



MISSOURI DEPARTMENT OF
**HEALTH &
SENIOR SERVICES**

HEALTH IN RURAL MISSOURI

Biennial Report, 2022-2023

Table of CONTENTS

Executive Summary	2
Introduction	4
Defining Rural Health	5
The People of Missouri	7
Social Drivers of Health	12
Health Status of Rural Missourians	28
Maternal, Infant and Child Health in Missouri	57
Health Care in Rural Missouri	62
Office of Rural Health and Primary Care	68
Relevant Information and Initiatives	78
Recommendations	85
Appendix A	86
Appendix B	87
Glossary	92
References	94

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The cover photo and this photo were provided courtesy of the Missouri Department of Agriculture's Focus on Missouri Agriculture Photo Contest

EXECUTIVE SUMMARY

The Missouri Office of Rural Health (MORH), located within the Office of Rural Health and Primary Care (ORHPC), Division of Community and Public Health (DCPH), Department of Health and Senior Services (DHSS), biennially reports its activities and recommendations to the Governor and members of the General Assembly on or before November 15th of odd-numbered years, as set forth in Missouri Revised Statute §192.604.

- The ORHPC promotes and develops diverse and innovative health care services and models in rural areas and works closely with local health advocates on a variety of community development activities designed to increase access to quality health care services and improve the health of Missourians. This report highlights this work, makes recommendations for public policies to encourage continued viability of quality and cost-effective rural health care delivery and identifies conditions hindering the delivery of essential health care services to rural Missouri. This report also demonstrates the impacts of current conditions on the health of Missouri's 2.05 million rural residents. It includes information about Missouri's aging population; social drivers of health (SDOH), such as poverty, access to care, education, unemployment and transportation; COVID-19; leading causes of death; and infant and child mortality.

The 2022-2023 Health in Rural Missouri Biennial Report reveals that Missourians living in rural counties experience higher instances of health disparities compared to Missourians living in urban counties, exhibiting worsening health behaviors, health outcomes and difficulty accessing necessary health care services. The 2022-2023 Health in Rural Missouri Biennial Report key findings include:

- From 2014 to 2023, 19 Missouri hospitals closed, 12 of which were located in rural counties. These closures left 50 rural counties without a hospital. Furthermore, all 19 hospitals were located in geographic and population-based health professional shortage areas (HPSAs).
- According to the Missouri Office of Rural Health's Health Care Facilities Map, 41 rural counties and 1 urban county (36% of the 115 counties) do not have a hospital, with an average distance to a hospital for these counties of 29.4 miles.
- Poverty is much more prevalent in rural communities. The 20 counties with the highest percentages of poverty were all in rural areas, with 15.4% of rural residents and 11.5% of urban residents living in poverty. Rural Missouri also has much higher percentages of children and the elderly living in poverty.
- Among Missouri's 99 rural counties, the population declined by 1.0%. In contrast, Missouri's urban population increased by 1.9%.
- Rural Missourians have a more difficult time accessing health services for reasons including distance to a health care provider, lower rates of insurance coverage and cost.
- More of Missouri's rural residents are uninsured than urban residents (15.0% versus 10.8%, respectively).
- Rural populations have higher rates than urban populations in almost all of the top 10 causes of death. Heart disease was the underlying cause of death for 31,011 rural Missourians during the 2017-2021 time period, making it the leading cause of death for rural Missouri.

- Diabetes death rates in rural areas have steadily risen since 2019, reaching a new high of 29.7 in 2021.
- This report also highlights repeated instances where residents in southeast Missouri have the highest rates of disease and disease-related death as well as the lowest rates of health-protecting behaviors.
- Black/African American populations in rural counties had a higher rate for preterm births (14.9) compared to white populations in rural counties (10.4).
- Much of rural Missouri is designated by the federal government as a primary care health professional shortage area in medical, dental and mental health.
- The data provided in this report illustrate the ongoing need to improve the health status and access to care for Missourians, especially in rural areas. However, Missourians across the state experience high rates of mortality, chronic diseases, poor access to care and unhealthy behaviors and have high levels of unmet health care needs. To see change in these unfortunate statistics, Missouri communities, especially rural communities, will need to engage in a community-driven systematic, policy-level approach that brings new and innovative strategies to reduce barriers, such as transportation and cost, while improving access to care.



The **2022-2023 Health in Rural Missouri Biennial Report** reveals that Missourians living in **rural counties experience higher instances of health disparities compared to Missourians living in urban counties**, exhibiting worsening health behaviors, health outcomes and difficulty accessing necessary health care services.

INTRODUCTION

The General Assembly established the Missouri Office of Rural Health (MORH) in 1990 (192.604 RSMo), to “assume a leadership role in working or contracting with state and federal agencies, universities, private interest groups, communities, foundations, and local health centers to develop rural health initiatives and maximize the use of existing resources without duplicating existing effort.” This report fulfills the statute requirement of reporting rural health activities including related recommendations biennially to the Governor and members of the General Assembly.

The 2022-2023 Health in Rural Missouri Biennial Report describes the health disparities rural Missourians experience, as compared to urban Missourians. The report compares the rural and urban health-related and social determinants of health (SDOH) disparities, including demographic differences, population changes, difficulties in increasing healthy behaviors, health outcomes, health care access, health conditions, and maternal and child health.

This report focuses on the health status and factors that impact the health of rural Missourians. However, to help put rural health activities and recommendations into context, urban Missouri data is included. This data also:

- Allows for a natural and readily understandable comparison to better highlight and understand health in rural Missouri, and
- Presents compelling evidence that geographic location in Missouri has a significant bearing on health.



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DEFINING RURAL HEALTH

The United States (U.S.) Census Bureau and other federal agencies use different methods to define the rural population. Each definition uses different criteria, such as commuting patterns, population size or population density. For the purposes of this report, a county is considered rural if:

- Less than 150 people per square mile.
- County does not contain any part of a central city in a Metropolitan Statistical Area (MSA).

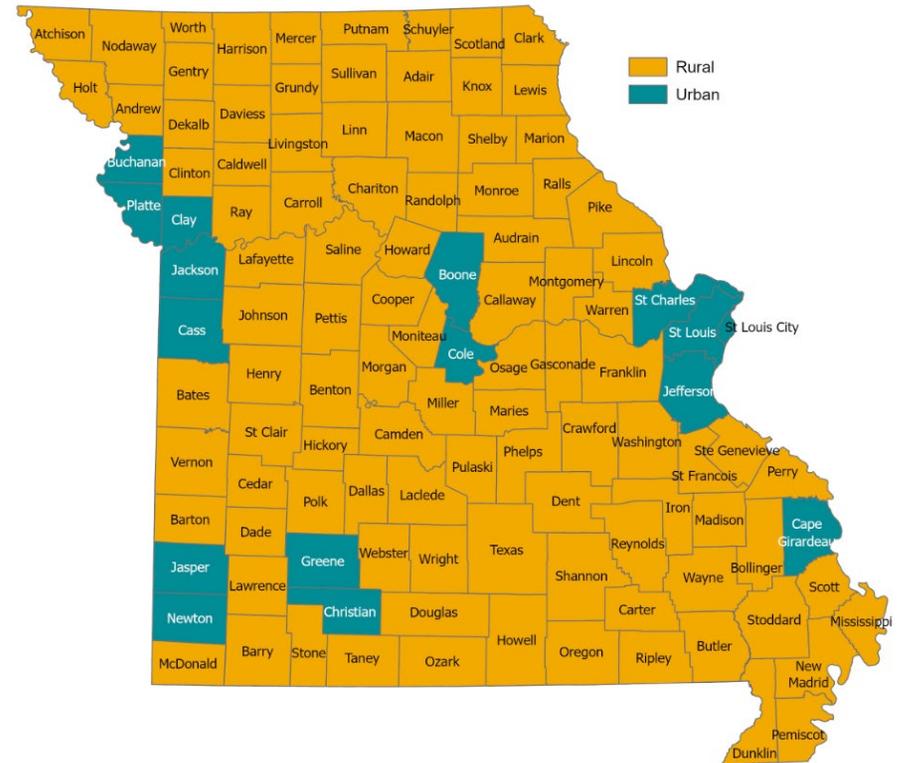
Based on this criteria and using 2021 population estimates of the 115 counties in Missouri*

99 counties are rural



16 counties are urban

Rural/Urban County Classification
Missouri, 2021



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

*St. Louis City is an independent city which functions as its own county. It is therefore included as one of the 16 urban counties.



This photo was provided courtesy of the Missouri Department of Agriculture's Focus on Missouri Agriculture Photo Contest

Rural Counties

Adair	Dent	Maries	Ray
Andrew	Douglas	Marion	Reynolds
Atchison	Dunklin	McDonald	Ripley
Audrain	Franklin	Mercer	Saline
Barry	Gasconade	Miller	Schuyler
Barton	Gentry	Mississippi	Scotland
Bates	Grundy	Moniteau	Scott
Benton	Harrison	Monroe	Shannon
Bollinger	Henry	Montgomery	Shelby
Butler	Hickory	Morgan	St. Clair
Caldwell	Holt	New Madrid	St. Francois
Callaway	Howard	Nodaway	Ste. Genevieve
Camden	Howell	Oregon	Stoddard
Carroll	Iron	Osage	Stone
Carter	Johnson	Ozark	Sullivan
Cedar	Knox	Pemiscot	Taney
Chariton	Laclede	Perry	Texas
Clark	Lafayette	Pettis	Vernon
Clinton	Lawrence	Phelps	Warren
Cooper	Lewis	Pike	Washington
Crawford	Lincoln	Polk	Wayne
Dade	Linn	Pulaski	Webster
Dallas	Livingston	Putnam	Worth
Daviess	Macon	Ralls	Wright
DeKalb	Madison	Randolph	



Urban Counties

Boone	Clay	Newton
Buchanan	Cole	Platte
Cape Girardeau	Greene	St. Charles
Cass	Jackson	St. Louis
Christian	Jasper	St. Louis City
	Jefferson	

Metropolitan and Micropolitan Statistical Areas

The U.S. Census Bureau has additional methods for further classifying rural counties using the Metropolitan Statistical (metro) Area and Micropolitan Statistical (Micro) Area classification. The metro areas combine urban counties with adjacent rural counties that are partially integrated with their nearest urban population center. Micropolitan areas either contain or are socially and economically associated with smaller city hubs that do not meet the population size for classification as a Metro Area. There are currently 19 counties that do not meet the population density requirement to be classed as urban in this report but are still in a Census-defined metro area. There are an additional 22 counties in a micropolitan area. Fifty-eight rural counties in Missouri do not meet either of these criteria and are classed as Other Rural. This report utilizes the later, more detailed method of further classifying rural counties to analyze population trends over the past 5 years.

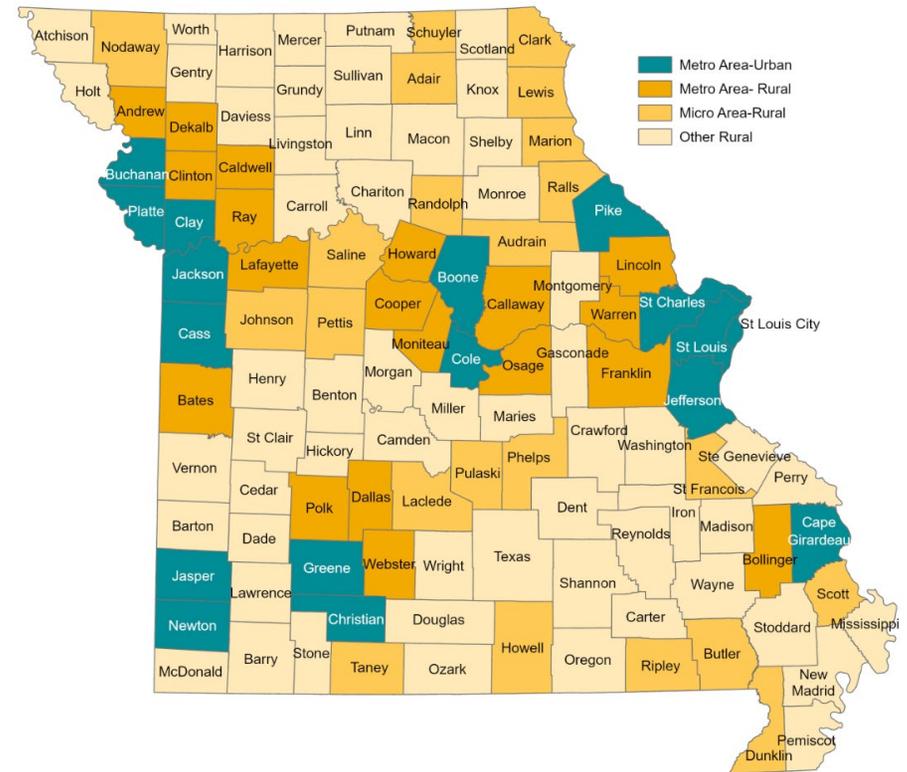
THE PEOPLE OF MISSOURI

POPULATION TRENDS

According to the 2021 U.S. Census Bureau, Missouri's estimated population is 6,168,187 persons. The rural population is 2.05 million persons or 33.2% of the state population. The remaining 66.8% (or 4.12 million persons) reside in urban counties. Missouri experienced a modest population increase of just over 54,000 persons between 2017 and 2021. Missouri's population increase of 0.9% was just under half of the overall U.S. national average increase of 1.9%. Missouri ranked 39th among all 50 states for population increase during this time period. Neighboring states Kansas and Arkansas also experienced an increase of less than 1% while Illinois declined in population by 1%.

Among Missouri's 99 rural counties, the population declined by 1.0%. In contrast, Missouri's urban population increased by 1.9%. Using the metro area and micro area classification to analyze trends further, metro area-rural counties experienced a population increase of 1.4%. However, the micro area counties declined by 0.5% and the other rural counties declined by 2.9%, which is the largest population decline.

Metropolitan and Micropolitan Statistical Areas



Source: Missouri Census Data Center. (<https://mcdc.missouri.edu/>). Accessed April 27, 2021.



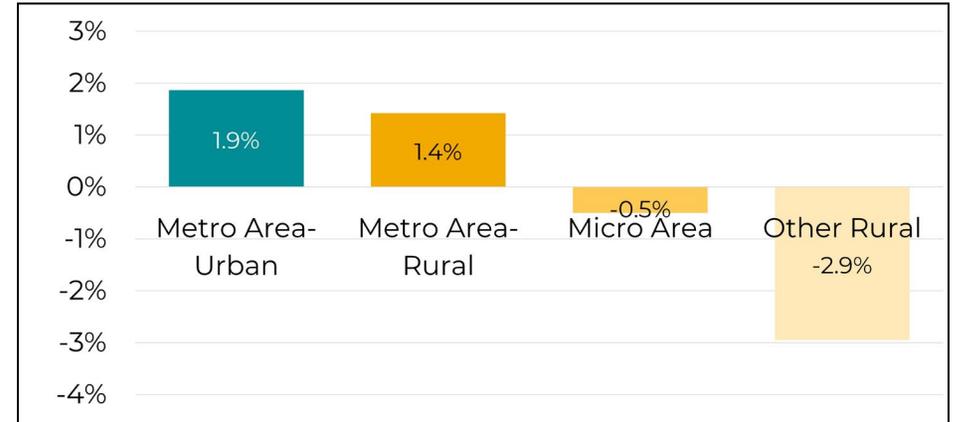
According to the 2021 U.S. Census Bureau, Missouri's estimated population is **6,168,187** persons.

This photo was provided courtesy of the Missouri Department of Agriculture's Focus on Missouri Agriculture Photo Contest.

Forty-nine counties had population gains between 2017 and 2021. While 14 of the 16 urban counties gained population, only 35 of the 99 rural counties experienced population increase. Almost two-thirds of Missouri's rural counties lost population during this 5-year window, while only 2 of 16 urban counties suffered population loss. Other notable population trends include:

- Three rural counties had a population increase over 5%. Lincoln County, located on the outer suburban ring of St. Louis, had the largest population increase in the state at 9.6%. Neighboring Warren County ranked fourth overall in growth at 7.1%. Morgan County, near the Lake of the Ozarks in central Missouri, had a 6.1% increase, the fifth highest increase in the state.
- Fifteen rural counties had a population increase of at least 2%. The southwest region was the most represented with six counties. However, all seven regions of the state had at least one rural county with a population increase of 2% or greater.
- Ten of the 16 urban counties had population growth of at least 2%. Platte County near Kansas City, and Christian County near Springfield, ranked second and third overall with increases above 7%. In addition, Cass and Clay counties in the Kansas City area and Cape Girardeau County in southeast Missouri had population increases above 5%.
- St. Louis City and Buchanan County, the two urban counties to lose population, both lost between 5-6% of their population during the 5-year period.
- Over 75% of the 58 counties in the other rural classification lost population in this time period.

Population Change in Missouri
2017-2021



Source: U.S. Census Bureau. <https://www.census.gov/programs-surveys/popest/data/tables.html>. Accessed July 31, 2023.

49 counties
had **POPULATION GAINS** between 2017 and 2021.

NATURAL INCREASE

Natural increase, an additional tool commonly used to track population trends, is calculated by subtracting the total deaths for a specific area from the total births for the same area. When the location has more births than deaths, it will have a positive natural increase, indicating population growth. When the location has more deaths than births, there is a natural decrease or population loss.

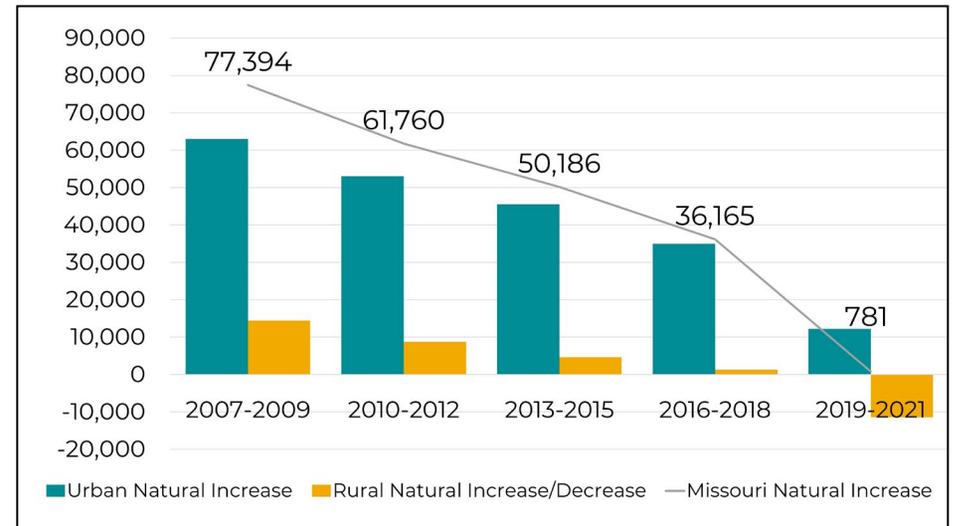
The number of births for every one death is related to natural increase. A ratio of 1.0 means that there were equal numbers of births and deaths for the years selected. If the ratio is above 1.0, then there were more births than deaths, and if the ratio is less than 1.0, there were fewer births than deaths. For the 2019-2021 time period, there were virtually equal numbers of births and deaths statewide.

The years 2020 and 2021 were unique in Missouri Vital Statistics. These were the first two years where there were more deaths than births. COVID-19 is largely responsible for this trend. While Missouri experienced a decline in natural increase for the last 15 years, the pace of the change dramatically accelerated in these two years. Natural increase declined by approximately half in 10 years, from 77,394 in 2007-2009 to 36,165 in 2016-2018. In the next 3-year interval (two of which included COVID-19), the natural increase declined to 781, a decline of over 35,000 from the prior 3-year period.

Natural Increase, 2019-2021

	Births	Deaths	Natural Increase	Number of Births for Every 1 Death
Missouri	210,649	209,868	781	1.0
Rural Missouri	70,827	82,250	-11,423	0.9
Urban Missouri	139,822	127,618	12,204	1.1

Natural Increase Over Time Missouri, 2007-2021



Source: Missouri Vital Statistics Files. Bureau of Health Care Analysis and Data Dissemination.

Key findings related to urban and rural patterns include:

- The rural population in 2019-2021 had 11,400 more deaths than births. For every one death, there were 0.9 births.
- In rural areas, deaths increased by 13.7% over the previous 3-year time period (2016-2018) while births only declined by 3.8%.
- Urban Missouri still had a net natural increase for 2019-2021 with slightly over 12,000 more births than deaths, but the ratio of births to deaths has consistently declined. In 2007-2009, the ratio was 1.6, compared to 1.3 for 2016-2018 and now just 1.1 in 2019-2021.
- Similar to rural trends, in urban areas births declined and deaths increased compared to 2016-2018 with deaths increasing by 13.5% and births declining by 5.1%.

RACE AND ETHNICITY

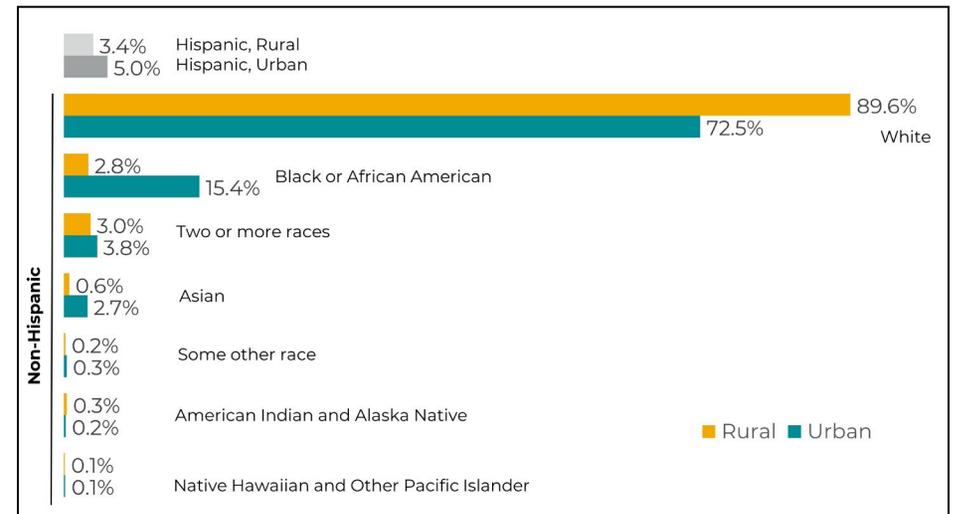
Missouri’s rural counties were less racially and ethnically diverse than Missouri’s urban counties. From 2017 to 2021, approximately 10% of Missouri rural residents identified as a race and ethnicity combination other than white Non-Hispanic compared to approximately 28% of urban residents. Data showed that from 2012 to 2016 approximately 9% of rural Missouri residents and 26% of urban Missouri residents identified as a race and ethnicity other than white Non-Hispanic. Thus, over this period, the minority population in urban areas increased slightly more than in rural areas. Douglas County had the greatest percent increase (141.2%) in their minority population over these two 5-year periods.

Other notable findings include:

- In urban counties, the Non-Hispanic Black/African American population comprised the second largest racial group, making up 15.4% of the total urban population which was five times the Black/African American population in rural areas (2.8%).
- In rural Missouri, when taking into account both race and ethnicity, more individuals identified as Hispanic (3.4%) than Black/African American (2.8%).
- Missouri’s Hispanic population is dispersed throughout the state. Estimates show that the Hispanic population made up approximately 5.0% of urban counties and 3.4% of rural counties.
- Missouri’s 4.4% total Hispanic population is relatively small when compared to the overall U.S. Hispanic population of 18.4%.
- Among rural counties, Pemiscot County had the highest percent of their population identify as Black/African American at 26.5%. Several other counties in southeast Missouri also had a Black/African American population that made up over 10% of their county population, including Mississippi (24.1%), New Madrid (13.2%) and Dunklin (10.4%) counties.

- The three counties with the largest Hispanic population were rural counties—Sullivan, McDonald and Pulaski. In each of these counties, Hispanic individuals comprised over 11% of their total population.
- Those who identified as Asian, American Indian, Alaska Native, Native Hawaiian, Other Pacific Islander, as well as those who identify as any other singular race made up approximately 1% of Missouri’s rural population and 3% of the urban population.

Racial and Ethnic Diversity in Rural and Urban Counties Missouri, 2017-2021



Source: U.S. Census Bureau, 2017-2021 American Community Survey 5-Year Estimates, DP05

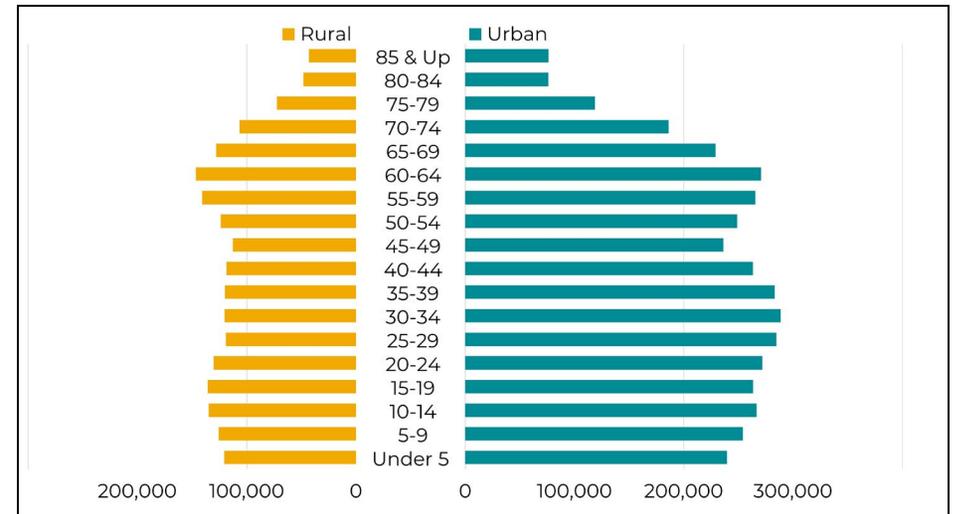
AGING IN MISSOURI

Age pyramids visually display age structure differences for a population. This graphic shows an overview of Missouri's population broken down by five-year age groups and separated by rural versus urban counties. Rural populations were smaller than urban populations, but the general patterns were similar. However, one difference was that rural Missouri was slightly older as the following examples illustrate:

- The largest single age group for rural counties was 60-64 year olds (the young end of the Baby Boomer generation).
- The largest age group for urban counties was 30-34 year olds (the younger end of Generation Y or Millennial generation).
- The senior population (65 years of age and older) comprised of 19.4% of the rural population and 16.6% of the urban population in Missouri.
- Young adults (those 20-34 years of age) were more prevalent in urban areas (20.5% in urban counties compared to 18.1% in rural counties).
- It is important to note that individual counties, especially in rural areas, may have different population patterns compared to these overarching rural and urban trends. Colleges, prisons, and military bases are examples of institutions that often have a large impact on the age distribution (usually making them much younger).

Since 2017, rural and urban Missouri experienced similar aging patterns. The senior population grew by 0.8 percentage points in rural counties and 1.3 percentage points in urban counties. Additionally, the young adult population declined by 0.3 percentage points and 0.6 percentage points in rural and urban counties respectively. Overall in Missouri, from 2017-2021 the senior population grew by one percentage point while the young adult population declined by 0.8 percentage points.

Rural vs. Urban Population
Missouri, 2021



Source: U.S. Census Bureau. <https://www.census.gov/programs-surveys/popest/data/tables.html>. Accessed July 31, 2023.



SOCIAL DRIVERS OF HEALTH

IMPACT ON HEALTH OF RURAL MISSOURIANS

Healthy People 2030 defines social determinants of health as the non-medical factors and conditions in the environment and places where people are born, live, age, learn, work, play and worship that influence and affect a wide range of functioning, quality-of-life and health risks and outcomes.¹ However, “determinants” suggests we can do nothing to change health outcomes. Instead, this report uses the term “drivers” to reframe the conversation around health for Missourians.

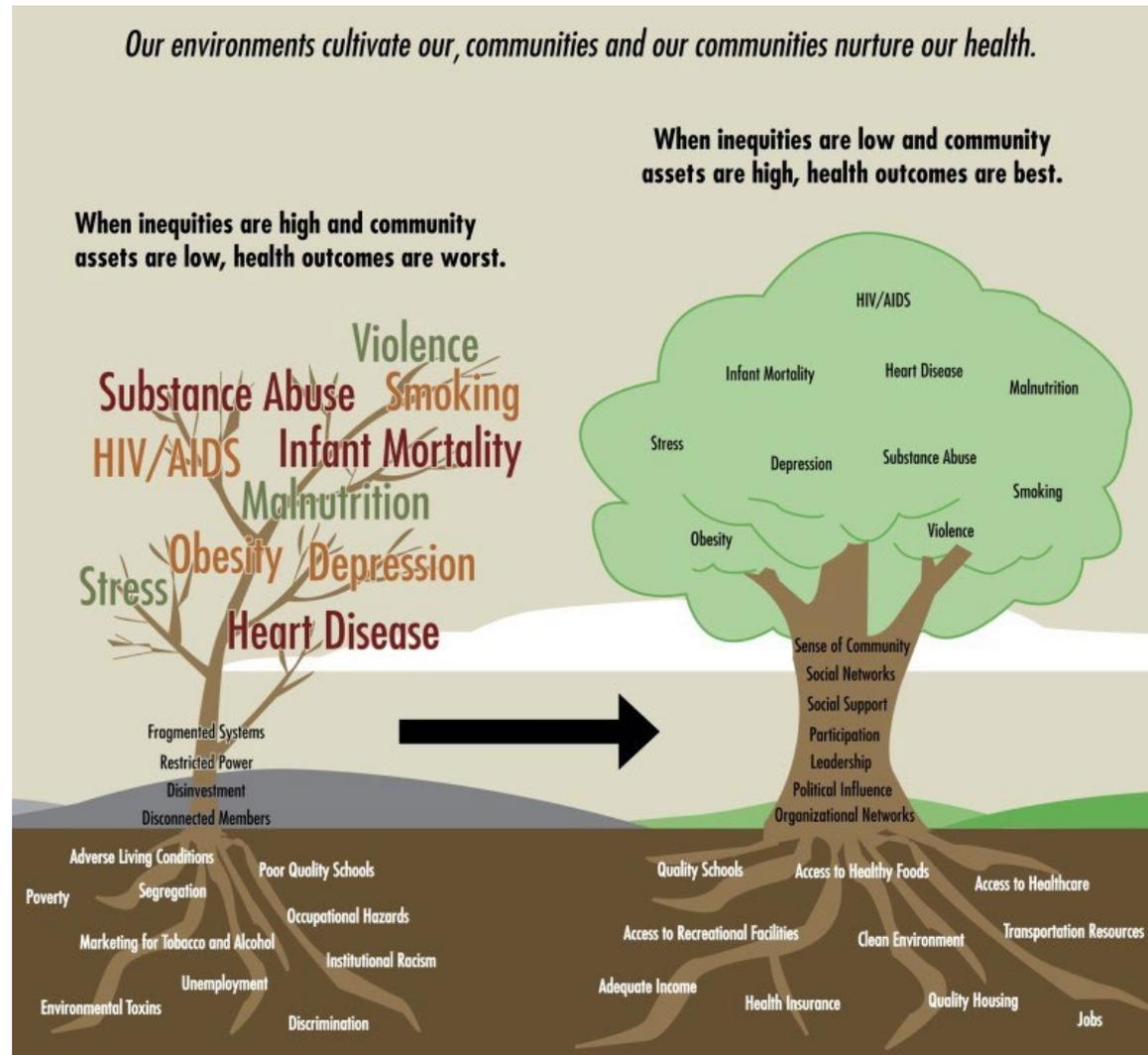
Social Drivers of Health (SDOH) pose distinct obstacles in rural communities, including limited access to health care services, transportation barriers, higher rates of concentrated poverty, fewer economic opportunities, income inequality, racial and ethnic disparities and limited access to affordable housing and healthy food options.² Addressing these obstacles is vital to promote health equity and reduce disparities among Missouri’s population.



Healthy People 2030, U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion. Retrieved [date graphic was accessed], from <https://health.gov/healthypeople/objectives-and-data/social-determinants-health>

Social drivers of health (SDOH) are the non-medical factors and conditions in the environment and places where people are born, live, age, learn, work, play and worship that influence and affect a wide range of functioning, quality-of-life and health risks and outcomes.

- **Economic Stability:** Economic stability plays a significant role in determining the overall health and quality of life in rural areas. Limited job opportunities, lower income levels, and higher poverty rates are common challenges rural areas face. These economic disparities contribute to inequalities in health outcomes, as individuals in rural communities often struggle with accessing health care, finding healthy food options and securing adequate housing.³
- **Education Access and Quality:** Rural areas often face challenges in providing equitable access to educational resources, including limited school choices, inadequate funding, and reduced availability of specialized educational programs. These disparities in education access and quality can hinder individuals' health literacy, limit opportunities for health promotion and contribute to health disparities within rural communities.
- **Health Care Access and Quality:** Certain rural areas in Missouri have limited health care infrastructure, including a shortage of health care professionals and health care facilities. This scarcity can lead to challenges in accessing timely and appropriate health care services, including preventive care, specialty care and emergency services. These factors contribute to health disparities and poorer health outcomes in rural communities.³
- **Neighborhood and Built Environment:** Rural areas of Missouri often have less developed infrastructure resulting in transportation barriers and less access to recreational facilities. An improved and more developed built environment can foster healthier lifestyles, which can reduce health disparities, and combat higher rates of obesity and chronic diseases among rural residents.³



Source: Centers for Disease Control and Prevention. Promoting Health Equity: A Resource to Help Communities Address Social Determinants of Health. <https://www.cdc.gov/nccdphp/dch/programs/healthycommunitiesprogram/tools/pdf/SDOH-workbook.pdf>. Accessed August 24, 2023.

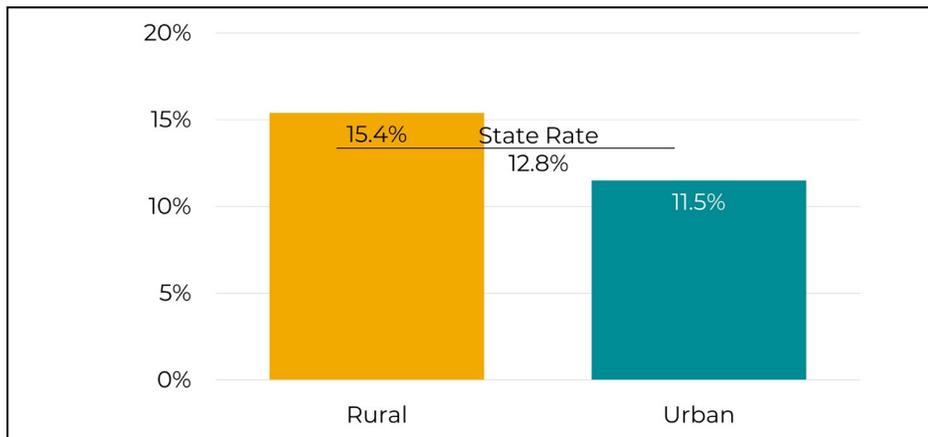
- **Social and Community Context:** Social isolation, limited social support networks and decreased community resources can negatively affect the health and well-being of individuals in rural areas. Strengthening social connections and building supportive community environments in rural areas can enhance overall health and well-being.³

POVERTY

People with steady employment are less likely to live in poverty and more likely to be healthy. The ability to obtain a livable wage and earn a steady income would allow people to meet their health needs, such as preventive medicine, visits to medical specialists and prescription drugs for long-term conditions. However, many people have difficulty finding and keeping a job, leading to chronic poverty.⁴ Poverty ranks just behind smoking among risk factors for mortality. As a public health issue, economic policies effect health outcomes. To improve population health, Missouri needs pathways to economic stability that are accessible to all citizens. Further, individuals with higher socioeconomic status often experience better access to health care, improved educational opportunities and healthier living environments, leading to improved overall health.⁵

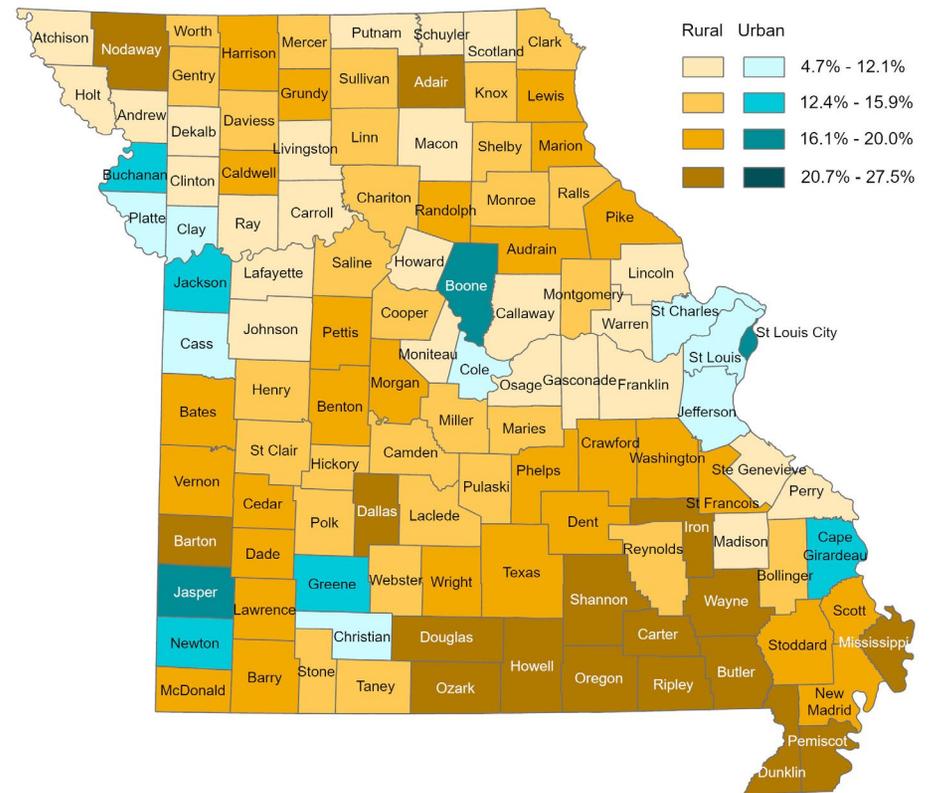
In Missouri from 2017-2021, 12.8% of Missouri residents were living below the poverty level. Missouri’s rural counties had a higher rate of poverty than urban counties, with 15.4% of rural residents and 11.5% of urban residents in poverty. The percentage of Missourians living in poverty is decreasing, from 15.6% in 2010-2014 to 12.8% in 2017-2021.

Total Population Poverty Rate Missouri, 2017-2021



Source: U.S. Census Bureau, 2017-2021 American Community Survey 5-Year Estimates, Table S1701 United States Census Bureau. American Community Survey 5 Year Estimates. Table S1701.

Total Poverty Rate Missouri, 2017-2021



Source: U.S. Census Bureau, 2017-2021 American Community Survey 5-Year Estimates, Table S1701.

County Differences

- The 20 counties with the highest poverty rates were all rural.
- Of the 10 highest county poverty rates, eight were located in southeast Missouri.
- Of the 20 counties with the lowest poverty rates, 12 were urban.
- Rural Pemiscot County had the highest poverty rate at 27.5%.
- Osage and Franklin counties had the lowest rural poverty rates at 8.2% and 9.3% respectively.

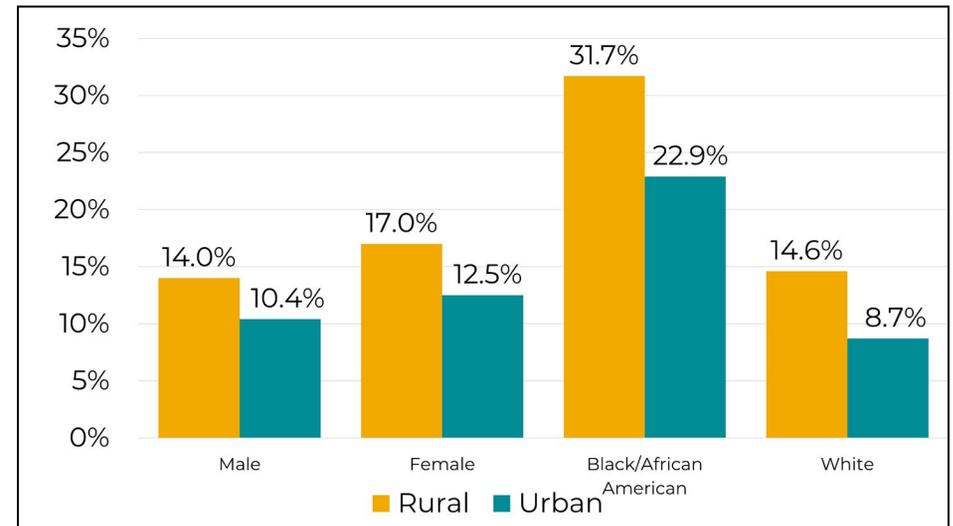
Gender Differences

- In rural counties, poverty was more prevalent in females (17.0%), compared to males (14.0%). The same is true in urban counties, with 12.5% of females living in poverty compared to 10.4% of males.
- In only eight counties, poverty was more prevalent in males than females, all of which were rural.
- Rural Shannon County had the largest disparity in poverty between males and females, with 18.8% of males and 28.2% of females living in poverty.

Racial Differences

- Black/African American residents in both rural and urban counties had over double the percent of poverty as white residents.
- In rural counties, 14.6% of white residents lived in poverty compared to 31.7% of Black/African American residents.
- Poverty among white residents decreased in 63 of the 99 rural counties during the 2015-2019 to 2017-2021 time periods. In contrast, only 47 rural counties had a decrease of poverty among Black/African American residents.

Poverty Rate by Gender and Race
Missouri, 2017-2021



Source: U.S. Census Bureau, 2017-2021 American Community Survey 5-Year Estimates, Tables B17001A and B17001B

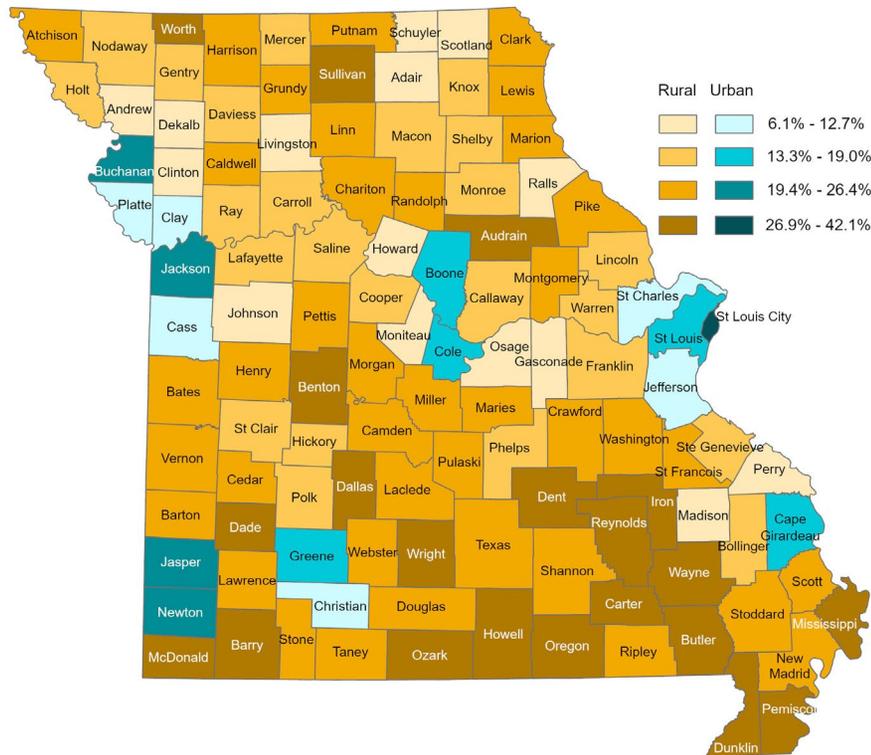


CHILDHOOD POVERTY

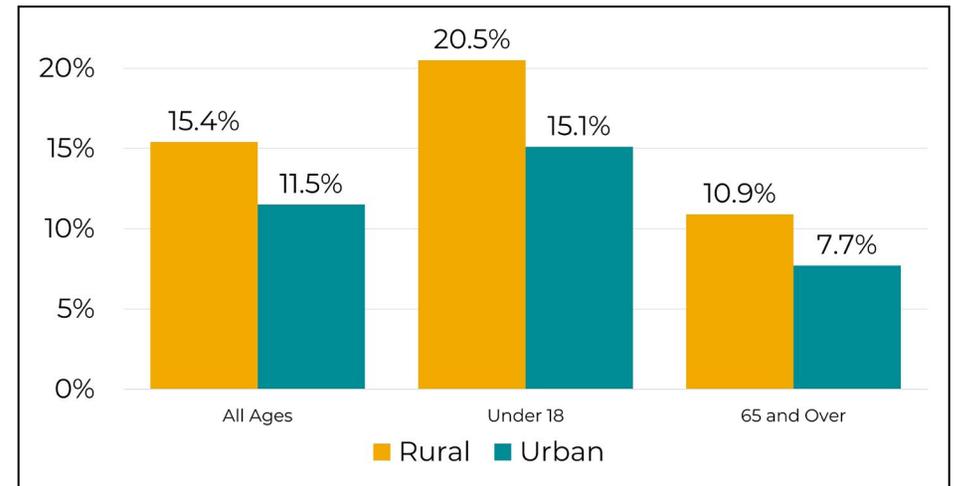
Children who are impoverished, may experience low birth weight, obesity, and asthma, while in adulthood they may be more susceptible to early morbidity and mortality rates, as well as decreased psychosocial wellness outcomes.⁶ A decrease in poverty among children may prevent poor health outcomes for children and adults. From 2015-2019 to 2017-2021, childhood poverty in Missouri decreased from 18.7% to 16.9%. During this same time period, childhood poverty in rural counties decreased from 22.8% to 20.5%.

- Rural counties had a higher childhood poverty rate than urban counties, 20.5% versus 15.1%.
- The three highest county childhood poverty rates were in southeast Missouri. Rural Pemiscot County had the highest childhood poverty rate at 42.1%.
- Childhood poverty in rural counties decreased from 22.8% during 2015-2019 to 20.4% in 2017-2021.
- Almost all Missouri counties (110) have higher childhood poverty rates than total poverty.

Under 18 Poverty Rate Missouri, 2017-2021



Poverty Rate by Age Group Missouri, 2017-2021



Source: U.S. Census Bureau, 2017-2021 American Community Survey 5-Year Estimates, Table S1701.

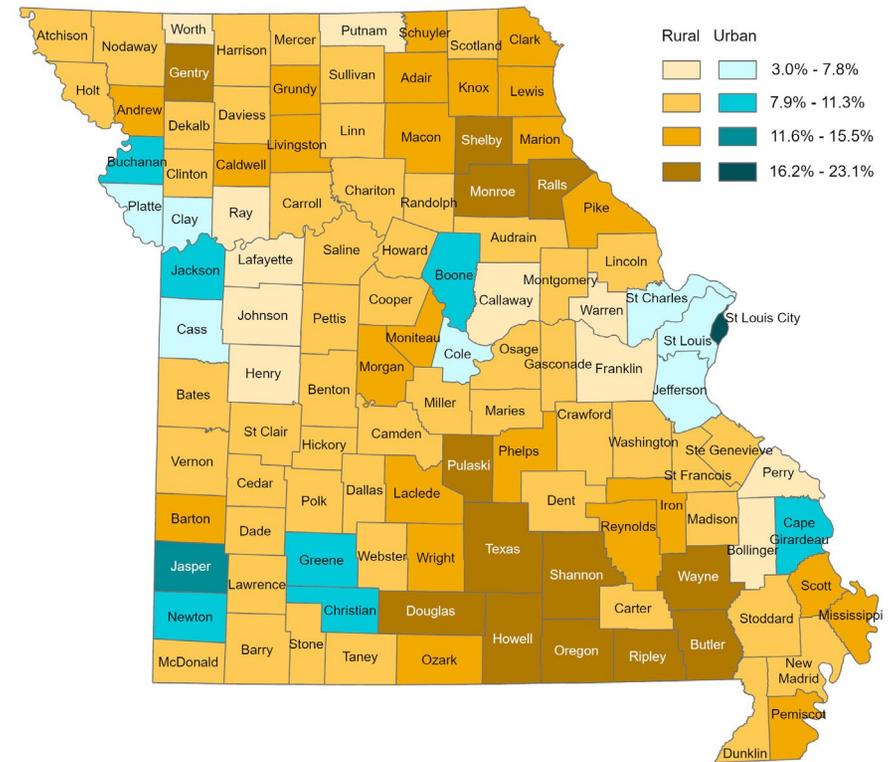
Source: U.S. Census Bureau, 2015-2019 American Community Survey 5-Year Estimates, Table S1701.

SENIOR POVERTY

Missouri, along with the rest of the United States, is experiencing a tremendous growth in the older adult population. In 2017, 22.9% of Missouri’s population was adults 60 years of age and older.⁷ The Missouri State Plan on Aging estimates that by 2030, 1 in 4 Missourians will be over the age of 60 and those 65 and over will outnumber the population of children 18 and under.⁷ This growth is significant to public health as older-age groups are more economically vulnerable due to higher amounts of fixed incomes spent on medical costs and health care.⁸

- In 2017-2021, 8.9% of Missouri’s population 65 years and over experienced poverty. Senior poverty occurred more in rural counties (10.9%) than urban counties (7.7%).
- Rural Oregon County had the highest rate of senior poverty (23.1%).
- Of the 10 counties with the highest senior poverty rate, nine were rural. Five of the nine rural counties were located in the southeast region of the state.

**Over 65 Poverty Rate
Missouri, 2017-2021**



Source: U.S. Census Bureau, 2015-2019 American Community Survey 5-Year Estimates, Table S1701.




AGING WITH DIGNITY
Missouri’s Master Plan on Aging
Health.Mo.Gov/aging

EDUCATION

Education access and quality is one of the five key areas in the Healthy People 2030 SDOH framework and is a major predictor of health outcomes. Higher levels of education have often been associated with longer lifespans, health benefits, and overall improved well-being. Individuals who have attained higher levels of education are less likely to report experiencing poor health outcomes such as heart disease, high blood pressure, diabetes, anxiety, and depression.⁹ Additionally, graduation from a post-secondary education also has a positive impact on employment.¹⁰ This may lead to an improvement in one's health by expanding access to necessary health care resources and insurance.

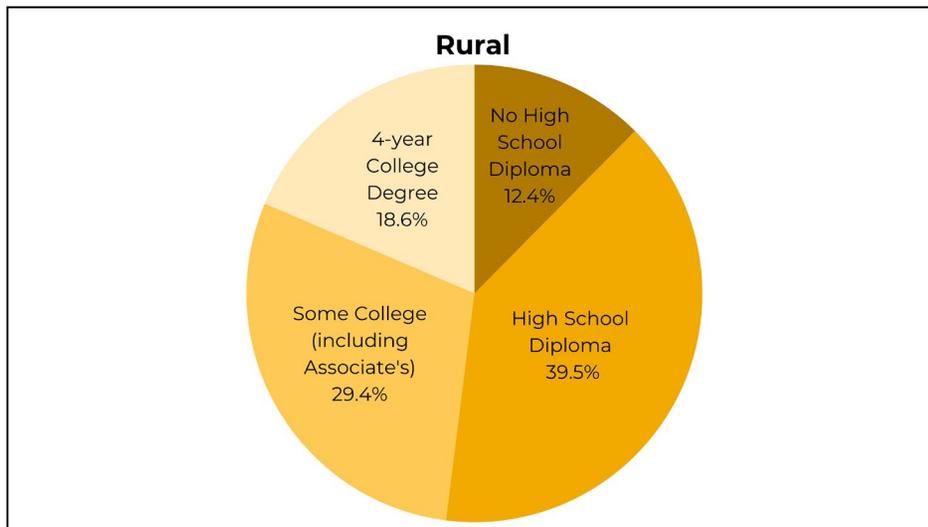
In Missouri, the overall 2021 high school graduation rate was 89.3%.¹¹ This being said, many barriers exist that may prevent an individual from pursuing a higher level of education, especially in rural counties. Residents in Missouri's rural counties continue to face a disproportionate lack of resources when it comes to education. A

factor that influences a student's decision to attend college is the preparation that their primary and secondary education may offer. Many rural high schools face teacher shortages and lack resources to provide students with advanced or honors classes, making it difficult for students to be equipped for a college-level course load.⁹

Because many students in rural counties do not pursue postsecondary education, the largest proportion of adults 25 years of age and older in rural counties are those whose highest education is a high school diploma (39.5%). In urban counties, those with a 4-year college degree or higher make up the largest portion of adults 25 years and older (36.7%). Furthermore, from 2017-2021, Missouri's rural counties had a higher percentage of residents without a high school diploma or equivalent (12.4%) than their urban counterparts (7.3%).

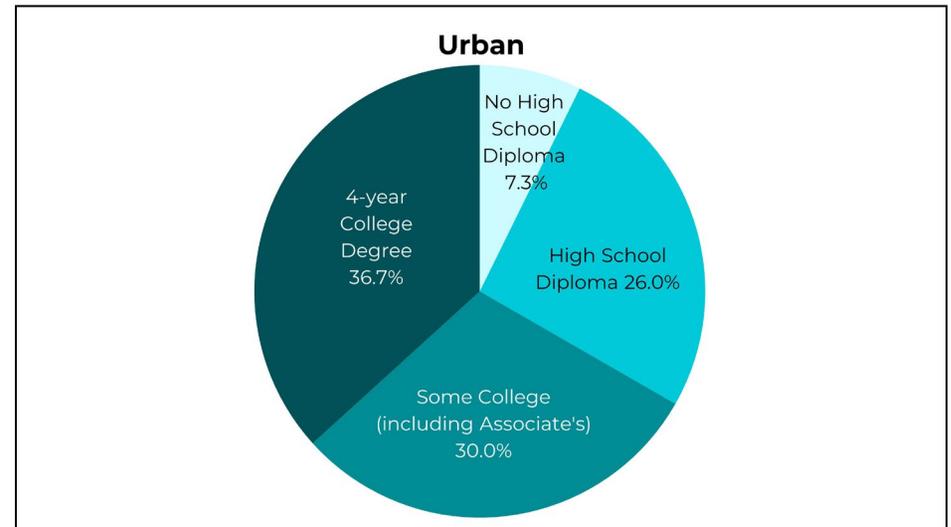
Another possible barrier for rural students pursuing higher education is lack of transportation to higher educational opportunities. Of the 59 college and university locations in Missouri where students can earn a

Educational Attainment for Adults 25+ Missouri, 2017-2021



Source: U.S. Census Bureau, 2017-2021 American Community Survey 5-Year Estimates, Table S1501*

Educational Attainment for Adults 25+ Missouri, 2017-2021



Source: U.S. Census Bureau, 2017-2021 American Community Survey 5-Year Estimates, Table S1501*

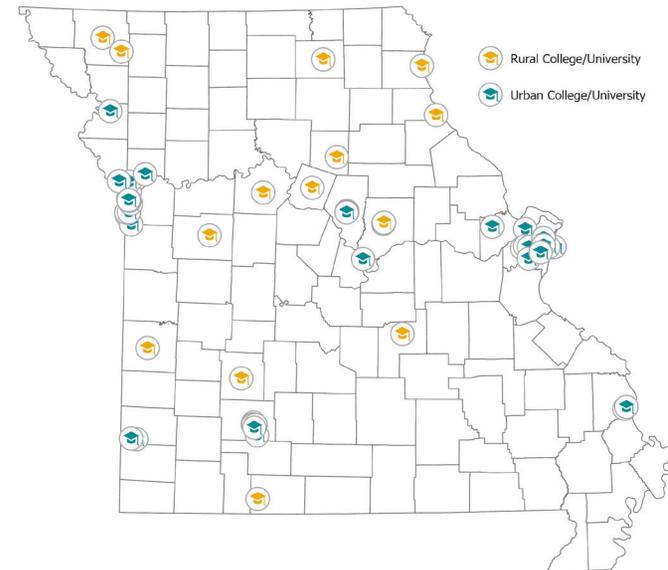
bachelor's degree, 13 rural counties have a 4-year college within their county boundaries. However, the most sparse area of Missouri when it comes to access to higher education is in the southeast region with only one university in Cape Girardeau where students can earn a bachelor's degree. This region of Missouri consistently performs poorly in terms of various social drivers of health. While pursuing an online education has become increasingly popular for those with transportation barriers, oftentimes access to high-speed internet in many rural counties is also a barrier. In 2020, 22.3% of rural Americans reported limited/no access to broadband.¹²

Other Missouri education trends include:

- Counties in southeast Missouri have the lowest rates of adults 25 years and older with a high school diploma at 85.2%. For rural counties, Reynolds, McDonald, and Morgan Counties had the lowest rates for the percentage of their population 25 years and older that holds a high school diploma or higher with values between 77.8% and 79.1%. In urban counties, Jasper County had the lowest percentage for those 25 years and older with a high school diploma at 87.6%.
- Pulaski, Putnam, and Holt were the rural counties with the highest percentage of their population 25 years and older with a high school diploma or higher all at approximately 94%.
- Mississippi County in southeast Missouri had the lowest percent of their 25 and older population that attended any college (32.8%). This includes any individual that attended some college but earned no degree, as well as those who earned an associates, bachelors or graduate/professional degree. Platte County had the highest percent at 74.8%.
- Adair County was the rural county with the highest rate of bachelor degree attainment or higher; Truman State University, located in Adair County, contributes to this large number of college graduates.

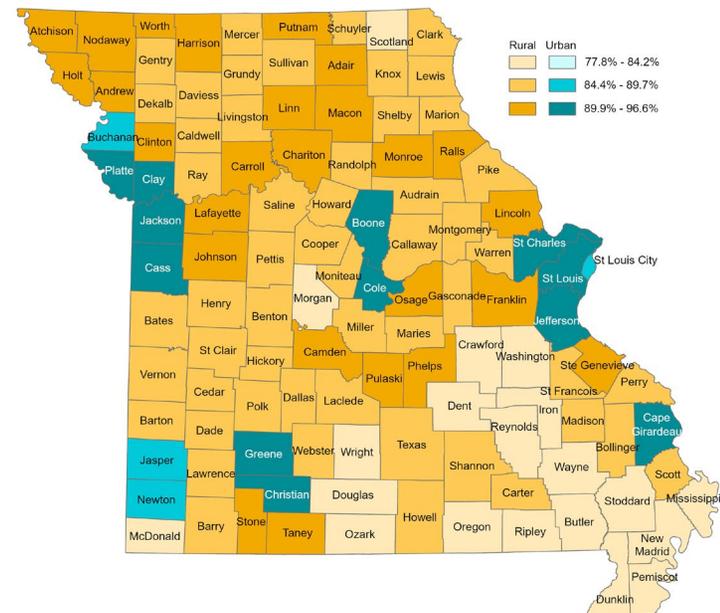
Since the last rural health report in 2021, the percentage of individuals in rural counties who obtained a college degree increased 1% and the percentage of rural residents without a high school diploma decreased 1.5%.

Colleges and Universities for Bachelor's Degree Attainment



Source: National Center for Education Statistics

Population 25 Years and Older with a High School Diploma or Higher Missouri, 2017-2021



Source: U.S. Census Bureau, Table 1501

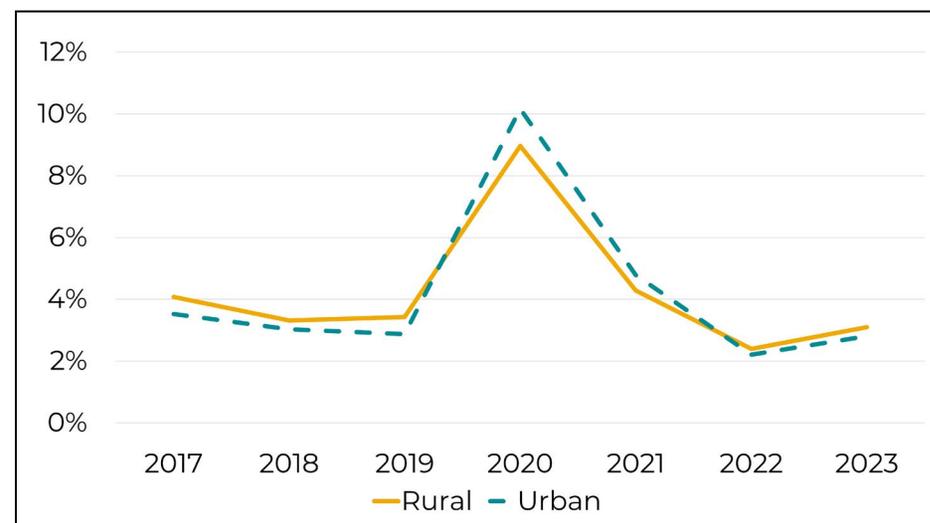
UNEMPLOYMENT

As of May 2023, Missouri's civilian labor force consisted of 3.1 million people which includes employed individuals and individuals who are jobless but have looked for work in the last four weeks.¹³ Being unemployed can create a barrier to obtaining adequate health care as individuals who are unemployed often do not have health insurance and therefore are more likely to suffer from poorer health. The stress resulting from job loss and unemployment also negatively impacts one's physical and mental health and may lead to elevated levels of anxiety and depression.¹⁴ People who work are more likely to have positive health outcomes.¹⁵ However, harmful work conditions or workplaces that harbor an environment of conflict or other psychosocial stress can increase the risk for negative health outcomes in employed individuals as well.¹⁶

During the COVID-19 public health emergency, the unemployment rate in Missouri increased significantly. From May 2019 to May 2020, urban unemployment rates increased 254% while rural unemployment rates increased 161%. Unemployment data from 2020 and 2021 indicate that during the height of the pandemic, individuals were employed at a higher rate in rural counties as opposed to urban counties. As of May 2023, the unemployment rate in rural counties had exceeded the urban county unemployment rate once again. University of Missouri Extension researchers found that broadband availability and its adoption had a positive relationship with rural employment rates during the initial months of the COVID-19 pandemic. They found that a 1% increase in broadband availability increased the employment rate by 0.37 percentage points.¹⁷

Unemployment data from 2020 and 2021 indicate that during the height of the pandemic, **individuals were employed at a higher rate in rural counties** as opposed to urban counties.

Unemployment Rate*
Missouri, May 2023



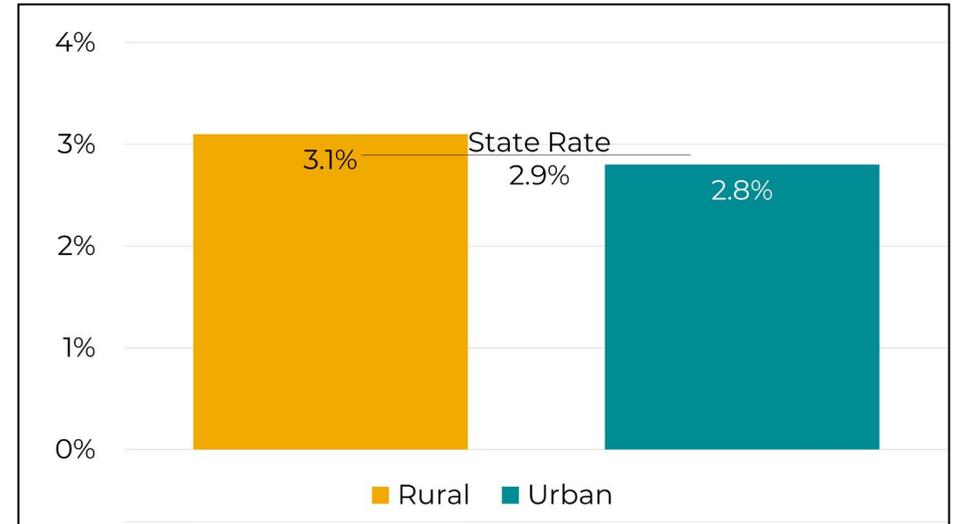
*Unemployment rates are not seasonally adjusted
Source: Missouri Economic Research and Information Center (MERIC). Local Area Unemployment Statistics. <https://meric.mo.gov/data/economic/local-area-unemployment-statistics/laus>. Accessed August 22nd, 2023.



Other Missouri unemployment trends include:

- The latest unemployment estimates include everything through May 2023 and show the state unemployment rate at 2.9%. The rural rate was slightly higher at 3.1% while the urban rate was slightly lower at 2.8%.
- Compared to May 2017, the May 2023 unemployment rate was down approximately 1 percentage point in rural areas and 0.7 percentage points in urban areas.
- In May 2021, Ray County had the highest unemployment rate at 10%. As of May 2023, unemployment rates have decreased significantly, as no county in Missouri had an unemployment rate greater than 5%.
- The counties with the highest unemployment rate in May 2023 were located in the southeast region of Missouri with rural counties Dunklin, Iron, and Wayne having the highest unemployment rates.
- Nine of the ten lowest unemployment rates in Missouri were rural counties with Holt County in northwest Missouri having the lowest rate (2.2%). The urban county with the lowest unemployment rate was Cole County (2.4%) with the ninth lowest rate overall.
- St. Louis City had the highest urban unemployment rate at 3.4%.

Unemployment Rate
Missouri, May 2023



*Unemployment rates are not seasonally adjusted
Source: Missouri Economic Research and Information Center (MERIC). Local Area Unemployment Statistics. <https://meric.mo.gov/data/economic/local-area-unemployment-statistics/laus>. Accessed August 22nd, 2023.

9 out of 10 lowest unemployment rates in Missouri were rural counties.

Holt County in northwest Missouri had the **lowest rate (2.2%)**. The **urban county** with the **lowest unemployment rate** was **Cole County (2.4%)** with the ninth lowest rate overall.

HOSPITAL COMMUTE

A major driver of health outcomes is travel time to a hospital. In an emergency, travel time and available transportation is critical. According to the Missouri Office of Rural Health and Primary Care's Health Care Facilities Map, 41 rural counties and 1 urban county (36% of the 115 counties) do not have a hospital, with an average distance to a hospital for these counties of 29.4 miles. Of the 42 counties without a hospital, 16 have an average distance to a hospital of over 30 miles. Carter, Benton, Douglas, and Hickory counties have an average distance of over 45 miles with Carter and Benton being 51.5 miles away from a hospital. Depending on county and roads, the average drive time to a hospital can be between 40-60 minutes, and in some areas even longer.

Missouri Department of Health and Senior Services
Medical Facilities in Missouri



Top 5 Counties with the Longest Average Distance (miles) to a Hospital	
Carter	51.5
Benton	51.5
Douglas	49.9
Hickory	46.1
Bollinger	41.7



PUBLIC TRANSPORTATION

Missourians' access to public transportation is a vital component of their health. Without transportation, citizens are not able to access health care services, may ignore health problems until emergency care is necessary, and may not be able to get treatments/medications when needed. Lack of transportation can also negatively affect the health care system. When patients cannot make their appointments providers lose revenue, insurance reimbursement, and time from missed appointments.

Availability of transportation is another obstacle, as many Missourians living in rural counties do not have a vehicle. According to the American Community Survey, Missouri had 157,937 (6.5%) households without a vehicle. Forty-one counties had at or above the state's average of households without a vehicle. Of these, 35 are rural counties. St. Louis City had the highest average households without a vehicle (18.6%), followed by Mississippi (15.4%), Pemiscot (11.8%), and Morgan (11.7%) counties.

Top 5 Counties with the Highest % of Households Without a Vehicle	
St. Louis City	18.6
Mississippi	15.4
Pemiscot	11.8
Morgan	11.7
Grundy	9.6

Source: U.S. Census Bureau, 2017-2021 American Community Survey 5-Year Estimates. Table B08201

While rural public transportation options are not as robust as those in urban areas, rural Missourians do have several public transportation services available. Operating Above the Standard (OATS) Transit provides service in 87 counties while Southeast Missouri Transportation Service provides regional service to 21 counties. Missouri Rural Health Association also operates Healthtran, a volunteer driver program. While there are rural public transportation options, barriers still exist as many of them are on set routes, fixed schedules, and require advanced notice to ride. Most rural counties do not have access to public transportation such as buses, taxis or trams, so spreading the knowledge of the existing services is crucial for those without transportation in these areas.

Missourians' **access to public transportation** is a vital component of their health.



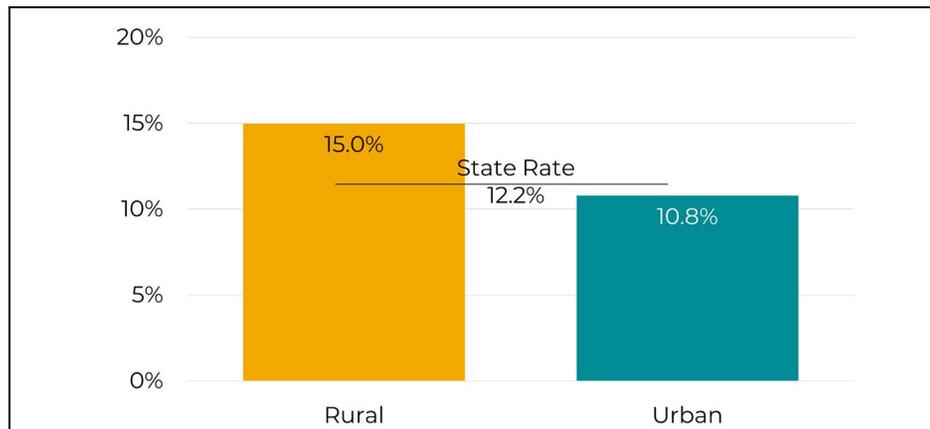
ACCESS TO HEALTH CARE

Health care access and quality is another key domain in Healthy People 2030's SDOH framework. Health insurance status as well as the distance a person must travel to the nearest health care provider can affect health care access and quality. Individuals without health insurance are less likely to have a primary care provider and may not be able to afford the services and medications that they need.¹⁸ Health insurance status and distance to a health care provider especially affect people who live in rural areas.

In Missouri, the Small Area Health Insurance Estimates (SAHIE) program provides data that allows for analysis by rural and urban metrics for a variety of demographic indicators.¹⁹ However, because it is a national survey, confidence intervals or statistical significance cannot be determined for any of the comparison groups. Because most persons 65 and older receive Medicare coverage, analysis here is limited to the under 65 population.

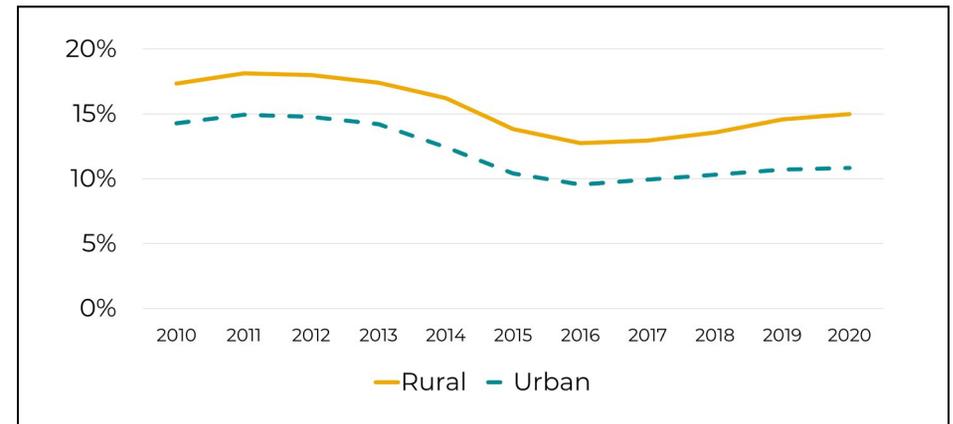
- Data from 2020 shows that the Missouri state percentage of individuals who are uninsured is 12.2%. There is a stark contrast in health insurance rates between rural and urban areas as rural Missouri has higher rates of people who are uninsured than urban areas (15.0% versus 10.8%, respectively).
- The discrepancy between rural and urban areas has been relatively consistent throughout the decade, averaging at 3.4% from 2010-2020. However, 2020 shows the largest gap between rural and urban areas' health insurance statuses since 2010.
- The overall percentage of uninsured individuals has declined for both rural and urban areas since 2010, but starting in 2016, the percent of people uninsured has shown an increasing trend for both rural and urban populations.

**Percent Without Health Insurance*
Missouri, 2020**



*Percent of population under age 65
Source: U.S. Census Bureau, 2008 - 2021 Small Area Health Insurance Estimates (SAHIE) using the American Community Survey (ACS)

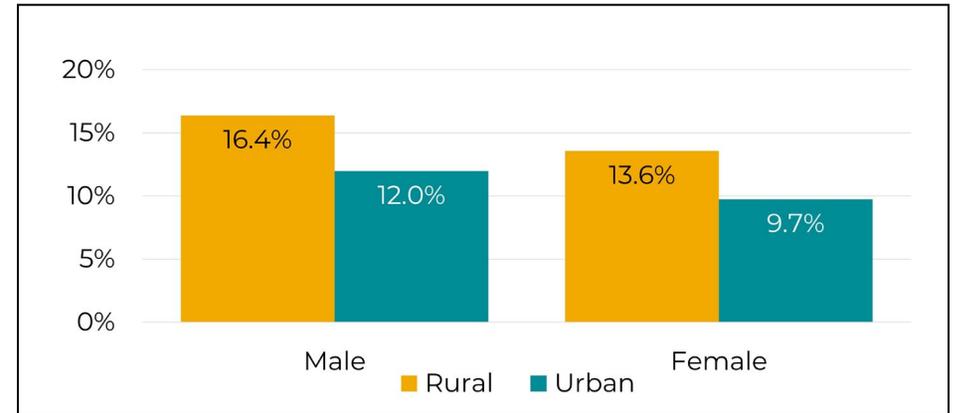
**Percent Without Health Insurance by Year*
Missouri, 2010-2020**



*Percent of population under age 65
Source: U.S. Census Bureau, 2008 - 2021 Small Area Health Insurance Estimates (SAHIE) using the American Community Survey (ACS)

- Male uninsured rates are higher than female rates in both urban and rural locations. This disparity is slightly higher in rural areas where the difference between males and females is 2.8 percentage points, compared to urban areas where the difference is 2.3 percentage points.
- Youth under 19 years of age show a significantly lower percentage of those uninsured for both rural and urban areas (8.5% and 5.8% respectively). The rural/urban disparity is slightly less for the under 19 population with the rural uninsured rate being 2.7 percentage points higher.
- Those between the ages of 21 and 64 show an uninsured rate higher than the state average for both rural and urban areas. Additionally, the disparity between rural and urban areas is greater with a difference of 4.9 percentage points (17.5% rural versus 12.6% urban).
- Individuals at or below 200% of poverty show a much higher uninsured rate at 20.9%. However, there is little disparity between rural and urban areas with a difference of only 0.5 percentage points (21.2% rural vs. 20.7% urban).

Percent Without Health Insurance by Gender*
Missouri, 2020



*Percent of population under age 65
Source: U.S. Census Bureau, 2008 - 2021 Small Area Health Insurance Estimates (SAHIE) using the American Community Survey (ACS)

- The counties with the highest uninsured rates for persons under 65 are all rural. The three counties with rates above 20% were scattered throughout the state with Scotland County in the northeast region having the highest rate at 23.3%.
- The three counties with uninsured rates below 10% for persons under 65 were all urban. St. Charles County had the lowest uninsured rate at 6.6%.

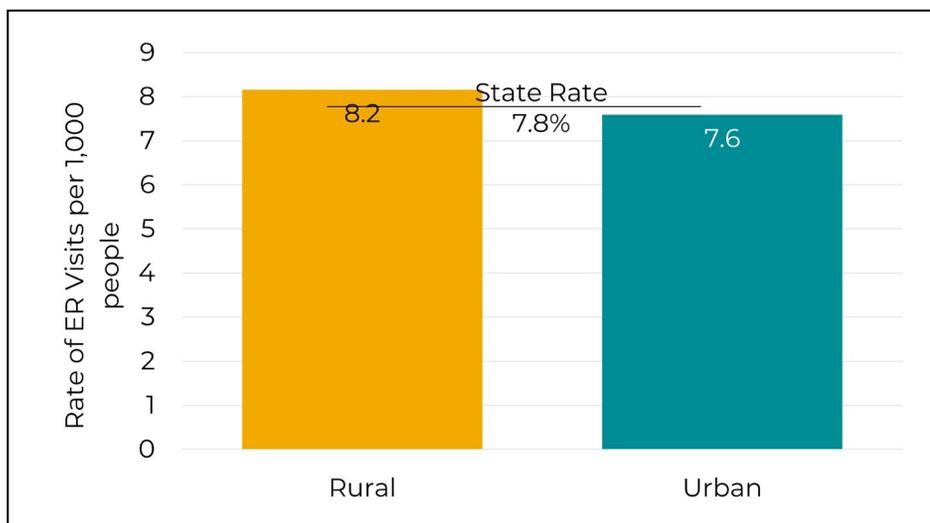


Dental Care

Regular dental care can lower the risk for oral diseases, and there is an established link between oral health and general health.²⁰ However, in 2022, only 63.3% of adults over the age of 18 had a dental exam or cleaning in the United States.²¹ There are various reasons why an individual may not seek preventive dental services. In Missouri, one factor affecting preventive dental care is the shortage of dentists in many areas. Of the 115 counties in Missouri, 104 of them are currently experiencing a shortage of dentists.²² Six of the 11 counties without a shortage are urban. One consequence resulting from a shortage of providers is that many people may neglect preventative dental care, and then defer to the emergency room (ER) for care when a dental emergency arises.

- In Missouri, rural counties show a 7% higher rate of ER visits due to dental complaints than urban counties.

**ER Visits for Dental Complaints
Missouri, 2017-2021**



Source: Missouri Patient Abstract System

- Nationally, the majority of patients who seek dental care in the ER are uninsured or insured through Medicaid.²³ In Missouri, the same is true, with the majority of these patients either having no insurance (41%) or using Medicaid (29%).
- In Missouri, the estimated average cost of an ER visit due to a dental complaint is \$3,709.80. The total cost of dental ER visits was \$886,170,869 from 2017-2021.
- In the state, 56% of dental ER visits are for patients aged 25 to 44 years old. This percentage is slightly higher in rural communities at 58%.
- The state rate of ER visits due to dental complaints is about three times higher for Black/African American individuals (18.4 per 1,000) compared to white individuals (6.1 per 1,000).
- In Missouri, females are more likely than males to visit the ER due to dental complaints (8.3 vs. 7.2 per 1,000).
- The seven highest rates of ER visits due to dental complaints were in rural counties, with the highest rate belonging to Washington County at 20.5. The neighboring Iron County, in east central Missouri, is the second highest at 18.5.

Preventive dental care is an important part of reducing dental emergencies. The Office of Oral Health, implements the Preventive Services Program (PSP), to improve the oral health of school-aged children throughout Missouri. The program provides oral health education and preventive services, including screening, application of fluoride varnish to prevent tooth decay, and referrals to dental clinics. From 2017 to 2021, PSP program participation decreased by 85%, from 92,692 participants in a school year to 14,082 participants.²⁴ The drastic change is largely due to the COVID-19 pandemic, however other factors include a shortage of dentists and difficulty finding program volunteers. The PSP helps both rural and urban areas; however, the rate of participation is much higher in rural areas at 16.3 per 1,000 compared to 6.5 in urban areas.

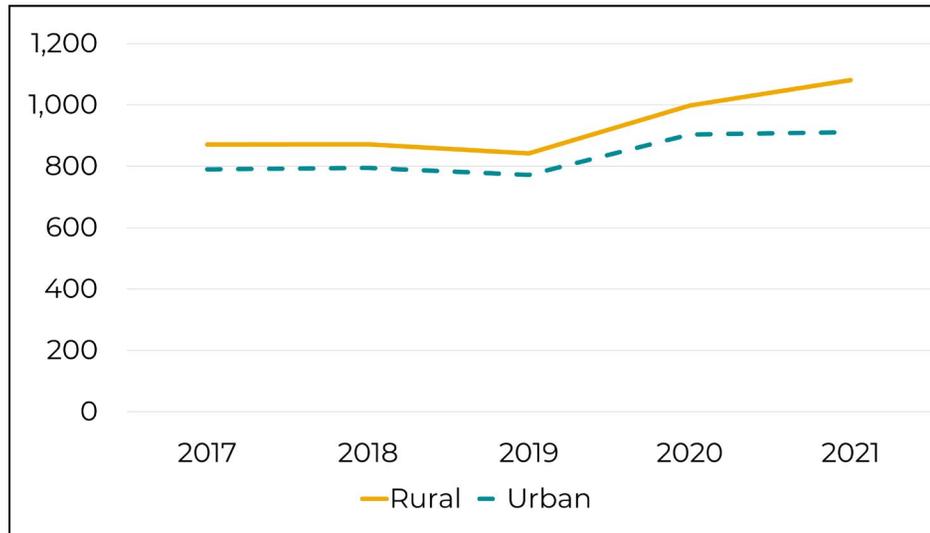
THE HEALTH STATUS OF RURAL MISSOURIANS

DEATH: ALL CAUSES

Missouri experienced 334,845 deaths between 2017 and 2021, for an annual average of 66,969 deaths. Because Missouri's population is aging, the death counts for more recent years have been greater than in the past (e.g., the annual average for 2017-2021 was 66,969 compared to 2012-2016, which was 58,163). The age-adjusted death rate for Missouri was 870.2 (per 100,000 population) for 2017-2021. Age adjusting for death rates controls for differences in the age structure of different geographies and across time. State-level rates have fluctuated, decreasing between 2018 and 2019, then increasing dramatically in 2020 and 2021.

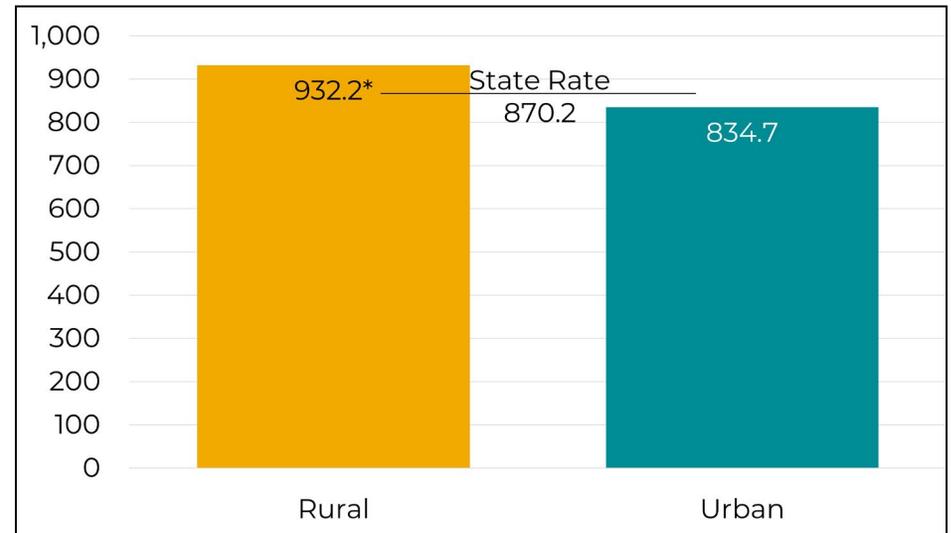
One consistent statistical trend is that rural death rates are higher than urban death rates from 2017 to 2021 (932.2 vs. 834.7 respectively). The 11.7% higher rate difference found in rural areas is statistically significant. The difference between rural and urban areas did not alter much from 2017 to 2020, with rural rates averaging between 9.0-10.5% higher than their urban neighbors. However, from 2020 to 2021, the difference between rural and urban areas expanded dramatically to 18.6%.

Death Rate from All Causes by Year
Missouri, 2017-2021



Age-adjusted rates per 100,000 population

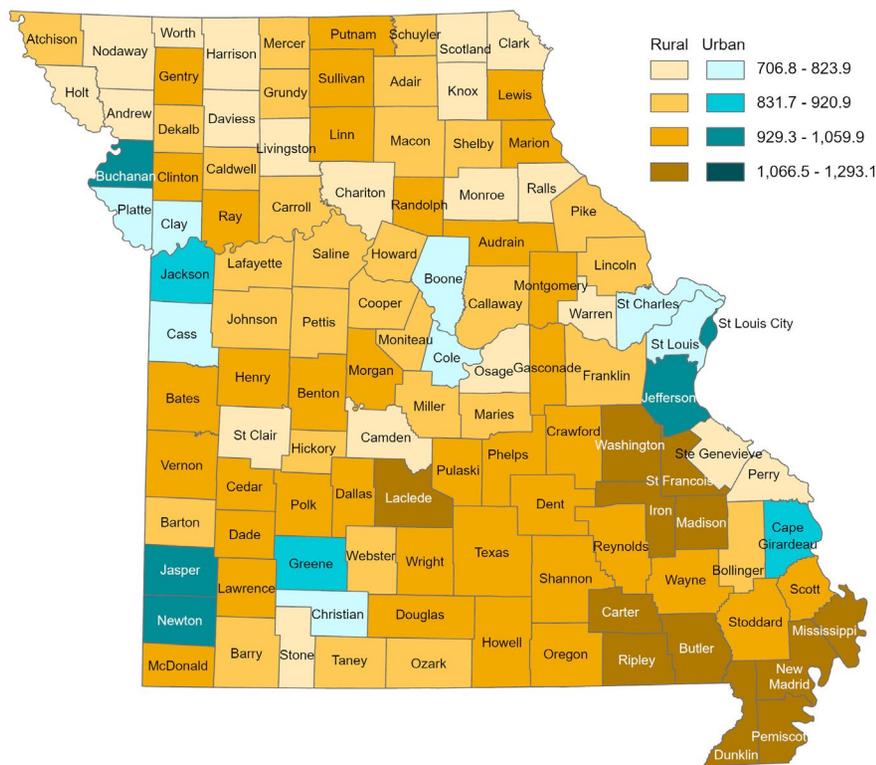
Death Rate from All Causes
Missouri, 2017-2021



*Indicates a rate that is statistically significantly higher, using 95% confidence intervals
Age-adjusted rates per 100,000 population

- Southeast Missouri has the highest death rates. There are two clusters of counties in this region with death rates higher than any other part of the state. In contrast to the southeast region, northeast and northwest Missouri have clusters of counties with lower death rates than any other rural area.
- The five counties with the highest death rates are Pemiscot, Dunklin, New Madrid, Mississippi, and Ripley. All of these counties are in the southeast region of Missouri and four of the five are in the Missouri “Bootheel” region.
- Pemiscot County had the highest death rate at 1,293.1, which is 83% higher than Platte County, which had the lowest rate at 706.8.

**Death Rate From All Causes
Missouri, 2017-2021**



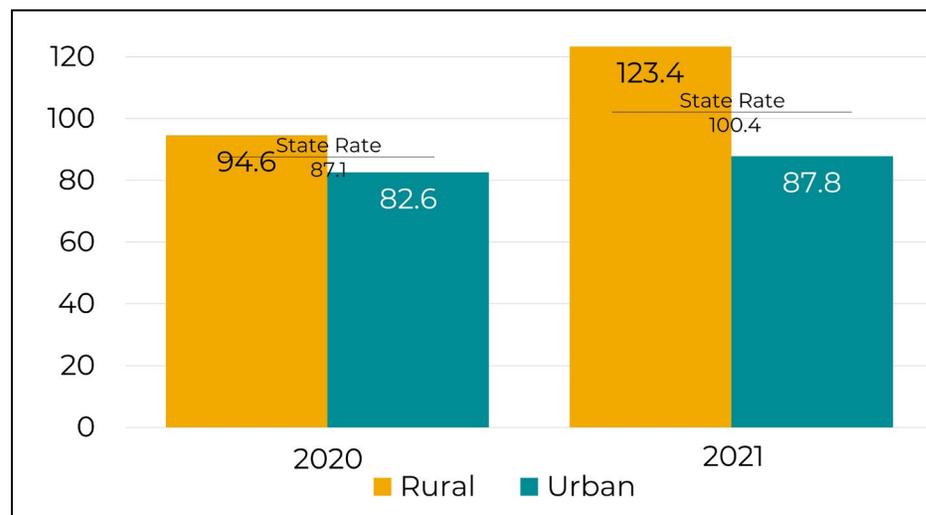
Source: Missouri Vital Statistics Death File

COVID-19 Mortality

Deaths from COVID-19 were not included in the top 10 leading causes of death for years 2017-2021 due to the disease's impact being limited to only the past few years. From 2020 to 2021, there were over 14,890 deaths attributed to COVID-19, which made it the third leading cause of death behind heart disease and cancer. When comparing rural and urban counties, there appears to be great disparities in COVID-19 mortality.

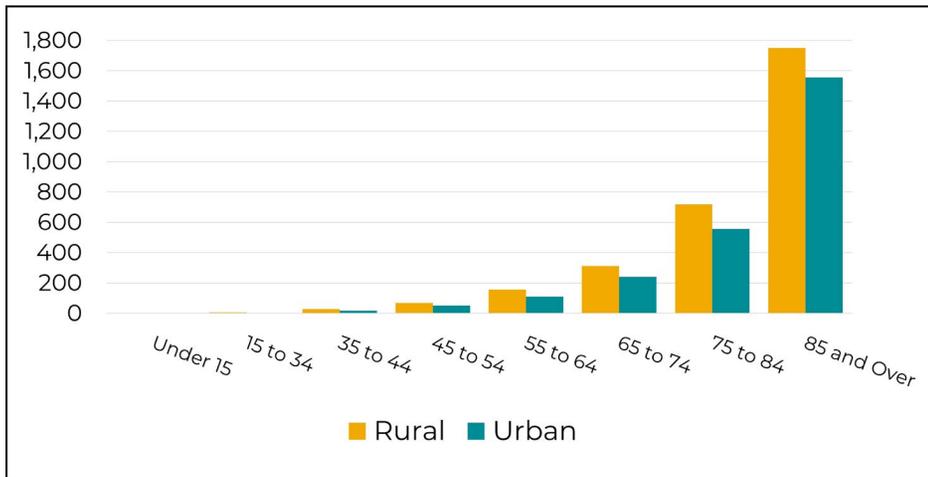
- Rural counties in Missouri experienced a higher COVID-19 mortality rate in both 2020 and 2021. In 2020, the COVID-19 mortality rate for rural counties was 14.5% higher than the rate for urban counties. In 2021, the rate for rural counties was 40.5% higher than the COVID-19 mortality rate for urban counties.
- Rural counties had a larger percent increase for COVID-19 mortality compared to urban counties. Between 2020 and 2021, the rate increased by 30.4% in rural counties compared to only a 6.4% increase for urban counties.

**COVID-19 Death Rate
Missouri, 2020 and 2021**



Source: Missouri Vital Statistics Death File
Age-adjusted rates per 100,000 population

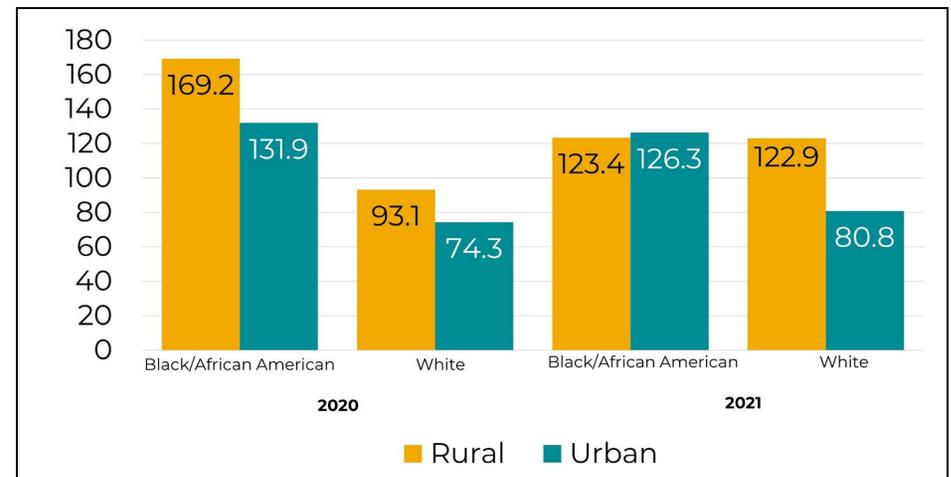
**COVID-19 Death Rate by Age
Missouri, 2020-2021**



Source: Missouri Vital Statistics Death File

- COVID-19 mortality rates greater than 10.0 included Missourians 65 and over in 2020. By 2021, rates greater than 10.0 for COVID-19 mortality included Missourians 45 and over.
- Females living in rural counties had the largest one-year rate increase (43.8%) for COVID-19 mortality. By 2021, the rate among females living in rural counties (106.1) was 54.9% higher than the COVID-19 mortality rate for females living in urban counties (68.5).
- Among males living in rural counties, the COVID-19 mortality rate increased 19.5% from 2020 to 2021. By 2021, the rate among males in rural counties (143.4) was 27.0% higher than the COVID-19 mortality rate for males living in urban counties (113.0).

**COVID-19 Death Rate by Race
Missouri, 2020 and 2021**



Source: Missouri Vital Statistics Death File
Age-adjusted rates per 100,000 population

- From 2020 to 2021, the COVID-19 mortality rate increased among white persons living in rural counties by 32.0%. In 2021, the rate for white persons in rural counties (122.9) was 52.1% higher than the COVID-19 mortality rate for white persons living in urban counties (80.8).
- For Black/African American persons living in rural counties, the COVID-19 mortality rate decreased by 27.1% from 2020 to 2021. However, the 2021 rate (123.4) was 52.7% higher than the COVID-19 mortality rate for white persons in urban counties (80.8).
- The 2021 COVID-19 mortality rate for Black/African American persons living in urban counties (126.3) was similar to Black/African American persons living in rural counties (124.3).

LEADING CAUSES OF DEATH

The National Center for Health Statistics (NCHS) has a well-established approach to determine the rankings of different causes of death. Instead of using the age-adjusted death rate, the ranking is determined based on the actual number of deaths recorded.²⁵ In the table provided, the causes of death are presented in a sequence that reflects the primary causes for individuals residing in rural areas. In this edition of the report, the order of rankings for leading causes of death in rural counties were slightly different when comparing to both the state order as well as the urban order.

Analyzing the data on mortality frequencies in rural and urban areas in Missouri yielded valuable observations regarding the factors contributing to the deaths of residents in these regions. The analysis revealed that rural areas exhibited significantly higher rates of death across the majority of all leading causes compared to the urban areas, the exceptions being Alzheimer's disease and accidental/unintentional injuries.

Heart disease and cancer continue to maintain their long-standing positions as the top two causes of death, just as they have for numerous decades. Slightly less than half (43.3%) of all deaths in rural areas can be attributed to one of these two causes. This represents a decrease compared to the prior 5 years (2012-2016) when heart disease and cancer accounted for 46.3% of all rural deaths. In addition, accidents/unintentional injury totals in Missouri experienced a 30.7% increase between the two time periods (2012-2016 vs 2017-2021). The majority of this increase was from the sub-category

Leading Causes of Death Summary Table
Missouri, 2017-2021

Rank	Cause	Missouri Frequency	Missouri Rate	Rural Frequency	Rural Rate	Urban Frequency	Urban Rate
1	Heart Disease	76,313	192.9	31,011	214.7	45,302	180.5
2	Cancer	64,896	162.7	25,752	175.8	39,144	155.2
3	Chronic Lower Respiratory Diseases	19,195	47.8	9,125	61.1	10,070	40.1
4	Accidents/ Unintentional Injuries	20,903	64.9	7,192	66.1	13,711	64.3
5	Stroke (cerebrovascular diseases)	15,669	39.7	5,979	41.0	9,690	38.9
6	Alzheimer's Disease	13,357	33.5	4,779	32.2	8,578	34.2
7	Diabetes	8,584	21.9	3,812	26.7	4,772	19.3
8	Kidney Disease (nephritis, nephrotic syndrome and nephrosis)	7,723	19.6	3,018	20.9	4,705	18.9
9	Influenza and Pneumonia	5,841	14.9	2,467	17.0	3,374	13.6
10	Suicide	5,810	18.6	2,153	21.0	3,657	17.4

Age-adjusted rates per 100,000 population



Heart Disease

Heart disease was the underlying cause of death for 31,011 rural Missourians during the 2017-2021 time period, making it the leading cause of death for rural Missouri. The heart disease death rate for rural Missouri counties (214.7) was 18.9% higher than urban counties (180.5) over this period. Heart disease deaths increased by 8.0% for rural counties and 5.1% for urban counties during this 5-year span. Other findings displayed on the following graphs include:

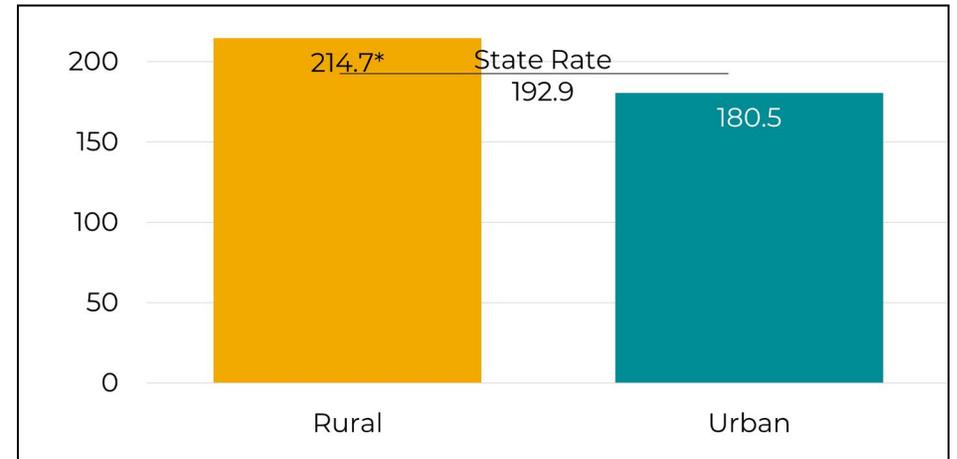
- An increase in heart disease death rates occurred between 2019 and 2021. Rural rates increased by 12.8% while urban rates increased by 6.4% over this 2 year span.
- The 28 counties with the highest death rates from heart disease were rural. Jasper County had the highest heart disease death rate in an urban county with a rate of 233.4.

**Heart Disease Death Rate
Missouri, 2017-2021**

Rank	Rural	Urban
Frequency	31,011	45,302
Rate	214.7	180.5
Percent Change (2017-2021)	+8.0%	+5.1%

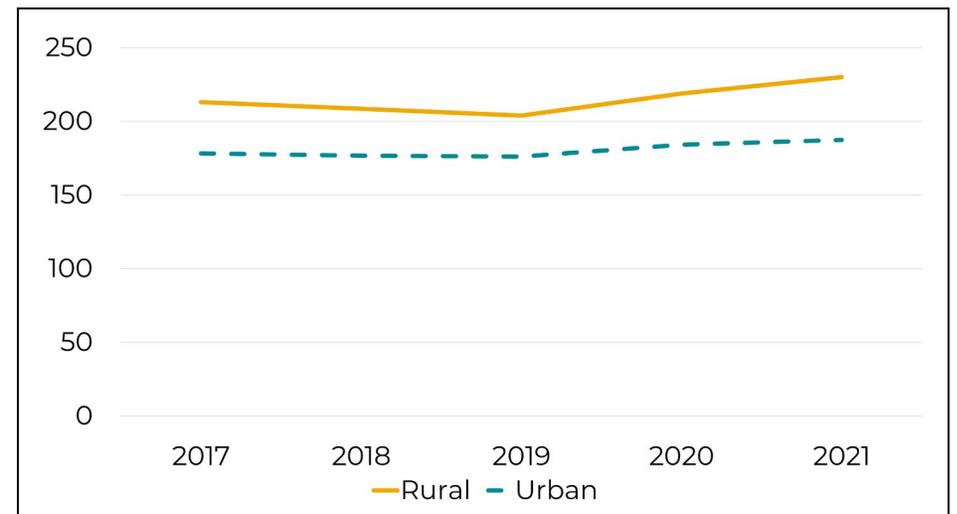
Age-adjusted rates per 100,000 population

**Heart Disease Death Rate
Missouri, 2017-2021**



*Indicates a rate that is statistically significantly higher, using 95% confidence intervals
Age-adjusted rates per 100,000 population

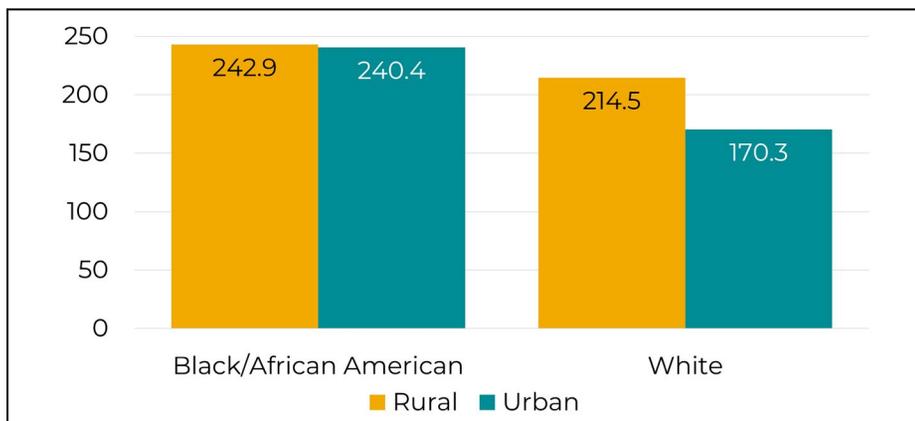
**Heart Disease Death Rate by Year
Missouri, 2017-2021**



Age-adjusted rates per 100,000 population

- Rural heart disease death rates were higher for both Black/African Americans and whites. However, the disparity in white populations was much greater. The rural white death rate was 26.0% higher than urban white populations. In contrast, the rural Black/African-American rate was only 1.0% higher than urban Black/African American populations.

**Heart Disease Death Rate by Race
Missouri, 2017-2021**



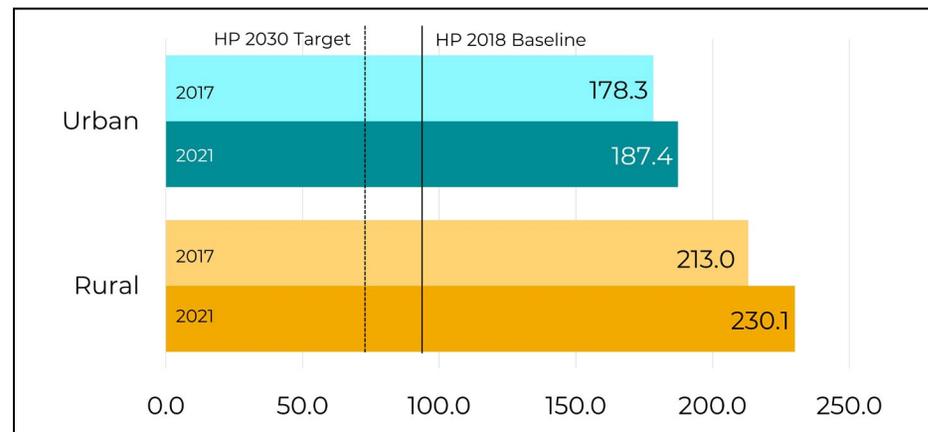
Age-adjusted rates per 100,000 population

- Male rates for heart disease mortality in rural Missouri counties were 16.5% higher compared to males living in urban counties. Female rates in rural Missouri counties were 18.7% higher than the rates of their urban counterparts.
- Pemiscot County had the highest heart disease mortality with a rate of 407.4. Four of the five highest heart disease rates were in southeast region counties.

Healthy People 2030 set a target goal of 71.1 heart disease deaths per 100,000 for 2030.²⁶ Rural and urban counties had heart disease death rates above this target goal in both 2017 and 2021. In 2021, rural and urban Missouri counties had rates that were respectively three times (230.1) and two and half times (187.4) higher than the Healthy People 2030 target (71.1).

There are multiple risk factors for heart disease. These risk factors can be categorized into two main groups: lifestyle choices and demographic factors like age and family history. Some specific risk

**Heart Disease Death Rate
Missouri, 2017 and 2021**



Age-adjusted rates per 100,000 population

factors for heart disease include elevated blood pressure, unfavorable blood cholesterol levels, diabetes mellitus, obesity, and tobacco use.²⁷

An American Heart Association study shows that individuals who engage in regular physical activity experience lower mortality rates compared to those who do not engage in physical activity despite having no risk factors. Moreover, individuals with heart disease who maintain physical fitness live longer and experience fewer heart attacks compared to heart patients who are not physically fit.²⁷ Regular physical activity provides the following advantages: reduces blood pressure, lowers levels of LDL “bad” cholesterol in the bloodstream, enhances blood sugar regulation, alleviates feelings of stress, helps manage body weight, enhances sleep quality and reduces sleep onset time, improves memory, decreases the risk of dementia and depression, and enhances self-esteem and overall well-being.²⁸ The 2021 Missouri Behavioral Risk Factor Surveillance System (BRFSS) telephone survey revealed that 25.3% of adults in rural areas of the state had not engaged in physical activity outside of work in the past 30 days. Both declined and low activity puts individuals at greater risk of heart disease. Increasing physical activity levels among Missourians is a preventive measure, with potential for reducing heart disease mortality rates across the state of Missouri. Focusing on areas with significant challenges, such rural counties may lead to substantial improvements for the state overall.

Cancer

Cancer was the underlying cause of death for 25,752 rural Missourians during the 2017-2021 time period, making it the second leading cause of death for rural Missouri. During this period, rural Missouri counties endured a higher rate of death from cancer (175.8) compared to Missouri's urban counties (155.2).

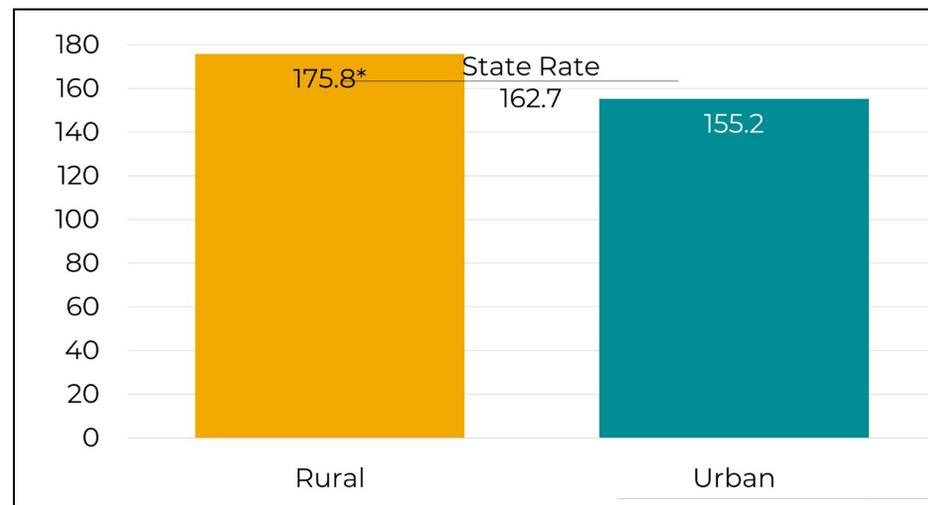
**Cancer Death Rate
Missouri, 2017-2021**

Rank	Rural	Urban
Frequency	25,752	39,144
Rate	175.8	155.2
Percent Change (2017-2021)	+2.7%	-4.6%

Age-adjusted rates per 100,000 population

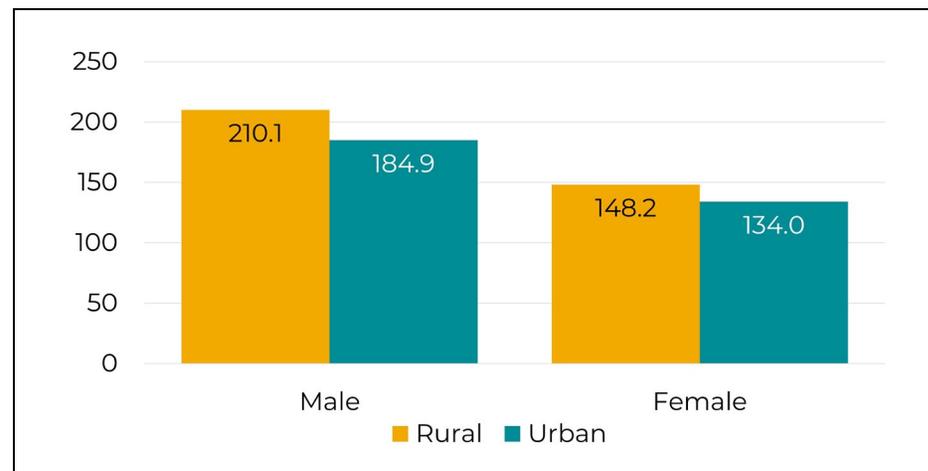
- The rural cancer death rate was 13.3% higher than the urban rate.
- In Missouri, the 33 highest cancer death rates for 2017-2021 all belonged to rural counties.
- Three counties in southeastern Missouri, Ripley, Pemiscot and New Madrid, had the highest cancer death rates in the state.
- Newton County was the highest ranked urban county (34th) with a cancer death rate of 183.1.
- Males in Missouri had higher rates of cancer deaths than females. Rural males had the highest rate at 210.1 compared to urban males at 184.9. While females had lower cancer death rates, rural females were affected at a higher rate than urban females, 148.2 and 134.0 respectively.

**Cancer Death Rate
Missouri, 2017-2021**



*Indicates a rate that is statistically significantly higher, using 95% confidence intervals
Age-adjusted rates per 100,000 population

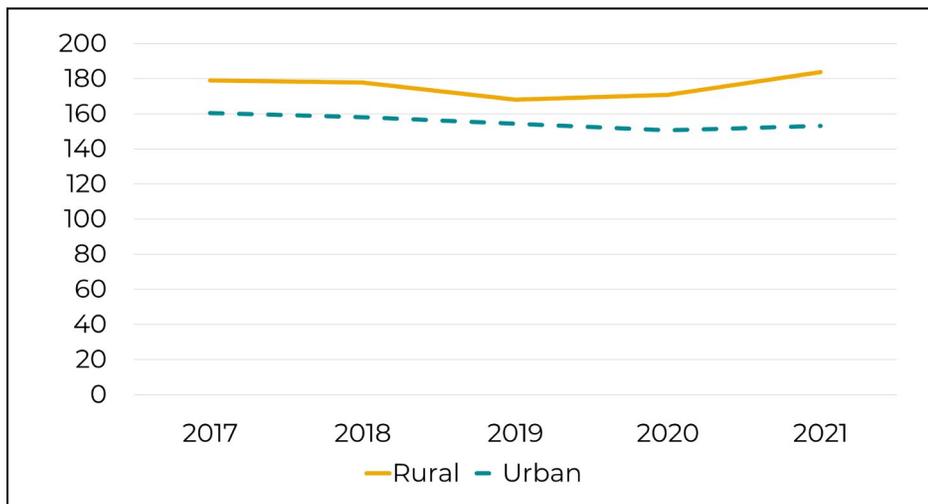
**Cancer Death Rate by Sex
Missouri, 2017-2021**



Age-adjusted rates per 100,000 population

- The Healthy People 2030 goal sets a target of having cancer-related deaths to a rate of 122.7 by 2030, with a baseline rate of 149.1 from the year 2018.²⁹ Missouri has a lot of work to do on this front in order to meet the Healthy People goal, especially the rural parts of the state. In 2021, rural Missouri had a cancer death rate of 179.0 while urban Missouri had a rate of 160.4.
- The gap between rural and urban cancer mortality rates has widened over the past five years. Rural Missourians are now 20% more likely to die from cancer than their urban counterparts. In 2017, the rural-urban disparity was only 12%.
- Missouri's cancer death rate had been decreasing, however, in 2020, rural Missouri saw a 1.7% increase in cancer death rates when compared to 2019. In 2021, there were increases in cancer death rates for both rural and urban Missouri.

**Cancer Death Rate by Year
Missouri, 2017-2021**



Age-adjusted rates per 100,000 population

Cancer deaths are categorized into different subtypes. There are several hundred types of cancer, which are classified by the tissue and where it originated in the body.³⁰ From 2017 to 2021, five types of cancer accounted for more than half of all cancer deaths in Missouri. Rural Missouri experienced a higher rate for most of these types of cancer, excluding only breast cancer. Lung cancer was the leading cause of cancer deaths, making up 27.2% of all cancer deaths in Missouri. Fortunately, lung cancer deaths have been decreasing in both rural and urban areas.

**Leading Causes of Cancer Death
Missouri, 2017-2021**

Rank	Cause	Rural	Urban
1	Lung/Trachea/Bronchus	50.2	39.3
2	Colon/Rectum/Anus	16.2	13.0
3	Pancreas	11.8	11.7
4	Breast	10.7	11.0
5	Prostate	7.8	7.0

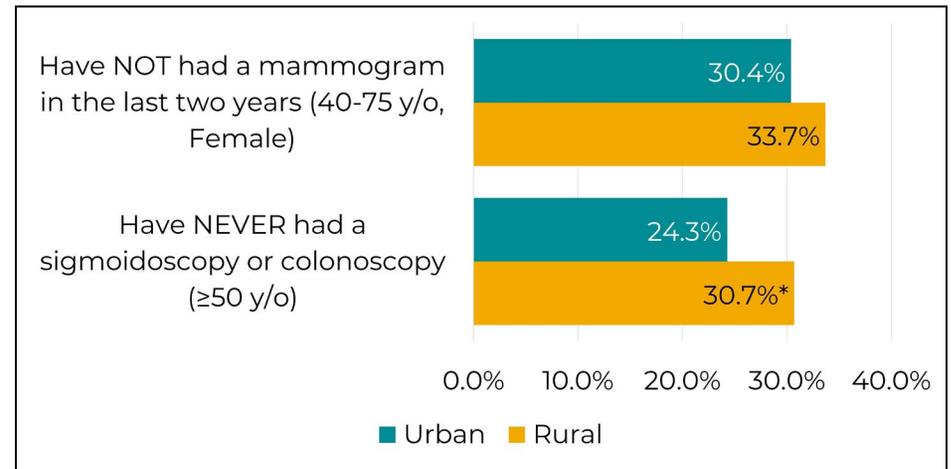
Age-adjusted rates per 100,000 population
Only female population counts are used to calculate the death rates for breast cancer, and only male population counts are used to calculate prostate cancer death rates.



Cancer screening is important and recommended for at-risk individuals and specific age groups. Screening tests help to find cancer before someone shows symptoms, known as early detection.³¹

- For breast cancer, women should have annual mammograms between the ages of 45 and 54, and be screened every two years after the age 55.
- Everyone should start regular screening for colon and rectal cancer at the age of 45.
- Women should begin cervical cancer screening at the age of 25.
- According to the 2022 BRFSS survey, screening adherence for breast and colon cancer was lower in rural areas.

Cancer Screening Adherence Missouri BRFSS, 2022



Source: Missouri Behavioral Risk Factor Surveillance System (BRFSS)

*Indicates a value that is statistically significantly higher, using 95% confidence intervals

Results are based on response of “No” to the questions, “Have you had a mammogram in the past 2 years?” (women age 40 and older) and “Have you had a sigmoidoscopy or colonoscopy?” (among those 50 and older).

Screening tests help to **find cancer before** someone shows **symptoms**.

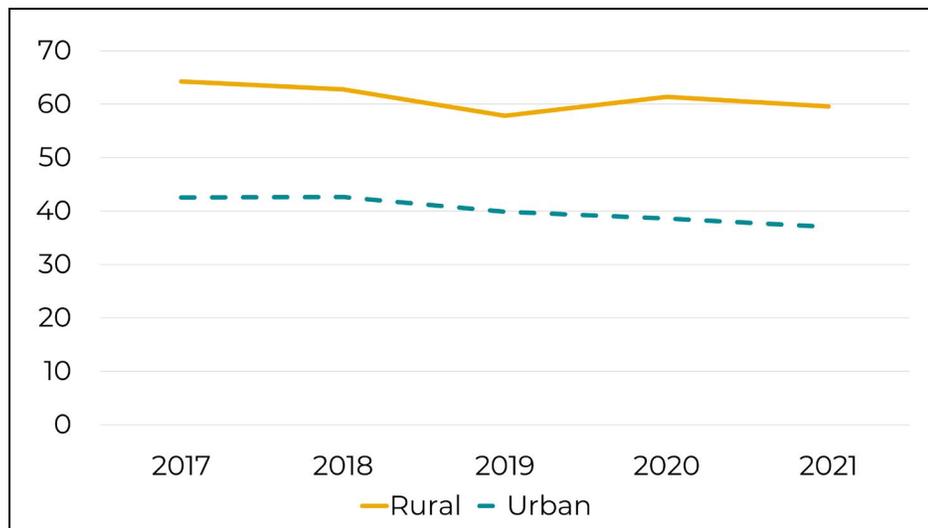
Learn more at
[Health.Mo.Gov/cancer](https://www.health.mo.gov/cancer)



Chronic Lower Respiratory Disease

Chronic lower respiratory disease (CLRD) was the underlying cause of death for 9,125 rural Missourians during the 2017-2021 time period, making it the third leading cause of death for rural Missouri. CLRD obstructs airflow, affecting airways and lung structures. The most common of these diseases are chronic obstructive pulmonary disease (COPD), asthma, emphysema, and bronchitis.

**Chronic Lower Respiratory Disease Death Rate by Year
Missouri, 2017-2021**



Age-adjusted rates per 100,000 population

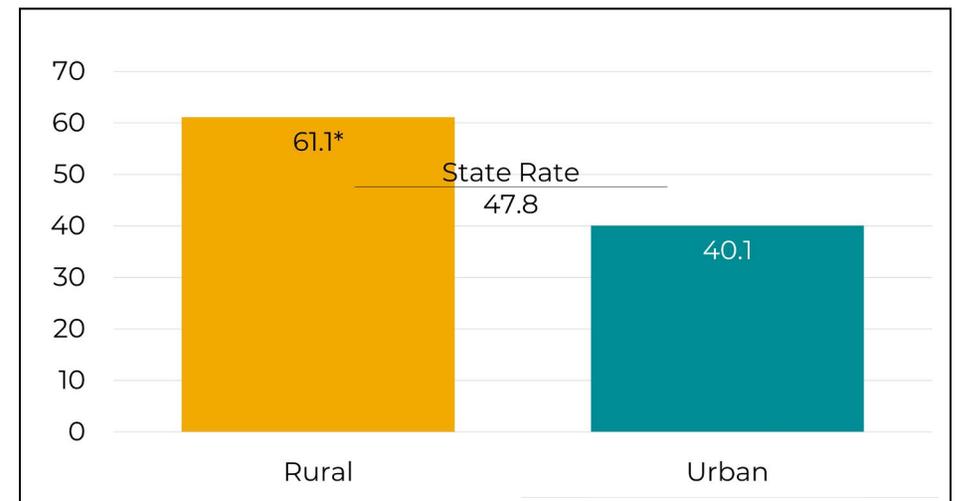
**Chronic Lower Respiratory Disease Death Rate
Missouri, 2017-2021**

Rank	Rural	Urban
Frequency	9,125	10,070
Rate	61.1	40.1
Percent Change (2017-2021)	-7.3%	-13.0%

Age-adjusted rates per 100,000 population

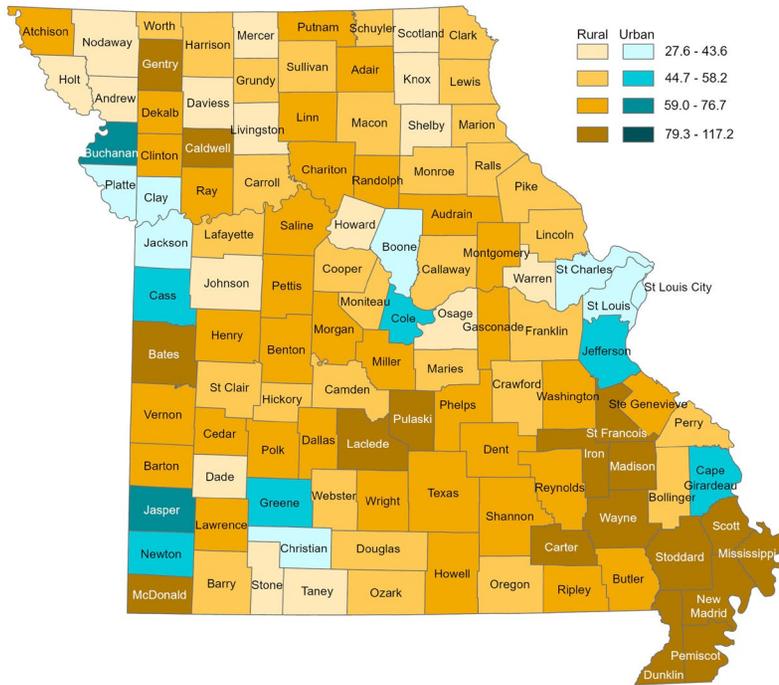
Historically, and due in part to higher smoking rates, rural counties in Missouri have had higher death rates for CLRD compared to their urban counterparts. This pattern continues to be true. Between 2017 and 2021, rural Missouri experienced a higher rate of deaths from CLRD (61.1) compared to urban Missouri (40.1). The disparity was widest in 2021, when the rural rate was 60.9% higher.

**Chronic Lower Respiratory Disease Death Rate
Missouri, 2017-2021**



*Indicates a rate that is statistically significantly higher, using 95% confidence intervals
Age-adjusted rates per 100,000 population

Chronic Lower Respiratory Disease Death Rate Missouri, 2017-2021



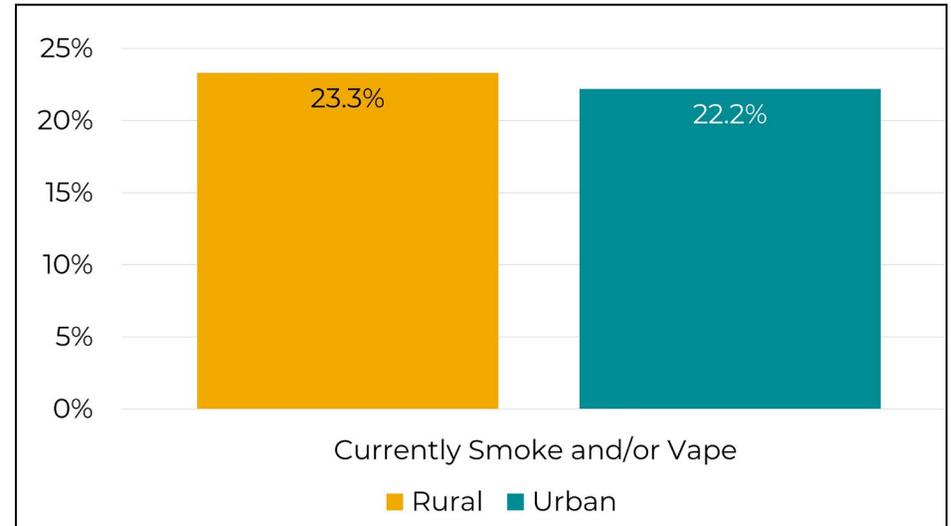
Source: Missouri Vital Statistics Death File

- Six of the top 10 counties with the highest CLRD death rates were located in southeast Missouri. These counties were Dunklin, New Madrid, Carter, Madison, Stoddard and Iron.
- Rural males and females had higher rates of CLRD deaths. Rural males had rates 60.6% higher than urban males. Rural females had rates 46.1% higher than urban females.
- Since 2017, both rural and urban areas in Missouri have seen a decrease between 7-13% in CLRD mortality rates. The urban rate decreased faster which led to the disparity increasing.

A key risk factor for some of the major diseases encompassed by CLRD is tobacco smoke. The toxins in tobacco smoke damage tissue and cells within the body's airways and lungs. Close to 8 of every 10 COPD deaths are due to tobacco smoking.³³ Research has also shown e-cigarette use to increase the risk for developing CLRD. E-cigarettes contain extremely fine particles and heavy metals that cause

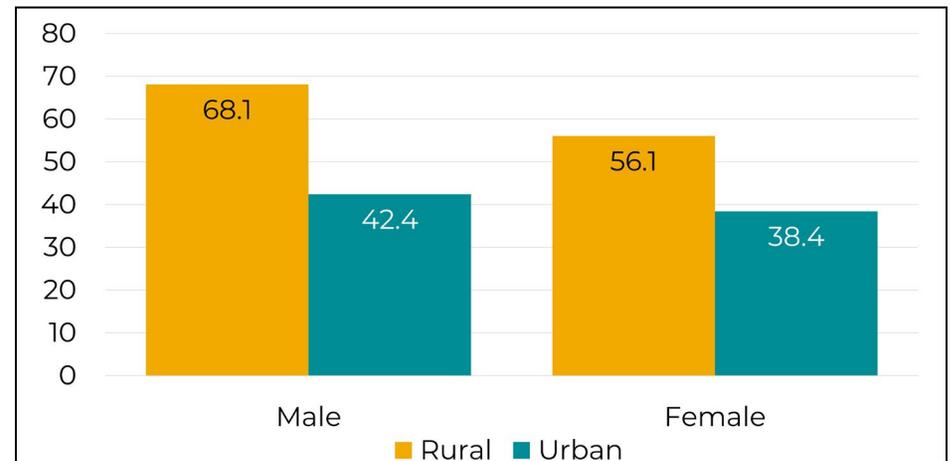
inflammation and alter immune function.³⁴ According to the Missouri BRFSS in 2022, rural areas had comparable percentages to urban areas when asked about current smoking/vaping status.

Smoking/Vaping Among Adults Missouri BRFSS, 2022



Source: Missouri Behavioral Risk Factor Surveillance System (BRFSS)
Results are based on response of "yes" to 'every day' or 'some days' when asked "Do you smoke cigarettes (or electronic vaping products) every day, some days or not at all?"

Chronic Lower Respiratory Disease Death Rate by Sex Missouri, 2017-2021

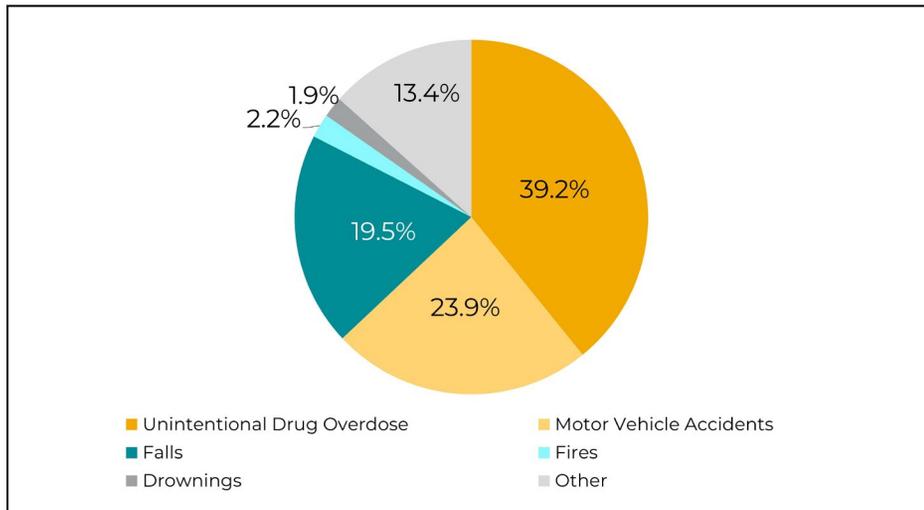


Age-adjusted rates per 100,000 population

Accidental/Unintentional Injuries

Accidental/unintentional injuries were the underlying cause of death for 7,192 rural Missourians during the 2017-2021 time period, making it the fourth leading cause of death for rural Missouri. The most frequent cause of unintentional injury across all of Missouri for this time period was unintentional drug overdose, followed by motor vehicle accidents.

Accidental/Unintentional Injury Top Causes of Death Missouri, 2017-2021



Source: Missouri Vital Statistics Death File

Rural Missouri counties have marginally higher rates of death from accidents/unintentional injuries (66.1) compared to urban counties (64.3) over the 2017-2021 time period. Other important unintentional injury statistics include:

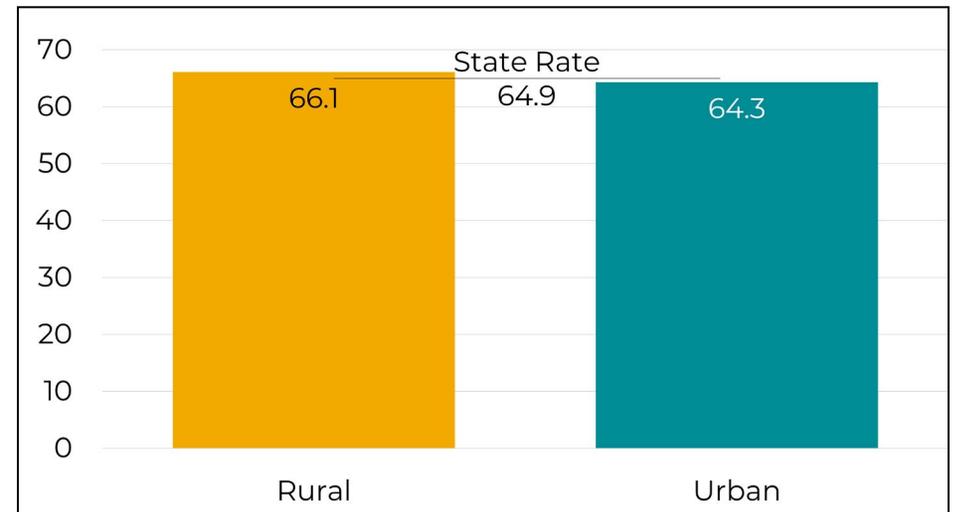
- The Healthy People 2030 goals set a target rate of 43.2 for unintentional injury deaths by 2030.³² Neither rural nor urban Missouri is on track to meet the Healthy People 2030 goal. Urban area rates increased by 27.0% and rural areas by 30.1% between 2017 and 2021. Both have rates in 2021 that are approaching double the 2030 target.

Accidental/Unintentional Injury Death Rate Missouri, 2017-2021

Rank	Rural	Urban
Frequency	7,192	13,711
Rate	66.1	64.3
Percent Change (2017-2021)	+30.1%	+27.0%

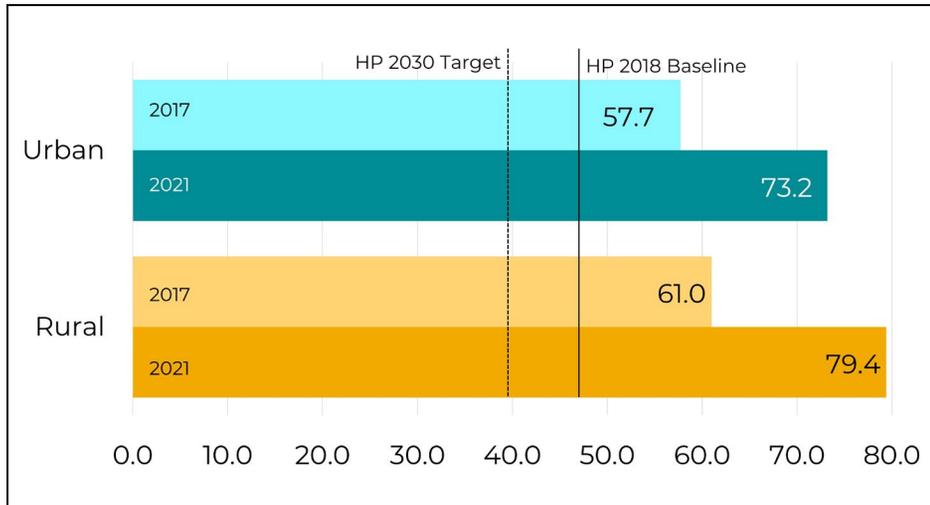
Age-adjusted rates per 100,000 population

Accidental/Unintentional Injury Death Rate Missouri, 2017-2021



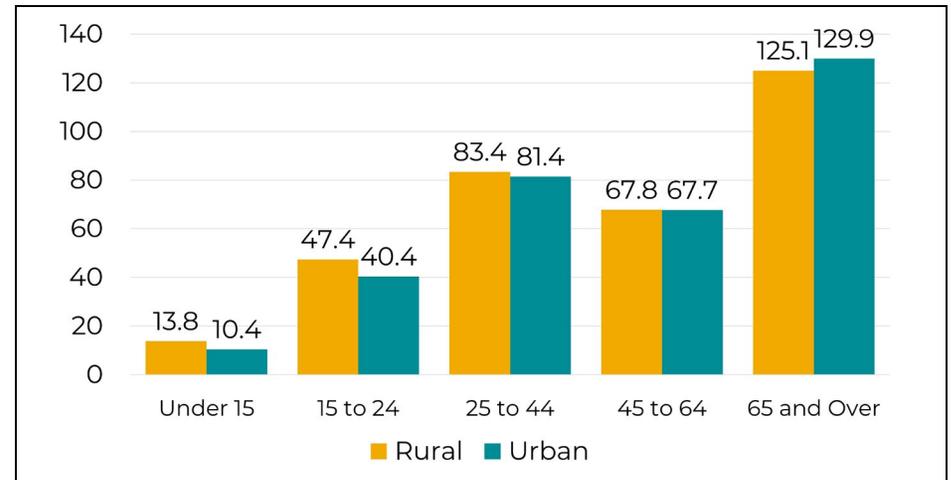
The difference in rates for rural vs. urban counties was not statistically significant
Age-adjusted rates per 100,000 population

Accidental/Unintentional Injury Death Rate Missouri, 2017-2021



Age-adjusted rates per 100,000 population

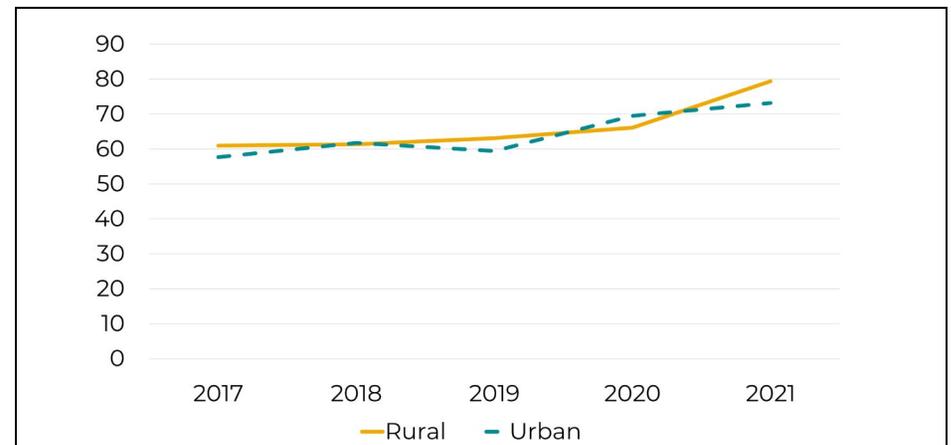
Accidental/Unintentional Injury Death Rate by Age Missouri, 2017-2021



Source: Missouri Vital Statistics Death File

- The disparity between rural and urban unintentional injury deaths is diminishing. From 2012-2016, the rural rate was 19.5% higher than the urban rate (56.3 vs. 47.1). However, from 2017-2021, the disparity had decreased to only 2.8%. This decrease can be largely attributed to an increase of accidental drug overdose deaths in urban counties in recent years.

Accidental/Unintentional Injury Death Rate by Year Missouri, 2017-2021



Age-adjusted rates per 100,000 population

- When observing deaths from unintentional injuries by sex regardless of geography, males are statistically more likely to die than females. Rural males (87.8) had rates slightly below their urban counterparts (88.4). In contrast, rural females (44.4) had higher rates than urban females (41.9).
- Motor vehicle accidents account for 31.6% of unintentional injuries for rural residents and 19.8% for urban residents.
- Unintentional drug overdose, discussed in more detail in the next section, accounted for 28.6% of unintentional injury deaths for rural residents compared to 44.7% for urban.
- Accidental deaths vary by age groups. For example, falls make up the majority of accidental deaths for those 65 and over, while drug overdose and motor vehicle accidents make up larger percentages for the younger population. The 65 and over age group is the only age group where the rural rate (125.0) is lower than the urban rate (129.9).

Drug Overdose

Between 2017 and 2021, there were 8,596 drug overdoses in Missouri, comprising more than 39% of the unintentional injury/accidental death category. This represents a big shift from the previous decade (2007-2011) when drug overdose deaths comprised 26% of accidental deaths.

**Drug Overdose Death Rate
Missouri, 2017-2021**

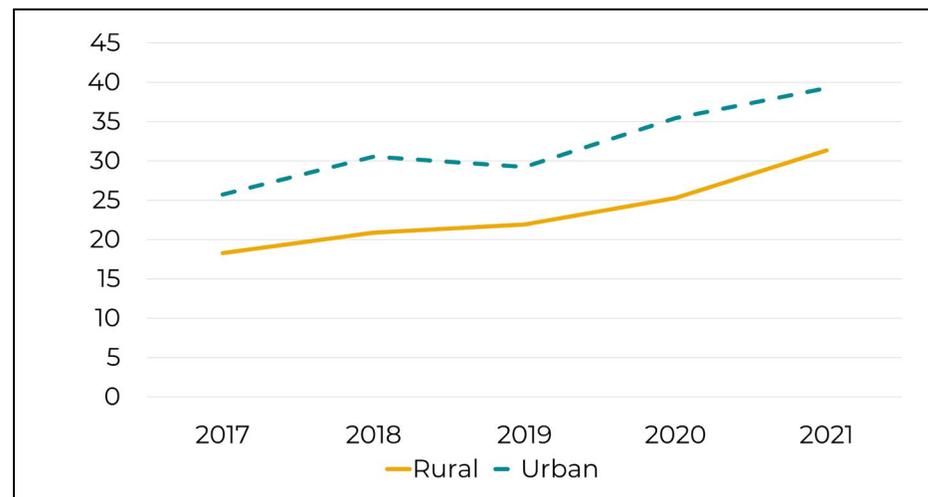
Rank	Rural	Urban
Frequency	2,185	6,410
Rate	23.5	32.1
Percent Change (2017-2021)	+71.5%	+52.5%

Age-adjusted rates per 100,000 population

To be consistent with other reports that include overdose deaths, all manners of drug overdose deaths were included in this analysis. However, about 91.5% of drug overdose deaths in Missouri were unintentional. Some important drug overdose statistics for Missouri include:

- Between 2017 and 2021, Missouri's state rate of drug-related mortality was 29.3, which was higher than the national average of 26.0.
- Between 2017 and 2021, the rate of overdose deaths in Missouri's rural areas (23.5) was 9.6% lower than the national rate. In contrast, Missouri's urban drug-related death rate (32.1) was 12.5% above the national average.
- From 2017-2021, drug overdose deaths in rural Missouri increased sharply by 71.5% while in urban areas the increase was smaller, but also robust at 52.5%.
- In 2021, Missouri hit an all-time high in drug overdose deaths for the year. Rural areas experienced a 24.0% increase over the previous year while urban areas increased by 10.7%.

**All Drug Overdose Death Rate by Year
Missouri, 2017-2021**

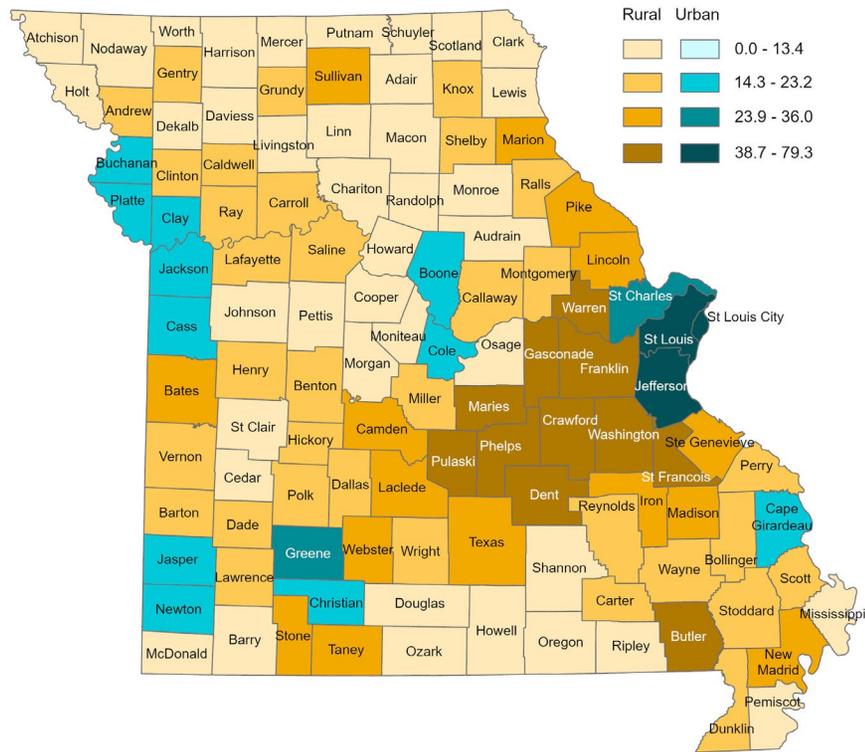


Age-adjusted rates per 100,000 population

- Drug overdoses were highest for both rural and urban counties in eastern Missouri. Dent County, just southeast of the St. Louis region, had the highest rural rate at 53.6 ranking it second highest among all counties in the state. St. Louis City, an urban county, had the highest rate (79.3) and was 2.7 times greater than the state rate.

**Drug Overdose
Dashboard**
[Health.Mo.Gov/opioids](https://www.health.mo.gov/opioids)

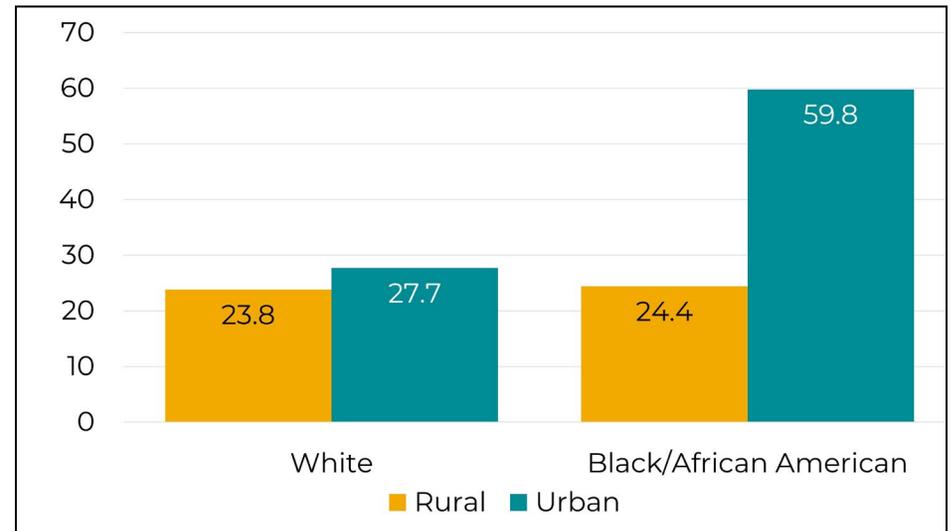
All Drug Overdose Death Rate Missouri, 2017-2021



Source: Missouri Vital Statistics Death File

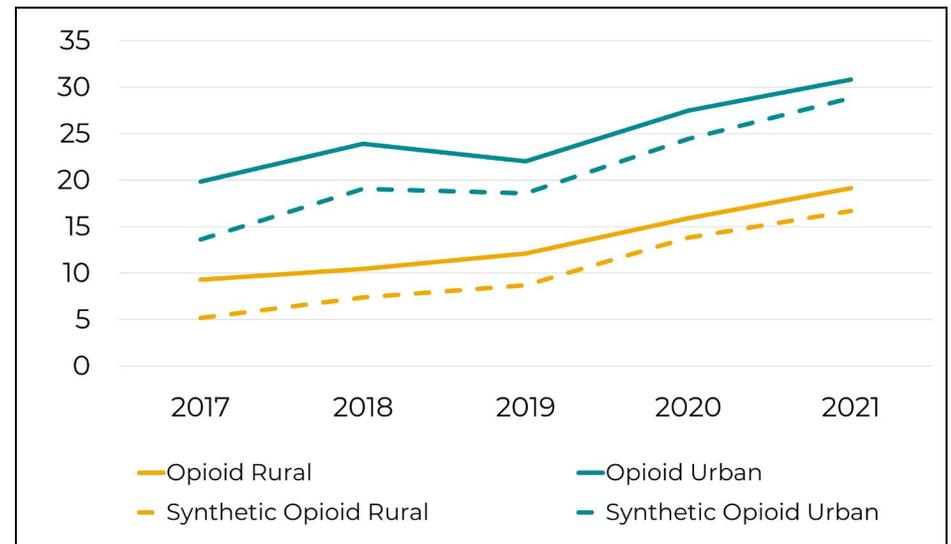
- Males were statistically more likely to overdose fatally from drugs than females in both rural and urban areas. The rate of drug overdoses for rural males (29.3) was 67.4% higher than the rural female rate at 17.5.
- In rural areas, the rates of fatal overdoses from drugs for white Missourians and Black/African American Missourians were roughly the same. However, for urban areas, the rate for Black/African American Missourians was more than double the rate for white Missourian.

All Drug Overdose Death Rate by Race Missouri, 2017-2021



Age-adjusted rates per 100,000 population

Opioid vs. Synthetic Opioid Overdose Death Rate by Year Missouri, 2017-2021

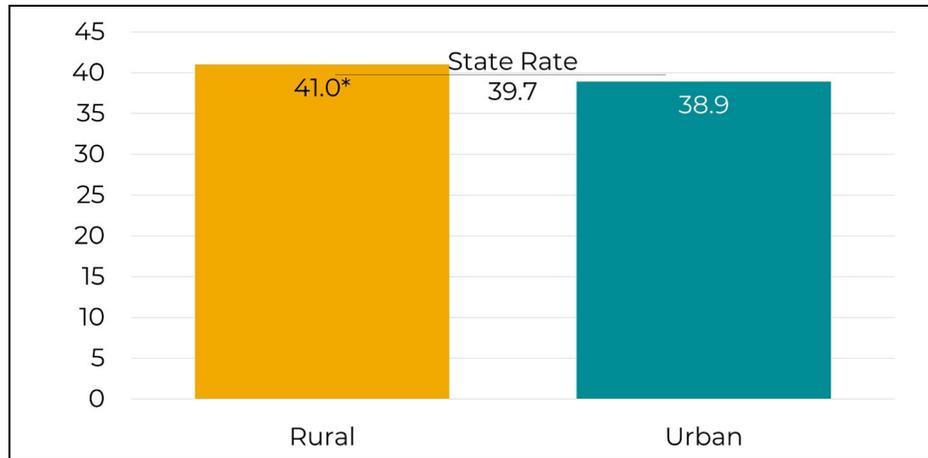


Age-adjusted rates per 100,000 population

Stroke

Stroke was the underlying cause of death for 5,979 rural Missourians during the 2017-2021 time period, making it the fifth leading cause of death for rural Missouri. In addition, the stroke death rate in rural counties was statistically significantly higher (41.0) than the rate in urban counties (38.9).

Stroke Death Rate Missouri, 2017-2021



*Indicates a value that is statistically significantly higher, using 95% confidence intervals
Age-adjusted rates per 100,000 population

Other county trends include:

- In 2017-2021, the 25 counties with the highest stroke death rates were all rural, with rates ranging from 49.1 to 68.1. Eleven of these 25 counties were located in southeastern Missouri. The urban county with the highest stroke death rate was St. Louis City, ranking 26th with a rate of 49.0.
- The rural counties of Putnam (68.1), Dunklin (65.6), and Carter (64.6) had the three highest stroke death rates.
- The three counties with the lowest stroke death rates were all rural counties located in the northwestern Missouri. Nodaway County had a stroke death rate of 21.1, followed by Grundy and Worth Counties with rates of 25.9 and 26.3 respectively.

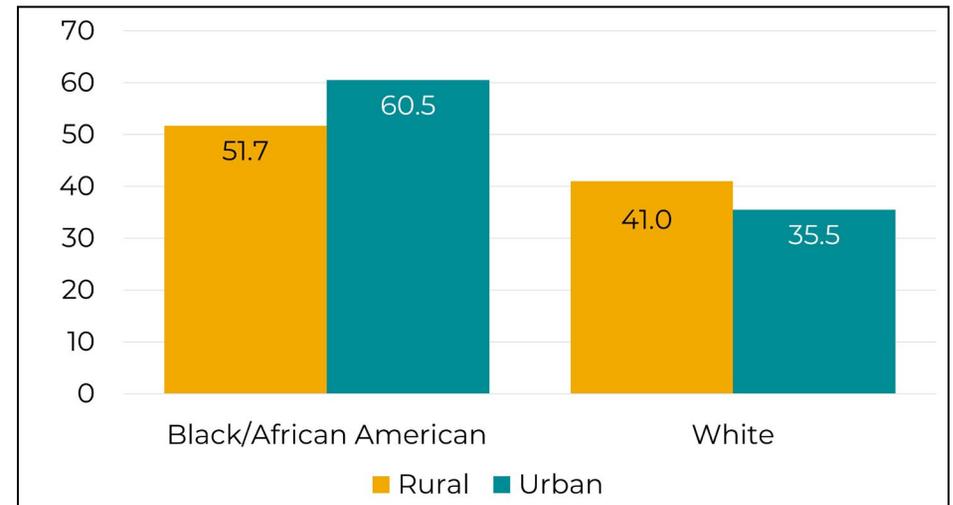
Stroke Death Rate Missouri, 2017-2021

Rank	Rural	Urban
Frequency	5,979	9,690
Rate	41.0	38.9
Percent Change (2017-2021)	+6.0%	-3.5%

Age-adjusted rates per 100,000 population

Black/African American individuals in Missouri had higher stroke death rates than white individuals. Statewide, from 2017-2021, Black/African American residents had 58.9% higher stroke death rates compared to white residents. Furthermore, Black/African American residents who live in urban counties had the highest stroke death rate at 60.5 while white individuals who live in urban counties had the lowest stroke death rate at 35.5.

Stroke Death Rate by Race Missouri, 2017-2021



Age-adjusted rates per 100,000 population

The Healthy People 2030 goals set a target of a 10% reduction in stroke deaths to 33.4 from the baseline rate of 37.1 in 2018.²⁶ As of 2021, both rural and urban counties were greater than this target rate, however, urban counties have seen a reduction in their death rate of approximately 3.5%. Rural counties are not moving in the desired direction as the stroke death rates have increased by 6.0% since 2017.

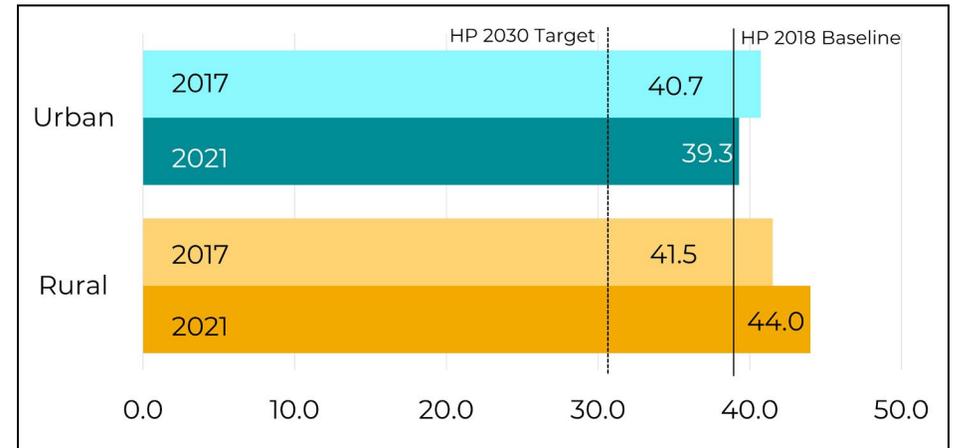
The chance of having a stroke approximately doubles every 10 years after the age of 55.³⁵ Looking at individuals 50 years and older in Missouri, Black/African American individuals in this age range consistently had a higher stroke death rate over the last five years with a death rate of 177.0 in 2021. At the county level, Black/African American individuals 50 years of age and older in urban counties have the highest stroke death rate at 179.9 followed by white individuals 50 years of age or older in rural counties at 149.2.

According to Missouri BRFSS data collected in 2022, 3.5% of Missouri adults had a health professional tell them that they had a stroke. Many health conditions including high blood pressure (hypertension), high cholesterol, heart disease, diabetes, and obesity can increase an individual's risk of having a stroke.³⁶

- According to 2022 Missouri BRFSS data, a statistically significantly higher percentage of individuals in rural counties reported having hypertension (40.3%), than in urban counties (36.2%). (This does not include gestational hypertension/preeclampsia or borderline hypertension).
- Heavy alcohol consumption was also higher in rural areas than in urban areas (9.3% vs. 7.8% respectively). Alcohol consumption can elevate blood pressure, thus leading to an increased risk of stroke.
- According to the 2022 Missouri County-Level Study, an estimated 74.5% of individuals in urban counties were currently taking medicine to control blood pressure compared to 77.8% in rural counties.

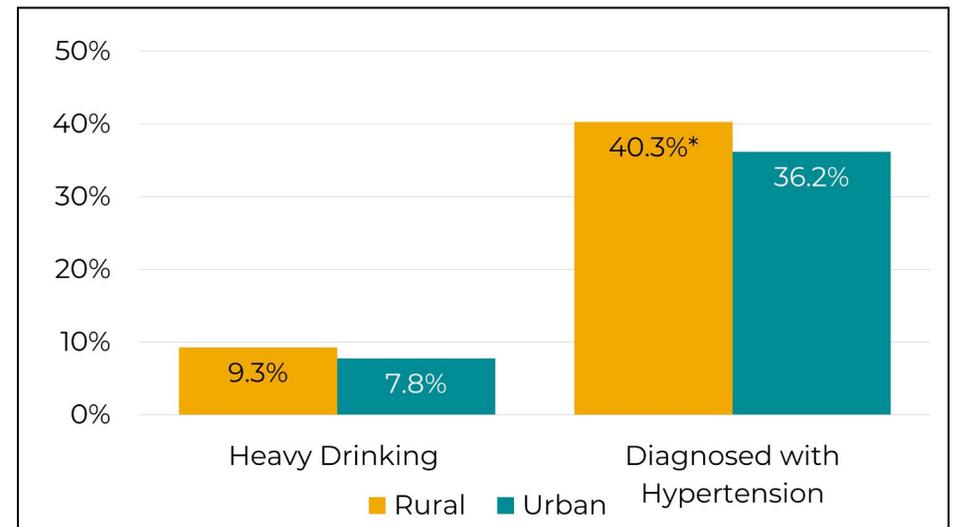
Maintaining good blood pressure control and cholesterol levels, as well as limiting intake of alcohol and tobacco/nicotine products, can help lower the risk of stroke.³⁶

Stroke Death Rate Missouri, 2017-2021



Age-adjusted rates per 100,000 population

Stroke Risk Factors Missouri BRFSS, 2022



Source: Missouri Behavioral Risk Factor Surveillance System (BRFSS)

*Indicates a value that is statistically significantly higher, using 95% confidence intervals

Results are based on a response of "yes" to the questions "Have you ever been told by a medical professional you have high blood pressure?" and for men, "Do you have more than 14 drinks per week?" or for women, "Do you have more than 7 drinks per week?"

Alzheimer's Disease

Alzheimer's disease (AD) was the underlying cause of death for 4,779 rural Missourians during the 2017-2021 time period, making it the sixth leading cause of death for rural Missouri. This is the only leading cause of death where urban Missouri experienced a higher death rate when compared to rural Missouri (34.2 vs. 32.2 respectively). AD is the most common type of dementia that affects memory, thinking, and behavior.³⁷ As time progresses, the ability to handle even simple tasks deteriorates. Physicians commonly diagnose AD using medical history, mental status tests, physical and neurological exams, diagnostic tests, and brain imaging.³⁸ While there is extensive research on AD and how it affects the brain, there is still no cure.

**Alzheimer's Disease Death Rate
Missouri, 2017-2021**

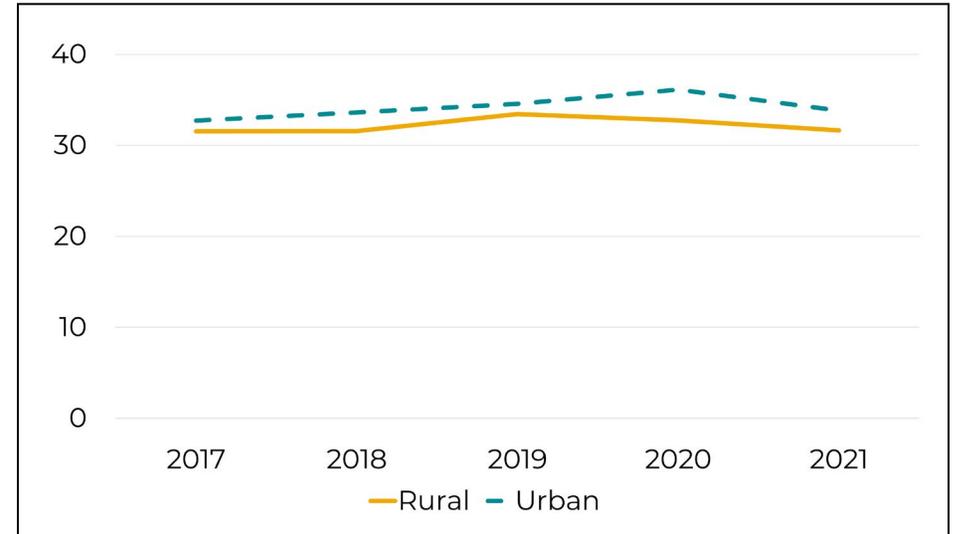
Rank	Rural	Urban
Frequency	4,779	8,578
Rate	32.2	34.2
Percent Change (2017-2021)	+0.3%	+3.3%

Age-adjusted rates per 100,000 population

Historically, rural counties have had higher rates of AD than urban counties, until 2016 when the urban county rate surpassed the rural rate. Since 2016, urban rates have continued to remain higher, peaking in 2020 with an all-time high of 36.1. Rural rates have continued to steadily decline since their peak in 2019 with a rate of 33.4. Both rural and urban areas have experienced declines between 2020 and 2021.

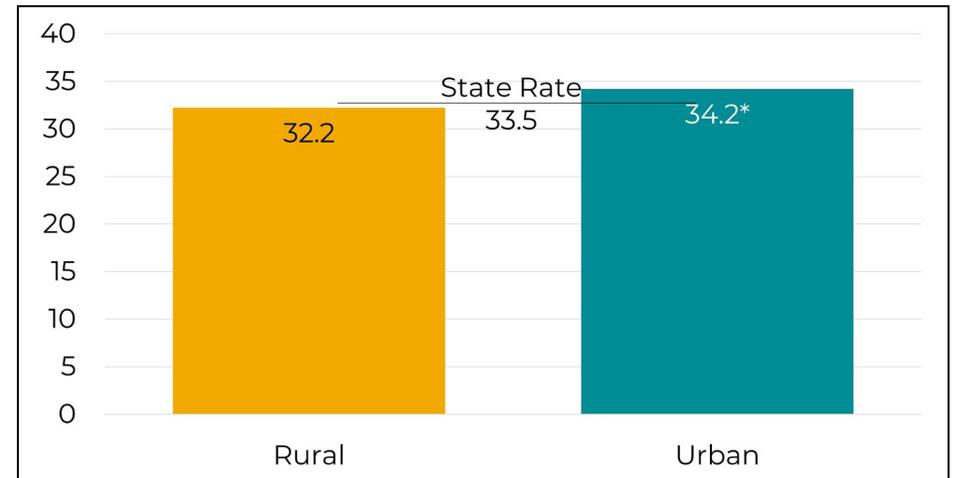
- Both rural and urban counties have seen a small percent increase in rate when comparing 2017 to 2021. However, that masks some dramatic shifts over the past decade in AD mortality. When comparing 2011 rates with 2021, rural rates decreased 3%, but urban rates increased 40.3%.

**Alzheimer's Disease Death Rate by Year
Missouri, 2017-2021**



Age-adjusted rates per 100,000 population

**Alzheimer's Disease Death Rate
Missouri, 2017-2021**



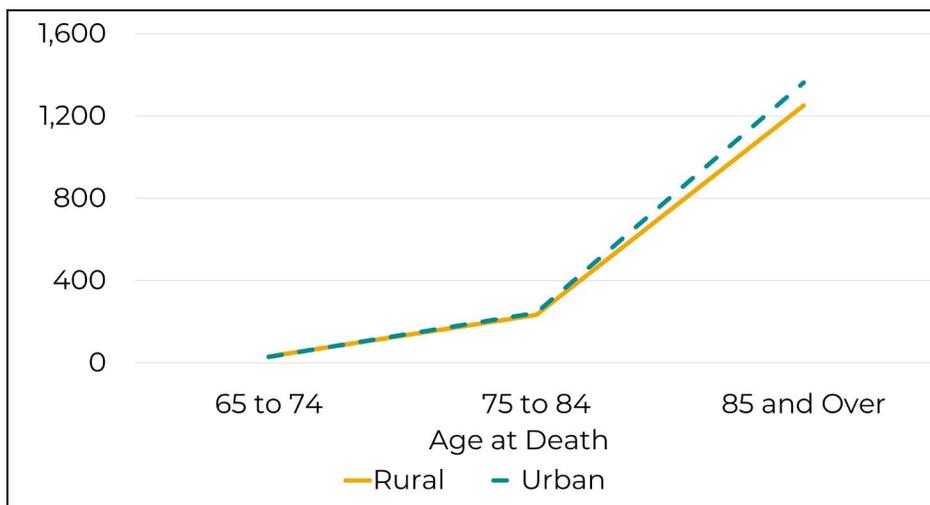
*Indicates a rate that is statistically significantly higher, using 95% confidence intervals
Age-adjusted rates per 100,000 population

- Females generally have higher rates of death due to AD, with urban females having the highest rate of 37.8. Rural females trail close behind (36.8) followed by urban males (28.2). Rural males have the lowest rate of 25.4. Rural females were 45% more likely to die from AD than rural males.
- White urban residents had the highest rates of AD deaths (34.7), followed closely by Black/African American urban residents (33.0) and white rural residents (32.5). Black/African American rural residents had the lowest rate of 26.0.
- The 10 counties with the highest rates of AD deaths were all rural counties. New Madrid County had the highest rate (71.4), followed by Carter County (68.8) and Mississippi County (59.8). Jefferson County held the highest rate of the urban counties, ranking 11th with a rate of 49.6.
- Deaths due to AD primarily occur in those who are 65 and older. AD is a progressive disease, so as the individual continues to age, AD continues to worsen. In both rural and urban communities, those aged 65 and older made up 99% of all AD deaths during the 2017-2021 time period.

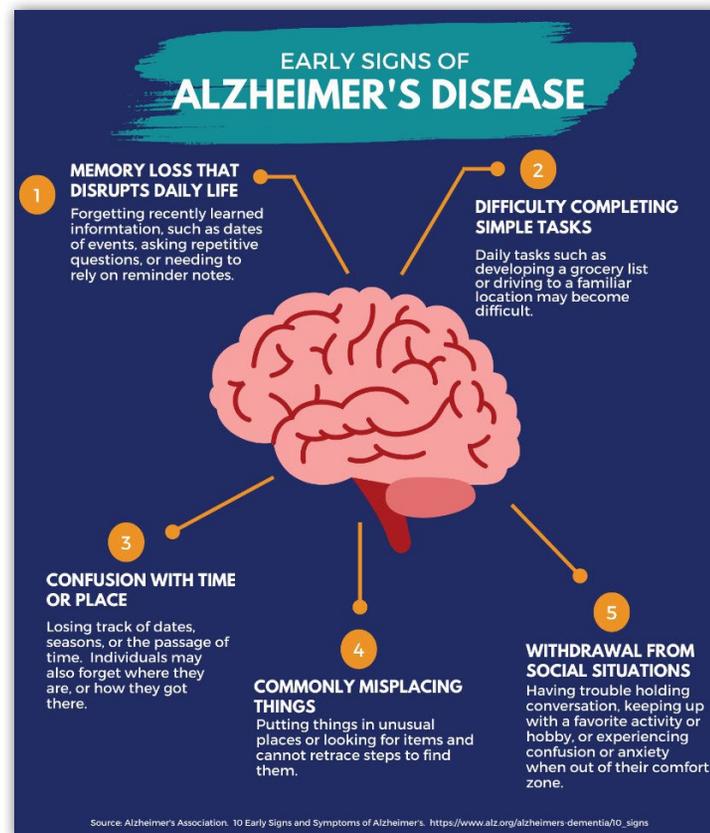
- When comparing age groups within rural and urban counties, there is a dramatic increase in deaths for the 85 and older age group when compared to both the 65-74 and 75-84 age groups. Rural and urban Missourians 85 years and older are over five times more likely to die from AD than those who are age 75-84.

Education on early signs and symptoms of AD is crucial for obtaining an early diagnosis. Early diagnosis is important so that the individual can assist with the care plan for their future. While there is no cure for AD, medical intervention early on may help slow the progression of the disease. Research has shown that lifestyle habits such as regular physical activity and strong social connections can help improve intellectual activity, and could help lower the risk of AD in the future.

Alzheimer's Disease Death Rate for 65+ Missouri, 2017-2021



Source: Missouri Vital Statistics Death File

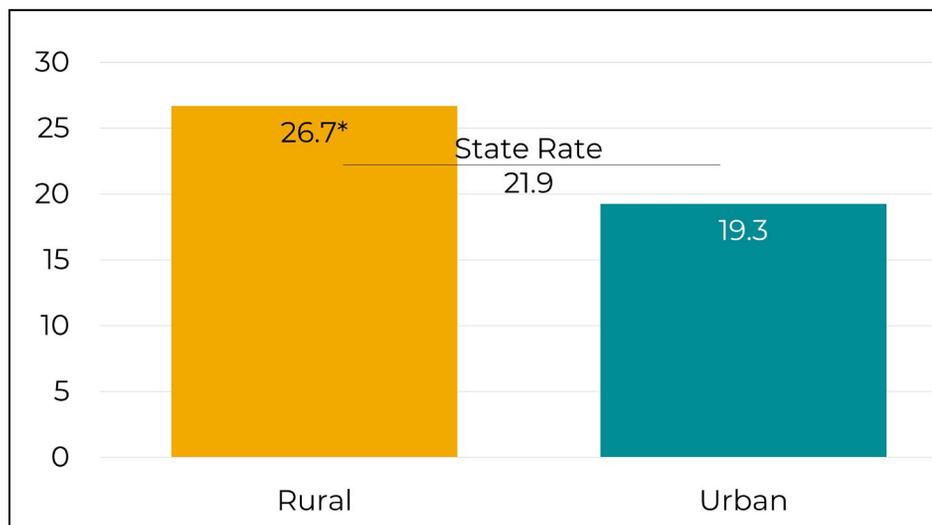


Source: Alzheimer's Association. 10 Early Signs and symptoms of Alzheimer's. https://www.alz.org/alzheimers-dementia/10_signs.

Diabetes

Diabetes was the underlying cause of death for 3,812 rural Missourians during the 2017-2021 time period, making it the seventh leading cause of death for rural Missouri. Several risk factors, including high blood pressure, physical inactivity, smoking or even certain SDOH such as lack of access to healthy foods or increased chronic stress due to poverty often precede a diabetes diagnosis.^{39,40} While death rates due to diabetes increased for both rural and urban areas from 2017 to 2021, rural Missouri experienced a greater percent increase of 18.7%.

Diabetes Death Rate Missouri, 2017-2021



*Indicates a rate that is statistically significantly higher, using 95% confidence intervals
Age-adjusted rates per 100,000 population

Diabetes Death Rate Missouri, 2017-2021

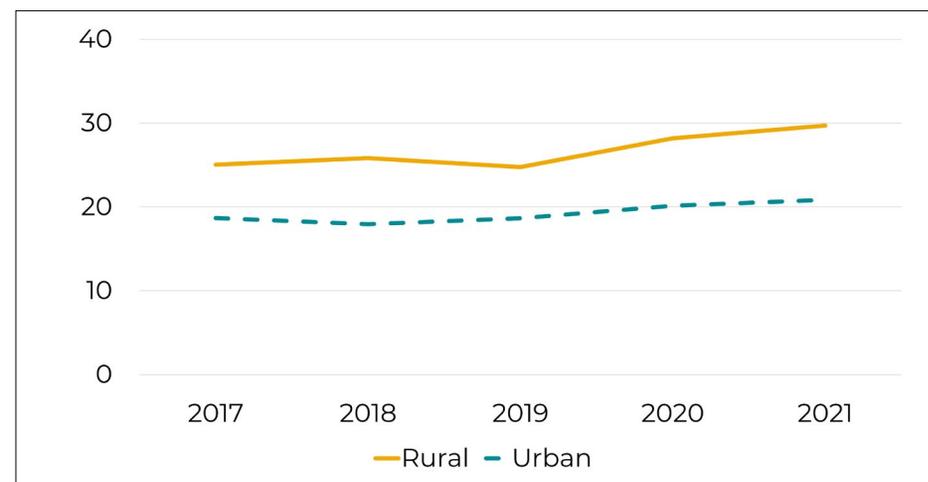
Rank	Rural	Urban
Frequency	3,812	4,772
Rate	26.7	19.3
Percent Change (2017-2021)	+18.7%	+11.7%

Age-adjusted rates per 100,000 population

Over the 5-year time period, both rural and urban populations saw an increase in diabetes death rates, with rural areas having consistently higher rates for all five years. The rural rate of 26.7 was statistically significantly higher than the urban rate of 19.3.

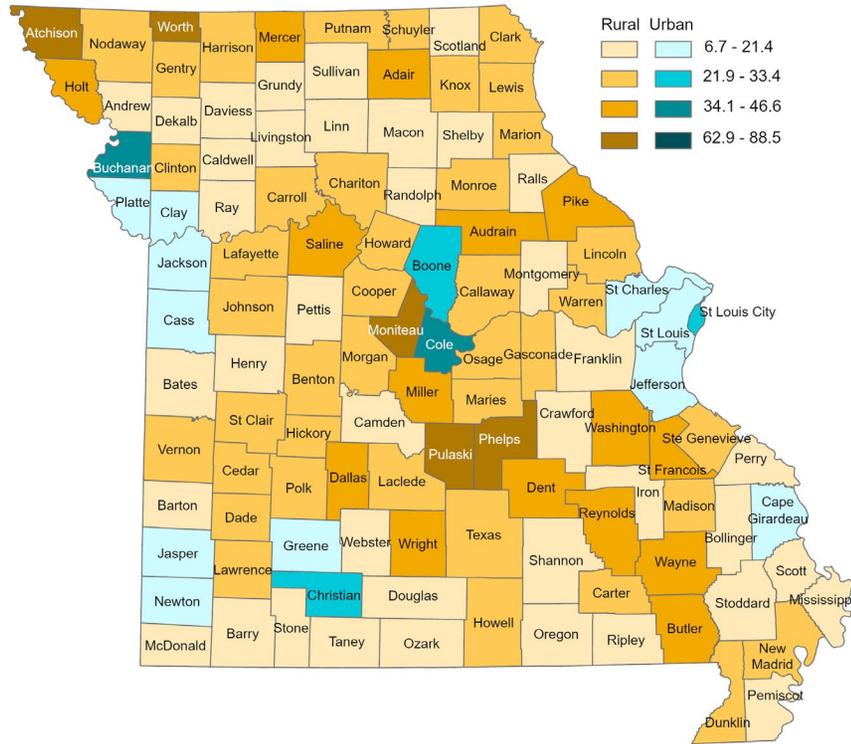
Diabetes death rates in rural areas have steadily risen since 2019, reaching a new high of 29.7 in 2021.

Diabetes Death Rate by Year Missouri, 2017-2021



Age-adjusted rates per 100,000 population

Diabetes Death Rate Missouri, 2017-2021

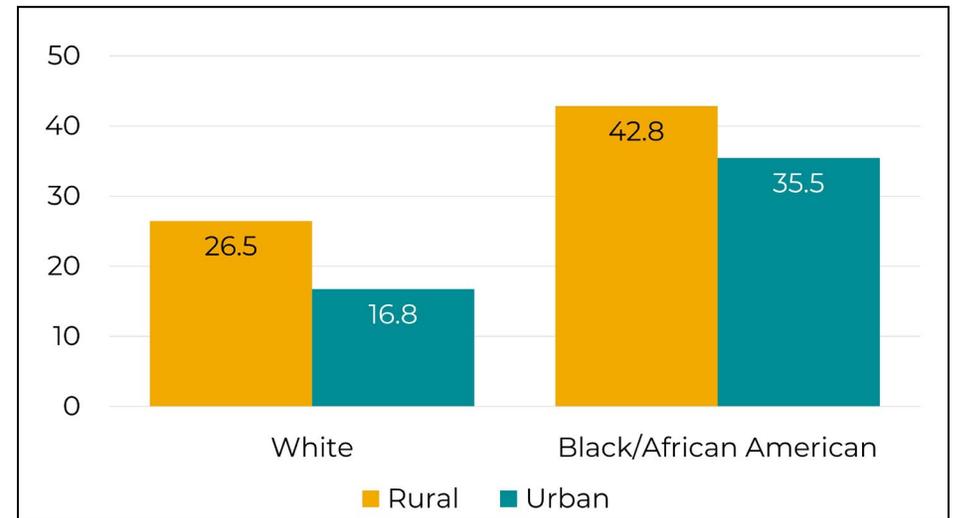


Source: Missouri Vital Statistics Death File

- Of the counties with the 10 highest rates, nine were rural, with Moniteau County having the highest rate of 88.5. Four out of the 10 were located in the central region of the state.
- Males living in rural Missouri experienced higher rates of death due to diabetes (32.1) than rural females (21.8) and urban males (24.8). Urban females experienced the lowest death rate for this cause of death (14.8).

- Black/African American Missourians in both rural and urban areas experienced the highest diabetes-related death rates when compared to other races. Rural Black/African Americans had the highest death rate of 42.8, which was significantly higher than the rural white rate (26.5) and over 2.5 times higher than the rate of white urban Missourians (16.8).

Diabetes Death Rate by Race Missouri, 2017-2021

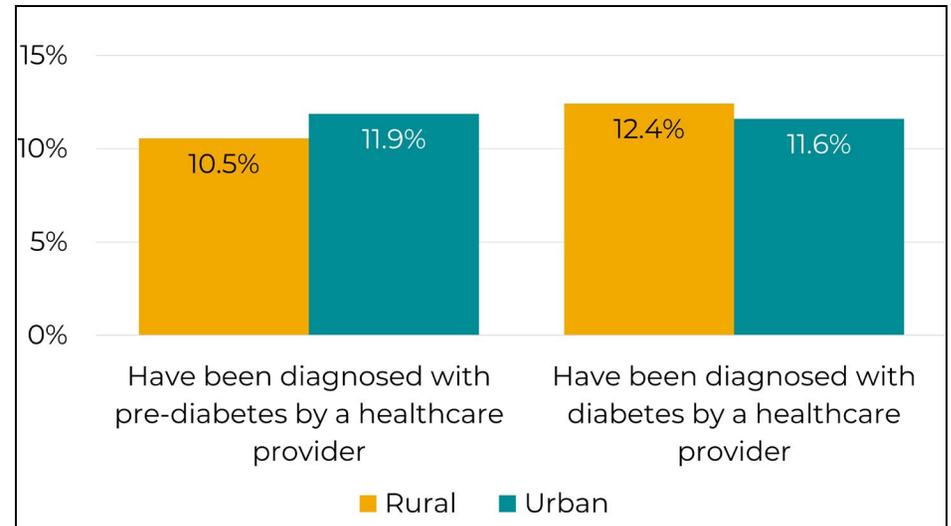


Age-adjusted rates per 100,000 population

Pre-diabetes is when an individual's blood sugar levels are slightly elevated, but not enough to be diagnosed with type 2 diabetes. According to the Centers for Disease Control and Prevention (CDC), approximately 96 million American adults have pre-diabetes, but more than 80% do not know they do.⁴¹ Data from Missouri's BRFSS shows that rural counties had a lower percent of diagnosis of pre-diabetes by a health care provider when compared to urban counties. While this difference was not significant, it still suggests that fewer rural Missourians are receiving an early diagnosis. The inverse is true when asking whether an individual received a diagnosis of diabetes by a health care provider. BRFSS results showed rural counties had a higher percentage of persons diagnosed with diabetes when compared to their urban counterparts.

Several factors may contribute to the higher rates of diabetes deaths in rural Missouri. Health literacy and health education about risk factors and management of diabetes are important aspects to care. Missouri BRFSS revealed that 15.3% of rural Missourians who had diabetes took a course or class on diabetes self-management within the last two years, whereas 17.8% of urban Missourians with diabetes took a course. Rural communities historically have had smaller percentages of individuals who completed advanced education. They also have fewer community health workers per 100,000 population and have more barriers when accessing health care providers. These are all opportunities where individuals could receive education on the risks of diabetes, as well as early signs and symptoms. In some cases, early adoption of lifestyle change could prevent an individual from ever developing diabetes.

Pre-Diabetes vs. Diabetes Diagnosis Missouri BRFSS, 2022



Source: Missouri Behavioral Risk Factor Surveillance System (BRFSS)
Results are based on the response "Yes" to the question "Ever told you had pre-diabetes or diabetes?"



Kidney Disease

Kidney disease was the underlying cause of death for 3,018 rural Missourians during the 2017-2021 time period, making it the eighth leading cause of death for rural Missouri. CDC has identified kidney disease as a hidden public health crisis, affecting an estimated 1 in 7 adults. This translates to 35.5 million people estimated to have kidney disease.⁴² The most common risk factors for kidney disease in most adults are diabetes and high blood pressure. Some other risk factors include heart disease, obesity, a family history of chronic kidney disease, inherited kidney disorders, past damage to the kidneys, and older age.⁴³

Significantly higher rates of kidney disease-related deaths were observed in rural areas (20.9) compared to urban areas (18.9).

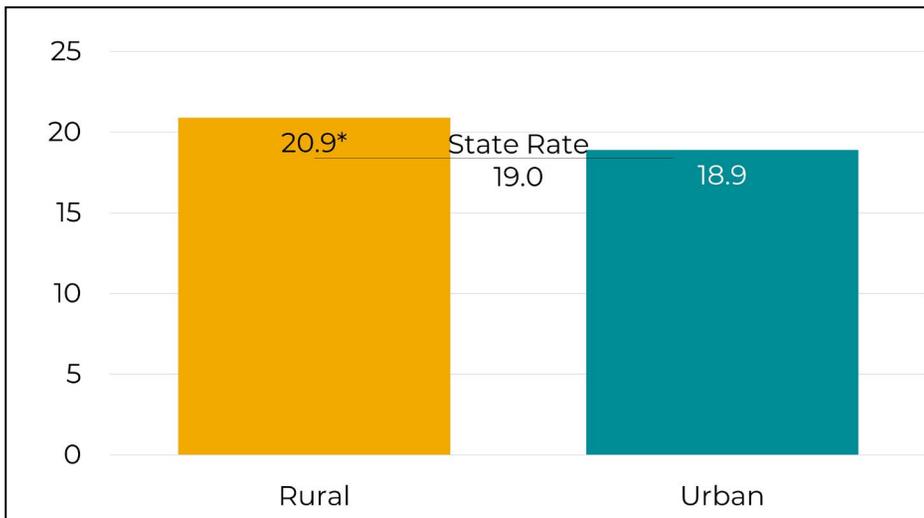
**Kidney Disease Death Rate
Missouri, 2017-2021**

Rank	Rural	Urban
Frequency	3,018	4,705
Rate	20.9	18.9
Percent Change (2017-2021)	+20.9%	-9.5%

Age-adjusted rates per 100,000 population

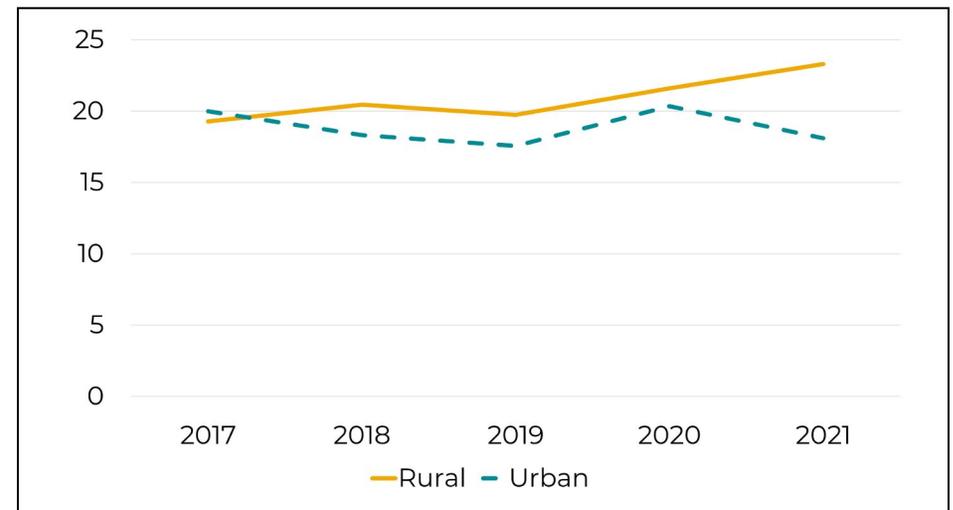
Statewide, kidney disease death rates have remained stable over the last 5 years with rural rates running just slightly higher than urban areas. However, there have been fluctuations during that time span. Urban rates were higher in 2017 but from 2018-2021 the reverse was true with rural rates being higher. In 2021, the rural rate was 28.7% higher than the urban rate, reflecting the greatest disparity in this period.

**Kidney Disease Death Rate
Missouri, 2017-2021**



*Indicates a rate that is statistically significantly higher, using 95% confidence intervals
Age-adjusted rates per 100,000 population

**Kidney Disease Death Rate by Year
Missouri, 2017-2021**

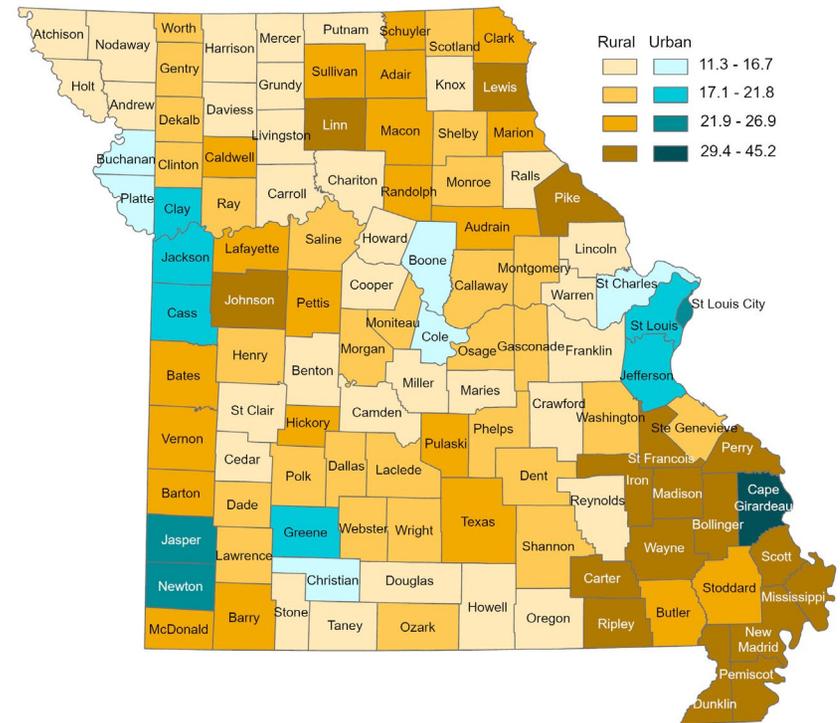


Age-adjusted rates per 100,000 population

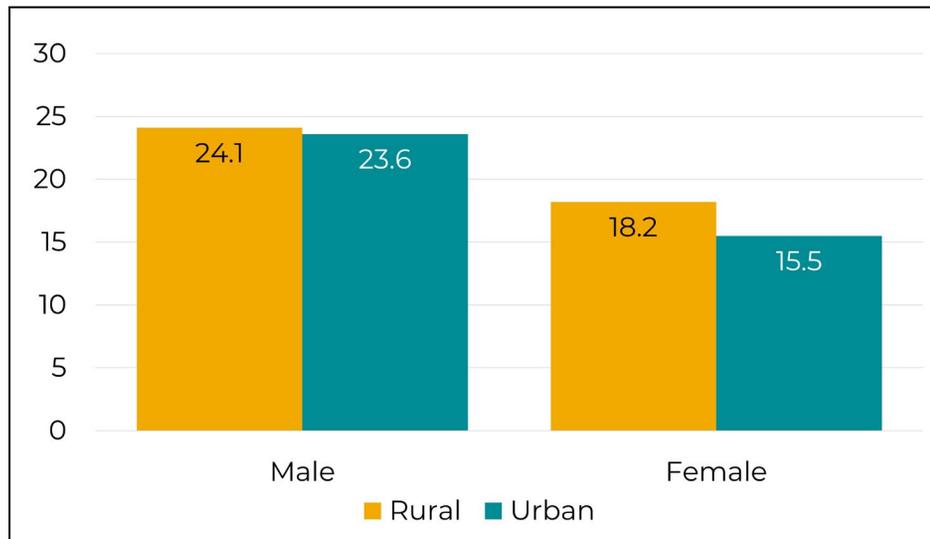
Other mortality trends related to kidney disease include:

- The 31 counties with the highest death rates from kidney disease were rural. Jasper County had the highest kidney disease death rate among urban counties at 24.3.
- Both rural and urban areas experienced higher kidney disease death rates among Black/African American residents, with rates more than double those of white residents. Among the different demographic groups, rural Black/African American residents had the highest death rate (43.3), while urban white residents had the lowest rate (16.4).
- Kidney disease death rates were significantly higher for males in both rural and urban areas. Males and females in rural areas had higher kidney disease death rates compared to their urban counterparts. Rural males had the highest death rate (24.1), while urban female residents had the lowest (15.5).

Kidney Disease Death Rate Missouri, 2017-2021



Kidney Disease Death Rate by Sex Missouri, 2017-2021



Age-adjusted rates per 100,000 population

Source: Missouri Vital Statistics Death File

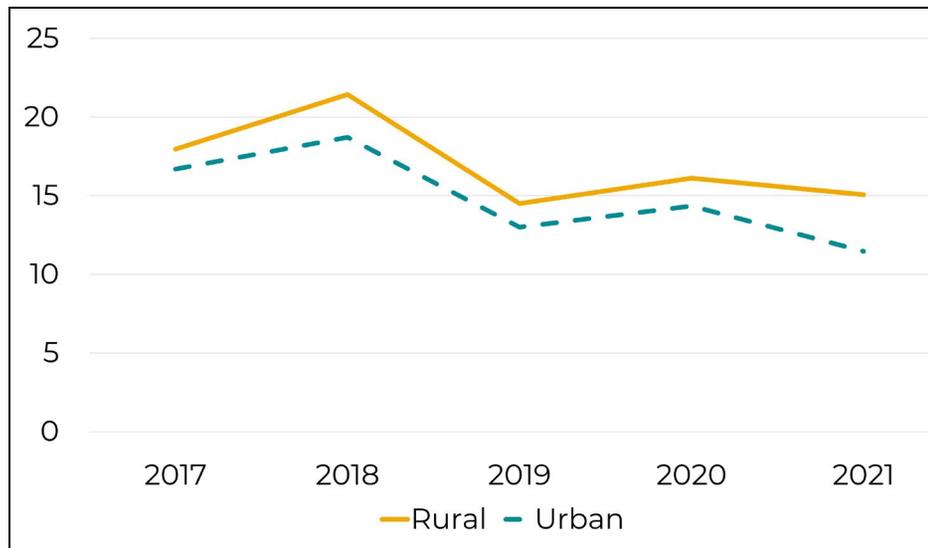
Pneumonia and Influenza

Pneumonia and influenza was the underlying cause of death for 2,467 rural Missourians during the 2017-2021 time period, making it the ninth leading cause of death for rural Missouri. The death rate attributed to pneumonia and influenza across all of Missouri was 14.9.

Rural areas experienced 25.0% higher death rates for pneumonia and influenza compared to urban areas (17.0 vs. 13.6). Some notable statistics reveal that:

- The overall death rate in the state decreased by 31.3% since 2017. However, the decline was more rapid in urban areas where rates declined by 40.9% compared to rural locations where the decline was only 16.1%.

**Pneumonia and Influenza Death Rate by Year
Missouri, 2017-2021**



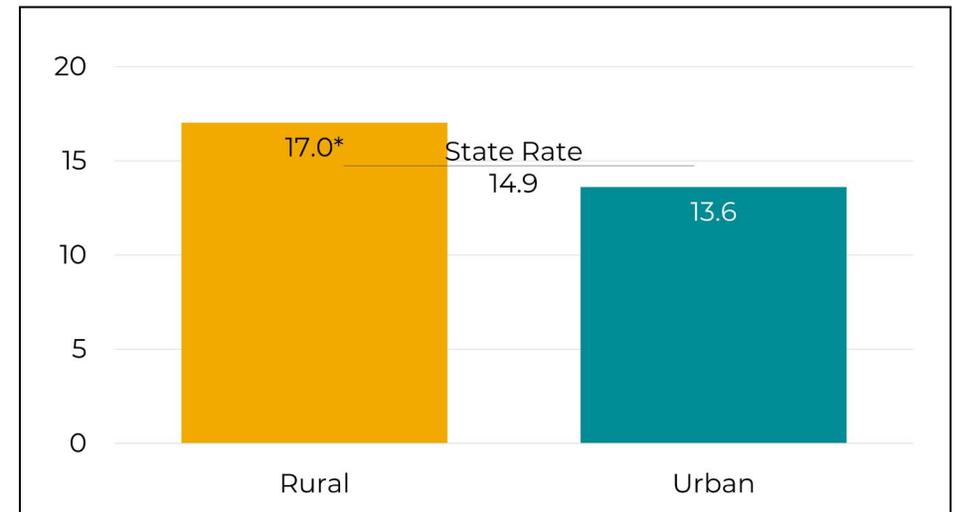
Age-adjusted rates per 100,000 population

**Pneumonia and Influenza Death Rate
Missouri, 2017-2021**

Rank	Rural	Urban
Frequency	2,467	3,374
Rate	17.0	13.6
Percent Change (2017-2021)	-16.1%	-40.9%

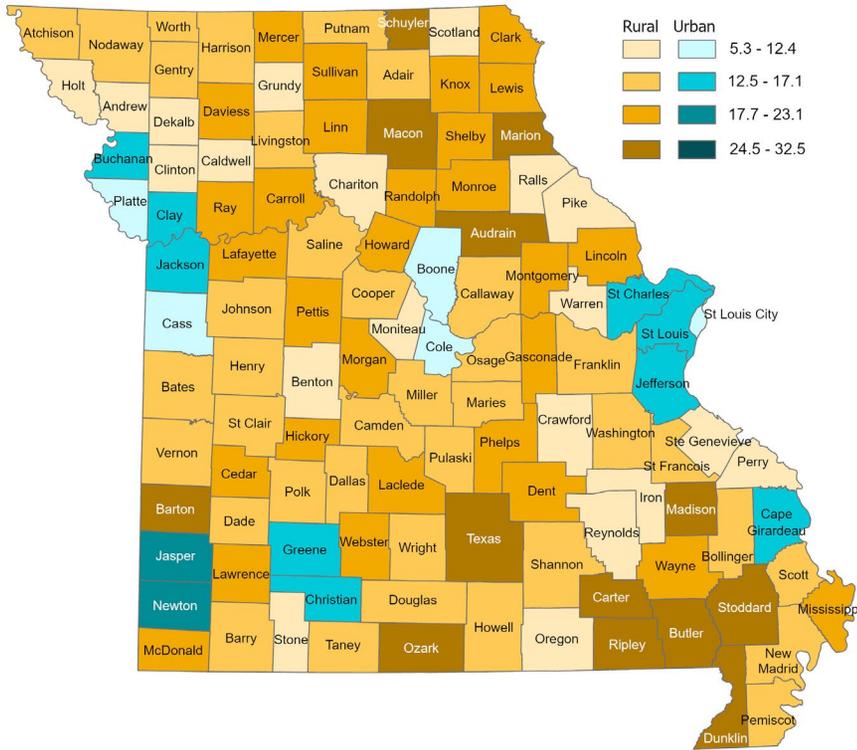
Age-adjusted rates per 100,000 population

**Pneumonia and Influenza Death Rate
Missouri, 2017-2021**



*Indicates a rate that is statistically significantly higher, using 95% confidence intervals
Age-adjusted rates per 100,000 population

Pneumonia and Influenza Death Rate Missouri, 2017-2021



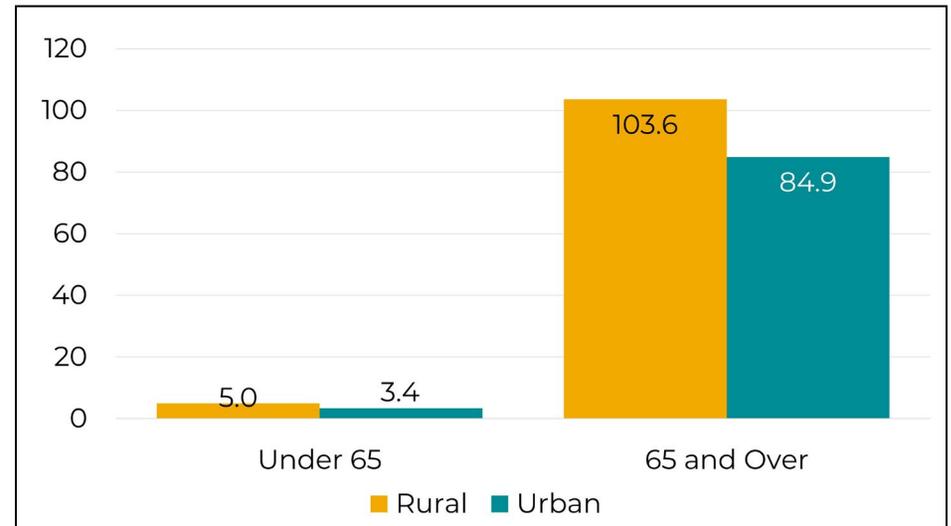
Source: Missouri Vital Statistics Death File

- Throughout 2017-2021, rural counties had 25 out of the 26 highest pneumonia and influenza death rates in Missouri. The only urban county in the top 26 was Jasper County (23.1), which ranked 14th. The rural county with the highest pneumonia and influenza disease mortality was Butler County with a rate of 32.5. Rural counties with high rates were dispersed geographically across the state.

According to the National Institute on Aging, pneumonia and influenza complications are more likely to affect individuals aged 65 and older; people with certain medical conditions such as asthma, kidney disease, diabetes, heart disease or stroke; and older adults living in nursing home and long-term care facilities. Furthermore, older adults are more vulnerable to pneumonia and influenza infection as their immune system weakens as they age and they are more likely to have other health conditions.⁴⁴

- Death rates were significantly higher for individuals aged 65 and over in both rural and urban areas compared to those under the age of 65. Specifically, individuals aged 65 and over in rural areas experienced the highest death rate at 103.6, while their urban counterparts had a death rate of 84.9.

Pneumonia and Influenza Death Rate by Age Missouri, 2017-2021



Source: Missouri Vital Statistics Death File

Suicide

Suicide was the underlying cause of death for 2,153 rural Missourians during the 2017-2021 time period, making it the tenth leading cause of death for rural Missouri. Suicides are a growing public health concern in Missouri, and the United States. According to the CDC, suicide and suicide attempts can cause physical and emotional distress for the person attempting to commit suicide as well as their friends and family.⁴⁵

Suicide Death Rate Missouri, 2017-2021

Rank	Rural	Urban
Frequency	2,153	3,657
Rate	21.0	17.4
Percent Change (2017-2021)	+5.2%	-1.2%

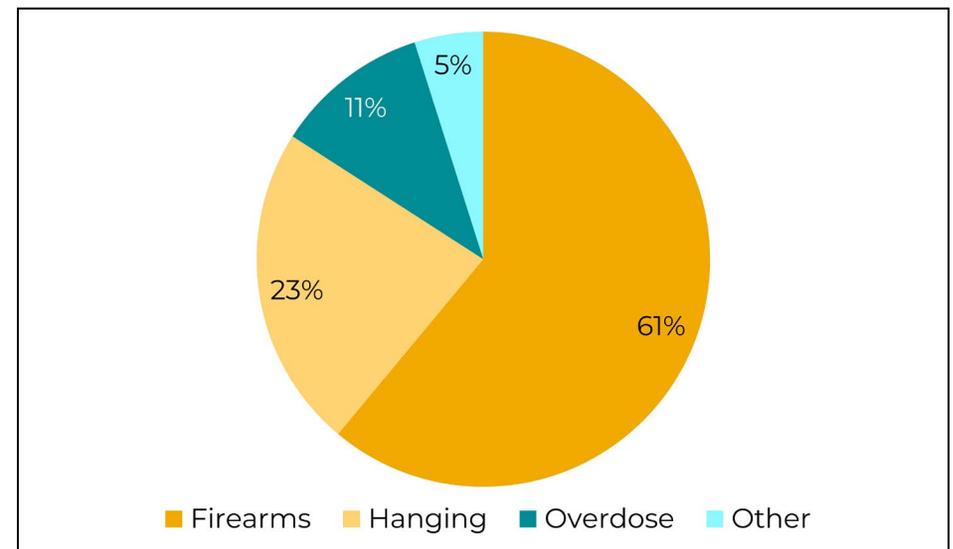
Age-adjusted rates per 100,000 population

988 IN MISSOURI
 There is hope.
988 IS A DIRECT THREE-DIGIT LIFELINE CONNECTING MISSOURIANS TO CRISIS COUNSELORS 24/7

Top 3 mechanisms for Suicide in Missouri, 2017-2021



Suicide Causes of Death Missouri, 2017-2021

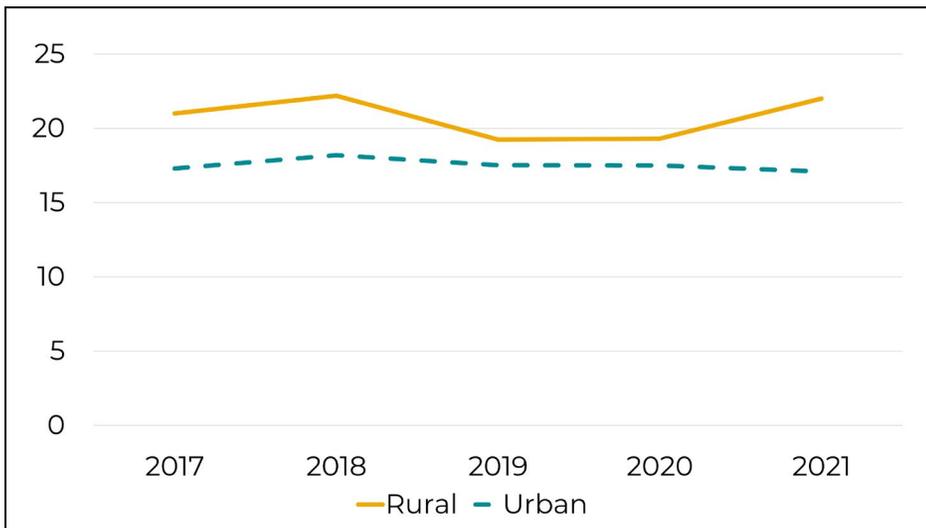


Source: Missouri Vital Statistics Death File

The rural suicide rate of 21.0 was significantly higher than the urban rate of 17.4. Both rates were higher than the Healthy People 2030 target of 12.8 suicides per 100,000 population.⁴⁶ Other suicide trends include:

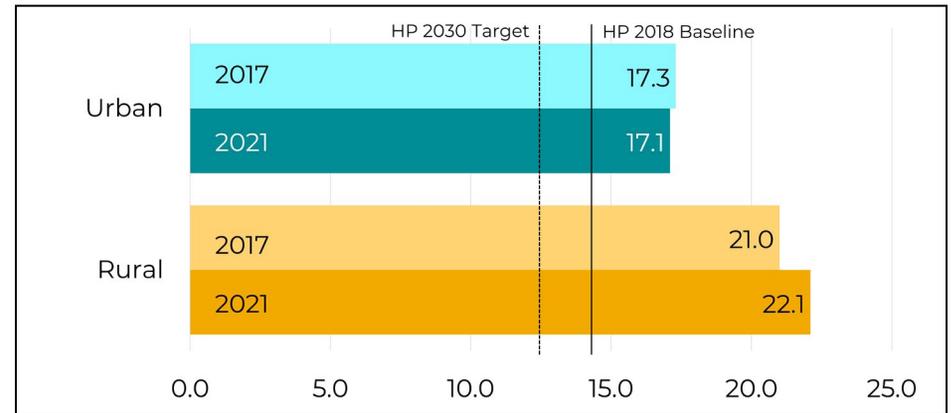
- For all years between 2017 and 2021, the rural and urban suicide rates were higher than the 2030 Healthy People goal of 12.8.
- Between 2017 and 2021, the rural suicide rate was above the urban rate every year. The disparity was greatest in 2021, when the rural rate (22.1) was 29.2% higher than the urban rate (17.1).

**Suicide Death Rate by Year
Missouri, 2017-2021**



Age-adjusted rates per 100,000 population

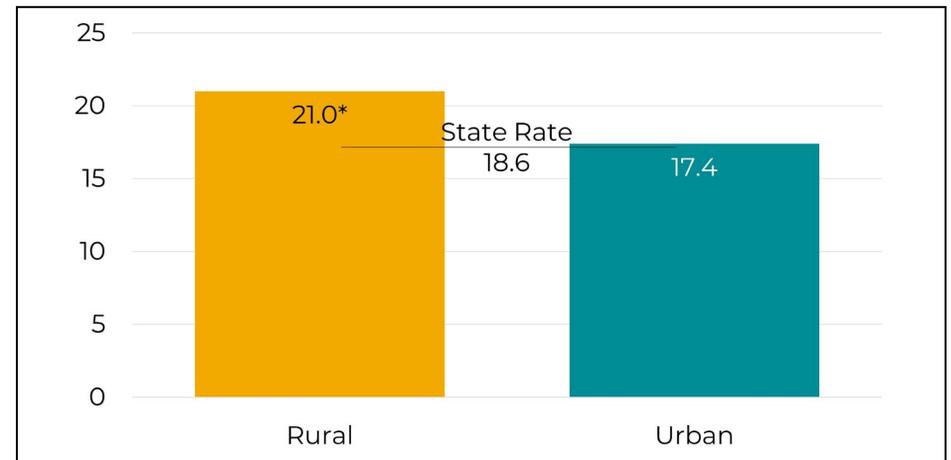
**Suicide Death Rate
Missouri, 2017-2021**



Age-adjusted rates per 100,000 population

- In 2021, rural suicide rates were 72.6% higher than the Healthy People 2030 target, while urban suicide rates were 32.8% above the target threshold.
- Rural counties experienced an increase of 5.2% in suicide death rates while urban counties experienced a slight decrease of 1.2% between 2017 and 2021.

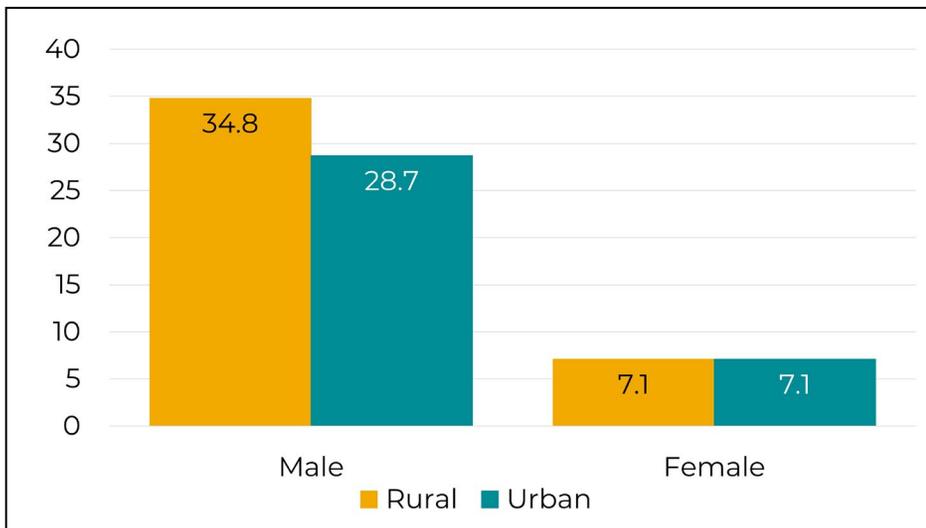
**Suicide Death Rate
Missouri, 2017-2021**



*Indicates a rate that is statistically significantly higher, using 95% confidence intervals
Age-adjusted rates per 100,000 population

- Suicides in both rural and urban Missouri counties were much higher for males compared to females. In addition, the rural male suicide rate of 34.8 was significantly higher than the urban male rate of 28.7 for 2017-2021. In contrast, the female rate was the same for rural and urban areas at 7.1.

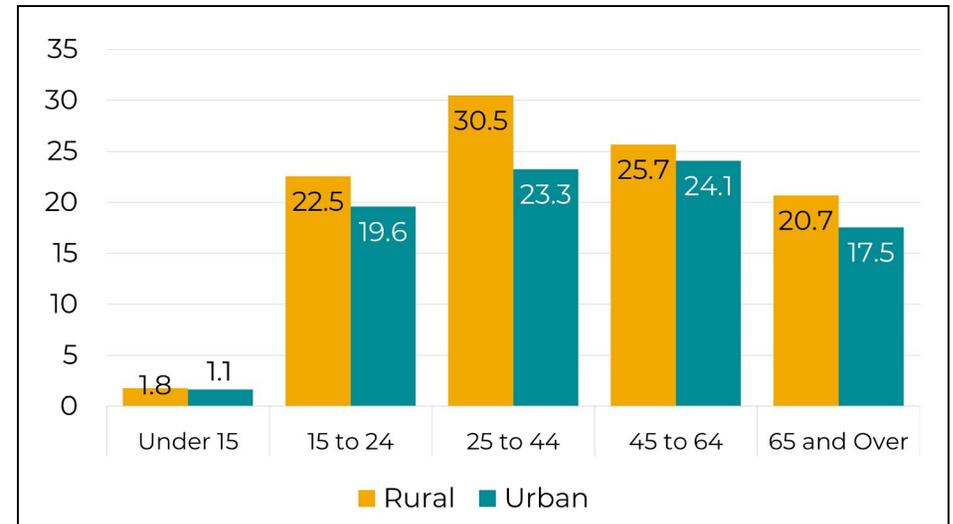
**Suicide Death Rate by Sex
Missouri, 2017-2021**



Age-adjusted rates per 100,000 population

- Across all age groups, the rates were higher in rural areas compared to their urban counterparts. The 25-44 age group had the highest rate of suicide in rural counties (30.5), while for urban counties the 45-64 age group had the highest rate (25.7).
- The 24 highest rates of suicide mortality were in rural counties.
- The five counties with the highest suicide rates were Mercer, Caldwell, Ozark, Sullivan, and Montgomery Counties. Mercer County in northern Missouri had the highest suicide rate at 47.5. The others in the top five all had rates above 34.0.

**Suicide Death Rate by Age
Missouri, 2017-2021**



Source: Missouri Vital Statistics Death File

There are many warning signs for someone with suicidal ideation. The National Institute of Mental Health (NIMH) mentions some of the key warning signs:

- Talking about wanting to hurt or kill themselves.
- Talking about hopelessness or having no reason to live.
- Talking about being a burden to others.
- Giving away important possessions.

It is important not to ignore these signs of extreme distress because suicide is not a normal response to stress. The NIMH lists five key steps to help someone with suicidal thoughts:

- Ask "Are you thinking about harming yourself?"
- Keep the person safe by limiting access to dangerous items.
- Be there for them emotionally and acknowledge their feelings.
- Help them connect to hotlines and other helpful resources.
- Stay connected with them and always follow up.⁴⁷

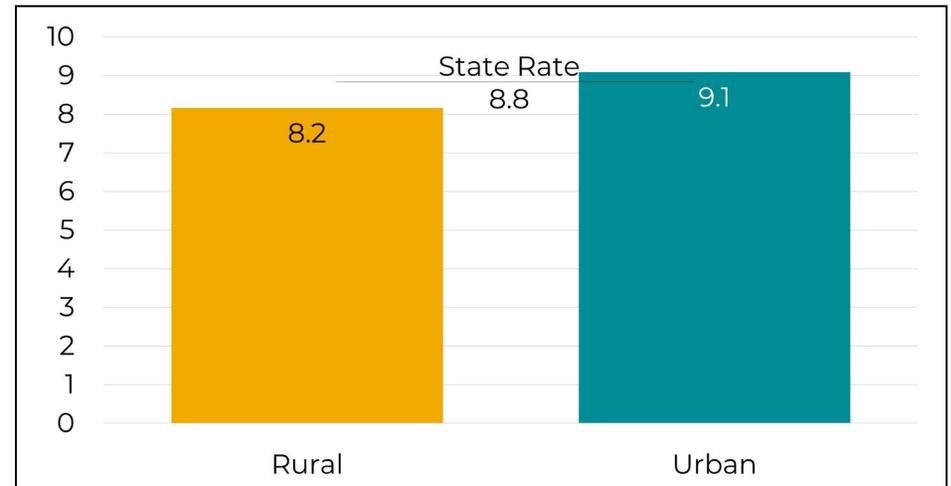
MATERNAL, INFANT AND CHILD HEALTH

Maternal, infant, and child health (MCH) indicators provide an important source of information about the well-being of some of Missouri's most vulnerable populations. These indicators include information about pregnancy, childbirth, newborn care and postpartum care. MCH indicators can also be a good gauge of the overall health status for a community.

At 37 weeks, pregnancies are considered full-term with the average baby weighing between 3,000-4,000 grams (6-8 pounds). Pregnancies can also result in a preterm birth (defined as a baby born less than 37 weeks gestation) or low birth weight (defined as births weighing less than 2,500 grams or 5.5 pounds). These two indicators have a strong association with each other. From 2017-2021, nearly 70.0% of infants born with a low birth weight in Missouri were also born prematurely. There were regional differences, however, most indicators showed better health outcomes for both prematurity and birth weight in rural counties compared to urban.



**Low Birth Weight Rate
Missouri, 2017-2021**



Rates per 1,000 live births

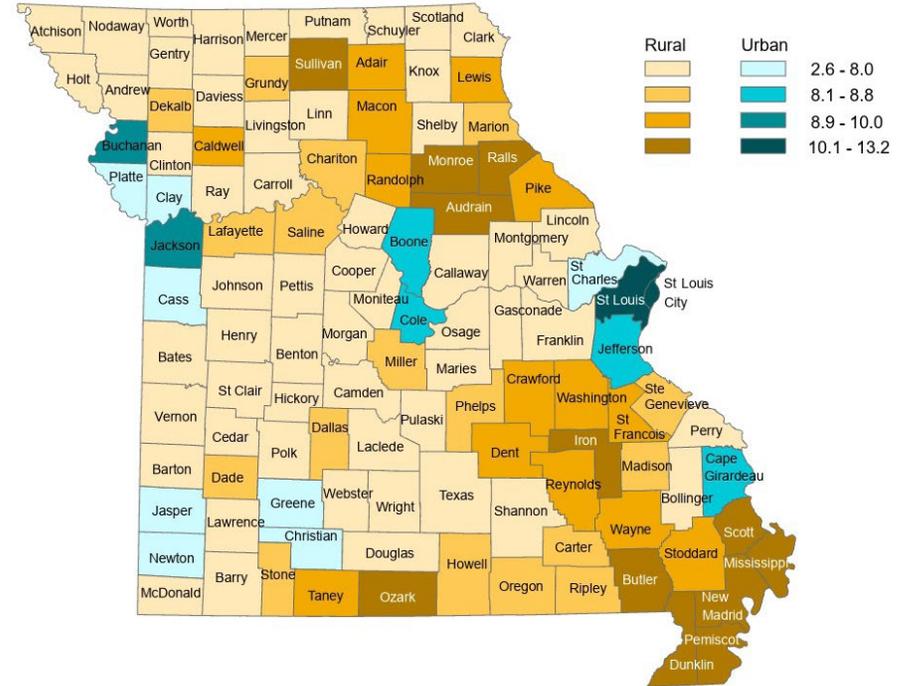
**Premature Birth Rate (less than 37 completed weeks)
Missouri, 2017-2021**



Rates per 1,000 live births

- From 2017 to 2021, the rate for low birth weight in rural counties (8.2) was lower than the rate in urban counties (9.1).
- Thirty-three counties had a low birth weight rate higher than the state rate (8.8). Of the 14 highest rates for low birth weight, seven counties were in the southeast region including four counties from the Bootheel region. Dunklin County had the highest rate (13.2) among rural counties and St. Louis City had the highest rate (12.8) among urban counties. Additional counties with rates above 10.0 for low birth weight include Pemiscot, Scott, New Madrid, Mississippi, Ozark, Iron, Monroe, Ralls, Butler, Audrain, Sullivan and St. Louis Counties.
- For preterm births, the rate in rural counties (10.6) was lower than the rate in urban counties (11.0).
- Forty counties had a preterm birth rate higher than the state rate of 10.9. Counties from the southeast region represented seven of the 10 highest preterm birth rates. Sullivan County had the highest preterm birth rate for rural counties (16.4) and St. Louis City had the highest rate for urban counties (13.1). Additional counties with preterm birth rates above 13.0 included Dunklin, Butler, Reynolds, Iron and Ripley Counties.
- Births where the pregnancy was full-term but the birth weight was low had similar rates for both rural (2.9) and urban counties (3.0).

Low Birth Weight Missouri, 2017-2021



Source: Missouri Vital Statistics Death File

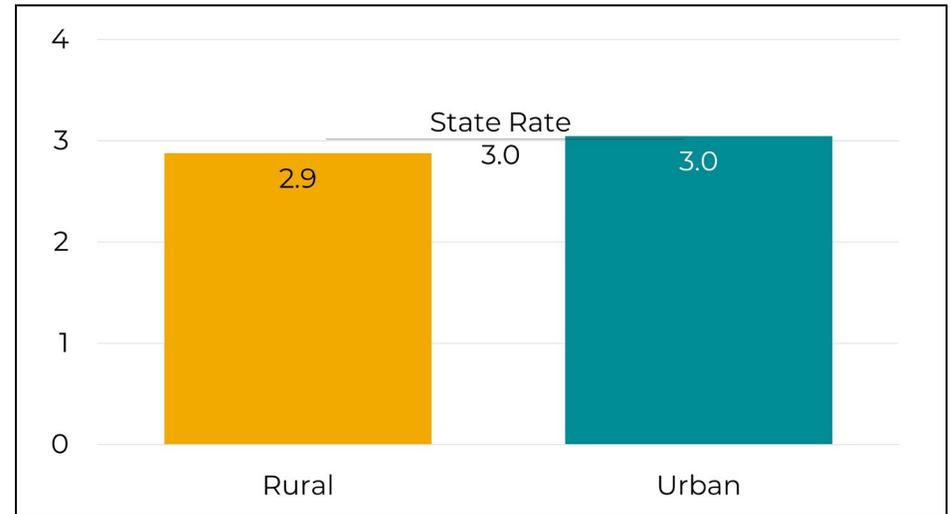
At 37 weeks, pregnancies are considered full-term with the average baby weighing between 3,000-4,000 grams (6-8 pounds).



Even though MCH indicators for the general population were comparatively better in rural counties, there were subpopulations with poorer health outcomes. From 2017 to 2021, the Black/African American population had a rate for low birth weight nearly double that of the white population. The higher rate for low birth weight among Black/African Americans was true for both rural counties and urban counties. Other indicators had similar patterns:

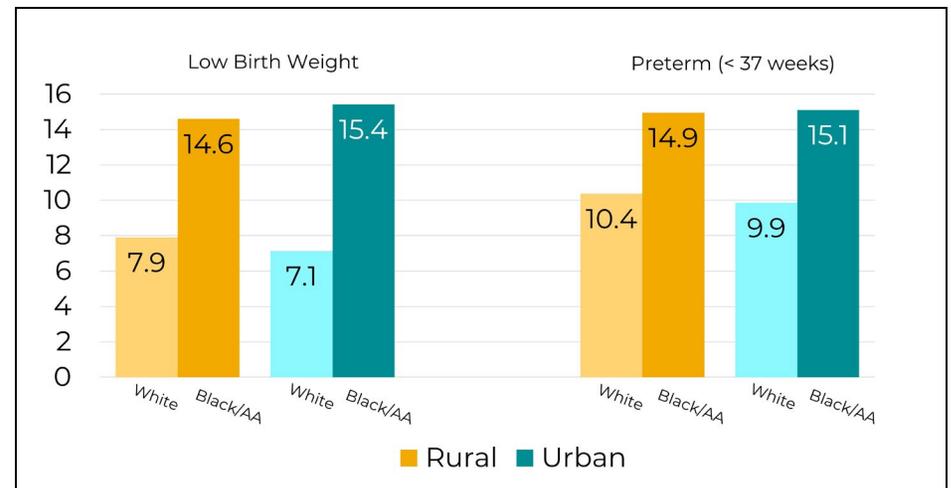
- Whites in rural counties (10.4) had a lower preterm birth rate than the rate for Black/African Americans in rural counties (14.9).
- The rate for full-term pregnancies with a low birth weight was higher for Black/African American persons in both rural (5.9) and urban counties (5.9) compared to white persons in rural counties (2.8) and white persons in urban counties (2.2).

Low Birth Weight and Full-Term Missouri, 2017-2021



Rates per 1,000 live births

Low Birth Weight and Preterm Rate by Race Missouri, 2017-2021



Rates per 1,000 live births



INFANT MORTALITY

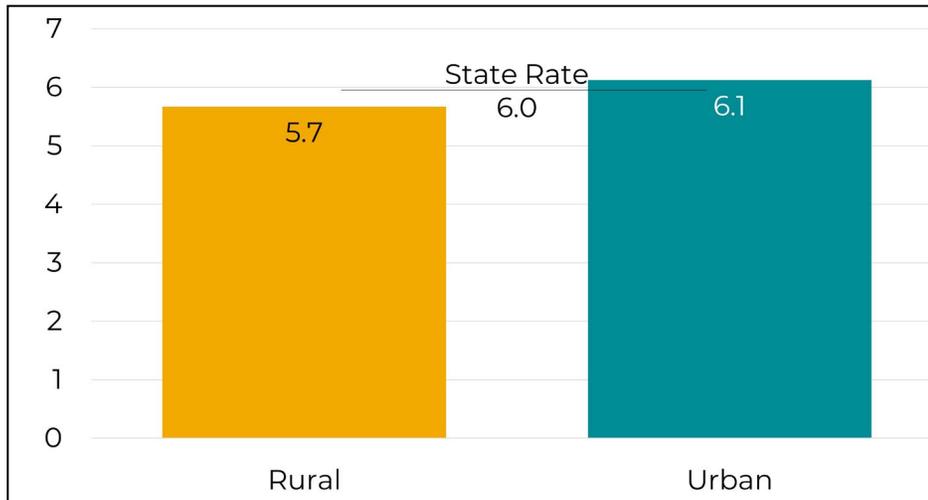
Infant mortality includes deaths that occur after birth, but prior to a child’s first birthday. Usually calculated as deaths per 1,000 live births, the infant mortality rate can provide key information about maternal and infant health. The infant mortality rate has become an important measure for understanding the overall health of a population. People also use it to assess other indicators like poverty and health care access.⁴⁸

In Missouri, infant mortality has been declining for many years. The infant mortality rate decreased by half in the 25 years between 1950 and 1975 (33.4 versus 16.4). The rate was again halved in the 20 years between 1975 (12.3) and 1995 (7.4). Since the mid-1990s, the infant mortality rate has continued to decline but at a much slower pace. From 1996 to 2016, the infant mortality rate declined 13.2% from 7.6 to 6.6. The infant mortality rate declined an additional 8.1% from 2017 (6.2) to 2021 (5.7). Despite a declining infant mortality rate, there was still an average of 426 infant deaths per year in Missouri from 2017 to 2021.

Rural and urban trends for infant mortality have shifted in recent years. Between 2009 and 2017, the rural infant mortality rate was higher than the urban rate eight of the nine years. From 2018 to 2021, the urban rate was higher three of the four years. Infant mortality rates have declined for both rural and urban counties even with these trend shifts, however, there are subpopulations where the infant mortality rate has remained high.

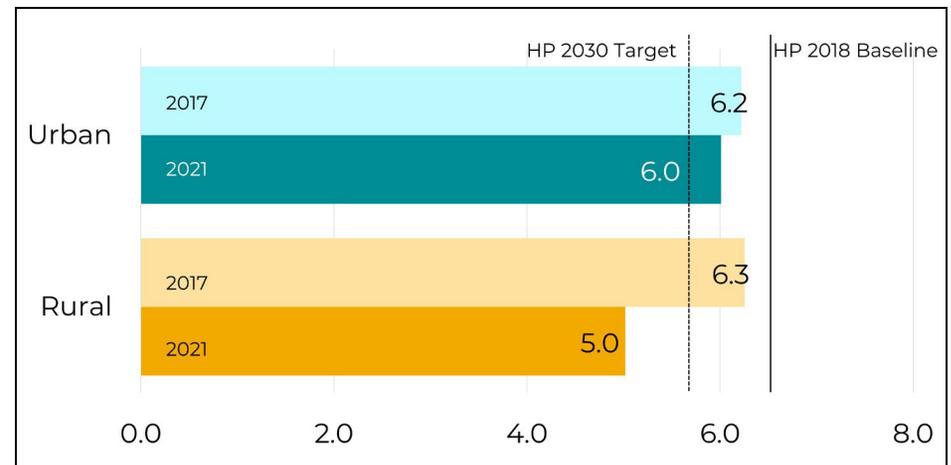
- From 2017-2021, the infant mortality rate in rural counties was 7.0% lower than the urban county rate (5.7 versus 6.1).
- In 2021, rural counties achieved the Healthy People 2030 target rate of 5.0 for infant mortality. The infant mortality rate declined by 20.6% between 2017 (6.3) and 2021 (5.0).

Infant Mortality Rate Missouri, 2017-2021



Rates per 1,000 live births

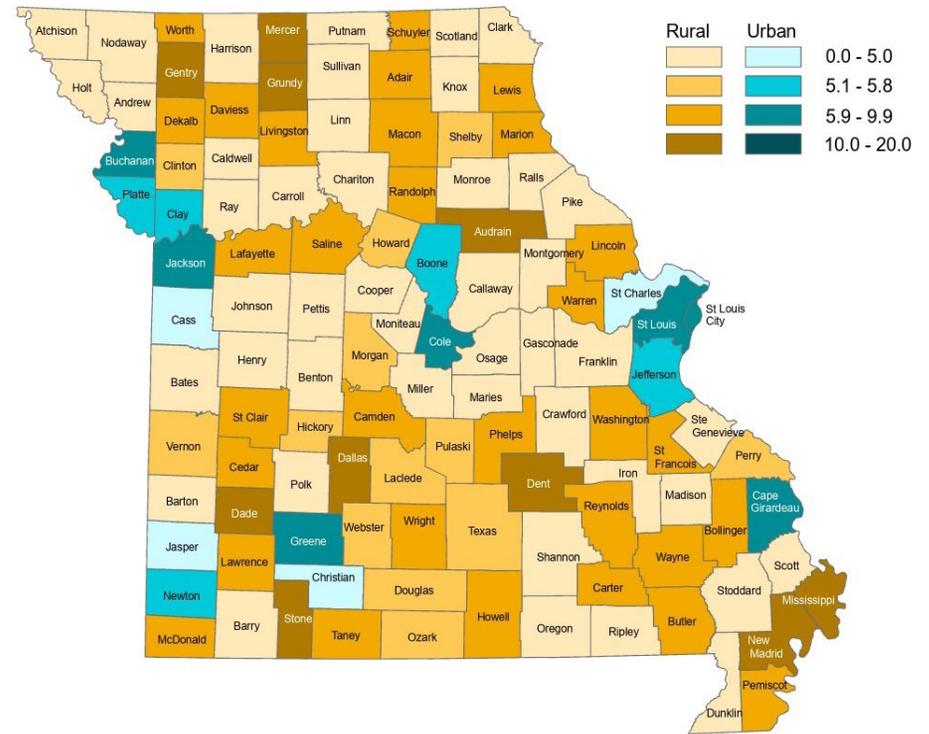
Infant Mortality Rate Missouri, 2017-2021



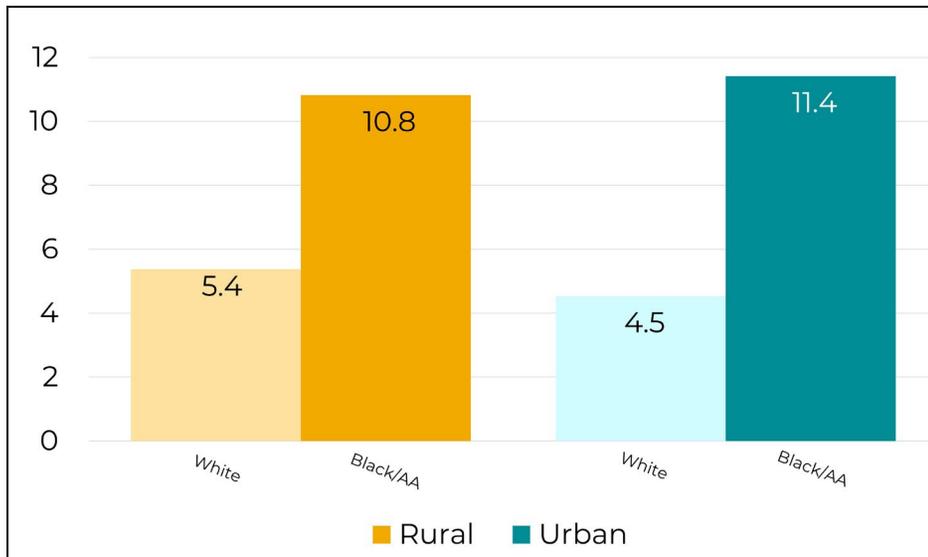
Rates per 1,000 live births

- Forty-two counties had infant mortality rates above the state rate of 6.0. Dallas County had the highest infant mortality rate for rural counties (17.3) while St. Louis City had the highest rate for urban counties (8.7). The 10 highest infant mortality rates were all in rural counties. Counties with infant mortality rates above 10.0 included Dallas, Grundy, Mercer, Dent, Mississippi, Gentry, New Madrid, Dade, Stone and Audrain.
- Among all Black/African Americans in Missouri, the infant mortality rate declined 8.1% from 2017 (12.4) to 2021 (11.4), however, the rate in 2021 was still more than double the Healthy People 2030 target rate.⁴⁹
- The infant mortality rate among rural Black/African Americans was double the rate for rural whites (10.8 versus 5.4). Urban whites had the lowest infant mortality rate (4.5) while urban Black/African Americans had the highest rate (11.4).

Infant Mortality Rate Missouri, 2017-2021



Infant Mortality Rate by Race Missouri, 2017-2021



Rates per 1,000 live births

Source: Missouri Vital Statistics Death File



HEALTH CARE IN RURAL MISSOURI

Basic access to primary care physicians, psychiatrists, dentists, inpatient and outpatient hospital services and specialty care services improves overall health and contributes significantly to an area's economic vitality. However, in rural Missouri, there are vast differences from urban Missouri in access to hospitals, specialty care, and primary care services, even for those who have health insurance, are financially stable, and have access to transportation. People in rural areas generally have less access to health care than people in urban areas do. Fewer primary care practitioners, mental health programs, and health care facilities in these areas often means less preventive care and longer response times in emergencies.

SPECIALTY SERVICES

Only 28 rural communities have access to the specialty emergency care necessary to save lives when minutes matter. The lack of access to hospital and specialty services in rural Missouri is one contributor to the higher death rates seen in the Health Status section of this report. Given the lower incomes and increased age of rural residents compared to urban counterparts, the lack of specialty care services can mean no access to or less consistent care for vulnerable populations. Rural Missourians generally have to travel long distances to obtain specialty care, such as cardiology, oncology, and nephrology.

No rural Missouri counties have a Level 1 Trauma Center, Pediatric Trauma Center, Stroke Center or STEMI Center, meaning our patients need to travel to urban areas for the care they need. Level 1 Trauma Centers provide the top level of care. STEMI or ST-elevation myocardial infarction, is the term used for a type of serious heart attack where one of the major arteries that supply oxygen and blood to the heart is blocked.

Designated Hospitals: Rural vs. Urban

	Level 1		Level 2		Level 3		Level 4	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
Trauma Center	0	9	1	7	0	9	N/A	N/A
Stroke Center	0	11	1	27	11	20	2	0
Stemi Center	0	17	1	24	3	6	3	3

Source: <https://health.mo.gov/living/healthcondiseases/chronic/tcdsystem/designatedhospitals.php>

STEMI, or ST-elevation myocardial infarction, is the term used for a type of serious heart attack where one of the major arteries that supply oxygen and blood to the heart is blocked.

RURAL HOSPITALS

Rural hospitals are a crucial component for a community's well-being. In addition to providing primary, acute, and long-term care, they are often a significant employer and natural leader in community-based health programs and initiatives. Most rural hospitals are the only source of medical care in their community. Unfortunately, low reimbursement rates from Medicare, Medicaid, and other types of insurance; increased regulation; reduced patient volumes; and unpaid patient medical bills have caused many rural hospitals to struggle financially.⁵⁰ Inflation, a tight labor market, and the end of COVID-19 federal funding have also exacerbated economic loss for rural hospitals.

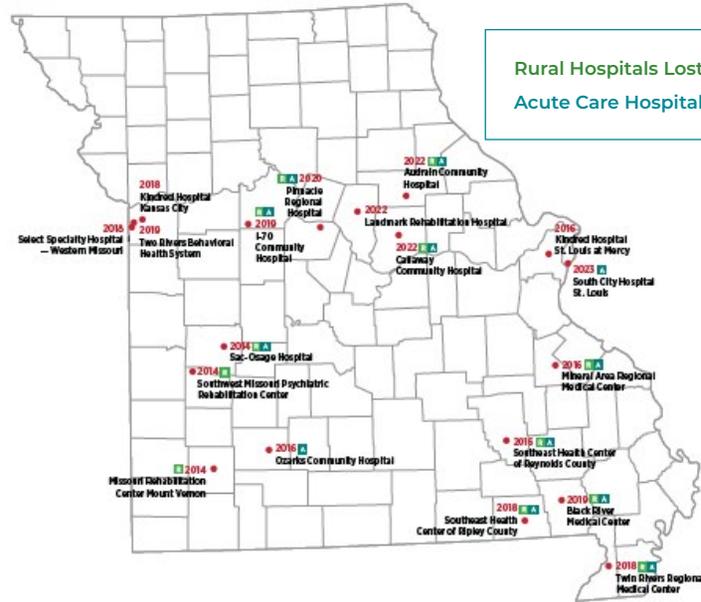
From 2014 to 2023, 19 Missouri hospitals closed, 12 of which were located in rural counties. These closures left 50 rural counties without a hospital. Furthermore, all 19 hospitals were located in geographic and population-based HPSAs. Closure of the rural hospitals reduces access to needed care which increases health disparities. There is also an economic impact as communities with a hospital closure have reduced tax revenue from the closed hospital and loss of hospital employees. As a major employer, the individuals working for rural hospitals often have difficulty finding employment within their community and may have to travel a great distance to the nearest large city for employment and health care.

As of September 1, 2023, Missouri has 125 licensed general acute care hospitals, 44.8% (56) are located in rural counties. These hospitals provide 1.75 beds per 1,000 residents in rural counties while urban counties have 3.86 beds per 1,000 residents. Of the 162 licensed hospitals in Missouri, 61 (37.65%), including 5 behavioral health hospitals, are located in rural counties. Of those 64 hospitals, 48 are small rural hospitals, and 35 are critical access hospitals (CAHs).



19 Hospital Closures in Missouri

Since 2014



- Southwest Missouri Psychiatric Rehab Center, El Dorado Springs, in 2014 R
- Sac-Osage Hospital, Osceola, in 2014 R A
- Missouri Rehabilitation Center, Mount Vernon, in 2014 R
- Mineral Area Regional Medical Center, Farmington, in 2016 R A
- Southeast Health Center of Reynolds County, Ellington, in 2016 R A
- Ozarks Community Hospital, Springfield, in 2016 A
- Kindred Hospital St. Louis at Mercy, St. Louis, in 2016
- Kindred Hospital Kansas City, in 2018
- Select Specialty Hospital – Western Missouri, Kansas City (non-member), in 2018
- Twin Rivers Regional Medical Center, Kennett, in 2018 R A
- Southeast Health Center of Ripley County, Doniphan, in 2018 R A
- Two Rivers Behavioral Health System, Kansas City, in 2019
- Black River Medical Center, Poplar Bluff, in 2019 R A
- I-70 Community Hospital, Sweet Springs, in 2019 R A
- Pinnacle Regional Hospital, Boonville, in 2020 R A
- Callaway Community Hospital, Fulton, in 2022 R A
- Audrain Community Hospital, Mexico, in 2022 R A
- Landmark Rehabilitation Hospital, Columbia, in 2022
- South City Hospital, St. Louis, in 2023 A

Source: https://www.mhanet.com/mhaimages/advocacy/Missouri_Hospital_Closures.pdf

SMALL RURAL HOSPITALS

Missouri has 48 small rural hospitals. A small rural hospital is defined as a non-federal, short-term, general acute care hospital that is located in a rural area and has 49 available beds or less, as reported on the hospital's most recently filed Medicare Cost Report. These small rural hospitals provide short-term, general acute care for their communities. Small rural hospitals may be for-profit or not-for-profit, including faith-based.

CRITICAL ACCESS HOSPITALS (CAHS)

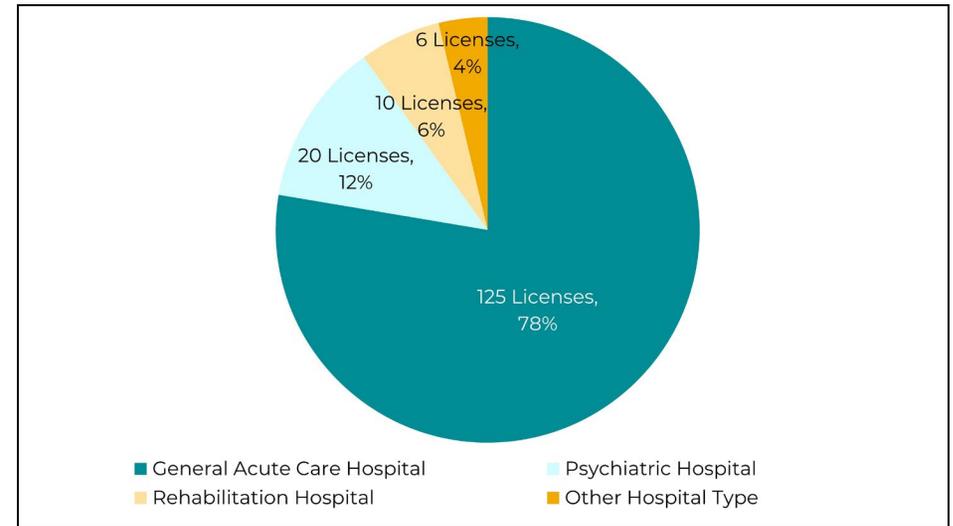
The Centers for Medicare and Medicaid Services (CMS) designates eligible rural hospitals as critical access hospitals (CAH). CMS designed the designation to keep essential services in rural communities and improve access to health care while reducing the financial vulnerability of rural hospitals through cost-based Medicare reimbursement. Missouri has 35 CAHs, 31 of which are located in rural counties. Hospitals must meet the following criteria to receive CAH designation:

- Have 25 or fewer acute care inpatient beds.
- Be more than 35 miles from another hospital.
- Have an average length of stay of no more than 96 hours for acute care patients.
- Provide 24/7 emergency care services.

RURAL EMERGENCY HOSPITALS

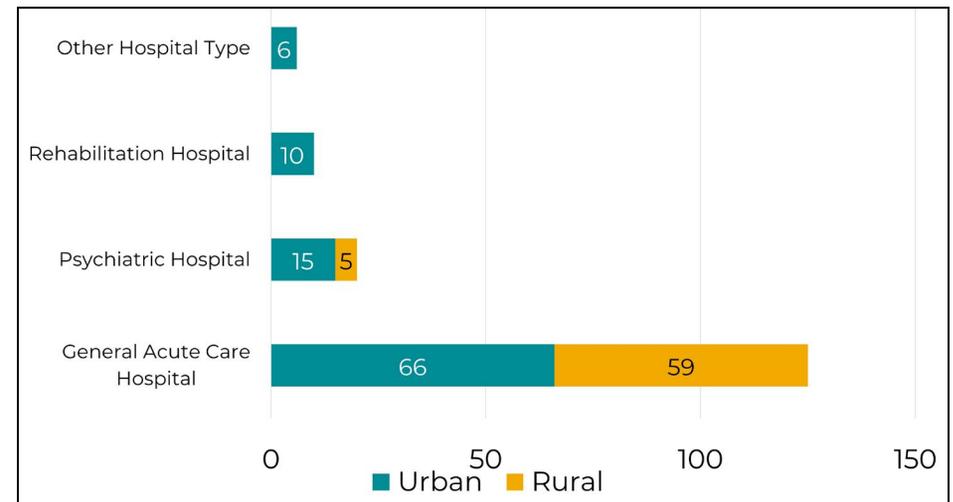
In January 1, 2023, CMS began designating rural emergency hospitals (REHs). CMS designed the REH designation to maintain access to critical outpatient hospital services in communities that may not be able to support or sustain a CAH or small rural hospital. REH's are required to provide 24-hour emergency and observation services and can elect to furnish other outpatient services. REHs receive enhanced Medicare payments for certain outpatient services and additional monthly payments.

Hospital License Type



Missouri Department of Health and Senior Services: Licensing and Regulation. <https://health.mo.gov/safety/healthservregs/directories.php>

Hospital License Type: Urban vs. Rural



Missouri Department of Health and Senior Services: Licensing and Regulation. <https://health.mo.gov/safety/healthservregs/directories.php>

Facilities eligible for conversion to REH include CAHs and rural acute care hospitals with 50 or fewer beds that were open December 27, 2020, or after. Facilities that close after December 27, 2020, are eligible to reopen as a REH if they meet the REH conditions of participation.

Rural emergency hospitals are required to provide these services:

- 24-hour emergency services.
- Laboratory services identified in the CAH conditions of participation and consistent with the needs of the patient population.
- Diagnostic radiologic services.
- Pharmacy or drug storage area.
- Discharge planning by, or under the supervision of, a registered nurse, social worker or other qualified professional.

FEDERALLY QUALIFIED HEALTH CENTERS

Federally qualified health centers (FQHCs) are local, nonprofit, community-driven health care providers delivering health care services to Missouri’s low-income and medically underserved populations in rural and urban areas. They serve individuals from every county, including St. Louis City. Missouri has 28 primary FQHC sites and 314 service delivery sites:

- 13 have sites in rural areas only.
- 7 have sites in urban areas only.
- 8 have sites in both rural and urban areas.

Missouri’s FQHCs have provided high-quality, affordable primary care and preventive services, often including dental, pharmaceutical, mental health, and substance abuse services in areas where care is needed and otherwise scarcely available for over 50 years. The Office of Management and Budget recognizes FQHCs as one of the most effective programs as they reduce the need for more expensive inpatient and specialty care, saving taxpayers millions of dollars. FQHCs are the medical home for 450,000 Missourians and provide 1.6 million encounters yearly.⁵¹ FQHC patients are among Missouri’s most vulnerable populations—people whom, even if insured, would

nonetheless remain isolated from traditional forms of care because of barriers related to where they live, the language they speak, and higher levels of complex health care needs. Almost 75% of FQHC patients have family incomes at or below 100% of poverty. Moreover, FQHCs serve a disproportionate level of patients who are uninsured (26%) or depend on Medicaid (41%).⁵²

Deemed a “safety net” provider, FQHCs must meet these qualifications:⁵³

- Offer services regardless of the person’s ability to pay.
- Establish a sliding fee discount program.
- Be a nonprofit or public organization.
- Be community-based, with the majority of its governing board of directors composed of patients.
- Serve a medically underserved area or population.
- Provide comprehensive primary care services.
- Have an ongoing quality assurance program.

RURAL HEALTH CLINICS

Missouri has 340 RHCs, more than any other state. Rural health clinics (RHCs) are public, nonprofit or for-profit health care facilities intended to increase access to primary care in rural areas. RHCs utilize a team approach of physicians, nurses, and physician assistants to provide quality health care services to Missouri’s rural populations. The primary advantage of RHC certification is enhanced reimbursement rates for providing Medicare and Medicaid covered services. RHCs are required to adhere to the following requirements, among others:

- Be located in a rural, underserved area.
- Be staffed at least 50% of the time with a nurse practitioner (NP), physician assistant (PA) or certified nurse midwife (CNM).
- Have a team approach of physicians working with non-physician providers such as NPs, PAs or CNMs.
- Provide outpatient primary care services.
- Provide basic laboratory services.

HEALTH PROFESSIONAL SHORTAGE AREA (HPSA)

The Health Resources and Services Administration (HRSA) designates Health Professional Shortage Areas (HPSA). HRSA designates HPSAs based on geography (a county, defined service area or census tract), population-base (including specific population groups such as low income or Medicaid-eligible) or facility-type (including correctional facilities, state/county mental hospitals, FQHCs, and other Auto-HPSA facilities). HPSAs usually indicate that an area does not have enough health care resources to meet the need of its residents and can occur in both urban and rural settings. HPSAs can occur when there are too few, if any, providers in an area; when there are more patients than providers can see; or when transportation barriers prevent patients from reaching providers. There are three types of HPSA designations: primary care, dental health, and mental health. While HPSA designations change frequently, as of September 2023, Missouri had 917 designations.

Many federal and state programs use HPSA designations to determine if a facility, program or area is eligible for federal funding. Large sections of Missouri, especially rural Missouri, are designated HPSAs due to low-income populations.

Missouri only has one county (Cass) that does not have a geographic or population-based HPSA; or a primary care, dental health or mental health HPSA. According to the HRSA Shortage Designation Management System, Missouri has a total of 9,020 primary care, mental health, and dental health providers, of which 2,036 (23%) practice in rural counties. Even though 33.2% of Missouri's population lives in rural areas, only 23% of available health care providers deliver services to rural Missourians. Providers practicing in urban areas (77%) provide services to the 66.8% of Missourians living in urban areas. This deficit and difference further demonstrates and necessitates programs and recruitment and retention efforts to increase the number of providers practicing in rural areas.

Designation Type	Discipline	Number of Designations
Facility-based: RHC, FQHC, correctional facility, FQHC look-a-like	Primary Care	235
	Mental Health	233
	Dental Health	231
Geographic or Population	Primary Care	102
	Mental Health	24
	Dental Health	92



OFFICE OF RURAL HEALTH AND PRIMARY CARE

The Missouri Office of Rural Health and Primary Care (ORHPC) is located within the Missouri Department of Health and Senior Services (DHSS). This organizational structure enables a unique environment in which to engage in close collaboration enhancing equitable health care services to rural and underserved populations and communities.

The DHSS serves the citizens of Missouri by working to improve the health and quality of life for Missourians of all ages. The Division of Community and Public Health is responsible for supporting and operating more than 100 programs and initiatives addressing public health topics, such as communicable disease control, chronic disease management, health promotion, genetic health conditions, maternal and child health, vital statistics, and health care access. The division also assures the continuity of essential public health services to all citizens of and visitors to the state of Missouri.

The ORHPC's programs focus on increasing access to quality health care, increasing the health care workforce in health care professional shortage areas and targeting health improvements in rural and underserved areas. These programs serve and support communities, health care providers, FQHCs, rural health clinics and hospitals and critical access hospitals (CAHs). The ORHPC also enhances access to health care services for rural and underserved populations through work with partnerships and local health advocates. The ORHPC initiatives and priorities include:

- Identifying the obstacles and needs of health care providers and patients in rural and underserved areas.
- Developing health initiatives designed to improve the health of people living in rural and underserved areas.
- Collaborating with partners to implement strategies and create impactful outcomes.
- Addressing social drivers of health (SDOH) as a primary approach to achieving health equity.



VISION
Optimal health and safety for all Missourians, in all communities, for life.



MISSION
To promote health and safety through prevention, collaboration, education, innovation and response.



MISSOURI OFFICE OF RURAL HEALTH

Health.Mo.Gov/ruralhealth

The Missouri General Assembly established the Missouri Office of Rural Health (MORH) in 1990 with the intent to support rural health care delivery systems and communities. The office achieves its goals through the following activities:

- Acting as a central hub for the collection and dissemination of information related to rural health care, including research findings related to rural health.
- Monitoring, coordinating, and facilitating rural health efforts with a focus on avoiding duplication and inefficiencies.
- Providing technical assistance (TA) and educational opportunities to rural health stakeholders to support and improve efforts on quality, operational, and financial outcomes.
- Promoting and developing diverse and innovative health care service models.
- Recommending appropriate public policies to ensure the viability of rural health care delivery.
- Biennially reporting activities and recommendations to the governor and members of the general assembly, to include an overview of health data and issues in rural Missouri.

A primary function of the MORH is to collect and disseminate information and resources to rural and underserved areas. The MORH utilizes a variety of mechanisms, including presentations, resource materials, and web-based media. The MORH maintains the Rural Health webpage (Health.Mo.Gov/ruralhealth) which provides educational resources, such as publications, trainings, events, toolkits, infographics, fact sheets, rural health policy announcements, and funding opportunities. The MORH also publishes and maintains the Rural Spotlight webpage (<https://ruralhealthinfocenter.health.mo.gov/>).

This webpage is a curated blog filled with news from federal and state partners, associations, and organizations, and includes information about funding opportunities, federal policy updates, research updates, learning opportunities, and resources.

The MORH manages three federally funded grants with multiple programs within each grant, specifically designed to strengthen the viability of rural health care providers, hospitals, and clinics, while improving their quality of care. The list below includes the federally awarded grants providing pass-through funding or services for hospitals and clinics.

State Office of Rural Health (SORH)

Health.Mo.Gov/ruralhealth

The SORH grant supports the creation of an institutional framework to link small rural communities with state and federal resources to develop long-term solutions to support rural health problems. The grant requires a \$3 state to \$1 federal match. The SORH grant has three primary areas of focus:

- Dissemination of Missouri rural health information.
- Coordination of Missouri-based activities related to rural health care, including providing support for grant proposals, providing resources, and facilitating connections.
- Facilitation of rural recruitment and retention by providing access to a platform for job postings and recruitment and retention training sponsorships, and assist with recruitment services.

Small Rural Hospital Improvement Program (SHIP)

[Heath.Mo.Gov/ruralhealth/ship.php](https://www.health.mo.gov/ruralhealth/ship.php)

The SHIP grant provides funding for small rural hospitals to implement quality and operational improvement efforts to meet their organization's value-based payment care goals. SHIP also assists eligible hospitals to participate in delivery system reforms such as becoming or joining a Medicare Shared Saving Program or Accountable Care Organization (ACO) or other shared saving programs. Further, SHIP allows participating hospitals to utilize these funds to purchase hardware, software, and telemedicine equipment to assist in meeting data system requirements established under the Medicare Program.

Medicare Rural Hospital Flexibility Program (FLEX)

<https://www.hrsa.gov/rural-health/grants/rural-hospitals/flex>

The FLEX grant provides support to critical access hospitals (CAHs) emphasizing continuous quality improvement, quality reporting, performance improvement, and benchmarking to improve patient care, financial practices and hospital operations. FLEX also assists facilities with establishing or expanding the provision of rural emergency medical services.

FLEX focuses on:

- Increasing the number of CAHs consistently reporting quality data.
- Improving the quality of care in CAHs.
- Maintaining and improving the financial viability of CAHs.
- Building the capacity of CAHs to achieve measurable improvements in the health outcomes of rural communities.



Medicare Rural Hospital Flexibility Program (FLEX) also assists facilities with **establishing or expanding** the provision of **rural emergency medical services.**

MISSOURI PRIMARY CARE OFFICE

Health.Mo.Gov/primarycare

The Missouri Primary Care Office (PCO) aims to improve access to comprehensive primary care services for rural and urban underserved populations through increasing health care workforce availability to meet the needs of the Missouri underserved populations. The PCO supports and enhances health systems to optimize effectiveness and eliminate health disparities.

Access to quality preventive and primary care services remains central to improving the health status of Missourians. The PCO efforts are vital to ensuring the state takes actions to address the availability of primary care services for Missourians. The PCO collaborates with various state and federal organizations, coordinates activities in the state related to the delivery of primary care services, and supports facilitation of the recruitment and retention of health care providers. The PCO initiatives and priorities include:

- Measuring access to primary care through health care workforce and shortage designation analysis; addressing the Health Professional Shortage Areas (HPSAs) in Missouri.
- Recruitment and retention efforts for a diverse workforce of medical, dental, mental, and public health care providers in underserved areas.
- Managing the Conrad State 30/J-1 Visa Waiver Program, National Interest Waiver Program, Missouri Graduate Medical Education Grant Program, Community-Based Faculty Preceptor Tax Credit Program, and Health Professional Student Loan and Loan Repayment programs.
- Conducting a Statewide Primary Care Needs Assessment.
- Collaborating and providing technical assistance to improve access to primary care services.
- Collaborating with organizations and facilities to apply for HPSA designations where the need exists to improve access to health care.

- Assisting those working to increase access to primary care services for all, and reduce disparities seen in our rural and urban underserved populations.

J-1 Visa Waiver Program (Conrad 30 Waiver Program)

Health.Mo.Gov/j1visa

The PCO handles the administration of the J-1 Visa program. The J-1 Visa waives the two-year home residency requirement allowing a foreign medical graduate to attend an advanced training program in the United States and waives the requirement for graduates to return to their native country.

- The J-1 Visa waiver is granted in exchange for an obligation to practice in a federally designated HPSA or Medically Underserved Area (MUA).
- Section 214(l) of the Immigration Nationality Act allots states 30 recommendations each federal fiscal year.

The table below illustrates the number of J-1 Visa Waivers supported, percentage distribution in rural and urban underserved areas, and percentage distribution of primary care physicians and specialist physicians for 2021-2023.

Year	Number of J-1 Visa Applications Supported	Percent of Employed in Rural Areas	Percent Employed in Urban Areas	Percent Primary Care Physicians	Percent Specialist Physicians
2021	30	13%	87%	67%	33%
2022	30	17%	83%	7%	93%
2023	30	7%	93%	7%	93%

National Interest Program (NIW)

[Health.Mo.Gov/j1visa/niw](https://www.health.mo.gov/j1visa/niw)

The NIW Program effectively helps foreign physicians attain permanent residency status in the U.S. and increases access to care in Missouri's underserved areas. The employment of these professionals greatly benefits Missouri and the nation. The program allows professionals of exceptional ability to request a waiver of the U.S. Immigration labor certification requirements, based on a letter of recommendation from the PCO. The PCO provides an official letter to the U.S. Citizenship and Immigration Services (USCIS), housed within the Department of Homeland Security (DHS).

- Physicians applying for a NIW are required to work full-time for five years in a Missouri HPSA (<https://data.hrsa.gov/tools/shortage-area/hpsa-find>). They may count time spent in H1-B status to fulfill J-1 Visa Waiver requirements towards the five-year term.

The table below exhibits the number of NIW Waivers requests DHSS supported, percentage distribution in rural and urban underserved areas and percentage distribution of primary care physicians and specialist physicians during 2015-2023.

Year	Number of NIW Requests Supported	Percent Employed in Rural Areas	Percent Employed in Urban Areas	Percent Primary Care Physicians	Percent Specialist Physicians
2015	15	13%	87%	13%	87%
2016	18	11%	89%	83%	17%
2017	19	4%	96%	11%	89%
2018	12	16%	84%	16%	84%
2019	7	0%	100%	0%	100%
2020	30	12%	88%	12%	88%
2021	10	1%	99%	0%	100%
2022	8	2%	98%	1%	99%
2023	6	2%	98%	0%	100%

Health Professional Student Loan and Loan Repayment Programs

Health.Mo.Gov/hpl-lr

The PCO administers the Health Professional Loan and Loan Repayment programs which aim to increase access to health care for Missourians located in HPSAs. In parts of Missouri, a shortage of primary health care providers makes it difficult for low-income, uninsured and geographically isolated Missourians to receive health care. Helping to pay educational debt of health care providers in exchange for a service obligation is one strategy to improve care for the underserved.

Nurse Student Loan (NSL) Program

Health.Mo.Gov/healthprofloans

The NSL Program is a competitive state program that awards funding to Missouri residents attending a Missouri institution pursuing education leading to careers as licensed practical nurses or professional nurses. NSL recipients earn forgiveness on their DHSS-issued loans by providing direct patient care services in any Missouri hospital or in a facility located within a Missouri HPSA. The table below shows the eligible nursing programs, associated licensure, enrollment requirements and the amount of funding per award the NSL program provided.

Program Type	Must be Licensed as	Must be Enrolled	Funding Amount Per Academic Year
Practical Nursing Certificate or Diploma	Licensed Practical Nurse (LPN)	Full-time	\$5,000
Diploma Nurse (DN), Associate Degree in Nursing (ADN) or Bachelor Degree in Nursing (BDN)	Registered Nurse (RN)	Full-time	\$10,000
Master Degree in Nursing (MSN)	Advanced Practice Registered Nurse (APRN)	Full-time	\$10,000
Doctoral Degree in Nursing (PhD, DNP, EdD)	APRN	Part-Time or Full-Time	\$10,000

The tables below show how many NSL awardees completed their service obligations in 2021, 2022, and 2023, by licensure type and rural vs. urban.

State Fiscal Year (SFY) 2021-2023 NSL Completed Service Obligation by Licensure Type				
SFY	LPN	RN	APRN	Total
2021	2	15	2	19
2022	2	11	3	16
2023	3	5	1	9
Total 2021-2023	7	31	6	44

2021-2023 NSL Completed Service Obligation by Rural vs. Urban			
SFY	Rural	Urban	Total
2021	7	12	19
2022	5	11	16
2023	2	7	9
Total 2021-2023	14	30	44

Between State Fiscal Year 2021 and SFY2023, 44 NSL recipients were actively fulfilling their services obligations, with 68% serving in urban underserved areas and 32% in rural underserved areas.

Nurse Loan Repayment Program (NLRP)

[Health.Mo.Gov/loanrepayment](https://www.health.mo.gov/loanrepayment)

The NLRP is a competitive state program that awards funding for educational loan repayment to Missouri registered nurses and advanced practice registered nurses. NLRP recipients provide direct patient care services in any Missouri hospital or in a facility located within a Missouri HPSA to earn forgiveness on their loans. The table below shows the eligible licensure type and the amount of funding per award, the NLRP provided.

Program Type	Maximum Funding Amount Per Award
Registered Nurse (RN)	\$10,000
Advanced Practice Nurses (APN, NP, CRNA, FNP)	\$10,000

The table below illustrates the number of NLRP awards provided per licensure type and rural or urban service for 2021-2023.

SFY Awarded	Licensure Type	Awards Provided	Rural Service	Urban Service	Total Awards
2021	APRN	15	7	8	59
	RN	44	21	23	
2022	APRN	14	9	5	50
	RN	36	18	18	
2023	APRN	13	3	10	38
	RN	25	11	14	

In 2023, 49 NLRP recipients were actively fulfilling their services obligations, with 33% serving in rural underserved areas, and 67% in urban underserved areas.

Primary Care Resource Initiative for Missouri (PRIMO) Program

Health.Mo.Gov/primo

The PRIMO Program is a competitive state program, designed to improve health care delivery in Missouri. The program awards forgivable loans to Missouri residents attending a Missouri institution pursuing primary care training leading to Missouri licensure as a physician, dentist, dental hygienist or psychiatrist. After obtaining the appropriate degree and licensure, PRIMO recipients provide direct patient care services in rural and underserved communities to earn forgiveness on their loans. The table below illustrates the number of PRIMO student loans issued from 2021-2023, displayed by discipline.

PRIMO Student Loans SFY 2021-2023				
Year	Medical	Dental	Behavioral	Total by Year
2021	2	4	1	7
2022	3	5	0	8
2023	2	2	0	4
Total by Loan Type	7	11	1	19

The following tables illustrate the number of PRIMO recipients who were fulfilling their service obligations by specialty and rural or urban service area in SFY 2021-2023.

In total, during SFY2021 through SFY2023, 69% of PRIMO recipients fulfilling their service obligations served in Missouri rural areas, and 31% served in underserved urban areas.

SFY 2021-2023 PRIMO Completing Service Obligation by Specialty				
	2021	2022	2023	Total
Family Medicine	10	7	5	22
Family Medicine and Obstetrics	2	1	1	4
Dentistry	4	4	5	13
Dental Hygiene	1	2	2	5
Pediatrics	2	2	1	5
Obstetrics and Gynecology	1	0	0	1
Psychiatry	1	2	2	5
Total	21	18	16	55

2021-2023 PRIMO Completing Obligation by Rural vs. Urban			
	Rural	Urban	Total
2021	15	6	21
2022	14	4	18
2023	9	7	16
Total	38	17	55

The State Loan Repayment Program (SLRP)

Health.Mo.Gov/loanrepayment/slrp

The SLRP is a federally funded grant with state matching funding dollar-to-dollar. This competitive loan repayment program seeks to recruit and retain providers in rural and underserved communities. The PCO awards SLRP funding to eligible Missouri licensed providers practicing psychiatry, medical and dental health professionals (osteopathic and allopathic providers of the following disciplines: general obstetrics/gynecology, pediatrics, family practice, internal medicine, psychiatry and dentistry), in exchange for services in Missouri areas with a shortage of primary care, dental health or mental health professionals. Recipients earn forgiveness of their award with a two-year, full-time service obligation in a qualifying location.

The two tables below illustrate the number of SLRP recipients who were fulfilling their service obligations per specialty and rural or urban service area in SFY 2021-2023.

SFY 2021-2023 SLRP Completing Obligation by Rural vs. Urban			
	Rural	Urban	Total
2021	35	25	62
2022	42	27	69
2023	34	18	52
Total	113	70	183

SLRP Awards by Specialty SFY 2021-2023				
	2021	2022	2023	Total
Family Medicine	22	25	21	68
Family Medicine and Obstetrics	1	1	1	3
Internal Medicine	2	2	0	4
Internal Medicine and Pediatrics	1	1	0	2
Pediatrics	4	4	4	12
Obstetrics and Gynecology	1	2	2	5
Psychiatry	2	2	1	5
Dentistry	28	31	22	81
Pediatric Dentistry	1	1	1	3
Total	62	69	52	183

During SFY 2021 through SFY 2023, 62% of SLRP recipients fulfilled their service obligations in rural areas of the state, and 38% served in underserved urban areas.

Upcoming Initiatives and Programs

The ORHPC will complete changes to the programs offered in SFY 2024. The ORHPC will no longer grant awards under the NSL, NLRP or PRIMO programs. However, ORHPC will administer a new Health Professional Loan Repayment Program (HPLRP) in addition to the Missouri Graduate Medical (GME) Grant Program, Community-Based Faculty Preceptor Tax Credit Program and the Rural Primary Care Physician Grant Program (Health.Mo.Gov/ruralphysician/grant).

Health Professional Loan Repayment Program (HPLRP)

Health.Mo.Gov/graduatemedicalgrant

The HPLRP is a state-funded, competitive loan repayment program starting in 2024, designed to reduce the burden of educational debt while increasing access to health care, mental health and public health professionals in underserved areas. The HPLRP provides forgivable loans to selected qualifying health care, mental health and public health applicants for repaying existing educational-related loans, in exchange for a 2-year service obligation in an underserved area.

Missouri Graduate Medical (GME) Grant Program

Health.Mo.Gov/gme

The GME Grant Program is a state-funded program to increase the number of Missouri accredited residency positions and fully trained Missouri physicians in the specialties of family medicine, general internal medicine, general pediatrics, general obstetrics and gynecology (Ob/Gyn), and general psychiatry (collectively, “general primary care and psychiatry”). The program aims to improve and expand access to health care in Missouri through development of new sustainable residency positions to address the physician workforce shortages and challenges Missouri’s underserved communities face.

Community-Based Faculty Preceptor Tax Credit Program

Health.Mo.Gov/precept

The Community-Based Faculty Preceptor Tax Credit Program provides an income tax credit for qualified community-based faculty preceptors for physicians and physician assistant students. The preceptor may receive \$1,000 per completed preceptor rotation, for a maximum of \$3,000 each year. Each completed preceptorship is the equivalent of 120 hours of community-based instruction in family medicine, internal medicine, pediatrics, psychiatry or obstetrics and gynecology to one or more medical or physician assistant student(s). The PCO awards the tax credits on a first come first serve basis. The credit cannot exceed the preceptor’s tax liability. The deadline to submit an application is January 31 of each calendar year following the tax year in which the provider served as a preceptor.

Rural Primary Care Physician Grant Program

Health.Mo.Gov/ruralphysicangrant

The Rural Primary Care Physician Grant Program is a competitive state program aimed at recruiting and retaining primary care physicians in rural underserved areas. The program uses a bid process for the selection and DHSS provides funding up to \$200,000 to a primary care physician beginning practice after July 1, 2022, in a Missouri county with a population of fewer than thirty-five thousand (35,000) inhabitants. Awardees must agree to reside and practice as a primary care physician in a Missouri rural county for a continuous five (5) year period and provide primary health care services to underserved populations in a Missouri HPSA.

RELEVANT INFORMATION AND INITIATIVES

INTERNET ACCESS AND TELEHEALTH

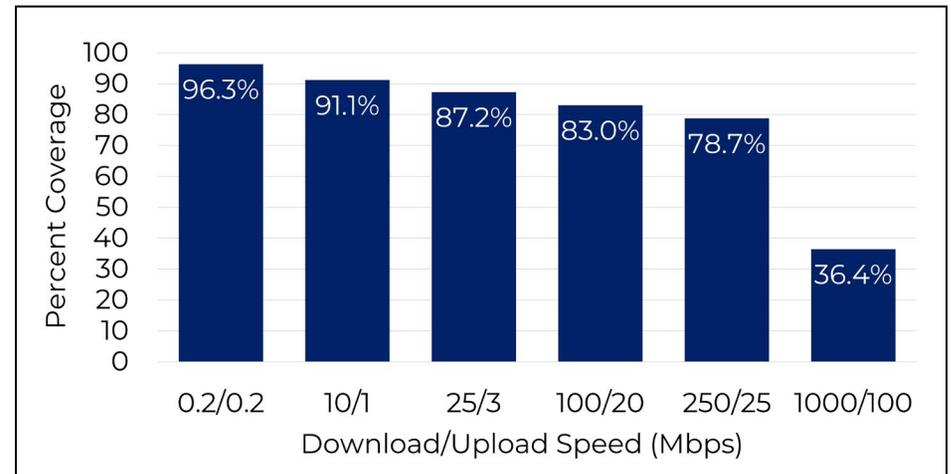
Access to broadband and telehealth services has been critical for Missourians, especially since the advent of COVID-19. Broadband access to clinical services provides significantly improved and cost effective access to health care. Using technology such as telehealth may help bridge the large geographic spread of health care in rural Missouri and reduce access to care disparities between rural and urban Missourians.

Through telehealth advancements, access to quality primary and specialty health services increases for people in rural areas when broadband internet is available. As telehealth progressively becomes a part of the nation's health care delivery system, access to health care is increasingly being linked to access to broadband. Broadband access is defined as having at least one broadband provider servicing the area. Providers were only counted if they generated speeds of 25 megabits per second (Mbps) for downloads, and 3 Mbps for uploads. Internet by satellite was excluded due to noted concerns on speed, interference and costs.⁶⁰

According to the Federal Communication Commission National Broadband Map, 92% of Missourians have access to broadband internet, including 90% of rural counties and 96% of urban counties. All urban counties had at least 83% coverage with 12 of the 16 urban counties having over 95% coverage. Nine rural counties have less than 50% access; the majority of these counties are in southeast Missouri. However, Missouri currently ranks 43rd among states in BroadbandNow's annual rankings of internet coverage speed and availability.⁵⁴ Expanding internet and broadband access to these more remote areas has been a main priority for the state.

The U.S. Census Bureau's American Community Survey shows 85% of Missouri households have an internet subscription. However, in rural county households 80% have an internet subscription, while 88% of households in urban counties have an internet subscription. Twenty-eight rural counties have more than 25% of households without internet, with three counties having more than 35% without internet (Oregon 36.0%, Knox 35.8% and Schuyler 35.0%). In addition, 40% of rural households that have a household income of less than \$20,000 are without an internet subscription compared to 33% of urban households in this same income bracket.

Percent of Broadband Coverage
Missouri, 2022



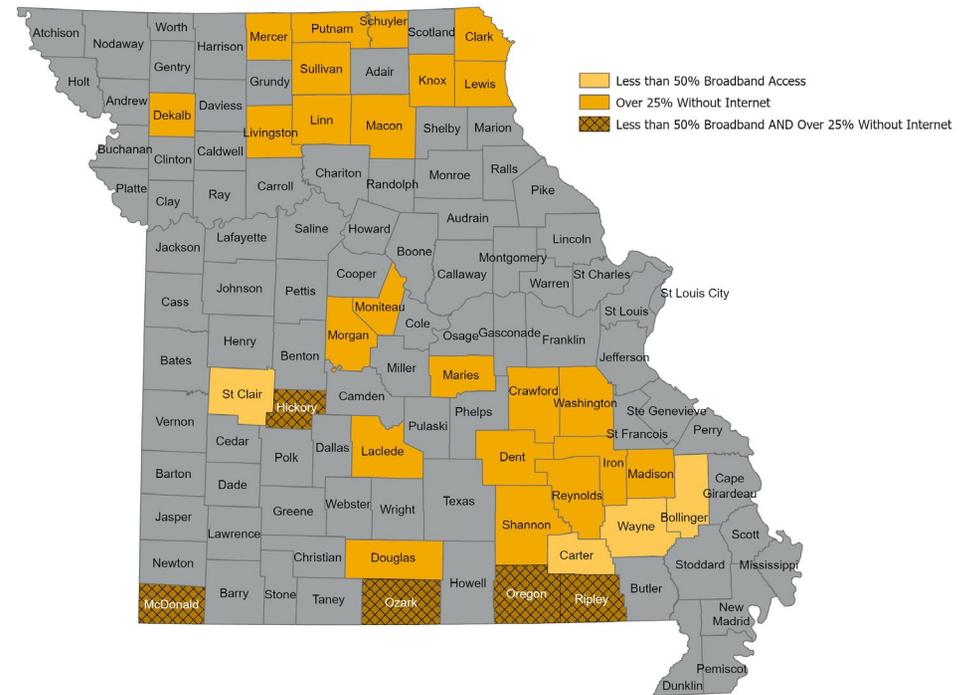
Source: Federal Communications Commission. FCC National Broadband Map.

Since the pandemic, telehealth has increased significantly and has become an important component of the nation's health care infrastructure. Before the COVID-19 Public Health Emergency (PHE), only 2.3% of MO HealthNet participants used telehealth while 20% of participants used telehealth during the pandemic. From March 2019 – February 2020, providers used telehealth to deliver 2.1 million services compared to 32.5 million services between March 2020 and February 2021. According to the Missouri Office of Broadband Development's Missouri Internet Survey Report, seven out of ten households with internet use it to access government or health services (72%).⁵⁵

Missouri has been a national leader in telemedicine since 1994 with the Missouri Telehealth Network's operational, legal and regulatory, research and evaluation efforts. Since then, the Missouri Telehealth Network has served to provide and expand telehealth services in rural and underserved communities. Providers once used telehealth primarily to connect rural patients with specialty care. However, today's uses include telehealth coverage of tele-ICU and emergency departments, telehealth into schools, hospital to hospital telehealth such as tele-stroke, remote monitoring of chronic diseases, and many more applications.⁵⁶ Nearly every major health system in the state has adopted some form of telehealth. In addition, a recent Missouri Hospital Association survey of rural hospitals indicated that more than half of participating hospitals use telehealth services, and over 80% of those retained patients within their communities because of the use of telehealth.⁵⁷

During the pandemic, CMS waived certain telehealth requirements for patients using Medicaid. The end of the COVID-19 Public Health Emergency means Medicaid and Medicare beneficiaries will see changes to their telemedicine services, but the delivery model

Internet and Broadband Access Missouri, 2017-2021



Source: Federal Communications Commission. FCC National Broadband Map.

remains available. According to the U.S. Department of Health and Human Services, many Americans in rural areas or those who struggle to find access to specialty care have “come to rely” on telehealth because of their pandemic telehealth experience.⁵⁸ As providers continue to use telehealth technologies as a cost-effective, high-quality method for delivering and accessing services, potential benefits include increased access to care in areas with provider shortages, reduced health care expenses and unnecessary emergency room visits. Reduced patient travel and shorter wait times are also added benefits.⁵⁹

COMMUNITY HEALTH WORKERS

Community health workers (CHWs) are frontline public health workers who are trusted members of and/or have a close understanding of the communities served. This trusting relationship enables CHWs to link health/social services and the community to facilitate access to services and improve the quality and cultural competence of service delivery. They advocate for and promote public health within the community and in health care settings. CHWs are an excellent resource for citizens throughout the state and are especially valuable for the health of rural counties. The lack of health care infrastructure in rural locations can make it difficult for residents to find specialized care. CHWs may act as a liaison to help extend health services to span a larger geographic region than health care facilities could ordinarily reach.

Some of the services CHWs provide include:

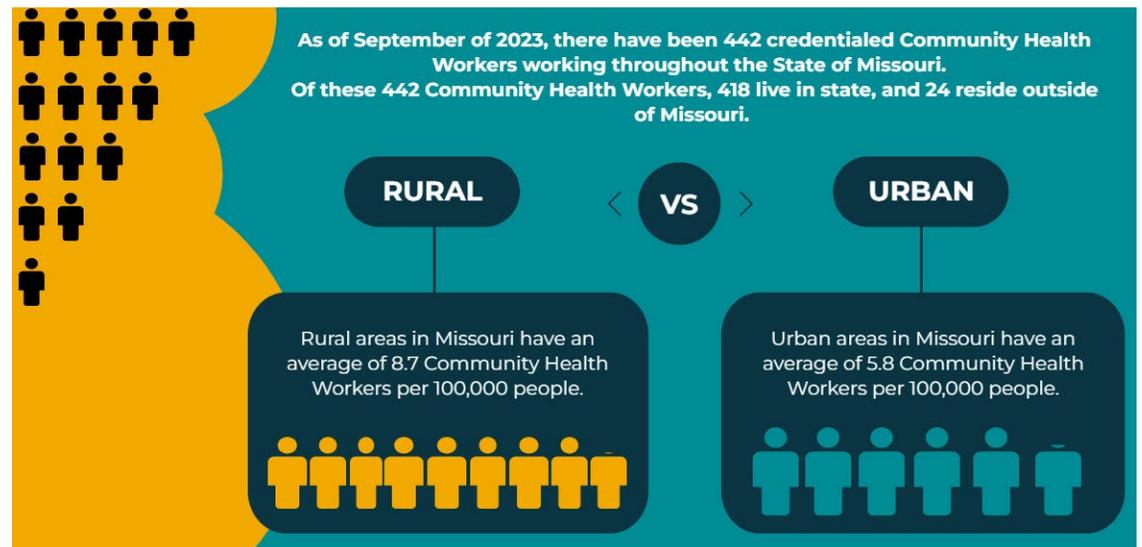
- Facilitating transportation to and from appointments.
- Helping to enroll patients into preventive health programs.
- Working with patients to alleviate insurance coverage and payment issues or other barriers to health care.
- Ongoing peer-to-peer engagement to provide encouragement and social support to help individuals with goal setting.
- Recognizing gaps and advocating for individual and community health needs.

In Missouri, CHWs work to build trustworthy, reliable relationships within their local community. To become a CHW in Missouri, individuals are encouraged to complete a training course at one of the following locations:

- State Fair Community College
- Metropolitan Community College of Kansas City
- St. Louis Community College

- Southeast Missouri State University
- Ozark Technical College
- Three Rivers Community College
- Crowder College
- Central Christian College of the Bible in collaboration with Randolph County Caring Community Partnership
- CE Impact
- Doula Foundation of Mid-America
- North Central Missouri College
- Mid-America Regional Council

Once they complete training, CHWs are well equipped to provide services within the community and are eligible for credentialing through the Missouri Credentialing Board. As of September 2023, Missouri has 442 credentialed CHWs.



COVID-19 IN RURAL MISSOURI

COVID-19 HEALTH DISPARITIES GRANT

The National Initiative to Address COVID-19 Health Disparities among Populations at High-Risk and Underserved, including Racial and Ethnic Minority Populations and Rural Communities provided funding to address COVID-19 and advance health equity through the Coronavirus Response and Consolidated Appropriations Act of 2021. The grant supported innovative strategies, interventions and services to address systemic barriers and potentially discriminatory practices that put those groups at higher risk for diseases like COVID-19. The project period is June 1, 2020, through May 31, 2024. One unique aspect of this grant is the rural carve out, in which Missouri has allocated more than half these funds to rural communities.

Through this grant, the Missouri Office of Rural Health and Primary Care (ORHPC) contracted with 60 organizations to address health disparities related to COVID-19. ORHPC contracted with the Ozarks Public Health Institute to establish the Health Disparities Program Office to provide logistical oversight and technical assistance for other contractors. The program created a webpage and GIS map to highlight the work supported. They also developed issue briefs, print stories, and videos of contractor successes.

DHSS selected Strategies 3 and 4 to reduce COVID-19-related health disparities, improve and increase testing and contact tracing, control COVID-19 infection and transmission, bolster infrastructure and increase partner mobilization.



Success Story Videos
Health.Mo.Gov/fundingstories

Issue Briefs
reachmissouri.com/issue-briefs

National Initiative to Address COVID-19 Health Disparities among Populations at High-Risk and Underserved, including Racial and Ethnic Minority Populations and Rural Communities



SCAN ME

COVID-19 Health Disparities Grant - Strategy 3

Strategy 3 of the grant aimed to build, leverage and expand infrastructure support for COVID-19 prevention and control among populations that are at higher risk and underserved. Projects under this strategy included improving housing and food insecurity, expanding access to primary medical care, developing the public health workforce and addressing mental health.

Contractors included:

- New Madrid County Family Resource Center
- United Way of Southwest Missouri and Southeast Kansas
- Urban League of Metropolitan St. Louis
- Washington County Memorial Hospital
- Community Partnership of Southeast Missouri
- Missouri Primary Care Association
- Wellness Equity Alliance
- A.T. Still University's College of Graduate Health Studies
- Missouri Area Health Education Centers



"We want to empower the Missouri public health workforce with a graduate-level education and contribute to strengthening Missouri's overall health outcomes."

Marisa Hastie, EdD
Dean and Associate Professor
A.T. Still University

Source: Reach Missouri



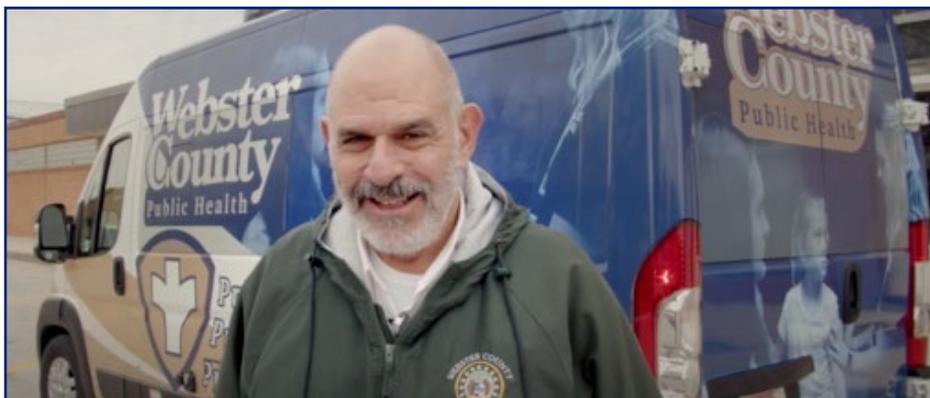
COVID-19 Health Disparities Grant - Strategy 4

Strategy 4 mobilized partners and collaborators to advance health equity and address social determinants of health as they relate to COVID-19 health disparities among populations at higher risk and underserved.

Partners include Bio-Reference Laboratories, Fresh Start Self-Improvement Center, Missouri Boot-heel Regional Consortium, Missouri Hospital Association, Randolph County Caring Community Partnership, Samuel U. Rodgers Health Center, United Way of Greater St. Louis and three University of Missouri contracts, Northwest Missouri State University and Missouri State University. LPHA contracts include:

- Adair
- Andrew
- Atchison
- Boone
- Caldwell
- Cape Girardeau
- Carter
- Cass
- City of Independence
- City of St. Louis
- Clinton
- Dent
- Gasconade
- Greene
- Grundy
- Harrison
- Hickory
- Jackson
- Jefferson
- Knox
- Knox
- Lewis
- Livingston
- Madison
- McDonald
- Mercer
- Pettis
- Pike
- Polk
- Pulaski
- Reynolds
- St. Francois
- St. Louis
- Saline
- Schuyler
- Sullivan
- Taney
- Tri-County
- Webster

Source: Reach Missouri



"[Webster County Health Unit] identified that there was an unmet need in Webster County for bringing public health to the people of our county and some of the more remote areas."

Scott Allen , Administrator
Webster County Health Unit



"Equity is very important in the health care system. Inclusion is important. The way we message to people is important."

Rachel Brown, Health Disparities Coordinator (former)
Tri-County Health Department

Other Office of Rural Health and Primary Care Grants

The ORHPC, utilizing both ORH and PCO, manages federally funded grants and multiple programs within each grant, specifically related to COVID-19:

- The American Rescue Plan Act of 2021 (ARPA) COVID-19 Testing and Mitigation Grant provided one-time funding to support small, rural hospitals for testing education, establishing alternate testing sites, processing test results, arranging for processing of test results and engaging in other activities within the CDC Community Mitigation Framework to address COVID-19 in rural communities. Funding and project period was July 1, 2021 through December 31, 2023.
- The Epidemiology and Laboratory Capacity for Prevention and Control of Emerging Infectious Diseases (ELC) Enhanced Detection (ED) provided funding through November 30, 2023 to increase the capacity of health care providers in underserved communities to enhance detection and response to COVID-19 infectious disease within the community.
- The Epidemiology and Laboratory Capacity for Prevention and Control of Emerging Infectious Diseases (ELC) Enhancing Detection Expansion (EDE) provides funding through July 31, 2024. This grant seeks to strengthen health departments and provide resources for public health educators in rural communities to prevent infectious disease threats and enhance awareness of strategic and tactical behaviors to reduce risk of chronic public health risks, such as heart disease, cancer, smoking and other leading causes of death among rural communities.

Other Department Grants

The COVID-19 funding dashboard (<https://health.mo.gov/living/healthcondiseases/communicable/novel-coronavirus/funding.php>) allows users to explore how nearly \$1.2 billion in federal funding is benefited Missourians. This dashboard shows distribution of COVID-19 public health funding by House and Senate districts. It complements the statewide ARPA dashboard (<https://moarpa.mo.gov/arpa-spending-performance/>) which shows how Missouri used funding from seven federal funding acts including ARPA, CARES, Coronavirus Preparedness and Response Supplemental Appropriations Act of 2020, Coronavirus Response and Relief Supplemental Appropriation Act of 2021, Families First Coronavirus Response Act of 2019, Paycheck Protection Program and Health Care Enhancement Act of 2020, and Public Health Services Act of 2021.



RECOMMENDATIONS

It is undeniable that rural Missourians experience many challenges to being healthy. While the health care system is one critical factor for safeguarding health, truly there are many including economic factors, the built environment, the health care workforce and access to care. As we work to eliminate the urban–rural divide, the most important rural priorities to address in the coming decade are mental health and substance use disorders, access to high quality health care services, and social determinants of health, such as economic stability. Stakeholders reviewed Rural Healthy People 2030 priorities and for the first time across three decades, a greater proportion of survey respondents selected “Mental Health and Mental Disorders” and “Addiction” as priorities for rural America, than did “Health Care Access and Quality”. Although, health care access and quality still remains the single most important priority.⁶¹

To create effective change to address these complex issues, Missouri will need to consider the unique qualities and conditions that define rural health and the unique challenges affecting rural health care systems. Missouri has to consider some of the innovative strategies that states and stakeholders are using to improve access to care in rural communities:

- Gathering data about unmet health care needs, rural financial pressures and workforce challenges to help define the most pressing problems and ensure that access, workforce, and other aspects of rural health care support the overall wellness of rural residents.
- Engaging rural community stakeholders and people with lived experience to review policies, identify challenges and opportunities, and develop effective programs.
- Aligning policies and investments to support programs with proven results, such as mobile integrated health networks.

- Employing technology, including telehealth, where possible; continuing to expand broadband access; and redefining roles for primary care providers and care extenders to expand the reach of the current workforce.
- Educating Missouri’s youth about rural practice and health professional careers and supporting schools and programs that offer health professional career training.

Despite the challenges noted, Missouri will persist in our efforts to invest in rural communities. There are exciting opportunities for collaboration and new models of care and prevention on the horizon, and in partnership with our innovative rural communities, Missouri can see progress towards eliminating the health disparities noted throughout this report.



Access to health care

Access to health care services, including access to broadband, **needs continual improvement** throughout rural Missouri.

Source: Callaghan, T., Kassabian, M., Johnson, N., Shrestha, A., Horel, S., Bolin, J., & Ferdinand, A. (2023, June 33). doi:10.1016/j.pmedr.2023.102176 (Callaghan, et al., 2023)

APPENDIX A – USING THE DHSS COMMUNITY DATA PROFILES AND MISSOURI INFORMATION FOR COMMUNITY ASSESSMENT (MICA)



MOPHIMS
Missouri Public Health Information Management System



Community Data Profiles



Data MICAs



Environmental Tracking

The Missouri Public Health Information Management System (MOPHIMS) provides a common means for users to access public health related data to assist in defining the health status and needs of Missourians

Many of the health data included in this report may be accessed on DHSS’s Missouri Public Health Information Management System (MOPHIMS) website, which includes the Community Data Profile and the Missouri Information for Community Assessment (MICA) tools. Users can easily create different types of tables, graphs, charts and maps pertaining to health indicators.

The MOPHIMS home page can be found at <https://healthapps.dhss.mo.gov/MoPhims/MOPHIMSHome>. From here users can access the Community Data Profiles, Data MICAs and EPHT (Environmental Public Health Tracking) query system.

For more information on using the Community Data Profiles and MICAs, please contact the DHSS Bureau of Health Care Analysis and Data Dissemination at 573-751-6285 or email MOPHIMSUserGroup@health.mo.gov.

APPENDIX B – DEATH NUMBERS AND RATES BY CAUSE, GENDER AND AGE GROUP

2017-2021 Age-Adjusted Death Rates per 100,000 Population	Rural Number	Rural Rate	Urban Number	Urban Rate
All causes	130,995	932.2	203,850	834.7
Males	69,477	1,097.9	104,293	1,004.0
Females	61,518	783.4	99,557	694.9
Under 15	1,114	58.3	2,118	55.8
15 to 24	1,289	96.2	2,848	107.2
25 to 44	5,781	241.7	12,310	224.0
45 to 64	25,449	948.2	39,774	772.7
65 and Over	97,362	4,910.9	146,800	4,456.7
Heart disease	31,011	214.7	45,302	180.5
Males	17,346	269.6	24,267	231.5
Females	13,665	166.7	21,035	140.4
Under 15	27	1.4	41	1.1
15 to 24	45	3.4	63	2.4
25 to 44	712	29.8	1,089	19.8
45 to 64	5,995	223.4	8,788	170.7
65 and Over	24,232	1,222.2	35,321	1,072.3
Cancer	25,752	175.8	39,144	155.2
Males	14,265	210.1	20,256	184.9
Females	11,487	148.2	18,888	134.0
Under 15	53	2.8	56	1.5
15 to 24	36	2.7	70	2.6
25 to 44	493	20.6	877	16.0
45 to 64	6,418	239.1	10,172	197.6
65 and Over	18,752	945.8	27,969	849.1

APPENDIX B – DEATH NUMBERS AND RATES BY CAUSE, GENDER AND AGE GROUP

2017-2021 Age-Adjusted Death Rates per 100,000 Population	Rural Number	Rural Rate	Urban Number	Urban Rate
Chronic lower respiratory diseases (CLRD)	9,125	61.1	10,070	40.1
Males	4,581	68.1	4,503	42.4
Females	4,544	56.1	5,567	38.4
Under 15	4	0.2@	21	0.6
15 to 24	11	0.8@	16	0.6@
25 to 44	67	2.8	75	1.4
45 to 64	1,520	56.6	1,558	30.3
65 and Over	7,523	379.5	8,400	255.0
Stroke	5,979	41.0	9,690	38.9
Males	2,597	40.6	4,057	39.8
Females	3,382	40.7	5,633	37.7
Under 15	9	0.5@	14	0.4@
15 to 24	8	0.6@	8	0.3@
25 to 44	86	3.6	153	2.8
45 to 64	764	28.5	1,284	24.9
65 and Over	5,112	257.8	8,231	249.9

APPENDIX B – DEATH NUMBERS AND RATES BY CAUSE, GENDER AND AGE GROUP

2017-2021 Age-Adjusted Death Rates per 100,000 Population	Rural Number	Rural Rate	Urban Number	Urban Rate
Diabetes	3,812	26.7	4,772	19.3
Males	2,119	32.1	2,690	24.8
Females	1,693	21.8	2,082	14.8
Under 15	2	0.1@	7	0.2@
15 to 24	11	0.8@	9	0.3@
25 to 44	144	6.0	199	3.6
45 to 64	915	34.1	1,229	23.9
65 and Over	2,740	138.2	3,328	101.0
Kidney disease	3,018	20.9	4,705	18.9
Males	1,529	24.1	2,440	23.6
Females	1,489	18.2	2,265	15.5
Under 15	5	0.3@	5	0.1@
15 to 24	5	0.4@	4	0.2@
25 to 44	58	2.4	95	1.7
45 to 64	442	16.5	751	14.6
65 and Over	2,508	126.5	3,850	116.9

APPENDIX B – DEATH NUMBERS AND RATES BY CAUSE, GENDER AND AGE GROUP

2017-2021 Age-Adjusted Death Rates per 100,000 Population	Rural Number	Rural Rate	Urban Number	Urban Rate
Pneumonia and influenza	2,467	17.0	3,374	13.6
Males	1,172	18.5	1,594	15.9
Females	1,295	15.8	1,780	12.0
Under 15	14	0.7@	23	0.6
15 to 24	4	0.3@	12	0.5@
25 to 44	58	2.4	101	1.8
45 to 64	338	12.6	442	8.6
65 and Over	2,053	103.6	2,796	84.9
Suicide	2,153	21.0	3,657	17.4
Males	1,796	34.8	2,891	28.7
Females	357	7.1	766	7.1
Under 15	23	1.8	42	1.1
15 to 24	302	22.5	520	19.6
25 to 44	729	30.5	1,278	23.3
45 to 64	689	25.7	1,239	24.1
65 and Over	410	20.7	578	17.5
Alzheimer's disease	4,779	32.2	8,578	34.2
Males	1,519	25.4	2,629	28.2
Females	3,260	36.8	5,949	37.8
Under 15	0	0.0	0	0.0
15 to 24	0	0.0	0	0.0
25 to 44	1	0.0@	1	0.0@
45 to 64	48	1.8	87	1.7
65 and Over	4,730	238.6	8,490	257.7

APPENDIX B – DEATH NUMBERS AND RATES BY CAUSE, GENDER AND AGE GROUP

2017-2021 Age-Adjusted Death Rates per 100,000 Population	Rural Number	Rural Rate	Urban Number	Urban Rate
Unintentional injury	7,192	66.1	13,711	64.3
Males	4,631	87.8	8,745	88.4
Females	2,561	44.4	4,966	41.9
Under 15	264	13.8	396	10.4
15 to 24	635	47.4	1,073	40.4
25 to 44	1,994	83.4	4,477	81.4
45 to 64	1,819	67.8	3,485	67.7
65 and Over	2,480	125.1	4,280	129.9
All drug overdose*	2,185	23.5	6,411	32.1
Males	1,375	29.3	4,368	44.7
Females	810	17.5	2,043	19.9
Under 15	10	0.5@	26	0.7
15 to 24	180	13.4	563	21.2
25 to 44	1,151	48.1	3,307	60.2
45 to 64	744	27.7	2,202	42.8
65 and Over	100	5.0	313	9.5

Source: Missouri Vital Statistics Death File

* Drug overdose mortality data is derived using death certificate data and calculated by the Bureau of Health Care Analysis and Data Dissemination. To be consistent with other reports where drug overdose data is shared, we are including all manners of drug overdose deaths. However, about 90% of all drug overdose deaths are accidental. An @ following a rate indicates that the rate is based on fewer than 20 cases and is considered to be unstable.

GLOSSARY

Age-adjusted rates

Age-adjusted rates allow impartial comparisons between groups with different age distributions. For example, a county with a higher percentage of elderly residents may have a higher rate of death than a county with a younger population. The same distortion can occur when comparing races, genders or time periods with different age structures. Age adjustment controls for different age structures and makes the rates for different groups more comparable.

A standard population distribution is used to adjust death, hospitalization, ER visit, and other types of rates that typically vary with age. Age-adjusted rates are the 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 use of the U.S. 2000 standard population to calculate age-adjusted rates. Staff adjusted all age-adjusted rates in this report using the U.S. 2000 standard population. Age-adjusted rates published elsewhere, such as the Missouri Public Health Information Management System (MOPHIMS) or the annual Missouri Vital Statistics (MVS), may be slightly different from those found in this report due to changes in population estimates.

Correlation

A correlation is a relationship or connection between variables and how much they relate to one another. However, additional investigation is always needed before accepting that one variable causes or influences another. Adapted from <https://mysidewalk.com/>.

Healthy People 2030

Healthy People 2030 objectives are health status targets for the entire U.S. Targets are set using baseline U.S. data. Objectives are organized

into 62 topic areas, with Leading Health Indicators identified in 12 of these topic areas. Additional information about Healthy People 2030 is available at <https://health.gov/healthypeople>.

Health Professional Shortage Area (HPSA)

Page 67 includes information on HPSAs.

Maternal and Child Health (MCH)

MCH refers to the health of both the mother and child, pre-conception and postpartum. Some MCH focus areas aim to reduce premature birth, low birth weight, infant mortality, and obesity among children and adolescents, while also ensuring coordination of care between mothers and their children. The MOPHIMS suite of tools provide additional MCH indicators. The suite of tools can be found at <https://healthapps.dhss.mo.gov/MoPhims/MOPHIMSHome>.

Metropolitan Statistical Area (MSA)

A MSA consists of one or more counties that contain a city of 50,000 or more inhabitants or contain a Census-Bureau-defined urbanized area and have a total population of at least 100,000. Examples include areas surrounding St. Joseph, Kansas City, Columbia, Jefferson City, Cape Girardeau, Joplin, and Springfield. Adapted from U.S. Census Bureau.

Missouri's Behavioral Risk Factor Surveillance System (BRFSS)

The Centers for Disease Control and Prevention (CDC) coordinates the BRFSS, an ongoing telephone health survey of adults conducted in all 50 states. The survey collects information on health conditions, behaviors, preventive practices, and access to health care. Thousands of Missourians participate in the survey each year. Households are randomly selected to participate. Participants respond to general questions about health and specific conditions such as asthma, access to health care, physical activity, and cancer screening. The BRFSS survey has significantly contributed to public health. Public

health practitioners use the survey information to track health behaviors and evaluate progress toward achieving national, state, and local public health goals. For more information, visit <https://health.mo.gov/data/brfss/index.php>.

Preventive Dental Care/Preventive Services Program (PSP)

The Missouri Department of Health and Senior Services implements PSP to focus on the oral health of school-aged children throughout Missouri. The PSP program provides oral health education and preventive services, including screening, an application of fluoride varnish twice a year to prevent tooth decay, and a referral to a dental clinic if necessary.

Ranks

Rural and urban county ranks are reported in some sections of this report. This report is structured so that “1” always indicates the worst rate, regardless of whether the worst rate is the highest or lowest value.

Resident

This report provides data only for Missouri residents. Missouri residents are persons who resided in Missouri at the time of the event in question (birth, death, hospitalization, ER visit, etc.). Missouri receives vital records and hospital/ER data about Missouri residents from most of its border states, and these records are included in the Missouri resident data. For example, a record for a Missouri resident treated in a Kansas hospital is reported as a Missouri resident hospitalization. Data in MOPHIMS, as well as in this report, are categorized by resident status. For instance, the record for an Adair County resident who visited the emergency room in Boone County is counted in Adair County.

Social Determinants of Health (SDOH)

SDOH refer to lifestyle conditions that may cause barriers to being and staying healthy. These are place-based factors that affect health, whether that place represents a physical location or where individuals fit within their social structure. Differences in health are much greater in communities with poor SDOH, such as low income, unstable

housing or unsafe neighborhoods. By addressing and improving SDOH, individual and population health can improve, and disparities in health reduced. For more information, visit <https://www.cdc.gov/socialdeterminants/about.html>.

Statistical Significance

Statistical significance tests are performed to determine whether the difference between two rates is the result of chance factors or if it is meaningful. All tests of statistical significance performed for this report were computed using 95% confidence intervals. In this report, the terms “statistically significant” or simply “significant” indicate that a significance test was performed.

Unreliable Rates

Unreliable rates are rates based on fewer than 20 events. Unreliable rates can be common for small population areas, such as certain counties, and for low-frequency events, such as cause-specific deaths or birth defects. If the use of data from one specified year is not required, data from several years can be combined to generate a reliable multi-year rate. Similarly, data from several counties can be combined to create a reliable regional rate. In this report, 11 years of data were combined to calculate cause-specific death rates and death rates by gender and age-group.



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