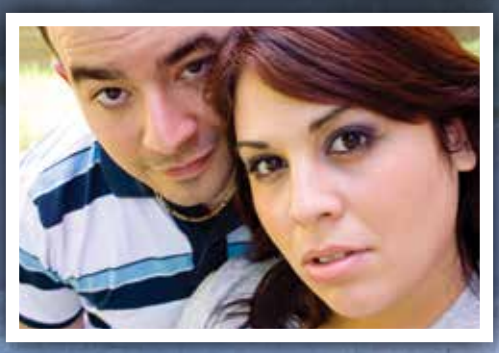
MFH
Missouri Foundation for Health

Health Equity Series:

Hispanic Health Disparities in Missouri

April 2013



Health Equity Series:
Hispanic Health Disparities in Missouri

April 2013

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 among 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 Missouri's Hispanic population. The purpose of this publication is to report on key health indicators that highlight health disparities between Missouri's Hispanic population and the white and African American populations. It provides an update to a similar report published in 2009 and where possible makes comparisons between the rates and ratios of today and those of the prior report in order to illustrate where progress has been made and what challenges may lay ahead for Missouri. In both reports, the most current data available at the time of writing were used whenever possible. For the 2009 report, that was often data from the 2006 time period. In this report, the most current data are usually from 2010.

In this report, when possible, the Hispanic population is compared to the non-Hispanic white and non-Hispanic African American populations. This is a departure from the 2009 report, which compared Hispanic rates to the entire white and African American populations (including Hispanic whites and Hispanic African Americans). Any comparisons made in this book between the two different time periods use the more recent definitions for race/ethnicity. Additionally, this report uses bridged race definitions, for which each person is assigned a primary race group and multi-race options are not allowed. As in previous reports, only Missouri resident data are included in all rate calculations.

For some data systems, there is strong evidence suggesting that Hispanic data are underreported. This is most notable in the death section, where an alternative method for evaluating rates has been implemented. Low rates for Hispanics in the Emergency Room and Injury chapters also indicate the possibility of underreporting.

Readers may find a companion publication, *Health Equity Series: African American 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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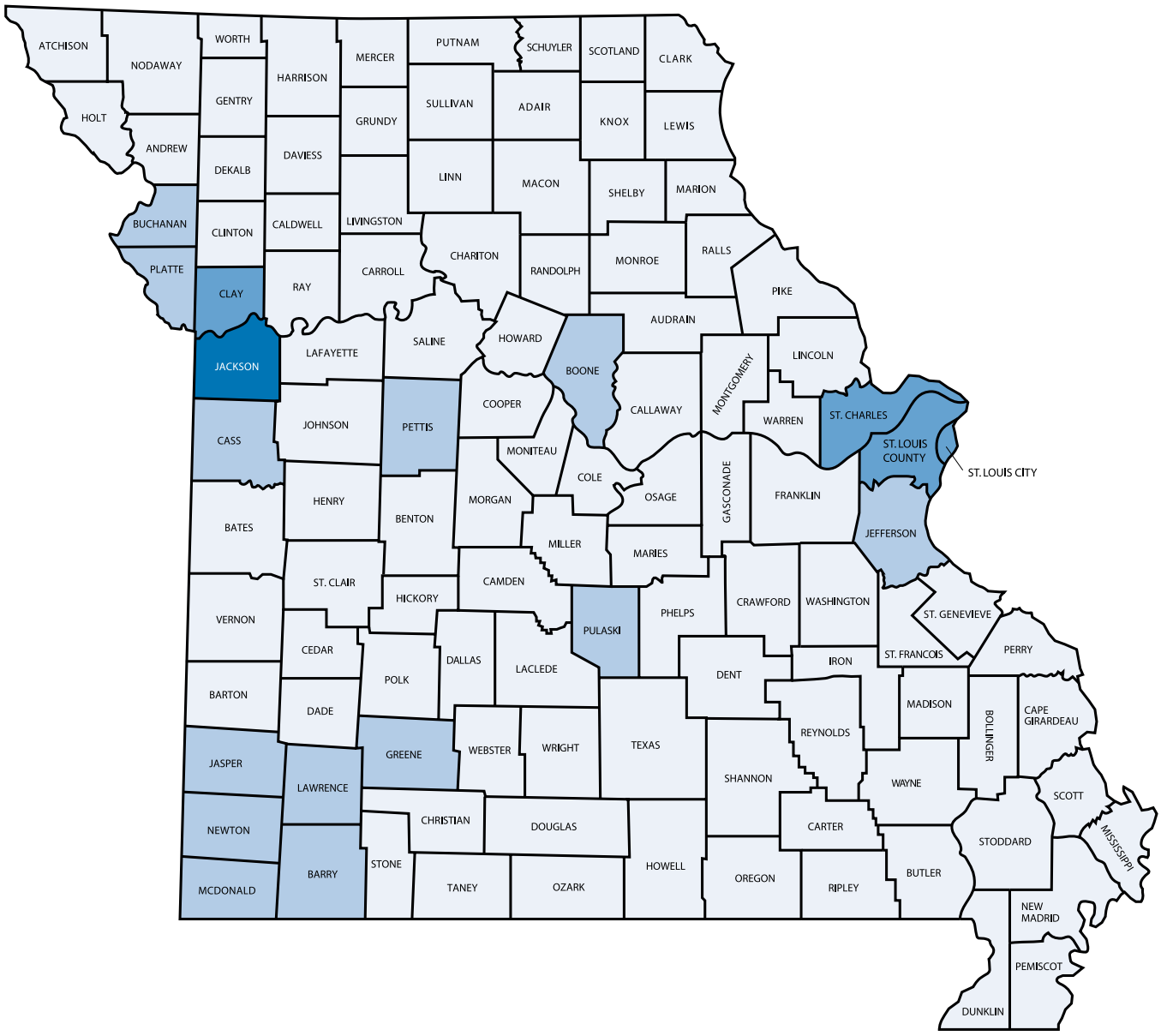
2010 Hispanic Population Counts in Missouri*



23 - 1,925

2,444 - 8,207

9,983 - 25,024

56,434

*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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Hispanic (or Latino) ethnicity includes any persons of Cuban, Mexican, Puerto Rican, or Dominican descent, persons from other Central or South American countries, and other persons of Spanish culture or origin. Ethnicity is defined as a large class of people bonded by shared national, religious, or cultural origins.[1] It is distinct from race and often reported separately. Not all Hispanic persons speak Spanish. The Hispanic population is composed of a wide variety of backgrounds and cultures, but most Missouri Hispanics have ties to Mexico. According to 2010 Census counts, 69 percent of Hispanics in Missouri (147,254) list Mexico as their country of origin. This is the largest subgroup of Hispanics in Missouri. Puerto Rico is second with 12,236 persons (5.8%). Although some represent only a small percentage of the total population, over 20 Central and South American nations are listed as a country of origin for Missouri's Hispanic residents.

The 2010 Census counts Missouri's total Hispanic population at 212,470 persons, or 3.5 percent of the state population. In comparison to national figures, in which Hispanics make up 16.3 percent of the population, the Hispanic population in Missouri is still quite small. However, the Hispanic population in Missouri is rapidly increasing. Population growth was 79 percent for Missouri Hispanics between 2000 and 2010 (an increase of 93,878 persons), compared to 43 percent for Hispanics nationally. In contrast, the non-Hispanic population in Missouri increased by only 5.4 percent. Thus, although Hispanics only account for 3.5 percent of the state's population, they represented approximately 24 percent of the state's population increase between 2000 and 2010.

One reason for the large increase in the Hispanic population is that, over the last decade, Hispanic fertility rates have consistently been much higher than those of their non-Hispanic counterparts. The 2009 Hispanic fertility rate was 98.7 per 1,000 women ages 15-44. This was 52 percent higher than the fertility rate for non-Hispanic women (64.9). The gap between the two populations was

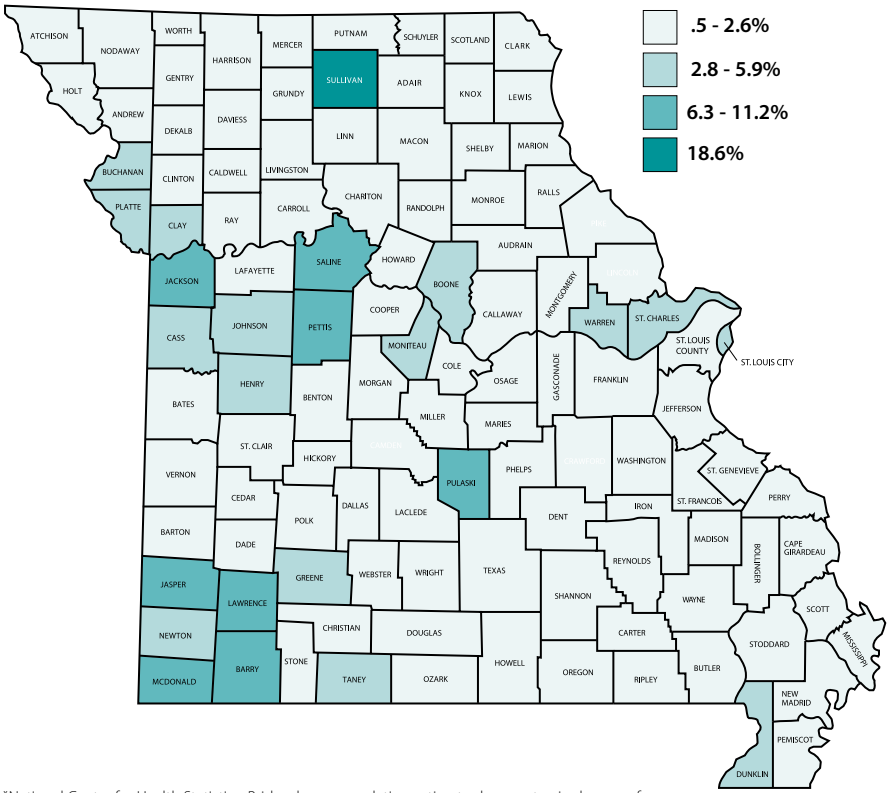
Data From:
Missouri Department of Health and Senior Services, Bureau of Health Care Analysis and Data Dissemination

Hispanic Health Disparities in Missouri

greatest during 2004-2005, when the Hispanic rate of 115.1 was more than 80 percent higher than the non-Hispanic rate of 62.7. Since then, the Hispanic rate has dropped 17 percent, while the non-Hispanic rate has increased slightly.

Migration is another important component of population growth for Hispanics. Missouri Vital Statistics and Census populations show a positive net migration of 58,196 Hispanic persons into the state between 2000 and 2010. Hispanic natural increase (births minus deaths) is calculated to be 35,682 persons. Therefore, 62 percent of the total Hispanic population increase is attributable to migration. In contrast, only 36 percent of the non-Hispanic population increase is attributable to migration. Most Hispanics migrating to Missouri are adults. Among the Hispanic population ages 18 and over, 43.6 percent were born in a foreign country. In contrast, only 8.8 percent of Hispanic residents under the age of 18 were born outside the United States.

Hispanic Population Percentages, Missouri 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.*

As discussed in more detail in the Deaths chapter of this report, research shows that Hispanic deaths are underreported, thus skewing both natural increase and migration figures. Hispanic migration into the state is likely higher than the figure calculated here and, conversely, Hispanic natural increase is likely lower. However, even if Hispanic deaths doubled, they would not have a huge effect on the migration and natural increase figures. Total population growth for Hispanics relies strictly on Census figures from 2000 and 2010 and is not affected by Hispanic death certificate undercounts.

Hispanic Health Disparities in Missouri

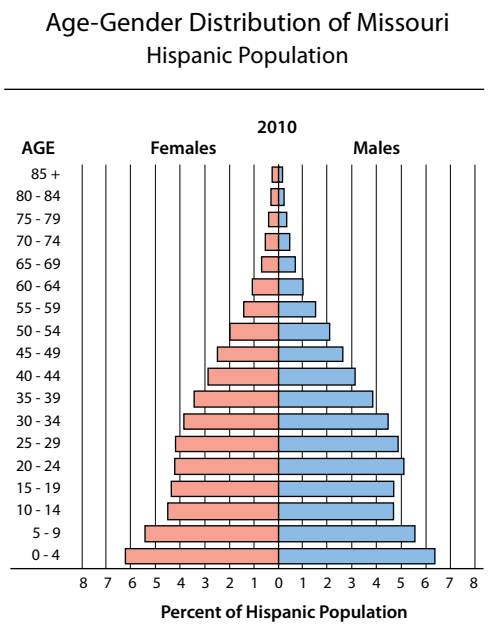
The Hispanic population is geographically dispersed across the state. Nearly every county in the state has experienced Hispanic population growth since the 2000 U.S. Census, with almost 75 percent of counties experiencing an increase of 50 percent or greater. One difference between the population distribution of African Americans compared to that of Hispanics is that Hispanics are more likely to live in rural areas of the state. Ninety-five of Missouri's counties have at least 100 Hispanic residents. This compares to only 78 counties with over 100 African Americans. Under the Census Bureau's urban and rural definitions based on Metropolitan Statistical Areas (MSAs), 19.5 percent of Missouri's Hispanic population live in rural areas. In contrast, only 8.6 percent of the African American population live in rural areas.

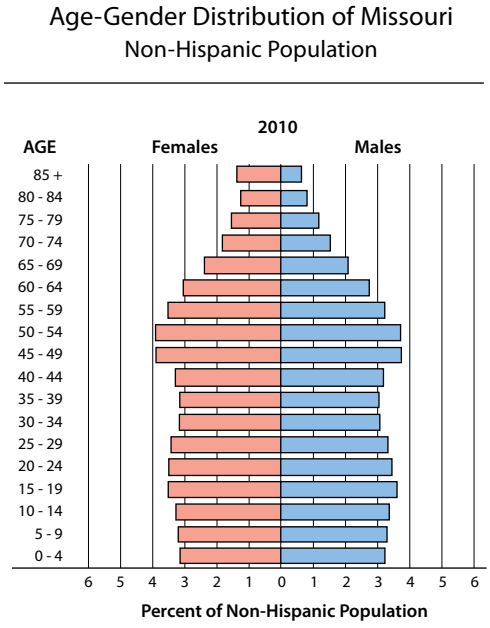
The largest concentration of Hispanics (56,434 persons) is found in Jackson County, which contains a large portion of Kansas City. Nearly a quarter of all Hispanics in the state reside there. Approximately 8 percent of Jackson County residents are Hispanic, which is more than double the state average. The Hispanic population in Jackson County increased 60 percent between 2000 and 2010. St. Louis County, which has the largest total county population at nearly one million persons, has the second largest number of Hispanics at 25,024. However, Hispanics represent only 2.5 percent of St. Louis County's total population. In rural areas, the absolute numbers of Hispanic residents may be small, but they often represent a relatively large percentage of the population. Higher densities of Hispanics are located in the central and north-central parts of the state. Sullivan County has the highest percentage of Hispanic residents (18.6%) among all counties in Missouri, while the Saline, Pettis, and Moniteau County percentages are all above the state average. Additional areas with large numbers of Hispanic residents include other metropolitan counties in the St. Louis and Kansas City regions (Clay, St. Charles, St. Louis City, etc.) and Southwest Missouri, which has several counties with large clusters of Hispanics. McDonald, Jasper, Lawrence, Newton, and Barry counties all have percentages above the state average. In fact, at 11.2 percent, McDonald County has the second highest percentage of Hispanic residents in the state.

Hispanic Health Disparities in Missouri

The age distribution of the Hispanic population differs dramatically from that of the non-Hispanic population, as Hispanic residents are, in general, much younger than non-Hispanics. Nearly 42 percent of the Hispanic population in Missouri is under age 20, compared to only 26 percent of the non-Hispanic population. At the other end of the scale, less than 4 percent of the Hispanic population is over age 65, compared to 14 percent for non-Hispanics. These trends combine to give the population pyramid for Hispanics a strikingly different look than the pyramid for their non-Hispanic counterparts. While the Hispanic pyramid has a large base and very short rows at the top, the non-Hispanic pyramid appears fairly uniform, with a slight bulge for the 'Baby Boom' generation. That bulge is nonexistent in the Hispanic age pyramid.

Hispanic males continue to outnumber Hispanic females, especially in the early adult age groups. In 2010, there were over 6,500 more Hispanic men than Hispanic women in the 20 to 44 age





group. However, the gender gap has narrowed somewhat during the past ten years; whereas men composed 54.3 percent of that age group in 2000, they now represent 53.5 percent. In comparison, only 49.7 percent of non-Hispanics in the 20-44 age group are male.

Hispanic Health Disparities in Missouri

Health disparities affecting Missouri's Hispanic population are less well understood than those affecting African Americans. Though the Hispanic population is growing, it is still a small portion of Missouri's total population. Consequently, the small numbers for many key health indicators can prevent the calculation of meaningful rates. There are also many challenges facing the collection of health data for Hispanics. One such barrier is language. According to the Census Bureau's American Community Survey estimates, about 27 percent of the Hispanic population in Missouri speaks English less than "very well."[2] That figure jumps to nearly 62 percent (approximately 40,000 persons) if only the foreign-born Hispanic population is included. Limited ability to speak English impacts a person's ability to capture and act upon information that can lead to better health and outcomes. Evolving data systems that have not historically collected ethnicity data pose another obstacle to understanding the health of Hispanic Missourians. These challenges may lead to underestimates of Hispanic totals for many health indicators.

Hispanics face many barriers to achieving positive health outcomes in today's society. This report highlights some of the key health indicators and risk factors for which there are disparities among Hispanics, non-Hispanic whites, and non-Hispanic African Americans. At the beginning of each chapter, disparities between Hispanic and non-Hispanic white rates are expressed as ratios between the corresponding rates. If no disparity is present, the ratio between the Hispanic and non-Hispanic white rates is 1 to 1. If the first term of the ratio is greater than one (e.g., 2 to 1), the Hispanic rate is higher than the non-Hispanic white rate. Conversely, if the first term of the ratio is less than one (e.g., 0.5 to 1), the Hispanic rate is lower than the non-Hispanic white rate. See the Appendix for 2009 ratios, which have been adjusted to utilize the new definitions for race/ethnicity.

Hispanic Health Disparities in Missouri

Using the MICA (Missouri Information for Community Assessment) Website

Some of the health data represented in this report may be accessed on the Missouri Department of Health and Senior Services (DHSS) MICA website. State-level data on Hispanic residents are available in most of the MICA data sets. However, county-level data are not available for all topics. When data are available, users can create customized tables pertaining to minority indicators.

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. To view data for Hispanics, non-Hispanic whites, and non-Hispanic African Americans on a single table, select "Race" and "Ethnicity" as the variables on Steps 1 and 2.

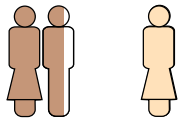
At this time, the Hispanic health data presented in this book are not available on the Community Data Profiles tool within the MICA system. The size of the Hispanic population in Missouri limits the calculation of meaningful rates for a number of indicators at the state level and for the majority of health indicators at the county level. Hispanic data may be incorporated into the Community Data Profiles in the future, as the Hispanic population in Missouri continues to grow.

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

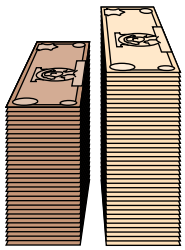
Ratios of Hispanics to Non-Hispanic Whites for Selected Socio-Economic Indicators

Missouri, 2011



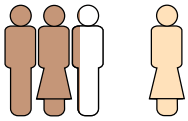
1.7 to 1

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



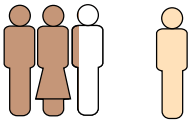
0.8 to 1

Median Household Income



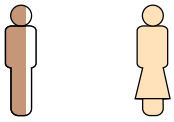
2.2 to 1

Population Below Poverty Level



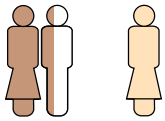
2.2 to 1

Families with Children Under 18 Years Old Below Poverty Level



0.7 to 1

Persons Age 25 & Over with at Least a High School Diploma/ Equivalent



1.4 to 1

Unemployment

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

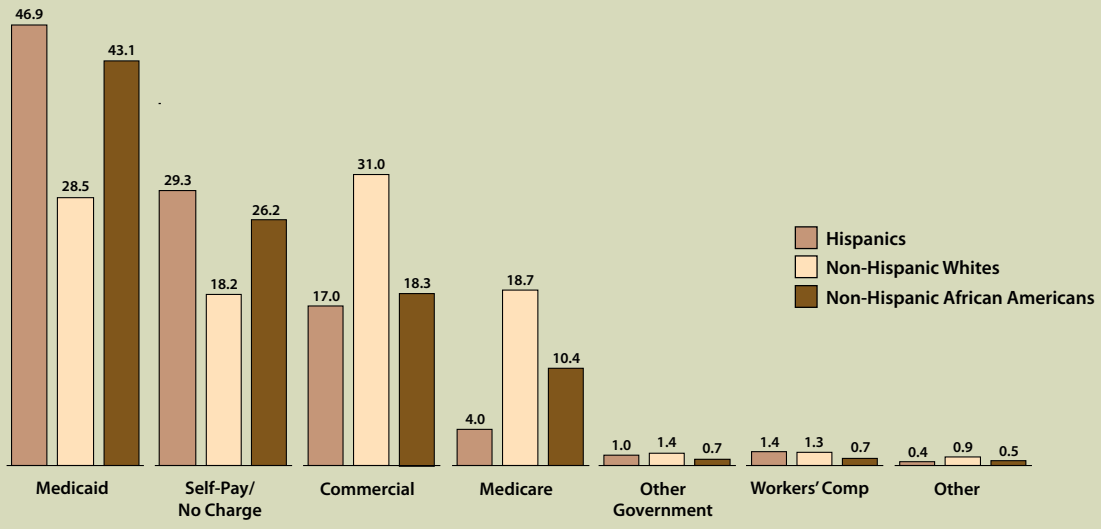
Hispanics
Non-Hispanic Whites

Expected Pay Source for Emergency Room Visits

Expected pay source for emergency room (ER) care can be used to analyze the types of health insurance different demographic groups are accessing. Compared to non-Hispanic whites, a disproportionate percentage of Hispanics list expected pay source for ER visits as either Self-Pay/No Charge or Medicaid. Those two categories account for approximately 75 percent of all ER visits by Missouri's Hispanic residents. Self-Pay/No Charge and Medicaid make up slightly less than 70 percent of ER visits by non-Hispanic African Americans, while 43.7 percent of ER visits by non-Hispanic whites are accounted for by those two categories. Between 2006 and 2010, the percentage of Hispanic ER visits listed as Self-Pay/No Charge changed very little, but at the same time, the percentage of Hispanic ER visits listed as Commercial Insurance dropped over 4 percent. Similar declines in Commercial Insurance were reported for non-Hispanic whites and non-Hispanic African Americans. In 2010, only 17 percent of Hispanics list Commercial Insurance as the expected pay source, compared to 31.0 percent of non-Hispanic whites and 18.3 percent of non-Hispanic African Americans. These findings are consistent with the latest U.S. Census reports from 2011 which show that nationally 31.5 percent of Hispanics under age 65 lack health insurance compared to 13.2 percent of non-Hispanic whites.[1]

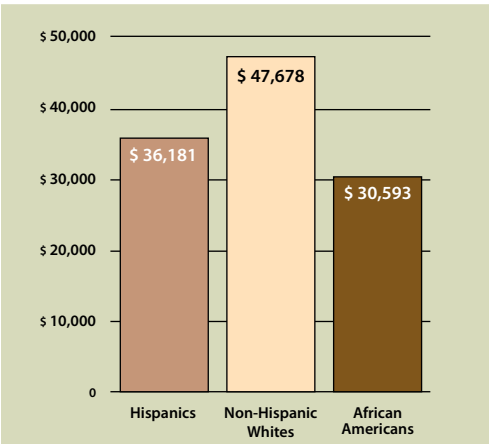
Expected Pay Source for Emergency Room Visits *– The primary source of payment for the patient's hospital or emergency room stay is based on information supplied at the time of admission.*

Expected Pay Source for Emergency Room Visits*
Missouri, 2010



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

Median Household Income*
Missouri, 2011



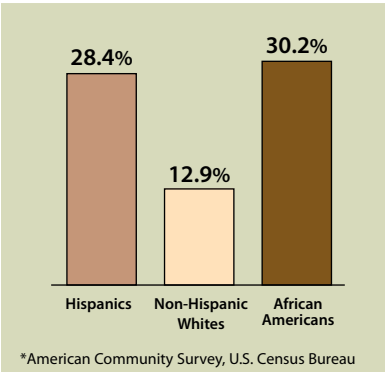
*2011 American Community Survey, U.S. Census Bureau

While lower income levels may not directly cause poor health outcomes, several studies have indicated that some type of relationship exists, with income and education both individually and in combination providing protection for an individual's health.[2,3] The 2011 median household income for Hispanics is $36,181, 31 percent below the income of non-Hispanic whites ($47,678) and 18 percent higher than the income of African Americans ($30,593). However, the household incomes of Missouri's Hispanic residents have not fared well over the past several years. Hispanic income decreased by 1.5 percent, while non-Hispanic white income rose 10 percent and African American income rose 5 percent between 2006 and 2011.

Median Household Income

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

Percent of Population Below Poverty Level*
Missouri, 2011



*American Community Survey, U.S. Census Bureau

Experts have found that "poverty and health are inextricably intertwined."[5] 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."[6] Poverty statistics show that 28.4 percent of Hispanics fall below the poverty line. In this regard, Hispanics are more similar to African Americans (who have a 30.2% poverty rate) than non-Hispanic whites (who have a 12.9% poverty rate). Since 2006, the poverty rate for Hispanics increased by 9.2 percent, which is close to the 9.0 percentage increase for non-Hispanic whites. In contrast, the African American rate decreased by 1.3 percent.

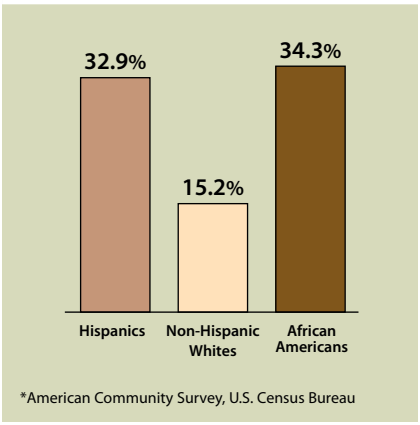
Population Below Poverty Level

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.*[4]

Families with Children Below Poverty Level

Percent of Families with Children Less Than 18 Years Old Below Poverty Threshold – *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.*[7]

Percent of Families with Children Below Poverty Level*
Missouri, 2011



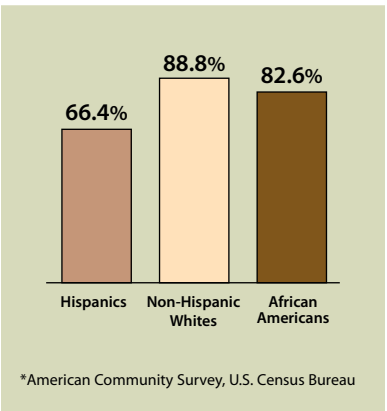
*American Community Survey, U.S. Census Bureau

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.[8] Census estimates for 2011 show that the poverty rate for Hispanic families with children under age 18 is 32.9 percent. The Hispanic rate is more than double the rate for non-Hispanic whites (15.2%) and slightly lower than the rate for African Americans (34.3%). Poverty rates for both African Americans and Hispanics increased by less than one percent, while the non-Hispanic white rate increased by 3.5 percent during the 2006-2011 time period.

Persons with at Least a High School Diploma

Percent of Persons Age 25 and Older with at Least a High School Diploma/ Equivalent – *The percent of adults ages 25 and over whose highest level of education "was a high school diploma or its equivalent, people who attended college but did not receive a degree, and people who received an associate's, bachelor's, master's, or professional or doctorate degree. People who reported completing the 12th grade but not receiving a diploma are not included."*[9]

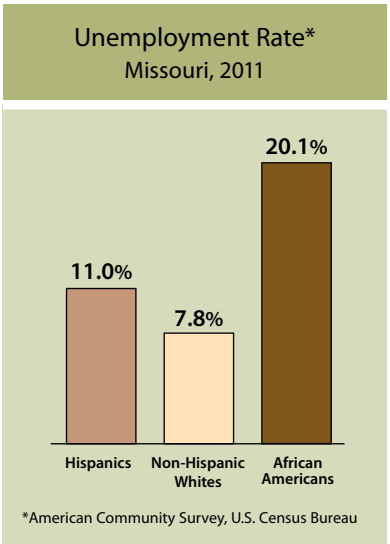
Percent of Residents Ages 25 & Over with at Least a High School Diploma*
Missouri, 2011



*American Community Survey, U.S. Census Bureau

Better educated persons have lower incidence of many acute and chronic diseases, even after controlling for other demographic factors.[10] Adult Hispanics have lower educational attainment than either non-Hispanic whites or African Americans. About two-thirds of Hispanics have a high school diploma, which is lower than the rates for non-Hispanic whites (88.8%) and African Americans (82.6%). Additionally, the gap between Hispanics and other population groups appears to be growing. High school graduation rates for Hispanics declined 1.3 percent between 2006 and 2011, while the non-Hispanic white and African American rates both increased by approximately 3 percent. Adult immigration among Hispanics may be the cause of the increasing

disparity in education at the high school level. Hispanics compare more favorably when examining figures for the college level. About 18 percent of Hispanics have at least a bachelor's degree, compared to 16.5 percent of African Americans. The non-Hispanic white rate is substantially higher at 27 percent.



Unemployment

The estimated Hispanic unemployment rate in Missouri is 11 percent for 2011. The unemployment rate for African Americans is nearly double that, at 20.1 percent, while the non-Hispanic white rate is lower, at 7.8 percent. Unemployment rates for all three groups increased between 2006 and 2011, with rate increases of 3.3 percent, 5.4 percent, and 2.6 percent, respectively. The relationship between employment and good health is complex, and cause and effect are difficult to determine.

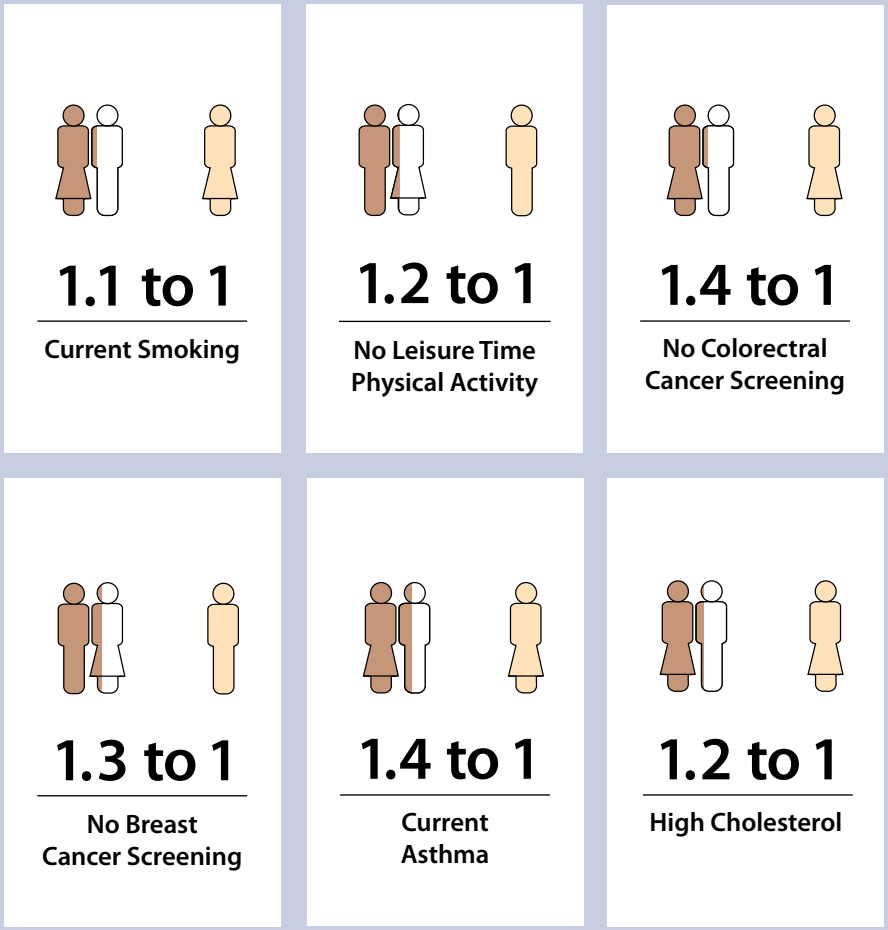
Research shows that there may be a relationship between unemployment and some health outcomes. For example, some findings have shown a correlation between unemployment and suicide.[13] In many cases, poor health may lead to job loss, but research also shows that job loss can lead to poor mental and physical health. Studies have found that recently unemployed workers who lost their job through no fault of their own 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 18 months.[14] 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.[15]

Unemployment *– Unemployment rate is the number of unemployed people as a percentage of the civilian labor force.[11] 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, and (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.[12]*

Behavioral Risk Factors and Chronic Conditions

Ratios of Hispanic to Non-Hispanic White Prevalence Rates for Selected Behavioral and Chronic Disease Indicators

Missouri, 2011



Source: 2011 Missouri County-Level Study

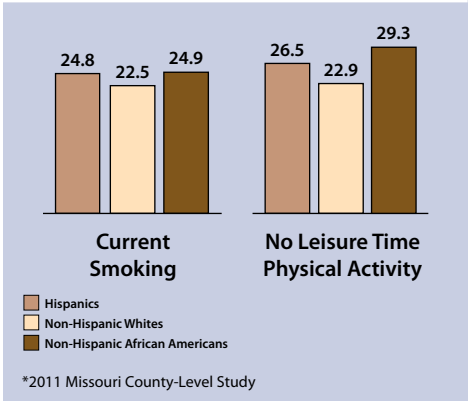
Behavioral Risk Factors

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.*

Smoking and physical inactivity are two major risk factors for multiple chronic diseases. The 2011 Hispanic rate for current smoking is 24.8 percent, which is slightly higher than the rate for non-Hispanic whites (22.5%) and slightly lower than the rate for non-Hispanic African Americans (24.9%). The Hispanic rate for no leisure time physical activity is 26.5 percent. This rate is higher than the non-Hispanic white rate of 22.9 percent but lower than the non-Hispanic African American rate of 29.3 percent. The Hispanic rates are not statistically significantly different from either the non-Hispanic white or non-Hispanic African American rates for either indicator.

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



*2011 Missouri County-Level Study

Lack of Cancer Screenings

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

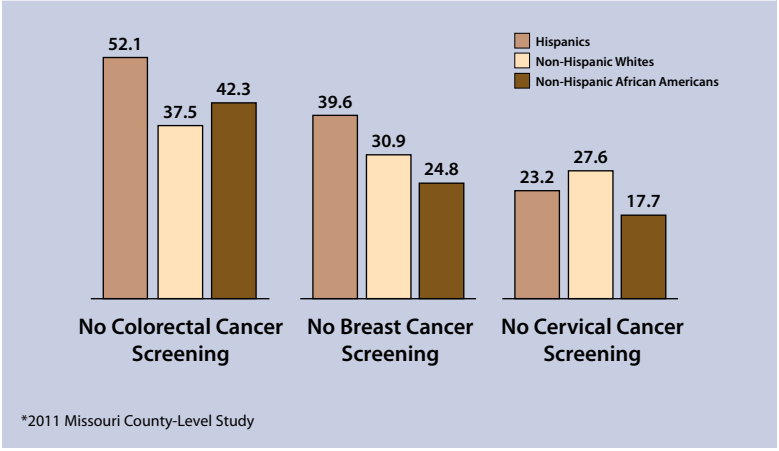
No Breast Cancer Screening – *Percentage of women ages 40 and older that had no mammogram or clinical breast exam within the last year.*

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

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, or cervical cancer. The 2011 Hispanic prevalence for no colorectal cancer screening is 52.1 percent. This is higher than both the non-Hispanic white rate (37.5%) and the non-Hispanic African American rate (42.3%). The Hispanic rate is statistically significantly higher than the non-Hispanic white rate. The Hispanic rate for no breast cancer screening is 39.6 percent, which is also higher than the rates for non-Hispanic whites (30.9%) and non-Hispanic African Americans (24.8%). The Hispanic rate for no cervical cancer screening is 23.2 percent. This rate is lower than the rate for non-Hispanic whites (27.6%) but higher than the rate for non-Hispanic African Americans (17.7%). There are no statistically significant differences among the Hispanic, non-Hispanic white, and non-Hispanic African American rates regarding lack of breast or cervical cancer screenings.

Lack of Cancer Screenings

Percentage of Adults Who Lack Selected Cancer Screenings*
Missouri, 2011

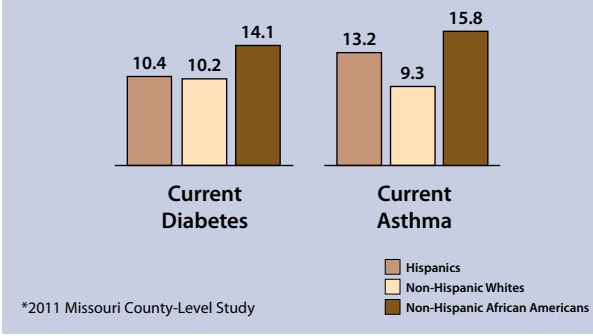


*2011 Missouri County-Level Study

Current Diabetes and Current Asthma

Diabetes and asthma are chronic diseases that often interact with other conditions. For 2011, the prevalence of diabetes for Hispanics is 10.4 percent. This rate is similar to the non-Hispanic white rate of 10.2 percent. The non-Hispanic African American rate is higher, at 14.1 percent. The Hispanic rate for current asthma is 13.2 percent. This rate is higher than the non-Hispanic white rate of 9.3 percent but lower than the non-Hispanic African American rate of 15.8 percent. The Hispanic rates for current diabetes and current asthma are not statistically significantly different from the non-Hispanic white or non-Hispanic African American rates.

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



*2011 Missouri County-Level Study

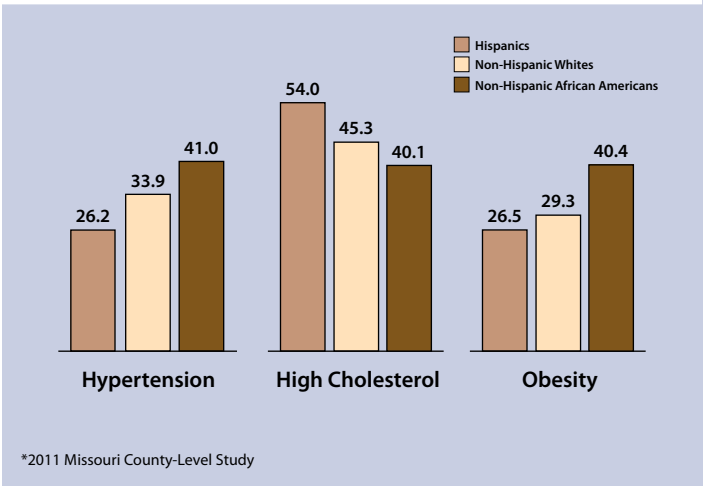
Current Diabetes – *Percentage of adults ages 18 and over who had ever been told by a doctor that they have diabetes.*

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.*

Chronic Diseases

Hypertension, high cholesterol, and obesity are three conditions that increase an individual's risk of developing other chronic conditions. The 2011 Hispanic prevalence of hypertension (26.2%) falls well below the rates for both non-Hispanic whites (33.9%) and non-Hispanic African Americans (41%). The differences among the Hispanic, non-Hispanic white, and non-Hispanic African American rates are statistically significant. In contrast, the Hispanic prevalence of high cholesterol (among residents over age 35 who have ever had their cholesterol checked) is 54 percent, which is higher than both the non-Hispanic white rate of 45.3 percent and the non-Hispanic African American rate of 40.1 percent. The Hispanic rate for high cholesterol is statistically significantly higher than the non-Hispanic African American rate. The obesity rate among Hispanics is 26.5 percent. This is lower than the rate for non-Hispanic whites (29.3%) and non-Hispanic African Americans (40.4%). The obesity rate for Hispanics is statistically significantly lower than the rate for non-Hispanic African Americans.

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



*2011 Missouri 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.*

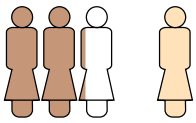
High Cholesterol – *Percentage of adults ages 35 and older who have had their cholesterol checked and were told by a doctor, nurse or other health professional that they have high cholesterol.*

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

Maternal and Child Health

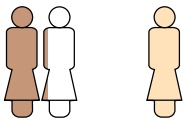
Ratios of Hispanic to Non-Hispanic White Rates for Selected Maternal and Child Health Indicators

Missouri, 2006-2010



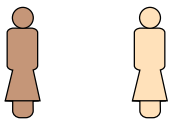
2.1 to 1

Inadequate Prenatal Care



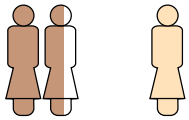
1.1 to 1

Premature Birth



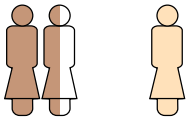
1.0 to 1

Pre-pregnancy Obesity



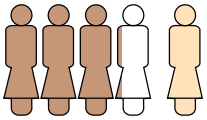
1.6 to 1

Births to Unmarried Mothers



1.5 to 1

Births to Mothers Receiving Medicaid



3.1 to 1

Mothers with Less Than a High School Education

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

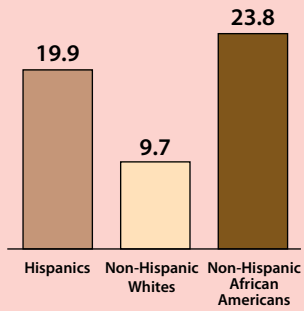
Hispanics
Non-Hispanic Whites

Inadequate Prenatal Care

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.*

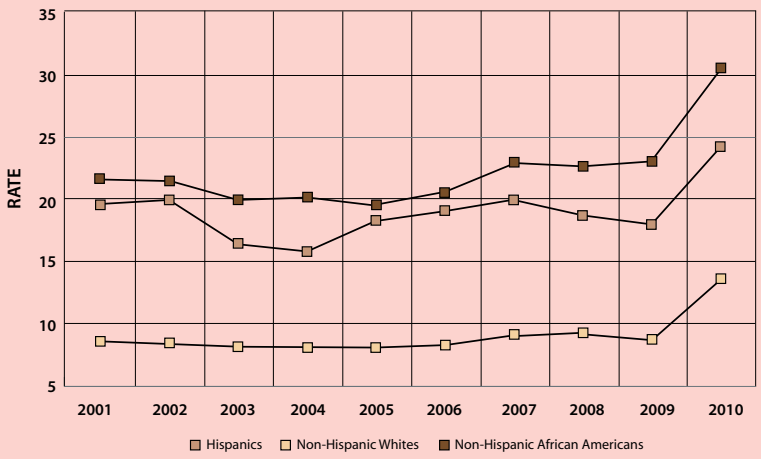
For 2006-2010, the Missouri rate of inadequate prenatal care for Hispanic mothers is double the rate for non-Hispanic white mothers but approximately 15 percent less than the non-Hispanic African American rate. This disparity reflects the low socio-economic level of many Hispanic mothers and a possible overall lack of access to medical care. Since 2000, the inadequate prenatal care rates for all races/ethnicities have remained stable. Beginning in 2010, additional questions on prenatal care were added to the birth certificate. These questions increased the specificity in the reporting of this indicator. As a result, increased 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, 2006-2010



*Rates per 100 Live Births with Known Prenatal Care Status

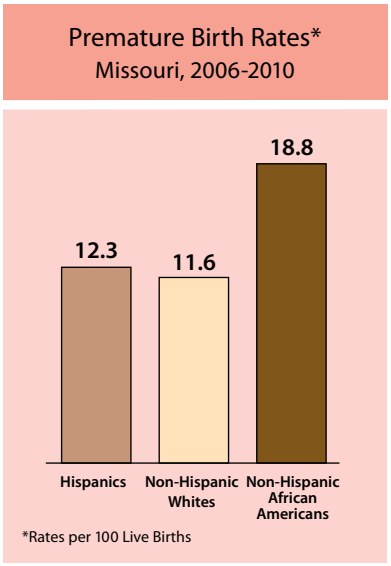
Inadequate Prenatal Care Rates*
Missouri, 2001-2010



*Rates per 100 Live Births with Known Status

Premature Birth

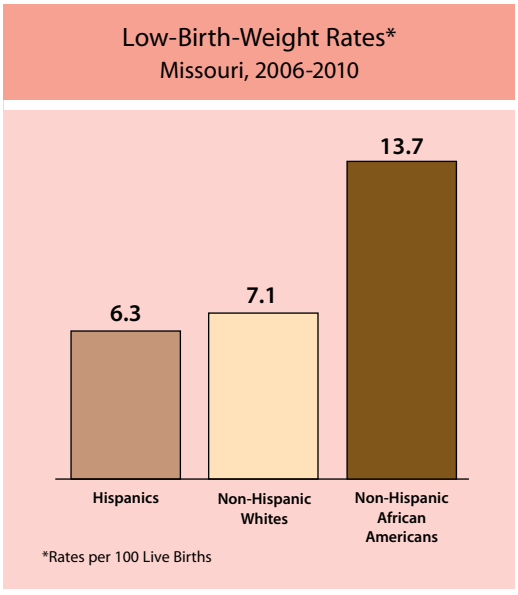
Between 2006 and 2010, Hispanic newborns in Missouri were 6 percent more likely to be born prematurely than non-Hispanic white newborns (at 12.3 versus 11.6 premature births out of every 100 live births). However, the non-Hispanic African American premature birth rate of 18.8 was more than 50 percent higher than the Hispanic rate. 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 of life. 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.[2,3] 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.[4]



***Premature Birth** – A resident live birth with a gestational age of 36 or fewer weeks.*[1]

Low Birth Weight

For the 2006-2010 period, Missouri's low birth weight (LBW) rate for Hispanic newborns (6.3 per 100 live births) is approximately 12 percent less than the rate for non-Hispanic white newborns (7.1) and 54 percent less than that for non-Hispanic African American newborns (13.7). This lower rate may be attributed to lower rates of smoking during pregnancy and fewer multiple gestation pregnancies for Hispanic mothers. Non-Hispanic African American mothers were 2.4 times more likely to smoke than Hispanic mothers during this time period, while non-Hispanic white mothers were 3.7 times more likely to smoke. In addition, the multiple gestation rate for Hispanic mothers was one-third of the rates for non-Hispanic African American and non-Hispanic white mothers. Five-year trend data show that LBW rates for the three racial/ethnic groups were stable between 2006 and 2010. Low birth weight 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.[6]

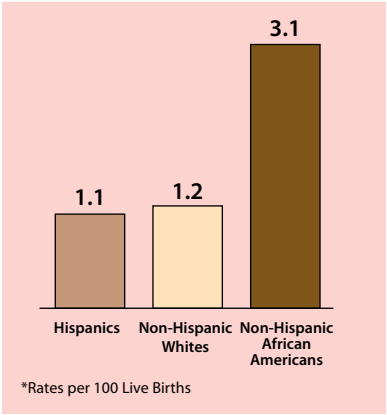


***Low Birth Weight** – Live birth weight of less than 2,500 grams or 5.5 pounds, regardless of gestational age.*[5]

Very Low Birth Weight

Very Low Birth Weight – *Live birth weight of less than 1,500 grams or 3 pounds and 4 ounces, regardless of gestational age.*[7]

Very Low Birth Weight Rates*
Missouri, 2006-2010

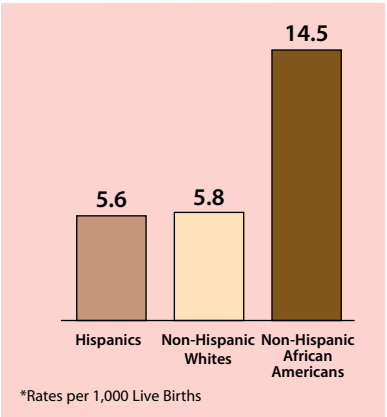


For 2006-2010, the Hispanic very low birth weight (VLBW) rate in Missouri is 1.1 VLBW births per every 100 resident live births. The Hispanic rate is 8 percent less than the non-Hispanic white rate of 1.2 and 65 percent less than the non-Hispanic African American rate of 3.1. As discussed in the Low Birth Weight section, the lower rate for Hispanics may be attributed to lower rates of smoking during pregnancy and fewer multiple gestation pregnancies for Hispanic mothers. 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.[8]

Infant Deaths

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

Infant Death Rates*
Missouri, 2006-2010

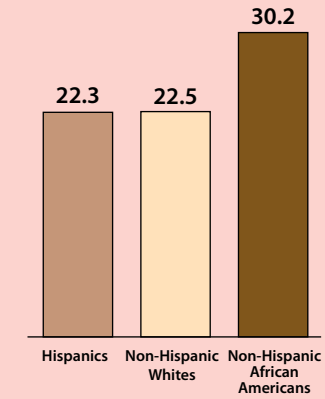


In Missouri, the 2006-2010 Hispanic infant death rate of 5.6 deaths per 1,000 live births is less than half the rate for non-Hispanic African American infants (14.5) and slightly less than the non-Hispanic white rate (5.8). The same is also true for the infant death rate due to perinatal conditions. The perinatal death rate, which includes fetal deaths at 20 or more weeks gestation and deaths of infants less than 28 days old, is 2.1 for Hispanics, compared to 8.2 for non-Hispanic African Americans and 2.5 for non-Hispanic whites. The neonatal (less than 28 days old) death rate of 3.6 for Hispanic infants is the same as that for non-Hispanic whites but less than half that for non-Hispanic African Americans (10.1).

Pre-pregnancy Obesity

Between 2006 and 2010, the obesity rate for Missouri's Hispanic mothers was 22.3 per 100 live births, which was slightly lower than the rate for non-Hispanic white mothers (22.5) and 35 percent lower than the rate for non-Hispanic African American mothers (30.2). According to national figures from the Centers for Disease Control and Prevention (CDC), Hispanic women tend to have lower obesity rates than non-Hispanic African American women but higher obesity rates than non-Hispanic white women.[9] In Missouri, the Hispanic pre-pregnancy obesity rate was lower for Hispanics than non-Hispanic whites until 2009.

Pre-pregnancy Obesity Rates*
Missouri, 2006-2010

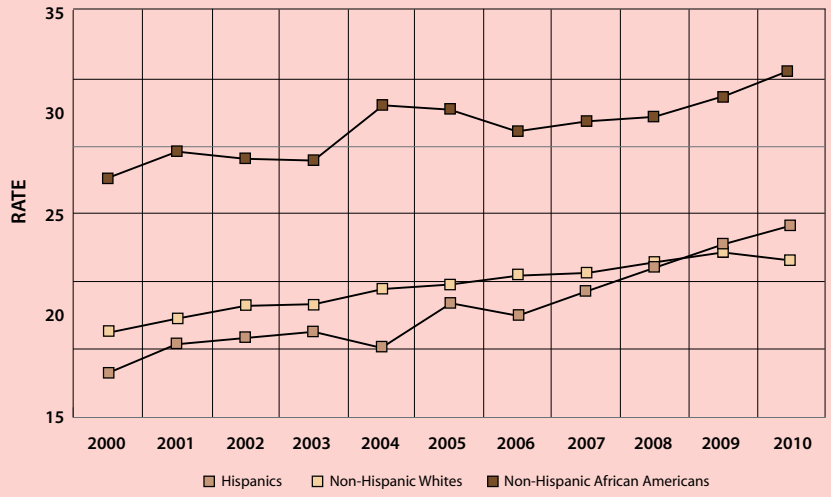


*Rates per 100 Live Births with Known Status

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

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.[10] The U.S. Surgeon General links obesity with increased risk of arthritis, diabetes, high cholesterol, and some forms of cancer. The Surgeon General also notes that obesity during pregnancy is associated with a higher risk of birth defects, maternal and infant mortality, and labor and delivery problems.[11]

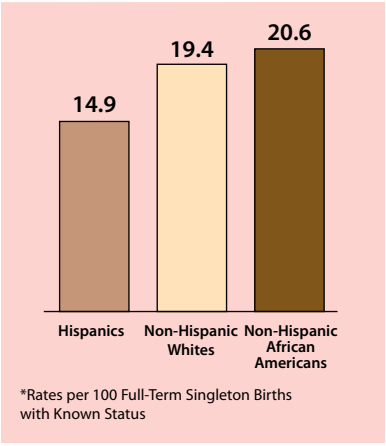
Pre-pregnancy Obesity Rates*
Missouri, 2000-2010



*Rates per 100 Live Births with Known Status

High Maternal Weight Gain

High Maternal Weight Gain Rates*
Missouri, 2006-2010



Between 2006 and 2010, fewer Hispanic mothers had a pregnancy weight gain of at least 45 pounds than either non-Hispanic white mothers or non-Hispanic African American 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. From 2003 through 2008, the high maternal weight gain rate stabilized at approximately 19 percent. High maternal weight gain is associated with an increased incidence of high birth weight infants, obstetric complications, cesarean section deliveries, and preeclampsia.[12]

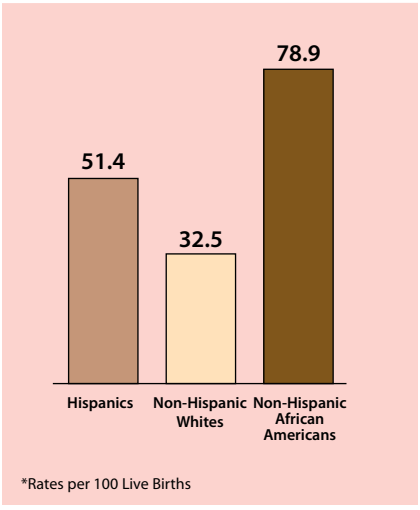
In 2009, the Institute of Medicine (IOM) revised the recommendations for weight gain during pregnancy. They are now based on body mass index (BMI) categories, rather than Metropolitan Life Insurance tables. Different ranges for weight gain during pregnancy were developed based on the mother's pre-pregnancy weight and height. Due to higher risk of developing related chronic diseases, the IOM stated that it would be best for women to conceive during a time when their BMI is normal.[13] 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 Hispanic mothers is 51.4 per 100 live births for the 2006-2010 period. This rate is approximately 58 percent higher than the rate for non-Hispanic white mothers (32.5). In contrast, the Hispanic rate is approximately 35 percent lower than the rate for non-Hispanic African American mothers (78.9). The overall rate of births to unmarried mothers, regardless of race/ethnicity, increased approximately 9 percent between the 2002-2006 and 2006-2010 time periods. During this time, the Hispanic and non-Hispanic white rates each increased by more than 9 percent, while the non-Hispanic African American rate increased by about 2 percent. Research indicates children who grow up with only one parent in the home are more likely to be financially worse off and have worse socio-economic outcomes (even after income differences are taken into account) compared to children who grow up in a home with two parents.[14]

Births to Unmarried Mothers*
Missouri, 2006-2010



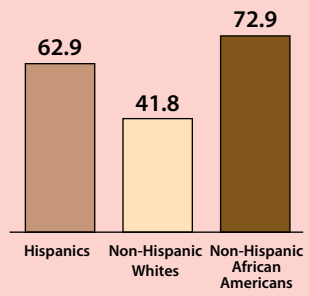
*Rates per 100 Live Births

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.for perinatal conditions are P00-P96.*

Births to Mothers Receiving Medicaid

Over half of the live births to Missouri's Hispanic mothers were paid for by Medicaid during 2006-2010. This rate was 50 percent higher than the rate for non-Hispanic white mothers (41.8 per 100 live births), but 13.7 percent less than the rate for non-Hispanic African American mothers (72.9). 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, Hispanic mothers on Medicaid are more likely to receive inadequate prenatal care than non-Hispanic white mothers on Medicaid (23.4% versus 15.5%). 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, 2006-2010



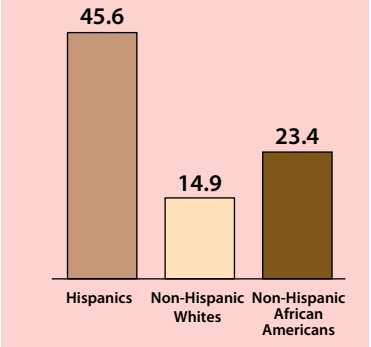
*Rates per 100 Live Births with Known Status

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

Hispanic mothers have lower education levels than both non-Hispanic white and non-Hispanic African American mothers, according to 2006-2010 Missouri birth certificate data. The rate of Hispanic mothers with less than a high school education is 45.6 per 100 live births. This is almost twice the rate for non-Hispanic African American mothers (23.4) and more than three times the rate for non-Hispanic white mothers (14.9). Furthermore, 31.7 percent of non-Hispanic white mothers have college degrees, compared to 10.5 percent of Hispanic and 10.3 percent of non-Hispanic African American mothers. Mothers with lower education levels are more likely to have low socio-economic status and limited access to health care and are more likely to have poor birth outcomes, including increased low birth weight and infant death rates.

Births to Mothers with Less Than a High School Education*
Missouri, 2006-2010



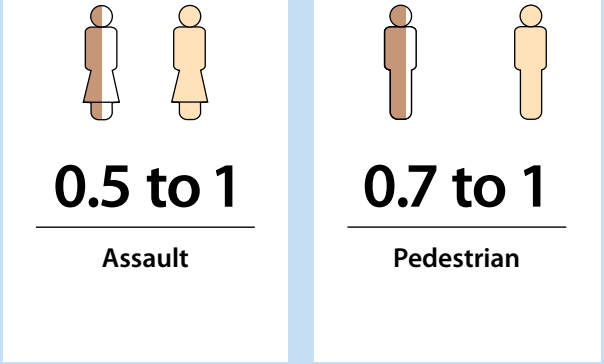
*Rates per 100 Live Births

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

Injuries Treated in Hospitals

Assault	28
Pedestrian	28

Ratios of Hispanic to Non-Hispanic White Rates for Selected Injuries Treated in Hospitals



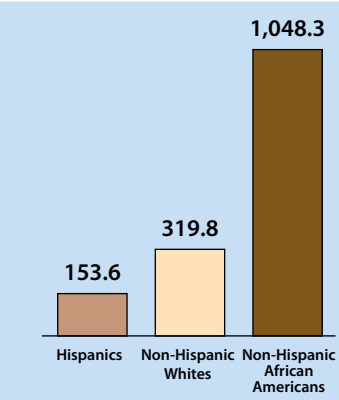
Source: Patient Abstract System, Bureau of Health Care Analysis and Data Dissemination, Missouri Department of Health and Senior Services

Hispanics
Non-Hispanic Whites

Assault Injury

The 2010 Hispanic assault injury rate is 153.6 injuries per 100,000 residents, which is lower than both the non-Hispanic white rate of 319.8 and the non-Hispanic African American rate of 1,048.3. The rates for all three groups decreased between 2006 and 2010. However, Hispanics experienced the largest decrease at 71 percent, compared to a non-Hispanic white decrease of 5.2 percent and a non-Hispanic African American decrease of 6.0 percent. The 2010 Hispanic assault injury rate is the lowest since Missouri began collecting injury data in the mid-1990s. Assault injury rates are highest for the 15-24 and 25-34 age groups among all three racial/ethnic groups.

Assault Injury Rates*
Missouri, 2010



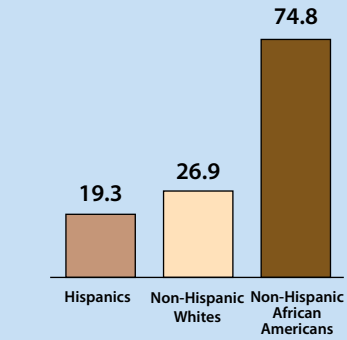
*Age-Adjusted Rates per 100,000 Population

***Assault** – Resident hospital admissions plus emergency room visits for persons injured during an assault. ICD-9 codes are: E960-E969, E979, and E999.1.*

Pedestrian Injury

The 2010 pedestrian injury rate for Hispanic Missourians is 19.3 injuries per 100,000 residents. This is lower than both the non-Hispanic white rate of 26.9 and the non-Hispanic African American rate of 74.8. Pedestrian injury rates decreased for all three racial/ethnic groups between 2006 and 2010. Hispanics experienced the largest decrease of 22 percent, but that change was not statistically significant. The non-Hispanic white and non-Hispanic African American rates both declined less than 2 percent. Hispanic men are over 40 percent more likely than Hispanic women to suffer a pedestrian injury (22.0 versus 15.4). The Hispanic gender disparity is similar to the disparity between non-Hispanic men and women (40.5 versus 27.3). Hispanic pedestrian injury rates are similar across all age groups. Recent national data show that minorities of all ages are more likely to be involved in a pedestrian fatality than non-Hispanic whites.[1]

Pedestrian Injury Rates*
Missouri, 2010



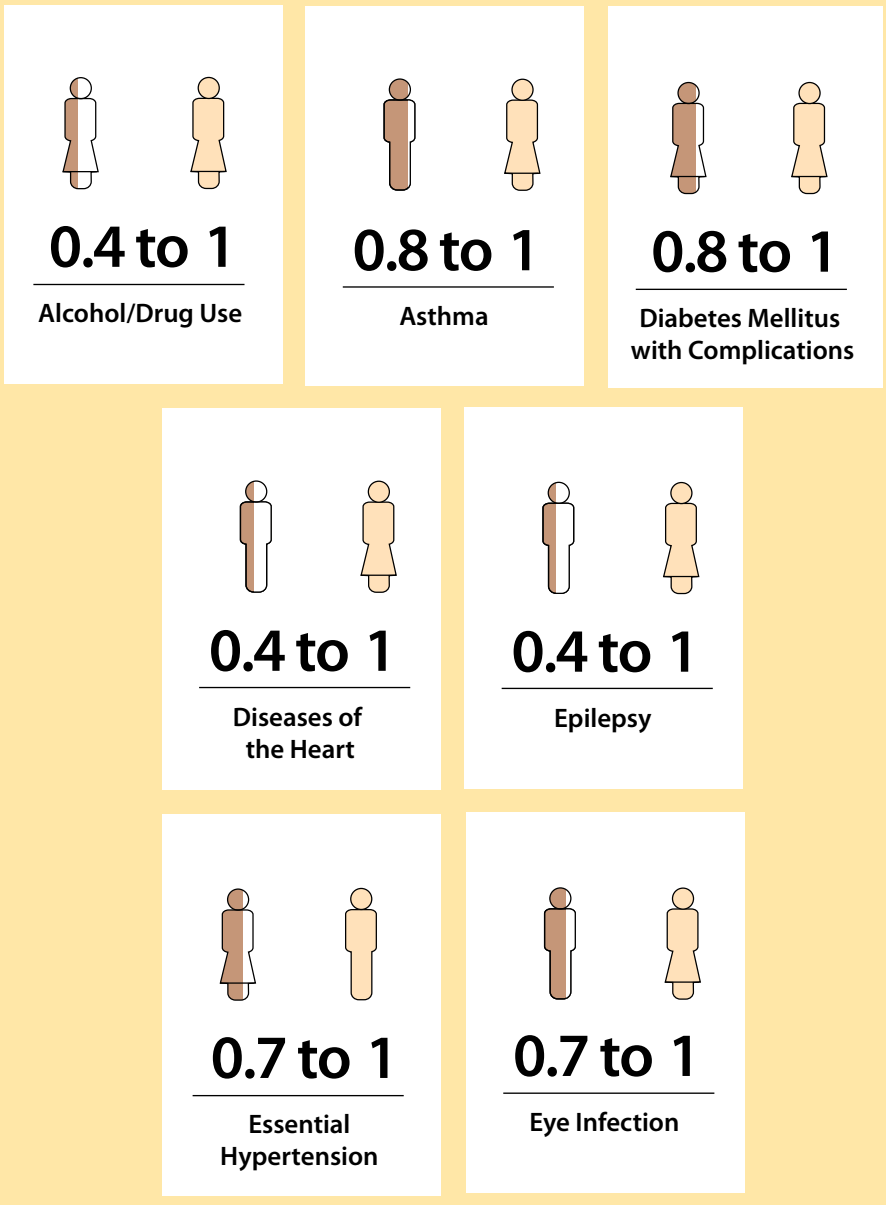
*Age-Adjusted Rates per 100,000 Population

***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.*

Emergency Room Visits

Ratios of Hispanic to Non-Hispanic White Rates for Selected Causes of Emergency Room Visits

Missouri, 2010



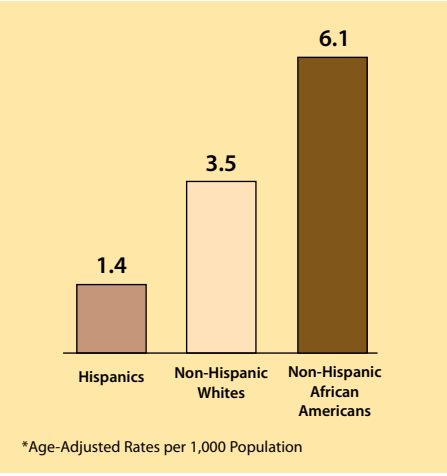
Source: Patient Abstract System, Bureau of Health Care Analysis and Data Dissemination, Missouri Department of Health and Senior Services

Hispanics
Non-Hispanic Whites

Alcohol/Drug Use Related ER Visits

Alcohol and drug abuse is classified as a mental disorder. The Hispanic alcohol/drug abuse ER visit rate is 1.4 visits per 1,000 residents. In comparison, the non-Hispanic white rate is 3.5, and the non-Hispanic African American rate is 6.1. The Hispanic rate has remained virtually unchanged since 2006, when the rate was 1.5. In contrast, non-Hispanic whites and non-Hispanic African Americans have experienced large increases of 35-45 percent. The rate for Hispanic men is 2.3, compared to 0.5 for Hispanic women, a disparity ratio of 4.6. This is a larger gender disparity than that of either non-Hispanic whites or non-Hispanic African Americans, whose gender disparity ratios are 1.8 and 2.6, respectively. Among both Hispanics and non-Hispanic African Americans, the highest rates are found in the 45-64 age group. The highest rates for non-Hispanic whites are found in the 15-24 and 25-44 age groups.

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



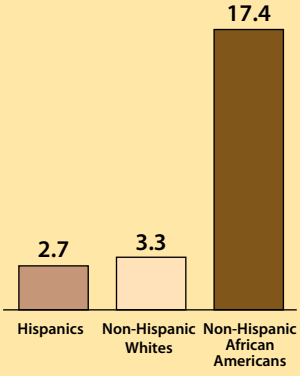
*Age-Adjusted Rates per 1,000 Population

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.*

Asthma Related ER Visits

The 2010 Hispanic asthma emergency room (ER) visit rate is 2.7 visits per 1,000 residents, which is slightly below the non-Hispanic white rate of 3.3 and much lower than the non-Hispanic African American rate of 17.4. Asthma ER visit rates increased for both Hispanics (42%) and non-Hispanic African Americans (13%) between 2006 and 2010, while the non-Hispanic white rate decreased slightly (1%). The Hispanic rate increase from 1.9 in 2006 to 2.7 in 2010 is statistically significant. Hispanic males have

Asthma: ER Visit Rates*
Missouri, 2010



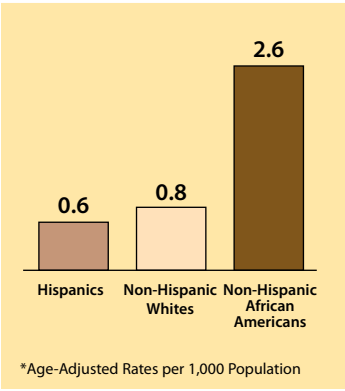
*Age-Adjusted Rates per 1,000 Population

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.*

slightly higher rates than females (2.8 versus 2.5) while the reverse is true for the non-Hispanic population (5.1 versus 5.7). As with both non-Hispanic whites and non-Hispanic African Americans, children have the highest rates (6.1 for persons ages 15 and under) among the Hispanic population. 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 Related ER Visits

Diabetes Mellitus:
ER Visit Rates*
Missouri, 2010



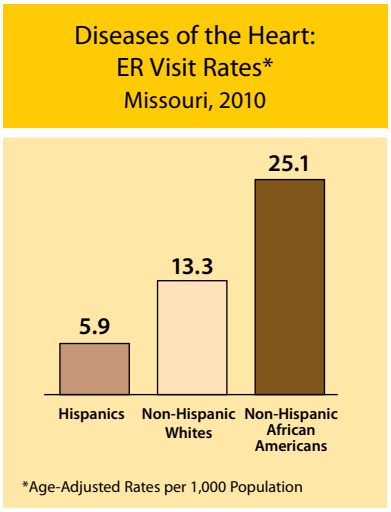
The Hispanic ER visit rate for diabetes mellitus with complications is 0.6 visits per 1,000 residents, which is a 50 percent increase from the 2006 rate of 0.4. However, the Hispanic rate still falls below the non-Hispanic white rate of 0.8 and the non-Hispanic African American rate of 2.6, which is over four times the Hispanic rate. The non-Hispanic white rate has remained unchanged since 2006, but the non-Hispanic African American rate has increased 14 percent (from 2.3). There are no gender disparities for any of these three racial/ethnic groups. Diabetes ER visit rates are highest for the older age groups in all three populations. Residents ages 65 and over have the highest rate (2.2) among Hispanics. National research shows that Hispanics have higher rates of Type 2 diabetes due to "genes, environment, culture, social factors, the nature of [the] health care system," and other influences which work together to produce higher rates for the Hispanic population.[2] Studies by the Agency for Healthcare Research and Quality (AHRQ) show that certain diabetic complications such as kidney failure are more common among Hispanics and African Americans than whites.[3]

Diabetes Mellitus Related ER Visits

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.*

Diseases of the Heart Related ER Visit

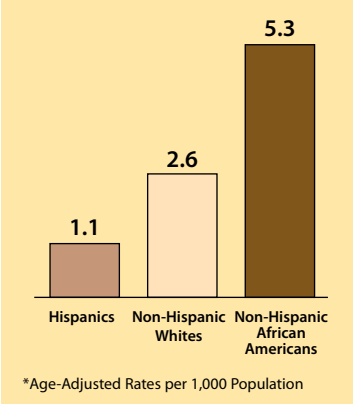
The Hispanic ER visit rate for diseases of the heart is 5.9 visits per 1,000 residents. This rate is more than four times lower than the rate for non-Hispanic African Americans (25.1) and less than half the rate for non-Hispanic whites (13.3). The Hispanic rate has increased 20 percent since 2006, when it was 4.9. Both the non-Hispanic white and the non-Hispanic African American rates experienced even larger increases during the same time period (with 2006 rates of 11.9 and 19.2, respectively). The rate for Hispanic males is about 7 percent higher than that of Hispanic females (6.1 versus 5.7). This differs from the gender disparity within the non-Hispanic population, in which females have higher rates by about 9 percent (20.5 versus 19.1). In 2010, the highest rates among Hispanics were found in the 55-64 and 65-74 age groups, in contrast to non-Hispanic whites, whose highest rates occurred in the 75-84 and 85 and over age groups.



Diseases of the Heart – *Resident emergency room visits with a principal diagnosis of heart disease, including hypertensive, ischemic, and other heart disease.*

Epilepsy Related ER Visits

Epilepsy: ER Visit Rates*
Missouri, 2010



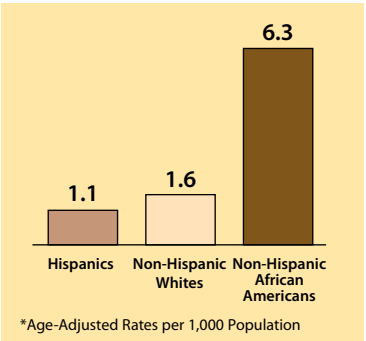
The epilepsy ER visit rate for Hispanics is 1.1 visits per 1,000 residents, which is statistically significantly lower than the rates for non-Hispanic whites (2.6) and non-Hispanic African Americans (5.3). The Hispanic rate has decreased slightly since 2006, when it was 1.3. In contrast, epilepsy ER visit rates have increased by 8 and 6 percent for non-Hispanic whites and non-Hispanic African Americans, respectively, during the same time period. Rates are approximately 10 percent higher for males than females across all three racial/ethnic groups. Hispanic rates are highest among the under 15 population, for which the rate of 2.2 is double the overall Hispanic rate. In fact, over half of all epilepsy ER visits for Hispanics are by residents under the age of 15. For the non-Hispanic population, the under 15 rate is slightly higher than the overall rate (3.3 versus 3.0).

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.*

Essential Hypertension Related ER Visits

The Hispanic ER visit rate for essential hypertension is somewhat lower than the non-Hispanic white rate and more than five and a half times lower than the non-Hispanic African American rate. The Hispanic rate nearly doubled between 2006, when it was 0.6 per 1,000 residents, and 2010 (1.1). Non-Hispanic whites and non-Hispanic African Americans also experienced relatively large increases of 24 and 35 percent, respectively, during this time period. Females have higher rates for essential hypertension regardless of ethnicity, with Hispanic females having a rate of 1.2 compared to 0.8 for Hispanic males. The highest rates by age are found in the 65 and over population. The Hispanic 65 and over rate of 3.8 is nearly three and a half times the Hispanic rate for all ages.

Essential Hypertension:
ER Visit Rates*
Missouri, 2010

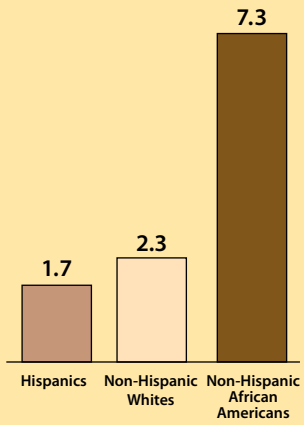


Epilepsy Convulsions – *Resident emergency room visits with a primary diagnosis of a recurrent brain function disorder characterized by sudden, brief attacks of altered consciousness or motor activity. Convulsive seizures are the most common, but there are varying levels of symptoms and there may or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

Eye Infection Related ER Visits

The rate of ER visits for eye infections is 1.7 visits per 1,000 residents among Hispanics, compared to 2.3 for non-Hispanic whites and 7.3 for non-Hispanic African Americans. Between 2006 and 2010, the Hispanic rate increased by 31 percent (from 1.3). In contrast, the non-Hispanic white rate decreased 13 percent (from 2.6). The non-Hispanic African American rate grew 9 percent (from 6.6) over the same five-year time span. As with the general population, eye infection rates among Hispanics are greatest for the youngest age categories, with the highest rates found in the under 1 and 1-4 age groups (rates of 10.5 and 5.8, respectively).

Eye Infection: ER Visit Rates*
Missouri, 2010



*Age-Adjusted Rates per 1,000 Population

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, 363.00-360.22, 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, or 379.00-379.09.*

Deaths

Because undercounting of Hispanic deaths has become so great, comparisons of Hispanic versus non-Hispanic death rates in Missouri are not meaningful, and therefore rates are not displayed in this data book.

Death Rates

While Hispanics constituted 3.5 percent of Missouri's population in 2010, they accounted for only 0.6 percent of Missouri deaths. This difference is partly due to the fact that the Hispanic population is younger. However, even when age groups are considered separately, death rates for Hispanics are much lower.

Unfortunately, the largest factor contributing to these low numbers is undercounting. Underreporting of Hispanic ethnicity on Missouri death certificates was documented in the 2009 Hispanic Data Book, but the issue has worsened since then. For 2002-2006, the age-adjusted death rate for Hispanic Missouri residents was 625.8 deaths per 100,000 residents. Based on Missouri death certificates, the 2006-2010 age-adjusted death rate for Hispanic Missourians was 413.5 (compared to 830.6 for non-Hispanics). There is no reason to believe that the risk of death for Hispanic residents of Missouri has fallen to half that of the rest of the state's population.

As discussed in the Introduction, the number of Hispanic persons living in Missouri is increasing. However, the number of known Hispanic deaths has decreased. Between the 2002-2006 and 2006-2010 time periods, the estimated average population of Hispanic Missouri residents increased nearly 25 percent. Yet instead of increasing concurrently, the number of Missouri Hispanic resident deaths recorded during 2006-2010 (1,779) was nearly 15 percent lower than the number of deaths recorded during 2002-2006 (2,083). This provides further evidence of underreporting of Hispanic deaths.

Hispanic deaths are believed to be undercounted nationally. The CDC's National Center for Health Statistics estimates that Hispanic origin is underreported on death certificates by 5 percent.[1] The exact size of Missouri's undercount is unknown, but the situation in Missouri appears to be worse than that of the nation as a whole. The 2009 age-adjusted death rate was 314.3 for Hispanic Missourians. This was about 40 percent below the national Hispanic death rate of 523.1.[2]

In most cases there is no feasible way to ascertain the ethnicity of individual decedents not recorded as Hispanic. However, for deaths of infants and children, the death certificate can be linked to the birth certificate. For 2006-2010, out of 90 deceased infants

and children with both mother and father reported as Hispanic on the birth certificate, 30 were reported as non-Hispanic on their death certificates. For the 2002-2006 period, the discrepancy was only 13.3 percent (14 of 105). Among deceased infants and children for whom only one parent was listed on the birth certificate as Hispanic, underreporting of Hispanic ethnicity was 26.5 percent for 2002-2006 and rose to 36.2 percent for 2006-2010. Even greater underreporting is expected for older Hispanics, since the decedent's parents are usually not the primary source of information for the death certificate.

Proportionate Mortality Ratio

While comparisons between the absolute death rates of Hispanic and non-Hispanic Missourians are not meaningful, differences in the relative mortality burden of various causes can be used to make valid comparisons. The proportionate mortality ratio (PMR) provides a more valid comparison than the absolute deaths rates. The different age distributions for the Hispanic and non-Hispanic white populations may impact this measure. Age distribution is a significant factor that affects PMRs for a number of causes of death. Causes such as Alzheimer's disease, which typically affect older residents, have lower PMRs among Hispanics simply because the Hispanic population is younger than the non-Hispanic white population. Conversely, causes such as motor vehicle accidents, which typically affect younger people, have higher PMRs.

In order to provide fairer comparisons between the different age structures of the Hispanic and non-Hispanic populations, the data in this chapter were adjusted for age. That is, the number of deaths from a given cause that would be expected if the Hispanic population had the same age distribution as the non-Hispanic white population was calculated. This "expected" number was then compared with the actual number. The "expected" number, however, is still based on identified Hispanic deaths and not based on an estimate of the actual number of Hispanic deaths, many of which are presumed to be missed due to underreporting. The PMR technique assumes that persons identified as Hispanic on Missouri death certificates are representative of Hispanic Missouri decedents in general. While that assumption may not be accurate, there are no other data to use for estimates.

Proportionate Mortality Ratio (PMR) – *A ratio measuring the proportion of total deaths attributed to a selected cause for Hispanics divided by the percentage for non-Hispanic whites. Under this method, the proportionate mortality ratio for non-Hispanic whites is considered to be 1.00. The Hispanic PMR will also be 1.00 if the percentages for the two groups are equal. If the Hispanic percentage is higher than the non-Hispanic white percentage, the Hispanic PMR will be greater than 1.00. If the Hispanic percentage is lower than the non-Hispanic white percentage, the Hispanic PMR will be less than 1.00.*

Leading Causes of Death

The five leading causes of death for Hispanic Missourians were the same during 2006-2010 as they were during 2002-2006, and they occurred in the same order: heart disease, cancer, unintentional injury, stroke, and diabetes. The more recent proportions of Hispanic deaths due to heart disease and unintentional injury are relatively similar to the proportions for non-Hispanic whites, as the proportionate mortality ratio (PMR) is 0.94 for heart disease and 0.98 for unintentional injury. However, the PMRs for cancer, certain types of unintentional injuries, stroke, and diabetes reveal disparities between the two groups.

Leading Causes of Death for Hispanic Missourians:
2006-2010

	Cause	Deaths*
1	**Heart Disease**	**353**
2	**Cancer**	**318**
3	**Unintentional Injury**	**208**
4	**Stroke**	**89**
5	**Diabetes**	**74**

*Cumulative totals

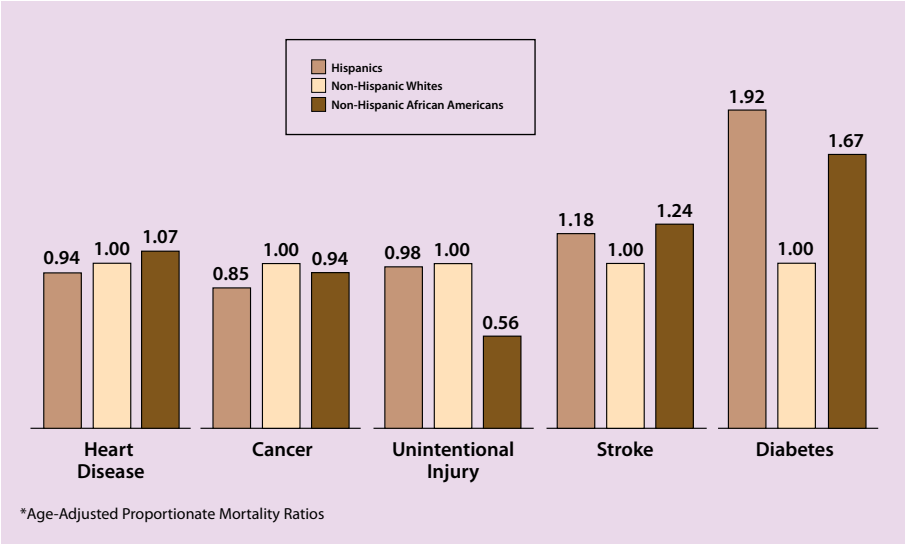
Underlying Cause of Death *– The underlying cause of death is the disease or injury that initiated the sequence of events which led to a death or the accident or violence which produced a fatal injury. Causes of death in this report are underlying causes. Causes of death are classified in accordance 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.*

The Hispanic proportion of stroke deaths is only slightly higher than the non-Hispanic white proportion, resulting in a PMR of 1.18. This is consistent with national data which show that "Hispanic American adults have similar risks of suffering from a stroke as their non-Hispanic white adult counterparts" but "are less likely to die from a stroke" and "have lower rates of hypertension and high cholesterol."[3] However, Hispanic deaths due to stroke affect a younger population. The Hispanic PMR for stroke deaths among Missouri residents under age 65 is 1.60, compared to 1.05 for deaths among residents ages 65 and over.

The Hispanic proportion for diabetes deaths is statistically significantly higher than the non-Hispanic white proportion. In fact, the Hispanic proportion is nearly twice that of non-Hispanic whites, and the diabetes PMR of 1.92 is the highest PMR among the top five leading causes of death for Hispanics. Ranked fifth for Missouri Hispanics, diabetes is the sixth leading cause of death for non-Hispanic African Americans and the eighth leading cause for non-Hispanic whites. An important risk factor for diabetes is being overweight. According to the 2011 Missouri County-Level Study, the percentage of Hispanics ages 18 and over who are overweight is slightly lower than the percentage of non-Hispanic whites, although the difference is not statistically significant. However, national data show that obesity rates among Hispanics are similar to or even higher than rates for non-Hispanic whites.[4] Nationally, adult Hispanics were more likely than non-Hispanic whites (13.2 percent versus 7.6 percent) to be diagnosed with diabetes in 2010.[5] Research by the Agency for Healthcare Research and Quality (AHRQ) has shown that Hispanics with diabetes often face economic barriers to treatment, are reluctant to place their own medical needs over the needs of family members, and may have a distrust of insulin therapy.[6]

PMRs* for Leading Causes of Hispanic Death
Missouri, 2006-2010



*Age-Adjusted Proportionate Mortality Ratios

Leading Causes of Death

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, cardiomyopathy, atrial fibrillation, and congestive heart failure. ICD-10 codes are: I00-I09, I11, I13, and I20-I51.*

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.*

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.*

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. Also includes deaths due to late effects of strokes. ICD-10 codes are I60-I69.*

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.*

Cancer Deaths

The proportion of Hispanic deaths due to cancer is statistically significantly lower than the proportion of non-Hispanic white deaths due to cancer. As a result, the Hispanic PMR for all cancers is low at 0.85. However, cancer is actually a broad category of different diseases, and PMRs vary widely across the different cancer types. For example, pancreatic cancer and colorectal cancer have PMRs near 1 (1.09 and 0.92, respectively); thus, the Hispanic and non-Hispanic white proportions are similar. In contrast, lung cancer and breast cancer have low PMRs, while liver cancer and stomach cancer have high PMRs.

The low Hispanic PMR for lung cancer may be related to smoking patterns, as 70 to 90 percent of lung, bronchus and trachea cancer deaths are attributable to smoking.[7] While the 2011 Missouri County-Level Study does not show a statistically significant difference between Hispanic and non-Hispanic white residents for percentage of current smokers, national patterns of smoking may indicate more positive behaviors by Hispanics within both the smoker and non-smoker groups. Among smokers, Hispanics are less likely than African American, white, or other groups to smoke every day. Among non-smokers, Hispanics are more likely than non-Hispanic whites to have never smoked, rather than to be former smokers.[8] Missouri resident deaths due to cancer of the lung, bronchus and trachea may reflect this more favorable smoking pattern among Hispanics, as the PMR is low, at 0.61. Smoking patterns also impact other diseases. For instance, 70 to 90 percent of deaths due to chronic lower respiratory diseases (CLRD) are attributable to smoking.[9] Among non-Hispanic whites, CLRD is the third leading cause of death; however, for Hispanics it is only the seventh leading cause. The Hispanic proportion for CLRD deaths is significantly lower than the non-Hispanic white proportion, resulting in a PMR of 0.62.

Female breast cancer also has a relatively low PMR (0.76) for Hispanics. The American Cancer Society attributes low breast cancer death rates in Hispanics to lower incidence of the disease. Nationally, "the breast cancer incidence rate in Hispanic women is 26 percent lower than in non-Hispanic white women."[10] The rates are lower still for foreign-born women compared to U.S.-born women of Hispanic ethnicity.[11] Possible factors for this lower incidence include lower age at first birth, greater number of births,

Lung Cancer – *Resident deaths for which the underlying cause of death was given on the death certificate as a malignant neoplasm of the lung, bronchus or trachea. ICD-10 codes are C33-C34.*

Liver Cancer – *Resident deaths for which the underlying cause of death was given on the death certificate as a malignant neoplasm of the liver and intrahepatic bile ducts. ICD-10 code is C22.*

Stomach Cancer – *Resident deaths for which the underlying cause of death was given on the death certificate as a malignant neoplasm of the stomach. ICD-10 code is C16.*

Pancreatic Cancer – *Resident deaths for which the underlying cause of death was given on the death certificate as a malignant neoplasm of the pancreas. ICD-10 code is C25.*

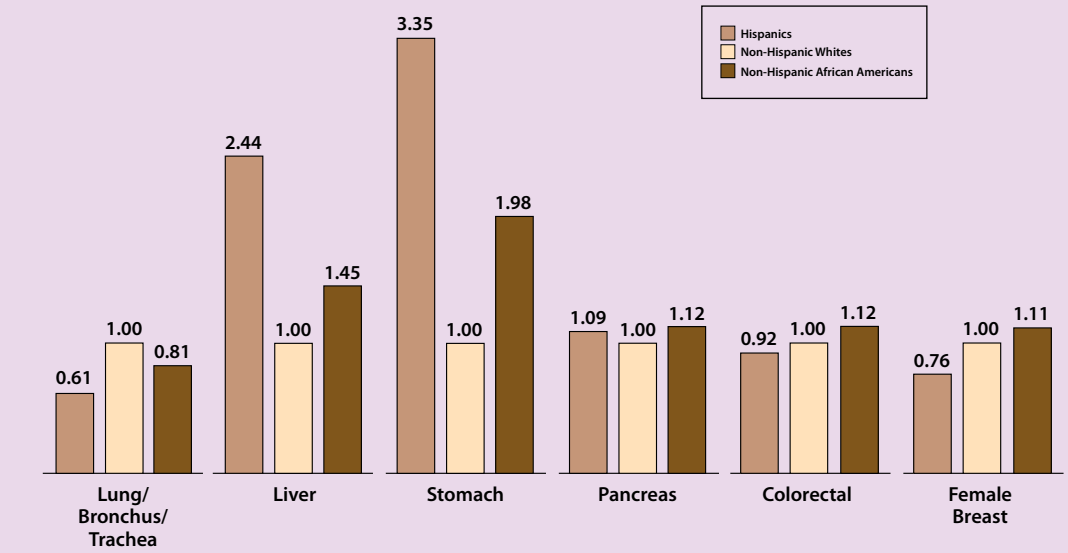
Colorectal Cancer – *Resident deaths for which the underlying cause of death was given on the death certificate as a malignant neoplasm of the colon, rectum or anus. ICD-10 codes are C18-C21.*

Female Breast Cancer – *Resident deaths for which the underlying cause of death was given on the death certificate as a malignant neoplasm of the female breast. ICD-10 code is C50.*

Cancer Deaths

and less use of hormone replacement therapy. Although the breast cancer incidence rate is lower for Hispanic women, national data from the American Cancer Society indicate that once Hispanic women have breast cancer, they are more likely to die than non-Hispanic women.[12] One probable reason is that they are less likely to be diagnosed while the disease is at a localized stage.[13] Indeed, both nationally and in Missouri, lower numbers of breast cancer diagnoses for Hispanic women may be partly due to lack of screening.[14,15]

PMRs* for Selected Types of Cancer
Missouri, 2006-2010



*Age-Adjusted Proportionate Mortality Ratios

In contrast to lung cancer and breast cancer, the proportions of Hispanic deaths due to cancers of the liver and stomach are higher than those of non-Hispanics. The 2006-2010 Hispanic PMR for liver cancer is 2.44, and for stomach cancer it is 3.35. Liver cancer and stomach cancer PMRs are also high for African Americans (1.45 and 1.98, respectively), but not as markedly so. According to the American Cancer Society, high incidence of liver cancer is related to "chronic infections with hepatitis B virus and/or hepatitis C virus," as well as alcohol consumption. Nationally, hepatitis rates are similar for Hispanics and non-Hispanics. Though overall alcohol consumption is low among Hispanics, some studies have

Cancer Deaths

reported that rates of heavy or binge drinking may be high for Mexican males.[16] Of Hispanic Missouri residents who died of liver cancer during 2006-2010, 19 of 26 (73.1 percent) were male, while only 54.4 percent of all Hispanic cancer deaths were male. However, national figures show Hispanic men and women are twice as likely to have liver cancer and to die from it.[17]

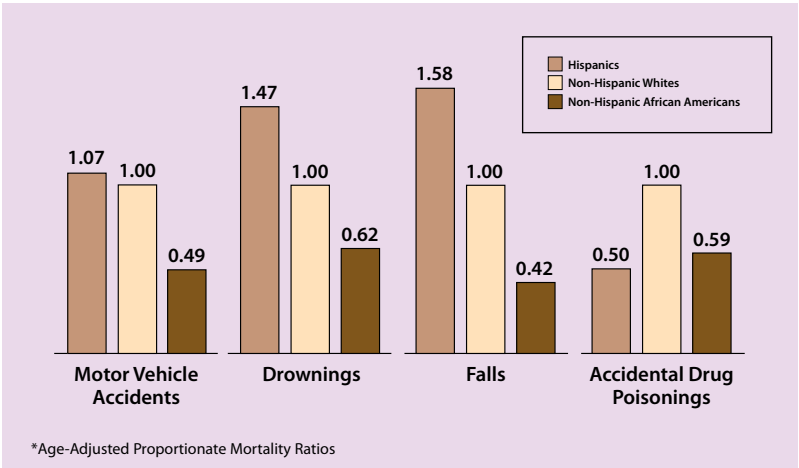
The high Hispanic PMR for stomach cancer deaths may be related to a bacterium. The strongest identified risk factor for stomach cancer is chronic infection with Helicobacter pylori , and the prevalence of H. pylori infection is higher in lower-income countries and among individuals of lower socio-economic status.[18] While it can be successfully treated with antibiotics, H. pylori infection is still common in Latin America. In the U.S., Hispanic infection rates are two to four times those found among whites, with the bacterium being much more common among foreign-born than U.S.-born Hispanics.[19]

Unintentional Injury Deaths

For the time period 2006-2010, unintentional injury is the third leading cause of death for Hispanic Missourians, the fourth leading cause of death for non-Hispanic African Americans, and the fifth leading cause of death for non-Hispanic whites. Although the unintentional injury ranking for Hispanics has not changed since 2002-2006, there have been major changes within the category. The most dramatic change is that motor vehicle crashes are now outnumbered by other unintentional injuries. For 2006-2010, 43.8 percent of Hispanic unintentional injury deaths are due to motor vehicle collisions, which represents a decline from 54.8 percent during 2002-2006. Other racial/ethnic groups experienced similar declines between the two time periods.

Overall, the 2006-2010 PMR for Hispanic unintentional injury deaths is 0.98, indicating a mortality burden that is essentially the same as that for non-Hispanic white Missourians. However, as motor vehicle crash fatalities have been decreasing statewide, accidental drug poisoning deaths have been rapidly increasing. Hispanic motor vehicle deaths have decreased along with the overall state decline and now have a PMR of 1.07, but the number of Hispanic deaths in the skyrocketing accidental drug poisoning category has not increased. The Hispanic proportion of deaths for this category is significantly lower than the non-Hispanic white proportion. As a result, the number of Hispanic deaths in the accidental drug poisoning category is about half the expected number based on the pattern of non-Hispanic white deaths.

PMRs* for Selected Unintentional Injuries
Missouri, 2006-2010



*Age-Adjusted Proportionate Mortality Ratios

Motor Vehicle Accidents – *Resident deaths for which the underlying cause of death was given on the death certificate as any accident involving one or more motor vehicles. ICD-10 codes included 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.*

Drownings – *Resident deaths for which the underlying cause of death was given as accidental drowning and submersion. This category includes drownings in bathtubs, swimming pools, and natural water but excludes drownings involving watercraft. ICD-10 codes are W65-W74.*

Falls – *Resident deaths for which the underlying cause of death was given as an unintentional fall. ICD-10 codes are W00-W19.*

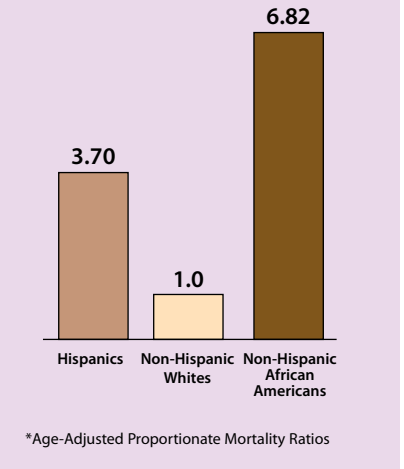
Accidental Drug Poisonings – *Resident deaths for which the underlying cause of death was given on the death certificate as accidental poisoning by drug. This category does not include suicides by drug or other drug-related deaths, nor does it include poisonings by alcohol or noxious substances. ICD-10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

Homicide

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.*

During 2006-2010, homicide was the sixth leading cause of death for Hispanic Missourians, with 65 deaths. Homicide ranked fifth for non-Hispanic African Americans. In sharp contrast, homicide ranked seventeenth among non-Hispanic whites. The PMRs for Hispanics (3.70) and non-Hispanic African Americans (6.82) are well above the 1.00 base for non-Hispanic whites and these differences are statistically significant. One factor elevating homicides among Hispanics is that, like African Americans, Hispanics are more concentrated in Missouri's urban areas, where homicide rates are higher. For both Hispanics and non-Hispanics, males are at higher risk of homicide than females. Among victims of homicide, Hispanic males outnumbered females four to one.

Homicide Rates*
Missouri, 2006-2010

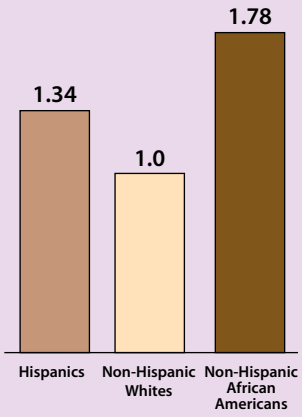


*Age-Adjusted Proportionate Mortality Ratios

Kidney Disease

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.*

PMRs* for Kidney Disease
Missouri, 2006-2010



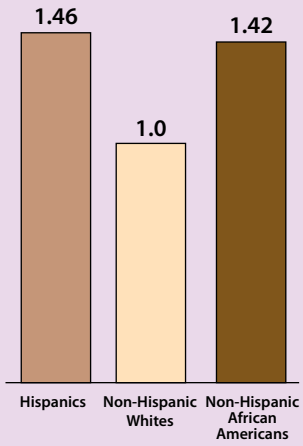
*Age-Adjusted Proportionate Mortality Ratios

During the 2006-2010 period, kidney disease ranked as the eleventh leading cause of death for Hispanics, with a total of 39 deaths. The proportion of kidney disease deaths in the Hispanic population is higher than that for the non-Hispanic white population (PMR is 1.34). Diabetes is a leading risk factor for kidney disease, and the high diabetes rate for Hispanics may increase the PMR for kidney disease. Studies by the Agency for Healthcare Research and Quality (AHRQ) show that certain diabetic complications such as kidney failure are more common among Hispanics and African Americans than whites.[20]

Septicemia

Between 2006 and 2010, septicemia caused 32 Hispanic deaths, making it the fourteenth leading cause of death among Hispanics. The PMR for Hispanics is relatively high at 1.46, and the difference between the Hispanic and non-Hispanic white proportions is statistically significant. For both Hispanic and non-Hispanic Missourians, deaths due to septicemia occur mostly among persons ages 65 and older. Of the 32 Hispanic deaths due to septicemia, 20 (62.5%) were males, while for non-Hispanics, the majority (53.6%) of septicemia deaths were females.

PMRs* for Septicemia
Missouri, 2006-2010



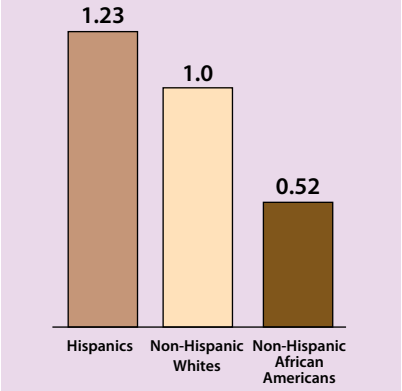
*Age-Adjusted Proportionate Mortality Ratios

Septicemia – *Resident deaths for which the underlying cause of death was given on the death certificate as septicemia (infection of the blood or "blood poisoning"). ICD-10 codes are A40-A41.*

Liver Disease

During 2006-2010, liver disease accounted for 25 deaths among Missouri's Hispanic population, making it the fifteenth leading cause of death for Hispanics. The Hispanic PMR of 1.23 contrasts with the non-Hispanic African American PMR of 0.52. The low number of Hispanic liver disease deaths makes drawing conclusions about trends difficult. However, about two-thirds of liver disease decedents are male, for Hispanic and non-Hispanic Missourians alike. Among Hispanic liver disease deaths, 56 percent were attributed to alcoholic liver disease, compared to 44.6 percent among non-Hispanic African American and 38.9 percent among non-Hispanic white deaths.

PMRs* for Liver Disease
Missouri, 2006-2010



*Age-Adjusted Proportionate Mortality Ratios

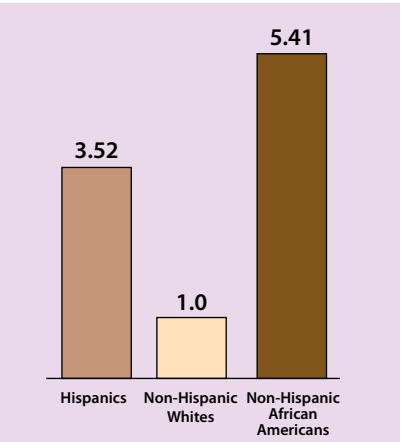
Liver Disease – *Resident deaths for which the underlying cause of death was given on the death certificate as liver disease (alcoholic liver disease or other chronic liver disease and cirrhosis). ICD-10 codes are K70, K73, and K74.*

HIV/AIDS Deaths

For the period 2006 through 2010, HIV/AIDS was the sixteenth leading cause of death among Hispanics, with 13 total deaths. The PMR for Hispanics is 3.52, indicating that HIV/AIDS accounts for more than three times the expected number of Hispanic deaths based on the rates for non-Hispanic whites. This difference between the Hispanic and non-Hispanic white proportions is statistically significant. Likewise, the 2011 rate of newly diagnosed HIV cases is 3.2 times higher for Hispanics than for non-Hispanic whites.[21] As is the case for homicide, the disparity for HIV/AIDS deaths is even greater for non-Hispanic African Americans, at 5.41, than it is for Hispanics. The non-Hispanic African American incidence rate is 8.6 times the non-Hispanic white rate in 2011.[22]

The total number of Hispanic deaths due to HIV/AIDS decreased by 50 percent between 2002-2006 and 2006-2010. In contrast, the number of non-Hispanic deaths due to HIV/AIDS dropped 8.7 percent between the two time periods. The small number of Hispanic HIV/AIDS deaths makes drawing conclusions difficult, but the decrease in non-Hispanic deaths indicates a probable downward trend for Hispanics as well. HIV/AIDS deaths in the overall population occur more frequently in urban areas and among men. Of the HIV/AIDS deaths recorded as Hispanic for 2006-2010, 100 percent were male.

PMRs * for HIV/AIDS*
Missouri, 2006-2010



*Age-Adjusted Proportionate Mortality Ratios

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.

Proportionate Mortality Ratio (PMR)

Proportionate mortality compares deaths from a specific cause to all deaths that occurred in a particular population. Proportionate mortality is given as a proportion or percentage. The proportionate mortalities for all of the individual causes of death must sum to 100 percent. The formula used to calculate proportionate mortality is:

Number of deaths from a specific cause ÷ Number of deaths from all causes x 100

A proportionate mortality ratio (PMR) can be used to compare proportionate mortality in two different populations. In this report, PMRs are used to compare Hispanic and non-Hispanic African American mortality with non-Hispanic white mortality. Please note that the PMRs in this report are also adjusted for differences in the age structures of the Hispanic, non-Hispanic white, and non-Hispanic African American populations.

In these formulas, the PMR for non-Hispanic whites is considered to be 1.00. The Hispanic PMR will also be 1.00 if the percentages for the two groups are equal. If the Hispanic percentage is higher than the non-Hispanic white percentage, the Hispanic PMR will be greater than 1.00. If the Hispanic percentage is lower than the non-Hispanic white percentage, the Hispanic PMR will be less than 1.00.

Proportionate mortality and PMR calculations do not consider population size. They may be misleading because all causes of death must sum to 100 percent. Therefore, if one particular cause of death has low proportionate mortality, the proportionate mortalities for all of the other causes will rise.

This explanation of proportionate mortality and proportionate mortality ratios was adapted from:

Centers for Disease Control and Prevention (CDC), "Lesson 3: Measures of Risk, Section 3: Mortality Frequency Measures, Principles of Epidemiology in Public Health Practice, 3rd edition, 2012. *http://www.cdc.gov/osels/scientific_edu/SS1978/Lesson3/Section3.html*.

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.

Appendix

Ratios of Hispanic to Non-Hispanic White Rates for Time Period Reported in *Data Book 2: Hispanics: Minority Health Disparities in Missouri**

Please note that different definitions for the Hispanic and African American populations were used in the 2009 report. The ratios provided below have been revised to reflect the new definitions.

Selected Socio-Economic Indicators (2006)

1.7 to 1	Self-Pay/No Charge or Medicaid as Expected Pay Source
0.8 to 1	Median Household Income
2.4 to 1	Population Below Poverty Level
2.7 to 1	Families with Children Under 18 Years Old Below Poverty Level
0.8 to 1	Persons Ages 25 and Over with at Least a High School Diploma/Equivalent
1.5 to 1	Unemployment

Selected Maternal and Child Health Indicators (2002-2006)

1.1 to 1	Infant Death
2.2 to 1	Inadequate Prenatal Care
1.0 to 1	Premature Birth
0.9 to 1	Low Birth Weight
1.2 to 1	Very Low Birth
0.9 to 1	Pre-pregnancy Obesity
0.8 to 1	High Maternal Weight Gain
1.6 to 1	Births to Unmarried Mothers
1.6 to 1	Births to Mothers Receiving Medicaid
2.7 to 1	Births to Mothers with Less Than a High School Education

Selected Injuries Treated in Hospitals (2006)

0.8 to 1	Assault
0.9 to 1	Pedestrian

Selected Causes of Emergency Room Visits (2006)

0.6 to 1	Asthma
0.6 to 1	Diabetes Mellitus with Complications
0.4 to 1	Eye Infections
0.5 to 1	Diseases of the Heart
0.5 to 1	Essential Hypertension
0.5 to 1	Epilepsy
0.6 to 1	Alcohol/Drug Abuse

*Data Book 2: Hispanics: Minority Health Disparities in Missouri. Missouri Foundation for Health (2009). Data from Missouri Department of Health and Senior Services. *http://www.mffh.org/mm/files/09HispanicDisparities.pdf.*

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Missouri Foundation for Health Health Policy Publications

The Missouri Foundation for Health has produced a variety of publications on important health policy topics that may be of interest to the reader. Topics include impact of the health reform law, analysis of the state's Medicaid program, the affordability of health coverage, and the state of Missouri's health. Foundation publications are available at www.mffh.org, www.covermissouri.org, or by request at 1.800.655.5560 or 314.345.5500.

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