

Missouri Office of Rural Health Biennial Report 2006-2007



Missouri Department of Health and Senior Services
Office of Primary Care and Rural Health
www.dhss.mo.gov/PrimaryCareRuralHealth

RURAL HEALTH QUICK FACTS

- Of the 115 counties in Missouri, 103 counties do not contain urbanized areas.
- Of Missouri's population, 30.6% live in rural areas.
- The age-adjusted rates for many of the health status indicators are often much worse for rural areas than for the entire state or for urban areas. Rural areas tend to have higher death rates for most of the leading causes of death.
- Seventy-six counties have a higher percent of population below the poverty rate that is higher than the state as a whole (of which, 71 are rural).
- As of January 2007, there were 5,067 homeless rural Missourians.
- In 2007, out of 63 counties that had an annual average unemployment rate greater than the state as a whole, 60 were rural counties.
- Of the 29 counties with more than 20% of their populations uninsured, all but one were rural counties.
- Of the 70 counties with more than 20.7% of adults without a high school education, only one (St. Louis City) was urban.
- Childhood obesity rates have more than tripled from 1980 to 2004, from 5 to 17%.
- Forty-three rural counties in Missouri had rates higher than the state rate for deaths due to heart disease.
- Over 93% of the counties with rates higher than the state rate for deaths due to stroke are rural.
- Of the counties with a higher rate of death due to diabetes, 88% are rural counties.
- All of the counties with motor vehicle accident death rates greater than the state rate were rural counties.
- The rate of hospitalizations due to alcohol and substance abuse is higher than the state rate in 43 counties, 31 of which are rural counties.
- Rural counties make up 93% of the counties whose rate for the cause of death by suicide exceeds the state rate.

ACKNOWLEDGMENTS AND CREDITS

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Rural Health Biennial Report to the Governor and General Assembly

EXECUTIVE SUMMARY

The Missouri Office of Rural Health (the Office) was established by the 1990 General Assembly (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.” The authorizing legislation also requires the Office to submit a biennial report of its activities and recommendations to the governor and members of the general assembly on or before November fifteenth of odd-numbered years. This report is submitted in compliance with that statute.

Missouri’s Office of Rural Health is located within the Office of Primary Care and Rural Health, Division of Community and Public Health, Missouri Department of Health and Senior Services. The Office, in addition to the statutory roles, analyzes and disseminates rural health information and conducts outreach activities and applied research to improve the health of rural Missourians.

INTRODUCTION

The 2006–2007 Missouri Rural Health Biennial Report provides a snapshot of rural Missouri, including community infrastructure, health care delivery systems, and health determinants. The report reflects Missouri’s unique rural, cultural, and geographic characteristics, including the rich history and resources. Missouri communities are responsible for 90% of the nation’s lead supply, as well as being leading producers in grains, hay, corn and rice. Missouri is a leading agriculture producer ranking fifth in the nation for turkey and soybean production. Additionally Missouri ranks second in the nation for forage production, and sixth for cattle production¹. The majority of the agriculture production occurs in Missouri’s rural farmlands, where residents enjoy close-knit communities and strong traditions.

This publication is comprised of three sections. Section I contains an overview of challenges faced by Missouri’s rural communities, such as, changing populations, demographics, and socio-economic characteristics. Section II contains a summary of health status and health determinants of rural populations. Section III provides health resources, activities and programs.

Goal of the Missouri Office of Rural Health

- To improve health outcomes in rural Missouri.

Strategies

- Improve or build rural health networks and systems through collaboration with state and local agencies and community-based rural health coalitions and stakeholders.
- Increase awareness, advocate for, and develop policies to address rural health care availability and quality.
- Provide technical assistance and resources to rural health care facilities, communities, and rural health stakeholders in order to achieve defined and measurable outcomes for improving health care services and their delivery.

Defining Rural Missouri

For purposes of this report, rural Missouri will be defined as those 103 counties in the state that do not contain urbanized areas, as established in 1999 by the U.S. Bureau of the Census (Map 1). The rural counties make up 89% of the state's counties. The data and information provided throughout this report will be defined according to this classification. The map below shows the counties defined as rural and urban according to this definition. When defining rural Missouri there are limitations such as consistent data collection of newly emerging trends. Examples of emerging trends include the influx of Hispanic populations in rural communities, the increasing senior cohort, and the prevalence of obesity.

Challenges in Rural Missouri

Rural Missourians face many challenges, largely due to geographic isolation and the lack of critical population mass. This is evidenced by 97.4% of Missouri land being classified as rural, however only 30.6% of Missouri's population lives in rural areas². Additionally, Missouri's Hispanic population has grown considerably over the past 10 years with significant increases in the Northeast and Southwest portions of the state. This population increase continues to challenge economically stressed rural

communities in terms of language and cultural barriers. Further, rural communities have limited financial and human resources to influence efforts in addressing healthcare disparities and the quality of care in rural health communities. A major challenge of rural communities continues to be the recruitment and retention of medical and dental professionals. There are many disparities to address in rural areas; and the resources available are relatively limited. These indicators are greatly influenced by the social and economic characteristics of rural Missouri, as well as the lack of health care infrastructure within those communities.

SECTION I - SOCIO-ECONOMIC CHARACTERISTICS

In order to reduce rural communities burden of disease, it is essential to address the major health determinants of rural Missourians. Addressing personal health and lifestyle, community influences, living and working conditions, as well as economic and cultural factors allows for effective health promotion. There are several socio-economic characteristics that have a direct relationship to health in a community or region. The impact of poverty and education on health status are well documented. In the following sections several indicators are reviewed and comparisons are made where appropriate between the rural and urban counties in the state.

Map 1 Rural and Urban Counties Based on Urbanized Area Criteria Census of the Population, 2000



Poverty

Seventy-one counties (93%) of the 76 counties that have a greater percent of population below the poverty level than the state as a whole are rural. As indicated in the map below, only one urban county (St. Louis City) is in the highest quintile, in terms of poverty. The average poverty rate for Missouri's rural counties was 15.1% below poverty, while in urban counties the average poverty rate was 12.6%. It is also of note that the rural counties with the lowest poverty rates were those adjacent to the urban areas. In terms of the poorest rural counties, the majority is in the southeast region of the state. [Map 2](#) shows the distribution of poverty, by county, in Missouri.

When looking at the population under 18, the differences between urban and rural counties are even more pronounced. The percent of children living below poverty is greatest in 25 rural counties and the city of St. Louis. Nineteen of those rural counties are located in the southeast region of the state. The distribution of counties according to children living below poverty is shown [Map 3](#).

Homelessness

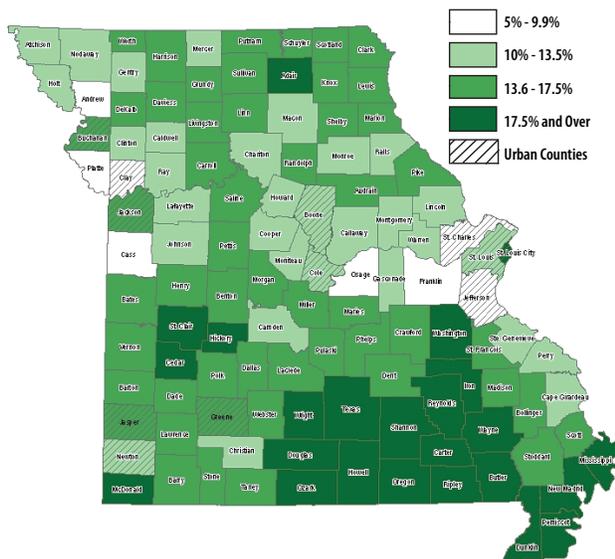
Homelessness is a problem that many Americans face; however homelessness is typically associated with big cities and urban life. Unfortunately, homelessness is an issue rural areas contend with also. The *Homeless Missourians Information System* conducted a Point-in-Time homeless population count on January 5, 2007. The count entails contacting rural emergency and transitional shelters to acquire data on how many homeless individuals are being served that day. The Point-In-Time count yielded 5,067 homeless rural Missourians. Of the 5,067 homeless individuals and families, 959 were categorized as victims of domestic violence, persons with chronic substance abuse or persons with severe mental illness³.

Poverty HOMELESSNESS

Office of Primary Care and Rural Health

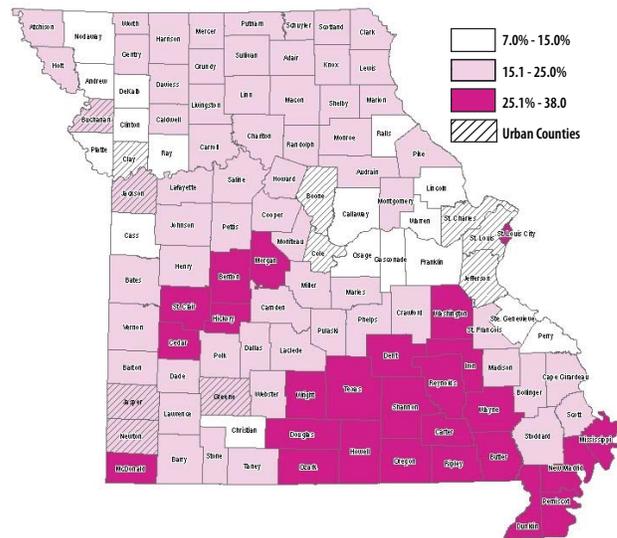
Map 2 *Percent of Population Below Poverty
2004 Estimates Missouri Rate: 13*

Source: U.S. Census Bureau



Map 3 *Percent of Children Below Poverty
2004 Estimates Missouri Rate: 18.5*

Source: U.S. Census Bureau



Unemployment

A characteristic closely tied to poverty as an indicator of the financial health of a community is the unemployment rate. In 2007, 63 counties in Missouri had an annual average unemployment rate greater than the state as a whole. Of those counties, 60 or 95% were rural counties. Taney, Stone and Washington counties had the highest unemployment rates in the state with 16%, 13.4% and 10.1% respectively. In total, there were 14 counties with unemployment rates over 7.0%, of which all 14 were rural counties. The following map depicts the 2007 annual unemployment rates by county.

Uninsured Populations

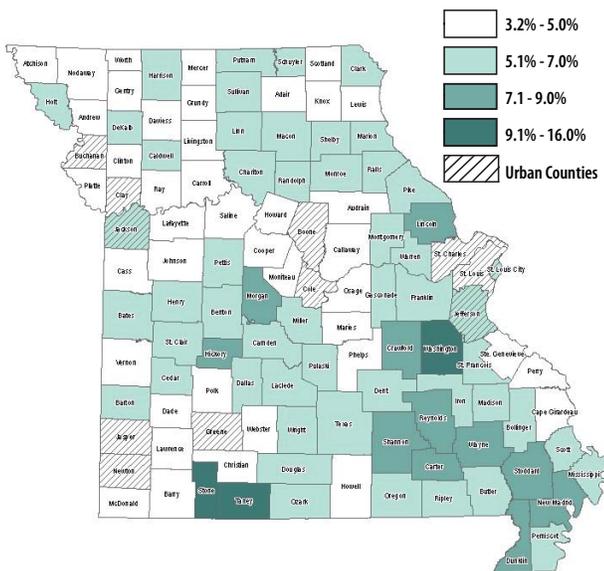
The Office estimates 28% of Missourians currently lack adequate access to health care. Of this 28%, 13.4% are uninsured and 15.4% are on Medicaid⁴. It is very likely this is a conservative estimate, as many employers in Missouri either do not provide health insurance coverage or offer a higher wage for employees who forgo health insurance coverage. The increasing cost of health care continues to discourage most small employers from providing health care insurance to their employees. National Health insurance and Medicaid programs often overlook this rapidly growing “special” population of adult working poor. Working without insurance places medical, dental and mental health care services beyond financial reach for most. Additionally, the homeless and undocumented populations are not well represented in this estimation.

Unemployment Uninsured Populations

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Map 4 *Unemployment Rates by County*
2007 Annual Average **Missouri Rate: 5.1**

Source: Missouri Department of Economic Development



Education

Education and income are highly correlated with health status. The higher the education and income levels of a population, the better the health status is likely to be for that population. In rural Missouri, lack of education, as measured by the percent of population without a high school education, is a very serious issue. Nineteen counties in the state have a percent of population over 18 without a high school education that ranges between 39% and over 61%. All of those counties are rural, and all but two were in the southeast region of the state. Of the 70 counties with more than 20.7% of adults without a high school education, only one (St. Louis City) was urban. Of all rural counties, almost 85% have a percent of adults without a high school education greater than the state rate. This is a critical factor in developing intervention strategies to impact health in rural Missouri. The following map (Map 5) displays the percentage of adults without a high school education, by county, according to the 2000 national census.

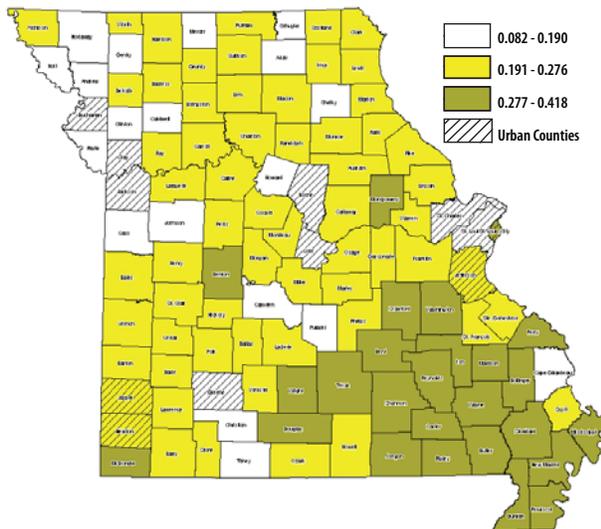
Obesity

The prevalence of obesity is increasing across America. According to the Centers for Disease Control and Prevention, nearly two-thirds of adult Americans are either overweight or obese. Obesity among Missouri adults is 26.3%, which places Missouri adults 12th in a 2007 national obesity ranking, a significant increase from 2005 ranking⁵. Childhood obesity rates have more than tripled from 1980 to 2004, from 5% to 17%, with 13.9% middle school students and 13.2% high school students being overweight. Several studies indicate that obesity is rising among rural populations, which may be attributed to remoteness from physical recreation centers, schools and churches, which necessitate driving, rather than walking or bicycling. Cultural traditions of high fat and caloric food preparation, along with low intake of fruits and vegetables and easy access to high fat and calorie snacks and drinks, also add to increasing obesity rates. Being overweight or obese contributes to risk of diabetes, hypertension, high cholesterol and many other health conditions.

Education Obesity

Office of Primary Care and Rural Health

Map 5 *Percent of Population Over 18 Without a High School Education
2000 Census of the Population Missouri Rate 18.7*



Changing Populations

The 2006 United States Census Bureau lists Missouri's population as 5,842,713, which is a 4.4% increase from 2000. Population estimates released by the United States Bureau of the Census indicate a trend of population loss in several rural counties, located primarily in northern Missouri. Of interest, 39 counties had population losses of up to 5% between the last national Census of the Population and estimates of 2004. Since that time, only seven counties had population losses of up to 5%, of which 100% were rural counties. Conversely, 94% of the state experienced population gains. Although the majority of rural counties gained in population, the largest rural county gains were in those counties adjacent to the urban areas. Those counties were Cass, Christian, Lincoln, Platte, St. Francois, Taney, Warren and Webster. This is indicative of the growth of suburban communities, often at the expense of more urbanized areas. The three counties that experienced the largest growth are in the St. Louis and Springfield areas. Those counties are Christian (29.9%), Lincoln (28.7%) and Warren (21%). The changes in population in all of Missouri counties are shown in [Map 6](#).

The fastest growing ethnic group in Missouri is the Hispanic population. Statewide there was a 92% increase in Hispanics between the censuses of 1990 and 2000. Much of this increase occurred in the Northeast and Southwest portions of the state, although

there were notable gains across the state, including the Bootheel. There are indications that more minorities are moving into Missouri's rural counties, especially in the south central area of the state. The changes facing rural communities in terms of languages and culture are compounding problems around inadequate infrastructure and resources.

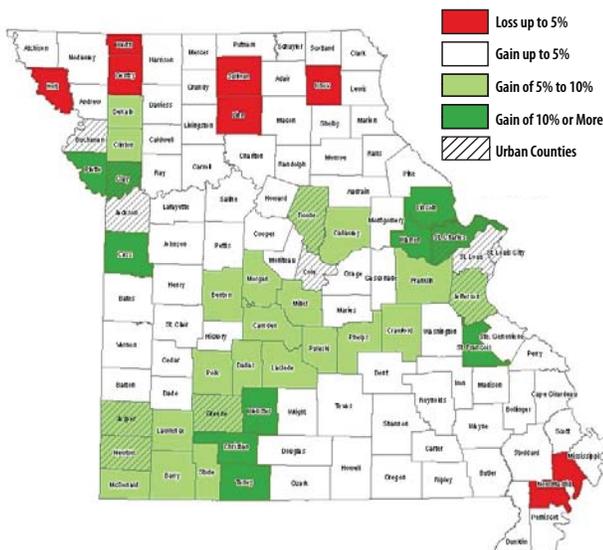
Aging

Missouri's aging population is increasing drastically, reflecting a national trend. In 2005 Missouri seniors accounted for an estimated 784,467 people. The Missouri senior population is projected to reach nearly 15% of the total population by 2010, and to over 18% by 2020— proportions higher than the nation overall⁶.

Elderly individuals in rural areas face additional challenges, such as transportation limitations to get back and forth to essential appointments, and other social and cultural activities. Furthermore, the number of elders in rural communities struggling financially due to single household incomes is a growing trend. Consequently, needed health care and prescriptions become a financial burden and are disregarded. Without adequate health care, conditions go undiagnosed and untreated, causing more serious health complications and increases in existing health disparities.

Map 6 *Changes in Population in Missouri, 2000 to 2006*

Source: U.S. Census Bureau



SECTION II - HEALTH STATUS

An indicator of the disparity in health status between the urban and rural populations is the variation of the death and hospitalization rates for various diseases and health conditions among the counties of the state. The following section looks at diseases and health conditions identified on the Missouri Department of Health and Senior Services Web site as the leading causes of death (Community Data Profiles) and the most pressing health issues (Priorities, Missouri Information for Community Assessment). These Web-based tools provide the listing of diseases and health conditions that most impact the state. From these tools, 10 health status indicators were selected: total death rate; deaths due to heart disease; cancer; stroke; pneumonia and influenza; diabetes; motor vehicle accidents; hospitalizations related to alcohol and substance abuse; kidney disease; and suicide. Unless otherwise noted, all data used in this analysis were provided through Missouri Information for Community Assessment (MICA) for the years 1996 through 2005. To conduct the comparisons, the rates were divided into quintiles by ascending order, and rates in the first two quintiles

were labeled as “lower than state rate”; rates in the third quintile were labeled as “equal to state rate”; and rates in the fourth and fifth quintile were labeled as “greater than state rate”.

Of the 46 counties with age-adjusted death rates for all causes higher than the state rate, 43 (93%) are rural. The majority of those counties with higher death rates are in the southern areas of the state, including much of the counties within the Bootheel or Mississippi Delta Region of the state.

Heart Disease

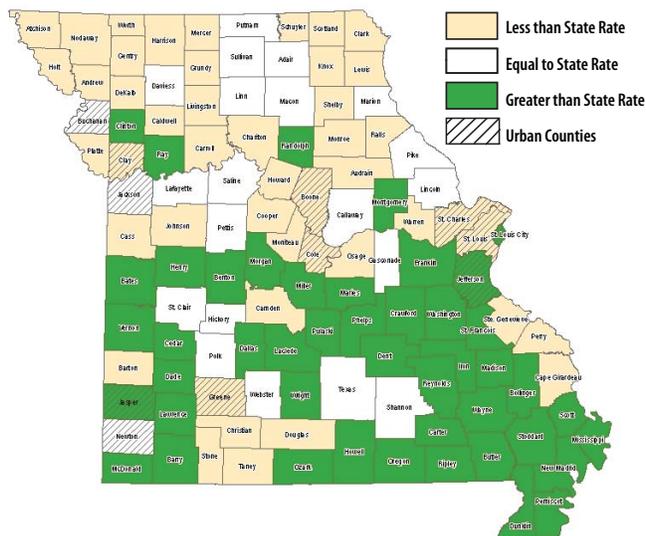
Although the trend of the state rate shows a statistically significant decrease, heart disease continues to be the leading cause of death in Missouri. Forty-six counties have a rate higher than the state rate for this health indicator, 43 of which are rural. Of the rural counties only 36% have a rate lower than the state rate, compared to 75% of the urban counties. Map 8 shows the distribution of counties according to cause of death due to heart disease.

Heart Disease



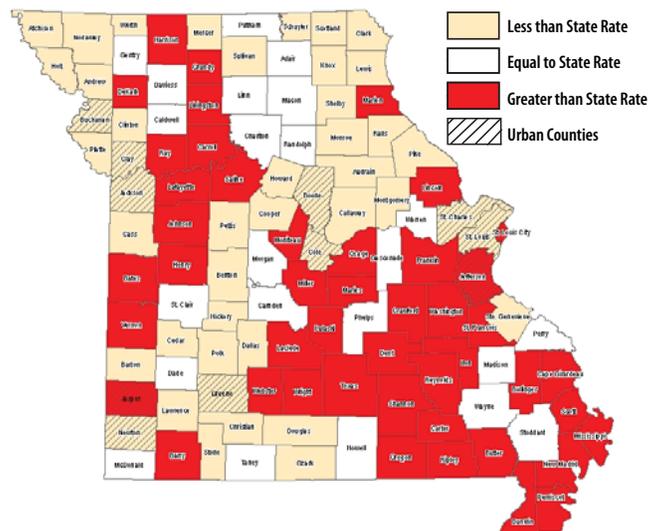
Map 7 Deaths Due to All Causes 1996 to 2005
Age-adjusted Death Rates Missouri Rate: 910.4

Source: Missouri Information for Community Assessment (MICA), www.dhss.mo.gov



Map 8 Deaths Due to Heart Disease 1996 to 2005
Age-adjusted Death Rates Missouri Rate: 278.8

Source: Missouri Information for Community Assessment (MICA), www.dhss.mo.gov



Cancer

The trend of the state's age-adjusted death rate from all cancers in Missouri shows a statistically significant decrease in the last decade. However, cancer continues to be the second leading cause of death in the state. The proportion of counties with rates lower than and greater than the state rate is similar to the percentage of counties that are rural. That is, about 89% of the counties in the state are rural, and about 87% of the counties in the lower category and 91% in the greater than state rate categories are rural. However, it is interesting to note that the majority of rural counties with rates higher than the state rate are located in the southern areas of the state. The distribution of counties by their respective death rate categories due to cancer is shown in [Map 9](#).

Stroke

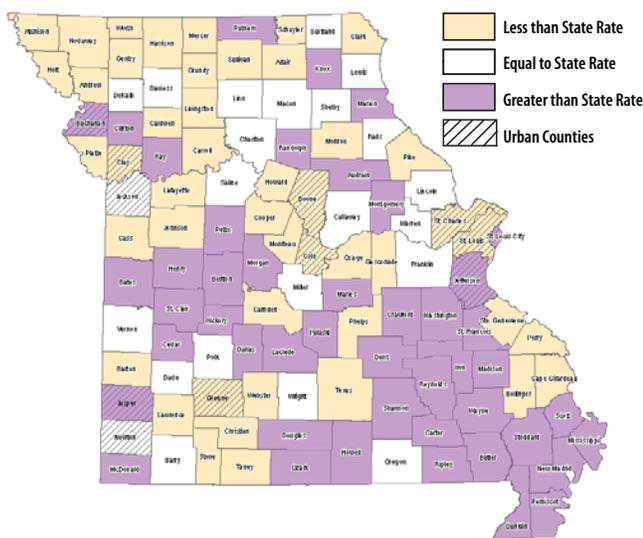
Stroke is the third largest cause of death in Missouri and the nation. According to the American Heart Association, stroke is a leading cause of serious, long-term disability in the United States. In Missouri, there is a disproportionate percentage of rural counties among those counties with rates higher than the state rate. Over 93% of the counties with rates higher than the state rate are rural. The death rate due to stroke in many counties in the northwest section of the state is above the state average. The distribution of counties for deaths due to stroke by rates lower than, equal to, or greater than the state rate is shown in [Map 10](#).

CANCER Stroke

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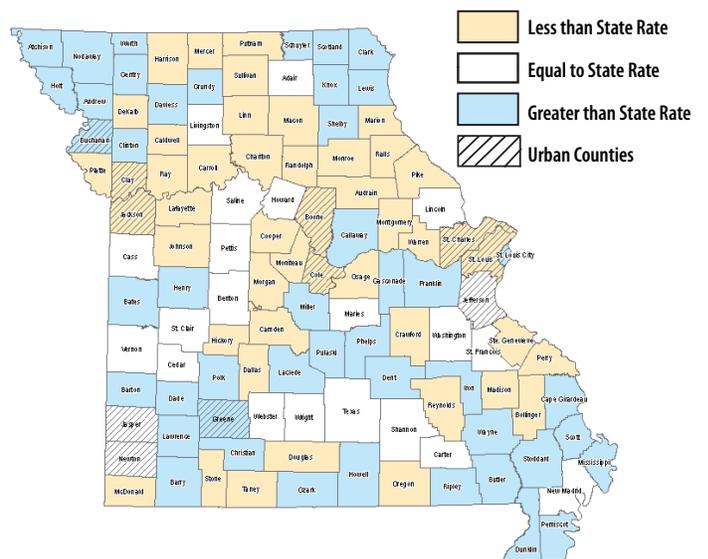
Map 9 Deaths Due to Cancer 1996 to 2005
Age-adjusted Death Rates Missouri Rate: 205.4

Source: Missouri Information for Community Assessment (MICA), www.dhss.mo.gov



Map 10 Deaths Due to Stroke 1996 to 2005
Age-adjusted Death Rates Missouri Rate: 61.6

Source: Missouri Information for Community Assessment (MICA), www.dhss.mo.gov



Pneumonia and Influenza

The fifth leading cause of death in Missouri is pneumonia and influenza. Rural counties make up a slightly higher percentage of counties with a rate higher than the state rate (91% as opposed to 90% counties being rural). However, when looking only at rural or urban counties, 39% of rural counties have a rate above that of the state, while for urban counties the rate is 33%. Statistically the Missouri trend for deaths due to pneumonia and influenza is decreasing in rate; this may be due in part to the widespread use of vaccines for these diseases, which is one indicator of service quality being measured in rural hospitals. However, these diseases continue to have a substantial impact on Missourians. The distribution of counties by their respective rate categories for deaths due to pneumonia and influenza is shown in [Map 11](#).

Diabetes

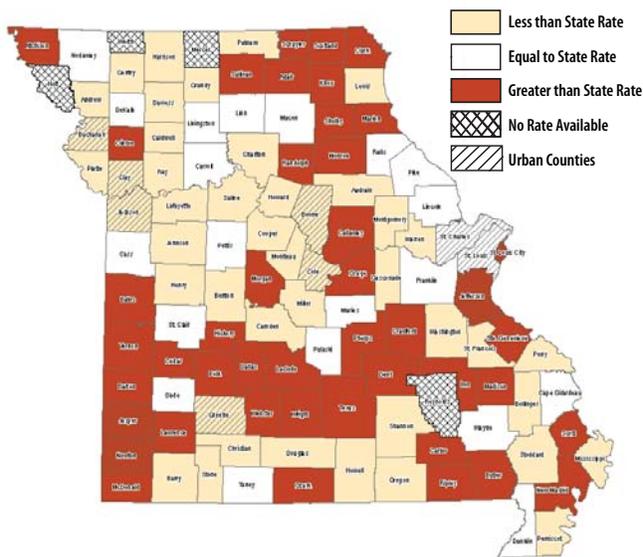
There is a statistically significant increase in the rate of Type 2 diabetes in the state of Missouri. Type 2 diabetes, formerly known as adult onset diabetes or non-insulin dependent diabetes, accounts for 90–95% of all persons diagnosed with diabetes. Risk factors for Type 2 diabetes include older than 45, family history of diabetes, overweight or obesity, physical inactivity and race/ethnicity. Increasing rates of obesity in the state (17.6% in 1994 to 24.8% in 2005 according to the Missouri Behavioral Risk Factor Surveillance System) and the increasing percentage of the population in the older age groups, especially in rural areas, are exacerbating the impact of this disease. Rural counties make up 88% of those counties with a rate higher than the state rate. Unfortunately, rates could not be calculated for 11% of the rural counties. The distribution of counties by their respective rate categories for deaths due to diabetes is shown in [Map 12](#).

Pneumonia Influenza Diabetes



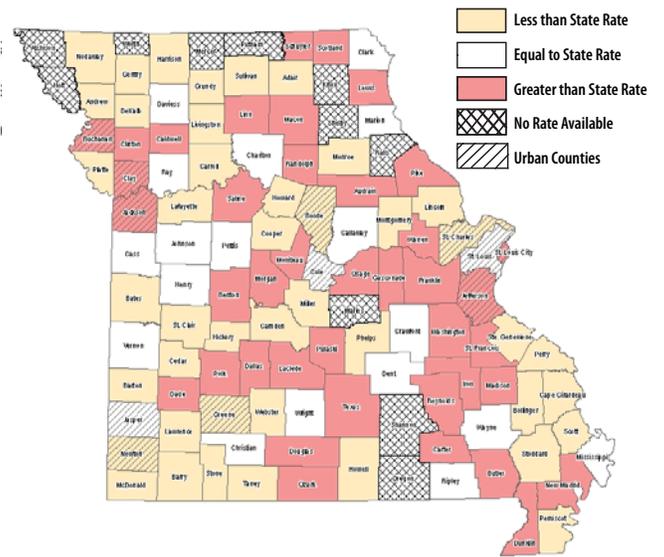
Map 11 *Deaths Due to Pnuemonia and Influenza 1996 to 2005*
Age-adjusted Death Rates Missouri Rate: 29.0

Source: Missouri Information for Community Assessment (MICA), www.dhss.mo.gov



Map 12 *Deaths Due to Diabetes 1996 to 2005*
Age-adjusted Death Rates Missouri Rate: 24.8

Source: Missouri Information for Community Assessment (MICA), www.dhss.mo.gov



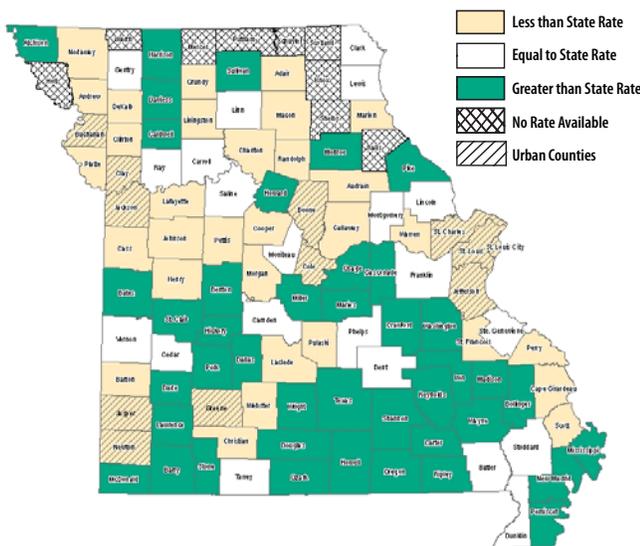
Motor Vehicle Deaths

Deaths due to motor vehicle accidents are a dramatic indicator of the disparity of health systems between rural and urban communities. For example, of the 852 fatal crashes on Missouri highways in 2005, an astounding 654 or 77% occurred in rural areas⁷. This may be due to the geographic remoteness of rural roadways, highway conditions, types of traffic and the lack of health system infrastructure to meet the need of accident victims. Additionally, the University of Missouri Truman School of Public Affairs conducted a survey to capture attitudes of rural and urban teens regarding seatbelt use. The study indicated that significantly fewer teenagers acknowledged wearing a seatbelt and believed it was likely for them to receive legal consequences, such as a ticket for not wearing a seatbelt⁸. It is important to note that Missouri is a secondary enforcement state, meaning that a police officer cannot stop a driver for a seatbelt violation; the stop must be made in connection with another law infraction. This is significant due to the majority of vehicular fatalities involving teenage drivers.

A distribution of counties by their respective rate categories is shown below in **Map 13**. All of the counties with motor vehicle accident death rates greater than the state rate were rural counties. Conversely, all of the urban counties had rates less than the state rate for motor vehicle deaths.

Map 13 Deaths Due to Motor Vehicle Accidents 1996 to 2005
Age-adjusted Death Rates Missouri Rate: 20.1

Source: Missouri Information for Community Assessment (MICA), www.dhss.mo.gov



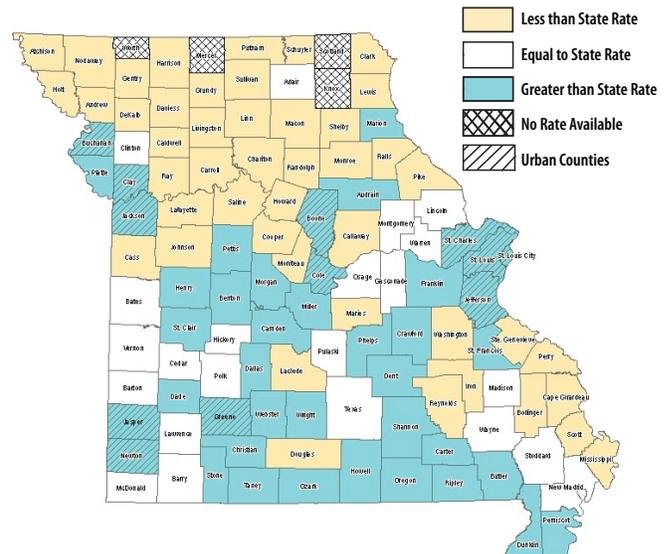
Alcohol and Substance Abuse

Drug activity, methamphetamine production and alcohol abuse are continuing challenges for rural communities. Relative isolation and quiet lifestyle in rural areas provides ideal opportunities to engage in illicit activities. In 2005, approximately one in 16 Missouri high school students reported ever having used methamphetamine. From 1999 to 2005, the prevalence of high school students ever having used methamphetamine decreased on average by 3.4% per year. Missouri's average annual decrease over this time was approximately three times less than that observed nationally (11.1%)¹⁰. Perhaps the more troubling crisis involves the high prevalence of the abuse of alcohol, especially among rural teenagers. Limited access of treatment options for rural areas creates additional barriers when seeking assistance. From 1996 to 2005, the number of alcohol and drug related hospitalizations and emergency department encounters of Missourians increased on average by 2.9% and 9.3% per year respectively. In 2005, there was an alcohol related hospitalization or emergency department encounter for an estimated one in every 116 Missourians.

Map 14, which shows the distribution of counties by indicator rate for hospitalizations due to alcohol and substance abuse, shows an interesting pattern in the rural counties with the higher rates. Most of the rural counties with hospitalization rates higher than the state average (90%) are south of the Missouri River.

Map 14 Hospitalizations Due to Alcohol and Substance Abuse 1996 to 2005
Missouri Rate: 15.4

Source: Missouri Information for Community Assessment (MICA), www.dhss.mo.gov



Kidney Disease

Deaths due to kidney disease are classified as those deaths resulting from nephritis, nephrosis, or nephrotic syndrome. Most of the deaths in this category are attributed to chronic renal failure, or to renal failure unspecified whether chronic or acute. Although rates for kidney disease deaths could not be calculated for over 24% of the rural counties, rural counties still constituted 97% of the counties with rates higher than the state rate. The distribution of counties by their respective rate categories is shown in [Map 15](#).

Kidney DISEASE

Suicide

There are many reasons why suicide is a major health problem, the tragic untimely loss of life, the large number of people affected by suicide, and the enormous health care costs associated with suicide. The average medical cost per completed suicide exceeds \$2,000⁹. Rural counties make up 93% of the counties whose rate for the cause of death by suicide exceeds the state rate. This is the case even though rates are not available for 45 of the rural counties. However, 83% of the urban counties in Missouri have rates that are equal to or less than the state rate, indicating greater access to essential services.

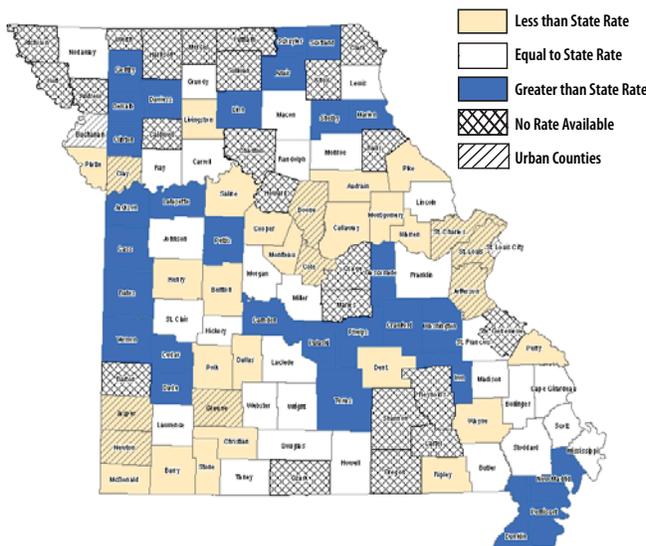
Suicide can be prevented and its impact reduced in much the same way as other public health efforts. This health status indicator, in addition to the following indicator (alcohol and substance abuse), is indicative of the mental health needs within rural communities. The distribution of counties by their respective rate categories for deaths due to suicide is shown in [Map 16](#).

SUICIDE



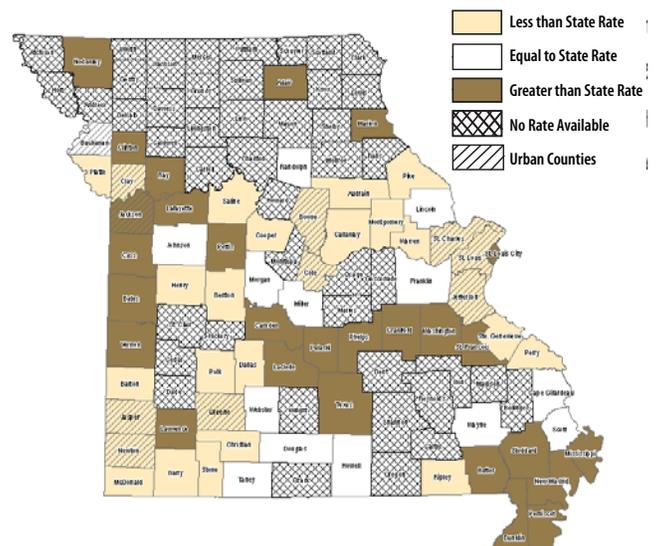
Map 15 *Deaths Due to Kidney Disease 1996 to 2005*
Age-adjusted Death Rates Missouri Rate: 15.3

Source: Missouri Information for Community Assessment (MICA), www.dhss.mo.gov



Map 16 *Deaths Due to Suicide 1996 to 2005*
Age-adjusted Death Rates Missouri Rate: 12.6

Source: Missouri Information for Community Assessment (MICA), www.dhss.mo.gov



SECTION III - HEALTH RESOURCES

Health resources, an essential element in the prevention and treatment of disease and health conditions, are sorely lacking in most rural communities. Small rural towns no longer have the saturation of people or income to support full-time physicians or dentists as well as many other types of health care professionals. It is in the area of health care resources that the stark contrast between rural and urban areas is most obvious. In this section the health resources reviewed include hospital services, primary care physicians and general practice dentists. Although there are many other essential health care practitioners that make up the health care delivery system, the resources reviewed are adequate to differentiate between the rural and urban conditions.

Hospital Services

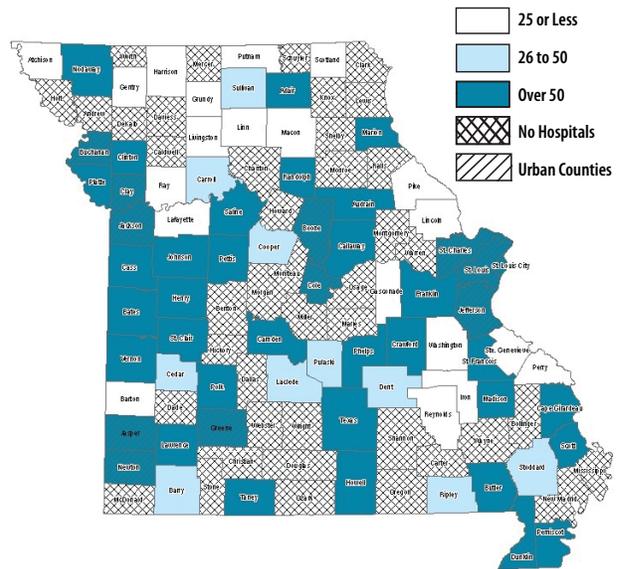
Forty percent of rural counties in Missouri do not have a hospital. Of those rural communities that have a hospital, 21% of rural hospitals have over 100 beds; and those facilities, in Butler, Cape Girardeau and St. Francois counties, serve large rural service areas. The lack of hospitals in rural Missouri is also indicative of the lack of certain hospital services, especially emergency room and specialty care. The need for these services is dramatically evident in the disparity of health status indicators identified earlier. However, most rural populations must travel excessive distances to obtain many types of specialty care, e.g., cardiology, rheumatology, endocrinology, etc. Given the large proportion of rural populations that are elderly or in poverty, the lack of these services locally, can mean no access for those in need. The following map (Map 17) shows the distribution of staffed hospital beds in the state.

Hospital Services

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Map 17 *Staffed Hospital Beds by County*

Source: Missouri Department of Health and Senior Services.



Primary Medical Care

The number of federally designated Health Professional Shortage Areas (HPSA) throughout Missouri continues to decrease and the types of HPSA designations are changing. For instance, Geographic HPSAs are based on the ratio of primary care physicians to the general population, while Low-Income HPSAs are based on the amount of care provided to those at or below 200% of the Federal Poverty Level (for Missouri this is mainly the Medicaid and uninsured patients). Much of this radical change is prompted by the concentration of primary care providers in regional medical centers. Therefore, areas that previously qualified as Geographic HPSAs are being designated as Low-Income HPSAs. Map 18 illustrates the current Primary Care HPSA distribution for the two types of HPSA designations in Missouri.

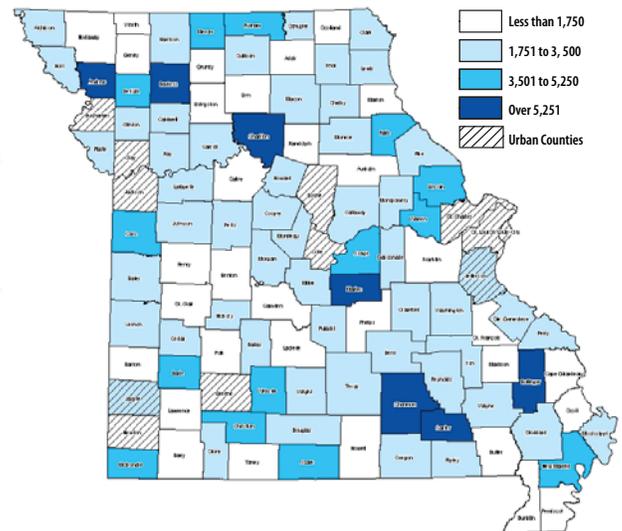
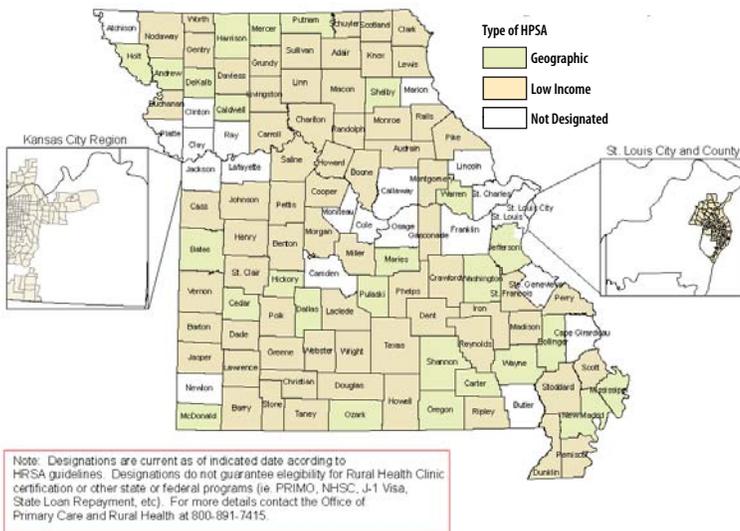
Twenty-five counties in Missouri, all rural, have a population to primary care physician ratio that exceeds 3,500-to-1, the federal standard for health professional shortage areas. Only one urban county (Jefferson) has a ratio of greater than 3,000-to-1, while one-third of rural counties exceed this ratio. Most urban counties (75%) have ratios of less than 1,400-to-1. Although 40% of Missouri's population lives in rural areas of the state, only 25% of the primary care physicians are located in rural areas. This disparity in primary medical practitioners is a critical factor in assuring access to preventive and maintenance health services in rural Missouri. The distribution of primary care physicians in Missouri is shown on Map 19.

Primary MEDICAL CARE

Office of Primary Care and Rural Health

Map 18 Primary Care Health Professional Shortage Areas (HPSA) September 2007

Map 19 Ratio of Population to Primary Care Physicians, 2004



Primary Care Dentists

Primary care/general dentists are also key healthcare practitioners. Recent research and findings indicate the importance of maintaining good oral health. Further studies show that oral disease contributes to many serious overall health conditions such as heart and digestive disease, diabetes, and premature and low weight babies. The need for dentists is not exclusively a rural problem, although access to dental services is a much greater issue in rural communities. The average number of patient visits a dentist sees each year is less than 3,000. In Missouri, the number of counties with a population to dentist ratio that exceeds 3,000-to-1 is 100 or 87%. Of those that exceed this standard, 93 are rural.

Additionally, there are five rural counties that don't have a dentist in the county. Although there are 10 rural counties with ratios of less than 3,000-to-1, these counties tend to be either regional medical centers or have very low populations. The dentists in rural Missouri represent only 28% of licensed dentists, while the population in those counties constitutes 40% of the total population. The distribution of dentists in Missouri counties is represented on [Map 20](#).

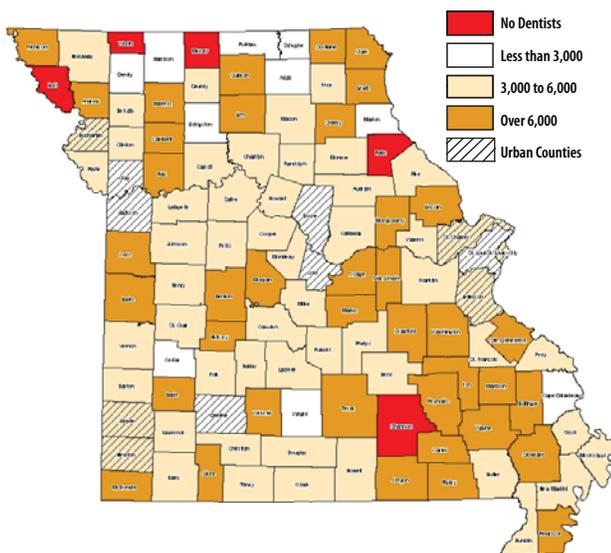
Summary

In review, whether looking at indicators of health status, economics or health infrastructure, the rural areas of Missouri are at a disadvantage, when compared with the state as a whole or with urban counties. Each of these indicators is directly related, as the socio-economic status and health infrastructure of a community determine, in large part, the overall health status of the community. In order to address the health outcomes in rural communities, the Office of Rural Health partners with national, state and local organizations to implement an array of interventions and programs designed to enhance and improve the socio-economic and health infrastructure issues in rural areas. These efforts are detailed in the following sections.

Primary Care Dentists

Biennial Report 06-07

Map 20 *Ratio of Population to General Dentists, 2004*



ACTIVITIES AND PROGRAMS

The program and activity areas of the Office are designed to address the health infrastructure of rural communities to impact both the health outcomes and economy of those communities. The programs listed are efforts to improve outcomes within the emergency medical, hospital and primary care services in rural communities. Although these entities are often the direct recipients of the technical assistance or services provided by the Office, all other aspects of the rural community, including local public health, education, local government, businesses and social service agencies are encouraged or required to be partners and participants in the overall efforts. The specific programs and functions are described in detail below.

Missouri Comprehensive Advanced Life Support Program

Rural facilities often lack trauma or general surgeons, specialists and diagnostic tools, unlike the emergency departments of urban hospitals. Transport of seriously ill patients to tertiary centers might take hours. The patient's life depends on the skill and knowledge of a health care team that may consist of only a family physician and several general care nurses.

This common rural scenario led to the formation of the Comprehensive Advanced Life Support (CALs) program, an educational program developed by a multidisciplinary working group supported by the Minnesota Academy of Family Physicians. The primary focus is to train medical personnel in a team approach to anticipate, recognize and treat life-threatening emergencies. There are three components to the CALs program: 1) home study, 2) provider course and 3) Benchmark Lab.

The Missouri Office of Rural Health determined there was significant value for the CALs program in Missouri. The Office has contracted with A. T. Still University of Health Sciences, Missouri Area Health Education Center (AHEC) to assist with the formation of a Missouri Chapter of CALs (MoCALs). Funding for this program was provided through the Medicare Rural Hospital Flexibility (FLEX) grant. Activities focused on implementation of MoCALs began September 1, 2004 and are continuing. The Minnesota CALs program recommended certain professional and provider groups that were critical to the success of the program. The recommended partners for support of the MoCALs program include: American College of Emergency Physicians – Missouri Chapter, Missouri Academy of Family Physicians, American College of Surgeons/ Trauma Surgeons, Missouri Nurses Association and American Heart Association – Missouri Affiliate.

The MoCALs Planning Committee provides guidance and stakeholder input on the operations of the program. The Planning Committee has been expanded and

continues to work to not only develop the MoCALs program but to assure that the program is supported by critical groups throughout the state. Twenty-two community-based emergency care providers (physician, nurse, paramedic and physician assistant) have completed CALs classroom and skills lab training under an agreement with the National CALs training program based in Minnesota. These individuals are using the CALs skills in providing emergency care in their hospitals, which include Critical Access Hospitals (CAH), community hospitals, regional referral centers and tertiary care centers. Individuals from this group will be trained by National CALs faculty as Missouri CALs instructors and offer the first Missouri-based CALs courses to emergency care staff in rural Missouri hospitals in early 2008. Initial efforts will focus on making the CALs training available to rural Critical Access Hospitals. Data on emergency care delivery and patient outcomes at selected hospitals will be collected before and after staff has participated in CALs training to evaluate the impact of the training.

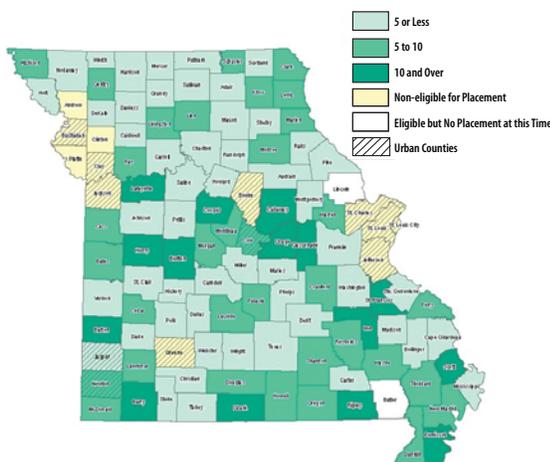


Rural Access to Emergency Devices Program

This program has provided Automated External Defibrillators (AED) and training in Cardiopulmonary Resuscitation (CPR) and AED operations in federally designated areas of rural Missouri. The Office has partnered with the Unit of Emergency Medical Services (EMS) in the development of the approved distribution plan and for coordination of training of healthcare professionals and non-healthcare personnel from each recipient site. Training includes certifications in CPR and AED through American Red Cross or American Heart Association instructors and basic stroke information.

Presently, over 630 AEDs have been distributed in rural Missouri and over 4,700 rural first responders received CPR, AED and stroke training. The following map shows the distribution of AEDs in Missouri.

Map 21 Rural Access to Emergency Devices Automatic External Defibrillator Placement by County



Critical Access Hospital (CAH) Conversion Program

Through the Medicare Rural Hospital Flexibility Program, the Office has had the opportunity to certify rural hospitals as necessary providers, making them eligible for CAH status. As a CAH, rural hospitals are limited to 25 licensed beds and must have certain services such as an emergency room. The benefit to the hospital and community of CAH status is an enhanced reimbursement from Medicare for inpatient, outpatient and emergency room services. This is extremely important as rural communities tend to have higher concentrations of Medicare-dependent, elderly populations. There are 36 facilities that have converted to CAH status. The location of those facilities is shown on [Map 22](#).

Map 22 Critical Access Hospitals November 2007



Small Rural Hospital Improvement Program

The Small Rural Hospital Improvement Program (SHIP) is a federally funded program that provides funding to small rural hospitals to pay for costs related to compliance with provisions of Health Insurance Portability and Accountability Act (HIPAA), implementation of the Medicare Prospective Payment System (PPS) and the expansion of Quality Improvement Programs. To be eligible for these grants, a hospital must have less than 50 available beds, as reported on the hospital's most recently filed Medicare Cost Report, and be located outside a Metropolitan Statistical Area (MSA).

During the reporting period, \$791,947 was distributed among 45 participating hospitals. The funds were used in quality improvement programming (67%), HIPAA compliance (28%) and PPS implementation (5%). The majority of these funds are used to purchase technical assistance, services, training and information technology. Specifically, these funds were used to implement educational programs for hospital staff, to implement the use of electronic health records, and to create private-conversation areas to abide by HIPAA guidelines. Hospitals also used funds to develop procedures for prevention and reduction of medical errors such as development of electronic medication administration records; hand held devices and docking stations for scanning barcodes; software upgrades for electronic ordering and firewall security. Infant protection systems have also been installed to prevent newborns from being removed from the hospital without authorization. To help maximize purchasing power through economies of scale, the Office encouraged and assisted eligible hospitals to form consortiums and pool their grant funds for the purchase of needed services.

Critical Access Hospital Network (CAHnet)

In January 2005 Missouri Office of Rural Health (MORH), Missouri Hospital Association, Missouri Rural Health Association and Primaris (Missouri's health care facility quality improvement organization as designated by the Center for Medicaid Services) formed a statewide technical support and communications network for Missouri Critical Access Hospitals (CAH). The network, referred to as the "CAHnet", was created to identify and deliver essential technical assistance and services for CAHs. CAHnet activities are to strengthen and sustain quality and safety by:

- Enhancing and sustaining operational efficiencies and continuity
- Developing and implementing strategies that lead to increased organizational effectiveness
- Engaging customers and community stakeholders in creating an effective and efficient system of care.
- Defining, building and participating in local and regional partnerships

To identify and target needed technical assistance, the Office and CAHnet partnership identified current CAH needs and capacity through online surveys and consultations with CAH administrators and key senior staff. Based on information obtained from the survey, resources have been allocated to implement the Balanced Scorecard Performance Improvement Program. The model has proven to be highly successful in the Mississippi Delta Region and was dynamic enough for each hospital to define their unique objectives, initiatives, targets and measures for quality improvement. Ultimately, it is the goal of the Office to have not only CAHs but all rural hospitals implement quality improvement plans and measures that either increase, optimize or sustain rural health care services to their communities and customers.

Balanced Scorecard Performance Improvement Program

Based on information provided by Critical Access Hospitals (CAH) in Missouri, the Office allocated resources to implement a model for quality improvement called the Balanced Scorecard. The Balanced Scorecard is a framework that helps organizations put strategy at the center of the organization by translating strategy into operational objectives that drive both behavior and performance. The model proved to be highly successful in the Mississippi Delta Region and was dynamic enough for each hospital to define their objectives, initiatives, targets and measures for quality improvement. Benefits of Missouri's hospitals that implemented the Balanced Scorecard system

include increased employee alignment to overall organizational goals, improved collaboration to achieve goals, employees exhibiting an unrelenting focus on strategy and increased financial returns. Seven Missouri rural CAHs are presently engaged in the Balanced Scorecard. MORH has budgeted for four additional designated CAHs to implement the Balanced Scorecard and to provide technical assistance and advisement for the additional seven CAHs, currently using the Balanced Scorecard model, to improve financial business management. MORH will continue to build the Balanced Scorecard program in Missouri, and build capacity in the state partner organizations (CAHnet – Missouri Office of Rural Health, Missouri Rural Health Association, Primaris (Missouri's QIO) and the Missouri Hospital Association) to maintain and expand the program. Ultimately, it is the goal of the Office to have not only CAHs but all rural hospitals implement quality improvement plans and measures that either increase, optimize or sustain rural health care services to their customers and communities.

Primary Care Delivery System Development

Economically sustainable health care delivery systems that provide high quality, accessible, primary medical, dental and mental health services are necessary to assure the survival of rural communities. Health care delivery systems throughout Missouri include a broad range of health services and care settings that strive to prevent, treat and manage disease, injury and disability. To assist communities in reaching this goal, the Office continues to work with the Health Care Delivery System Development component of the Primary Care Office and the Primary Care Resource Initiative for Missouri (PRIMO) program.

In state fiscal years 2006 and 2007, PRIMO invested \$3,495,700 in rural communities. As a result, an increased capacity to provide medical, dental and mental health care services in 16 separate rural communities was achieved. Access to health care services was increased in these communities by 119,240 patient health care encounters (collectively). Rural counties with communities receiving PRIMO investments included: Benton, Chariton, Clark, Iron, Jefferson, Lafayette, Linn, Marion, Morgan, Oregon, Pettis, Reynolds, Ripley, Taney and Washington counties. Additionally, more than three million dollars in ongoing annual federal grants to the community health centers in Benton, Chariton, Iron, Jefferson, Oregon, Pettis, Reynolds, Taney and Washington counties are attributed to the investments and support provided through PRIMO.

PRIMO also invests in statewide organizations and institutions to facilitate early recruitment of students pursuing primary health care careers through the PRIMO “pipeline.” The initiatives are a combination of school-based orientations to health care careers and community-based approaches and activities that foster interest in health care careers. The investment outcomes are also focused on establishing clinical training opportunities in rural and underserved areas to develop pre-admissions programs and to provide communication and support systems for students enrolled in a health care provider program. Communities benefit from PRIMO student loans because it reduces the overall dollar amount that would otherwise leave the community to pay for education in another (outside) community that is typically urban. PRIMO early recruitment and retention efforts also provide funds to training institutions, which positively impacts the economics of the educational institutions and the communities in which they are located.

Oral Health

The Oral Health Program provides a broad range of core public health activities. Dental caries continues to be one of the most common diseases in our children population with lack of access to oral health care being a contributing factor. A surveillance project was conducted in 2004–2005 to document the oral health of Missouri’s 3rd and 6th grade children. This survey revealed that the percentage of children with untreated dental decay had risen from 22% in 2000 to 24%. More information regarding this survey and survey results can be found at:

<http://www.dhss.mo.gov/oralhealth/OralHealthReport.pdf>

<http://www.dhss.mo.gov/oralhealth/ShowMeSmile2005.pdf>.

In response to the growing dental need of children in Missouri the Preventive Services Program (PSP) was implemented in late 2005. The PSP is a community-based program for oral health designed to assist populations in taking responsibility for the oral health of its children. The PSP consists of four components: surveillance, education, prevention and referral.

The surveillance portion of PSP supplies on-going statewide oral health data through annual dental screenings provided by licensed dentists and dental hygienists. The prevention portion of PSP provides two applications of fluoride varnish per year to each participating child as well as toothbrushes, toothpaste and floss. An age-appropriate educational curriculum is available to fulfill the educational component of PSP in addition to other educational material. Communities are encouraged to develop

a dental service referral network through the PSP structure. Dental hygienists and a dentist serve as consultants for this program and work to encourage communities to act on behalf of better oral health for their children.

The state initiates PSP promotional activities and distributes materials to inform the public of this program. Promotional materials include website news media (www.mohealthysmiles.com), radio spots, printed posters and displays at civic and professional meetings. Additionally, the Oral Health Consultants make personal visits to groups or individuals interested in implementing PSP.

The Oral Health Program collaborates with the Missouri Primary Care Association and the Missouri Coalition for Oral Health to encourage the development of a safety net structure for oral health throughout the state. Educational resources, portable dental equipment and toothbrushes are provided to communities conducting oral health events. Other on-going programs include:

- **The Elks Mobile Dental Program** provides dental services to special health care needs children and other special needs populations.
- **The Missouri Donated Dental Services Program** allows volunteer dentists to provide services to qualified disabled and elderly at their own sites without charge to the patient. Participating laboratories provide denture fabrication for a negotiated fee or at no cost.
- **Community water fluoridation programs** continue to be encouraged by providing information and education on the benefits of fluoridation.
- Recruitment of dentists and dental hygienists to work in limited or low access areas is accomplished through **student loan repayment programs**.



FUTURE ACTION AND NEXT STEPS

The Office of Primary Care and Rural Health has identified additional areas of concentration for the immediate future. Much of the programming that has occurred in the past will continue, with increased focus on measurable health outcomes. The identified areas of concentration include: Statewide Planning and Evaluation, Quality Improvement Activities, Network Development, Emergency Medical Services Enhancement and Systems of Care Modeling.

Planning and Evaluation

The Office has identified as a goal, the development of an operational rural health plan for the state of Missouri. Although a state plan was developed to allow Missouri to participate in the Medicare Rural Hospital Flexibility Program, no operational plan has been developed. The Office, in collaboration with statewide partners, including the Missouri Rural Health Association, the Missouri Hospital Association, the Missouri Primary Care Association and University of Missouri Extension, have initiated a process to develop this plan. This report will form a portion of the needs assessment and asset mapping necessary to develop the plan. Also, additional statewide and community partners will be recruited to aid in the process. This process will be implemented in state fiscal year 2008.

Quality Improvement

Quality and performance improvement programming will continue to be an emphasis for all Office activities. It is the intent to expand tools such as the Balanced Scorecard from hospitals into other local and state organizations. The Office will implement a Balanced Scorecard for the statutory and grant required activities, as well as the other program areas within the organization. Other statewide and community partners will be encouraged, and technical assistance will be offered by the Office and other statewide partners, to implement this performance improvement approach that emphasizes strategic planning and public reporting.

Network Development

The expansion of CAHnet activities and participants is a key element of future operations. As the number of communities partnering with the Office increases, so does the opportunities to expand networks to provide input to the Office on program operations and environmental assessments, as well as sharing technical and financial resources among network participants. As the need increases in rural Missouri, and the total amount of resources available holds constant, increased communication and coordination within and among rural communities holds the key to improving and sustaining health care outcomes.

EMS Enhancement

Emergency medical services will continue to be a priority area for programming in the future. New partners from trauma centers, emergency physician organizations and first responder agencies are being sought, with expanded education opportunities across the EMS delivery system. In addition, a Balanced Scorecard for EMS is being developed to encourage performance improvement activities in this aspect of the health care delivery system.

Systems of Care Modeling

The Office uses the community-based model Systems for Community Health and Life Quality to guide and assist community organizations. This approach represents all aspects of the community and stresses the importance of a focal point for assessment, planning and resource allocation, whether it be through a community-based board or community coalition. The model is used to expand the community's ability to understand and effectively communicate the economic, social and health benefits of an effective and efficient health care delivery system (including preventive as well as restorative/acute care).



CONCLUSION

Missouri's rural communities boast rich resources, traditions and strong family values. Unfortunately when comparing social and health resources available in rural areas to urban resources, rural communities can be considered a neglected frontier. In order for Missouri's rural communities to continue thriving the disparate conditions must be addressed through awareness and advocating for policy change. Policy priorities should include equity in access to quality healthcare for uninsured and underinsured, recreational facilities, and creating an infrastructure for health education dissemination. Additional topics that need to be addressed are motor vehicle safety, housing and health disparities.

The Department of Health and Senior Services' Office of Rural Health will continue to provide resources to community organizations, facilities and individuals in order to improve operational efficiencies, program effectiveness and health outcomes for rural Missourians. The Office will continue the focus on community organization and oversight of local systems of care, to enable and empower those communities to address their citizens' health care needs and to increase involvement and investment in health from all aspects of the community. The Office also welcomes the opportunities to work with federal, state and local partners to expand rural systems of care, in order to assure optimal services in rural communities.

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(Endnotes)

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- ⁶ Missouri Senior Report, Ahead of the Baby Boom: Missouri Prepares 2006
<http://www.missouriseniorreport.org>
- ⁷ Seat Belt Use Among Rural and Urban Pickup Truck Drivers
<http://truman.missouri.edu/uploads/Publications/4-2007PickupDrStBltUse.pdf>
- ⁸ Attitudes Toward Seat Belt Use Among Urban and Rural Teens
<http://truman.missouri.edu/uploads/Publications/3-2007UrbRurTeenBeltUse.pdf>
- ⁹ Suicide Prevention Resource Center, Missouri Suicide Prevention Fact Sheet
www.sprc.org
- ¹⁰ Youth Risk Behavior Surveillance System, Centers for Disease Control and Prevention, U.S. Department of Health and Human Services



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