

Linn County Community Health Needs Assessment

*Conducted on behalf of Pershing Memorial Hospital
Pershing Health System
(in Collaboration with Linn County Health Department)*

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Table of Contents

Background.....3

Community Description.....5

Survey Results.....9

Health Status.....11

Conclusion.....18

Community Resources.....21

Appendices.....25

Resources.....31

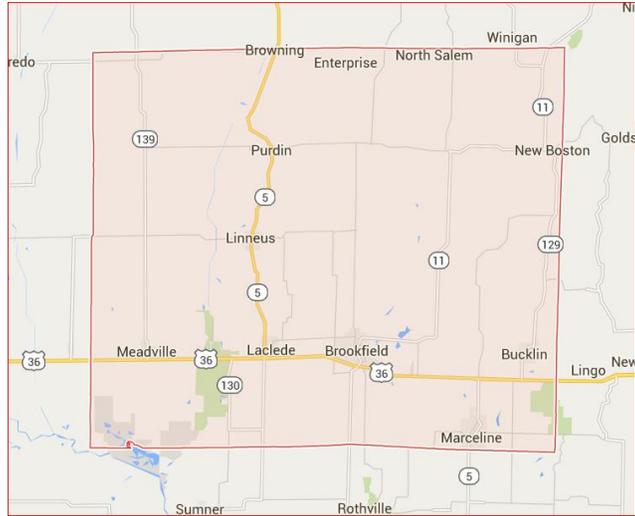
Background

Linn County, Missouri is a rural county in North Central Missouri. The population of Linn County is approximately 13,000 residing in eight towns. The county has limited resources to prevent and address health issues that may arise. Linn County ranks 33rd for health outcomes of the counties in Missouri. There are many health issues that compose this statistic. To better understand the priority health issues that individuals in the county identify and are indicated by secondary data sources, Pershing Health System collaborated with the Linn County Health Department to utilize a Masters of Public Health Student from the University of Missouri-Columbia as part of the Beacon of Hope Fellowship program to conduct a 2016 community health assessment. Pershing Health System also utilized information from the 2013 CHNA completed by Cory Hernandez University of Missouri – Columbia, Health Management and Informatics where applicable in the updated community health assessment.

To complete a community health assessment of Linn County the intern participated in a windshield survey during which she made observations about the infrastructure in the county and individual communities. After touring the county the researcher discussed evident challenges facing the community with community leaders. Using the information gained from these processes the researcher designed questions to pose to citizens of the county, health professionals in the county, and leaders of service organizations.

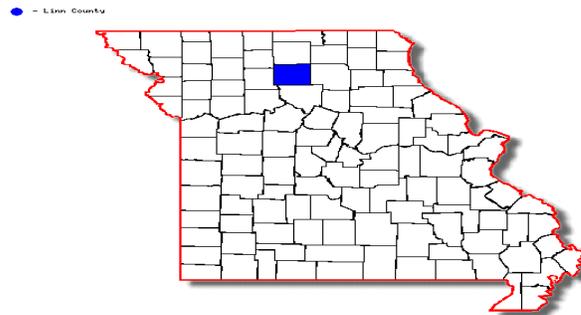
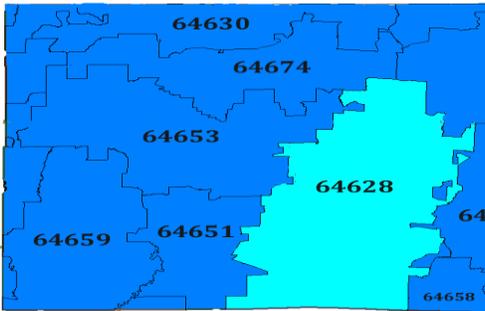
The purpose of the community health needs assessment is twofold. First, the primary aim is to improve the overall health of Linn County through identifying any areas of need. Second, is to satisfy both state and federal requirements by engaging key stakeholders in the county for their input on health vulnerabilities.

The 2016 CHNA found concerns related to a lack of access to affordable medical care, chronic disease, and lack of recreational areas. Pershing Health System has identified poverty, lack of access to affordable healthcare, lack of primary care, and chronic disease as areas of need in the community.



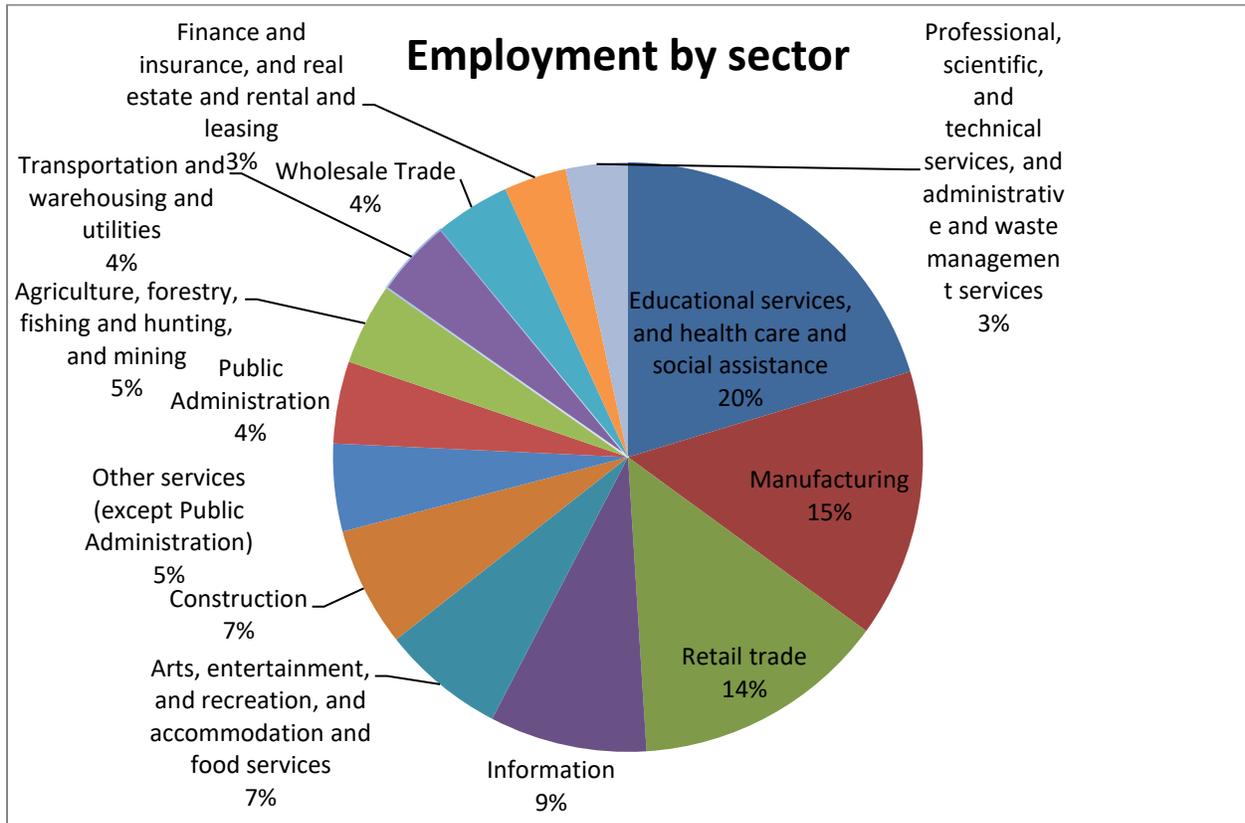
Linn County, Missouri, Google Maps

Linn County



Zip	City	County
64630	Browning	LINN, MO
64674	Purdin	LINN, MO
64653	Linneus	LINN, MO
64659	Meadville	LINN, MO
64651	Laclede	LINN, MO
64628	Brookfield	LINN, MO
64631	Bucklin	LINN, MO
64658	Marceline	LINN, MO

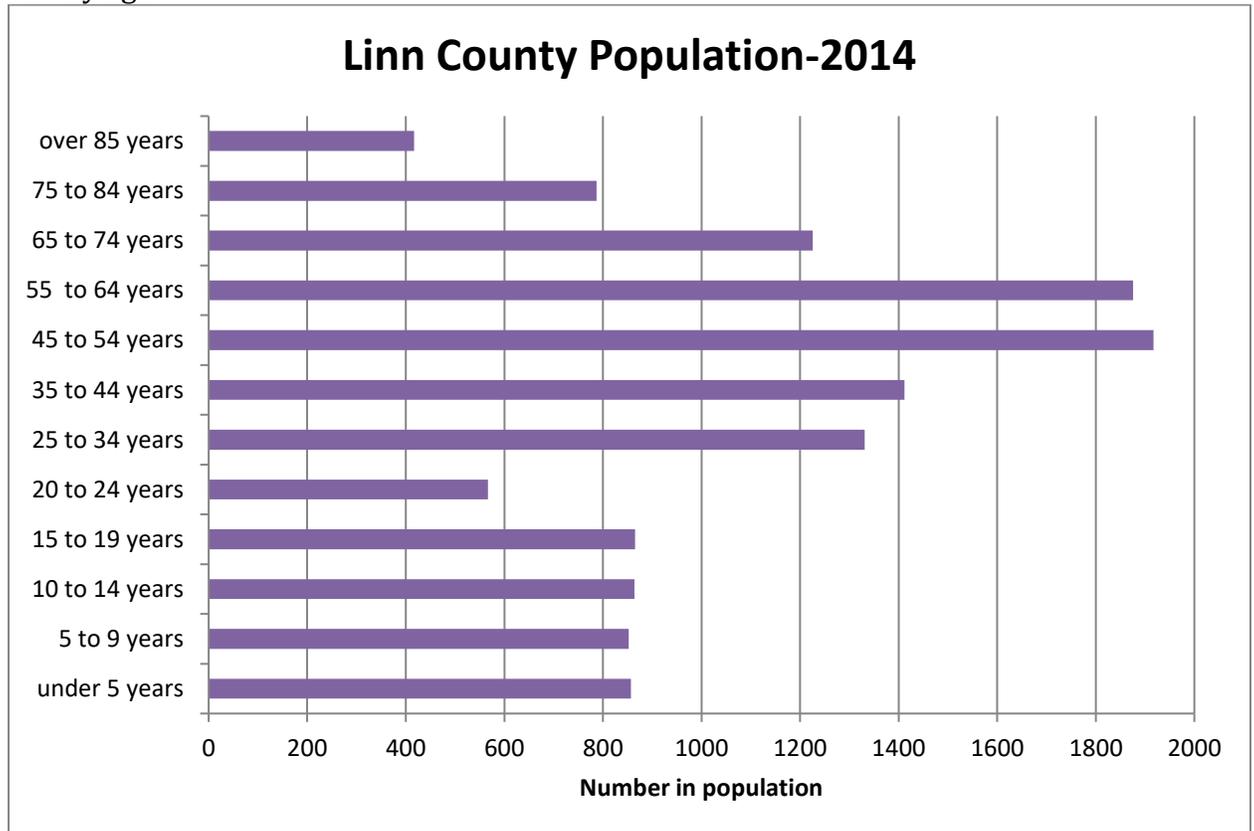
Community Description: Employment



American Community Survey, 2016.

The total employed population in Linn County was 5,037 in 2013. As of December 2013 Linn County's unemployment rate was 6.4% as opposed to Missouri's unemployment rate of 6.3% over the same period. Of the employed individuals 3,965 drove alone to work, 78.7% of workers, and 639 carpooled, 12.7% of workers (U.S. Census Bureau-American Community Survey, 2016). Economic factors of a community often correlate with access to healthcare. Analyzing the various classes of workers gives an idea as to the availability of health insurance to the labor force.

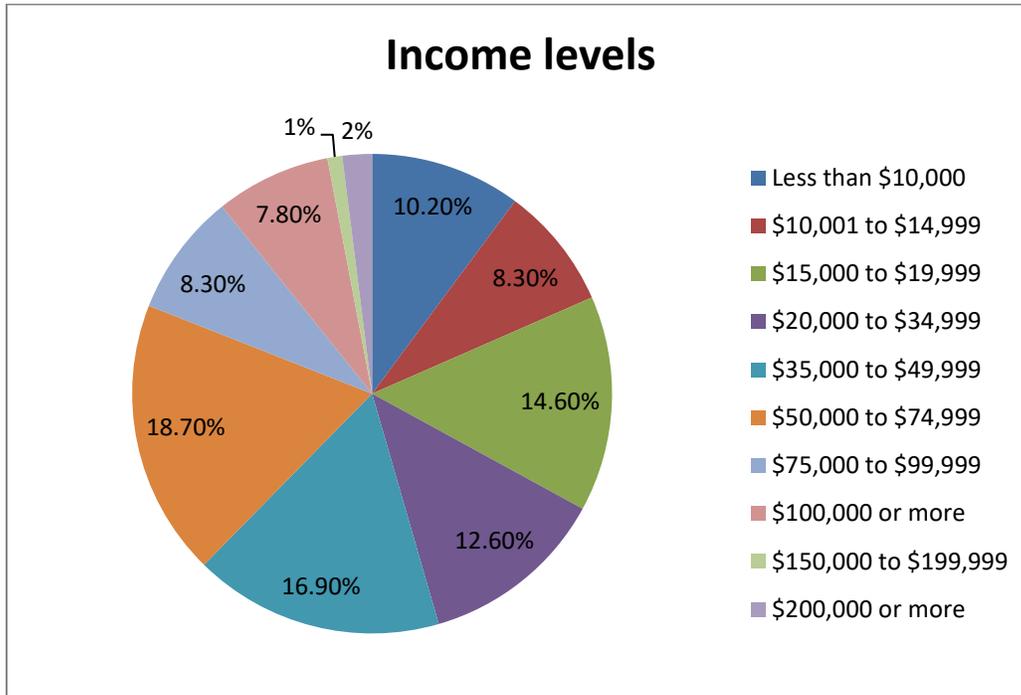
Population by age



American Community Survey, 2016.

At the end of 2013 19.3% of the citizens of Linn County were 65 years or older (American Community Survey, 2016), as opposed to the 15% of Missourians that were over the age of 65 in 2013 (U.S. Census Bureau-Missouri Quickfacts, 2016). The population of Linn County decreased by 3.5% from April 1, 2010 to July 1, 2014, from 12,761 to 12,311 (American Community Survey, 2016). This is representative of the trend of decreasing population in Linn County. The county has decreased in population from 13,754 in 2000 to 12,311 in 2014, or by 10.5% in 14 years (Missouri Quickfacts, 2016). The decrease in population could be attributed to a couple of factors including, but not limited to, proximity of major metropolitan areas, migration from surrounding counties, increased industry, and an increase in prison population. Population size, composition, and migration are linked to a host of variables that shift as social and economic conditions evolve.

Economic Health

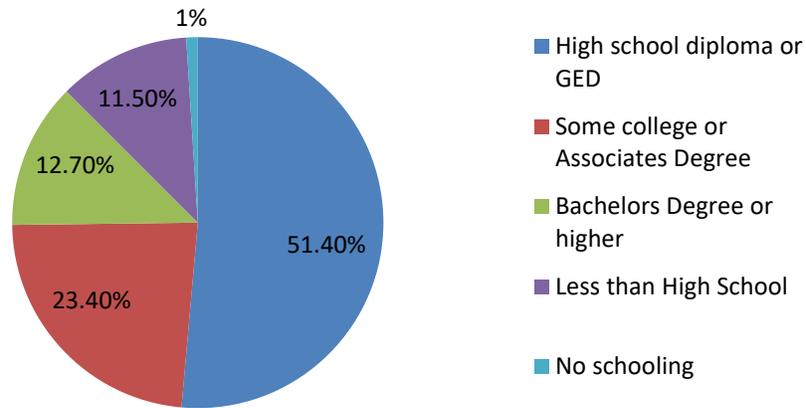


American Community Survey, 2016.

The median household income in Linn County, Missouri was \$38,250 in 2013 (American Community Survey, 2014). The median income for male-full time, year round workers was \$38,212 in 2013 compared to the median income for female-full time, year round workers, which was \$28,153 in the same time period (American Community Survey, 2016). This reveals a gender disparity in the annual incomes of men and women. Of those living below the federal poverty level the largest percentage of those are those led by a woman with no husband with children under 5 years old, 61.2%. Married couples represent 5.8% of the population living below the poverty level. In 2013, 15.1% of the total population of Linn County lived below the poverty level (American Community Survey, 2016). This percentage is lower than the 15.5% of Missourians that lived below federal poverty in 2013 (Missouri Quickfacts, 2016). The relationship between income and health is well documented and can simply be stated as the higher the income the better the health of the individual (Reinstein, 2011). The ability to pay for healthcare services is the key to accessing health services resulting in better health outcomes of the individual.

Education level

Educational Attainment



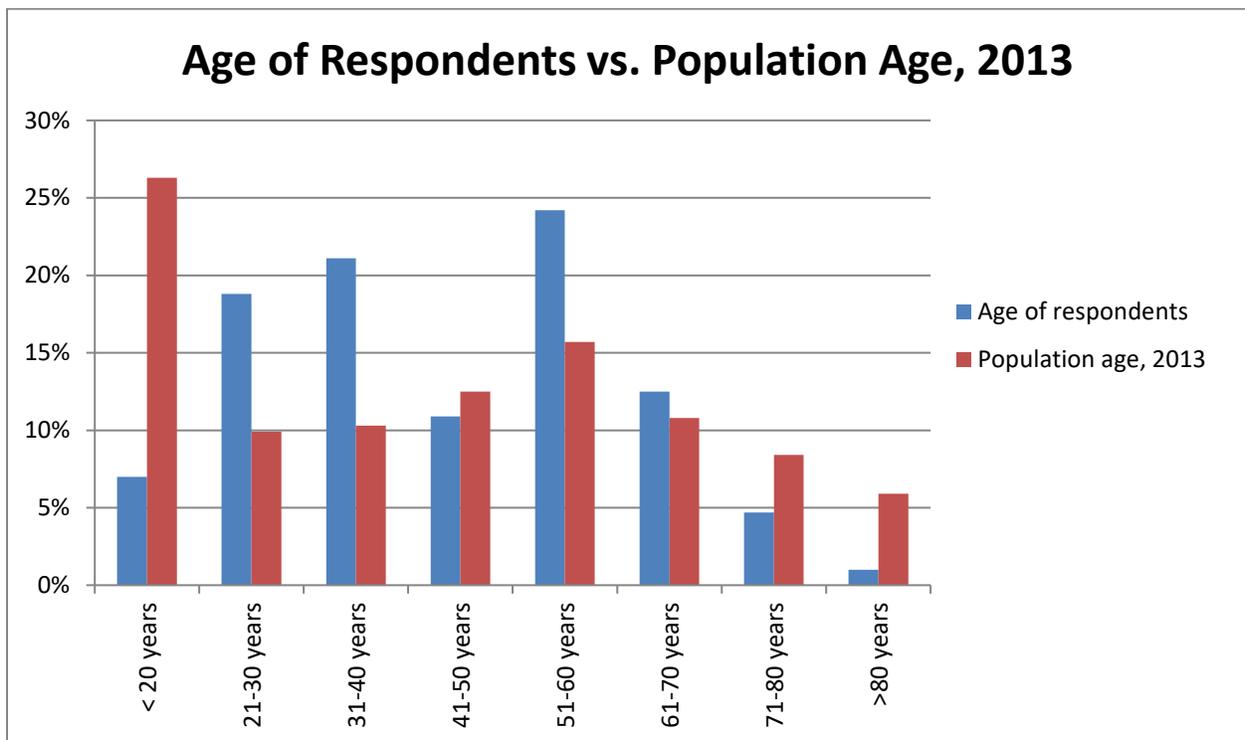
American Community Survey, 2016.

87.5% of the residents of Linn County have attained a high school diploma or equivalent. Of those living below the poverty line in Linn County that are 25 years and older, 25.4% do not have their high school equivalency. Median earnings are correlated with degree of education achieved, as earnings rise with the amount of education received. An exception to this is that individuals with some college or an associate's degree, on average, do not earn as much money as those who graduated high school, but did not pursue higher education (American Community Survey, 2016). Studies have shown that college graduates generally tend to be healthier than non-college graduates. Lower levels of educational attainment decrease the potential for higher income levels and occupation advancement, ultimately resulting in poorer levels of health.

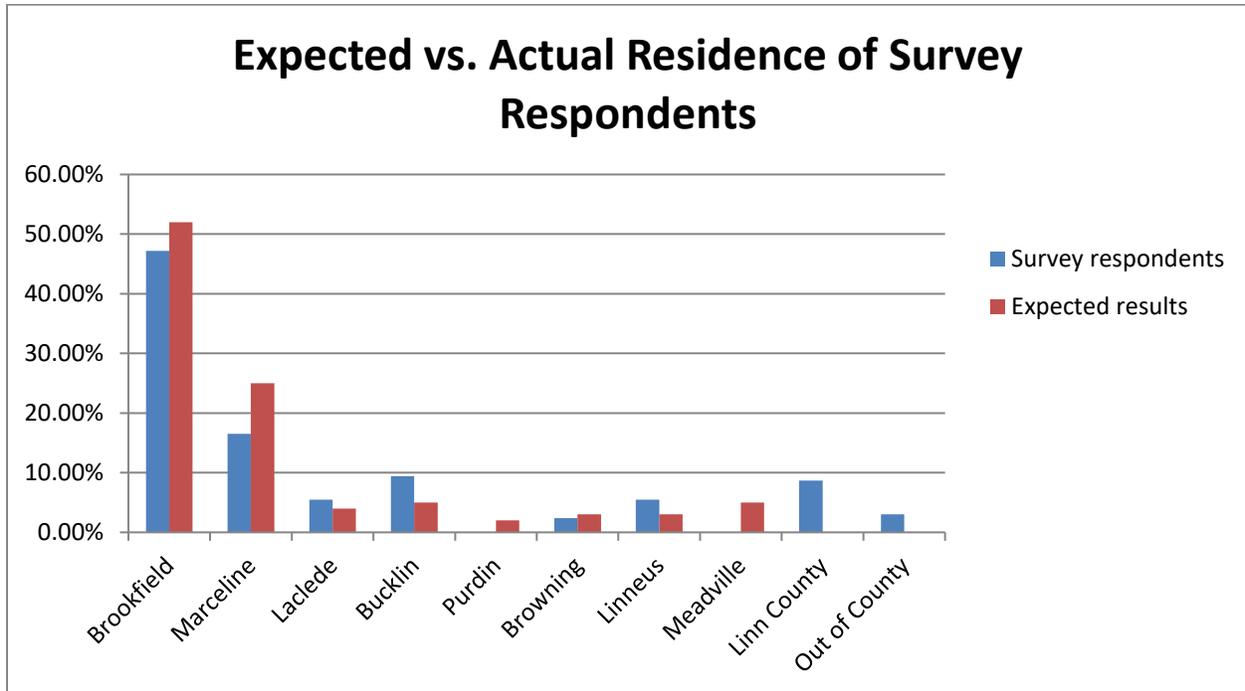
Survey results

Of the 138 respondents the largest age group represented was 50 years to 60 years with 24.2% of the responses. This was not representative of the population as that group only represents 15.7% of the population. In conjunction with this, only 1% of respondents were over 80 years old; as opposed to the 5.9% they represent of the overall population. Generally, a younger population was surveyed than exists in Linn County.

A note about the percentage of people under 20 years old in Linn County: this statistic includes all individuals from newborn to 20 years old. However, the surveyed individuals under the age of 20 ranged from 17 to 19 years old. This age group represents approximately 3.5% of the total population, and is much more comparable to the 7% of respondents in that age group.



In regards to city of residence, significantly more individuals living in Bucklin responded to the survey, 9.4%, than was proportional to its population. The researcher expected 5% of the responses to come from Bucklin residents. Meanwhile, no residents of Meadville responded to the survey which altered the proportional response rate greatly. Also, 8.7% of the individuals who agreed to fill out the survey put “Linn County” as their city of residence. These individuals could have been residents of any city in Linn County. Individuals that filled out the survey, but do not reside in Linn County account for 3.9% of the responses.



Responses gathered from the community health assessment survey

- 87.4% of respondents receive recommended vaccinations
- 56.6% have received emergency treatment in the last year
- 60.7% stated they attend church services regularly
- 33.3% stated they participate in community organizations
 - Indicating that churches and community organizations would be beneficial partners for public health program implementation
- 75% believe that sufficient after school programs exist for children
- 50% have to travel more than 5 miles to the nearest grocery store
 - This makes it difficult for many citizens to access healthy foods if they do not have a car or other transportation
- 47.3% believe the social services available in Linn County to be adequate for the needs of their families
 - 10% stated the services were inadequate for their families needs
 - 42.7% stated that this question was not applicable to them

Health status

Primary data about the population was gathered through surveying techniques. Surveys were distributed to community members and 138 individuals from the county completed the survey, as well as 8 health professionals and 9 service providers. The questions included on the surveys covered such topics as health insurance coverage, regularity of appointments with a primary care physician, past emergency department visits, and distance travelled to grocery store. The researcher also asked respondents to indicate prevalent health issues in Linn County. The responses to this question can be categorized into several broad topics, including: lack of access to medical care, lack of physicians, insufficient health literacy in patient population, lack of affordable medical care and medications, no parks or walking trails for citizens to access, and prevalent preventable chronic diseases such as heart disease, obesity, and diabetes.

Lack of Primary Care Physicians

Linn County Missouri, as well as many other rural counties in Missouri, suffers from a lack of medical professionals. There are few primary care physicians working in Linn County. In 2012, the ratio of individuals to primary care physicians was 1,783:1. The Missouri average for this measure was 1,439:1, and the range of responses per county in Missouri was 13,858:1 to 799:1 (County Health Rankings, 2016). In 2012, the ratio of citizens to dentists was 6,184:1. This measure has improved since 2012 as there are now 4 dentists practicing in the county. Therefore, currently the dental health ratio is 3,078:1, which is still far below the state average of 1,920:1 (County Health Rankings, 2016). Also, the ratio of individuals to mental health professionals was 4,123:1 (County Health Rankings, 2016).

In the responses gathered from the survey, 25% of individuals surveyed listed the low number of medical professionals in the county as a priority health issue. Few medical professionals practicing in the county can lead to greater wait times for patients and individuals may decide to travel out of the county to receive medical care at greater rates. Of the people surveyed, 19% travel out of Linn County to see their primary care physician and 33% of respondents indicated that they had to wait more than 2 days after they called for an appointment to see their doctor.

Unaffordable medical care and medications

Being able to afford healthcare is a key contributing factor to whether or not people access preventative care services. Of those that responded to the survey, 46% of respondents said that healthcare is not affordable. 13% of respondents identified this as the primary health issue in the county.

Of the total civilian, non-institutionalized population of Linn County, 12.9% did not have health insurance in 2013. Of the uninsured population, 38.3% were employed, but their employer did not supply health insurance and they did not qualify for public coverage. The unemployed represented 7.9% of the uninsured population. Those who have removed themselves from the labor force, for whatever reason, represented 29.8% of the unemployed population (American Community Survey, 2016). Also, many individuals are underinsured or only have a catastrophic health insurance plan. These situations result in

patients having to pay greater amounts out of pocket and may also result in the underutilization of health services.

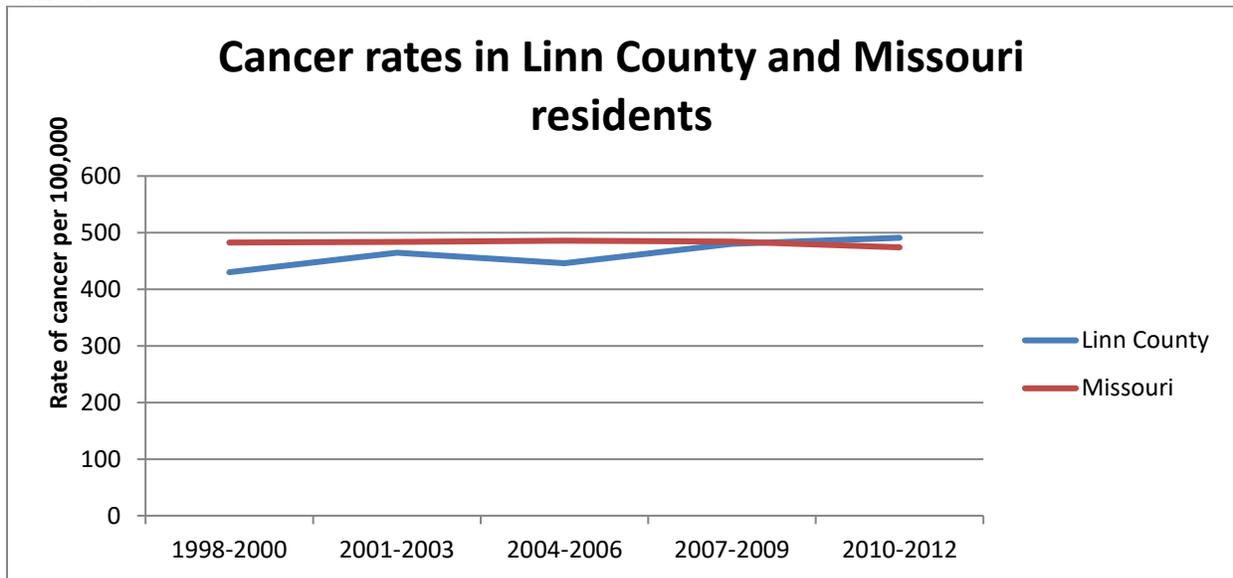
Lack of Access to Quality Medical Care

Results from the survey indicate that 76% are satisfied with the quality of medical care available in Linn County. Of these individuals, approximately one half indicated that the care received at Pershing Health System was sufficient. Half indicated that the physicians in the county give quality, compassionate care to the public. This indicates that many citizens in Linn County are confident in the medical professionals that practice in the county. The lack of providers is partially alleviated by the proximity to Kansas City and Columbia, but results in a portion of the population leaving the community for healthcare services. A shortage of primary care physicians is always an issue in rural America and Pershing Memorial Hospital is striving to improve the access for county residents. Pershing Health System is a participating organization in the Primary Care Resource Initiative for Missouri (PRIMO). Pershing Memorial Hospital currently supports two students in medical school through this program and will employ them upon completion of their residency. Pershing Health System is continually recruiting family practice physicians and nurse practitioners to the area to provide inpatient consults and primary care and will continue to do so in the foreseeable future. Pershing also has multiple resident physicians practicing in the clinic's and Emergency Department this could result in employment of these physicians in the future upon their graduation as well.

Prevalent preventable Chronic Diseases

Many of the individuals that filled out the health assessment survey believe that chronic diseases are highly prevalent in Linn County. Of the respondents, 25% identified a chronic disease or multiple chronic diseases as the priority health issue facing citizens of Linn County. Obesity, heart disease, and cancer were the key chronic diseases mentioned by those surveyed.

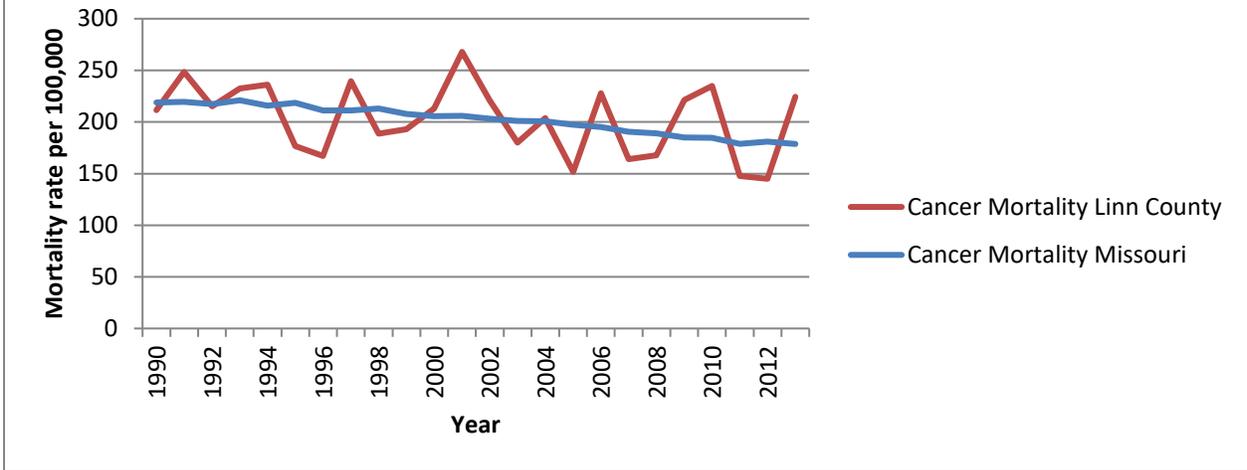
Cancer



Community Data Profiles, 2016.

The cancer rate in Linn County has been rising slowly and steadily since 1998, and in 2009 the cancer diagnosis rate in Linn County surpassed that of the state of Missouri (MO DHSS, 2016). However, this data is vulnerable to distortion for several reasons. The people of Linn County could be receiving health screenings that diagnose the cancer at a higher rate than other Missourians, the cancer in Linn County residents could be diagnosed earlier than other Missourians, or the low population in Linn County could be confounding the data because 1 case is statistically significant.

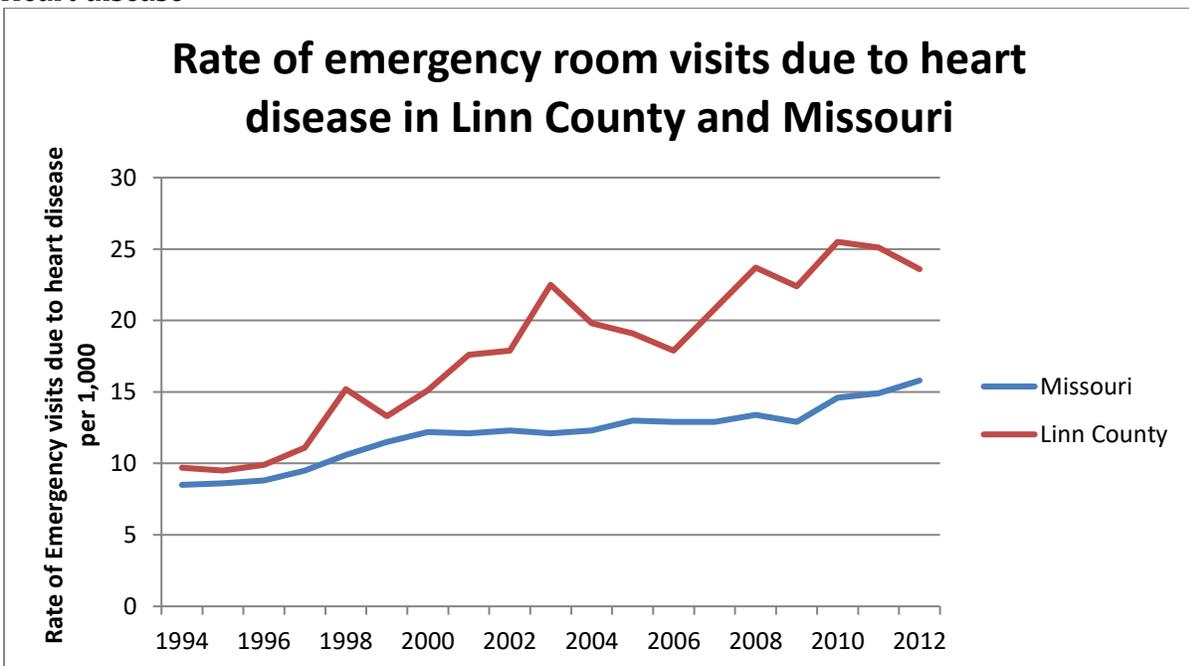
Mortality Rate due to Cancer in Linn County, Missouri from 1990-2013



MO DHSS, 2016.

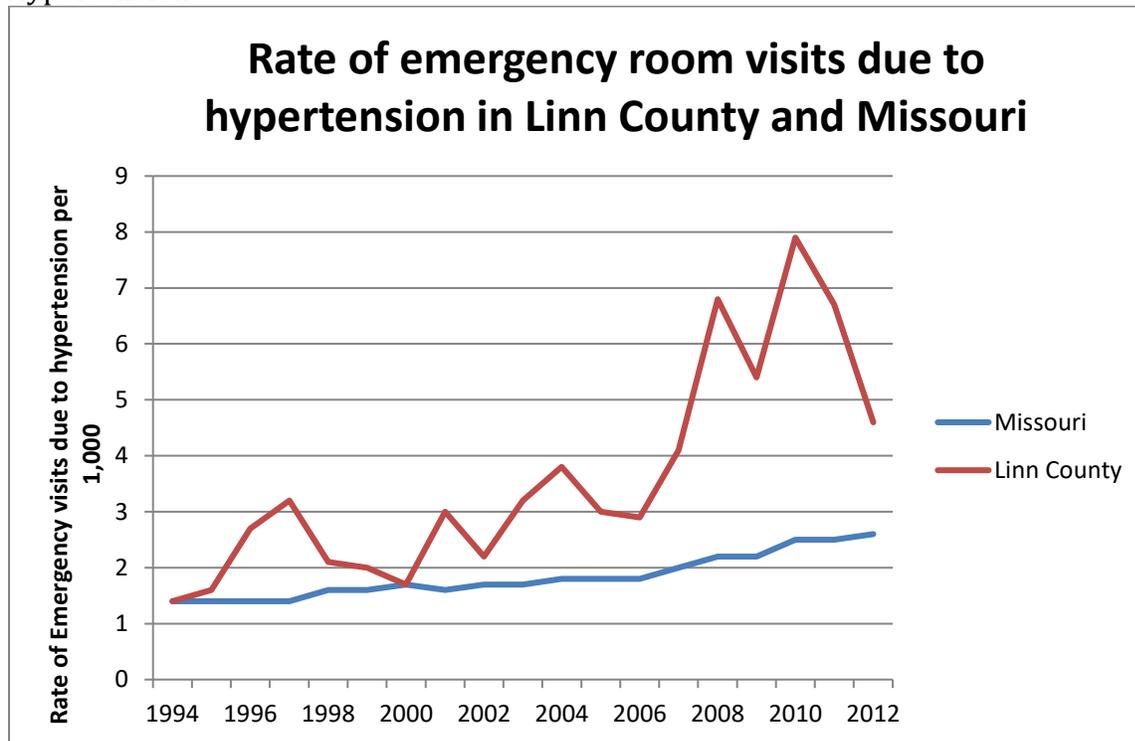
Mortality due to cancer in Linn County and Missouri has been on a decreasing, overall trend since 1990. The mortality rate due to cancer in Linn County is much more variable year to year than in the entire state of Missouri because the low population in Linn County every cancer death is significant and raises the mortality rate.

Heart disease



MO DHSS, 2016.

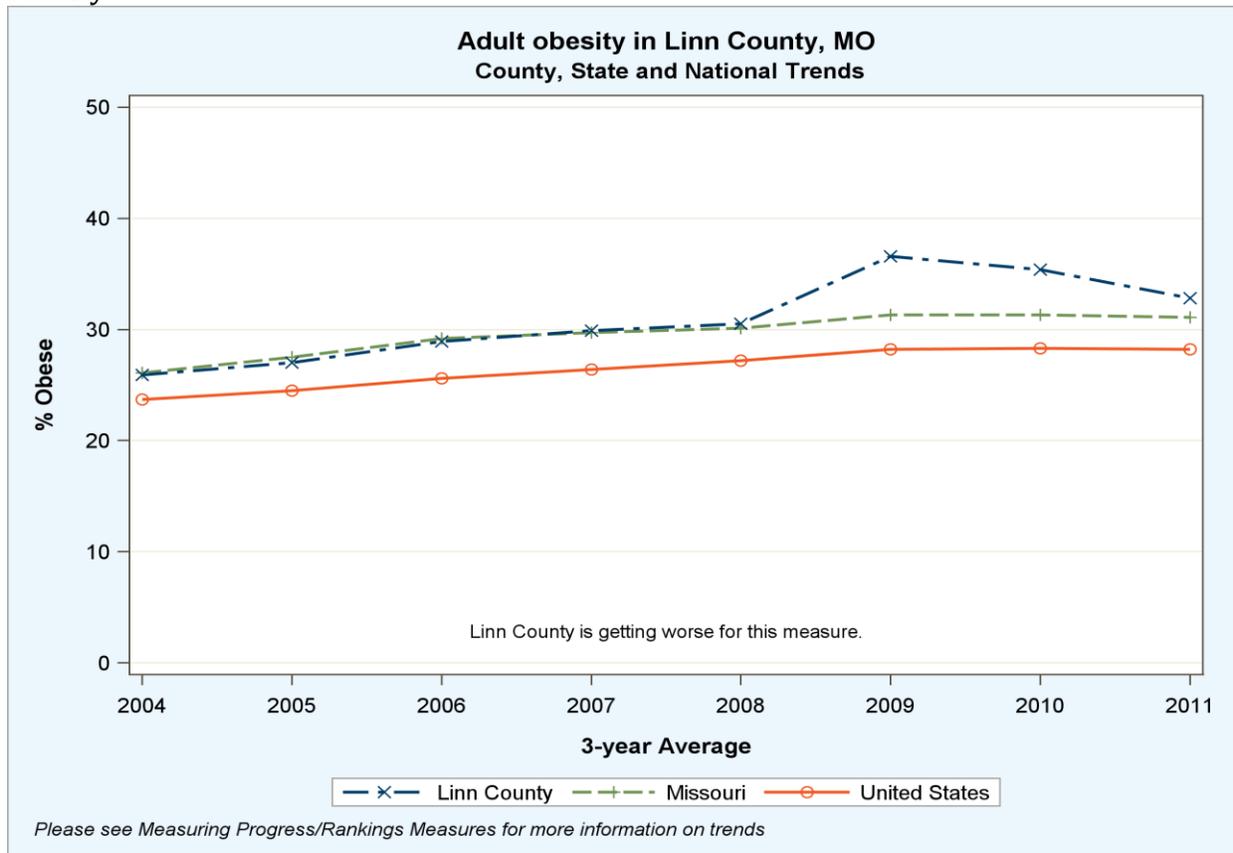
Hypertension



MO DHSS, 2016.

Emergency department visits due to hypertension and heart disease are much higher in Linn County residents than in the Missouri population. Citizens in Linn County may have poorly controlled hypertension and heart disease due to medication non-compliance, environmental risk factors, or because the conditions were undiagnosed before the emergency department visit. This number could also be contributed to patient's using the Emergency Department as primary care instead of scheduling regular appointments with primary care physicians. These behaviors also may indicate that patients are waiting until they are in a crisis before seeking needed medical treatment.

Obesity



County Health Rankings, 2016.

Adult obesity is becoming an epidemic in the U.S. and increases the risk for countless health conditions. Obesity is an energy imbalance due to a lack of physical activity combined with a poor diet. Obesity can ultimately lead to the following: coronary heart disease, type II diabetes, cancer, hypertension, stroke, gall bladder disorders, respiratory problems, and osteoarthritis.¹² In Linn County the rate for heart disease far exceeds state, national, and Healthy People 2020 benchmarks.

In 2014, 30.3% of Missouri residents were obese and another 35.3% were overweight (MO DHSS, 2016). This indicates that almost 2/3 of the Missouri population has a body index higher than is presumed healthy for them. In 2012, 33% of Linn County residents were obese and an untold number were overweight (County Health Rankings, 2016). This suggests that Linn County is more obese than the state of Missouri on the whole. This likely is related to the reduced number of exercise opportunities afforded to residents and a culture that emphasizes poor eating habits and de-emphasizes exercise.

Lack of parks or walking trails for citizens to access

A question included in the health assessment survey asked respondents to rate the public recreation spaces in the county, such as parks, walking trails, sidewalks, etc..., on a scale from 1 to 10. The average response rated the park system in Linn County as 4/10, below average. At the time of the survey 52% of individuals in the county exercise fewer than 3 days a week. In 2013, only 1.2% of individuals in Linn County biked or walked to work (American Community Survey, 2016). Improving the park system in Linn County would likely lead to an increase in the amount of exercise citizens complete and increase the percentage of people that walk to work. Also, property values have been shown to increase in areas near parks and walking trails (Economic Benefits of Trails, 2016). However, another factor to consider is the rural location of Linn County. This makes the idea of walking to work not only unrealistic for many of the citizens, but unachievable. Also, many citizens do not have access to these recreational facilities in the area because of rural geographic area, and as noted early many of the citizens live below the level of poverty. This makes exercise and recreation unimportant when balancing other issues related to poverty such as being able to eat, maintain housing, and maintaining utilities. This creates the almost never ending cycle of increased chronic illness and obesity. This indicates that the true underlying issue is not obesity, and chronic illness but rather poverty as the major issue contributing to all healthcare needs identified.

Insufficient health literacy in patient population

Of the individuals that completed the survey 48.6% reported taking maintenance medications, and 100% of these people stated that they take their medications as the directions indicate. However, medical professionals identify medication non-compliance as a prevalent issue in the community. The discrepancy between these responses reveals a miscommunication between health professionals and patients and poor health literacy in patient populations.

Conclusion- Written By Heather Wood, BSW, Director of Social Services, Pershing Health System

Many factors during the last three years since the previous 2013 Community Health Needs Assessment was completed have gone unchanged as indicated by the most current 2016 Community Health Needs Assessment. Overall, this assessment suggests that the health services within Linn County are sufficient to serve the residents in the county. However, our findings indicated several vulnerabilities in healthcare services provided to the community and unfavorable trends in healthcare factors.

One positive factor noted is the continued trend of a decline in unemployment in Linn County. While unemployment rates for Linn County remain slightly higher than state averages, the trend continues downward. Unemployment is a large factor contributing to individuals lacking the financial capability to access healthcare. Increasing rates of unemployment will raise the need for community health centers and additional safety-net clinics in the county. In terms of economic status, Linn County is worse off in relation to the rest of Missouri and the United States and has a high percentage of families below the poverty level. Analyzing the various classes of workers gives an idea as to the availability of health insurance to the labor force. The 2016 CHNA indicated that a large percentage of Linn County workers are employed in the education, manufacturing, and retail industries. The 2013 CHNA indicated Linn County boasts a larger percentage of self-employed workers than both Missouri and the United States. Having a high number of self-employed workers could mean that portion of the population has to provide their own health insurance and the increasingly high premiums and deductibles could be a deterrent.

It would be easy for one to focus on the obvious healthcare factors affecting the citizens of Linn County such as obesity, heart disease, diabetes, lack of exercise, and lack of access to recreational locations as the needs to address in the county; however, it would be a disservice to the citizens and the community if Pershing Health System did not consider the significant impact that the level of poverty plays in all of these issues. This would lead one to question if the true issue is related to the significant amount of citizens who live in poverty in Linn County as the primary cause for many, if not all of the health needs identified. Residents living in poverty attitude regarding health needs are significantly less important, especially when trying to meet basic needs to survive. How can a person living in poverty be expected to address obesity, heart disease, and diabetes if they are unable address the basic needs of their household such as running water, food, rent, and utilities, without struggle? Unless or until poverty is addressed chronic illness will always be significant for county residents. Poverty issues related to healthcare will impact the quality of care that citizen's access, which in return impact the overall health of the citizens. Linn County ranks 33rd in health outcomes according to *County Health Rankings* and 77th in health factors for the state of Missouri. Negative trends in adult obesity, heart disease, and physical inactivity are all higher than Missouri and National averages and contribute to an increasing premature death rate for the county. However, until poverty is addressed, any intervention applied to these chronic issues with have very little impact. Another area of concern identified was lack of recreational areas for exercise. Many citizens who live in

poverty would be quick to say that whether or not they have access to recreational areas is not a priority for them.

After speaking with community healthcare service providers, several weaknesses in the provision of services to the community were revealed. One of the weaknesses that falls below acceptable levels is the number of primary care providers per number of the population, as indicated in survey population. Pershing Memorial Hospital is attempting to recruit and retain primary care providers in order to address the shortage in the community. It is indicated that a large number of preventable hospitalizations are still occurring in the county, so if primary care services can be strengthened it would likely offset those events and reduce the burden on the county's emergency department. Pershing has a strong plan in place to address this issue including Pershing's participation in Primary Care Resource Initiative for Missouri (PRIMO). Pershing Memorial Hospital currently supports two students in medical school through this program and will employ them upon completion of their residency. Pershing hired a fourth nurse practitioner to work full time in the Community Medical Associates Clinic. Pershing Health System is continually recruiting family practice physicians and nurse practitioners to the area to provide inpatient consults and primary care and will continue to do so in the foreseeable future. Pershing also has multiple resident physicians practicing in the clinics and Emergency Department this could lead to employment of these physicians in the future upon their graduation.

Linn County's proximity to Kansas City and Columbia creates a number of unique weaknesses and strengths. First, the attraction of Kansas City and Columbia often lures providers, making it difficult for Linn County to recruit providers. Kansas City also boasts a strong healthcare influence creating a misperception of lower quality healthcare in Linn County. This misperception leads to a portion of the population believing that in order to receive quality healthcare they must travel outside of the community. This takes a number of possible patients outside the community. Another stressor on the health of Linn County is the lack of specialty providers. While the lack of local specialists could make for a deficiency in specialty care for the community, it is one aspect that the proximity to Kansas City and Columbia alleviates. With Kansas City offering a number of specialty services, Linn County is relieved from the pressures of these hard to recruit positions. Nonetheless, Pershing Memorial Hospital should continue to attempt to recruit specialists in order to address the shortage they have in the community.

One other way that Pershing Health System has addressed the lack of access to health care is offering multiple health fairs in the community. Including, the annual health fair that occurs in the Marceline, MO and Brookfield, MO area and is always coordinated during National Hospital Week. Pershing offers many health screenings during this time at a reduced cost to the public. Pershing also has multiple health fairs for local employers where Pershing staff will go to the workplace and conduct a health fair. This addresses the need for citizens to travel for needed health screenings. Pershing also offers free physicals to all Linn County school aged children, one time monthly during the summer months. Pershing also has an ever-growing number of specialists who travel to Pershing Memorial Hospital for specialty clinics including: Cardiovascular, OB/GYN, Dermatology,

Ophthalmology, Orthopedics and General / Same Day Surgery, to name only a few. Pershing needs to continue to focus on ways of making the public aware of the multiple clinics that are available in the area and encourage the public to take advantage of the services.

The information provided in this assessment should be used as a tool to community stakeholders when deciding the next step in community health. The health of Linn County is stable, but also should expect to confront challenges caused by negative trends in health factors and a changing population mix. It will be important that the community address these challenges and make decisions based on community needs moving forward.

CURRENT HEALTHCARE SERVICES AND FACILITIES

HOSPITALS

GENERAL JOHN J. PERSHING MEMORIAL HOSPITAL – PERSHING HEALTH SYSTEM

Pershing Memorial is a 25 bed critical access hospital located at 103 East Lockling in Brookfield, Missouri. The hospital originally opened on January 11, 1960 and added an 11 million dollar expansion for outpatient procedures on October 4, 2008.

SERVICE LINES

■ Outpatient/Ambulatory Services

General/Same Day Surgery
Cataracts/Laser Surgery
IV Therapy/Infusions (also including, Remicade, Rituxan, Reclast & Lupron Therapy)
Medication Administration
Blood Transfusions, Wound Care, Cast/Splints
Port-a-Cath Central Line Access
Bladder Instillation/Catheterization

■ Laboratory Services

Full Service Laboratory
Phlebotomy Therapy
Employment Drug Screens
Must set up contract
Coagulation Testing (Blood Thinner)
Inpatient and Outpatient

■ Respiratory Therapy

Inpatient and Outpatient
Treatment of Chronic and Acute Respiratory Disorders
Pulmonary Function Testing
Arterial Blood Gases, Pulse Oximetry
Sleep Studies – Call to Schedule

■ Rehabilitation

Physical Therapy
Occupational Therapy
SNF Rehab

Medicare, Medicaid, Work Comp, Insurance
Post-Joint Replacement Rehab
Stroke – Bio-Dex Balance/Vestibular Training
Sports, Industrial, & Farm Injuries
Pediatrics, Geriatrics, Orthopedics
Visiting Orthopedic Surgeon Clinics

■ Radiology Services

Radiography/Fluoroscopy
CT Scan
MRI Scan
Ultrasound
Mammography
Nuclear Medicine
Dexa – Bone Density
X-ray/Radiology Services in Marceline

■ Cardio Rehabilitation

Phase II, Phase III, & Phase IV

■ Nutritional Services

Inpatient and Outpatient
Registered Dietician Consultation

■ Specialty Clinics

Audiology
General Surgery/Same Day Surgery
Orthopedics
Foot Care Specialist
Ophthalmology
Gastroenterology / GI Labs
Cardiology
Dermatology

HEDRICK MEDICAL CENTER – SAINT LUKE’S HEALTH SYSTEM

Hedrick Medical Center is located at 2799 Washington Street, in Chillicothe, Missouri and is part of the Saint Luke’s Health System headquartered in Kansas City, Missouri. HMC is a critical access which provides a full range of services. These services include; Cancer care, Diabetes centers, Emergency services, Gastroenterology, Heart & vascular , Laboratory services, Maternity, Pain management, Podiatry services (foot care), Radiology Short-term rehab (Skilled nursing care), Sleep disorders, Spiritual wellness, Surgical services, and Wound care.

WRIGHT MEMORIAL HOSPITAL – SAINT LUKE’S HEALTH SYSTEM

Wright Memorial Hospital is a critical access hospital located in Trenton, Missouri. Wright offers a wide range of essential health care services including; respiratory care, emergency services, inpatient and outpatient surgery, specialty clinics, and more.

As the seat of Grundy County, WMH is dedicated to providing the finest healthcare to residents of Trenton and surrounding areas. As a part of Saint Luke’s Health System of Kansas City, WMH is dedicated to serving the healthcare needs of the people of the region, and with a new facility having opened in April 2011, WMH has the foundation to continue to build its service profile.

ADDITIONAL HEALTHCARE INSTITUTIONS

APPELGATE MEDICAL GROUP – COMMUNITY MEDICAL ASSOCIATES – MEADVILLE MEDICAL CLINIC

The Applegate Medical Group is located in Brookfield. Dr. Minerva Concepcion, MD is currently the practicing physician. Clinic hours are Monday, Wednesday and Friday from 9:00-5:00pm. The group includes a nurse practitioner Karla Clubine. Community Medical Associates is located in Pershing Memorial Hospital; the clinic is open 7 days a week and is the only walk in clinic that is open all week. The hours are from 10-6pm (Mon-Sat) (12pm-6 on Sunday) this allows the community to have easier access to health care. The clinics also have an indigent care program that helps provide those who have a financial hardship with the ability to see a healthcare provider. The Meadville Medical Clinic is located at 101 East Hayward in Meadville, Missouri; it is comprised of medical director Jerry Wait D.O. and Kelly Dudley-Schwager FNP.

KNOWLES FAMILY PRACTICE- DR. BRIAN K. KNOWLES, D.O.

Dr. Brian K. Knowles graduated from the A.T. Still University of Health Sciences/ Kirksville College of Osteopathic Medicine in 1985. He works in Brookfield, MO and specializes in Family Medicine. Dr. Knowles is affiliated with Boone Hospital Center and Pershing Memorial Hospital. Dr. Knowles has an office located at 624 W. Lockling, Brookfield, MO.

INDEPENDENT PHYSICIAN –MICHAEL CRIST, D.O.

Dr. Crist is a family practice physician that is able to treat patients from children to adults. Dr. Crist is the only independent practitioner located in Linn County that is not an employee or under contract with Pershing Health System. Dr. Crist has an office located at 814 Fairlane Dr. in Brookfield, MO.

ASSISTED LIVING AND ADULT CARE HOMES

There are currently seven assisted living or adult care homes for the residents of Linn County that provide a variety of services that cater specifically to the elderly population living in the county:

Bristol Manner of Marceline
Life Care Center of Brookfield
Mc Larney Manner

Pioneer-Skilled Nursing of America
Ashbury Heights

Other Community resources

Primary Care Providers in Linn County:

- Marceline Family Health Center-Medical [FQHC]
Marceline, MO

Other Health Providers in Linn County:

- Linn County Health Department
Brookfield, MO

Dentists in Linn County:

- Dr. William Copple
Brookfield, MO
- McCoy and Samples Dental Clinic
Brookfield, MO
- Marceline Community Health Center-Dental
Marceline, MO

Service Organizations Operating in Linn County:

- Missouri Department of Social Services
 - Supplies food stamps, TANF, Medicaid, and non-emergency medical transportation services for the local community.
- Green Hills Community Action Agency
 - Services offered at the Green Hills Community Action Agency include utility assistance, employment programs, providing women's health services, and weatherization vouchers.
- Senate Bill 40 Linn County
 - Assists disabled individuals with finding employment and case management services.
- Brookfield Ministries Food Pantry
 - Provides financial assistance to citizens of Linn County for rent, food, and emergency gas card vouchers.
- Salvation Army
 - Provides rent assistance to residents and hot meals transient individuals.
- Diapers and Devotion
 - Provides parents with free diapers.
- Marceline Area Nutrition Program
 - Serves congregated meals and delivers meals to home bound persons.
- Green Hills Women Shelter
 - Provides services to victims of domestic abuse.
- First Choice Pregnancy Resource Center
 - Offers pregnancy tests, peer counseling, and adoption referrals.
- North Central Missouri Mental Health Center
 - Affords the local community comprehensive psychiatric care, medication services, and counseling services.
- Northeast Missouri Rural Health Network
 - Acts to improve the access of quality health care services to all of the residents in Northeast Missouri.

Appendices: 1.

Linn County Health Assessment Survey

Are you a resident of Linn County? City of Residence _____ Age _____

Yes No

Do you have an established primary care provider?

Yes No

If so, what city does your provider practice?

_____ Have you seen him or her in the last year?

Yes No Not applicable

How long did you have to wait to see your provider after you scheduled an appointment?

0-2 days 3-5 days 5-7 days more than 1 week Not applicable

Do you take medications to manage a chronic health condition?

Yes No Not applicable

If so, do you take your medications as prescribed?

Yes No Not applicable

Do you and your family receive the recommended vaccinations?

Yes No If not, why? _____

Have you accessed emergency services (emergency department, walk-in clinic, etc...) in the last year?

Yes No

Do you believe affordable health care is available to all citizens in the county?

Yes No I don't know

Do you receive services from a specialty care provider?

Yes No

If so, where do you drive for those services?

_____ Have you seen a dentist in the last year?

Yes No

What strengths do you identify in Linn County?

What do you identify as the biggest health issue facing Linn County?

What changes can be made to improve the problem?

Do you attend church services?

Yes No

Do you participate in any community organizations? If so, which?

Yes No _____

Are there activities for children to participate in after school and in the summer?

Yes No

How far do you have to travel to the nearest grocery store?

0-2 miles 2-5 miles 5-10 miles 10-30 miles 30+ miles

In general, how often do you skip meals?

Never Once a week 2-3 times a week Once a day Multiple times a day

How would you rate the recreation spaces in Linn County, on a scale from 1-10?

1 2 3 4 5 6 7 8 9 10

Do you have access to resources to help you exercise?

Yes No Not applicable

How often do you exercise?

Never Once a week 4-5 times a week 2-3 times a week Daily

Are the social services offered in Linn County adequate for the needs of your family?

Yes No Not applicable

If not, what services do you need that are not offered?

2.

Linn County service organizations survey

Office name:

What are your weekly office hours?

How many people do you serve every month?

Do you have the resources to serve more people each month? If so, how many more?

What are the main issues you have identified in your patron population?

What possible solutions do you propose to alleviate these problems?

What focus would you like to see the health department take to assist with these issues?

3.

Linn County health care professionals' survey

Office name:

What are your weekly office hours?

Are you taking new patients?

Do you accept Medicaid patients? (Adults and/or children)

How many of your patients would you deem regulars?

What is your current patient load (per day)?

What is your maximum patient capacity (how many people could you possibly see in a day)?

Linn County Health Department Conclusion:

By: Vanessa Lincoln, RN, MSN, County Health Officer

Per the data collection by Ms. Cooke and the data available at a county level via the Community Data Profiles, heart disease remains a priority concern for the county. Contributing factors were identified throughout the assessment and range from obesity as a primary source, to insufficient health care (whether it be primary, secondary or tertiary care) or as a secondary health condition (such as diabetes, high cholesterol or substance abuse). In general, a number of items contribute to the high percentages of heart disease in the county. The rural location and complications with access to care are a few identified by the general public, while health care providers recognize that clients are lacking to seek primary and secondary care and are presenting to the Emergency Department with acute symptoms. Regardless of the condition the statistics show that the Emergency Department is highly utilized within the county and heart disease and hypertension are among just a few of those conditions that have a high statistical significance in comparison with the state rate (www.health.mo.gov/data/mica/ASPsEmergencyRoom/header.php?cnty=115).

Taking notice of the importance of cardiac health, it is a priority of health care providers to identify solutions to the risk factors that have been identified. Ms. Cooke recognized that the county has a lack of access to outdoor exercise solutions and the built environment is not conducive to outdoor exercise, whether it is a safety concern or an unrealistic expectation (walking to work). Then one must ask, is it a true lack of resources or is it a lack in personal motivation? The Community Data Profiles indicate that Linn County has a statistically significant percentage compared to the state rate when comparing activity limitation. This could also be correlated with personal ability to engage in activities that would contribute to weight loss. Either way, obesity is a contributing factor to the high heart disease numbers seen in Linn County.

Behavioral health is another contributing factor that deserves recognition because of its statistical significance. The behavioral health profile for Linn County that was developed with support from Missouri Division of Behavioral Health and the Substance Abuse and Mental Health Service Administration is some of the most recent data available to this assessment with a date of June 2016. It provided some astonishing rates for the youth of the county indicating that the 30 day use for grades 6-12 for cigarettes, alcohol, marijuana, inhalants, OTC abuse and synthetic drugs in Linn County is higher than the overall state average in comparison. A print out of the Behavioral Health Profile is included at the end of this assessment. Early and continued use of these substances leads to a variety of health concerns, with heart disease being one of them.

Access to care cannot be overlooked in a rural community. While there is not a cardiac specialist practicing in the county, Pershing Hospital does partner with the Missouri Heart Center and cardiologists come to the county for patient visits. There are also numerous screening events available to county citizens that could lead to early detection and diagnosis, including Pershing Memorial Hospital's annual health fair in conjunction with hospital week. While these do not fit the needs of all county citizens, they are made available to the county, however there will always be travel associated with health care in a rural community despite any extra efforts.

Overall, heart disease and the many associated factors is the main problem threatening the health of many of Linn County's citizens. Combating the issue is going to take collaborative efforts amongst all providers, county officials, law enforcement and concerned citizens.

Appendices: 3

Stakeholders

Dr. Michael Crist, DO

Applegate Medical Associates

Marceline Community Health Center

Knowles Family Health Clinic

Meadville Medical Clinic

Community Medical Associates

Dr. William Copple, DDS

Linn County Health Department

Green Hills Community Action Agency

Senate Bill 40

Brookfield, Ministries

Food Pantry

Diapers and Devotion

Green Hills Women's Shelter

Appendices: 4

PERSHING HEALTH SYSTEM COMMUNITY HEALTH NEEDS ASSESSMENT COMMITTEE:

Heather Wood, BSW, Director of Social Services

Wendy Engberg, Medical Staff Coordinator

Lorna Woodside, Clinic Manager

Resources

1. County Health Rankings and Roadmaps. (2016). Linn (LN). Retrieved from
2. <http://www.countyhealthrankings.org/app/missouri/2015/rankings/linn/county/outcomes/overall/snapshot>
3. Missouri Department of Health and Human Services. (2016). MICA: Community Data Profiles. Retrieved from <http://health.mo.gov/data/CommunityDataProfiles/index.html>
4. Pennsylvania Land Trust Association. (2016). Economic Benefits of Trails. Retrieved from <http://conservationtools.org/guides/97-economic-benefits-of-trails>
5. U.S. Census Bureau. (2016). 2013 American Community Survey: Linn County, Missouri. Retrieved from <http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF>
6. U.S. Census Bureau. (2016). Missouri Quickfacts. Retrieved from <http://quickfacts.census.gov/qfd/states/29000.html>