Michigan Epidemiological Profile

April 2015

Behavioral Health and Developmental Disabilities Administration

Office of Recovery Oriented Systems of Care

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 four different topic areas with thirty-two 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 2004 and 2013, alcohol-related traffic crashes involving at least one driver, 16 to 20 years of age, who had been drinking, caused an annual average of 158 deaths and serious injuries.

- In 2013, 1,149 youths 16 to 20 years of age, were admitted to treatment for alcohol as the primary drug of abuse in Michigan, accounting for 22.1% of all substance abuse treatment admissions.

- In 2013, 11.8% of Michigan 9th through 12th graders smoked cigarettes on one or more of the past 30 days and 7.1% of students had smoked daily.

- In 2013, 27.0% of Michigan youth reported having depressive feelings, and nearly one out of ten (8.9%) students reported having attempted suicide one or more times.

The findings for Michigan's adult population include:

- Between 2004 and 2013, alcohol-related traffic crashes involving at least one driver, 21 years of age or older, who had been drinking, caused an annual average of 1,107 deaths and serious injuries.

- In 2013, an estimated 6.2% of individuals 18 years of age or older were heavy drinkers and 18.9% of them were binge drinkers.

- In 2012, the prescription drug overdose death rate was the highest for adults 35 to 54 years of age.

- In 2013, prescription drugs totaled 8,464 treatment entrances for individuals 21 years of age or older, accounting 9.2% of all substance abuse treatment admissions.

- Between 2003 and 2012, 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.

- Between 2011 and 2012, 7.4% of adults 18 years of age and older reported experiencing a major depressive episode and 4.5% 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 the Michigan 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 Disease Control, Prevention, and Epidemiology.

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.

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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 (Michigan Office of Highway Safety Planning {MOHSP}) • 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 Drug of Choice (Treatment Episode Data Set {TEDS})	• Fatal Traffic Crashes of Alcohol Impaired Drivers (MOHSP) • Current Alcohol Use, Binge Drinking, and Heavy Drinking (Michigan Behavioral Risk Factor Surveillance System{MiBRFS}) • Drove After Drinking (MiBRFS) • Alcohol Primary Drug of Choice (TEDS)
Tobacco Use	• Current Tobacco Use and Daily Cigarettes Use (MiYRBS) • Perceived Risk of Smoking (NSDUH) • Early Initial Use (MiYRBS)	• Current Tobacco Use (MiBRFS) • Lung Cancer Mortality and Morbidity (Michigan Vital Statistics)
Prescription Drug Abuse	• Nonmedical Use of Pain Relievers (NSDUH) • Prescription Drug Primary Drug of Choice (TEDS) • Fatal Traffic Crashes of Drug Impaired Underage Drivers (MOHSP)	• Prescription Drug Overdose Death Rate (vital statistics) • Prescription Drug Primary Drug of Choice (TEDS) • Fatal Traffic Crashes of Drug Impaired Drivers (MOHSP)
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)

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Michigan Overview

In 2013, the estimated population (of Michigan) was 9,895,622.[1] Approximately, 79.1% of the state's population is White, 13.9% African American, 4.7% Hispanic, 2.7% Asian/Pacific Islander, and 0.5% Native American. English is the primary language spoken at home by 91.0% of the residents of Michigan, followed by languages other than English at 9.0%, which includes 2.8% Spanish speaking.[1] An estimated 47% 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% of all African Americans reside in Southeast Michigan, primarily in Wayne and Oakland counties; 43% 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 15.0% of the state's population is over 65 years of age, with 22.7% under 18 years of age. An estimated 50.9% of the state's population is female; 49.1% 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 35.8% 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 (26.9% and 29.6% 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% in 2000 to 17.0% in 2013, while the U.S. individual poverty rate was 12.2% and 15.8% respectively. The percentage of families living below the poverty line showed a similar trend. The family poverty rate for Michigan was 7.7%, while the U.S. family poverty rate was 9.3% in 2000. In 2013, Michigan's family poverty rate was estimated as 12.3% and that of the U.S. was 11.6%.[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 abuse services through 10 regional Prepaid Inpatient Health Plans (PIHP). The OROSC, along with 10 PIHPs (See Appendix for PIHP map), contracts public funds for substance abuse prevention, treatment, and recovery initiatives.

1. U.S. Bureau of the Census. (2013). American community survey. Retrieved from http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk
2. State of Michigan. (2014). Michigan Tribal Governments. Retrieved from http://www.michigan.gov/som/0,1607,7-192-29701_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 2004 and 2013, the average alcohol-related traffic crash deaths was 0.02 per 100 million miles driven, and the average alcohol-related traffic crash injuries reported was 0.13 per 100 million miles driven during the same period.

Source: Michigan Office of Highway Safety Planning, 2004-2013.

Summary: The rate of alcohol-related traffic crash deaths among youth has decreased by 33% from 2004 to 2013. The rate of alcohol-related traffic crash serious injuries has decreased by 59% from 2004 to 2013. Alcohol-related traffic crashes involving at least one driver 16 to 20 years of age who had been drinking, caused an annual average of 158 deaths and serious injuries in Michigan each year between 2004 and 2013.

Figure 1. Alcohol-Related Traffic Crash Deaths and Serious Injuries Among Youth: 2004-2013
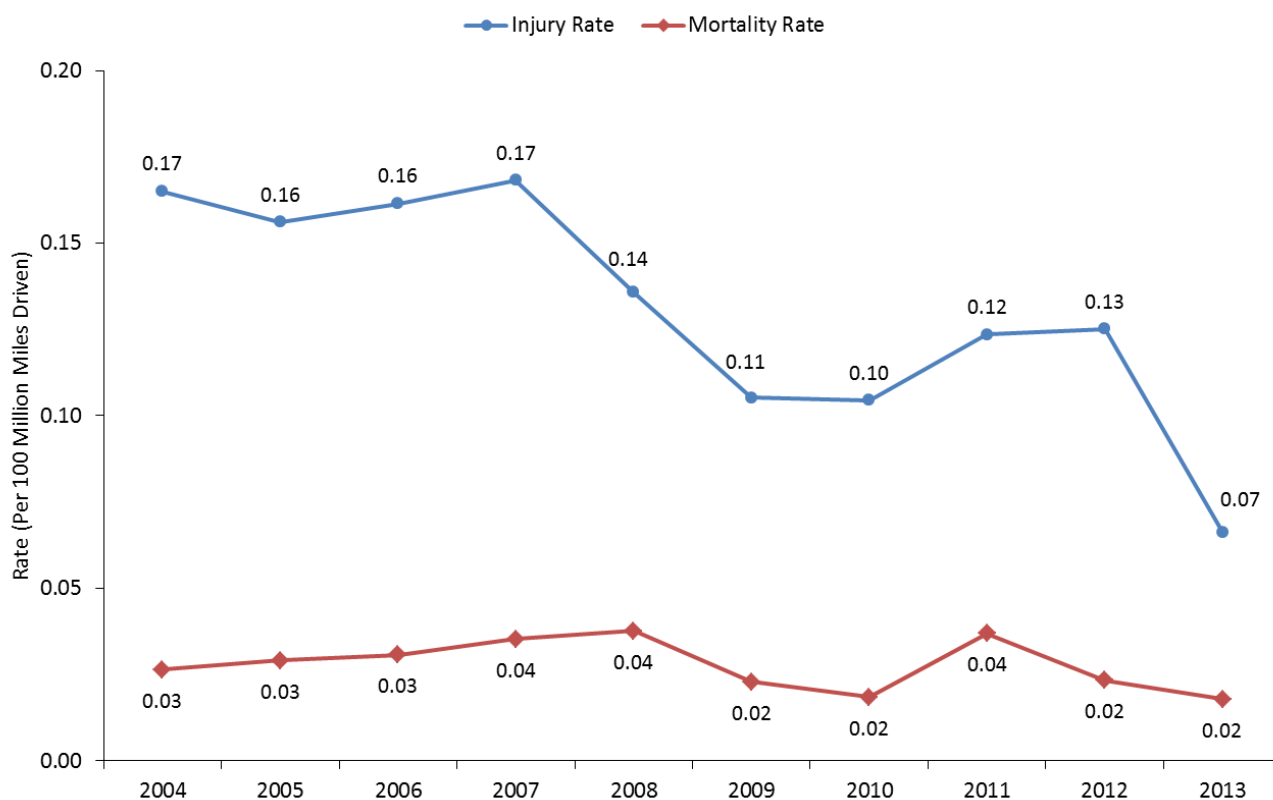
Alcohol Consequences Among Youth

Indicator Description:

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

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 particular substance abuse problems.

Source: Treatment Episode Data Set, 2003-2013.

Summary: The percent of youth who reported alcohol as their primary drug of abuse when seeking treatment has steadily declined from 2003 to 2013, with an overall decrease of 47% during that time period.

Figure 2. Percent of Youth Admitted for Substance Abuse Treatment Who Reported Alcohol as Primary Drug of Abuse: 2003-2013
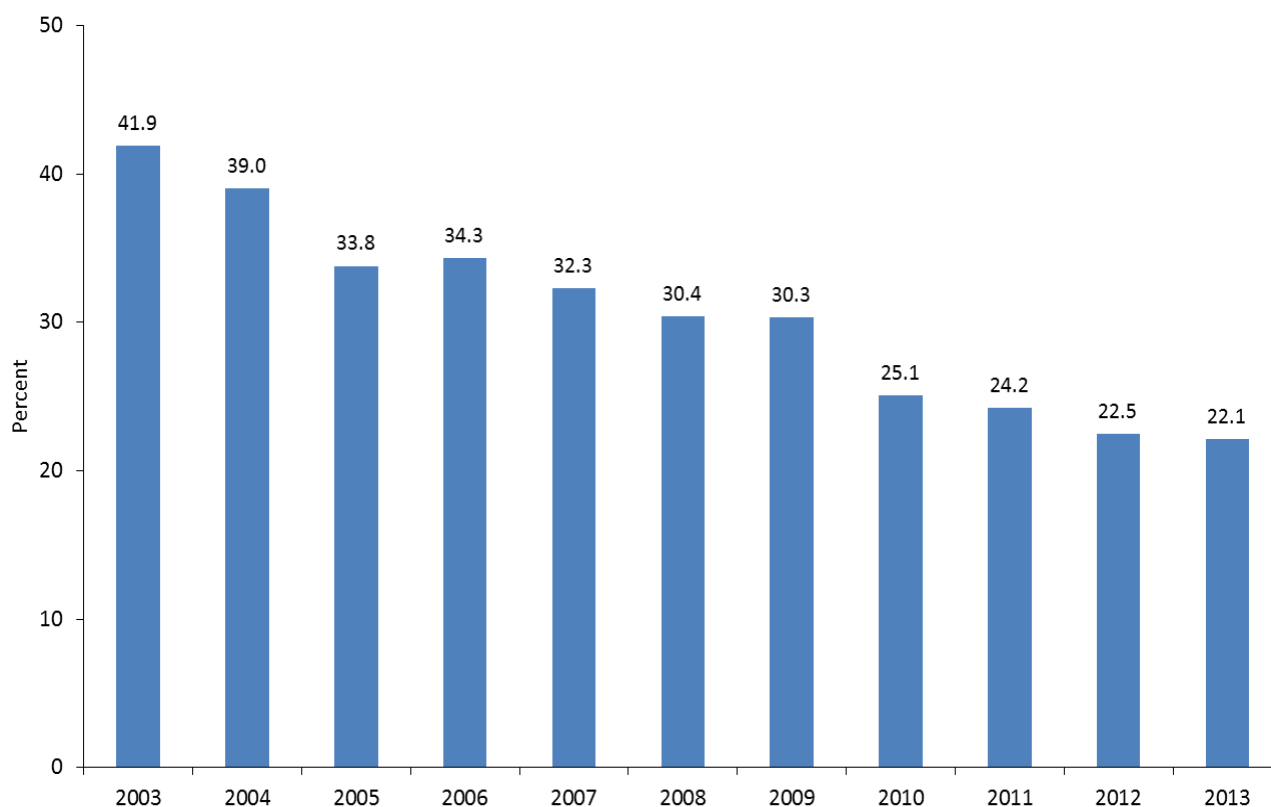
Alcohol Use Among Youth
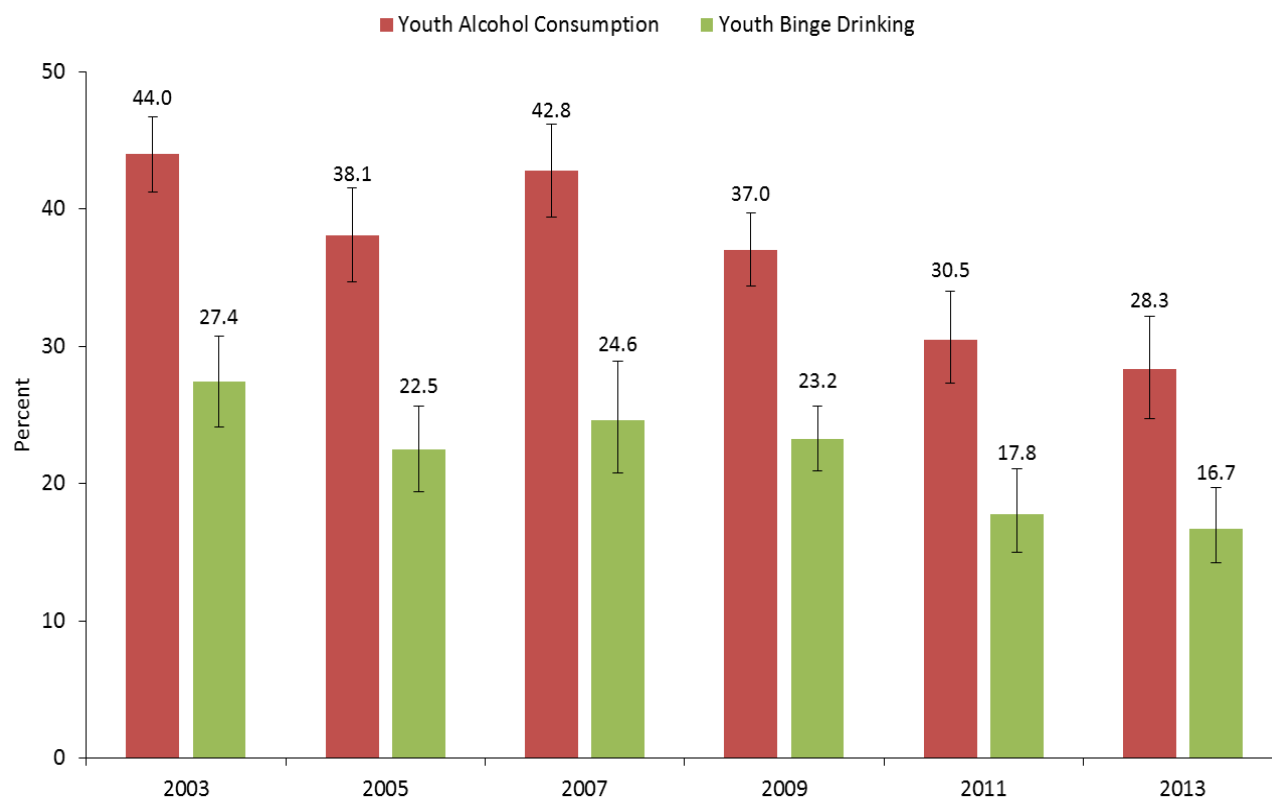
Indicator Description:

- **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).

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, 2003-2013.

Summary: From 2003 to 2013 the percent of students who reported consuming at least one alcoholic drink within the past 30 days decreased significantly from 44.0% to 28.3%, Similarly, the percent of students who reported binge drinking within the past 30 days significantly decreased as well, from 27.4% to 16.7%.

Figure 3. Percent of Youth Who Reported Consuming Alcohol in the Past 30 Days: 2003-2013

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

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, 2003-2013.

Summary: From 2003 to 2013 the percent of students who drove a car or other vehicle one or more times when they had been drinking alcohol significantly decreased from 10.7% to 6.3%, 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 29.6% to 20.3%.

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: 2003-2013
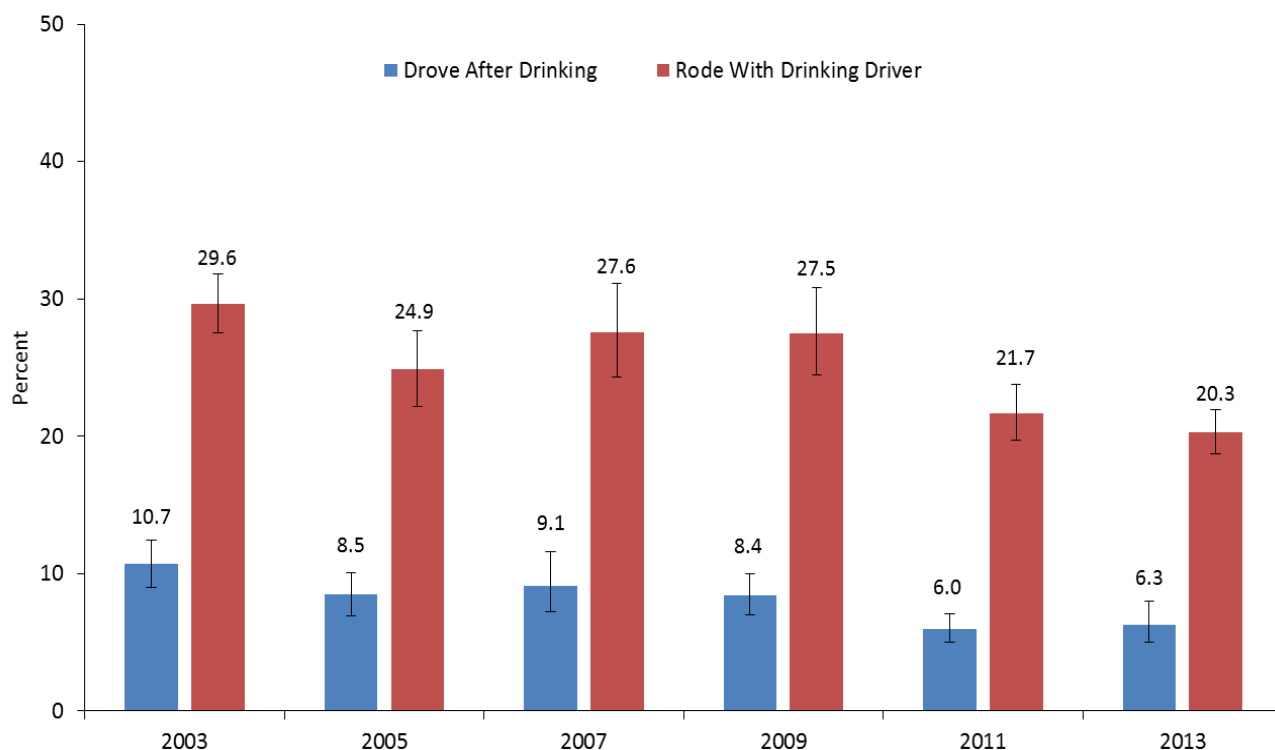
Note: Error bars represent 95% confidence intervals for percent.

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, 2003-2013.

Summary: The percent of youth who reported having consumed their first drink of alcohol prior to the age of 13 has significantly decreased from 26.9% to 14.0% from 2003 to 2013.

Figure 5. Percent of Youth Who Reported Consuming Their First Drink of Alcohol Before Age 13: 2003-2013
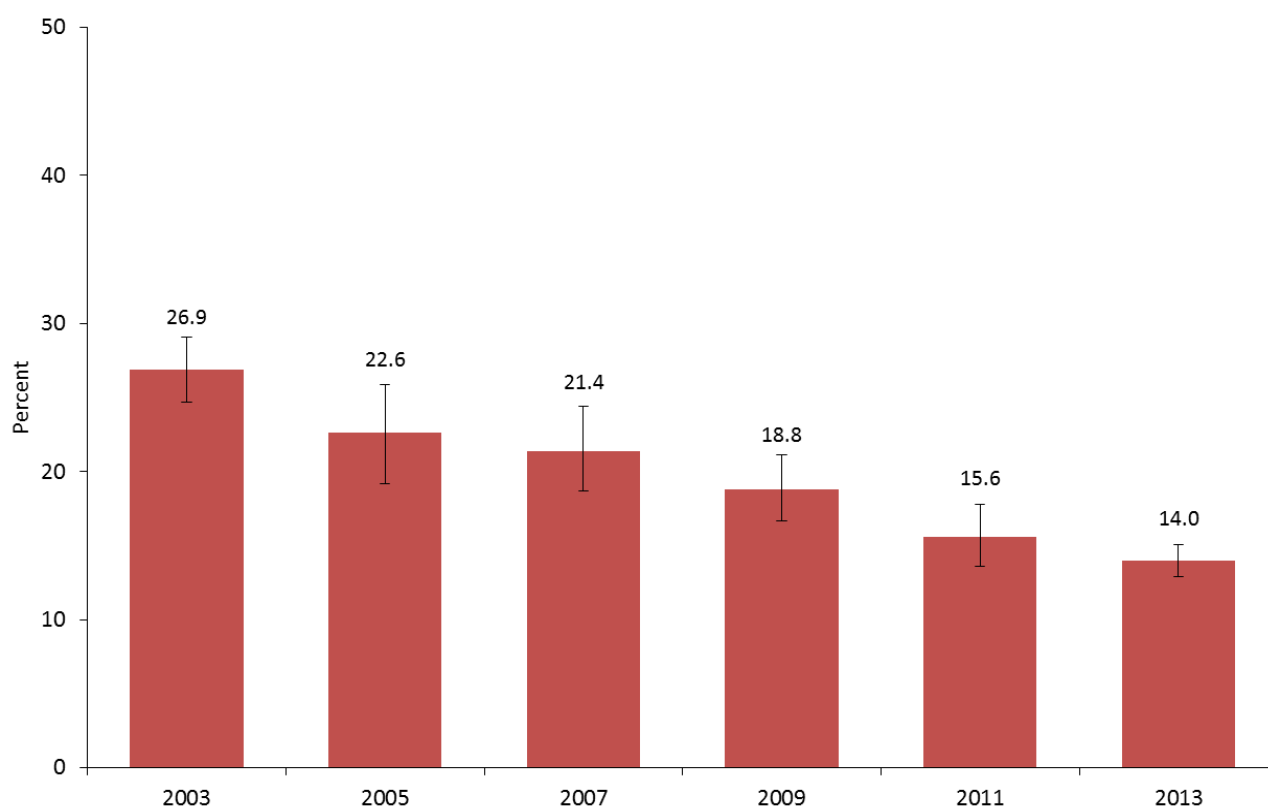
Note: Error bars represent 95% confidence intervals for percent.

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1. Grant BF, Dawson DA. Age at onset of alcohol use and its association with DSM-IV alcohol abuse and dependence: results from the National Longitudinal Alcohol Epidemiologic Survey. J Subst Abuse. 1997;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, 2003-2012.

Summary: Over one-third of youth continue to perceive great risk from having five or more alcoholic drinks once or twice a week from 2003 to 2012, with no significant change.

Figure 6. Percent of Youth Who Perceived Great Risk From Having Five or More Alcoholic Drinks Once or Twice a Week: 2003-2012
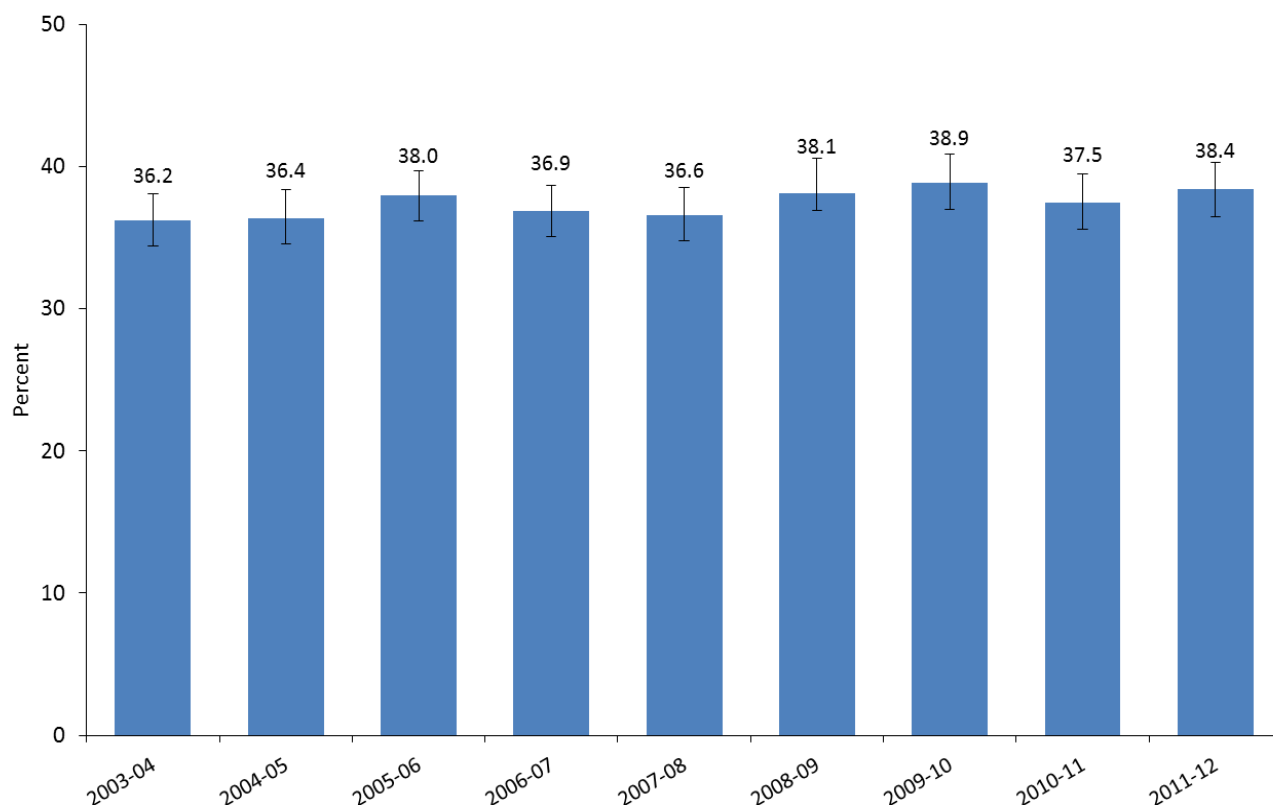
Note: Error bars represent 95% confidence intervals for percent.

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, 2004-2012

Summary: From 2004 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.

Figure 7. Percent of Adults Who Reported Driving After Drinking Too Much Alcohol in the Past 30 days: 2004-2012
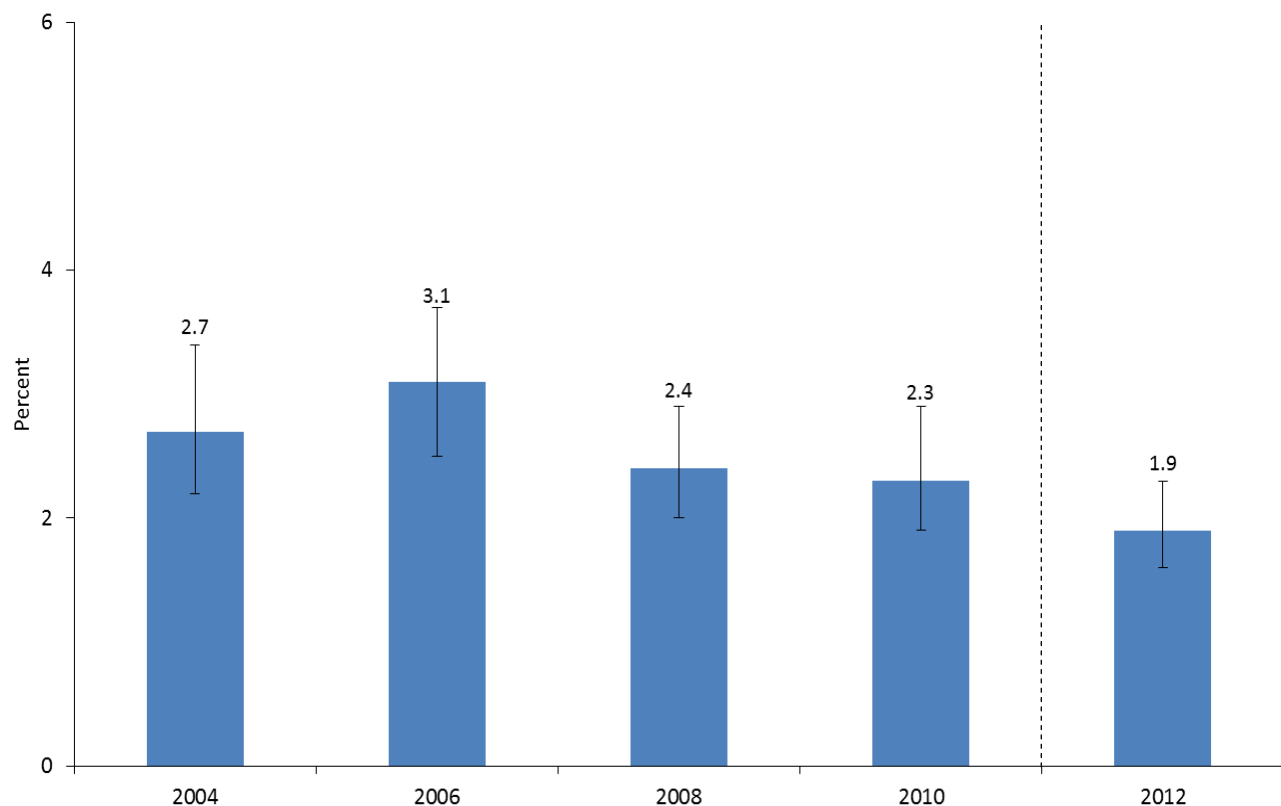
Note: Error bars represent 95% confidence intervals for percent. Due to methodology changes that took place in 2011, BRFSS estimates from 2011 and moving forward cannot be compared to BRFSS estimates from 2010 and earlier.

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 2004 and 2013, the average alcohol-related traffic crash mortality rate was 0.24 per 100 million miles driven, and the average alcohol-related traffic crash injuries rate reported was 0.87 per 100 million miles driven during the same period.

Source: Michigan Office of Highway Safety Planning, 2004-2013.

Summary: The rate of alcohol-related traffic crash deaths has decreased by 21% from 2004 to 2013. The rate of alcohol-related traffic crash serious injuries has decreased by 37% from 2004 to 2013. Alcohol-related traffic crashes involving at least one driver 21 years of age or older who had been drinking, caused an annual average of 1,107 deaths and serious injuries in Michigan each year between 2004 and 2013.

Figure 8. Alcohol-Related Traffic Crash Deaths and Serious Injuries Among Adults: 2004-2013
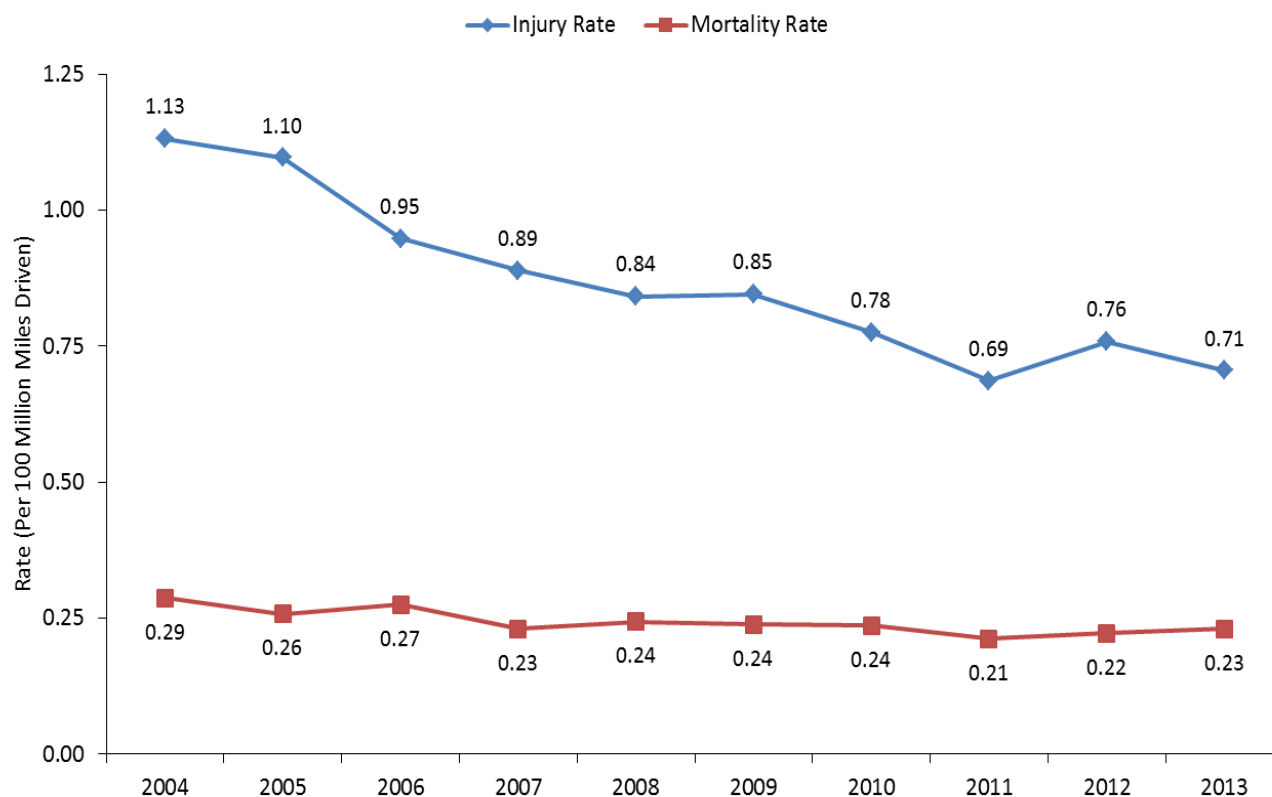
Alcohol Consequences Among Adults

Indicator Description:

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

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 particular substance abuse problems.

Source: Treatment Episode Data Set, 2003-2013.

Summary: The percent of adults who reported alcohol as their primary drug of abuse when seeking treatment has steadily declined from 2003 to 2013, with an overall decrease of 26% during that time period.

Figure 9. Percent of Adults Admitted for Substance Abuse Treatment Who Reported Alcohol as Primary Drug of Abuse: 2003-2013
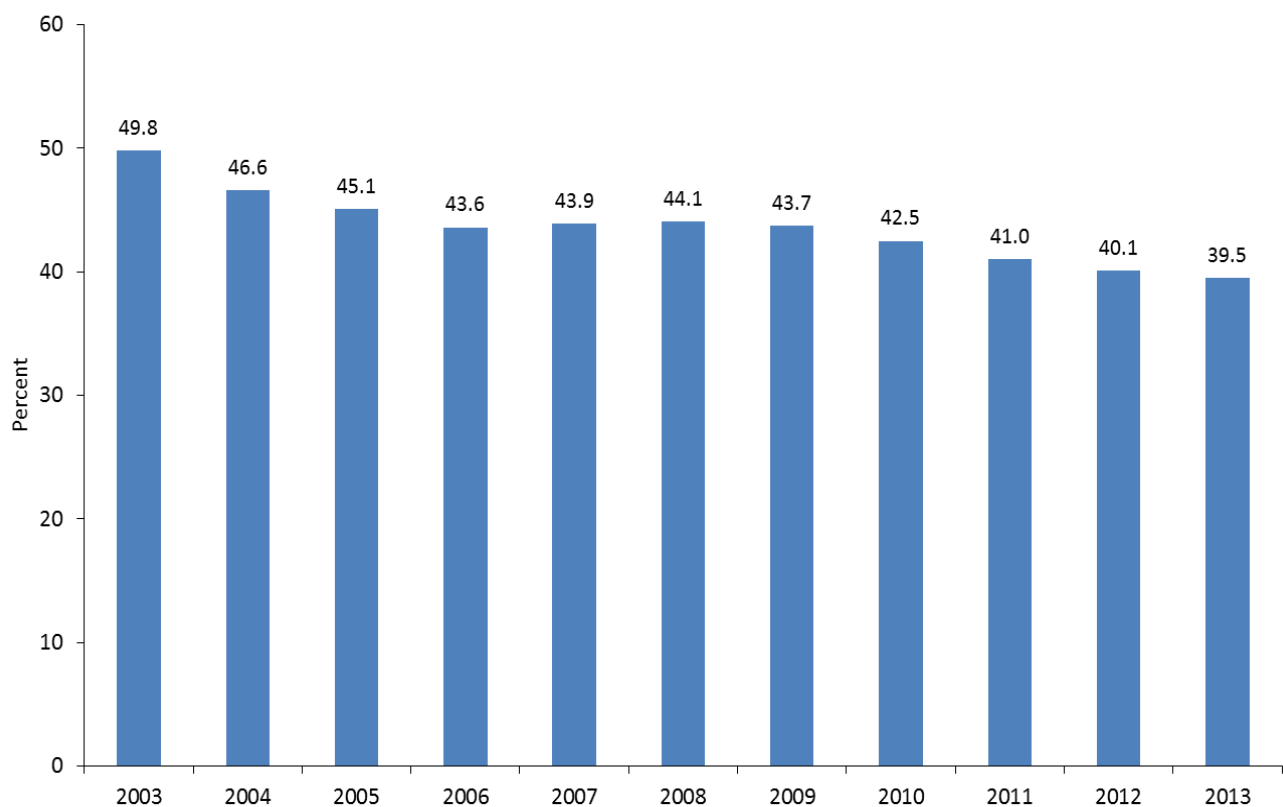
Alcohol Use Among Adults

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, 2005-2013

Summary: The proportion of Michigan adults who reported consuming at least one alcoholic beverage in the past 30 days had remained stabile from 2005 to 2010, as well as from 2011 to 2013, at approximately 56%.

Figure 10. Percent of Adults Who Reported Consuming One or More Alcoholic Drinks in the Past 30 days: 2005-2013
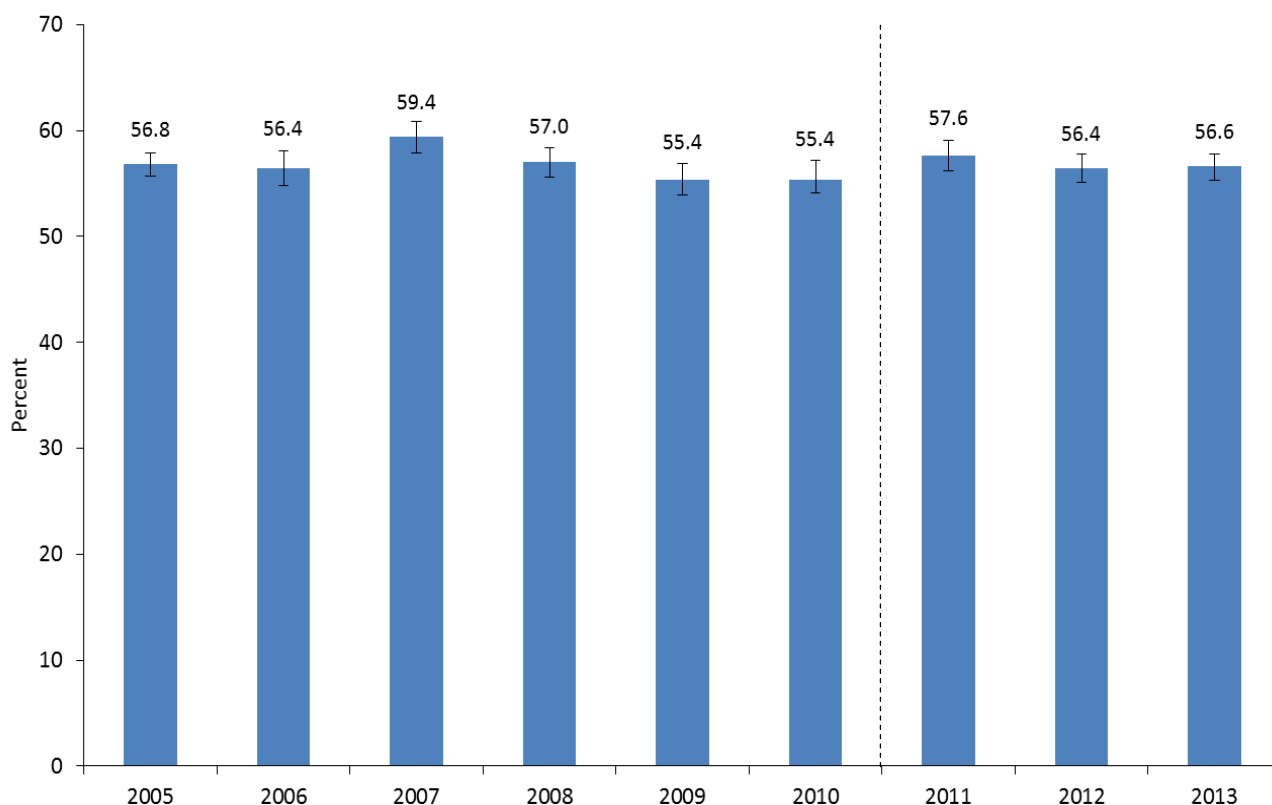
Note: Error bars represent 95% confidence intervals for percent. Due to methodology changes that took place in 2011, BRFSS estimates from 2011 and moving forward cannot be compared to BRFSS estimates from 2010 and earlier.

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

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Alcohol Use Among Adults

Indicator Description:

- **Current Binge Drinking Behavior Among Adults**. Binge drinking data from 2003-2005 represent all respondents, 18 or older, who reported consuming five or more drinks on an occasion within the last 30 days. Data from 2006-2013 represent men who reported consuming five or more drinks on an occasion, and women who reported consuming four or more drinks on an occasion, 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, 2003-2013

Summary: From 2003 to 2010 binge drinking significantly decreased in Michigan from 19.1% of adults to 15.0%. From 2011 to 2013, the proportion of adults who reported binge drinking in the past 30 days remained constant, around 19%. The proportion of adults who reported heavy drinking in the past 30 days remained stabile from 2003 to 2010, as well as from 2011 to 2013, at approximately 6.2%.

Figure 11. Percent of Adults who Reported Heavy Drinking or Binge Drinking in the Past 30 Days: 2003-2013
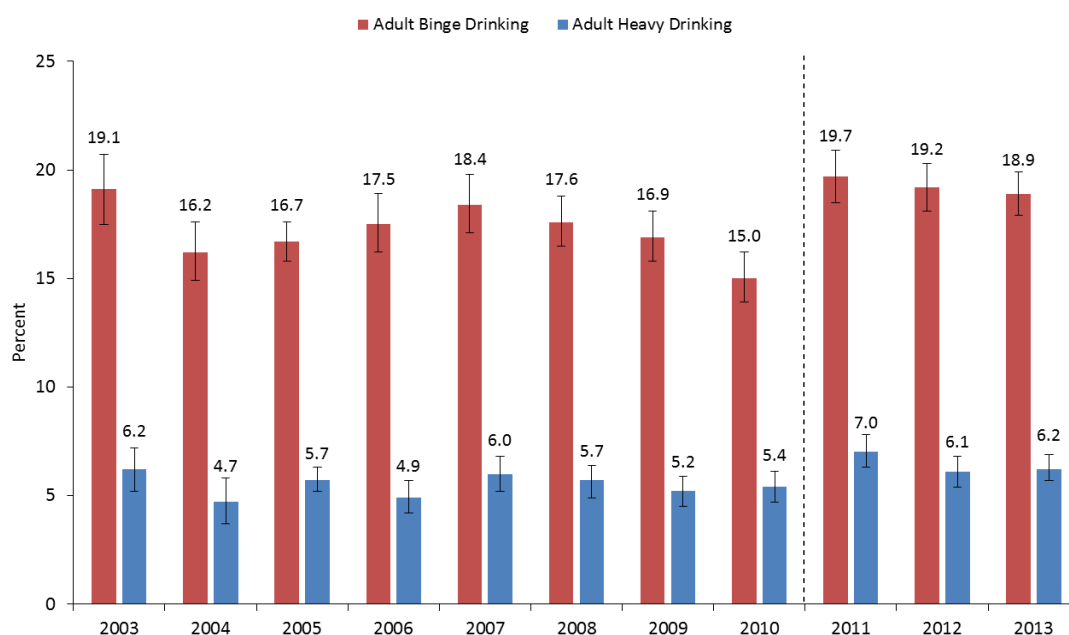
Note: Error bars represent 95% confidence intervals for percent. Due to methodology changes that took place in 2011, BRFSS estimates from 2011 and moving forward cannot be compared to BRFSS estimates from 2010 and earlier.

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

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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, 2003-2013.

Summary: The percent of high school students who reported smoking at least one cigarette during the past 30 days has significantly decreased from 22.6% to 11.8% during the time period of 2003 to 2013.

Figure 12. Percent of Youth Who Smoked Cigarettes During the Past 30 Days: 2003-2013
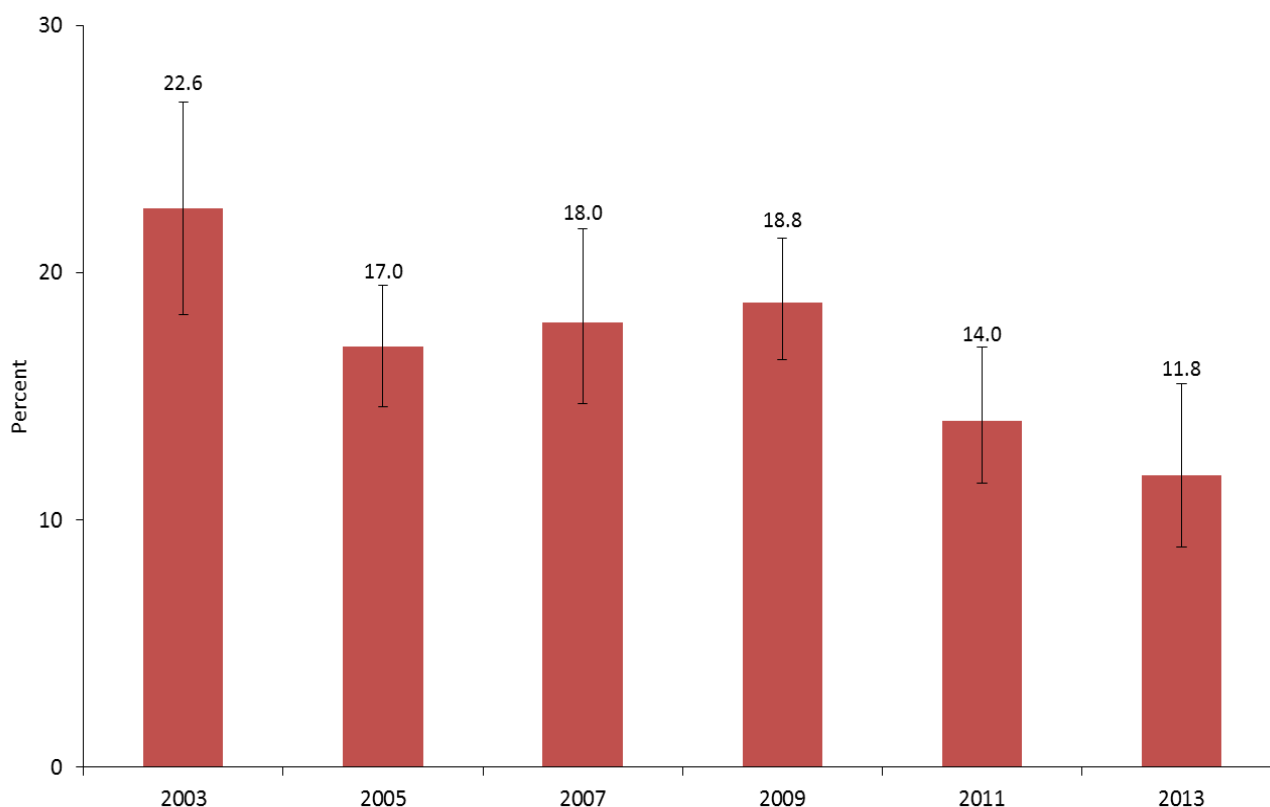
Note: Error bars represent 95% confidence intervals for percent.

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1. U.S. Department of Health and Human Services. 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, 2014.

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, 2003-2013.

Summary: The percent of high school students who reported ever smoking at least one cigarette every day for 30 days has significantly decreased from 18.4% to 7.1% during the time period of 2003 to 2013.

Figure 13. Percent of Youth Who Ever Smoked Cigarettes Daily: 2003-2013

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

1. U.S. Department of Health and Human Services. 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, 2014.
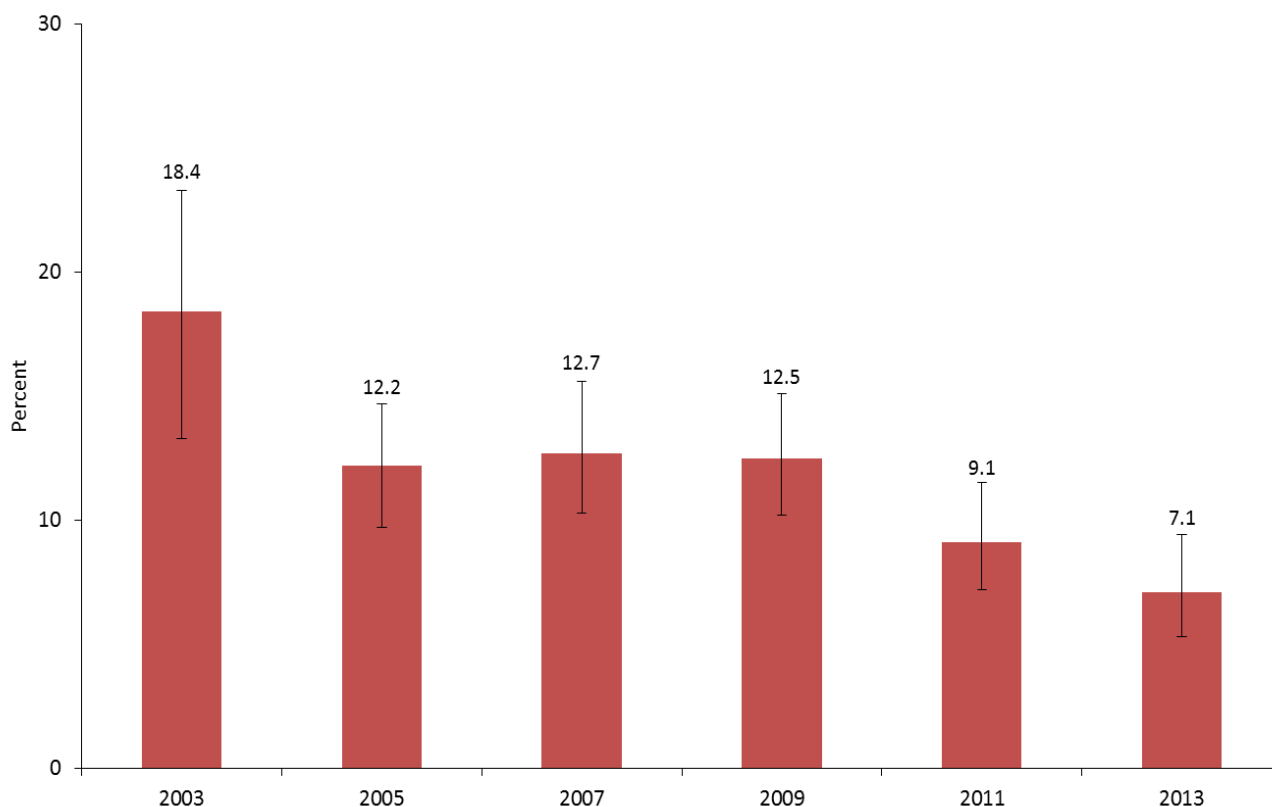
Factors Contributing to Tobacco Use Among Youth

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. Youth 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, 2003-2012.

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 66% from 2003 to 2012, with no significant deviation.

Figure 14. Percent of Youth Who Perceived Great Risk From Smoking One or More Packs of Cigarettes Per Day: 2003-2012
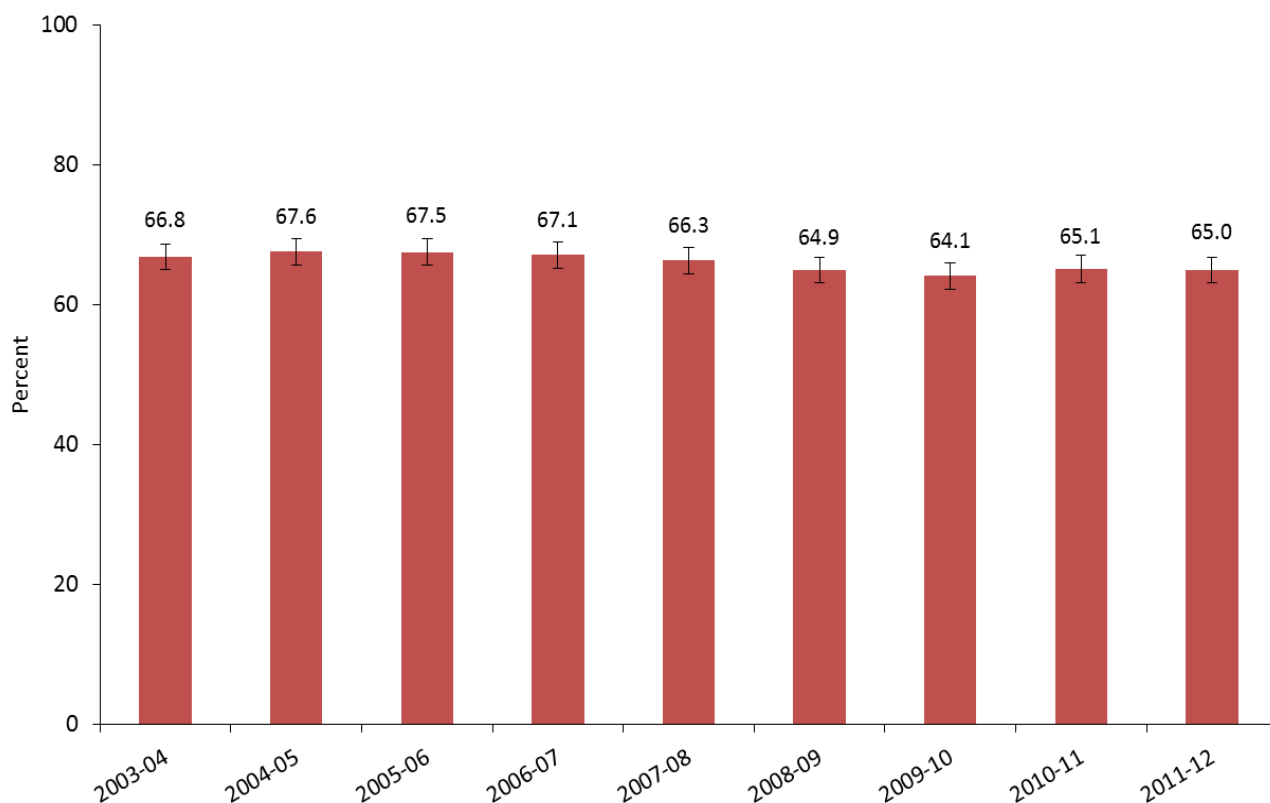
Note: Error bars represent 95% confidence intervals for percent.

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, 2003-2013.

Summary: From 2003 to 2013, the percent of high school students who reported smoking a whole cigarette for the first time before age 13 decreased significantly from 21.3% to 7.9%.

Figure 15. Percent of Youth Who Smoked a Whole Cigarette for the First Time Before Age 13: 2003-2013
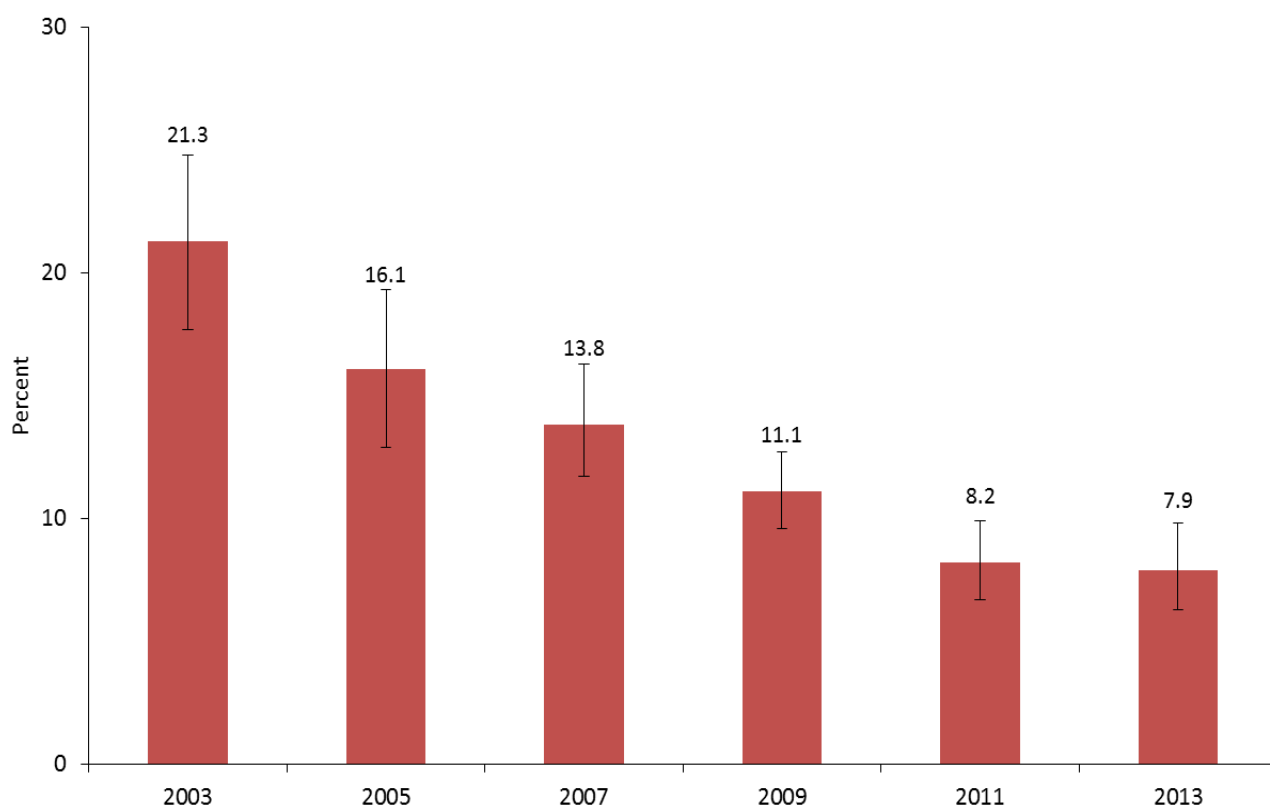
Note: Error bars represent 95% confidence intervals for percent.

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, 2003-2013

Summary: The percent of adults (age 18 or older) who reported ever smoking at least 100 cigarettes in their life and currently smoke now has significantly decreased, from 25.8% to 18.9% during the 2003 to 2010 time period. From 2011 to 2013 the percent has remained constant, at approximately 22%.

Figure 16. Current Cigarette Use Among Adults: 2003-2013
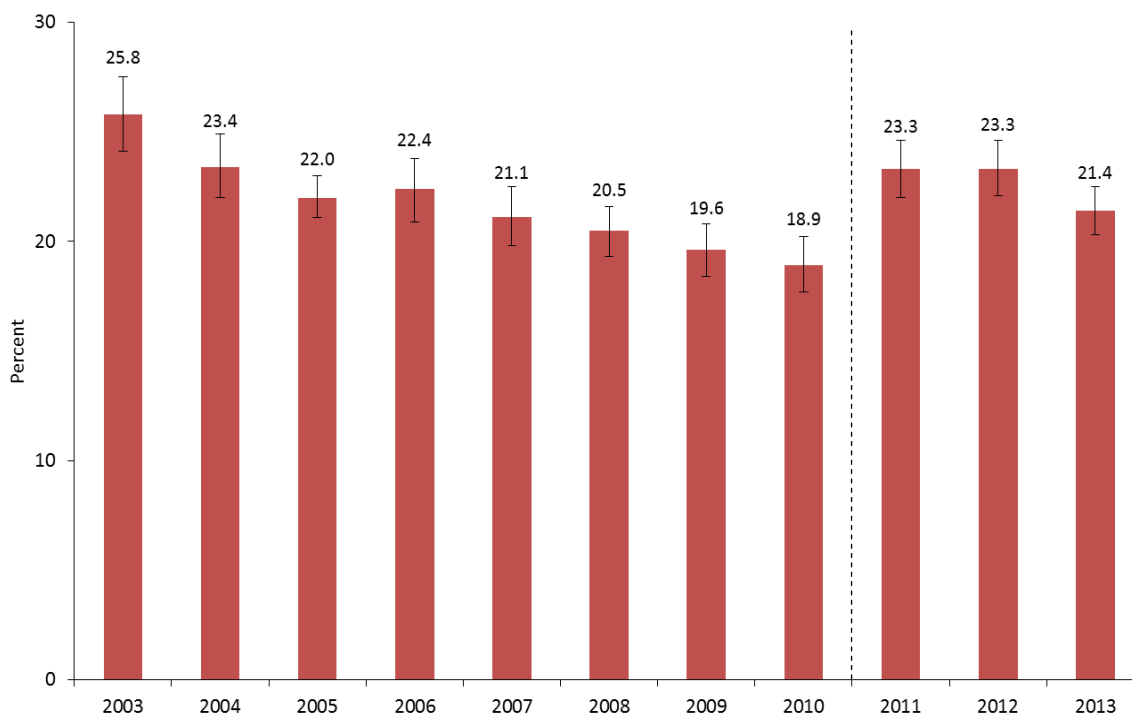
Note: Error bars represent 95% confidence intervals for percent. Due to methodology changes that took place in 2011, BRFSS estimates from 2011 and moving forward cannot be compared to BRFSS estimates from 2010 and earlier.

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

2. U.S. Department of Health and Human Services. 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, 2014.

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, 2003-2012.

Summary: Incidence rates of lung cancer has decreased significantly from 78.6 cases per 100,000 individuals to 66.2 cases per 100,000 individuals, during the 2003 to 2011 time period. Deaths related to lung cancer have steadily decreased as well, from 56.0 deaths per 100,000 individuals to 49.6 deaths per 100,000 individuals.

Figure 17. Lung Cancer Incidence and Death Rates: 2003-2012
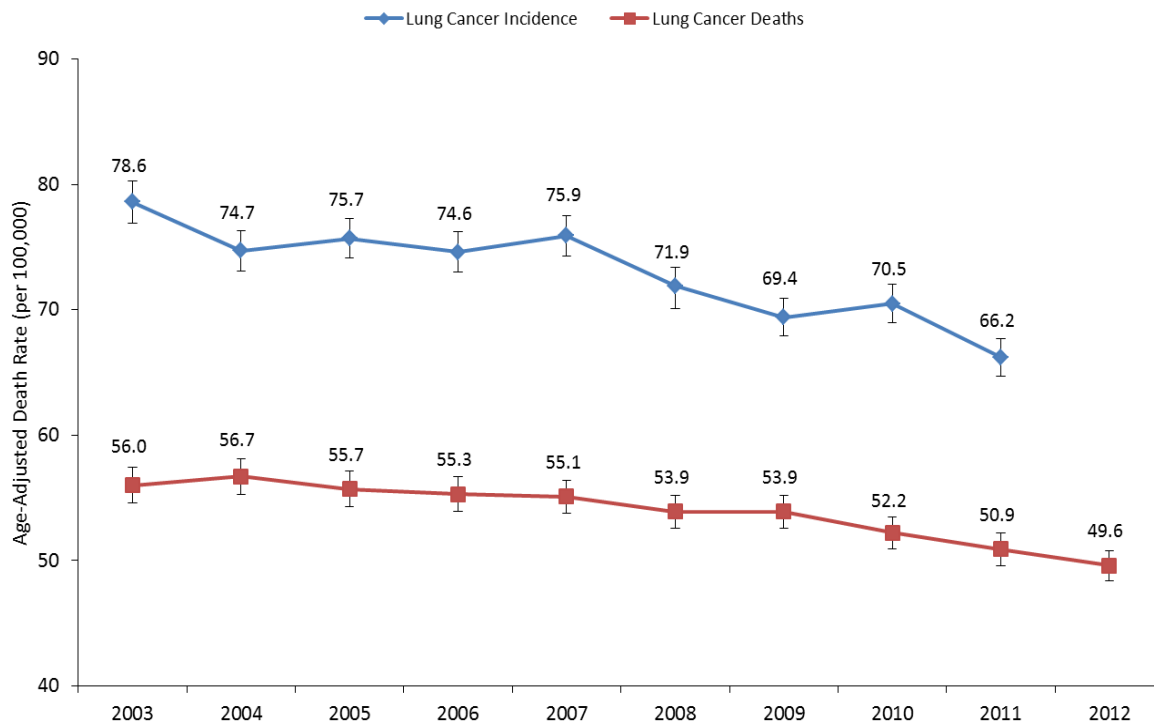
Note: Error bars represent 95% confidence intervals for percent.

1. U.Cancer S. Statistics Working Group. *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; 2014.

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, 2003-2012.

Figure 18. Prescription Drug-Related Mortality Rates by Age Group: 2003-2012
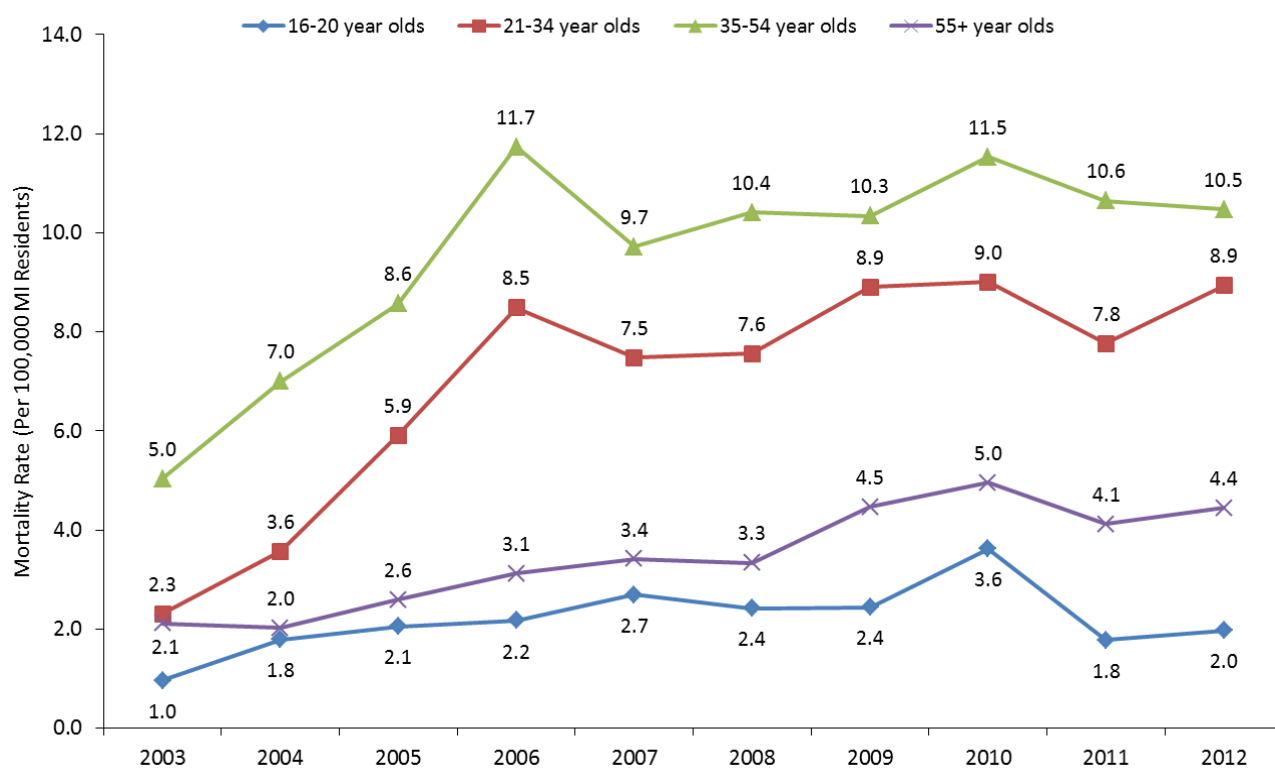
Note: 95% confidence intervals for percent not shown on figure. Refer to Table 1 on page 22.

1. Michigan Deparment of Community Health. *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, 2014. http://www.michigan.gov/documents/mdch/MAPS_Report_2014_-_FINAL_464112_7.pdf.

Prescription Drug-Related Mortality

		Table 2. Prescription Drug-Related Mortality Rates by Age Group: 2003-2012									
		Mortality Rate (95% C.I.) by Year of Death									
		2003	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Age Group	**16-20 years**	1.0 (0.3-1.7)	1.8 (0.8-2.8)	2.1 (1.0-3.1)	2.2 (1.1-3.2)	2.7 (1.5-3.9)	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)
	21-34 years	2.3 (1.6-3.0)	3.6 (2.7-4.4)	5.9 (4.8-7.0)	8.5 (7.1-9.8)	7.5 (6.2 -8.7)	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)
	35-54 years	5.0 (4.2-5.8)	7.0 (6.1-7.9)	8.6 (7.5-9.6)	11.7 (10.5-13.0)	9.7 (8.6-10.8)	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)
	55+ years	2.1 (1.5-2.7)	2.0 (1.4-2.6)	2.6 (1.9-3.2)	3.1 (2.4-3.8)	3.4 (2.7-4.2)	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)

Summary: Prescription drug-related mortality has increased significantly for 21 to 34 year-olds, 35 to 54 year-olds, and 55+ year-olds from 2003 to 2012. 21 to 34 year-olds showed the highest increase from 2003 to 2012, of 287% (2.3; 95% CI: 1.6-3.0, vs. 8.9; 95%CI:7.5-10.3). 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
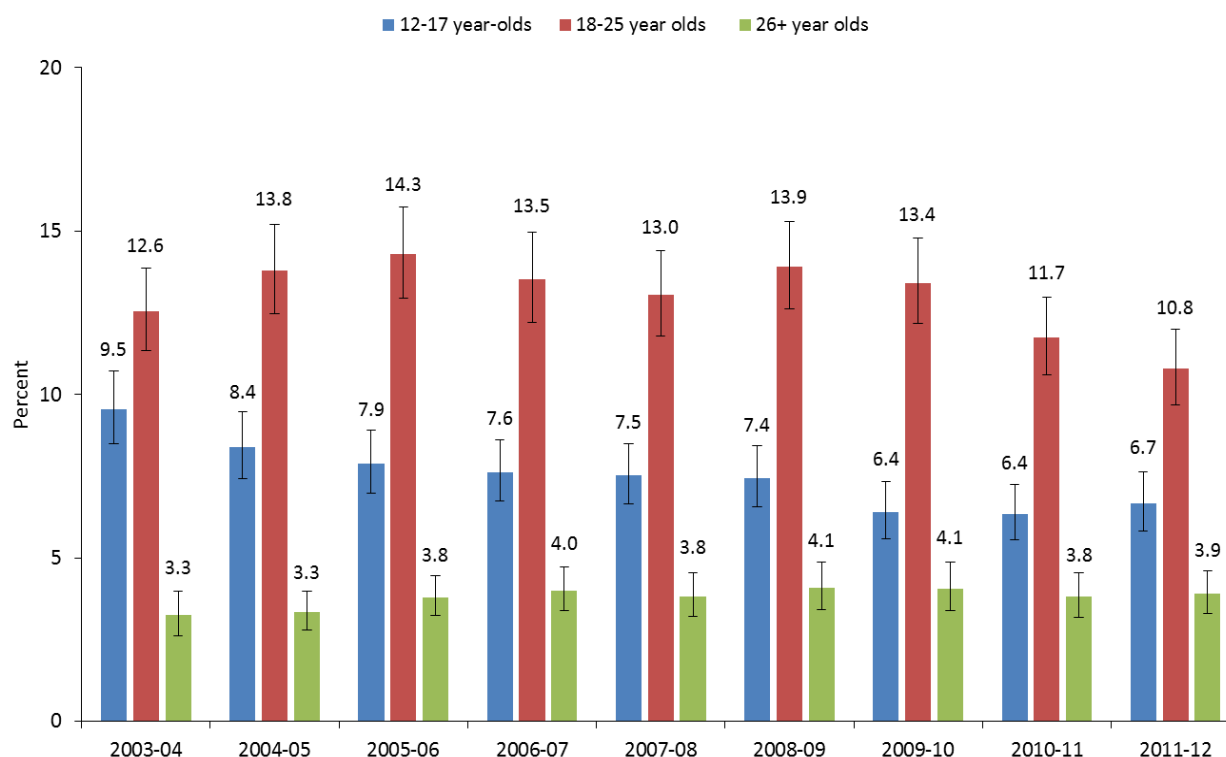
Indicator Description:

- **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, 2003-2012.

Summary: Nonmedical use of pain relievers was significantly higher from 2003 to 2012 for 18 to 25 year-olds compared to 12 to 17 year-olds and adults 26 years and older. Nonmedical use of pain relievers was lowest among adults age 26 years and older. The percentage of 12 to 17 year olds using pain relievers for nonmedical uses significantly dropped by 30% during this time period. Prescription pain reliever misuse did not significantly change for 18 to 25 year-olds or those 26 years and older from 2003 to 2012.

Figure 19. Nonmedical Use of Pain Relievers by Age Group: 2003-2012

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

1.   Office of National Drug Control Policy. *Prescription Drug* Abuse. Washington, D.C. http://www.whitehouse.gov/ondcp/prescription-drug-abuse

Drug-Related Consequences Among Youth
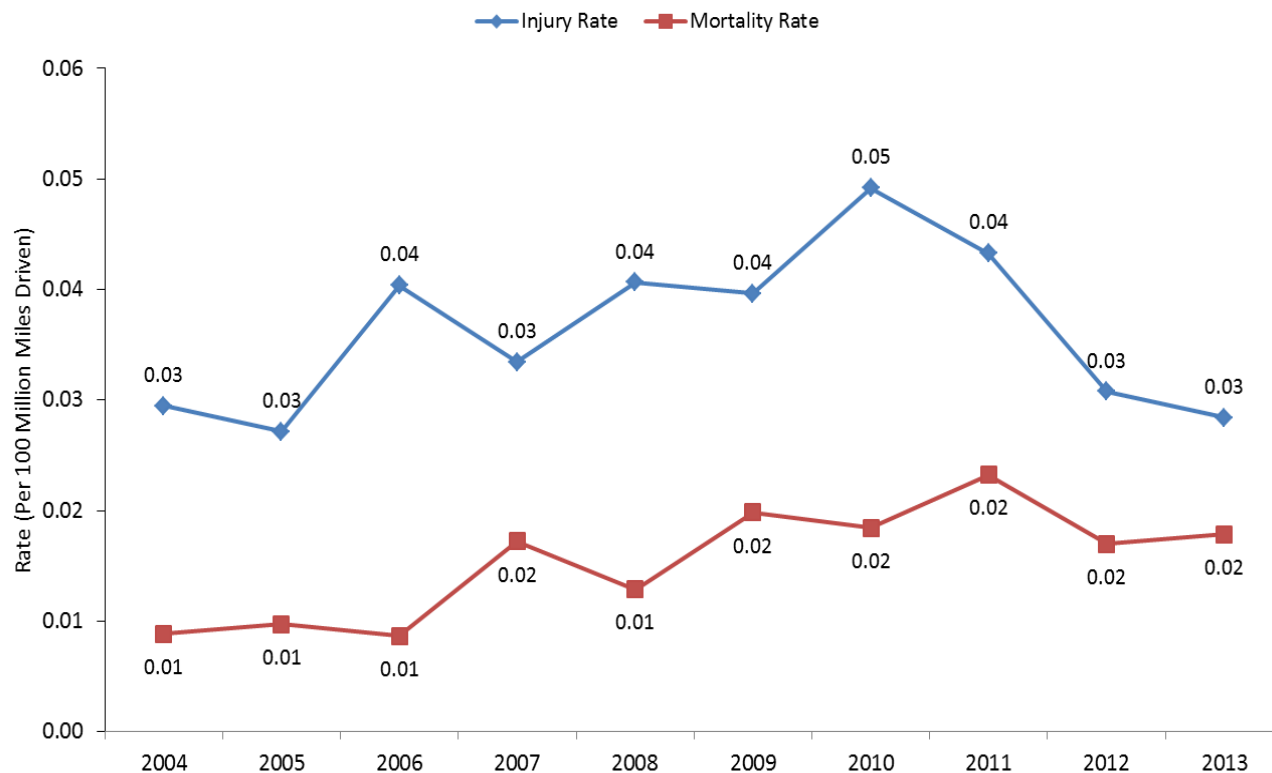
Indicator Description:

- **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 2004 and 2013, the average drug-related traffic crash deaths was 0.02 per 100 million miles driven, and the average drug-related traffic crash injuries reported was 0.04 per 100 million miles driven during the same period.

Source: Michigan Office of Highway Safety Planning, 2004-2013.

Summary: The rate of drug-related traffic crash deaths among youth doubled from 2004 to 2013. The rate of drug-related traffic crash serious injuries increased from 2004 to 2010 by 67%, then decreased back to 0.03 per 100 million miles in 2013. Drug-related traffic crashes involving at least one driver 16 to 20 years of age, caused an annual average of 51 deaths and serious injuries in Michigan each year between 2004 and 2013.

Figure 20. Drug-Related Traffic Crash Deaths and Serious Injuries Among Youth: 2004-2013

Drug-Related Consequences Among Youth
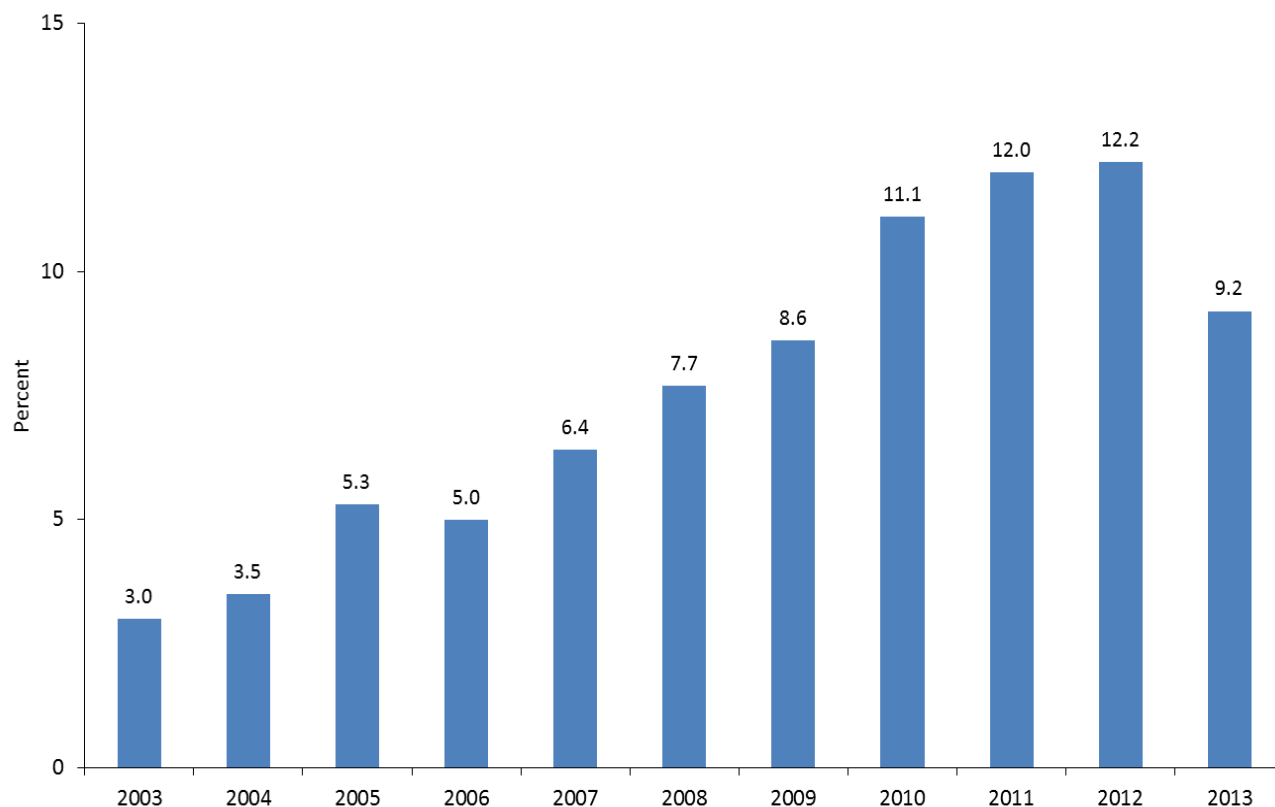
Indicator Description:

- **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 of abuse 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 particular substance abuse problems.

Source: Treatment Episode Data Set, 2004-2013.

Summary: The percent of youth who reported prescription drugs as their primary drug of abuse at admission has steadily increased from 2003 to 2013, with an overall increase of 207% during that time period.

Figure 21. Percent of Youth Admitted for Substance Abuse Treatment Who Reported Prescription Drugs as Primary Drug of Abuse: 2003-2013

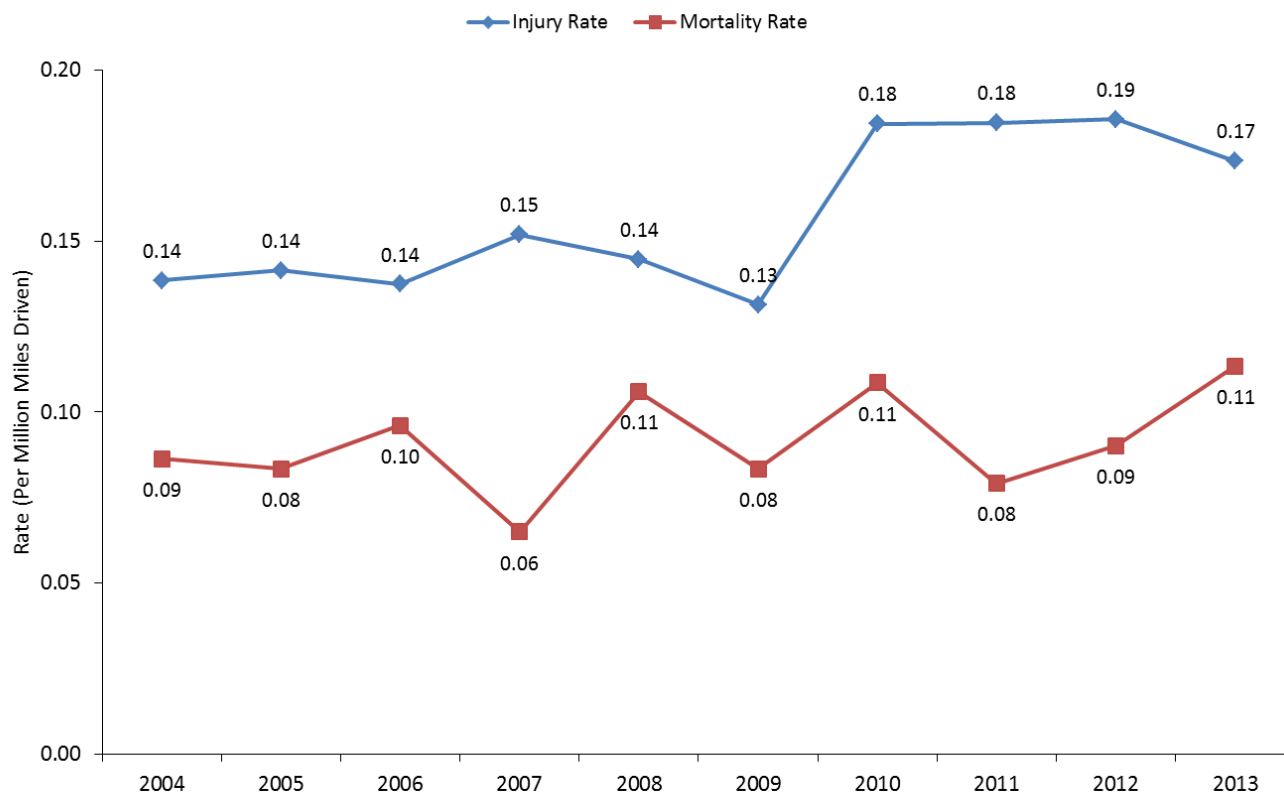## *Drug-Related Consequences Among Adults*

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: 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 2004 and 2013, the average drug-related traffic crash mortality rate was 0.09 per 100 million miles driven, and the average drug-related traffic crash injuries rate reported was 0.16 per 100 million miles driven during the same period.

Source: Michigan Office of Highway Safety Planning, 2004-2013.

Summary: The rate of drug-related traffic crash injuries and drug-related traffic crash deaths among adult drivers increased by 22% and 21%, respectively, from 2004 to 2013. Drug-related traffic crashes involving at least one driver 21 years of age or older, caused an annual average of 246 deaths and serious injuries in Michigan each year between 2004 and 2013.

Figure 22. Drug-Related Traffic Crash Deaths and Serious Injuries Among Adults: 2004-2013

Drug-Related Consequences Among Adults
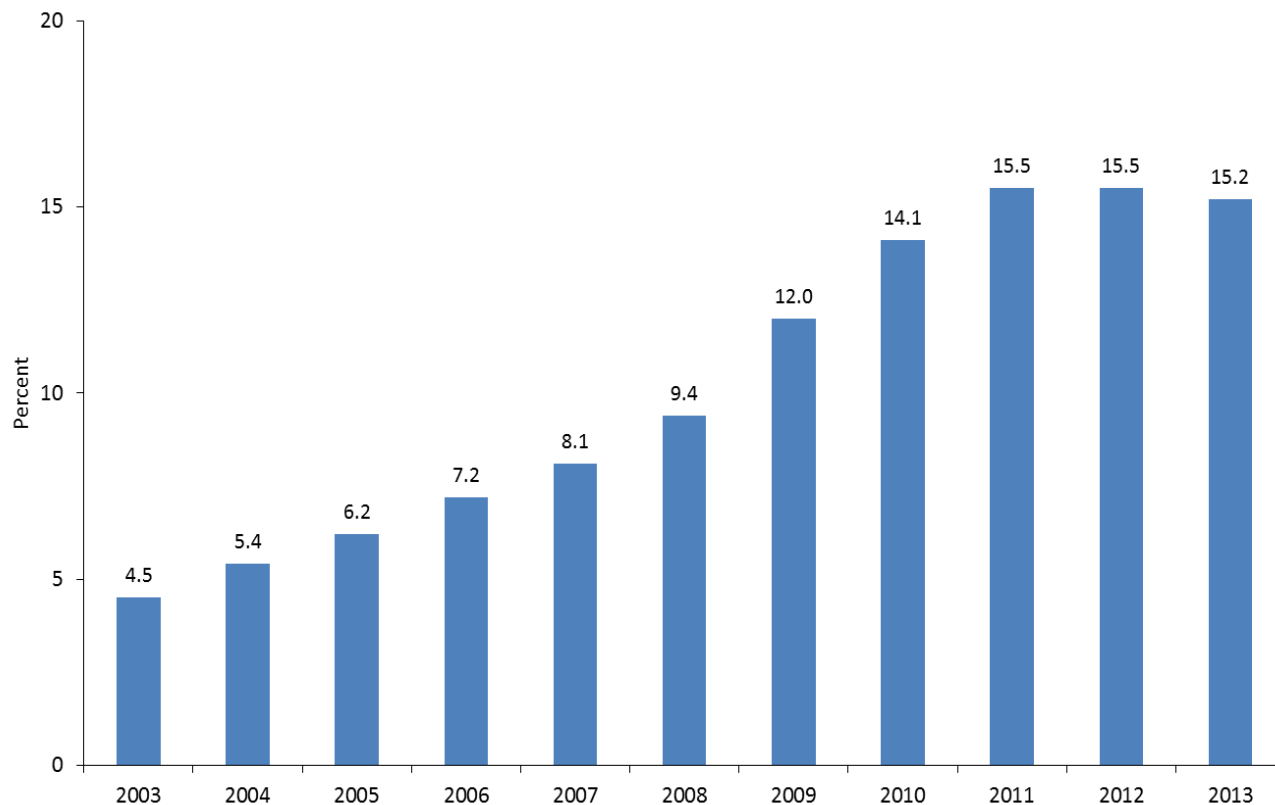
Indicator Description:

- **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 of abuse 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 particular substance abuse problems.

Source: Treatment Episode Data Set, 2004-2013.

Summary: The percent of adults who reported prescription drugs as their primary drug of abuse at admission has steadily increased from 2003 to 2013, with an overall increase of 238% during that time period.

Figure 23. Percent of Adults Admitted for Substance Abuse Treatment Who Reported Prescription Drugs as Primary Drug of Abuse: 2003-2013

Depressive Feelings Among Youth

Indicator Description:

- **Depression Among Youth.** Percent of high school students (9th to 12th graders) who reported feeling sad or hopeless everyday 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, 2003-2013.

Summary: The percent of high school students who reported experiencing depressive feelings in the past year has steadily remained around 27%, with no significant deviation from 2003 to 2013.

Figure 24. Percent of Youth Who Reported Experiencing Depressive Feelings in the Past Year: 2003-2013
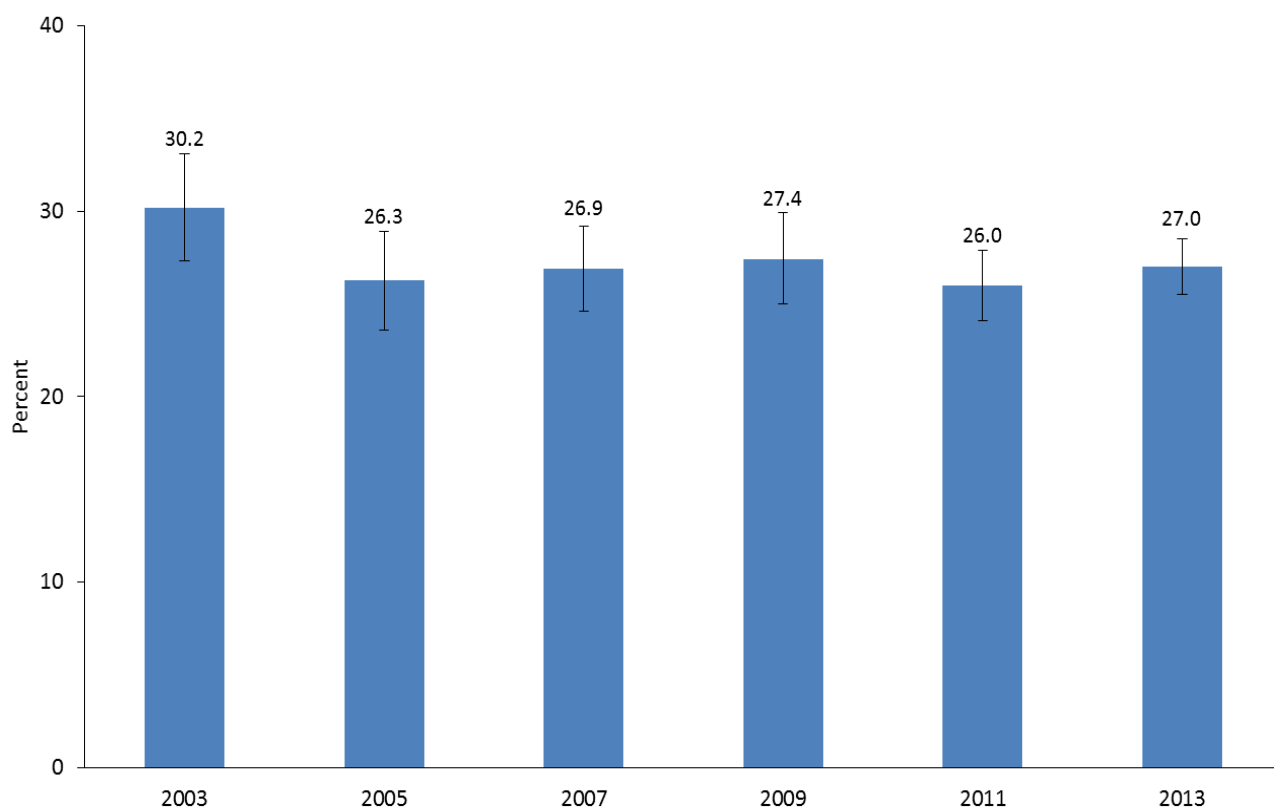
Note: Error bars represent 95% confidence intervals for percent.

1. Hawkins EH. A tale of two systems: co-occurring mental health and substance abuse disorders treatment for adolescents. Annu Rev Psychol. 2009;60:197-227. doi: 10.1146/annurev.psych.60.110707.163456. Review.

2. U.S. Dep. Health Human Serv, *Report to Congress on the Prevention and Treatment of Co-occurring Substance Abuse and Mental Health Disorders.* 2002, Subst. Abuse Ment. Health Serv. Admin.: 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, 2003-2013.

Summary: The percent of high school students who reported having attempted suicide at least once in the past year has steadily remained around 9%, with no significant deviation from 2003 to 2013.

Figure 25. Percent of Youth Who Reported a Suicide Attempt in the Past Year: 2003-2013
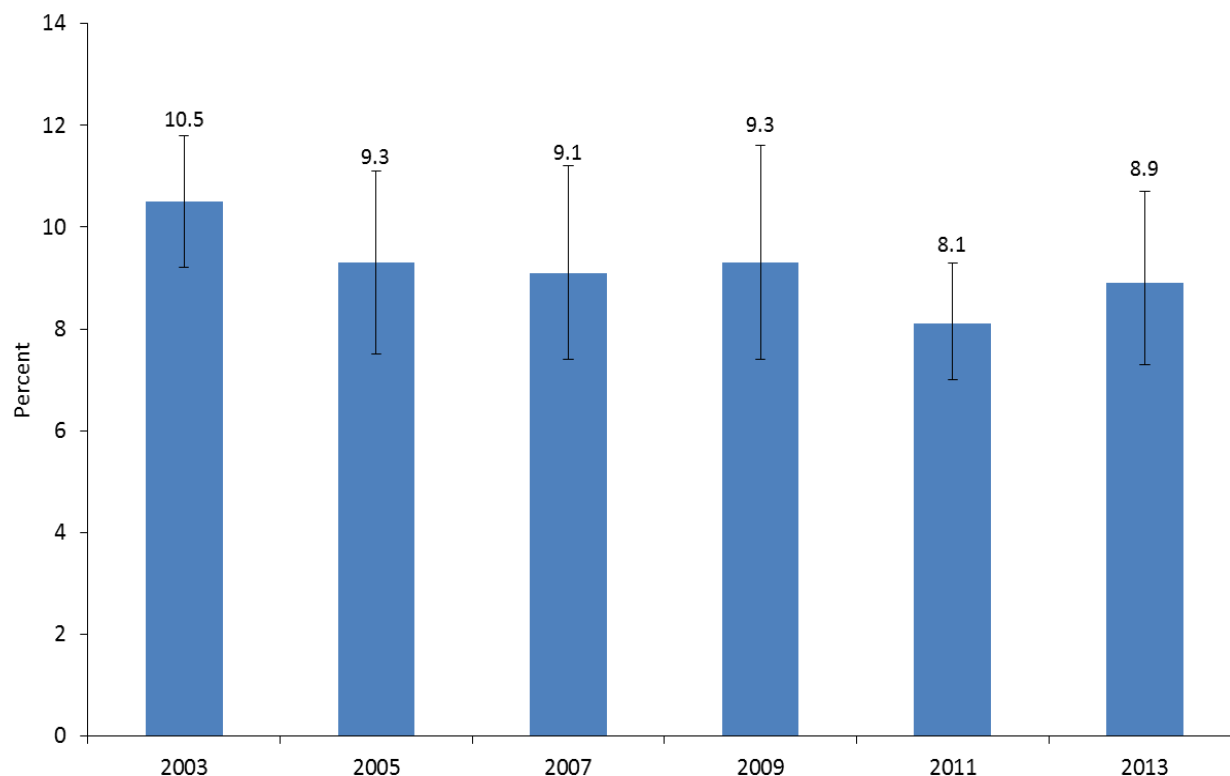
Note: Error bars represent 95% confidence intervals for percent.

Depressive Feelings Among Adults
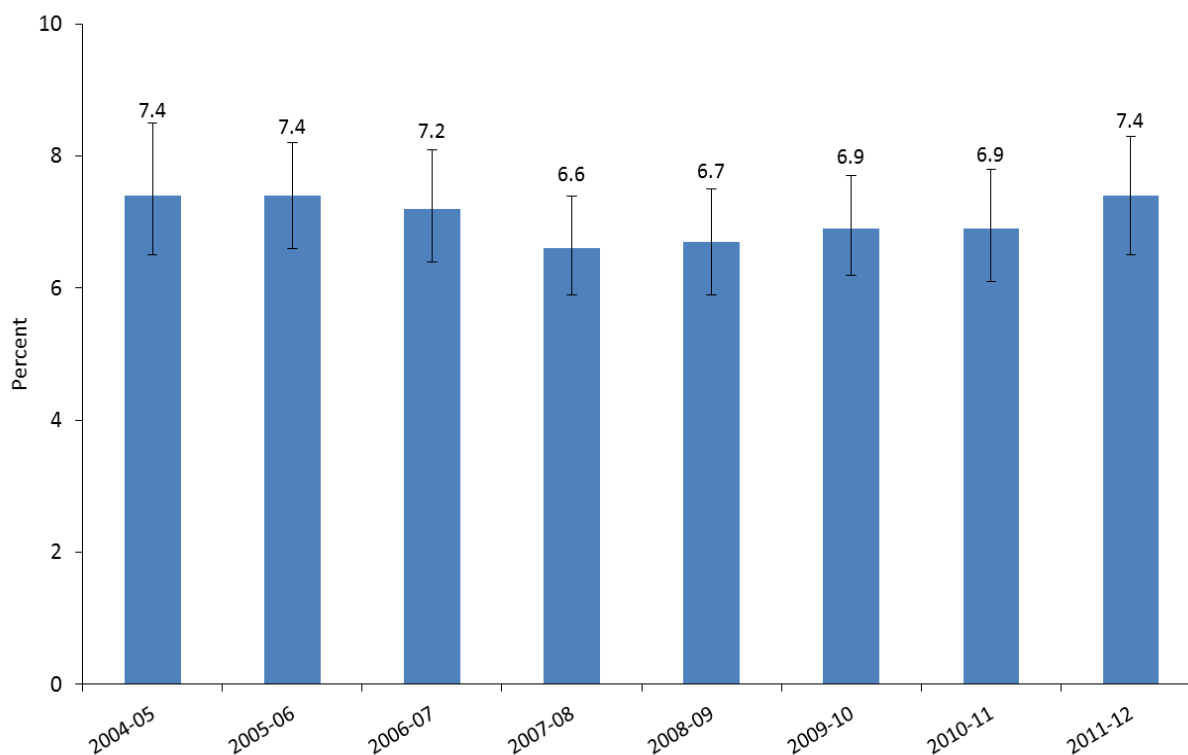
Indicator Description:

- **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, 2004-2012.

Summary: The percent of adults who reported experiencing a major depressive episode in the past year has steadily remained around 7%, with no significant deviation from 2004 to 2012.

Figure 26. Percent of Adults Who Reported Experiencing a Major Depressive Episode in the Past Year: 2004-2012

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

1. American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 5th ed. Arlington: American Psychiatric Association; 2013.

2. Davis L, Uezato A, Newell JM, Frazier E. Major depression and comorbid substance use disorders. Curr Opin Psychiatry. 2008 Jan;21(1):14-8. doi: 10.1097/YCO.0b013e3282f32408. Review.

Serious Mental Illness Among Adults
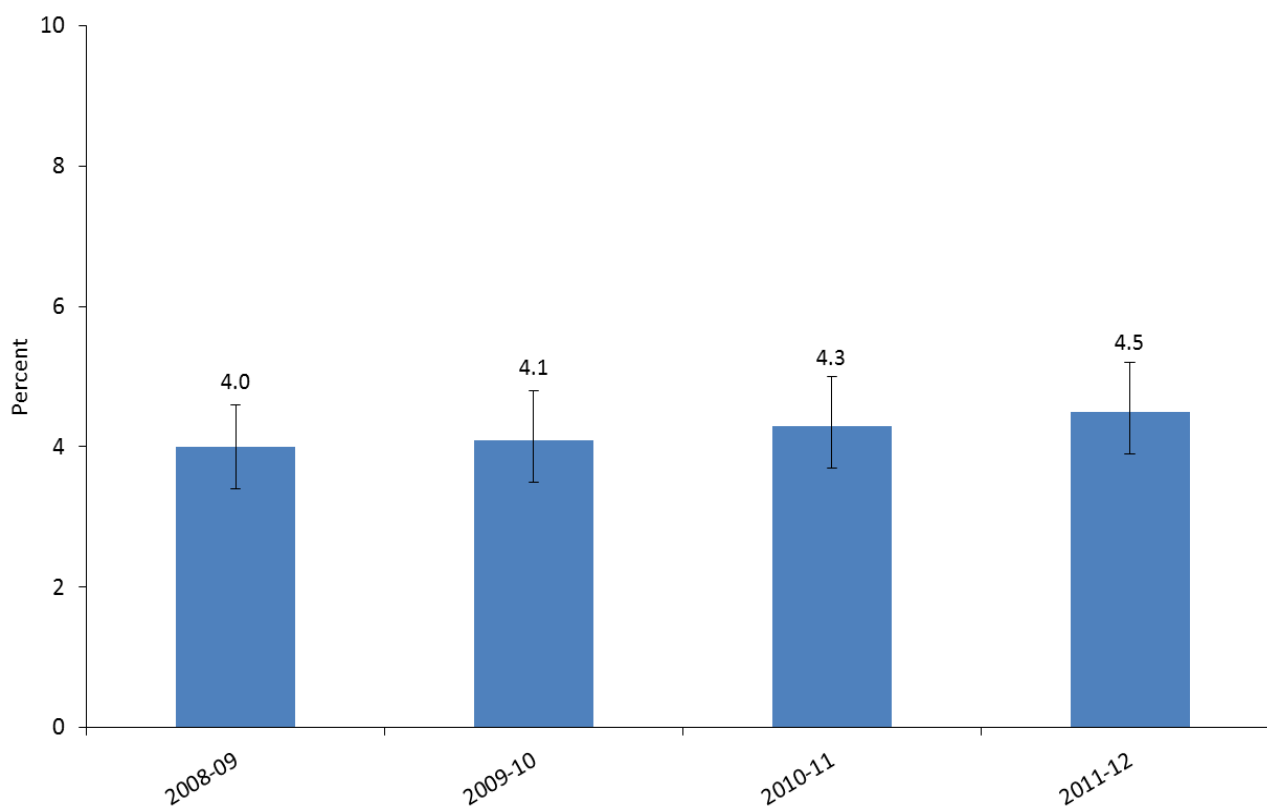
Indicator Description:

- **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, 2008-2012.

Summary: The percent of adults who reported having a serious mental illness in the past year has steadily remained around 4%, with no significant deviation from 2008 to 2012.

Figure 27. Percent of Adults Who Reported Having a Serious Mental Illness in the Past Year: 2008-2012

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

1. American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 5th ed. Arlington: American Psychiatric Association; 2013.

2. Davis L, Uezato A, Newell JM, Frazier E. Major depression and comorbid substance use disorders. Curr Opin Psychiatry. 2008 Jan;21(1):14-8. doi: 10.1097/YCO.0b013e3282f32408. Review.

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, 2008-2012.

Summary: The percent of adults who reported having suicidal thoughts in the past year has steadily remained around 4.3%, with no significant deviation from 2008 to 2012.

Figure 28. Percent of Adults Who Reported Having Suicidal Thoughts in the Past Year: 2008-2012
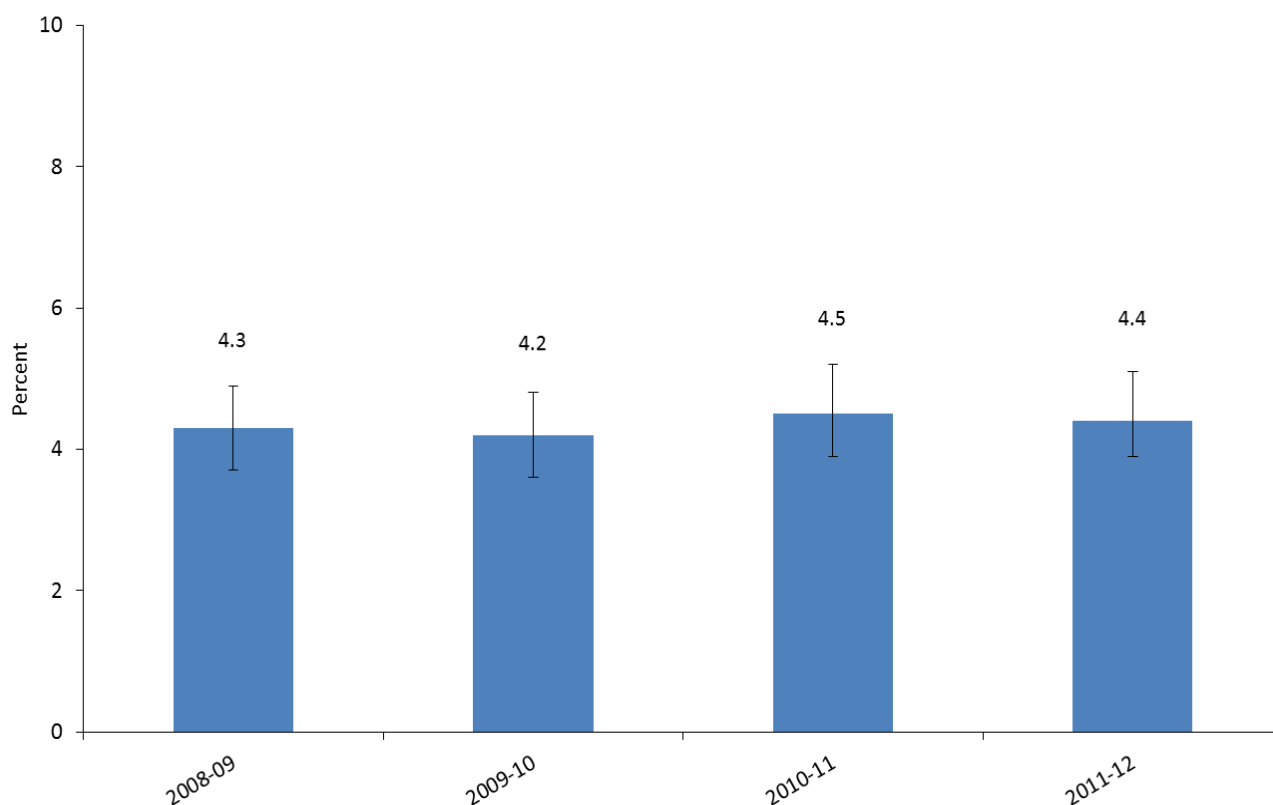
Note: Error bars represent 95% confidence intervals for percent.

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 promote positive behavioral and mental health over the lifespan.
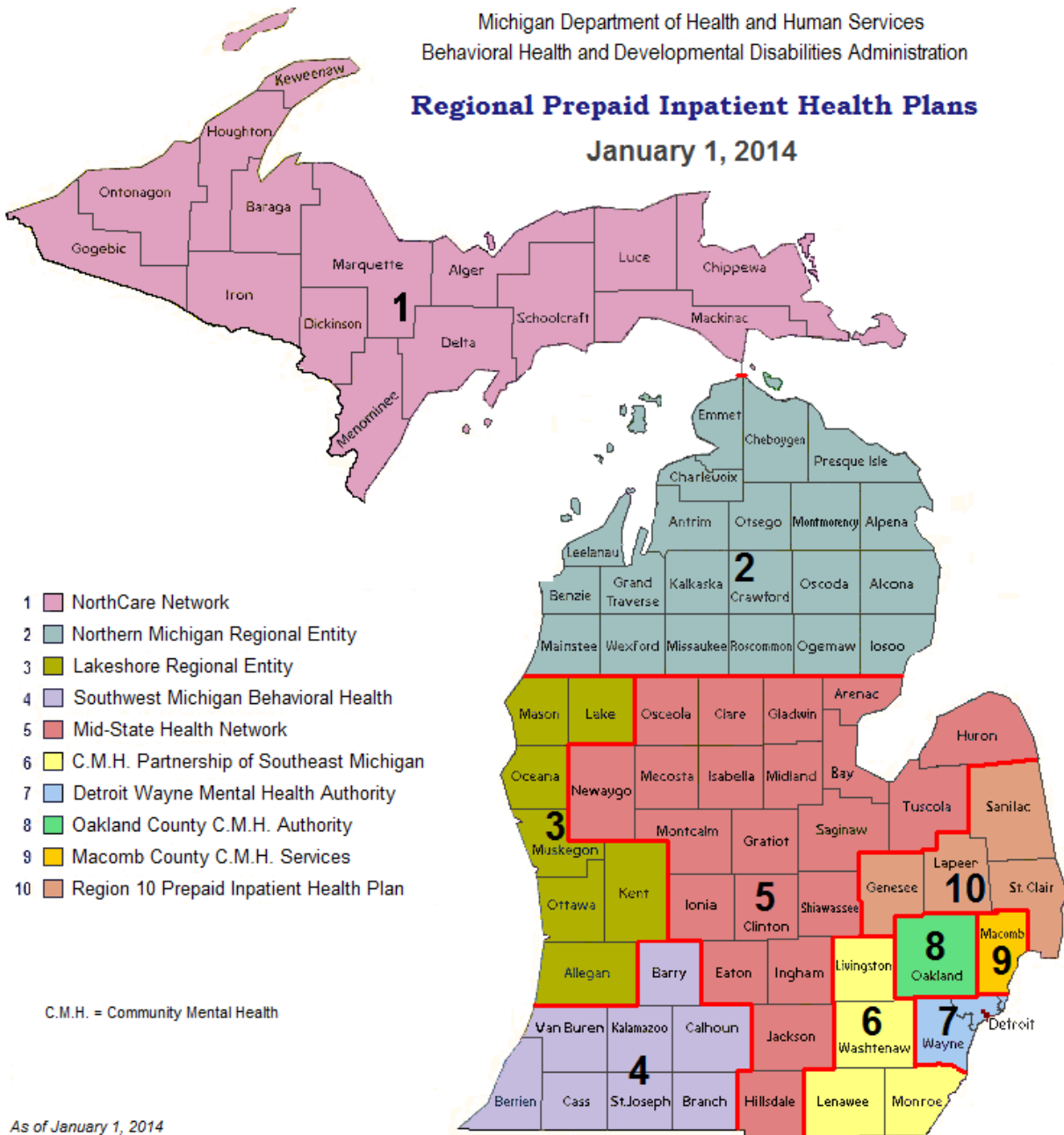
This document presents some of guiding principles, which direct the work of the Michigan SEOW:

- 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 the Office of Recovery Oriented Systems of Care's (OROSC) 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 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/or 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

January 1, 2014

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 Mental Health Authority
8. ▢ Oakland County C.M.H. Authority
9. ▢ Macomb County C.M.H. Services
10. ▢ Region 10 Prepaid Inpatient Health Plan

C.M.H. = Community Mental Health

As of January 1, 2014

Contact Information:

Michigan Department of Health and Human Services

Behavioral Health and Developmental Disabilities Administration

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Office of Recovery Oriented Systems of Care

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