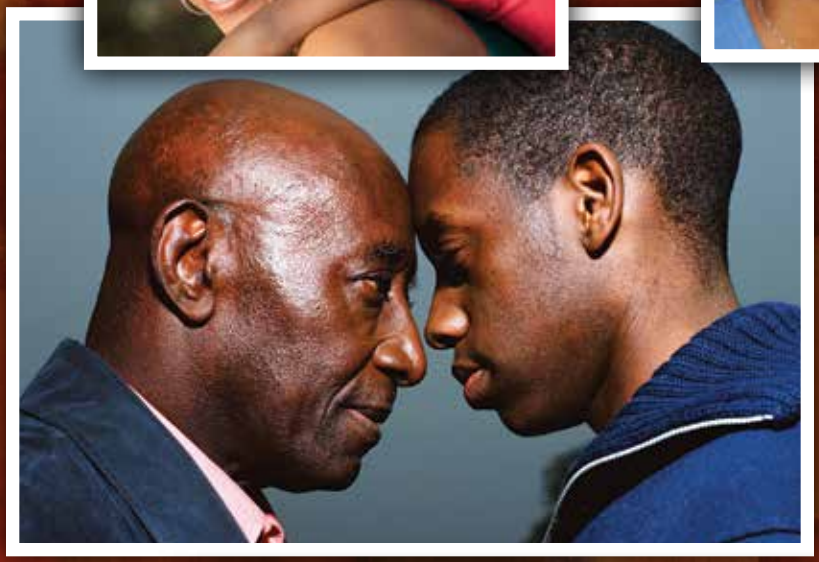
MFH
Missouri Foundation for Health

Health Equity Series:

African American Health Disparities in Missouri

April 2013



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This report is based on data, analysis, and narrative prepared by the Missouri Department of Health and Senior Services, Section for Epidemiology and Public Health Practice
Edited by A. Coleman, Health Policy Associate

Missouri Foundation for Health is an independent philanthropic foundation dedicated to improving the health of people in our region. MFH works as a changemaker, educator and partner to promote community health and increase access to care for the uninsured and underserved.

To address health issues from a systemic perspective, MFH's Health Policy Portfolio provides timely research and information on health-related issues. Recent topics include impact of the federal health reform law and the affordability of health coverage. Policymakers and community leaders can access a variety of timely publications and research on issues that affect the health of Missourians at www.mffh.org or www.covermissouri.org.

Preface

In an effort to document health disparities for racial and ethnic groups in Missouri, the Missouri Foundation for Health (MFH) commissioned the Missouri Department of Health and Senior Services to assemble data on the state's African American population. Similar reports were compiled in 2004 and 2009 and presented findings on health disparities between Missouri's African American and white populations for key indicators. This current publication provides an update to the previous reports. Where possible, the current publication makes comparisons between recent and past rates and ratios to illustrate where progress has been made and challenges that may lie ahead.

The most current data available at the time of writing were used whenever possible. In the 2009 report, that was often data from the 2006 time period. In this report, the most current data are usually from 2010. This report uses bridged-race definitions, in which each person is assigned to a single race group. (Bridged-race definitions do not include a multi-race option). It provides data on African American and white populations regardless of ethnicity (e.g., the white definition includes both non-Hispanic and Hispanic white persons). This is consistent with the data presented in the 2009 report. As in previous reports, only Missouri resident data are included in all rate calculations.

Readers may also find a companion publication, *Health Equity Series: Hispanic Health Disparities in Missouri*, to be of interest. We hope these updated reports not only expand the understanding of health disparities in our state but also provide a sound basis for programs seeking to reduce health disparities in Missouri.

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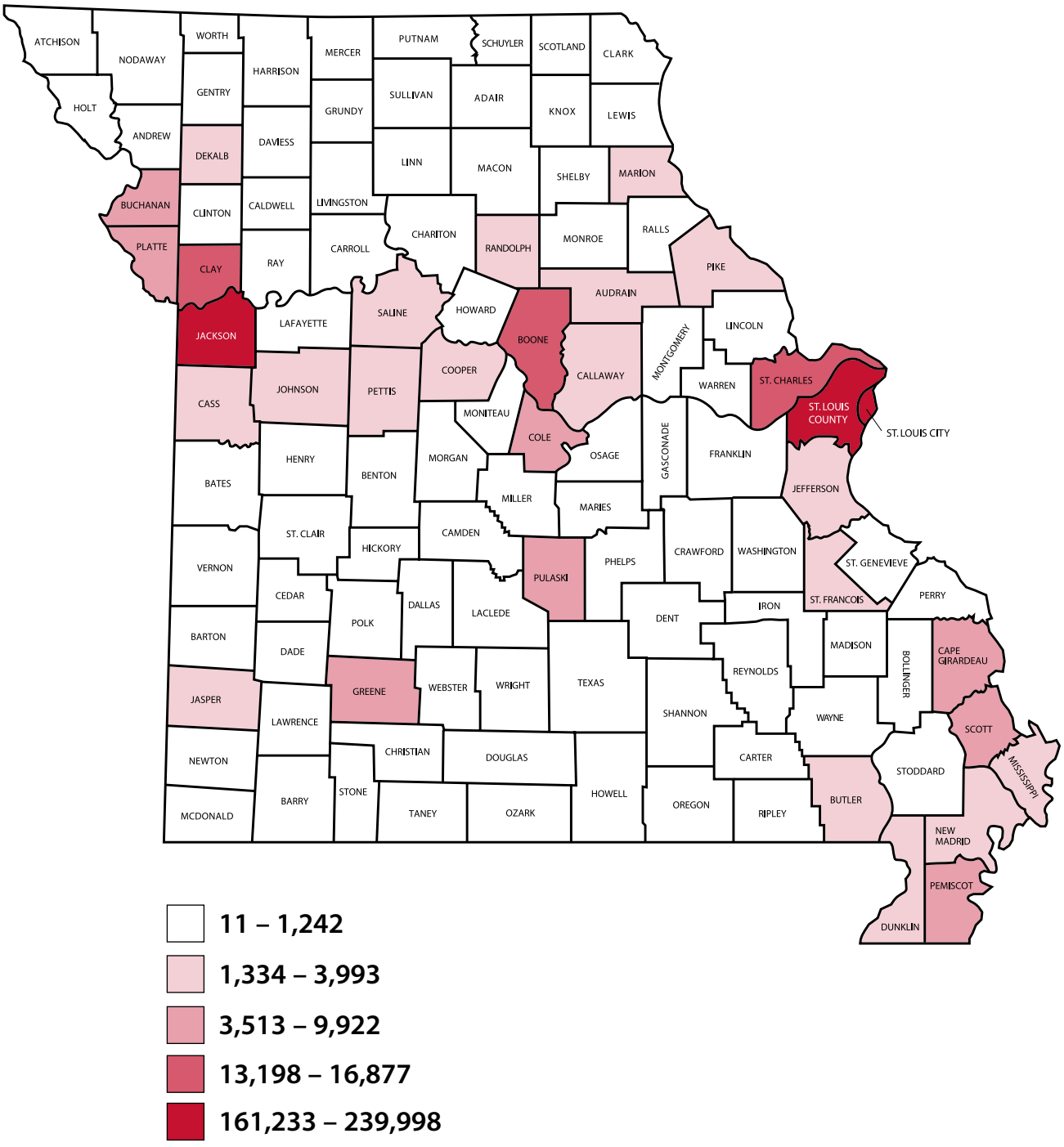
2010 African American Population Counts in Missouri*



*National Center for Health Statistics, Bridged-race population estimates by county, single-year of age, bridged race, Hispanic origin, and sex (April 1, 2010). Prepared under a collaborative arrangement with the U.S. Census Bureau (Nov 17, 2011). http://www.cdc.gov/nchs/nvss/bridged_race.htm.

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According to 2010 Census estimates, Missouri's population is nearly 6 million persons. The overall state increase in population was 7.0 percent from 2000 through 2010, somewhat below the national average of 9.7 percent. Of the 5,988,927 persons living in the state, African Americans make up 12.3 percent (734,657), a slight increase from 11.6 percent in 2000. Missouri's proportion of African Americans is similar to that of the United States as a whole, where African Americans make up 13.6 percent of the just over 300 million residents. In Missouri, the African American population has increased by almost 85,000 since 2000, a change of 13.1 percent. In contrast, the white population increased 5.3 percent over the same period.

This report provides evidence that Missouri's African American population lags behind the white population on many health indicators. Given the different obstacles that urban and rural populations face in achieving high health standards, knowing where African Americans live in Missouri can provide a better understanding of some of the health disparities they encounter. The African American population is not distributed evenly throughout the state. The largest concentrations of African Americans can be found in the metropolitan areas of St. Louis (St. Louis County and St. Louis City) and Kansas City (Jackson County). Almost 78 percent of the total African American population in Missouri resides in those three counties. This figure is slightly lower than in 2000, when 82.5 percent of Missouri's African American residents lived in those three counties. The next largest concentrations of African Americans are found in the suburban areas of Kansas City and St. Louis, as well as in several of the next largest cities in Missouri (Cape Girardeau, Columbia, Jefferson City, and Springfield). The 'Bootheel' region (Scott, Mississippi, New Madrid, Pemiscot, and Dunklin Counties) in southeast Missouri contains the largest rural concentration of African Americans.

In five counties, African Americans make up more than 20 percent of the total population. Just over 50 percent of St. Louis City's population is African American. This is by far the highest

Data From:
Missouri Department of Health and Senior Services, Bureau of Health Care Analysis and Data Dissemination

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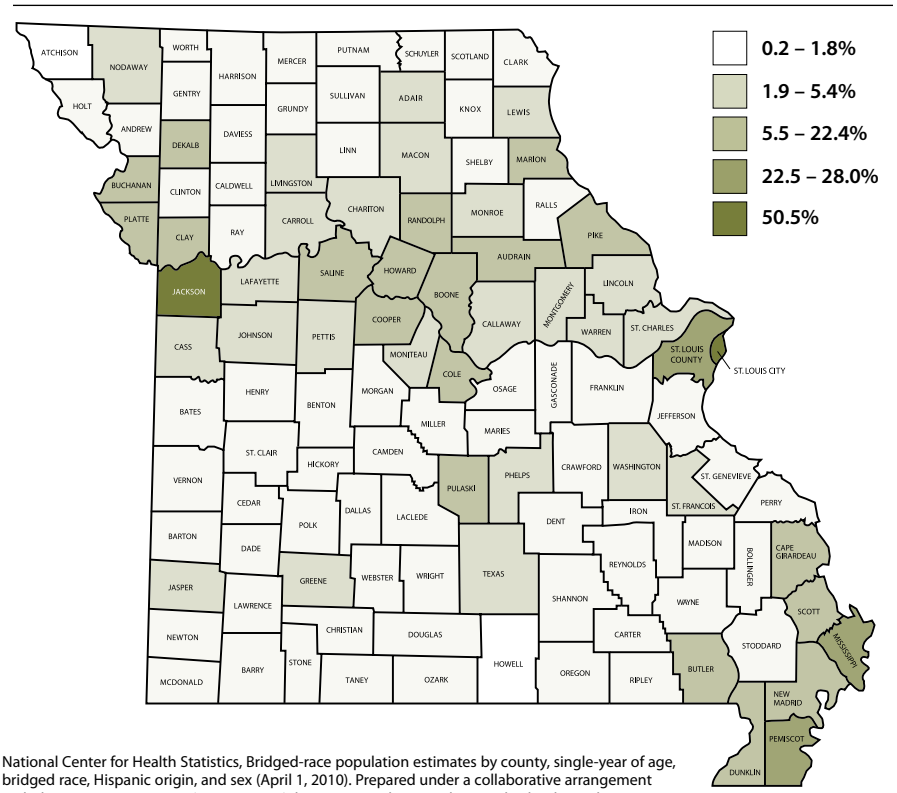
percentage for any county in the state. The other four counties above the 20 percent threshold (Pemiscot, Jackson, Mississippi, and St. Louis County) have an African American population ranging from 24 to 28 percent of the county residents. Two geographic regions, the central region around the Columbia/Jefferson City area and three 'Bootheel' counties (Scott, New Madrid, and Dunklin) in southeast Missouri, have population percentages near the state average. Aside from these areas, African American populations are relatively higher along the I-70 corridor between St. Louis and Kansas City and in areas to the immediate north. In general, the north central parts of the state have higher percentages of African American residents than areas in the Southern part of the state, excluding the 'Bootheel' region. Greene County, which contains Springfield, is the largest county in the southern part of the state but has a relatively small African American population of only 3.6 percent. Jasper County, which contains most of the city of Joplin, is similar, with an African American population of 2.8 percent. A final noteworthy area is Pulaski County, which has an African American population just over 13 percent, which is higher than the state average and is most likely due to the presence of the military base at Fort Leonard Wood.

African American Population Percentages, 2010



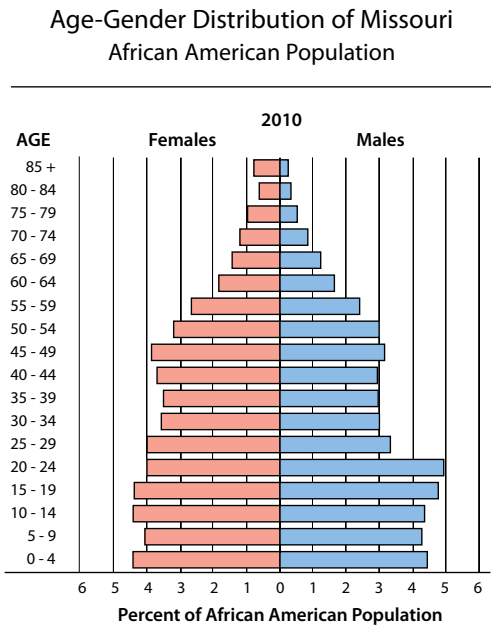
National Center for Health Statistics, Bridged-race population estimates by county, single-year of age, bridged race, Hispanic origin, and sex (April 1, 2010). Prepared under a collaborative arrangement with the U.S. Census Bureau (Nov 17, 2011). http://www.cdc.gov/nchs/nvss/bridged_race.htm.

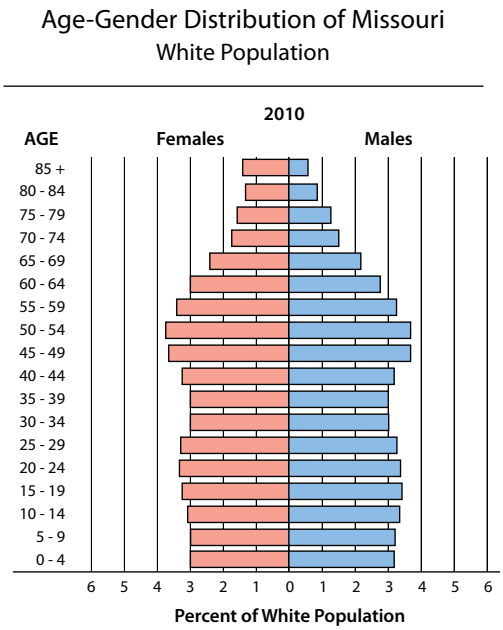
African American Health Disparities in Missouri

Another demographic factor of interest is the high rate of natural increase (births minus deaths) among African Americans. Based on data from the Missouri Vital Records System and the two most recent Census counts (2000 and 2010), the African American natural increase is 8 percent, compared to 3 percent for the white population. Overall, the natural increase rate for all residents of the state is 4 percent. For both African Americans and whites, about 60 percent of the total population increase occurring from 2000 through 2010 is a result of natural increase. The remaining 40 percent for both races is attributable to net migration into the state.

Age pyramids for the white and African American race groups show distinct differences. The wider base at the bottom of the African American population pyramid indicates a large population of younger residents. In fact, the largest population groups are all under 25 years of age. In contrast, the white population has large middle and upper-middle age groups. The widest parts of the white pyramid are found in the bars representing 45- to 59-year-olds (i.e., Baby Boomers). Persons ages 65 and older make up over 15 percent of the white population but only around 8 percent of the African American population. (Throughout this report, the large differences in the age distributions of the two races are controlled through the use of age-adjusted figures when appropriate.)

African Americans have long had higher fertility rates than whites; however, the difference in fertility rates between the two groups has decreased over the past 20 years. In 1990, African Americans





African American Health Disparities in Missouri

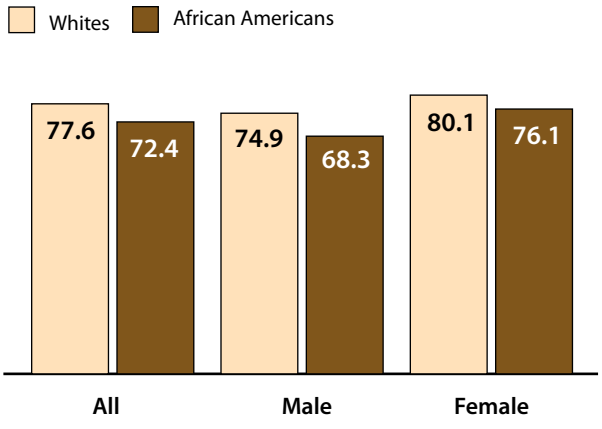
had a fertility rate of about 30 births higher per 1,000 females aged 15 to 44 (96.6 live births for African Americans versus 63.9 for whites). By the late 1990s, the African American rate had dropped 25 percent to an average of approximately 70 live births per 1,000 females. In contrast, the white fertility rate declined by only about 5 percent, to an average near 60. Over the past ten years, the rates have mildly fluctuated for both race groups, with the African American rate consistently about 10 points higher than the white rate. Fertility rates for both races were slightly higher (approximately 5%) in 2009 compared to the beginning of the decade.

Differences also exist between African Americans and whites in terms of life expectancy. Based on 2004-2008 birth and death data, life expectancy at birth for white residents of Missouri is 77.6 years, compared to 72.4 years for African American residents. The life expectancy disparity is greater among men. White men live about 6.5 years longer than African American men. Among women, the difference is only 4 years.

African American Health Disparities

While these demographic factors provide a background for the comparisons made throughout this report, they do not offer reasons for the wide disparities between the African American and white populations in Missouri. The higher rates of diseases and health conditions among African Americans are often attributed, at least in part, to lower incomes, higher rates of poverty, and less insurance coverage. These factors impact health status by making it more difficult to access timely, high quality health care. Lifestyle, behavior, negative attitudes of some providers, and many other factors, some of which are not well understood, also contribute to the disparities between African Americans and whites.

Life Expectancy at Birth
Missouri, 2004-2008



The purpose of this report is to highlight some of the key health indicators and risk factors where the disparities between the two major race groups are the greatest in Missouri. A disparity between African American and white rates can be expressed as a ratio between the corresponding rates. If no disparity is present, the ratio between the African American

and white rates is 1 to 1. If the first term of the ratio is greater than one (e.g., 2 to 1), the African American rate is higher than the white rate. Conversely, if the first term of the ratio is less than one (e.g., 0.5 to 1), the African American rate is lower than the white rate. In many instances, this report compares the key indicators of today to indicators highlighted in the 2009 report on the same topic (see Appendix for 2009 ratios).

Using the DHSS Community Data Profiles and MICA (Missouri Information for Community Assessment) Websites

Much of the health data represented in this report may be accessed on the Missouri Department of Health and Senior Services (DHSS) Community Data Profiles and MICA websites.Users can easily create different types of tables, graphs, charts, or maps pertaining to minority health indicators.

The following step-by-step guide offers detailed instructions on accessing health disparities data on the DHSS Community Data Profiles website.

1. Go to the DHSS Community Data Profiles website: http://health.mo.gov/data/CommunityDataProfiles/index.html

2. From the topic list, select a Profile.Then use the pull-down menu to choose whether to view data by city, county, or at the state level.(Note: Health disparities data are only available for geographies with significant minority populations.These include the State of Missouri, Kansas City, St. Louis City, and Boone, Buchanan, Cape Girardeau, Cass, Clay, Cole, Dunklin, Greene, Jackson, Jasper, Mississippi, New Madrid, Pemiscot, Platte, Pulaski, St. Charles, St. Louis, and Scott Counties.)Click the Submit button.

3. The requested data table will appear.If health disparities data are available for the selected geography, a tab labeled “Race” will appear at the upper left corner of the table.Click this tab to access the health data for this Profile according to race.

4. The Trend Line and Comparison Bar Graph columns provide links to available charts and graphs.Users can create a graph showing a three-year moving average of African American and white rates.In addition, users can create a bar chart showing the white/African American rates for a specific indicator in

selected counties or compare indicators within a single geography.

The following step-by-step guide offers detailed instructions on accessing health disparities data on the DHSS MICA website.

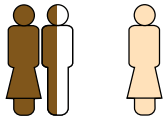
1. Go to the DHSS MICA website: http://health.mo.gov/data/mica/MICA/
2. Choose a topic from the list of MICA data sets.
3. Select a viewing option. Options may include county/city tables, maps, or zip code tables.Each option provides a query screen that allows users to customize the data output.

For more information on using the Community Data Profiles and MICAs, please refer to the User Handbook at http://health.mo.gov/data/mica/MICA/CHAIPTraining.html or contact the DHSS Bureau of Health Care Analysis and Data Dissemination at 573-751-6272.

Socio-Economic Factors

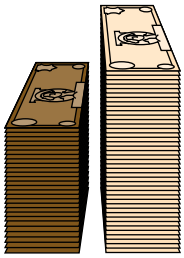
Ratios of African Americans to Whites for Selected Socio-Economic Indicators

Missouri, 2011



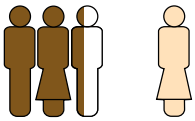
1.5 to 1

Self-Pay/No Charge or Medicaid as Expected Pay Source (2010*)



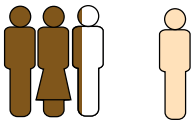
0.6 to 1

Median Household Income



2.3 to 1

Population Below Poverty Level



2.2 to 1

Families with Children Under 18 Years Old Below Poverty Level

Source: American Community Survey, U.S. Census Bureau, unless otherwise noted

*Missouri Patient Abstract System, Bureau of Health Care Analysis and Data Dissemination, Missouri Department of Health and Senior Services

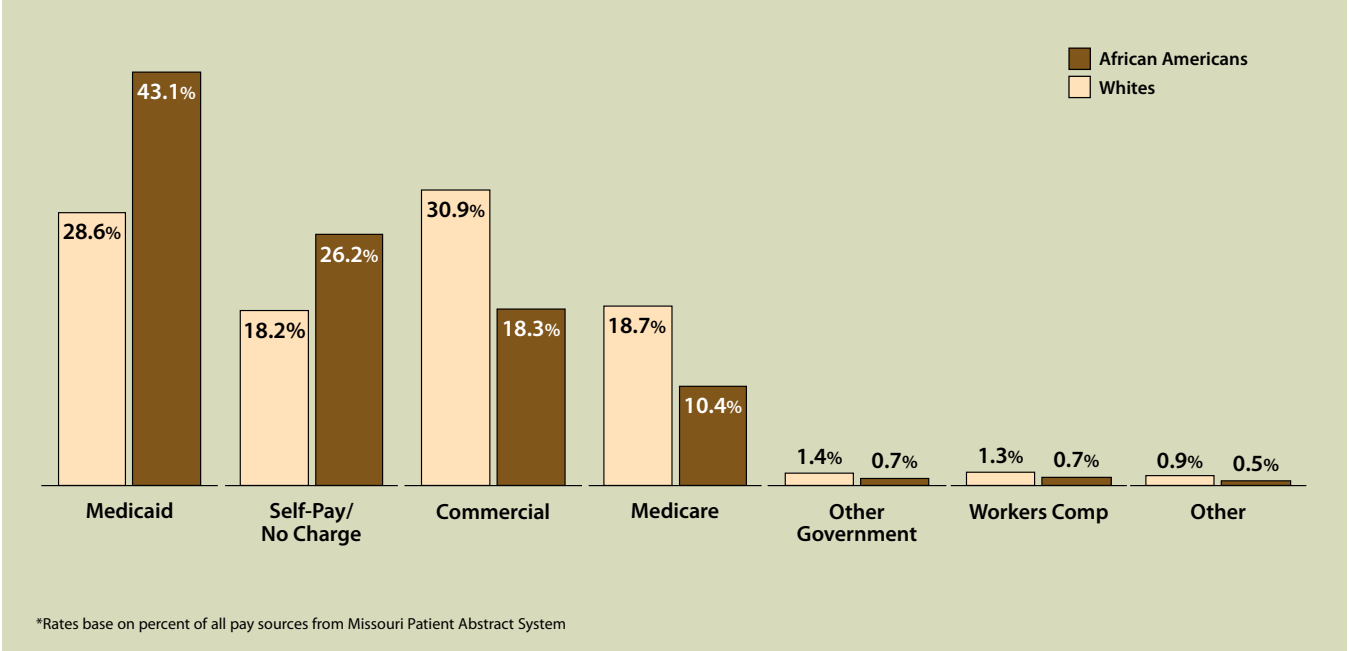
African Americans
Whites

Expected Pay Source for Emergency Room Visits

Expected Pay Source for Emergency Room Visits – *The primary source of payment for the patient's hospital or emergency room stay is based on information supplied at the time of admission.*

Expected pay source for emergency room care can be used to analyze the types of health insurance different demographic groups are accessing. Compared to whites, African Americans are over-represented in the Self-Pay/No Charge and Medicaid pay source groups and under-represented in the Commercial Insurance group. Nearly 70 percent of African Americans report either Self-Pay/No Charge or Medicaid as their expected pay source compared to 46.8 percent of the white population. In contrast, only 18.3 percent of African Americans report access to Commercial Insurance, while 30.9 percent of whites use Commercial Insurance. The percentages of both African Americans and whites using Medicaid or Self-Pay/No Charge rose between 2006 and 2010. The percentages for Commercial Insurance are down about 5 percent for both race groups. These findings are consistent with the latest U.S. Census reports from 2011 which show that nationally 21.1 percent of African Americans under age 65 lack health insurance compared to 17.3 percent of whites.[1]

Expected Pay Source for Emergency Room Visits*
Missouri, 2010

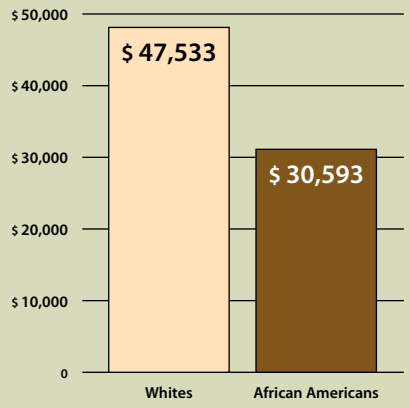


*Rates base on percent of all pay sources from Missouri Patient Abstract System

Median Household Income

The relationship between income and health is not entirely clear. While lower income levels may not directly cause poor health outcomes, several studies have indicated that some type of relationship exists. For example, a national survey found that people with lower socioeconomic status not only die at a younger age and have a higher likelihood of having a major illness or condition, but also experience daily colds, influenza, headache, and pain at higher rates than those with higher socioeconomic status.[2] According to 2011 American Community Survey (ACS) data from the U.S. Census Bureau, the median household income in Missouri is 55 percent higher for whites than for African Americans. This places African Americans at a greater risk for poor health outcomes. However, household income estimates from 2006 through 2011 show that African American incomes increased by 10 percent during that time period. In contrast, white incomes increased by 5 percent; thus, the disparity ratio between the two groups decreased 8 percent.

Median Household Income
Missouri, 2011



Source: 2011 American Community Survey, U.S. Census Bureau

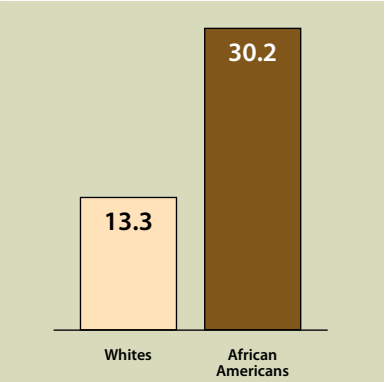
Median Household Income *– When household incomes are arranged in rank order, the median is the income at the midpoint of that ranking.*

Population Below Poverty Level

Percent of Population Below Poverty Threshold *– The percent of individuals whose total income [which consists of "wage or salary income; net self-employment income; interest, dividends, or net rental or royalty income or income from estates and trusts; Social Security or Railroad Retirement income; Supplemental Security Income (SSI); public assistance or welfare payments; retirement, survivor, or disability pensions; and all other income"] before taxes falls below the poverty income threshold. Members of a family have the poverty level of the family; individuals not in families have their income compared to the appropriate threshold. It is not possible to determine the poverty status of individuals under 15 not living in families or of persons residing in prisons, nursing homes, military barracks, or unconventional housing situations that are not shelters.*[3]

Experts have found that "poverty and health are inextricably intertwined."[4] Research shows that Americans living in extreme poverty have "more chronic illness, more frequent and severe disease complications, and make greater demands on the health care system."[5] U.S. Census Bureau figures indicate that African Americans are more than twice as likely as whites to fall below the poverty level. Estimates from 2011 show that 30.2 percent of all African Americans live below the poverty level, compared to 13.3 percent of all whites. The poverty rate for whites increased from 10.6 percent in 2006 to 13.3 percent in 2011, while the African American rate decreased slightly during that time (from 30.6% in 2006 to 30.2% in 2011). These changes decreased the health disparity ratio from 2.9 in 2006 to 2.3 in 2011.

Percent of Population Below Poverty Level
Missouri, 2011



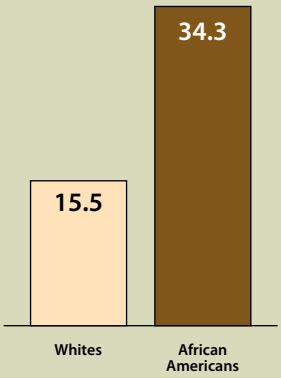
Source: American Community Survey, U.S. Census Bureau

Families with Children Below Poverty Level

Percent of Families with Children Less Than 18 Years Old Below Poverty Level *– The percent of families with children less than 18 years old whose total income [which consists of "wage or salary income; net self-employment income; interest, dividends, or net rental or royalty income or income from estates and trusts; Social Security or Railroad Retirement income; Supplemental Security Income (SSI); public assistance or welfare payments; retirement, survivor, or disability pensions; and all other income"] before taxes falls below the poverty income threshold for a family of a given size and age distribution. There are 48 possible poverty thresholds based on different family sizes and income levels.*[6]

Research shows that poverty is particularly difficult on children. Children in poverty are more likely to suffer from poor health, which often leads to poor educational outcomes and a lack of opportunities later in life.[7] Estimates for 2011 show that 34.3 percent of African American families with children under age 18 fall below the poverty level. This is nearly three times the rate for white families (15.5%). One reason for this disparity is the large number of African American families headed by females only. The poverty rates for married families with children are 11.1 percent among whites and 6.9 percent among African Americans. This compares to 37 percent of white families and 49 percent of African American families headed

Percent of Families with Children Less Than 18 Years Old Below Poverty Level
Missouri, 2011



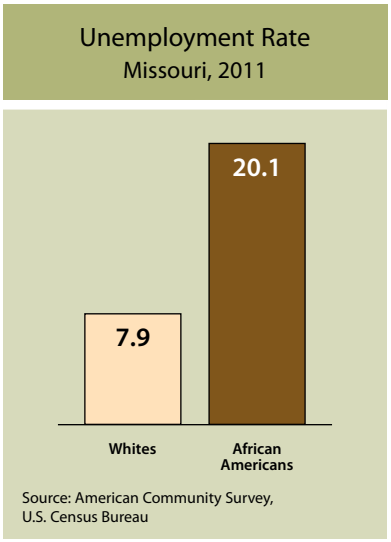
Source: American Community Survey, U.S. Census Bureau

by a female only. Since 2006, overall poverty rates for families with children have gone up slightly among whites (12% in 2006 versus 15.5% in 2011) but are virtually unchanged for African Americans (34% for both time periods).

Unemployment Rate

The 2011 unemployment rate for African Americans is 20.1 percent, which is 2.5 times the white rate of 7.9 percent. The unemployment rate increased for both race groups between 2006 and 2011. The white rate was 5.2 percent in 2006, while the African American rate was 14.7 percent. These trends mirror national patterns. Overall U.S. unemployment increased from 6.4 percent in 2006 to 10.3 percent in 2011. The national African American unemployment rate is about twice the white rate (17.7% versus 8.9%).

Research on recently unemployed workers who lost their job through no fault of their own shows that they are more likely than continuously employed persons to develop new negative health outcomes such as high blood pressure, diabetes, or heart disease in the ensuing year and a half.[9] A national study of African American men showed that those who were unemployed were more than four times more likely to suffer from major depression for both a 12-month period and over the course of their lifetime compared to employed men.[10] However, more broadly based studies have found it difficult to distinguish between unemployment and other socio-economic indicators (i.e., poverty) when analyzing impact on health.[11]



Unemployment Rate *– Unemployment rate is the number of unemployed people as a percentage of the civilian labor force. All civilians age 16 and older are classified as unemployed if they (1) were neither "at work" nor "with a job but not at work" during the reference week, (2) were actively looking for work during the last 4 weeks, and (3) were available to start a job. Also counted as unemployed are individuals who did not work at all during the reference week, were waiting to be called back to a job from which they had been laid off, and were available for work except for temporary illness.*[8]

Behavioral Risk Factors and Chronic Conditions

Ratios of African American to White Rates for Selected Behavioral Risk Factors and Chronic Diseases/Conditions

Missouri, 2011

Source: 2011 Missouri County-Level Study

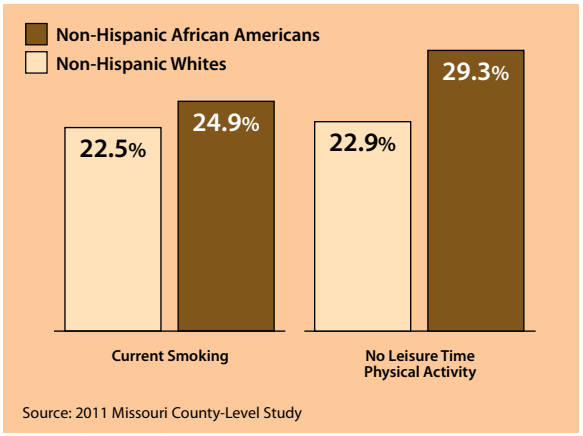
This section has a data source that uses race and ethnicity.

Non-Hispanic African Americans
Non-Hispanic Whites

Behavioral Risk Factors

Smoking and physical inactivity are two major risk factors for multiple chronic diseases. For 2011, there is no statistically significant difference between the current smoking prevalence of non-Hispanic whites and non-Hispanic African Americans; however, the prevalence of no leisure time physical activity is significantly higher among non-Hispanic African Americans than among non-Hispanic whites.

Percentage of Adults Who Engage in Selected Behavioral Risk Factors
Missouri, 2011



Source: 2011 Missouri County-Level Study

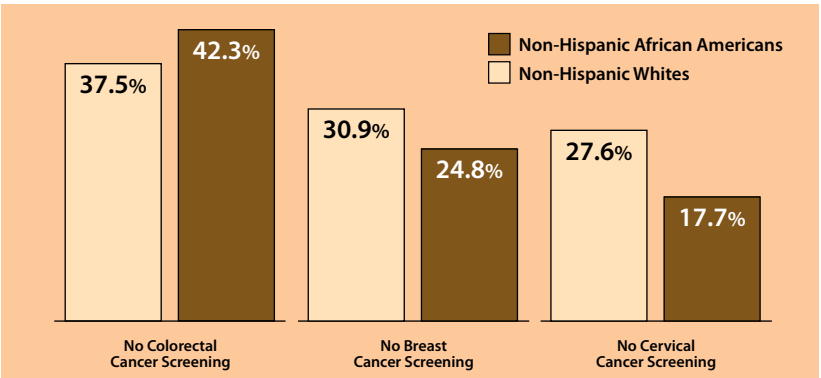
Current Smoking *– Percentage of adults ages 18 and over who have smoked at least 100 cigarettes in their lifetime and now smoke every day or some days.*

No Leisure Time Physical Activity *– Percentage of adults ages 18 and over who, other than a regular job, did not participate in physical activities or exercise such as running, calisthenics, golf, gardening, or walking for exercise in the past 30 days.*

Lack of Cancer Screenings

Early detection of cancer greatly improves a person's chances of survival. However, many Missourians do not receive recommended screenings for colorectal cancer, breast cancer, and cervical cancer. The 2011 prevalence of no colorectal cancer screening is about 40 percent among both race groups, but the prevalence of no breast cancer screening is significantly lower among non-Hispanic African Americans than non-Hispanic whites. Likewise, the prevalence of no cervical cancer screening is significantly lower among non-Hispanic African American women than non-Hispanic white women.

Percentage of Adults Who Lack Selected Cancer Screenings
Missouri, 2011



Source: 2011 County-Level Study

No Colorectal Cancer Screening *– Percentage of adults ages 50 and older that had no colonoscopy or sigmoidoscopy within the past 10 years.*

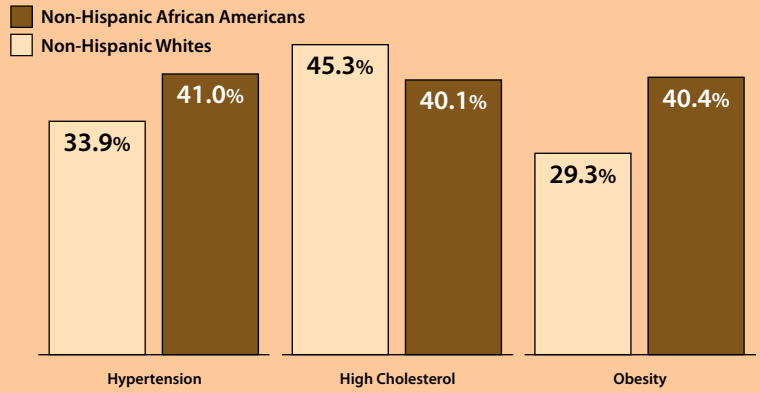
No Breast Cancer Screening *– Percentage of women ages 40 and older that had no mammogram or clinical breast exam within the last year.*

No Cervical Cancer Screening *– Percentage of women ages 18 and older that had no pap smear within the last 3 years.*

Chronic Disease Risk Factors

Hypertension, high cholesterol, and obesity are three conditions that increase an individual's risk of developing other chronic conditions. The 2011 prevalence of hypertension among non-Hispanic African Americans is significantly higher than among non-Hispanic whites. The non-Hispanic African American prevalence rate for obesity of 40.4 percent is also significantly higher than the white prevalence of 29.3 percent. However, the prevalence of high cholesterol is significantly lower for non-Hispanic African Americans compared to non-Hispanic whites.

Percentage of Adults with Selected Chronic Disease Risk Factors
Missouri, 2011



Source: 2011 County-Level Study

Hypertension *– Percentage of adults ages 18 and older who had ever had their blood pressure checked and had been told by a doctor, nurse or other health professional that they have high blood pressure.*

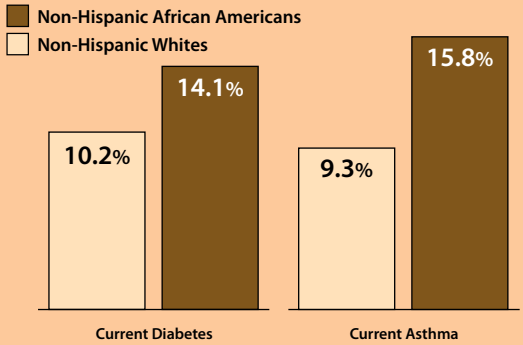
High Cholesterol *– Percentage of adults ages 35 and older who have had their cholesterol checked and were told by a doctor, nurse or other health professional that they have high cholesterol.*

Obesity *– Percentage of adults ages 18 and over who are obese based on body mass index (BMI) calculated from self-reported height and weight.*

Diabetes and Asthma

Diabetes and asthma are chronic diseases that often interact with other conditions. For 2011, the prevalence of diabetes among non-Hispanic African Americans is significantly higher than among non-Hispanic whites. The prevalence of current asthma is also higher for non-Hispanic African Americans than for non-Hispanic whites.

Percentage of Adults with Diabetes and Percentage of Adults with Asthma
Missouri, 2011



Source: 2011 Missouri County-Level Study

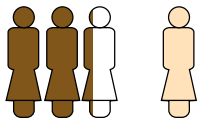
Current Diabetes *– Percentage of adults ages 18 and over who had ever been told by a doctor that they have diabetes.*

Current Asthma *– Percentage of adults ages 18 and over who had ever been told by a doctor, nurse or other health professional that they have asthma.*

Maternal and Child Health

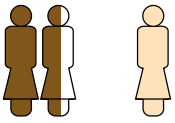
Ratios of African American to White Rates for Selected Maternal and Child Health Indicators

Missouri, Selected Years



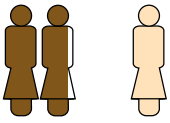
2.2 to 1

Inadequate Prenatal Care (2010)



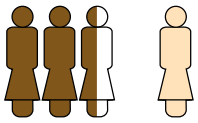
1.6 to 1

Premature Birth (2010)



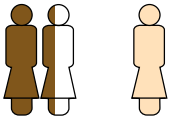
1.9 to 1

Low Birth Weight (2006-2010)



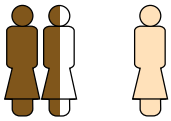
2.4 to 1

Infant Death (2001-2010)



1.3 to 1

Pre-pregnancy Obesity (2006-2010)



1.5 to 1

Postpartum Depression (2009-2010*)

Source: Bureau of Vital Statistics, Missouri Department of Health and Senior Services, unless otherwise noted
Rates are per 100, unless otherwise noted. Refer to each section for denominator information.

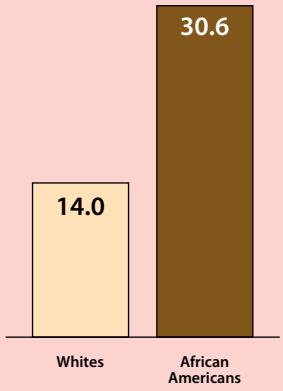
*Missouri PRAMS

African Americans
Whites

Inadequate Prenatal Care

The rate of African American mothers with inadequate prenatal care is more than double the rate for white mothers. This racial disparity remained relatively stable over the past decade. Although statistically significant decreases were observed for both African Americans and whites during the latter part of the 1990s, the rates have not changed much since 2000. Beginning in 2010, additional questions on prenatal care were added to the birth certificate. These questions increased the specificity in reporting of this indicator. As a result, increased yearly rates of inadequate prenatal care are observed for 2010 data compared to prior years. The 2010 rates probably do not reflect a true increase in the prevalence of inadequate prenatal care. Rather, due to the new questions, the increased 2010 rate is likely closer to the true rate. A multitude of reasons contribute to the lack of adequate prenatal care for Missouri mothers. These reasons include lack of transportation, lack of child care, shortage of local physicians who accept Medicaid, overly-busy physicians, lack of understanding of the need for care, other priorities, and pregnancy denial.

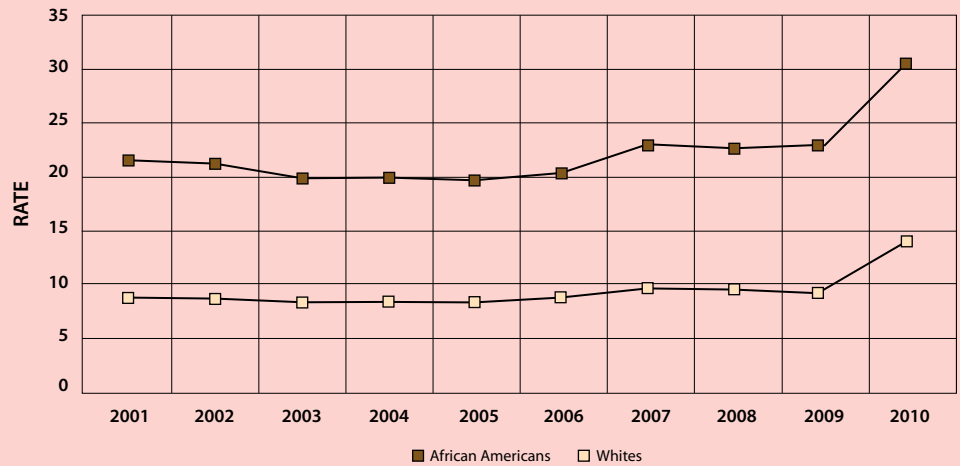
Inadequate Prenatal Care Rates*
Missouri, 2010



*Rates per 100 Live Births Known Prenatal Care Status

Inadequate Prenatal Care *– Inadequate prenatal care is defined as fewer than five prenatal care visits for pregnancies shorter than 37 weeks gestation, or fewer than eight prenatal care visits for pregnancies 37 or more weeks gestation, or prenatal care that began after the first four months of pregnancy. If adequacy of prenatal care could be determined even if month care began or the number of prenatal visits was unknown, then these records were included.*

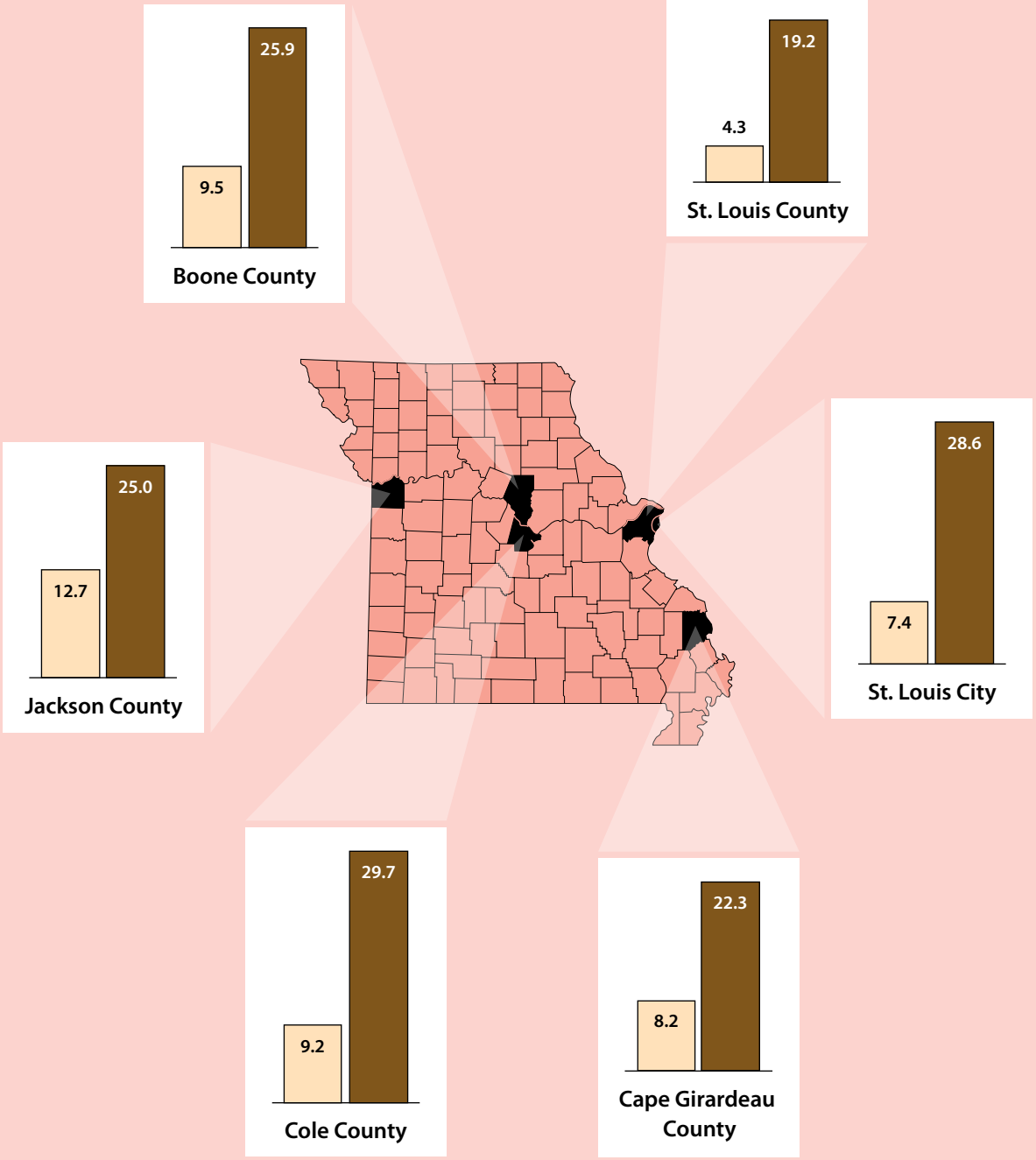
Inadequate Prenatal Care Rates*
Missouri, 2001–2010



*Rates per 100 Live Births Known Prenatal Care Status

Inadequate Prenatal Care Rates*

Missouri, 2006 - 2010 (Selected Counties)



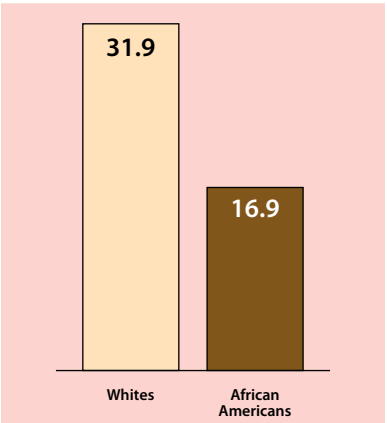
*Rates per 100 Live Births with Known Prenatal Care Status

Folic Acid Use

Folic Acid Use *– Estimates of daily folic acid consumption are derived from responses to the Pregnancy Risk Assessment Monitoring System (PRAMS) survey question, "During the* month before *you got pregnant with your new baby, how many times a week did you take a multivitamin, a prenatal vitamin, or a folic acid vitamin?" Respondents who checked "Every day of the week" are reported as taking daily folic acid.*

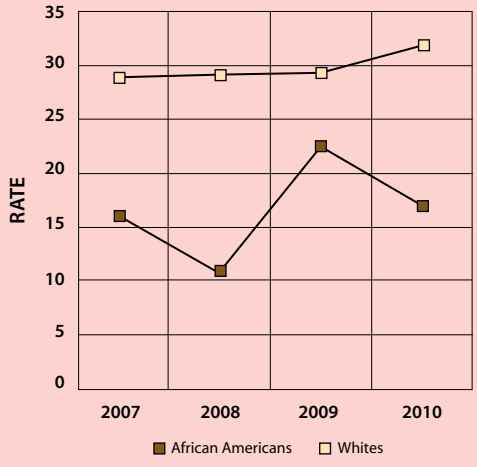
According to 2010 data from the Missouri Pregnancy Risk Assessment Monitoring System (PRAMS), only 16.9 percent of Missouri's African American new mothers report taking a daily multivitamin containing folic acid during the month prior to pregnancy. This compares to 31.9 percent among new white mothers. Similar rates were reported for the time period covering 2007 through 2010, when the African American rate of 16.6 percent was significantly lower than the white rate of 29.8 percent. Differences in folic acid consumption between African Americans and whites were statistically significant in every individual year of this time period except 2009 (when the rates were 22.5 percent and 29.4 percent, respectively). The rates for both groups remained relatively stable from 2007 through 2010, although the African American rate fluctuated somewhat due to smaller sample sizes. Folic acid consumption significantly reduces neural tube defects, including spina bifida (open spine) and anencephaly (open skull), among newborns. The U.S. Public Health Service recommends that all women of childbearing age consume 400μg of folic acid daily, because folic acid benefits the embryo during a period before many women even realize they are pregnant.[1]

Daily Folic Acid Use*
Missouri, 2010



*Rates per 100 New Mothers, Based on PRAMS Study

Daily Folic Acid Use*
Missouri, 2007–2010

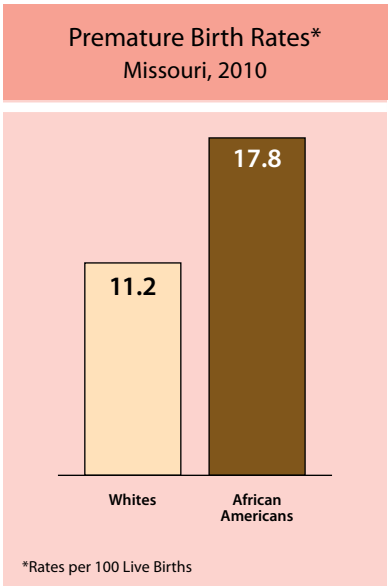


*Rates per 100 New Mothers, Based on PRAMS Study

Premature Birth

The 2010 African American rate of 17.8 premature births per 100 resident live births is statistically significantly higher than the white rate of 11.2. For the 2006-2010 period, African American newborns in Missouri were about 60 percent more likely to be born prematurely than white newborns. Inadequate prenatal care for African American mothers could be a source of this disparity. During this same time period, the rate of inadequate prenatal care for African American mothers (25.9% of live births) was more than twice as high as the rate for white mothers (9.5%).

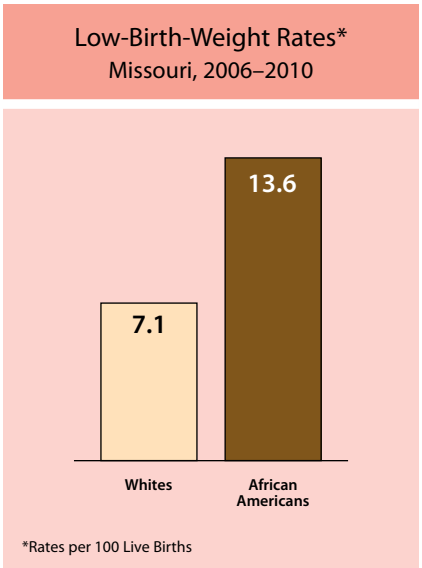
Premature, or preterm, birth is among the top causes of infant death worldwide. A premature infant typically has a lower birth weight than a full-term infant and faces an increased risk of death in the first year of life, with the greatest risk occurring in the first month. Premature infants are at greater risk for short- and long-term complications, including disabilities and impediments in growth and mental development. Factors that have been linked to a higher risk of preterm birth are: age at the upper or lower end of the reproductive years, multiple pregnancies (twins, triplets, etc.), lack of prenatal care, and use of tobacco.[3,4] The cost of neonatal care for preterm babies is very high. According to a 2008 report from the March of Dimes Foundation, the average cost of medical care for a premature baby during its first year of life was about $49,000 for a baby born in 2005.[5]



Premature Birth *– A resident live birth with a gestational age of 36 or fewer weeks.*[2]

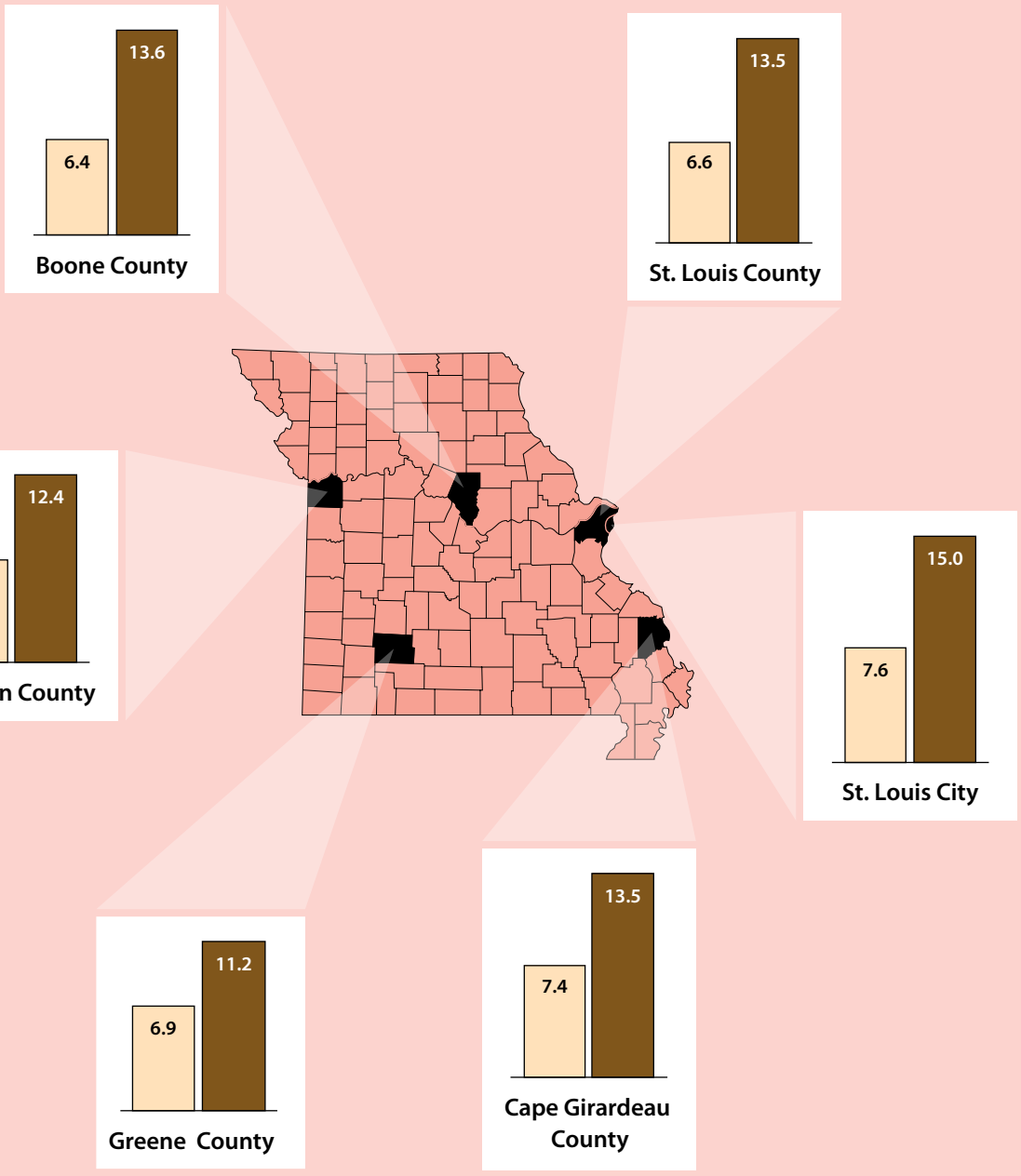
Low Birth Weight

Low birth weight (LBW) is a major risk factor for neonatal and post-neonatal mortality as well as developmental delays and disabilities. Poor maternal nutrition and certain behaviors, such as smoking, are the main causes of low birth weight births.[7] For the period from 2006 through 2010, the low birth weight rate for African American newborns was nearly twice the rate for white newborns. Trend data show that the annual LBW rates for both race groups have remained relatively stable during this five-year period. Low birth weight is more prevalent in the eastern and southeastern areas of Missouri. The 2006-2010 rates of LBW for the St. Louis Metro and Southeastern Behavioral Risk Factor Surveillance System (BRFSS) Regions are 10 percent higher than the overall state LBW rate.



Low Birth Weight *– Live birth weight of less than 2,500 grams or 5.5 pounds, regardless of gestational age.*[6]

Low Birth Weight Rates*
Missouri, 2006 - 2010 (Selected Counties)

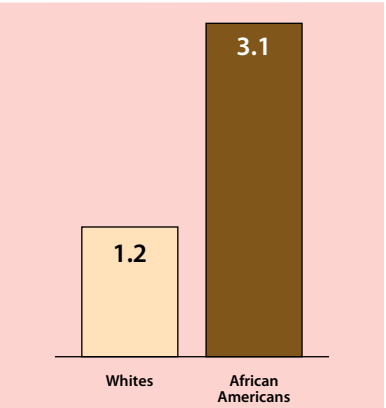


*Rates per 100 Live Births

Very Low Birth Weight

The African American very low birth weight (VLBW) rate of 3.1 VLBW births per every 100 resident newborns is more than twice the rate for white newborns (1.2). This may be attributed to the inadequate prenatal care received by more than 30 percent of African American mothers during pregnancy and the elevated premature birth rate (17.8% in 2010) for African American babies. Infants born at very low birth weights (less than 3 pounds 4 ounces) are more likely to die in the first year of life than are infants of normal birth weight (above 5 pounds 8 ounces). Very low birth weight infants who survive have significantly increased risk of severe problems, including physical and visual difficulties, developmental delays, and cognitive impairment, which require increased levels of medical, educational, and parental care.[9]

Very Low Birth Weight Rates*
Missouri, 2006–2010



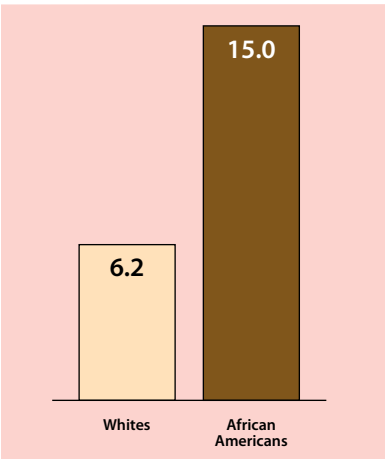
*Rates per 100 Live Births

Very Low Birth Weight *– Live birth weight of less than 1,500 grams or 3 pounds and 4 ounces, regardless of gestational age.*[8]

Infant Death

While the infant death rate for African American babies in Missouri remains more than double the white infant death rate, it has declined from 16.1 infant deaths per 1,000 live births at the time of the last report (covering 1997-2006) to 15.0 infant deaths per 1,000 live births for the 2001-2010 time period. The main reason for this racial disparity in infant mortality is that African American mothers are twice as likely as white mothers to deliver very low birth weight (VLBW) newborns (i.e., less than 1500 grams or 3.3 pounds). The major risk factors for a VLBW birth include multiple gestation pregnancies (e.g., twins or triplets), maternal genitourinary infections, a previous preterm birth, certain uterine or cervical abnormalities, and stress.

Infant Death Rates*
Missouri, 2006–2010

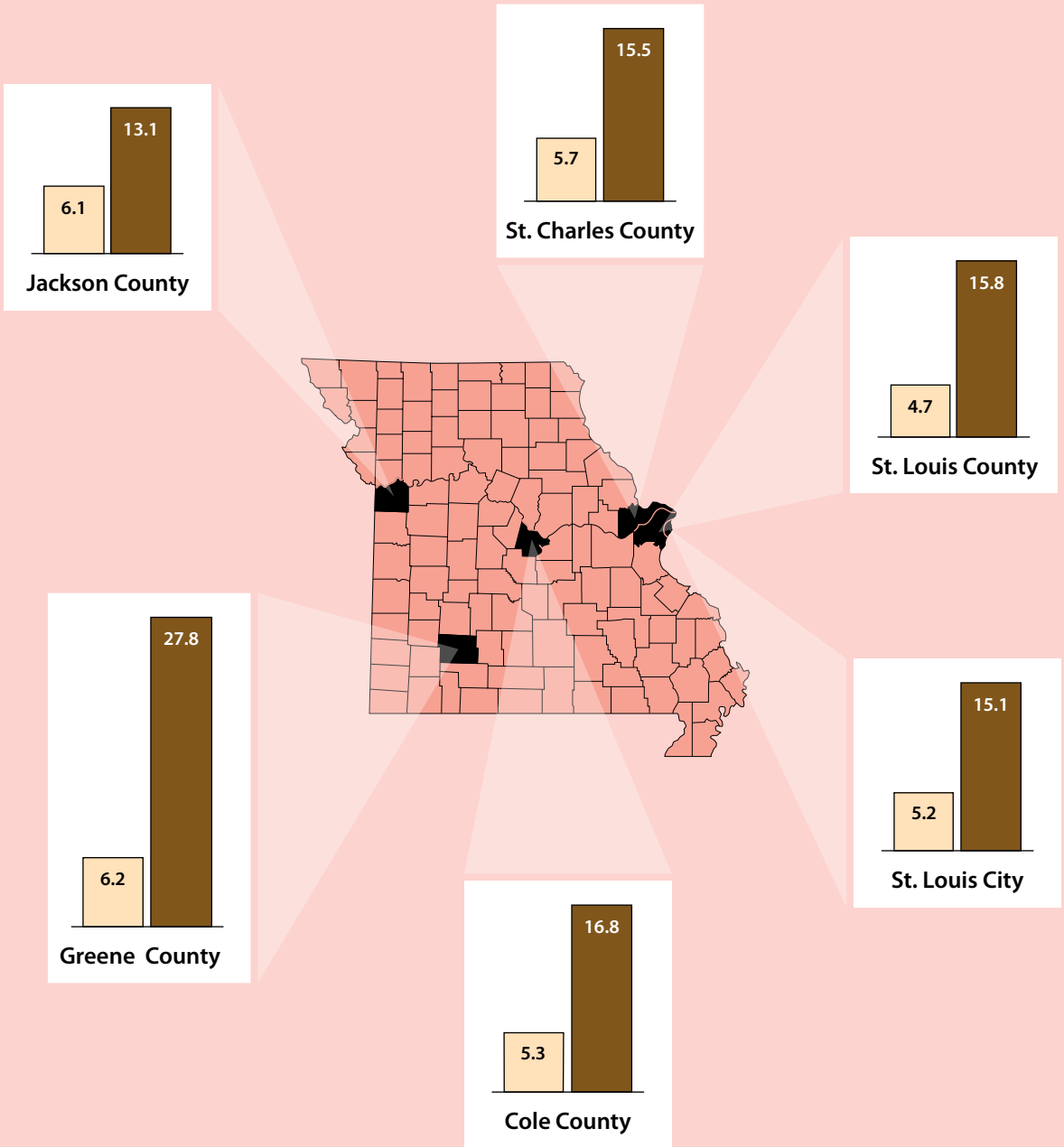


*Rates per 1,000 Live Births

Infant Death *– Deaths of resident babies who were born alive but died during the first year of life. ICD-10 codes for perinatal conditions are P00-P96. Rate is per 1,000 live births during the time period.*

Infant Death Rates*

Missouri, 2001–2010 (Selected Counties)

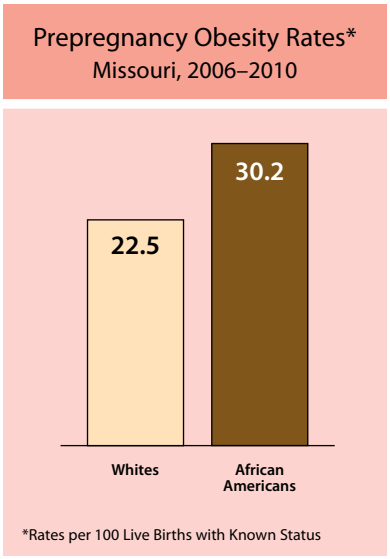


*Rates per 1,000 Live Births

Pre-pregnancy Obesity

Between 2006 and 2010, the obesity rate for Missouri's African American mothers (30.2) was a third higher than the rate for white mothers (22.5). According to national figures from the Centers for Disease Control and Prevention (CDC), non-Hispanic African American women are 50 percent more likely to be obese than non-Hispanic white women[10] (Missouri obesity rates cited in this report include Hispanic mothers.). The U.S. Surgeon General links obesity with increased risk of arthritis, diabetes, high cholesterol, and some forms of cancer. The Surgeon General also states that obesity during pregnancy is associated with a higher risk of birth defects, maternal and infant mortality, and labor and delivery problems.[11]

Obesity may result from several factors including: genetics, lack of knowledge about healthy eating, poverty, and lack of grocery stores in more urban neighborhoods with high population density. In many cases, more filling, less healthy foods are less expensive and more readily available than healthier options.[12] Additionally, the literature refers to many studies which have found that the cultural stigma of being overweight or obese is much less for African American women than for white women.[13]

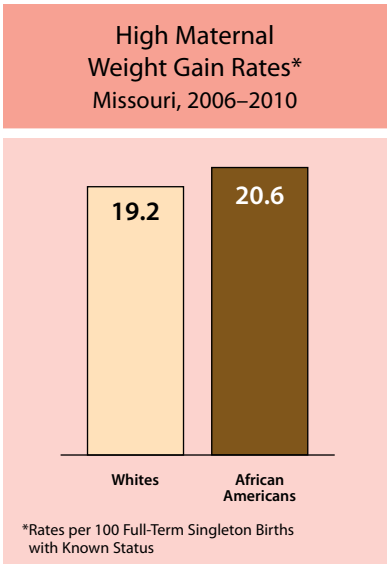


Pre-pregnancy Obesity *– Resident mothers with a body mass index (BMI) score of 30 or higher at the start of pregnancy.*

High Maternal Weight Gain

Between 2006 and 2010, the percentage of Missouri's African American mothers gaining 45 or more pounds during pregnancy was only slightly higher than the percentage of white mothers. According to a recent Department of Health and Senior Services FOCUS Article, weight gained during pregnancy increased for all mothers between 1989 and 2003. High maternal weight gain is associated with an increased incidence of high birth weight infants, obstetric complications, cesarean section deliveries, and preeclampsia.[14]

In 2009, the Institute of Medicine (IOM) revised the recommendations for weight gain during pregnancy. They are now based on body mass index (BMI) categories, rather than Metropolitan Life Insurance tables. Different ranges for weight gain during pregnancy were developed based on the mother's pre-pregnancy weight and height. Due to higher risk of developing related chronic diseases, the IOM stated - it would be best for women to conceive during a time when their BMI is normal.[15] Since the definitional change occurred in the middle of the time period covered by this report, the older Metropolitan Life Insurance categories were used to determine high maternal weight gain.

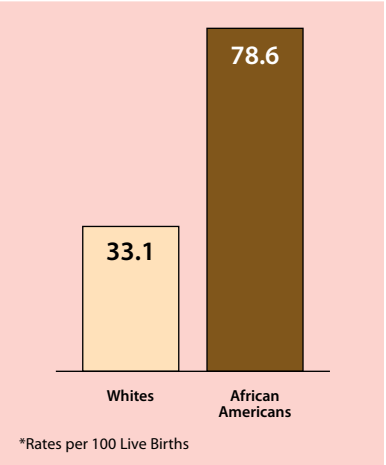


High Maternal Weight Gain – *Weight gain of at least 45 pounds during the course of pregnancy.*

Births to Unmarried Mothers

The rate of births to unmarried African American mothers is 2.4 times the rate of births to unmarried white mothers (78.6 versus 33.1 per 100 live births). According to the 2010 American Community Survey conducted by the U.S. Census Bureau, the marriage rate of white Missouri residents is twice the marriage rate of African American Missouri residents. Research indicates children who grow up with only one parent in the home are more likely to be financially worse off and have worse socioeconomic outcomes (even after income differences are taken into account) compared to children who grow up in a home with two parents.[16]

Births to Unmarried Mothers*
Missouri, 2010



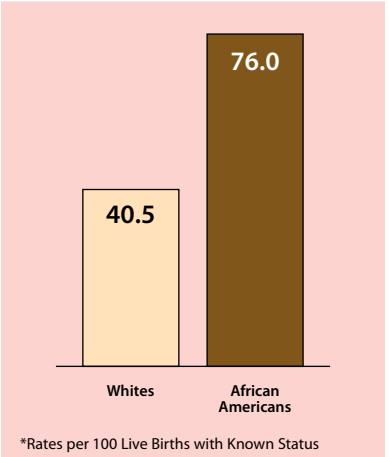
*Rates per 100 Live Births

Births to Unmarried Mothers *– Live births to mothers who were unmarried at the time of conception, the time of birth, and throughout the time between conception and birth.*

Births to Mothers Receiving Medicaid

In 2010, more than three-fourths of the live births to Missouri's African American mothers were paid by Medicaid, which was almost twice the rate for white mothers (76.0 versus 40.5 per 100 live births). In general, a mother must have an income less than 185 percent of the federal poverty level to qualify for Medicaid benefits. Even with the security of medical coverage, African American mothers on Medicaid are 50 percent more likely to receive inadequate prenatal care than white mothers on Medicaid. These risk factors of poverty and inadequate prenatal care combined have been associated with increased chances of complications during delivery and of congenital anomalies for the newborn.

Births to Mothers Receiving Medicaid*
Missouri, 2010

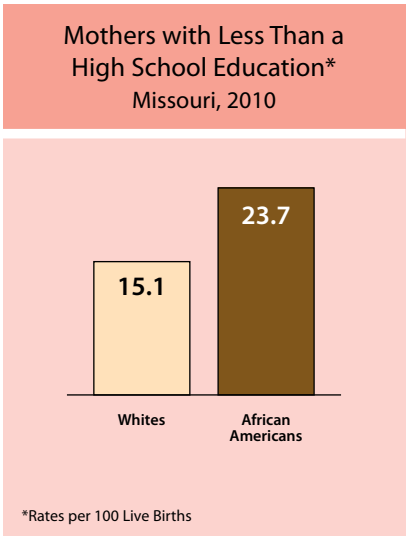


*Rates per 100 Live Births with Known Status

Births to Mothers Receiving Medicaid *– Resident births for which the principal source of payment for delivery is Medicaid.*

Mothers with Less Than a High School Education

According to 2010 Missouri birth certificate data, African American mothers report lower educational levels than white mothers. The percentage of African American mothers with less than a high school education (23.7) is 1.6 times the percentage for white mothers (15.1). Furthermore, the rate of white mothers reporting at least a college degree is 3.4 times the rate for African American mothers. Mothers with lower education levels are more likely to have low socioeconomic status, limited access to health care, and are more likely to have poor birth outcomes, including increased low birth weight and infant death rates.

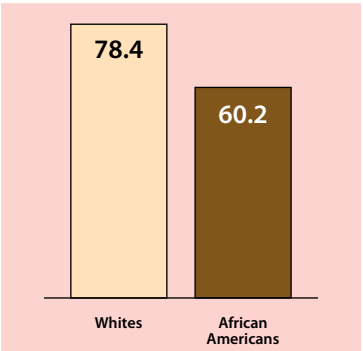


Mothers with Less Than a High School Education *– Mothers who reported having less than a 12th grade education.*

Breastfeeding at Four Weeks Postpartum

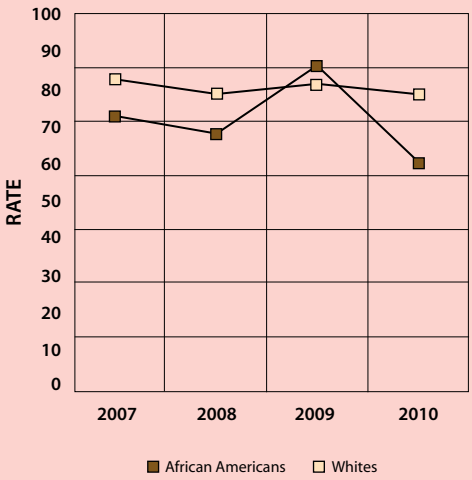
According to 2010 data from the Missouri Pregnancy Risk Assessment Monitoring System (PRAMS), 60.2 percent of African American new mothers and 78.4 percent of white new mothers still breastfeed four weeks after delivery. For the first time since the Missouri PRAMS began collecting data in 2007, the difference between African Americans and whites is statistically significant. Rates for both groups remained relatively stable between 2007 and 2010, although the rates for African Americans fluctuated somewhat due to smaller sample sizes. Breastfeeding is associated with the reduction of a number of negative outcomes for infants and children, including reduced risk of hospitalization due to lower respiratory tract diseases, asthma, adolescent and adult overweight or obesity, type 1 and type 2 diabetes, and sudden infant death syndrome (SIDS). For mothers, benefits include improved birth spacing and lower risk of breast and ovarian cancers. The American Academy of Pediatrics (AAP) recommends breastfeeding exclusively for at least six months.[17]

Breastfeeding at Four Weeks Postpartum*
Missouri, 2010



*Rates per 100 Women Who Initiated Breastfeeding, Based on PRAMS survey

Breastfeeding at Four Weeks Postpartum*
Missouri, 2007–2010



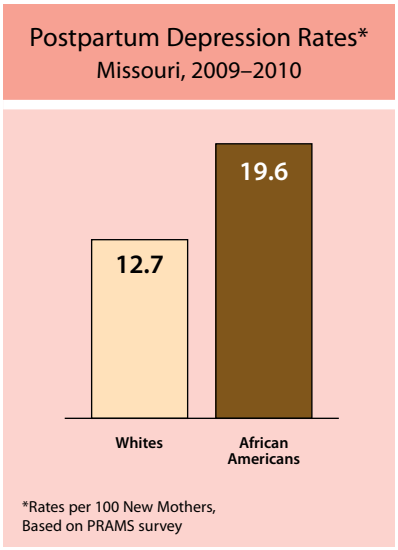
*Rates per 100 Women Who Initiated Breastfeeding, Based on PRAMS survey

Breastfeeding at Four Weeks Postpartum *– The percentage of women who were breastfeeding four weeks after delivery out of all surveyed women who had initiated breastfeeding. Breastfeeding duration data are calculated using responses to several Pregnancy Risk Assessment Monitoring System (PRAMS) survey questions, including delivery and survey dates, whether the respondent had ever initiated and was still breastfeeding, and whether past breastfeeding duration exceeded approximately one month or four weeks.*

Postpartum Depression

During the 2009-2010 time period, Missouri's African American new mothers were more likely to self-report symptoms of postpartum depression than whites (19.6% versus 12.7%), according to Missouri Pregnancy Risk Assessment Monitoring System (PRAMS) data. However, these differences in the prevalence of postpartum depression were not statistically significant. Unfortunately, additional data are not available because PRAMS questions changed for 2009, and prior data are not comparable.

Postpartum depression is characterized by sadness, anxiety, and/or hopelessness which are more severe and potentially longer lasting than the "baby blues." It can interfere with daily life and with caring for the baby. Symptoms may include: sadness; loss of interest in activities; problems with thinking, concentrating, and making decisions; feelings of worthlessness, shame, or guilt; and/or feeling disconnected from the baby.[18] Risk factors for postpartum depression include a history of depression, stressful events during the prior year (e.g., financial or relationship stressors), young maternal age, tobacco use during pregnancy, and unplanned pregnancy.[19]

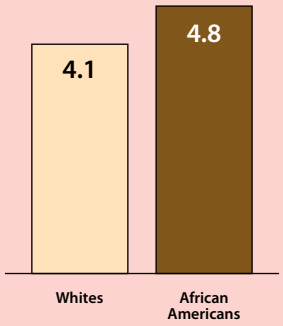


Postpartum Depression *– Prevalence rates for postpartum depression are calculated based on a series of Pregnancy Risk Assessment Monitoring System (PRAMS) survey questions. Respondents are asked to report the extent to which they felt 1) down, depressed, or sad, 2) hopeless, and 3) "slowed down" after childbirth. Each question is rated from 1 (Never) to 5 (Always). Respondents are classified as depressed based on the sum of ratings across the questions.*

Substantiated Child Abuse/ Neglect

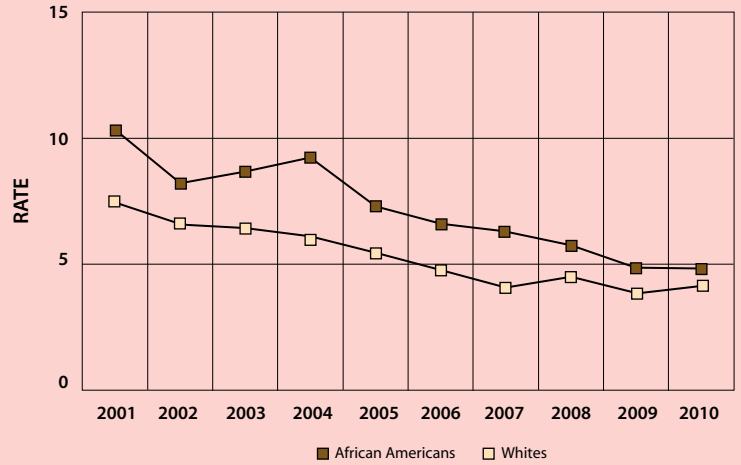
According to the Missouri Department of Social Services, the Missouri child abuse/neglect rates for both African Americans and whites declined over the past ten years. The African American rate dropped by more than 50 percent between 2001 and 2010, from a high of 10.3 substantiated cases per 1,000 residents under age 18 to a low of 4.8 cases in 2010, while the white rate dropped from 7.5 to 4.1. The racial disparity between African Americans and whites also decreased during this time period. For 2010, the African American rate was only slightly higher than the white rate. In contrast, national child abuse/neglect rates have risen for both race groups. In the U.S. overall, the 2009 white rate of 7.4 was almost double the Missouri rate of 3.8.[21] For African Americans, the national rate of 14.4 was nearly three times higher than the Missouri rate of 4.8.[22]

Child Abuse/Neglect Rates*
Missouri, 2010



*Rates per 1,000 Children under 18

Child Abuse/Neglect Rates*
Missouri, 2001–2010



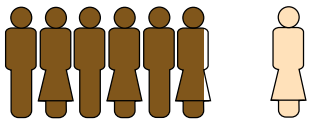
*Rates per 1,000 Children under 18

Substantiated Child Abuse/Neglect – *A finding that abuse/neglect has occurred or is occurring as a result of the observation of visible signs, physical and/or credible verbal evidence provided to the Children's Service Worker by the child, perpetrator or witnesses in accordance with the definitions of abuse/neglect. This includes cases which are adjudicated by the courts and those with preponderance of evidence.*[20]

Communicable Diseases

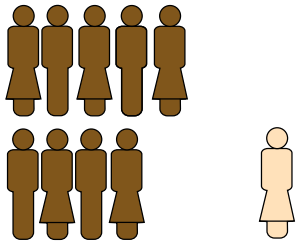
Ratios of African American to White Rates for Selected Communicable Diseases

Missouri, 2007-2011



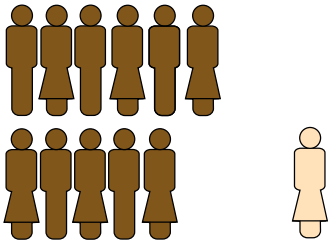
5.9 to 1

Tuberculosis



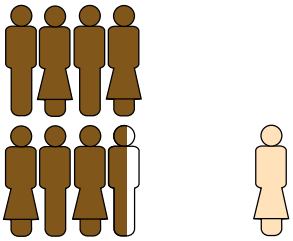
9.0 to 1

HIV



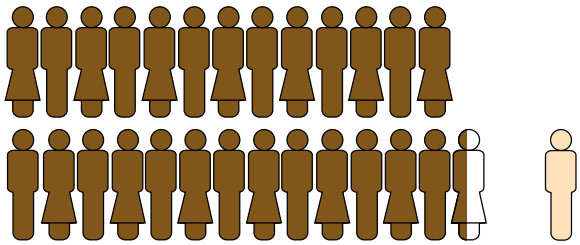
11.0 to 1

Chlamydia



7.6 to 1

Primary & Secondary Syphilis



26.4 to 1

Gonorrhea

African Americans
Whites

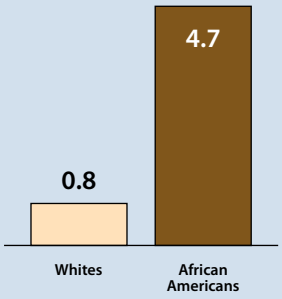
Source: Bureau of Communicable Disease Control and Prevention, Missouri Department of Health and Senior Services

Rates are per 100,000 population.

Tuberculosis

Tuberculosis (TB) *– Tuberculosis is a communicable disease caused by bacteria called* Mycobacterium tuberculosis. *The bacteria can attack any part of the body, but it usually attacks the lungs. TB is spread through the air from one person to another. The bacteria are expelled into the air when a person with TB disease of the lungs or throat coughs, sneezes, speaks, or sings. These bacteria can stay in the air for several hours, depending on the environment. Additional information about the transmission of TB bacteria is provided in the glossary. Tuberculosis is a reportable disease under 19 CSR 20-20.020.*

Tuberculosis Rates*
Missouri, 2007–2011



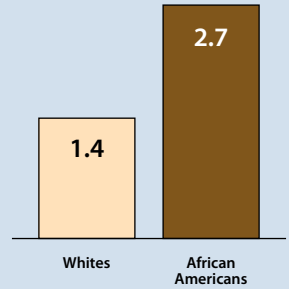
*Rates per 100,000 Population

The 2007-2011 tuberculosis (TB) rate for African Americans is 4.7 cases per 100,000 residents. This is nearly six times greater than the white rate of 0.8. Nationally, the TB rate for non-Hispanic African Americans is 7.0 cases per 100,000 population and is over seven times higher than the rate of TB in non- Hispanic whites (0.9 cases per 100,000).[1] Several factors place African Americans at greater risk of contracting TB. These include socio-economic characteristics, language and cultural barriers, inability or reluctance to take long-term medication, and higher rates of conditions such as HIV and diabetes.[2] TB rates have decreased for both race groups in comparison to the 2003-2007 time period. The white rate decreased by 50 percent (from a rate of 1.2), while the African American rate decreased by nearly 20 percent (from a rate of 5.6). Although these trends are positive, they may pose additional challenges for African Americans in the future. The CDC notes that as a result of the declining number of TB cases in the United States, there is decreased awareness of TB signs and symptoms among health care providers and at-risk populations. Consequently, patients may be less likely to seek medical care and health providers may be less likely to diagnose TB as the cause.[3]

West Nile Virus

West Nile Virus (WNV) *– West Nile Virus is spread through the bite of mosquitoes, which become infected with the virus when they feed on infected birds. A very small number of individuals have also become infected through receipt of blood transfusions and transplanted organs. Arboviral infections may be asymptomatic or may result in illnesses of variable severity sometimes associated with central nervous system (CNS) involvement. Clinical syndromes ranging from febrile headache to aseptic meningitis to encephalitis may occur, and these are usually indistinguishable from similar syndromes caused by other viruses. Arboviral meningitis is characterized by fever, headache, stiff neck, and pleocytosis. West Nile virus is a reportable disease under 19 CSR 20-20.020.*

West Nile Virus Rates*
Missouri, 2007–2011



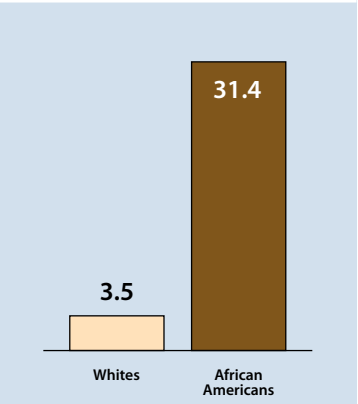
*Rates per 100,000 Population

The 2007-2011 West Nile virus (WNV) rate for African Americans is 2.7 cases per 100,000 residents. This is nearly double the white rate of 1.4. The WNV rate has decreased for both race groups in comparison to the 2003-2007 time period, when the rates were 2.3 for whites and 4.1 for African Americans. One of the primary reasons for the higher African American rates is that urban areas are susceptible to WNV. Mosquitoes that carry the WNV need stagnant water, commonly found in urban areas, to breed and spread the disease. Additional information on the environmental and weather factors that contribute to outbreaks of WNV is provided in the glossary.

HIV

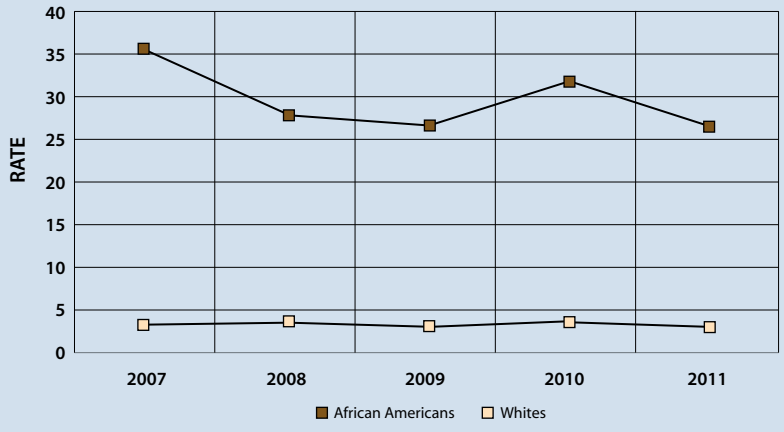
Between 2007 and 2011, African Americans were nearly nine times as likely to be diagnosed and sub-classified as human immunodeficiency virus (HIV) cases as whites (31.4 cases per 100,000 residents versus 3.5). During this time period, the rate of new HIV cases fluctuated among both African Americans and whites, with no sustained upward or downward trend appearing. Persons infected with HIV may not have symptoms of illness for some time, but they are at risk of eventually developing many serious health problems. As the HIV disease process progresses, there is a gradual deterioration of immune system function that makes the individual particularly vulnerable to serious illnesses, which can include extreme weight loss, severe pneumonia, certain forms of cancer, and damage to the nervous system. These illnesses signal the onset of acquired immunodeficiency syndrome (AIDS), which is diagnosed in the later stages of HIV infection. The leading risk factors for HIV are high-risk sexual contact, injection drug use, and for males, sexual relations with other men.

HIV Case Diagnosis Rates*
Missouri, 2007–2011



*Rates per 100,000 Population

HIV Case Diagnosis Rates*
Missouri, 2007–2011



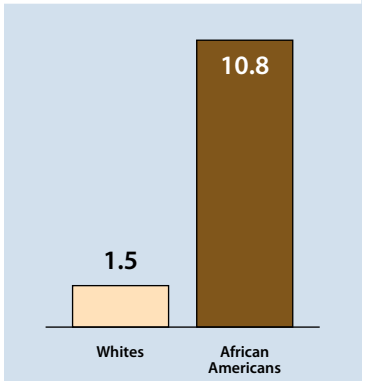
*Rate per 100,000 Population

Human Immunodeficiency Virus (HIV) *– HIV disease includes all persons infected with the human immunodeficiency virus (HIV). Those identified as having HIV are sub-classified into HIV cases or AIDS cases depending on the progression of the disease. The numbers reported for HIV refer to all cases diagnosed during the years presented which remained sub-classified as HIV cases at the end of their initial diagnosis year.*

AIDS

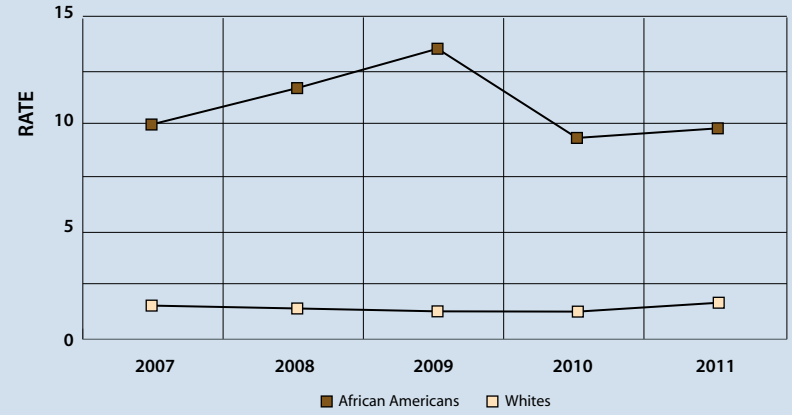
Between 2007 and 2011, the rate of new AIDS diagnoses fluctuated slightly among both African Americans and whites, with no sustained upward or downward trend appearing. During this same time period, African Americans were more than seven times as likely to be newly diagnosed and sub-classified with AIDS as whites (10.8 cases per 100,000 residents versus 1.5). The disparity in HIV and AIDS diagnosis rates may be attributed to social, economic, and cultural factors. These factors also may be barriers to receiving HIV prevention information or accessing treatment. Individuals with AIDS face many serious health issues. Normally the immune system wards off infections and certain other diseases. However, because the immune system is severely damaged, individuals with AIDS may develop a variety of life-threatening illnesses.

AIDS Case Diagnosis Rates*
Missouri, 2007–2011



*Rates per 100,000 Population

AIDS Case Diagnosis Rates*
Missouri, 2007–2011



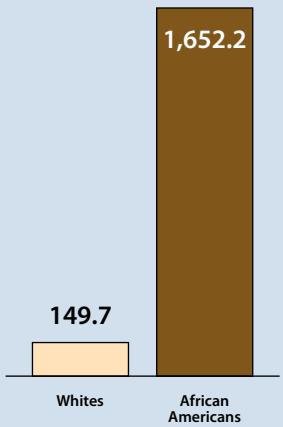
*Rates per 100,000 Population

Acquired Immunodeficiency Syndrome (AIDS) *– AIDS is a classification of the late stage of HIV infection, when the body's immune system breaks down. AIDS cases are defined as persons in the later stages of the HIV disease process who meet the case definition for AIDS. The numbers reported for AIDS refer to all persons initially diagnosed with HIV disease who were sub-classified as AIDS by the end of their initial diagnosis year.*

Chlamydia

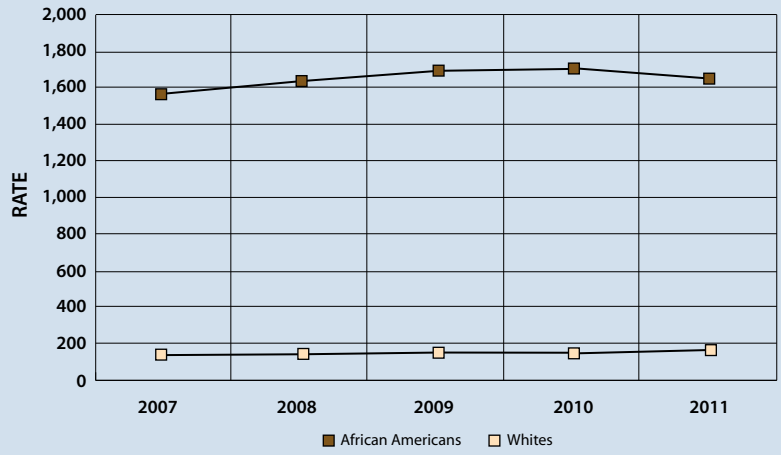
Between 2007 and 2011, African Americans were eleven times more likely to be reported with chlamydia than whites (1,652.2 cases per 100,000 residents versus 149.7). Women are more likely to be reported with the disease than men. Among whites, the rate of reported chlamydia cases increased each year between 2007 and 2011. Among African Americans, the rate of reported chlamydia cases increased between 2007 and 2010 but then decreased from 2010 to 2011. Chlamydia rates are particularly high in Missouri's largest cities (St. Louis and Kansas City).

Chlamydia Case Rates*
Missouri, 2007–2011



*Rates per 100,000 Population

Chlamydia Case Rates*
Missouri, 2007–2011



*Rates per 100,000 Population

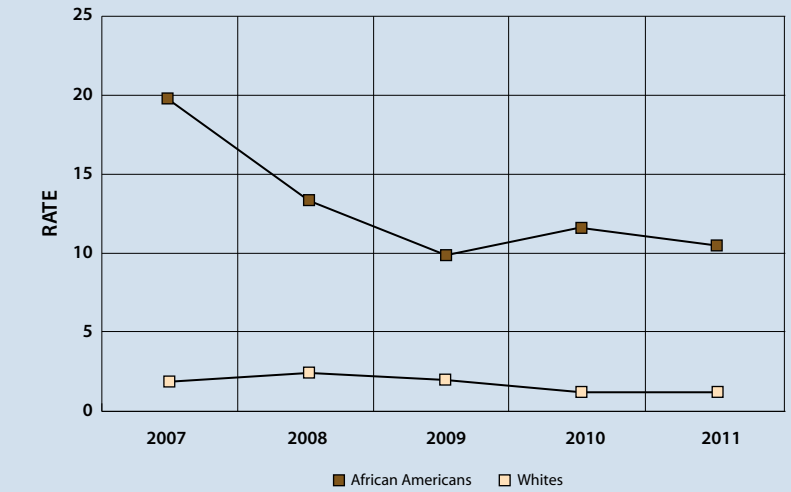
Chlamydia *– The most commonly reported sexually transmitted disease (STD), chlamydia, is caused by the bacterium Chlamydia trachomatis, which can damage a woman's reproductive organs. This infection is easily confused with gonorrhea because the symptoms of both diseases are similar and they often occur together. These include discharge from the genitals for both sexes. For females, symptoms can include bleeding after intercourse or between menstrual periods and abdominal or pelvic pain. For men, symptoms can include painful urination and swollen or painful testicles. Often symptoms of chlamydia are mild or absent. This infection is currently curable with antibiotics.*

Primary and Secondary Syphilis

Primary and Secondary Syphilis – *A curable sexually transmitted disease caused by the bacterium Treponema pallidum. The first symptom of primary syphilis is an ulcer called a chancre. The chancre can appear within ten days to three months after exposure, but it generally appears within two to six weeks. Because the chancre may be painless and may occur inside the body, it may go unnoticed. It is usually found on the part of the body exposed to the partner's ulcer, such as the penis, the vulva, or the vagina. A chancre also can develop on the cervix, tongue, lips, or other part of the body. The chancre disappears within three to six weeks regardless of whether a person is treated.*

The second stage, or secondary syphilis, starts when one or more areas of the skin break into a rash that usually does not itch. Rashes can appear as the chancre is fading or can be delayed up to ten weeks. The rash usually heals within several weeks or months. Other symptoms may also occur, such as mild fever, fatigue, headache, or sore throat, as well as patchy hair loss and swollen lymph glands throughout the body. These symptoms may be very mild and will disappear without treatment. The signs of secondary syphilis may come and go over the next one to two years.

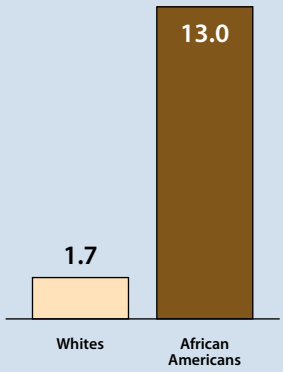
Primary and Secondary Syphilis Case Rates*
Missouri, 2007–2011



*Rates per 100,000 Population

Between 2007 and 2011, African Americans were more than seven times as likely to be reported with syphilis as whites. Large fluctuations in the rates for syphilis occurred over the past several years, with rates peaking for whites in 2008 and for African Americans in 2007. More recently, the white rate of syphilis increased from 2007 to 2008 and then decreased from 2008 to 2011. Among African Americans, the rate of syphilis decreased from 2007 to 2009 and then generally increased through 2011. The decreases occurring over the past several years may be a function of the large amounts of public health resources that have been devoted to containing the spread of syphilis.

Primary and Secondary Syphilis Case Rates*
Missouri, 2007–2011

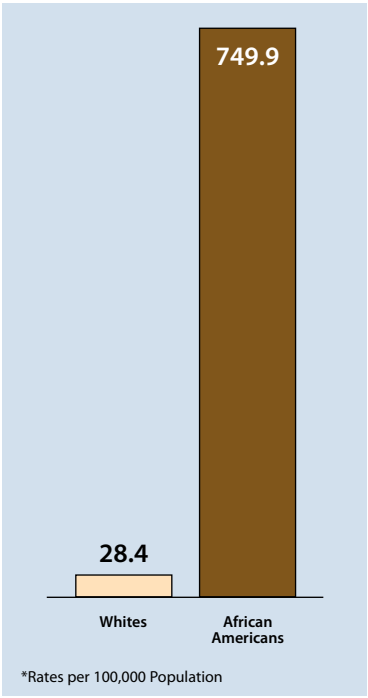


*Rates per 100,000 Population

Gonorrhea

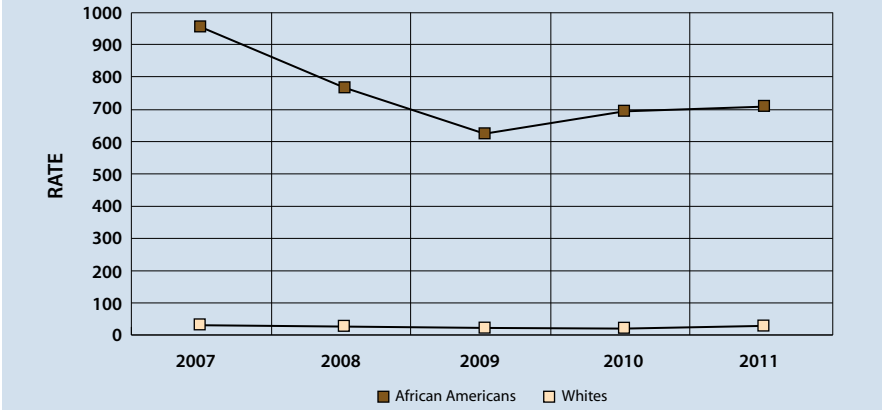
Between 2007 and 2011, African Americans were 26 times more likely to be reported with gonorrhea than whites (749.9 cases per 100,000 residents versus 28.4). Among both African Americans and whites the rate of reported gonorrhea cases decreased from 2007 through 2009 and then increased from 2009 to 2010. This increase may be related in part to additional testing efforts over the last two years and may not be solely attributable to a true increase in gonorrhea prevalence.

Gonorrhea Case Rates*
Missouri, 2007–2010



*Rates per 100,000 Population

Gonorrhea Case Rates*
Missouri, 2007–2010



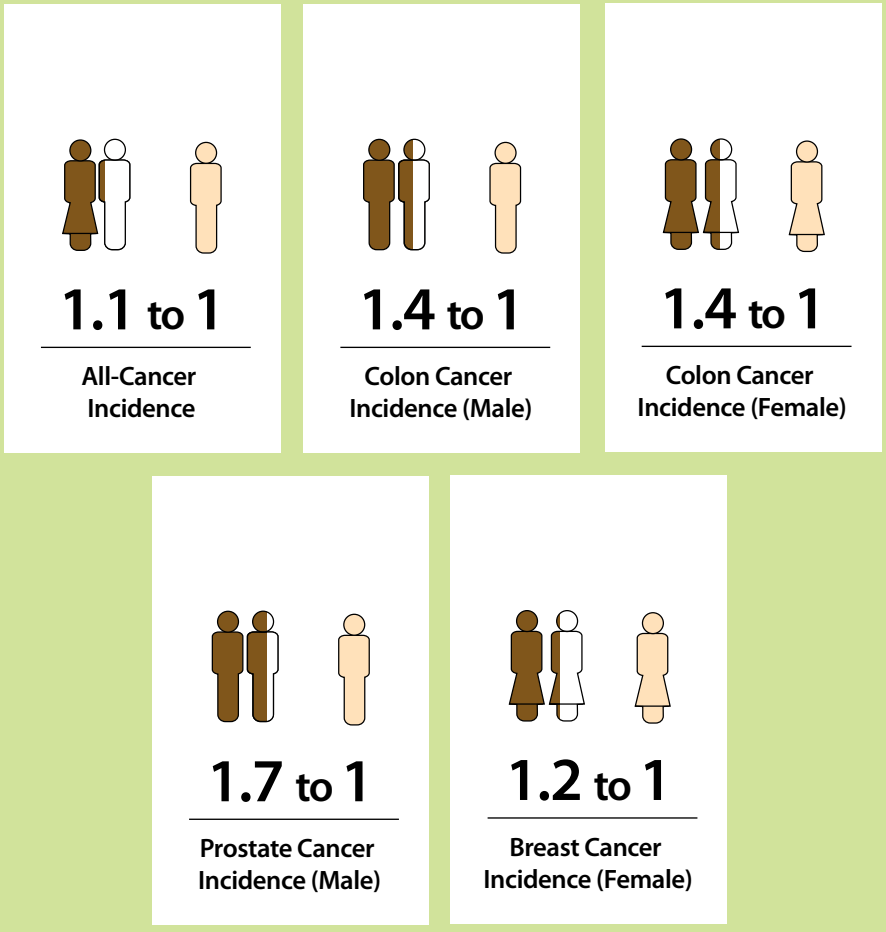
*Rates per 100,000 Population

Gonorrhea *– A sexually transmitted disease caused by Neisseria gonorrhoeae, a bacterium that can grow and multiply easily in the warm, moist areas of a male or female reproductive system. Gonorrhea may infect the genital tract, the mouth, the rectum, the eyes, or the throat. Often, symptoms of gonorrhea are mild or absent. Infected males may experience painful urination or a white, yellow, or green discharge from the penis. Infected females may experience painful urination, increased vaginal discharge, or vaginal bleeding between periods. In women, the opening to the uterus, the cervix, is often the first place of infection. The infection, however, can spread into the uterus and fallopian tubes, resulting in pelvic inflammatory disease (PID). PID can cause infertility. This infection is currently curable with antibiotics. However, the number of drug-resistant strains of gonorrhea is increasing.*

Cancer

Ratios of African American to White Rates for Selected Cancers

Missouri, 2009



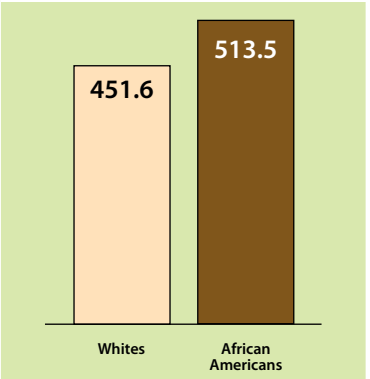
Source: Missouri Cancer Registry
Rates are per 100,000 population.

African Americans
Whites

Cancer

In 2009, 30,458 Missourians were diagnosed with cancer, for an incidence rate of 455.7 cases per 100,000 residents. African Americans were diagnosed at a rate of 513.5, which is significantly higher than both the state rate and the rate for white Missourians (451.6). Although the differences have decreased over the past five years, African American men have consistently had the highest all-cancer incidence rates. For the 2005-2009 period, the rates for males were 653.3 among African Americans versus 541.2 among whites. In contrast, there was very little difference between the all-cancer rates for females by race (468.4 among African Americans versus 455.4 among whites).

All-Cancer Incidence Rates*
Missouri, 2007–2010

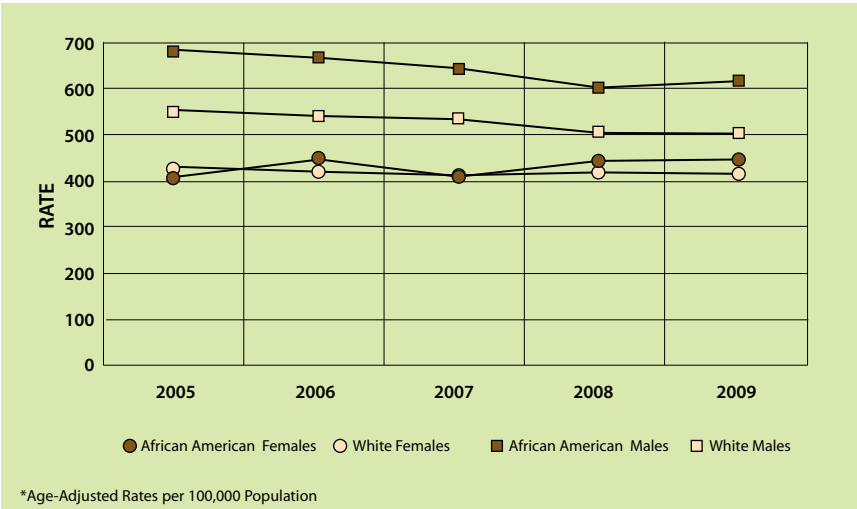


*Age-Adjusted Rates per 100,000 Population

Cancer *– Cancer is not just one disease that begins in different parts of the body but a group of diseases that cause cells in the body to change abnormally and grow out of control. Usually the abnormal growth occurs as a lump or mass of cells called a tumor, but some cancers, such as leukemia and most types of lymphoma, do not form tumors. Tumors may grow slowly, posing little threat to overall health and requiring little or no treatment other than watchful waiting, while others grow aggressively and spread throughout the body in a process called metastasis. Types of cancer are generally named after the part of the body in which they start.*

African Americans tend to be diagnosed with cancer at later stages than white Missourians. The percentage of cancers diagnosed in a localized (earlier) stage, in which the cancer is still confined to the organ of origin, is consistently lower for African Americans than whites, while the percentage for regional stage and distant stage diagnoses are higher for African Americans. Because many types of cancer can be treated more successfully if diagnosed early, these late-stage diagnoses partly account for the higher death rates among African Americans.

All-Cancer Incidence Rates* Missouri, 2005-2009



*Age-Adjusted Rates per 100,000 Population

According to Missouri Vital Statistics, cancer claimed the lives of 12,569 Missourians in 2010, accounting for nearly one-fourth (22.8 percent) of all deaths in Missouri. Cancer is second only to heart disease as the leading cause of death among Missourians. Cancer was the leading cause of death among African American men, surpassing heart disease, but the cancer death rate among African American men has fallen significantly since 2005, from 343.0 per 100,000 residents to 282.5.

All-cancer mortality among African American women was higher than for white women and remained unchanged from 2005 to 2010.

Cancer

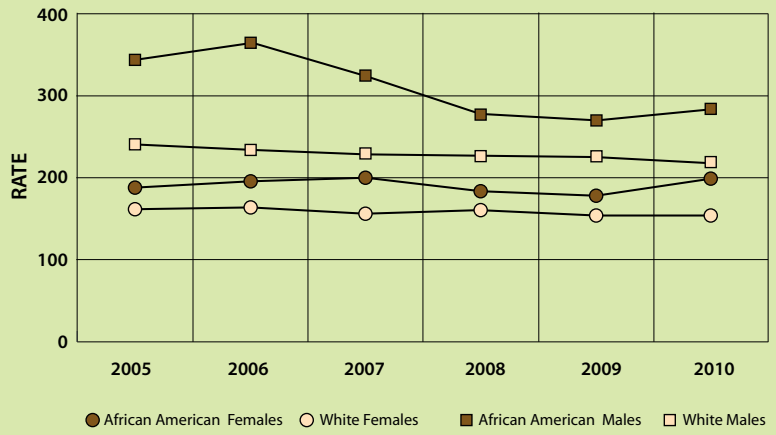
Stage at Diagnosis for All Cancers Among Women by Race
Missouri, 2005-2009

Stage at Diagnosis	2005		2006		2007		2008		2009	
	White	African American	White	African American	White	African American	White	African American	White	African American
Localized	43.2%	37.3%	44.3%	38.0%	44.3%	37.1%	45.4%	38.9%	46.3%	37.0%
Regional	23.6%	29.2%	24.1%	24.3%	24.9%	27.7%	25.0%	28.0%	24.0%	28.4%
Distant	21.6%	24.1%	22.2%	28.3%	22.5%	27.1%	22.6%	26.6%	22.3%	29.0%
Unknown	11.5%	9.4%	9.3%	9.5%	8.4%	8.1%	7.0%	6.5%	7.4%	5.5%

Stage at Diagnosis for All Cancers Among Men by Race
Missouri, 2005-2009

Stage at Diagnosis	2005		2006		2007		2008		2009	
	White	African American	White	African American	White	African American	White	African American	White	African American
Localized	46.0%	42.2%	47.5%	43.3%	48.8%	46.4%	46.6%	44.9%	47.4%	44.2%
Regional	18.8%	17.7%	18.7%	18.4%	19.1%	19.2%	20.1%	21.2%	19.9%	19.4%
Distant	23.5%	29.4%	23.9%	27.4%	23.4%	25.9%	25.7%	28.0%	25.0%	29.4%
Unknown	11.7%	10.7%	9.8%	10.8%	8.7%	8.4%	7.6%	5.9%	7.7%	7.0%

All Cancer Death Rates*
Missouri, 2005-2010



*Age-Adjusted Rates per 100,000 Population

Localized *– Cancer is limited to the organ in which it began, without evidence of spread.*

Regional *– Cancer has spread beyond the primary site to nearby lymph nodes or organs and tissues.*

Distant *– Cancer has spread from the original site to distant organs or distant lymph nodes.*

Unknown *– There is not enough information to determine the stage of cancer.*

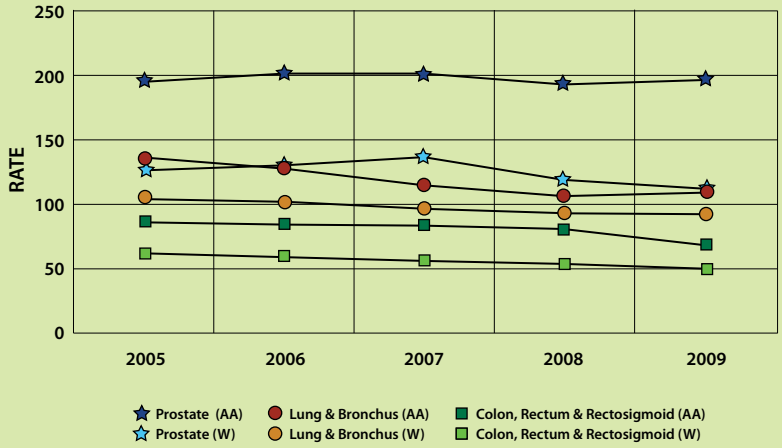
Cancer

The leading types of cancer – those with the most new cases (incidence) – are cancer of the lung, bronchus and trachea (the airways to the lungs), female breast cancer, prostate cancer, and colorectal cancer. Combined, these accounted for half of all new cancer cases in 2009 (53.5%) and nearly two-thirds of all cancer deaths (65%). Although cancer of the lung, bronchus and trachea had the highest incidence rate among all Missourians combined (76.4 per 100,000 residents), breast cancer was the leading cancer among Missouri women (151.6), and prostate cancer (119.4) had the highest incidence among Missouri men.

African American men have higher rates of incidence than white men for the three leading types of cancer that typically affect males, and the disparity is greatest for prostate cancer. In 2009, the African American rate was over 70 percent higher than the white rate (196.0 cases per 100,000 residents versus 113.2). Colon cancer rates were 36 percent higher and lung cancer rates were 17 percent higher for African American men.

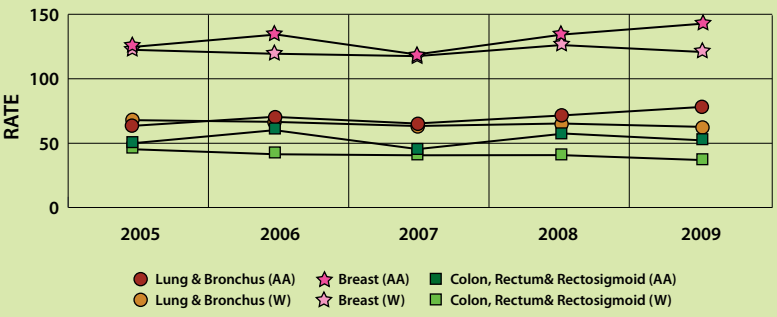
Incidence rates for the three leading cancer types that typically affect women are also higher among African Americans compared to whites. In 2009, the type with the greatest racial disparity was colon cancer, for which the African American incidence rate was almost 40 percent higher than the white rate (51.0 versus 36.8). Lung cancer rates for African American females were 24 percent higher (78.0 versus 62.7), and breast cancer rates were 17 percent higher (143.6 versus 122.3). From 2007 to 2009, breast cancer incidence among African American women increased substantially, from

Incidence Rates for Leading Cancer Types Among Males*
Missouri, 2005-2009



*Age-Adjusted Rates per 100,000 Population

Incidence Rates for Leading Cancer Types Among Females*
Missouri, 2005-2009

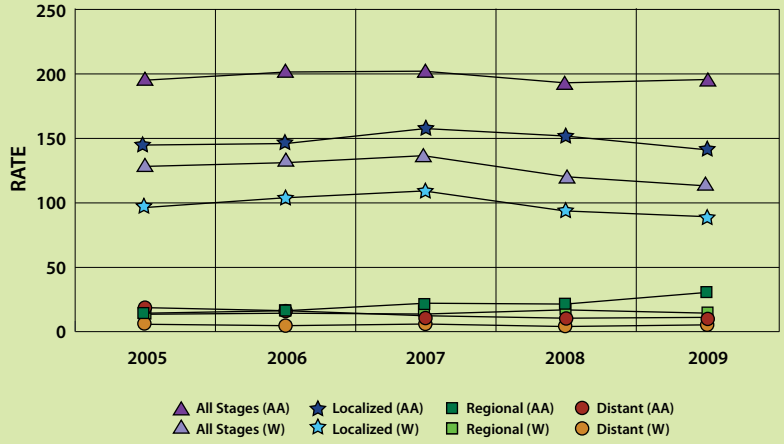


*Age-Adjusted Rates per 100,000 Population

147.9 to 169.8, most likely as a result of efforts to increase screening rates. However, breast cancer incidence among white women remained stable from 2005 to 2009.

From 2005 through 2009, the incidence rate of prostate cancer remained nearly twice as high among African American men as among white men. However, both African American and white men show recent decreases in the incidence rate of localized stage prostate cancer, an earlier and generally more treatable stage. Specific reasons for the decreases are not clear but may be a result of fewer screenings among African American men, following several recent studies questioning the benefit compared to the harm of prostate cancer screening and subsequent follow-up.[1]

Prostate Cancer Incidence Rates by Stage at Diagnosis
Missouri, 2005-2009



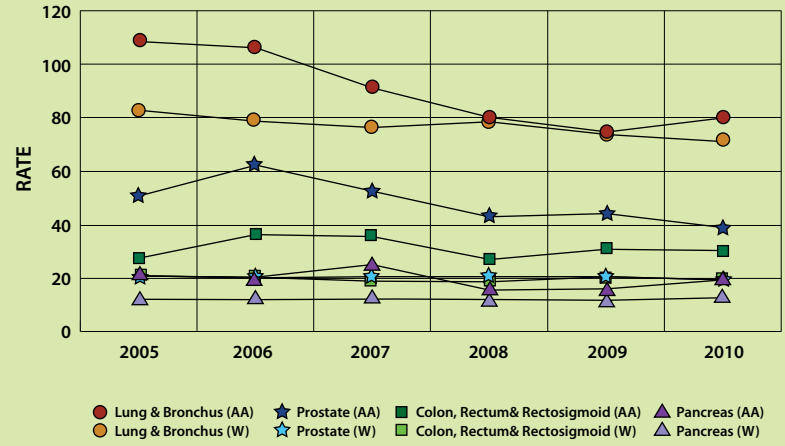
*Age-Adjusted Rates per 100,000 Population

The prostate cancer mortality rate declined for African American men between 2005 and 2010, but the change was not significant. In 2010, the prostate cancer mortality rate in Missouri remained twice as high among African American men as among white men (39.0 versus 17.7 per 100,000 residents).

Among African Americans in Missouri, lung (bronchus and trachea) cancer is the leading cause of cancer deaths. The mortality rate among African American men decreased significantly between 2006 and 2010, from 106.5 per 100,000 residents to 80.3. Since 2008, African American male lung cancer mortality rates have not significantly differed from the rates for white men. In contrast, mortality rates among African American women have been generally increasing. The change occurring between 2006 and 2010 is not significant, however.

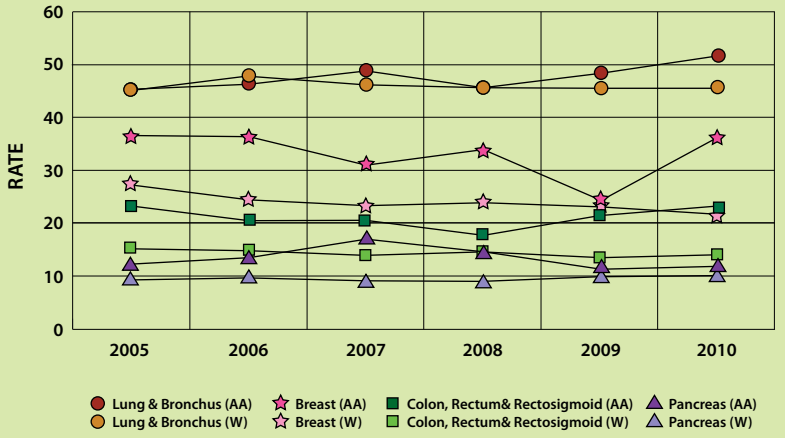
Cancer

Mortality Rates* for Leading Cancer Types Among Males
Missouri, 2005-2010



*Age-Adjusted Rates per 100,000 Population

Mortality Rates* for Leading Cancer Types Among Females
Missouri, 2005-2010

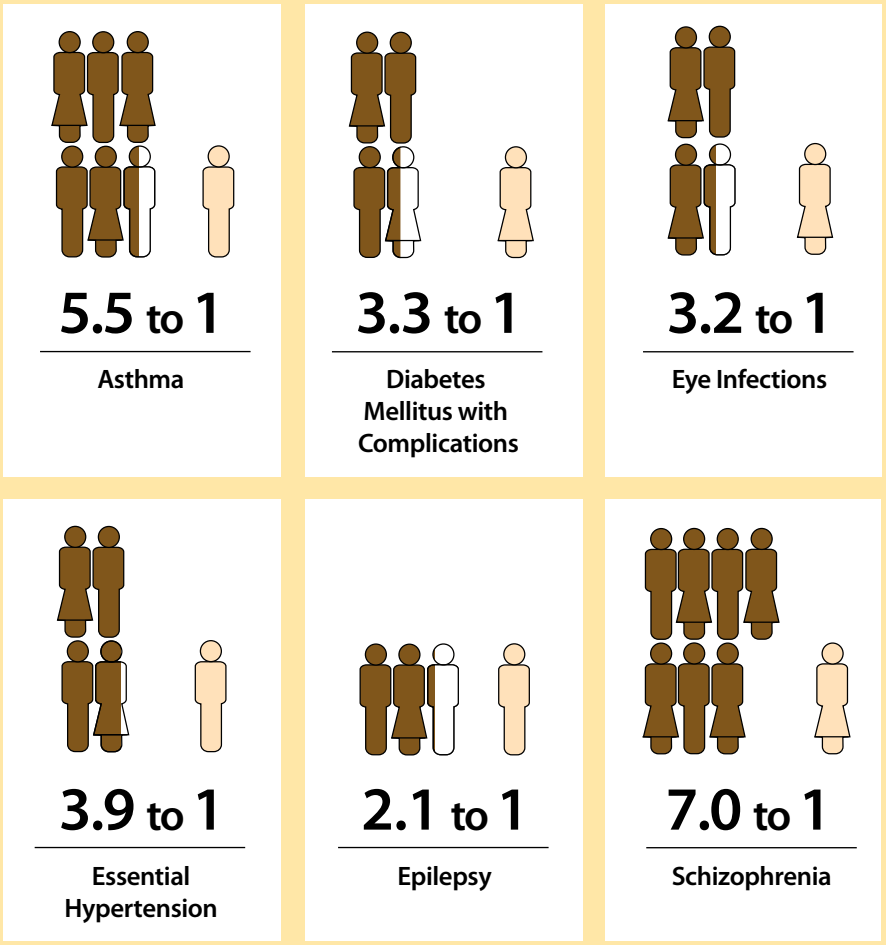


*Age-Adjusted Rates per 100,000 Population

Emergency Room Visits

Ratios of African American to White Rates for Selected Causes of Emergency Room Visits

Missouri, 2010



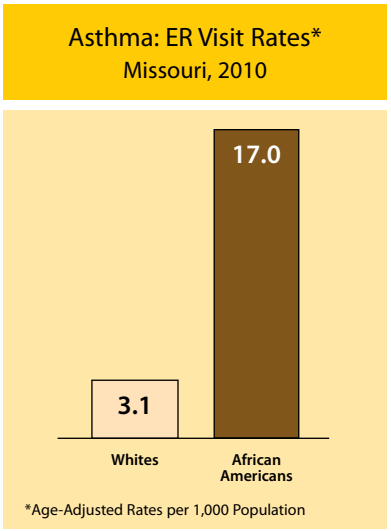
Source: Patient Abstract System, Bureau of Health Care Analysis and Data Dissemination, Missouri Department of Health and Senior Services

Rates are per 1,000 population.

African Americans
Whites

Asthma Related ER Visits

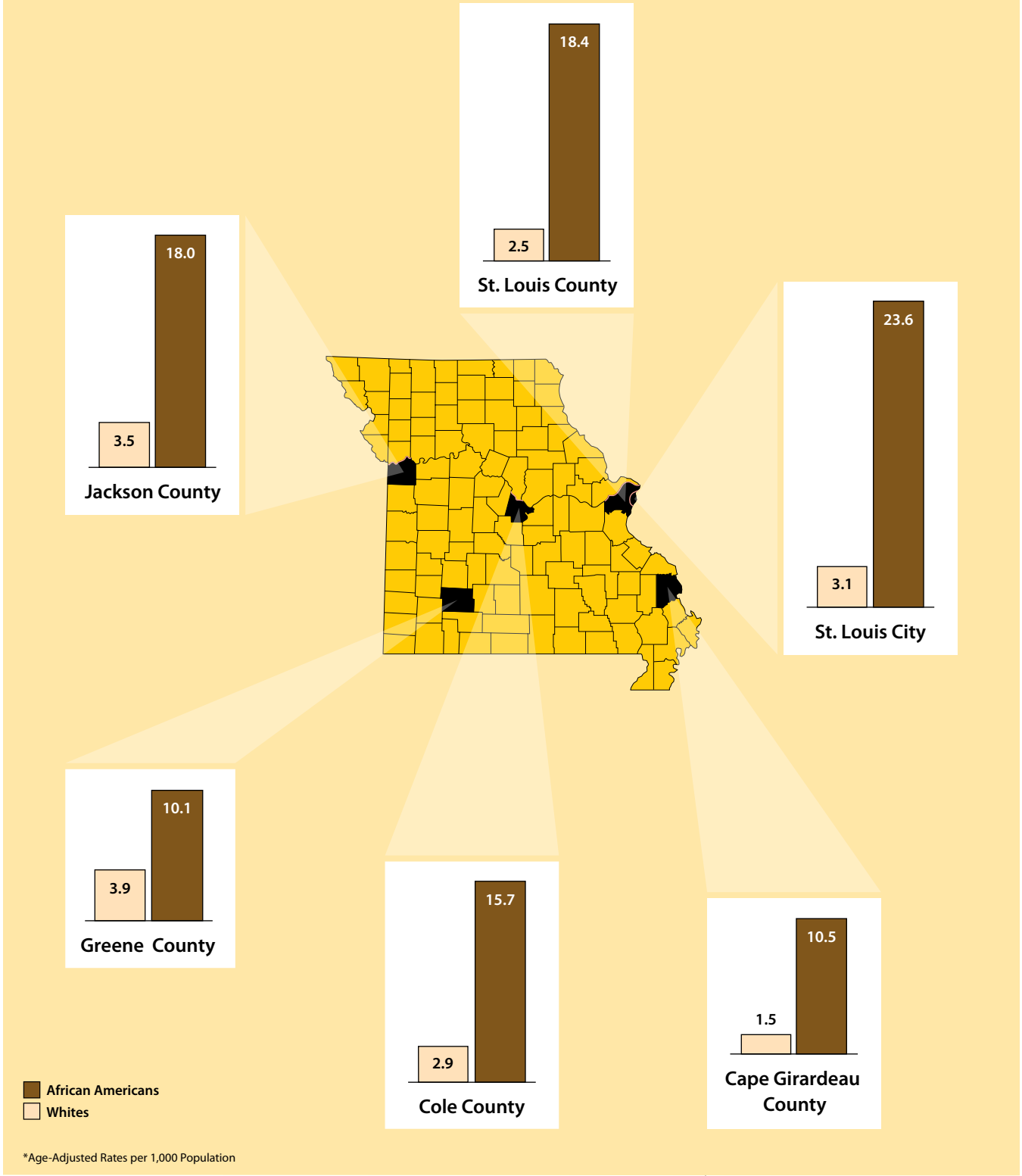
The African American asthma emergency room (ER) visit rate of 17.0 visits per 1,000 residents is over five times the rate for whites (3.1). This difference between the race groups is statistically significant. The African American rate increased by 8 percent between 2006 (when the rate was 15.7) and 2010, a statistically significant change. In contrast, the white rate remained stable at 3.1 for both time periods. Asthma ER visit rates are higher in urban areas. The combined 2010 African American rate for the three most urban counties (Jackson County, St. Louis City, and St. Louis County) is 19.5, compared to 10.3 for the 16 counties with the next largest African American populations. African American children under age 15 have an asthma ER visit rate of 32.6, the highest rate for all age-race groups by a large margin. The largest disparities by race occur in St. Louis City, St. Louis County, and Cape Girardeau, where the rates for African Americans are over seven times the white rates. National evidence shows that asthma is a top reason for school absences. Factors that may increase the risk of asthma among the general population include pollution, poverty, and lack of education.[1]



Asthma *– Resident emergency room visits with a primary diagnosis of asthma, which is a chronic lung disease characterized by episodes of breathing difficulties. ICD-9 codes are 493.00-493.92.*

Asthma Related Emergency Room Visit Rates*

Missouri, 2006–2010 (Selected Counties)

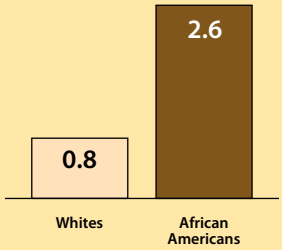


*Age-Adjusted Rates per 1,000 Population

Diabetes Mellitus with Complications Related ER Visits

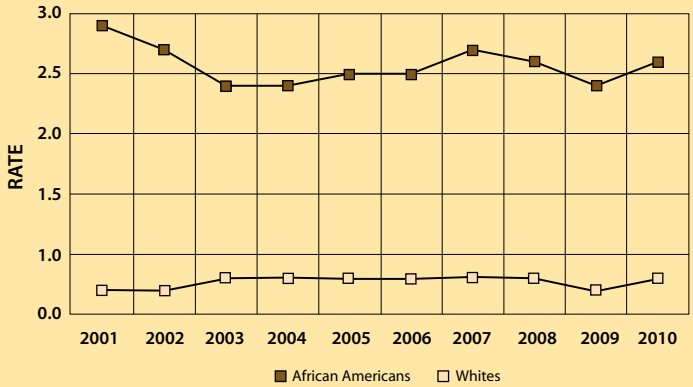
The African American ER visit rate for diabetes mellitus with complications is 2.6 visits per 1,000 residents, which is statistically significantly higher than the white rate of 0.8. These rates have not changed since 2006 for either race group. Diabetes ER visit rates are typically higher among older populations. In Missouri, the highest rates are found among African American adults ages 45-64 and 65 and over (rates of 4.1 and 6.3, respectively). The disparity ratio is largest for the 45-64 population, in which the African American rate is nearly four times the white rate. Research shows that age-adjusted Type 2 diabetes prevalence is higher for African American women (12.1 percent) than white women (5.8 percent).[2] Individual risk factors for diabetes include obesity, age, and a sedentary lifestyle. In addition, statistics show that certain racial/ethnic groups, including African Americans, Asian Americans, and Native Americans, are at higher risk for developing type 2 diabetes.[3]

Diabetes Mellitus: ER Visit Rates*
Missouri, 2010



*Age-Adjusted Rates per 1,000 Population

Diabetes Mellitus with Complications: Emergency Room Visit Rates*
Missouri, 2001–2010



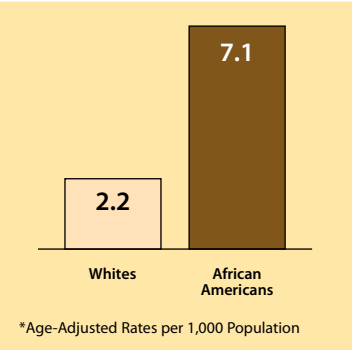
*Age-Adjusted Rates per 1,000 Population

Diabetes Mellitus with Complications *– Resident emergency room visits with a primary diagnosis of diabetes mellitus with complications. Diabetes is characterized by excessive urine excretion and an inability to metabolize carbohydrates, proteins, and fats with insufficient secretion of insulin. ICD-9 codes are 250.02-250.93.*

Eye Infection Related ER Visits

Eye Infections *– Resident emergency room visits with a primary diagnosis of an infection or rash on the eyelid, eye, cornea, retina, or iris, or a disorder of the globe. Infections can be caused by parasites, fungal disease, bacteria, or trachoma, as well as other conditions. ICD-9 codes are 021.3, 032.81, 053.20-053.29, 054.40-054.49, 055.71, 076.0-077.99, 115.02, 115.12, 115.92, 130.1-130.2, 139.1, 360.00-360.19, 363.00-363.22, 364.00-364.3, 370.20-370.59, 370.8-370.9, 372.00-372.39, 373.00-373.13, 373.31-373.9, 375.00-375.03, 375.30-375.43, 376.00-376.13, 377.30-377.39, and 379.00-379.09.*

Eye Infection: ER Visit Rates*
Missouri, 2010

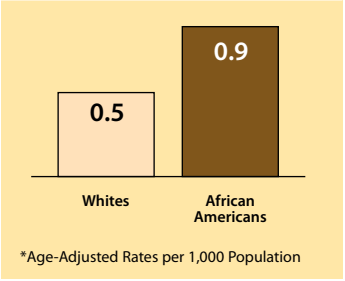


The rate of ER visits for eye infections is 7.1 visits per 1,000 residents among African Americans, compared to 2.2 for whites. Between 2006 and 2010, the African American rate increased by 4 percent (from 6.8 to 7.1), while the white rate decreased 12 percent (from 2.5 to 2.2). Only the decrease in the white rate is statistically significant. Eye infection ER visit rates are highest for the youngest populations, with the highest rates found in the under 1 and 1-4 African American age groups, which have rates of 32.3 and 25.0, respectively. The American Academy of Ophthalmology reports that "minority populations are at greater risk for eye disease and vision loss."[4]

Congestive Heart Failure Related ER Visits

Congestive Heart Failure *– Resident emergency room visits with a primary diagnosis of decreased cardiac output and marked by hypertension and edema. Usually the inability of the heart to pump adequately causes excessive fluid retention, congestion in the lungs, or swelling of the torso or legs. ICD-9 codes are 398.91 and 428.0-428.9.*

Congestive Heart Failure:
ER Visit Rates*
Missouri, 2010



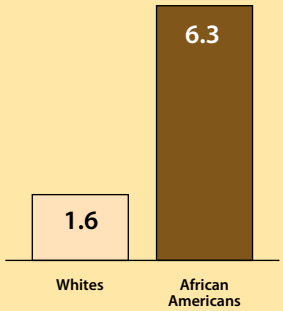
The 2010 congestive heart failure ER visit rate for African Americans is 0.9 visits per 1,000 residents, compared to 0.5 for whites. The African American rate decreased by 35 percent from 2006 to 2010, a statistically significant change. The white rate decreased slightly during this same time period (from 0.6 to 0.5). Males have somewhat higher rates than females (0.7 versus 0.5), but the African American racial disparity is similar for both genders.

Congestive heart failure rates are higher among older age groups for both races. The largest disparities are found among middle-aged adults. African Americans ages 25-44 have a rate 6 times higher than the white rate, while those ages 45-64 have a rate 3.5 times higher than that of whites in the same age category. However, in contrast to the pattern among middle-aged adults, the rate for whites ages 85 and over is twice as high (7.4) as the African- American rate (3.5). One recent study shows that African Americans have a higher incidence of congestive heart failure (4.6 per 1,000 person-years) compared to whites (2.4 per 1,000 person-years). This racial disparity is statistically significant; however after controlling for hypertension and diabetes, the statistical differences by race were eliminated.[5]

Essential Hypertension Related ER Visits

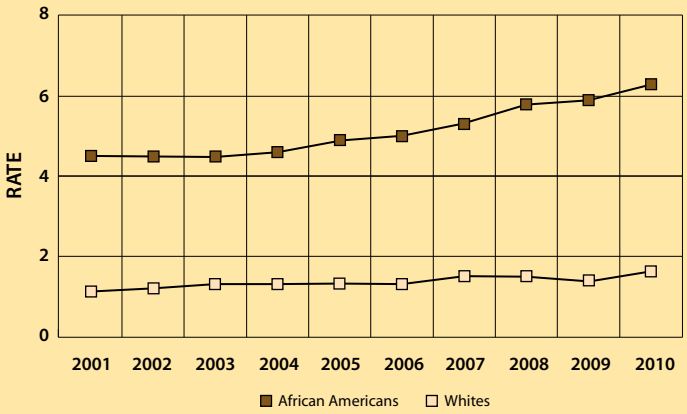
The 2010 African American ER visit rate for essential hypertension (6.3 visits per 1,000 residents) is nearly four times the white rate (1.6). This represents a statistically significant difference. The rate for African Americans increased by 26 percent between 2006 and 2010, a statistically significant increase. During the same time period, the white rate increased 23 percent, which is also a statistically significant change. ER visit rates are slightly higher among females of both race groups. The highest rate for whites is found in the oldest age group (6.8 for the 85 and over population). In contrast, among African Americans the highest rates are found in the middle age groups. The African American aged 45-64 rate is 12.1, compared to a rate of 8.5 for the 85 and over population. A recent study showed that disparities in hypertension risk and outcomes among diverse populations are now believed to be more related to personal habits, socioeconomic status, and psychosocial factors rather than race, ethnicity, or genetics.[6]

Essential Hypertension:
ER Visit Rates*
Missouri, 2010



*Age-Adjusted Rates per 1,000 Population

Essential Hypertension: Emergency Room Visit Rates*
Missouri, 2001–2010



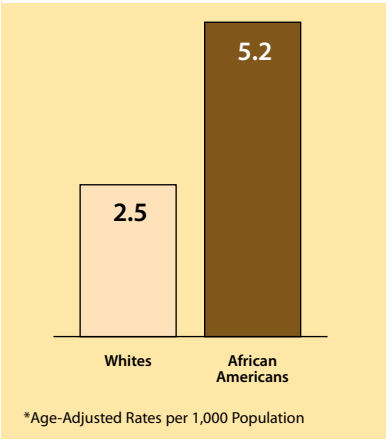
*Age-Adjusted Rates per 1,000 Population

Essential Hypertension *– Resident emergency room visits with a primary diagnosis of persistently high arterial blood pressure without a discoverable organic cause. ICD-9 codes are 401.0 and 401.9.*

Epilepsy Related ER Visits

The African American epilepsy ER visit rate of 5.2 visits per 1,000 residents is slightly more than double the white rate of 2.5. The African American rate remained unchanged from 2006 through 2010, while the white rate increased by 13 percent (from 2.2 to 2.5) during the same time period. While epilepsy rates for whites are the same for both genders, African American males have rates 65 percent higher than African American females. African American epilepsy rates are highest among the 1-4 year old population, at 10.6 (compared to 5.2 for whites in the same age group), and the 25-44 age category, at 6.3. Research shows that African Americans have a significantly higher seizure frequency and score lower on beliefs about medicines and antiepileptic medication adherence compared to whites.[7]

Epilepsy: ER Visit Rates*
Missouri, 2010



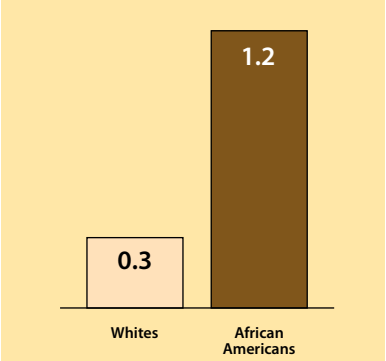
*Age-Adjusted Rates per 1,000 Population

Epilepsy Convulsions *– Resident emergency room visits with a primary diagnosis of a recurrent brain function disorder characterized by sudden, brief attacks of altered consciousness or motor activity. Convulsive seizures are the most common, but there are varying levels of symptoms and there may or may not be loss of consciousness. ICD-9 codes are 345.0-345.91 and 780.3-780.39.*

Osteoarthritis Related ER Visits

Osteoarthritis is the most common form of arthritis and a common cause of disability in the U.S.[8] The rate of osteoarthritis ER visits is four times higher for African Americans compared to whites. Trend analysis of the rates for both race groups shows virtually no change over the past five years. For both races the rates are higher among females. Osteoarthritis rates are highest for the oldest populations. Among persons ages 85 and over, the African American rate is 4.2 compared to 1.9 for whites.

Osteoarthritis: ER Visit Rates*
Missouri, 2010



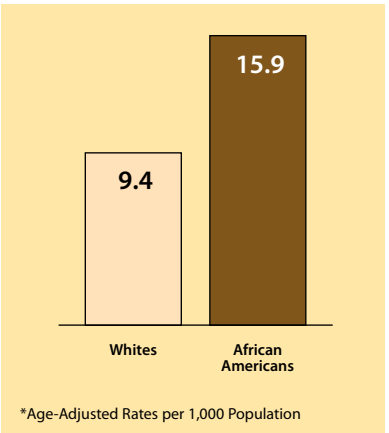
*Age-Adjusted Rates per 1,000 Population

Osteoarthritis *– Resident emergency room visits with a primary diagnosis of a chronic degenerative joint disease. May be caused by disease or internal or external injury and may affect single or multiple sites. ICD-9 codes are 715.00-715.98 and V13.4.*

Dental Problem Related ER Visits

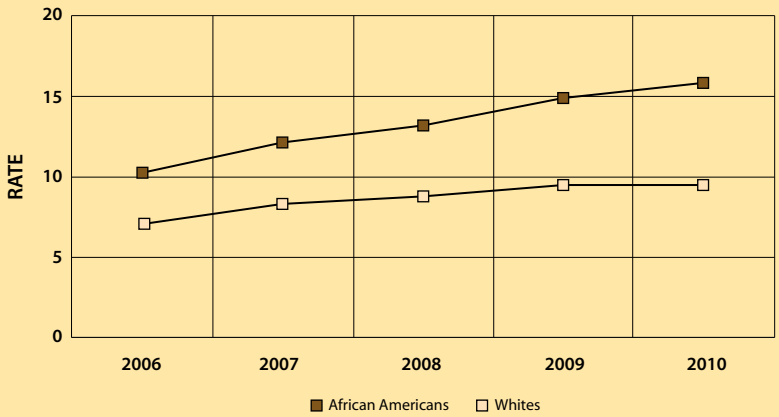
The African American ER visit rate for dental problems is 15.9 visits per 1,000 residents, which is statistically significantly higher than the 9.4 rate for whites. However, rates for both race groups have significantly increased since 2006. The white rate increased from 7.0 to 9.4 (a 34% change), while the African American rate increased from 10.2 to 15.9 (a 55% change) between 2006 and 2010. The disparity ratio increased from 1.5 to 1.7 over this time span. Female rates are higher than male rates for both race groups (18.5 versus 13.2 among African Americans and 10.6 versus 8.3 among whites). Rates are also higher for young adults (ages 20-34) of both race groups. Research shows that national ER visit rates for dental problems increased by 59 percent between 2001 and 2008. In particular, young adults (18-44) and African Americans experienced large increases during this time period.[9]

Teeth and Jaw Disorders:
ER Visit Rates*
Missouri, 2010



*Age-Adjusted Rates per 1,000 Population

Teeth and Jaw Disorders: ER Visit Rates*
Missouri, 2006-2010



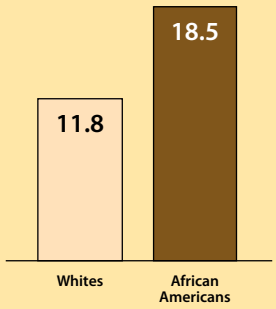
*Age-Adjusted Rates per 1,000 Population

Dental Problems *– Resident emergency room visits with a primary diagnosis of dental issues caused by teeth and jaw disorders. ICD-9 codes are 520.0-526.9, V523, V534, V585, and V722.*

Mental Health Related ER Visits

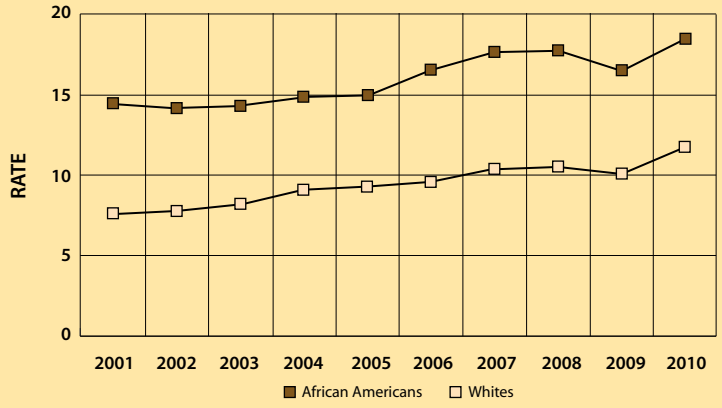
African Americans seek ER treatment for mental disorders at a rate of 18.5 visits per 1,000 residents. This rate is statistically significantly higher than the white rate of 11.8. Rates of ER visits related to mental disorders increased throughout the report period. The rate for whites increased by 55 percent between 2001 and 2010, compared to a 27 percent increase for African Americans during the same time period. There does not appear to be a gender disparity in ER visit rates for whites (11.9 for males versus 11.6 for females). However, among African Americans, males have a 50 percent higher rate than females (22.5 versus 15.0). For whites, mental disorder ER visit rates are highest in the 15-24 and 25-44 age groups. For African Americans, rates are highest in the 25-44 and 45-64 age groups. Rates of ER visits for several specific mental disorders are examined closer in the remainder of this chapter.

Mental Disorders:
ER Visit Rates*
Missouri, 2010



*Age-Adjusted Rates per 1,000 Population

Mental Disorders: ER Visit Rates*
Missouri, 2001–2010



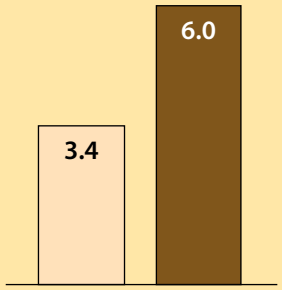
*Age-Adjusted Rates per 1,000 Population

Mental Disorders *– Resident emergency room visits with a primary diagnosis related to a mental health concern. ICD-9 codes are 290.0-319, 331.0, 331.1, 331.11, 331.19, 331.2, 780.1, 797, V110-V113, V118, V119, V154, V154.1, V154.2, V158.2, V154.9, V400-V403, V409, V628.4, V663, V673, V701, V702, V790-V793, V710.1, V710.2, V710.9, V798, and V799.*

Alcohol/Drug Use Related ER Visits

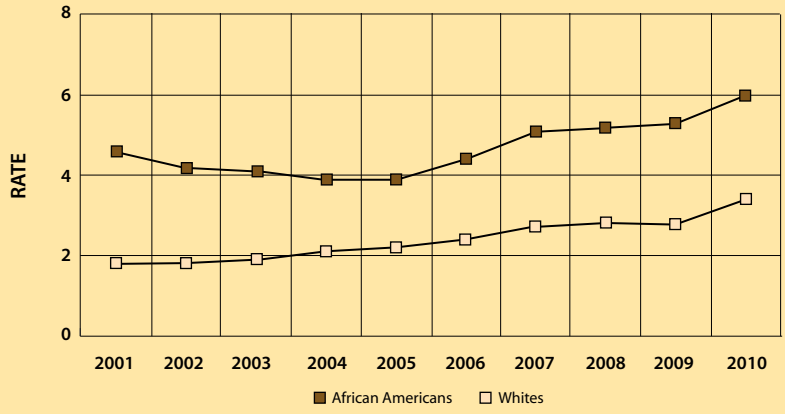
Alcohol and drug abuse is classified as a mental disorder. The African American alcohol/drug abuse ER visit rate is 6.0 visits per 1,000 residents. This is nearly double the white rate of 3.4, and the difference in these rates is statistically significant. Both race groups experienced increases of about 40 percent over the last five years. However, while the white rate steadily increased throughout the entire decade, the African American rate only increased over the past five years. Alcohol/drug abuse ER visit rates are higher for males than for females of both races. However, among men the African American rate is more than double the white rate (9.6 versus 4.3), while among females the African American rate is only about 25 percent higher (3.0 versus 2.4). Among whites the highest rates by age are found in the 15-24 and 25-44 age groups (rates of 5.0 and 5.7, respectively), while among African Americans the highest rates occur in the 45-64 age group (11.3).

Alcohol/Drug Use:
ER Visit Rates*
Missouri, 2010



*Age-Adjusted Rates per 1,000 Population

Alcohol/Drug Use: ER Visit Rates*
Missouri, 2001–2010



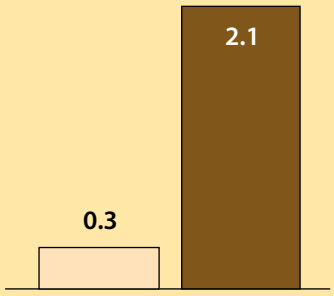
*Age-Adjusted Rates per 1,000 Population

Alcohol/Drug Abuse *– Resident emergency room visits caused by excessive use of alcohol or drugs. ICD-9 codes are 291.0-292.9, 303.00-305.93, and V15.82.*

Schizophrenia Related ER Visits

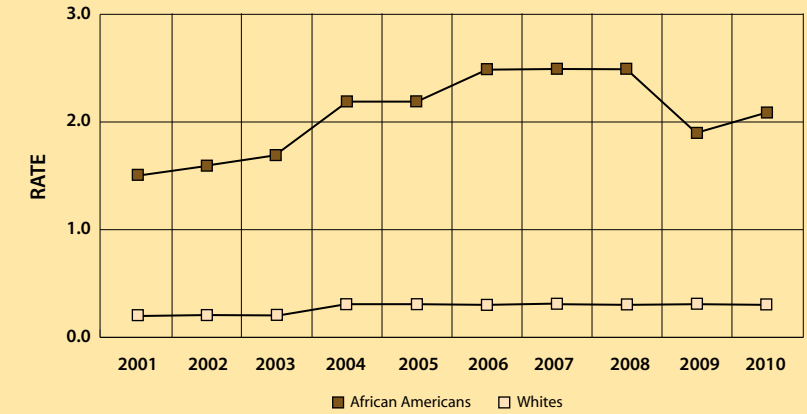
Schizophrenia is another type of mental disorder. The African American rate of ER visits for schizophrenia is 2.1 visits per 1,000 residents, which is seven times (and statistically significantly) higher than the rate for whites (0.3). The African American ER visit rate for schizophrenia fluctuated throughout the decade from 2000 through 2010. The rates from the last two years (2009-2010) are statistically significantly lower than the rates from the 2006-2008 period. The white rate remained 0.3 throughout the time period from 2006 to 2010. Schizophrenia ER visit rates are higher for males of both race groups. The gender disparity is slightly higher for African Americans (3.2 for males versus 1.2 for females) than for whites (0.4 for males versus 0.2 for females). Schizophrenia ER visit rates are highest among the 25-44 and 45-64 age groups for both races. The racial disparity is greatest in the 45-64 population, in which the African American rate is 9 times higher than the white rate. The schizophrenia ER visit rate is highest in St. Louis City (4.7 for African Americans), but the racial disparity is lower. The African American rate is 4.7 times higher than the white rate in St. Louis City, while the statewide African American rate is 7 times greater than the white rate. National research among 16- to 45-year-olds shows African Americans have significantly higher rates of clinically diagnosed schizophrenia compared to the white population.[10]

Schizophrenia: ER Visit Rates*
Missouri, 2010



*Age-Adjusted Rates per 1,000 Population

Schizophrenia: ER Visit Rates* Missouri, 2001–2010



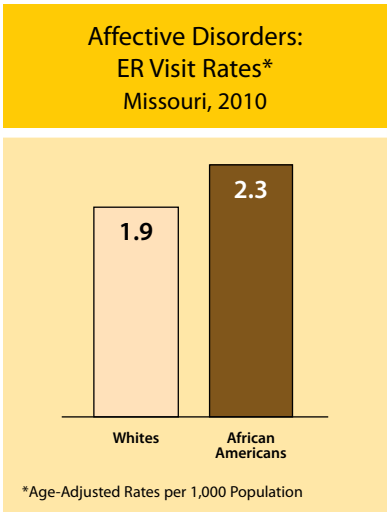
*Age-Adjusted Rates per 1,000 Population

Schizophrenia *– Resident emergency room visits with a primary diagnosis of schizophrenia or a related disorder characterized by disturbance in form or content of thought, mood, and behavior. ICD-9 codes are 295.00-295.95 and 299.00-299.91.*

Affective Disorder Related ER Visits

Affective, or mood, disorders are a form of mental disorders and include diagnoses such as depression, mania, and seasonal affective disorder. The 2010 African American ER visit rate for affective disorders is 2.3 visits per 1,000 residents, compared to 1.9 for whites. ER visit rates for affective disorders increased among both races between 2006 and 2010. The white rate increased by 58 percent (from 1.2 in 2006), while the African American rate increased by 28 percent (from 1.8 in 2006). Both increases are statistically significant. Affective disorder ER visit rates are higher for women than men of both race groups (1.4 versus 1.0 for whites and 1.8 versus 1.6 for African Americans). The highest rates for both races are found in the 15-24 age group (3.3 for whites and 4.0 for African Americans).

A recent national study of adults ages 55 and older looked at lifetime affective disorders and showed that prevalence estimates of affective disorders are highest for non-Hispanic whites (23.5%) and Latinos (22.8%), while African Americans (13.7%) and Asian Americans (12.3%) have the lowest prevalence rates. This pattern was true for one or more affective disorders and was calculated for racial/ethnic group, adjusting for age, gender, employment status, poverty-income level, education, marital status, region, and nativity.[11] The fact that all age categories of African Americans in Missouri have higher ER visit rates for affective disorders, when national data indicate higher prevalence rates for whites, may be indicative of access to care issues for African Americans.

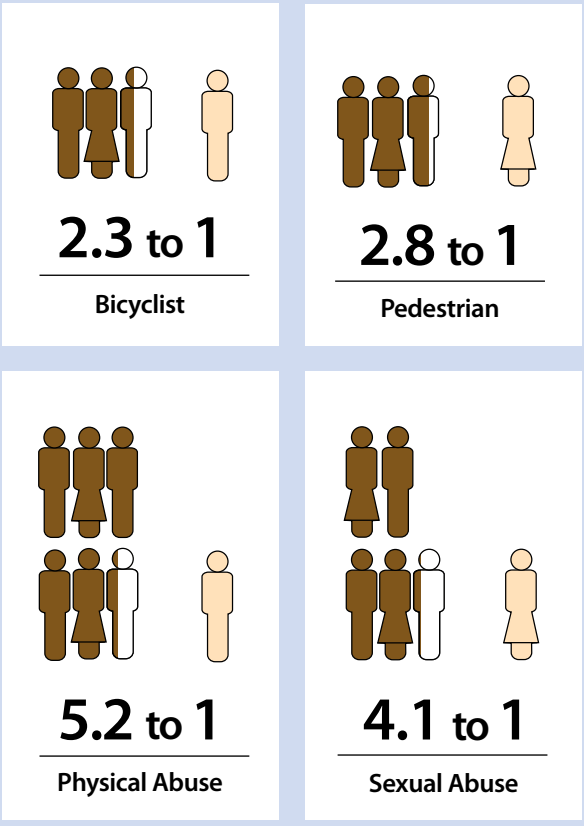


Affective Disorders *– Resident emergency room visits with a primary diagnosis related to affective disorders. ICD-9 codes are: 296.00-296.06, 296.10-296.16, 296.20-296.26, 296.30-296.36, 296.40-296.46, 296.50-296.56, 296.60-296.66, 296.7, 296.80-296.82, 296.89, 296.90, 296.99, 298.0, 300.4, 301.11, 301.13, and V628.4.*

Inpatient Hospitalizations and Injuries Treated in Hospitals

Ratios of African American to White Rates for Selected Inpatient Hospitalizations and Injuries Treated in Hospitals

Missouri, 2010



Source: Patient Abstract System, Bureau of Health Care Analysis and Data Dissemination, Missouri Department of Health and Senior Services

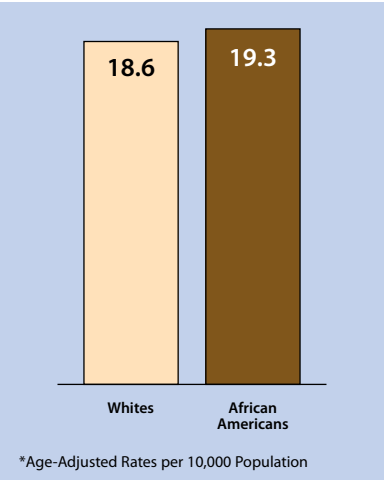
Age-adjusted rates are per 10,000 population.

African Americans
Whites

Acute Myocardial Infarction (Heart Attack) Hopitalizations

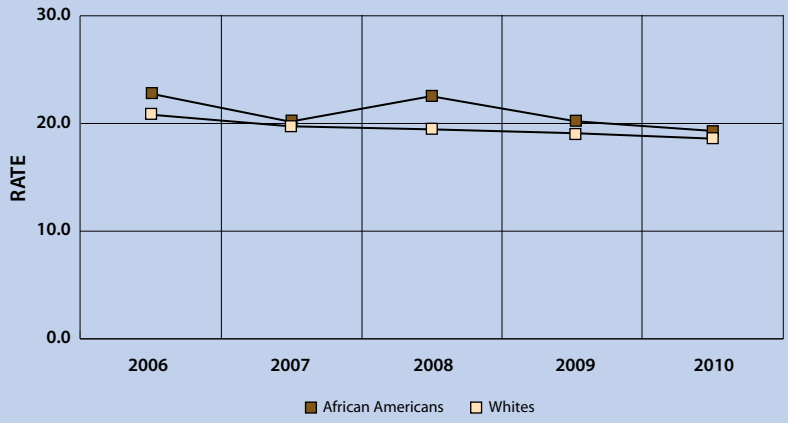
The 2010 rate of hospitalizations related to acute myocardial infarction (heart attack) is slightly higher for African Americans compared to whites (19.3 hospitalizations per 10,000 residents for African Americans versus 18.6 for whites), but the difference is not statistically significant. Both race groups experienced statistically significant decreases in the last five years. The African American rate decreased by 15 percent between 2006 and 2010 (from 22.9), while the white rate decreased 11 percent (from 21.0). In both race groups, males have higher rates than females, but among whites the gender disparity is much greater. The disparity ratio between white males and females stands at 1.9 (25.1 versus 12.9), while for African Americans it is only 1.3 (22.3 versus 16.9). Thus, white men are hospitalized for a heart attack at nearly twice the rate of white women (25.1 versus 12.9), whereas African American men are only 32 percent more likely to be hospitalized than African American women (22.3 versus 16.9).

Acute Myocardial Infarction Inpatient Hospitalization Rates*
Missouri, 2010



*Age-Adjusted Rates per 10,000 Population

Acute Myocardial Infarction Inpatient Hospitalization Rates*
Missouri, 2006-2010

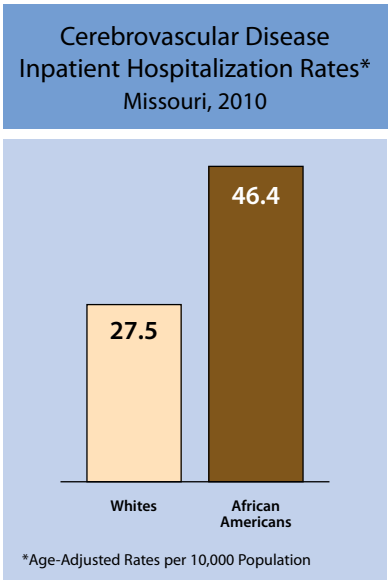


*Age-Adjusted Rates per 10,000 Population

Acute Myocardial Infarction *– Resident inpatient hospitalizations with a primary diagnosis of a sudden decrease in coronary artery blood flow that results in death of the heart muscle. ICD-9 codes are 410.0, 410.00, 410.01, 410.02, 410.1, 410.10-410.12, 410.2, 410.20-410.22, 410.3, 410.30-410.32, 410.4, 410.40-410.42, 410.5, 410.50-410.52, 410.6, 410.60-410.62, 410.7, 410.70-410.72, 410.8, 410.80-410.82, 410.9, and 410.90-410.92.*

Cerebrovascular Disease (Stroke) Hopitalizations

The African American rate for hospitalizations related to cerebrovascular disease (stroke) is 46.4 hospitalizations per 10,000 residents. This rate is 69 percent higher than the white rate of 27.5, and the difference is statistically significant. The white rate decreased by 6.5 percent between 2006 (when the rate was 29.3) and 2010, while the African American rate remained virtually unchanged. In both race groups, the stroke hospitalization rate for males exceeds the rate for females (by 11.5% for African Americans and 16% for whites). Stroke rates are highest among the oldest age groups. The African American rate for the age 85 and older population is 360.1, which is 24 percent higher than the white rate of 289.0. The largest disparity is found in the 35-64 age group, for which the African American rate is between two and three times greater than the white rate.

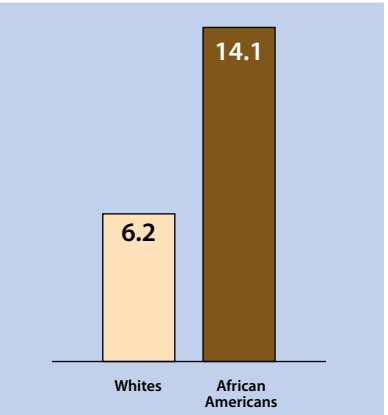


Cerebrovascular Disease (Stroke) – *Resident inpatient hospitalizations with a primary diagnosis of a stroke, which is caused by the interruption of the blood supply to the brain, usually because a blood vessel bursts or is blocked by a clot. ICD-9 codes are 346.60, 346.61-346.63, 430-431, 432.0-432.1, 432.9, 433.0, 433.00-433.01, 433.1, 433.10-433.11, 433.2, 433.20-433.21, 433.3, 433.30-433.31, 433.8, 433.80-433.81, 433.9, 433.90-433.91, 434.0, 434.00-434.01, 434.1, 434.10-434.11, 434.9, 434.90-434.91, 435.0-435.3, 435.8-435.9,436, 437.0-437.1, 437.1, 437.3-437.9, 438, 438.0, 438.10-438.14, 438.9, 438.20-438.22, 438.30-438.2, 438.40-438.42, 438.50-438.53, 438.6-438.7, 438.81-438.85, and 438.89.*

Bicyclist Injury

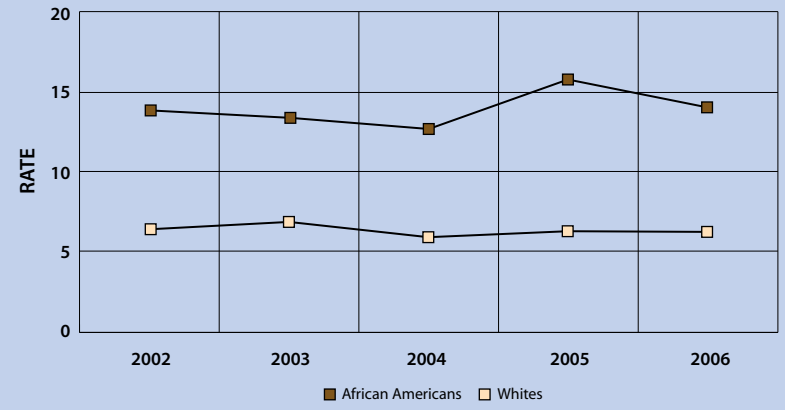
The African American rate of bicyclist injuries caused by a motor vehicle on a roadway is 14.1 injuries per 100,000 residents, more than double the white rate of 6.2. This disparity in the bicyclist injury rate is statistically significant. Over the last five years, neither the rate for whites nor the rate for African Americans changed significantly. Rates are three to four times higher for males than females of both race groups. The largest racial disparity by age occurs in the under 15 population. Within this age cohort, the 2010 African American rate of 31.9 is more than 3.5 times the white rate of 8.4. A recent national study showed that African American fifth graders are 36 percent less likely to wear a bike helmet than their white peers.[1]

Bicyclist Injury Rates*
Missouri, 2010



*Age-Adjusted Rates per 100,000 Population

Bicyclist Injury Rates*
Missouri, 2006–2010

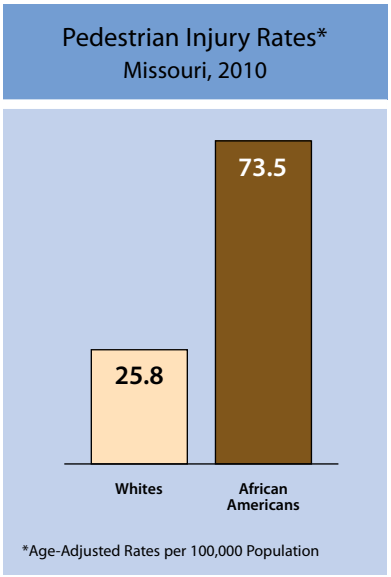


*Age-Adjusted Rates per 100,000 Population

Bicyclist *– Resident hospital admissions plus emergency room visits for bicyclists injured in collisions with motor vehicles on roadways. ICD-9 codes are 8106, 8116, 8126, 8136, 8146, 8156, 8166, 8176, 8186, and 8196.*

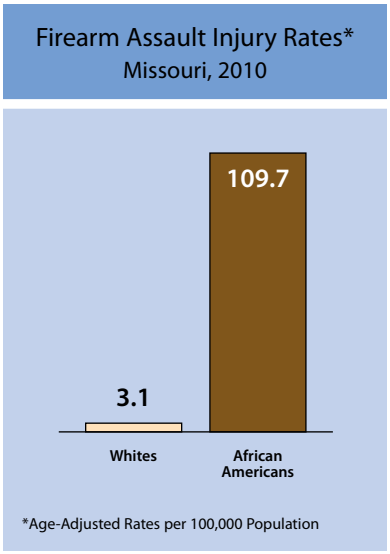
Pedestrian Injury

The pedestrian injury rate remains high for African Americans compared to whites. The 2010 rate of 73.5 injuries per 100,000 African American residents is significantly higher than the white rate of 25.8. The African American rate decreased from 83.2 in 2006, but this change is not statistically significant. Pedestrian injuries are highest in the 15-24 age categories for both race groups. African Americans over age 35 are significantly less likely to be involved in a pedestrian injury compared to persons under age 35. For both African Americans and whites, pedestrian injury rates are highest in St. Louis City, at 106.3 and 38.9, respectively. Research shows that persons of lower socioeconomic status are at greater risk for pedestrian injuries and fatalities. Experts speculate this may be attributed to less awareness of public safety issues and less supervision for children due to lack of access to daycare. Nationally, 47 percent of all pedestrian traffic fatalities for 4- to 7-year-olds and 37 percent of 8- to 15-year-olds were African American. Fatalities were disproportionately high for African American children in these age groups in both rural and urban settings.[2]



Pedestrian *– Resident hospital admissions plus emergency room visits for pedestrians injured in collisions with motor vehicles on roadways. ICD-9 codes are E810.7, E811.7, E812.7, E813.7, E814.7, E815.7, E816.7, E817.7, E818.7, and E819.7.*

Firearm Assault Injury



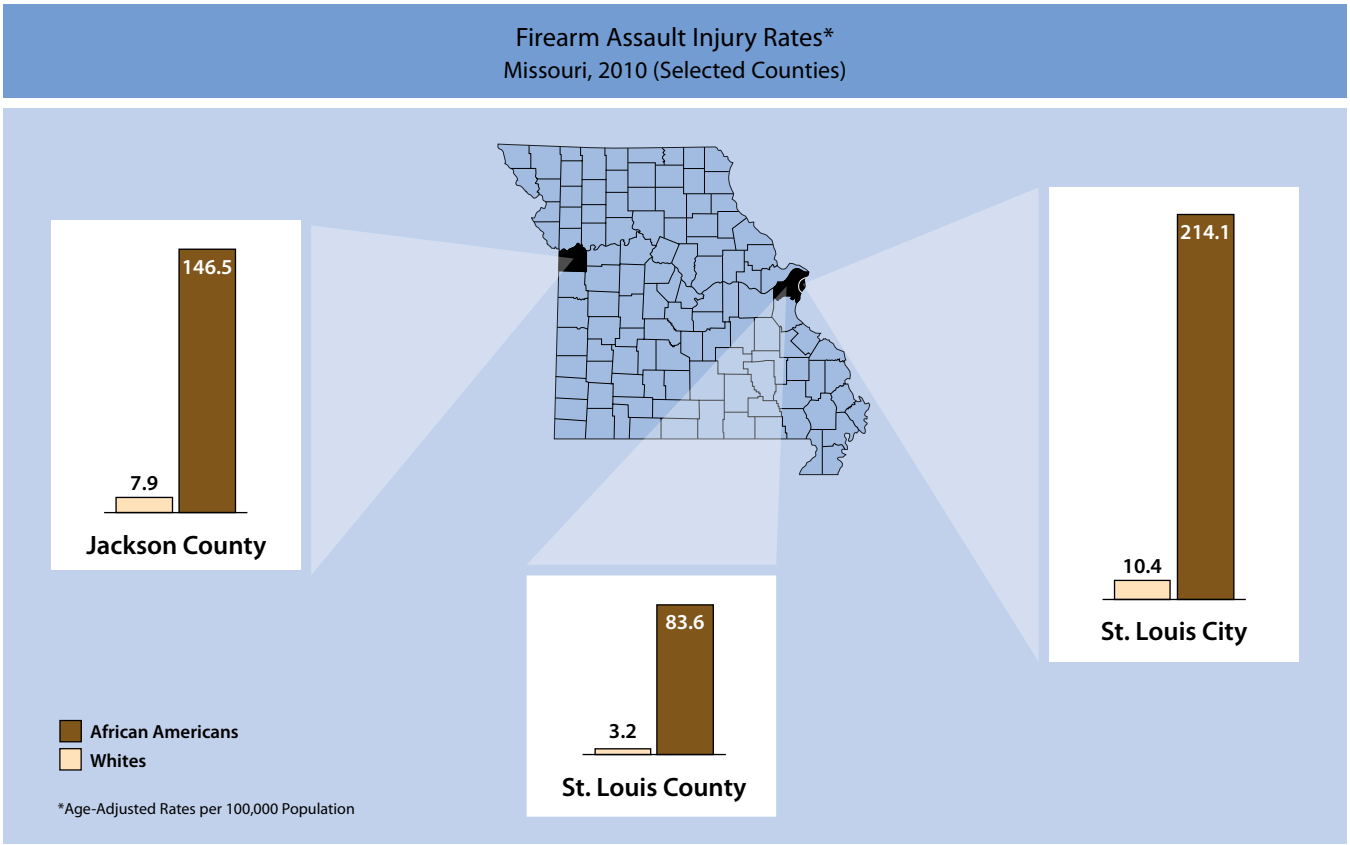
The 2010 African American firearm assault injury rate is 109.7 injuries per 100,000 residents, compared to 3.1 among the white population. This large disparity, with an African American rate that is 35 times the white rate, represents a statistically significant difference. The African American firearm assault injury rate in Missouri is consistently much higher than the white rate. However, the African American rate has fluctuated over the 16 years for which comparable data are available. African American rates dipped in the late 1990s and early 2000s (to a low rate of 76.9 in 2001) before consistently increasing beginning in 2002 and continuing until 2008-2009.

The 2010 African American rate of 109.7 is significantly lower than the 2009 rate of 126.5 and is the first rate decrease for firearm assault injuries since 2000-2001. The 2010 rate is the lowest overall rate for African Americans since 2005. In contrast, the white rate did not vary much from a rate of 3.0 between 2000 and 2010.

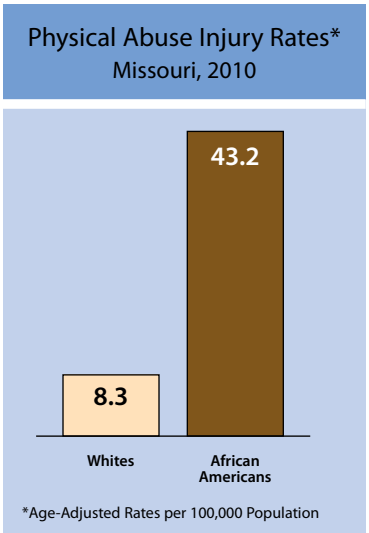
The rates for both race groups are dramatically higher for men. Among African Americans the assault injury rate for men is almost 9 times the rate for women. Among whites the gender disparity is only 5 times greater for men. Over 90 percent of all African American firearm assaults occur in the 15-44 age group. For children ages 15-17, the rate is 60 times greater for African Americans than for whites. A research study in Tennessee revealed that African American children "were four times more likely to die of firearm injuries than whites" after controlling for intent and age.[3]

Geographically, firearm assault injury rates are highest in St. Louis City for both African Americans and whites (214.1 and 10.4, respectively). Jackson County also has rates that are significantly higher than the state rates for both African Americans and whites (146.5 and 7.9, respectively). In St. Louis County, the African American rate of firearm assaults is 83.6, significantly lower than the statewide African American rate of 109.7.

Firearm Assault *– Resident hospital admissions plus emergency room visits for firearm assault injuries. ICD-9 codes are E965.0-E965.4 and E979.4.*



The 2010 physical abuse injury rate for African Americans is 43.2 injuries per 100,000 residents, compared to 8.3 for whites. While the African American rate has remained virtually unchanged since 2006, the white rate has increased by over 50 percent (from 5.2 to 8.3). This increase is statistically significant and caused the disparity ratio between African Americans and whites to drop from 8.4 to 1 to 5.2 to 1 between 2006 and 2010. In both race groups, women are about 3 times more likely to suffer physical abuse injuries than men (12.1 versus 4.5 for whites, 61.0 versus 22.6 for African Americans). Infants under age 1 have the highest physical abuse rates among both race groups (93.5 for whites compared to 146.8 for African Americans). The racial disparity is considerably lower for the under age 1 population at 1.6 to 1 compared to 5.2 to 1 for all persons.



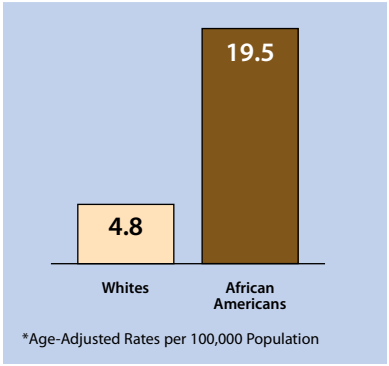
Physical Abuse Injury

Physical Abuse *– Resident hospital admissions plus emergency room visits for intentionally inflicted physical injury. Injuries to children are usually inflicted by a caregiver. ICD-9 codes are E967.0-E967.2, E967.4-E967.9, and also E967.3 if age is less than 14.*

Sexual Abuse Injury

African Americans seek sexual abuse treatment at hospitals four times more frequently than whites. The 2010 rate for African Americans is 19.5 compared to 4.8 for whites. This difference in rates is statistically significant. The African American rate declined by 18 percent between 2006 and 2010 (23.1 and 19.5, respectively), but this decrease is not statistically significant. Women are about seven times more likely to seek hospital treatment for sexual abuse than men. This disparity ratio by gender is similar for both African Americans and whites. Children under age 18 have the highest sexual abuse rates for both race groups. Almost 90 percent of all African American and 66 percent of all white sexual abuse injuries for which the victim sought treatment in a hospital occurred among children. African American children ages 10-14 have a sexual abuse injury rate of 99.9 per 100,000 population, which is more than 9 times the rate for whites in the same age group.

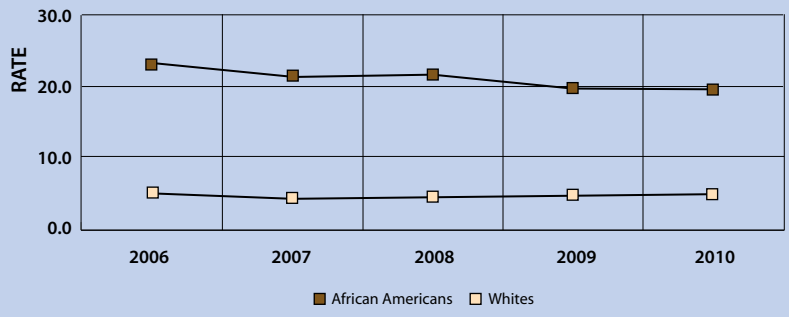
Sexual Abuse Injury Rates*
Missouri, 2010



*Age-Adjusted Rates per 100,000 Population

The injury rates reported in this chapter are based on only those sexual abuse cases treated in hospitals. Many cases likely go unreported. Research shows that white children are 1.3 times more likely to be reported for child sexual abuse recurrence than either African American or Hispanic children nationwide. In addition, their claims are more likely to be investigated than those of African Americans or Hispanics. However, African American and Hispanic children are more likely to be investigated for claims of physical abuse/neglect.[4]

Sexual Abuse Injury Rates* Missouri, 2006-2010



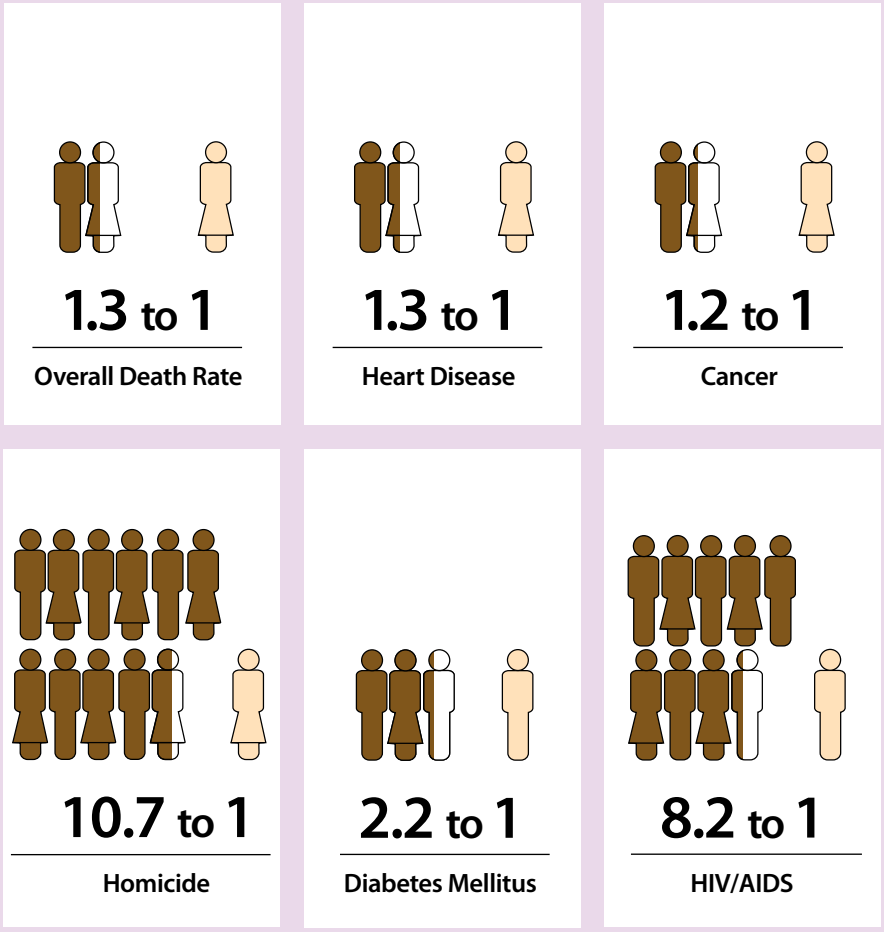
*Age-Adjusted Rates per 10,000 Population

Sexual Abuse *– Resident hospital admissions plus emergency room visits for sexual abuse. Sexual abuse includes physical or psychological injury due to all forms of sexual contact or exposure, as well as non-contact sexual abuse (e.g., voyeurism, exposure to pornography). Sexual violence occurs when the victim does not consent to the sexual activity or when the victim is unable to consent (e.g., due to age or illness) or refuse (e.g., due to physical violence or threats). ICD-9 codes are as follows: E9601 and either second E-code is E967 or E9679; or one of the first 10 diagnoses is among the following: E9955, E99550, E99551, E99553, E99554, E99559, E99580, E99581, E99582, E99583, or E99585; or if one of the first 10 diagnoses is E99553 or E99583 and the E-code is in the range of E960-E968 (assault).*

Deaths

Ratios of African American to White Rates for Selected Causes of Death

Missouri, 2006-2010



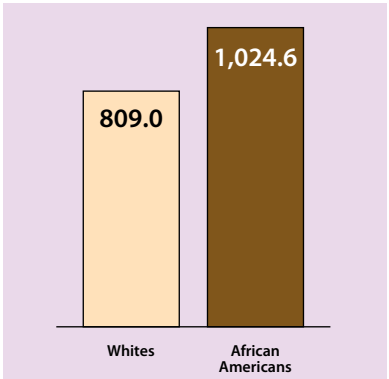
Source: Bureau of Vital Statistics, Missouri Department of Health and Senior Services
Rates are per 100,000 population.

African Americans
Whites

Death Rates

The total number of Missouri resident deaths from all causes for 2006-2010 is 273,808, a rate of 825.8 deaths per 100,000 residents. The age-adjusted death rate for African American Missourians is 1,024.6, 30 percent higher than the rate of 809.0 for white Missourians. Although the 2006-2010 age-adjusted death rates for both African Americans and whites are lower than those reported for 2002-2006, the disparity ratio between the two races is unchanged at 1.3 to 1.

Death Rates*
Missouri, 2006–2010



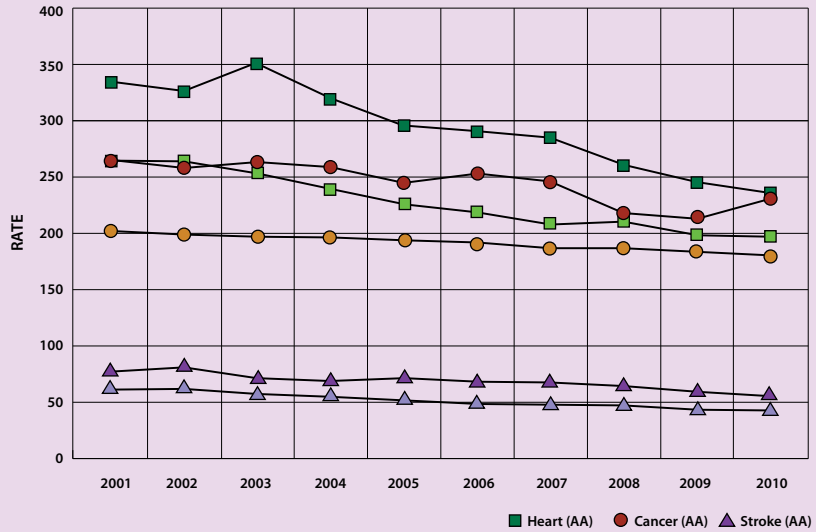
*Age-Adjusted Rates per 100,000 Population

The three leading causes of death for African Americans during the period from 2006 to 2010 were heart disease, cancer, and stroke. The rank order of these causes remained the same as in the previous reporting period of 2002-2006, even though the number of deaths due to each cause decreased. For white residents the two leading causes remained heart disease and cancer. However, the third leading cause for whites changed from stroke to chronic lower respiratory disease (CLRD). Stroke mortality decreased from 15,740 to 14,045 (an 11% decline) between the two time periods,

Underlying Cause of Death *– The underlying cause of death is the disease or injury that initiated the sequence of events which led to death, or the accident or violence which produced a fatal injury. Causes of death in this report are underlying causes. Causes of death are classified in accordance with the Tenth Revision of the International Classification of Diseases (ICD-10), the standard diagnostic tool for monitoring and analyzing the general health status of population groups, including the compilation of mortality statistics. When more than one cause contributes to a death, the underlying cause is chosen by rules specified by the National Center for Health Statistics.*

Leading Causes of Death *– Leading causes of death are ranked by the number of deaths attributed to the selected causes. Because the ranking of causes is heavily dependent on how the causes are grouped, standard groupings and procedures were developed in 1951; they have changed little since then. See M. Heron, "Deaths: Leading Causes for 2009," National Vital Statistics Reports Vol.61, No. 7, Hyattsville, MD: National Center for Health Statistics 2012 for a complete list of the 51 rankable causes (Table A) and a description of how they were chosen. www.cdc.gov/nchs/data/nvsr/nvsr61/nvsr61_07.pdf.*

Death Rates Due to Heart Disease, Cancer, and Stroke*
Missouri, 2001–2010

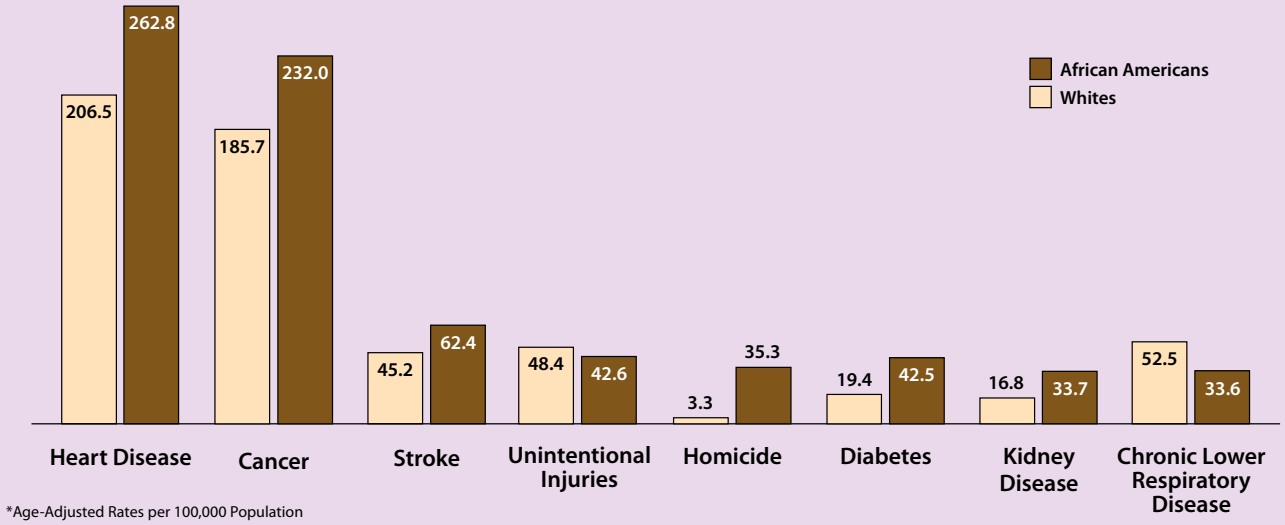


*Age-Adjusted Rates per 100,000 Population

while CLRD mortality, which had been the fourth leading cause of death for the previous reporting period, grew from 13,783 to 15,880 (a 15% increase). Several leading causes of death for African Americans are highlighted in the remainder of this chapter.

Death Rates

Comparison of Leading Causes of Death Rates*
Missouri, 2006 -2010



*Age-Adjusted Rates per 100,000 Population

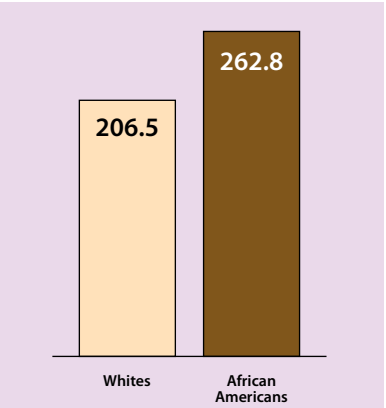
Comparison of Leading Causes of Death for African Americans and Whites
Missouri 2006-2010

African American Residents			White Residents		
Rank	Cause	Deaths	Rank	Cause	Deaths
1	Heart Disease	6,664	1	Heart Disease	63,972
2	Cancer	6,119	2	Cancer	55,769
3	Stroke	1,539	3	Chronic Lower Respiratory Diseases	15,880
4	Unintentional Injury	1,405	4	Stroke	14,045
5	Homicide	1,318	5	Unintentional Injury	13,060
6	Diabetes Mellitus	1,097	6	Alzheimer's Disease	8,579
7	Chronic Lower Respiratory Diseases	846	7	Pneumonia and Influenza	6,108
7	Kidney Disease	846	8	Diabetes Mellitus	5,848
9	Conditions of the Perinatal Period (Early Infancy)	507	9	Kidney	5,206
10	Septicemia	503	10	Suicide	3,836

Heart Disease Deaths

Heart disease, with 71,020 total deaths in Missouri, ranked number one as the leading cause of death for both African Americans and whites during 2006-2010, the same rank it held for the previous reporting period of 2002-2006. However, the number and rate of heart disease deaths declined for both groups between the two reporting periods. The African American mortality rate decreased from 316.5 deaths per 100,000 residents to 262.8. Similarly, white Missourians experienced a decrease from 240.6 to 206.5. The disparity between the groups remained approximately the same over these years, with African Americans nearly 30 percent more likely to die of heart disease than whites.

Heart Disease Death Rates*
Missouri, 2006–2010



*Age-Adjusted Rates per 100,000 Population

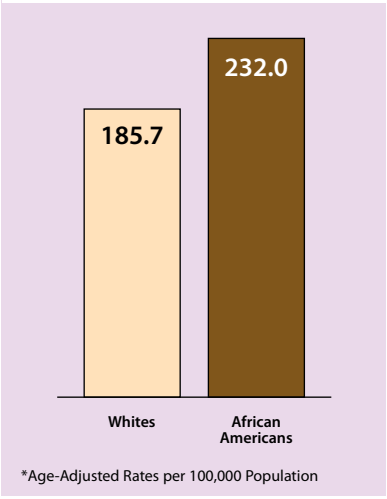
For 2006-2010, the largest disparity ratios within the heart disease grouping of ICD-10 codes are for hypertensive heart disease (disparity ratio of 4.8 to 1) and hypertensive heart and renal disease (disparity ratio of 3.8 to 1). However, both of these disparity ratios are smaller than for 2002-2006, when the hypertensive heart disease ratio was 5.2 to 1 and the hypertensive heart and renal disease ratio was 6.8 to 1. Although essential hypertension (high blood pressure) is not included in the heart disease grouping of ICD-10 codes, the relationship between high blood pressure and cardiovascular disease is strong. The disparity ratio for essential hypertension deaths is about 2.6 to 1 for 2006-2010, compared to 3.0 to 1 for 2002-2006. As further evidence of disparities related to hypertension, a key finding of the 2009 Missouri Behavioral Risk Factor Surveillance System (BRFSS) survey was that a significantly higher percentage of African American Missouri residents (43.4%) had high blood pressure compared to white Missouri residents (29.7%).[1]

Heart Disease *– Resident deaths for which the underlying cause of death was given on the death certificate as heart disease. Causes of death in this category include ischemic heart disease, rheumatic heart disease, hypertensive heart disease, pulmonary embolism, various valve disorders, cardio-myopathy, atrial fibrillation, and congestive heart failure. ICD-10 codes for heart disease are: I00-I09, I11, I13, and I20-I51.*

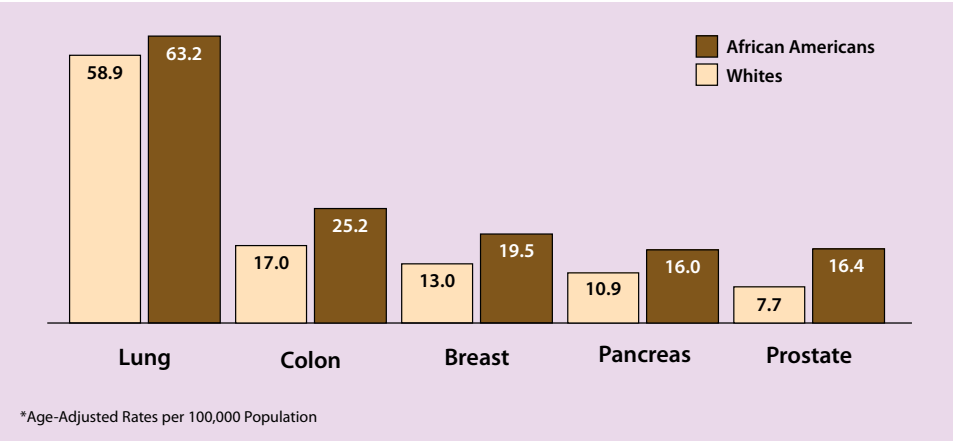
Cancer Deaths

During 2006-2010, 62,339 Missourians died from cancer. Cancer ranked number two as the leading cause of death for both African Americans (with a rate of 232.0 deaths per 100,000 residents) and whites (with a rate of 185.7). The top five causes of cancer deaths are the same for both races: lung, colon, breast, pancreas, and prostate, in that order. Among both African Americans and whites, pancreatic cancer death rates increased compared to 2002-2006. At the same time, the mortality rates for lung, colon, breast, and prostate cancer all decreased for both races, yet the African American rates from these causes remain higher than the white rates. The disparity between the races remained approximately the same for both time periods. The greatest disparities are for prostate and breast cancer, with ratios of 2.1 and 1.5, respectively. Nationally, African Americans have higher mortality rates than any racial and ethnic group for all cancers combined and for most major cancers.[2]

Cancer Death Rates*
Missouri, 2002-2006



Selected Cancer Death Rates*
Missouri, 2006 -2010



The disparity in cancer deaths is thought to be reflective of socio-economic disparities, including inequities in employment, income, education, and access to care. Socioeconomic status has been correlated with cancer risk as persons with lower socioeconomic status are more likely to engage in behaviors that increase cancer risk, such as tobacco use and lack of physical activity.[3] Stage at diagnosis is another major factor in cancer mortality. African Americans are more likely to be diagnosed during later stages of cancer, when treatment is more difficult and long-term survival less likely.[4]

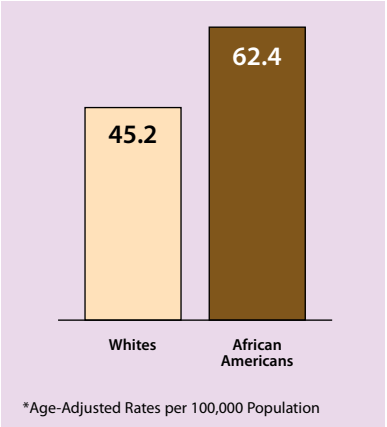
Cancer *– Resident deaths for which the underlying cause of death was given on the death certificate as a malignant neoplasm (cancer). This includes leukemia and cancer of various organs. ICD-10 codes are C00-C97.*

Stroke Deaths

Between 2006 and 2010, stroke was the fourth leading cause of death for Missourians, with 15,713 cases. However, for African Americans stroke remained the third leading cause of death, despite a decrease in the number of deaths from 1,637 to 1,539 (a 6% decline). Age-adjusted mortality rates for African American decedents fell from 69.7 per 100,000 residents in 2002-2006 to 62.4 in 2006-2010. Rates for white Missourians fell from 53.3 to 45.2 during the same years. The 2006-2010 African American disparity ratio is about 1.4 to 1, a slight increase over the 1.3 to 1 ratio from the previous period.

This stroke mortality disparity has been associated with high blood pressure, a key risk factor for stroke. About one in three African Americans have high blood pressure.[5] High blood pressure continues to be a major risk factor for stroke and African Americans are far more susceptible to it, as discussed in the Heart Disease section. Other factors related to heart disease, such as physical inactivity and obesity, are also risk factors for stroke.

Stroke Death Rates*
Missouri, 2006-2010



*Age-Adjusted Rates per 100,000 Population

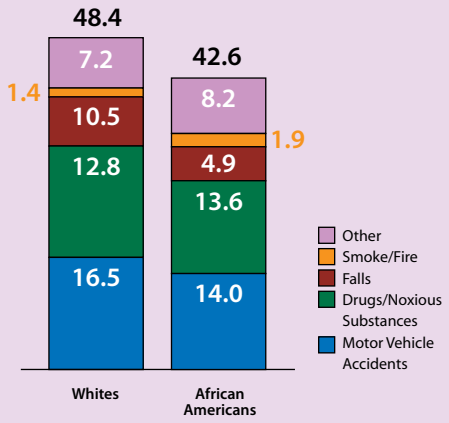
Stroke *– Resident deaths for which the underlying cause of death was given on the death certificate as cerebrovascular disease (stroke), whether due to bleeding or to blockage of arteries in the brain. This also includes deaths due to late effects of strokes. ICD-10 codes are I60-I69.*

Unintentional Injury Deaths

For all Missourians, the fifth leading cause of death in the 2006-2010 period was unintentional injuries, with 14,618 deaths. Among African Americans, unintentional injury was the fourth leading cause of death, as it was for the period 2002-2006; among whites unintentional injury was the fifth leading cause of death in both time periods. For the 2002-2006 time period there was no racial disparity for unintentional injury deaths. However, the age-adjusted death rate for African Americans decreased by 8 percent, from 46.3 for 2002-2006 to 42.6 for 2006-2010, while the white rate increased 4 percent, from 46.4 to 48.4. Thus, the overall African American mortality rate for unintentional injuries is now lower than the overall white rate. However, racial disparities exist for certain subcategories of unintentional injuries. For example, the disparity ratio for African Americans compared to whites is about 1.3 to 1 for deaths due to accidental exposure to fires and smoke.

In fact, the shift in disparity for all unintentional injury deaths (from 1.0 in the prior reporting period to 0.9 for 2006-2010) is due

Unintentional Injury Death Rates*
Missouri, 2006–2010



*Age-Adjusted Rates per 100,000 Population

Unintentional Injury Deaths

to changes in mortality rates within major subcomponents of unintentional injury, primarily motor vehicle accidents, drugs/noxious substances, falls, and fires. Motor vehicle accidents has historically been the largest subcategory of unintentional injury death for both races. However, mortality from motor vehicle accidents decreased for both races between 2002-2006 and 2006-2010. The white mortality rate fell almost 20 percent while the African American rate fell about 13 percent. The white motor vehicle mortality rate of 16.5 is still higher than the African American rate of 14.0. The biggest change for white Missourians occurred in the drugs/noxious substances subcategory, where the mortality rate increased by 56 percent from 8.2 to 12.8. In contrast, the African American death rate due to drugs/noxious substances was relatively stable, increasing just 3 percent, from 13.2 to 13.6. Likewise, the white mortality rate for falls increased about 13 percent from 9.3 to 10.5 while the African American mortality rate decreased by 21 percent from 6.2 to 4.9. Among African Americans, deaths due to fires and smoke decreased by 27 percent from 2.6 to 1.9, while white mortality was unchanged at 1.4. The overall impact of these changes has created a slight disparity for whites, as the African American disparity ratio has decreased from 1.0 to 0.9.

Unintentional Injury *– Resident deaths for which the underlying cause of death was given on the death certificate as unintentional injury, that is, injuries that are not caused by a person's intent to harm. Unintentional injuries include a wide variety of causes such as motor vehicle crashes, other transport accidents (water, air, and space), falls, accidental discharge of firearms, and accidental poisoning and exposure to noxious substances. ICD-10 codes are V01-X59 and Y85-Y86. The ICD-10 codes for Motor Vehicle Accidents are V02-V04, V090, V092, V12-V149, V190-V192, V194-V196, V20-V799, V803-V805, V810-V811, V820-V821, V83-V869, V870-V878, V880-V888, V890, and V892. The ICD-10 codes for Drugs/Noxious Substances are X40-X49. The ICD-10 codes for falls are W00-W19. The ICD-10 codes for Smoke/Fire are X00-X09.*

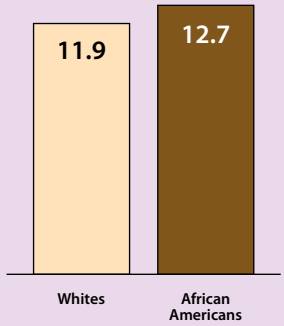
Accidental Drug Poisoning Deaths

Accidental drug poisonings is the largest subset of drugs/noxious substances, a type of unintentional injury death. The change in the disparity ratio for overall unintentional injury deaths between 2002-2006 and 2006-2010 can be largely attributed to significant increases in accidental drug poisoning deaths among whites. The number of deaths attributed to accidental drug poisonings is 765 (a rate of 12.7 deaths per 100,000 residents) for African American Missourians and 4,466 (a rate of 11.9) for white Missourians

Accidental Drug Poisoning Deaths

during 2006-2010. If this subset of deaths was ranked, it would be the eighth leading cause for African Americans and the tenth leading cause for whites. The racial disparity for accidental drug poisoning deaths has nearly disappeared, decreasing from a disparity ratio of 1.7 for 2002-2006 to a ratio of 1.1 for 2006-2010. This reduction is mainly due to the significant increase in the white mortality rate over these years.

Accidental Drug Poisoning Death Rates*
Missouri, 2006–2010

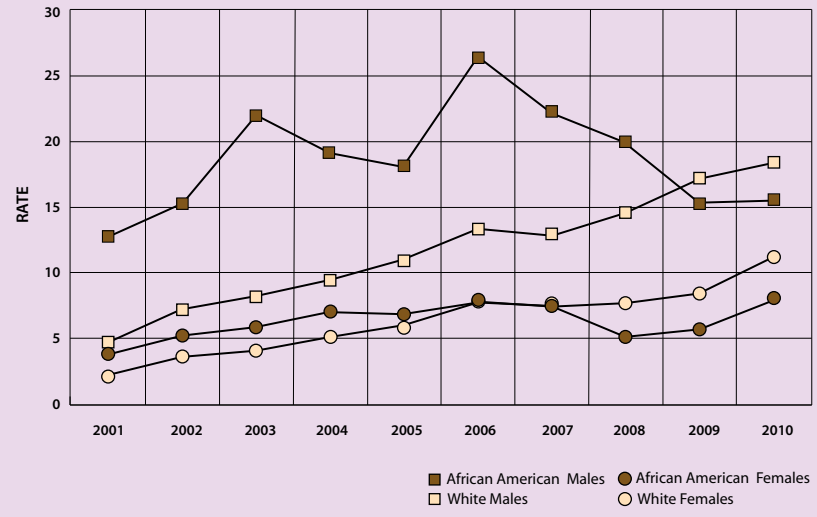


*Age-Adjusted Rates per 100,000 Population

Between 2001 and 2010, the accidental drug poisoning death rate increased for men and women, and for both African American and white residents. However, the rate of increase has been higher for males than for females. The rate of increase has also been higher for whites than for African Americans. The African American male rate fluctuated wildly over this time, reaching a high of 26.4 deaths per 100,000 residents in 2006. Since 2006, the rate decreased every year through 2010, when the rate was 15.6, approximately 20 percent higher than the 2001 rate. Consistent increases in the rate for white male residents over these years have caused the rate to nearly quadruple from 4.7 in 2001 to 18.4 in 2010. During the same years, the rates for African American and white women also increased, but not as dramatically. The rate for African American women more than doubled, from 3.8 in 2001 to 7.9 in 2010. The white female rate increased more than five times, from a 2001 rate of 2.2 to 11.2 in 2010. This faster growth in the white rates has caused the racial disparity to diminish. The total disparity ratio for accidental drug poisoning deaths was 1.3 to 1 for the overall period 2001-2010, but it dropped to 1.1 to 1 for the more recent 2006-2010 time period.

Accidental Drug Poisonings *– Resident deaths for which the underlying cause of death was given on the death certificate as accidental poisoning by drug. This category does not include suicides by drug or other drug-related deaths, nor does it include poisonings by alcohol or noxious substances. ICD-10 codes are X40-X44.*

Accidental Drug Poisoning Death Rates*
Missouri, 2001-2010

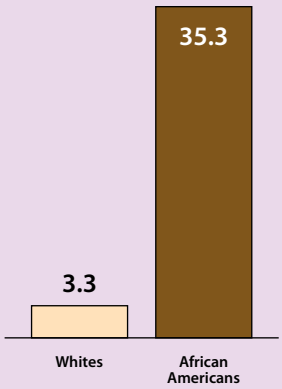


*Age-Adjusted Rates per 100,000 Population

Homicide

Between 2006 and 2010 there were a total of 2,170 homicides in Missouri. Historically, African Americans have been more likely to die of homicide than whites. That likelihood increased for 2006-2010. Among African Americans, homicide rose from the sixth leading cause of death in 2002-2006 to the fifth leading cause in 2006-2010 (from 1,092 to 1,318 deaths, respectively). Its ranking dropped from twentieth to twenty-first for white Missourians during the same time period, although the number of deaths increased from 806 to 817.

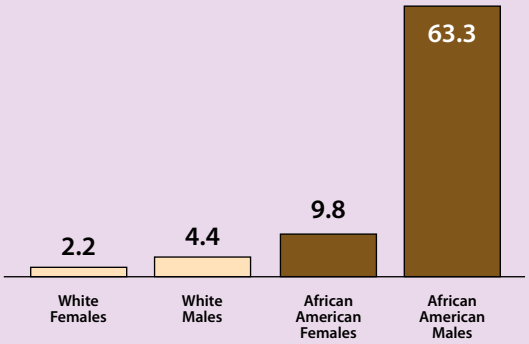
Homicide Rates*
Missouri, 2006–2010



*Age-Adjusted Rates per 100,000 Population

The age-adjusted homicide rate per 100,000 residents increased from 30.7 to 35.3 for African Americans, while it remained constant at 3.3 for white residents, resulting in a disparity ratio of 10.7 to 1 for 2006-2010. In other words, during the period 2006-2010, African American residents were almost 11 times more likely to die of homicide than their white counterparts, whereas they were only 9 times more likely to die of homicide in the period 2002-2006. Homicide rates for both races are higher in the urban areas of the state. For Jackson County, St. Louis County, and St. Louis City combined, the African American homicide rate is 44.8, compared to 4.3 for whites. The racial disparity by gender is even more pronounced. African American male residents were more than 14 times as likely to be murdered as white males during 2006-2010, while African American females were about 5 times more likely to die from homicide than white females.

Homicide Rates by Gender and Race*
Missouri, 2006–2010



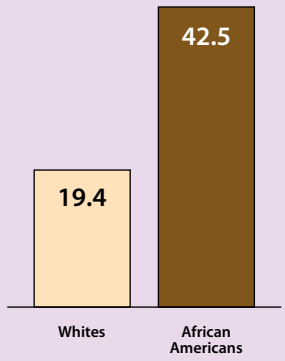
*Age-Adjusted Rates per 100,000 Population

Homicide *– Resident deaths resulting from intentional assault by another, whether or not death was intended. It includes all fatal injuries purposely inflicted by other persons, excluding legal intervention by law enforcement agents. ICD-10 codes are U01-U02, X85-Y09, and Y87.1.*

Diabetes Deaths

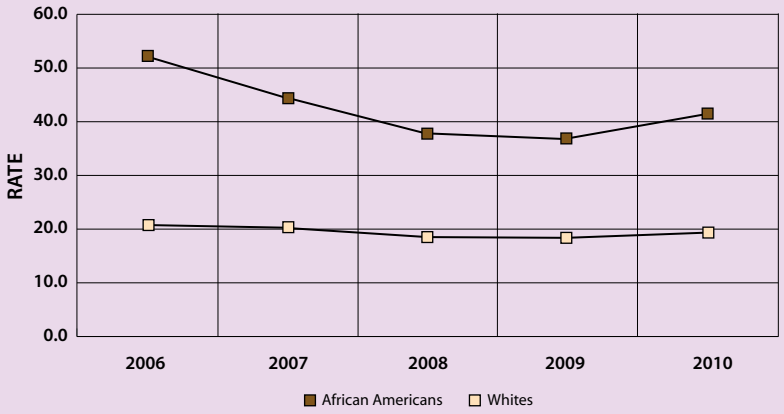
Diabetes was listed as the primary cause for 7,007 deaths between 2006 and 2010 in Missouri. Diabetes ranked as the sixth leading cause of death for African Americans, compared to eighth for whites. The African American death rate of 42.5 is more than double the 19.4 rate for whites. Diabetes dropped one spot in the rankings for African Americans since 2002-2006, as the death rate decreased from 51.9 to 42.5. However, there was little change in disparity (2.2 for 2006-2010 versus 2.3 for 2002-2006), as the number and rate of deaths among white Missourians also decreased during this time. Both genetics and socioeconomic factors such as low levels of education and low income,[6] as well as being overweight and obese, have been identified as key risk factors for the development of diabetes. These risk factors are prevalent within African American communities.

Diabetes Death Rates*
Missouri, 2006–2010



*Age-Adjusted Rates per 100,000 Population

Diabetes Death Rates*
Missouri, 2006-2010



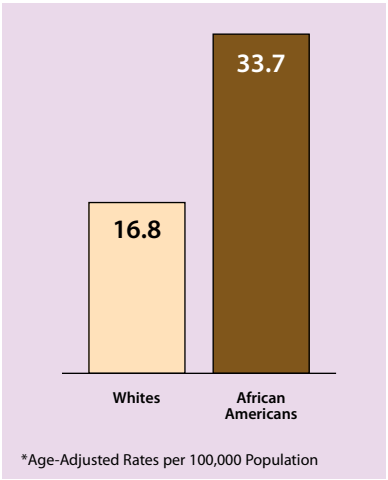
*Age-Adjusted Rates per 100,000 Population

Diabetes *– Resident deaths for which the underlying cause of death was given on the death certificate as diabetes mellitus. ICD-10 codes are E10-E14.*

Kidney Disease Deaths

Between 2006 and 2010, there were 6,099 deaths due to kidney disease. For African Americans, kidney disease ranked as the seventh leading cause of death, the same rank it held during the 2002-2006 reporting period. However, the number of kidney disease deaths increased slightly, from 774 to 846 (a 9% increase). Among white Missourians, kidney disease ranked ninth for both periods, although the number of deaths decreased from 6,472 to 5,206 (an 11% decline). As a result of these changes in the number of deaths, the age-adjusted rate per 100,000 residents increased from 33.1 to 33.7 for African Americans and from 16.0 to 16.8 for whites. There was no change in the disparity ratio of 2 to 1, which shows that African American residents are twice as likely to die of kidney disease as white residents. Kidney disease is most often caused by diabetes, heart disease, and high blood pressure, all of which are more prevalent among African Americans.

Kidney Disease Death Rates*
Missouri, 2006–2010



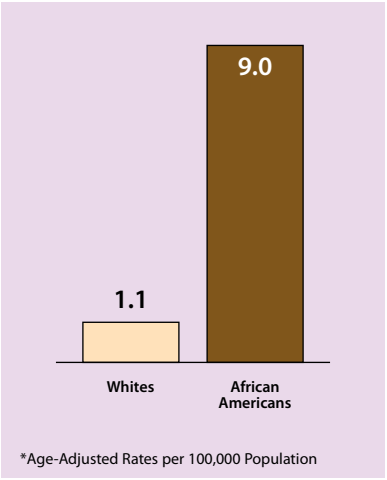
*Age-Adjusted Rates per 100,000 Population

Kidney Disease *– Resident deaths for which the underlying cause of death was given on the death certificate as nephritis, nephrosis, or nephrotic syndrome. Most of the deaths in this category are attributed to chronic renal failure or to renal failure, unspecified, whether chronic or acute. ICD-10 codes are N00-N07, N17-N19, and N25-N27.*

HIV/AIDS Deaths

In Missouri, 568 deaths were due to HIV/AIDS during the time period from 2006 through 2010. For African American Missourians, the number of deaths decreased 7 percent from 313 in 2002-2006 to 290. However, HIV/AIDS remained the fourteenth leading cause of death for African Americans. The number of white HIV/AIDS deaths decreased from 319 to 274. The age-adjusted rates per 100,000 residents fell for both race groups (from 10.1 to 9.0 for African Americans and from 1.3 to 1.1 for whites). However, the HIV/AIDS mortality disparity ratio increased slightly from 7.8 to 8.2.

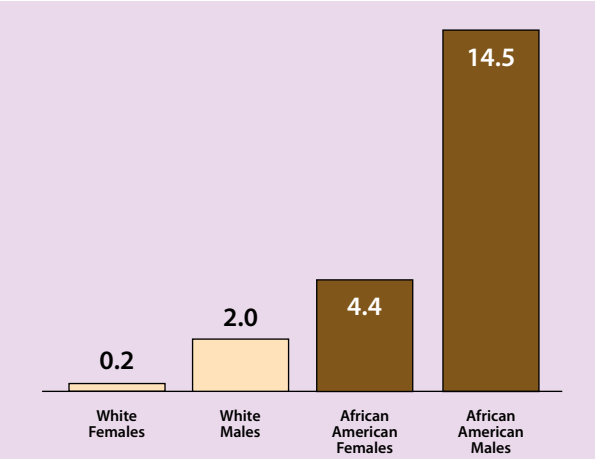
HIV/AIDS Death Rates*
Missouri, 2006-2010



*Age-Adjusted Rates per 100,000 Population

African American Missourians are now more than eight times as likely to die of HIV/AIDS as white Missourians. Among males, the rate is seven times greater for African Americans. The disparity is even more striking for females. An African American female is 22 times more likely to die of HIV/AIDS than a white female. These results mimic studies at the national level which estimate that lifetime risk of becoming infected with HIV is 1 in 16 for African American males and 1 in 30 for African American females, a far higher risk than for white males (1 in 104) and white females (1 in 588).[7]

HIV/AIDS Death Rates by Gender and Race*
Missouri, 2006–2010



*Age-Adjusted Rates per 100,000 Population

HIV (Human Immunodeficiency Virus)/ AIDS (Acquired Immunodeficiency Syndrome) *– Resident deaths for which the underlying cause of death was given on the death certificate as HIV/ AIDS. ICD-10 codes are B20-B24.*

Glossary, Appendix, & Endnotes

Glossary

Age-Adjusted Rates

Age adjusting rates is a way to make fairer comparisons between groups with different age distributions. For example, a county having a higher percentage of elderly people may have a higher rate of death or hospitalization than a county with a younger population, merely because the elderly are more likely to die or be hospitalized. (The same distortion can happen when comparing races, genders, or time periods.) Age adjustment can make the different groups more comparable.

A "standard" population distribution is used to adjust death and hospitalization rates. The age-adjusted rates are rates that would have existed if the population under study had the same age distribution as the "standard" population. Therefore, they are summary measures adjusted for differences in age distributions.

The National Center for Health Statistics recommends that the U.S. 2000 standard population be used when calculating age-adjusted rates. However, if you compare rates from different sources, it is very important that you use the same standard population on both sides of your comparison. **It is not legitimate to compare adjusted rates which use different standard populations.**

Users of Missouri Information for Community Assessment (MICA) have the option of selecting age-adjusted rates based on the U.S. 1940, 1970 or 2000 standard populations when generating tables where age adjustment is utilized. Age-adjusted rates in the Community Data Profiles use the U.S. 2000 standard population.

Age-adjusted rates published elsewhere (e.g., in the annual *Missouri Vital Statistics*) may be slightly different from those found in the MICA or Community Data Profiles, due to updating of population estimates for years between decennial Censuses. The constant or "per population" number used for the age-adjusted rates may vary, depending on the type of event. For example, the age-adjusted rates for deaths are per 100,000 population. However, age-adjusted rates for hospitalizations and procedures are per 10,000 population and age-adjusted rates for emergency department visits are per 1,000 population.

The use of different standard populations can also affect general trends in total mortality and cause of death and differences in mortality by race and gender. For more information on this topic see: "Effects of Changing from the 1940 to the Year 2000 Standard Population for Age-Adjusted Death Rates in Missouri," Missouri *Monthly Vital Statistics*, 33.12 (Feb. 2000).

Behavioral Risk Factor Surveillance System (BRFSS)

The Behavioral Risk Factor Surveillance System (BRFSS) is an annual landline and cell telephone survey that collects information on health risk behaviors, preventive health practices, and health care access from non-institutionalized adults ages 18 and older. The annual BRFSS sample size of approximately 6,000 produces prevalence estimates at the state and regional levels.

Body Mass Index

Body mass index (BMI) is an indicator of body fat. Persons with BMI values of 30.0 or greater are considered obese. The BMI formula using pounds and inches is: weight (lb) x 703/[height(in)]^2.

The Behavioral Risk Factor Surveillance System and County-Level Study derive the Overweight (25.0 – 29.9 BMI) and Obese (>=30 BMI) indicators by calculating BMI using responses to the following questions:

- About how much do you weigh without shoes?
- About how tall are you without shoes?

County-Level Study

The Missouri County-Level Study (CLS) is a BRFSS-like landline and cell telephone survey that was conducted in 2007 and 2011 with approximately 50,000 non-institutionalized adults ages 18 and older. Sufficient data were collected to produce prevalence estimates for each of the state's 114 counties and the City of St. Louis.

HIV/AIDS Surveillance Data

Missouri's communicable disease reporting rule, 19 CSR 20-20.020, established reporting of AIDS cases in 1983, named HIV cases in 1987, CD4 lymphocyte counts in 1991, and HIV viral load lab results in 2000. Demographic information, vital status, mode of exposure, laboratory results, and treatment and service referrals are collected on standardized case report forms and laboratory reports. The Missouri Department of Health and Senior Services (DHSS), Bureau of HIV, STD, and Hepatitis (BHSH) is responsible for managing the HIV/AIDS surveillance data, stored in the evaluation HIV/AIDS Reporting System (eHARS).

Evaluations have shown a high level of completeness of the surveillance system. However, the surveillance system primarily collects information only on individuals diagnosed with HIV disease in Missouri. Some information regarding those currently living with HIV in Missouri is maintained in eHARS, but it is not complete. The data collected in the surveillance system are based on diagnosis date and not the time of infection. Diagnosis can be made at any clinical stage of the disease. The characteristics associated with new diagnoses may not reflect characteristics associated with recent infection. The surveillance system only includes data on individuals who are tested confidentially and reported. Members of certain subpopulations may be more or less likely to be tested. Therefore, different subpopulations could be over- or under-represented among diagnosed and reported HIV cases.

Missouri Cancer Registry

The Missouri Cancer Registry (MCR) is a collaborative partnership between the Missouri Department of Health and Senior Services (DHSS) and the University of Missouri-Columbia. Since 1995, MCR has received financial support from the National Program of Cancer Registries (NPCR) of the Centers for Disease Control and Prevention (CDC). The information collected consists of demographics, site of cancer, type of cancer, type of treatments, stage of disease at diagnosis, and vital status. Hospital registry data are used to evaluate diagnostic and treatment practices, assess quality of patient care and hospital programs, and track outcomes.

Central cancer registries depend on the information obtained from hospital-based registries and from other sources (e.g., pathology laboratories, freestanding cancer clinics and treatment centers, physician offices, other state central registries, etc.). Data submitted by hospitals and other reporting facilities are edited for quality and consolidated to remove duplicate cases.

Data in this report use the Surveillance, Epidemiology and End Results (SEER) Program definition of cancer incidence. SEER is a major source of cancer data, compiled by the U.S. National Institutes of Health, National Cancer Institute, and is the standard for national and state cancer incidence data. In order to be consistent with SEER, MICA users should only select the "invasive" cancer stage when comparing MICA data with data from other states or the U.S. "Invasive" is the default setting on the MICA query page. The MICA categories of "in situ" and "all stages" (which includes "in situ") are not included in SEER data and may not be included in data from other states. However, SEER data for bladder cancer combine both in situ and invasive stages. Likewise, in MICA, the in situ and invasive cases are combined under "invasive." Therefore, selecting "invasive" stage

in the Cancer MICA will provide the best match with national data for all types of cancer. For more information on the SEER program, please refer to http://seer.cancer.gov/.

Pregnancy Risk Assessment Monitoring System (PRAMS)

The Missouri Pregnancy Risk Assessment Monitoring System (PRAMS) is an ongoing, population-based surveillance system that monitors specific maternal behaviors and experiences before and during pregnancy and two months postpartum, the period of the child's early infancy. PRAMS collects data through a mailed survey with telephone follow-up for non-respondents. Topics of the survey include, but are not limited to, pregnancy intention, folic acid consumption, contraceptive use, health insurance, prenatal care, breastfeeding, infant health care, alcohol and tobacco use, violence against women, and postpartum depression. The PRAMS survey is co-sponsored by the Centers for Disease Control and Prevention (CDC). Responses are weighted by CDC to represent all live births in the state. Forty states and New York City currently participate, representing about 78 percent of all U.S. live births. The goal of the PRAMS project is to improve the health of mothers and infants by reducing adverse outcomes.

Resident

Resident means the person was a resident of Missouri at the time of the event in question (birth, death, emergency room visit, etc.). Data in the MICA (Missouri Information for Community Assessment) system are reported by resident status. For example, a record for a Missouri resident treated in a Kansas hospital would be reported as a Missouri hospitalization. Missouri receives vital records and hospital data from most of its border states.

Statistical Significance

Statistical significance tests are performed to determine whether the difference between two rates is probably the result of chance factors or if it is meaningful. All tests of statistical significance reported in this data book were computed using a 95 percent confidence interval.

STD Surveillance Data

Missouri's communicable disease reporting rule, 19 CSR 20-20.020, requires reporting of chlamydia and gonorrhea cases within three days and syphilis cases, including congenital syphilis, within one day to the local health authority or DHSS. Demographic information, vital status, laboratory results, and treatment information are collected on standardized report forms and laboratory reports. The Missouri Department of Health and Senior Services (DHSS), Bureau of HIV, STD, and Hepatitis (BHSH) is responsible for managing all reportable STD surveillance data, which are stored in the Missouri Health Surveillance Information Systems (WebSurv). Data in this system are presented based on the date of report to the health department and not the diagnosis date. The data represent only those individuals tested and reported, which underestimates the true burden of infection, as many infected individuals do not seek care, often due to a lack of symptoms. In addition, many people receive treatment without being tested, again underestimating the true burden of infection. Since morbidity is frequently entered based on the receipt of laboratory reports at DHSS, race and ethnicity information is often not available. Incomplete race and ethnicity reporting limits the interpretation of trends for these characteristics.

Tuberculosis

People who become infected with tuberculosis (TB) bacteria usually have had very close, day-to-day contact with someone who has TB disease (e.g., a family member, friend, or close co-worker). A person is not likely to get infected

from someone coughing in line at a supermarket or restaurant. Dishes do not spread TB, nor do drinking glasses, sheets, or clothing. In most people who become infected, the body is able to fight the bacteria to stop them from growing. The bacteria become inactive, but remain alive in the body and can become active later. This is called latent TB infection. People with latent TB do not have symptoms of TB disease, and they cannot spread the disease to others.

West Nile Virus

Since it was first identified in New York City in 1999, West Nile virus (WNV) has made itself at home across North America and in Missouri. While human cases are reported every year in Missouri, a large outbreak depends on certain environmental and weather factors being just right.

WNV is spread to people through the bite of an infected mosquito, but most people who get infected do not become sick. If five people get infected with WNV, for example, chances are that only one of them will become sick. Often, that one person who does get sick is someone who is older than 50 or who might already have other health problems. The symptoms of WNV infection usually start within two weeks and can range in severity from a flu-like illness to a life-threatening infection of the brain and nervous system. There is no vaccine to prevent WNV illness.

The WNV season starts in midsummer. Infected mosquitoes and people come together at this time of year because both are out and about homes and communities in the cooler parts of the day – mornings and evenings. A person can use insect repellent at these times to avoid mosquito bites, but when a large outbreak of WNV occurs in an urban area, there must be a community-wide response to prevent an epidemic.

The mosquitoes that carry WNV need stagnant water to breed. Urban environments tend to make good homes for mosquitoes because stagnant water can develop very quickly in the summer – in old tires, piles of garbage, and clogged storm water drainage systems.

Public health officials' understanding of the epidemiology of WNV outbreaks increases every year. It was not well recognized before the 2012 Texas epidemic that outbreaks can occur even during times of drought. Fortunately, there are many tools to manage mosquitoes and to minimize human suffering and death. These tools are best used in an outbreak detection system that provides data to support the early decisive action needed to prevent or contain large urban epidemics

Appendix

Ratios of African American to White Rates from *Minority Health Disparities in Missouri: 2009 African American Data Book**

Selected Socio-Economic Indicators (2006)

1.5 to 1 Self-Pay/No Charge or Medicaid as Expected Pay Source
0.6 to 1 Median Household Income
2.9 to 1 Population Below Poverty Level
2.9 to 1 Families with Children Under 18 Years Old Below Poverty Level

Selected Maternal and Child Health Indicators

2.3 to 1 Inadequate Prenatal Care (2006)
2.0 to 1 Low Birth Weight (2002-2006)
2.4 to 1 Births to Unmarried Women (2006)
2.6 to 1 Infant Deaths (1997-2006)
2.3 to 1 Sudden Infant Death Syndrome (1997-2006)

Selected Communicable Diseases (2003-2007)

8.0 to 1 HIV
6.6 to 1 AIDS
4.7 to 1 Tuberculosis
1.8 to 1 West Nile Virus

Selected Sexually Transmitted Diseases (2003-2007)

11.0 to 1 Chlamydia
7.3 to 1 Primary & Secondary Syphilis
30.1 to 1 Gonorrhea

Selected Cancers (2006)

1.1 to 1 All-Cancer Incidence
1.3 to 1 Lung Cancer Incidence (Male)
1.0 to 1 Lung Cancer Incidence (Female)
1.4 to 1 Colon Cancer Incidence (Male)
1.4 to 1 Colon Cancer Incidence (Female)
1.5 to 1 Prostate Cancer Incidence (Male)
1.1to 1 Breast Cancer Incidence (Female)

Selected Injuries Treated in Hospitals (2006)

2.1 to 1 Bicyclist
36.3 to 1 Firearm Assault
3.2 to 1 Pedestrian
8.4 to 1 Physical Abuse
4.5 to 1 Sexual Abuse

Selected Causes of Emergency Room Visits (2006)

1.8 to 1 Alcohol/Drug Use
4.8 to 1 Asthma
3.1 to 1 Diabetes Mellitus with Complications
2.7 to 1 Eye Infections
2.2 to 1 Congestive Heart Failure
3.8 to 1 Essential Hypertension
8.3 to 1 Schizophrenia and Related Disorders
2.4 to 1 Epilepsy-Convulsions
3.7 to 1 Osteoarthritis

Selected Causes of Inpatient Hospitalizations (2006)

1.1 to 1 Acute Myocardial Infarction (Heart Attack)
1.6 to 1 Cerebrovascular Disease (Stroke)
2,390.0 to 1 Sickle Cell Anemia

Selected Causes of Deaths (2002-2006)

1.3 to 1 Overall Death Rate
1.3 to 1 Heart Disease
1.3 to 1 Cancer
1.3 to 1 Stroke
1.0 to 1 Unintentional Injury
2.3 to 1 Diabetes Mellitus
9.3 to 1 Homicide
2.0 to 1 Kidney Disease
7.8 to 1 HIV/AIDS

*Minority Health Disparities in Missouri: 2009 African American Data Book, Missouri Foundation for Health (2009). Data from Missouri Department of Health and Senior Services, http://www.mffh.org/mm/files/09AfricanAmericanDisparities.pdf.

Endnotes

Socio-Economic Factors

1. U.S. Census Bureau, Current Population Survey, Annual Social and Economic Supplement, 2012. *http://www.census.gov/hhes/www/cpstables/032012/health/toc.htm*
2. A Stone, A Krueger, A Steptoe& J Harter, "The socioeconomic gradient in daily colds and influenza, headaches, and pain," *Archives of Internal Medicine*, 170(6), 570-572.
3. U.S. Census Bureau, *American Community Survey and Puerto Rico Community Survey 2011 Subject Definitions*, n.d. *http://www.census.gov/acs/www/Downloads/data_documentation/SubjectDefinitions/2011_ACSSubjectDefinitions.pdf*
4. S Murray, "Poverty and health," *Canadian Medical Association Journal*, 2006, 174(7), 923.
5. S Rice, "Poverty and poor health are intertwined, experts say," *CNN Health*, 2006. *http://articles.cnn.com/2006-08-29/health/poverty.health_1_health-insurance-poverty-health-care?_s=PM:HEALTH*
6. U.S. Census Bureau, n.d
7. S Murray, 2006
8. U.S. Census Bureau, n.d
9. K Strully, (2009, May). "Job loss and health in the U.S. labor market," *Demography*, 2009, 46(2), 221-246.
10. D Hudson, H Neighbors, A Geronimus & J Jackson, "The relationship between socioeconomic position and depression among a US nationally representative sample of African Americans," *Social Psychiatry and Psychiatric Epidemiology*, 2011, 47(3), 373-381.
11. M Bartley, "Unemployment and ill health: Understanding the relationship," *Journal of Epidemiology and Community Health*, 1994, 48(4), 333-337.

Maternal and Child Health

1. Centers for Disease Control and Prevention (CDC), "Recommendations for the use of folic acid to reduce the number of cases of spina bifida and other neural tube defects," *Morbidity and Mortality Weekly Report*, 1992, 41(RR-14), 1.
2. CDC, CDC Features: Premature Birth, 2011. *http://www.cdc.gov/Features/PrematureBirth/*
3. Ibid.
4. K Debiec, K Paul, C Mitchell & J Hitti, "Inadequate prenatal care and risk of preterm delivery among adolescents: A retrospective study over 10 years," *American Journal of Obstetrics and Gynecology*, 2010, 203(2), 122.e1-122.e6.
5. March of Dimes Foundation, The Cost of Prematurity to Employers, 2008. *http://www.marchofdimes.com/peristats/pdfdocs/cts/ThomsonAnalysis2008_SummaryDocument_final121208.*pdf
6. CDC, Reproductive and Birth Outcomes: Low Birthweight and the Environment, 2012. *http://ephtracking.cdc.gov/showRbLBWGrowthRetardationEnv.action*
7. Ibid.
8. Health Resources and Services Administration, Maternal and Child Health Bureau. *Child Health USA 2008-2009.* Rockville, Maryland: U.S. Department of Health and Human Services, 2009.
9. Ibid.
10. CDC, "Differences in prevalence of obesity among black, white, and Hispanic adults – United States, 2006—2008," *Morbidity and Mortality Weekly Report*, 2009, 58(27), 740-744.
11. Surgeon General. Overweight and Obesity: Health Consequences, U.S. Department of Health and Human Services, n.d. *http://www.surgeongeneral.gov/library/calls/obesity/fact_consequences.html*
12. CDC, 2009.
13. J Oliver, *Fat Politics: The Real Story behind America's Obesity Epidemic.* New York, NY: Oxford University Press, 2006.
14. Missouri Department of Health and Senior Services (DHSS), FOCUS—*Weight Gain during Pregnancy: Trends and Outcomes*, 2011. *http://health.mo.gov/data/focus/pdf/FOCUS_Jan11.pdf*
15. Institute of Medicine, *Weight Gain during Pregnancy: Reexamining the Guidelines*, Washington, DC: National Academies Press, 2009.
16. C Solomon-Fears, *Nonmarital Childbearing: Trends, Reasons and Public Policy Interventions*, Congressional Research Service, 2008.
17. Missouri DHSS, PRAMS MOnitor: Breastfeeding Initiation and Continuation, 2010. *http://health.mo.gov/data/prams/pdf/breastfeeding.pdf*
18. Missouri DHSS, PRAMS MOnitor: Postpartum Depression, 2011. *http://health.mo.gov/data/prams/pdf/postpartumdepression.pdf*
19. Mayo Clinic, Postpartum Depression, 2012. *http://www.mayoclinic.com/health/postpartum-depression/DS00546*
20. Missouri Department of Social Services, Children's Division, Child Abuse and Neglect: Calendar Year 2010 Annual Report, 2011. *http://www.dss.mo.gov/re/pdf/can/cancy10.pdf*
21. Lucile Packard Foundation for Children's Health, Child Abuse and Neglect—Substantiated Cases of Child Abuse and Neglect, by Race/Ethnicity: 2000-2011 (Race/Ethnicity: Caucasian/White). *http://www.kidsdata.org/data/topic/trend/child_abuse-cases-race.aspx-?f=1&ch=9&loc=1*

22. Lucile Packard Foundation for Children's Health, Child Abuse and Neglect—Substantiated Cases of Child Abuse and Neglect, by Race/Ethnicity: 2000-2011 (Race/Ethnicity: African American/Black). *http://www.kidsdata.org/data/topic/trend/child_abuse-cases-race.aspx-?f=1&ch=1&loc=7*

Communicable Diseases

1. Centers for Disease Control and Prevention (CDC), Tuberculosis (TB) – Fact Sheet: Tuberculosis in Blacks, 2012. *http://www.cdc.gov/tb/publications/factsheets/specpop/resources_TB_Blacks.htm*
2. Ibid.
3. Ibid.

Cancer

1. U.S. Preventive Services Task Force, Screening for Prostate Cancer, 2012. *http://www.uspreventiveservicestaskforce.org/prostatecancerscreening.htm*

Emergency Room Visits

1. U.S. Department of Health and Human Services, Office on Women's Health, Minority Women's Health: Asthma, 2010. *http://www.womenshealth.gov/minority-health/african-americans/asthma.cfm*
2. M Araneta, & E Barrett-Connor, "Ethnic differences in visceral adipose tissue and type 2 diabetes: Filipino, African-American, and white women," *Obesity Research*, 2005, 13(8), 1458-1465.
3. Mayo Clinic, Type 2 Diabetes, 2012. *http://www.mayoclinic.com/health/type-2-diabetes/DS00585/DSECTION=risk-factors*
4. American Academy of Ophthalmology, Minority Eye Health: Know Your Risks, n.d. *http://www.geteyesmart.org/eyesmart/eye-health-news/minority-eye-health.cfm*
5. H Bahrami, R Kronmal, D Bluemke, et al., "Differences in the incidence of congestive heart failure by ethnicity: The multi-ethnic study of atherosclerosis," *Archives of Internal Medicine*, 2008, 168(19), 2138-2145.
6. M Wrobel, J Figge& J Izzo, "Hypertension in diverse populations: A New York State Medicaid clinical guidance document," *Journal of the American Society of Hypertension*, 2011, 5(4), 208-220.
7. R Bautista & D Jain, "Detecting health disparities among Caucasians and African-Americans with epilepsy," *Epilepsy and Behavior*, 2011, 20(1), 52-56.
8. Centers for Disease Control and Prevention. Estimates for Specific Forms of Arthritis, 2010. Retrieved February 2013 from *http://www.cdc.gov/features/dsarthritis/index.html*
9. H Lee, C Lewis, B Saltzman & H Starks, "Visiting the emergency department for dental problems: Trends in utilization, 2001 to 2008," *American Journal of Public Health*, 2012, 102(11), 77-83.
10. M Gara, W Vega, S Arndt, et al., "Influence of patient race and ethnicity on clinical assessment in patients with affective disorders," *Archives of General Psychiatry*, 2012, 69(6), 593-600.
11. A Woodward, R Taylor, K Bullard, et al., "Prevalence of lifetime DSM-IV affective disorders among older African Americans, Black Caribbeans, Latinos, Asians and non-Hispanic White people," *International Journal of Geriatric Psychiatry*, 2012, 27(8), 816-827.

Inpatient Hospitalizations and Injuries Treated in Hospitals

1. M Schuster, M Elliott, D Kanouse, et al., "Racial and ethnic health disparities among fifth-graders in three cities," *The New England Journal of Medicine*, 2012, 367, 735-745.
2. B Chakravarthy, S Lotfipour & F Vaca, "Pedestrian injuries: Emergency care considerations," *California Journal of Emergency Medicine*, 2007, 8(1), 15-21.
3. C Martin, P Unni, M Landman, et al., "Race disparities in firearm injuries and outcomes among Tennessee children," *Journal of Pediatric Surgery*, 2012, 47(6), 1196-1203.
4. A Sinanan, "The impact of child, family, and child protective services factors on reports of child sexual abuse recurrence," *Journal of Child Sexual Abuse*, 2011, 20(6), 657-676.

Deaths

1. Missouri Department of Health and Senior Services (DHSS), Division of Community and Public Health, Office of Epidemiology. B*ehavioral Risk Factor Surveillance System: 2009 Key Findings*, 2010. http://health.mo.gov/data/brfss/2009_BRFSS_Key_Findings_Report.pdf
2. U.S. Department of Health and Human Services, Office of Minority Health, Cancer and African Americans, 2012. *http://minorityhealth.hhs.gov/templates/content.aspx?lvl=3&lvlID=4&ID=2826*
3. American Cancer Society, Cancer Facts and Figures for African Americans, 2011-2012, 2011. *http://www.cancer.org/acs/groups/content/@epidemiologysurveilance/documents/document/acspc-027765.pdf*
4. Ibid.
5. National Stroke Association, African Americans and stroke, n.d. *http://www.stroke.org/site/PageServer?pagename=aamer*
6. Missouri DHSS, Division of Community and Public Health, Office of Epidemiology. *Missouri Behavioral Risk Factor Surveillance System: 2011 Key Findings*, 2012. *http://health.mo.gov/data/brfss/2011_BRFSS_Key_Findings_Report.pdf.*

H Hall, Q An, A Hutchinson & S Sansom, "Estimating the lifetime risk of a diagnosis of the HIV infection in 33 states, 2004-2005," *Journal of Acquired Immune Deficiency Syndromes*, 2008, 49(3), 294-297.

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Spring 2013

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