Source: University of Michigan Transportation Research Institute/Center for the Management of Information for Safe and Sustainable Transportation and Michigan Department of State, 2011-2020.

Summary: The rates of alcohol-related traffic crash deaths had remained stable between 2011 and 2020. Alcohol-related traffic crashes involving at least one driver 21 years of age or older who had been drinking, caused an annual average of 1,077 deaths and serious injuries in Michigan each year between 2011 and 2020.

Figure 8. Alcohol-Related Traffic Crash Deaths and Serious Injuries Among Adults: 2011-2020
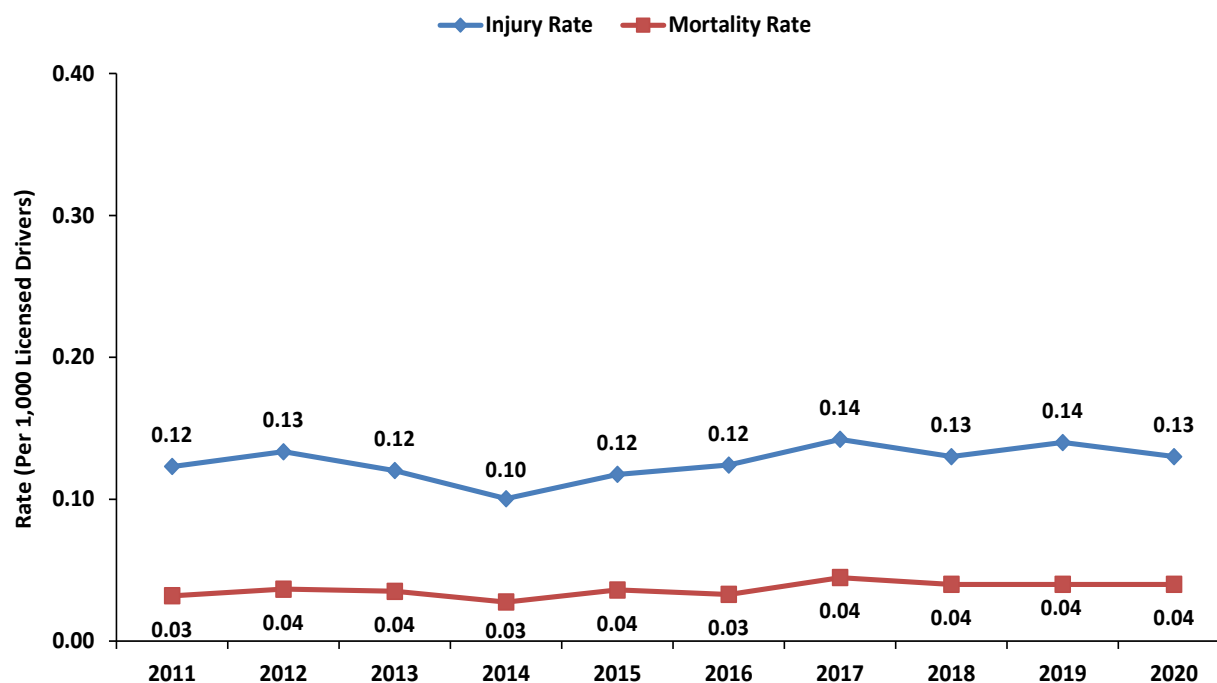
Alcohol Consequences Among Adults

Indicator Description:

- **Reporting alcohol as a primary substance use.** Percent of adults (age 21 or older) admitted for substance use disorder treatment who reported alcohol as their primary substance use.

Why Indicator is Important: Substance use disorder treatment admissions data is an indicator of how many individuals received treatment for their substance use problems. It is not an indicator of actual substance use, but rather an indication of the capacity and resources needed for a behavioral health system to address substance use disorders.

Source: Treatment Episode Data Set, 2010-2020.

Summary: The percent of adults who reported alcohol as their primary substance use when seeking treatment has steadily declined from 2010 to 2016 with an overall decrease of 17 percent during that time period. Adult primary alcohol treatment increased from 35.4 percent in 2016 to 41.1 percent in 2020.

Figure 9. Percent of Adults Admitted for Substance Use Disorder Treatment Who Reported Alcohol as Primary Substance Use: 2010-2020
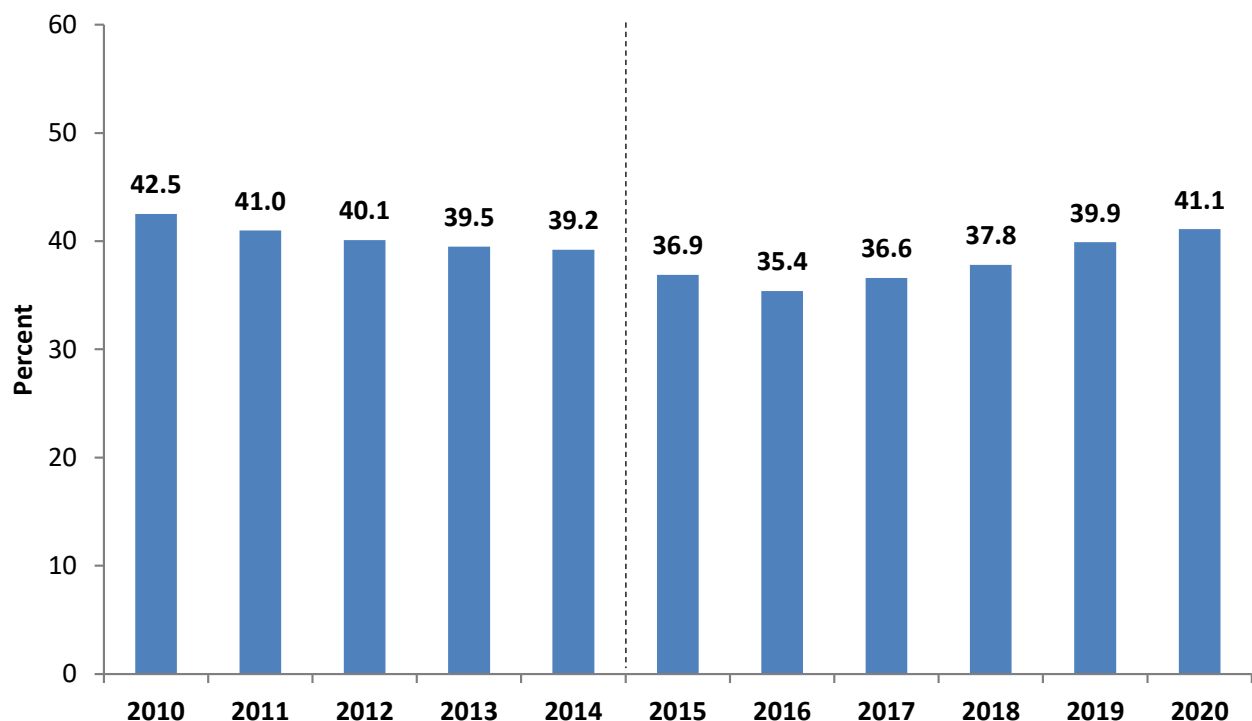
Note: Substance Use TEDS system was replaced with Behavioral Health TEDS system in 2015.

Alcohol Use Among Adults

Indicator Description:

- **Current Alcohol Use Among Adults**. This indicator presents the proportion of persons age 18 or older who reported consumption of one or more alcoholic drinks on one or more days within the past 30 days.

Why Indicator is Important: Alcohol abuse has been previously associated with serious negative health outcomes, including cirrhosis of the liver, hypertension, stroke, and some types of cancer.[1] It can also increase the risk for motor vehicle accidents, injuries, violence, and suicide.[1]

Source: Michigan Behavioral Risk Factor Surveillance System, 2010-2019

Summary: The proportion of Michigan adults who reported consuming at least one alcoholic beverage in the past 30 days remained stable from 2011 through 2017 at approximately 57 percent, only decreasing slightly in 2018 to 55.7 percent. A slight increase to 56.7 percent was recorded in 2019.

Figure 10. Percent of Adults Who Reported Consuming One or More Alcoholic Drinks in the Past 30 days: 2010-2019
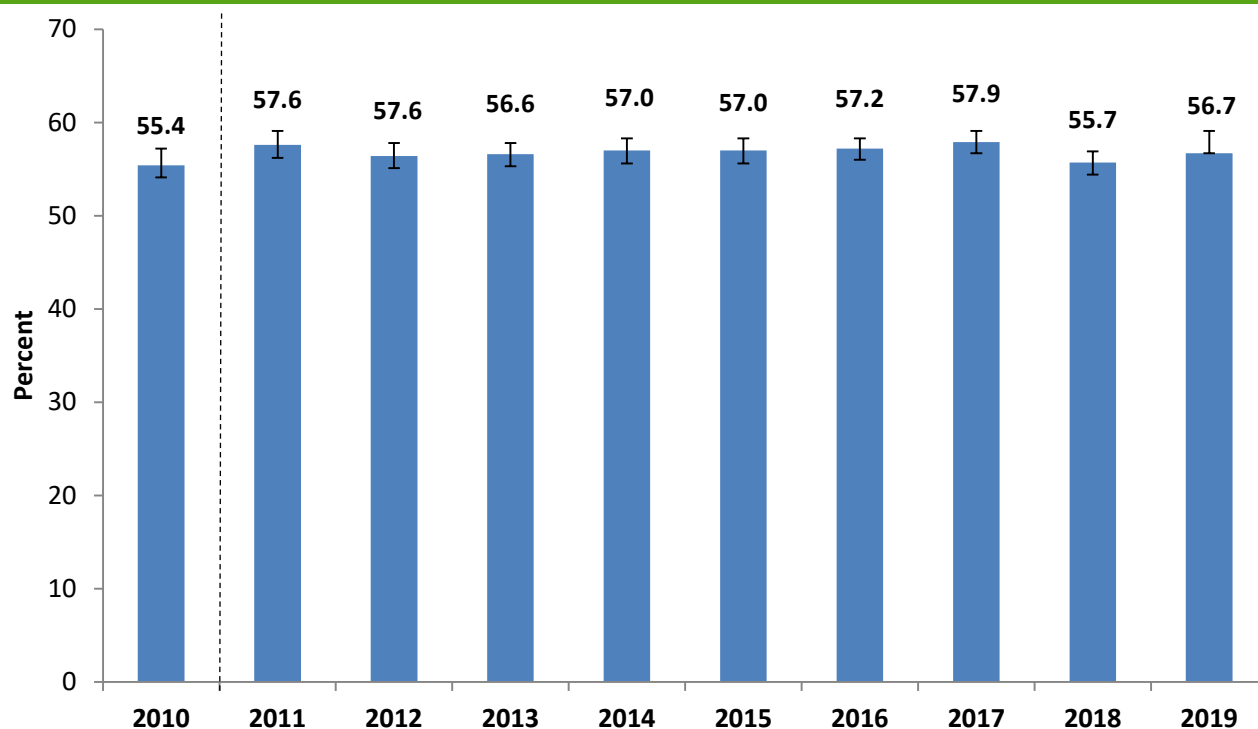
Note: Error bars represent 95% confidence intervals for percent. Due to methodology changes that took place in 2011, BRFSS estimates from 2011 and moving forward cannot be compared to BRFSS estimates from 2010 and earlier.

1. Centers for Disease Control and Prevention. (2012). Alcohol and Public Health - Alcohol Use and Health. Retrieved from http://www.cdc.gov/alcohol/fact-sheets/alcohol-use.htm.

Alcohol Use Among Adults

Indicator Description:

- **Current Binge Drinking Behavior Among Adults (age 18 or older)**. Binge drinking is defined as consuming five or more drinks on an occasion for men, consuming four or more drinks on an occasion for women during the past 30 days.

- **Current Heavy Drinking Behavior Among Adults (age 18 or older).** Heavy drinking is defined as consuming an average of more than two alcoholic drinks per day for men or more than one alcoholic drink per day for women in the past 30 days.

Why Indicators are Important: Binge drinking and heavy drinking are the most common patterns of excessive alcohol use in the United States and are types of high-risk drinking behavior which increases the risk for many health and social-related consequences. Binge drinking and heavy drinking are associated with many health problems including unintentional injuries, intentional injuries, sexually transmitted diseases, and cardiovascular diseases.[1]

Source: Michigan Behavioral Risk Factor Surveillance System, 2010 -2019

Summary: From 2011 to 2017, the proportion of adults who reported binge drinking in the past 30 days remained constant, around 19 percent, with a decrease to 17.2 and 17.9 percent in 2018 and 2019, respectively. The proportion of adults who reported heavy drinking in the past 30 days decreased from 7.0 percent in 2011 to 6.2 percent in 2019, with no significant difference.

Figure 11. Percent of Adults who Reported Heavy Drinking or Binge Drinking in the Past 30 Days: 2010-2019
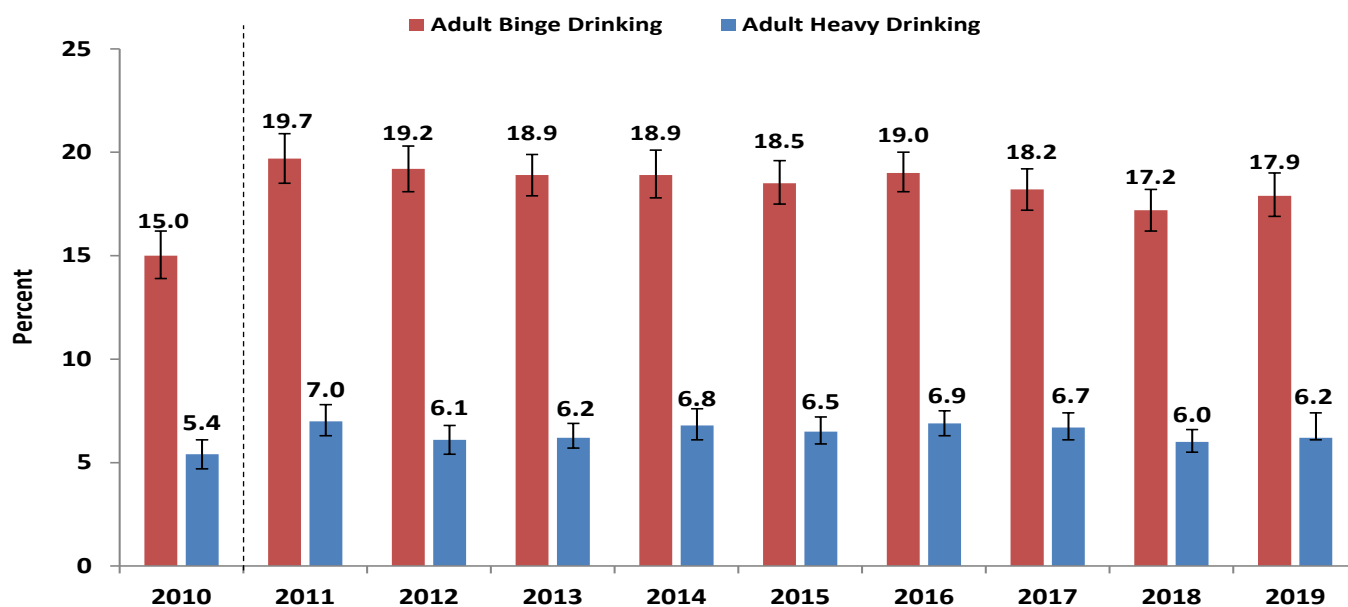
Note: Error bars represent 95% confidence intervals for percent. Due to methodology changes that took place in 2011, BRFSS estimates from 2011 and moving forward cannot be compared to BRFSS estimates from 2010 and earlier.

1.   Centers for Disease Control and Prevention. 2012. Alcohol and Public Health - Alcohol Use and Health. Retrieved from http://www.cdc.gov/alcohol/fact-sheets/alcohol-use.htm.

Tobacco Use Among Youth

Indicator Description:

- **Current Tobacco Use Among Students.** Percent of high school students (ninth to 12th graders) who smoked on one or more of the past 30 days.

Why Indicator is Important: Tobacco use is associated with higher risk of adverse health outcomes including cancer, cardiovascular disease, respiratory illness, and death.[1]

Source: Michigan Youth Risk Behavior Survey, 2009-2019.

Summary: The percent of high school students who reported smoking at least one cigarette during the past 30 days has significantly decreased from 18.8 percent to 4.5 percent during the time period of 2009 to 2019.

Figure 12. Percent of Youth Who Smoked Cigarettes During the Past 30 Days: 2009-2019
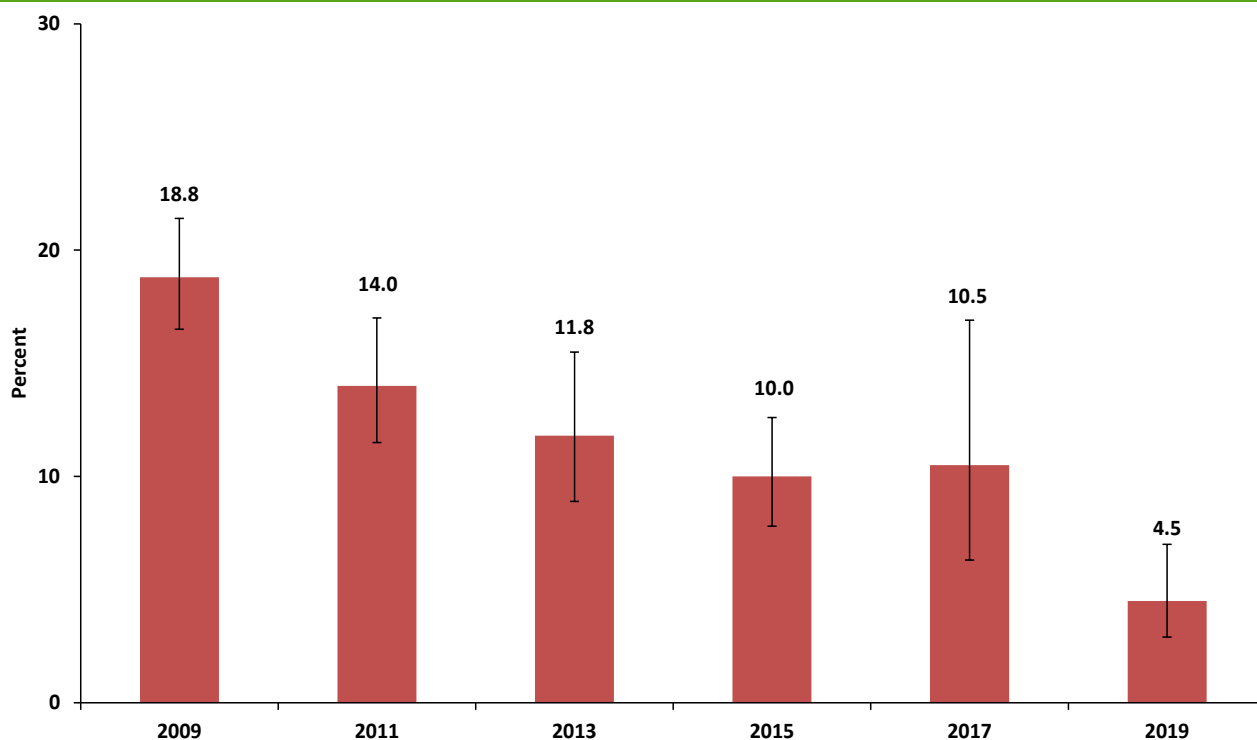
Note: Error bars represent 95% confidence intervals for percent.

1. U.S. Department of Health and Human Services. (2014). The Health Consequences of Smoking—50 Years of Progress: A Report of the Surgeon General. Atlanta: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health.

Tobacco Use Among Youth

Indicator Description:

- **Youth Daily Cigarettes Ever.** Percent of high school students (ninth to 12th graders) who ever smoked cigarettes daily; that is, at least one cigarette every day for 30 days.

Why Indicator is Important: Tobacco use is associated with higher risk of adverse health outcomes including cancer, cardiovascular disease, respiratory illness, and death.[1]

Source: Michigan Youth Risk Behavior Survey, 2009 -2019.

Summary: The percent of high school students who reported ever smoking at least one cigarette every day for 30 days has significantly decreased from 12.5 percent to 0.6 percent during the time period of 2009 to 2019.

Figure 13. Percent of Youth Who Ever Smoked Cigarettes Daily: 2009-2019
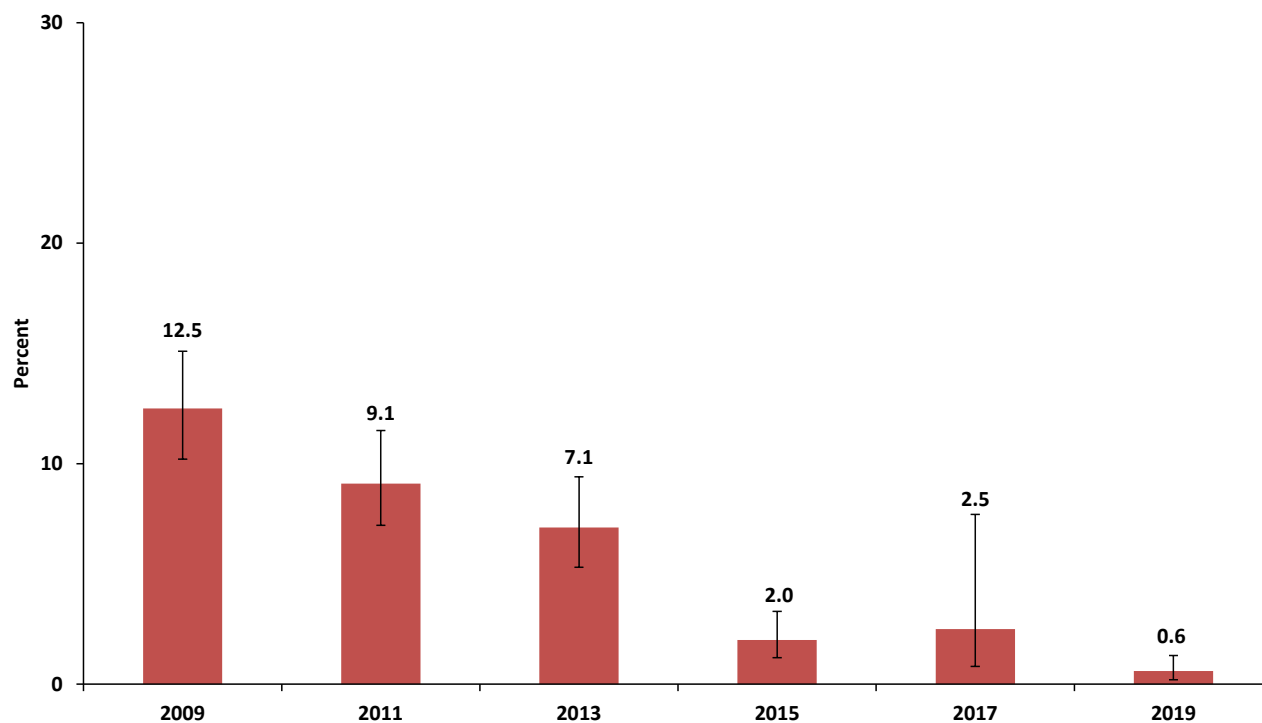
Note: Error bars represent 95% confidence intervals for percent.

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1. U.S. Department of Health and Human Services. (2014). The Health Consequences of Smoking—50 Years of Progress: A Report of the Surgeon General. Atlanta: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health.

Electronic Vapor Product Use Among Youth

Indicator Description:

- **Current Electronic Vapor Products Use among Students.** Percent of youth (ninth to 12th graders) who used an electronic vapor product on one or more of the past 30 days. (Including e-cigarettes, e-cigs, e-pipes, vape pipes, vaping pens, e-hookahs, and hookah pens).

Why Indicator is Important: Electronic vapor products contain nicotine. Nicotine poses a risk for addiction and brain development during adolescence. Young people who use vapor products may be more likely to smoke cigarettes in the future.[1]

Source: Michigan Youth Risk Behavior Survey, 2015-2019.

Summary: Although there is limited data available, 20.8 percent of high school students reported vapor products use during the past 30 days in 2019. This is a 6.0 percent increase from 2017.

Figure 14. Percent of Youth Students Who Used Electronic Vapor Products During the Past 30 Days: 2015-2019
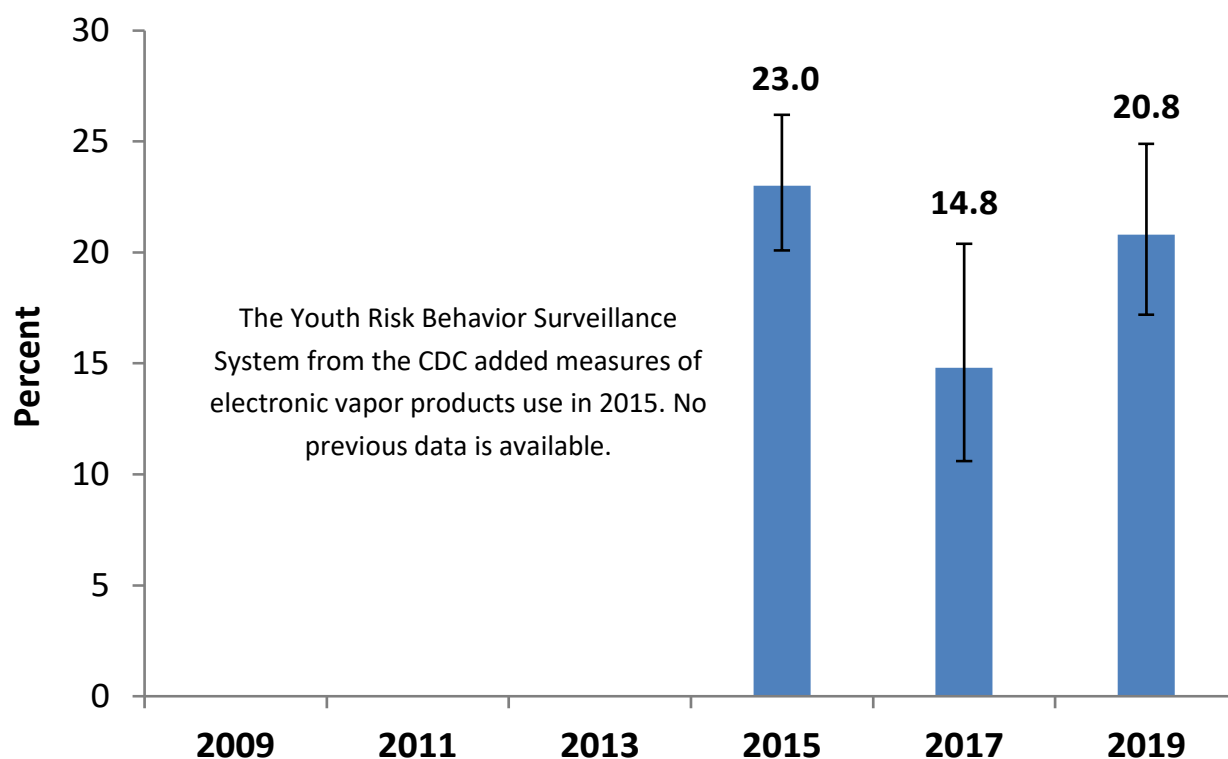
Note: Error bars represent 95% confidence intervals for percent.

1. US Department of Health and Human Services (2016). E-cigarette Use Among Youth and Young Adults: A Report of the Surgeon General. Retrieved from https://www.cdc.gov/tobacco/data_statistics/sgr/e-cigarettes/pdfs/2016_sgr_entire_report_508.pdf

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Electronic Vapor Product Use Among Young Adults

Indicator Description:

- **Current Electronic Vapor Products Use among Students.** Percent of young adults (18 to 24 years) who currently use e-cigarettes or other electronic vaping products, either every day or on some days.

Why Indicator is Important: E-cigarette use is an emerging issue with young adults. While e-cigarette smoke may contain fewer toxic chemicals than regular cigarettes, they still contain many harmful substances, including nicotine, heavy metals, and chemicals that cause cancer. E-cigarettes are particularly dangerous for youth, young adults, and pregnant women.[1]

Source: Michigan Behavioral Risk Factor Surveillance System, 2017-2019.

Summary: Although there is limited data available, 18.8 percent of young adults reported vapor products use during the past 30 days in 2019. This is a 6.0 percent increase from 2017.

Figure 15. Percent of Young Adults Who Report Currently Use Electronic Vapor Products Every Day or Some Days: 2017—2019

The Michigan Behavioral Risk Factor Surveillance System added measures of electronic vapor products use in 2017. No previous data is available.
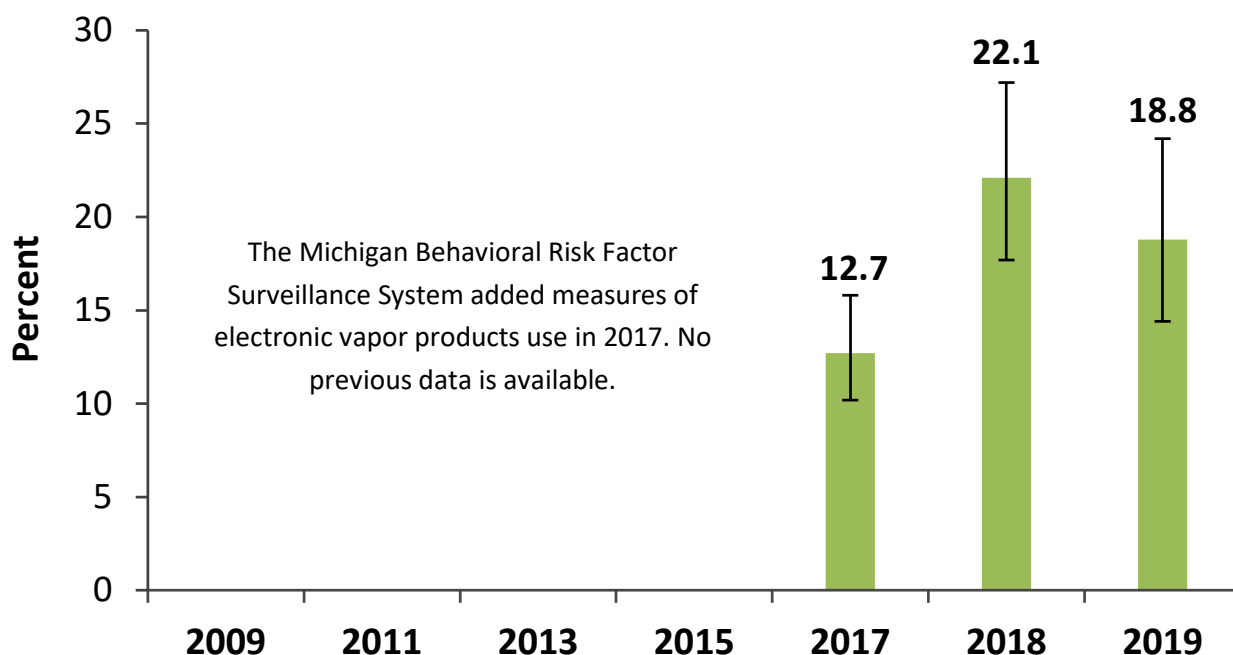
Note: Error bars represent 95% confidence intervals for percent.

1. Centers for Disease Control and Prevention. 2021. About Electronic Cigarettes. https://www.cdc.gov/tobacco/ basic_information/e-cigarettes/

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Factors Contributing to Tobacco Use Among Youth

Indicator Description:

- **Perceptions of Great Risk from Smoking.** Percent of youth (12 to 17 years of age) who perceived great risk from smoking one or more packs of cigarettes per day.

Why Indicator is Important: Youth perception of the risks associated with tobacco use is a crucial determining factor in whether he or she engages in substance use. Youths who perceive high risk of harm are less likely to use drugs than youths who perceive low risk or harm.

Source: National Survey on Drug Use and Health, 2009-2019.

Summary: The percent of youth ages 12 to 17 who reported perceiving great risk from smoking one or more packs of cigarettes per day remained around 64 percent from 2009-2010 to 2013-2014, with no significant deviation. Between 2015-16 and 2017-2018, the percentage reported to an average of 67.4 percent before decreasing in 2018-2019 to 64.2 percent.

Figure 16. Percent of Youth Who Perceived Great Risk From Smoking One or More Packs of Cigarettes Per Day: 2009-2019
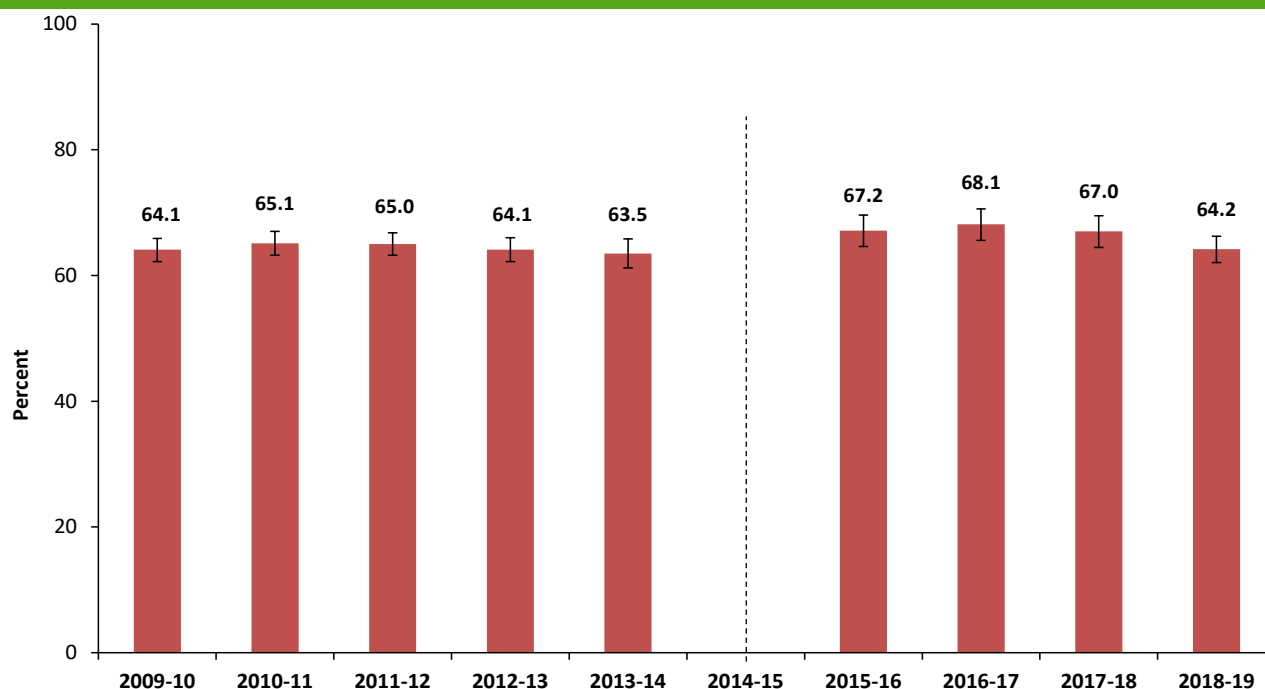
Note: Error bars represent 95% confidence intervals for percent. Due to methodology changes in 2015, NSDUH estimates from 2015 and moving forward cannot be compared to NSDUH estimates from 2014 and earlier.

Factors Contributing to Tobacco Use Among Youth

Indicator Description:

- **Early Initial Use.** Percent of high school students (ninth to 12th graders) who smoked a whole cigarette for the first time before age 13.

Why Indicator is Important: Youth perception of the risks associated with tobacco use is a crucial determining factor in whether he or she engages in substance use. Youths who perceive high risk of harm are less likely to use drugs than youths who perceive low risk or harm.

Source: Michigan Youth Risk Behavior Survey, 2009-2019.

Summary: From 2009 to 2015, the percent of high school students who reported smoking a whole cigarette for the first time before age 13 decreased significantly from 11.1 percent to 7.8 percent but rose to 10.7 percent in 2017. In 2019, the percent decreased significantly to 7.3 percent.

Figure 17. Percent of Youth Who Smoked a Whole Cigarette for the First Time Before Age 13: 2009-2019
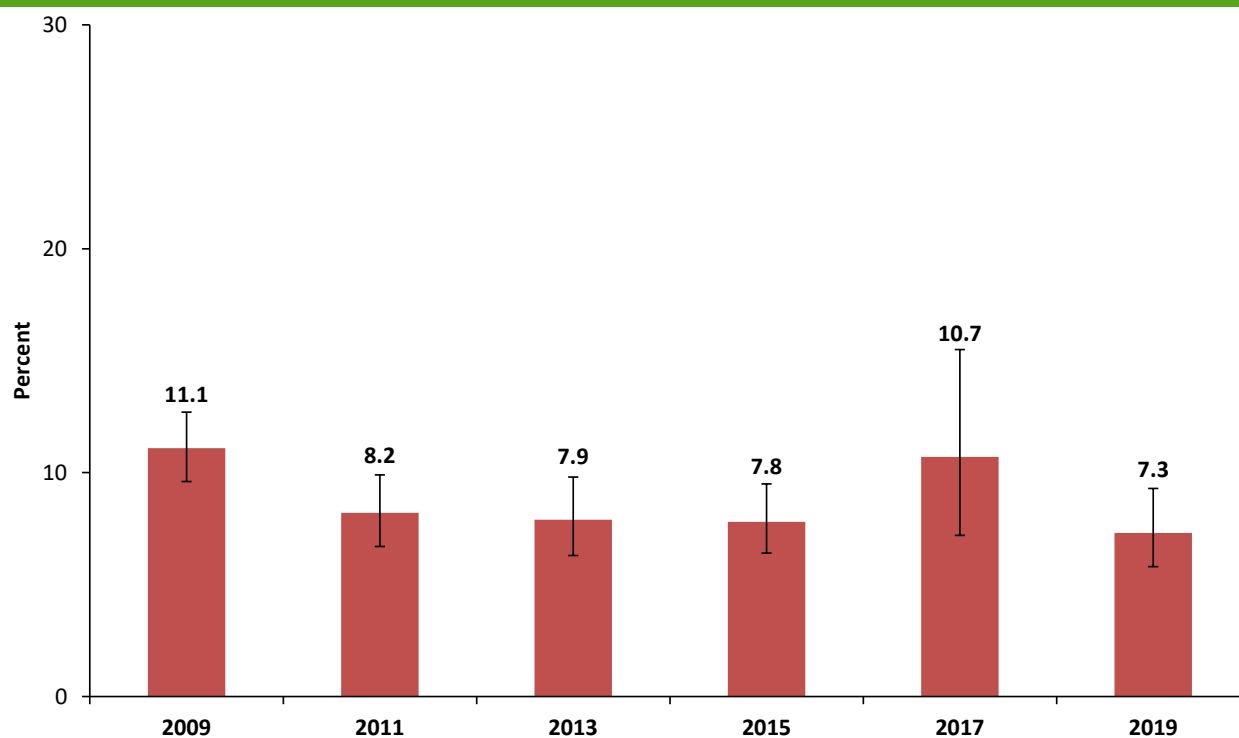
Note: Error bars represent 95% confidence intervals for percent.

Tobacco Use Among Adults

Indicator Description:

- **Current Cigarette Use Among Adults.** Among all adults (age 18 or older), the proportion reporting that they had ever smoked at least 100 cigarettes (five packs) in their life and that they smoke cigarettes now, either every day or on some days.

Why Indicator is Important: Cigarette smoking causes nearly half a million deaths each year in the United States, or about one out of every five deaths.[1] Tobacco use has been documented to harm nearly every organ in the body.[2] Tobacco users are at higher risk of chronic disease such as stroke, diabetes, immune function disorder, reduced fertility, and multiple forms of cancer.[2]

Source: Michigan Behavioral Risk Factor Surveillance System, 2009-2019

Summary: From 2009 to 2010, the percent of adults (age 18 or older) who reported ever smoking at least 100 cigarettes in their life and currently smoke now did not change significantly, remaining around 19 percent. In 2011 and 2012 the percent increased to 23.3 percent but has since steadily declined, decreasing to 18.7 percent in 2019.

Figure 18. Current Cigarette Use Among Adults: 2009-2019
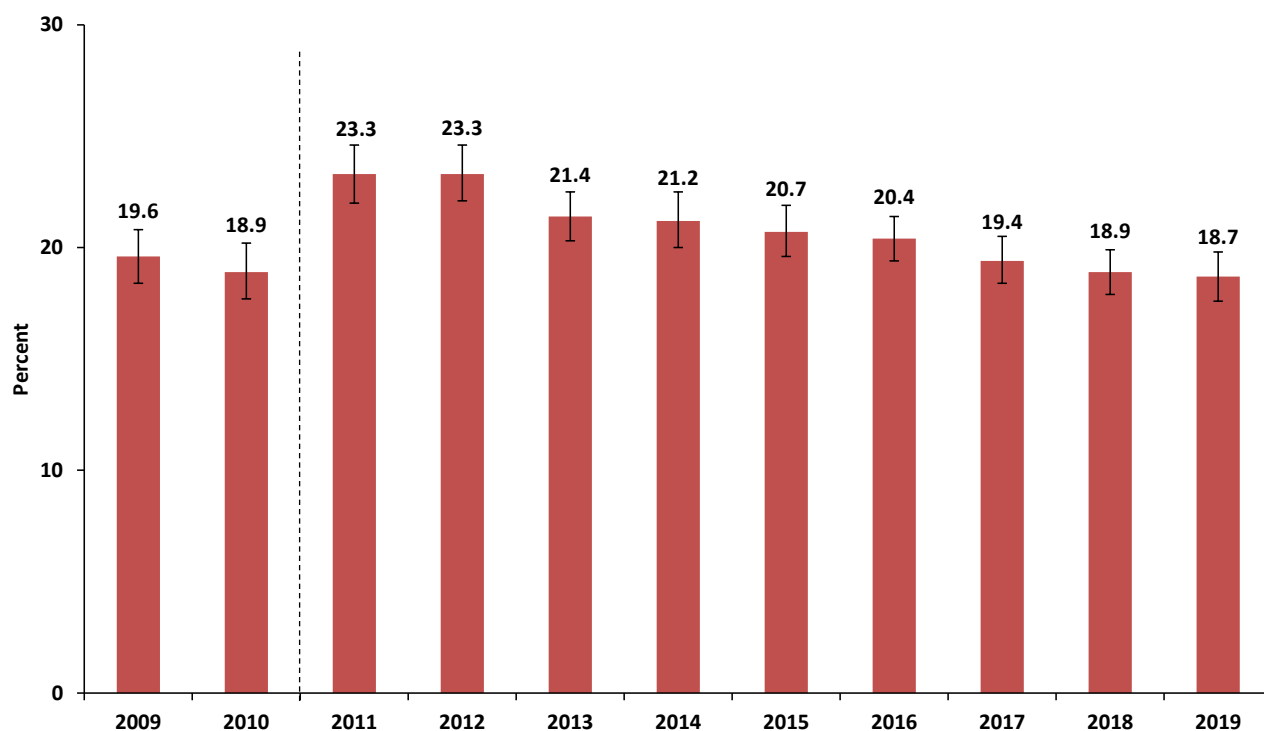
Note: Error bars represent 95% confidence intervals for percent. Due to methodology changes that took place in 2011, BRFSS estimates from 2011 and moving forward cannot be compared to BRFSS estimates from 2010 and earlier.

1. Xu, J. (2013). QuickStats: Number of Deaths from 10 Leading Causes—National Vital Statistics System, United States, 2010. *Morbidity and Mortality Weekly Report*, 62(08);155.

2. U.S. Department of Health and Human Services. (2014). The Health Consequences of Smoking—50 Years of Progress: A Report of the Surgeon General. Atlanta: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health.

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Consequences of Tobacco Use

Indicator Description:

- **Lung Cancer Incidence Rate.** A calculation of the number of new cases of disease per 100,000 people. Rates are age-adjusted to the 2000 U.S. standard population.

- **Lung Cancer Death Rate.** A calculation of the number of people who died of lung cancer, per 100,000 individuals, age-adjusted to the 2000 U.S. standard population.

Why Indicator is Important: Lung cancer is the leading cause of cancer death in the United States.[1] Cigarette smoking is the leading cause of lung cancer. Lung cancer may also be caused by use of other forms of tobacco as well as second-hand smoke inhalation.[1]

Source: Michigan Vital Records and Health Statistics, 2010-2019.

Summary: Incidence rates of lung cancer have decreased significantly from 71.5 cases per 100,000 individuals to 59.6 cases per 100,000 individuals, during the 2010 to 2018 time period. Deaths related to lung cancer have significantly decreased as well during this period, from 52.2 deaths per 100,000 individuals to 38.8 deaths per 100,000 individuals in 2019.

Figure 19. Lung Cancer Incidence and Death Rates: 2010-2019
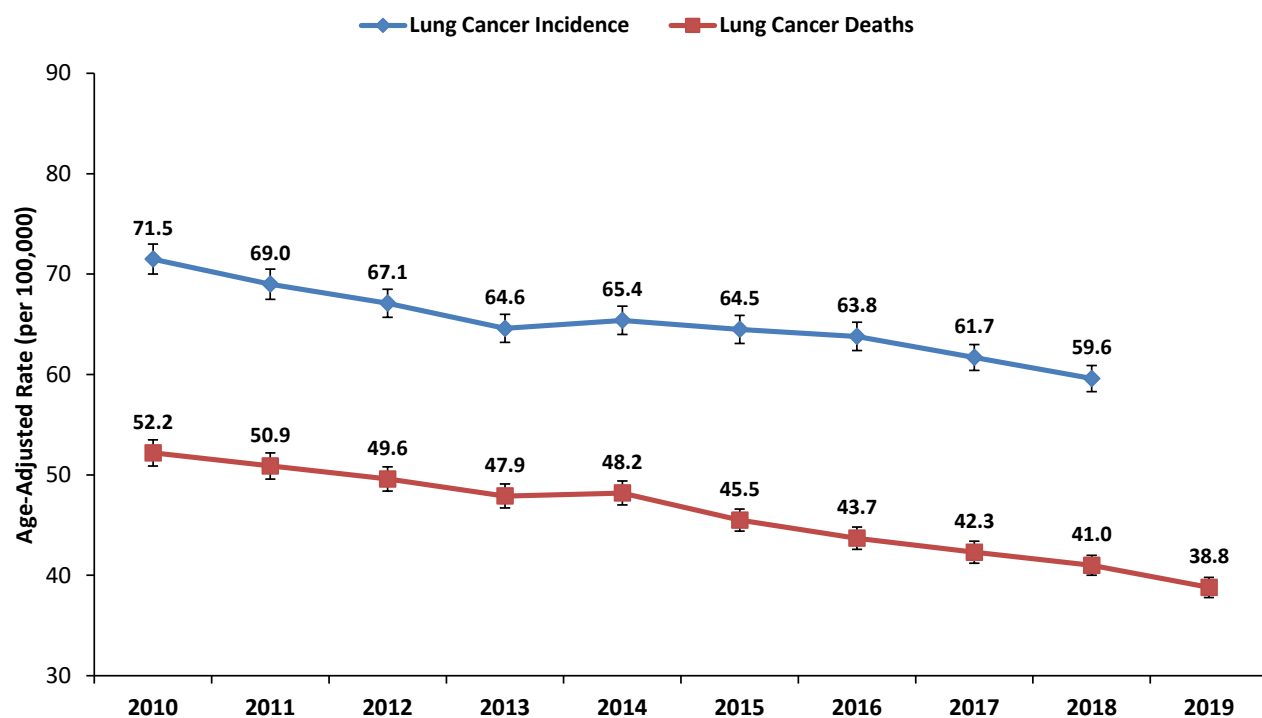
Note: Error bars represent 95% confidence intervals for percent.

1.   U.S. Cancer Statistics Working Group. (2014). United States Cancer Statistics: 1999–2011 Incidence and Mortality Web-based Report. Atlanta (GA): Department of Health and Human Services, Centers for Disease Control and Prevention, and National Cancer Institute.

Prescription Opioids

Indicator Description:

- **Opioid Prescription Rate per 100 people.** A calculation of rate of opioid prescriptions per 100 Michigan residents. Opioid prescriptions include full agonist opioids such as oxycodone, hydrocodone, morphine, and methadone; and partial agonist opioids such as buprenorphine and tramadol.

Why Indicator is Important: Prescription opioids can be used for moderate-to-severe pain, after surgery or injury or pain from health conditions like cancer. However, there are risks including misuse, addiction, overdose, and death.

Source: Michigan Automated Prescription System, 2009-2020

Summary: The overall opioid prescribing rate declined from 2015 to 2020, and in 2020, the prescribing rate had fallen to the lowest it had been in more than 12 years at 67.9 per 100 persons.

Figure 20. Opioid Prescription Rate (per 100 people): 2009-2020
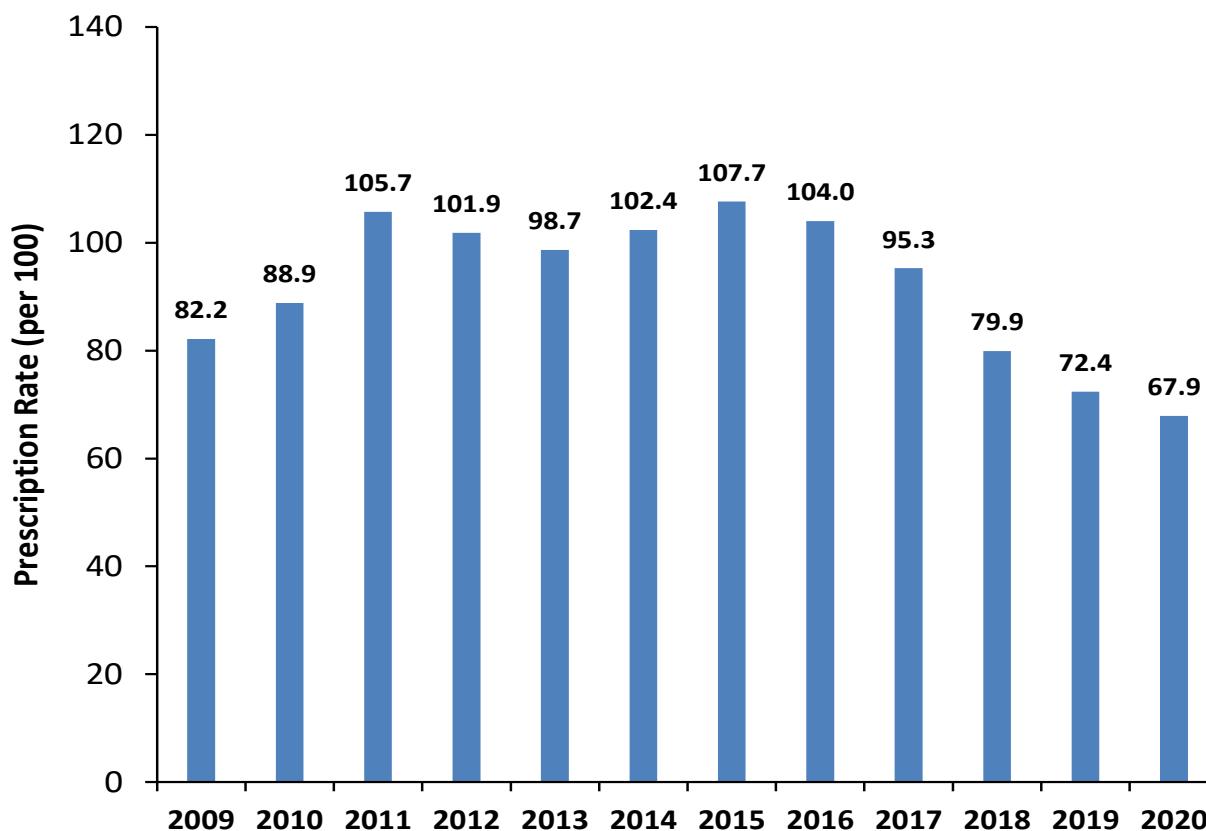
Opioids Consequences among Youth

Indicator Description:

- **Percent of Primary Opioid Treatment.** Percent of youth (16 to 20 years of age) admitted for substance use disorder treatment who reported opioids (heroin and other opiates) as their primary substance use.

Why Indicator is Important: Substance use disorder treatment admissions data is an indicator of how many individuals received treatment for their substance use problems. It is not an indicator of actual substance use, but rather an indication of the capacity and resources needed for a behavioral health system to address substance use disorders.

Source: Treatment Episode Data Set, 2010-2020

Summary: The percent of youth who reported opioids (heroin or other opiates) as their primary substance use at admission has remained stable at 20 percent between 2010 and 2016. Since 2016, the percent has steadily declined, with 11.7 percent of youth reporting opioids as their primary substance use in 2020.

Figure 21. Percent of Primary Opioid Treatment 16-20 Year Old: 2010-2020

Note: Substance Use TEDS system was replaced with Behavioral Health TEDS system in 2015.

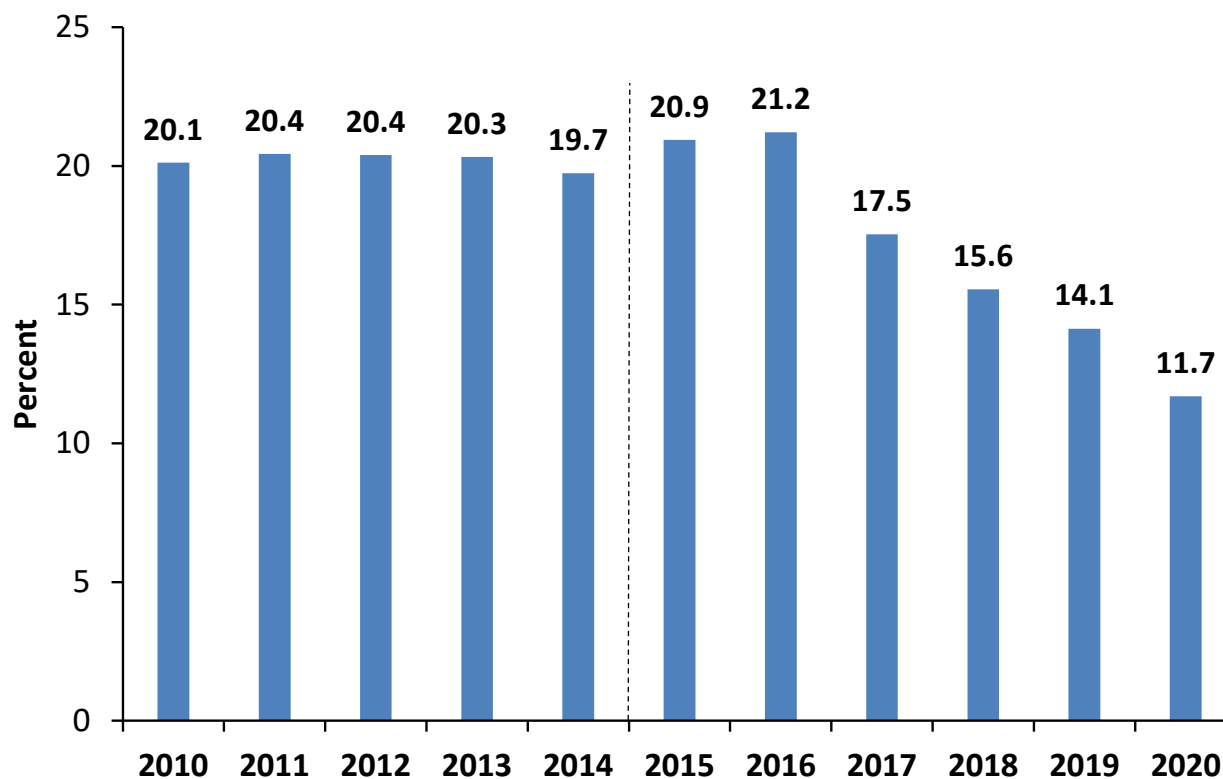## *Opioids Consequences among Adults*

Indicator Description:

- **Percent of Primary Opioid Treatment.** Percent of adults (21 or older) admitted for substance use disorder treatment who reported opioids (heroin or other opiates) as their primary substance use.

Why Indicator is Important: Substance use disorder treatment admissions data is an indicator of how many individuals received treatment for their substance use problems. It is not an indicator of actual substance use, but rather an indication of the capacity and resources needed for a behavioral health system to address substance use disorders.

Source: Treatment Episode Data Set, 2010-2020

Summary: The percent of adults who reported opioids (heroin or other opiates) as their primary substance use at admission has steadily increased from 2010 and peaked at 46.6 percent in 2016. Since 2016, the percent has steadily declined with 36.1 percent of adults reporting opioids as their primary substance use at admission in 2020.

Figure 22. Percent of Primary Opioid Treatment 21 or Older: 2010-2020

Note: Substance Use TEDS system was replaced with Behavioral Health TEDS system in 2015.
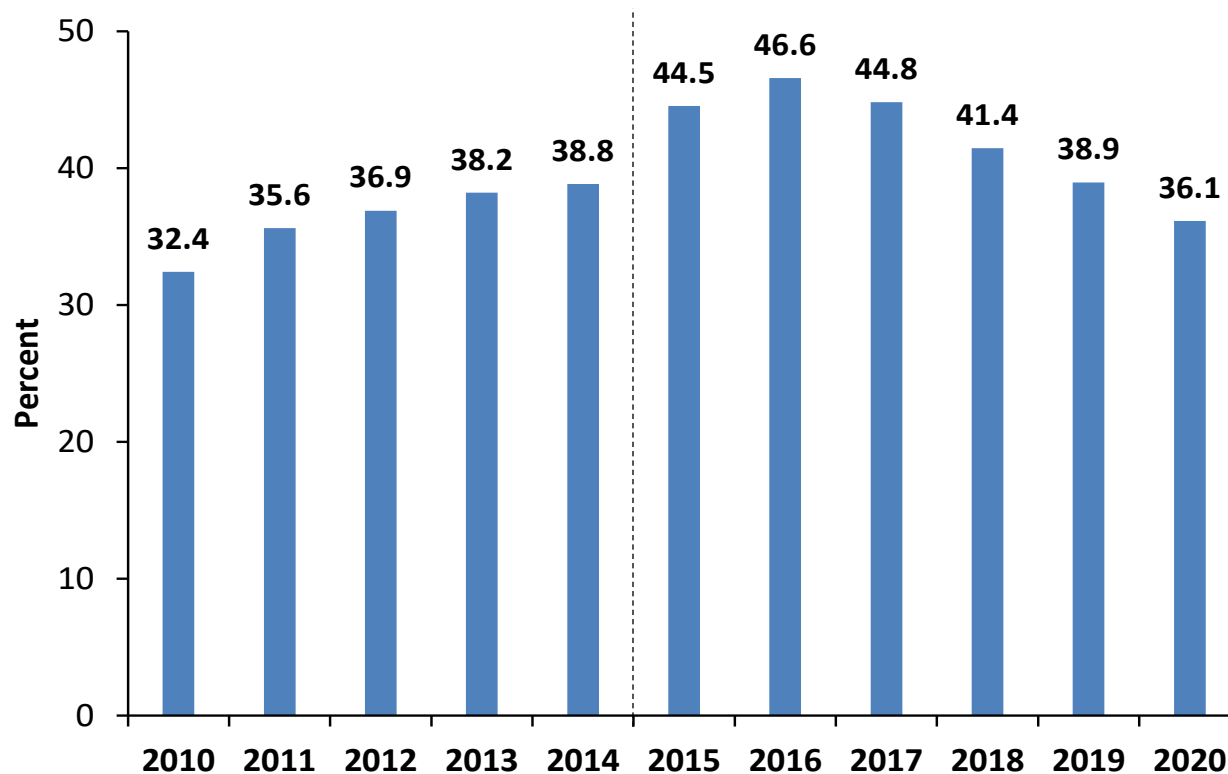
Opioid-Related Mortality

Indicator Description:

- **Opioid-Related Mortality Rate.** A calculation of the number of deaths related to opioids as indicated on the death certificate by a medical examiner, per 100,000 Michigan residents in a specific age group. Drug poisoning deaths included are those with ICD-10 underlying cause code X40-X44, X60-X64, X85, and Y10-Y14. Opioid-related deaths are those with ICD-10 related cause code T40.0-T40.4, and T40.6.

Why Indicator is Important: 2,354 drug overdose deaths occurred in Michigan in 2019. Opioids were involved in 1,768 overdose deaths in 2019 (75.1 percent of all drug overdose deaths).

Source: Death Certificates, Michigan Vital Records and Health Statistics, 2009-2019.

Figure 23. Opioid-Related Mortality Rates by Age Group: 2009-2019
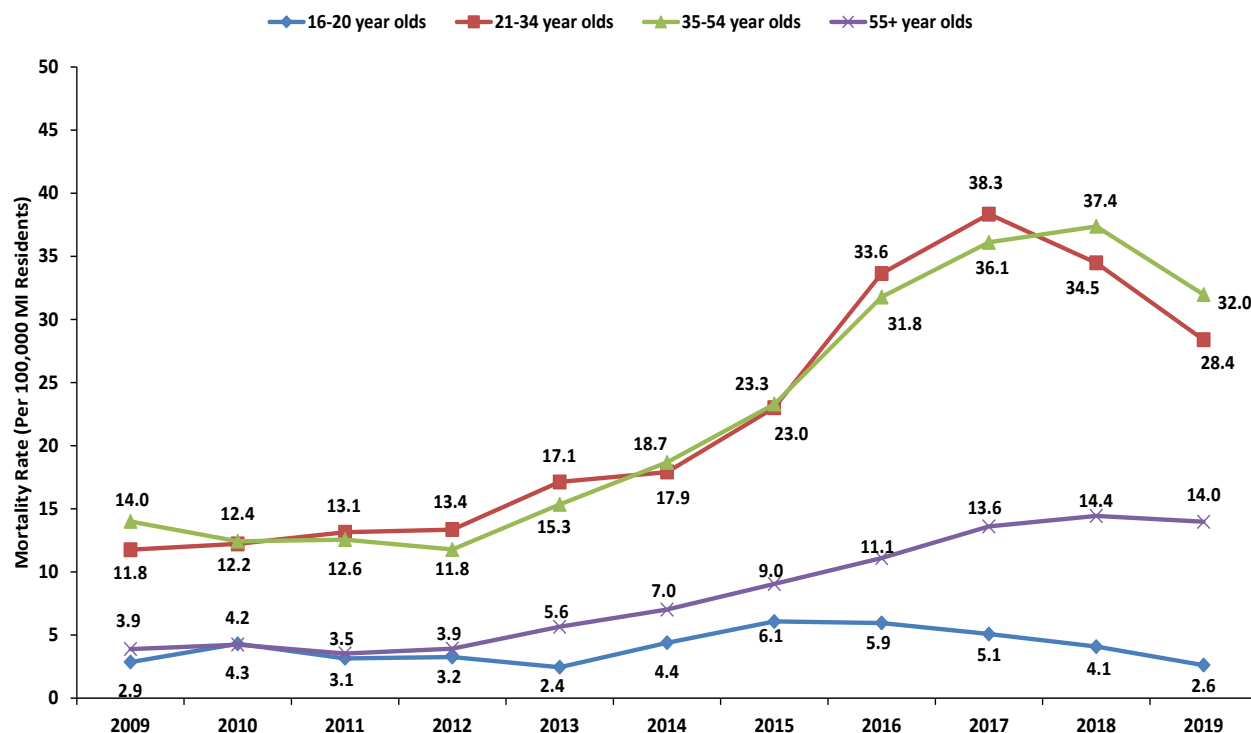
Note: 95% confidence intervals for percent not shown on figure. Refer to Table 2 on page 27.

Opioid-Related Mortality

		Table 2. Opioid-Related Mortality Rates by Age Group: 2009-2019										
		Mortality Rate (95% C.I.) **by Year of Death**										
		2009	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Age Group	**16-20 years**	2.9 (1.6-4.1)	4.3 (2.8-5.8)	3.1 (1.9-4.4)	3.2 (1.9-4.6)	2.4 (1.3-3.6)	4.4 (2.8-6.0)	6.1 (4.2-7.9)	5.9 (4.1-7.8)	5.1 (3.4-6.8)	4.1 (2.5-5.6)	2.6 (1.4-3.9)
	21-34 years	11.8 (10.1-13.4)	12.2 (10.5-13.9)	13.1 (11.4-14.9)	13.4 (11.6-15.1)	17.1 (11.6-15.1)	17.9 (15.9-19.9)	23.0 (20.8-25.2)	33.6 (31.0-36.3)	38.3 (35.5-41.2)	34.5 (31.8-37.2)	28.4 (26.0-30.8)
	35-54 years	14.0 (12.6-15.4)	12.4 (11.1-13.7)	12.6 (11.2-13.9)	11.8 (10.5-13.1)	15.3 (13.8-16.8)	18.7 (17.0-20.3)	23.3 (21.4-25.2)	31.8 (29.6-34.0)	36.1 (33.7-38.5)	37.4 (35.0-39.8)	32.0 (29.7-34.2)
	55+ years	3.9 (3.1-4.6)	4.2 (3.4-5.0)	3.5 (2.8-4.2)	3.9 (3.2-4.6)	5.6 (4.8-6.5)	7.0 (6.0-8.0)	9.0 (8.0-10.1)	11.1 (9.9-12.3)	13.6 (12.3-14.9)	14.4 (13.1-15.8)	14.0 (12.7-15.3)

Summary: Opioid-related mortality increased significantly for all age groups from 2009 to 2018 but decreased for all age groups in 2019. 21-34 year-olds showed the highest increase from 2009 to 2018, of 192 percent (11.8; 95%CI: 10.1-13.4, vs. 34.5; 95%CI:31.8-37.2). Overall, young adults (21 to 34 year-olds) and middle-aged adults (35 to 54 year-olds) had higher rates of mortality compared to youth (16 to 20 year-olds) and older adults (55+ year-olds) during the past decade.

# *Prescription Drug-Related Mortality*

Indicator Description:

- **Prescription Drug-Related Mortality Rate.** A calculation of the number of deaths related to prescription drugs as indicated on the death certificate by a medical examiner, per 100,000 Michigan residents in a specific age group. Drug poisoning deaths included are those with ICD-10 underlying cause code X40-X44, X60-X64, X85, and Y10-Y14. Prescription drug-related deaths are those with ICD-10 related cause code T36.0-T39.9, T40.2-T40.4, T41.0-T41.5, T42.0-T43.5. T43.8, T43.9, and T44.0-T50.8.

Why Indicator is Important: Over the past decade, the number of drug poisoning deaths have increased dramatically in Michigan. The rate of death from unintentional drug poisoning has almost quadrupled since 1999, driven by an increase in overdoses involving prescription drugs.[1] Opioid analgesics (e.g., oxycodone, hydrocodone) are narcotic drugs that are prescribed to relieve pain and were involved in a large number of Michigan's prescription drug overdose deaths.[1]

Source: Death Certificates, Michigan Vital Records and Health Statistics, 2009-2019.

Figure 24. Prescription Drug-Related Mortality Rates by Age Group: 2009-2019
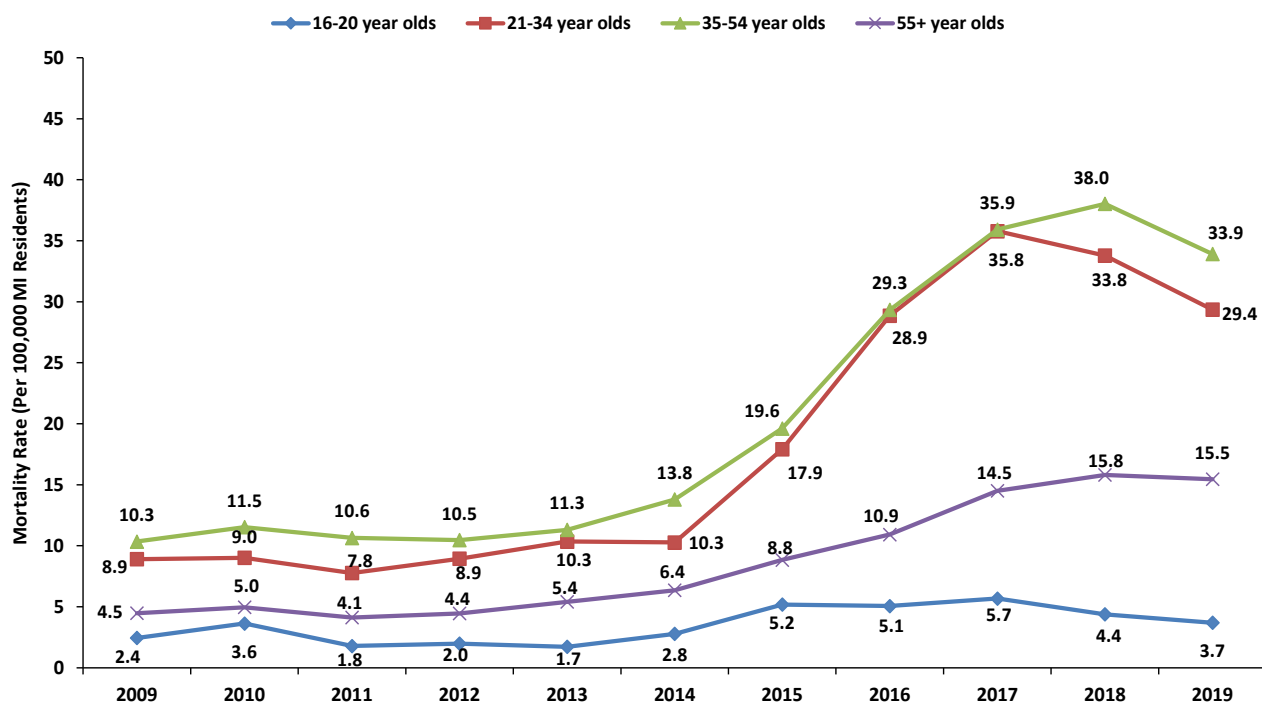
Note: 95% confidence intervals for percent not shown on figure. Refer to Table 3 on page 29.

1. Michigan Deparment of Community Health. (2014). *A Profile of Drug Overdose Deaths Using the Michigan Automated Prescription System.*. Lansing (MI): Office of Recovery Oriented Systems of Care, Michigan Department of Community Health. Retrieved from http://www.michigan.gov/documents/mdch/MAPS_Report_2014_-_FINAL_464112_7.pdf.

Prescription Drug-Related Mortality

		Table 3. Prescription Drug-Related Mortality Rates by Age Group: 2009-2019										
		Mortality Rate (95% C.I.) by Year of Death										
		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Age Group	**16-20 years**	2.4 (1.3-3.6)	3.6 (2.3 - 5.0)	1.8 (0.8-2.7)	2.0 (0.9-3.0)	1.7 (0.7-2.7)	2.8 (1.5-4.0)	5.2 (3.5-6.9)	5.1 (3.4-6.8)	5.7 (3.9-7.5)	4.4 (2.8-6.0)	3.7 (2.2-5.2)
	21-34 years	8.9 (7.5-10.3)	9.0 (7.6-10.4)	7.8 (6.4-9.1)	8.9 (7.5-10.3)	10.3 (8.8-11.8)	10.3 (8.8-11.7)	17.9 (16.0-19.9)	28.9 (26.4-31.3)	35.8 (33.0-38.5)	33.8 (31.1-36.4)	29.4 (26.9-31.8)
	35-54 years	10.3 (9.2-11.5)	11.5 (10.3-12.8)	10.6 (9.4-11.9)	10.5 (9.2-11.7)	11.3 (10.0-12.6)	13.8 (12.4-15.2)	19.6 (17.9-21.3)	29.3 (27.2-31.5)	35.9 (33.6-38.3)	38 (35.6-40.5)	33.9 (31.6-36.2)
	55+ years	4.5 (3.6-5.3)	5.0 (4.1-5.8)	4.1 (3.4-4.9)	4.4 (3.7-5.2)	5.4 (4.5-6.3)	6.4 (5.4-7.3)	8.8 (7.8-9.9)	10.9 (9.7-12.1)	14.5 (13.2-15.9)	15.8 (14.4-17.2)	15.5 (14.1-16.8)

Summary: Prescription drug-related mortality has increased significantly for all age groups from 2009 to 2018. 21-34 year-olds showed the highest increase from 2009 to 2018, of 280 percent (8.9; 95%CI: 7.5-10.3, vs. 33.8; 95%CI:31.1-36.4). However, prescription drug related mortality rates decreased for all age groups in 2019. Overall, young adults (21 to 34 year-olds) and middle-aged adults (35 to 54 year-olds) had higher rates of mortality compared to youth (16 to 20 year-olds) and older adults (55+ year-olds) during the past decade.

Nonmedical Use of Pain Relievers

Indicator Description:

- **Nonmedical Use of Pain Relievers**. Estimates of past year nonmedical use of pain relievers among persons aged 12 or older. Nonmedical use of prescription pain relievers is defined as use of these drugs without a prescription or use that occurred simply for the experience or feeling caused by the drug; over-the-counter (OTC) use and legitimate use of prescription pain relievers are not included.

Why Indicator is Important: Nonmedical use of pain relievers and other prescription drugs is the second most prevalent illicit drug problem in the United States, behind marijuana.[1] Patients with prescriptions for controlled substances must use them as directed by their healthcare provider in order to limit potential harm while effectively addressing health concerns.

Source: National Survey on Drug Use and Health, 2009-2019.

Summary: Nonmedical use of pain relievers was significantly higher from 2009 to 2014 for 18 to 25 year-olds compared to 12 to 17 year-olds and adults 26 years or older and remained higher from 2015 to 2019. The percentage of 12 to 17 year-olds and 18 to 25 year-olds using pain relievers for nonmedical uses significantly decreased from 2009 to 2014, but the decrease was not significant from 2015 to 2019. Prescription pain reliever misuse did not significantly change for those 26 years or older, remaining between 3.0 and 4.0 percent from 2009 through 2019.

Figure 25. Nonmedical Use of Pain Relievers by Age Group: 2009-2019
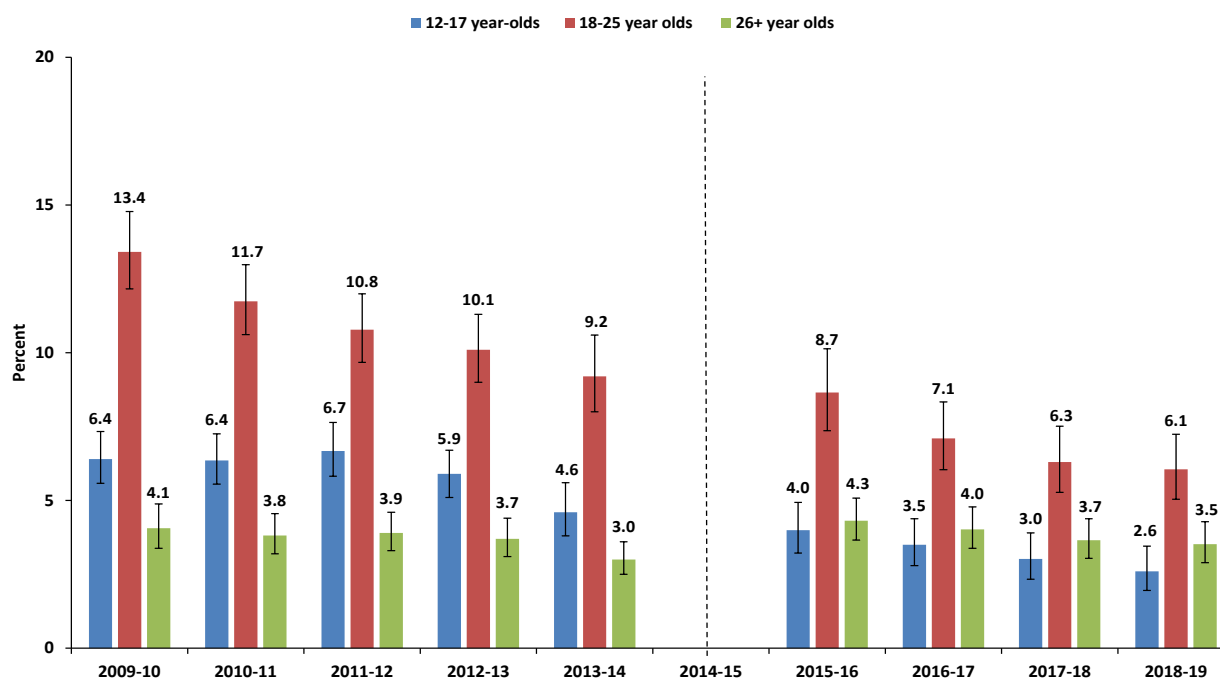
Note: Error bars represent 95% confidence intervals for percent. Due to methodology changes in 2015, NSDUH estimates from 2015 and moving forward cannot be compared to NSDUH estimates from 2014 and earlier.

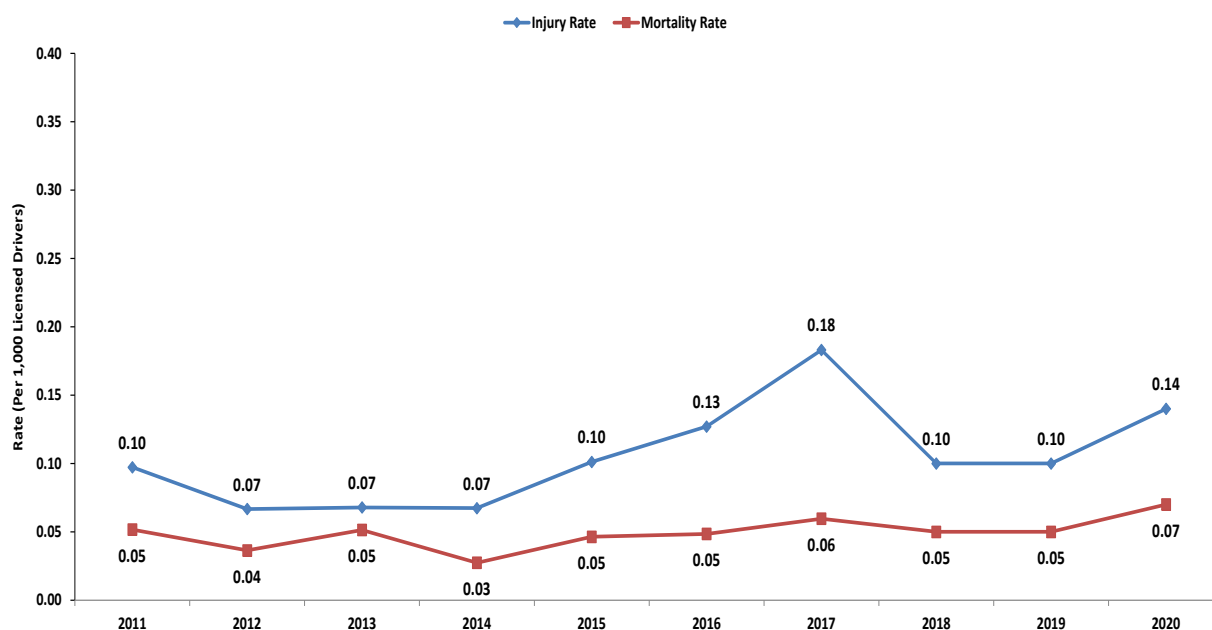## *Drug-Related Consequences Among Youth*

Indicator Description:

- **Motor Vehicle Crash Deaths and Serious Injuries Involving Drugs**. Drug-related traffic crashes involving at least one driver 16 to 20 years of age suspected of drug use and caused a death or incapacitating injury.

Why Indicator is Important: Youth may be killed or seriously injured as an impaired driver, and they may kill or severely injure others. Among drivers between 16 and 20 years of age from 2011 and 2020, the average drug-related traffic crash deaths were 0.05 per 1,000 licensed drivers, and the average drug-related traffic crash injuries reported was 0.10 per 1,000 licensed drivers during the same period.

Source: University of Michigan Transportation Research Institute/Center for the Management of Information for Safe and Sustainable Transportation and Michigan Department of State, 2011-2020.

Summary: The rate of drug-related traffic crash deaths among youth increased 23 percent from 2011 to 2020. The serious injury rate showed a steep increase from 0.07 in 2014 to 0.18 per 1,000 licensed drivers in 2017 before decreasing to 0.10 in 2018, increased to 0.14 in 2020. Drug-related traffic crashes involving at least one driver 16 to 20 years of age, caused an annual average of 73 deaths and serious injuries in Michigan each year between 2011 and 2020.

Figure 26. Drug-Related Traffic Crash Deaths and Serious Injuries Among Youth: 2011-2020

Drug-Related Consequences Among Youth

Indicator Description:

- **Prescription Drug-Related Treatment**. Percent of youth (16 to 20 years of age) admitted for substance use disorder treatment reporting prescription drugs as their primary substance use at admission. Prescription drugs include opiates, barbiturates, sedatives, tranquilizers, benzodiazepine, amphetamines, antidepressants, steroids, and Talwin/Pyribenzamine.

Why Indicator is Important: Substance use disorder treatment admissions data is an indicator of how many individuals received treatment for their substance use problems. It is not an indicator of actual substance use, but rather an indication of the capacity and resources needed for a behavioral health system to address substance use disorders.

Source: Treatment Episode Data Set, 2010-2020.

Summary: The percent of youth who reported prescription drugs as their primary substance use at admission has steadily increased from 2010 and peaked at 12.2 percent in 2012. After 2014 reports steadily rose to 10.1 percent in 2017 before falling to 7.3 percent in 2020.

Figure 27. Percent of Youth Admitted for Substance Use Disorder Treatment Who Reported Prescription Drugs as Primary Substance Use: 2010-2020

Note: Substance Use TEDS system was replaced with Behavioral Health TEDS system in 2015.

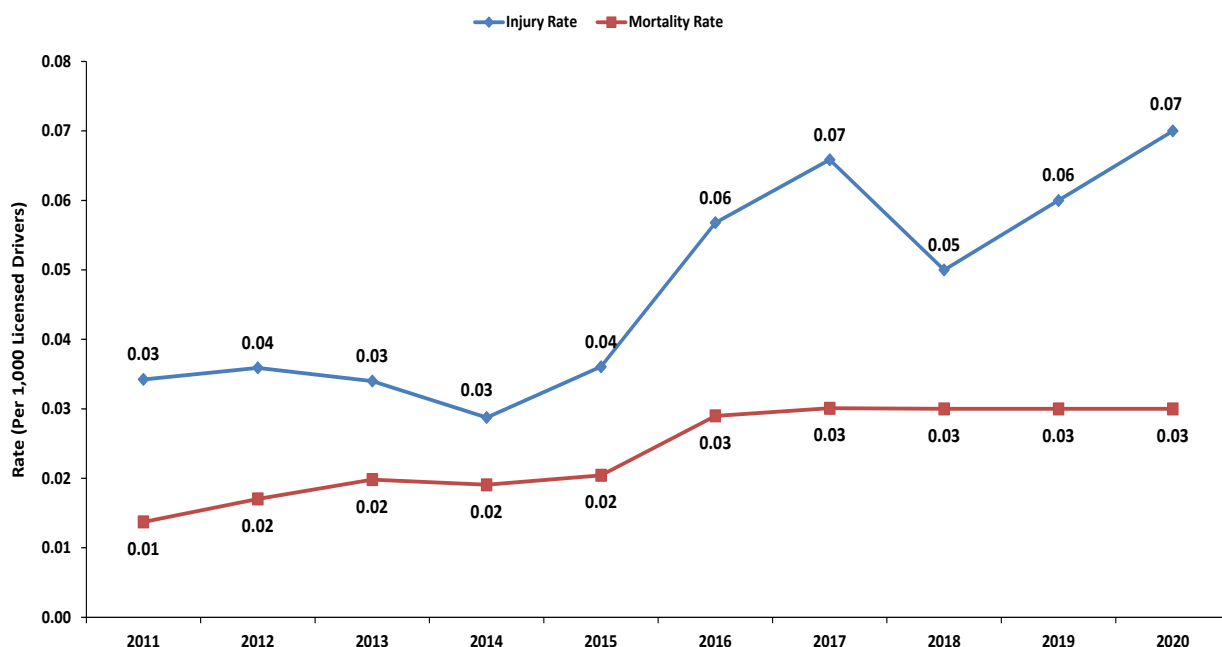## *Drug-Related Consequences Among Adults*

Indicator Description:

- **Motor Vehicle Crash Deaths and Serious Injuries Involving Drugs**. Drug-related traffic crashes involving at least one driver 21 years of age or older who had been suspected of drug use and caused a death or incapacitating injury.

Why Indicator is Important: Individuals under the influence of drugs may be killed or seriously injured as an impaired driver, and they may kill or severely injure others. Among adult drivers between 2011 and 2020, the average drug-related traffic crash mortality rate was 0.02 per 1,000 licensed drivers, and the average drug-related traffic crash injuries rate reported was 0.04 per 1,000 licensed drivers during the same period.

Source: University of Michigan Transportation Research Institute/Center for the Management of Information for Safe and Sustainable Transportation and Michigan Department of State, 2011-2020.

Summary: The rate of drug-related traffic crash injuries and drug-related traffic crash deaths among adult drivers increased by 60 percent and 49 percent, respectively, from 2011 to 2020. Drug-related traffic crashes involving at least one driver 21 years of age or older, caused an annual average of 473.6 deaths and serious injuries in Michigan each year between 2011 and 2020.

Figure 28. Drug-Related Traffic Crash Deaths and Serious Injuries Among Adults: 2011-2020

# Drug-Related Consequences Among Adults

Indicator Description:

- **Prescription Drug-Related Treatment**. Percent of adults (21 years of age or older) admitted for substance use disorder treatment reporting prescription drugs as their primary substance use at admission. Prescription drugs include opiates, barbiturates, sedatives, tranquilizers, benzodiazepine, amphetamines, antidepressants, steroids, and Talwin/Pyribenzamine.

Why Indicator is Important: Substance use disorder treatment admissions data is an indicator of how many individuals received treatment for their substance use problems. It is not an indicator of actual substance use, but rather an indication of the capacity and resources needed for a behavioral health system to address substance use disorders.

Source: Treatment Episode Data Set, 2010-2020.

Summary: The percent of adults who reported prescription drugs as their primary substance use at admission peaked at 15.5 percent in 2011. Rates remained relatively steady until steadily declining from 14.7 percent in 2015 to 9.4 percent in 2020.

Figure 29. Percent of Adults Admitted for Substance Use Disorder Treatment Who Reported Prescription Drugs as Primary Substance Use: 2010-2020
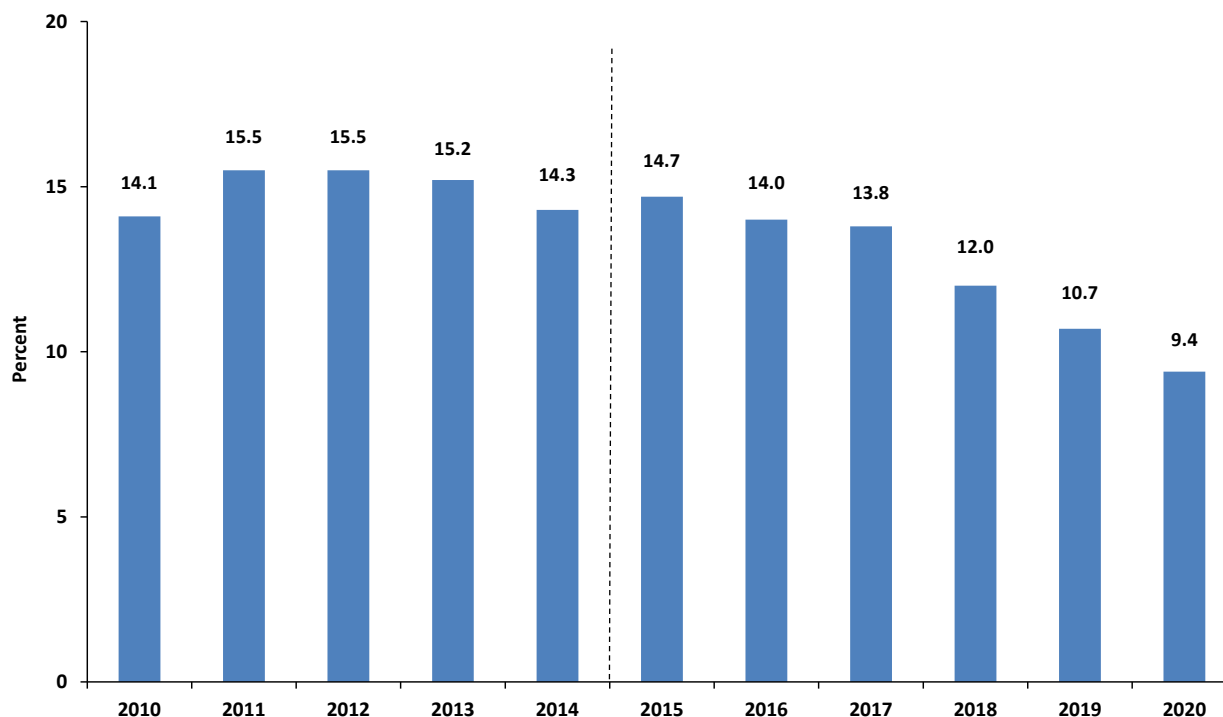
Note: Substance Use TEDS system was replaced with Behavioral Health TEDS system in 2015.

Marijuana Use Among Youth

Indicator Description:

- **Past Month Marijuana Use**. Percent of youth (12-17 years of age) who reported using marijuana within the past month.

Why Indicator is Important: Studies have suggested that students who smoke marijuana have poorer educational outcomes than their nonsmoking peers. Adolescents had a much higher chance of developing dependence, using other drugs, and attempting suicide.[1, 2]

Source: National Survey for Drug Use and Health, 2009-2019.

Summary: The percent of youth reporting marijuana use in the past month increased from 8.1 percent in 2009-2010 to 9.5 percent in 2012-2013. The percent gradually declined from 8.0 percent in 2013-2014 to 7.4 percent in 2018-2019.

Figure 30. Percent of Youth Reporting Marijuana Use in the Past Month: 2009-2019
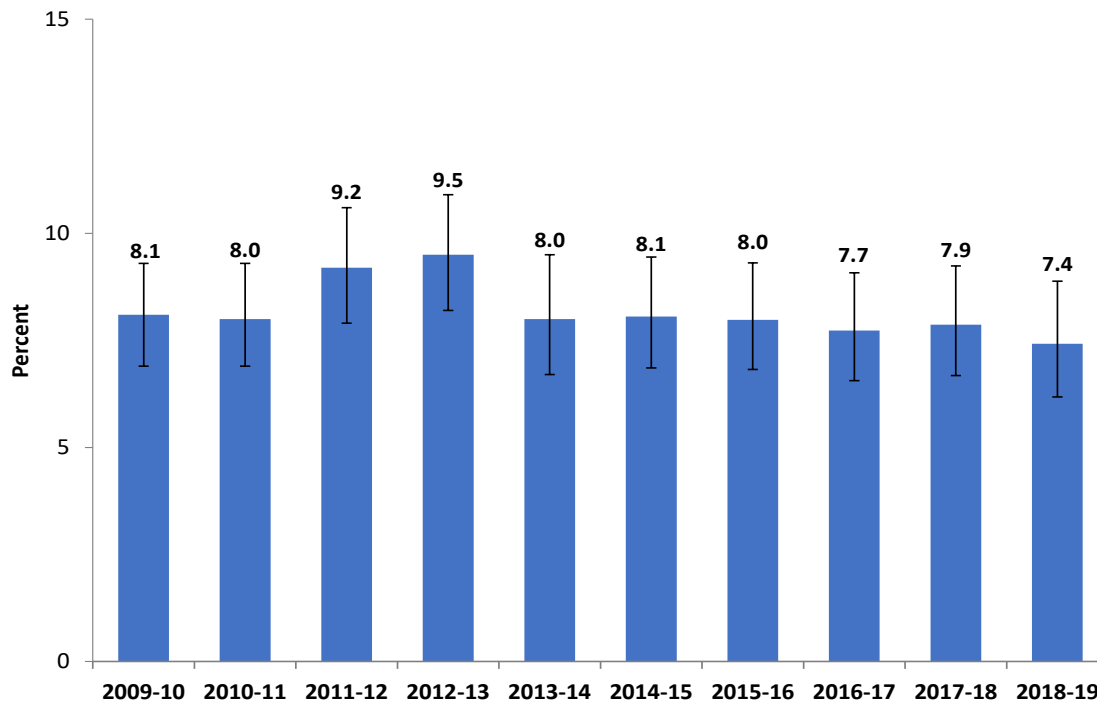
Note: Error bars represent 95% confidence intervals for percent.

1. Macleod, J. et al. (2004). Psychological and social sequelae of cannabis and other illicit drug use by young people: a systematic review of longitudinal, general population studies. *The Lancet*, *363*(9421), 1579–1588. doi: 10.1016/s0140-6736(04)16200-4

2. Silins, E. et al. (2014). Young adult sequelae of adolescent cannabis use: an integrative analysis. *The Lancet Psychiatry*, *1*(4), 286–293. doi: 10.1016/s2215-0366(14)70307-4

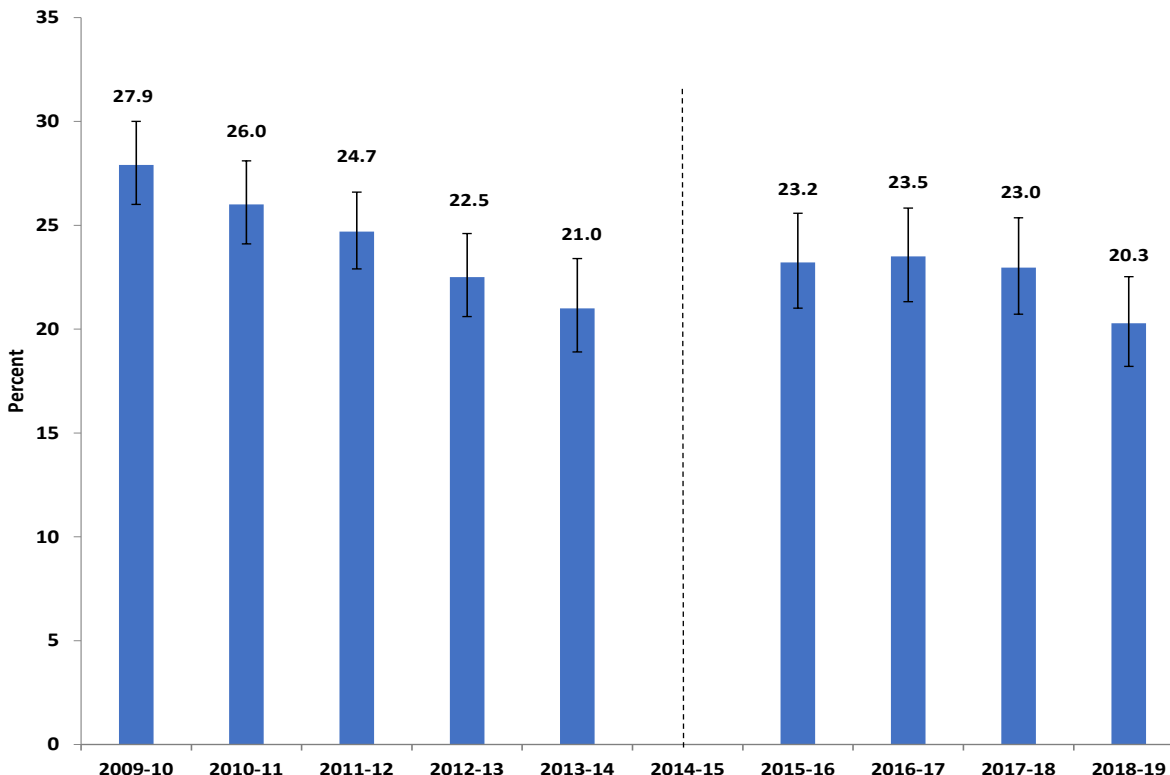## *Factors to Contributing to Marijuana Use*

Indicator Description:

- **Perceptions of Great Risk from Smoking Marijuana**. Percent of youth (12 to 17 years of age) who perceived great risk from smoking marijuana once a month.

Why Indicator is Important: Perceived risk of marijuana is closely related with use. It is a leading indicator for future use and useful to understand the association between marijuana use and perception of great risk of harm.

Source: National Survey for Drug Use and Health, 2009-2019.

Summary: The percent of youth who perceived great risk or harm from smoking marijuana once a month significantly decreased from 27.9 percent in 2009-2010 to 21.0 percent in 2013-2014 period. From 2015-16 to 2017-18 period, the percent remained around 23.3 percent before decreasing to 20.3 percent in 2018-2019.

Figure 31. Percent of Youth who Perceived Great Risk from Smoking Marijuana Once a Month: 2009-2019

Note: Error bars represent 95% confidence intervals for percent. Due to methodology changes in 2015, NSDUH estimates from 2015 and moving forward cannot be compared to NSDUH estimates from 2014 and earlier.

Factors Contributing to Marijuana Use

Indicator Description:

- **First Use of Marijuana**. Percent of youth (12-17 years old) reported using marijuana for the first time in the past 12 months.

Why Indicator is Important: Individuals who started to use marijuana before the age of 18 are four to seven times more likely to develop a marijuana use disorder than adults.[1]

Source: National Survey for Drug Use and Health, 2009-2019.

Summary: The percent of youth who smoked marijuana for the first time remained around 6.2 percent from 2009-10 to 2011-2012. The percent rose to 7 percent in 2013-2014. A drop to 5.8 percent occurred in 2014-2015 before rising again to over 6 percent in 2017-2018.

Figure 32. Percent of Youth who Used Marijuana for the First Time in the Past Year: 2009-2019
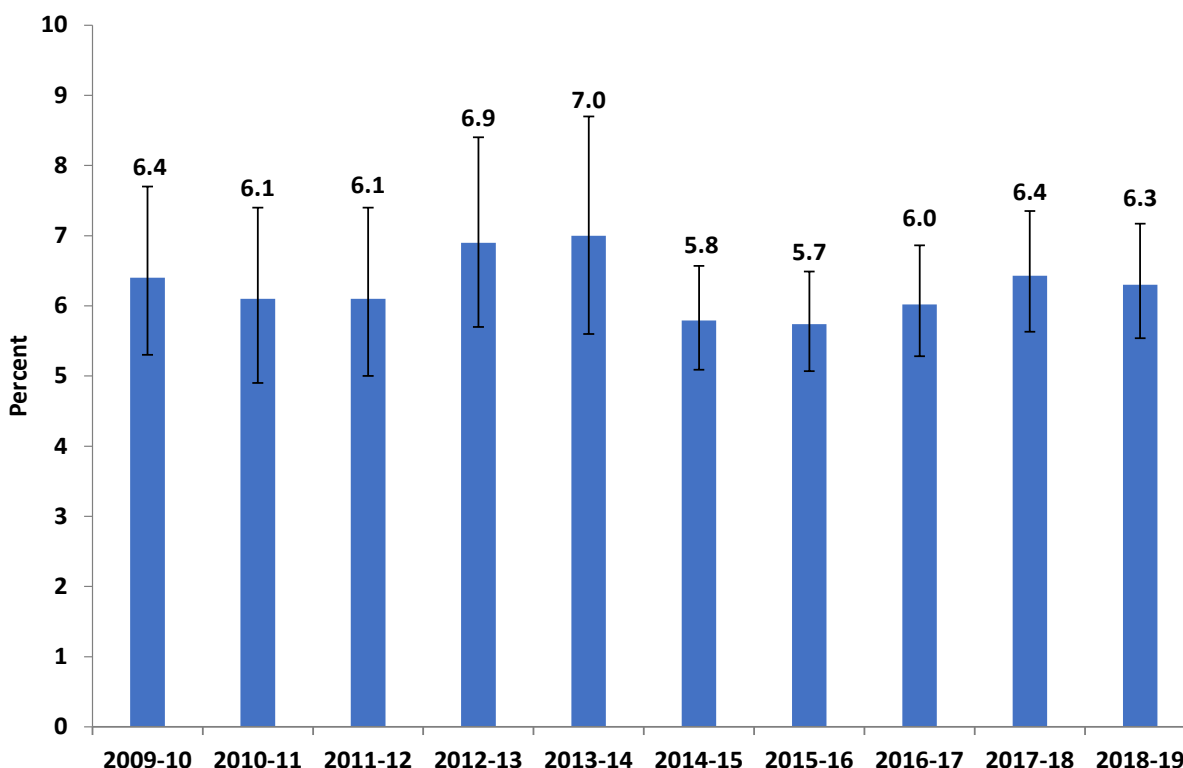
Note: Error bars represent 95% confidence intervals for percent.

1. Winters, K. C., & Lee, C.-Y. S. (2008). Likelihood of developing an alcohol and cannabis use disorder during youth: Association with recent use and age. *Drug and Alcohol Dependence*, *92*(1-3), 239–247. doi: 10.1016/j.drugalcdep.2007.08.005

Marijuana Consequences among Youth
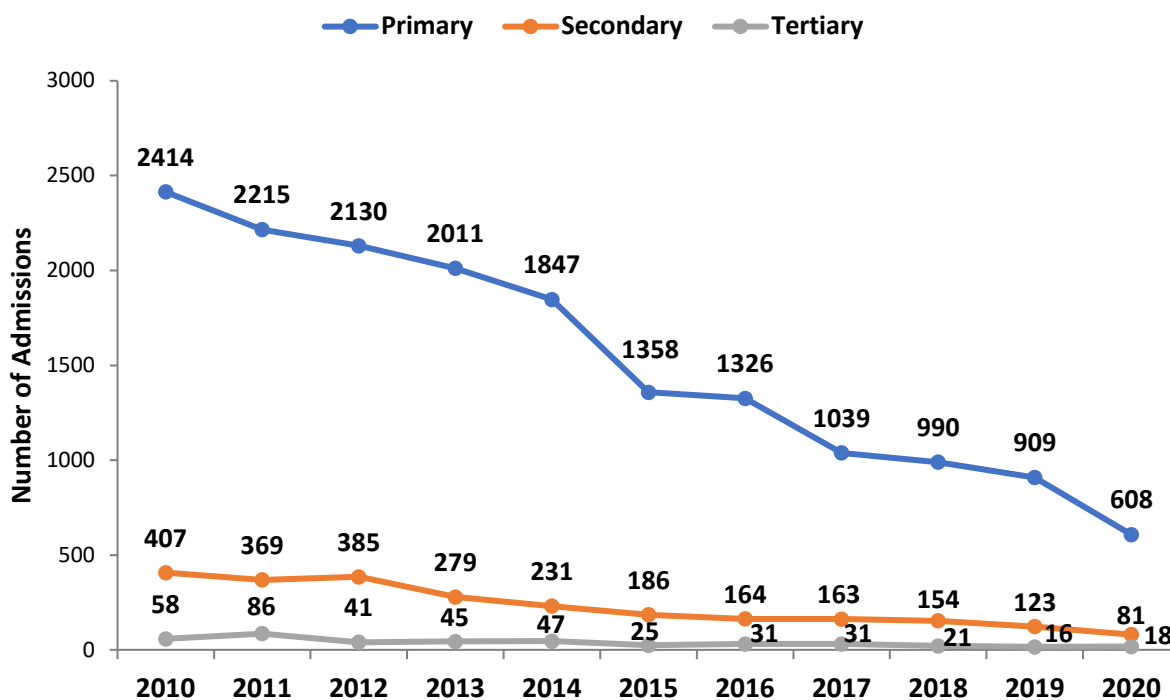
Indicator Description:

- **Reporting Marijuana as Substance Use**. Youth (12-17 years of age) reporting marijuana as their primary, secondary, or tertiary substance use.

Why Indicator is Important: Substance use disorder treatment admissions data is an indicator of how many individuals received treatment for their substance use problems. It is not an indicator of actual substance use, but rather an indication of the capacity and resources needed for a behavioral health system to address substance use disorders.

Source: Treatment Episode Data Set, 2010-2020

Summary: In 2010, marijuana was most commonly reported primary substance by youth (2,414 admissions at 73.6 percent). While the total number of youth treatment admissions decreased over time, marijuana was still the primary substance use by youth in 2020, with 608 admissions at 60.7 percent.

Figure 33. Number of Youth (12-17 years of age) Admissions who Reported Marijuana as Primary, Secondary, or Tertiary Substance Use: 2010-2020

Marijuana Use Among Adults
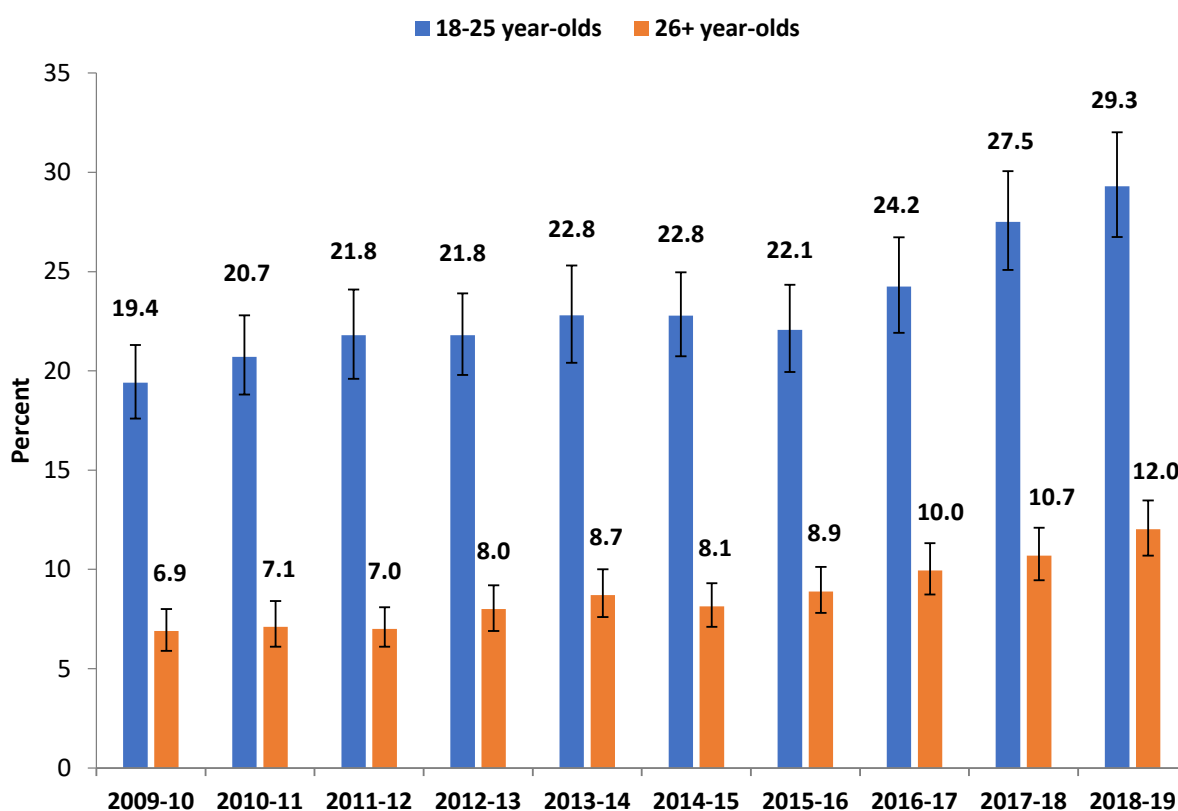
Indicator Description:

- **Past Month Marijuana Use**. Percent of adults (age 18 years or older) who reported using marijuana within the past month.

Why Indicator is Important: Marijuana use could impair short-term memory and judgement and alter perception, thus it can affect performance in school or at work and make it dangerous to drive.

Source: National Survey for Drug Use and Health, 2009-2019.

Summary: From 2009 to 2019, the percent of young adults (aged 18-25) reported current marijuana use increased significantly from 19.4 percent to 29.3 percent. Similarly, the percent of adults (aged 26 and older) reported current marijuana use increased significantly from 6.9 percent to 12.0 percent.

Figure 34. Percent of Adults Reporting Marijuana Use in the Past Month: 2009-2019

Note: Error bars represent 95% confidence intervals for percent.

Factors Contributing to Marijuana Use

Indicator Description:

- **Perceptions of Great Risk from Smoking Marijuana**. Percent of adults (age 18 years or older) who perceived great risk from smoking marijuana once a month.

Why Indicator is Important: Perceived risk of marijuana is closely related with use. It is a leading indicator for future use and useful to understand the association between marijuana use and perception of great risk of harm.

Source: National Survey for Drug Use and Health, 2009-2019.

Summary: Compared to other age groups including youth (aged 12-17), young adults (aged 18-25) reported lowest perceived great risk from smoking marijuana once a month at 8.7 percent.

Figure 35. Percent of Adults who Perceived Great Risk from Smoking Marijuana Once a Month: 2009-2019
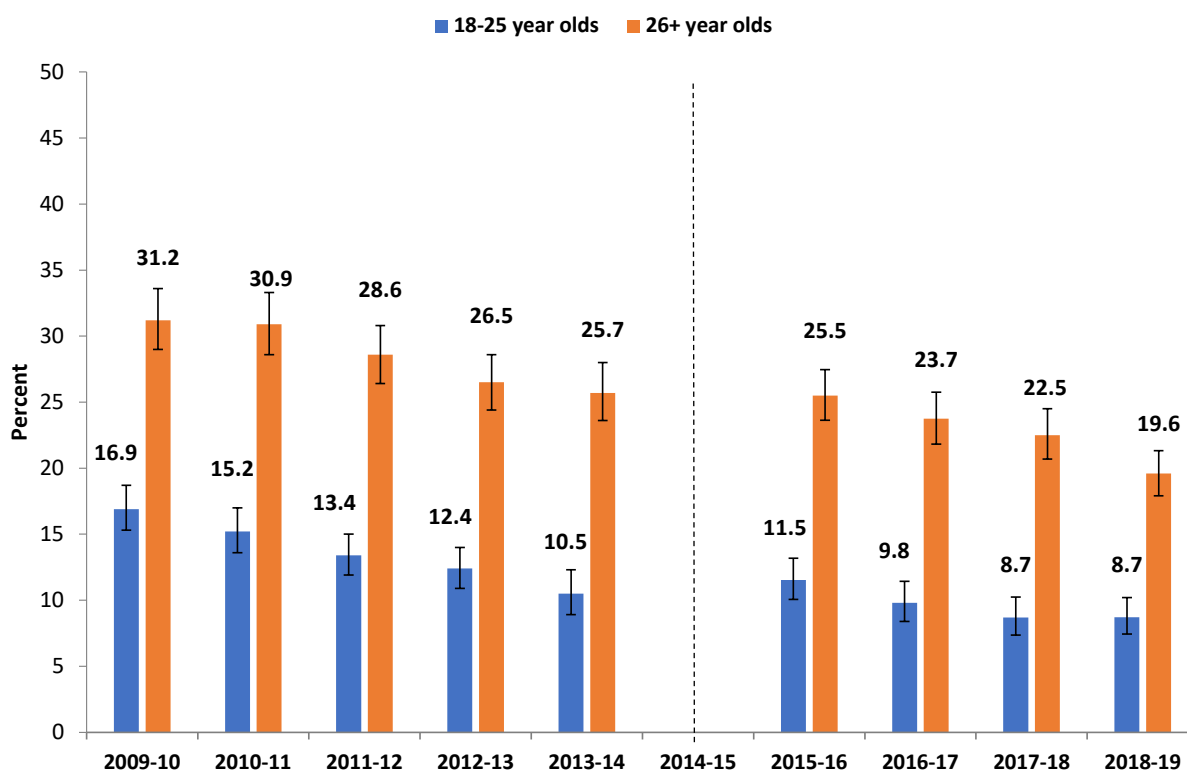
Note: Error bars represent 95% confidence intervals for percent. Due to methodology changes in 2015, NSDUH estimates from 2015 and moving forward cannot be compared to NSDUH estimates from 2014 and earlier.

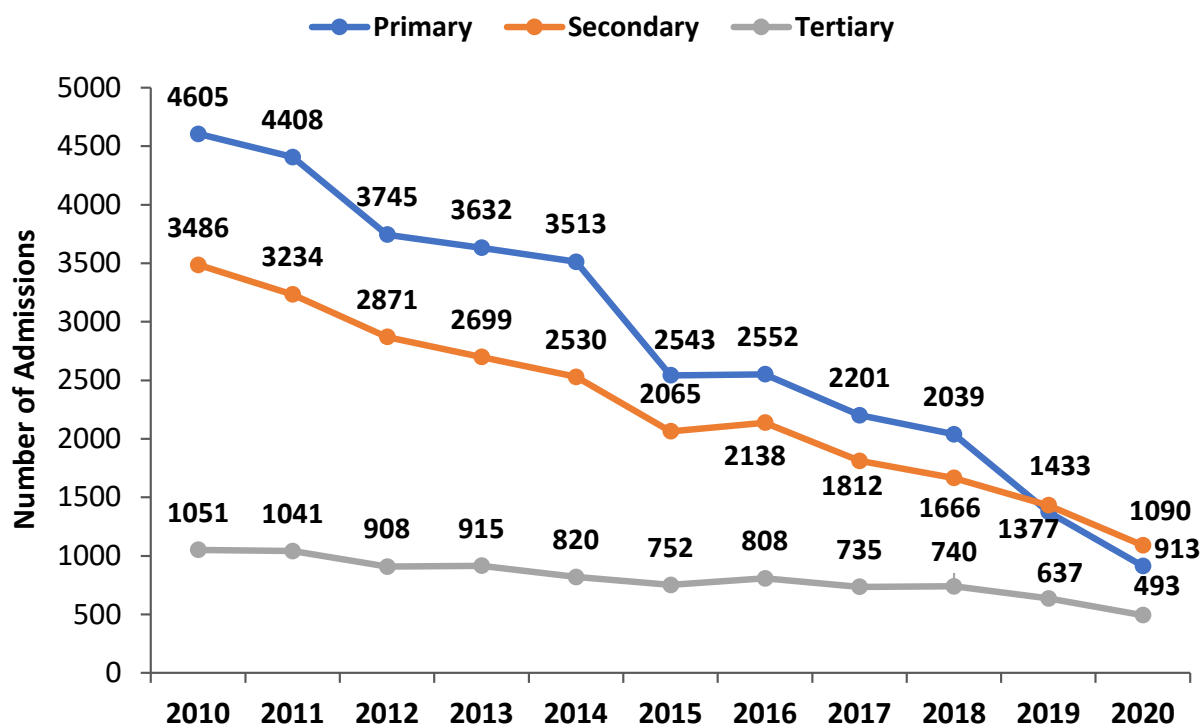## *Marijuana Consequences among Young Adults*

Indicator Description:

- **Reporting Marijuana as Substance Use**. Young adults (18-25 years of age) reporting marijuana as their primary, secondary, or tertiary substance use

Why Indicator is Important: Substance use disorder treatment admissions data is an indicator of how many individuals received treatment for their substance use problems. It is not an indicator of actual substance use, but rather an indication of the capacity and resources needed for a behavioral health system to address substance use disorders.

Source: Treatment Episode Data Set, 2010-2020

Summary: The number of treatment admissions among young adults (18-25 years of age) reporting marijuana as primary, secondary, or tertiary substance has fallen overall during the 2010 to 2020 period. In 2010, marijuana represented 28.2 percent of all primary substance treatment admissions, and it changed to 15.5 percent in 2020. Marijuana is most commonly reported secondary substance among young adults.

Figure 36. Number of Young Adults (18-25 years of age) Admissions who Reported Marijuana as Primary, Secondary, or Tertiary Substance Use: 2010-2020

Marijuana Consequences among Adults
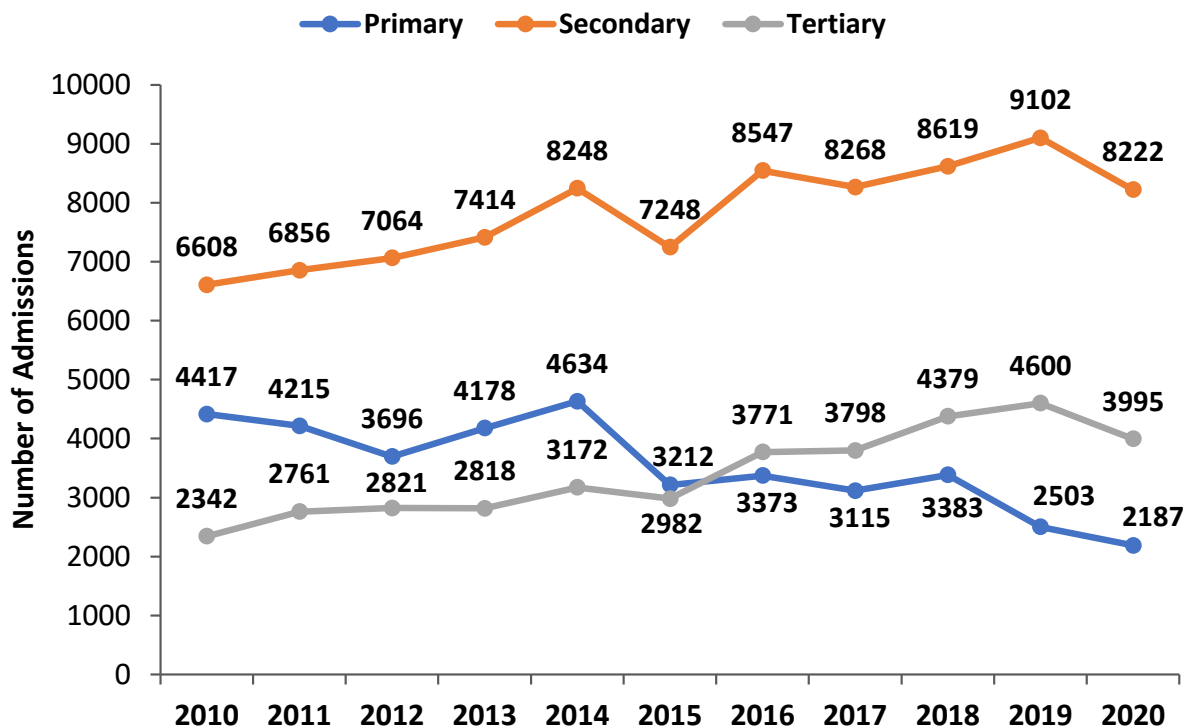
Indicator Description:

- **Reporting Marijuana as Primary Drug of Abuse**. Adults (26+ years of age) reporting marijuana as their primary, secondary, or tertiary substance use

Why Indicator is Important: Substance use disorder treatment admissions data is an indicator of how many individuals received treatment for their substance use problems. It is not an indicator of actual substance use, but rather an indication of the capacity and resources needed for a behavioral health system to address substance use disorders.

Source: Treatment Episode Data Set, 2010-2020

Summary: The number of treatment admissions among adults (26+ years of age) who reported marijuana as a secondary or tertiary substance use rose during the 2010 to 2020 period, while reports of primary marijuana use fell. As shown below, marijuana is most commonly reported secondary substance among adults aged 26 or older.

Figure 37. Number of Adults (26+ years of age) who Reported Marijuana as Primary, Secondary, or Tertiary Substance Use: 2010-2020

Depressive Feelings Among Youth

Indicator Description:

- **Depression Among Youth.** Percent of high school students (ninth to 12th graders) who reported feeling sad or hopeless almost ever day for two weeks in a row during the past year.

Why Indicator is Important: Youth with depressive feelings are at higher risk for substance abuse problems. When youth have both substance abuse problems and mental health illnesses such as depression, they are at increased risk for problems with peer and familial relationships, academics, suicide, and homelessness.[1,2]

Source: Michigan Youth Risk Behavior Survey, 2009-2019.

Summary: The percent of high school students who reported experiencing depressive feelings in the past year has steadily remained around 27 percent, with no significant deviation from 2009 to 2013. A significant increase was observed from 27 percent in 2013 to 37.3 percent in 2018 and 36.4 percent in 2019.

Figure 38. Percent of Youth Who Reported Experiencing Depressive Feelings in the Past Year: 2009-2019
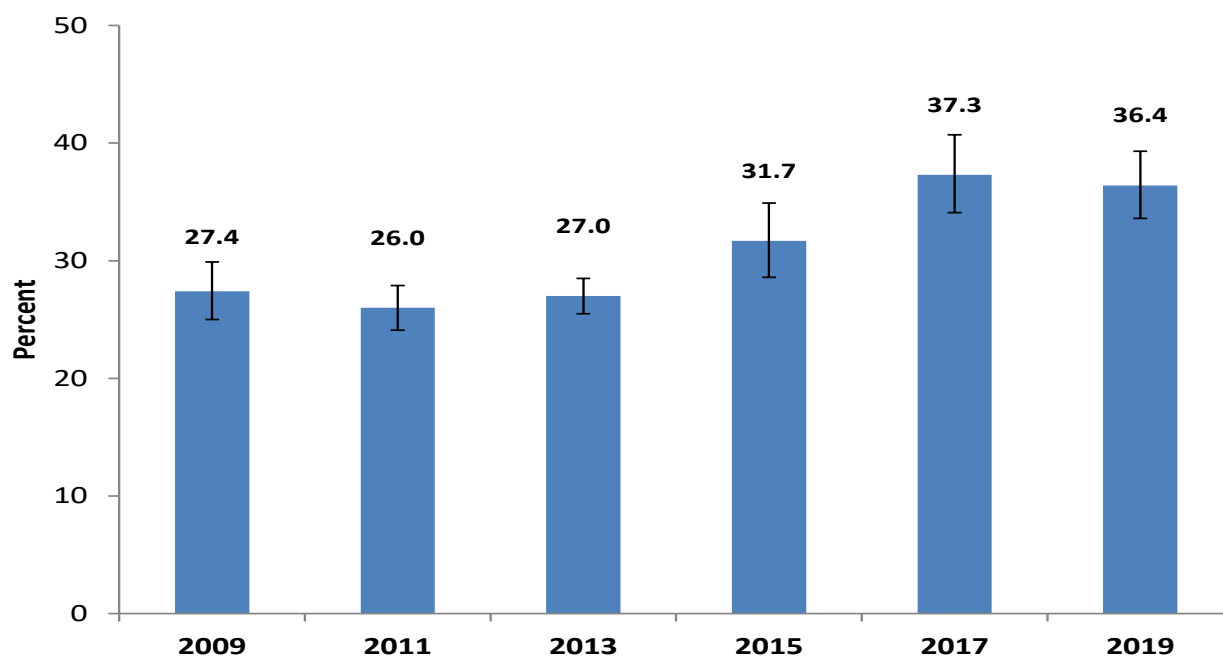
Note: Error bars represent 95% confidence intervals for percent.

1. Hawkins, E. (2009). A tale of two systems: co-occurring mental health and substance abuse disorders treatment for adolescents. *Annual Review of Psychology*. 60:197-227. doi: 10.1146/annurev.psych.60.110707.163456. Review.

2. U.S. Dep. Health Human Services. (2002). Report to Congress on the Prevention and Treatment of Co-occurring Substance Abuse and Mental Health Disorders. Substance Abuse and Mental Health Services Administration.: Rockville, MD.

Attempted Suicide Among Youth

Indicator Description:

- **Suicide Attempt Among Youth.** Percent of high school students (ninth to 12th graders) who reported having attempted suicide one or more times in the past year.

Why Indicator is Important: Suicide is the most tragic and final consequence of all individuals experiencing major depressive feelings.

Source: Michigan Youth Risk Behavior Survey, 2009-2019.

Summary: The percent of high school students who reported having attempted suicide at least once in the past year has steadily remained around 9 percent, with no significant deviation from 2009 to 2017. The rate dropped to 7.8 percent in 2019.

Figure 39. Percent of Youth Who Reported a Suicide Attempt in the Past Year: 2009-2019
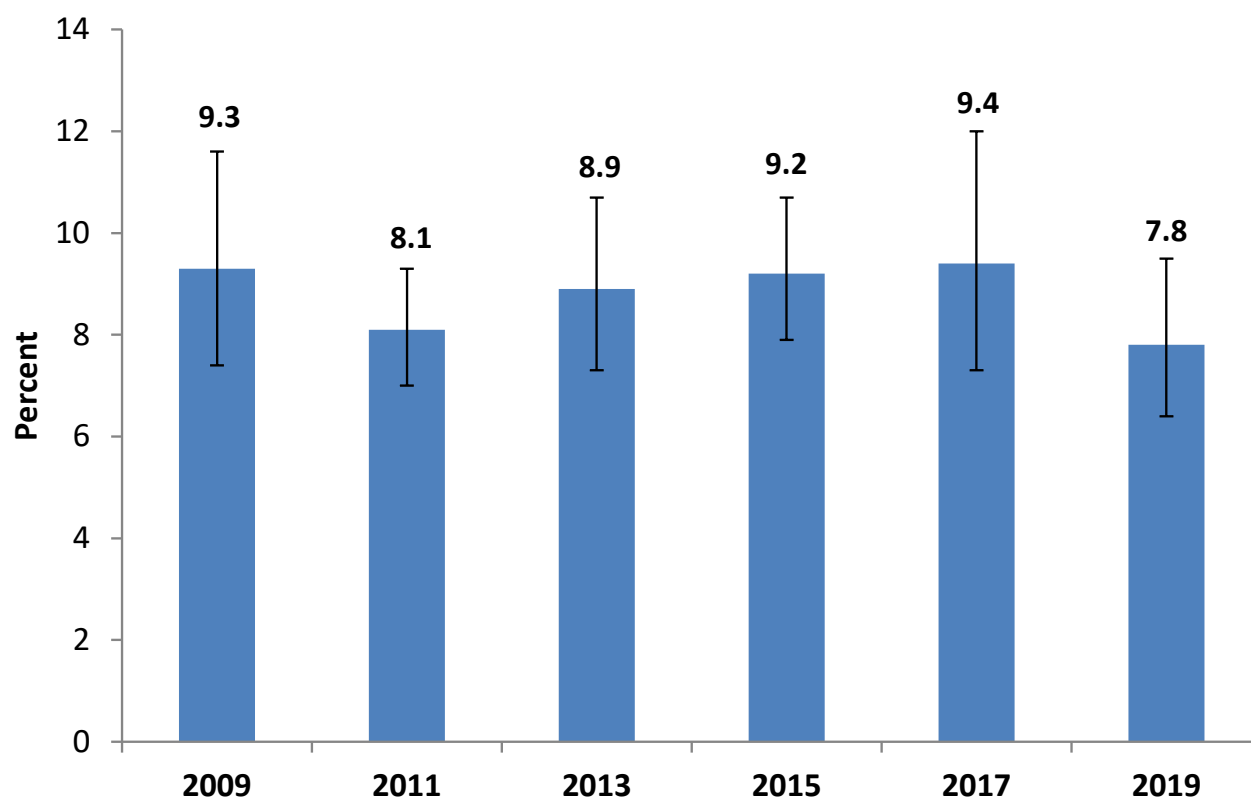
Note: Error bars represent 95% confidence intervals for percent.

Depressive Feelings Among Adults

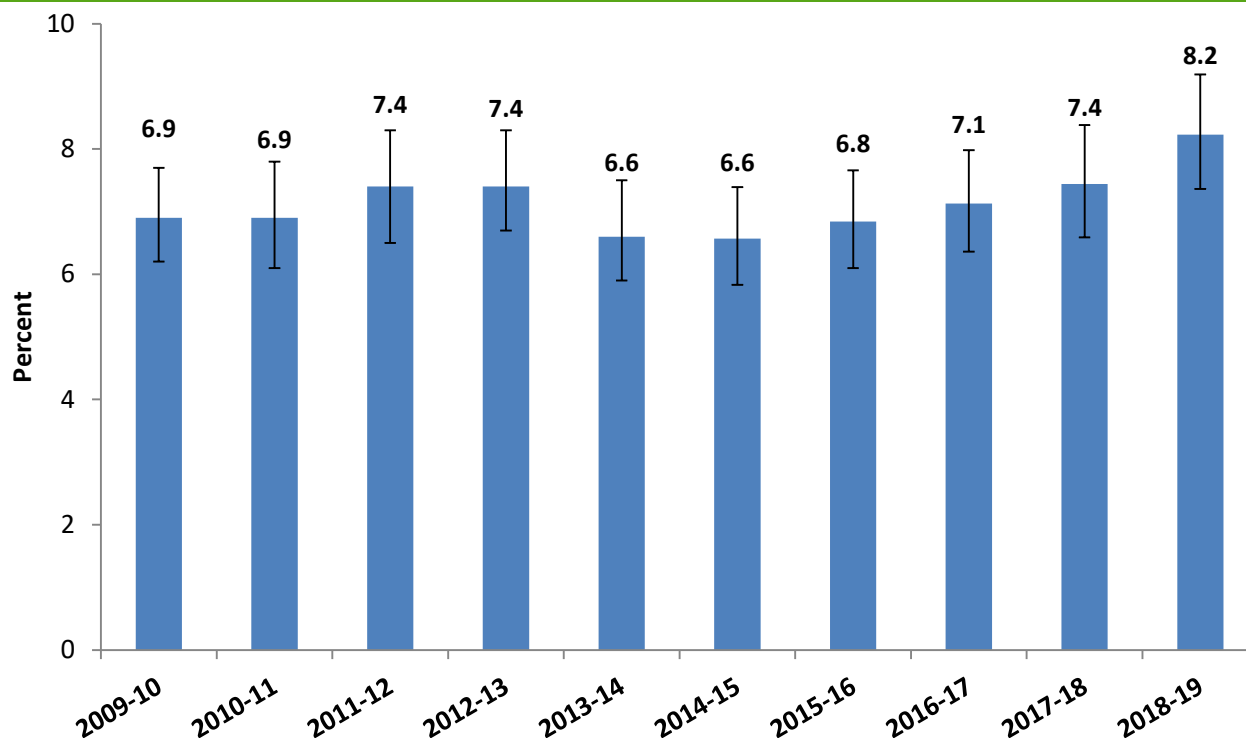**Indicator Description**:

- **Major Depressive Disorder.** Percent of adults (age 18 or older) who reported experiencing at least one major depressive episode in the past year.

Why Indicator is Important: Major depressive episodes are defined by the 5th edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-V) as a period of two weeks or longer of either a depressed mood or loss of interest or pleasure, and at least four other symptoms that reflect a change in functioning, such as problems with sleep, eating, energy, concentration, and self-image.[1] Experiencing psychological distress in the past year has been associated with higher rates of substance abuse.[2]

Source: National Survey on Drug Use and Health, 2009-2019

Summary: The percent of adults who reported experiencing a major depressive episode in the past year has steadily remained around 7 percent, with no significant deviation from 2009 to 2018. In 2018-2019, the percentage increased to 8.2 percent, the highest rate in over 14 years.

Figure 40. Percent of Adults Who Reported Experiencing a Major Depressive Episode in the Past Year: 2009-2019

Note: Error bars represent 95% confidence intervals for percent.

1. American Psychiatric Association (2013). Diagnostic and Statistical Manual of Mental Disorders. 5th ed. Arlington, VA.

2. Davis, L., Uezato, A., Newell, J. M., & Frazier, E. (2008). Major depression and comorbid substance use disorders. *Current Opinion in Psychiatry*, *21*(1), 14–18. doi: 10.1097/yco.0b013e3282f32408

Serious Mental Illness Among Adults
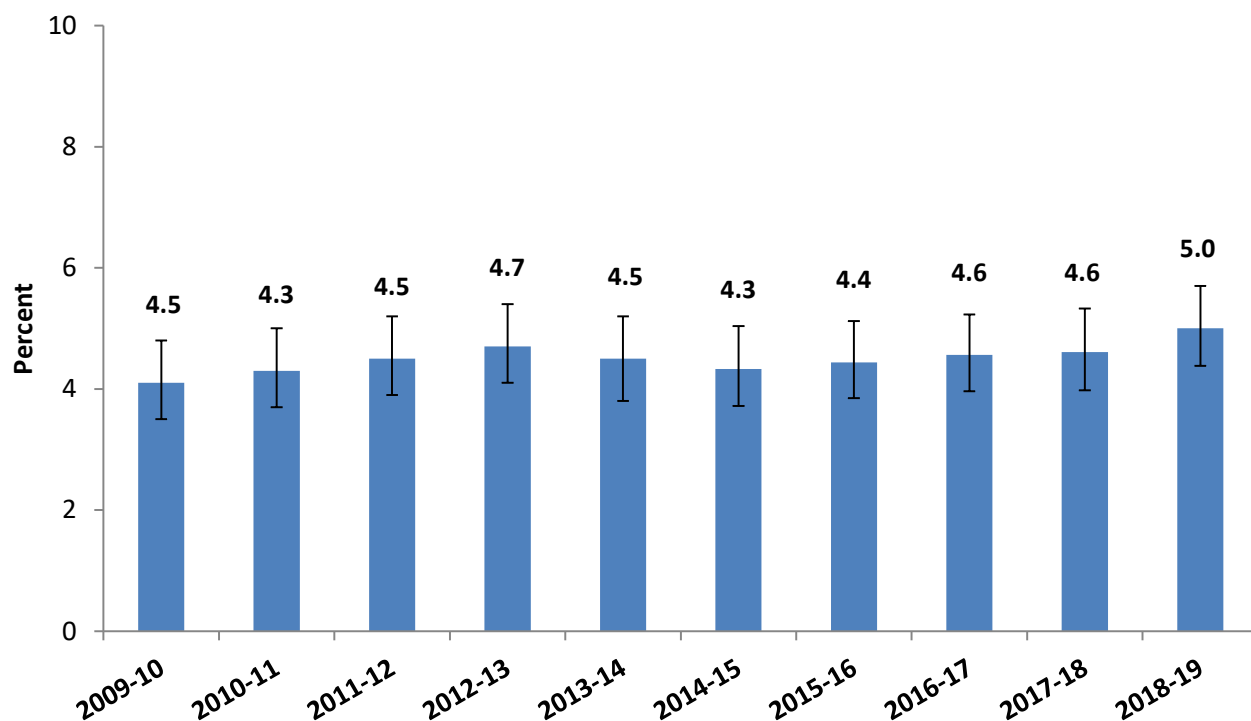
Indicator Description:

- **Serious Mental Illness.** Percent of adults (age 18 or older) who reported having a serious mental illness in the past year.

Why Indicator is Important: Serious mental illness is defined by the 5th edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-V) as having a diagnosable mental, behavioral, or emotional disorder, other than a substance use disorder, that results in serious functional impairment.[1] Experiencing psychological distress in the past year has been associated with higher rates of substance abuse.[2]

Source: National Survey on Drug Use and Health, 2009-2019.

Summary: The percent of adults who reported having a serious mental illness in the past year has steadily remained around 4.5 percent, with no significant deviation from 2009 to 2018. In 2018-2019, the percentage increased to 5.0 percent, the highest rate in over 10 years.

Figure 41. Percent of Adults Who Reported Having a Serious Mental Illness in the Past Year: 2009-2019

Note: Error bars represent 95% confidence intervals for percent.

1. American Psychiatric Association (2013). Diagnostic and Statistical Manual of Mental Disorders. 5th ed. Arlington, VA.

2. Davis, L., Uezato, A., Newell, J. M., & Frazier, E. (2008). Major depression and comorbid substance use disorders. *Current Opinion in Psychiatry*, *21*(1), 14–18. doi: 10.1097/yco.0b013e3282f32408

Suicidal Thoughts Among Adults

Indicator Description:

- **Suicidal Thoughts Among Adults.** Percent of adults (age 18 or older) who reported having suicidal thoughts in the past year.

Why Indicator is Important: Suicide is a preventable death that is the most tragic and final consequence of all individuals experiencing major depressive feelings.

Source: National Survey on Drug Use and Health, 2009-2019.

Summary: The percent of adults who reported having suicidal thoughts in the past year has steadily remained around 4.2 percent, with no significant deviation from 2009 to 2018. In 2018-2019, the percentage increased to 4.6 percent.

Figure 42. Percent of Adults Who Reported Having Suicidal Thoughts in the Past Year: 2009-2019
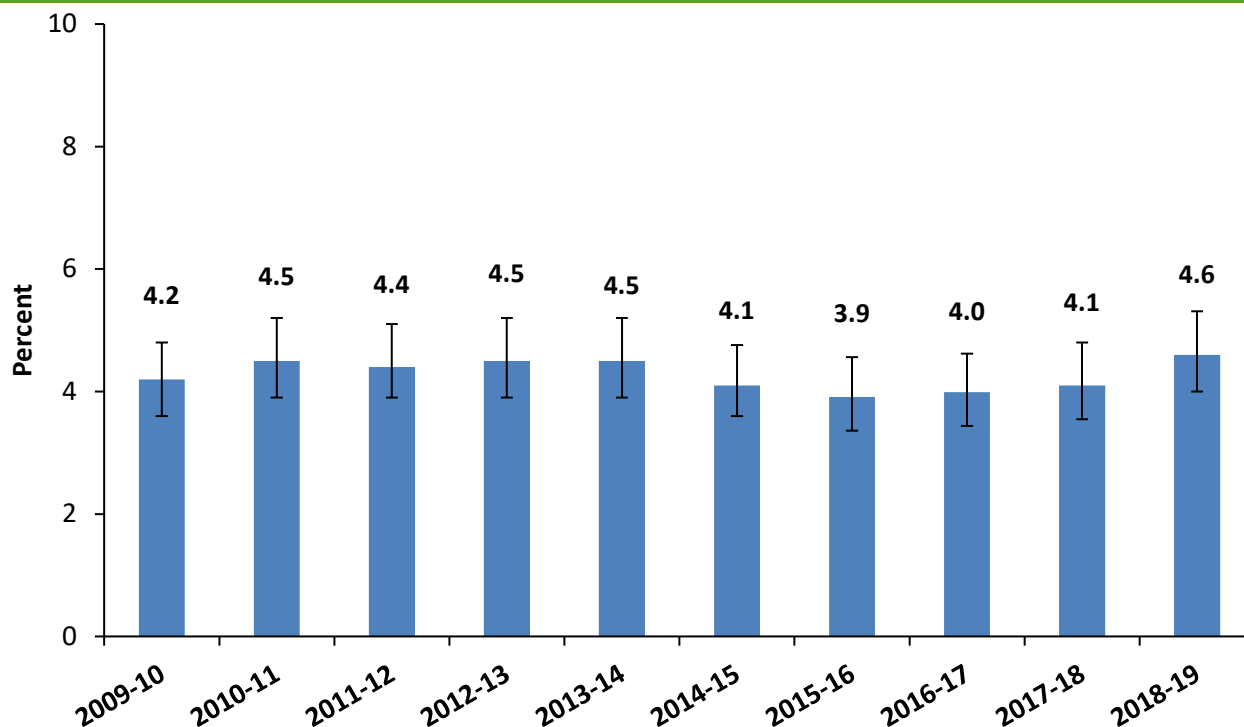
Note: Error bars represent 95% confidence intervals for percent.

Concluding Remarks

The State Epidemiological Outcomes Workgroup (SEOW) was established to assist the state and communities to adopt and implement the Strategic Prevention Framework. The mission of the SEOW is to use data to inform and enhance state and community decisions regarding substance use and mental, emotional, and behavioral disorders, prevention programs, practices, and policies, as well as to promote positive behavioral and mental health over the lifespan.
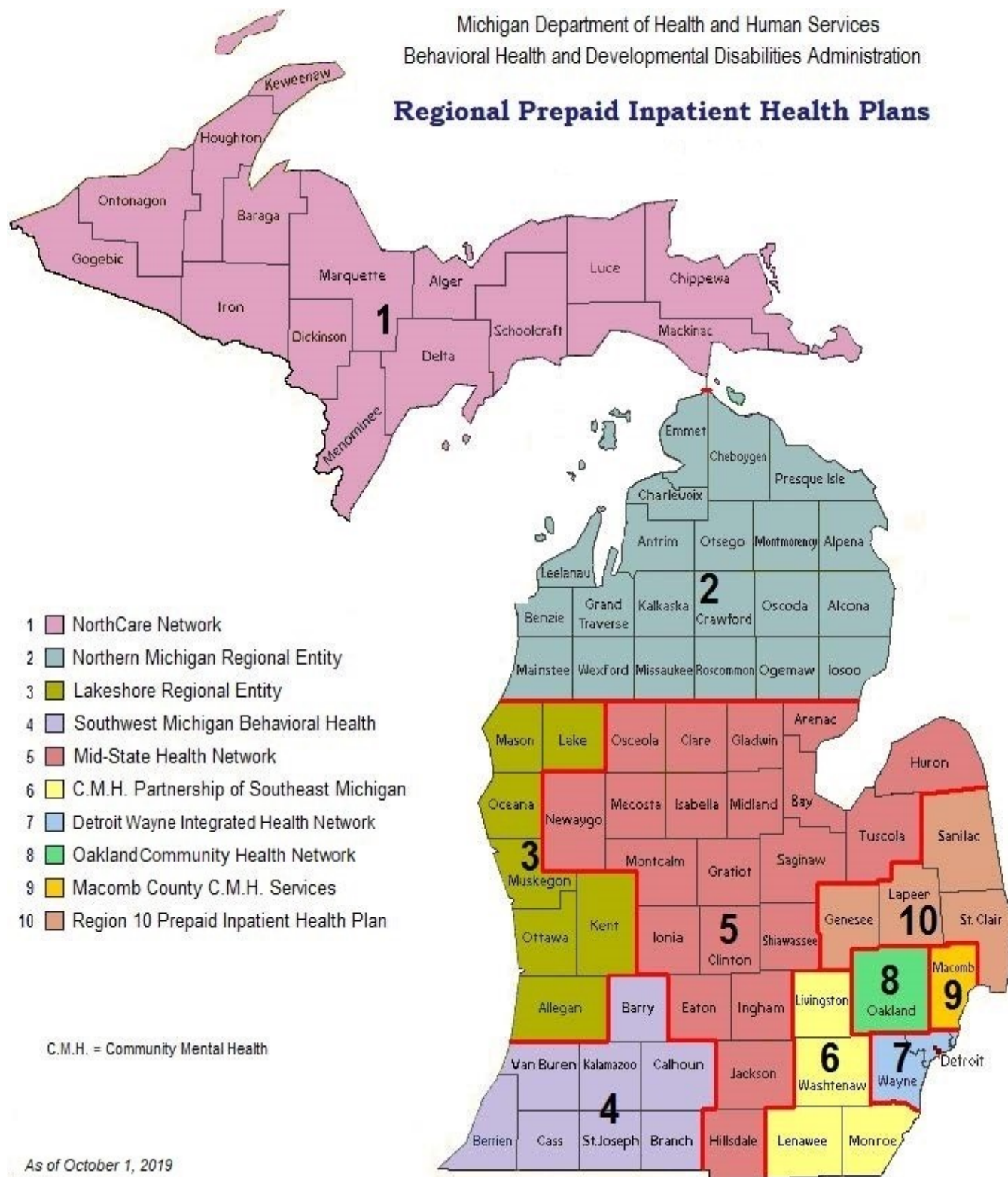
This document presents some of the guiding principles, which direct the work of Michigan's SEOW:

- A public health approach is used which encompasses improving health through a focus on population-based measures.

- A strategic planning framework is used, including assessment of need, capacity building, planning, implementation, and evaluation, in order to position Michigan with prevention prepared communities, provide alignment between substance use disorders and mental health service provisions and implement a recovery oriented system of care.

- The overall work of the SEOW positions Michigan for effective implementation of a data-driven decision making process in developing prevention prepared communities, which will lead to improved outcomes.

- The SEOW utilizes indicators from multiple sources, including the use of alcohol, tobacco and other/illicit drugs, substance use disorder treatment, and mental health issues pertaining to a variety of mental, emotional, and behavioral conditions.

- The integration of a combined substance use disorder and mental health indicator tracking system provides better integration of behavioral health decision-making processes and policy development, which leads to improved services and quality of life indicators for all Michigan citizens.

In order to implement OROSC's mission to promote wellness, strengthen communities, and facilitate recovery, effective prevention efforts are needed and require a thorough understanding of the community to target intervention efforts appropriately. Epidemiological data describing the extent and distribution of substance use, mental and emotional health, and their adverse consequences within and across populations is critical to a successful prevention initiative that embodies outcome-based prevention and a public health approach. Such data allow the state and communities to begin answering basic questions that serve as a foundation for data-driven prevention planning to prioritize and choose targeted interventions, and use appropriate programs, policies, and practices to address efforts related to promoting mental health and prevention of mental and substance use disorders.

This document was created to assist in the aforementioned efforts to assure data-driven planning and decision-making. It is the intention of OROSC to continue updates to this Michigan Epidemiological Profile in conjunction with the SEOW.

Appendix — Michigan Prepaid Inpatient Health Plans (PIHP) Service Areas

Michigan Department of Health and Human Services
Behavioral Health and Developmental Disabilities Administration

Regional Prepaid Inpatient Health Plans

1 ▢ NorthCare Network
2 ▢ Northern Michigan Regional Entity
3 ▢ Lakeshore Regional Entity
4 ▢ Southwest Michigan Behavioral Health
5 ▢ Mid-State Health Network
6 ▢ C.M.H. Partnership of Southeast Michigan
7 ▢ Detroit Wayne Integrated Health Network
8 ▢ Oakland Community Health Network
9 ▢ Macomb County C.M.H. Services
10 ▢ Region 10 Prepaid Inpatient Health Plan

C.M.H. = Community Mental Health

As of October 1, 2019

Contact Information:

Michigan Department of Health and Human Services

Behavioral Health and Developmental Disabilities Administration

Bureau of Community Based Services

Office of Recovery Oriented Systems of Care

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