Michigan Epidemiological Profile

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Behavioral Health and Developmental Disabilities Administration

Office of Recovery Oriented Systems of Care

MDHHS
Michigan Department of Health & Human Services
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Executive Summary

The Michigan Epidemiological Profile describes Michigan residents' substance abuse consequences, consumption patterns and intervening variables, mental health well-being, and establishes a method for monitoring and improving outcomes. The profile is organized by five different topic areas with 41 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 2008 and 2017, alcohol-related traffic crashes involving at least one driver, 16 to 20 years of age, who had been drinking, caused an annual average of 121 deaths and serious injuries.
- In 2018, 990 youths 12 to 17 years of age, were admitted to treatment for marijuana as the primary substance use in Michigan, accounting for 63.5 percent of all substance abuse treatment admissions.
- In 2017, 10.5 percent of Michigan 9th through 12th graders smoked cigarettes on one or more of the past 30 days and 2.5 percent of students had smoked daily.
- In 2017, 37.3 percent of Michigan youth reported having depressive feelings, and nearly one out of ten (9.4 percent) students reported having attempted suicide one or more times.

The findings for Michigan's adult population include:

- Between 2008 and 2017, alcohol-related traffic crashes involving at least one driver, 21 years of age or older, who had been drinking, caused an annual average of 1,082 deaths and serious injuries.
- In 2017, an estimated 6.7 percent of individuals 18 years of age or older were heavy drinkers and 18.2 percent of them were binge drinkers.
- In 2018, 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 2018, opioids (heroin or other opiates) totaled 29,954 treatment entrances for individuals 21 years of age or older, accounting for 41.4 percent of all substance abuse treatment admissions.
- According to 2016-2017 estimates, young adults 18 to 25 years of age in Michigan had higher rates of nonmedical use of pain relievers, compared to youth 12 to 17 years of age and adults 26 years of age or older.
- According to 2016/2017 estimates, 7.1 percent of adults 18 years of age and older reported experiencing a major depressive episode and 4.6 percent of adults reported serious mental illness.

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Introduction

The data reported in this document are 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 (SUD).[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 or substance abuse disorder or both, and the majority have a depressive illness.[3] Serious psychological distress is an important individual and population health issue. Depressive disorders, if untreated, become chronic and are expected, by the year 2020, to be exceeded only by heart disease in contributing to the global burden of diseases.[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 profile by the Bureau of Epidemiology and Population Health.

1. Hirschfield, R. (2001). Comorbidity of major depression and anxiety disorders: Recognition and management in primary care. Prim Care Companion Journal of Clinical Psychiatry. 3(6): 244–254.
2. National Institute on Drug Abuse. (2010). Comorbidity: addiction and other mental illnesses. Retrieved from http://www.nida.nih.gov/PDF/RRComorbidity.pdf
3. Moscicki, E. K. (2001). Epidemiology of completed and attempted suicide: toward a framework for prevention. Clinical Neuroscience Research, 1, 310-323.
4. Murray, C. J. L., & Lopez, A. D. (1996). A comprehensive assessment of mortality and disability from diseases, injuries, and risk factors in 1990 and projected to 2020. A. Lopez, C. Mathers, M. Ezzati, D. Jamison, C. Murray (Eds.). The global burden of disease, vol. 1. Cambridge, MA: Harvard University Press.
5. Murray, C. J. L., & Lopez, A. D. (1996). Global health statistics; a compendium of incidence, prevalence, and mortality estimates for over 200 conditions. C. Murray, A. Lopez (Eds.). The global burden of disease, vol. 2. Cambridge, MA: Harvard University Press.

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 (U of M 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) • 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 Primary Substance Use (TEDS)	• Past Month Marijuana Use (NSDUH) • Perceived Great Risk (NSDUH) • Marijuana Primary Substance Use (TEDS)
Mental Health Indicators	• Depressive feelings (MiYRBS) • Suicide Attempts (MiYRBS, national YRBS)	• Major Depressive Episode (National Survey on Drug Use and Health {NSDUH}) • Serious Mental Illness (NSDUH) • Suicidal Thoughts (NSDUH)

Michigan Overview

In 2017, the estimated population of Michigan was 9,925,568.[1] Approximately, 81.2 percent of the state's population is White, 15.2 percent African American, 4.9 percent Hispanic, 3.6 percent Asian/Pacific Islander, and 1.5 percent Native American. English is the primary language spoken at home by 90.6 percent of the residents of Michigan, followed by languages other than English at 9.4 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 15.9 percent of the state's population is over 65 years of age, with 22.3 percent under 18 years of age. An estimated 50.8 percent of the state's population is female; 49.2 percent is male.[1]

The portion of Michigan's population that has completed high school remains above the national rate. Eighty-nine percent of Michigan's residents, 25 years of age and older, possess a high school diploma or equivalent, and 37.4 percent have attained an Associate's Degree or higher. While Michigan tends to have a higher percentage of high school graduates than most states, Michigan trends for attainment of a bachelor's degree remain lower than the national average (28.1 percent and 30.9 percent respectively).[1]

The percentage of individuals living below the poverty line in Michigan has changed significantly over the past decade. Individual poverty rates for Michigan changed from 10.1 percent in 2000 to 15.6 percent in 2017, while the U.S. individual poverty rate was 12.2 percent and 14.6 percent respectively. The percentage of families living below the poverty line showed a similar trend. The family poverty rate for Michigan was 7.7 percent, while the U.S. family poverty rate was 9.3 percent in 2000. In 2017, Michigan's family poverty rate was estimated as 10.5 percent and that of the U.S. was 10.5 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. (2017). American community survey. Retrieved from http://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml
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:

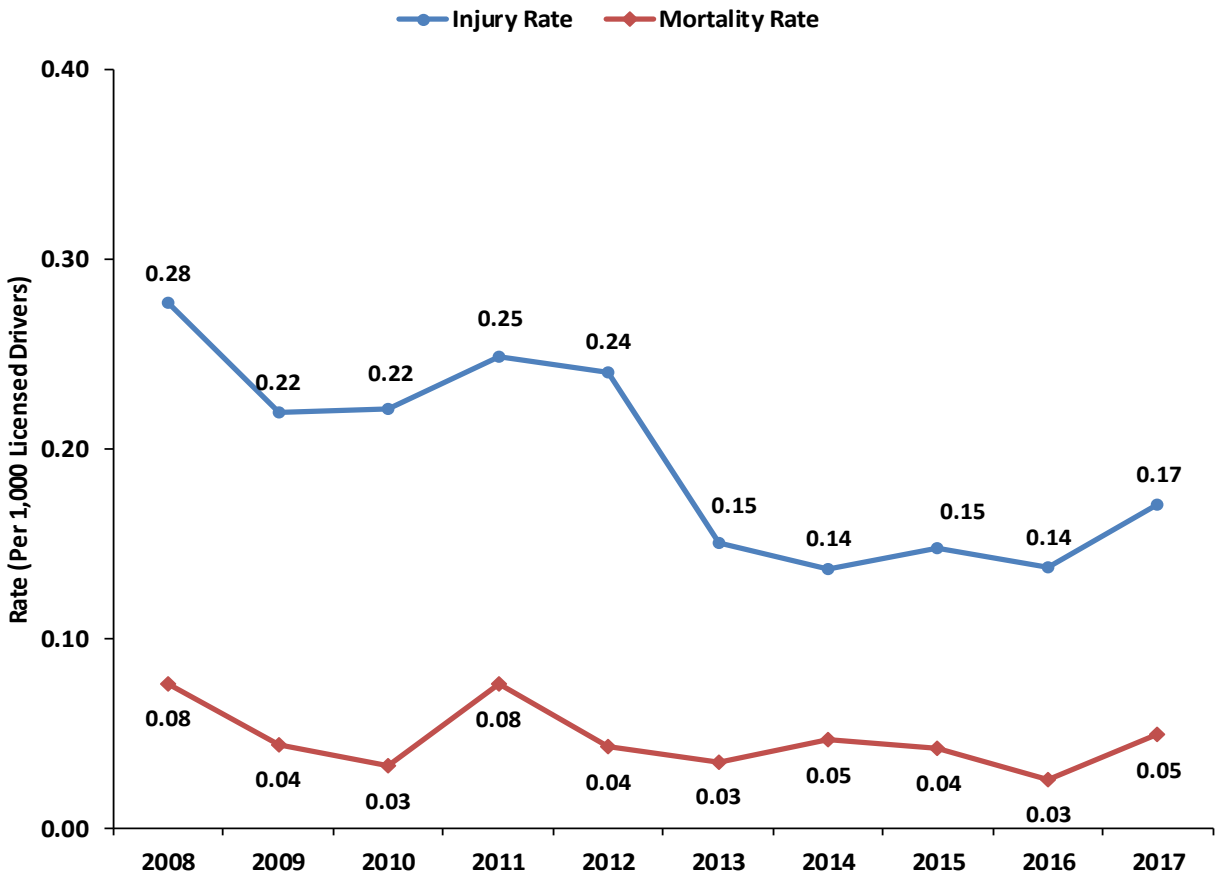
- **Motor Vehicle Crash Deaths and Serious Injuries Involving Alcohol**. Alcohol-related traffic crashes involving at least one driver 16 to 20 years of age who had been drinking and caused a death or incapacitating injury.

Why Indicator is Important: Youth may be killed or seriously injured as an innocent victim or as an impaired driver, and they may kill or severely injure others. Among drivers between 16 and 20 years of age from 2008 and 2017, the average alcohol-related traffic crash deaths was 0.05 per 1,000 licensed drivers, and the average alcohol-related traffic crash injuries reported was 0.20 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, 2008-2017.

Summary: The rate of alcohol-related traffic crash deaths among youth has decreased by 38 percent from 2008 to 2017. The rate of alcohol-related traffic crash serious injuries has decreased by 39 percent from 2008 to 2017. Alcohol-related traffic crashes involving at least one driver 16 to 20 years of age who had been drinking, caused an annual average of 121 deaths and serious injuries in Michigan each year between 2008 and 2017.

Figure 1. Alcohol-Related Traffic Crash Deaths and Serious Injuries Among Youth: 2008-2017



Alcohol Consequences Among Youth

Indicator Description:

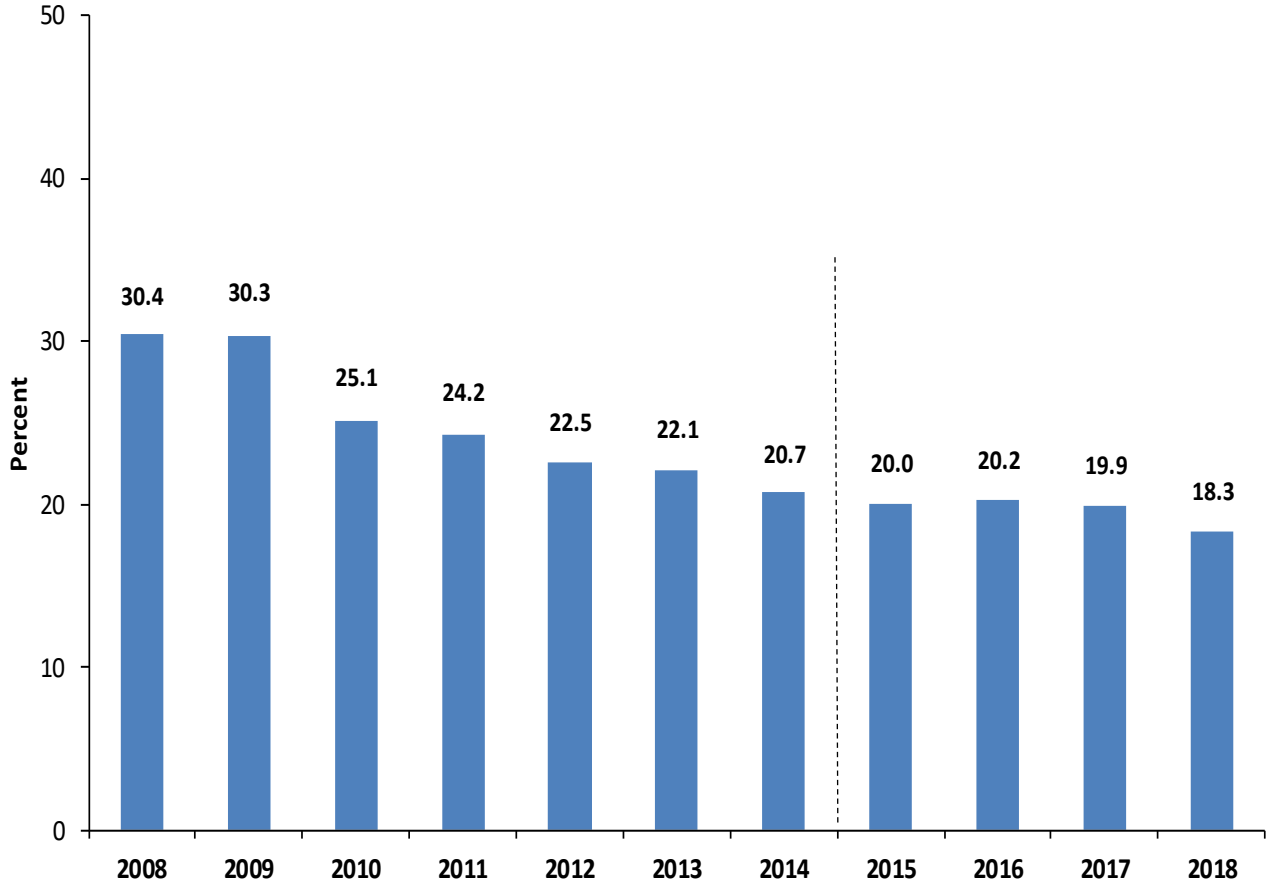
- **Reporting Alcohol as a Primary Substance Use.** Percent of youth (16 to 20 years of age) admitted for substance abuse treatment who reported alcohol as their primary substance use.

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

Source: Treatment Episode Data Set, 2008-2018.

Summary: The percent of youth who reported alcohol as their primary substance use when seeking treatment has steadily declined from 2008 to 2018, with an overall decrease of 40 percent during that time period.

Figure 2. Percent of Youth Admitted for Substance Abuse Treatment Who Reported Alcohol as Primary Substance Use: 2008-2018



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

Alcohol Use Among Youth

Indicator Description:

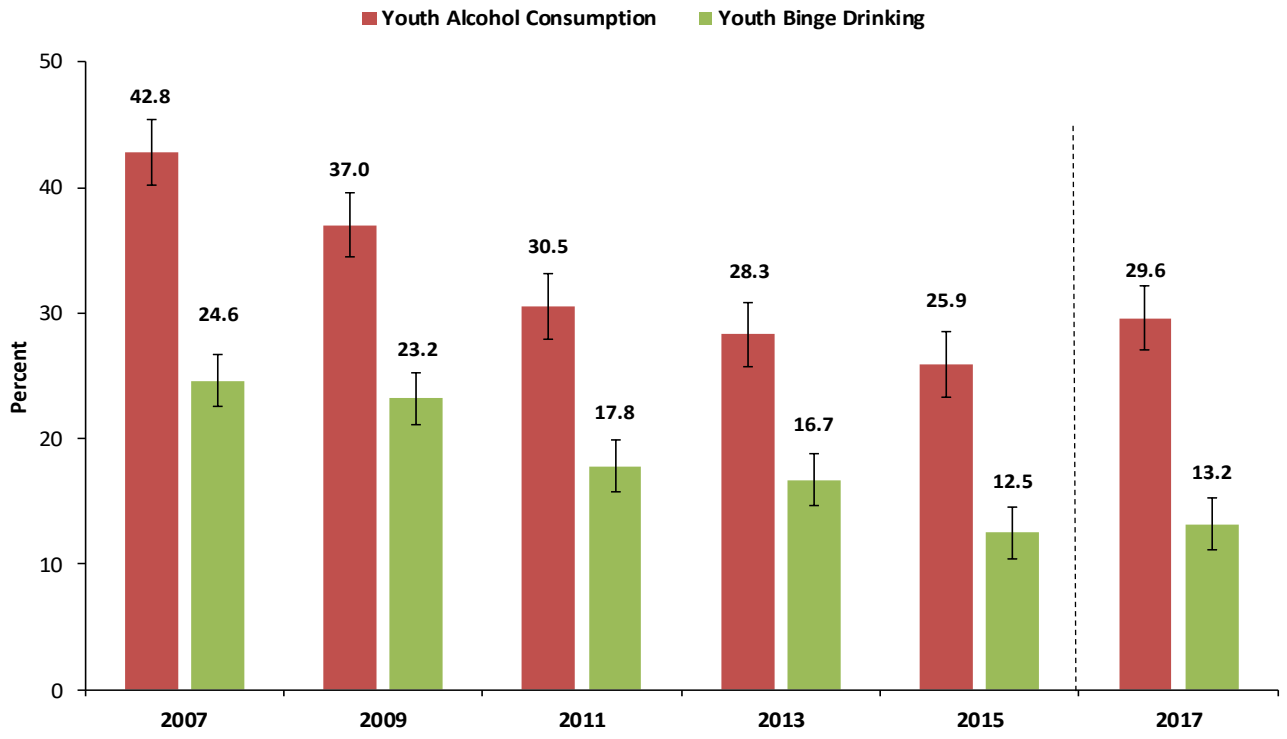
- **Current Alcohol Consumption Among Youth.** Percent of students (9th to 12th graders) who reported having had at least one drink of alcohol on one or more of the past 30 days.
- **Current High-Risk Alcohol Use Among Youth.** Percent of students (9th to 12th graders) who reported having five or more 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 twenties; however, it is reported as continuing well into the thirties and forties. 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, 2007-2017.

Summary: From 2007 to 2017 the percent of students who reported consuming at least one alcoholic drink within the past 30 days decreased significantly from 42.8 percent to 29.6 percent. For binge drinking, the percent of students who reported binge drinking within the past 30 days significantly decreased from 2007 to 2015, from 24.6 percent to 12.5 percent.

Figure 3. Percent of Youth Who Reported Consuming Alcohol in the Past 30 Days: 2007-2017



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:

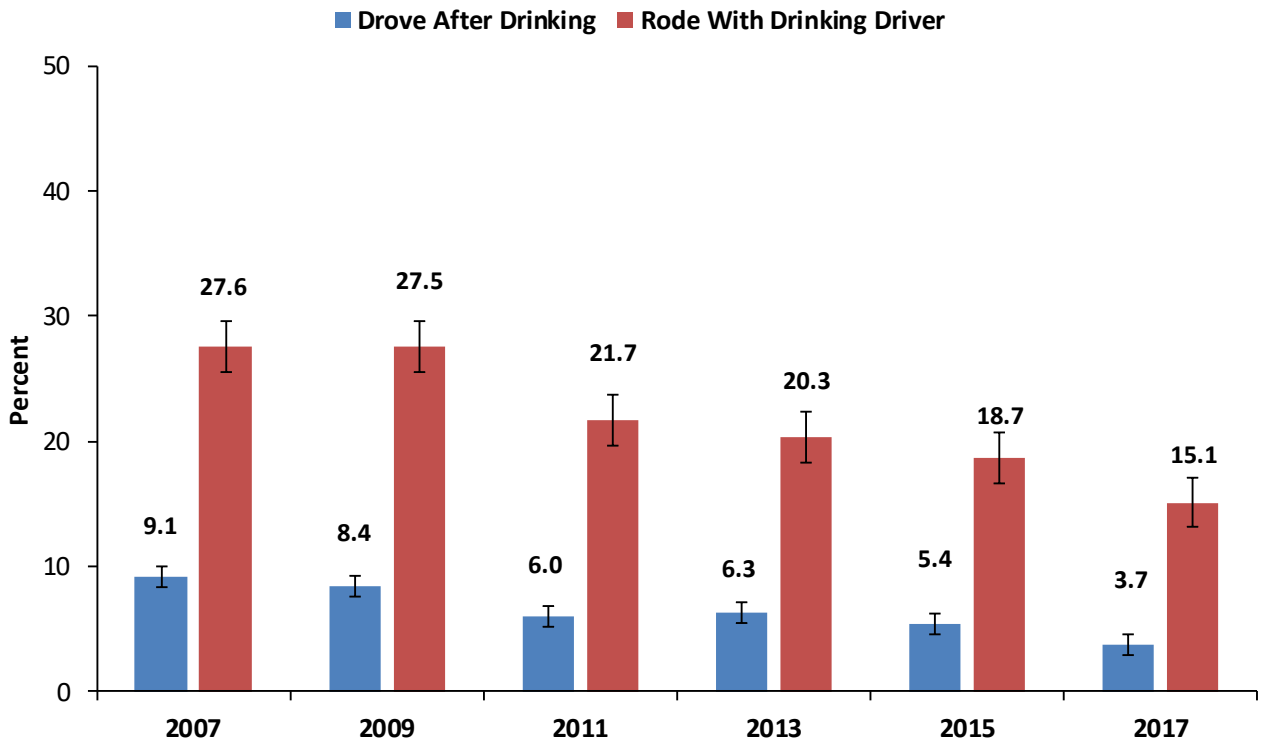
- **Underage Drinking and Driving.** Percent of high school students (9th to 12th graders) who during the past 30 days drove a car or other vehicle one or more times when they had been drinking alcohol.
- **Riding with a Drinking Driver.** Percent of high school students (9th to 12th graders) who during 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 innocent victim or as an impaired driver, and they may kill or severely injure others.

Source: Michigan Youth Risk Behavior Survey, 2007-2017.

Summary: From 2007 to 2017 the percent of students who drove a car or other vehicle one or more times when they had been drinking alcohol significantly decreased from 9.1 percent to 3.7 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 as well, from 27.6 percent to 15.1 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: 2007-2017



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

Factors Contributing to Alcohol Use Among Youth

Indicator Description:

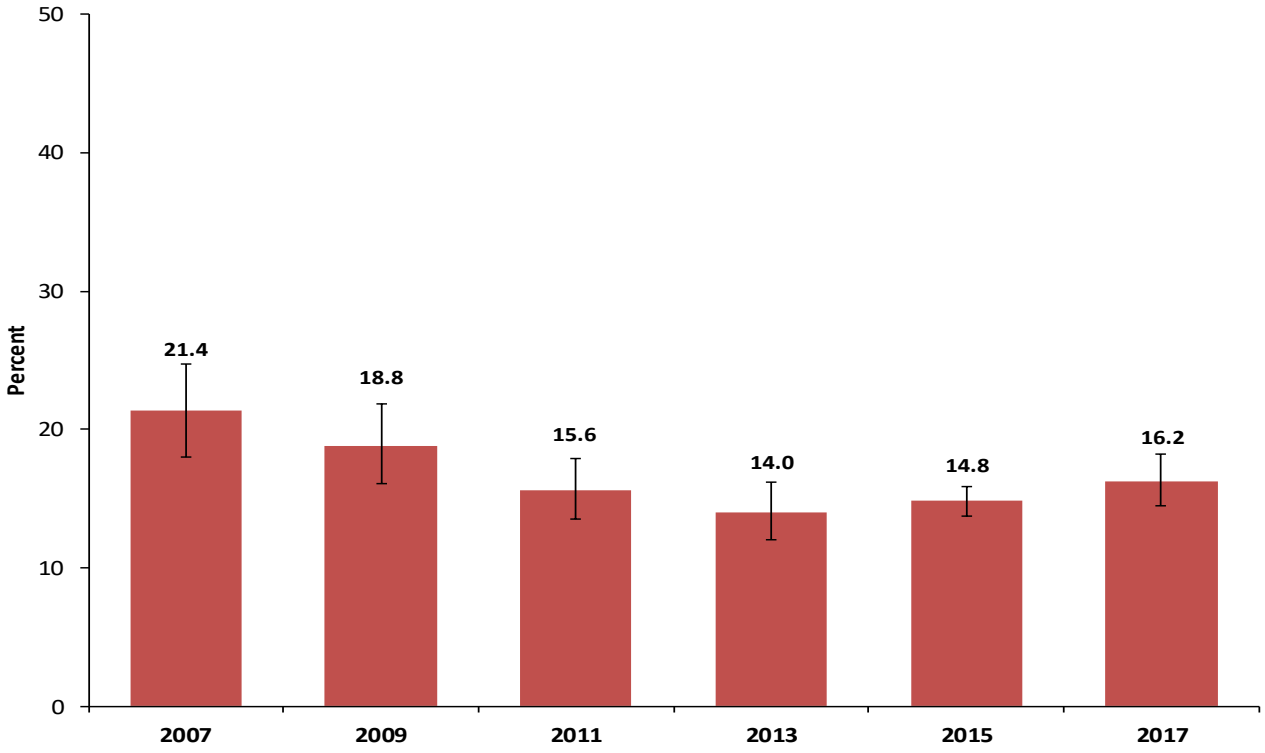
- **Early Initial Use.** Percent of students (9th to 12th graders) who had their first drink of alcohol, other than a few sips, before age 13.

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, 2007-2017.

Summary: The percent of youth who reported having consumed their first drink of alcohol prior to the age of 13 has significantly decreased from 21.4 percent to 14.8 percent from 2007 to 2015, but rose to 16.2 percent in 2017.

Figure 5. Percent of Youth Who Reported Consuming Their First Drink of Alcohol Before Age 13: 2007-2017



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:

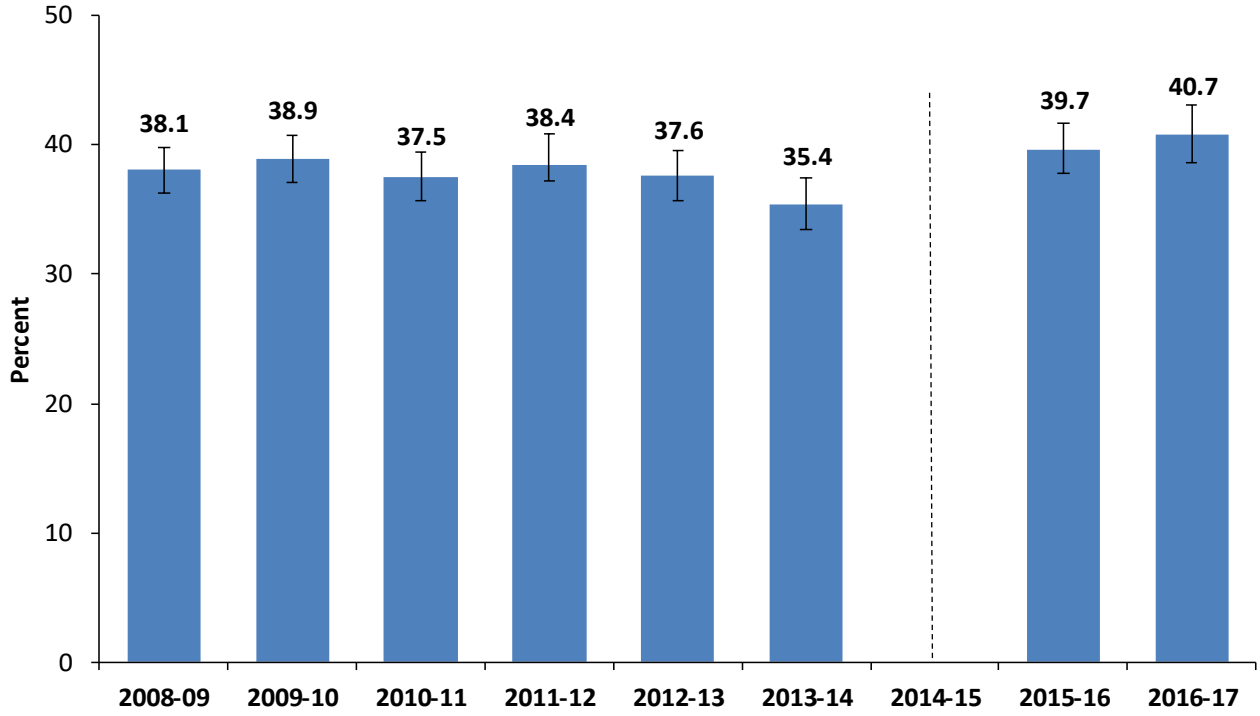
- **Perceived Risk of Binge Drinking.** Percent of youth (12 to 17 years of age) who perceived great risk from having five or more alcoholic drinks once or twice a week.

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, 2008-2017.

Summary: Over one-third of youth continue to perceive great risk from having five or more alcoholic drinks once or twice a week from 2008 to 2014. In 2016-2017 surveys, 40.7 percent youth perceived great risk from binge drinking.

Figure 6. Percent of Youth Who Perceived Great Risk From Having Five or More Alcoholic Drinks Once or Twice a Week: 2008-2017



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:

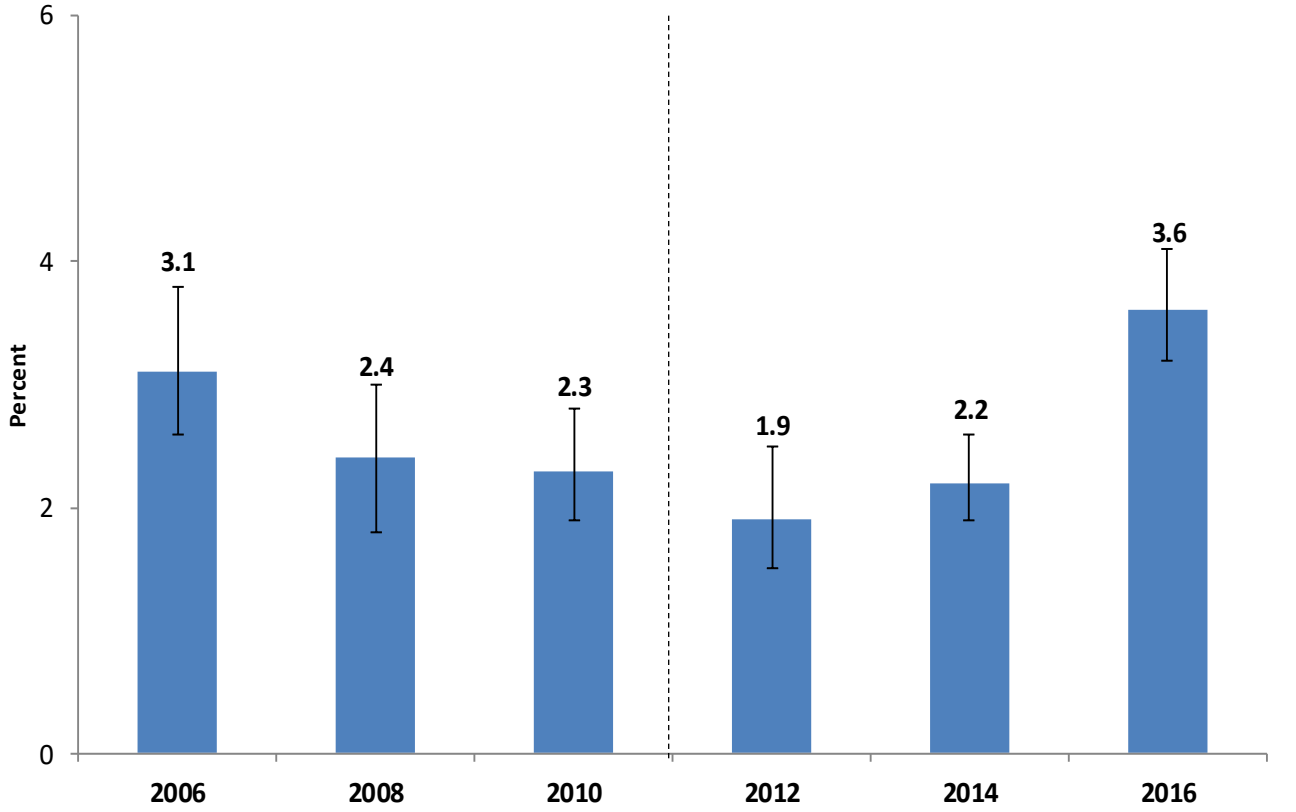
- **Drove Vehicle After Drinking.** Percent of adults (age 18 or older) who reported that they had driven a motor vehicle after they had too much to drink at least once in the previous month.

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

Source: Michigan Behavioral Risk Factor Surveillance System, 2006-2016

Summary: From 2006 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 across the years. In 2012-2016, the percent increased to higher than the previous years at 3.6 percent.

Figure 7. Percent of Adults Who Reported Driving After Drinking Too Much Alcohol in the Past 30 days: 2006-2016



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:

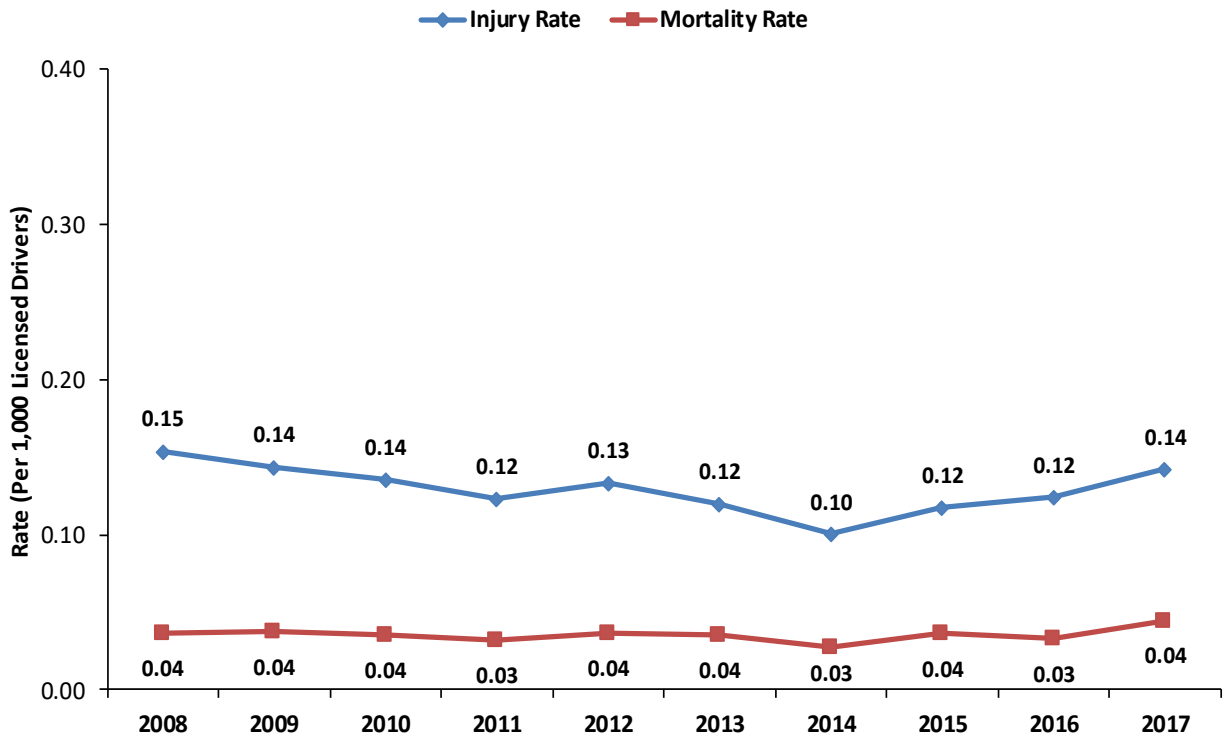
- **Motor Vehicle Crash Deaths and Serious Injuries Involving Alcohol**. Alcohol-related traffic crashes involving at least one driver 21 years of age or older who had been drinking and caused a death or incapacitating injury.

Why Indicator is Important: Intoxicated individuals may be killed or seriously injured as an innocent victim or as an impaired driver, and they may kill or severely injure others. Among adult drivers between 2008 and 2017, 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, 2008-2017.

Summary: The rates of alcohol-related traffic crash deaths had remained stable between 2008 and 2017. The rate of alcohol-related traffic crash serious injuries has decreased by 33 percent from 2008 to 2014, and it is on the rise. Alcohol-related traffic crashes involving at least one driver 21 years of age or older who had been drinking, caused an annual average of 1,082 deaths and serious injuries in Michigan each year between 2008 and 2017.

Figure 8. Alcohol-Related Traffic Crash Deaths and Serious Injuries Among Adults: 2008-2017



Alcohol Consequences Among Adults

Indicator Description:

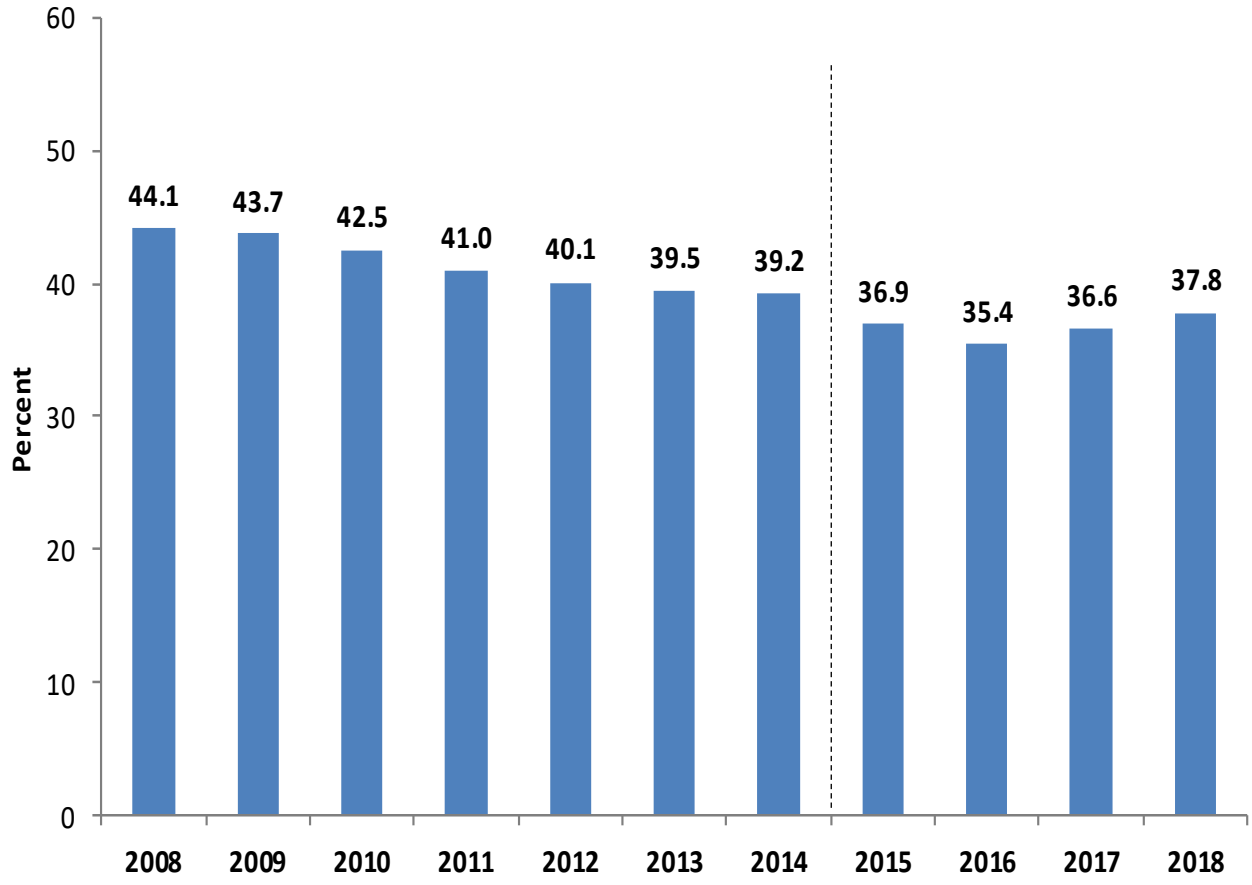
- **Reporting alcohol as a primary substance use.** Percent of adults (ages 21 and older) admitted for substance abuse treatment who reported alcohol as their primary substance use.

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

Source: Treatment Episode Data Set, 2008-2018.

Summary: The percent of adults who reported alcohol as their primary substance use when seeking treatment has steadily declined from 2008 to 2016 with an overall decrease of 20 percent during that time period. A slight increase noted from 2016 to 2018.

Figure 9. Percent of Adults Admitted for Substance Abuse Treatment Who Reported Alcohol as Primary Substance Use: 2008-2018



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

Alcohol Use Among Adults

Indicator Description:

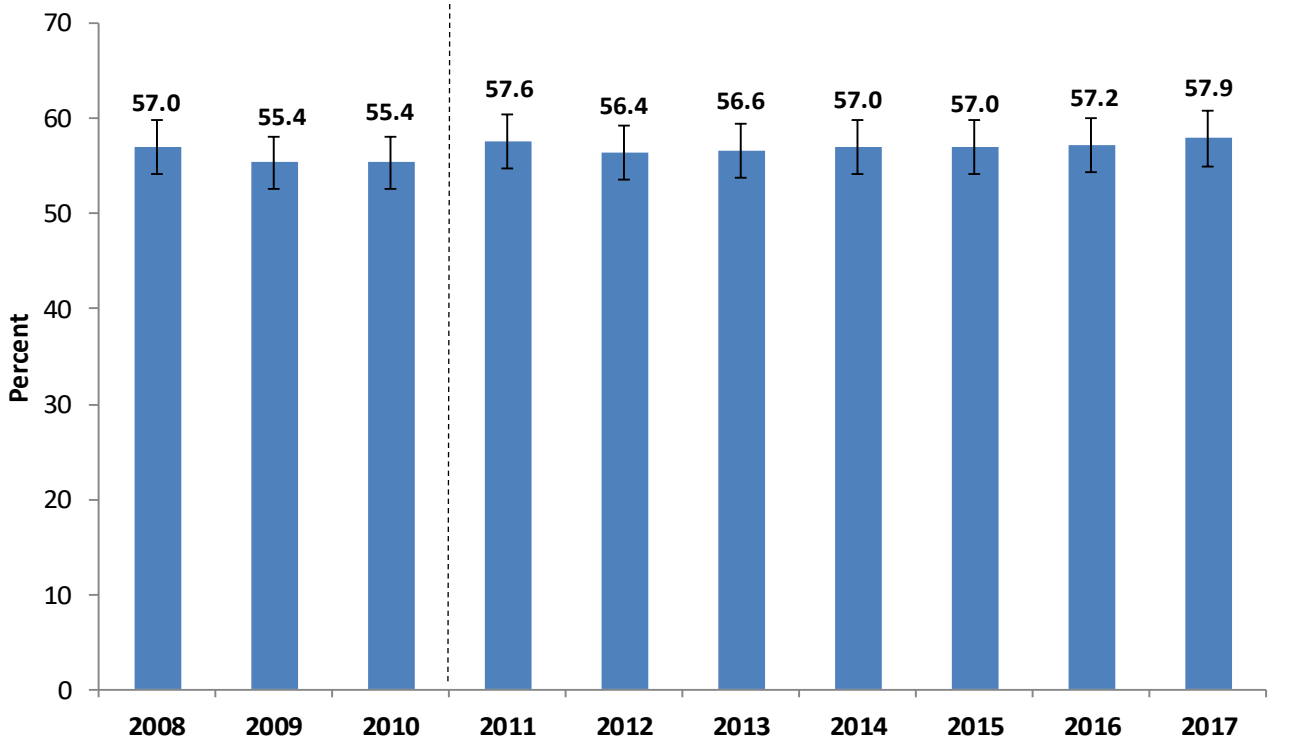
- **Current Alcohol Use Among Adults**. This indicator presents the proportion of persons age 18 or older who reported consumption of one or more alcoholic drinks on one or more days within the past 30 days.

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, 2008-2017

Summary: The proportion of Michigan adults who reported consuming at least one alcoholic beverage in the past 30 days had remained stable from 2008 to 2010 at approximately 56 percent, and from 2011 to 2017 at approximately 57 percent.

Figure 10. Percent of Adults Who Reported Consuming One or More Alcoholic Drinks in the Past 30 days: 2008-2017



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:

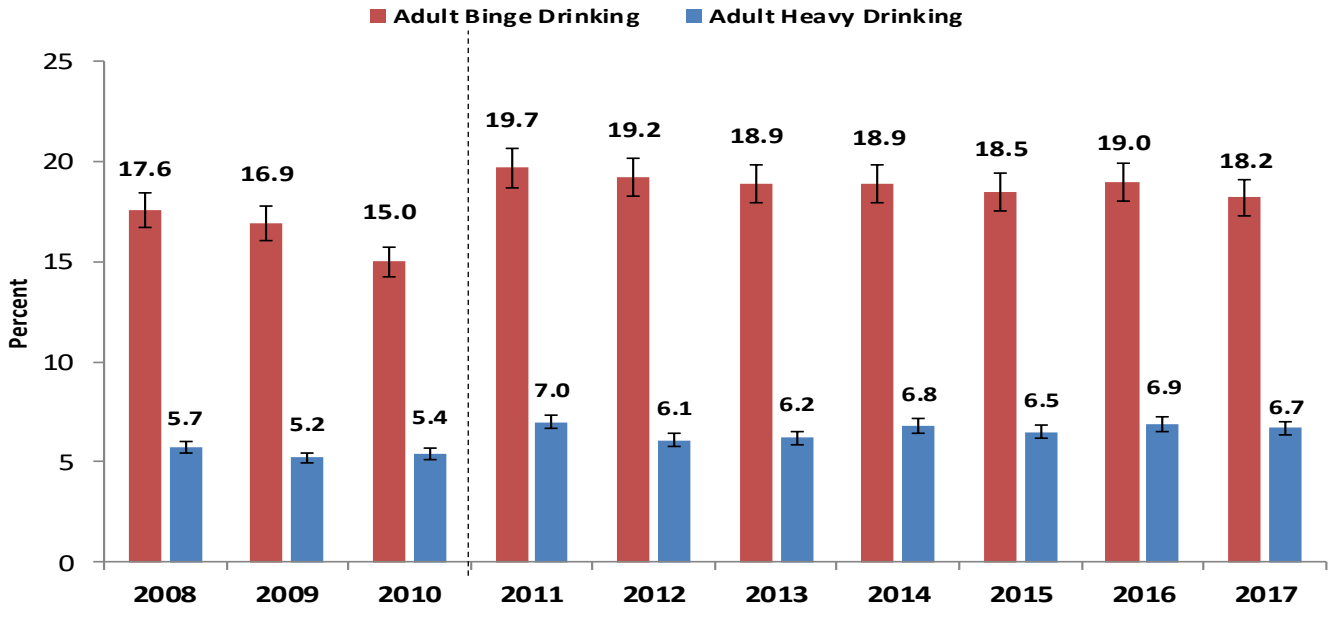
- **Current Binge Drinking Behavior Among Adults**. Binge drinking is defined as consuming five or more drinks on an occasion for men, consuming four or more drinks on an occasion for women during the past 30 days.
- **Current Heavy Drinking Behavior Among Adults.** Heavy drinking is defined as consuming 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, 2008-2017

Summary: From 2008 to 2010 binge drinking decreased, but not significantly, in Michigan from 17.6 percent of adults to 15.0 percent. From 2011 to 2017, the proportion of adults who reported binge drinking in the past 30 days remained constant, around 19 percent. The proportion of adults who reported heavy drinking in the past 30 days remained stable at 5.4 percent from 2008 to 2010, as well as from 2011 to 2017, at approximately 6.6 percent.

Figure 11. Percent of Adults who Reported Heavy Drinking or Binge Drinking in the Past 30 Days: 2008-2017



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:

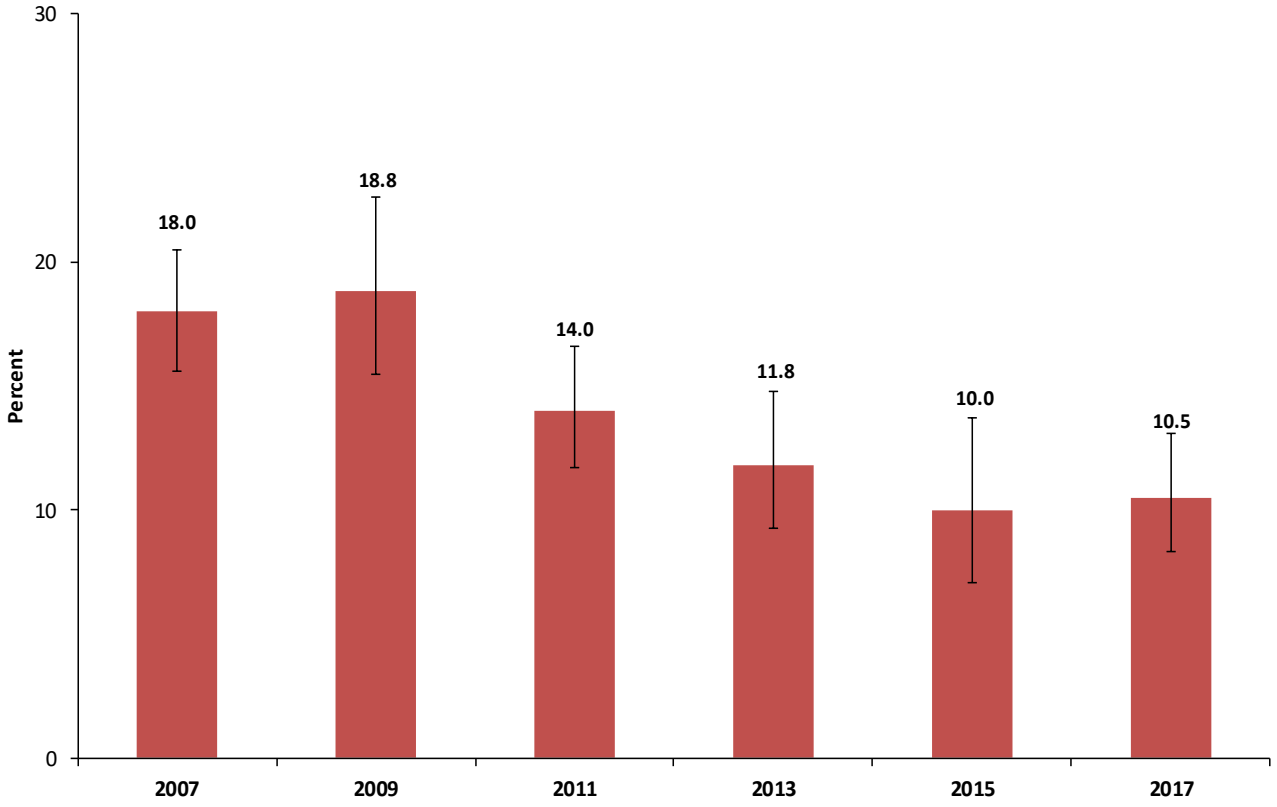
- **Current Tobacco Use Among Students.** Percent of high school students (9th to 12th graders) who smoked on one or more of the past 30 days.

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, 2007-2017.

Summary: The percent of high school students who reported smoking at least one cigarette during the past 30 days has significantly decreased from 18.0 percent to 10.5 percent during the time period of 2007 to 2017.

Figure 12. Percent of Youth Who Smoked Cigarettes During the Past 30 Days: 2007-2017



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:

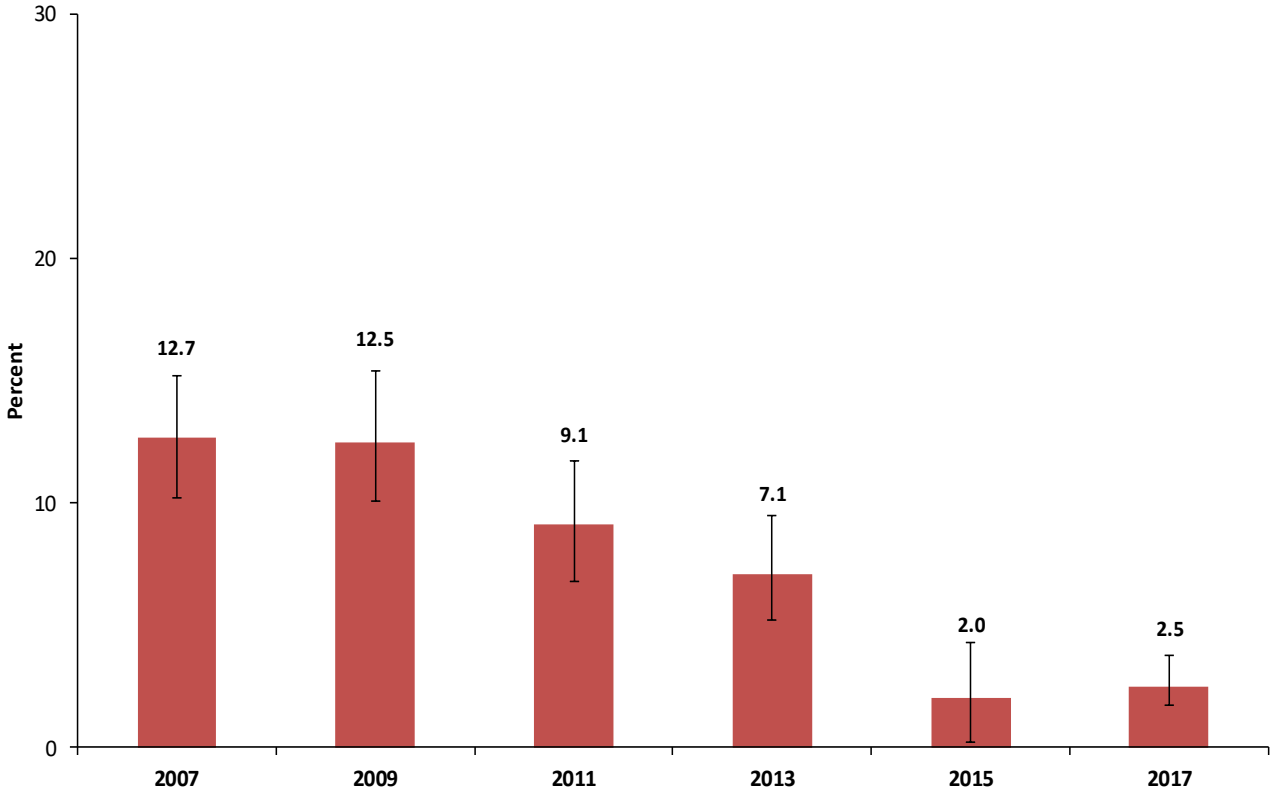
- **Youth Daily Cigarettes Ever.** Percent of high school students (9th to 12th graders) who ever smoked cigarettes daily, that is, at least one cigarette every day for 30 days.

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, 2007-2017.

Summary: The percent of high school students who reported ever smoking at least one cigarette every day for 30 days has significantly decreased from 12.7 percent to 2.5 percent during the time period of 2007 to 2017.

Figure 13. Percent of Youth Who Ever Smoked Cigarettes Daily: 2007-2017



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.

Electronic Vapor Product Use Among Youth

Indicator Description:

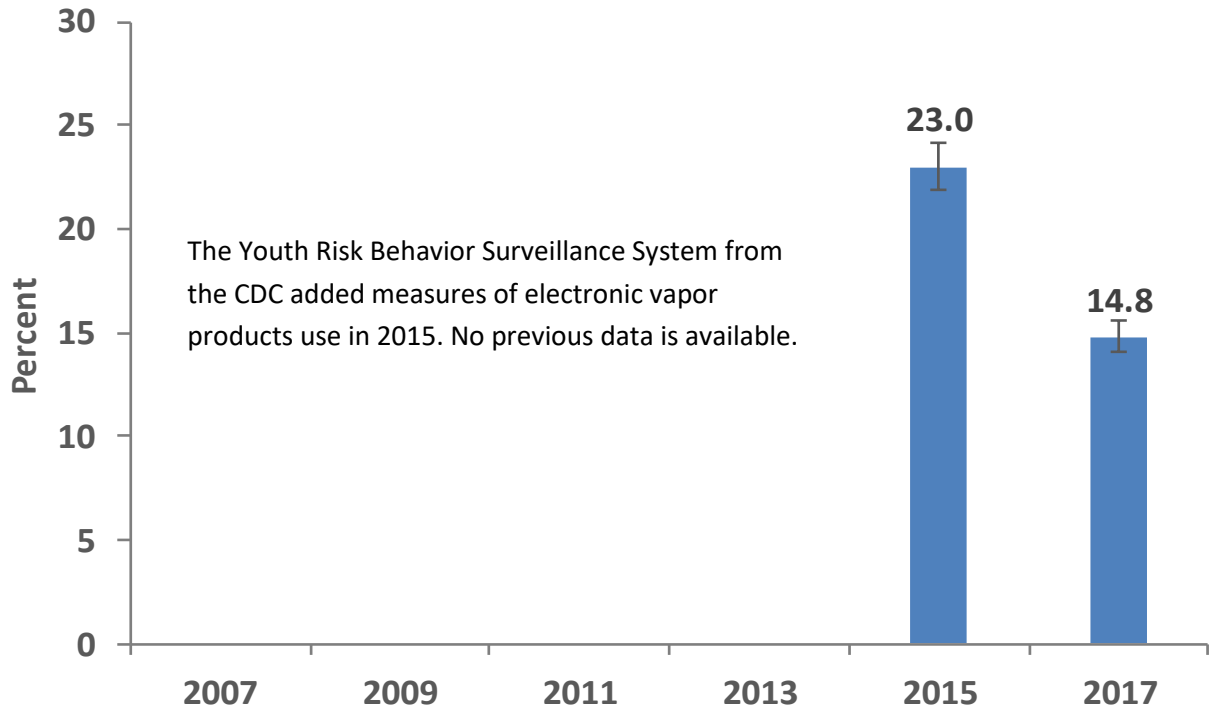
- **Current Electronic Vapor Products Use among Students.** Percent of youth (9th to 12th graders) who used an electronic vapor product on one or more of the past 30 days. (Including e-cigarettes, e-cigs, e-pipes, vape pipes, vaping pens, e-hookahs, and hookah pens).

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, 2015-2017.

Summary: Although there are limited data available, 14.8 percent of high school students reported vapor products use during the past 30 days in 2017.

Figure 14. Percent of Youth Students Who Used Electronic Vapor Products During the Past 30 Days: 2015-2017



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

Factors Contributing to Tobacco Use Among Youth

Indicator Description:

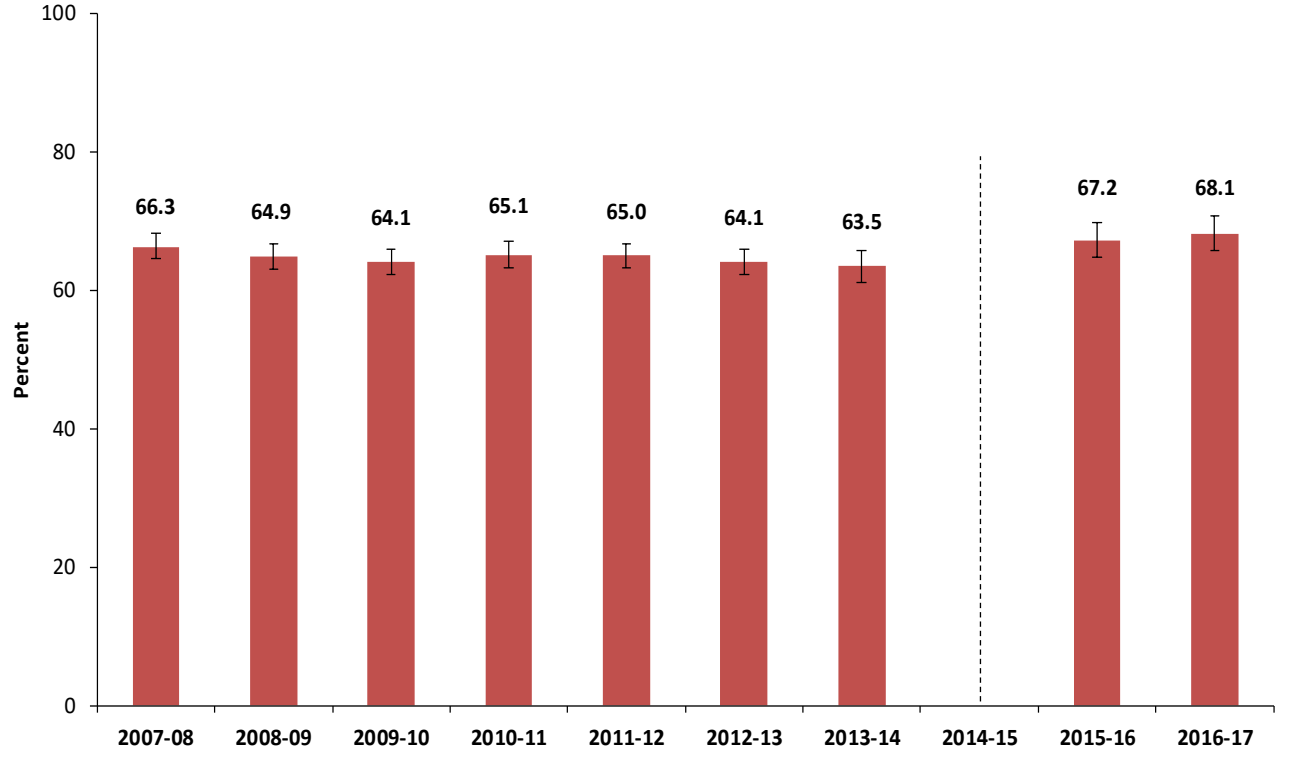
- **Perceptions of Great Risk from Smoking.** Percent of youth (12 to 17 years of age) who perceived great risk from smoking one or more packs of cigarettes per day.

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, 2007-2017.

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 65 percent from 2007 to 2014, with no significant deviation. Similarly, 2015-2017 remained around 68 percent.

Figure 15. Percent of Youth Who Perceived Great Risk From Smoking One or More Packs of Cigarettes Per Day: 2007-2017



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:

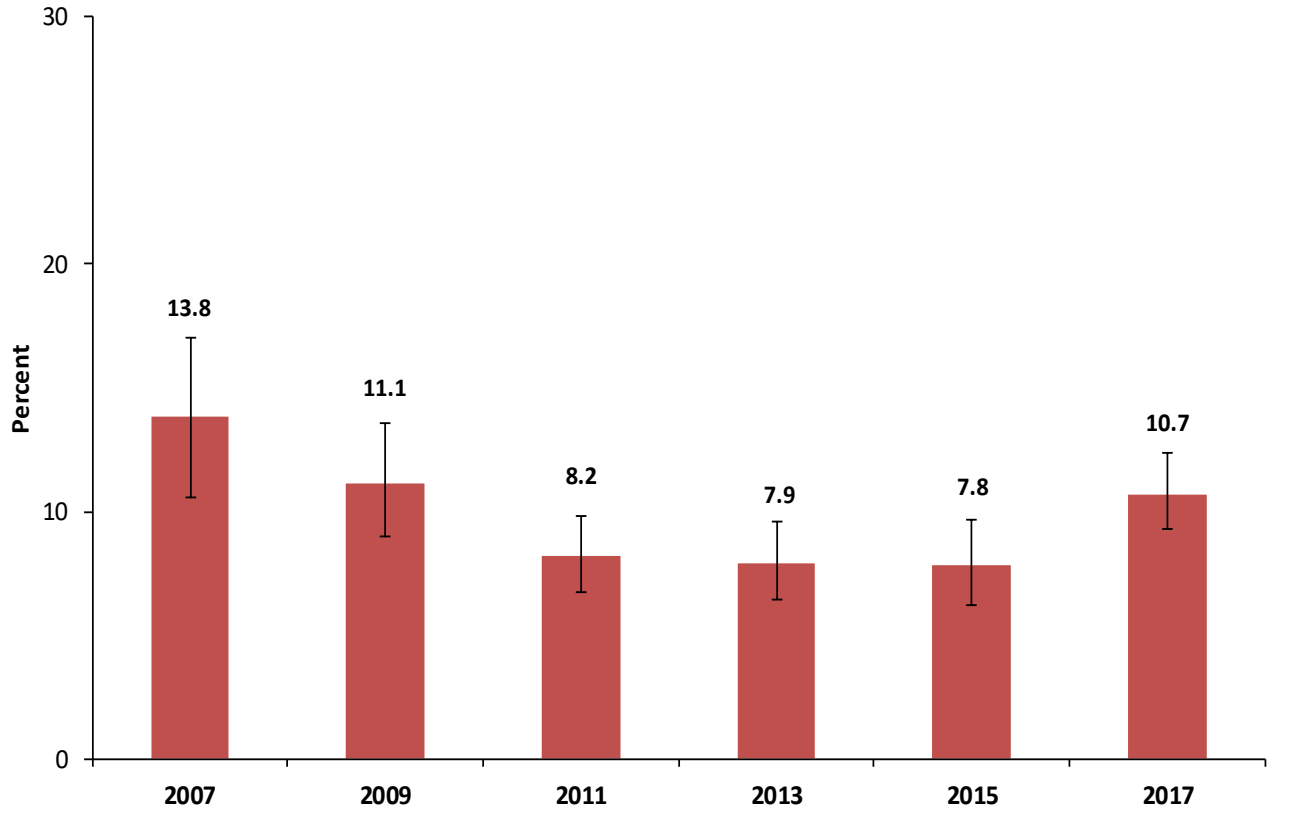
- **Early Initial Use.** Percent of high school students (9th to 12th graders) who smoked a whole cigarette for the first time before age 13.

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, 2007-2017.

Summary: From 2007 to 2015, the percent of high school students who reported smoking a whole cigarette for the first time before age 13 decreased significantly from 13.8 percent to 7.8 percent but rose to 10.7 percent in 2017.

Figure 16. Percent of Youth Who Smoked a Whole Cigarette for the First Time Before Age 13: 2007-2017



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, 2008-2017

Summary: From 2008 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 19.6 percent. From 2011 to 2017 the percent has significantly decreased, from 23.3 percent to 19.4 percent.

Figure 17. Current Cigarette Use Among Adults: 2008-2017

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.

Consequences of Tobacco Use

Indicator Description:

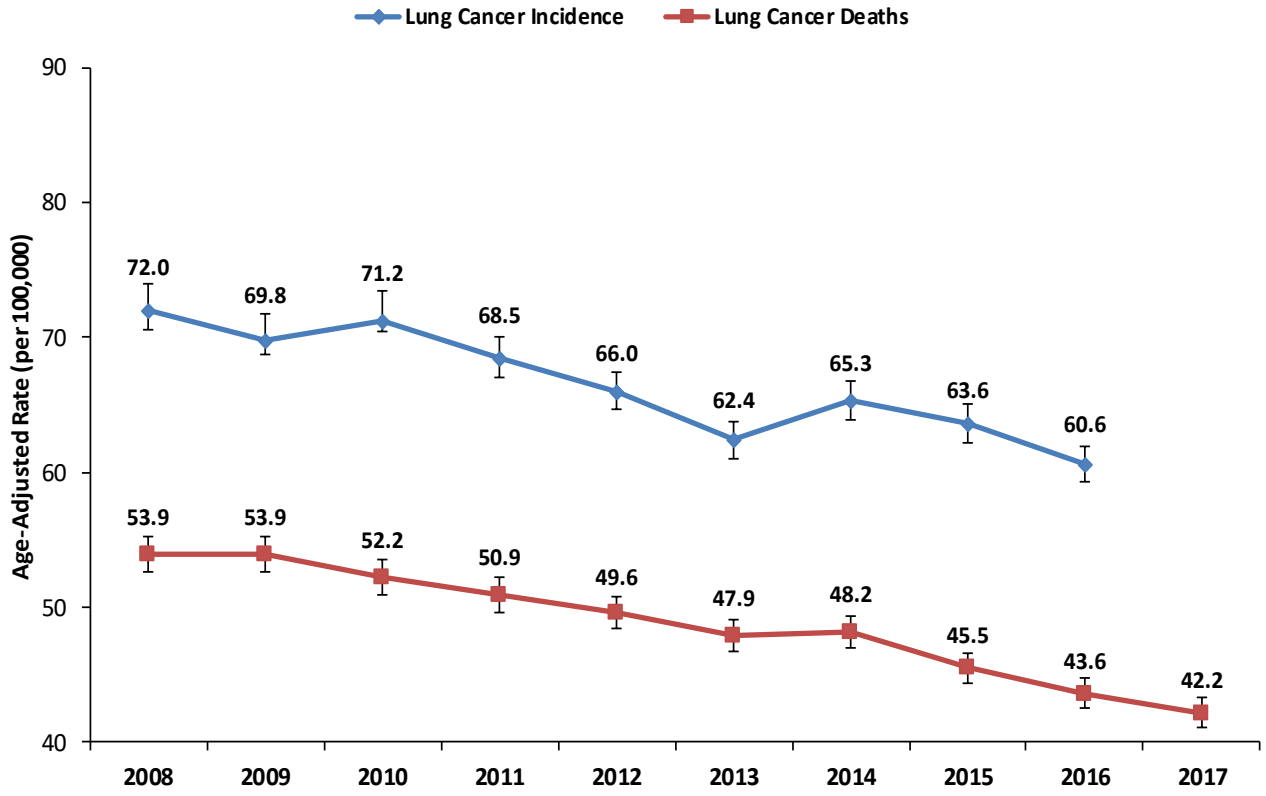
- **Lung Cancer Incidence Rate.** A calculation of the number of new cases of disease per 100,000 people. Rates are age-adjusted to the 2000 U.S. standard population.
- **Lung Cancer Death Rate.** A calculation of the number of people who died of lung cancer, per 100,000 individuals, age-adjusted to 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, 2008-2017.

Summary: Incidence rates of lung cancer have decreased significantly from 72.0 cases per 100,000 individuals to 60.6 cases per 100,000 individuals, during the 2008 to 2016 time period. Deaths related to lung cancer have significantly decreased as well during this period, from 53.9 deaths per 100,000 individuals to 42.2 deaths per 100,000 individuals.

Figure 18. Lung Cancer Incidence and Death Rates: 2008-2017



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:

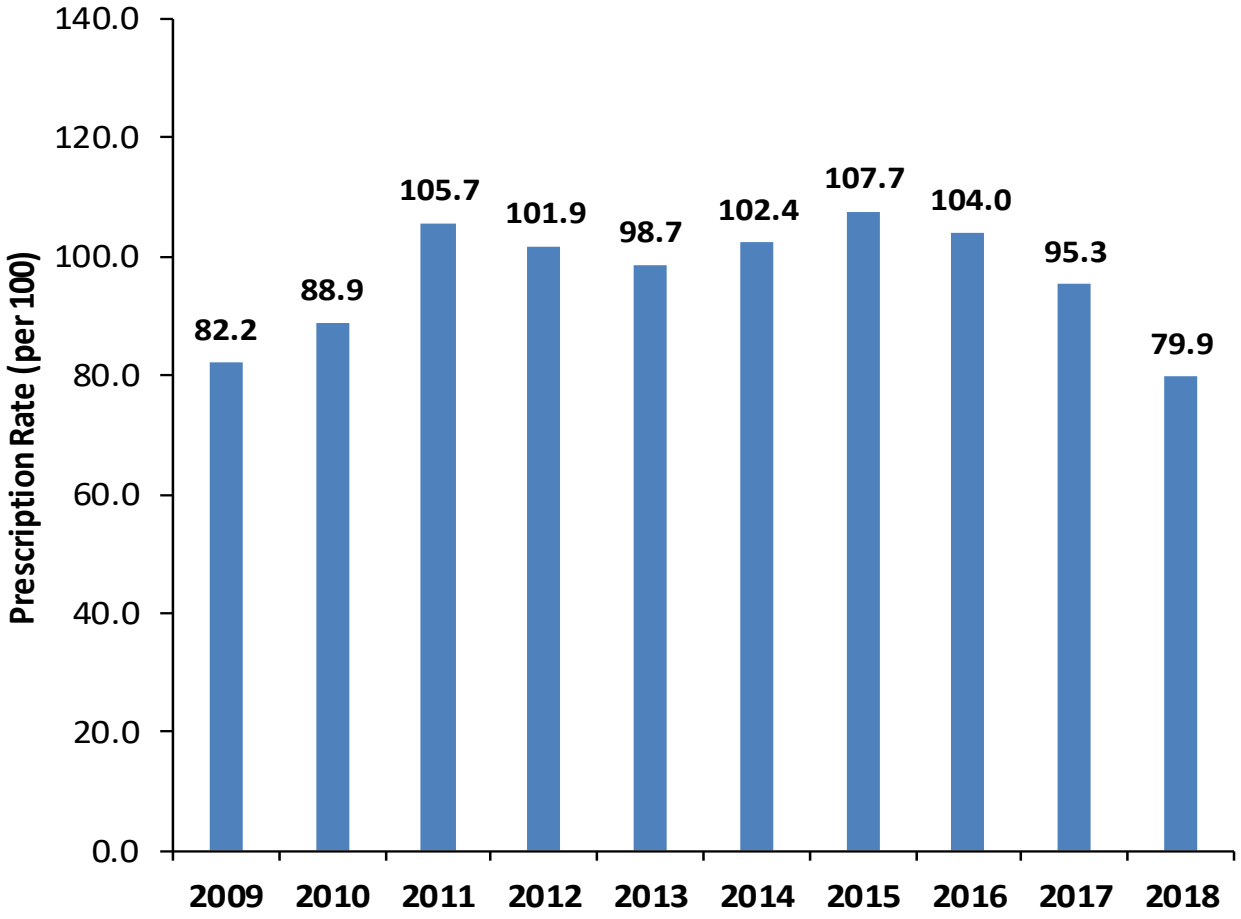
- **Opioid Prescription Rate per 100 people.** A calculation of rate of opioid prescriptions per 100 Michigan residents. Opioid prescriptions include full agonist opioids such as oxycodone, hydrocodone, morphine, and methadone; and partial agonist opioids such as buprenorphine and tramadol.

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, 2009-2018

Summary: The overall opioid prescribing rate declined from 2015 to 2018, and in 2018, the prescribing rate had fallen to the lowest it had been in more than 10 years at 79.9 per 100 persons.

Figure 19. Opioid Prescription Rate (per 100 people): 2009-2018



Opioids Consequences among Youth

Indicator Description:

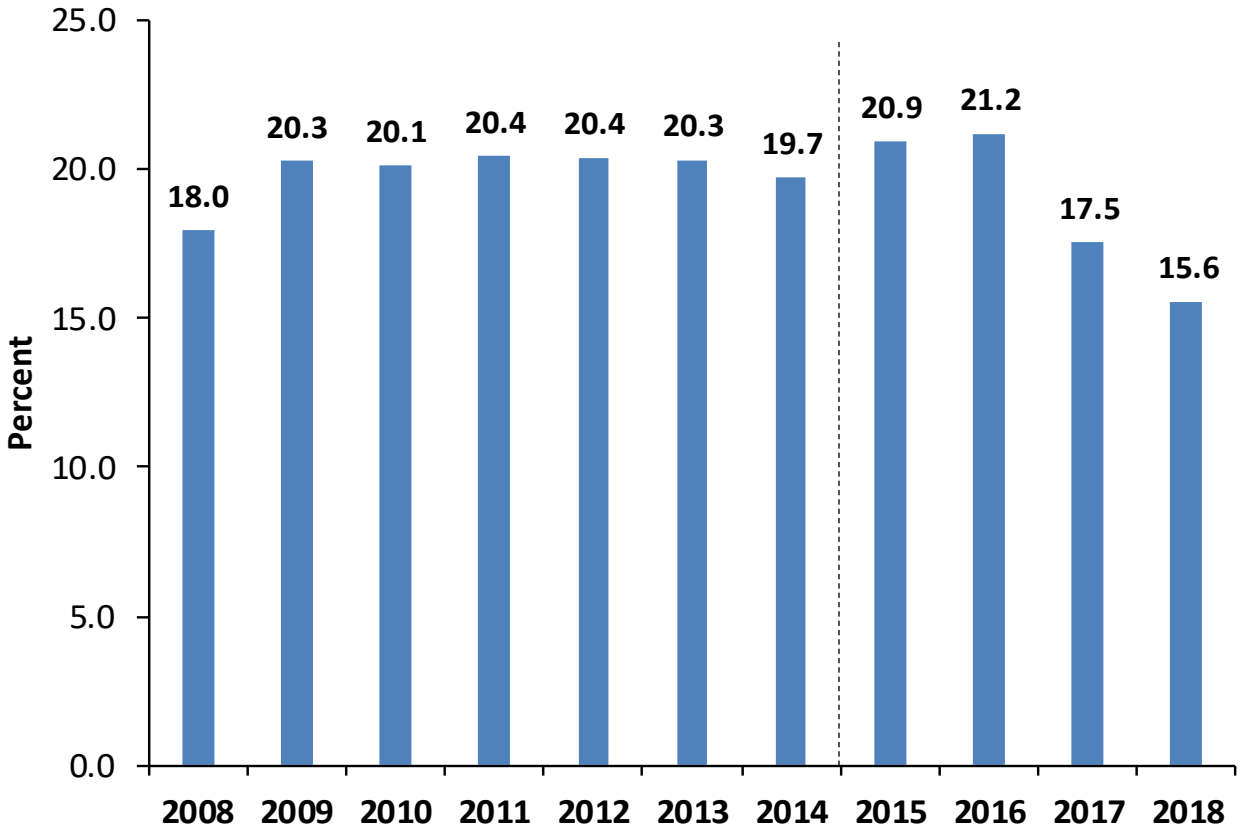
- **Percent of Primary Opioid Treatment.** Percent of youth (16 to 20 years of age) admitted for substance abuse treatment who reported opioids (heroin and other opiates) as their primary substance use.

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

Source: Treatment Episode Data Set, 2008-2018

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 2008 and 2016 and decreased to 15.6 percent in 2018.

Figure 20. Percent of Primary Opioid Treatment 16-20 Year Old: 2008-2018



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

Opioids Consequences among Adults

Indicator Description:

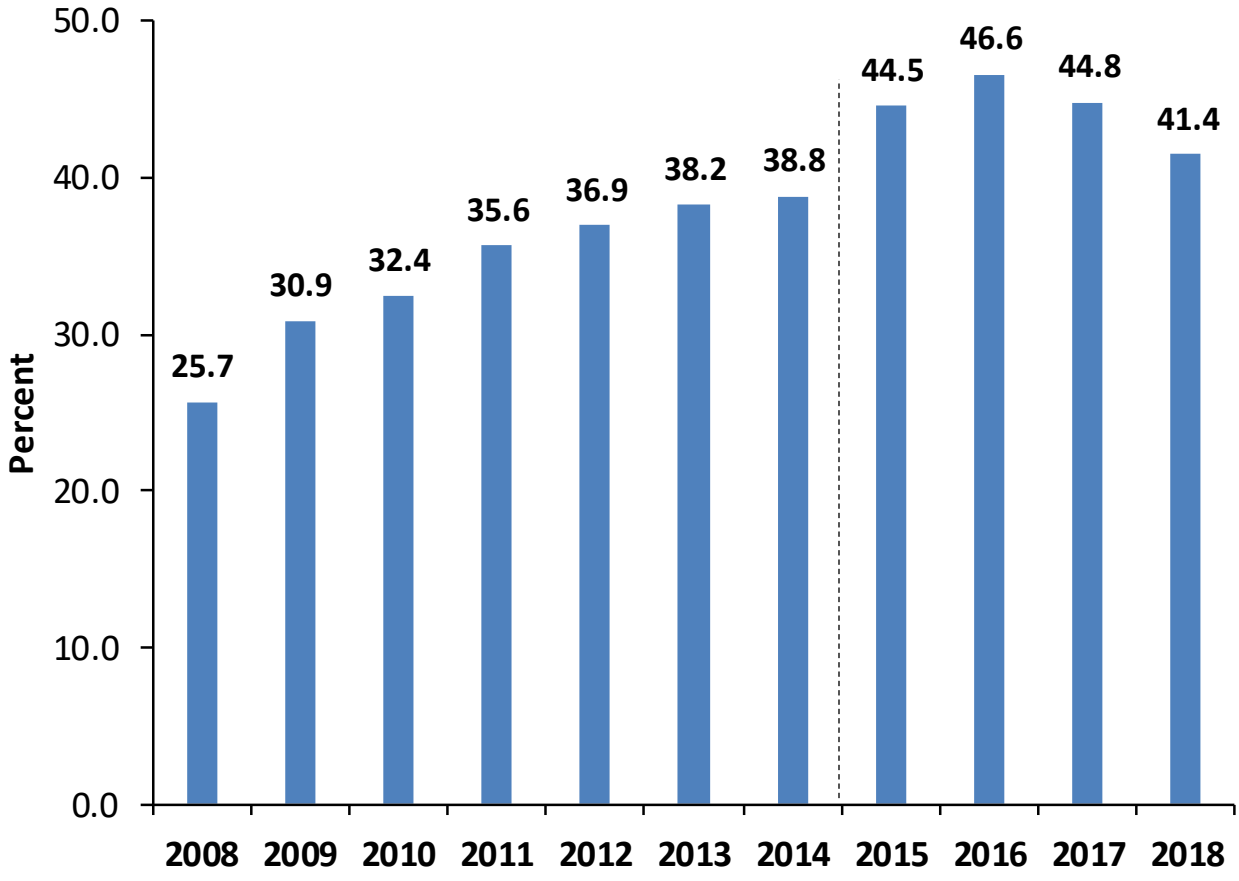
- **Percent of Primary Opioid Treatment.** Percent of adults (21 and older) admitted for substance abuse treatment who reported opioids (heroin or other opiates) as their primary substance use.

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

Source: Treatment Episode Data Set, 2008-2018

Summary: The percent of adults who reported opioids (heroin or other opiates) as their primary substance use at admission has steadily increased from 2008 and peaked at 46.6 percent in 2016.

Figure 21. Percent of Primary Opioid Treatment 21 and Older: 2008-2018



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

Opioid-Related Mortality

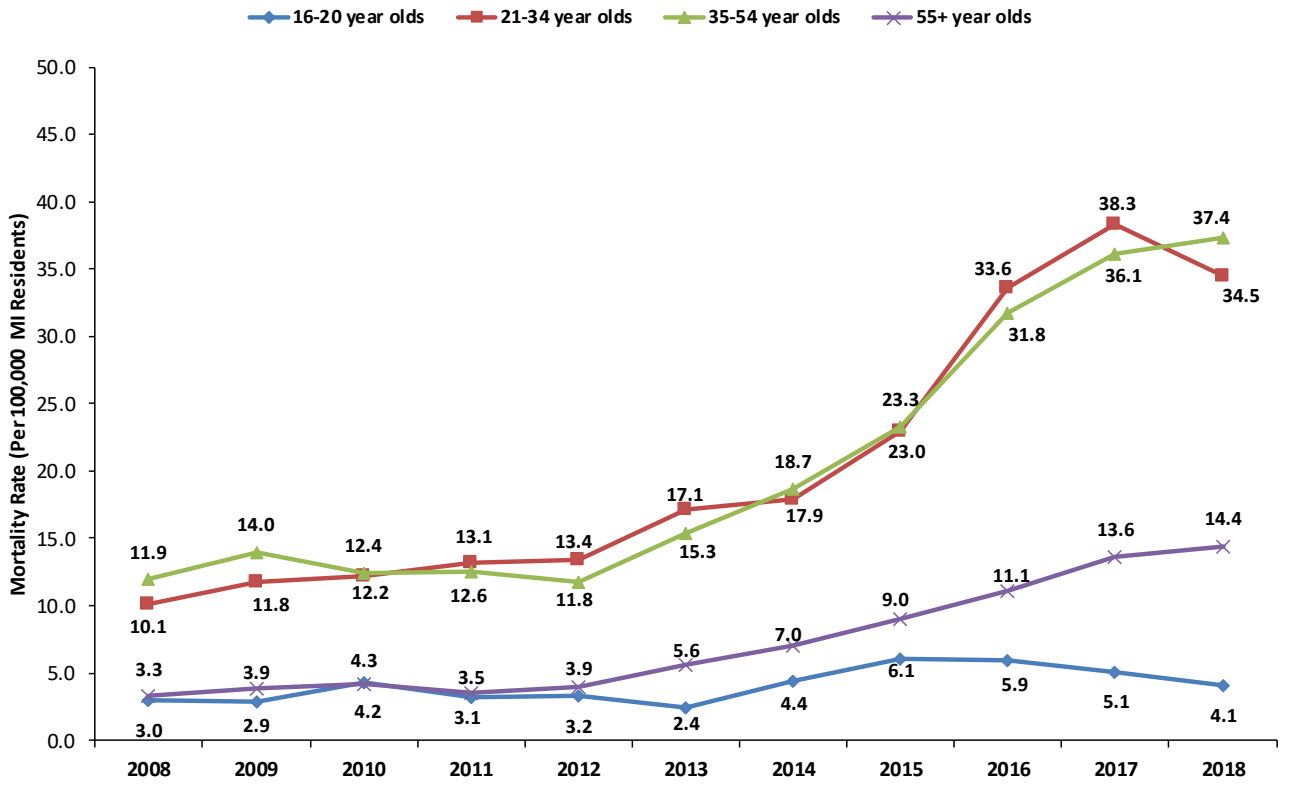
Indicator Description:

- **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: 2,599 drug overdose deaths occurred in Michigan in 2018. Opioids were involved in 2,036 overdose deaths in 2018 (78.3 percent of all drug overdose deaths).

Source: Death Certificates, Michigan Vital Records and Health Statistics, 2008-2018.

Figure 22. Opioid-Related Mortality Rates by Age Group: 2008-2018



Note: 95% confidence intervals for percent not shown on figure. Refer to Table 2 on page 26.

Opioid-Related Mortality

Table 2. Opioid-Related Mortality Rates by Age Group: 2008-2018

		Mortality Rate (95% C.I.) by Year of Death										
		2008	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Age Group	**16-20 years**	3.0 (1.7-4.2)	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)
	21-34 years	10.1 (8.6-11.6)	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)	35.8 (35.5-41.2)	34.5 (31.8-37.2)
	35-54 years	11.9 (10.7-13.2)	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)
	55+ years	3.3 (2.5-4.0)	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)

Summary: Opioid-related mortality has increased significantly for all age groups from 2008 to 2018. 21-34 year-olds showed the highest increase from 2008 to 2018, of 242 percent (10.1; 95%CI: 8.6-11.6, 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 from during this time period compared to youth (16 to 20 year-olds) and older adults (55+ year-olds).

Prescription Drug-Related Mortality

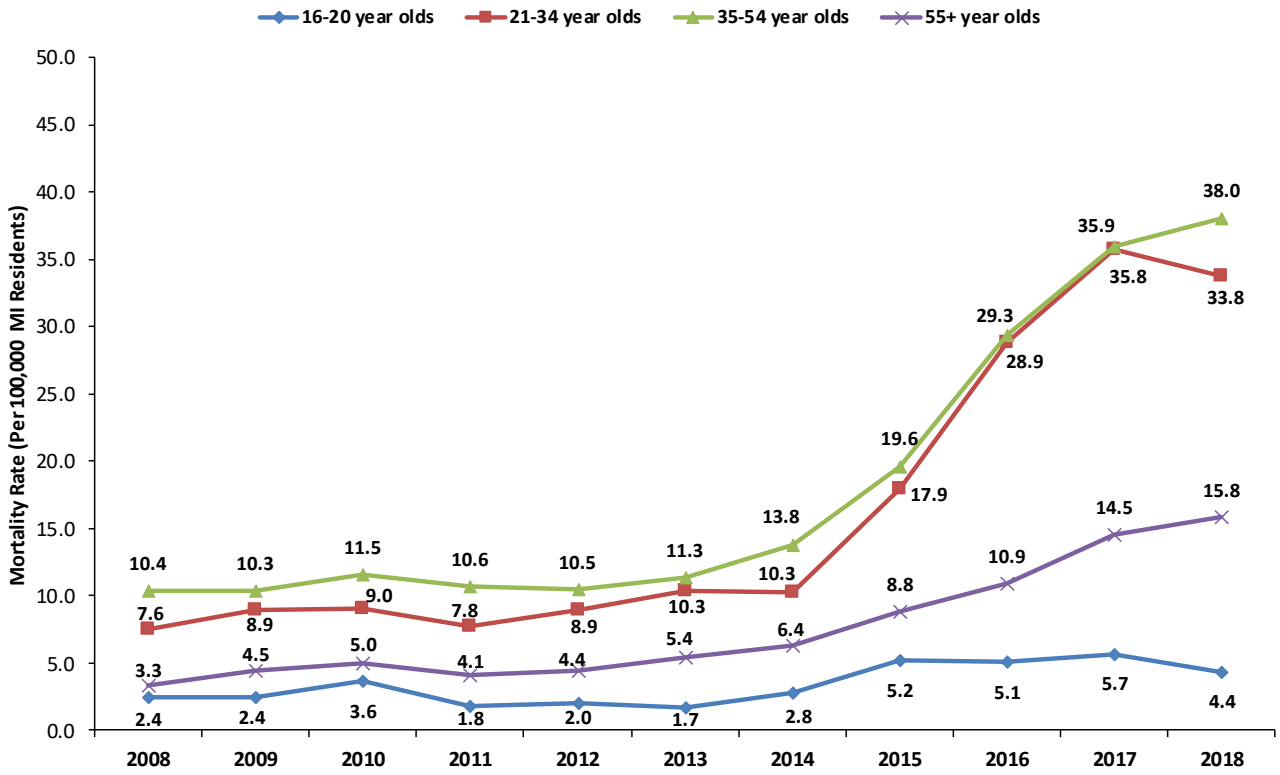
Indicator Description:

- **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, 2008-2018.

Figure 23. Prescription Drug-Related Mortality Rates by Age Group: 2008-2018



Note: 95% confidence intervals for percent not shown on figure. Refer to Table 3 on page 28.

1. Michigan Department 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: 2008-2018

		Mortality Rate (95% C.I.) by Year of Death										
		2008	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Age Group	**16-20 years**	2.4 (1.3-3.5)	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)
	21-34 years	7.6 (6.3-8.8)	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)
	35-54 years	10.4 (9.2-11.6)	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)	38.0 (35.6-40.5)
	55+ years	3.3 (2.6-4.1)	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)

Summary: Prescription drug-related mortality has increased significantly for all age groups from 2008 to 2018. 21-34 year-olds showed the highest increase from 2008 to 2018, of 345 percent (7.6; 95%CI: 6.3-8.8, vs. 33.8; 95%CI:31.1-36.4). Overall, young adults (21 to 34 year-olds) and middle-aged adults (35 to 54 year-olds) had higher rates of mortality from during this time period compared to youth (16 to 20 year-olds) and older adults (55+ year-olds).

Nonmedical Use of Pain Relievers

Indicator Description:

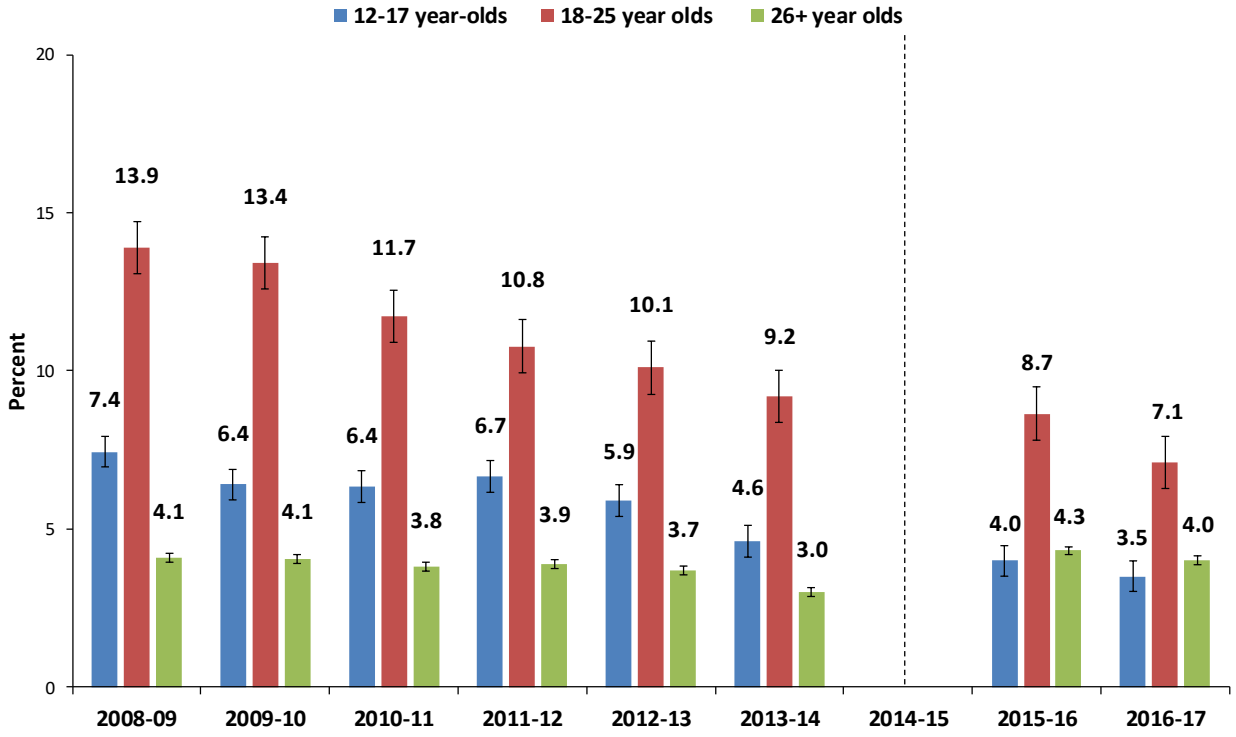
- **Nonmedical Use of Pain Relievers**. Estimates of past year nonmedical use of pain relievers among persons aged 12 or older. Nonmedical use of prescription pain relievers is defined as use of these drugs without a prescription or use that occurred simply for the experience or feeling caused by the 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, 2008-2017.

Summary: Nonmedical use of pain relievers was significantly higher from 2008 to 2014 for 18 to 25 year-olds compared to 12 to 17 year-olds and adults 26 years and older and remained higher from 2015 to 2017. The percentage of 12 to 17 year-olds and 18 to 25 year-olds using pain relievers for nonmedical uses significantly decreased from 2008 to 2014, but the decrease was not significant from 2015 to 2017. Prescription pain reliever misuse did not significantly change for those 26 years and older.

Figure 24. Nonmedical Use of Pain Relievers by Age Group: 2008-2017



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:

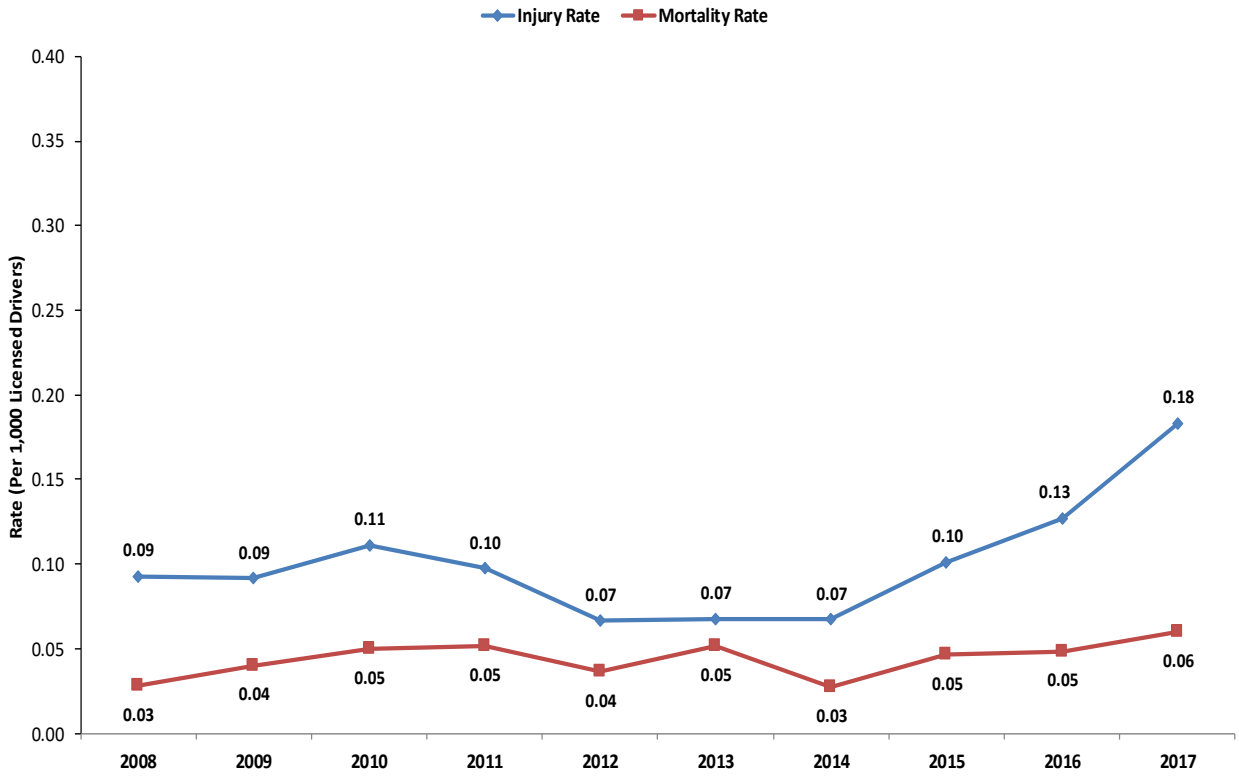
- **Motor Vehicle Crash Deaths and Serious Injuries Involving Drugs**. Drug-related traffic crashes involving at least one driver 16 to 20 years of age suspected of drug use and caused a death or incapacitating injury.

Why Indicator is Important: Youth may be killed or seriously injured as an innocent victim or as an impaired driver, and they may kill or severely injure others. Among drivers between 16 and 20 years of age from 2008 and 2017, the average drug-related traffic crash deaths were 0.04 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, 2008-2017.

Summary: The rate of drug-related traffic crash deaths among youth increased 100 percent from 2008 to 2017. The rate of drug-related traffic crash serious injuries also increased 100 percent from 2008 to 2017. The serious injury rate showed a steep increase from 0.07 in 2014 to 0.18 per 1,000 licensed drivers in 2017. Drug-related traffic crashes involving at least one driver 16 to 20 years of age, caused an annual average of 71 deaths and serious injuries in Michigan each year between 2008 and 2017.

Figure 25. Drug-Related Traffic Crash Deaths and Serious Injuries Among Youth: 2008-2017



Drug-Related Consequences Among Youth

Indicator Description:

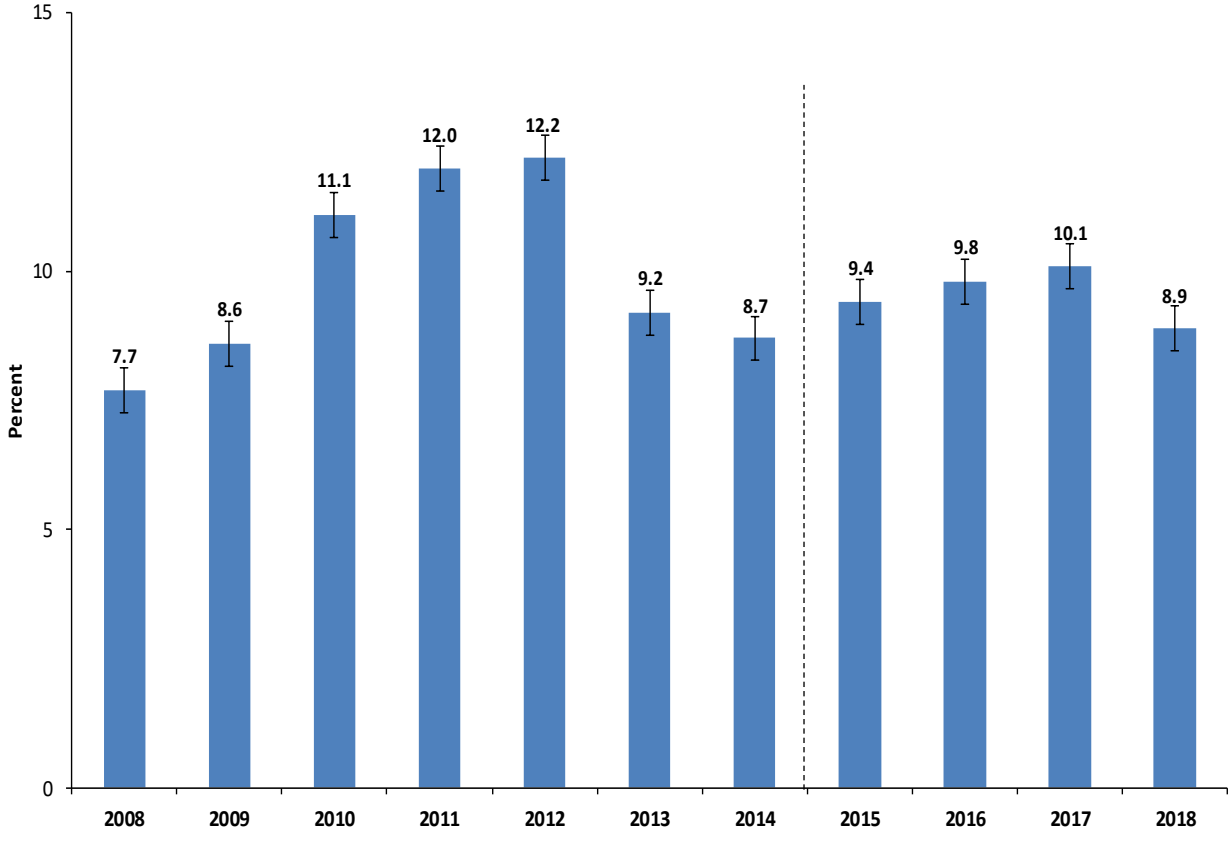
- **Prescription Drug-Related Treatment**. Percent of youth (16 to 20 years of age) admitted for substance abuse treatment reporting prescription drugs as their primary substance use at admission. Prescription drugs include opiates, barbiturates, sedatives, tranquilizers, benzodiazepine, amphetamines,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

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

Source: Treatment Episode Data Set, 2008-2018.

Summary: The percent of youth who reported prescription drugs as their primary substance use at admission has steadily increased from 2008 and peaked at 12.2 percent in 2012. After 2014 reports steadily rose to 10.1 percent in 2017 before falling to 8.9 percent in 2018.

Figure 26. Percent of Youth Admitted for Substance Abuse Treatment Who Reported Prescription Drugs as Primary Substance Use: 2008-2018



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 innocent victim or as an impaired driver, and they may kill or severely injure others. Among adult drivers between 2008 and 2017, 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, 2008-2017.

Summary: The rate of drug-related traffic crash injuries and drug-related traffic crash deaths among adult drivers increased by 133 percent and 50 percent, respectively, from 2008 to 2017. Drug-related traffic crashes involving at least one driver 21 years of age or older, caused an annual average of 383 deaths and serious injuries in Michigan each year between 2008 and 2017.

Figure 27. Drug-Related Traffic Crash Deaths and Serious Injuries Among Adults: 2008-2017

Drug-Related Consequences Among Adults

Indicator Description:

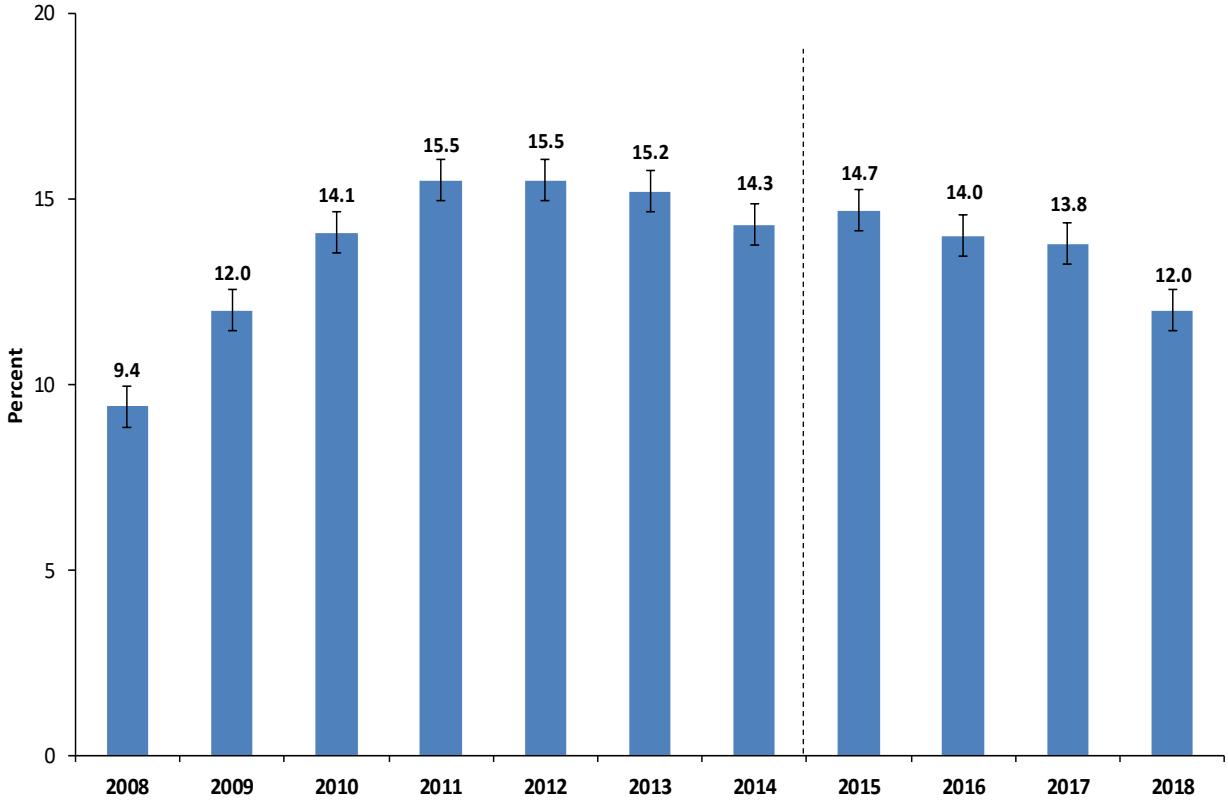
- **Prescription Drug-Related Treatment**. Percent of adults (21 years of age or older) admitted for substance abuse treatment reporting prescription drugs as their primary substance use at admission. Prescription drugs include opiates, barbiturates, sedatives, tranquilizers, benzodiazepine, amphetamines,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

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

Source: Treatment Episode Data Set, 2008-2018.

Summary: The percent of adults who reported prescription drugs as their primary substance use at admission has steadily increased from 2008 and peaked at 15.5 percent in 2011. Rates remained relatively steady until declining to 13.8 percent in 2017 and falling further to 12.0 percent in 2018.

Figure 28. Percent of Adults Admitted for Substance Abuse Treatment Who Reported Prescription Drugs as Primary Substance Use: 2008-2018



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

Marijuana Use Among Youth

Indicator Description:

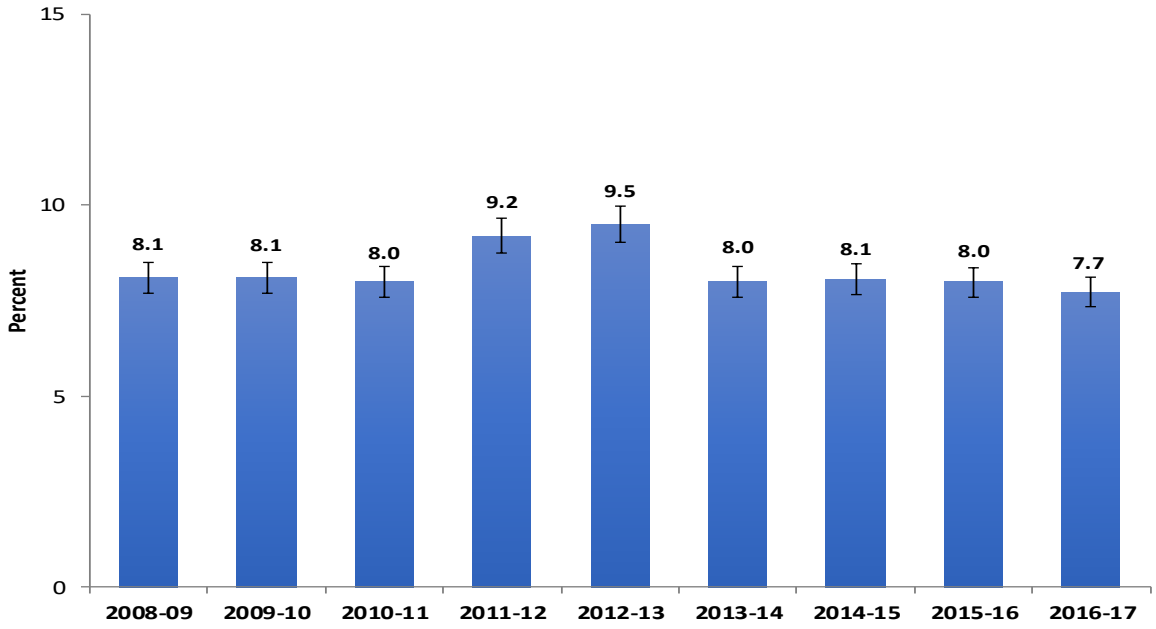
- **Past Month Marijuana Use**. Percent of youth (12-17 years of age) who reported using marijuana within the past month.

Why Indicator is Important: Studies have suggested that students who smoke marijuana have poorer educational outcome 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, 2008-2017.

Summary: From 2008 to 2011 the percent of youth reporting marijuana use in the past month remained consistent at around 8.0 percent. From 2011-2013 the percent rose to around 9.2 percent, before falling to around 7.9 percent from 2013 to 2017.

Figure 29. Percent of Youth Reporting Marijuana Use in the Past Month: 2008-2017



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:

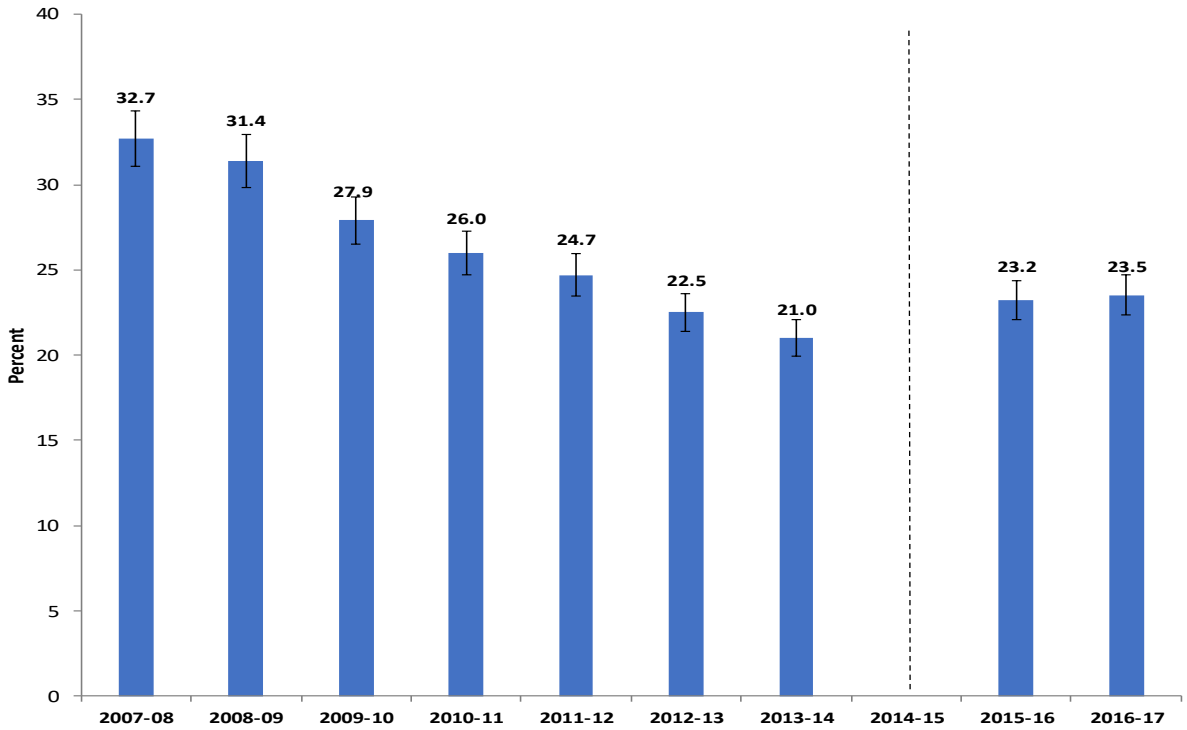
- **Perceptions of Great Risk from Smoking Marijuana**. Percent of youth (12 to 17 years of age) who perceived great risk from smoking marijuana once a month.

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, 2007-2017.

Summary: The percent of youth who perceived great risk or harm from smoking marijuana once a month significantly decreased from 32.7 percent to 21.0 percent during the 2007 to 2014 period. From 2015 to 2017, the percent remained around 23.3 percent.

Figure 30. Percent of Youth who Perceived Great Risk from Smoking Marijuana Once a Month: 2007-2017



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

Factors Contributing to Marijuana Use

Indicator Description:

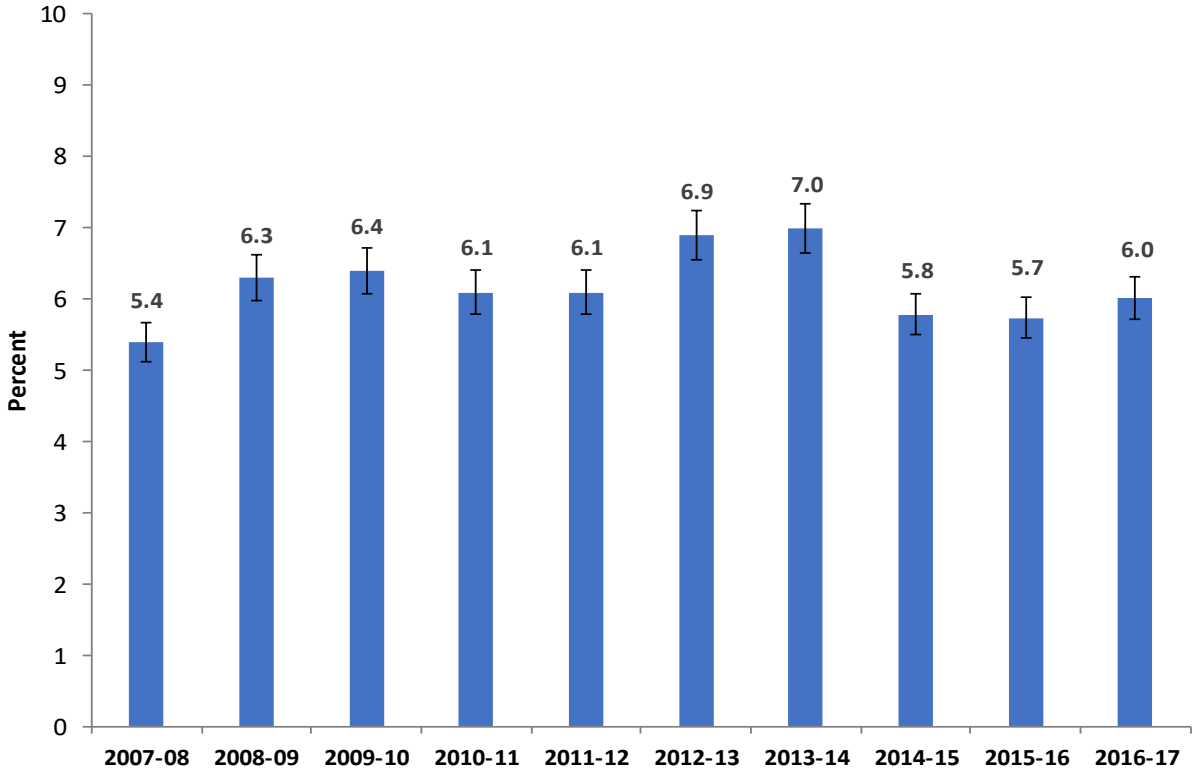
- **First Use of Marijuana**. Percent of youth (12-17 years old) reported using marijuana for the first time in the past 12 months.

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, 2007-2017.

Summary: The percent of youth who smoked marijuana for the first time remained around 6.2 percent from 2008 to 2012. The percent rose to 6.9 percent and 7.0 percent from 2012 to 2014. A drop to 5.8 percent occurred in 2014 before rising again to 6.0 percent from 2016 to 2017.

Figure 31. Percent of Youth who Used Marijuana for the First Time in the past year: 2007-2017



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:

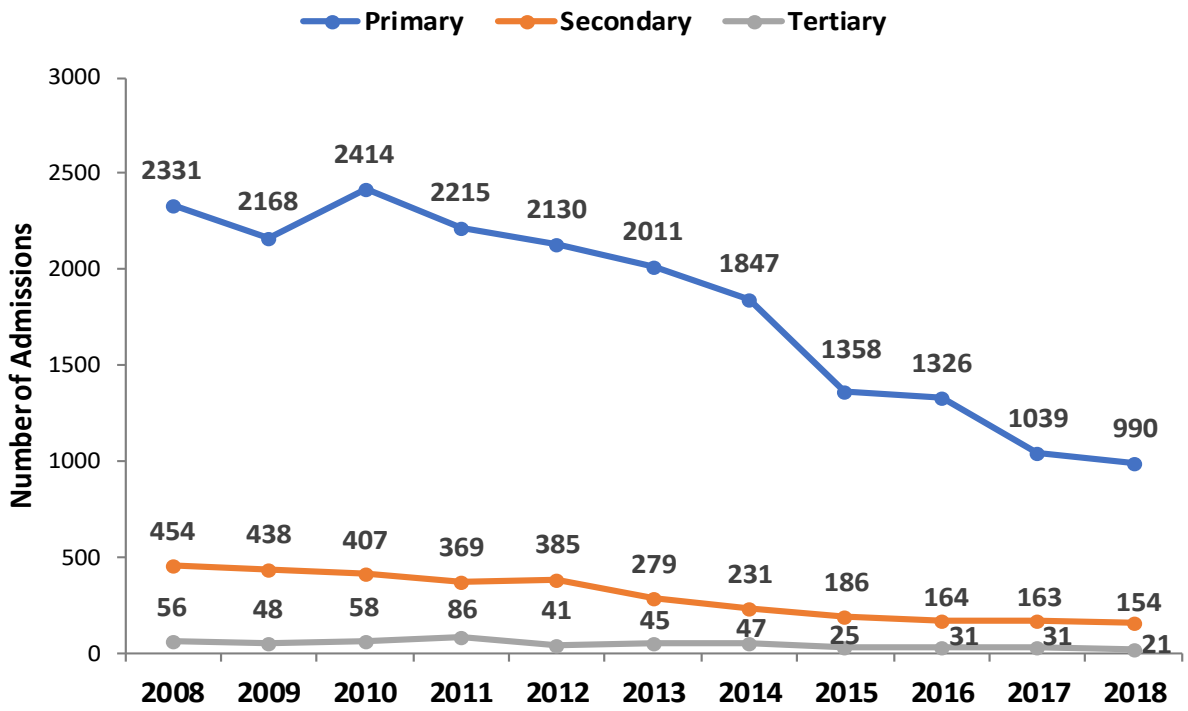
- **Reporting Marijuana as Substance Use**. Youth (12-17 years of age) reporting marijuana as their primary, secondary, or tertiary substance use.

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

Source: Treatment Episode Data Set, 2008-2018

Summary: In 2008, marijuana was most commonly reported primary substance by youth (2,331 admissions at 72.1 percent). While the total number of youth treatment admissions decreased over time, marijuana was still the primary substance use by youth in 2018, with 990 admissions at 63.5 percent.

Figure 32. Number of Youth Admissions who Reported Marijuana as Primary, Secondary, or Tertiary Substance Use: 2008-2018



Marijuana Use Among Adults

Indicator Description:

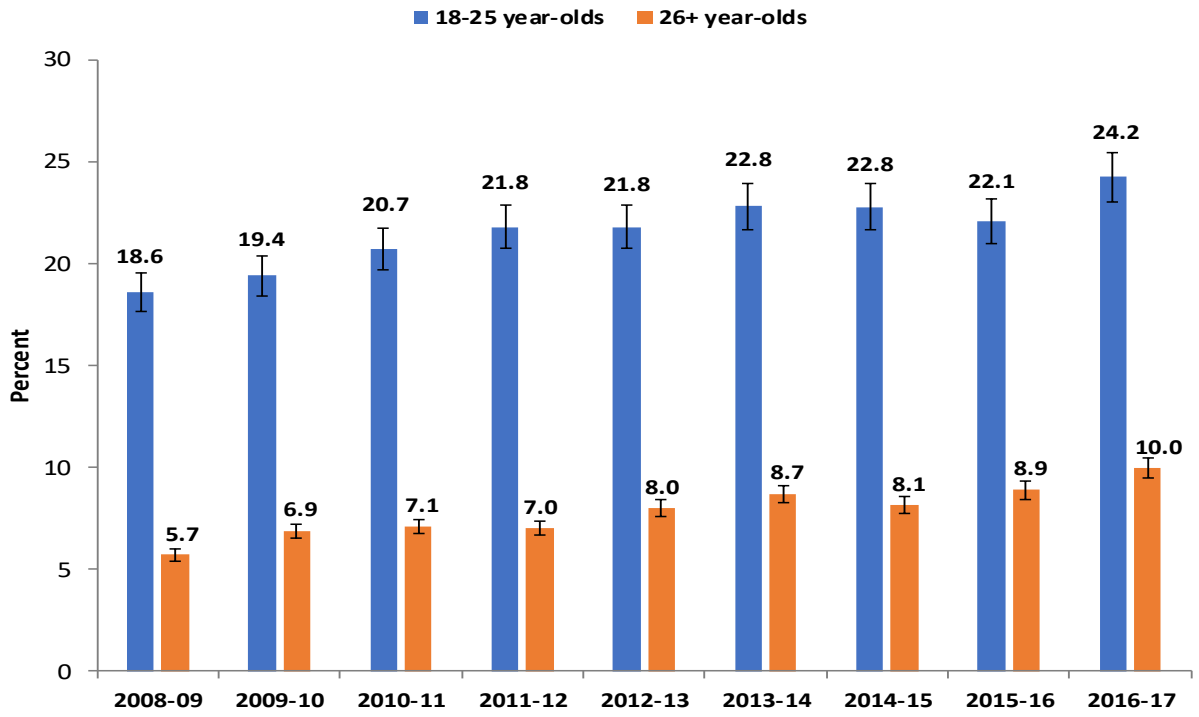
- **Past Month Marijuana Use**. Percent of adults (age 18 years and older) who reported using marijuana within the past month.

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, 2008-2017.

Summary: From 2008 to 2017, the percent of young adults (aged 18-25) reported current marijuana use increased significantly from 18.6 percent to 24.2 percent. Similarly, the percent of adults (aged 26 and older) reported current marijuana use increased significantly from 5.7 percent to 10.0 percent.

Figure 33. Percent of Adults Reporting Marijuana Use in the Past Month: 2008-2017



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

Factors Contributing to Marijuana Use

Indicator Description:

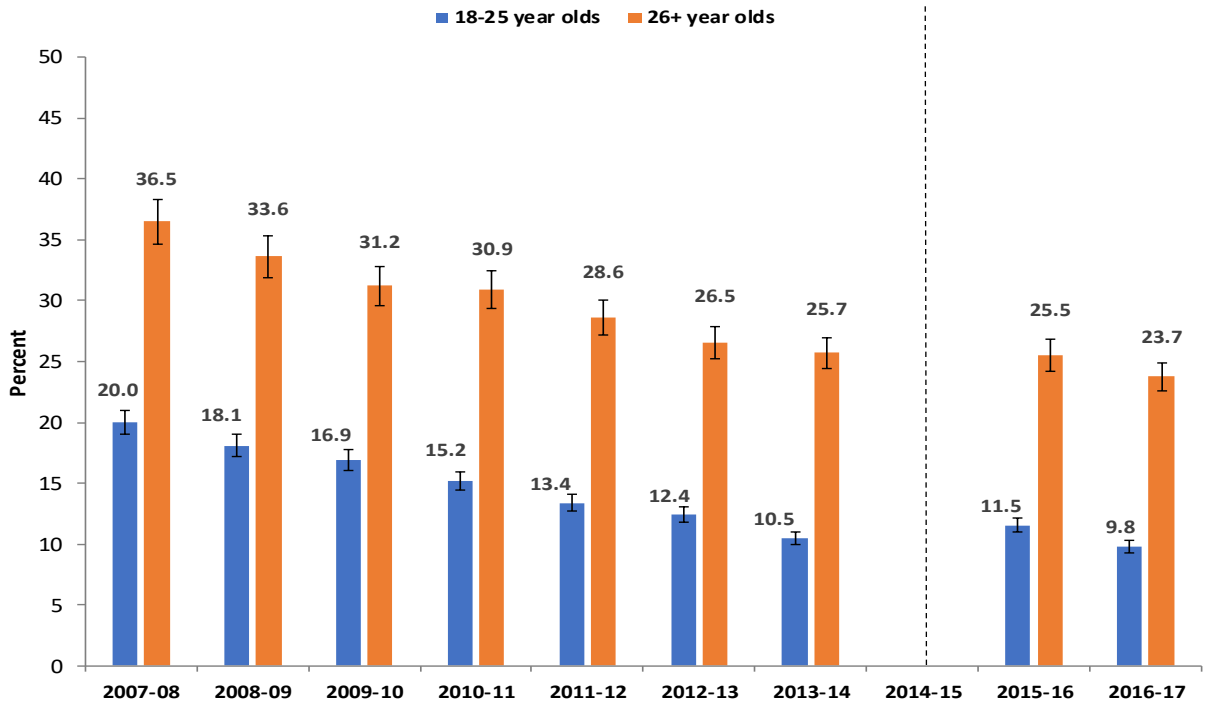
- **Perceptions of Great Risk from Smoking Marijuana**. Percent of adults (age 18 years and up) who perceived great risk from smoking marijuana once a month.

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, 2008-2017.

Summary: Compared to other age groups including youth, young adults (aged 18-25) reported lowest perceived great risk from smoking marijuana once a month at 9.8 percent.

Figure 34. Percent of Adults who Perceived Great Risk from Smoking Marijuana Once a Month: 2007-2017



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:

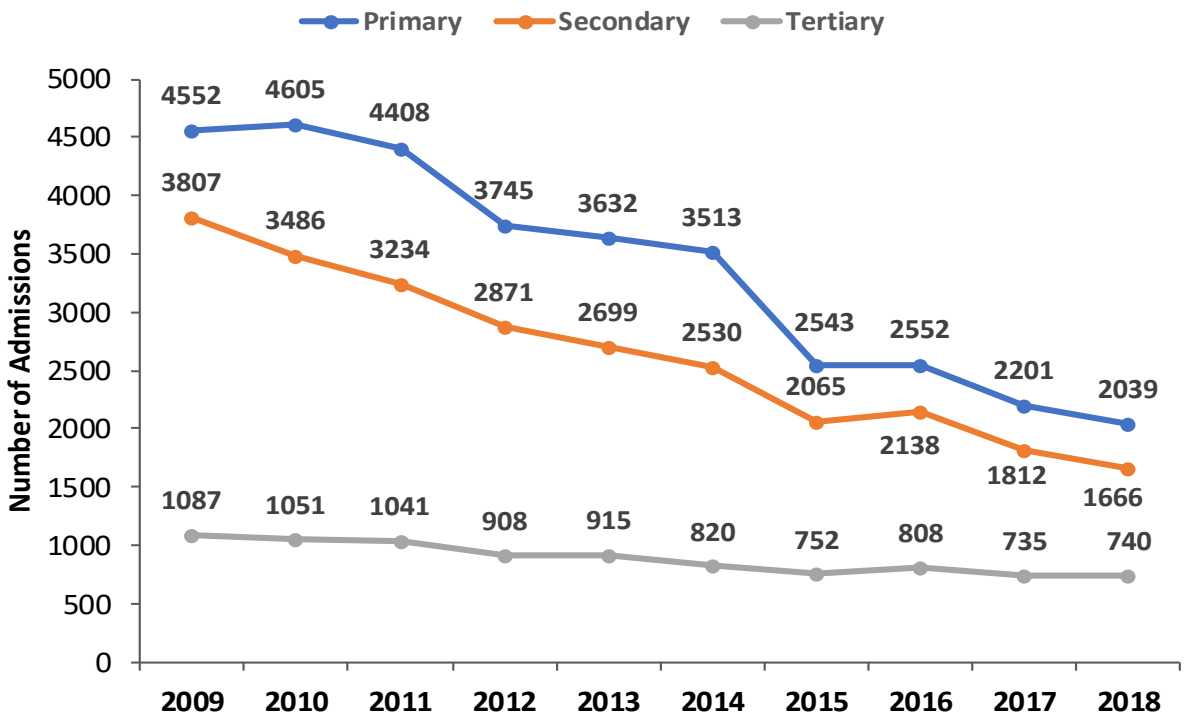
- **Reporting Marijuana as Substance Use**. Young adults (18-25 years of age) reporting marijuana as their primary, secondary, or tertiary substance use

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

Source: Treatment Episode Data Set, 2009-2018

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 2009 to 2018 period. In 2009, marijuana represented 26.9 percent of all primary substance treatment admissions and it changed to 22.0 percent in 2018. Marijuana is most commonly reported secondary substance among young adults.

Figure 35. Number of Young Adults (18-25 years of age) Admissions who Reported Marijuana as Primary, Secondary, or Tertiary Substance Use: 2009-2018



Marijuana Consequences among Adults

Indicator Description:

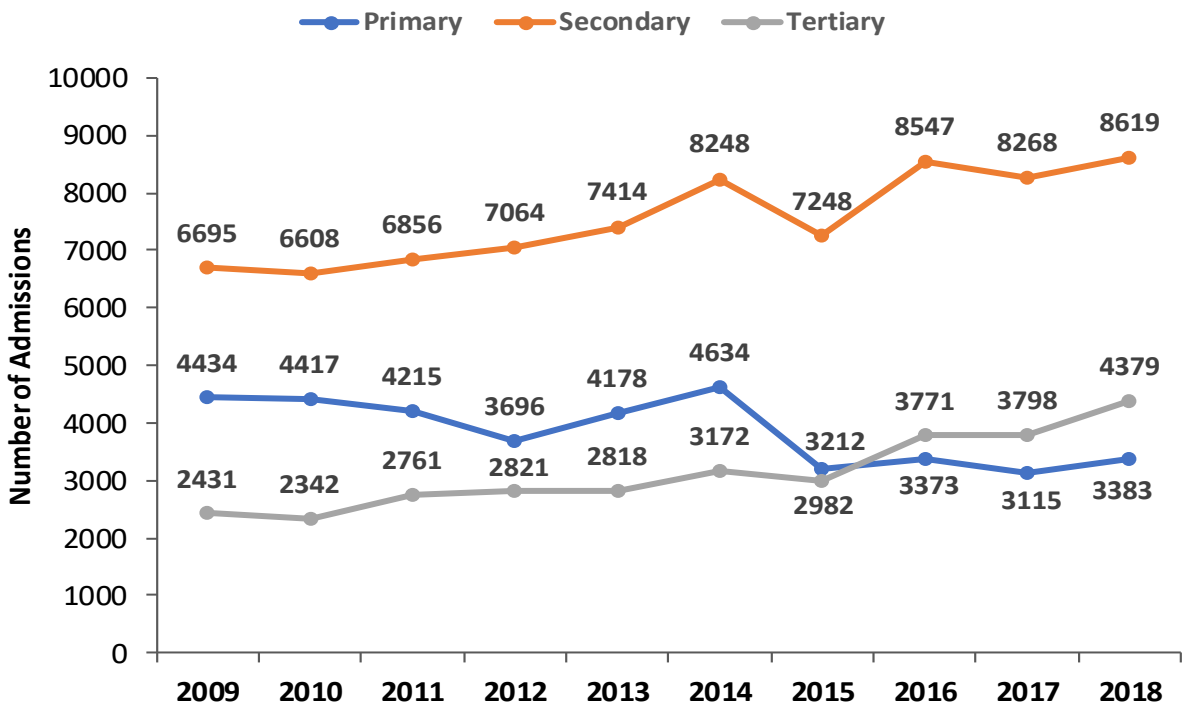
- **Reporting Marijuana as Primary Drug of Abuse**. Adults (26+ years of age) reporting marijuana as their primary, secondary, or tertiary substance use

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

Source: Treatment Episode Data Set, 2008-2018

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 2009 to 2018 period, while reports of primary marijuana use fell. As shown below, marijuana is most commonly reported secondary substance among adults aged 26 and older.

Figure 36. Number of Adults (26+ years of age) who Reported Marijuana as Primary, Secondary, or Tertiary Substance Use: 2009-2018



Depressive Feelings Among Youth

Indicator Description:

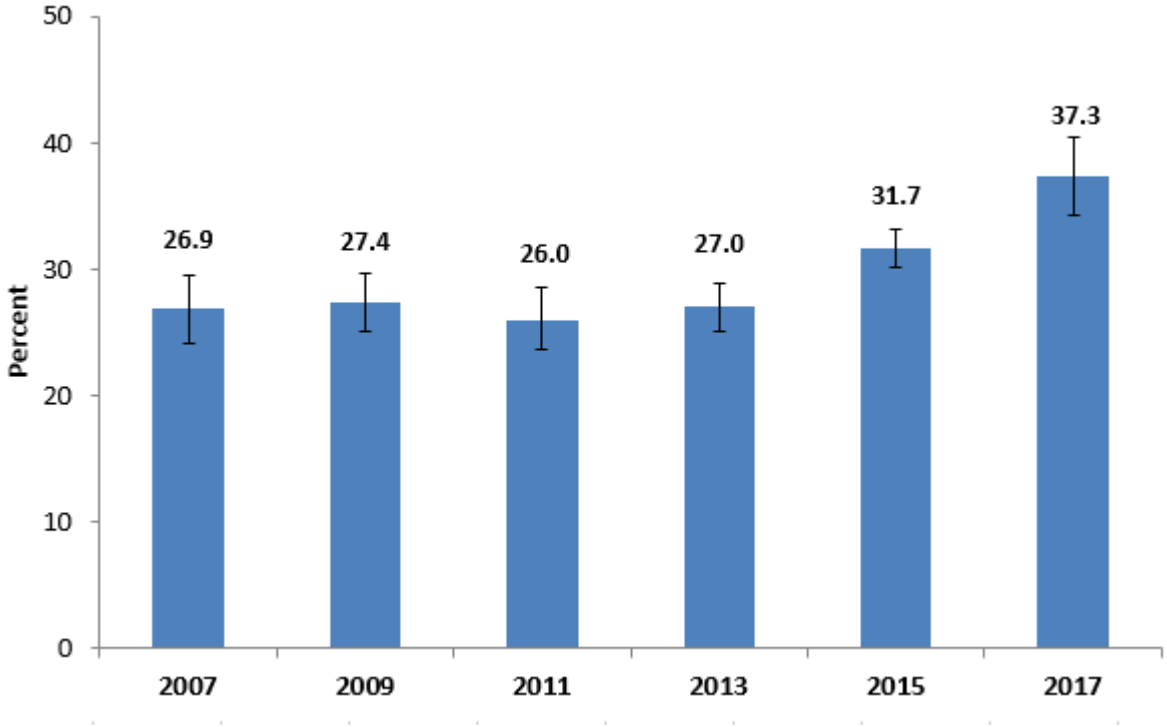
- **Depression Among Youth.** Percent of high school students (9th to 12th graders) who reported feeling sad or hopeless almost ever day for two weeks in a row during the past year.

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, 2007-2017.

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 2007 to 2013. A significant increase was observed from 27.0 percent in 2013 to 37.3 percent in 2017.

Figure 37. Percent of Youth Who Reported Experiencing Depressive Feelings in the Past Year: 2007-2017



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:

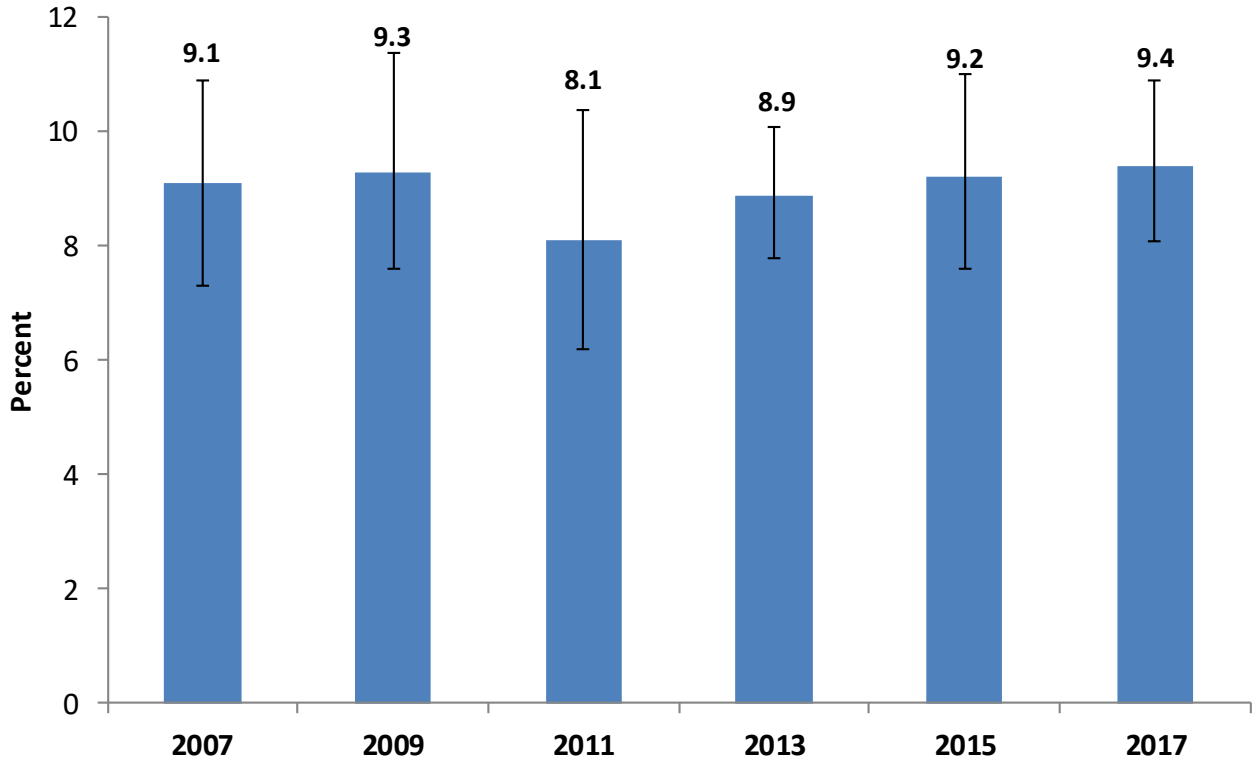
- **Suicide Attempt Among Youth.** Percent of high school students (9th to 12th graders) who reported having attempted suicide one or more times in the past year.

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, 2007-2017.

Summary: The percent of high school students who reported having attempted suicide at least once in the past year has steadily remained around 9.0 percent, with no significant deviation from 2007 to 2017.

Figure 38. Percent of Youth Who Reported a Suicide Attempt in the Past Year: 2007-2017



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

Depressive Feelings Among Adults

Indicator Description:

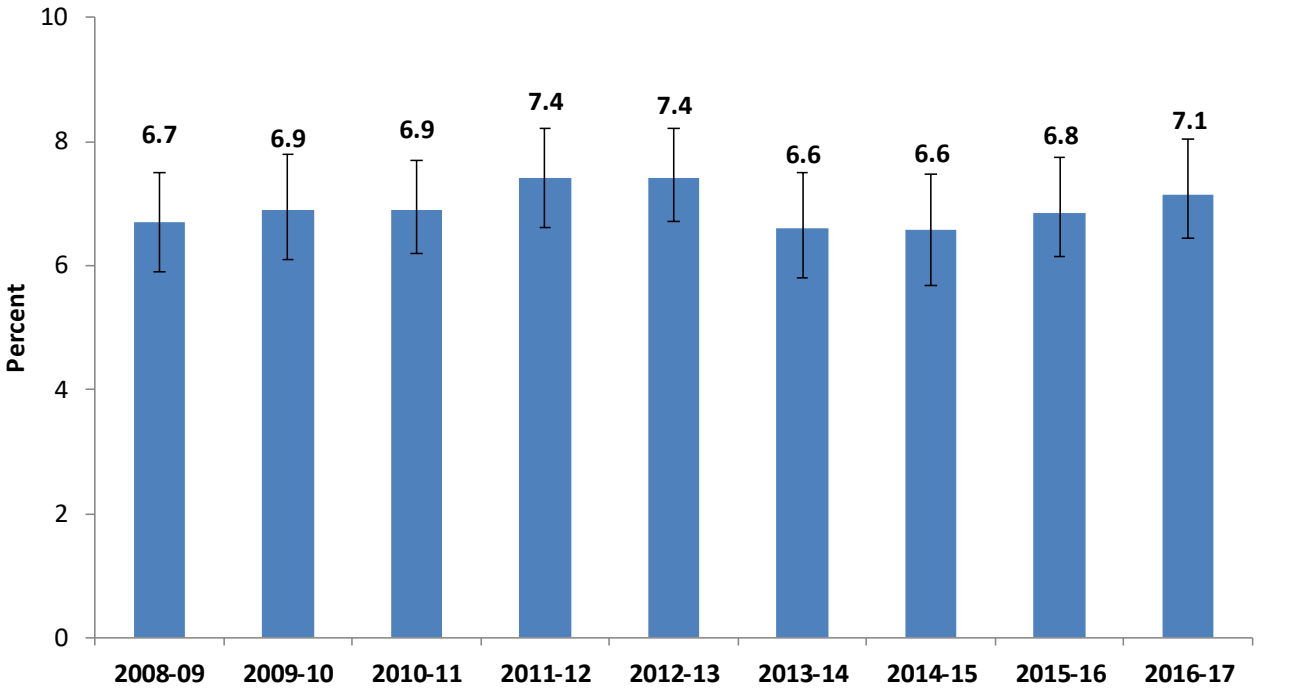
- **Major Depressive Disorder.** Percent of adults (age 18 or older) who reported experiencing at least one major depressive episode in the past year.

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, 2008-2017

Summary: The percent of adults who reported experiencing a major depressive episode in the past year has steadily remained around 7.0 percent, with no significant deviation from 2008 to 2017.

Figure 39. Percent of Adults Who Reported Experiencing a Major Depressive Episode in the Past Year: 2008-2017



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:

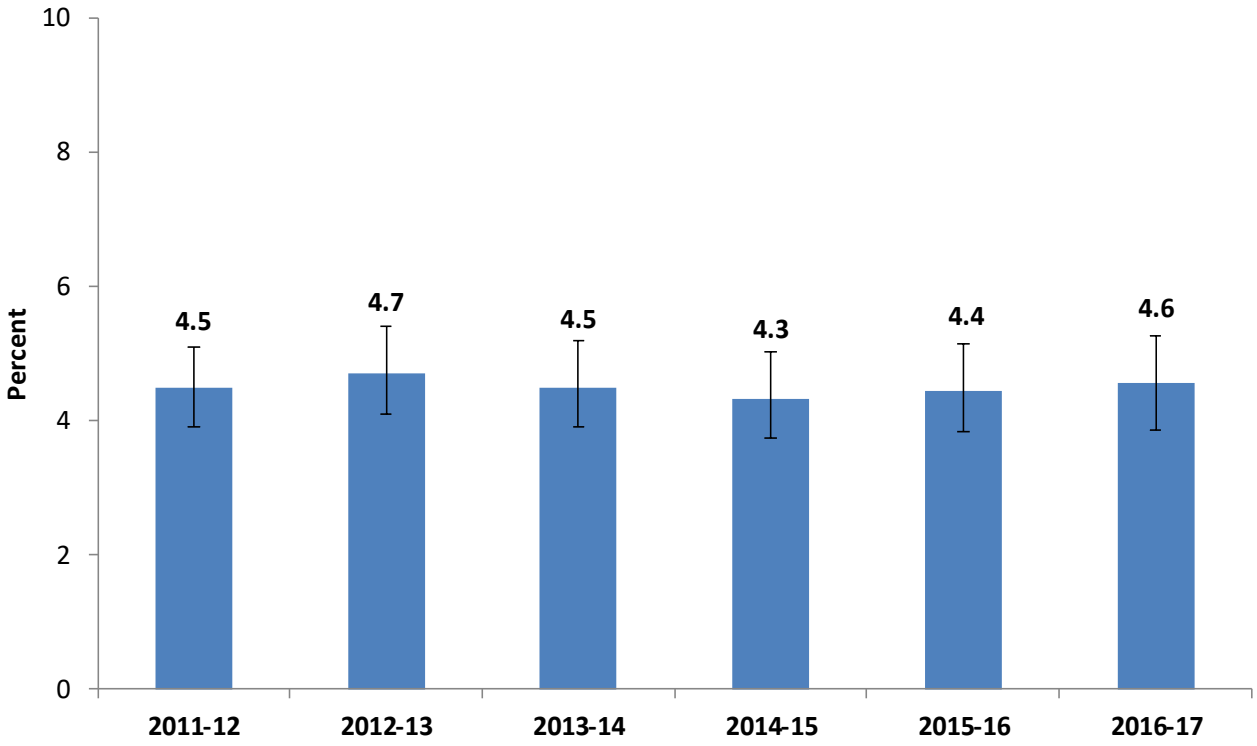
- **Serious Mental Illness.** Percent of adults (age 18 or older) who reported having a serious mental illness in the past year.

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 abuse 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, 2011-2017.

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 2011 to 2017.

Figure 40. Percent of Adults Who Reported Having a Serious Mental Illness in the Past Year: 2011-2017



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:

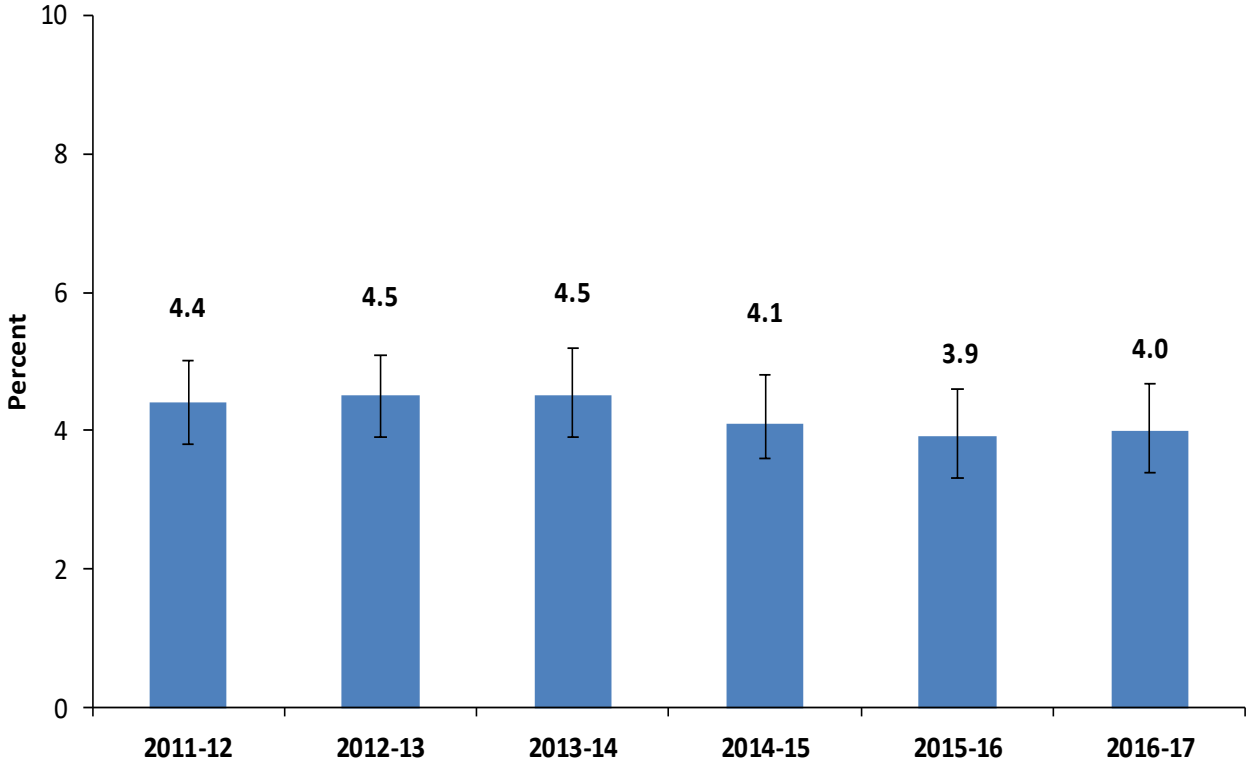
- **Suicidal Thoughts Among Adults.** Percent of adults (age 18 or older) who reported having suicidal thoughts in the past year.

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, 2011-2017.

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 2011 to 2017.

Figure 41. Percent of Adults Who Reported Having Suicidal Thoughts in the Past Year: 2011-2017



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 abuse and mental, emotional, and behavioral disorders, prevention programs, practices, and policies, as well as to promote positive behavioral and mental health over the lifespan.

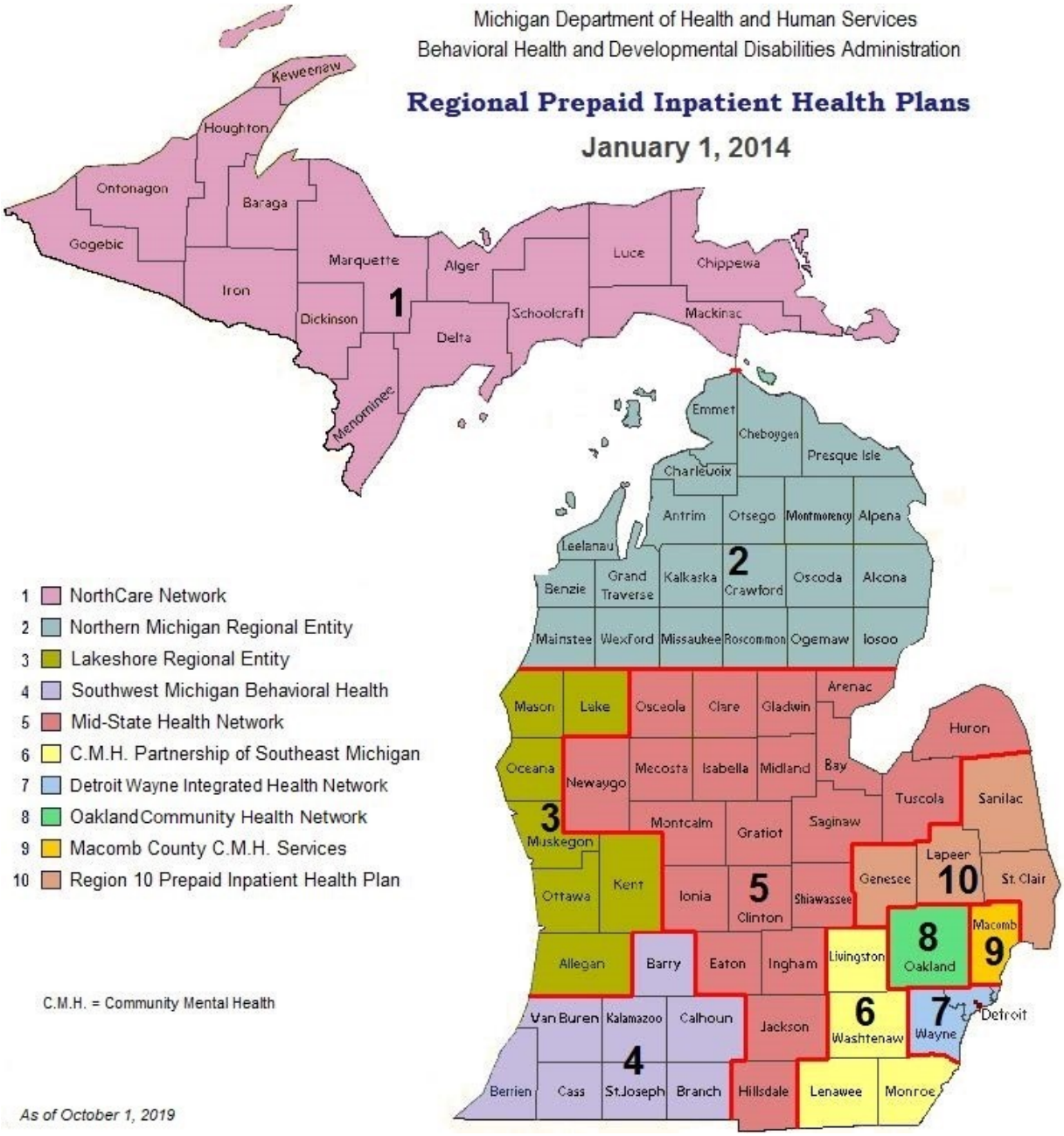
This document presents some of the guiding principles, which direct the work of Michigan's SEOW:

- 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



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