Boone Hospital Center BJC HealthCare

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2016 COMMUNITY HEALTH NEEDS ASSESSMENT REPORT AND IMPLEMENTATION PLAN

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I. Executive Summary

Boone Hospital Center, a member of BJC HealthCare, is a 397-bed hospital located in Columbia, Missouri. Among its many specialty areas, Boone Hospital Center is known for its cardiology, neurology, oncology, surgical and obstetrical services. For over 90 years, Boone Hospital Center has provided progressive health care programs, services and technologies in its mission to improve the health of the people and communities in mid-Missouri. Boone Hospital Center has also established effective partnerships towards the goals of improving the health of the community. (See Appendix A).

Like all nonprofit hospitals, Boone Hospital Center is required by the Patient Protection and Affordable Care Act (PPACA) to conduct a community health needs assessment (CHNA) and create an implementation plan every three years. Boone Hospital Center completed its first CHNA and implementation plan on Dec. 31, 2013. The report was posted to the hospital's website to ensure easy access to the public.

As part of the CHNA process, each hospital is required to define its community. Boone Hospital Center defined its community as Boone County. Once the community is defined, input must be solicited from those who represent the broad interests of the community served by the hospital, as well as those who have special knowledge and expertise in the area of public health.

Boone Hospital Center conducted its 2016 assessment in two phases. The first phase consisted of a focus group discussion with key leaders and stakeholders representing the community. This group reviewed the primary data and community health need findings from 2013 and discussed changes that had occurred since 2013. Additionally, the focus group reviewed gaps in meeting needs, as well as identified potential community organizations for Boone Hospital Center to collaborate with in addressing needs.

During phase two, findings from the focus group meeting were reviewed and analyzed by a hospital internal work group of clinical and non-clinical staff. Using multiple sources, including Healthy Communities Institute and Centers for Disease Control and Prevention (CDC)/State Cancer, a secondary data analysis was conducted to further assess the identified needs. This data analysis identified some unique health disparities and trends evident in Boone County when compared against data for the state and country.

At the conclusion of the comprehensive assessment process, Boone Hospital Center identified one health need where focus is most needed to improve the health of the community it serves: Obesity.

The analysis and conclusions were presented, reviewed and approved by the Boone Hospital Center board of directors.

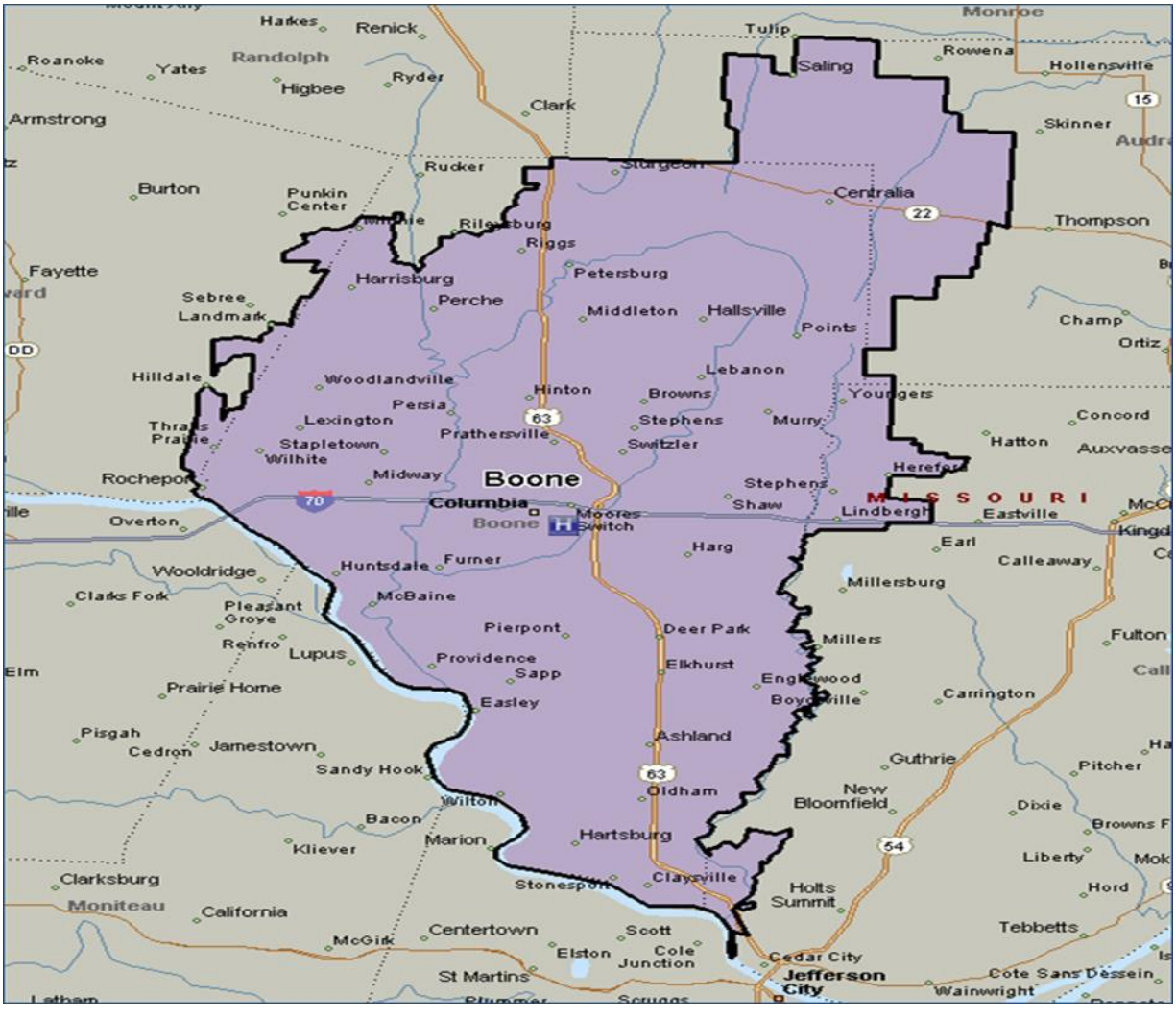
II. Community Description

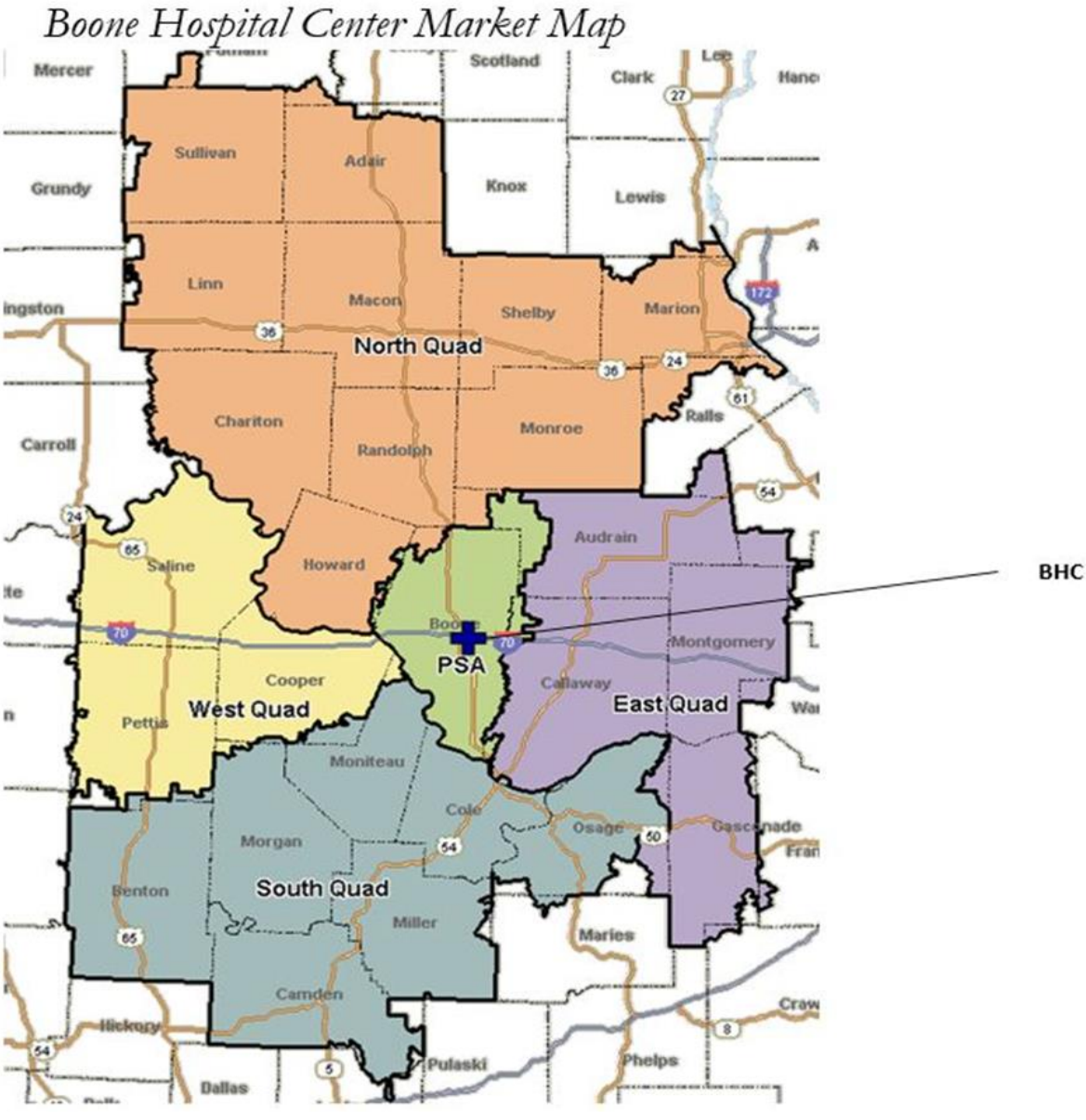
A. Geography

Boone Hospital Center is located in Boone County in the city of Columbia, Missouri, the county seat and largest city in Boone County. For the purpose of this CHNA, the hospital's defined community is Boone County.

Boone County Map

Boone Hospital Center is located along the I-70 corridor in mid-Missouri and has a service area of 25 counties.





Boone Hospital Center's primary service area (PSA) is represented by the green shaded area in the center of the map. The four quad areas outside the PSA indicate the hospital's secondary service areas.

Table 1 details the county's population as compared to the state.

Table 1: Boone County vs. Missouri Demographic		
GEOGRAPHY	**Boone County**	**Missouri**
Land area in square miles, 2010	685.41	68,741.52
Persons per square mile, 2010	237.30	87.1
POPULATION		
Population, July 1, 2015 estimate	174,974	6,083,672
Population, 2010 (April 1) estimates base	162,642	5,988,923
Population, percent change - April 1, 2010 to July 1, 2015	7.6%	1.6%
Population, 2010	162,642	5,988,927
RACE / ETHNICITY / Language Spoken		
White alone, percent, 2015	82.3%	83.5%
White alone, not Hispanic or Latino, percent, 2015	79.5%	67.6%
African American alone, percent, 2015	9.6%	11.8%
Asian alone, percent, 2015	4.7%	1.9%
Hispanic or Latino, percent, 2015	3.3%	4.0%
Two or More Races, percent, 2015	2.9%	2.0%
American Indian and Alaska Native alone, percent, 2015	0.4%	0.5%
Native Hawaiian and Other Pacific Islander alone, percent, 2015	0.1%	0.1%
Foreign born persons, percent, 2010-2014	5.9%	3.9%
AGE		
Persons under 5 years, percent, 2015	6.0%	6.2%
Persons under 18 years, percent, 2015	20.5%	23.0%
Persons 65 years and over, percent, 2015	10.9%	15.4%
GENDER		
Female persons, percent, 2015	51.6%	50.9%
Male person, percent, 2015	48.4%	49.1%

Source: US Census Bureau

B. Population Trend

Population and demographic data is necessary to understand the health of the community and plan for future needs. Boone County has a population of 174,974 (2015 Census estimate). The population experienced a 7.6 percent increase from 2010 to 2015, a significant growth for the county.

Boone County 2015 Population	**Missouri 2015 Total Population**
174,974	6,083,672
51.6 percent Female (90,287)	50.9 percent Female (3,096,590)
48.4 percent Male (84,687)	49.1 percent Male (2,987,082)
82.3 percent White (144,004)	83.5 percent White (5,079,866)
9.6 percent African American (16,798)	11.8 percent African American (717,873)
4.7 percent Asian (8,224)	1.9 percent Asian (115,590)
3.3 percent Hispanic or Latino (5,774)	4.0 percent Hispanic or Latino (243,347)
2.9 percent Two or More Races (5,074)	2.1 percent Two or More Races (127,757)

Table 2: Boone County Demographic Including Education, Income, Housing vs. Missouri

EDUCATION	**Boone County**	**Missouri**
Language other than English spoken at home, percent 5+, 2010-2014	8.0%	6.1%
High school graduate or higher, percent of persons age 25+, 2010-2014	93.2%	88.0%
Bachelor's Degree or higher, percent of persons age 25+, 2010-2014	47.7%	26.7%
INCOME		
Per capita money income in the past 12 months (2011 dollars), 2010-2014	$27,098	$26,006
Median household income (in 2014 dollars), 2010-2014	$49,059	$47,764
Persons below poverty level, percent, 2010-2014	19.5%	15.5%
HOUSING		
Housing units, July 1, 2015	74,436	2,735,742
Owner-occupied housing unit rate, 2010-2014	56.7%	67.9%
Housing units in multi-unit structures, percent, 2010-2014	29.3%	19.70%
Median value of owner-occupied housing units, 2010-2014	165,900	136,700
Households, 2010-2014	66,136	2,361,232
Persons per household, 2010-2014	2.4	2.48

Source: US Census Bureau

C. Education

Almost half of all Boone County adults age 25+ hold a bachelor's degree or higher degree. An additional 24 percent have attended college. Three colleges in Columbia -- University of Missouri – Columbia, Columbia College, and Stephens College – offer two-year, four-year and graduate degree programs.

D. Income

The median income of households in the county at $49,059 was slightly higher than the state median average of $47,764. Home ownership was lower in Boone County (56.7 percent) than the state (67.9 percent).

With an estimated poverty rate of 19.5 percent, Boone County had a higher percentage of persons living in poverty than Missouri (15.5 percent). While this higher poverty rate might be attributable to the sub-population of college students who earn less income, it is important not to overlook families who live below the poverty level.

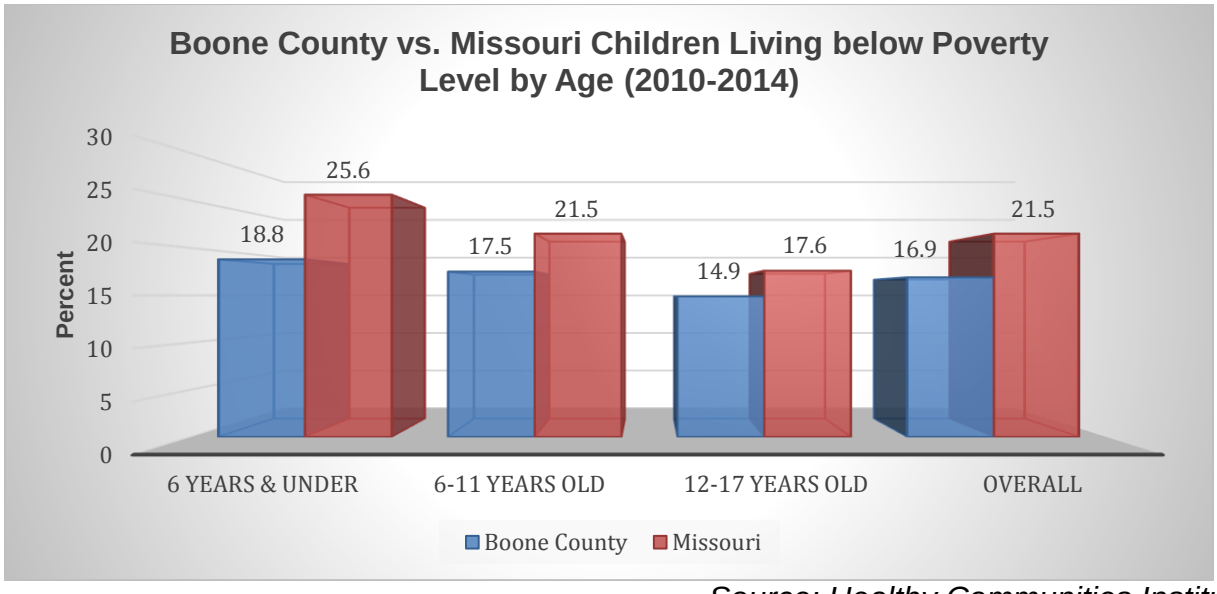
Poverty in Boone County

Federal poverty thresholds are set every year by the Census Bureau and vary by size of the family and ages of the family members. A high poverty rate is both a cause and a consequence of poor economic conditions. A high poverty rate indicates that local employment opportunities are not sufficient to provide for the local community. Through decreased buying power and decreased taxes, poverty is associated with lower-quality schools and decreased business survival. (Healthy Communities Institute).

Information below and on the following pages reveal additional statistics about the poverty in Boone County, affecting children, individuals, seniors and families.

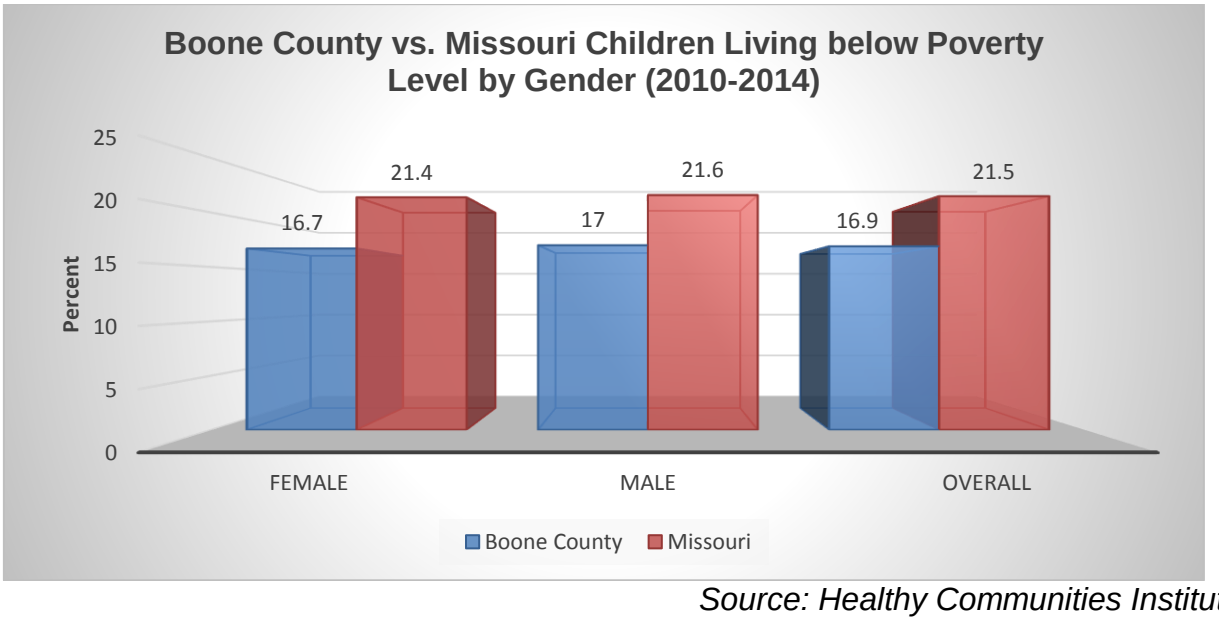
Children Living Below Poverty Level

In numerous studies, family income has been shown to affect a child's well-being. Compared to their peers, children in poverty are more likely to have physical health problems like low birth weight or lead poisoning, and are also more likely to have behavioral and emotional problems. Children in poverty also tend to exhibit cognitive difficulties, as shown in achievement test scores, and are less likely to complete basic education. (Healthy Communities Institute).



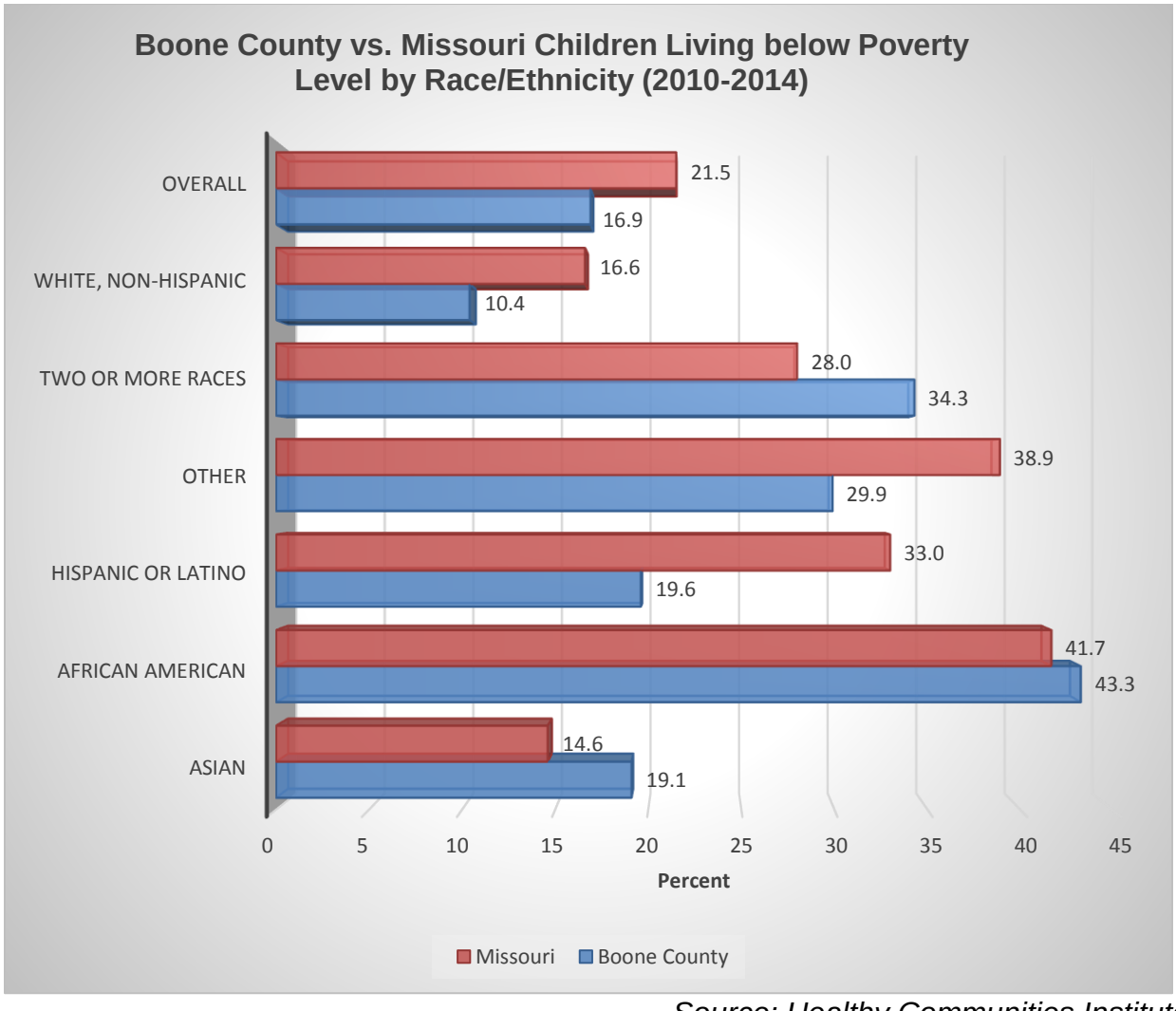
Source: Healthy Communities Institute

While the 6 & under age group had the highest percentage of children living below the poverty level in Boone County, that age group was 26.5 percent lower than the rate in the state.



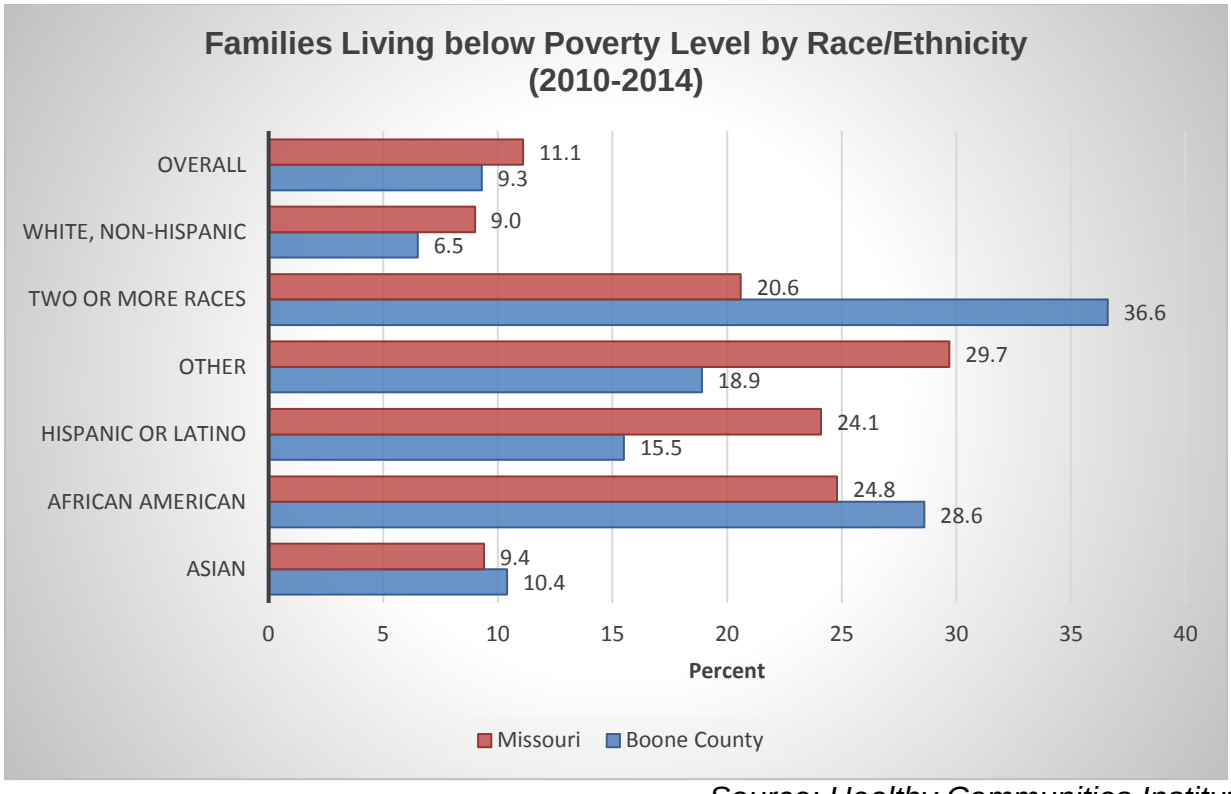
Source: Healthy Communities Institute

The overall rate of children living below the poverty level was 21.4 percent lower than the state. The rate for females and males were similar.



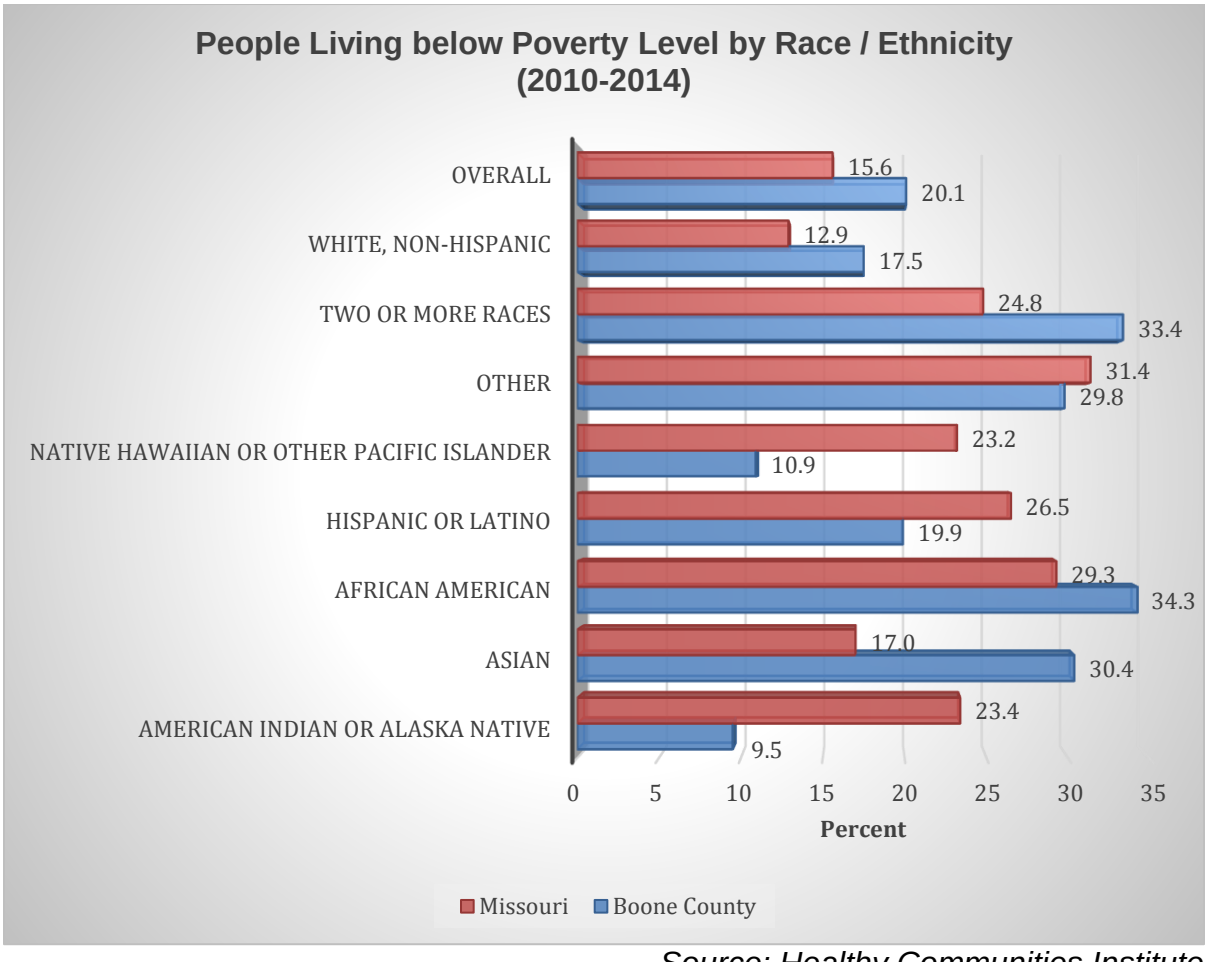
Source: Healthy Communities Institute

African-American children comprised the largest racial segment living below the poverty level in Boone County, slightly higher (1.6 points) than Missouri.



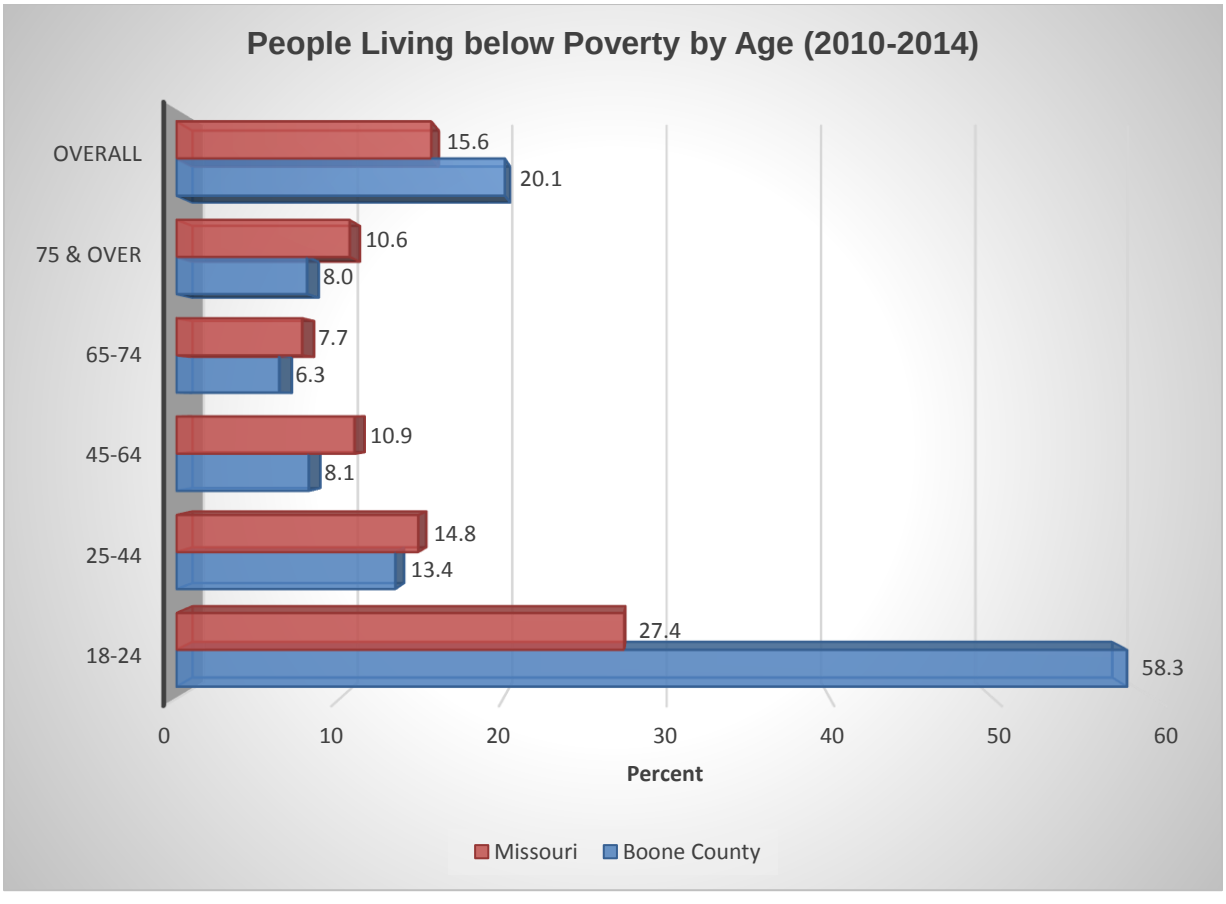
Source: Healthy Communities Institute

In Boone County, 9.3 percent of families lived below the poverty level compared to 11.1 percent in the state (2010-2014). Those identifying as two or more races had the highest percent of families living below the poverty level in the county. In the state, those identifying as other had the highest percent of families living below the poverty level.



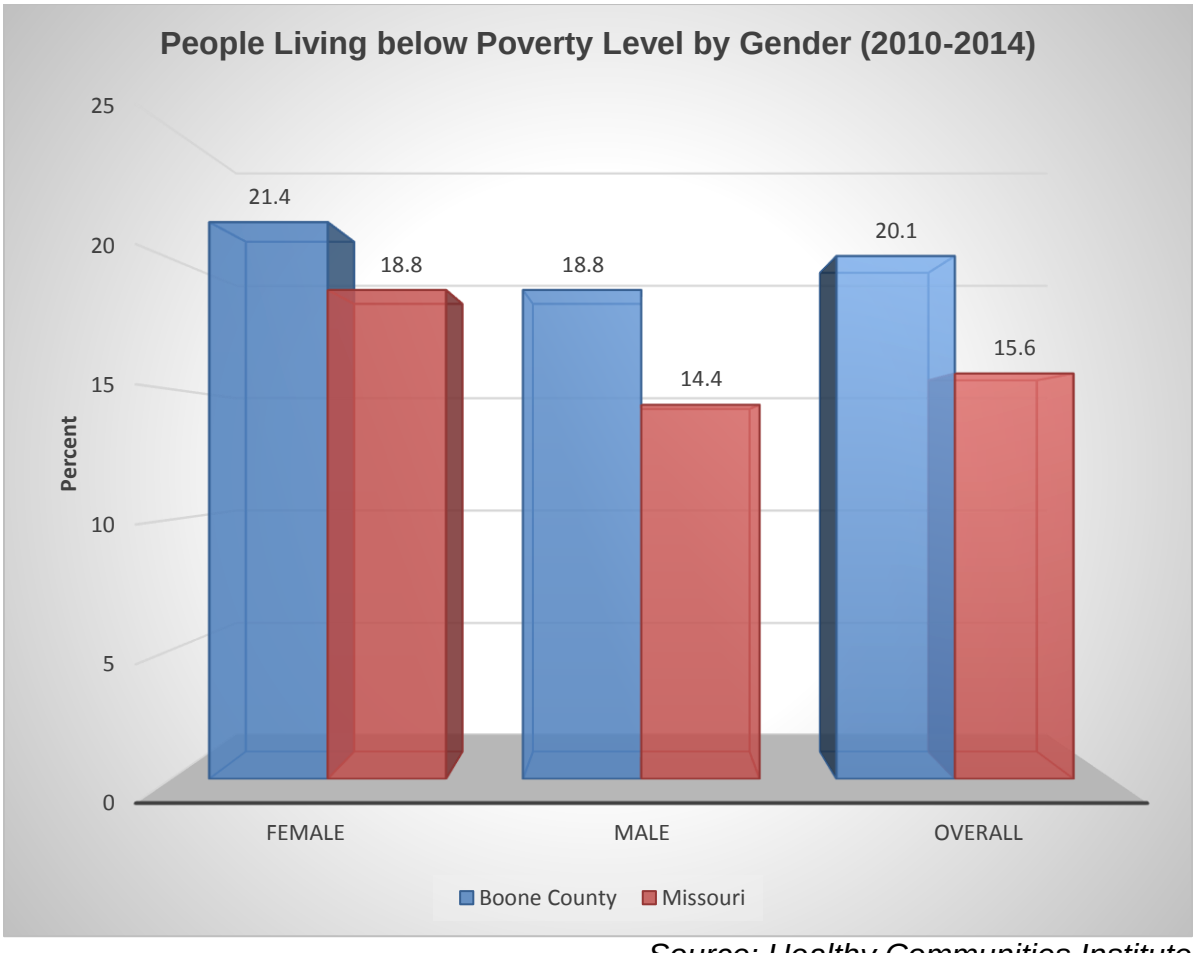
Source: Healthy Communities Institute

The rate of people living below the poverty level was higher in the county than the state. African Americans had the highest rate in the county (34.3 percent) and those identifying as other had the highest rate in the state (31.4 percent).



Source: Healthy Communities Institute

Almost 60 percent of the 18-24 age group in Boone County lived below the poverty level. This same age group had the highest rate in the state (27.4 percent).



Source: Healthy Communities Institute

Females living below the poverty level in the county had a 13.8 percent higher rate when compared to the state. Males living below the poverty level in the country had a 30.5 percent higher rate when compared to the state.

III. Previous (2013) CHNA Measurement and Outcomes Results

At the completion of the 2013 CHNA, Boone Hospital Center identified the top priority needs as Access: Coverage; Lung Cancer; Skin Cancer; Heart and Vascular: Heart Health (formerly obesity-related disease screening & education); and Obesity where focus was most needed to improve the health of the community served by the hospital. The following tables detail results, goals and current status of these community health needs.

Table 3: Boone Hospital Center's 2013 CHNA Outcomes		
Lung Cancer	**Skin Cancer**	**Access to Health Care**
Goals	**Goals**	**Goals**
Increase the number of individuals screened for lung cancer.	To increase the number of individuals screened for skin cancer. To increase education of self-detection of skin cancer.	Improve access to comprehensive, quality health care services.
Within 12 months, conduct at least 500 lung cancer screenings for individuals living in Boone Hospital Center service areas. Within 90 days of screenings, the nurse navigator will confirm medical follow-ups for at least 10 percent of all individuals presented with abnormal results.	Within late spring to fall of each year, conduct at least 350 skin cancer screenings in its service areas. By the end of the education session and screening, participant knowledge level of skin cancer prevention and self-examination will increase by 10 percent.	Every year, Boone Hospital Center will increase the number of underinsured and uninsured individuals who live in its service areas and qualified for Medicaid and other financial assistance enrollment by 15 percent from the previous year number.
Current Status	**Current Status**	**Current Status**
In 2014, 475 individuals were screened and 112 had adverse results. The nurse navigator assisted these residents with coordinating further testing and medical care.	2014: Out of 158 screenings, 37 required referral, of which 26 reported follow-up with a physician. Fifteen out of 26 patients required further treatment for skin cancer.	Boone Hospital Center continues to provide uninsured and underinsured patients with assistance enrolling in Medicaid, marketplace health care plans and other financial assistance programs, with support from HCFS Certified Application Counselors.
In 2015, there was a change in payment of lung cancer screening by Medicare and private insurance. Therefore, Boone Hospital Center discontinued the program.	2015: Out of 276 screenings, 76 required referral, of which 55 reported follow-up with a physician. Forty-one out of 55 patients required further treatment for skin cancer.	In 2014, 851 patients received enrollment assistance from the hospital. In 2015, 1,213 patients received insurance counseling and enrollment assistance.

Table 4: Boone Hospital Center's 2013 CHNA Outcomes		
Obesity: Kids on Track	**Obesity: Head to Toe**	**Heart Fair/ Know Your Numbers**
Goals	**Goals**	**Goal**
To increase physical activity among children and their families.	To improve knowledge of leading a healthy lifestyle among children and their families.	To increase awareness of the risks of abnormal cardiovascular diseases.
1.Staff will establish a baseline number of children aged 3-14, living in Boone County, who will participate in the program in the first year. 2. To increase the baseline by 10 percent of participants each year after the initial start year. 3. To establish a baseline number of the participants who have incorporated physical activities into their life after the three months participation period. 4. To increase each past year number of participants who have incorporated physical activity in their life after participation by 10 percent in the following year.	1. Provide intensive group educational sessions that focus on nutrition, physical activity and emotional health to 30 children per year. 2. Increase knowledge of nutrition, physical activity and emotional health among participants by a 5 percent increase in average knowledge score among participants at post- test compared to pre-test.	In 2014, establish a baseline number for screenings of individuals living in Boone County. At each yearly screening, after the baseline is established, increase the previous year number by 15 percent among Boone County residents. At each yearly screening, the nurse navigator will confirm that at least 25 percent of all abnormal screenings had a follow-up appointment with their primary physician or were referred to a medical home by Boone Hospital Center staff.
Current Status	**Current Status**	**Current Status**
2014: 1,105 families participated. 2015: 1,038 families participated. Surveys were sent to the 2014 families requesting their weekly exercise frequency; 112 responses were returned. Out of those received: 59 excercised 4 or more hours per week; 34 exercised 2-3 hours per week; and 19 exercised 1-2 hours per week.	In 2014 and 2015, the Head to Toe program at Boone Hospital Center was on hiatus due to staffing issues and low enrollment.	In 2014, 365 persons received health screens at the Heart Fair. In 2015, the result of pre-post knowledge showed improved knowledge about body mass index (BMI), cholesterol and excercising.
In February 2016, an online survey was sent to the 2015 families to request their exercise frequency per week; 124 responses were returned. Out of those received, 59 exercised 4 or more hours a week; 47 exercised 2-3 hours a week; 14 exercised 1-2 hours a week; and 4 exercised for less than 1 hour a week.	Boone Hospital Center started its next program in September 2016 and, if needed, will reassess the program objectives after the program's completion.	In 2014, Boone Hospital Center provided Know Your Numbers mobile health cholesterol, BMI and blood glucose screens for 873 persons. In 2015, Boone Hosital Center provided Know Your Numbers mobile health cholesterol, BMI and blood glucose screens for 576 persons. Follow-up strategy is being develped by the staff in order to follow all abnormal results

IV. Conducting the 2016 CHNA

A. Primary Data Collection: Focus Group

Boone Hospital Center conducted a focus group to solicit feedback from community stakeholders, public health experts and those with a special interest in the health needs of residents located in Boone County. (See Appendix D for complete Focus Group Report).

All of the nine invited participants representing various Boone County organizations participated in the focus group. (See Appendix B). The focus group was held May 4, 2016 at Boone Hospital Center with the following objectives identified:

1) Determine whether the needs identified in the 2013 CHNA remain the correct focus areas
2) Explore whether any previous needs are no longer a priority
3) Determine where gaps exist in the plan to address the prioritized needs
4) Identify potential organizations for collaboration
5) Discuss how the world has changed since 2013 when Boone Hospital Center first identified these needs and whether there are new issues to consider
6) Evaluate what issues the participants anticipate becoming a greater concern in the future

2016 Focus Group Summary

Although stakeholders did not dismiss the importance of needs Boone Hospital Center chose to address in the first implementation plan, several raised questions about how the needs were being addressed.

Considerations for Adding to List of Priorities

- Addressing access beyond Boone County, specifically in regard to Audrain and Howard counties and how the presence of Boone Medical Group might affect this issue
- Health disparities among different populations

Needs to Remove from the List

Several attendees felt that skin cancer could be removed as there is good information available to educate the public about prevention and treatment.

Gaps in Implementation Strategies

Gaps were identified in the ways in which needs are being addressed, including:

- Health literacy/racial disparity, especially as more individuals become insured, people may not be aware of how to find a doctor, services and use health insurance.

- Implementing primary prevention programs that encourage healthy lifestyles to prevent diseases, as many programs take place once a disease condition has been diagnosed.

- Food costs often prohibits families from eating healthy; farmers markets and community gardens were suggested.

- The limited access to Medicaid is a major issue in Missouri.

- Transportation continues to be an issue, even though bus route coverage has improved.

Potential Partner Organizations

The Public Health and Human Services Department has identified five community action teams including Access to Health Care, Behavioral Health, Healthy Lifestyles, Safe and Healthy Neighborhoods and Health Disparities as potential partners. Other groups mentioned include: the Central Missouri Community Action Group; Family Health Center and Primarus; Central Missouri Area Agency on Aging; local churches; African-American Clergy Association; local school systems; Services for Independent Living; and Boone County Family Resources.

Changes since the 2013 CHNA

The Boone County population has grown since the last CHNA, as has the poverty level.

This year's county health rankings indicate a growth in motor vehicle accidents, especially in alcohol-impaired driving deaths.

There is an increasing community awareness of substance abuse, namely prescription medications, which often leads to heroin use. The increase use of heroin has also resulted in a recent increase in Hepatitis B and C cases among users.

Women's reproductive health issues were mentioned by some as an area with increases in a variety of conditions:

- Teen births have decreased; however a large disparity continues between White and African American teen birth rates.

- Questions were raised about access to mammography services for underserved women. The Show Me Healthy Women program was identified as a resource.

While many people took advantage of obtaining health insurance when the Affordable Care Act was first introduced, concern was expressed regarding need for outreach efforts to reach those who may not know they qualify.

Access to dental services for children seems to have improved, but the availability of dental care for adults is still extremely limited.

Since the last CHNA, the Children's Services Fund tax was passed. This is a quarter-cent, county-wide sales tax that generates about $6.5 million annually. Another $1.5 million comes from other sources, including $500,000 from Boone Hospital Center, for a total of $7 million to be used for various health initiatives and grants.

Issues that may become more important in the future

As the Boone County community grows and becomes more diverse, the issue of cultural literacy will become increasingly important. In general, the refugee population has increased.

As Boone County businesses close, laid off employees will be affected in terms of access to insurance and health services, as well as income.

United HealthCare, the insurer that provided the most popular low-cost deductible plans through the Health Insurance Marketplace, has announced intentions to exit the Missouri marketplace in 2017.

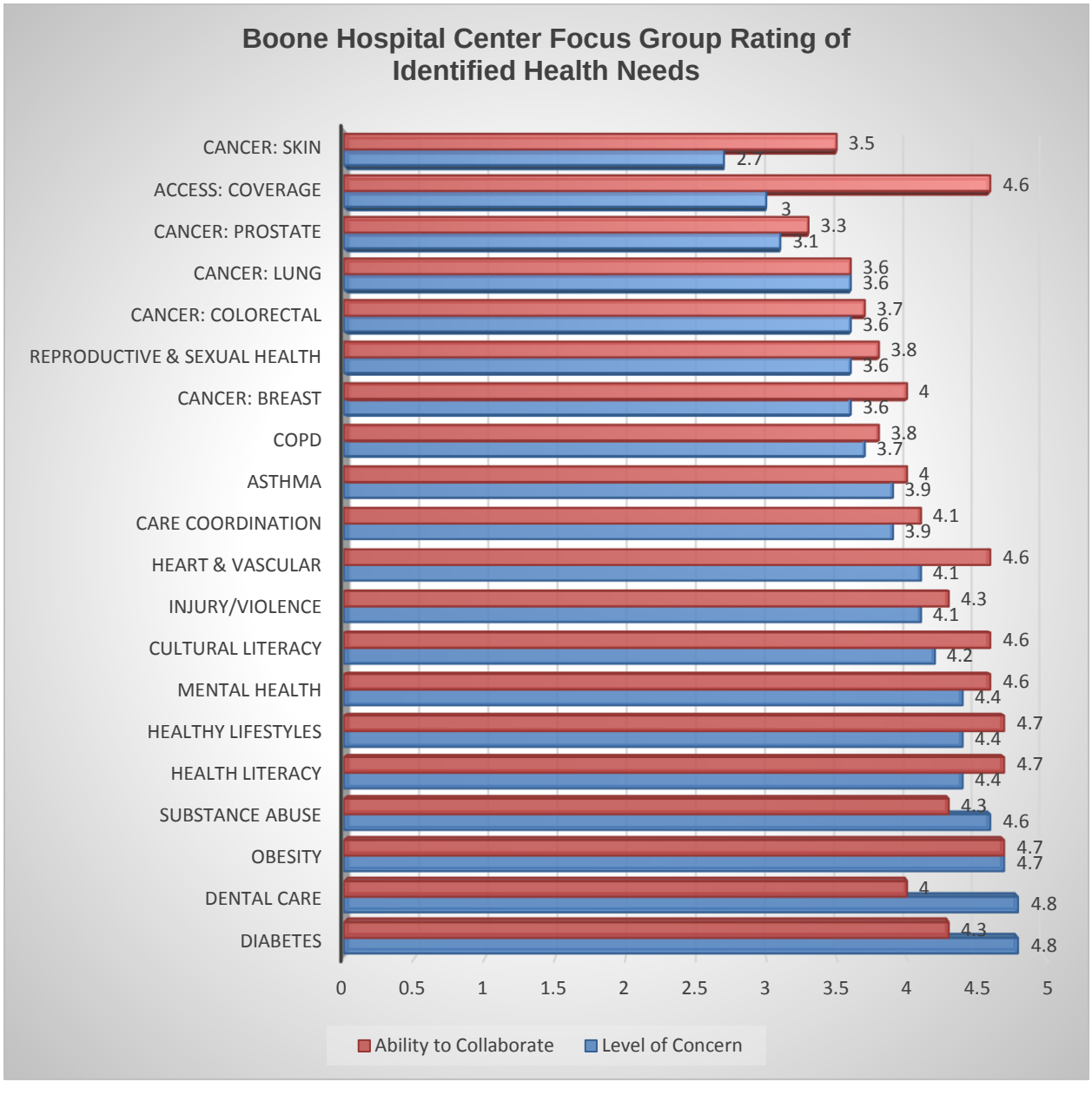
Discussion was held about the growth of the elderly population and the supply of beds and geriatric providers, especially among those who might suffer from dementia and Alzheimer's.

Services for veterans were discussed.

With such limited funding for services at the state level, funding at the federal has become increasingly important. With issues like the Zika virus looming large, there is a concern about funds being diverted from programs that are already operating on a shoestring toward other national priorities.

Rating of Needs

Participants were given the list of the needs identified in the 2013 assessment and directed to re-rank them on a scale of 1 (low) to 5 (high), based on their perceived level of community concern and the ability of community organizations to collaborate in addressing:



Diabetes and Dental Care were rated highest in terms of level of concern and ability to collaborate. Skin Cancer and Prostate Cancer were rated the lowest on ability to collaborate.

B. Secondary Data Analyses

Based on the primary data reviewed by focus group members (see graph on previous page), key areas were identified for a secondary data analysis. These areas represent the most prevailing issues identified by the focus group.

Data sources used for the secondary data analysis included:

Healthy Communities Institute (HCI), an online dashboard of health indicators for St. Louis County, offers the ability to evaluate and track the information against state and national data and Healthy People 2020 goals. Sources of data include the National Cancer Institute, Environmental Protection Agency, U.S. Census Bureau, U.S. Department of Education, and other national, state, and regional sources. http://www.healthycommunitiesinstitute.com/

Hospital Industries Data Institute (HIDI, 2014) is a data source that provides insight into the patterns and frequency of health care utilization in the hospital.

Missouri Information for Community Assessment (MICA) is a system that helps to prioritize diseases using publicly available data. The system also provides for the subjective input of experts to rank their perceived seriousness of each issue. (http://health.mo.gov/data/mica/MICA/County_Level_Study).

Centers for Disease Control and Prevention (CDC)/State Cancer Profiles is a web site that provide data, maps, and graphs to help guide and prioritize cancer control activities at the state and local levels. It is a collaboration of the National Cancer Institute and the Centers for Disease Control and Prevention. https://statecancerprofiles.cancer.gov

Missouri Department of Mental Health provides numerous comprehensive reports and statistics on mental health diseases, alcohol and drug abuse. http://dmh.mo.gov/ada/countylinks/saint_louis_county_link.html

The majority of the analysis was completed comparing Boone County, Missouri and the United States. In order to provide a comprehensive view (analysis of disparity and trend) the most up-to-date secondary data was included on the following needs:

- Access to Health Care
- Access: Transportation
- Asthma
- Heart and Vascular Health
- Obesity
- Healthy Lifestyle
- Diabetes
- Reproductive Health
- Cancer
- Behavioral Health
- Behavioral/Mental Health: Substance Abuse
- Injury and Violence

Following the secondary data analysis, a summary is provided that outlines observations noted in the disparities and trends for each of the above needs. (See Page 89). While Boone Hospital Center has identified one need as its primary focus, the following needs will continue to be appropriately addressed by the hospital and other organizations in Boone County.

Access to Health Care

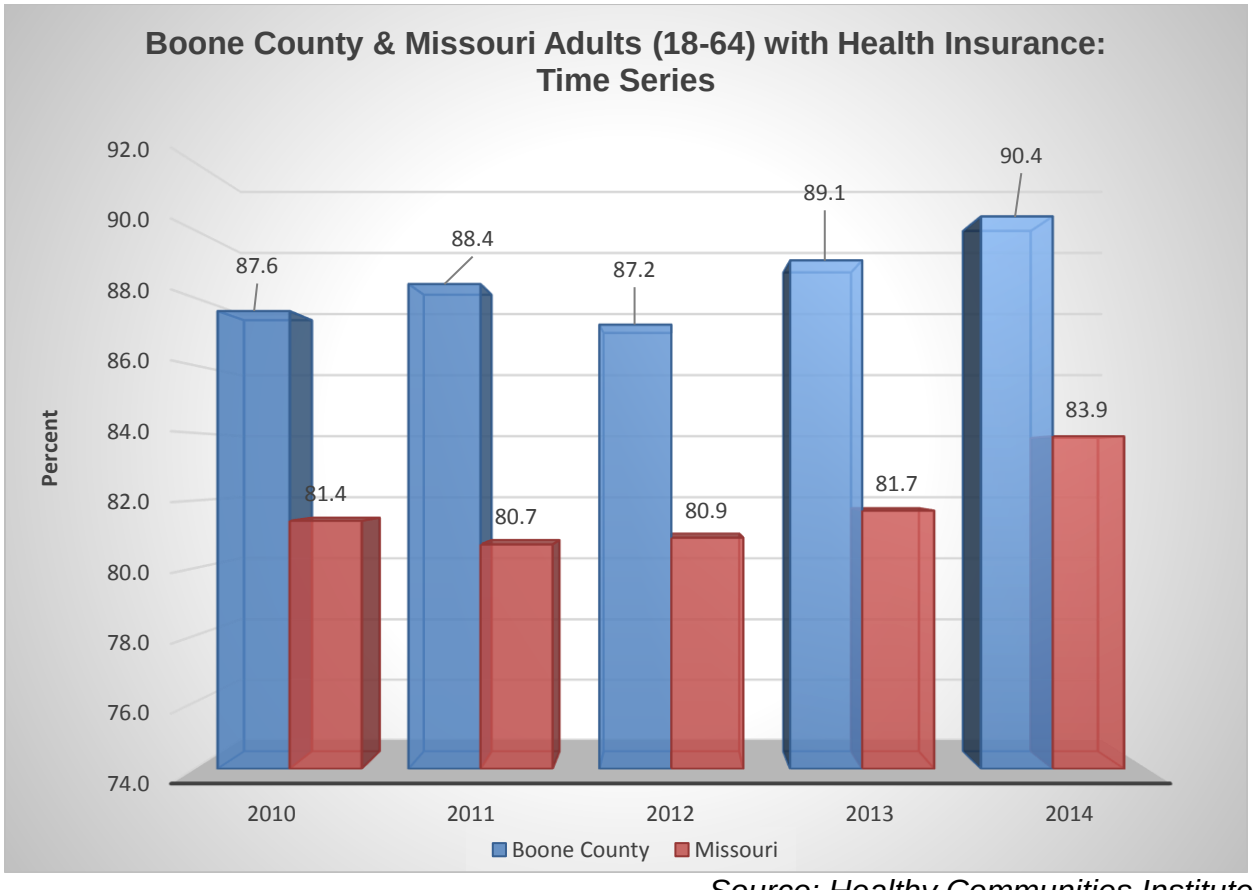
The ability to access health services has a profound and direct effect on every aspect of a person's well-being. Beginning in 2010, nearly 1 in 4 Americans lacked a primary care provider (PCP) or health center to receive ongoing medical services. Approximately 1 in 5 Americans, children and adults under age 65, do not possess medical insurance. Individuals without medical insurance are more likely to lack a traditional source of medical care, such as a PCP, and are more likely to skip routine medical care due to costs, therefore, increasing the risk for serious and debilitating health conditions. Those who access health services are often burdened with large medical bills and out-of-pocket expenses. Increasing access to both routine medical care and medical insurance are vital steps in improving the health of the community. (Healthy Communities Institute).

Table 5: Access to Health Care: Boone county vs. Missouri

Health Indicators	Boone County	Missouri
Adults with Health Insurance in Percent: Age 18-64 (2014)	90.4	83.9
Children's With Health Insurance in Percent (2014)	95.4	92.8
Primary Care Providers Rate / 100,000 (2012)	105	71
Dentist Rate/100,000 (2013)	60	54
Mental Health Providers Rate/100,000 (2014)	307	167
Non-Physicians Primary Care Providers Rate / 100,000 (2014)	106	66
Preventable Hospital Stays. Discharges / 1000 Enrollees (2013)	41	59

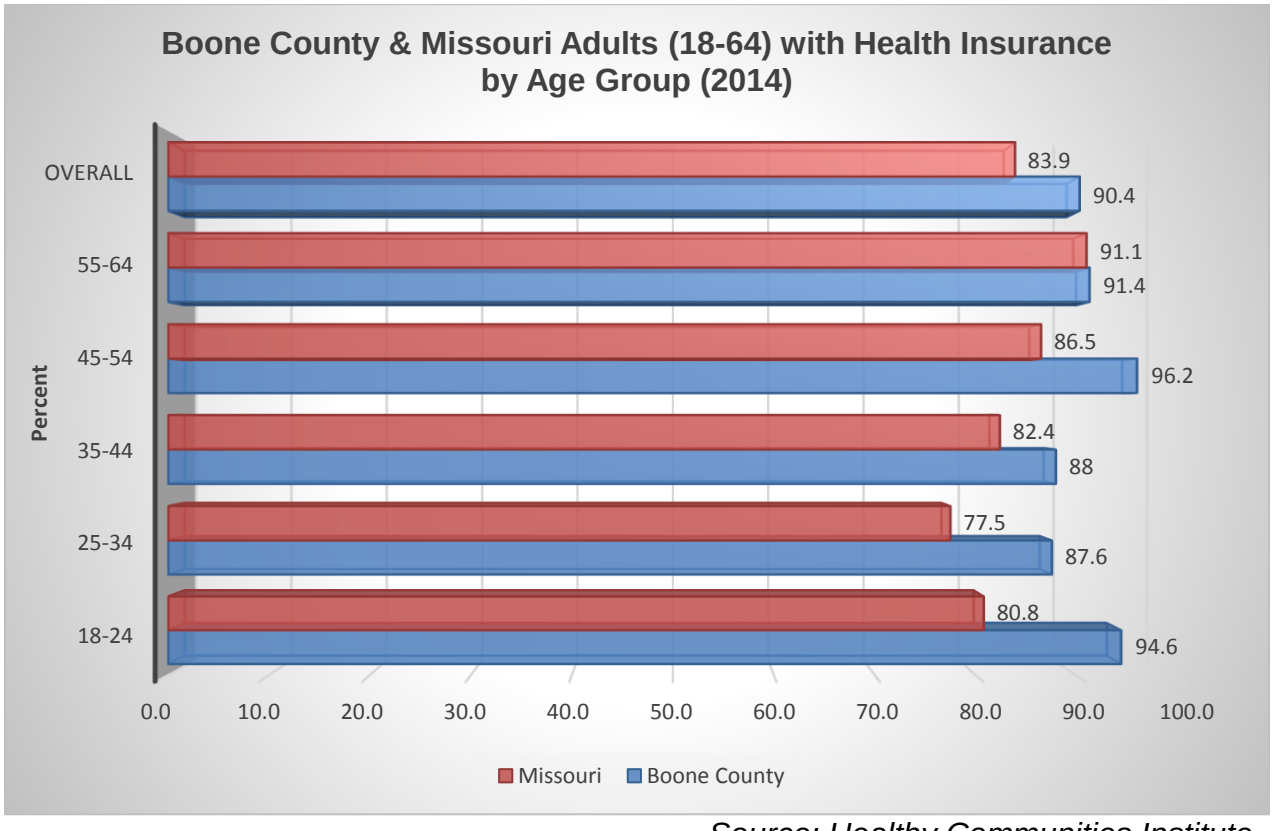
Source: Healthy Communities Institute/ County Health Ranking

The rate of adults and children with health insurance in Boone County in 2014 was higher than the rate of the same age group in Missouri. When comparing the rate of primary care providers and dentists, the rate in the county was higher than the rate in the state. The rate of mental health providers and non-physician primary care providers in Boone County was more than one and one-half times higher than the rate in the state. The rate of preventable hospital stays was lower in the county than in the state.



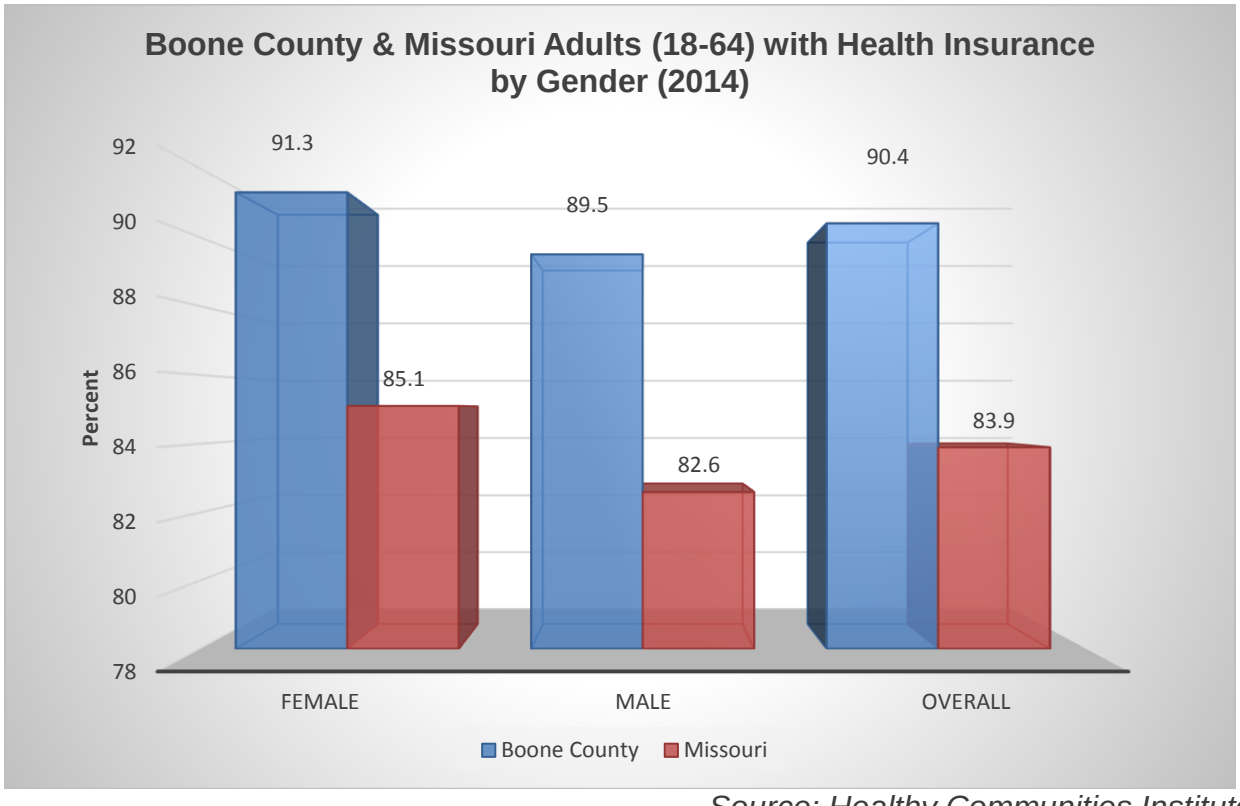
Source: Healthy Communities Institute

From 2010 to 2014, the rate of adults with health insurance in Boone County increased 3.2 percent, compared to a 3.1 percent increase in the state rate.



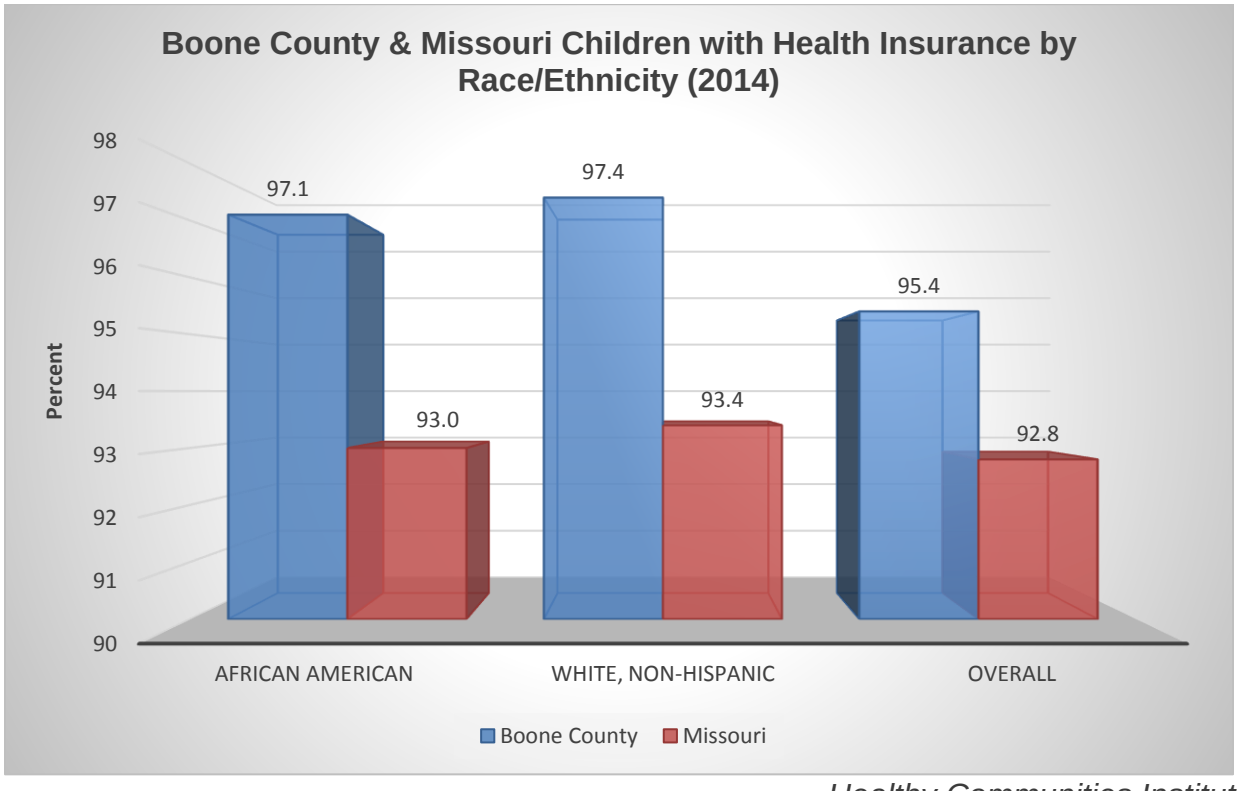
Source: Healthy Communities Institute

The overall rate of adults with health insurance living in Boone County was 90.4 percent, 7.7 percent higher than the state rate and lower than the 100 percent national health target rate set by the Healthy People 2020. In Boone County, the 45-54 age group had the highest rate of insurance at 96.2 percent while in the state, the 55-64 age group had the highest rate of insurance at 91.1 percent.



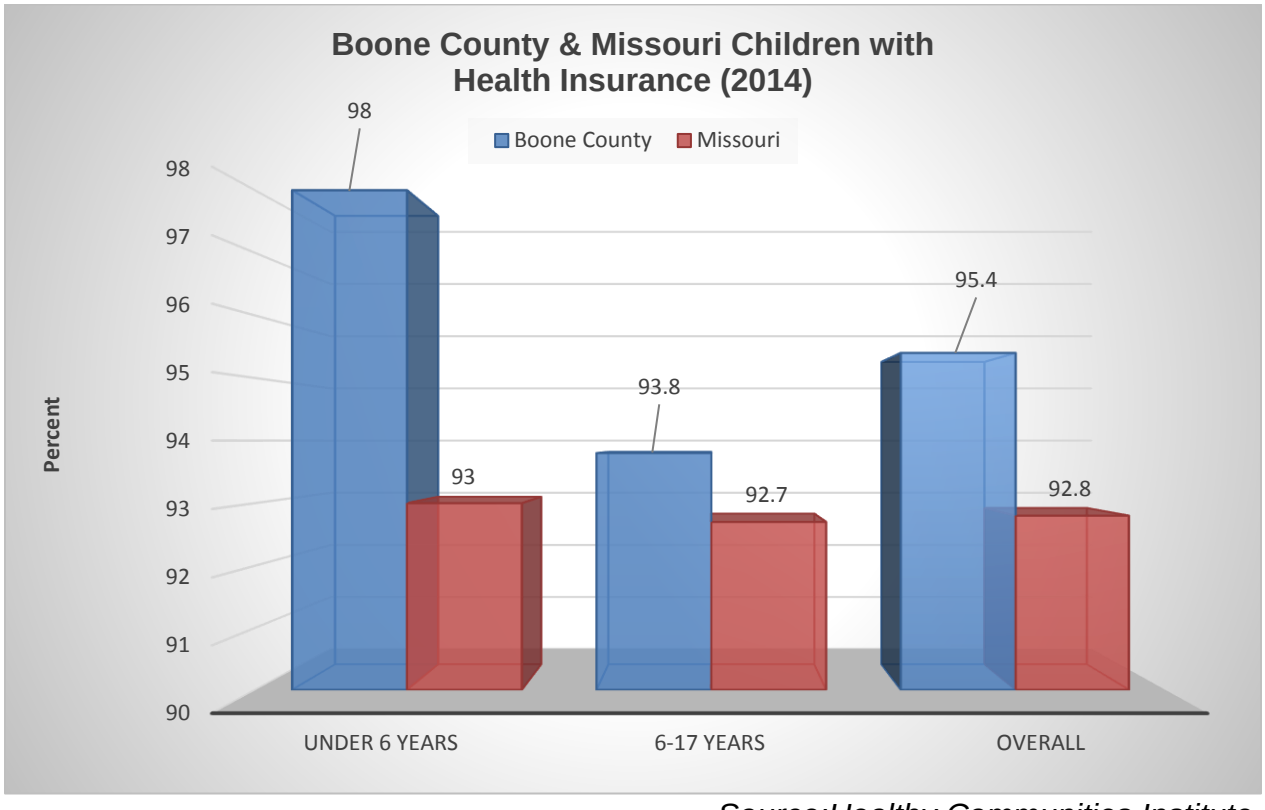
Source: Healthy Communities Institute

Females had a higher rate of health insurance than males in both the county and the state.



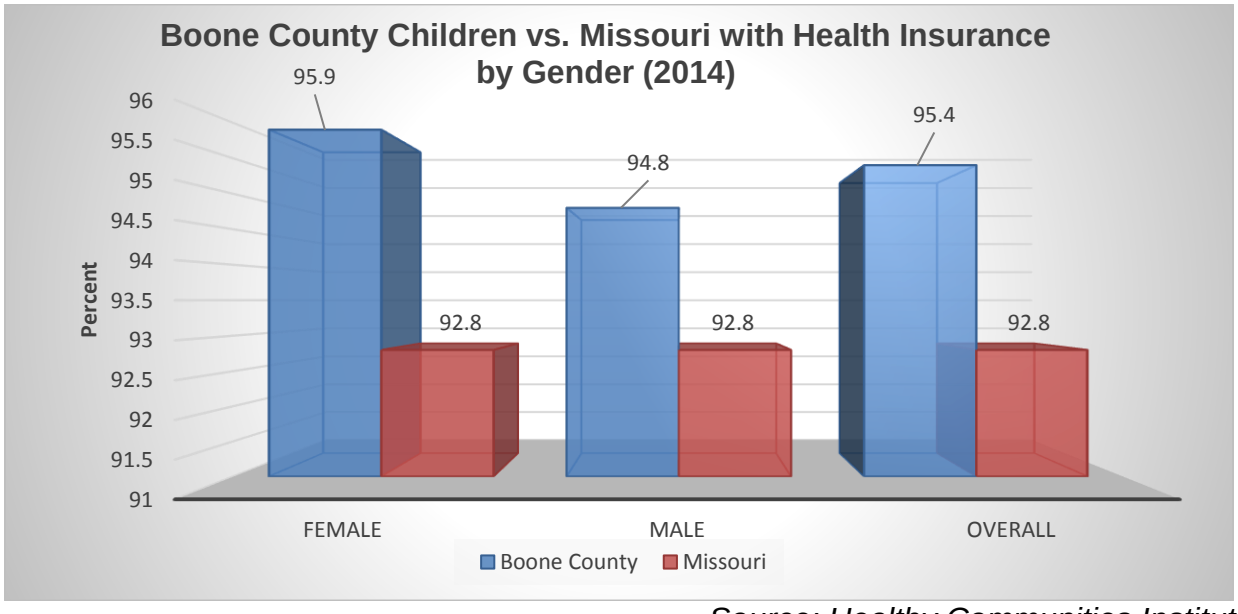
Healthy Communities Institute

African American (4.4 percent) and White (4.3 percent) adults living in the county had a higher rate of health insurance than those living in the state.



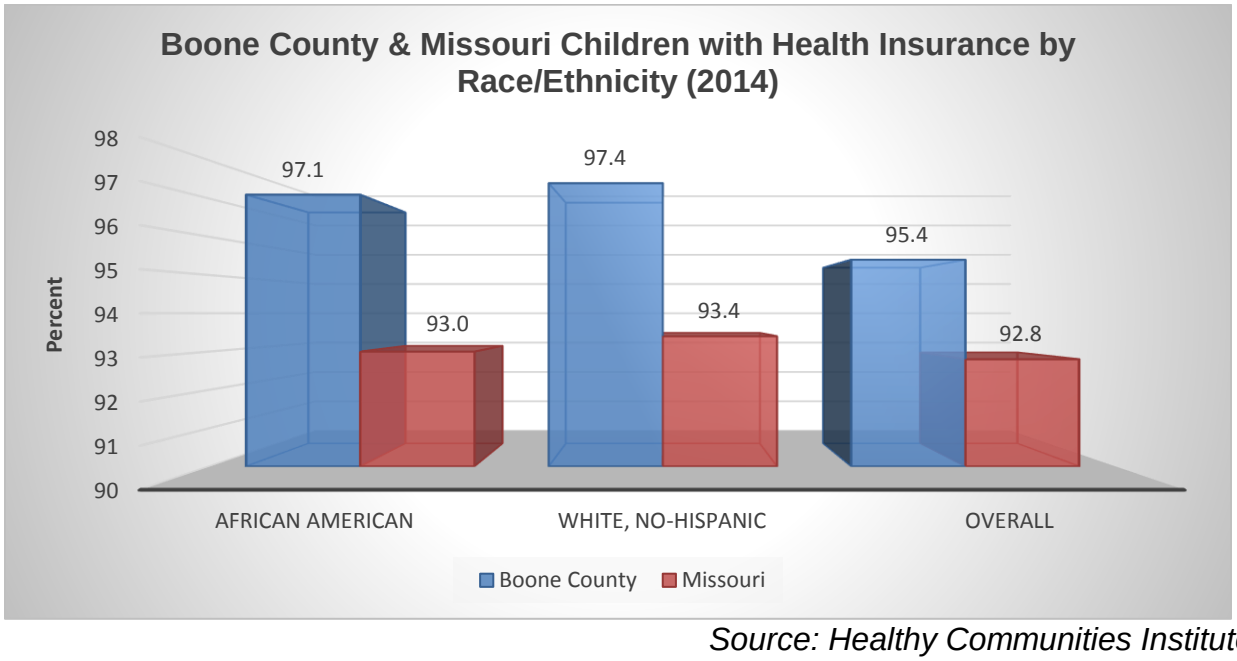
Source:Healthy Communities Institute

The overall rate of children with health insurance in the county was 2.8 percent higher than the rate in the state. Children in Boone County under 6 years of age with health insurance had the highest rate (98 percent) compared to those in the state (93 percent) and when compared to the 6-17 age group in both county (93.8 percent) and state (92.7 percent), the county had a higher rate.



Source: Healthy Communities Institute

Female and male children in the county had a higher rate of health insurance when compared to the state, 3.3 percent higher and 2.2 percent higher respectively.



Source: Healthy Communities Institute

The rate of African American and White children with health insurance was higher in the county than in the state.

Access: Transportation

Owning a car has a direct correlation with the ability to access health care. Individuals with no car in the household make fewer than half the number of trips compared to those with a car and have limited access to essential local services such as, supermarkets, post offices, doctors' offices and hospitals. Most households with above-average income own a car while only half of low-income households have a car.

Public transportation offers mobility to U.S. residents, particularly people without cars. Transit can help bridge the spatial divide between people and jobs, services and training opportunities. Public transportation is also beneficial because it reduces fuel consumption, minimizes air pollution and relieves traffic congestion.

Table 6: Access: Transportation: Boone County vs. Missouri

Health Indicators	Boone County	Missouri
Households Without a Vehicle in Percent (2010-2014)	5.50	7.4
Workers Commuting by Public Transportation in Percent (2010-2014)	0.8	1.5
Mean Travel Time to Work; Age 16+ in minutes (2010-2014)	18.1	23.1

Source: Healthy Communities Institute

The Healthy People 2020 national health target is to increase the proportion of workers who take public transportation to work to 5.5 percent. The rate in Boone County is far below the rate of the state as well as the target set by the Healthy People 2020.

Lengthy commutes cut into workers' free time and can contribute to health problems such as headaches, anxiety and increased blood pressure. Longer commutes require workers to consume more fuel, which is both expensive for workers and damaging to the environment. (Healthy Communities Institute).

Asthma

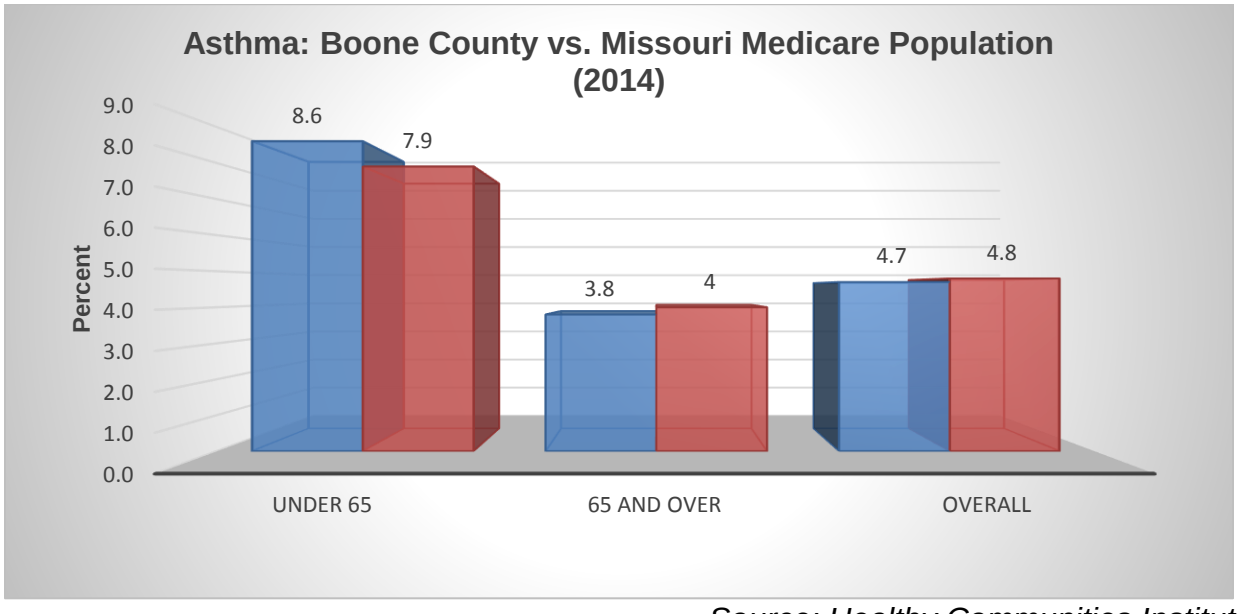
Asthma is a chronic lung disease characterized by periods of wheezing, chest tightness, shortness of breath and coughing. Symptoms often occur or worsen at night or in the early morning. These occurrences, often referred to as “asthma attacks,” are the result of inflammation and narrowing of the airways due to a variety of factors or “triggers.”

Table 7: Boone County Three-Year Moving Asthma Average Rates Compared to Missouri

Health Indicators	2009-2011		2010-2012		2011-2013	
	Boone County	Missouri	Boone County	Missouri	Boone County	Missouri
Asthma Death / 100,000 population	1.23	1.08	1.46	1.03	1.71	0.90
Asthma Hospitalizations /10, 000 population	10.02	13.38	10.90	13.50	11.61	13.64
Asthma ER Visits/ 1,000 population	3.82	5.15	4.04	5.20	4.15	5.22

Source: Missouri Health Department & Senior Services

From the period ending 2011 to the period ending 2013, the rate of asthma deaths, hospitalizations and ER visits increased in Boone County. In Missouri, the rate of asthma deaths decreased, while the rate of hospitalizations and ER visits increased.



Source: Healthy Communities Institute

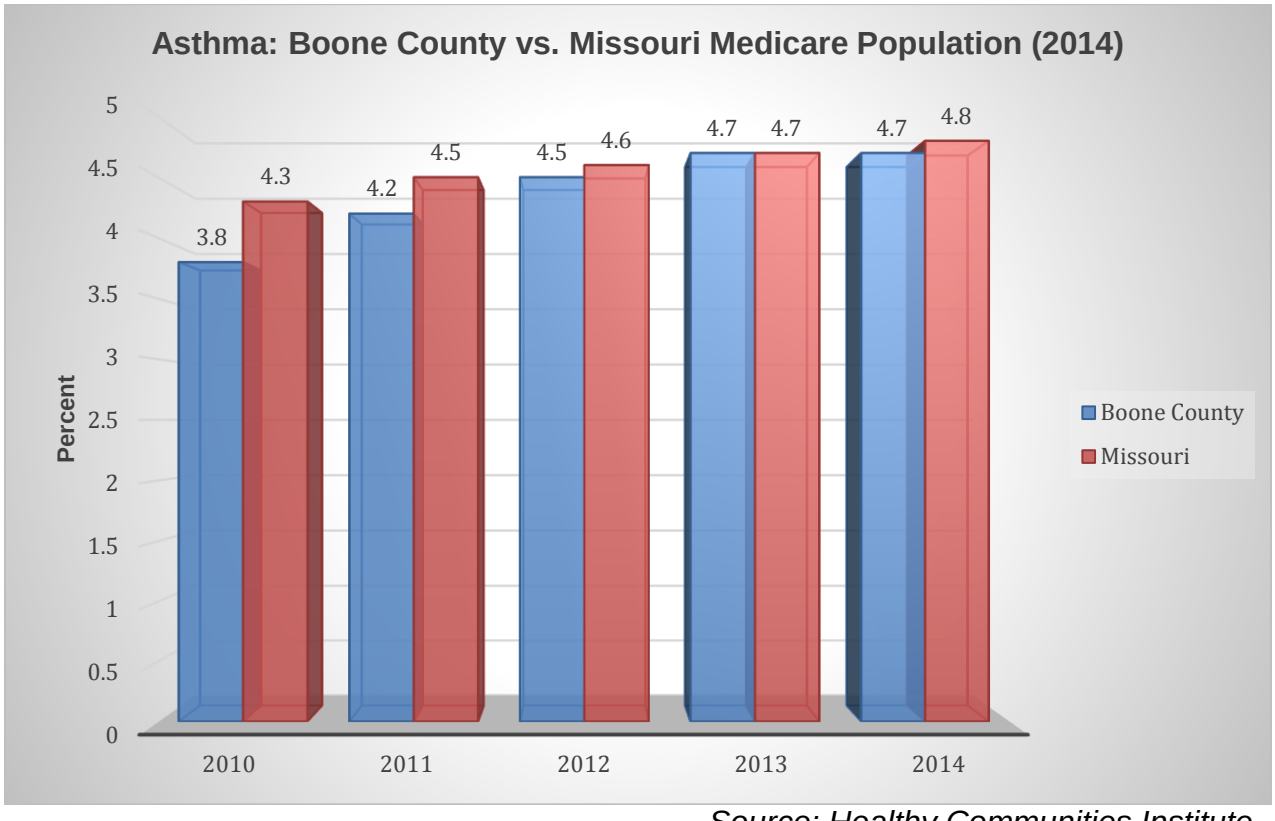
The overall rate of asthma in the Medicare population in the county was similar to the state. For those under 65, the rate in the county was 8.9 percent higher than the state. The rate for those 65 and over was similar in the county and the state.

Table 8: Boone County Asthma Cases Compared to Missouri

Health Indicators	Boone County	Missouri
Asthma Death / 100,000 Population (2003-2013)	1.3	1.1
Asthma Hospitalizations / 10,000 Population (2009-2013)	10.8	12.5
Asthma ER Visits / 1,000 Populatiom (2009-2013)	3.9	5.3

Source: Missouri Health Department & Senior Services

Asthma deaths in Boone County were slightly higher than in Missouri; hospitalizations and ER Visits in the county were both lower than the state.



Source: Healthy Communities Institute

From 2010 to 2014, the rate of asthma in the Medicare population increased 23.7 percent in the county and 11.6 in the state.

Table 9: Asthma Rate in Boone County & Missouri by Ethnicity / Race				
Health Indicators	**Boone County**		**Missouri**	
	White	**African American**	**White**	**African American**
Death / 100,000 (2003-2013)	1.2	2.9	0.9	3.0
Hospitalizations / 10,000 (2009-2013)	8.0	30.4	8.2	38.2
ER Visits / 1,000 (2009-2013)	2.7	13	3.1	17.4

Source: Missouri Health Department & Senior Services

The rate of asthma deaths for Whites was higher in the county when compared to the state. The asthma death rate was similar for African Americans in the county and the state.

The rate of hospitalizations for Whites in the county and the state were similar while the rate of hospitalizations for African Americans was 20.4 percent lower in the county than the state.

The rate of ER Visits for Whites was lower in the county than in the state. The rate for Africans American was 25.2 percent lower in the county than in the state.

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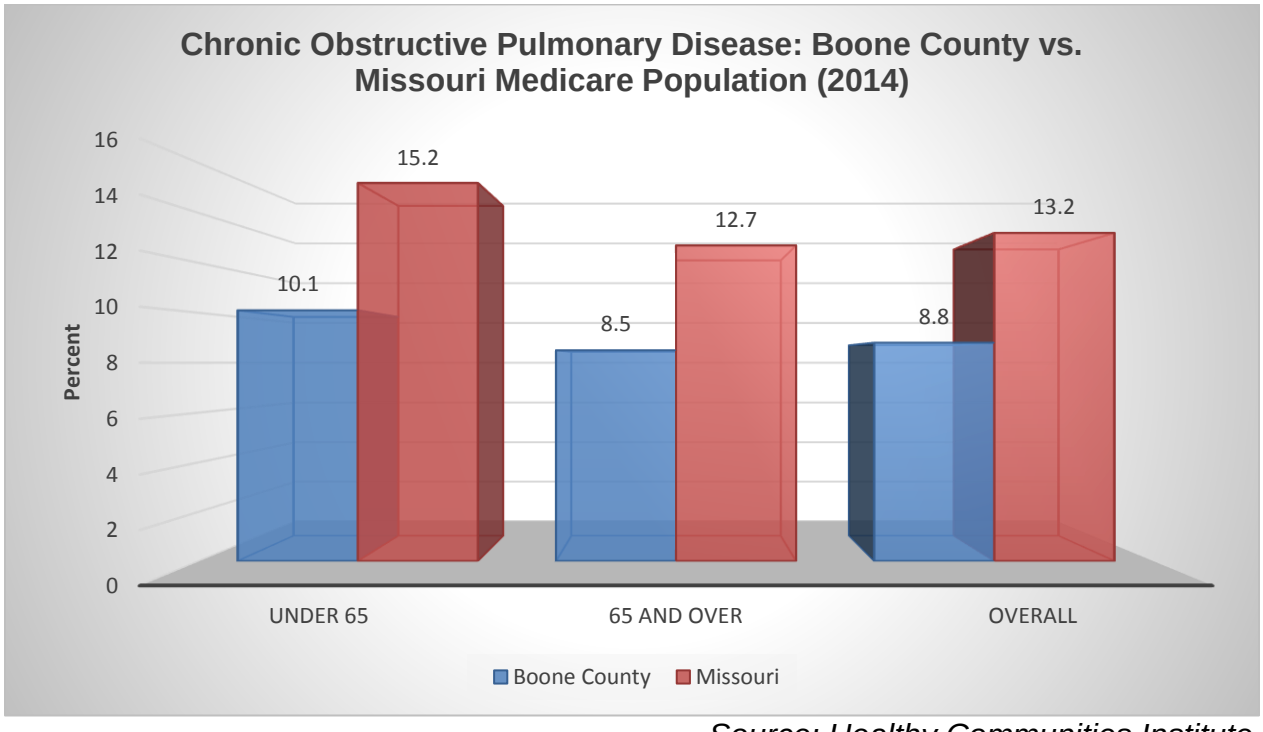


Source: Healthy Communities Institute

The rate of Chronic Obstructive Pulmonary Disease (COPD) in the Medicare population was 33.3 percent lower in the county than in the state. For those under 65, the rate was 33.6 percent lower in the county when compared to the state. The rate for those 65 and over was 33.1 percent lower in the county than in the state.

Table 10: Boone County Respiratory Diseases Rates Compared to Missouri		
Health Indicators	**Boone County**	**Missouri**
Adults with Current Asthma in Percent (2011)	9.3	10.1
Age-Adjusted Death Rate due to Chronic Lower Respiratory Disease /100,000 Population (2010-2014)	41.0	51.7
Asthma: Medicare Population in Percent (2014)	4.7	4.8
COPD: Medicare Population in Percent (2014)	8.8	13.2

Source: Missouri Health Department & Senior Services

While the rate for adults with current asthma was slightly lower in the county than the state and the rates for asthma in the Medicare population were similar in the county and state, the age-adjusted death rate due to Chronic Lower Respiratory Disease was 20.7 percent lower in the county than in the state. The rate for COPD in the Medicare population was 33.3 percent lower in the county than the state.

Heart and Vascular Health

Heart disease and stroke are among the most preventable diseases in the U.S., yet are the most widespread and costly health conditions facing the nation today. Heart disease and stroke are the first and third leading causes of death for both women and men. These diseases are also major causes of illness and disability and are estimated to cost the U.S. hundreds of billions of dollars annually in health care expenditures and loss of productivity. (CDC Division for Heart Division and Stroke Prevention).

Table 11: Heart Disease & Stroke: Boone County vs. Missouri Age-Adjusted Rate Comparison		
Health Topics	**Boone County**	**Missouri**
Heart Disease		
Deaths / 100,000 (2003-2013)	160.4	216.75
Hospitalizations / 10,000 (2009-2013)	94.1	123.11
ER Visits / 1,000 (2009-2013)	12.3	14.65
Ischemic Heart Disease		
Deaths / 100,000 (2003-2013)	94.2	144.7
Hospitalizations / 10,000 (2009-2013)	31.50	38.34
ER Visits / 1,000 (2009-2013)	0.20	0.62
Stroke / Other Cerebrovascular Disease		
Deaths / 100,000 (2003-2013)	44.90	47.75
Hospitalizations / 10,000 (2009-2013)	24.40	28.79
ER Visits / 1,000 (2009-2013)	0.40	0.77

Source: Missouri Department of Health & Senior Services (MICA)

In comparing heart disease, ischemic heart disease and stroke/other cerebrovascular disease, the rates of deaths, hospitalizations and ER Visits were all lower in Boone County when compared to Missouri. The death rate for heart disease in Boone County was 25.9 percent lower than the rate in Missouri and for ischemic heart disease, the death rate was 34.9 percent lower than the rate in Missouri. The death rate for stroke in Boone County was 6.0 percent lower than the state.

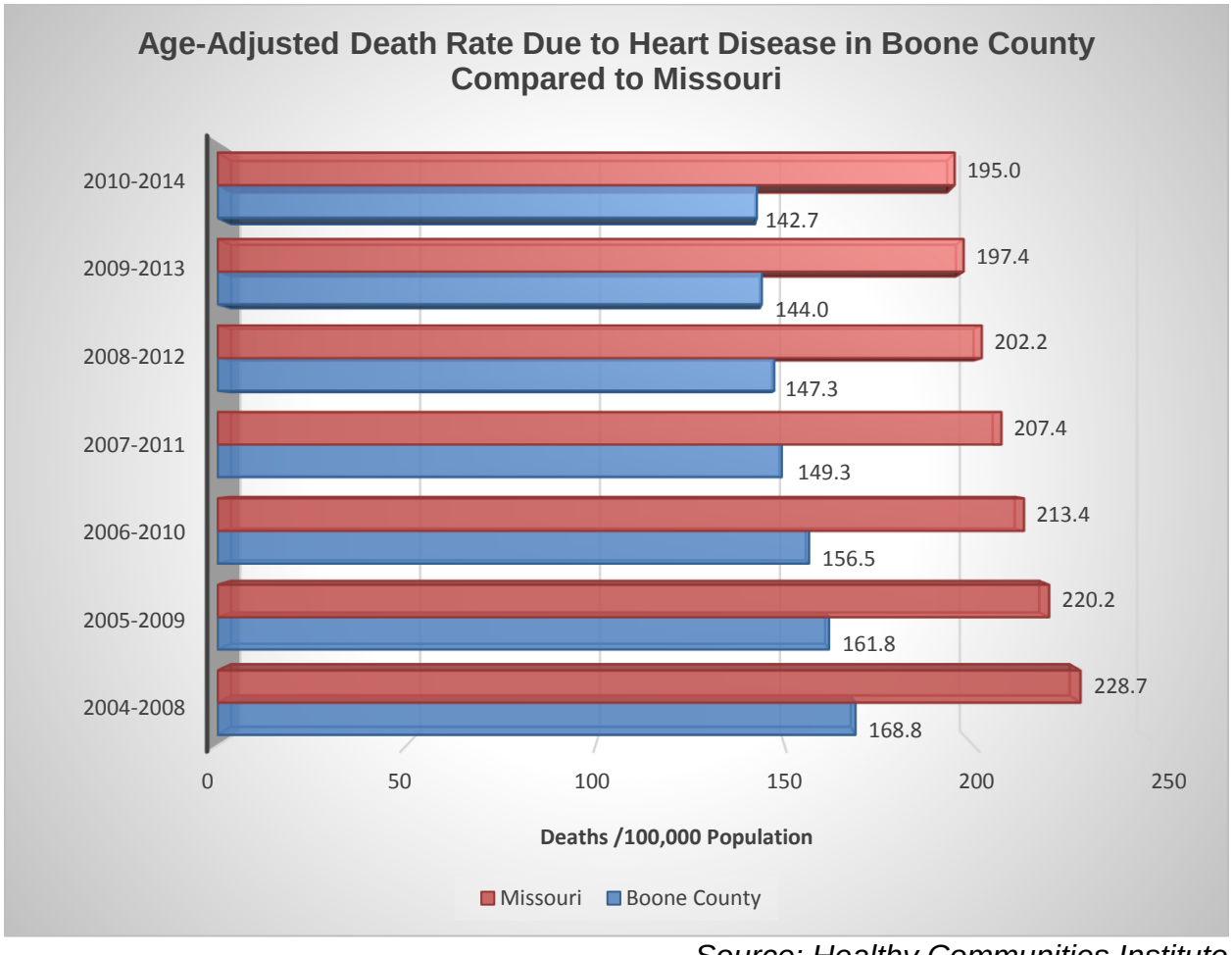
Table 12: Boone County Heart Disease & Stroke by Ethnicity / Race				
	Boone County		Missouri	
Health Topic	**White**	**African American**	**White**	**African American**
Heart Disease				
Deaths / 100,000 (2003-2013)	153.7	288.9	212.7	264.6
Hospitalizations / 10,000 (2009-2013)	88.7	158.4	115.4	180.8
ER Visits / 1,000 (2009-2013)	11.1	25.3	13.1	24.7
Ischemic Heart Disease				
Deaths / 100,000 (2003-2013)	90.9	162.9	143.1	168.6
Hospitalizations / 10,000 (2009-2013)	30.6	40.6	37.9	36.9
ER Visits / 1,000 (2009-2013)	0.1	0.3	0.6	0.4
Stroke / Other Cerebrovascular Disease				
Deaths / 100,000 (2003-2013)	43.5	62.8	46.4	60.9
Hospitalizations / 10,000 (2009-2013)	23.1	34.7	26.7	44.7
ER Visits / 1,000 (2009-2013)	0.4	0.6	0.7	0.7

Source: Missouri Department of Health & Senior Services (MICA)

For heart disease, Whites in the county had lower rates than the state in deaths, hospitalizations and ER Visits. The rates for heart disease deaths among African Americans was 9.2 percent higher in the county than in the state. Conversely, the rate for hospitalizations among African Americans was 12.4 percent lower in the county than in the state. The rate for ER Visits for African Americans was slightly higher in the county than in the state.

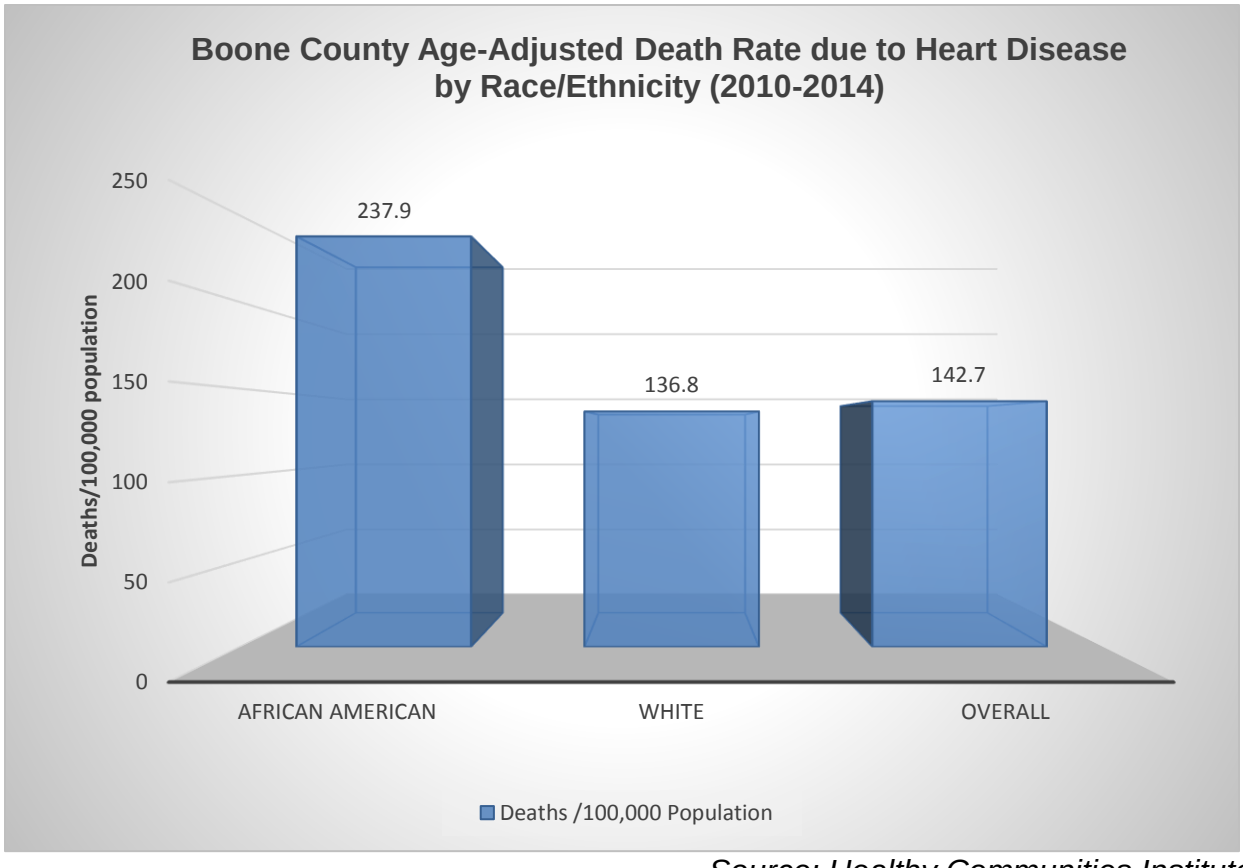
For ischemic heart disease, the rates for deaths, hospitalizations and ER Visits among Whites were all lower in the county than the state. The rates for deaths among African Americans was lower in the county than the state; the rate of hospitalizations was higher in the county than in the state and the rates of ER Visits among African Americans were similar in the county and state.

For stroke/other cerebrovascular disease, the rate for deaths, hospitalizations and ER Visits were lower in the county than in the state. The rate of deaths among African Americans was slightly higher in the county than the state; hospitalization were lower in the county than the state and ER Visits were similar in the county and the state.



Source: Healthy Communities Institute

From the period ending 2008 to the period ending 2014, the age-adjusted death rate due to heart disease decreased by 15.5 percent in the county and 14.7 percent in the state.



Source: Healthy Communities Institute

The age-adjusted death rate due for heart disease was 73.9 percent higher among African Americans when compared to the rate of Whites.

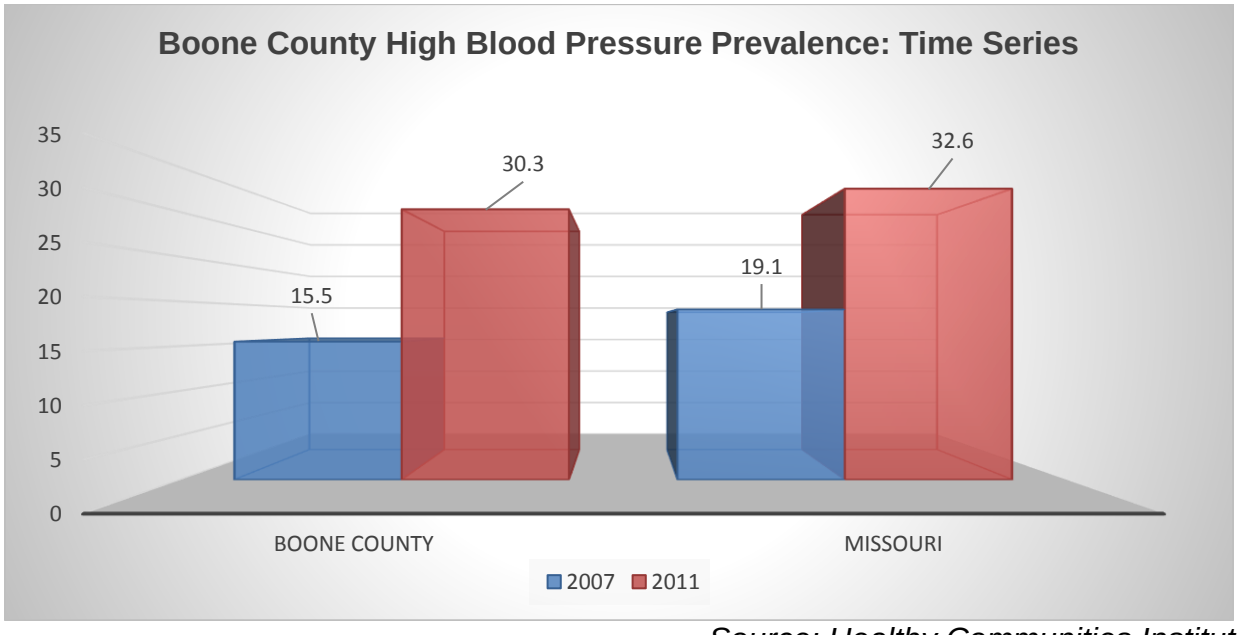
Table 13: Boone County Three-Year Moving Heart Disease Average Rates Compared to Missouri						
Health Topic	**2009-2011**		**2010-2012**		**2011-2013**	
	Boone County	**Missouri**	**Boone County**	**Missouri**	**Boone County**	**Missouri**
Heart Disease						
Deaths / 100,000	145.47	200.75	142.37	196.22	141.12	194.11
Hospitalizations / 10,000	115.49	151.84	107.88	142.91	103.89	136.57
ER Visits / 1,000	11.71	13.06	12.25	13.07	12.63	13.63
Ischemic Heart Disease						
Deaths / 100,000	84.68	132.55	81.43	128.05	75.16	122.38
Hospitalizations / 10,000	43.54	55.14	38.65	49.38	36.32	45.21
ER Visits / 1,000	0.22	0.84	0.19	0.73	0.19	0.67
Stroke / Other Cerebrovascular Disease						
Deaths / 100,000	42.01	43.90	43.24	42.83	42.87	41.73
Hospitalizations / 10,000	26.44	30.42	23.64	29.55	25.24	29.51
ER Visits / 1,000	0.48	0.81	0.46	0.79	0.46	0.77

Source: Missouri Department of Health & Senior Services (MICA)

For heart disease, the rate of deaths and hospitalizations in the county decreased from the period ending 2011 to the period ending 2013. In Missouri, the rate of deaths and hospitalizations decreased while the rate of ER Visits increased. The rate of ER Visits in the county increased over the same time period.

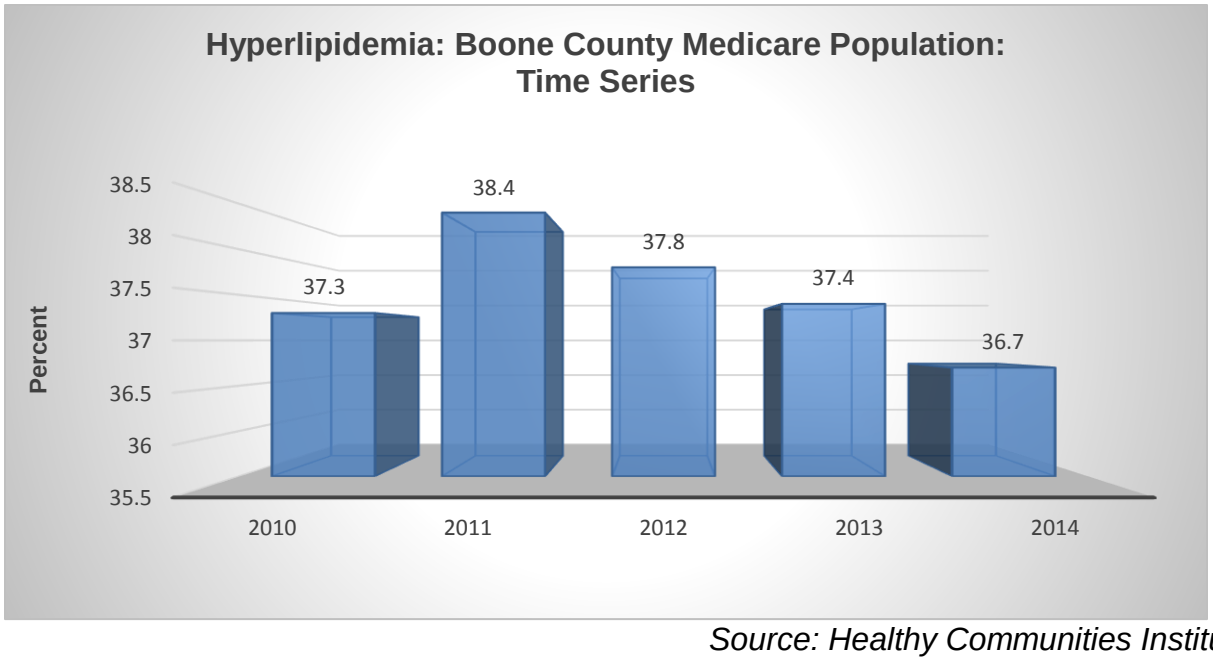
For ischemic heart disease, the rate of deaths and hospitalizations in the county and the state decreased from the period ending 2011 to the period ending 2013.

For stroke/other cerebrovascular disease, the rate of deaths and hospitalizations in the county decreased while the ER Visit rates were similar in the county. In Missouri, the rates for death, hospitalizations and ER Visits were lower in the state when compared to the county.



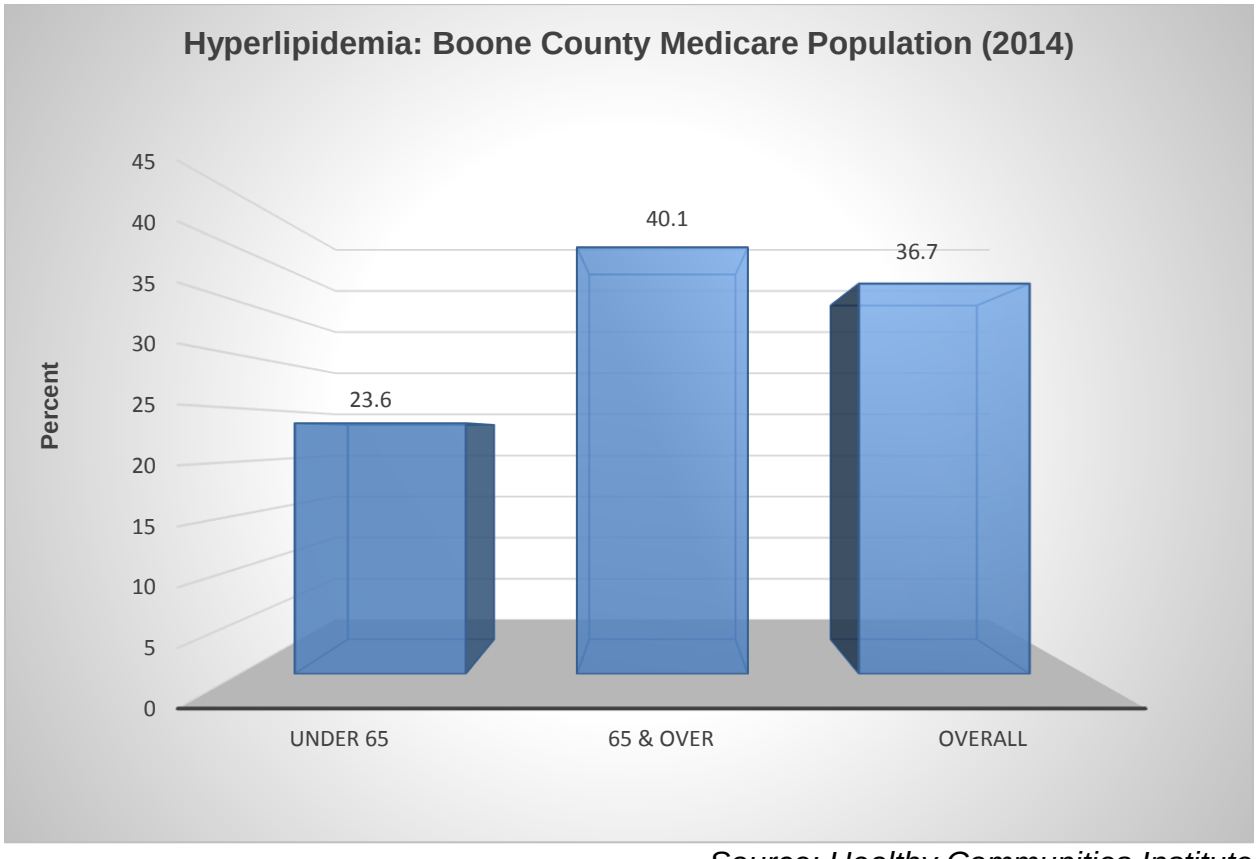
Source: Healthy Communities Institute

From 2007 to 2011, the high blood pressure prevalence rate in Boone County increased 94.8 percent compared to a 41.1 percent increase in the state.



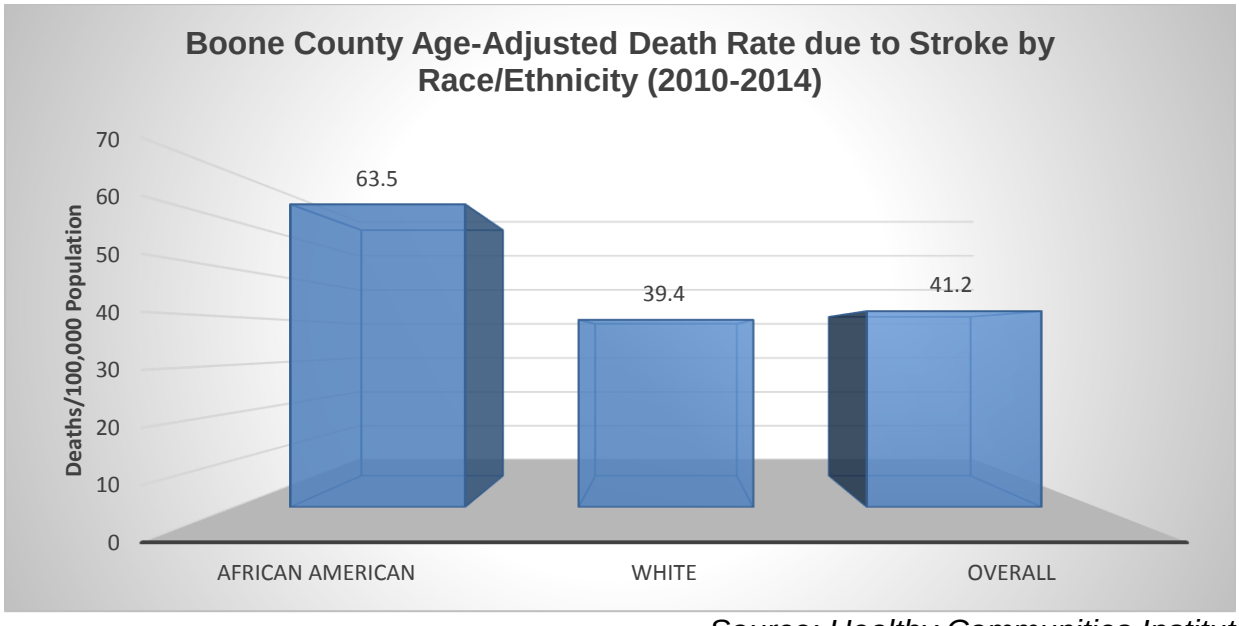
Source: Healthy Communities Institute

Although the rate of hyperlipidemia among the Medicare population in Boone County increased 1.1 points from 2010 to 2011, a gradual decrease of 1.7 points occurred in the rate from 2011 to 2014.



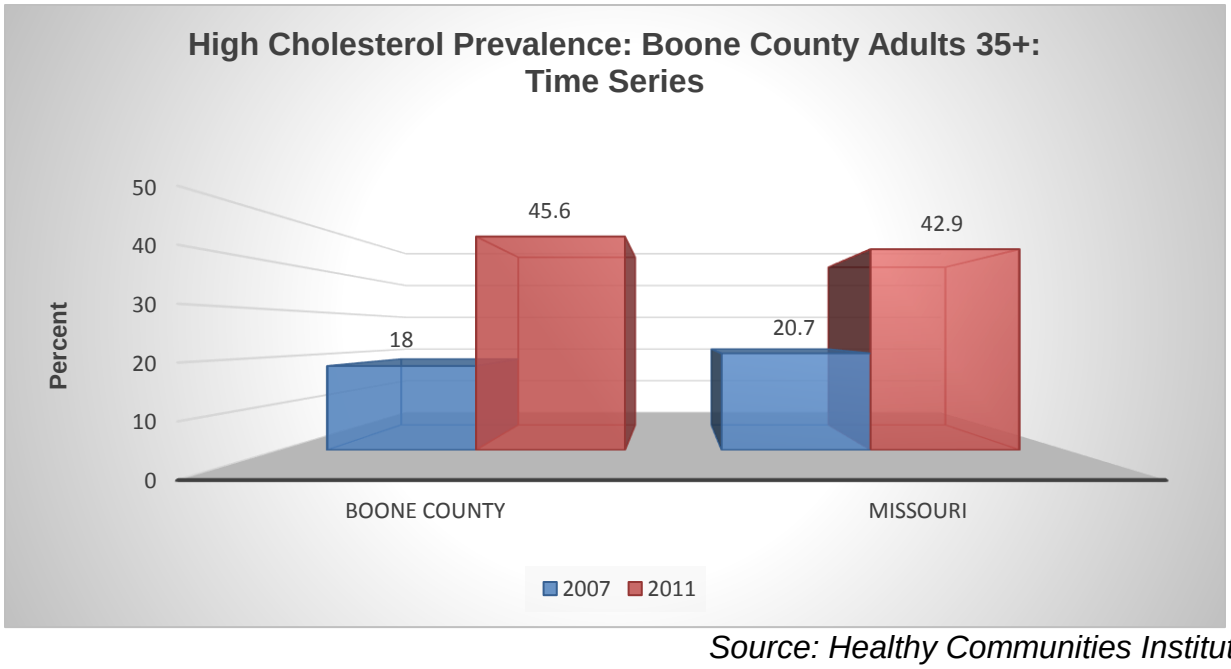
Source: Healthy Communities Institute

The rate of hyperlipidemia in the under 65 Medicare population in Boone County was 35.7 percent lower than the overall rate. The rate for those 65 and over was 9.3 percent higher than the overall rate.



Source: Healthy Communities Institute

The age-adjusted death rate due to stroke in Boone County was 61.2 percent higher among the African American population when compared to the rate of Whites.

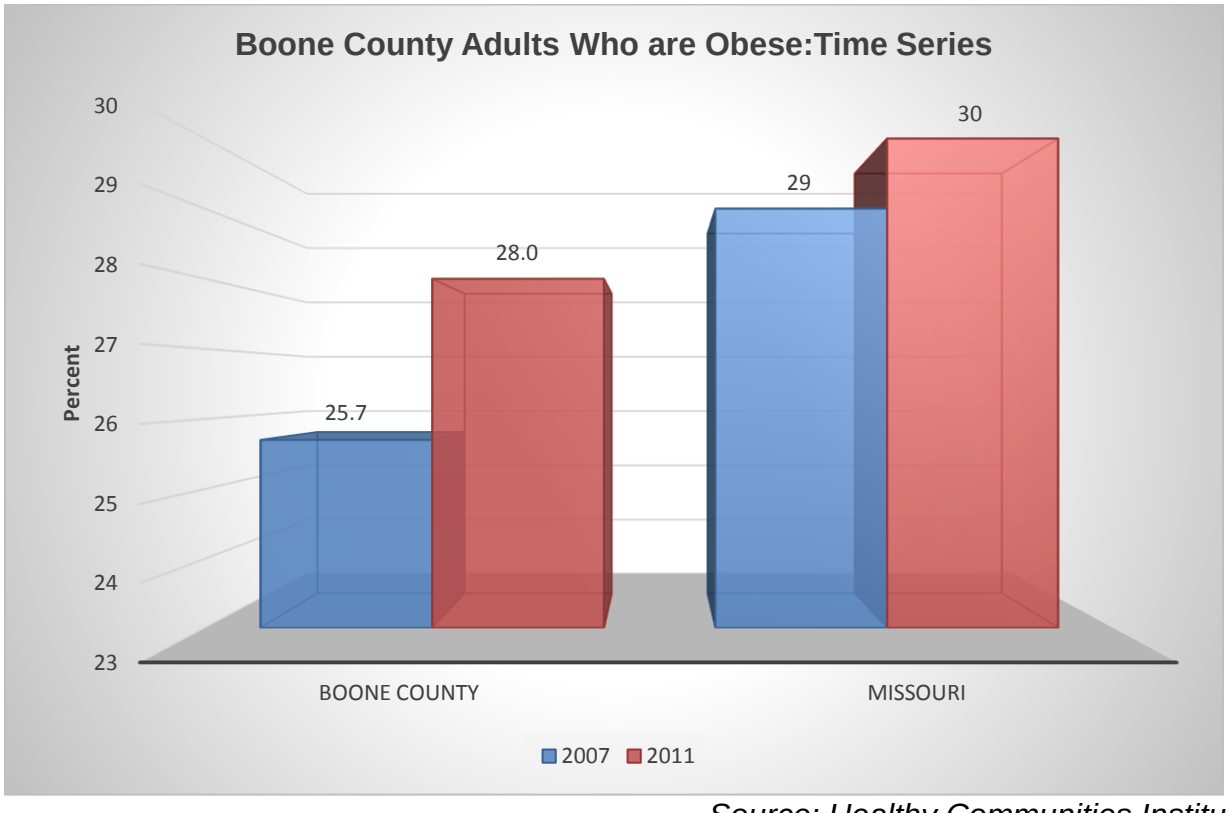


Source: Healthy Communities Institute

The high cholesterol prevalence rate in Boone County increased 153 percent from 2007 to 2011 as well as increased 107.2 percent in the state during the same time period.

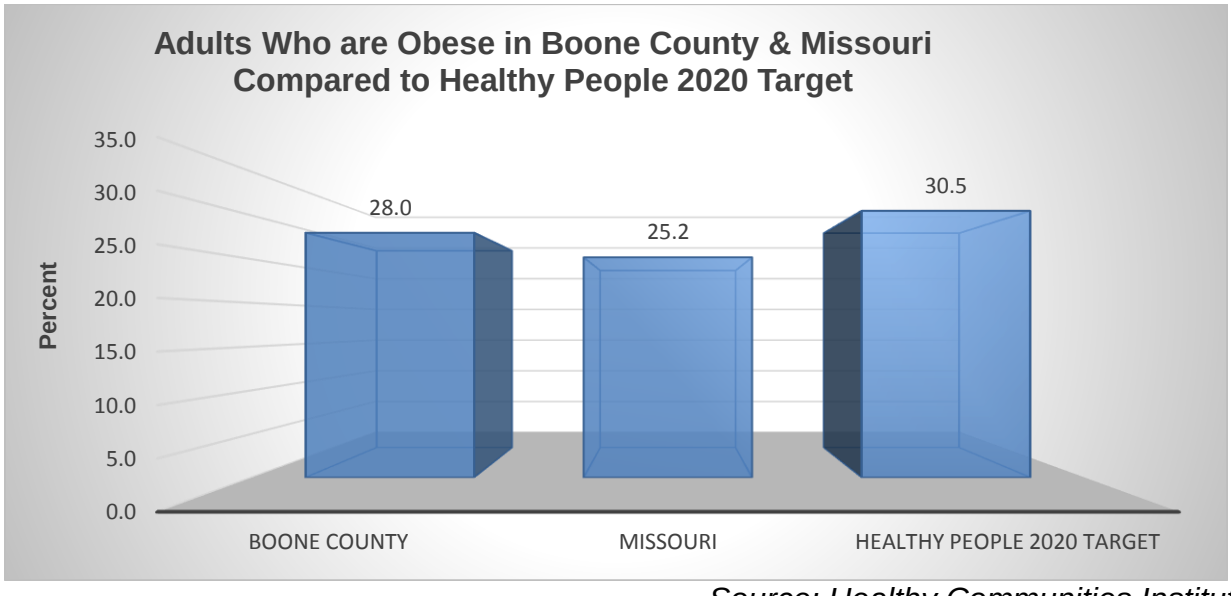
Obesity

The percentage of obese adults is an indicator of the overall health and lifestyle of a community. Obesity increases the risk of many diseases and health conditions including heart disease, type 2 diabetes, cancer, hypertension, stroke, liver and gallbladder disease, respiratory problems and osteoarthritis. (Healthy Communities Institute).



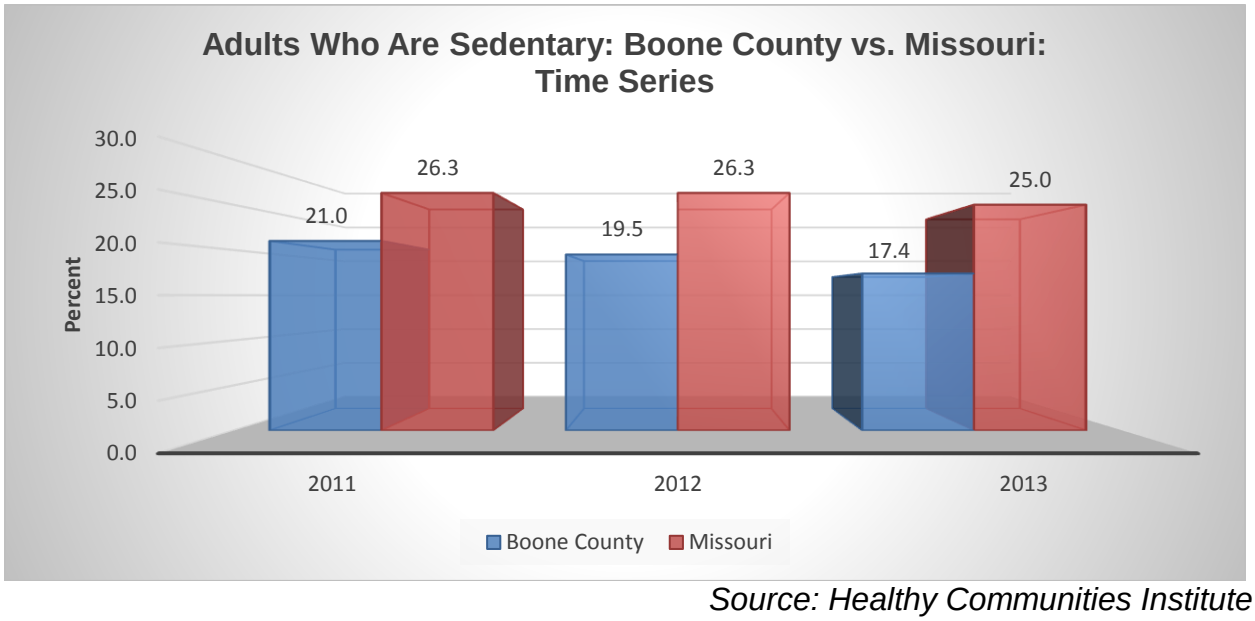
Source: Healthy Communities Institute

The obesity rate of adults in Boone County increased 8.9 percent from 2007 to 2011 as well as increased 3.4 percent in the state during the same time period.



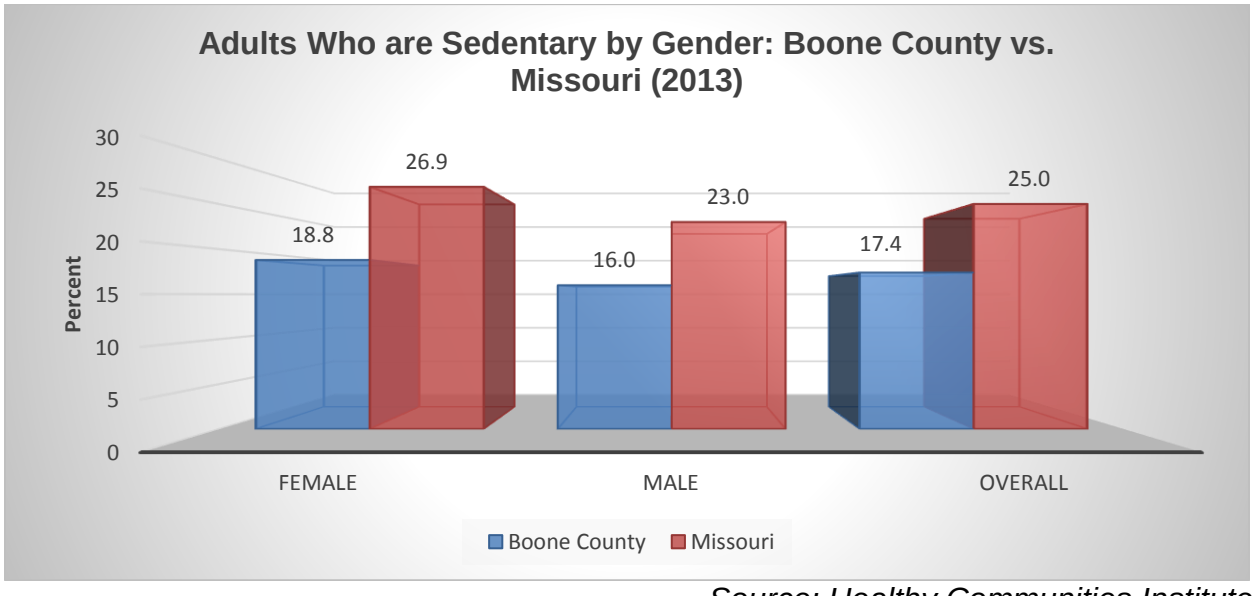
Source: Healthy Communities Institute

The rate of adults who are obese in Boone County was 8.2 percent lower than the Healthy People 2020 target and the rate in the state was 17.4 percent lower than the target.



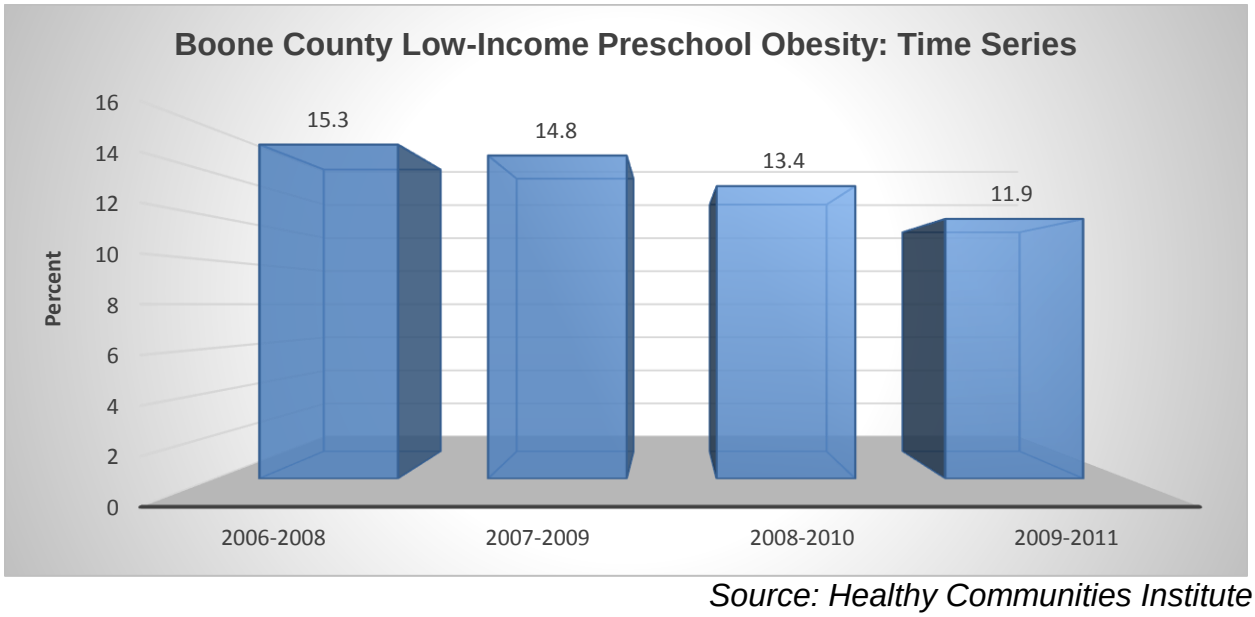
Source: Healthy Communities Institute

The rate of adults who are sedentary in Boone County decreased 17.1 percent from 2011 to 2013 while the rate in Missouri decreased 4.9 percent over the same time period.



Source: Healthy Communities Institute

Females had a 17.5 percent higher rate of adults who are sedentary than males in Boone County and females had a 17.0 percent higher rate in the state than males in the state.

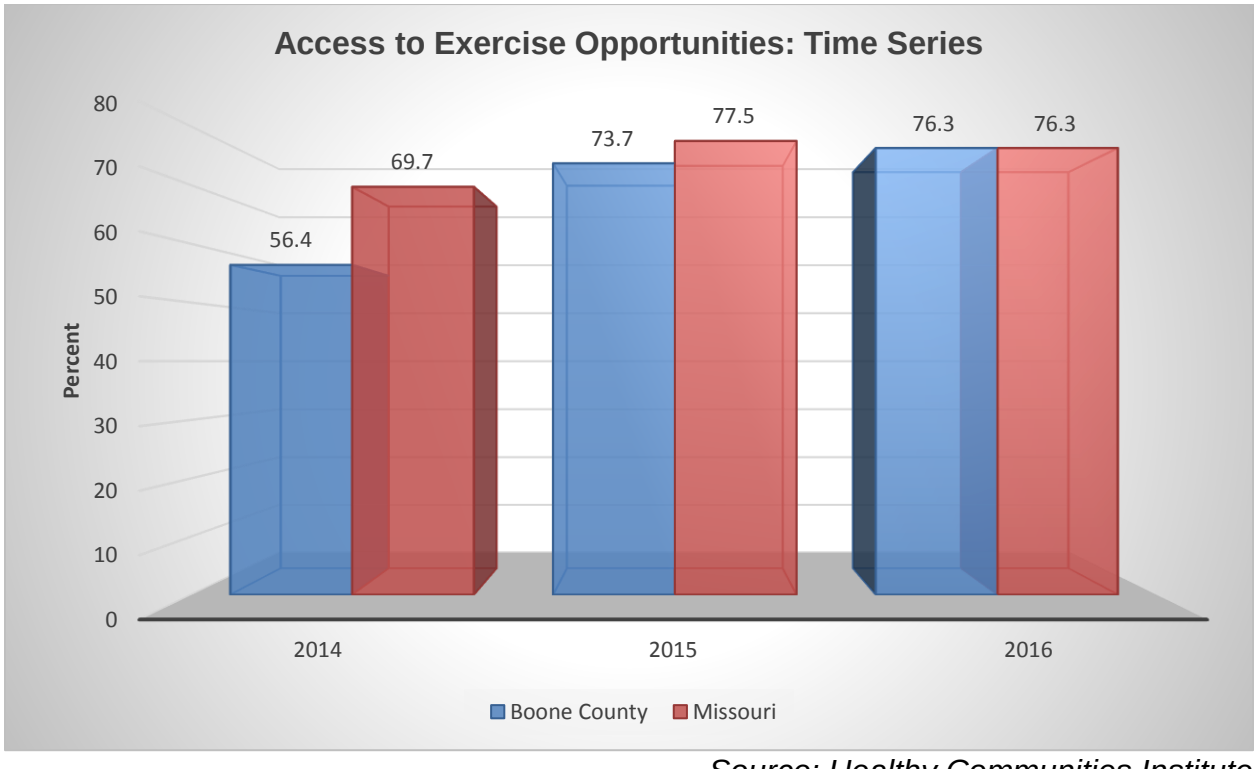


Source: Healthy Communities Institute

From the period ending 2008 to the period ending 2011, the rate of low-income preschool obesity decreased 22.2 percent in Boone County.

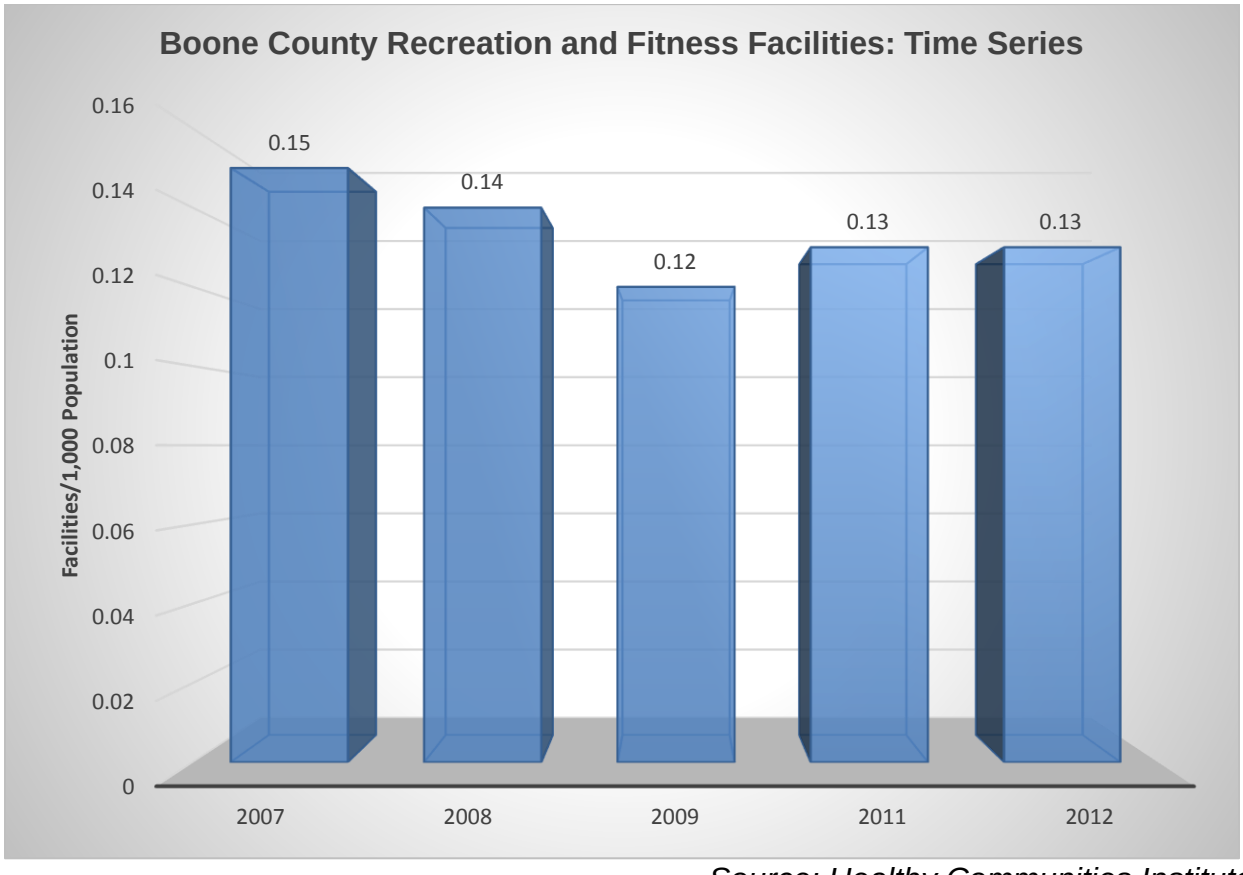
Healthy Lifestyle

Proximity to exercise opportunities, such as parks and recreation facilities, has been linked to an increase in physical activity among residents. Regular physical activity has a wide array of health benefits including weight control, muscle and bone strengthening, improved mental health and mood, and improved life expectancy. Furthermore, exercise reduces the risk of cardiovascular disease, type 2 diabetes and metabolic syndrome, and some cancers. (Healthy Communities Institute).



Source: Healthy Communities Institute

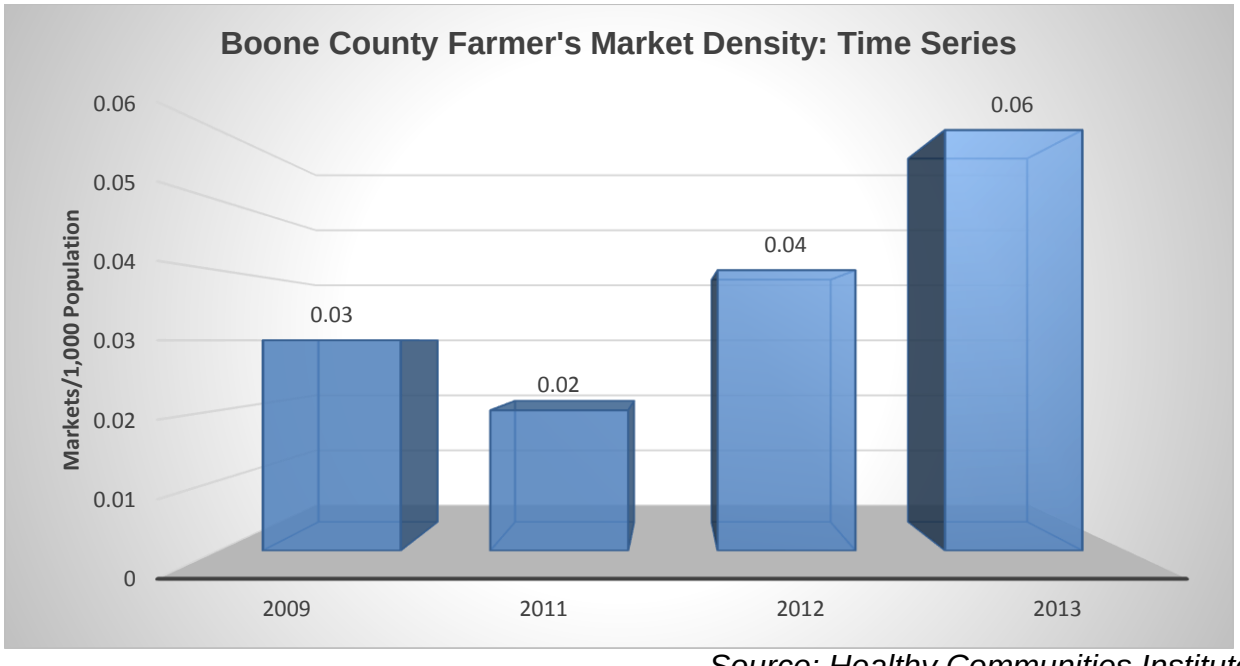
From 2014 to 2016, the rate of access to exercise opportunities in Boone County increased 35.3 percent. The rate also increased 9.5 percent in Missouri during the same time period.



Source: Healthy Communities Institute

From the period ending 2007 to the period ending 2009, a slight decrease occurred in the rate of recreation and fitness facilities in Boone County. A slight increase occurred in the following year.

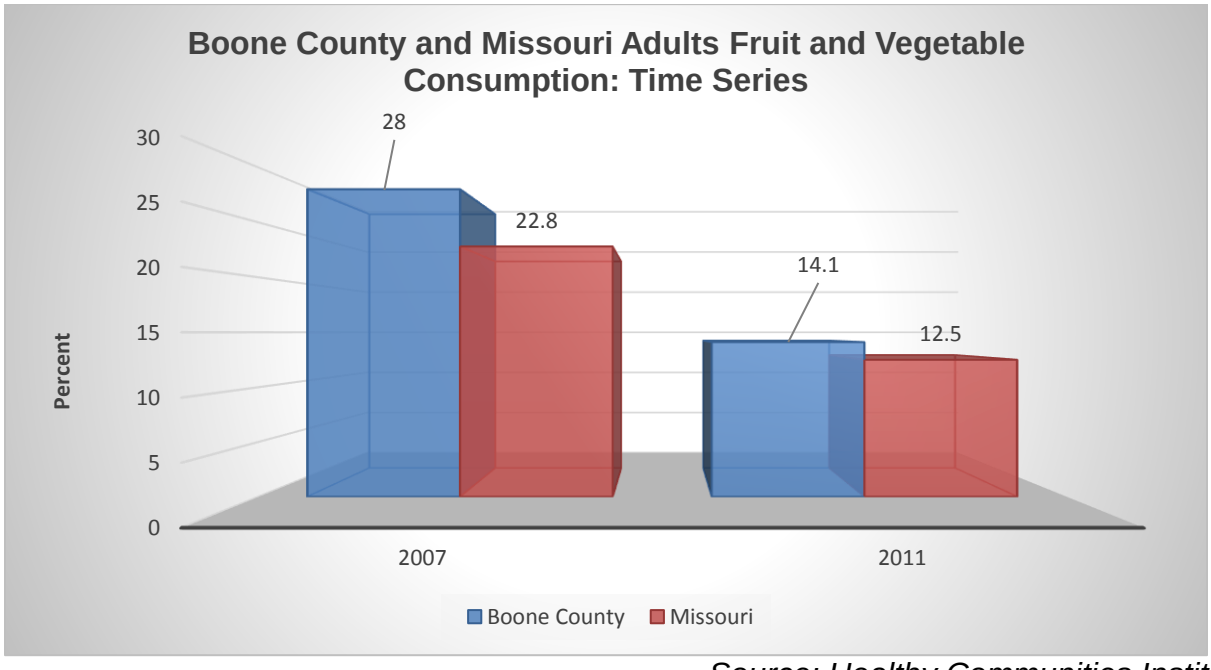
Farmer's markets provide a way for community members to buy fresh and affordable agricultural products while supporting local farmers. Farmers markets often emphasize good nutrition and support consumers to cook healthier meals and maintain good eating habits. A diet comprised of nutritious foods, in combination with an active lifestyle, can reduce the incidence of heart disease, cancer and diabetes and is essential to maintain healthy body weight and prevent obesity. (Healthy Communities Institute).



Source: Healthy Communities Institute

From 2009 to 2013, the rate of farmer's markets in Boone County increased 100 percent.

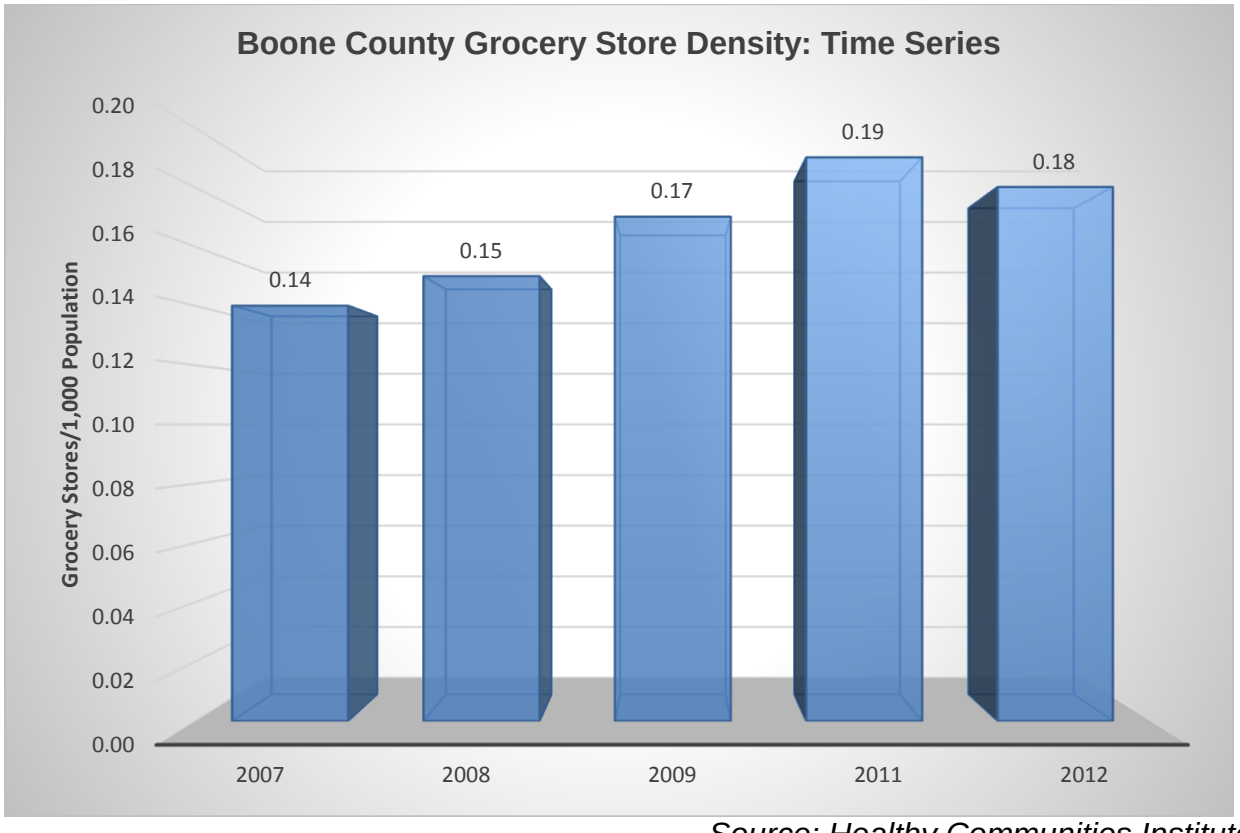
It is essential to eat a fresh, healthy and balanced diet in order to maintain a healthy weight and prevent chronic disease. Numerous studies have shown a clear link between the amount and variety of fruits and vegetables consumed and rates of chronic diseases, especially cancer. According to the World Cancer Research Fund International, about 35 percent of all cancers can be prevented through increased fruit and vegetable consumption. The USDA currently recommends four and one-half cups (nine servings) of fruits and vegetables daily for a 2,000-calorie diet, with higher or lower amounts depending on the caloric level. Despite the benefits, many people still do not eat recommended levels of fruits and vegetables. (Healthy Communities Institute).



Source: Healthy Communities Institute

The fruit and vegetable consumption of adults in Boone County decreased 49.6 percent from 2007 to 2011 as well as decreased 45.2 percent in the state during the same time period.

There are strong correlations between the density of grocery stores in a neighborhood and the nutrition and diet of its residents. The availability and affordability of healthy and varied food options in the community increase the likelihood that residents will have a balanced and nutritious diet. A diet comprised of nutritious foods, in combination with an active lifestyle, can reduce the incidence of heart disease, cancer and diabetes and is essential to maintain a healthy body weight and prevent obesity. Low-income and under-served communities often have limited access to stores that sell healthy food, especially high-quality fruits and vegetables. Moreover, rural communities often have a high number of convenience stores, where healthy and fresh foods are less available than in larger, retail food markets. (Healthy Communities Institute).



Source: Healthy Communities Institute

From the period ending 2007 to the period ending 2011, a 35.7 percent increase occurred in the rate of the density of grocery stores in Boone County, followed by a slight decrease from the period ending 2011 to 2012.

Diabetes

Diabetes is a leading cause of death in the United States. According to the Centers for Disease Prevention and Control (CDC), more than 25 million people have diabetes, including both diagnosed and undiagnosed cases.

This disease can have a harmful effect on most of the organ systems in the human body; it is a frequent cause of end-stage renal disease, non-traumatic lower-extremity amputation, and a leading cause of blindness among working-age adults. Persons with diabetes are also at increased risk for ischemic heart disease, neuropathy and stroke.

Diabetes disproportionately affects minority populations and the elderly, and its incidence is likely to increase as minority populations grow and the U.S. population becomes older. (Healthy Communities Institute).

Table 14: Boone County Diabetes Mellitus by Ethnicity / Race Compared to Missouri

	Boone County		Missouri	
Health Indicators	**White**	**African American**	**White**	**African American**
Diabetes Mellitus				
Deaths / 100,000 (2003-2013)	18.2	66.8	20.1	43.4
Hospitalizations / 10,000 (2009-2013)	11.5	52.8	14.6	46.1
ER Visits / 1,000 (2009-2013)	0.9	5.4	1.5	4.9

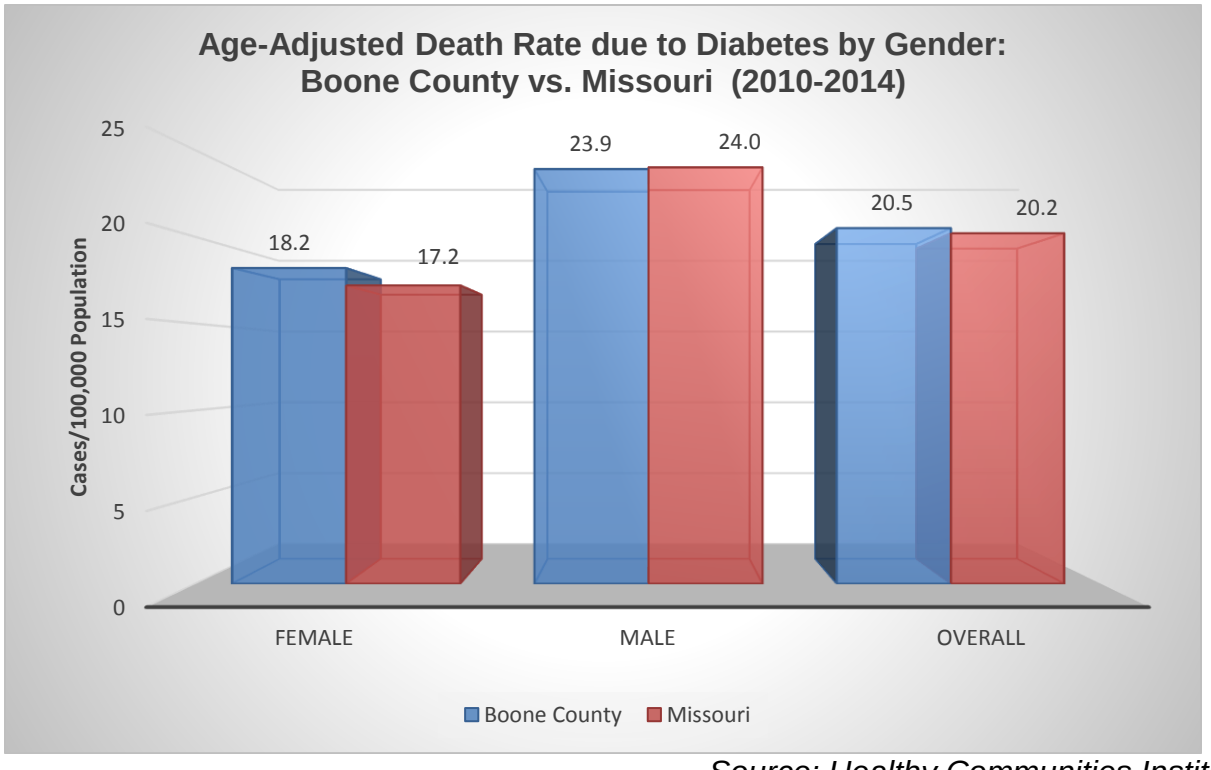
Source: Missouri Department of Health & Senior Services (MICA)

The rate of deaths, hospitalizations and ER Visits for Whites with diabetes in Boone County were lower when compared to the rates in Missouri. Conversely, rate of deaths, hospitalizations and ER Visits for African Americans in Boone County were higher than the rates in Missouri.

Table 15: Boone County Three Years Moving Diabetes Mellitus Average Rates Compared to Missouri						
Health Indicators	**2009-2011**		**2010-2012**		**2011-2013**	
Diabetes Mellitus	**Boone County**	**Missouri**	**Boone County**	**Missouri**	**Boone County**	**Missouri**
Death / 100,000 population	22.85	20.49	22.28	20.42	20.33	20.23
Hospitalizations /10, 000 population	14.21	17.20	14.63	17.27	14.82	17.39
ER Visits/ 1000 population	1.27	1.75	1.33	1.76	1.41	1.80

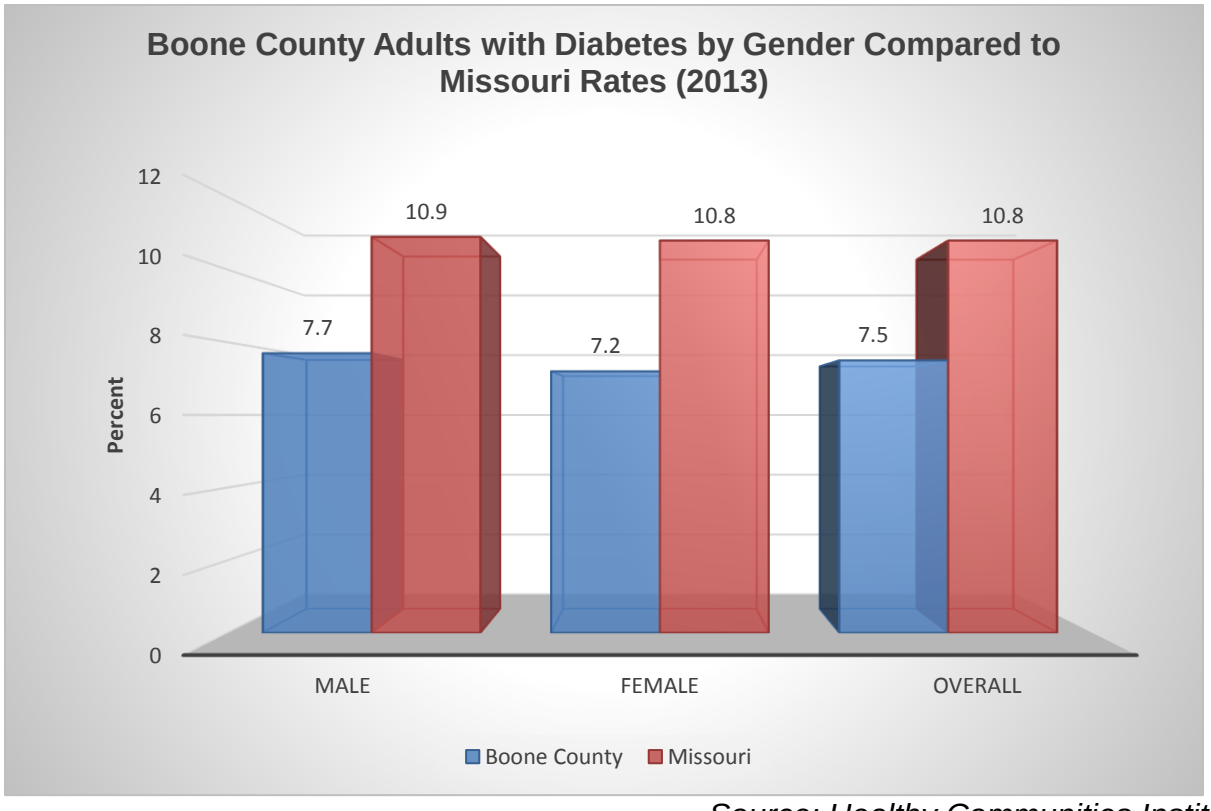
Source: Missouri Department of Health & Senior Services (MICA)

From the period ending 2009 to the period ending 2013, the rate of deaths from diabetes in Boone County decreased while the rate of hospitalizations and ER Visits increased. The rates in the state mirrored the rates in the county. The rate of deaths from diabetes in Missouri decreased while the rate of hospitalizations and ER Visits increased.



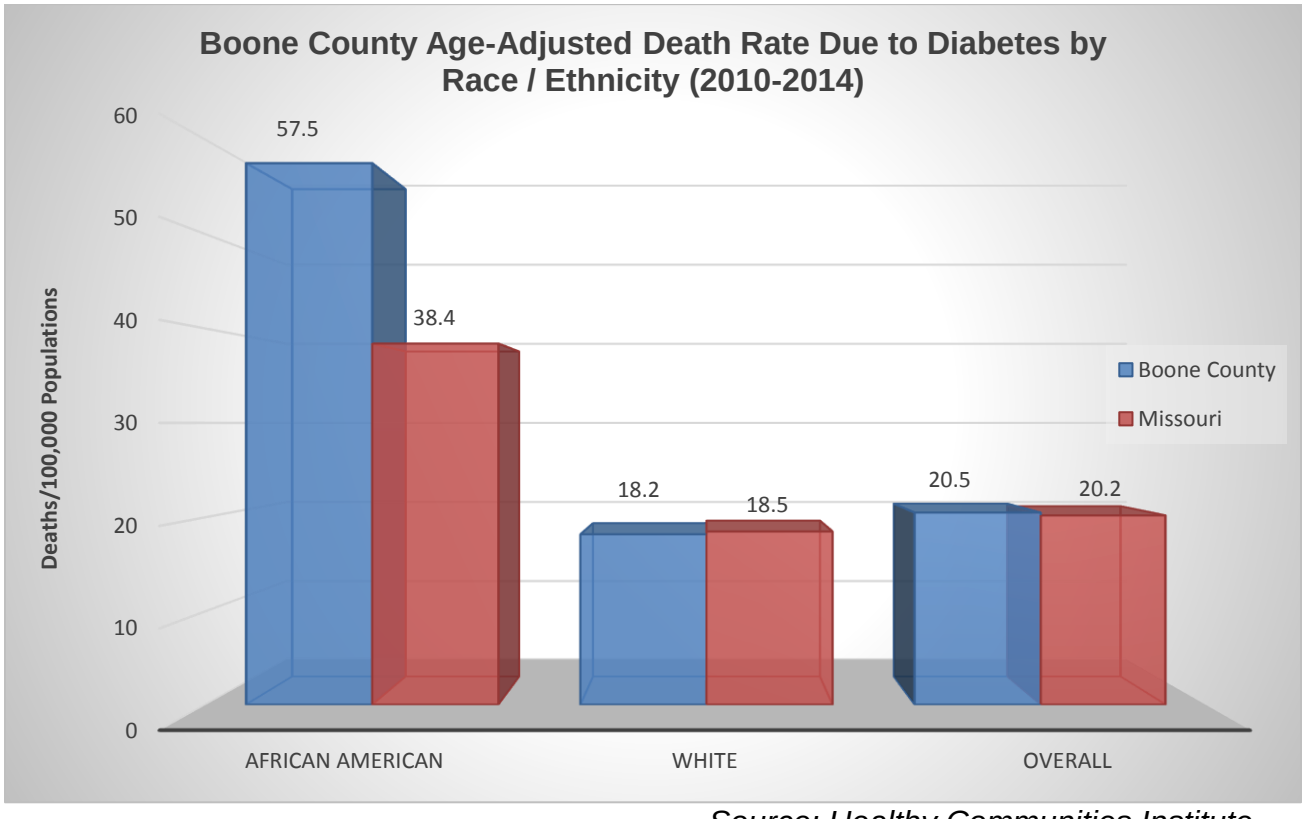
Source: Healthy Communities Institute

The age-adjusted death rate due to diabetes for females was 5.8 percent higher in the county than the state. The death rate due to diabetes for males was the same in the county and the state.



Source: Healthy Communities Institute

The rate of males with diabetes was 29.4 percent lower in the county than the rate in the state. The rate for females was 33.3 percent lower in the county when compared to the state.

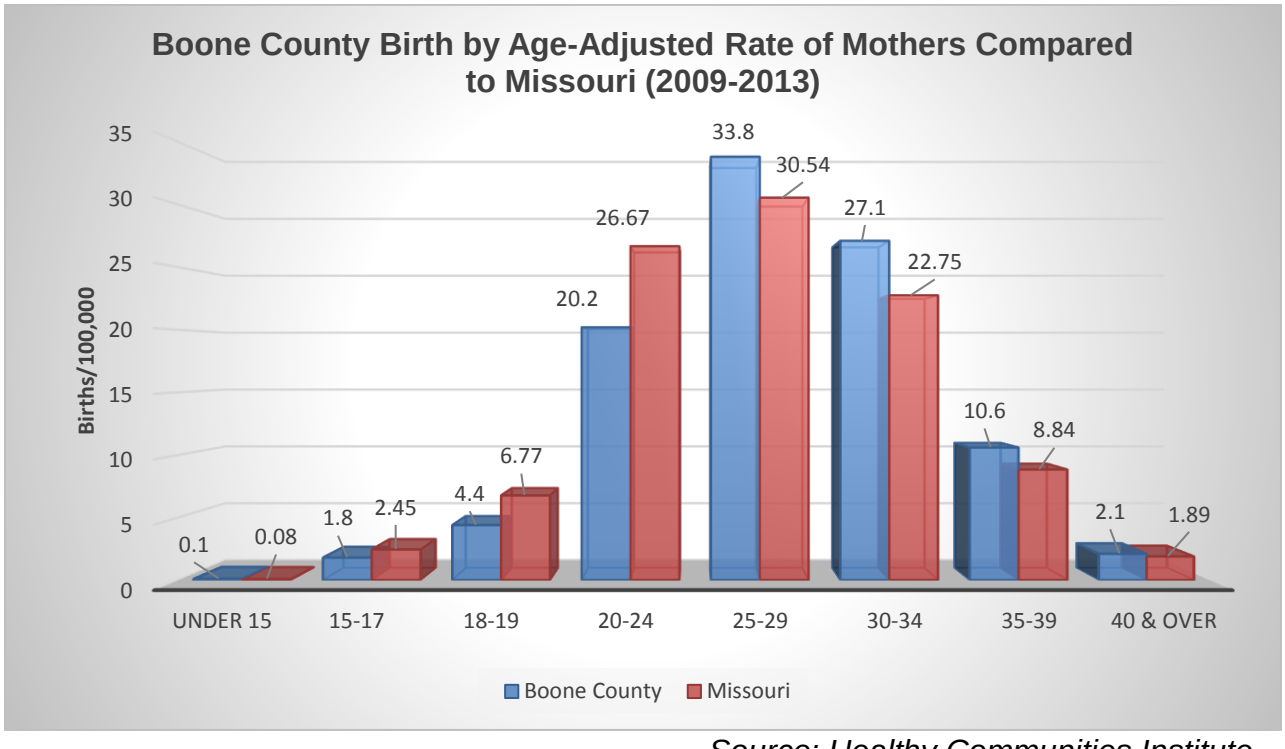


Source: Healthy Communities Institute

The age-adjusted death rate due to diabetes for African Americans was 49.7 percent higher in Boone County than the rate in Missouri. The age-adjusted death rate due to diabetes for Whites was similar both in the county and in the state.

Reproductive Health

Babies born with low birth weight are more likely than babies of normal weight to have health problems and require specialized medical care in the neonatal intensive care unit. Low birth weight is typically caused by premature birth and fetal growth restriction, both of which are influenced by a mother's health and genetics. The most important things an expectant mother can do to prevent low birth weight are to seek prenatal care, take prenatal vitamins, stop smoking, and stop drinking alcohol and using drugs. (Healthy Communities Institute).

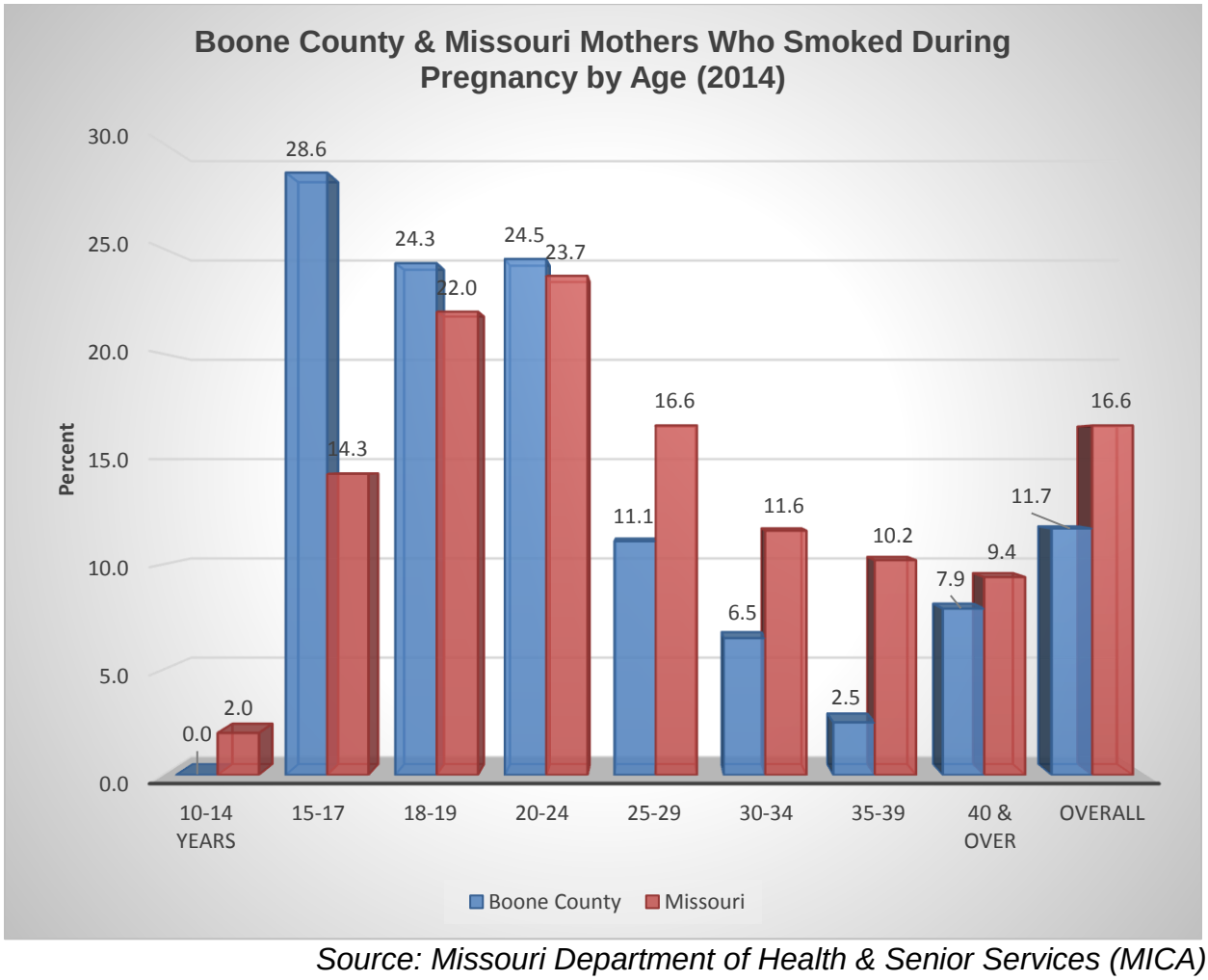


Source: Healthy Communities Institute

The highest rate of births for Boone County and the state occurred within the 25-29 age group.

Smoking during pregnancy poses risks for both mother and fetus. A baby born to a mother who has smoked during her pregnancy is more likely to have less developed lungs and a lower birth weight, and is more likely to be born prematurely. It is estimated that smoking during pregnancy causes up to 10 percent of all infant deaths. Even after a baby is born, secondhand smoking can contribute to SIDS (Sudden Infant Death Syndrome), asthma onset and stunted growth. (Healthy Communities Institute).

The Healthy People 2020 national health target is to decrease the percentage of women who gave birth and who smoked cigarettes during pregnancy to 1.4 percent.

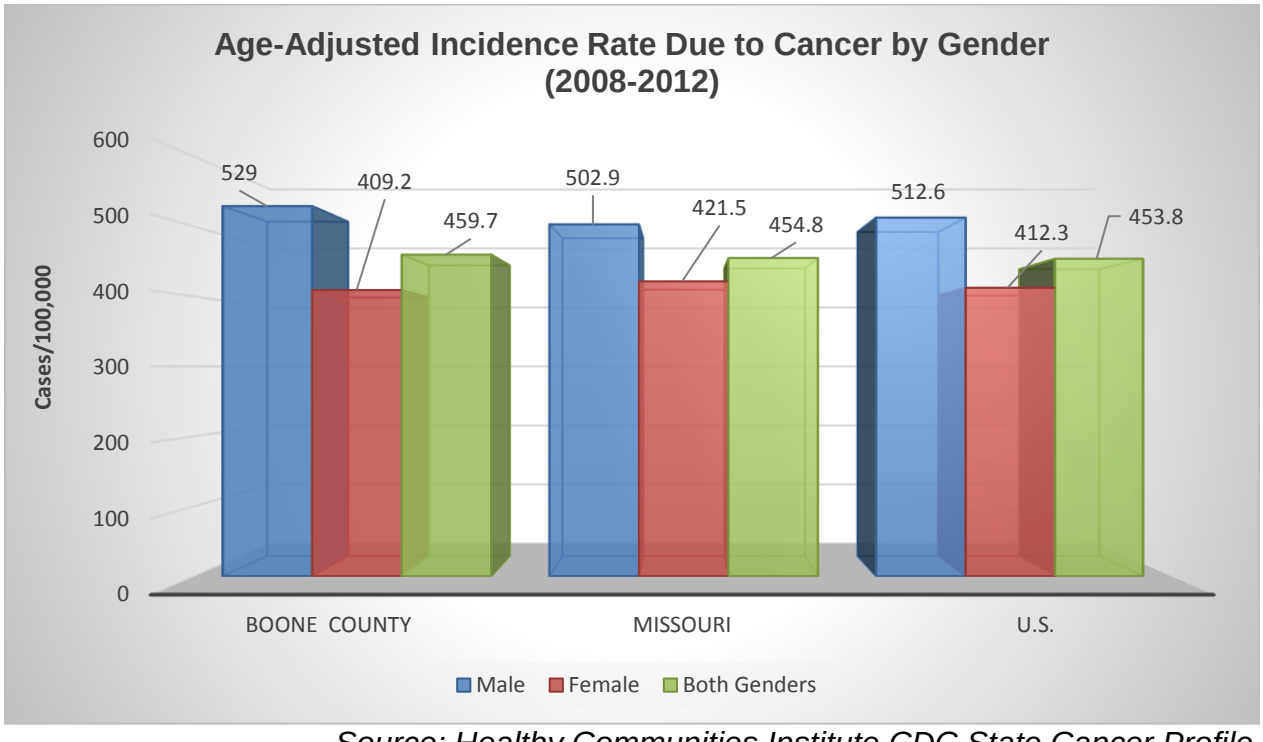


Source: Missouri Department of Health & Senior Services (MICA)

The highest rate of mothers who smoked during pregnancy occurred in 15-17 age group in Boone County. The highest rate of mothers who smoked during pregnancy in the state were found in the 20-24 age group.

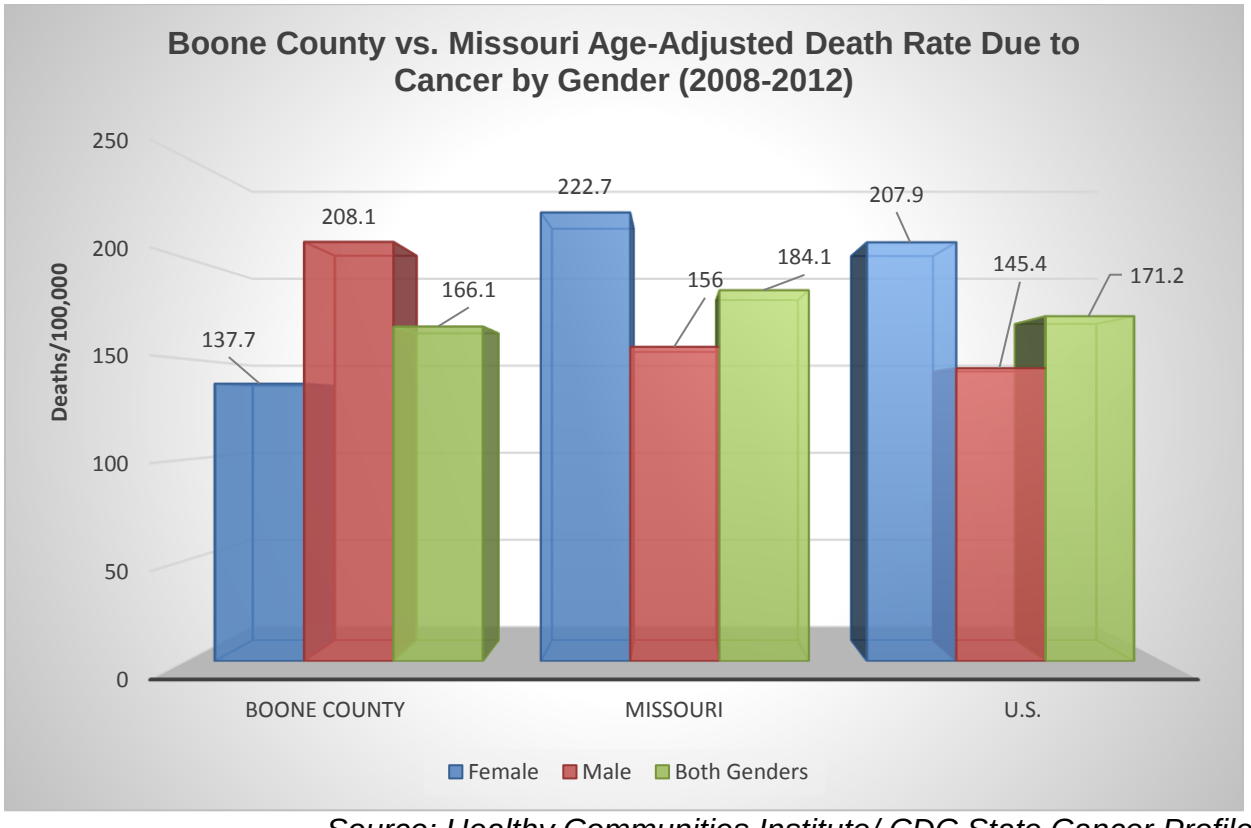
Cancer

Cancer is a leading cause of death in the United States, with more than 100 different types of the disease. According to the National Cancer Institute, lung, colon and rectal, breast, pancreatic and prostate cancer lead in the greatest number of annual deaths.



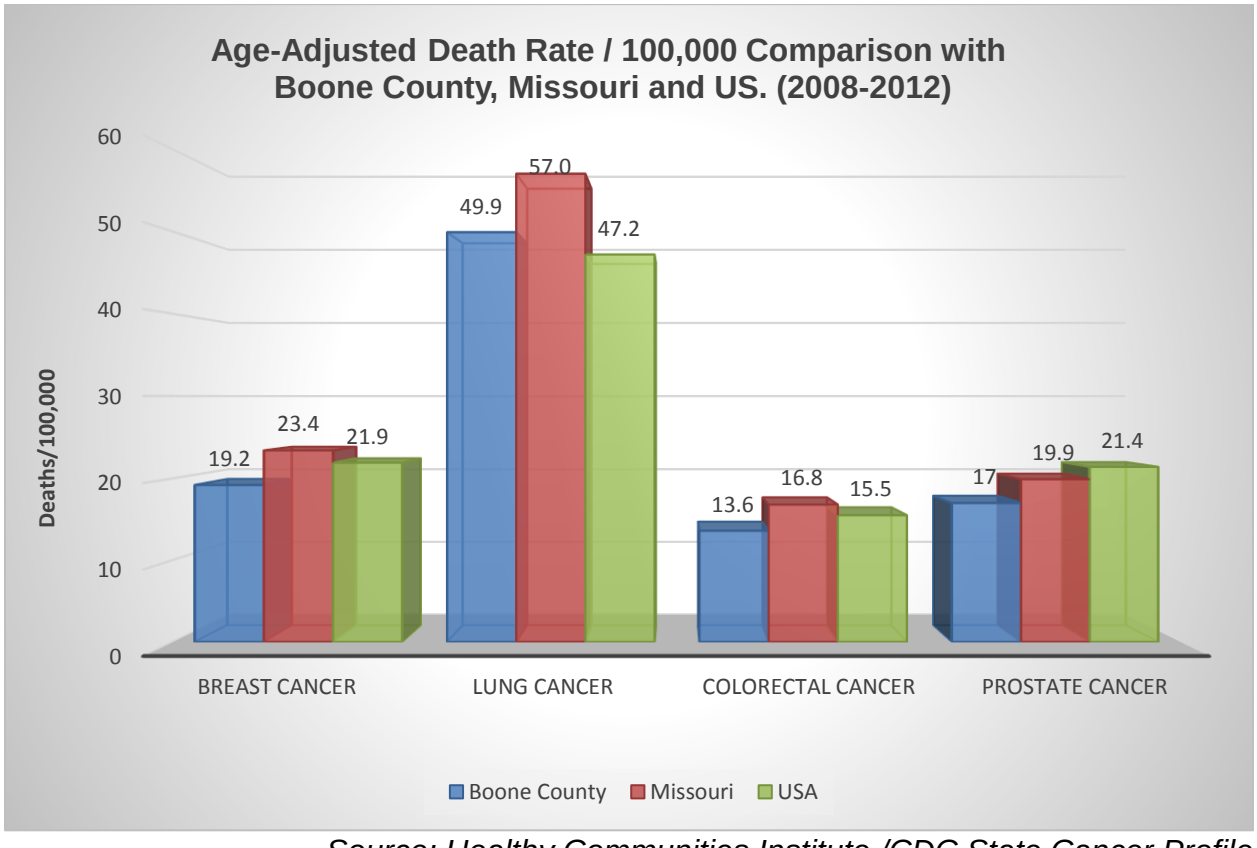
Source: Healthy Communities Institute CDC State Cancer Profile

The age-adjusted incidence rate due to cancer for males was 3.2 percent higher in Boone County when compared to the U.S and 5.2 percent higher when compared to Missouri. Females had a 0.8 percent lower age-adjusted incidence rate for cancer and a 2.9 percent lower rate when compared to Missouri.



Source: Healthy Communities Institute/ CDC State Cancer Profile

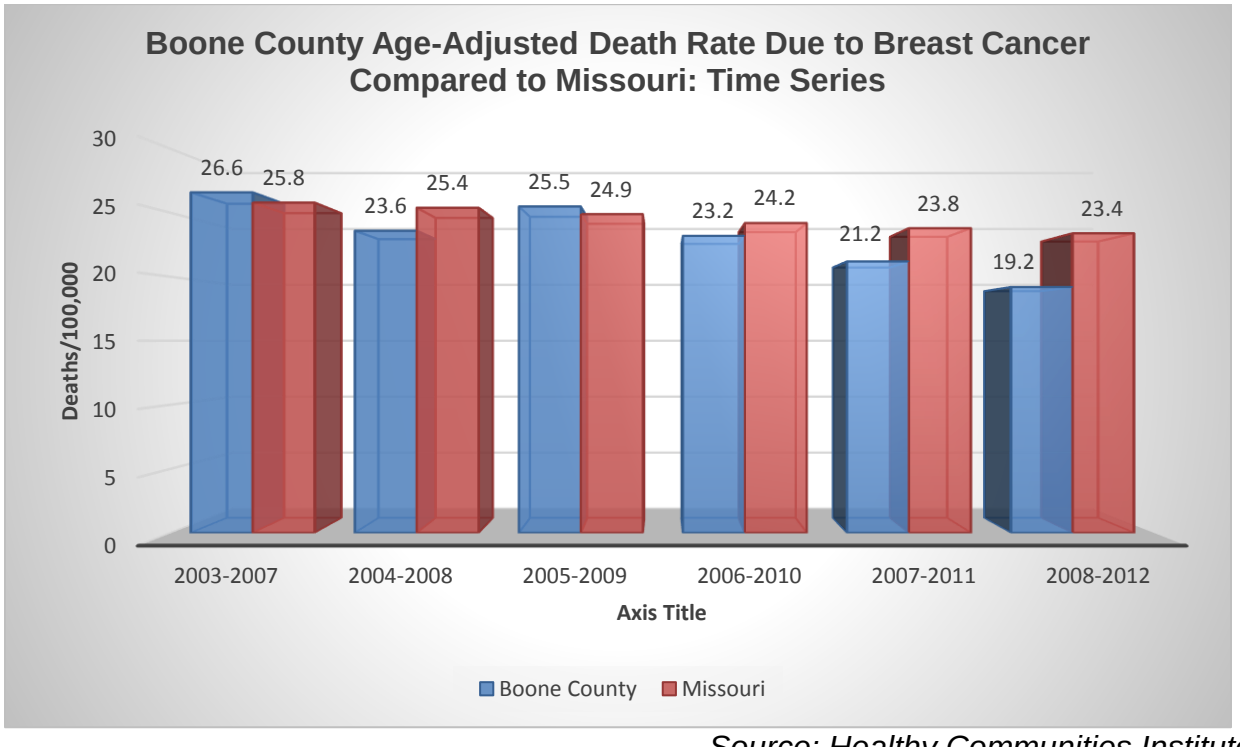
The age-adjusted death rate due to cancer for females in Boone County was 38.2 percent lower than Missouri and 33.8 percent lower than the U.S. Males had a 33.4 percent higher age-adjusted death rate in Boone County when compared to Missouri and a 43.1 percent higher rate than the U.S.



Source: Healthy Communities Institute /CDC State Cancer Profile

Lung cancer death rates were more than double the rates of breast, colorectal and prostate cancer in Boone County, Missouri and the U.S. With the exception of lung cancer, Boone County had a lower death rate when compared to Missouri and the U.S. In Boone County, lung cancer is 5.7 percent higher than the U.S., but 12.5 percent lower than the rate in Missouri.

Breast cancer is a leading cause of cancer death among women in the United States. According to the American Cancer Society, about 1 in 8 women will develop breast cancer and about 1 in 36 women will die from breast cancer. Breast cancer is associated with increased age, hereditary factors, obesity and alcohol use. Since 1990, breast cancer death rates have declined progressively due to advancements in treatment and detection. The Healthy People 2020 national health target is to reduce the breast cancer death rate to 20.7 deaths per 100,000 females.

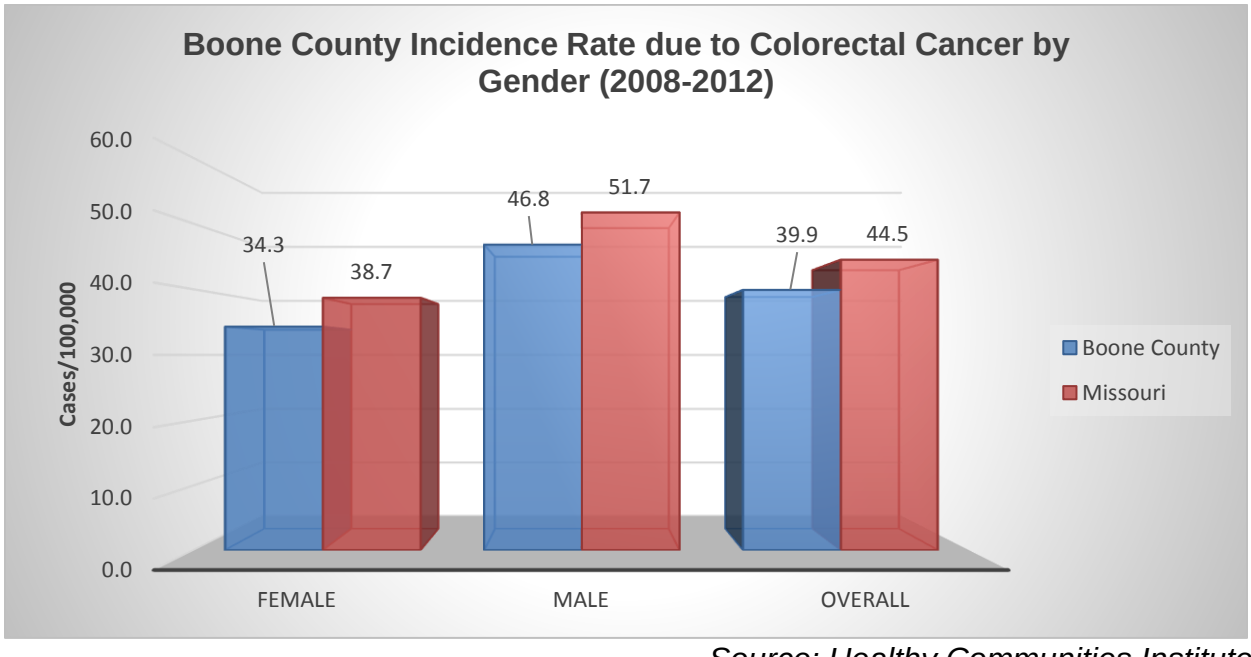


Source: Healthy Communities Institute

From the period ending 2007 to the period ending 2012, the age-adjusted death rate due to breast cancer decreased 27.8 percent in Boone County. The age-adjusted death rate due to breast cancer decreased 9.3 percent in Missouri.

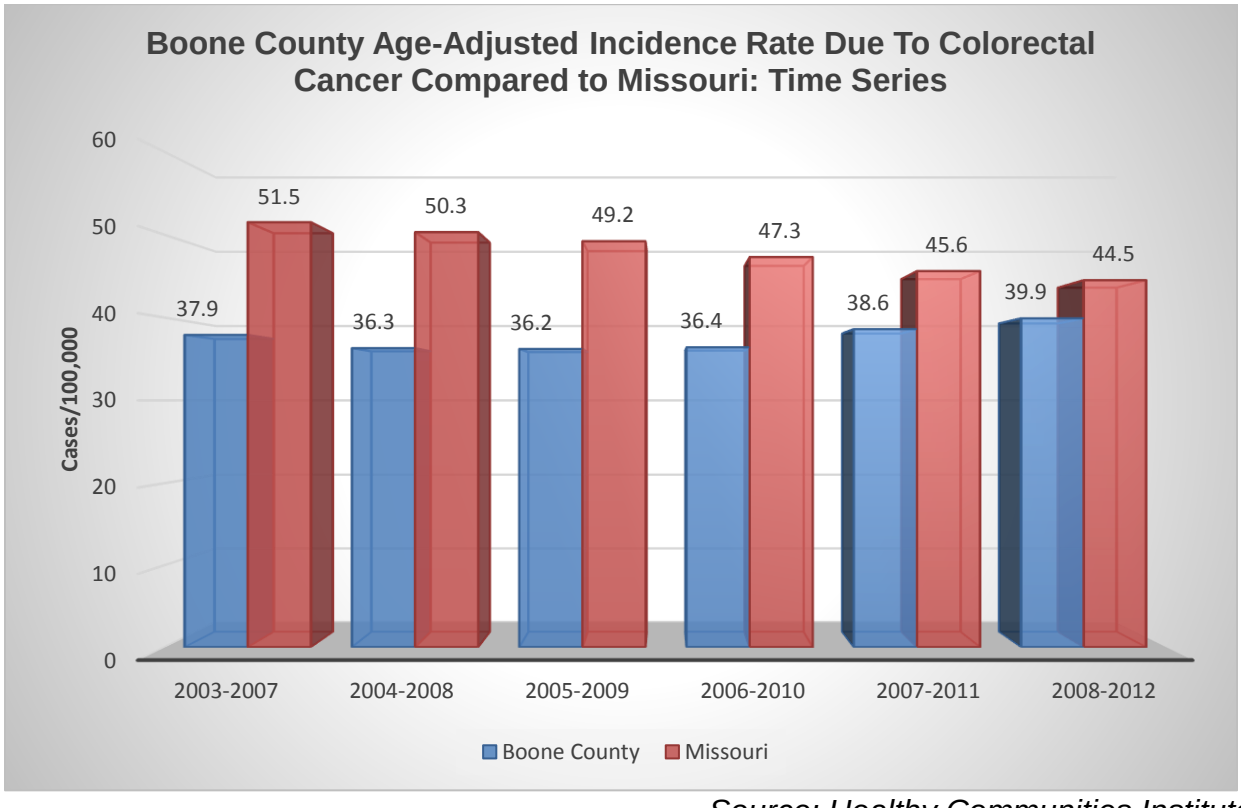
Colorectal cancer—cancer of the colon or rectum—is a leading cause of cancer-related deaths in the United States. The Centers for Disease Control and Prevention estimates that if all adults aged 50 or older had regular screening tests for colon cancer, as many as 60 percent of the deaths from colorectal cancer could be prevented. While 90 percent of colorectal cancer cases occur in adults aged 50 or older, it is essential for individuals with risk factors (those with a family history of colorectal cancer, inflammatory bowel disease, or heavy alcohol use) to seek regular screening earlier.

The Healthy People 2020 national health target is to reduce the colorectal cancer death rate to 14.5 deaths per 100,000 population.



Source: Healthy Communities Institute

The incidence rate due to colorectal cancer was 10.3 percent lower in Boone County than Missouri. Females had an 11.4 percent lower incidence rate in Boone County than Missouri. Males had an 8.1 percent lower incidence rate in the county when compared to the state.

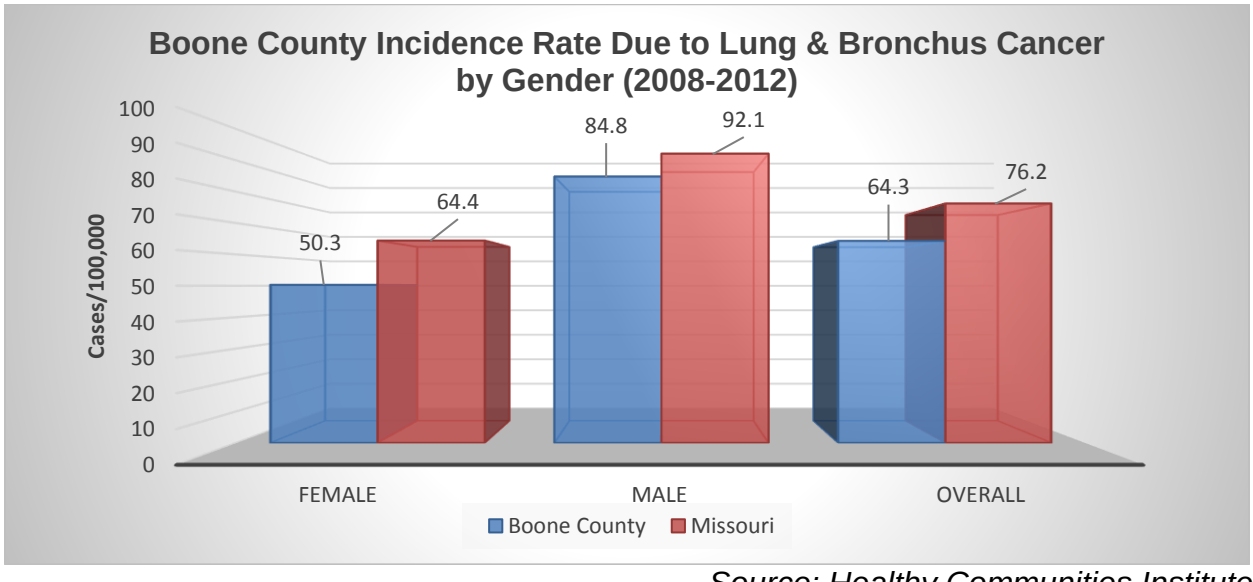


Source: Healthy Communities Institute

From the period ending 2007 to the period ending 2012, the age-adjusted incidence rate due to colorectal cancer increased 5.3 percent in Boone County and decreased 13.4 percent in Missouri.

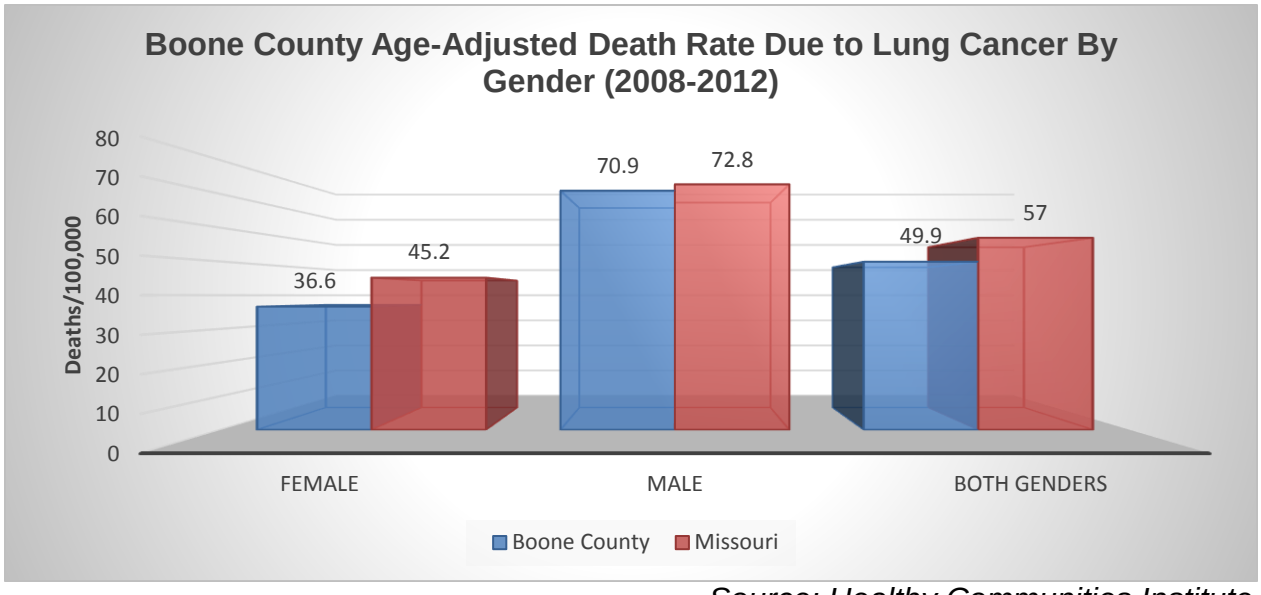
According to the American Lung Association, more people die from lung cancer annually than any other type of cancer, exceeding the total deaths caused by breast cancer, colorectal cancer and prostate cancer combined. The greatest risk factor for lung cancer is duration and quantity of smoking. While the mortality rate due to lung cancer among men has reached a plateau, the mortality rate due to lung cancer among women continues to increase. African Americans have the highest risk of developing lung cancer.

The Healthy People 2020 national health target is to reduce the lung cancer death rate to 45.5 deaths per 100,000 population.



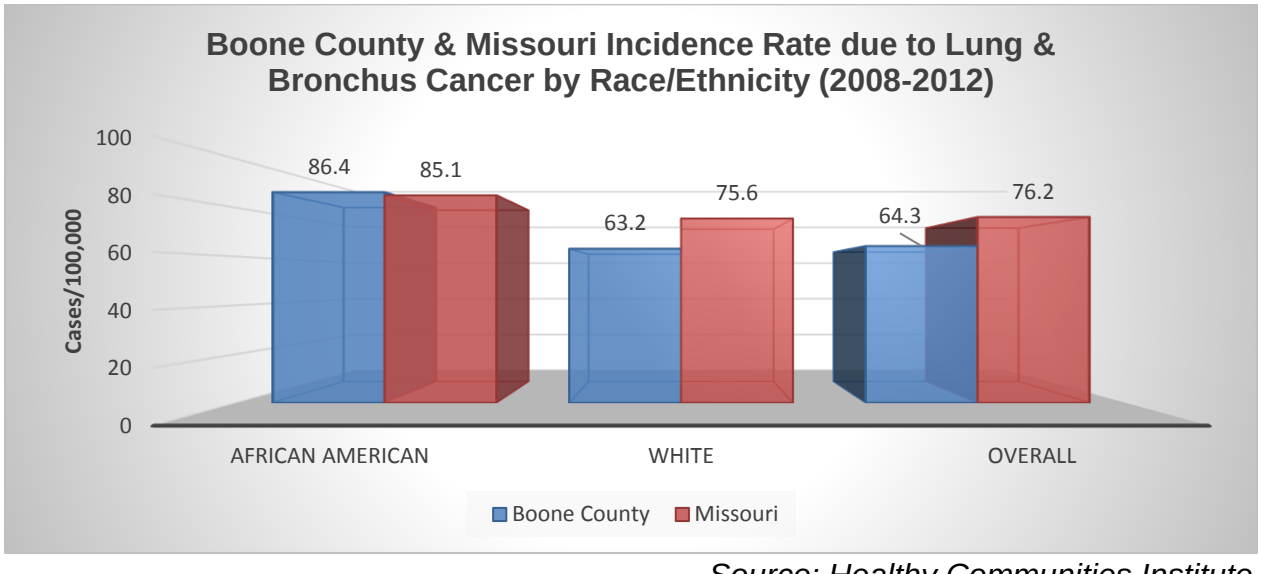
Source: Healthy Communities Institute

The incidence rate due to lung & bronchus cancer was 15.6 percent lower in Boone County than Missouri. The incidence rate due to lung & bronchus cancer for females was 21.9 percent lower than Missouri. Males had a 7.9 percent lower rate in Boone County when compared to Missouri.



Source: Healthy Communities Institute

The age-adjusted death rate due to lung cancer was 12.5 percent lower in Boone County than the state. The age-adjusted death rate for females was 19.0 percent lower in Boone County than the state. The rate for males was 2.6 percent lower in Boone County than the state.

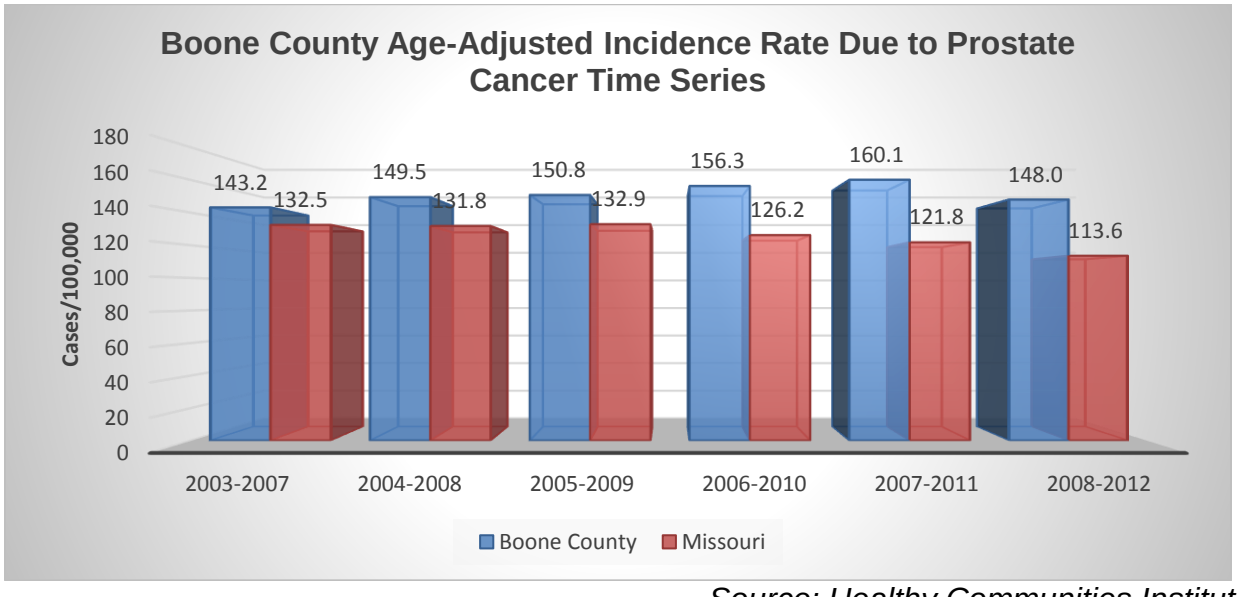


Source: Healthy Communities Institute

The incidence rate due to lung & bronchus cancer among African Americans was 1.5 percent higher in Boone County than Missouri. The incidence rate among Whites was 16.4 percent lower in Boone County when compared to Missouri.

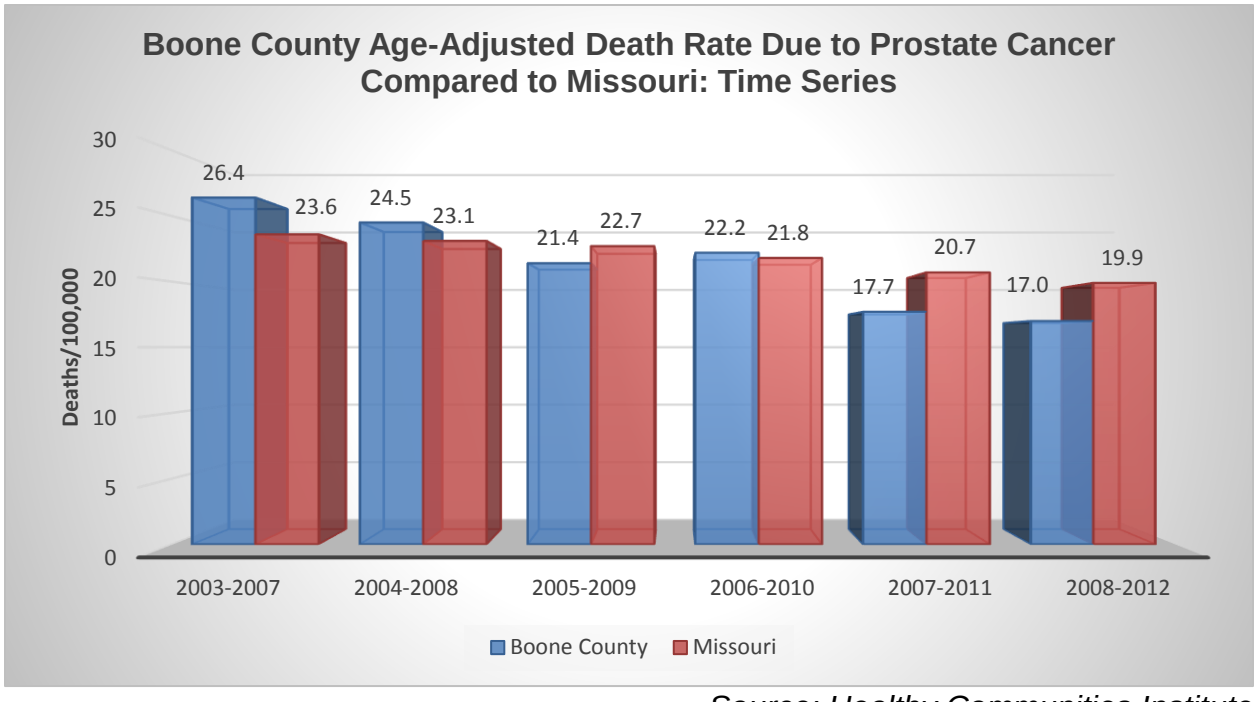
Prostate cancer is a leading cause of cancer death among men in the United States. According to the American Cancer Society, about 1 in 7 men will be diagnosed with prostate cancer. And about 1 in 36 will die from prostate cancer. The two greatest risk factors for prostate cancer are age and race, with men over the age of 65 and men of African descent possessing the highest incidence rates of prostate cancer in the U.S.

The Healthy People 2020 national health target is to reduce the prostate cancer death rate to 21.8 deaths per 100,000 males.



Source: Healthy Communities Institute

From the period ending 2007 to the period ending 2012, the age-adjusted incident rate due to prostate cancer increased 3.4 percent in Boone County. During the same period in the state, the age-adjusted incident rate decreased 14.3 percent.



Source: Healthy Communities Institute

From the period ending 2007 to the period ending 2012, the age-adjusted death rate due to prostate cancer decreased 32.0 percent in Boone County and decreased 15.5 percent in Missouri.

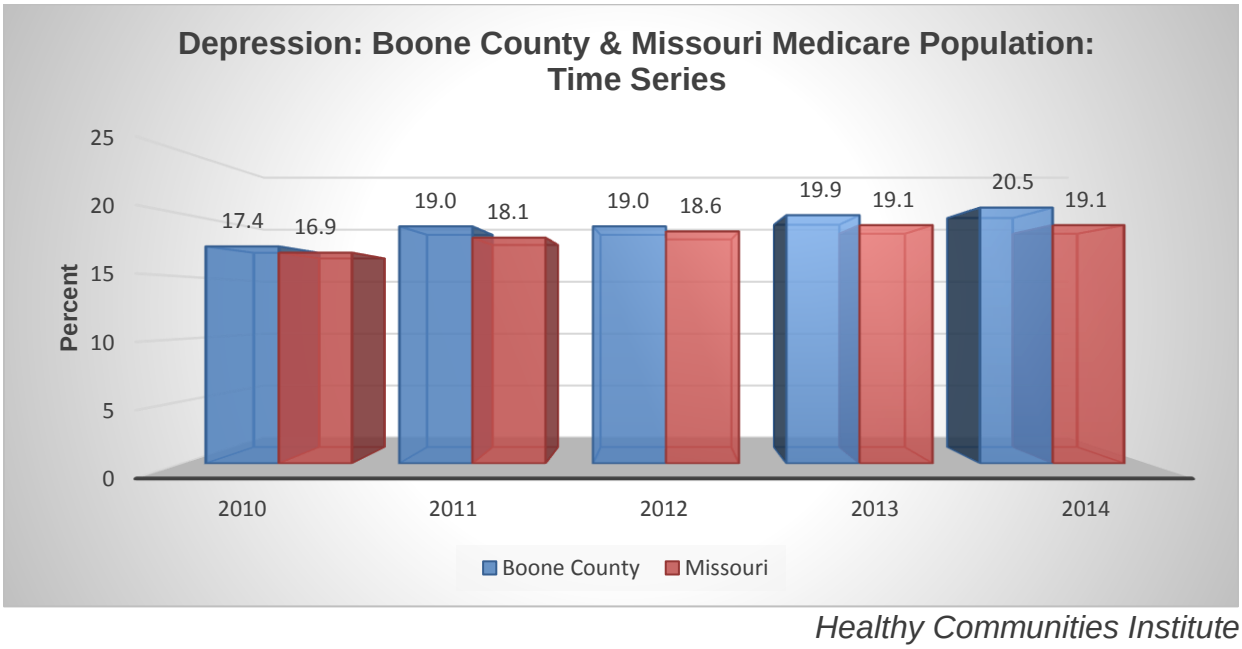
Behavioral/Mental Health

In 2014, there was an estimated 9.8 million adults age 18 or older in the U.S. with a serious mental illness. This number represented 4.2 percent of all U.S. adults. (National Institute of Mental Health).

Depression

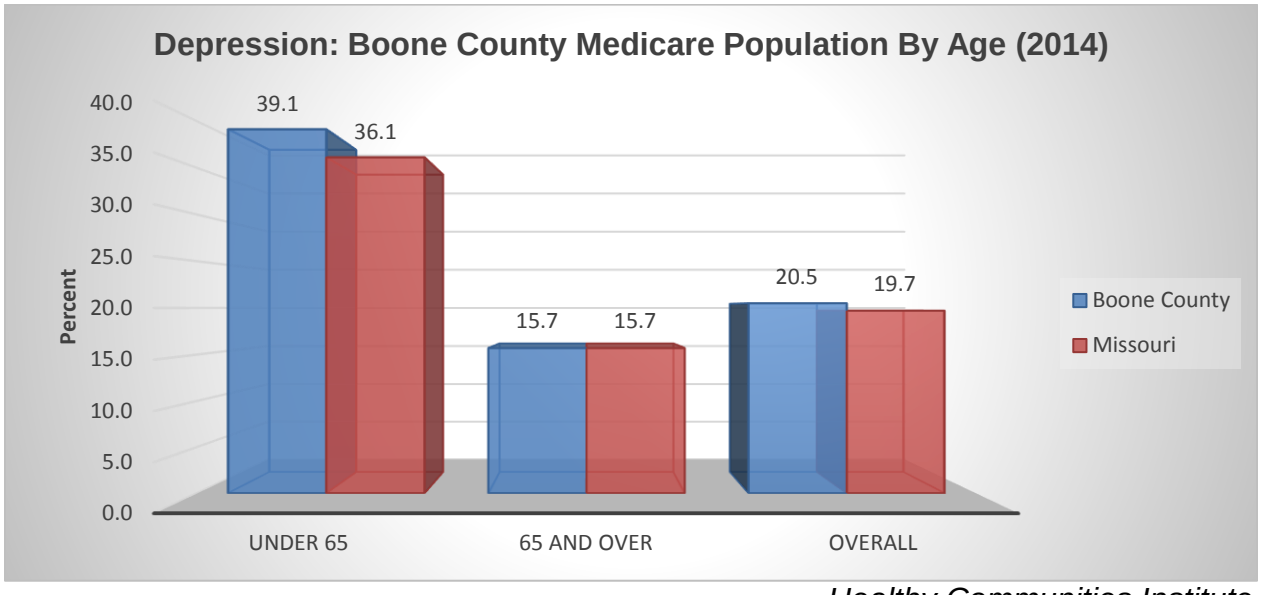
Depression is a chronic disease that negatively affects a person's feelings, behaviors and thought processes. Depression has a variety of symptoms, the most common being a feeling of sadness, fatigue and a marked loss of interest in activities that used to be pleasurable. Many people with depression never seek treatment; however, even those with the most severe depression can improve with treatments including medications, psychotherapies and other methods. (Healthy Communities Institute).

According to the National Comorbidity Survey of mental health disorders, people over the age of 60 have lower rates of depression than the general population — 10.7 percent in people over the age of 60 compared to 16.9 percent overall. The Center for Medicare Services estimates that depression in older adults occurs in 25 percent of those with other illnesses, including: arthritis, cancer, cardiovascular disease, chronic lung disease, and stroke. (Healthy Communities Institute).



Healthy Communities Institute

From 2010 to 2014, a 17.8 percent increase occurred in the rate of depression in Boone County, compared to a 13.0 percent increase in Missouri.

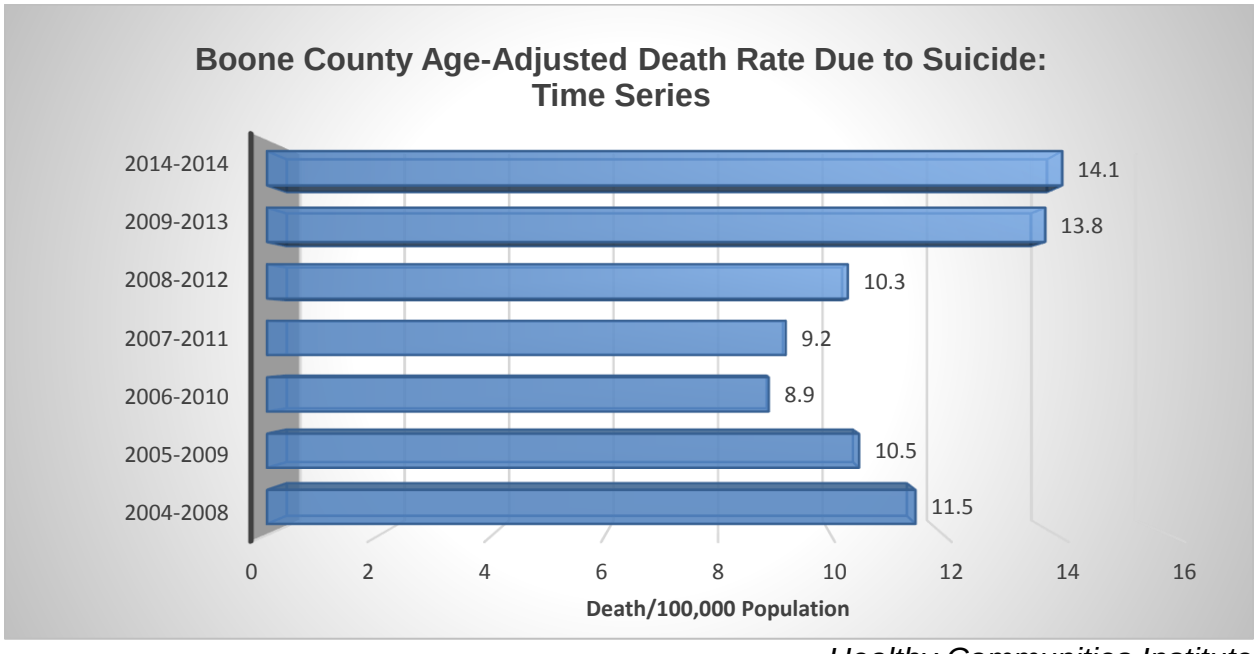


Healthy Communities Institute

The rate of depression in the Medicare population was 4.1 percent higher in the county than the state. For the under 65 age group, the rate in the county was 8.3 percent higher than the state. The rate for the over 65 age group was the same in the county and the state.

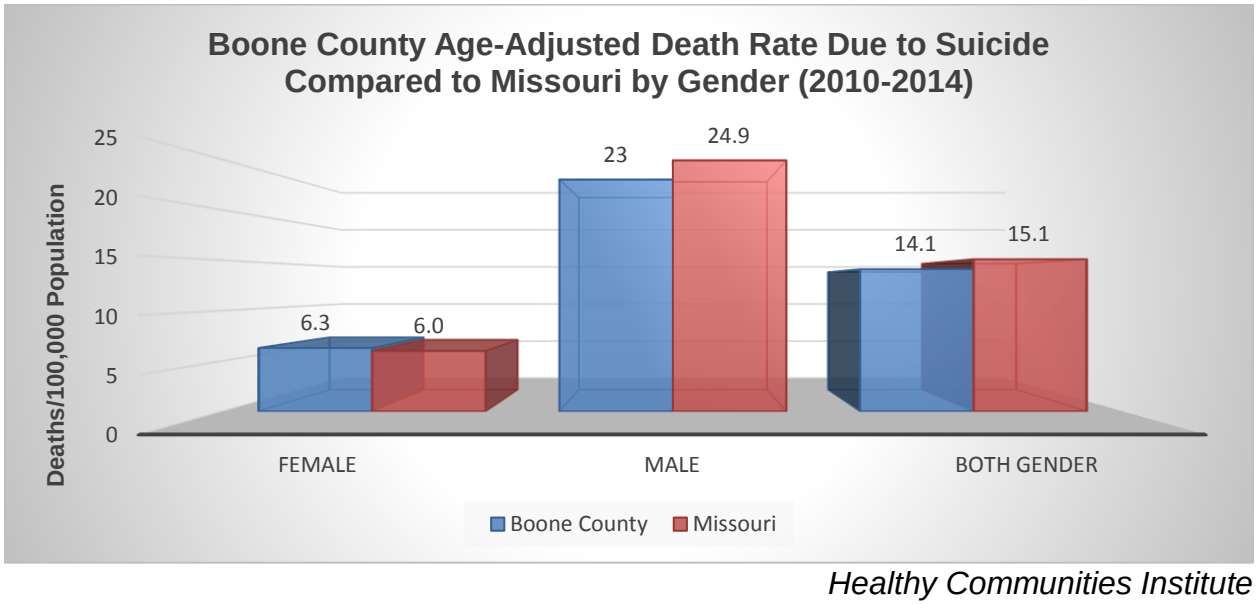
Suicide

Suicide is a leading cause of death in the United States, presenting a major, preventable public health problem. More than 33,000 people kill themselves each year according to the Centers for Disease Control and Prevention, but suicide deaths only account for part of the problem. An estimated 25 attempted suicides occur per every suicide death, and those who survive suicide may have serious injuries, in addition to having depression and other mental problems. Men are about four times more likely than women to die from suicide, but three times more women than men report attempting suicide. Suicide occurs at a disproportionately higher rate among adults 75 years and older. (Healthy Communities institute).



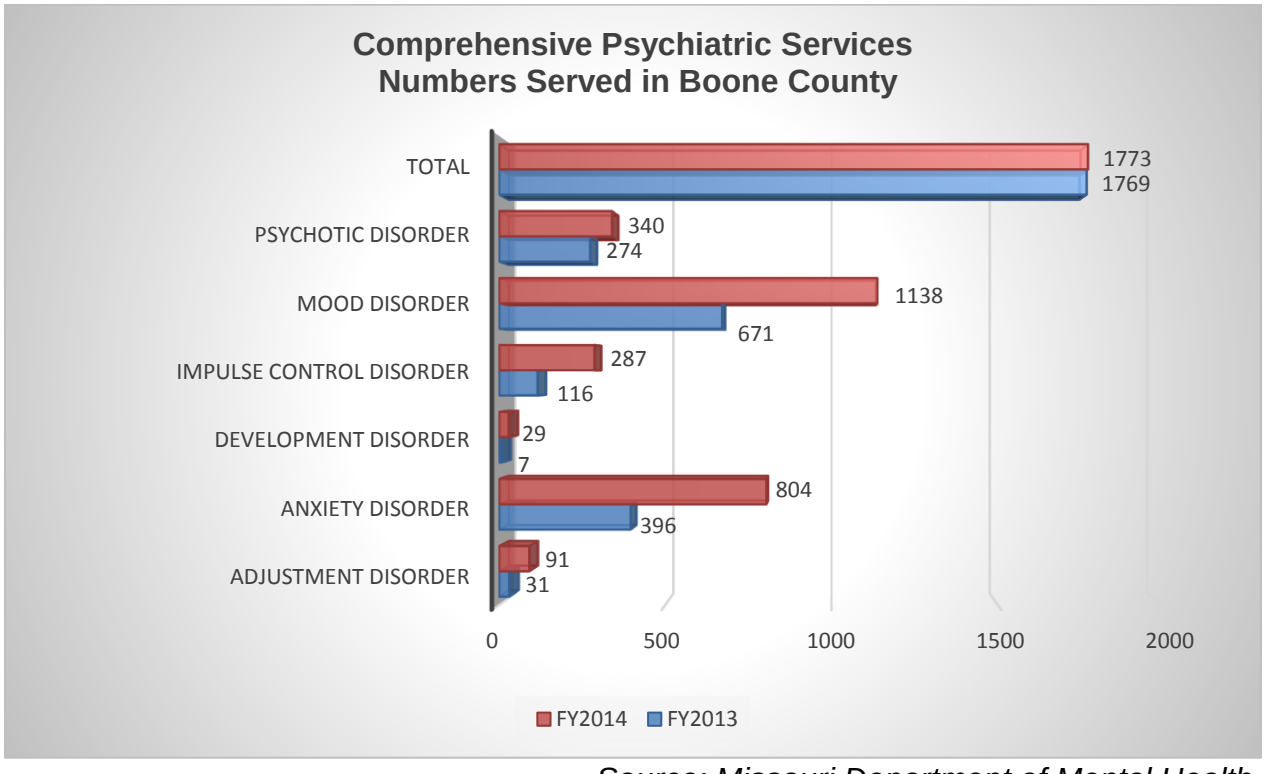
Healthy Communities Institute

From the period ending 2008 to the period ending 2014, the age-adjusted death rate due to suicide increased by 22.6 percent In Boone County.



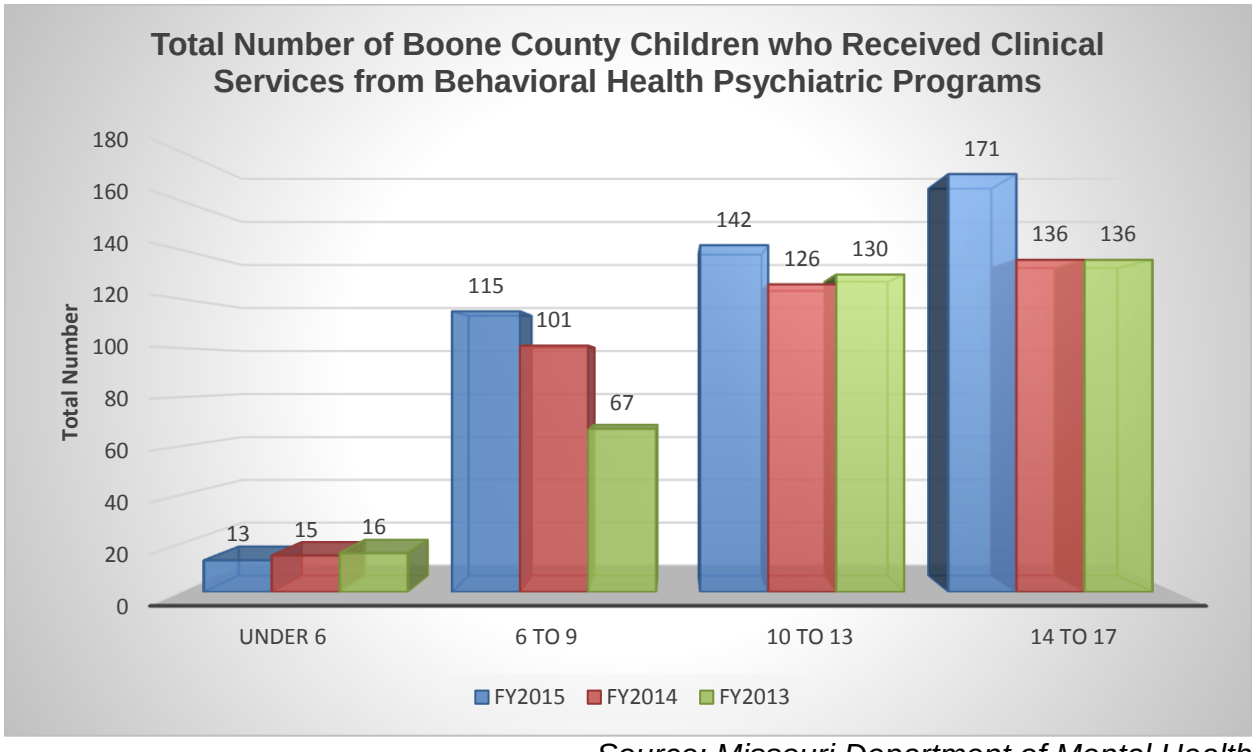
Healthy Communities Institute

The age-adjusted death rate due to suicide was 6.6 percent lower in Boone County when compared to the state.



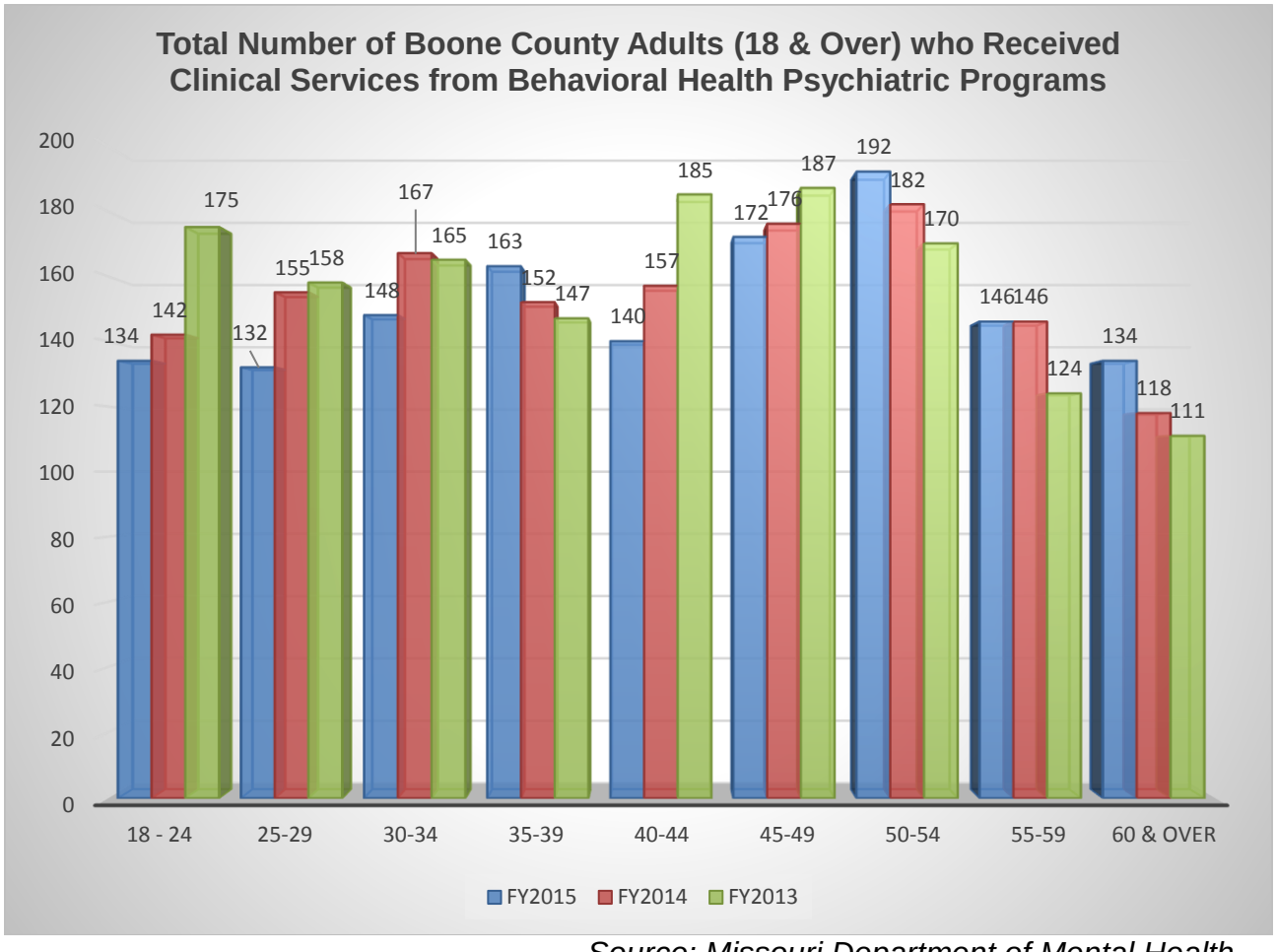
Source: Missouri Department of Mental Health

Boone County and Missouri had similar numbers of total services of psychiatric services. Mood Disorders had the largest number of services provided both in Boone County and Missouri, followed by Anxiety Disorders.



Source: Missouri Department of Mental Health

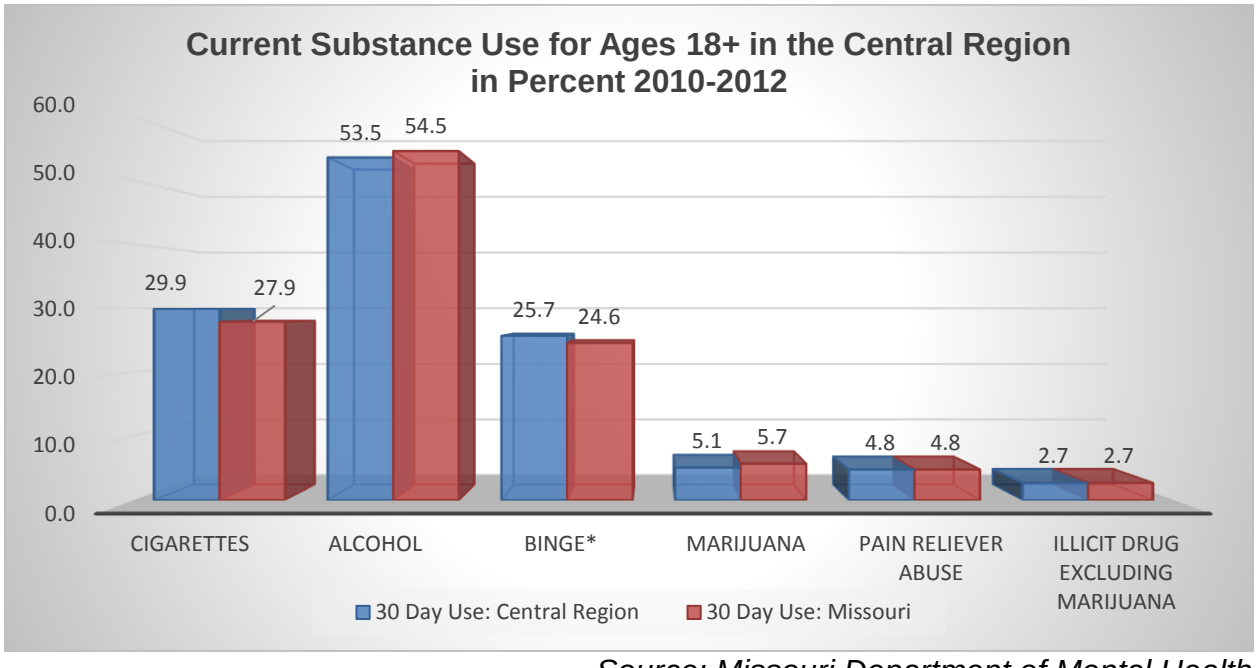
During FY2013 - FY2015, the 14 to 17 age group had the largest number of children in Boone County who received clinical services from Behavioral Health psychiatric programs.



Source: Missouri Department of Mental Health

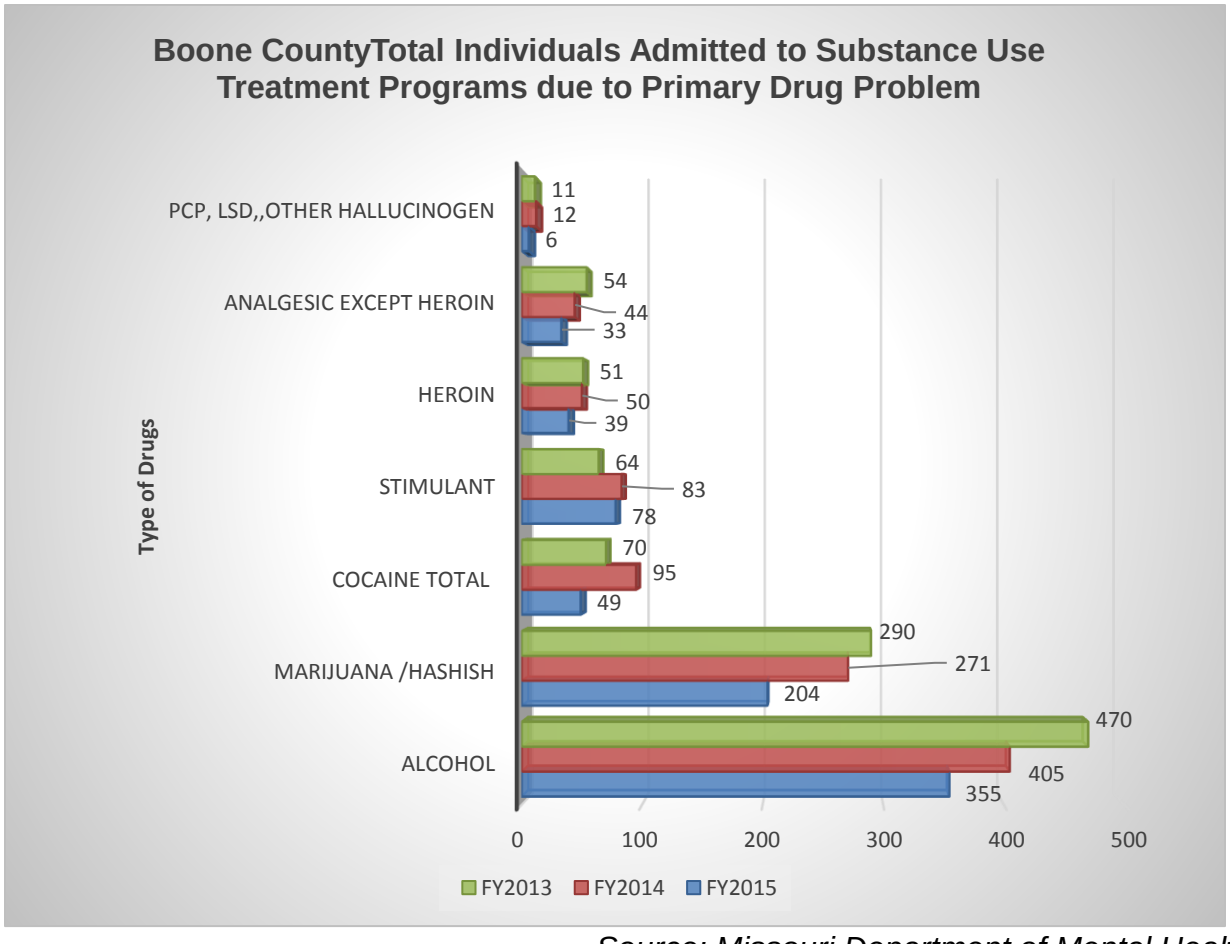
During FY2013-FY2015, the 50-54 age group had the largest number of adults in Boone County 18 and over who received treatment from Behavioral Health psychiatric programs.

Behavioral/Mental Health: Substance Abuse



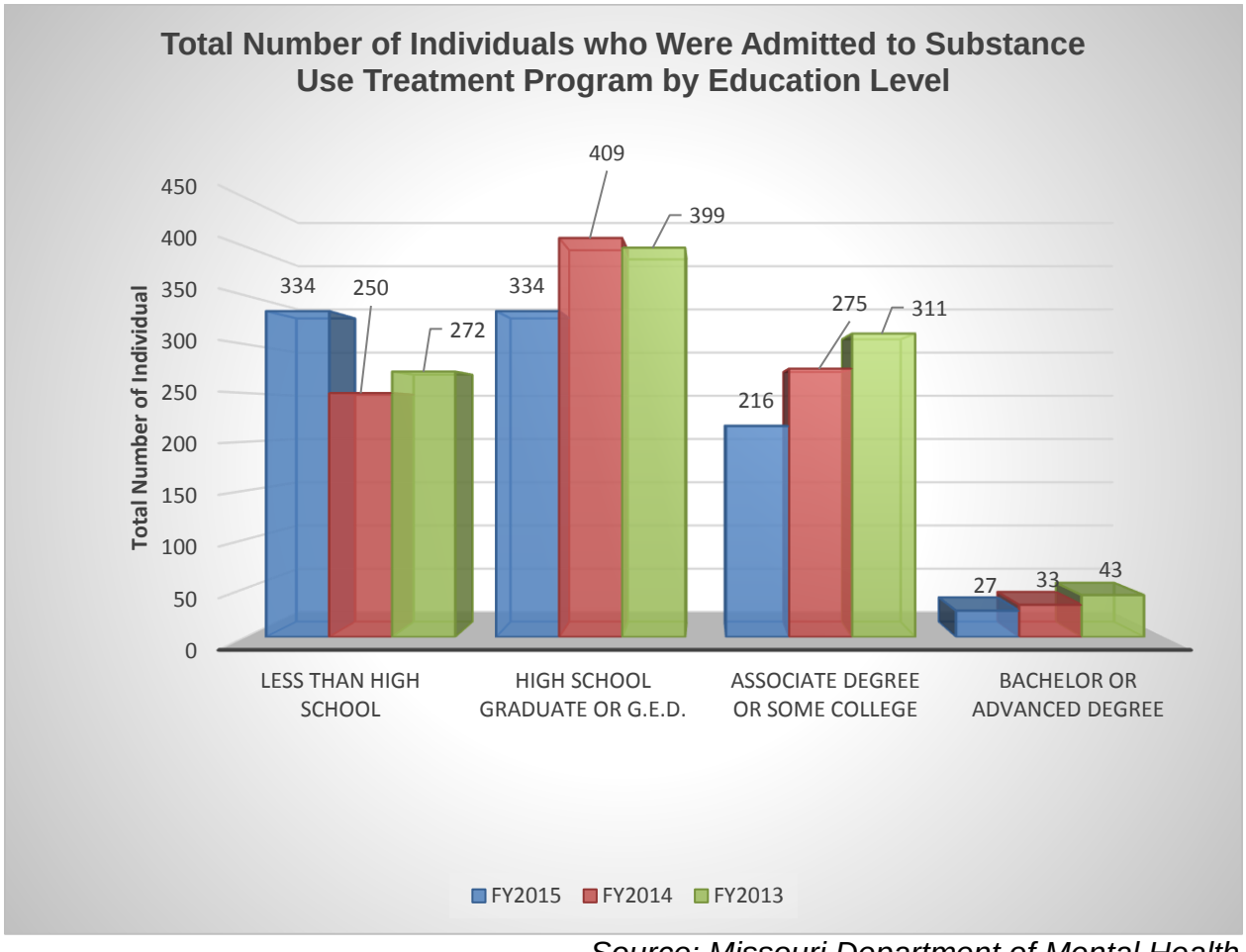
Source: Missouri Department of Mental Health

Alcohol was the highest substance use for ages 18 and over both in the Central Region and Missouri.



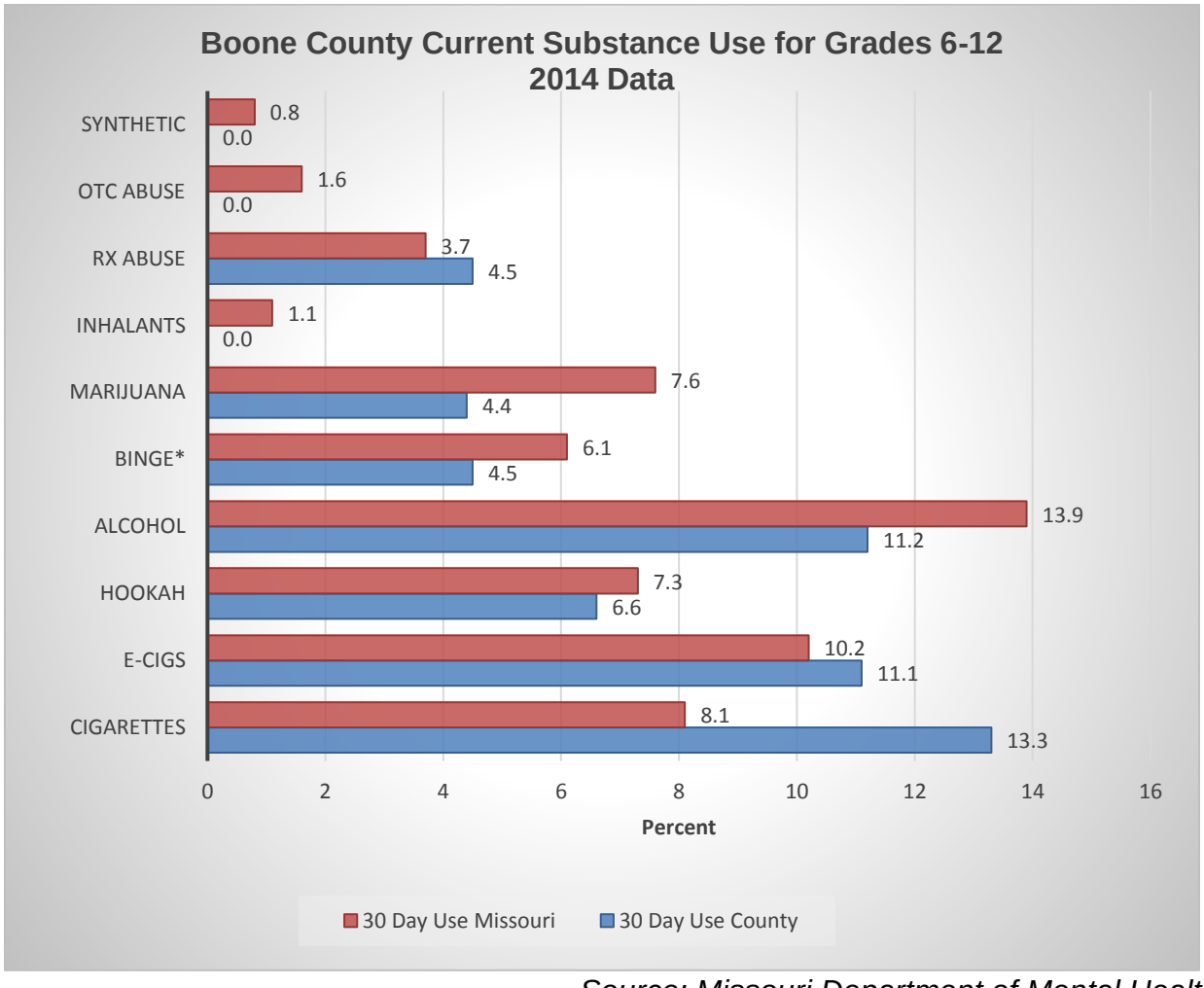
Source: Missouri Department of Mental Health

In FY2013, FY2014 and FY 2015, alcohol was the primary drug responsible for the most admissions of individuals to Substance Abuse Treatment programs in Boone County.



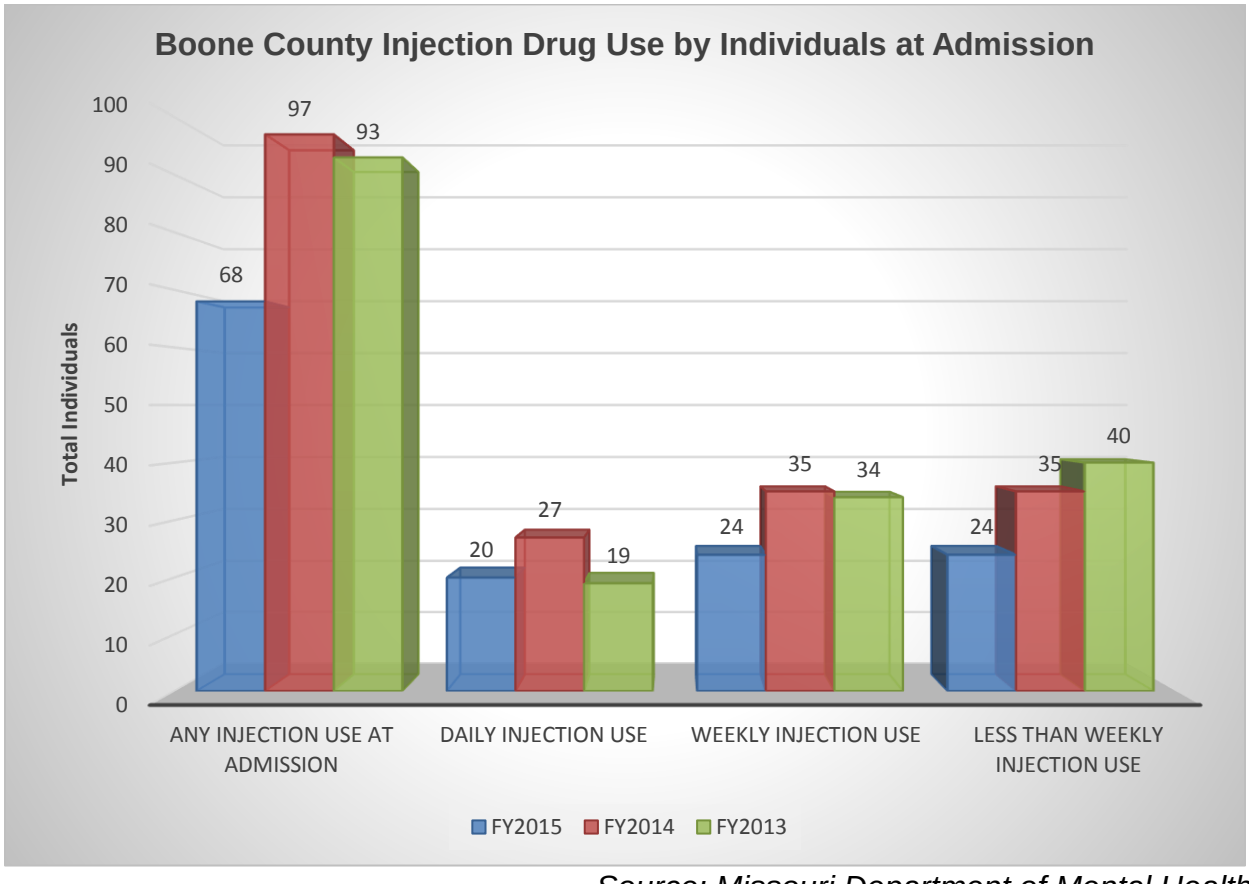
Source: Missouri Department of Mental Health

In FY2015, those with less than high school and those with high school graduate or G.E.D. had the highest admission rates to Substance Abuse Treatment programs in Boone County. Those with a high school graduate or G.E.D. had the highest admission rates to treatment programs both in FY2014 and FY2013 in Boone County.



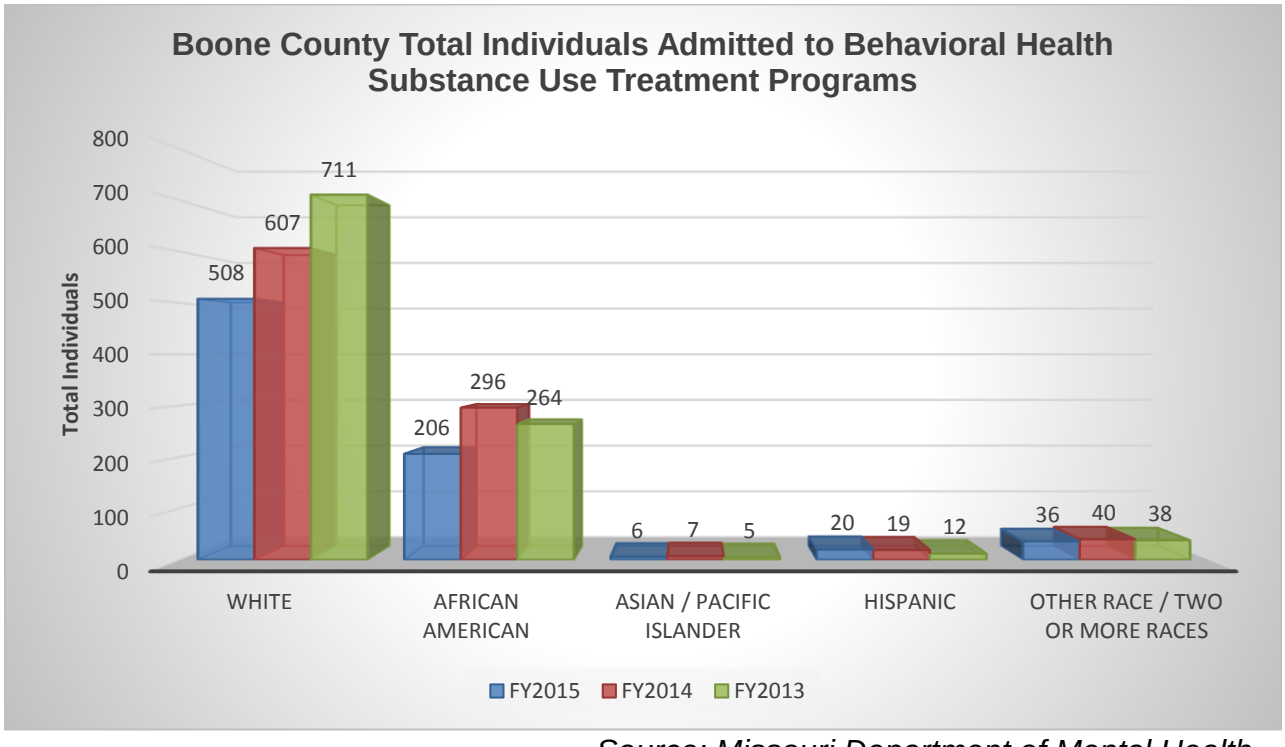
Source: Missouri Department of Mental Health

The highest rate for substance abuse for grade 6-12 was use of alcohol in Missouri. In Boone County, the highest rate was cigarette use.



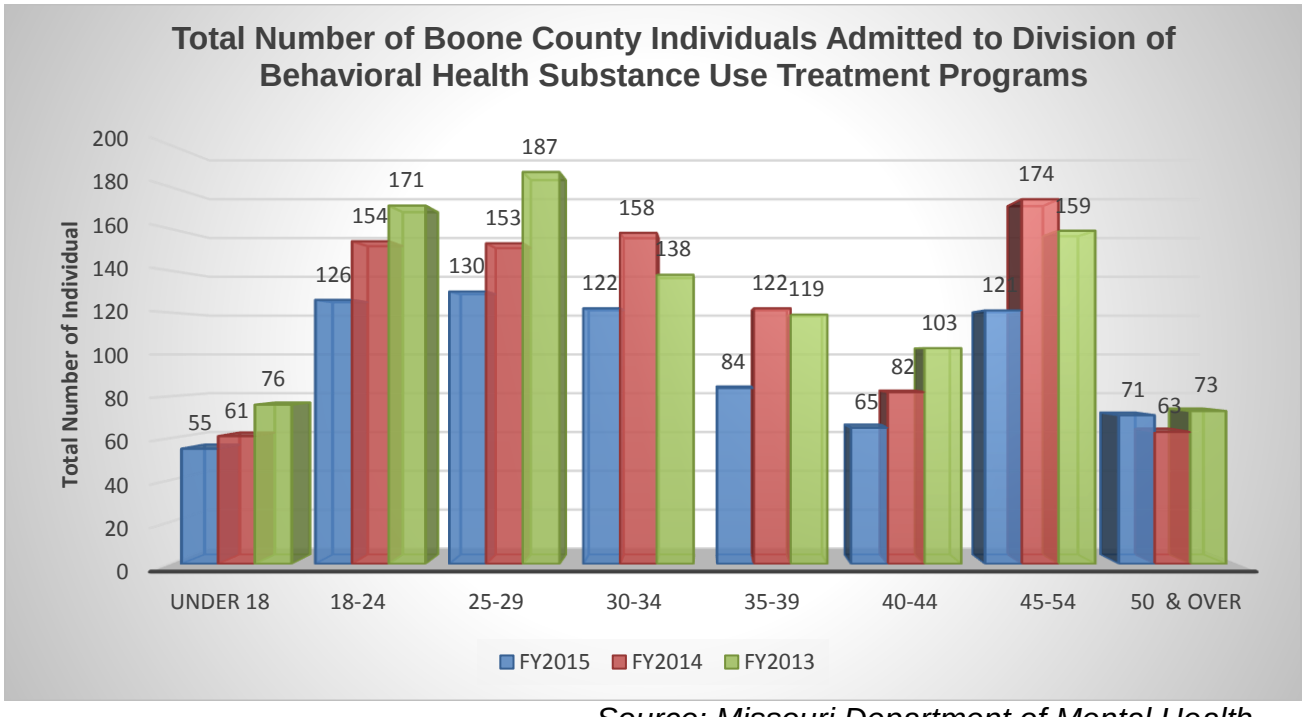
Source: Missouri Department of Mental Health

During FY2013, FY2014 and FY2015, any injection drug use at admission was higher than any other category for individuals at admission in Boone County.



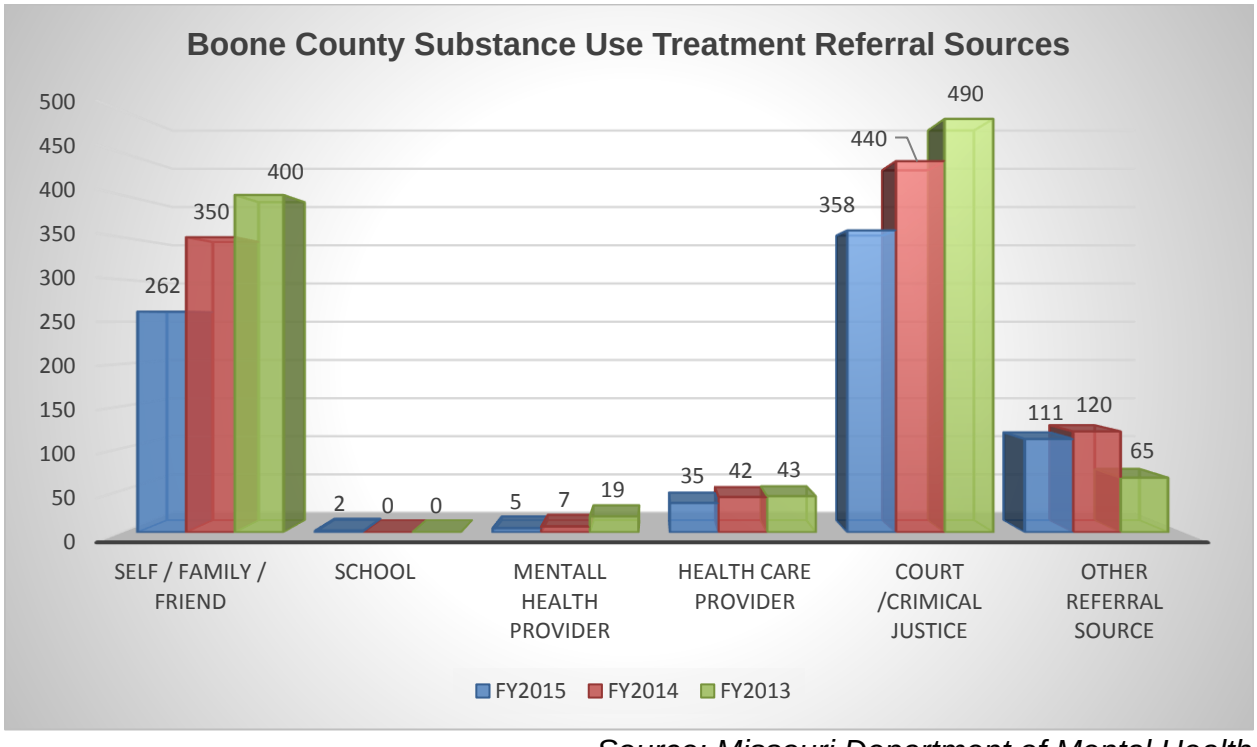
Source: Missouri Department of Mental Health

During FY 2013, FY2014 and FY205, Whites had the highest number of admissions to Behavioral Health Substance Use Treatment programs in Boone County.



Source: Missouri Department of Mental Health

In FY 2013, the 25-29 age group had the highest number of individuals admitted to a division of Behavioral Health Substance Use Treatment program in Boone County. In FY2014, the 45-54 age group led with the highest number of individuals admitted. In FY2015, the 25-29 age group had the highest number of individuals admitted.

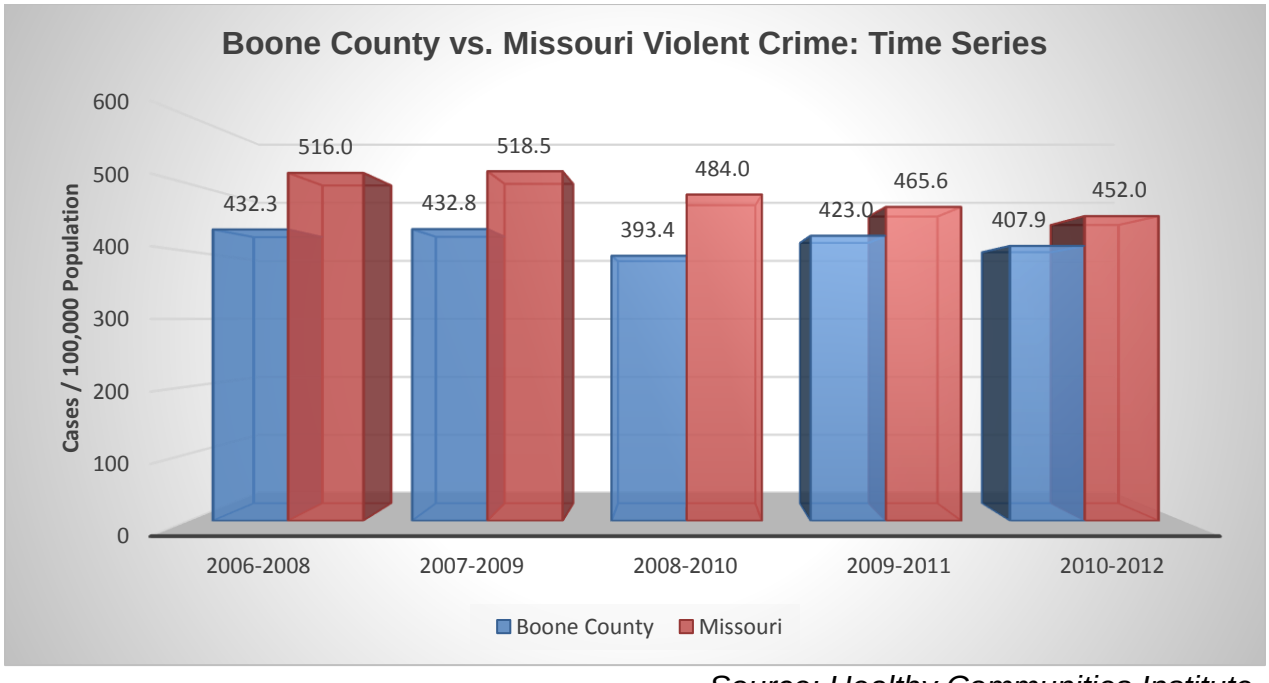


Source: Missouri Department of Mental Health

In FY2013, FY2014 and FY2015, the court/criminal justice had the highest number of referrals than any other treatment sources in Boone County.

Injury and Violence

A violent crime is a crime in which the offender uses or threatens to use violent force upon the victim. Violence negatively impacts communities by reducing productivity, decreasing property values, and disrupting social services. (Healthy Communities Institute).



Source: Healthy Communities Institute

From the period ending 2008 to the period ending 2012, the rate of violent crime decreased by 5.6 percent in Boone County and decreased by 12.4 percent in Missouri.

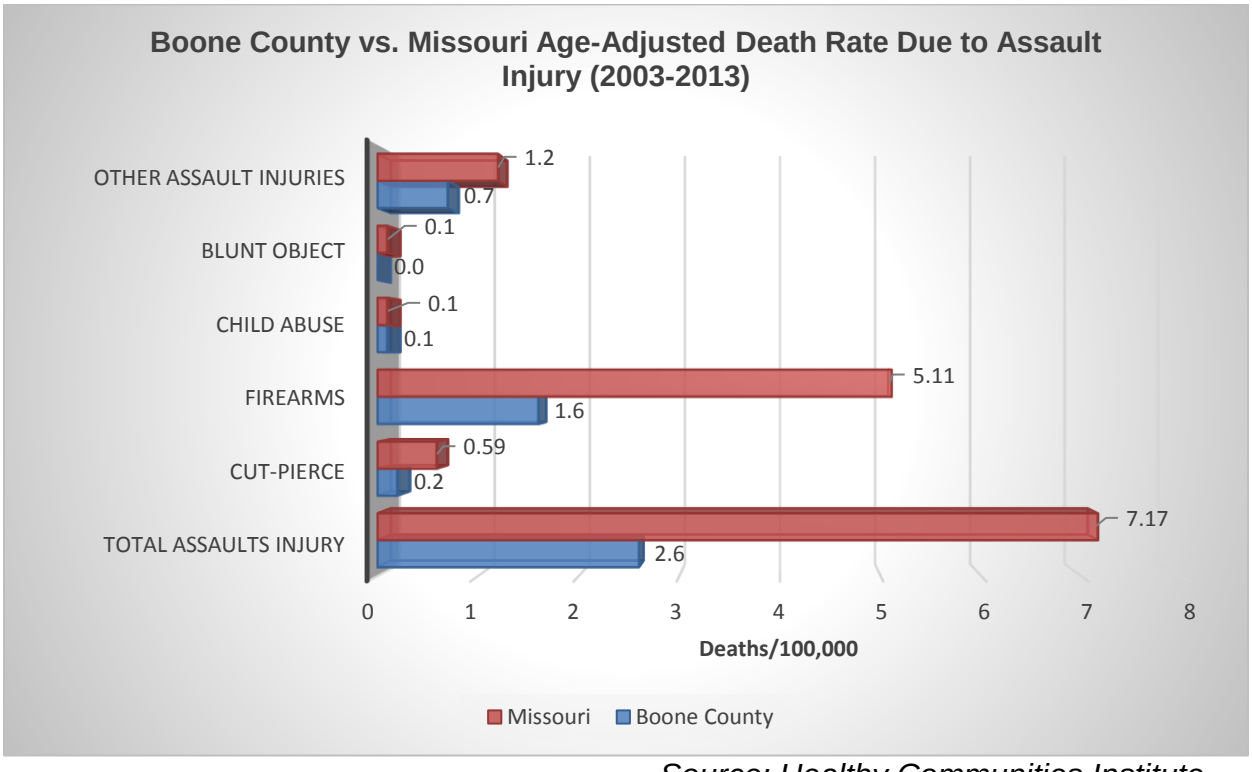
Table 16: Boone County vs. Missouri Three-Year Moving Assault Injury Average Rates						
Health Indicators	**2009-2011**		**2010-2012**		**2011-2013**	
	Boone County	**Missouri**	**Boone county**	**Missouri**	**Boone County**	**Missouri**
Total Assault Injury Deaths /100,000 Population	2.84	7.42	1.82	7.36	2.08	7.1
Total Assault Injury Hospitalizations /10, 000 population	2.21	3.28	1.92	3.07	1.45	2.89
Total Assault Injury ER Visits /1,000 population	2.47	4.01	2.48	3.96	2.53	3.92
Firearm Deaths/100,000 Population	2.16	5.47	1.36	5.48	1.67	5.23
Firearm Hospitalizations/10,000 Population	0.16	0.89	0.21	0.86	0.22	0.84
Firearm ER Visits/1,000 Population	0.02	0.11	0.03	0.12	0.04	0.1

Source: Missouri Department of Health & Senior Services (MICA)

From the period ending 2011 to the period ending 2012, a 35.9 percent decrease occurred in Boone County in the total assault injury deaths, followed by a 14.3 increase. From the period ending 2011 to the period ending 2013, the total assault injury death decreased 4.3 percent in the state.

From the period ending 2011 to the period ending 2013, the total assault hospitalization rate decreased 34.4 percent in Boone County and the total assault ER Visits slightly increased during the same period. From the period ending 2011 to the period ending 2013, the total assault hospitalization rate decreased 11.9 percent and the total assault ER Visits decreased 2.2 percent in the state.

From the period ending 2011 to the period ending 2012, the rate of firearm deaths decreased 37.0 percent, followed by a 22.8 increase in Boone County. From the period ending 2011 to the period ending 2013, the rate of firearm deaths decreased 4.3 percent and the rate of firearm hospitalization decreased 5.6 percent in the state. From the period ending 2011 to the period ending 2013, the rate of firearm hospitalizations increased 37.5 percent in the county. From the period ending 2011 to the period ending 2013, firearm ER Visits increased 100 percent in Boone County and decreased 9.1 percent in Missouri.



Source: Healthy Communities Institute

The age-adjusted death rate due total assaults injury was 63.7 percent lower in Boone County than in Missouri. The age-adjusted death rate due to firearms was 68.7 percent higher in Boone County than in Missouri.

Table 17: Assault Injury Rate in Boone County and Mo State by Ethnicity / Race (2003-2013)				
Health Indicators	**Boone County**		**Missouri**	
	White	**African American**	**White**	**African-American**
Total Assault Injury Deaths /100,000 Population	1.62	11.67	3.29	32.63
Total Assault Injury Hospitalizations /10, 000 population	1.23	7.58	1.62	10.80
Total Assault Injury ER Visits /1,000 population	1.87	7.16	2.93	9.78
Firearm Deaths/100,000 Population	0.96	7.32	1.79	26.53
Firearm Hospitalizations/10,000 Population	0.08	1.41	0.15	4.65
Firearm ER Visits/1,000 Population	0.01	0.13	0.02	0.59

Source: Missouri Department of Health & Senior Services (MICA)

The total assault injury deaths were 50.8 percent lower in Boone County when compared to Missouri among Whites and 64.2 percent lower in Boone County when compared to African Americans in Missouri.

The total assault injury hospitalizations were 24.0 percent lower in Boone County when compared to Missouri among Whites and were 29.8 percent lower in Boone County when compared to African Americans in Missouri.

The total assault injury ER Visits were 36.2 percent lower in Boone County when compared to Missouri among Whites and were 26.8 percent lower in Boone County when compared to African Americans in Missouri.

The firearm deaths were 4.3 percent lower in Boone County when compared to Missouri among Whites and were 72.4 percent lower in Boone County when compared to African Americans in Missouri.

The firearm hospitalizations were 46.7 percent lower in Boone County when compared to Missouri among Whites and were 69.7 percent lower in Boone County when compared to African Americans in Missouri.

The firearm ER Visits were 50 percent lower in Boone County when compared to Missouri among Whites and were 78.0 percent lower in Boone County when compared to African Americans in Missouri.

Secondary Data Summary

The collection of secondary data presented on the preceding pages revealed a number of findings:

- The age-adjusted death rate due for heart disease was 73.9 percent higher among African Americans when compared to the rate of Whites.

- From 2007 to 2011, the high blood pressure prevalence rate in Boone County increased 94.8 percent compared to a 41.1 percent increase in the state.

- The high cholesterol prevalence rate in Boone County increased 153 percent from 2007 to 2011 as well as increased 107.2 percent in the state during the same time period.

- The obesity rate of adults in Boone County increased 8.9 percent from 2007 to 2011 as well as increased 3.4 percent in the state during the same time period.

- The fruit and vegetable consumption of adults in Boone County decreased 49.6 percent from 2007 to 2011 as well as decreased 45.2 percent in the state during the same time period.

- The age-adjusted death rate due to diabetes for African Americans was 49.7 percent higher in Boone County than the rate in Missouri.

- Lung cancer death rates were more than double the rates of breast, colorectal and prostate cancer in Boone County, Missouri and the U.S.

- The age-adjusted death rate due to cancer for males in Boone County was 33.4 percent higher when compared to Missouri and a 43.1 percent higher rate than the U.S.

- From the period ending 2008 to the period ending 2014, the age-adjusted death rate due to suicide increased by 22.6 percent In Boone County.

- From 2010 to 2014, a 17.8 percent increase occurred in the rate of depression in Boone County, compared to a 13.0 percent increase in Missouri.

- The age-adjusted death rate due to firearms was 68.7 percent higher in Boone County than in Missouri.

C. Internal Work Group Meetings

Boone Hospital Center chose 12 employees to participate on an internal CHNA work group representing various hospital departments including Women & Children's Health; Oncology; Marketing & Communications; Admissions/Social Work; Emergency Room; Cardiology; Community Health Promotions; Customer Relations; Business Development; Foundation; and Home Care. (See Appendix C).

The work group met three times to analyze the primary and secondary data and to complete the priority ranking for the hospital's CHNA. Members reviewed data provided by the external focus group as well as information collected through secondary data analyses.

Meeting 1

The work group met on June 13, 2016 to review the purpose for the CHNA, role of the work group and goals for the project. The team reviewed the key findings from the 2013 report and the current findings from the 2015 focus group. The 2015 focus group perceptions were then reviewed and discussed.

Through the discussion and consensus, the team narrowed the list of the health needs from 20 health needs to 15 health needs. The team made its decision by reviewing resources available including staffing, program availability and hospital service lines.

Table 18: Boone Hospital Center List of Primary Data	
Stakeholders Focus Group: List of Community Health Needs	**Boone Hospital Center CHNA Work Group: Top 15 Community Health Needs**
Access: Coverage	Access: Coverage
Asthma	Asthma
Cancer: Breast	Cancer: Breast
Cancer: Colorectal	Cancer: Colorectal
Cancer: Lung	Cancer: Lung
Cancer: Prostate	Cancer: Prostate
Cancer: Skin	Cancer: Skin
Coordination of Care	Coordination of Care
COPD	COPD
Cultural Literacy	Diabetes
Dental Care	Heart & Vascular
Diabetes	Health Literacy
Heart & Vascular	Healthy Lifestyles
Health Literacy	Obesity
Healthy Lifestyles	Reproductive & Sexual Health
Injury/Violence	
Mental / Behavioral Health	
Mental / Behavioral Health: Substance Abuse	
Obesity	
Reproductive & Sexual Health	

Highlighted in red, Cultural Literacy; Dental Care; Injury/Violence; Mental/Behavioral Health; and Mental/Behavioral Health: Substance Abuse were needs the hospital CHNA work group decided not to include in its top list. The right column lists the top 15 community health needs the work group selected.

Meeting 2

The work group met again on June 30, 2016 for the purpose of reviewing the secondary data and discussing and prioritizing the top 15 community health needs. The team reviewed all the available community health needs and held a discussion about the importance of each need and its effect on the community.

During its second meeting, the work group also reviewed the criteria to rank the top 15 health needs. The criteria (noted below) for prioritizing the needs identified by the focus group was agreed upon by the Boone Hospital Center internal team.

Table 19: Criteria For Priority Setting			
	Rating	**Weight**	**Score**
How many people are affected by the problem?			
What are the consequences of not addressing this problem?			
Are existing programs addressing this issue?			
How important is this problem to community members?			
How does this problem affect vulnerable populations?			
The total score			

Source: Catholic Health Association

The work group used a ranking process to assign weight to criteria by using the established criteria for priority setting above. Criteria of overriding importance were weighted as “3,” important criteria were weighted as “2,” and criteria worthy of consideration, but not a major factor, were weighted as “1.” Health needs were then assigned a rating ranging from one (low need) to five (high need) for each criteria. The total score for each need was calculated by multiplying weights by rating. This process was done individually.

Table 20: Boone Hospital Center Internal Work Group: Ranking of Top Community Health Needs	
Highest to the Lowest Needs	**Total Scores**
Obesity	589
Heart & Vascular	563
Diabetes	500
Cancer: Lung	470
Cancer: Colorectal	444
Cancer: Breast	441
Access to Coverage	431
Healthy Lifestyles	424
COPD	423
Cancer: Skin	403
Coordination of Care	375
Cancer: Prostate	357
Health Literacy	314
Reproductive Health	282
Asthma	259

This table shows the ranking of the needs from highest to the lowest ranked health needs. The team reviewed each need individually and discussed the disparity and trends noted in the secondary data. Participants were then encouraged to share how and why each arrived at the ranking. Additionally, the group compared its results to the focus group ranking.

Next, the work group reviewed results of the secondary data using the Healthy Communities Institute (HCI) Data Scoring Tool, which compares data from similar communities in the nation. The tool provides a systematic ranking of indicators for St. Louis County and helps prioritize the needs. The scoring is based on how a county compares to other similar counties within the state and U.S., the average state value, the average U.S. value, historical indicator values, Healthy People 2020 targets, and locally set targets, depending on data availability. The team reviewed the scores by indicators.

The table on the next page shows:

- primary data from the focus group ranking
- needs identified by the internal work group ranking
- results of the secondary data using Healthy Communities Institute scoring tools that compared data from similar communities in the nation

The internal work group conducted this ranking as a group with individual input on the severity of each need.

Table 21 : Boone Medical Center Community Health Needs Assesment Primary & Secondary Data Summary			
Rank	**Focus Group**	**BHC Internal Work Group**	**HCI Scoring Data**
1	Diabetes	Obesity	Renters Spending 30% or More of Household Income on Rent
2	Dental Care	Heart & Vascular	People Living Below Poverty Level
3	Obesity	Diabetes	Prostate Cancer Incidence Rate
4	Substance Abuse	Cancer: Lung	Depression: Medicare Population
5	Health Literacy	Cancer:Colorectal	Food Insecurity Rate
6	Healthy Lifestyles	Cancer:Breast	Homeownership
7	Mental Health	Access: Coverage	Osteoporosis: Medicare Population
8	Cultural Literacy	Healthy Lifestyles	Breast Cancer Incidence Rate
9	Injury/Violence	COPD	Alcohol-Impaired Driving Deaths
10	Heart & Vascular	Cancer:Skin	Food Environment Index
11	Care Coordination	Care Coordination	Severe Housing Problems
12	Asthma	Cancer: Prostate	Cancer: Medicare Population
13	COPD	Health Literacy	Rheumatoid Arthritis or Osteoarthritis: Medicare
14	Cancer:Breast	Reproductive Health	Oral Cavity and Pharynx Cancer Incidence Rate
15	Reproductive & Sexual Health	Asthma	Adults Who Drink Excessively
16	Cancer: Colorectal		Low-Income and Low Access to a Grocery Store
17	Cancer:Lung		Fast Food Restaurant Density
18	Cancer: prostate		SNAP Certified Stores
19	Access: Coverage		Chlamydia Incidence Rate: Females 15-19
20	Cancer: Skin		Age-Adjusted Death Rate due to Suicide

- Health Lifestyles, Cancer and Reproductive Health were health needs ranked by all three groups.

- The focus group and internal work group listed the following needs: Obesity; Diabetes; Health Literacy; Heart & Vascular; Care Coordination; Asthma; COPD; and Access: Coverage.

- Substance Abuse and Mental Health were ranked as needs by the focus group and HIC Scoring Data.

Meeting 3

The third meeting of the internal work group was held July 27, 2016. After reviewing the secondary data, the internal work group discussed each need in depth. The health need areas where the data was of most concern to the group were lung cancer death rates, obesity rates and diabetes rates. The group discussed current Boone Hospital Center programs that address these needs.

In 2014, Boone Hospital Center provided free lung cancer screenings to 475 patients, 112 of which required and received referrals for further testing or treatment. In 2015, Medicare and most commercial insurances began to pay for low-dose CT lung cancer screenings as a preventative service for at-risk populations. With this major change in coverage, Boone Hospital Center discontinued the free screening program.

To address obesity, Boone Hospital Center provides free BMI and body composition screenings to adults, coordinates a free Kids on Track program to promote healthy behaviors in children and provides a family-based program, Head to Toe, to help children and parents make healthier choices to reduce health risks associated with obesity.

To address diabetes, Boone Hospital Center provides free blood glucose and A1C screenings to the community. The hospital also offers a diabetes support group.

Obesity is a risk factor for many health conditions, including diabetes, heart disease and cancer. Obesity is also a condition that can be addressed through health literacy and programs that promote a healthy lifestyle. Boone County typically has the lowest rate of obesity in Missouri counties. In 2012, the rate was 27 percent. Missouri's adult obesity rank was 30.2 percent in 2014 and ranks 20th on a list of states with the highest obesity rates. For two decades, obesity rates have steadily increased nationally, statewide and in Boone County. High obesity rates also exist in outlying counties served by Boone Hospital Center.

Obesity was recognized as a priority community health need by Boone Hospital Center in its 2013 CHNA report. It was also recognized as an area of high need by the 2016 focus group.

At the conclusion of the comprehensive assessment process to determine the most critical needs in Boone County, the group concluded that Boone Hospital Center will focus on Obesity.

V. Appendices

Appendix A

Boone Hospital Center is a 397-bed full service hospital located in Columbia, Missouri. It is a regional referral center located in the center of the state. The hospital provides progressive healthcare programs, services, and technology to people in 25 mid-Missouri counties.

Although the hospital is full service, areas in which Boone Hospital Center excels are cardiology, neurology, oncology, surgical, obstetrical services, and numerous other specialties. The hospital maintains a 24-hour emergency center with hospital-based ambulance service and a helipad for incoming emergency air transportation. The hospital employs over 2,000 on its staff and 350 physicians on the medical staff.

Boone Hospital Center is a leader in providing the latest technology, including an innovative surgery center offering progressive endoscopic and laser surgery procedures. The hospital provides numerous community educational lectures and events, centering on disease prevention and wellness.

To help community members make healthy lifestyle choices, Boone Hospital Center created WELLAWARE - a collection of resources and programs that encourage wellness and prevention. Working with mid-Missouri employers to promote good health on the job (such as becoming a tobacco-free workplace), WELLAWARE offers resources in occupational medicine, behavioral health, and Boone Hospital Center's various prevention and fitness programs to the community at large in Columbia, Missouri.

Boone Hospital Center is affiliated with BJC HealthCare, one of the nation's largest health-care systems. The BJC system includes hospitals, nursing homes and numerous health-related services and programs throughout Missouri and southern Illinois. Boone Hospital Center is licensed by the state of Missouri and accredited by The Joint Commission (TJC).

Boone Hospital Center has been certified as a “Magnet Hospital” three times by the American Nurses Credentialing Center, which places them in the top 1 percent of hospitals worldwide for nursing. In 2015 and 2016, Boone Hospital Center was ranked as the #1 hospital in mid-Missouri and the #3 hospital in all Missouri by U.S. News & World Report.

Apppendix B		
Focus Group Participants and Hospitals' Observants		
Focus Group Participants		
First Name	**Last Name**	**Organization**
Stephanie	Browning	Columbia-Boone County DHHS
Gloria	Crull	Family Health Center
Becky	Markt	Columbia Housing Authority
Sarah	Rainey	Columbia-Boone County DHHS
Rebecca	Roesslet	Columbia-Boone County DHHS
Michelle	Shikles	Columbia-Boone County DHHS
Kelly	Wallis	Columbia-Boone County DHHS
Barbara	Weaver	Former BHC Trustee
Kevin	Wehner	Central MO Community Action
Hospitals' Observants		
Fisrt Name	**Last Name**	**Hosptals**
Jessica	Parks	Boone Medical Center
Benjamin	Cornelius	Boone Medical Center
Karley	King	BJC HealthCare
Jane	Schaefer	BJC HealthCare
Angela	Chambers	BJC HealthCare

Appendix C			
Boone Hospital Center CHNA Internal Work Group Members			
Last Name	**First Name**	**Title**	**Department**
Park	Jessica	Coordinator	Marketing & Communications
Noren	Laura	Service Line Director	Women & Children's Health
Fansler	Andrea	Service Line Director	Oncology
Eikel	Liz	Manager	Admissions / Social Work
Eidson	Beth	Manager	Emergency Room
Begemann	Amy	Service Line Director	Cardiology
Zimmermann	Jeff	Manager	Community Health Promotions
Jones	Pamela	Nurse	Community Health Promotions
Johnson	Martha	Manager	Customer Relations/Business Development
Whorley	Brian	Director	Business Development
Danuser	Barb	Executive Director	Foundation
Koch	Destiny	Social Worker	Home Care

Appendix: D

PERCEPTIONS OF THE HEALTH NEEDS OF BOONE COUNTY RESIDENTS FROM THE PERSPECTIVES OF COMMUNITY STAKEHOLDERS

PREPARED BY:

Angela Ferris Chambers
Manager, Market Research & CRM
BJC HealthCare

June 3, 2016

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BACKGROUND

In the Patient Protection and Affordable Care Act (PPACA) passed in March 2010, non-profit hospitals were mandated to conduct a community-based health needs assessment every three years. As a part of that process, each hospital is required to solicit input from those who represent the broad interests of the community served by the hospital as well as those who have special knowledge and expertise in the area of public health.

Boone Hospital Center (BHC) conducted its first stakeholder assessment in 2013 and released its first Community Health Needs Assessment (CHNA) and implementation plan on December 31, 2013. These are effective through December 31, 2016 at which time, its next CHNA and implementation plan are due.

RESEARCH OBJECTIVES

The main objective for this research is to solicit input from health experts and those who have a special interest in the health of the community served by Boone Hospital Center in Boone County.

Specifically, the discussion focused around the following objectives:

1) Determine whether the needs identified in the 2013 CHNA are still the right areas on which to focus

2) Explore whether there are there any needs on the list that should no longer be a priority

3) Determine where there are the gaps in the plan to address the prioritized needs

4) Identify other organizations with whom BHC should consider collaborating

5) Discuss what has changed since 2013 when BHC first identified these needs and whether there are there new issues they should consider

6) Evaluate what issues the stakeholders anticipate becoming a greater concern in the future that we need to consider now

METHODOLOGY

To fulfill the PPACA requirements, BHC conducted a single focus group with public health experts and those with a special interest in the health needs of Boone County residents. It was held on May 4, 2016 at Boone Hospital Center. The group was facilitated by Angela Ferris Chambers, Manager of Market Research & CRM for BJC HealthCare. The discussion lasted ninety minutes.

Nine individuals representing various Boone County organizations participated in the discussion. (Appendix A).

Jessica Park, Boone Hospital Center Marketing Communications Coordinator, welcomed participants at the beginning of the meeting. Those who were observing on behalf of BHC and BJC were also introduced.

During the group, the moderator reminded the community leaders why they were invited - that their input is needed to help the hospital move forward in this next phase of the needs assessment process. The hospital views this iteration of its CHNA as more of a modification than a total revision of the first assessment; insufficient time has passed to have a substantive impact on the needs that were prioritized.

The moderator shared the needs prioritized by the hospital in the first assessment and discussed the hospital's implementation plan. She also mentioned that BJC is working to standardize the language for identifying prioritized needs across all of its hospitals so that impact can be measured consistently. This will allow the sharing of best practices among all system facilities.

The following needs (based on the revised nomenclature) were identified in the 2013 BHC CHNA and implementation plan.

- Access: coverage
- Lung cancer
- Skin cancer
- Heart and vascular: heart health (formerly obesity-related disease screening & education)
- Obesity

Other health needs were identified in the 2013 plan, but not addressed due to factors such as lack of expertise and limitations in resources. These included:

- Breast cancer
- Colorectal cancer
- Prostate cancer
- Chronic conditions: asthma
- Chronic conditions: COPD
- Chronic conditions: diabetes
- Coordination of care
- Cultural literacy
- Dental care
- Health literacy
- Injury & violence
- Mental/behavioral health: mental health
- Mental/behavioral health: substance abuse
- Reproductive & sexual health

KEY FINDINGS

FEEDBACK ON THE NEEDS BEING ADDRESSED:
Although stakeholders did not dismiss the importance of those needs BHC chose to address in the first implementation plan, several raised questions about how the needs were being addressed in the implementation plan.

Addressing **access** beyond Boone County was raised, specifically in regard to Audrain and Howard Counties and how the presence of Boone Medical Group might affect this issue.

Health disparities among different populations are of concern in the areas of colon cancer, heart disease and diabetes, and which are also linked to obesity.

There were questions about **racial disparities** and health screenings. Is there data that show that some populations are at higher risk of certain types of cancer than others, and should be targeted for screening? Boone Hospital Center is partnering with health departments and organizations like the YMCA as a way to increase the likelihood that they will reach individuals who are less likely to access these screening services.

Questions were also raised about what criteria were used to identify the priority areas that are being addressed in the 2013 plan. There was a discussion around what data the hospital used to set these priorities. These included the types of patients the hospital currently sees, the services they have available, and what else is being offered by others in the community so as not to duplicate efforts.

A few expressed surprise that **tobacco use** was not identified as a need. Along with **obesity**, it is a major contributing factor to so many other diseases.

NEEDS THAT SHOULD COME OFF OF THE LIST:
Several attendees felt that **skin cancer** is something that could be considered for removal from the list of needs to be addressed. There is good information available to educate the public about prevention and treatment. Although cancer is a leading cause of death in Boone County, skin cancer itself may not be as high a priority as other types of cancer.

GAPS BETWEEN DEFINED NEEDS AND OUR ABILITY TO ADDRESS THEM:
The area of **health literacy** is one in which we should more closely examine issues of racial disparity. As more people become insured, they may not be aware how to find a medical and how to actually use their health insurance, and figure out how to get the services they need.

Many of the programs that are being implemented will take place once a disease condition has been diagnosed. There is a concern about implementing **primary prevention programs** that encourage healthy lifestyles to prevent diseases before they occur, like encouraging healthy eating and eliminating tobacco use.

Encouraging healthy eating means that families must have access to fresh fruits and vegetables. Many cannot afford them. Encouraging farmers markets and community gardens would be one way to accomplish this.

When it comes to **access to insurance**, the limited access to Medicaid is a major issue in Missouri.

Transportation continues to be an issue, even though bus route coverage has been improved in the last three years. The public transportation system took into consideration where doctor's office and hospitals are located to make it a little easier for riders. But there is still no Sunday service, and buses do not always run very frequently.

OTHER ORGANIZATIONS WITH WHOM TO COLLABORATE:
The **Public Health and Human Services Departmen**t has identified five community action teams to address issues that they feel are very important. These include: Access to Health Care, Behavioral Health, Healthy Lifestyles, Safe and Healthy Neighborhoods and Health Disparities.

- The Access group is focusing on non-emergent ER visits, among other things, and challenges with navigating the health care system.

- As a part of the Behavioral Health team, they are addressing the convergence between criminal activity and mental illness. It is referred to as the Stepping Up Initiative, and is led by one of the county commissioners, Commissioner Thompson. They are also exploring how to destigmatize mental health services and reduce substance abuse.

- The Healthy Lifestyles team is focused on encouraging healthy eating, active living and tobacco cessation.

- Safe and Healthy Neighborhoods are working on neighborhood connectivity and crime reduction.

- The Health Disparities team is focusing on two issues: empowering members of the community to be proactive and take responsibility for their health; and how to design systems and policies to recognize and address disparities. The staff liaison mentioned that when thinking about disparities we must also consider the disabled as well as racial and ethnic minorities.

The **Central Missouri Community Action** group offers classes in understanding health insurance, along with health insurance counselling and guidance on how to enroll in health insurance plans. They work with their clients to help them navigate through that process.

Family Health Center and **Primarus** also have health insurance market place assistance programs, as does the **Central Missouri Area Agency on Aging**.

The role of local churches was discussed. Some of them have action-oriented initiatives, and some play more of social advocacy role. Several food banks were recognized including one at **Calvary Baptist** and another called **Bountiful Baskets** where families can order fresh fruits and vegetables for $25. The role of parish nurses can be very impactful in encouraging healthy behaviors and helping individuals make educated decisions. Some of the churches have a Wellness Ministry.

Boone County's Community Services Department has funded a two-year pilot program, **Live Well by Faith**. They will be working with at least 10 historically black churches to conduct wellness programs based on the health needs of the congregations.

The **African-American Clergy Association** was another group with whom to consider collaboration.

Collaborating with the school system is a way to impact the health of our youth now, and in the future. The correlation between lack of education and poverty is strong

Services for Independent Living and **Boone County Family Resources** are good partners to consider when addressing the needs of the disabled.

CHANGES SINCE THE 2012/2013 CHNA:
The Boone County population has grown since the last CHNA, as has the poverty level.

This year's County Health Rankings indicate that there has been a growth in **motor vehicle accidents**, especially in alcohol-impaired driving deaths.

In the community, there is an increasing awareness of **substance abuse**, not necessarily illegal drugs, but prescription medications which are being abused and often leading to heroin use. There is a concern that this will continue to become a bigger issue than it has been. The group suggested that the hospital may already be seeing its impact in the emergency department, as well as the ambulance services and emergency responders.

- The increase use of heroin has also resulted in a recent increase in Hepatitis B and C cases among users.

Women's reproductive health issues were mentioned by some as an area where they have seen an increase in a variety of conditions.

- **Teen births**, overall, have been going down. But there continues to be a large disparity between white and black teen birth rates. A pregnant teen who does not finish high school has a higher probability of living a life in poverty. There was discussion about a recent Washington University study on young women who use LARCs (Long-Acting Reversible Contraception). The results suggest that these women have greatly improved outcomes if they have access to this form of contraception. The Health Department is beginning to explore their use, even

though they are very expensive. This was also cited as an area for potential collaboration with BHC.

- Questions were also raised about the access to **mammography services for underserved women**. The **Show Me Healthy Women** program was identified as a resource for that. How these programs are communicated is important so that those who have a need are aware that they are available. Transportation can also be an issue, depending on the location where mammography screening is available. Getting churches involved in these programs is another potential area of collaboration especially if the services are provided via a mobile van. In Boone County, the University Health System has this capability.

Many people took advantage of obtaining **health insurance** when it first became available through the Affordable Care Act. There is a feeling that there are still many who would qualify if they only would check it out. There are many misconceptions, including that the low cost plans are all high deductible. If people would be willing to explore their options with a qualified health insurance counsellor, they might find that the plans are more affordable than they realized.

- This issue can also be considered a part of **health literacy**, including understanding what hospitals and health care providers are or are not covered. An example was given about the Coventry plan which covers services only at Boone, but not at University. There was another surgery example, where the surgeon was covered but the anesthesiologist was not. Other examples included confusion about vaccination coverage.

Access to dental services for children seems to have improved, but the availability of dental care for adults is still extremely limited. **Mission of Mercy** was here last summer, but they were primarily addressing acute needs. There is still no affordable or low-cost source of a dental home where a person could get preventative care.

Since the last CHNA, the **Children's Services Fund** tax was passed. This is a quarter-cent, county-wide sales tax that generates about $6.5 million annually. Another $1.5 million comes from other sources, including $500,000 from Boone Hospital Center, for a total of $7 million to be used for various health initiatives and grants.

- These dollars have been used to develop a variety of programs including mental health services for adults and children, a pilot program to reduce the use of the ER for dental needs, a small program to encourage access to healthy foods, and substance abuse treatment programs for youth and adults.
- The County Commissioners receive $500,000 of these funds to address community health needs through the Community Health Advisory Council.
- The Community Services Department is happy to explore additional opportunities to collaborate with BHC on issues of concern.

ISSUES THAT MAY BECOME MORE IMPORTANT IN THE FUTURE:

As the Boone County community grows and becomes more diverse, the issue of **cultural literacy** will become increasingly important. In general, there have been increases in the size of the refugee population. Because of the University, there are

family members who move to the area with a student but who may not have access to insurance coverage and health services.

There is also a concern that more Boone County businesses are closing and laying off employees, and this will have an impact on their access to insurance and health services, as well as to an income source.

United HealthCare was the insurer that provided the most popular low-cost deductible plans through the Health Insurance Marketplace. However, they are dropping out of the Missouri marketplace in 2017. This will require a lot of people to switch plans and choose either Anthem or Coventry, assuming they stay in our market. The open enrollment period will begin Nov. 1, 2016 for 2017.

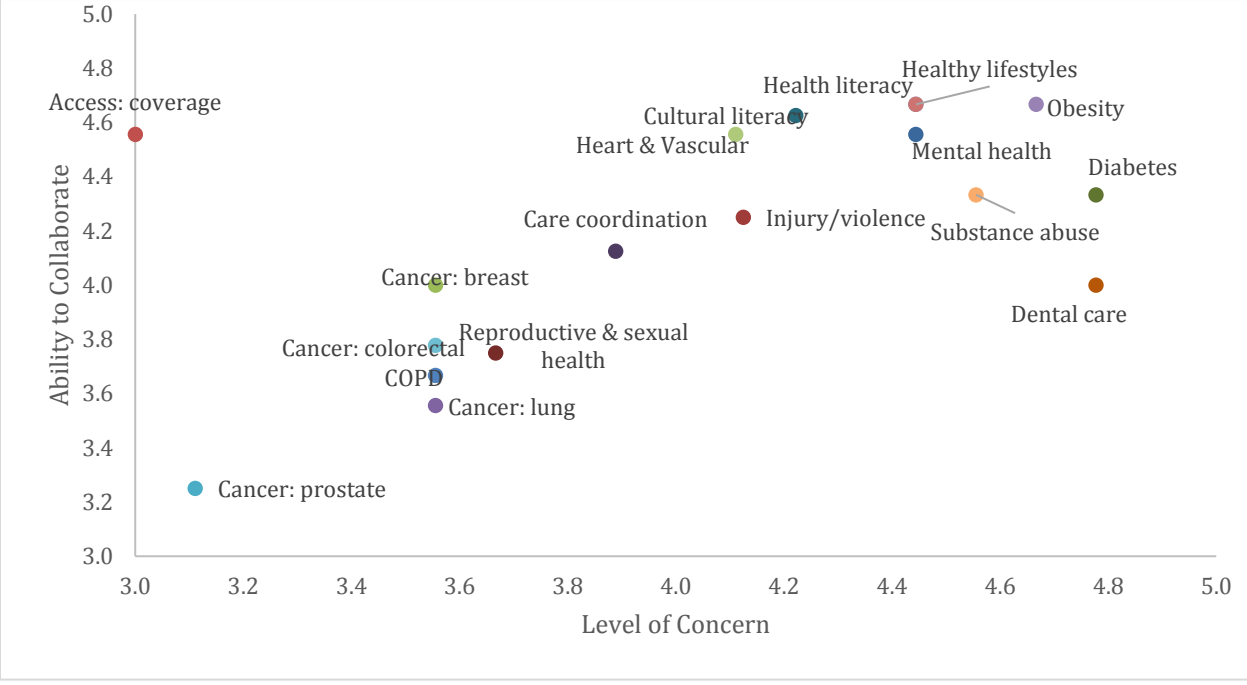
There was discussion about the **growth of the elderly population** and whether there are enough beds and geriatric providers to provide care, especially among those who might suffer from dementia and Alzheimer's. The needs of their family members and caregivers was also mentioned in terms of respite care and day care centers.

Services for veterans were mentioned. A new facility, **Patriot's Place**, recently opened and currently provides housing for 16 homeless vets. It also provides some treatment and support services. Boone County does have a Veteran's Hospital and it was reported that many vets move here for treatment but stay on afterward.

With such limited funding for services at the state level, funding at the federal has become increasingly important. With issues like the Zika virus looming large, there is a concern about funds being diverted from programs that are already operating on a shoestring toward other national priorities.

RATING OF NEEDS

Participants rerated the needs identified in the 2013 assessment on a scale of 1 (low) to 5 (high), based on their perceived level of community concern and the ability of community organizations to collaborate around them. Diabetes and dental care rated highest in terms of level of concern followed by obesity and substance abuse. Obesity, health literacy and healthy lifestyles are seen as having the greatest opportunities for collaboration



	Level of Concern	Ability to Collaborate
Diabetes	4.8	4.3
Dental care	4.8	4.0
Obesity	4.7	4.7
Substance abuse	4.6	4.3
Health literacy	4.4	4.7
Healthy lifestyles	4.4	4.7
Mental health	4.4	4.6
Cultural literacy	4.2	4.6
Injury/violence	4.1	4.3
Heart & Vascular	4.1	4.6
Care coordination	3.9	4.1
Asthma	3.9	4.0
COPD	3.7	3.8
Cancer: breast	3.6	4.0
Reproductive & sexual health	3.6	3.8
Cancer: colorectal	3.6	3.7
Cancer: lung	3.6	3.6
Cancer: prostate	3.1	3.3
Access: coverage	3.0	4.6
Cancer: skin	2.7	3.5

NEXT STEPS

Based on the input the hospital received from community stakeholders, BHC will examine secondary data for Boone County to explore the size of the needs that have been identified.

In addition, the hospital will establish an internal stakeholder workgroup to assess this information and evaluate whether the priorities should change.

The needs assessment and associated implementation plan must be revised and updated for release by December 31, 2016.

The community stakeholder group will continue to be updated about the progress of the internal work group as it works to meet this deadline.

IMPLEMENTATION PLAN

A. Community Health Needs to be Addressed: OBESITY

The obesity epidemic is one of the country's most serious health problems. Adult obesity rates have doubled since 1980, from 15 to 30 percent, while childhood obesity rates have more than tripled. Rising obesity rates have significant health consequences, contributing to a major health risk factor linked to increased cardiovascular disease (CVD), stroke, cancer, hypertension, diabetes, and early death. Until this some times this year, obesity was primarily seen as a behavioral and environmental problem. Today, obesity is viewed as a complex disorder. These conditions create a major strain on the health care system. More than one-quarter of health care costs are now related to obesity.

As of 2011, in Boone County more than 29% of adults and almost 12% of children are considered obese, as defined by their body mass index (BMI). The vast majority of obesity is caused by the calories consumed and lack of physical activities. Losing body fat requires healthy eating and calorie restriction as well as daily physical activity.

Boone Hospital Center will address overweight and obesity among adult and children in their service areas. BHC will work to help reduce obesity and health conditions that can occur with it, like high blood pressure, diabetes, and heart disease as well as to improve the quality of life of children and teens who are overweight or obese. This will be addressed through three different programs such Kids on Track, Head to Toe and Know Your Numbers.

I. "KIDS ON TRACK"

Regular physical activity can lower the risk of becoming obese. Children become less active every year they get older. Half of all school children aren't getting the exercise needed to build healthy hearts and lungs, and many cannot pass standard fitness tests.

The "Kids on Track" program is implemented over a three-month period in summer by BHC WELLAWARE staff in collaboration with Columbia Public Schools and local businesses, to address the lack of physical activity among children and teenagers and families living in Boone County, Mo. The program begins in May and ends in August. "Kids on Track" is designed to encourage the participants to walk, run or bike to complete an accumulated 26.2 miles within the three months of the program.

Rationale:

Children and adolescents who are obese are at greater risk for bone and joint problems, sleep apnea, and are more likely than normal-weight peers to be teased and stigmatized, which can lead to poor self-esteem. Moreover, obese youth are more likely to have risk factors for cardiovascular disease, such as high cholesterol or high blood pressure. They are more likely than normal-weight peers to be overweight or obese

adults and are therefore at risk for the associated adult health problems, including heart disease, type II diabetes, stroke and several types of cancer.

Program Goal: *To increase physical activity among children and their families.*

Program Objectives:

a) WELLAWARE staff will establish a baseline number of children aged 3-14, living in Boone County, who will participate in the program in the first year.
b) To increase the baseline by 10% of participants each year after the initial start year.
c) To establish a baseline number of the participants who have incorporated physical activities into their life after the three months participation period.
d) To increase each past year number of participants who have incorporated physical activity in their life after participation by 10 % in the following year.

Action Plan:

- The Kids on Track program will be promoted in spring of each year in Boone County by Boone Hospital Center and WELLAWARE staff. Information about the program and sign-up sheets are included in Friday Folders (informational packets for parents that are given each week to students at Columbia Public Schools). The program will also be advertised in Boone Hospital Center community publications and social media.
- Children and their families will register in spring to participate in the program.
- Each registrant is invited to participate in a kick-off day in May of each year. At this event, participants will run or walk one mile and receive program materials, including a progress tracking sheet.
- Participants are asked to track their miles on a provided progress sheet.
- When a designated number of miles are reached, participants are to take their sheet to a participating local vendor for a small prize.
- Participants take part in a final event in August including a mile run/walk. *Note:* The participants can ride a bike for the miles that they complete on their own between the kickoff and finale.
- Participants receive T-shirts and medals for completion of the program.
- Participants are encouraged to continue with physical activities after the three months of the program period. They are also encouraged to participate each year the program is offered.

Expected Outcome: Increase children's physical activity

Outcome Measurement*:*

- In the first year the "Kids on Track" staff will establish a baseline by documenting the number of participants who return on the final event day to measure the retention number.

- Twice in the year WELLAWARE staff will reach out to participants and track how many participants who self-report that they incorporate physical activity in their life.
- Staff will keep a record of each participant's first name on a spreadsheet. Using the record sheet, the staff will check "Yes" if participant indicates that he or she continues with physical activities or "No" for no continued physical activity. This is considered the baseline for the first year.
- In the following year, staff will track the same information and analyze previous and current sheets to determine if there was an increase or decrease in the participation level after three months of participation.
- The staff will also keep records of returning participants who took part in the program in any previous year to measure the number of recurring participants.

II. "HEAD TO TOE"

Rationale:

Obesity now affects 17% of all children and adolescents in the United States - triple the rate from just one generation ago, according to the Centers for Disease Control. Childhood obesity can have a harmful effect on the body and lead to a variety of adult-onset diseases in childhood, such as high blood pressure, high cholesterol, diabetes, breathing problems, socio-emotional difficulties and musculoskeletal problems.

Boone Hospital Center WELLAWARE currently provides the Head to Toe program twice annually to serve children in within Boone County as well as the surrounding community who have a written recommendation from their physician stating their need for the program.

Program Goal: To improve knowledge of leading a healthy lifestyle among children and their families.

Program Objectives:

a) Provide intensive group educational sessions that focus on nutrition, physical activity and emotional health to 30 children per year.
b) Increase knowledge of nutrition, physical activity and emotional health among participants by a 5% increase in average knowledge score among participants at posttest compared to pre-test.

Action Plan:

- A pre-knowledge assessment test will be given to participants at the beginning of the program. An exercise specialist will work with participants to increase their participation in physical activities. A registered dietician will educate participants on healthy eating, healthy choice, portion control, etc.
- A social worker and health promotion professional will facilitate 12 intensive group sessions on topics regarding physical activity, nutrition and emotional health.
- Knowledge post-test will be given at the end of the 12 weeks.

Expected Outcomes: Increase in heart healthy behavior

Outcome Measurements*:* This program is evaluated by measuring improvements in physical activity, nutrition, self-image, family relationships and healthy behaviors. The tools used to measure these outcomes capture changes in behavior, knowledge, skill and readiness to change assessment tools. Progress will be evaluated by measuring the number of sessions and the number of participants who complete pre-and post-assessment tools.

B. COMMUNITY HEALTH NEEDS NOT TO ADDRESS

While obesity is our prioritized health need, Boone Hospital Center will continue to offer the following programs and services to address the following health needs:

CANCER: LUNG

Boone Hospital Center continues to provide lung cancer screenings for patients who meet certain risk factors. In 2015, Medicare began covering lung cancer screenings for eligible patients.

CANCER: SKIN

Boone Hospital Center continues to provide free skin cancer screenings to the community in the spring and summer. These skin cancer screenings are conducted by nurses with specialized training in skin cancer screenings and include follow-up care for patients with abnormal findings.

CANCER: PROSTATE/COLORECTAL/BREAST

Boone Hospital Center continues to provide clinical screenings for prostate, colorectal and breast cancer. We will continue to hold our annual Cancer Fair, which provides the community with education and resources for cancer prevention, screening, and treatment.

HEALTH LITERACY

Health literacy and patient education continues to be an important part of Boone Hospital Center's patient care and community health programs, including programs and general education about the risks, prevention and reduction of obesity.

HEALTHY LIFESTYLE

Education about leading a healthy lifestyle and empowering people to reduce their risk of preventable disease continues to an important part of Boone Hospital Center's mission to improve the health of the people and communities we serve. The programs in our implementation plan to address obesity are designed to help participants make healthier lifestyle choices.

COORDINATION OF CARE

Coordination of care between inpatient, outpatient and primary care settings will continue to be a priority for patient care at Boone Hospital Center.

ACCESS TO COVERAGE

Boone Hospital Center will continue to provide counseling to assist patients with determining eligibility for and enrollment in coverage and financial assistance programs.

DIABETES

Because obesity is a risk factor and comorbid disorder with type II diabetes, Boone Hospital Center will continue to provide free A1C blood glucose screenings throughout the year on its Mobile Health Unit.

HEART & VASCULAR

Boone Hospital Center will continue to provide free health screenings for BMI, cholesterol, blood glucose and body composition at an annual Heart Fair and throughout the year on its Mobile Health Unit. Participants receive their test results immediately at the screening and have their results reviewed one-on-one by a clinician. Participants whose cholesterol and blood glucose results lie outside recommended levels will receive assistance to follow up with a primary care provider. Because obesity is a risk factor and comorbid disorder for some forms of heart disease, these screenings provide another opportunity to educate the community.

CULTURAL LITERACY

As Boone County continues to grow and become more diverse, including a growing refugee population, cultural literacy becomes increasingly important. Boone Hospital Center recognizes and continually addresses the need for increased cultural literacy to improve patient care, health literacy, and coordination of care, including translation services. County resources include refugee and immigration services, El Centro Latino for Spanish-speaking residents, and Services for Independent Living to support the needs of the disabled. Boone County's Community Services Department has also funded a two-year pilot program, **Live Well by Faith** which works with historically black churches to provide screenings and wellness programs.

At this time, Boone Hospital Center does not have programs or resources to directly address these identified health needs. Boone Hospital Center supports the Boone County Health Department and other programs that help address the below needs.

ASTHMA/COPD

Columbia/Boone County Public Health and Human Services offers smoking cessation programs. Boone Hospital Center refers patients and members of the community to these programs.

REPRODUCTIVE AND SEXUAL HEALTH

Columbia/Boone County Public Health provides low-cost or free reproductive and sexual health services to Boone County residents. These services include HIV/STD testing, counseling and prevention education; women's health screenings; pregnancy testing, and referrals for pregnancy and prenatal care.

INJURY AND VIOLENCE

Boone County's Public Health and Human Services Department has assembled a Safe and Healthy Neighborhood action team, which collaborates with the community to improve neighborhood safety and reduce crime.

MENTAL HEALTH / SUBSTANCE ABUSE

Boone County's Community Services Department and Children's Service Fund and the **Public Health and Human Services Departmen**t are working with community partners to explore how to improve access to outpatient mental health services, de-stigmatize use of mental health services, and reduce substance abuse. County mental health resources include Burrell Behavioral Health's Family Health Program, Family Counseling Center, UMC Psychological Services Clinic, Missouri Psychiatric Center, New Horizons and Phoenix Programs for substance abuse treatment.

DENTAL HEALTH CARE

Access to affordable dental care, especially for adults, remains an area of need in Boone County. Dental care resources for children include Family Dental Center, Mid-Missouri Dental Center, and the Kings' Daughters Dental Aide program which receives referrals from school nurses. Dental care is also covered for pregnant women by MO HealthNet. The Public Health and Human Services Department acute dental pain relief program helps adults with demonstrated financial need and no access to dental insurance receive x-rays and simple procedures. The nearest dental school clinic is at the University of Missouri-Kansas City.