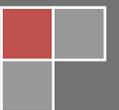


2012

Mississippi Chronic Disease Indicators Report, 2012



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List of Abbreviations

BRFSS: Behavioral Risk Factor Surveillance System

CDC: Centers for Disease Control and Prevention

CDI: Chronic Disease Indicators

CI: Confidence Interval

COPD: Chronic Obstructive Pulmonary Disease

CSTE: Council of State and Territorial Epidemiologists

CVD: Cardiovascular Disease

GIS: Geographic Information System

ICD: International Classification of Diseases

MS: Mississippi

MSDH: Mississippi State Department of Health

MSTAHRs: Mississippi STatistically Automated Health Resource System

NCHS: National Center for Health Statistics

U.S.: United States

YRBSS: Youth Risk Behavior Surveillance System

Introduction

In the United States (U.S.), more than 75% of health care spending is on people with chronic health conditions, such as heart disease, stroke, cancer and diabetes (1). Further, seven out of ten deaths among Americans each year are from chronic diseases (1). Four modifiable health risk behaviors—lack of physical activity, poor nutrition, tobacco use, and excessive alcohol consumption—are responsible for much of the illness, suffering, and early death related to chronic disease (1). In fact, it has been estimated that if the major risk factors for chronic diseases were eliminated, at least 80% of all heart disease, stroke and type 2 diabetes, and 40% of all cancer cases would be prevented (1).

In Mississippi (MS), the prevalence of chronic diseases and related risk factors is a major issue. Residents of MS experience rates of mortality due to chronic diseases that are considerably higher than national rates. Further, the prevalence of related risk factors in adults and youth are consistently higher in MS than the nation. Consequently, the financial impact of chronic disease morbidity and mortality places a heavy burden on the MS economy; Mississippians cannot afford to not take action and prevention is imperative. There is an immediate need for researchers, public health practitioners, educators, and advocates to be better equipped with data-based evidence that can be used to inform and guide policy-makers and program planners in the state in the development, implementation, and evaluation of health promotion and risk factor control strategies.

The primary purpose of this report is to document the burden of chronic disease and associated risk factors among MS adults and youth, and to identify statewide municipalities with smoke-free policy. Results from this report can be used to inform policy, environmental and systems-level

intervention strategies that promote and support healthy behaviors.

Specifically, our objectives are:

- 1) to determine the prevalence and specific patterns of chronic disease and chronic disease risk factors and behaviors among adult and youth in MS;
- 2) to identify disparities in chronic disease and related risk factor prevalence among population subgroups; and
- 3) to provide data-based evidence to inform policy and intervention strategies to reduce risk factors for chronic disease in MS.

In this Report

The report begins with the description and list of health conditions, risk factors, and behaviors identified by the authors as being relevant to public health efforts to prevent and control chronic disease and for which surveillance data were available at the state level. This is followed by a description of the methods and data sources used by the Mississippi State Department of Health (MSDH) to report on these indicators. The bulk of the report details state-level information for each indicator. Data through the most recent year available are included and trends over time are illustrated. Accompanying each indicator is a discussion of the importance of the indicator to overall health and highlights of the most recent year's data. Included in the report are 2010 hospital discharge data for heart disease, stroke and diabetes mellitus, and a list of MS towns that have a smoke-free policy, the date of the policy and the population affected by each policy. Finally, the results are summarized, a discussion is provided, and recommendations are presented based on the synthesis of these findings and in conjunction with national initiatives and evidence-based strategies to prevent and control chronic disease.

Methodology and Data Sources

Chronic Disease Indicators

Many of the health measures were selected based on the *Indicators for Chronic Disease Surveillance*, which was developed jointly by the Council of State and Territorial Epidemiologists, the Association of State and Territorial Chronic Disease Program Directors, and the Centers for Disease Control and Prevention (CDC) (2). The Chronic Disease Indicators (CDI) are a cross-cutting set of 97 indicators that were developed by consensus and that allows states, territories and large metropolitan areas to uniformly define, collect, and report chronic disease data that are important to public health practice and available for states, territories and large metropolitan areas (2). The CDI are divided into eight categories that represent a wide spectrum of conditions and risk factors as well as social context, including: physical activity and nutrition; tobacco and alcohol use; cancer; cardiovascular disease (CVD); diabetes; arthritis; overarching conditions; and other diseases and risk

factors (2). For more information about the CDI, go to: <http://www.cdc.gov/nccdphp/CDI/overview.htm>.

For this report, the authors focused on those CDI which were primarily related to CVD. Select health indicators not part of the 97 CDI were also added and include: high blood cholesterol among adults and overweight among youth. Table 1 lists and defines the CDI that were examined and specifies the data source for each indicator. Data through the most recent year available are included and trends over time are illustrated. Accompanying each indicator is a brief summary of the importance of the indicator to overall health and highlights of the most recent year's data are listed. Results related to the CDI are organized into four distinct chapters:

Chapter 1: Chronic Disease Risk Factors among Adults

Chapter 2: Chronic Disease Risk Factors among Youth

Chapter 3: Hospitalizations due to Chronic Diseases

Chapter 4: Mortality from Chronic Diseases

Table 1. List of Chronic Disease Indicators, Definitions and Data Sources.

Indicator	Definition	Data Source
Chapter 1: Chronic Disease Risk Factors among Adults		
Fruit/vegetable consumption	Percentage of adults aged ≥ 18 years who report eating fruits and vegetables ≥ 5 times/day.	BRFSS
Obesity	Percentage of adults aged ≥ 18 years who have a body mass index (BMI) ≥ 30.0 kg/m ² calculated from self-reported weight and height.	BRFSS
Overweight	Percentage of adults aged ≥ 18 years who have a body mass index (BMI) ≥ 25.0 and < 29.9 kg/m ² calculated from self-reported weight and height.	BRFSS
Physical activity	Percentage of adults aged ≥ 18 years who report moderate physical activity for ≥ 30 minutes ≥ 5 times/week or who report vigorous physical activity for ≥ 20 minutes ≥ 3 times/week.	BRFSS
Binge drinking	Percentage of adults aged ≥ 18 years who report having ≥ 5 drinks (men) or ≥ 4 drinks (women) on ≥ 1 occasion during the previous 30 days.	BRFSS
Smoking	Percentage of adults aged ≥ 18 years who report having smoked ≥ 100 cigarettes in their lifetime and are current smokers on every day or some days.	BRFSS
Hypertension	Percentage of adults aged ≥ 18 years who report having been told by a doctor, nurse, or other health professional of having high blood pressure.	BRFSS
Diabetes	Percentage of adults aged ≥ 18 years who report ever having physician-diagnosed diabetes other than diabetes during pregnancy.	BRFSS
No health insurance	Percentage of adults aged 18–64 years who report having no current health insurance coverage.	BRFSS
Health status	Percentage of adults aged ≥ 18 years who report their general health status as “fair” or “poor.”	BRFSS
Mental health status	Sum of the number of days during the previous 30 days for which adults aged ≥ 18 years report that their mental health (including stress, depression, and problems with emotions) was not good.	BRFSS
Heavy drinking	Percentage of adults aged ≥ 18 years who report an average daily alcohol consumption of >1 drink (females) or > 2 drinks (males).	BRFSS
Chapter 2: Chronic Disease Risk Factors among Youth		
Fruit and vegetable consumption	Percentage of students in grades 9–12 who report eating fruits and vegetables ≥ 5 times/day during the past 7 days.	YRBSS
Obesity	Percentage of students in grades 9–12 with a body mass index (BMI) at or above the sex- and age-specific 95th percentile from CDC Growth Charts* (3).	YRBSS
Overweight	Percentage of students who were ≥ 85 th percentile but < 95 th percentile for body mass index (BMI), based on sex- and age-specific reference data from the 2000 CDC growth charts.*	YRBSS
Physical activity	Percentage of students in grades 9–12 who report doing any kind of physical activity that increased their heart rate and made them breathe hard some of the time for a total of at least 60 minutes per day on each of the 7 days before the survey.	YRBSS
Television viewing	Percentage of students in grades 9–12 who report watching television for 2 or fewer hours on an average school day.	YRBSS
Alcohol use	Percentage of students in grades 9–12 who report consumption of ≥ 1 drink of alcohol during the past 30 days.	YRBSS
Smoking	Percentage of students in grades 9–12 who report having smoked a cigarette on ≥ 1 day during the past 30 days.	YRBSS
Smokeless tobacco use	Percentage of students in grades 9–12 who report having used smokeless tobacco products on ≥ 1 days during the past 30 days.	YRBSS
Binge drinking	Percentage of students in grades 9–12 who report having ≥ 5 drinks of alcohol within a couple of hours on ≥ 1 day during the past 30 days.	YRBSS

Abbreviations: BRFSS=Behavioral Risk Factor Surveillance System; CDC=Centers for Disease Control and Prevention; ICD=International Classification of Diseases; MSDH=Mississippi State Department of Health; MS HDD=Mississippi Hospital Discharge Data; YRBSS=Youth Risk Behavior Surveillance System.

* Kuczmarski RJ, Ogden CL, Grummer-Strawn LM, et al. CDC growth charts: U.S. In: Advance Data from Vital and Health Statistics, no. 314. Hyattsville, MD: National Center for Health Statistics; 2000.

Table 1 (continued). List of Chronic Disease Indicators, Definitions and Data Sources.

Indicator	Definition	Data Source
Chapter 3: Hospitalizations with Chronic Diseases		
Heart Disease and Stroke	Hospitalization diagnosis, discharge rates, patient's length of hospital stay, payment sources, hospitalization charges/costs	MS HDD
Diabetes	Hospitalization diagnosis, discharge rates, patient's length of hospital stay, payment sources, hospitalization charges/costs	MS HDD
Chapter 4: Mortality with Chronic Diseases		
Mortality with diseases of the heart	Deaths with ICD-10 codes I00–I09, I11, I13, and I20–I51 as the underlying cause of death among residents during a calendar year.	MS Vital Statistics and CDC Wonder
Mortality with stroke	Deaths with ICD-10 codes I60–I69 as the underlying cause of death among residents during a calendar year.	MS Vital Statistics and CDC Wonder
Mortality with diabetes	Deaths with ICD-10 codes E10–E14 as an underlying or contributing cause of death among residents during a calendar year.	MS Vital Statistics and CDC Wonder
Mortality with malignant neoplasms (cancer)	Deaths with ICD-10 codes C00–C97 as the underlying cause of death among residents during a calendar year.	MS Vital Statistics and CDC Wonder

Abbreviations: BRFSS=Behavioral Risk Factor Surveillance System; CDC=Centers for Disease Control and Prevention; ICD=International Classification of Diseases; MSDH=Mississippi State Department of Health; MS HDD=Mississippi Hospital Discharge Data; YRBSS=Youth Risk Behavior Surveillance System.

Data Sources

Behavioral Risk Factor Surveillance System (BRFSS)

The BRFSS is an ongoing, state-based, random digit-dialed telephone survey of non-institutionalized U.S. adults aged 18 years or older. The survey collects information on health risk behaviors, preventive health practices, and health care access primarily related to chronic disease and injury. The BRFSS operates in 50 states, the District of Columbia, and three U.S. territories (Puerto Rico, U.S. Virgin Islands, and Guam). As with all self-reported sample surveys, BRFSS data might be subject to systematic error resulting from non-coverage (e.g., lower telephone coverage among populations of low socioeconomic status), non-response (e.g., refusal to participate in the survey or to answer specific questions), or measurement (e.g., social desirability or recall bias). Further information on BRFSS, including information on survey data quality, question history, or module information is available from the survey website at: <http://www.cdc.gov/brfss/>.

Youth Risk Behavior Surveillance System (YRBSS)

YRBSS monitors priority health risk behaviors that contribute markedly to the leading causes of death, disability, and social problems among youth and adults in the U.S. These behaviors, often established during childhood and early adolescence, include tobacco use, unhealthy dietary behaviors, inadequate physical activity, alcohol and other drug use, risky sexual behaviors, and behaviors that contribute to unintentional injuries and violence. Conducted as a school-based survey every two years, YRBSS includes national, state, and local representative samples of students in grades 9 - 12. As with all self-reported sample surveys, YRBSS data might be subject to systematic error resulting from noncoverage (e.g., no participation by certain schools), nonresponse (e.g., refusal to participate in the survey or to answer specific questions), or measurement (e.g., social desirability or recall bias). Further information on

YRBSS is available from the survey website at: <http://www.cdc.gov/HealthyYouth/yrbs>.

Hospital Discharge Data

Hospital discharge data are the abstracted records associated with a patient's stay in a short-term hospital. These data typically contain patient demographics, patients' length of hospital stay, diagnosis, treatment, and payment information. MS-based hospital discharge data are collected, maintained, and analyzed by MSDH personnel. Diagnoses listed on hospital discharge data may be inaccurate. Practice patterns and payment mechanisms can affect decisions by health-care providers to hospitalize patients. Residents of one state might be hospitalized in another state and not be reflected in the first state's hospital data set. Multiple admissions for an individual patient can falsely elevate the number of persons hospitalized. Data provided in this report are per event.

Compressed Mortality File

The Compressed Mortality File (CMF) is produced by the National Center for Health Statistics (NCHS), at the CDC. CMF is a county-level national mortality and population database spanning the years 1968-2008. On CDC WONDER (<http://wonder.cdc.gov/>), data are available for the years 1979-2008. Compressed Mortality data on CDC WONDER are updated annually. Mortality data on the CMF are based on NCHS mortality files that include a record for every death of a U.S. resident recorded in the U.S. Mortality data are used to monitor the underlying and contributing causes of death for persons dying and to determine life expectancy. A limitation to this data source is that causes of death and other variables listed on the death certificate might be inaccurate. Please see the visit the following website for more information: http://www.cdc.gov/nchs/data_access/cmf.htm.

Mississippi Vital Statistics

Mortality statistics are compiled from death certificates which are filed with the MSDH, Office of Vital Records as required by MS state law and regulation. Mortality data in the MS STatistically Automated Health Resource System (MSTAHRS) represents deaths of MS residents. Deaths from 1999 forward are coded using the Tenth Revision of the International Classification of Diseases (ICD-10).

Social Sciences Research Center, Mississippi State University

The Tobacco Control Unit of the Social Sciences Research Center, MS State University provides data to inform programmatic and policy decisions regarding tobacco control in MS by applying scientific methods to collect and analyze data on social issues relating to tobacco. This workgroup provides surveillance and evaluation services for the MS Tobacco Control Program. Information about tobacco control and MS smoke-free policy provided by the Social Sciences Research Center can be found at <http://www.ssrc.msstate.edu/research-programs/tobacco-control-unit/>.

Statistical Analyses

Data for the indicators from the *Indicators for Chronic Disease Surveillance* report were analyzed using numerators and denominators specified in the report. The specified numerators and denominators were used to calculate and report on chronic disease prevalence, hospitalizations and mortality rates. All prevalence estimates from BRFSS and YRBSS used

survey weights and accounted for design effects. Estimates were not reported for those categories in which there were fewer than 50 respondents. Some of the indicators represent all residents in MS while others are reported by demographic subgroups (e.g., 18 years and older and students in grades 9 - 12).

Age-Adjusted Mortality Rate

Application of age-adjustment to a rate allows a way to make fairer comparisons between groups with different age distributions. In other words, age adjustment can make different groups more comparable. For this report, we used the U.S. 2000 standard population distribution to adjust death and hospitalization rates. The age-adjusted rates are rates that would have existed if the population under study had been distributed by age the same way as in the "standard" population. Therefore, they are summary measures adjusted for differences in age distributions.

Testing for Significance

For BRFSS and YRBSS data, confidence intervals were used to test for significance differences between subgroups (e.g., age, sex, race, and income). Z-scores were used to test for differences in mortality rates between subgroups (e.g., age, sex and race). Reported differences between subgroups are statistically significant unless otherwise noted.

Maps

Geographic Information System (GIS) technologies were used to generate maps depicting age-adjusted mortality rates for heart disease, stroke, diabetes mellitus, and cancer for the state.

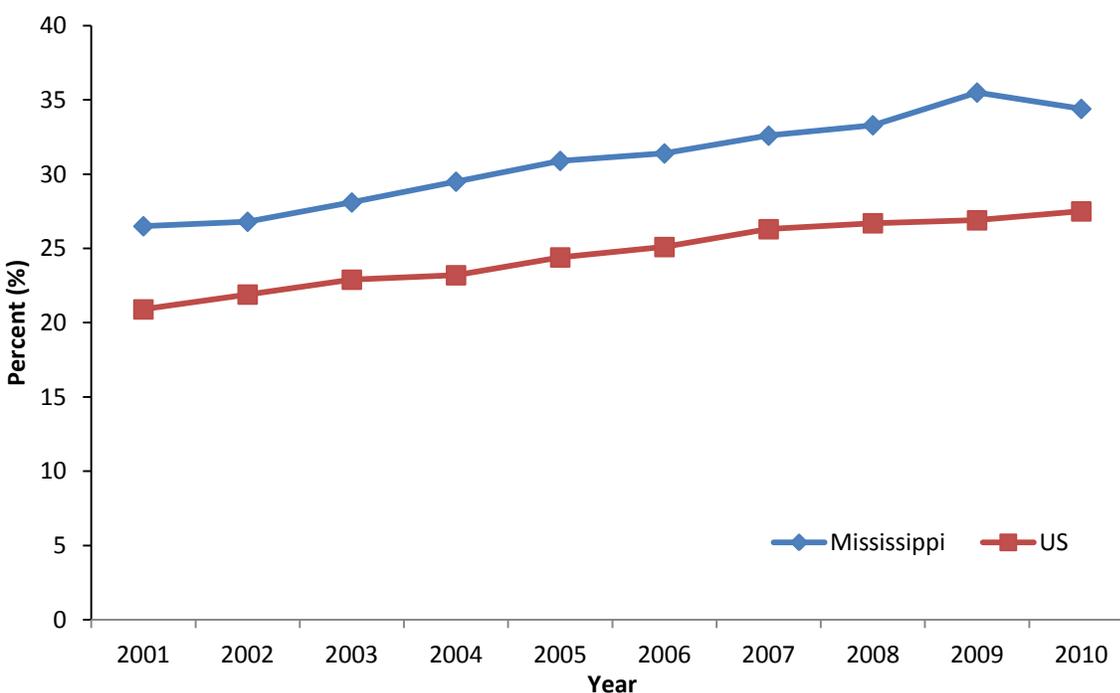
Chapter 1: Chronic Disease Risk Factors among Adults

Obesity among Adults Aged 18 Years and Older

Data Source: Behavioral Risk Factor Surveillance System

Obesity increases the risk for multiple chronic diseases, including heart disease, stroke, hypertension, type 2 diabetes, osteoarthritis, and certain cancers.

Figure 1. Trend in Prevalence of Obesity among Adults, Mississippi and U.S., 2001-2010



2010 DATA HIGHLIGHTS

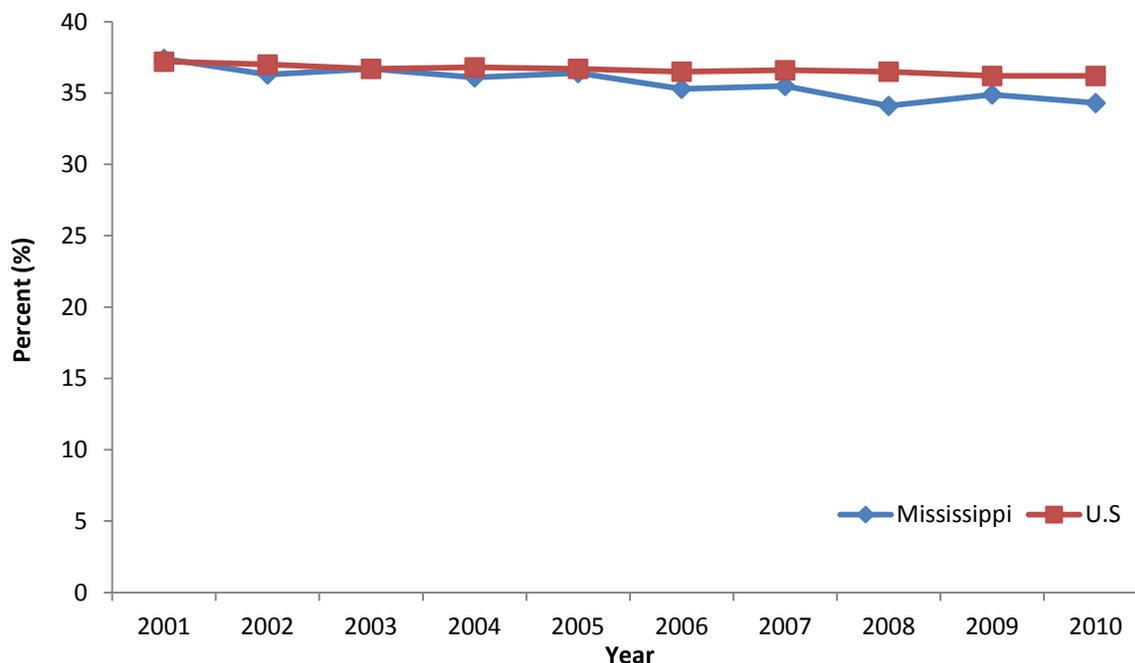
- In the U.S., 27.5% of adults were obese.
- In MS, 34.5% of adults were obese.
- A higher proportion of blacks (41.6%) than whites (30.9%) were obese.
- A higher proportion of black females (48.8%) than white females (27.3%) were obese.
- The prevalence of obesity was lowest among the youngest and oldest age groups (18-34 year olds: 28.9%; 35-49 year olds: 40.9%; 50-64 year olds: 38.8%; \geq 65 year olds: 27.2%). Some of these differences were not significant.
- The prevalence of obesity was highest among those with the lowest income and lowest among those with the highest income (< \$10,000: 41.4%; \$10,000-19,999: 41.1%; \$20,000-24,999: 34.5%; \$35,000-49,999: 37.8%; \geq \$50,000: 32.1%). Not all differences were significant.

Overweight among Adults Aged 18 Years and Older

Data Source: Behavioral Risk Factor Surveillance System

Being overweight increases the risk of multiple chronic diseases, including heart disease, stroke, hypertension, type 2 diabetes, osteoarthritis, and certain cancers.

Figure 2. Trend in Prevalence of Overweight among Adults, Mississippi and U.S. 2001-2010



2010 DATA HIGHLIGHTS

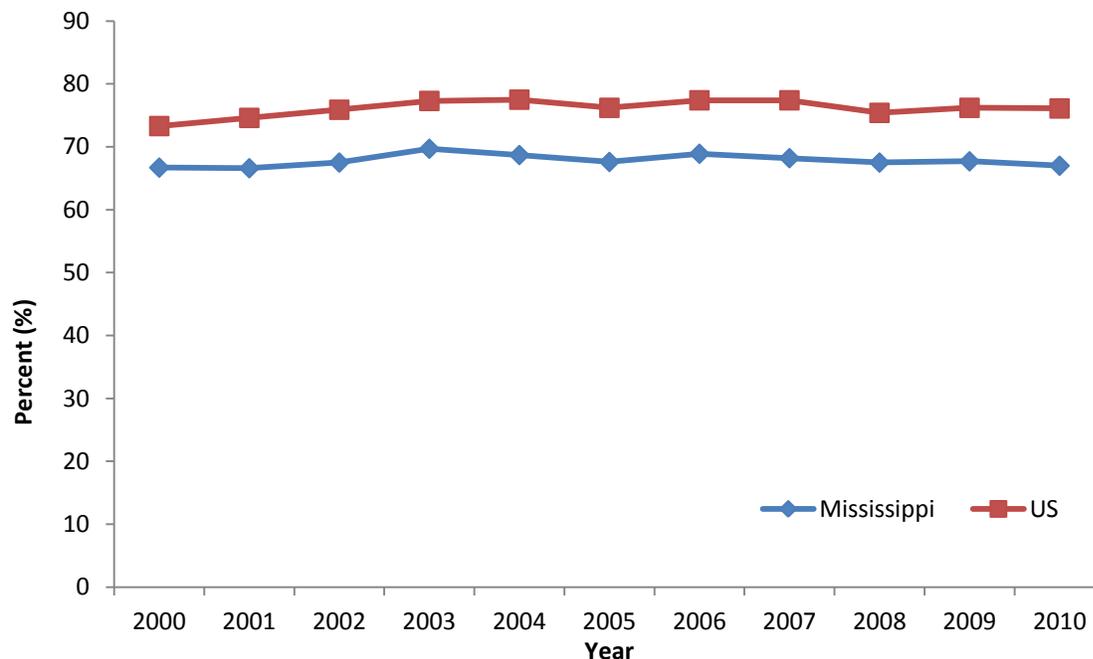
- In the U.S., 36.2% of adults were considered overweight.
- In MS, 34.3% of adults were considered overweight.
- A higher proportion of males (38.4%) than females (30.3%) were overweight.
- The prevalence of overweight increased with increasing age (18-34 year olds: 30.2%; 35-49 year olds: 33.2%; 50-64 year olds: 35.9%; ≥ 65 year olds: 40.3%). Some of these differences were not significant.
- The prevalence of overweight varied by income (< \$10,000: 31.5%; \$10,000-19,999: 28.7%; \$20,000-24,999: 37.4%; \$35,000-49,999: 37.8%; \geq \$50,000: 36.0%). Not all differences were significant.

Recommended Physical Activity among Adults Aged 18 Years and Older

Data Source: Behavioral Risk Factor Surveillance System

Physical activity reduces the risk for heart disease, colon cancer, stroke, type 2 diabetes and its complications, overweight, and osteoporosis.

Figure 3. Trend in Prevalence of Adults who meet the Recommended Level of Physical Activity, Mississippi and U.S. 2000-2010



2010 DATA HIGHLIGHTS

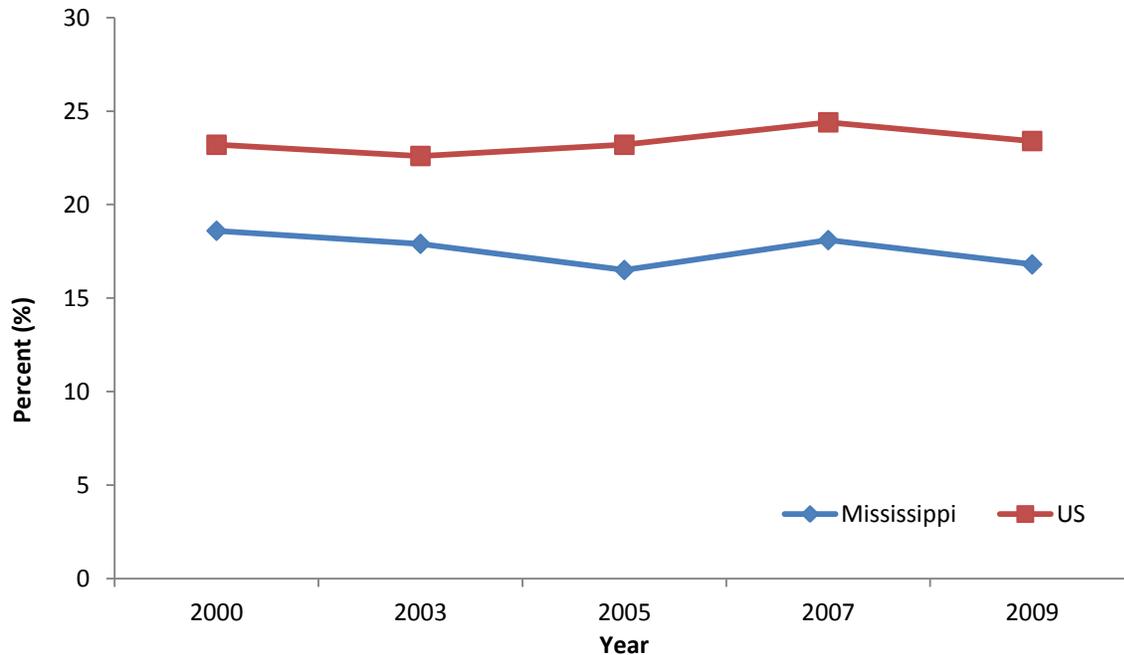
- In the U.S., 51.0% of adults met the recommended level of physical activity.
- In MS, 37.5% of adults met the recommended level of physical activity.
- A higher proportion of males (70.5%) than females (63.4%) met the recommended level of physical activity.
- A higher proportion of whites (69.9%) than blacks (60.9%) met the recommended level of physical activity.
- Generally, the proportion of adults who meet the recommended level of physical activity decreased with increasing age (18-34 year olds: 72.5%; 35-49 year olds: 68.3%; 50-64 year olds: 61.9%; \geq 65 year olds: 61.8%). Some of these differences were not significant.
- Generally, the proportion of adults who met the recommended level of physical activity increased with increasing income (<\$10,000: 47.1%; \$10,000-19,999: 51.0%; \$20,000-24,999: 66.8%; \$35,000-49,999: 75.1%; \geq \$50,000: 80.1%). Some of these differences were not significant.

Fruit and Vegetable Consumption among Adults Aged 18 Years and Older

Data Source: Behavioral Risk Factor Surveillance System

A diet of ≥ 5 servings of fruits and vegetables/day is associated with reduced risk of coronary heart disease and certain types of cancers.

Figure 4. Trend in Prevalence of Consumption of Five or More Fruits and Vegetables per day among Adults, Mississippi and U.S. 2000-2009



2009 DATA HIGHLIGHTS

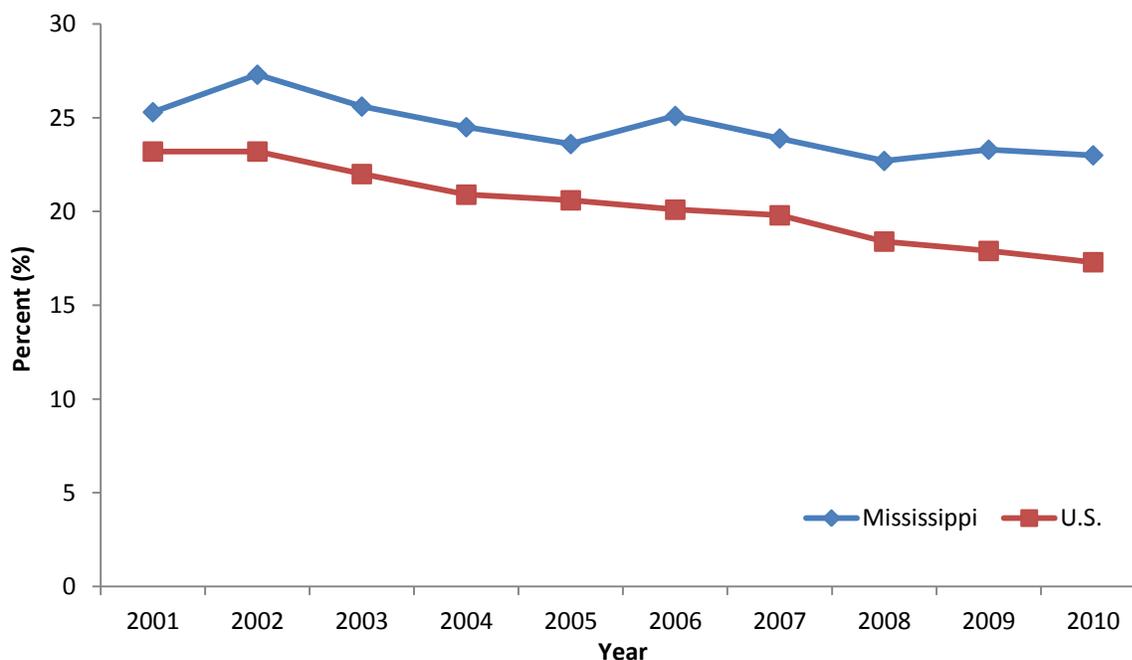
- In the U.S., 23.4% of adults consumed ≥ 5 fruits/vegetables per day.
- In MS, 16.8% of adults consumed ≥ 5 fruits/vegetables per day.
- A higher proportion of females (18.7%) than males (14.8%) consumed ≥ 5 fruits/vegetables per day.
- Generally, the proportion of adults who consumed ≥ 5 fruits/vegetables per day increased with increasing income (<\$10,000: 14.8%; \$10,000-19,999: 16.7%; \$20,000-24,999: 15.7%; \$35,000-49,999: 17.0%; \geq \$50,000: 19.0%). Some of these differences were not significant.

Cigarette Smoking among Adults Aged 18 Years and Older

Data Source: Behavioral Risk Factor Surveillance System

Smoking is the single most preventable cause of death and disease in the U.S. Smoking increases the risk of heart disease, cancer, stroke, and chronic lung disease. Environmental tobacco smoke has been demonstrated to increase the risk of heart disease and cancer among nonsmokers.

Figure 5. Trend in Prevalence of Cigarette Smoking among Adults, Mississippi and U.S. 2001-2010



2010 DATA HIGHLIGHTS

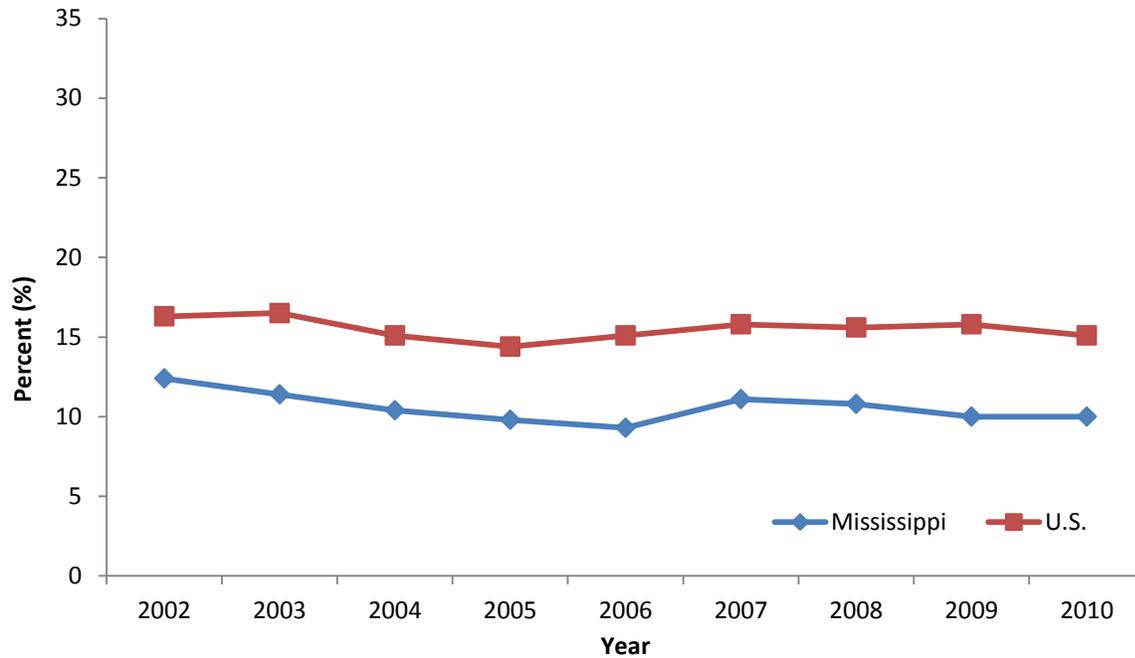
- In the U.S., 17.3% of adults were cigarette smokers.
- In MS, 22.9% of adults were cigarette smokers.
- A higher proportion of males (26.5%) were smokers than females (19.7%).
- The prevalence of smoking decreased with increasing age (18-34 year olds: 30.4%; 35-49 year olds: 23.9%; 50-64 year olds: 22.9%; \geq 65 year olds: 9.2%). Some of these differences were not significant.
- The prevalence of smoking decreased with increasing income (< \$10,000: 33.1%; \$10,000-19,999: 31.8%; \$20,000-24,999: 27.3%; \$35,000-49,999: 21.9%; \geq \$50,000: 12.5%). Not all differences were significant.

Binge Drinking Among Adults Aged 18 Years and Older

Data Source: Behavioral Risk Factor Surveillance System

Alcohol abuse is strongly associated with injuries, violence, fetal alcohol syndrome, chronic liver disease, and risk of other acute and chronic health effects.

Figure 6. Trend in Prevalence of Binge Drinking among Adults, Mississippi and U.S., 2002-2010



2010 DATA HIGHLIGHTS

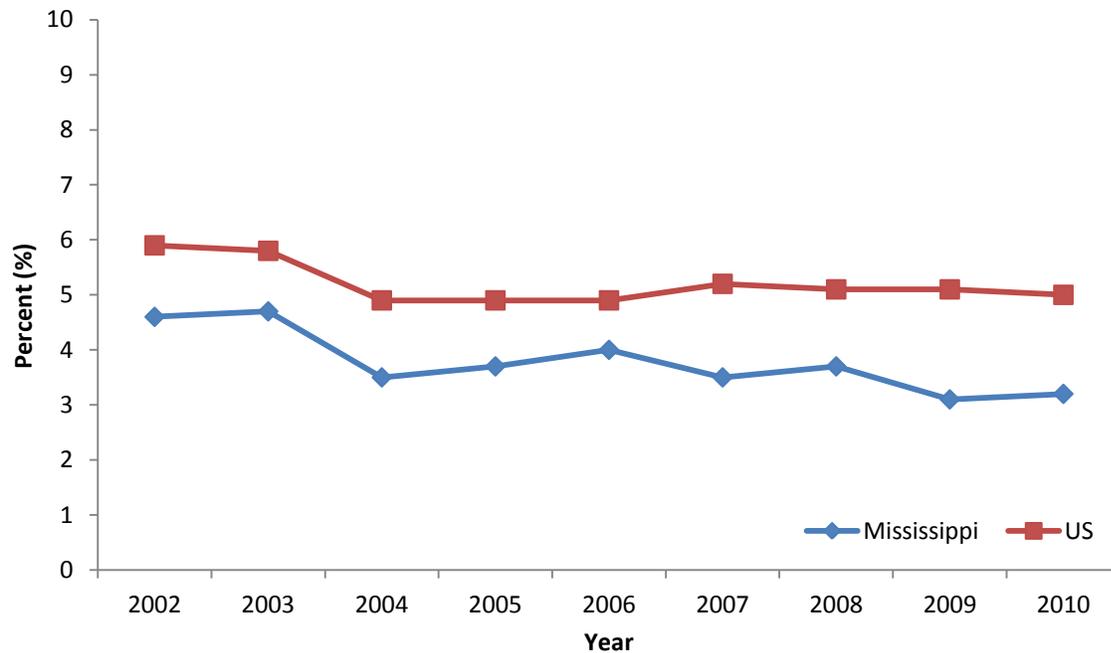
- In the U.S., the prevalence of binge drinking among adults was 15.1%.
- In MS, the prevalence of binge drinking among adults was 9.9%.
- A higher proportion of males (16.0%) than females (4.7%) reported binge drinking.
- The prevalence of binge drinking decreased with increasing age (18-34 year olds: 15.0%; 35-49 year olds: 12.1%; 50-64 year olds: 7.8%).

Heavy Drinking Among Adults Aged 18 Years and Older

Data Source: Behavioral Risk Factor Surveillance System

Alcohol abuse is strongly associated with injuries, violence, chronic liver disease, and risk of other acute and chronic health effects.

Figure 7. Trend in Prevalence of Heavy Drinking among Adults, Mississippi and U.S., 2002-2010



2010 DATA HIGHLIGHTS

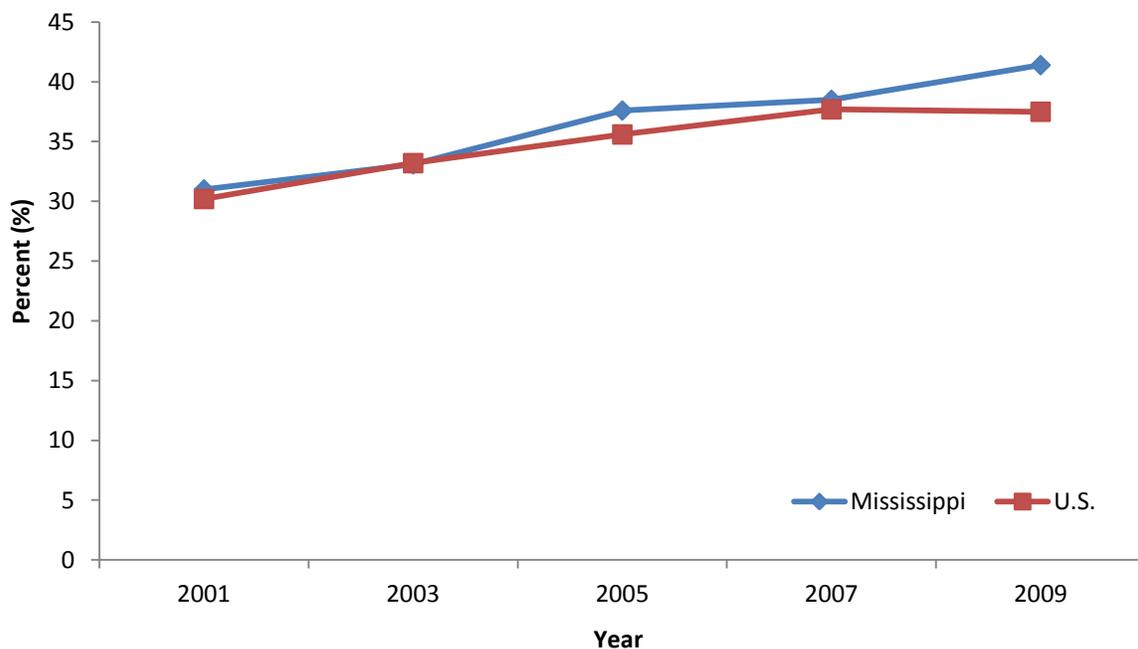
- In the U.S., the prevalence of heavy drinking among adults was 5.0%.
- In MS, the prevalence of heavy drinking among adults was 3.2%.
- A higher proportion of males (4.2%) than females (2.3%) reported heavy drinking.

High Blood Cholesterol among Adults Aged 18 Years and Older

Data Source: Behavioral Risk Factor Surveillance System

High blood cholesterol (HBC) is a major risk factor for heart disease. Control of HBC requires successful implementation of multiple steps among both patients and health-care providers, including ongoing screening for HBC, knowing one's cholesterol levels, and treating and managing HBC through lifestyle changes (e.g., reduced dietary intake of saturated fat and cholesterol, increased dietary intake of viscous fiber, increased exercise, and weight control) and medical treatment as appropriate.

Figure 8. Trend in Prevalence of High Blood Cholesterol among Adults, Mississippi and U.S., 2001-2009



2009 DATA HIGHLIGHTS

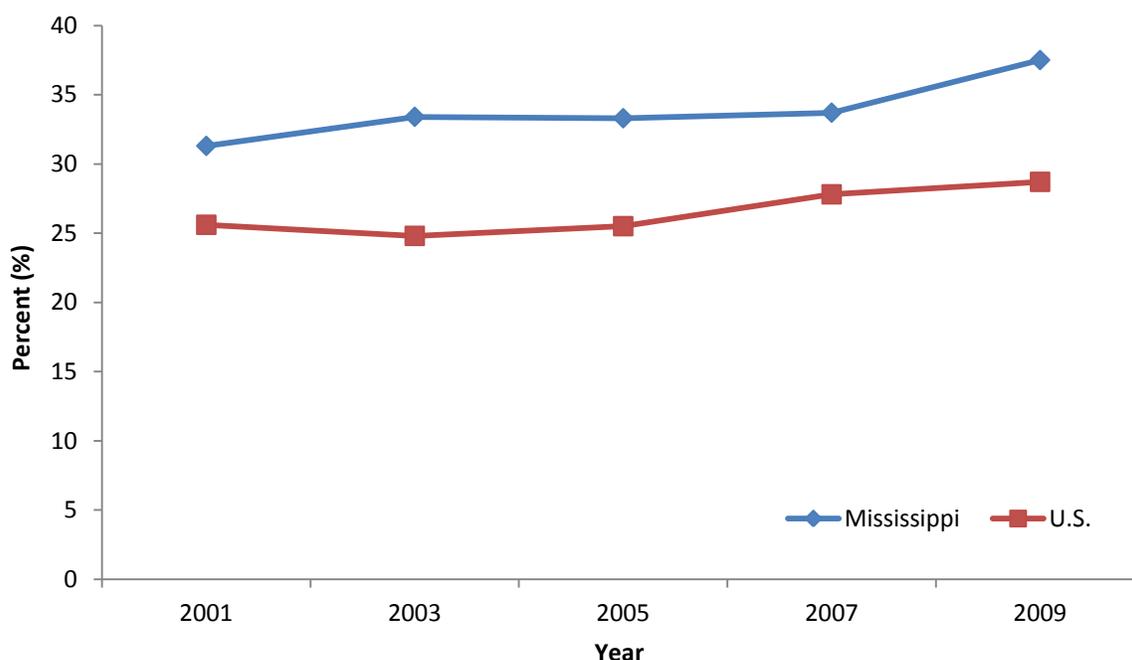
- In the U.S., the prevalence of high blood cholesterol among adults was 37.5%.
- In MS, the prevalence of high blood cholesterol among adults was 41.4%.
- A higher proportion of whites (43.5%) reported high blood cholesterol than blacks (37.4%).
- The prevalence of high blood cholesterol increased with increasing age (18-34 year olds: 15.5%; 35-49 year olds: 36.3%; 50-64 year olds: 52.2%; \geq 65 year olds: 58.2%).

High Blood Pressure Awareness among Adults Aged 18 Years and Older

Data Source: Behavioral Risk Factor Surveillance System

Approximately 20%–30% of coronary heart disease and 20%–50% of strokes in the U.S. are attributable to uncontrolled hypertension. Lifestyle risk factors for hypertension include high sodium intake, excessive caloric intake, physical inactivity, and excessive alcohol consumption.

Figure 9. Trend in Prevalence of High Blood Pressure Awareness among Adults, Mississippi and U.S., 2001-2009



2009 DATA HIGHLIGHTS

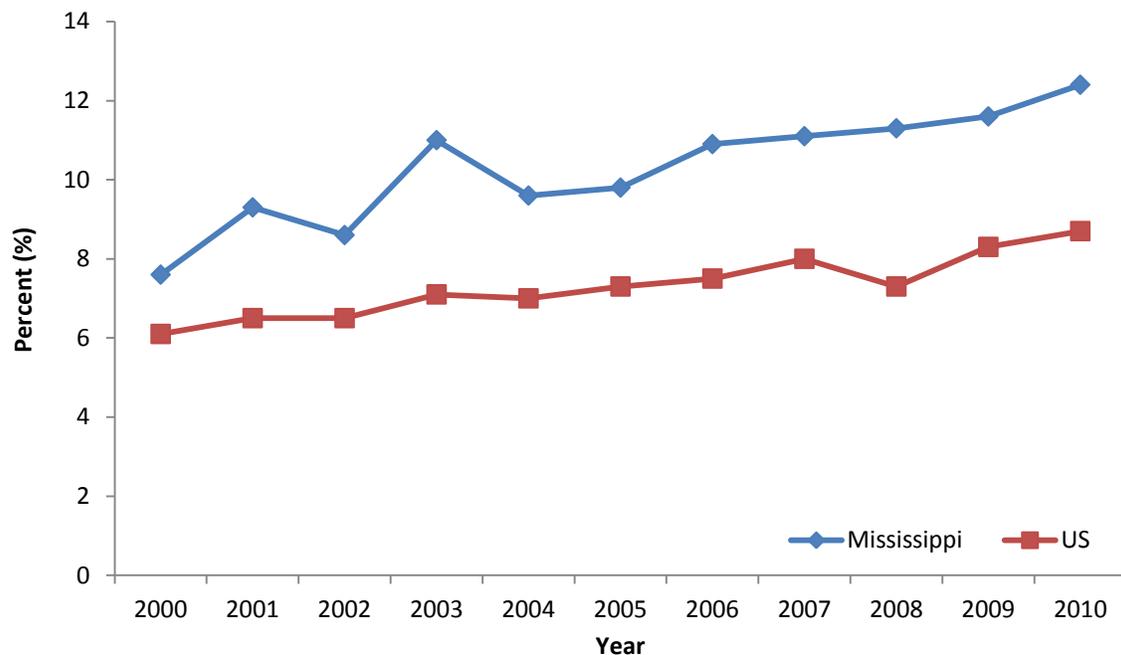
- In the U.S., the prevalence of high blood pressure awareness among adults was 28.7%.
- In MS, the prevalence of high blood pressure awareness among adults was 37.5%.
- A higher proportion of blacks (43.1%) reported high blood pressure awareness than whites (34.8%).
- The prevalence of high blood pressure awareness increased with increasing age (18-34 year olds: 13.3%; 35-49 year olds: 31.2%; 50-64 year olds: 52.8%; \geq 65 year olds: 68.1%).
- The prevalence of high blood pressure awareness decreased with increasing income (< \$10,000: 50.8%; \$10,000-19,999: 47.3%; \$20,000-24,999: 39.8%; \$35,000-49,999: 35.8%; \geq \$50,000: 29.1%). Not all differences were significant.

Diabetes Mellitus among Adults Aged 18 Years and Older

Data Source: Behavioral Risk Factor Surveillance System

The burden of diabetes in MS has increased with the increasing prevalence of obesity. Multiple long-term complications of diabetes can be prevented through improved patient education and self-management and provision of adequate and timely screening services and medical care.

Figure 10. Trend in Prevalence of Diabetes Mellitus among Adults, Mississippi and U.S., 2000-2010



2010 DATA HIGHLIGHTS

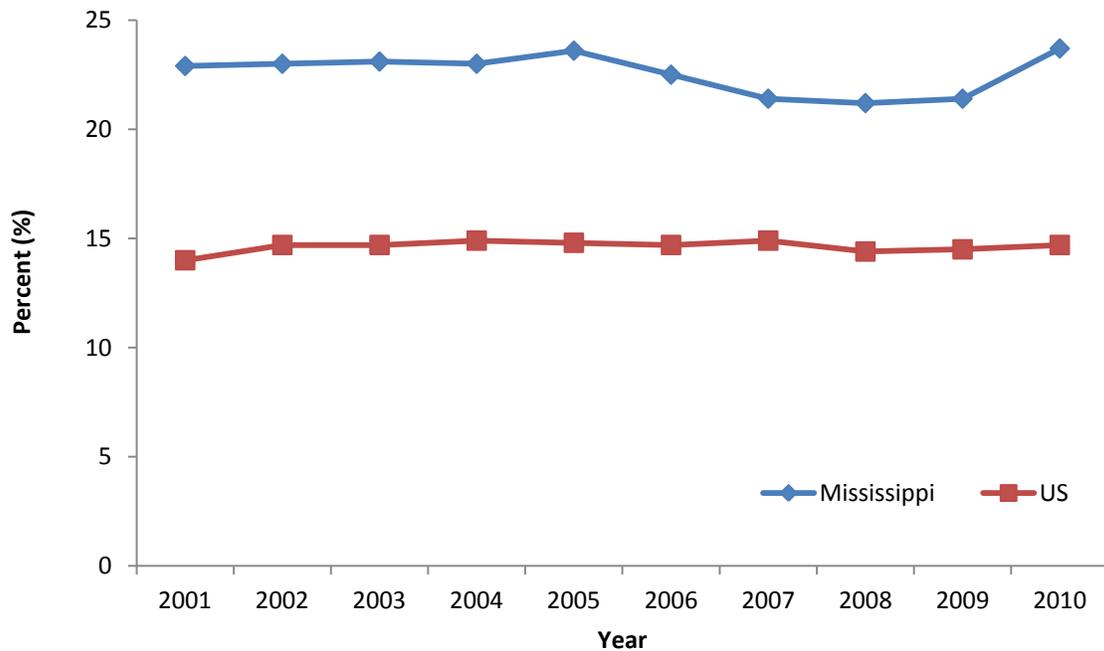
- In the U.S., the prevalence of diabetes among adults was 8.7%.
- In MS, the prevalence of diabetes among adults was 12.3%.
- A higher proportion of blacks (14.5%) reported diabetes than whites (10.2%).
- The prevalence of diabetes increased with increasing age (35-49 year olds: 7.3%; 50-64 year olds: 20.4%; ≥ 65 year olds: 24.5%).
- The prevalence of diabetes decreased with increasing income (< \$10,000: 19.5%; \$10,000-19,999: 18.9%; \$20,000-24,999: 12.8%; \$35,000-49,999: 11.5%; \geq \$50,000: 8.1%). Not all differences were significant.

Fair or Poor Self-Rated Health Status among Adults 18 Years and Older

Data Source: Behavioral Risk Factor Surveillance System

Self-assessed health status is a strong measure of overall health status and has been demonstrated to correlate with subsequent health service use, functional status, and mortality.

Figure 11. Trend in Prevalence of Fair/Poor General Health among Adults, Mississippi and U.S., 2001-2010



2010 DATA HIGHLIGHTS

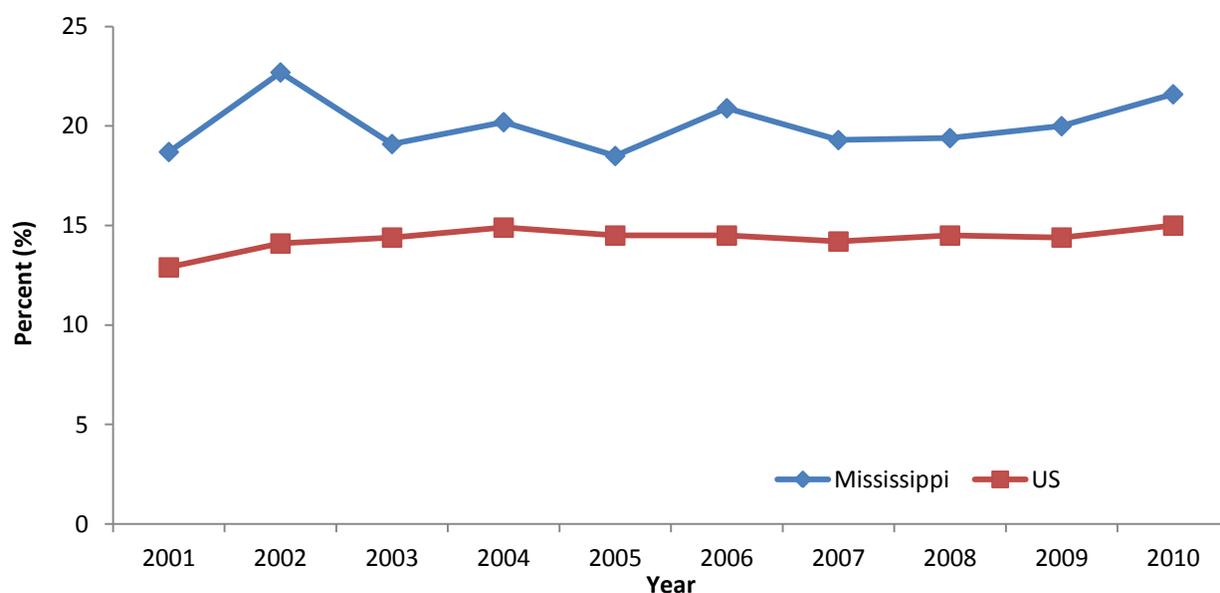
- In the U.S., 16.1% of adults reported fair/poor health status.
- In MS, 23.7% of adults reported fair/poor health status.
- A higher proportion of blacks (29.7%) reported fair/poor health status than whites (20.6%).
- The prevalence of fair/poor health decreased with increasing income. Those with <\$10,000 income had the highest prevalence (44.8%). Those with > \$50,000 income had the lowest prevalence (9.4%).
- The prevalence of fair/poor health increased with increasing age. 18-34 year olds had the lowest prevalence (11.6%), compared to 35-49 year olds (19.4%), 50-64 year olds (31.5%) and \geq 65 year olds (39.8%).

Current Lack of Health Insurance among Adults 18 Years and Older

Data Source: Behavioral Risk Factor Surveillance System

Lack of health insurance remains a major determinant of access to necessary health services, including preventive care. Certain socioeconomic conditions, including a lack of health insurance coverage and poverty, are associated with poor health status and chronic disease.

Figure 12. Trend in Prevalence of Lack of Health Insurance among Adults, Mississippi and U.S., 2001-2010



2010 DATA HIGHLIGHTS

- In the U.S., 17.8% of adults aged 18-64 years did not have health insurance.
- In MS, 25.8% of adults aged 18-64 years did not have health insurance.
- A higher proportion of males (29.7%) did not have health insurance than females (23.2%).
- A higher proportion of blacks (32.7%) did not have health insurance than whites (21.0%).
- The prevalence of no health insurance decreased with increasing income. Those with \geq \$50,000 (7.8%) and \$35,000-49,999 income (19.7%) were less likely to report no health insurance than those with incomes $<$ \$10,000 (41.2%), \$10,000-19,999 (41.3%), and \$20,000-34,999 (33.5%).
- The prevalence of no health insurance decreased with age (18-34 year olds: 35.3%; 35-49 year olds: 23.3%; 50-64 year olds: 17.3%).

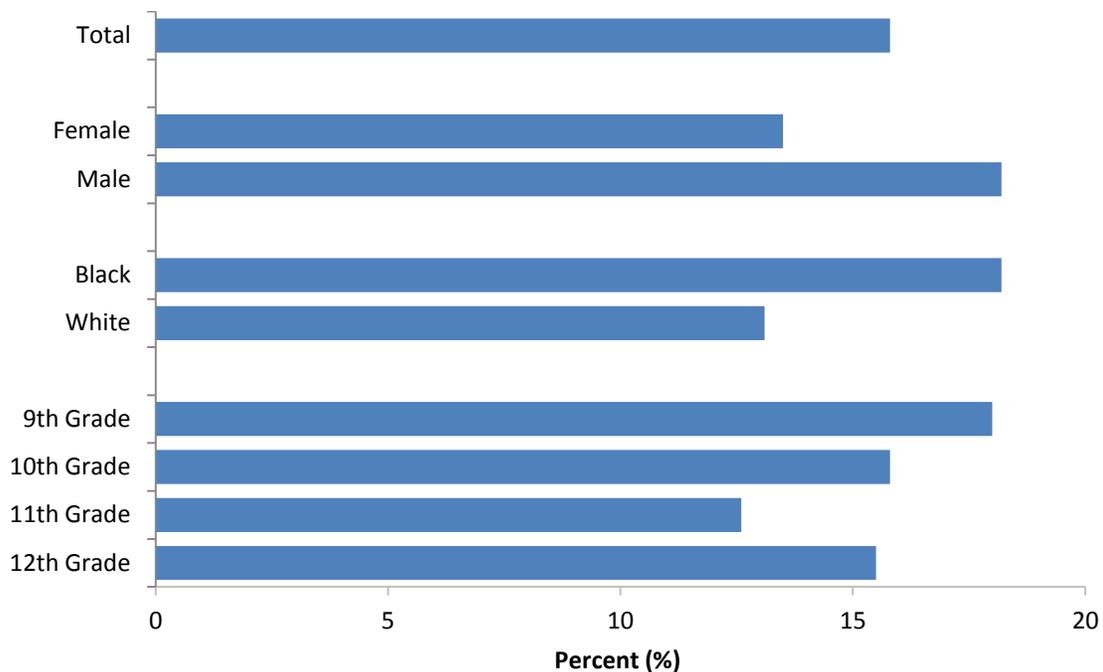
Chapter 2: Chronic Disease Risk Factors among Youth

Obesity among Youth

Data Source: Youth Risk Behavior Surveillance System

BMI levels established during childhood and adolescence might extend into adulthood and affect future chronic disease risk. Being overweight or obese increases the risk of multiple chronic diseases, including heart disease, stroke, hypertension, type 2 diabetes, osteoarthritis, and certain cancers.

Figure 13. Prevalence of Obesity among Youth, Mississippi, 2011



2011 DATA HIGHLIGHTS

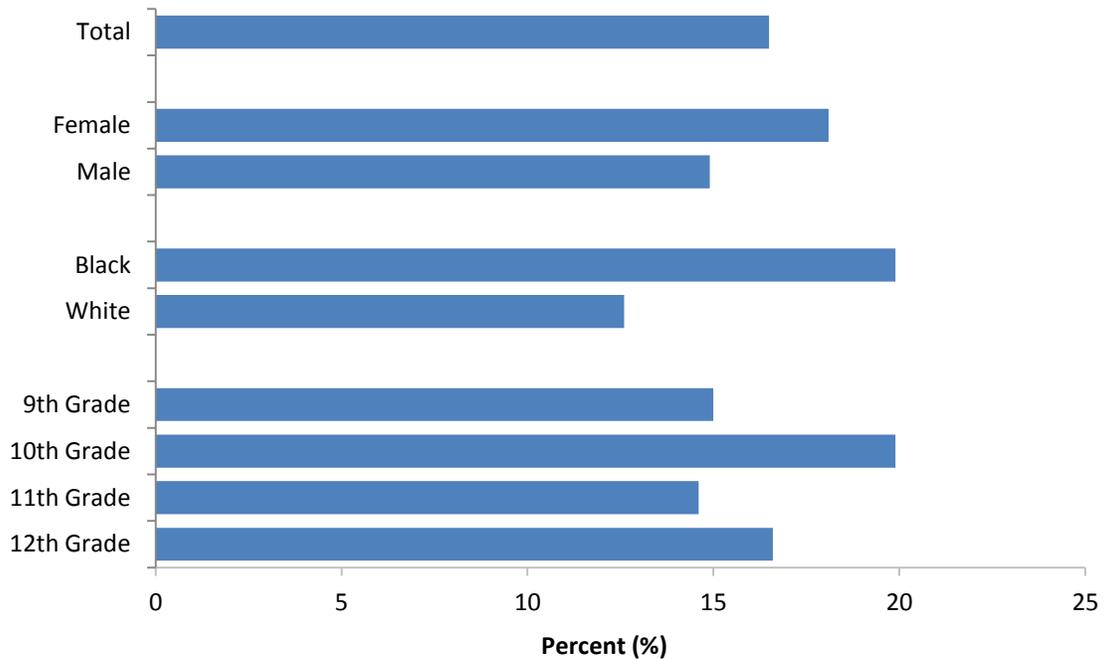
- In the U.S., 13.0% of adolescents were obese.
- In MS, 15.8% of adolescents were obese.
- A higher proportion of black youth (18.2%) were obese than white youth (13.1%).
- A higher proportion of male youth (18.2%) were obese than female (13.5%).

Overweight among Youth

Data Source: Youth Risk Behavior Surveillance System

BMI levels established during youth might extend into adulthood and affect future chronic disease risk. Being overweight or obese increases the risk of multiple chronic diseases, including heart disease, stroke, hypertension, type 2 diabetes, osteoarthritis, and certain cancers.

Figure 14. Prevalence of Overweight among Youth, Mississippi 2011



2011 DATA HIGHLIGHTS

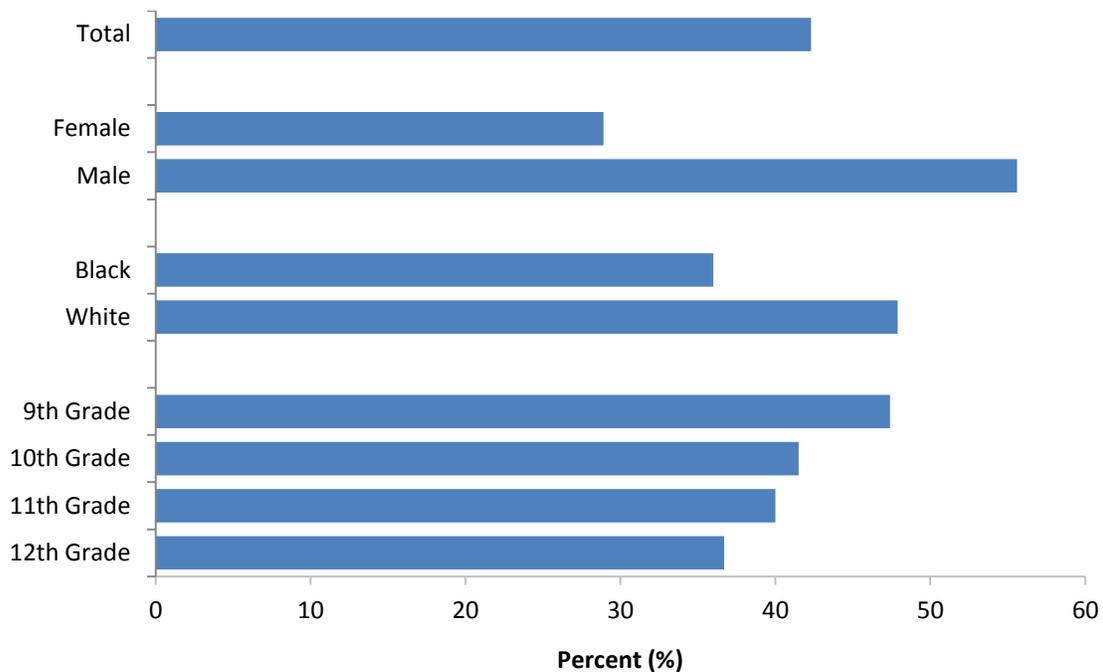
- In the U.S., 15.2% of adolescents were overweight.
- In MS, 16.5% of adolescents were overweight.
- A higher proportion of black youth (19.9%) were overweight than white youth (12.6%).

Recommended Physical Activity among Youth

Data Source: Youth Risk Behavior Surveillance System

Physical activity reduces the risk for heart disease, colon cancer, stroke, type 2 diabetes and its complications, overweight, and osteoporosis. Physical activity patterns established during adolescence might extend into adulthood and affect future chronic disease risk. In 2011, the recommended amount of physical activity was 60 minutes during 7 of 7 days.

Figure 15. Prevalence of Physical Activity among Youth, Mississippi 2011



2011 DATA HIGHLIGHTS

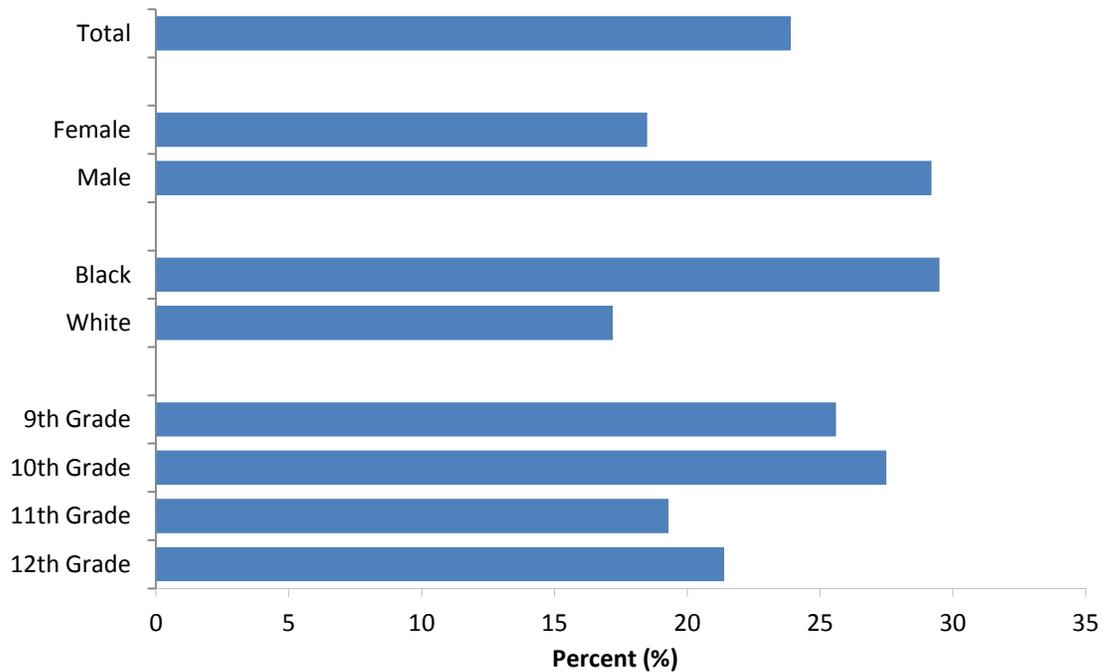
- In the U.S., 28.7% of adolescents met the recommended level of physical activity.
- In MS, 42.3% of adolescents met the recommended level of physical activity.
- Male adolescents (55.6%) were more likely to report physical activity than female adolescents (28.9%).
- White adolescents (47.9%) were more likely to report physical activity than black adolescents (36.0%).

Fruit and Vegetable Consumption among Youth

Data Source: Youth Risk Behavior Surveillance System

A diet of ≥ 5 servings of fruits and vegetables/day is associated with reduced risk of coronary heart disease and certain types of cancer, including cancer of the colon, rectum, oral cavity, pharynx, stomach, and esophagus. Dietary habits established during youth might extend into adulthood and affect future chronic disease risk.

Figure 16. Prevalence of Consumption of Five or More Servings of Fruits and Vegetables per Day among Youth, Mississippi 2011



2011 DATA HIGHLIGHTS

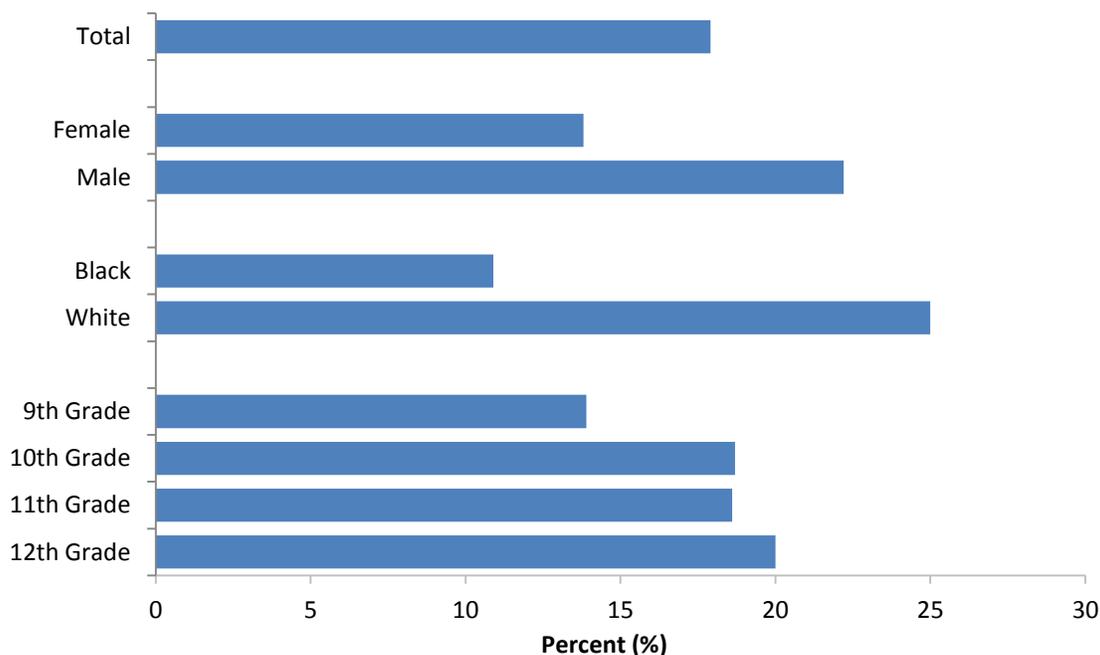
- In the U.S., 18.4% (YRBSS, 2009) of adolescents consumed ≥ 5 servings of fruits and vegetables daily.
- In MS, 23.9% of adolescents consumed ≥ 5 servings of fruits and vegetables daily.
- A higher proportion of male adolescents (29.2%) than female adolescents (18.5%) reported ≥ 5 servings of fruits and vegetables daily.
- Black adolescents (29.5%) were more likely to report ≥ 5 servings of fruits and vegetables per day than white adolescents (17.2%).

Cigarette Smoking Among Youth

Data Source: Youth Risk Behavior Surveillance System

Tobacco use is the single most preventable cause of death and disease in the U.S. More than 80% of adults begin smoking before 18 years of age. In MS, purchasing tobacco products is illegal for youth aged < 18 years. Smoking increases the risk of heart disease, cancer, stroke, and chronic lung disease. Environmental tobacco smoke has been demonstrated to increase the risk for heart disease and lung cancer among nonsmokers.

Figure 17. Prevalence of Current Cigarette Smoking among Youth, Mississippi 2011



2011 DATA HIGHLIGHTS

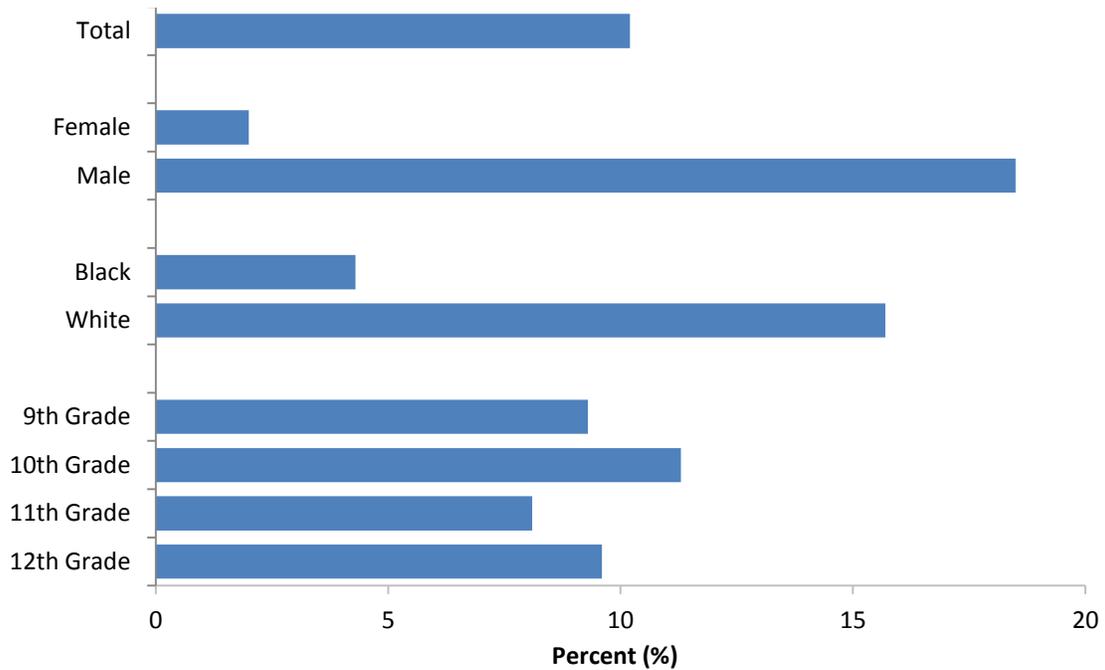
- In the U.S., the prevalence of current cigarette smoking among U.S. adolescents was 18.1%.
- In MS, prevalence of current cigarette smoking among adolescents was 17.9%.
- A higher proportion of male adolescents (22.2%) than female adolescents (13.8%) smoked cigarettes.
- White adolescents (25.0%) were more likely to smoke cigarettes than black adolescents (10.9%).

Smokeless Tobacco among Youth

Data Source: Youth Risk Behavior Surveillance System

Smokeless tobacco use is a cause of oral cancer and oral leukoplakia. Also, studies have determined it to be a risk factor for coronary heart disease, hypertension, and stomach cancer. Smokeless tobacco use established during adolescence might extend into adulthood and affect risk for chronic disease. In MS, purchasing tobacco products is illegal for youth aged < 18 years.

Figure 18. Prevalence of Current Smokeless Tobacco Use among Youth, Mississippi, 2011



2011 DATA HIGHLIGHTS

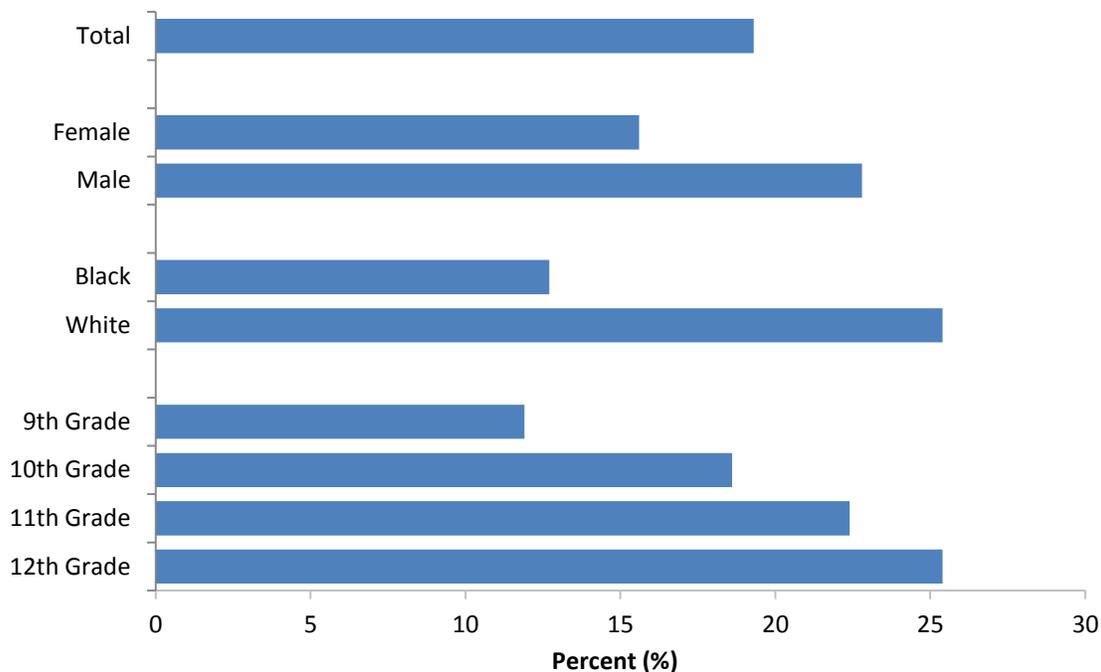
- In the U.S., 7.7% of adolescents used smokeless tobacco.
- In MS, 10.2% of adolescents used smokeless tobacco.
- A higher proportion of male adolescents (18.5%) than female adolescents (2.0%) used smokeless tobacco.
- White adolescents (15.7%) were more likely to use smokeless tobacco than black adolescents (4.3%).

Binge Drinking among Youth

Data Source: Youth Risk Behavior Surveillance System

Studies have determined that a delay in drinking until age 21 years substantially reduces the risk of experiencing alcohol-related problems. Alcohol abuse among youth is strongly associated with injuries, violence, fetal alcohol syndrome, and risk of other acute and chronic health effects.

Figure 19. Prevalence of Current Binge Drinking among Youth, Mississippi, 2011



2011 DATA HIGHLIGHTS

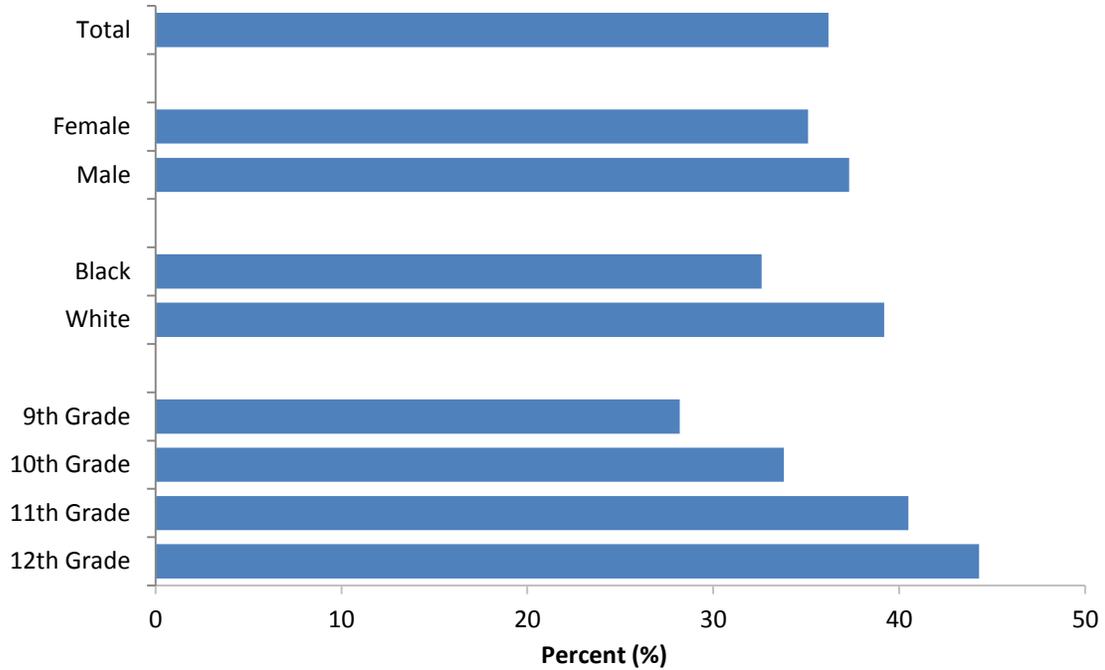
- In the U.S., 21.9% of adolescents reported binge drinking.
- In MS, 19.3% of adolescents reported binge drinking.
- White adolescents (25.4%) were more likely to binge drinking than black adolescents (12.7%).
- Binge drinking increased with grade level, from a low of 11.9% among 9th graders, compared to 18.6% among 10th graders, 22.4% of 11th graders and 25.4% of 12th graders.

Alcohol Use among Youth

Data Source: Youth Risk Behavior Surveillance System

Studies have determined that a delay in drinking until age 21 years substantially reduces the risk of experiencing alcohol-related problems. Alcohol abuse among youth is strongly associated with injuries, violence, fetal alcohol syndrome, and risk of other acute and chronic health effects.

Figure 20. Prevalence of Alcohol Use among Youth, Mississippi, 2011



2011 DATA HIGHLIGHTS

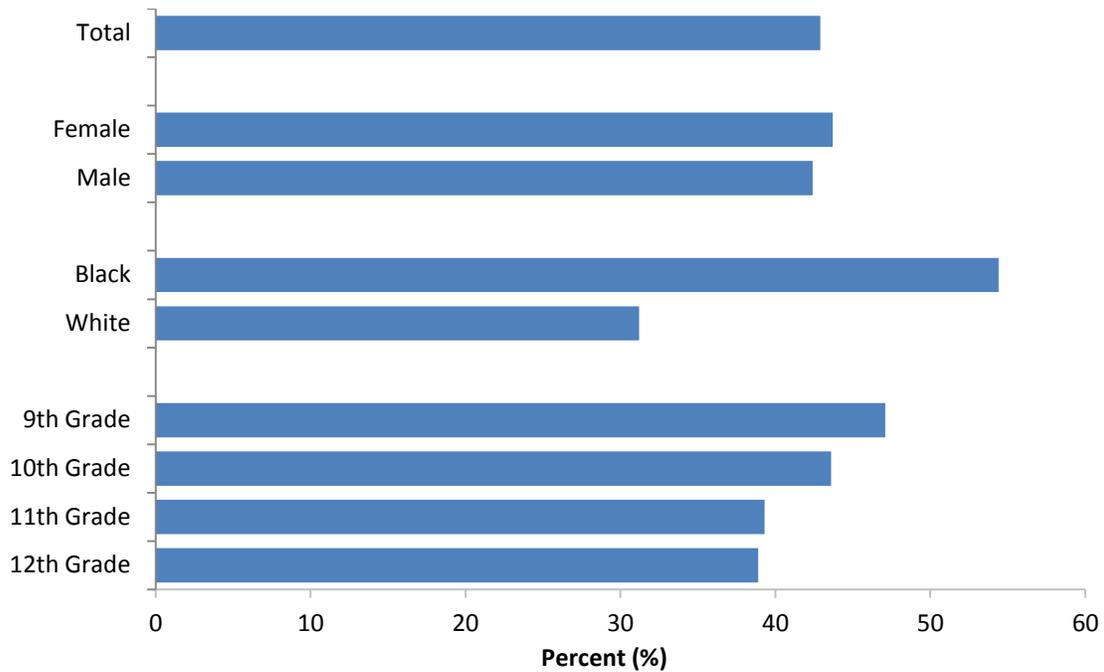
- In the U.S., 38.7% of U.S. adolescents consumed ≥ 1 drink of alcohol during the past 30 days.
- In MS, 36.2% of adolescents consumed ≥ 1 drink of alcohol during the past 30 days.
- Current alcohol use increased with grade level, from a low of 28.2% of 9th graders, compared to 33.8% of 10th graders, 40.5% of 11th graders, and 44.3% of 12th graders.

Television Viewing among Youth

Data Source: Youth Risk Behavior Surveillance System

Excessive television watching is associated with overweight and physical inactivity among children. Certain children are less physically active than recommended and physical activity declines during adolescence. Physical activity reduces the risk for heart disease, cancer, stroke, osteoporosis, and type 2 diabetes.

Figure 21. Proportion of Youth who Watch 3+ Hours of Television per school day, Mississippi, 2011



2011 DATA HIGHLIGHTS

- In the U.S., 32.4% of adolescents reported watching 3+ hours of television on an average school day.
- In MS, 44.9% of adolescents reported watching 3+ hours of television on an average school day.
- A higher proportion of black adolescents (54.4%) reported watching 3+ hours of television on an average school day than white adolescents (31.2%).

Chapter 3: Hospital Discharge Data

Data source: MSDH Hospital Discharge Data

Modifiable risk factors for coronary heart disease (CHD) and stroke include behaviors (e.g., tobacco use, physical inactivity, and improper nutrition), health status (e.g., hypertension, hyperlipidemia, overweight, or diabetes), and policies (e.g., smoking policies in restaurants and worksites). Historically, the southeastern U.S. (including MS) has had high stroke death rates. Cardiovascular disease, kidney failure, amputations, and ketoacidosis are complications of diabetes that frequently require hospitalization. Long-term complications of diabetes requiring hospitalization can be prevented through glucose, lipid, and blood pressure regulation, as well as screening and treatment for eye, foot, and kidney abnormalities.

2010 DATA HIGHLIGHTS

- According to MS Hospital Discharge Data, heart disease and stroke (as the primary diagnosis) attributed to over 22,000 inpatient hospitalizations in 2010.
- Specifically, there were 6,137 hospitalizations due to myocardial infarction, 4,769 hospitalizations for stroke, and 11,111 hospitalizations for congestive heart failure.
- For Medicare eligible Mississippians (65 years and older), heart disease and stroke accounted for over 14,000 hospitalizations- which is a hospitalization rate of 37 hospitalizations per 1,000 persons for that age group.
- In 2010, heart disease and stroke hospitalization charges were an estimated \$742 million.
- Heart disease-related hospitalization charges were an estimated \$611 million, while stroke hospitalization charges were an estimated \$131 million.
- In 2010, there were 7,306 hospitalizations with a primary diagnosis of Diabetes Mellitus.
- The hospital discharge rate was 24.6 per 10,000.
- Hospitalizations where diabetes was the primary diagnosis incurred more than \$172,006,241 in hospital charges.
- The average length of hospitalization was approximately 6 days.

Figure 22. Hospital Discharge Rates for Heart Disease, Stroke, and Diabetes Mississippi, 2010

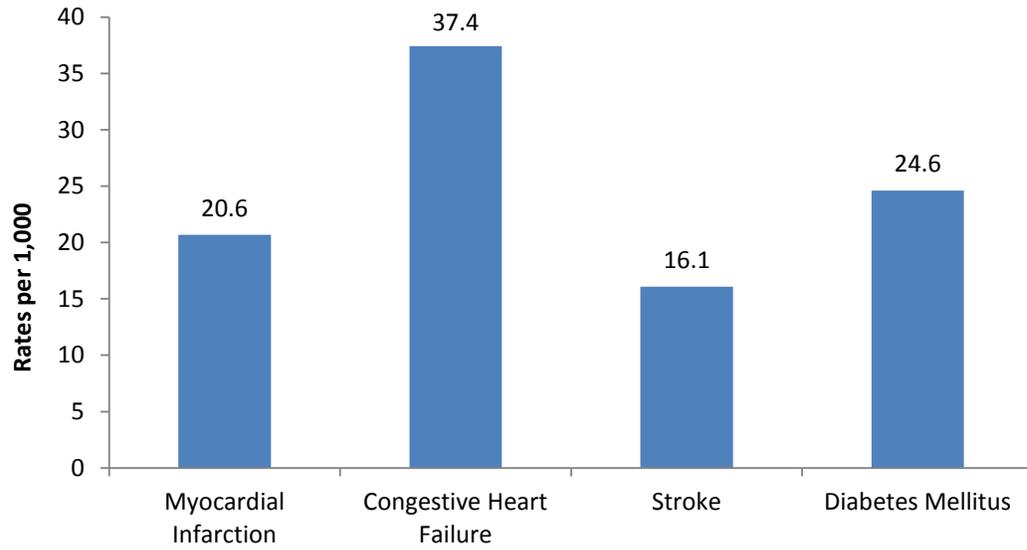
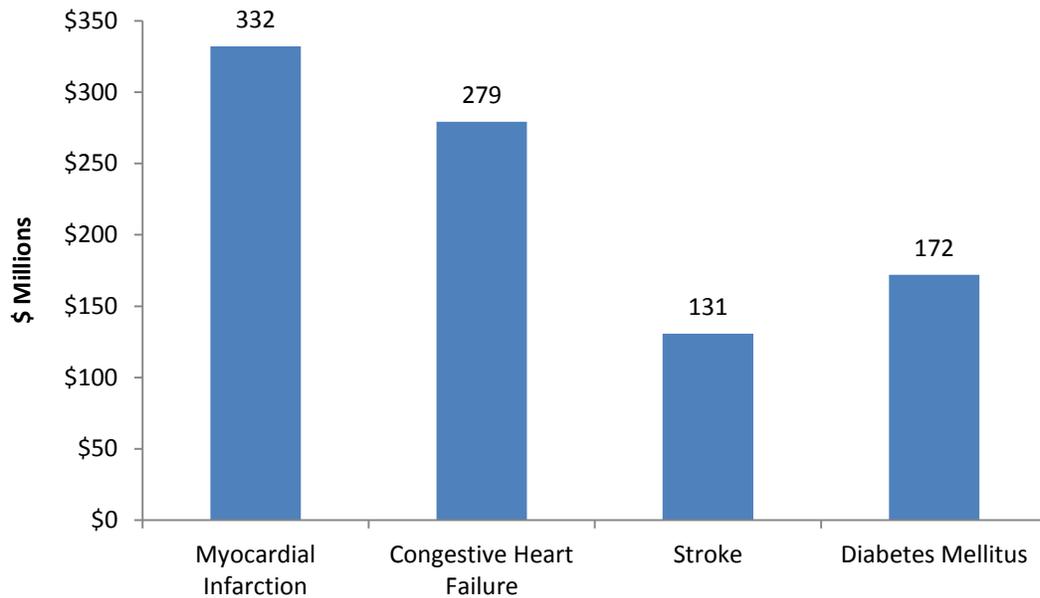
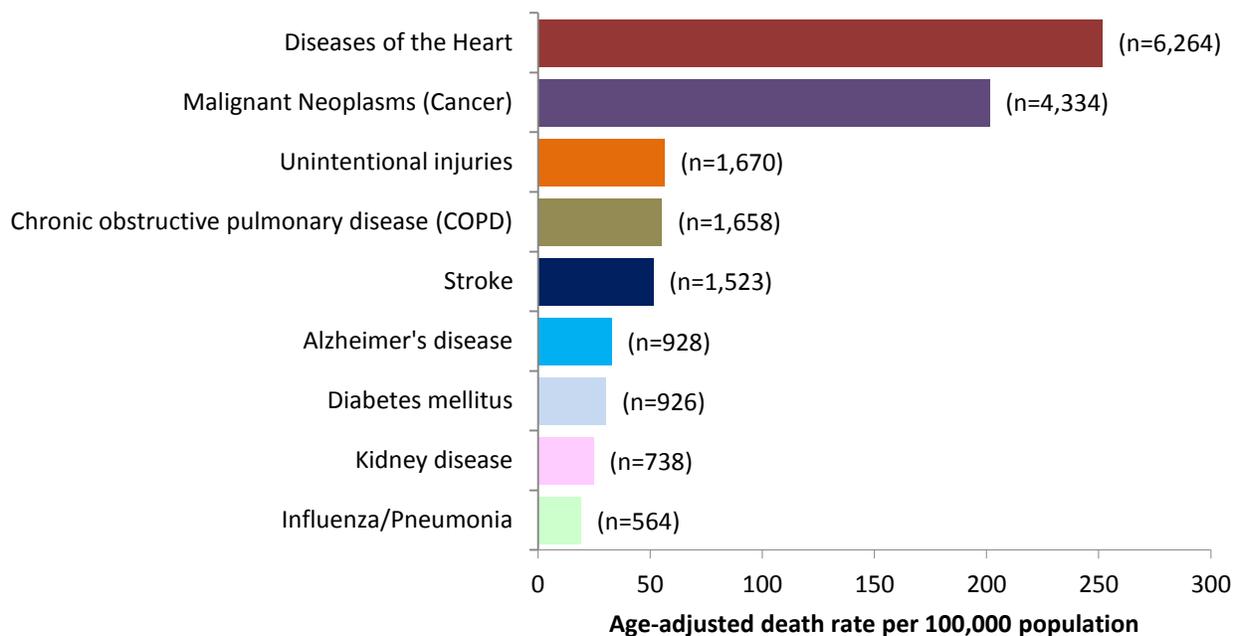


Figure 23. Estimated Hospital Discharge Cost for Heart Disease, Stroke, and Diabetes Mellitus, Mississippi, 2010



Chapter 4: Mortality from Chronic Disease

Figure 24. Leading Causes of Death in Mississippi, 2010



2010 DATA HIGHLIGHTS

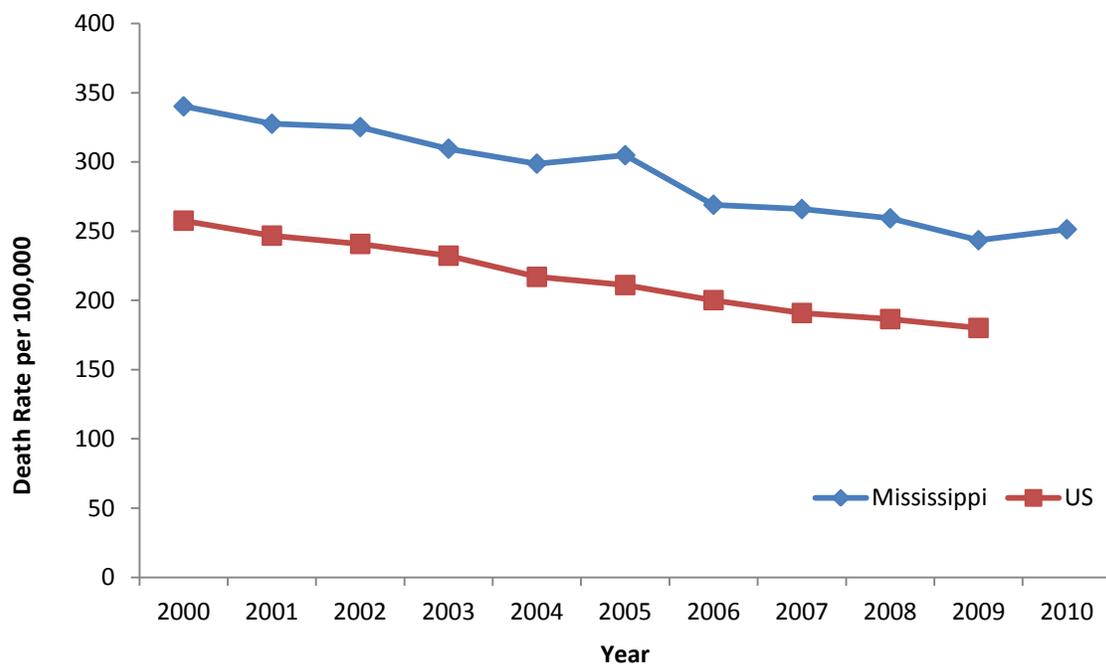
- In 2010, 7 of the leading causes of death in MS were chronic disease related. These included deaths with diseases of the heart, cancer, injury, chronic obstructive pulmonary disease (COPD), stroke, Alzheimer's disease, diabetes and kidney disease.

Mortality related to Diseases of the Heart

Data Source: MS Vital Statistics and CDC Wonder.

During 2010, heart disease was the leading cause of death in MS, accounting for approximately 26% of all deaths. Modifiable risk factors for heart disease include behaviors (e.g., tobacco use, physical inactivity, and poor nutrition), health status (e.g., hypertension, overweight, or diabetes), and policies (e.g., smoking policies). Substantial differences in heart disease death rates and preventive behaviors exist by race, age, sex, and other demographic factors.

Figure 25. Age-Adjusted Mortality related to Diseases of the Heart*, Mississippi, U.S., 2000-2010

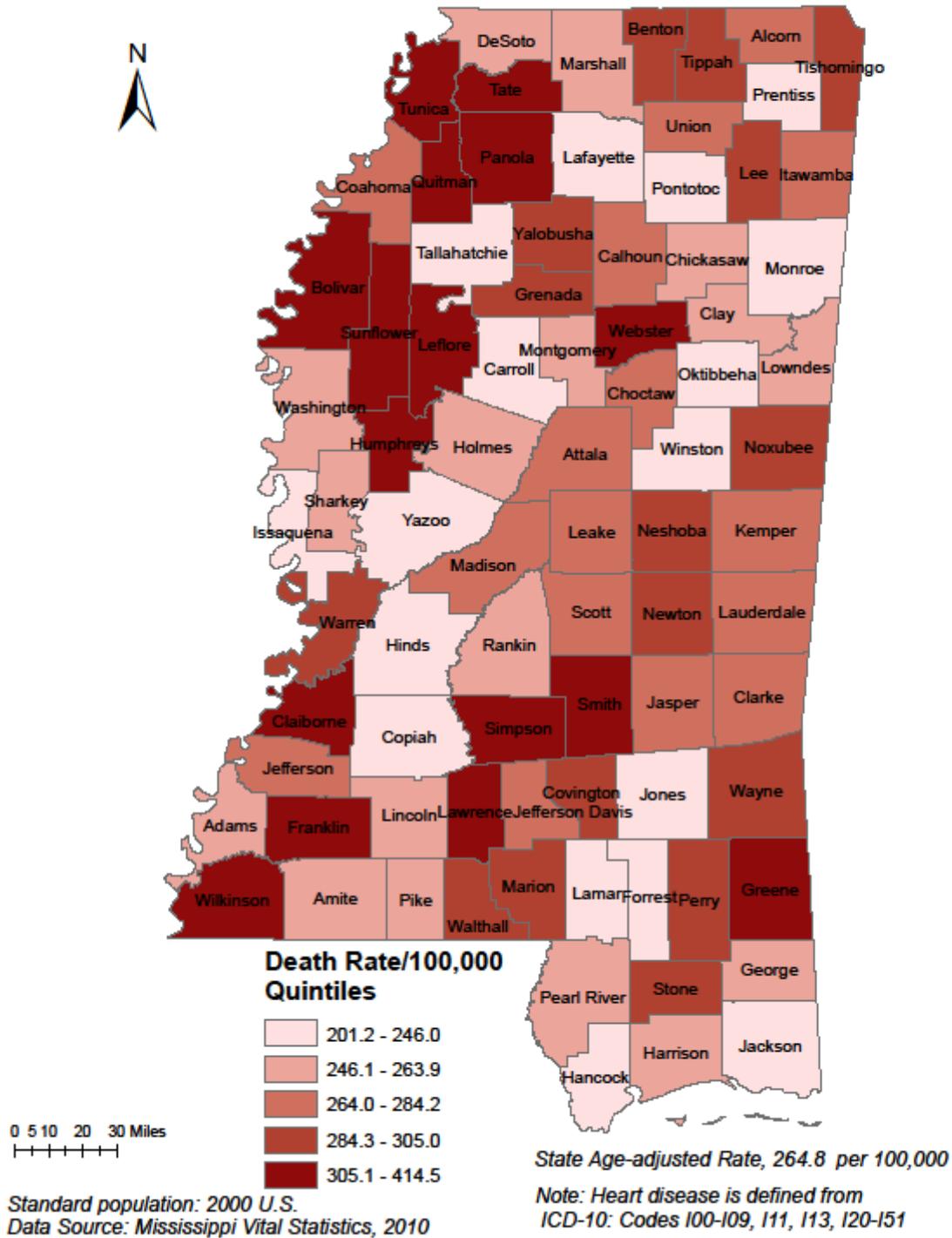


*Deaths with ICD-10 codes I00–I09, I11, I13, and I20–I51 as the underlying cause of death.

2010 DATA HIGHLIGHTS

- In 2009, the age-adjusted mortality rate related to diseases of the heart in U.S. was 180.1 per 100,000 persons.
- In 2010, the age-adjusted mortality rate related to diseases of the heart in MS was 215.4 per 100,000 persons.
- Men (311.4 per 100,000) had a higher mortality rate related to diseases of the heart than women (204.9 per 100,000).
- The mortality rate related to diseases of the heart for blacks (279.3 per 100,000) was higher than for whites (242.6 per 100,000).

Figure 26. Age-Adjusted Mortality related to Diseases of the Heart by County, Mississippi, 2005-2010

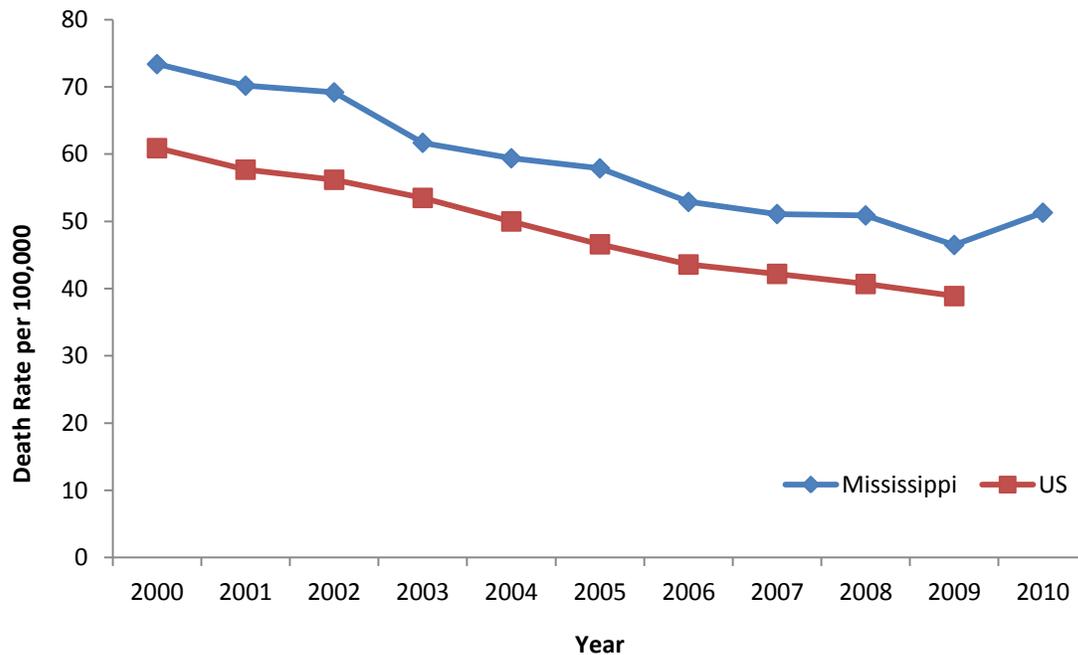


Mortality related to Stroke

Data Source: MS Vital Statistics and CDC Wonder

During 2010, stroke was the 5th leading cause of death in the MS, accounting for just over 5% of deaths. Modifiable risk factors for stroke include behaviors (e.g., tobacco use, physical inactivity, and improper nutrition) and health status (e.g., untreated hypertension, hyperlipidemia, overweight, or diabetes). Substantial differences in risk and preventive behaviors exist by race, age, sex, and other demographic factors.

Figure 27. Age-Adjusted Mortality related to Stroke*, Mississippi and U.S., 2000-2010

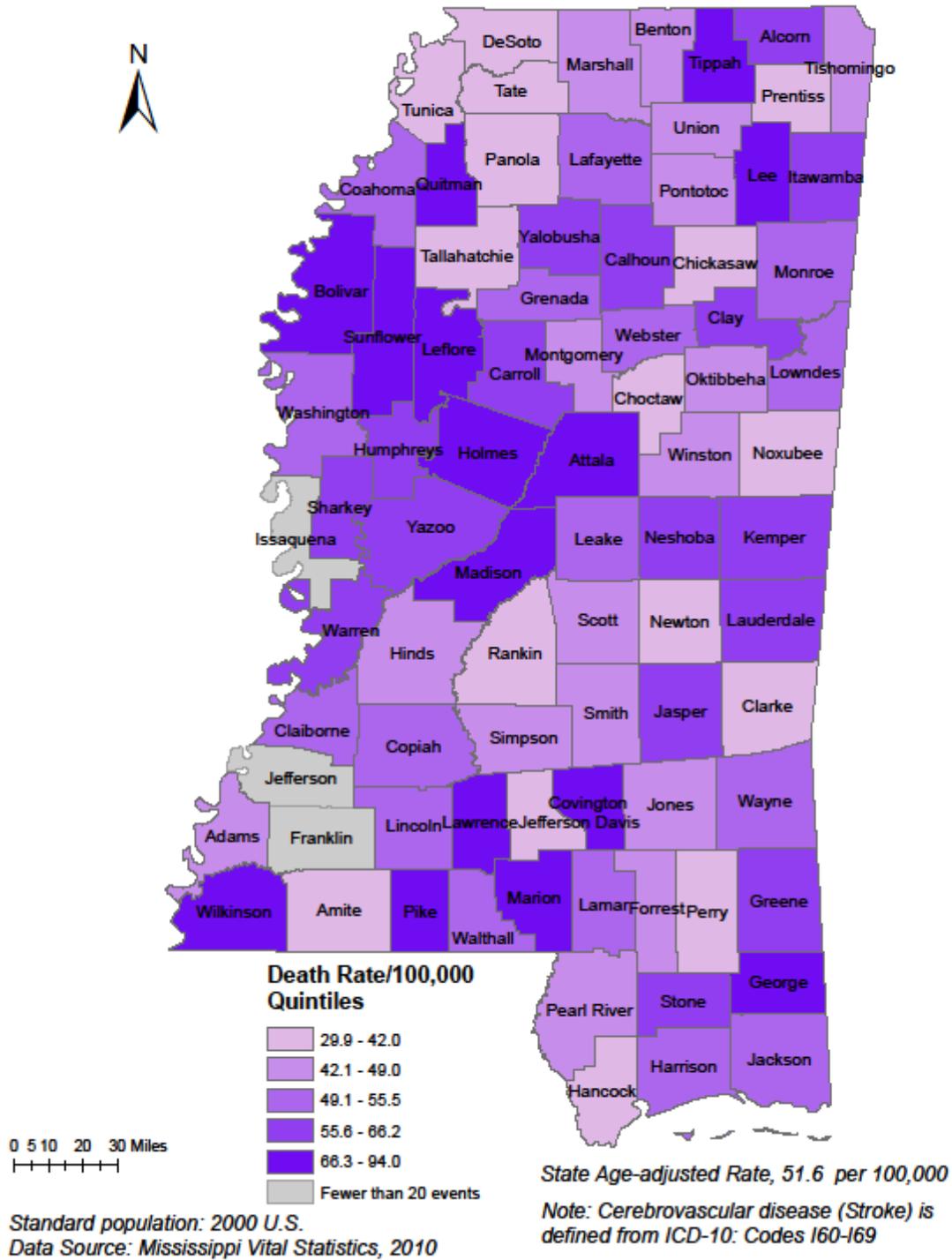


*Deaths with ICD-10 codes I60-I69 as the underlying cause of death.

2010 DATA HIGHLIGHTS

- In 2009, the age-adjusted mortality rate related to stroke in the U.S. was 38.9 deaths per 100,000 persons.
- In 2010, the age-adjusted mortality rate related to stroke in MS was 56.3 deaths per 100,000 persons.
- The stroke mortality rate for blacks (67.5 deaths per 100,000) was higher than for whites (45.3 deaths per 100,000).

Figure 28. Age-Adjusted Mortality related to Stroke by County, Mississippi, 2005-2010

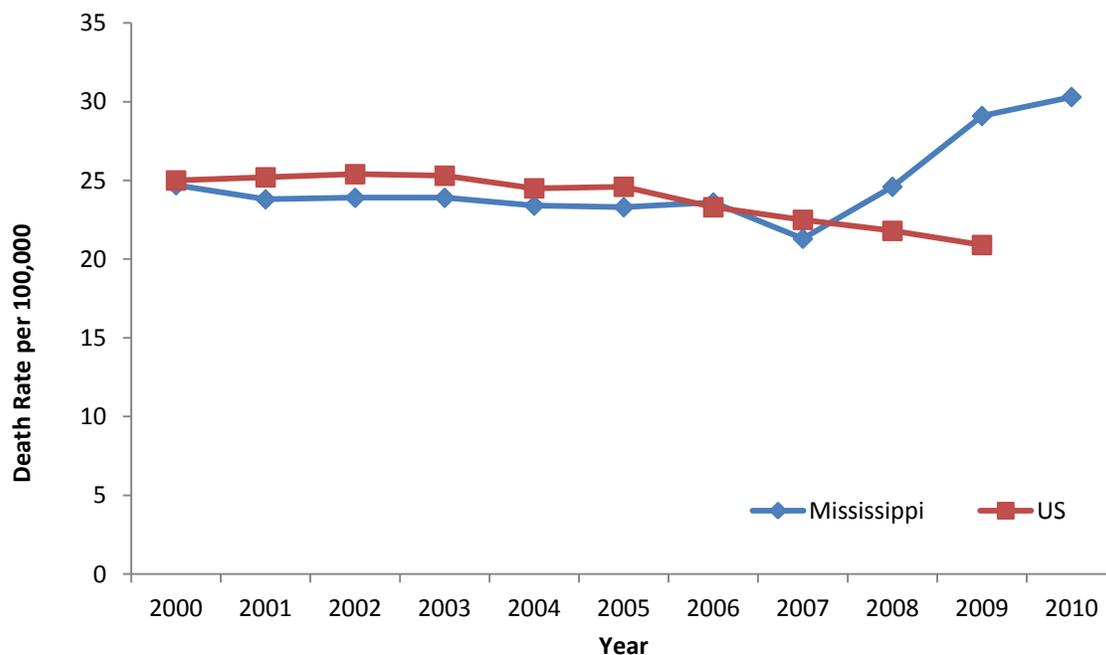


Mortality related to Diabetes Mellitus

Data Source: MS Vital Statistics and CDC Wonder

During 2010, diabetes was the 8th leading cause of death in the MS, accounting for 3% of deaths. Multiple long-term complications of diabetes can be prevented through glucose, lipid, and blood pressure regulation, and through screening and treatment for eye, foot, and kidney abnormalities.

Figure 29. Age-Adjusted Mortality related to Diabetes Mellitus*, Mississippi and U.S., 2000-2010

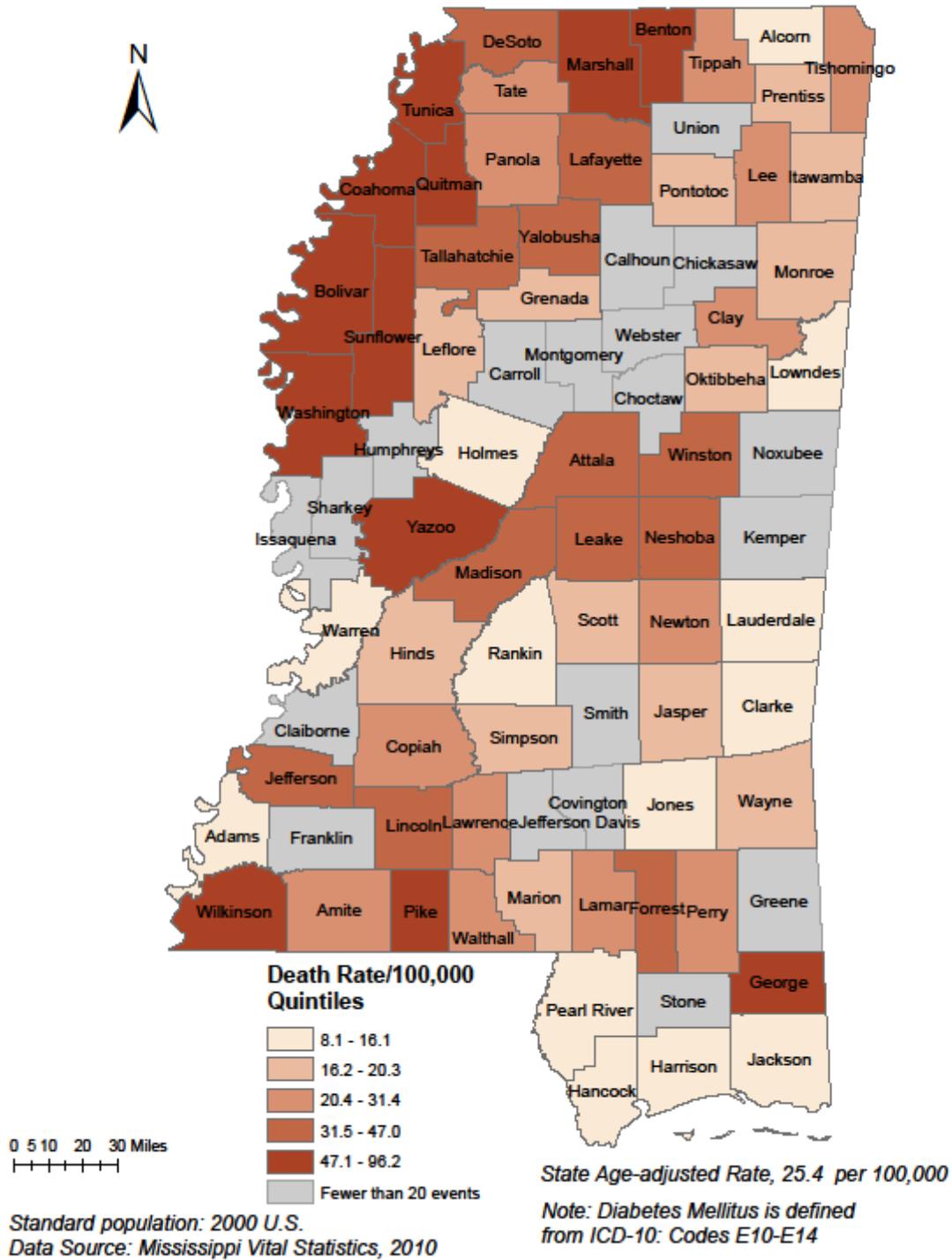


*Deaths with ICD-10 codes E10–E14 as the underlying cause of death.

2010 DATA HIGHLIGHTS

- In 2009, the age-adjusted mortality rate related to diabetes in the U.S. was 20.9 deaths per 100,000 persons.
- In 2010, the age-adjusted mortality rate related to diabetes in MS was 30.2 deaths per 100,000 persons.
- Men (34.6 deaths per 100,000) had a higher mortality rate related to diabetes than women (27.1 deaths per 100,000).
- The mortality rate related to diabetes for blacks (56.6 deaths per 100,000) was higher than for whites (20.9 deaths per 100,000).

Figure 30. Age-Adjusted Mortality related to Diabetes Mellitus by County, Mississippi, 2005-2010

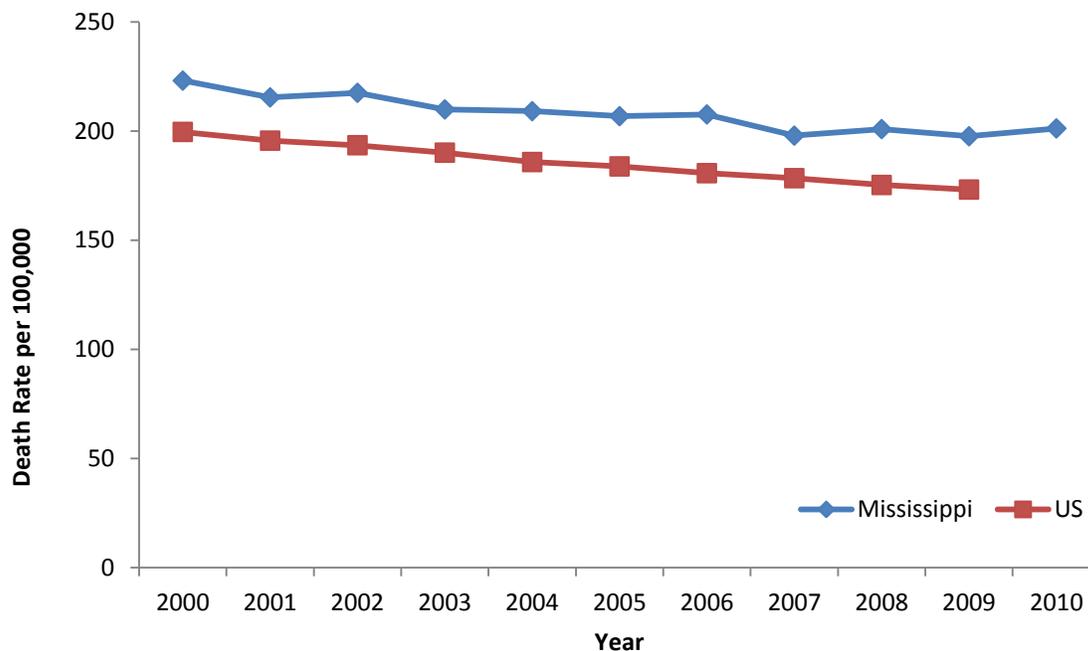


Mortality related to Cancer

Data Source: MS Vital Statistics and CDC Wonder

During 2010, cancer was the 2nd leading cause of death in the MS, accounting for approximately 22% of all deaths. Information on cancer at all sites combined provides a measure of, and means of tracking, the substantial burden imposed by cancer.

Figure 31. Age-Adjusted Mortality Rates related to Cancer*, Mississippi and U.S., 2000-2010

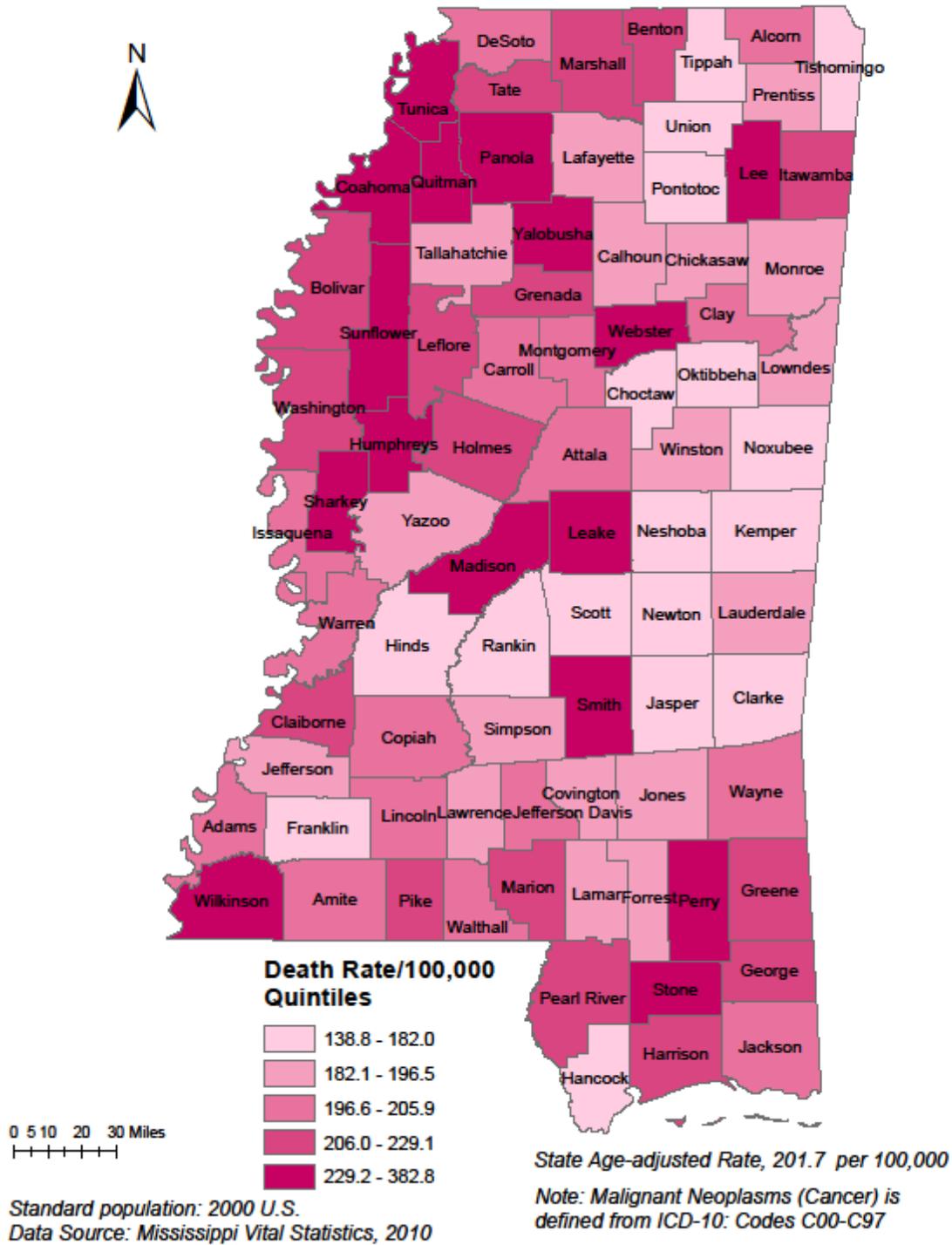


*Deaths with ICD-10 codes C00–C97 as the underlying cause of death.

2010 DATA HIGHLIGHTS

- In 2009, the age-adjusted mortality rate related to cancer in the U.S. was 173.2 deaths per 100,000 persons.
- In 2010, the age-adjusted mortality rate related to cancer in MS was 201.2 deaths per 100,000 persons.
- Men (258.2 deaths per 100,000) had a higher mortality rate related to cancer than women (162.5 deaths per 100,000).
- The mortality rate related to cancer for blacks (234.2 deaths per 100,000) was higher than for whites (191.5 deaths per 100,000).

Figure 32. Age-Adjusted Mortality related to Cancer by County, Mississippi, 2005-2010



Chapter 5: Mississippi Smoke-Free Policy

Nationally, cigarette smoking accounts for 1 of every 5 deaths and secondhand smoke accounts for over 53,000 deaths of nonsmokers annually. Adoption and enforcement of policy that restricts smoking in public areas is an effective strategy to reduce exposure to secondhand smoke. To date, 70 MS towns have adopted a smoke-free air ordinance; 58 of these policies are 100% comprehensive and 12 are partial smoke-free policies.

Table 2. Mississippi Smoke-Free Policy by County and Town

County	Municipality	Population	Date	Ordinance Type
Alcorn	Corinth	14,573	November 2007	100% Comprehensive
	Rienzi	330	January 2011	100% Comprehensive
Amite/Wilkinson	Centerville	1,680	November 2011	100% Comprehensive
Attala	Kosciusko	7,402	November 2007	100% Comprehensive
Bolivar	Alligator	220	June 2012	100% Comprehensive
	Duncan	578	May 2012	100% Comprehensive
Calhoun	Calhoun City	1,774	September 2011	100% Comprehensive
Carroll	Vaiden	840	May 2012	Partial
Choctaw	Mathiston	698	April 2007	100% Comprehensive
Coahoma	Jonestown	1,511	October 2010	100% Comprehensive
Copiah	Crystal Springs	5,044	June 2010	100% Comprehensive
	Georgetown	344	March 2012	100% Comprehensive
	Wesson	1,693	July 2010	100% Comprehensive
Covington	Collins	2,761	June 2008	100% Comprehensive
Desoto	Hernando	14,090	March 2007	100% Comprehensive
	Olive Branch	33,484	June 2011	Partial
	Walls	452	July 2008	Partial
Forrest	Hattiesburg	45,989	January 2007	100% Comprehensive
	Petal	10,454	December 2007	100% Comprehensive
Grenada	Grenada	13,092	January 2009	100% Comprehensive
Harrison	Gulfport	67,793	March 2008	Partial
Hinds	Byram	11,489	December 2011	100% Comprehensive
	Clinton	25,216	August 2008	100% Comprehensive
	Jackson	173,514	July 2010	100% Comprehensive
Holmes	Durant	2,673	May 2012	100% Comprehensive
	Goodman	1,252	<i>unknown</i>	Partial
	West	220	<i>unknown</i>	Partial

Humphreys	Belzoni	2,663	July 2010	100% Comprehensive
Issaquena	Mayersville	795	September 2005	100% Comprehensive
Itawamba	Mantachie	1,107	November 2006	100% Comprehensive
Jackson	Moss Point	13,704	June 2012	100% Comprehensive
Jefferson Davis	Bassfield	315	March 2010	100% Comprehensive
	Prentiss	1,158	April 2010	100% Comprehensive
Jones	Laurel	18,540	December 2008	100% Comprehensive
Lafayette	Oxford	18,916	November 2006	100% Comprehensive
Lamar	Lumberton	2,228	June 2010	100% Comprehensive
	Sumrall	1,005	June 2010	100% Comprehensive
Lauderdale	Meridian	41,148	February 2012	100% Comprehensive
Lawrence	Monticello	1,571	January 2012	100% Comprehensive
Lee	Tupelo	34,546	October 2006	100% Comprehensive
	Verona	3,006	May 2012	100% Comprehensive
Leflore	Greenwood	15,205	August 2007	100% Comprehensive
Lincoln	Brookhaven	12,513	November 2011	100% Comprehensive
Lowndes	Columbus	23,640	January 2010	Partial
Madison	Canton	13,189	January 2011	100% Comprehensive
	Flora	1,546	December 2007	100% Comprehensive
	Madison	24,149	June 2010	100% Comprehensive
	Ridgeland	24,047	July 2007	100% Comprehensive
Monroe	Aberdeen	5,612	March 2007	100% Comprehensive
	Amory	7,316	November 2007	100% Comprehensive
Noxubee	Shuqualak	562	June 2012	100% Comprehensive
Oktibbeha	Starkville	23,888	May 2006	100% Comprehensive
Panola	Batesville	7,463	March 2010	100% Comprehensive
Pearl River	Picayune	10,878	May 2009	Partial
Perry	New Augusta	644	June 2012	100% Comprehensive
Pike	McComb	12,790	November 2007	Partial
	Summit	1,428	December 2007	Partial
Pontotoc	Ecru	895	March 2008	100% Comprehensive
	Pontotoc	5,625	May 2008	100% Comprehensive
Prentiss	Booneville	8,743	June 2012	100% Comprehensive
Quitman	Marks	1,551	July 2012	100% Comprehensive
Rankin	Brandon	21,705	April 2010	Partial
	Flowood	7,823	May 2011	100% Comprehensive
	Pearl	25,092	September 2010	100% Comprehensive

Sharkey	Anguilla	745	March 2012	100% Comprehensive
	Rolling Fork	2,143	December 2011	100% Comprehensive
Tallahatchie	Sumner	407	July 2012	100% Comprehensive
Tate	Coldwater	1,677	December 2011	100% Comprehensive
	Senatobia	8,165	April 2011	Partial
Union	New Albany	8,034	December 2011	100% Comprehensive
Washington	Arcola	480	May 2012	100% Comprehensive
	Greenville	34,400	October 2007	Partial
	Hollandale	3,437	December 2009	100% Comprehensive
	Metcalfe	1,109	September 2002	100% Comprehensive

Data retrieved from Social Sciences Research Center, MS State University. Accessed June 2012 from:
<https://sites.google.com/a/ssrc.msstate.edu/mississippi-smoke-free-ordinances/>

Summary

Mississippians demonstrate a high prevalence of chronic disease risk factors. The prevalence of obesity, high blood cholesterol, high blood pressure, and diabetes has increased consistently over the last decade both nationally and in MS, while the prevalence of smoking has decreased. Behavioral risk factors, such as physical activity, consumption of fruits and vegetables, heavy drinking, and binge drinking have also remained stable over time both in the U.S. and MS over the last decade. MS adults consistently report a lower prevalence of physical activity and consumption of fruits and vegetables, and a lower prevalence of engaging in heavy and binge drinking in comparison to national statistics. Furthermore, Mississippians repeatedly self-report higher proportions of “fair or poor” health status and lack of health insurance compared to the nation. Evidence within this CDI Report demonstrates risk factors for chronic disease manifest in youth as well as adults. The 2011 YRBSS revealed, among MS youth, the prevalence of obesity, overweight, watching greater than or equal to three hours of television per day, and use of smokeless tobacco are higher than the national prevalence for these risk factors. MS youth report a lower prevalence of cigarette smoking, binge drinking, and general use of alcohol than the national statistics.

Despite a general decline over the last decade, heart disease remains the leading cause of death in both the U.S. and MS. In 2010, heart disease-related hospitalizations in MS accounted for an estimated \$611 million. Spatial distributions by county reveal two clusters of high mortality rates (305.1 – 414.5 deaths per 100,000) associated with diseases of the heart in the Delta region, including, Bolivar, Sunflower, Leflore, and Humphreys counties, and Tate, Tunica, Panola, and Quitman counties.

Between 2000 and 2009, the national and MS death rates for stroke mortality steadily declined. However, from 2009 to 2010, the MS rate increased by 10.3% and hospitalizations for stroke in MS accounted for an estimated \$131 million (2010). High death rates (63.3 – 94.0 deaths per 100,000) are present in a cluster of counties which includes Bolivar, Sunflower, Leflore, Holmes, Attala, and Madison counties. Furthermore, it is critical to highlight the presence of five additional Delta counties with high stroke-related death rates (55.6 – 66.2 deaths per 100,000) in proximity to this “cluster”, including, Carroll, Humphreys, Yazoo, Sharkey, and Warren counties. Conversely, several counties in the Northern section of the Delta region, including Desoto, Tunica, Tate, Panola, and Tallahatchie counties have low rates (29.9 – 42.0 deaths per 100,000).

Nationally, the trend for diabetes mortality depicts a general decline demonstrated by a 7.1% decrease between 2007 and 2009; while the trend in MS has been unstable. From 2006 to 2007, the MS diabetes death rate declined by 10.8%; however, between 2007 and 2010, this rate increased by 42.3% and hospitalizations for diabetes accounted for an estimated \$172 million (2010). There is a cluster of counties with high rates (47.1 – 96.2 deaths per 100,000) located within the Delta region, including, Tunica, Quitman, Coahoma, Bolivar, Sunflower, and Washington counties. In the Southeastern region of the state, the coastal counties of Hancock, Harrison, Jackson, and Pearl River exhibit a cluster of low rates (8.1 – 16.1 deaths per 100,000).

The national trend for cancer mortality has declined, while the trend in MS has remained relatively consistent over the last decade. Spatial distributions illustrate a cluster of counties with high rates (229.2 – 382.8 deaths per 100,000), including, Tunica, Panola, Quitman, Coahoma, Sunflower, Humphreys, Sharkey, and Yalobusha counties. There is also a cluster of high rates in the Southeastern section

of the state, including, Perry and Stone counties (229.2 – 382.8 deaths per 100,000), and Greene, George, Harrison, and Pearl River counties (206.0 – 229.1 deaths per 100,000). A large cluster of lower rates (138.8 – 182.0 deaths per 100,000) is also visible across the middle to middle-eastern section of the state, including, Hinds, Rankin, Scott, Newton, Jasper, Clarke, Neshoba, Kemper, Noxubee, Oktibbeha, and Choctaw counties.

Chronic disease mortality and related risk factors do not affect all Mississippians equally; data show health disparities exist among sub-groups within the MS population. In 2010, there were significant differences in mortality rates among male and female, and black and white adult sub-groups for diseases of the heart, cancer and diabetes, and between black and white adults for stroke. For diseases of the heart, cancer and diabetes, male and black adults experienced higher mortality rates than female and white sub-groups; while black adults demonstrated a higher stroke mortality rate than their white adult counterparts. Similar sub-group differences were significant for chronic disease risk factors as well. In 2010, a higher proportion of black and female adults were obese in comparison to their white and male counterparts, and male adults reported a higher prevalence of overweight than female adults. The prevalence of overweight and obesity was highest among those with the lowest income and lowest among those with the highest income. White adults had a higher proportion of high blood cholesterol than black adults, while the prevalence of high blood pressure and diabetes was highest among black adults in comparison to their white counterparts. The overall prevalence of high blood cholesterol, high blood pressure, and diabetes generally increased with increasing age for each of these risk factors. Black adults reported a higher prevalence of “fair or poor” health status than white adults, and the overall prevalence of self-reported “fair or poor” health status increased with increasing age and decreased

with increasing income. Higher proportions of male and black adults reported a lack of health insurance coverage than did their female and white adult counterparts. The prevalence of lack of health insurance coverage generally decreased with increasing income and increasing age. Significant differences among sub-groups in MS were also evident for behavioral risk factors. Male and white adults reported higher prevalence of meeting the recommended physical activity guidelines than their female and black adult counterparts, while a higher proportion of female adults reported consuming greater than or equal to five servings of fruits and vegetables daily in comparison to male adults. The prevalence of cigarette smoking, binge drinking and heavy drinking was higher among male adults than female adults.

Health disparities exist for chronic disease risk factors among youth as well. In 2011, black youth had a higher prevalence of obesity than their white counterparts, while higher proportions of males and black youth were overweight. Males and black youth also had a high prevalence of consuming five or more servings of fruits and vegetables daily compared to their female and white counterparts. Higher proportions of black youth reported watching three or more hours of television per day, while male and white youth had higher prevalence of engaging in recommended levels of physical activity, smoking cigarettes, and use of smokeless tobacco products. White youth had a higher prevalence of binge drinking compared to black youth. The overall prevalence of binge drinking and alcohol consumption increased with grade level.

Currently, there is no legislation in MS that imposes a statewide restriction on smoking in public establishments. A total of 74 MS town’s have adopted either a comprehensive (61) or partial (13) smoke-free air ordinance, representing 48 of 82 total MS Counties. Madison and Washington counties each

have four towns' that have a policy in place. The first smoke-free policy was adopted by Metcalf, MS (Washington County) in September 2002 and the most recent policies were adopted by Marks, MS (Quitman County) and Vaiden, MS (Carroll County) in July 2012. In the Delta region, a total of 24 smoke-free policies have been instituted, representing 15 of the 18 Delta counties.

Discussion

Provided current policy and intervention tactics for chronic disease remain unchanged and given that the population continues to age, national projections indicate 40.5% of Americans will have some form of CVD by 2030; increases in direct and indirect costs are eminent (5). MS adults and youth bear a disproportionate burden of chronic disease and related risk factors in comparison to the U.S. population and these burdens afflict significantly higher proportions of disparate groups within the state. The health disparities in MS will likely continue to remain if interventions fail to address social and economic determinants of health. The national CVD projections indicate stroke will have the largest relative increase in annual medical costs and identifies hypertension as the most costly contributor (5). In MS, black male and female adults experience higher rates of death from stroke and are more likely to report hypertension than white adults. Diabetes is a major cause of heart disease and stroke (6); in MS the prevalence of diabetes also disproportionately affects black adults, while black males have the highest diabetes death rate statewide. Black males are also markedly burdened by deaths related to diseases of the heart and cancer, and represent the highest proportion of MS adults that lack health insurance coverage. Health insurance coverage is strongly related to better health outcomes (7). The high prevalence of MS males that lack health insurance coverage combined with evidence that males are less

likely to utilize medical care (8) may contribute to the progression of chronic disease and subsequent mortality among black males in MS. Furthermore, disease burden maps reveal spatial clusters of high chronic disease mortality predominantly in the Delta region. According to the U.S. Census Bureau, the MS Delta is among the poorest areas in the country, and thus, poor economic conditions which plague this region likely influence access to healthcare and contribute to the burden of poor health status among residents.

Health disparities exist in chronic disease deaths paralleling disparities observed in multiple risk factors among MS adults and youth. Smoking is the leading preventable cause of death in the U.S. While the overall prevalence of smoking has declined since the 1960's (5), the proportion of Mississippians that smoke remains higher than the national statistic. This risk factor alone contributes substantially to the prevalence of chronic disease and related mortality statewide. In MS, adult and youth males have a higher proportion of smokers than their female counterparts, and black males have disproportionately higher mortality rates for diseases of the heart, diabetes, and cancer, all of which smoking is a primary risk factor. Moreover, the progress observed from declining smoking rates nationwide is offset by increasing trends in obesity prevalence (5). This effect may be experienced most notably among Mississippians because MS adults and youth lead the nation in obesity, with a greater proportion of black and female adults being obese. Hence, while female adult and youth have a lower prevalence of smoking, the observed increases in weight status may negate many of the health benefits non-smokers are afforded. Furthermore, among black Mississippians, there are associations between age and income and multiple risk factors, including, obesity, high blood pressure and diabetes. Conversely, adequate levels of physical activity and consumption of fruits and vegetables generally increase with increasing income levels and

generally decrease with increasing age. These findings further substantiate the relationships among education, income and health status.

Decreasing the prevalence of risk factors for chronic disease is difficult and heavily reliant on behavior change, leaving no single approach as the “best” method for intervention. As such, implementation of smoke-free policies at the local level has proven to be a starting point in many MS communities. Evidence from the MS Tobacco Data shows a 27.7% and 13.4% reduction in heart attack hospital admissions in Starkville and Hattiesburg, MS, respectively, following the implementation of a comprehensive smoke-free ordinance in each town (9). This equates to medical cost savings of over \$288,000 in Starkville and over \$2 million in Hattiesburg (9). These data suggest the potential for a substantial decrease in the number of heart attacks and associated costs if more MS communities or the state implemented smoke-free laws (9). As demonstrated by smoke-free air ordinances, policy at the local, regional and the state level have the potential to impact health at the population level and may be one of the most effective strategies for intervention in MS.

Recommendations

The following recommendations are congruent with evidence-based strategies encompassing policy, environmental and systems-level interventions, which warrant collaboration from multiple sectors and diverse disciplines with the intention to: 1) foster cultural norms which support healthy behavior change and sustainability, 2) construct environments that reduce exposures that contribute to risk factors, and 3) develop systems-based approaches to provide the capacity for a focus on health and overall wellbeing. Based on the findings contained within the MS CDI Report, recommendations are four-fold:

- 1) Four chronic disease risk factors warrant immediate attention at the population level, including, smoking, hypertension, diabetes and obesity. Resources should continue to be allocated for the implementation of effective programs and intervention strategies aimed at reducing exposure to secondhand smoke, increasing smoking cessation, reducing the onset of smoking and tobacco use, decreasing hypertension, increasing blood pressure screening, improving disease self-management, increasing adherence to regular physical activity, improving dietary behaviors, and preventing overweight and obesity.
 - a. At the local-level, MS communities should continue to be encouraged and provided assistance in developing, adopting and enforcing comprehensive smoke-free policy. Evaluation of policy by way of cost-benefit analysis and health outcomes must be conducted and evidence disseminated to inform state- and local-level policy-makers in their decision making processes so that health is a priority.
 - b. Strategies for hypertension and diabetes screening and patient self-management should be considered from a community-based, multi-disciplinary perspective, with focus on disparity reduction.
 - c. Policy and environmental strategies to promote regular physical activity, encourage preparation and consumption of healthy foods, and reduce the consumption of unhealthy foods and sodium intake should continue to be explored and promoted.
 - d. Overweight and obesity prevention should be active at the state- and local-levels. Obesogenic environments that support

sedentary behavior and poor diet influence people of all race, sex, and age groups. Strategies to curb the obesity epidemic in MS must include input from multiple entities at the local- and state-levels, and must address social and cultural contexts, and various environments, including the home, neighborhood, school, workplace, recreational, faith-based, and food settings.

2) The need to address underlying social determinants of health in MS is eminent, specifically among communities of color, low socioeconomic status and areas with low educational attainment rates. Social, cultural and economic factors that influence health are easily defined, however impacting the context of these factors remains a challenge and thus requires collaboration from multiple sectors, including,

economic development corporations, public health, educational systems, policy-makers, advocates, healthcare practitioners and insurance providers, and more.

3) Intervention strategies should be supported by community-based approaches that will build capacity and sustainably. In order for successful strategies to be sustainable and to have population reach, interventions should be multi-level and multi-disciplinary.

4) Finally, all programmatic strategies must include, and be committed to, allocating resources to rigorous evaluation and dissemination practices. Multiple forums to disseminate successful strategies and health outcomes statewide need to be identified and established.

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