# Linn County Community Health Needs Assessment

Conducted on behalf of:

General John J. Pershing Memorial Hospital

Pershing Health System

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# Executive Summary

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. To assess the needs of Linn County this assessment uses a number of secondary resources including; the U.S. Census Bureau, *County Health Rankings,* Missouri Department of Health and Senior Services, and the Missouri Hospital Association. Along with the secondary data analysis, input was gathered from healthcare service providers and important stakeholders in the community.

Secondary data analysis provided a picture of social demographics, economics, and contributing health factors for Linn County. According to the most recent U.S. Census Bureau data, Linn County has a total estimated population of 12,760 in 2010. This is a 7.8 percent decrease from 2000. Roughly 40 percent of the population falls between the ages of 35-64, which also represents the largest group of healthcare consumers. Future changes in the population mix will present unique challenges for Linn County.

Economic factors of a community often correlate with access to healthcare. In terms of economic status, Linn County is stable in relation to the rest of Missouri and the United States, but it does have a higher 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. Figure 4.2 shows that Linn County has about the same level of government employees as the state of Missouri and less than the national average. The county also has a higher level of individuals who are self-employed and conversely, has a slightly lower portion of private wage workers.

Linn County ranked 42nd out of 115 counties in overall health outcomes. Analysis of secondary data reveals several negative trending health factors. Linn County experiences higher than average rates in smoking, obesity, heart disease, and childhood poverty compared to the state of Missouri. These poor trends in healthcare factors ultimately lead to higher rates of premature death, a leading indicator of overall health in a community.

Discussions with local healthcare providers indicated that Linn County lacks in specialist providers, primary care providers, and preventative services. The lack of specialty 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.

In conclusion, the negative trends in healthcare factors will inevitably have a harmful effect on the county’s health outcomes in the future. The information provided in this assessment should be used as a tool for Pershing Memorial Hospital and 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.

INTRODUCTION

## Background & Purpose

The Community Health Needs Assessment (CHNA) is a unique document that will enable Pershing Health System and specifically Pershing Memorial Hospital (PMH) to better serve patients and the community. A student from the Health Management and Informatics Department at the University of Missouri-Columbia and Rockhurst University will conduct the assessment. The CHNA will identify the different health needs and outcomes that occur in Linn County. Cory Hernandez prepared a preliminary template for this assessment for Saint Luke’s Health System on June 2012. The original document was restructured to take account of the new guidelines imposed by the Internal Revenue Service and the particular health needs of Linn County.

 The community health needs assessment will achieve four distinct goals:

1. Maintain adherence to the Patient Protection and Affordable Care Act assessment requirements; and also Internal Revenue Service Section 501(r) mandates.
2. Identify vulnerable populations within Linn County and the most urgent health needs for those populations.
3. Look for collaborative solutions through services provided by Pershing Memorial Hospital and other community outreach programs.
4. To capture the opinion of community stakeholders including; independent healthcare professionals, Linn County Health Department officials, Pershing Memorial Hospital employees, and additional members of the community.

*Disclaimer:* The information and data for this assessment was collected from various sources including; U.S. Census Bureau, County Health Department, Missouri Hospital Association, Missouri Department of Health and Senior Services, Missouri Information for Community Assessment, and various other local and state agencies. The data collected through these agencies are by no means exhaustive and future research needs to be conducted in order to insure the most accurate and up to date representation of Linn County.

## Methodology

Pershing Memorial Hospital’s CHNA will be constructed using the following sources; U.S. Census Bureau, County Health Department, Missouri Hospital Association, Missouri Department of Health and Senior Services, Missouri Information for Community Assessment, and *County Health Rankings*. Data will also be obtained from Pershing Memorial Hospital, Pershing Health System, and partnering agencies.

In Linn County there exist several health related vulnerabilities and indicators that will be used to represent the status of the county as compared to national and state benchmarks. The CHNA will organize, construct, and accurately represent the comparisons in a manner that will allow the community to understand where their county is positioned in terms of health.

Key stakeholder discussions were undertaken to ascertain the health vulnerabilities and indicators of Linn County. Stakeholders were selected from the following groups; independent healthcare professionals, County Health Department officials, Pershing Memorial Hospital employees, and other members of the community.

## Community Health Needs Assessment

The Internal Revenue Service in conjunction with the Patient Protection and Affordable Care Act (ACA) has outlined several guidelines that dictate how the CHNA is to be organized as indicated below:

1. “…The CHNA must (1) take into account input from persons who represent the broad interests of the community served by the hospital facility, including those with special knowledge of or expertise in public health and (2) be made widely available to the public” (Internal Revenue Service, Section 501(r)(3)(B)).

2. “…May be based on current information collected by a public health agency or non-profit organizations and may be conducted together with one or more organizations, including related organizations” (Joint Committee on Taxation, *Technical Explanation of the Revenue Provisions of the “Reconciliation Act of 2010,” as amended, in combination with the “Patient Protection and Affordable Care Act”* (JCX-18-10), at 81, March 21, 2010).

3. “…requires hospital organizations to include in their annual information return (*i.e.*, Form 990) a description of how the organization is addressing the needs identified in each CHNA conducted under section 501(r)(3) and a description of any needs that are not being addressed, along with the reasons why the needs are not being addressed” (Internal Revenue Service, Section 6033(b)(15)(A)).

Pershing Memorial Hospital must meet all of the above criteria in order to remain in compliance with IRS and ACA mandates and maintain its not-for-profit status.

Pershing Memorial Hospital must also demonstrate community benefit in order to enjoy the not-for-profit designation, which it does through a variety of services and donations to the community. The opportunity to help those who need it most is something that PMH prides itself in and similarly holds stewardship as one of the system’s core values. The service that PMH provides as a part of community benefit is vital to the well being of underserved populations and include; community health improvement services, community health education, community based clinical services, healthcare support services, and financial in-kind contributions.

# I. Linn County Key Demographics

Using the U.S. Census Bureau and County Health Rankings websites’ key demographical information about Linn County has been compiled and is displayed below:

## Geography

Linn County is designated as the service area for the purposes of this community health needs assessment, due to the availability of data and because it is the county where the majority of patients for Pershing Memorial Hospital reside. Pershing Memorial Hospital is a private, not-for-profit critical access facility licensed for 25 beds by the State of Missouri and managed by Boone Hospital Center in Columbia. The hospital is a member of the Missouri Hospital Association, and Missouri Rural Health Association. The medical staff consists of 42 physicians/specialist and three helicopter ambulance services with flight time of approximately 30 minutes to Columbia and 35 minutes to Kansas City. Pershing also operates Community Medical Associates, a physician’s office practice with services 7 day/week, Applegate Medical Group, and the Meadville Medical Clinic.

##

|  |  |  |
| --- | --- | --- |
| **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 |

## Population

Population size, composition, and migration are linked to a host of variables that shift as social and economic conditions evolve. Linn County population trends reveal a decrease, which is opposite of the national trends and just over half of the percentage increase for the State of Missouri from 2000 to 2010.

### Population Change – Figure 1.1

*Source:* U.S. Census Bureau

##### Discussion

Using data obtained from the U.S. Census Bureau, we can see that the total population of Linn County has decreased by 7.8 percent or roughly (-993) people from 2000-2010 bringing the population down to 12,760. The population change for the entire state of Missouri on the other hand increased roughly 7 percent to 5,988,927 people.

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 by Age – Figure 1.2

*Source:* U.S. Census Bureau

##### Discussion

Figure 1.2 shows a break down by age for Linn County. Individuals between 35 and 64 years of age make up about 40 percent of Linn County’s population. The age of the population can determine the needs of the community and it helps determine what types of health care services will be required now and in the future. Also important to note, individuals above 54 years old represent 31 percent of the population and require different needs in terms of healthcare services. Older adults will need health care services to treat chronic conditions like heart disease, arthritis, diabetes, high blood pressure, and respiratory disease. According to the Census Bureau reports, 80 percent of Americans 54 and older have at least one chronic health condition. Heart disease, cancer, and stroke are leading causes of death for this group of individuals.

### Gender Differences (2010) – Figure 1.3

*Source:* U.S. Census Bureau

##### Discussion

Findings determine that women have higher healthcare service utilization and higher associated charges than men. Although the appropriateness of these differences is not determined, these findings have implications for the needs of health care services provided in the community. Linn County has a marginally higher level of females to males from age ranges of 15-64, also Linn County has a higher level of females compared to males from age ranges of 65+. Women have a higher overall life expectancy and will require more services to fulfill their health care needs over time.

### Ethnicity Breakdowns (2010) – Figure 1.4

*Source:* U.S. Census Bureau

##### Discussion

Ethnicity plays a role in assessing the health needs of the community. Cultural barriers may exist with individuals who do not speak English, which may keep them from seeking health care services due to health care professionals misunderstanding their needs. Figure 1.4 shows the distribution of ethnic groups within Linn County as well as the state of Missouri. According to the Census Bureau, the Hispanic population is expected to grow 45 percent from 2010 to 2030, and 60 percent from 2030 to 2050. It is imperative to understand and address cultural barriers for this growing population.

#####

### Religion (2010) – Figure 1.5

*Source*: The Association of Religion Data Archives

##### Discussion

Figure 1.5 represents the major religious stakeholders in Linn County. Numerous researchers have devoted significant attention to understanding the link between health and personal religious beliefs and practices, to determine whether a correlation exists. Some studies indicate that people who belong to a denominational group tend to have better health, as a result of social support provided by the community members.

### Educational level – Figure 1.5

*Source:* U.S. Census Bureau Age 25+

##### Discussion

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.

Linn County has a high school diploma rate of 89.1 percent, compared to the overall U.S. rate of 86.7 percent. Education is important in helping people understand the consequences of poor food choices, lack of exercise, or lifestyle habits that can be detrimental to one’s health.

## Employment Status

|  |  |  |  |
| --- | --- | --- | --- |
| **Civilian Labor Force**  | **Employment**  | **Unemployment**  | **Unemployment %** |
| 5,587 | 4,595 | 992 | 7.9% |

### Employment by Sector – Figure 1.6



*Source:* U.S. Census Bureau, United States Bureau of Labor and Statistics

##### Discussion

In 2011, Linn County’s civilian labor force had an unemployment rate of 10 percent. Although unemployment rates decreased significantly in 2012, Linn County’s unemployment rate remains just above the national average. In October 2012, Linn County’s unemployment rate was 7.9 percent compared to a U.S. unemployment rate of 7.8 percent. Figure 1.6 details the employment by sector.

### Income Levels – Figure 1.7

*Source:* U.S. Census Bureau

##### Discussion

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. Linn County is well below average in its mean family income of $51,231 compared to the U.S. mean family income of $82,446; also, there were still approximately 12.1 percent of the households living below the poverty level in 2010 compared to 10.1 for the U.S.

# II. Secondary Data Analysis

The following section details the analysis of data retrieved from secondary sources such as the Missouri Department of Health and Senior Services, various U.S. health surveys, and previous community health needs assessments or reports. A wide range of health indicators, outcomes, and measures were reviewed and compared to a number of standards and benchmarks in order to determine the overall quality of population health for Linn County.

## Health Measures

There are multiple mechanisms available to capture the health status of a population. The Office of Disease Prevention and Health Promotion (ODPHP), which manages the Healthy People 2020 initiative, has set forth several health indicators used to identify and measure a community’s wellbeing.

The following describes several measures that are available to provide information on a specific population’s health status.

Years of potential life lost (YPLL) is a summary measure indicating premature death. This formula provides an estimate of the total number of years that were not lived by an individual, and within the United States, is based on a limit of 75 years. The YPLL formula allows communities to target resources in high-risk areas and further investigate causes of death if trends become noted. It is illustrated in Figure 2.1.

Self-assessed health status is another useful tool for gauging the health status of a population. It measures and scores the individual perception of health. Ranking from excellent, very good, good, fair, or poor, self-addressed health status not only observes an individual population, but it also allows for easy comparison to other populations.

Mental and physical health perceptions extend the self-addressed health status by gathering data in separate questions in order to link quality of life measurement to the medical, mental, and behavioral health fields. Physically and mentally unhealthy days are a measurement of individuals whom in the past 30 day have rated their physical or mental health as not good.

Figures 2.2 and 2.3 provide additional details on Linn County’s self-assessed health status, physically healthy days, and mentally healthy days.

## Health Outcomes

### Mortality – Figure 2.1

Source: (2012) http://www.countyhealthrankings.org/missouri/linn/1

##### Discussion

Since mortality is one of the leading indicators in determining the health of a population, it will provide a basic measure for the health of Linn County. Premature death is represented by the years of potential life lost before age 75 (YPLL-75) and based off of rank from best to worst. Linn County ranks 33rd out of 111 counties in Missouri that reported this data.

### Morbidity Measures – Figure 2.2

|  |  |  |  |
| --- | --- | --- | --- |
|  | Linn County | Missouri | National Benchmark |
|  | **2011** | **2012** | **2012** | **2012** |
| **Poor or fair health[[1]](#footnote-1)** | 21% | 20% | 16% | 10% |
| **Poor physical health days[[2]](#footnote-2)** | 3.9 | 3.3 | 3.6 | 2.6 |
| **Low birth weight[[3]](#footnote-3)** | 7.4% | 7.2% | 8.1% | 6.0% |

##### Discussion

Self-reported health measures, such as the first three in the table above, are often used to determine the overall health of a population and have been shown to be very reliable indicators of current health.123  Linn County has experienced a slight decrease in all three of the indicators listed from 2011 to 2012, so the trend should be noted. In addition, the county is higher than the National Benchmark in every measure, but it remains lower than the state of Missouri in low infant birth weight.

Low birth weight, as defined by the World Health Organization, is the percent of live births in which the infant weighed less than 2,500 grams (5 lbs., 8 oz.). The measurement is representative of two factors: maternal exposure to health risks and an infant’s current and future morbidity, as well as premature mortality risk. In addition, there are numerous health consequences that coincide with low birth weight.4 Again, Linn County experienced a slight decrease for this measure. Currently, it is slightly below the Missouri average and above the National Benchmark. There may be some resources lacking that could be used to improve this figure.

For the overall morbidity measures, Linn County ranked 54th out of the 115 counties evaluated. The primary reason for a lower rating in this category can be attributed to a higher than average number of low birth weights. This indicator carries more weight since it is of more importance than the other indicators. The county ranks in the middle third (42 of 115) for health outcomes (mortality and morbidity) in the state of Missouri, so there is still room for improvement and an increase in focus on the above measures.

### Morbidity Measures – Figure 2.3

*Source:* http://www.countyhealthrankings.org/missouri/linn

DISCUSSION

Overall health is dependent upon both physical and mental well-being. By measuring the number of days an individual reports that their mental health is poor, represents an important facet of health-related quality of life. Identifying and understanding the health-related quality of life of the population helps the communities identify unmet health needs, assess health disparities among demographic and socioeconomic subpopulations, characterize the burden of disabilities and chronic diseases, and track population patterns and trends.[[4]](#footnote-4)

As seen in Figure 2.3, Linn County continues to be above the Missouri benchmark and well above the National Benchmark. With an increase from 2011 to 2012 there is a need to focus on this measure because it is still elevated above both the Missouri and U.S. benchmarks.

### Morbidity Measures – Figure 2.4

Source: http://www.countyhealthrankings.org/app/missouri/2012/measures/additional/62/data

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Livingston County** | **Grundy County** | **Linn County** | **Missouri** |
| **Mental Health Providers****per Person** | **14,123:0** | **10,083:0** | **12,655:0** | **9,561:1** |

DISCUSSION

Mental health providers include psychiatrists, clinical psychologists, clinical social workers, psychiatric nurse specialists, and marriage/family therapists who meet certain qualifications and certifications. According to Figure 2.4 Linn County is significantly lacking in mental health providers for their community compared to the state of Missouri. With an increased number of soldiers returning from the Middle East, a majority of these individuals will be in need of mental health treatment because approximately 18.5 percent of returning service members meets the criteria of either PTSD or depression.[[5]](#footnote-5)

## Health Factors

### Clinical Care – Figure 2.5

|  |  |  |  |
| --- | --- | --- | --- |
|  | Linn County | Missouri | National Benchmark |
|  | **2011** | **2012** | **2012** | **2012** |
| **Uninsured adults[[6]](#footnote-6)** | 18% | 15% | 15% | 11% |
| **Primary care providers[[7]](#footnote-7)** | 2531:1 | 3531:1 | 1015:1 | 631:1 |
| **Preventable hospital stays[[8]](#footnote-8)** | 105 | 108 | 75 | 49 |
| **Diabetic screening[[9]](#footnote-9)** | 71% | 80% | 84% | 89% |
| **Mammography screening[[10]](#footnote-10)** | 50% | 49% | 65% | 74% |

##### Discussion

The amount of uninsured adults in Linn County is equal in comparison to Missouri and higher than the National Benchmark. This indicates that the access to appropriate care can be an issue for the county’s residents. One surprise in Figure 2.5 is the low number of primary care providers, however the county is designated as a shortage area according to the Health Resources and Services Administration.[[11]](#footnote-11) When it comes to accessing care, having providers available to give care is just as important as having the financial resources to seek out the care. Providers must be available to deliver preventive care to the community, and if necessary, provide referrals to specialists.6,7

A higher number of preventable hospital stays indicates that the outpatient care may not be sufficient for the community. In addition, this indicates there may be an overuse of the hospital as a primary source of care.7 Diabetic screening, an indicator listed above, is the standard in assessing the management of diabetes; it provides an estimate of how well a patient is managing their condition and delaying or preventing complications.8  Evidence suggests appropriate mammography screening can reduce breast cancer mortality and is a widely endorsed quality of care measure.9

### Health Behaviors – Figure 2.6

|  |  |  |  |
| --- | --- | --- | --- |
|  | Linn County | Missouri | National Benchmark |
|  | **2011** | **2012** | **2012** | **2012** |
| **Adult Smoking [[12]](#footnote-12)** | 30% | 27% | 24% | 14% |
| **Adult obesity[[13]](#footnote-13)** | 31% | 37% | 31% | 25% |
| **Excessive drinking[[14]](#footnote-14)** | 17% | 17% | 17% | 8% |
| **Motor vehicle crash death rate[[15]](#footnote-15)** | 34 | 32 | 19 | 12 |
| **Sexually transmitted infections[[16]](#footnote-16)** | 223 | 239 | 438 | 84 |
| **Teen birth rate[[17]](#footnote-17)** | 49 | 47 | 44 | 22 |

##### Discussion

Each year thousands of premature deaths occur primarily due to smoking and it is identified as a contributing factor to multiple diseases such as cancer, cardiovascular disease, and respiratory conditions, to name a few. Alerting communities to the adverse effects of tobacco use can be valuable in assessing the needs for cessation programs or the effectiveness of existing ones.11

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

Excessive drinking is the third leading lifestyle-related cause of death in the U.S. annually. It is also a risk factor for a number of adverse health outcomes including; alcohol poisoning, hypertension, acute myocardial infarction, sexually transmitted infections, unintended pregnancy, fetal alcohol syndrome, sudden infant death syndrome, suicide, interpersonal violence, and motor vehicle crashes.16

Teen pregnancy is associated with poor prenatal care and pre-term delivery. Pregnant teens are more likely than older women to receive late or no prenatal care, have gestational hypertension and anemia, and achieve poor maternal weight gain. They are also more likely to have a pre-term delivery and low birth weight, increasing the risk of child developmental delay, illness, and mortality.18

### Health Behaviors – Figure 2.7

*Source*:[[18]](#footnote-18),[[19]](#footnote-19),[[20]](#footnote-20),[[21]](#footnote-21),[[22]](#footnote-22),[[23]](#footnote-23),[[24]](#footnote-24)

##### Discussion

Figure 2.7 compares statewide data from 2003 to 2010 for the risk factors that are known to be leading contributors to premature death. The findings from the data indicate that Linn County had a lower percentage of diabetes, but a higher percentage of smoking and lack of exercise compared to the averages for the state of Missouri. Improvements need to be made in these areas because Linn County is much higher than the state average.

*\*Social and economic factors, while certainly one of the determinants of health, were not reviewed here since they will be covered elsewhere in the report.*

### Health Behaviors – Figure 2.8



Source: Hospital Industry Data Institute discharge data, 2002-2009. Assessing the Health of Our Communities. Missouri Hospital Association, 2010.

##### Discussion

Preventable hospitalizations indicate a lack of high quality primary and preventive care, and may pinpoint areas in the health care system where potential improvements can be made.[[25]](#footnote-25) These hospitalizations may be avoided if clinicians effectively diagnose, treat, and educate patients; and, the patients are active participants in their care and adopt healthy behaviors.26 From 2005 to 2007 there was a steady decline in preventable hospitalizations indicating that primary and preventive care improved for Linn County. The chronic and acute conditions that are detailed in Figure 2.9 are those that can most likely be effectively managed in an outpatient or primary care setting. Thus, when the numbers in these measures trend upward or remain too high, the possibility may arise to identify opportunities that can prevent complications, reduce disease severity, control healthcare costs, and improve population health.[[26]](#footnote-26)

### Health Behaviors – Figure 2.9



Source: Hospital Industry Data Institute discharge data, 2004-2008. Assessing the Health of Our Communities, Missouri Hospital Association, 2010.

##### Discussion

Figure 2.9 provides a snapshot of the different Chronic and Acute conditions that factor into the number of preventable hospitalizations. The data set is generated using indicators from 2004 to 2008, and as you can see from the chart, Linn County has fluctuated both positively and negatively in several areas. The overall number in 2008 is very similar to that of 2004 and further data needs to be released in order to determine if this is a trend for Linn County.

### Health Behaviors – Figure 2.10

*Source:* http://www.clrsearch.com/Sitemap/Missouri/Linn\_County

DISCUSSION

The crime index offenses described in Figure 2.10 are a combined figure of seven individual crimes that make up the annual crime index per 1,000 residents. The seven crimes consist of murder, rape, robbery, assault, burglary, larceny, and motor vehicle theft. The crime index is a measure of the overall safety within a community and is a key issue because it impacts various other health factors and outcomes.[[27]](#footnote-27) Violence against others is a major public health problem and accounts for 18,000 lives each year in the U.S. Exposure to community violence is shown to increase stress, smoking, and can be associated with substance abuse and risky sexual behavior.[[28]](#footnote-28) As seen in Figure 2.10 we can see that Linn County’s crime index is well below both Missouri and U.S. indices, although assault and burglary are closer to the national average. While Linn County continues to be below the average, community safety is a major contributor to overall health and should be kept under close supervision.

## Adolescent, Teen, and Infant Health

### Figure 2.11

Percent of kindergarteners fully immunized of the 4:3:1:3:3 series by age two. Source: [www.kidscount.org](http://www.kidscount.org)

### Figure 2.12

Percentages of children 18 and under that are from low-income families and enrolled in the Missouri Children’s Health Insurance Program MO HealthNet for Kids. Source: [www.kidscount.org](http://www.kidscount.org)

### Figure 2.13

Percent of live births weighing under 5.5 lbs. Source: [www.kidscount.org](http://datacenter.kidscount.org/data/bystate/stateprofile.aspx?state=KS&cat=742&group=Category&loc=2865&dt=1%2c3%2c2%2c4)

### Figure 2.14

Number of deaths, under age 1, per 1,000 live births. Source: [www.kidscount.org](http://datacenter.kidscount.org/data/bystate/stateprofile.aspx?state=KS&cat=742&group=Category&loc=2865&dt=1%2c3%2c2%2c4)

### Figure 2.15

Number per 100,000 of 15- to 19-year-olds who died due to suicide, homicide, or motor vehicle accident. Source: [www.kidscount.org](http://datacenter.kidscount.org/data/bystate/stateprofile.aspx?state=KS&cat=742&group=Category&loc=2865&dt=1%2c3%2c2%2c4)

### Figure 2.16

Percentage of related children under age 18 who live in families with incomes below the U.S. poverty threshold. Source: [www.kidscount.org](http://datacenter.kidscount.org/data/bystate/stateprofile.aspx?state=KS&cat=742&group=Category&loc=2865&dt=1%2c3%2c2%2c4)

### Figure 2.17

Rate of child abuse victims from reports classified as "probable cause" indicating that child abuse or neglect has occurred. Source: [www.kidscount.org](http://datacenter.kidscount.org/data/bystate/stateprofile.aspx?state=KS&cat=742&group=Category&loc=2865&dt=1%2c3%2c2%2c4)

##### discussion

Figures 2.11 through 2.17 represent the population health for the youth of Linn County. Similar to many other health indicators and factors, it is important to consider inputs into children’s health to effectively target opportunities for improvement. Many conclusions could be inferred from the data above, but the purpose is to highlight areas of marked deficiencies or needed improvements. Linn County fares well in most of the reported measures, but a few points from the data include:

* The infant mortality rate for Linn County is higher than the overall rate for the state of Missouri.
* There are more children living within the U.S. poverty threshold in Linn County compared to the state of Missouri.
* The rate of child abuse and neglect is significantly higher for Linn County even though there has been a drop from 2007-2008.

*Note: The most current published data has been used to produce the charts and figures represented in this section.*

## Summary of Secondary Analysis

### Figure 2.18

Source: U.S. Department of Health and Human Services (2009) and http://health.mo.gov/data/mica/ASPsDeath/header.php?cnty=115. [http://www.communityhealth.hhs.gov](http://www.communityhealth.hhs.gov/MeasuresOfBirthAndDeath.aspx?GeogCD=20103&PeerStrat=45&state=Kansas&county=Leavenworth)

##### Discussion

Figure 2.18 shows the causes of death for Linn County in comparison to the U.S., Missouri, and the Healthy People 2020 target. The causes of death listed, while not avoidable, are certainly those that can potentially be manipulated by incorporating the proper policies and giving people the tools to effectively manage population health. The data show that coronary heart disease, unintentional injuries, vehicle accidents, and smoking are all at levels higher in relation to the U.S., Missouri, and the Healthy People 2020 target. Cause of death is a good measure of how effectively the needs of the community are being met and how well public officials and the healthcare industry are managing the topics covered throughout this section. The final recommendations and analysis will be discussed in a later section.

# III. 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 recently 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 100 Central Street in Chillicothe, Missouri and is part of the Saint Luke’s Health System headquartered in Kansas City, Missouri. HMC is a 25 bed critical access which provides a full range of services. These services include; [Cancer care](https://www.saintlukeshealthsystem.org/featured-service/cancer-services), [Diabetes centers](https://www.saintlukeshealthsystem.org/service/diabetes-centers), [Emergency services](https://www.saintlukeshealthsystem.org/service/hedrick-medical-center-emergency-services), [Gastroenterology](https://www.saintlukeshealthsystem.org/service/gastroenterology), [Heart & vascular](https://www.saintlukeshealthsystem.org/featured-service/heart-vascular) [,](https://www.saintlukeshealthsystem.org/featured-service/home-care-hospice) [Laboratory services](https://www.saintlukeshealthsystem.org/laboratory-services), [Maternity](https://www.saintlukeshealthsystem.org/featured-service/hedrick-medical-center-maternity-services), [Pain management,](https://www.saintlukeshealthsystem.org/service/pain-management) [Podiatry services (foot care)](https://www.saintlukeshealthsystem.org/service/hedrick-medical-center-podiatry-services-foot-care), [Radiology](https://www.saintlukeshealthsystem.org/service/hedrick-medical-center-radiology-services) [Short-term rehab (Skilled nursing care)](https://www.saintlukeshealthsystem.org/service/short-term-rehab-hedrick-medical-center), [Sleep disorders](https://www.saintlukeshealthsystem.org/service/brain-stroke/sleep-disorder-treatment), [Spiritual wellness](https://www.saintlukeshealthsystem.org/service/hedrick-medical-center-spiritual-wellness), [Surgical services](https://www.saintlukeshealthsystem.org/service/hedrick-medical-center-surgical-services), and [Wound care](https://www.saintlukeshealthsystem.org/service/hedrick-medical-center-wound-care-services).

### 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.

## Safety Net Clinics

### Linn County Health Department

Linn County Health Department is apart of the Northeast Missouri Rural Health Network. The following excerpts are taken directly from the Linn County Health Department Website and include the origin and mission of the organization:

#### Northeast Missouri Rural Health Network

…The Northeast Missouri Rural Health Network was initially funded, in part, by a three-year grant (#5D06RH00046-03) from the U.S. Department of Health and Human Services (US DHHS), Public Health Service (PHS), Health Resources and Services Administration (HRSA), Bureau of Primary Health Care, Office of Rural Health Policy. The project period was from September 30, 1997 to August 31, 2000. The Network is now in its self-sufficiency phase as a non-profit corporation and secured 501(c)(3) status in October of 2000…

#### Mission

…The Northeast Missouri Rural Health Network is dedicated to improving health services, promoting community health awareness, and facilitating continuing education for health care providers. A special emphasis is placed on meeting the needs of underserved populations. Its aim is to achieve improvements through collaboration, coordination, and sharing of services and resources among Network members. Its service area is the northeastern region of Missouri and includes the counties of Adair, Clark, Knox, Lewis, Linn, Macon, Putnam, Schuyler, Scotland, Shelby, and Sullivan…

## Additional Healthcare Institutions

### Appelgate Medical Group – Community Medical Associates – Meadville Medical Clinic

The Applegate Medical Group is located in Brookfield. The group includes doctors Alex and Grace Dymek, MD’s who specialize in internal medicine and pediatrics. The clinic is open 9-5pm Monday through Friday. The group also includes a nurse practitioner Karla Clubine who is available Monday through Wednesday. 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 10-8pm that 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.

### 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 Pioneer-Skilled Nursing of America

Life Care Center of Brookfield Ashbury Heights

Mc Larney Manner

# IV. Linn County Economic profile

The following section details the analysis of economic data retrieved from the Census Bureau. The economic welfare of individuals and community often correlates with health status. Thus, it is important to understand the economic status of Linn County. A wide range of economic characteristics were reviewed and compared to both the state of Missouri and national benchmarks in order to determine the economic profile of Linn County.

## Employment Statistics

### Employment Status – Figure 4.1

Employment Status by Percentage of Population

##### Discussion

Figure 4.1 describes the employment status of Linn County as it compares to both Missouri and national figures using the latest census data (2010). The figure shows that Linn County is below both state and national levels of employment. Related to the lower levels of employment, Linn County also has a higher percent of the population not in the labor force. While not as many individuals are employed, Linn County has a lower unemployment rate than both the state and national level. One other aspect of note is the high percentage of people not in labor force, which could be attributed to the incarcerated population within the county.

### Class of Worker – Figure 4.2

##### Discussion

The various types of worker classes present different opportunities for health insurance to individuals. Understanding the different types of worker classes in Linn County can provide a picture of the available health insurance options for the community. Figure 4.2 shows that Linn County has about the same level as the Missouri of government employees and less than the national average. The county also has a higher level of individuals who are self-employed and conversely, has a slightly lower portion of private wageworkers.

## Income Statistics

### Families Below Federal Poverty Level – Figure 4.3

|  |  |  |  |
| --- | --- | --- | --- |
|  | Linn County | Missouri | United States |
| **Percent of Families Below Federal Poverty Level** | 11.8% | 10% | 10.1% |

##### Discussion

Conversely to the median household income, families below the federal poverty level (FPL) often have less access to healthcare. Families that fall below the FPL must be provided with additional, more affordable services by the county to maintain a healthy status. Understanding the percentage of families that fall below the FPL gives insight as to how many additional services must be provided. According to Figure 4.3, Linn County has a higher percentage of families below the FPL than both the state of Missouri and the U.S. as a whole. The county must continue providing available services to those below the FPL.

## Local Factors Affecting Health

### Family And Social Support – Figure 4.4

*Source*: http://www.countyhealthrankings.org/missouri/linn

DISCUSSION

Family and social support is defined as the quality of relationships among family members and with friends, colleagues, and acquaintances, as well as community involvement. Research shows that poor family and social support is associated with increased morbidity and early mortality. By understanding the percentage of socially isolated individuals within a community, this may provide a more complete perspective on a community’s collective health profile, which could be due to a poor community network. Unfortunately, Linn County lies above the National Benchmark and the Missouri state average.

### Physical Environment – Figure 4.5

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Linn County** | **Missouri** | **National Benchmark** |
|  | **2010** | **2011** | **2010** | **2011** | **2010** | **2011** |
| **Air pollution-ozone days[[29]](#footnote-29)** | 0 | 0 | 1 | 7 | 0 | 0 |
| **Access to Healthy Foods[[30]](#footnote-30)** | 33% | 22% | 35% | 47% | 54% | 92% |
| **Access to Recreational Facilities[[31]](#footnote-31)** | N/A | 0 | N/A | 10 | N/A | 17 |

DISCUSSION

According to Figure 4.5, Linn County is below the National Benchmark for their access to healthy foods and access to recreational facilities. Each environmental relationship has its own direct impact on the health of a population. Through the presented measurements it shows not only that Linn County, but also the state of Missouri are below two of the three National Benchmarks in terms of creating a healthy environment. Although the air pollution-ozone days is equal to the National Benchmark, there is a significant difference being presented in terms of access to healthy food and recreational facilities.

Adequate environmental air quality is a prerequisite for good health and poor quality can be detrimental to the very young, the elderly, and those with chronic health conditions. In addition, ambient air pollution can have many substantial negative health consequences. These populations at risk include those with decreased lung function, chronic bronchitis, asthma, and other adverse pulmonary effects. Linn County is sitting below the Missouri average indicating good overall air quality, but this should always be an environmental factor to keep an eye on.

With obesity rates continuing to rise, there should be an interest in looking at local food and recreational facilities in the local environment. The variety, price, and availability of healthy foods in the local environment can play a role in whether those foods are consumed. In addition, access to recreational facilities can influence individuals’ and communities’ choices to engage in physical activity.[[32]](#footnote-32)

For the overall physical environment measures, Linn County ranks 71st out of 115 counties evaluated, and the measures are significantly distant from the National Benchmark. With the majority of the physical environment measures being altered by access to healthy foods and recreational facilities, there is a substantial need to place focus on increasing access to these areas.

# V. Expert Opinion of Healthcare Partners & Stakeholders in the Community

This section will discuss areas of weakness as identified by key health care service providers and Community stakeholders in Linn County. Key community stakeholders were contacted in-person and interviewed with regard to community health indicators deficiencies. The contact with hospital executives and representatives from community organizations include:

#### Linn County Medical Professionals and Administrators

Phil Hamilton, CEO, Pershing Health System

Gary Tandy, CFO, Pershing Health System

Lorna Woodside, CAPPM, Director of Clinics

Alex Dymek, M.D., Pershing Health System

Grace Dymek, M.D., Pershing Health System

Kelly Dudley FNP, Meadville Medical Clinic

Michael Crist, D.O., Independent Practitioner

Karla Clubine, FNP, Applegate Medical Group

Vanessa Lincoln, MSN, RN, County Health Department

Theresa Doss, RN, Brookfield School District

Mike Young, Director, Life Care Center

#### Community Residents and Representatives of Medically Underserved, Low-income, and Minority Populations

David Blakely Minister, Park Baptist Church

Joyce Rulon Community Volunteer, PHS

Gay Bell, Marceline Area Nutrition Program

Julia Neil Community Volunteer, PHS

O.J. Rodriguez Director, North Central YMCA

Karen Rojas Director , Senate Bill 40

Jamie Haston Case Manager, Senate Bill 40

Sabrina Fisher Case Manager, Senate Bill 40

Mike White Pastor, Brookfield Ministries

###

### Public Opinion

Primarily, information was gathered through in-person interviews of community stakeholders and medical practitioners that reside in Linn County. Discussion was focused on distinguishing the critical healthcare and public health needs within the Linn County area. Throughout these discussions, participants were either representing themselves, their particular organization, and/or the community in which they reside.

The interviews were conducted in an open format, with each individual being presented with an opportunity to voice their opinion or concerns regarding the health status of Linn County.

#### Interview Topics

* Health Outcomes
	+ Mortality and Morbidity
* Health Factors
	+ Smoking, Obesity, Physical inactivity, STI, Teen birth rate
* Clinical Care
	+ Uninsured, Primary care physicians, Diabetic screening
* Social and Economic Factors
	+ Unemployment, Children in poverty, Inadequate social support, Single parents
* Physical Environment
	+ Access to recreational facilities, Limited access to healthy foods
* Impact of Pershing Health System
	+ Addressing Needs
	+ Areas for collaboration
	+ Areas for improvement
* Community Concerns
	+ Changes in health behaviors
	+ Lack of mental health providers

Opinion was taken from many sources outside of Pershing Health System and includes; Public Health Officials, Independent Practitioners, and Government Employed Medical Professionals.

### Medically Underserved, Low-Income, and Minority Populations

Many of the individuals listed above are involved with organizations that focus on the medical underserved and indigent populations in Linn County. After the interview process with the key stakeholders and community residents, we discovered that there is agreement among the group with regard to the perceived health care needs for Linn County and particularly the medically underserved within Linn County. The access to health care was identified by most of the stakeholders and providers as being a major issue in Linn County. Lack of access was attributed to not having enough primary care physicians and lack of specialty care for both the insured and uninsured. Resources are over-extended when there is a need to get patients to a provider of services that is not available in Linn County. Lack of programs targeting preventive services and education for lifestyle choices and chronic illness, especially in relation to smoking and obesity was also an issue.

## Primary Needs Identified By The Linn County Community

### Adult Obesity

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.

### Adult Smoking

Each year thousands of premature deaths occur primarily due to smoking and it is identified as a contributing factor to multiple diseases such as cancer, cardiovascular disease, and respiratory conditions to name a few. Alerting communities to the adverse effects of tobacco use can be valuable in assessing the needs for cessation programs or the effectiveness of existing ones.11

### A Lack Of Access To Mental Health Providers And Services

As seen in Figure 2.3, Linn County continues to be above the Missouri benchmark and well above the National Benchmark in regard to the number of poor mental health days reported. With a slight increase from 2011 to 2012, there is a need to focus on this measure because it is still elevated above both the Missouri and U.S. benchmarks. Mental health providers include; psychiatrists, clinical psychologists, clinical social workers, psychiatric nurse specialists, and marriage/family therapists who meet certain qualifications and certifications. According to Figure 2.4 Linn County is significantly lacking in mental health providers for their community compared to the state of Missouri.

### Children In Poverty

The health of the youth population is vital to the future health of the overall population. Studies have shown that there exists a strong correlation between childhood obesity and adult obesity. There are also key indications that obesity is more prevalent among the lower socioeconomic population. Linn County has a higher percentage of families living at or below the federal poverty level as indicated in Figures 2.16 and 4.3. In order to secure the future health of the county, initiative must be taken to counteract the high amount of children in poverty.

### A Lack Of Primary Care Access And Physicians

Linn County like many other rural counties is facing a shortage in primary care services. Primary care shortages are usually seen in Missouri’s less populated counties where doctors, dentists, and other providers are likely to be few and far between. Since primary care providers often act as the first point of consultation for patients, primary care often plays a central role in the local community. Without any other resources, patients within the community often seek services from the hospital as a main source of primary care.

## Addressing Community Needs And Implementation Plan

Pershing Health System is either addressing or in the process of addressing every community health need listed above. The following plan includes initiatives that Pershing Memorial Hospital is engaged in to address the most urgent needs of the Linn County Community:

### Addressing Adult Obesity

Pershing Memorial Hospital employs a registered dietician that provides nutritional services currently to the patient population. A plan has been set forth to include general public use and access to these programs and will be facilitated by Barb Littrell. The program will include proper nutritional and dietary habits for healthy adults, as well as information for individuals that are diabetic or pre-diabetic. A partnership opportunity with the local school system will also be explored to determine the feasibility and impact of dietary programs in conjunction with existing school lunch policies.

### Addressing Adult Smoking

Smoking cessation programs approved through the American Lung Association are already developed and provided to employees of Pershing Health System. These programs will be tailored and expanded to suit the needs of community residents and be made available by Stephanie Milfred. The primary means for awareness regarding these programs will be radio advertising, newspaper print, and inclusion on the updated website.

### Increasing Access To Mental Health Providers And Services

The lack of mental health providers and services in rural settings including Linn County has been a detriment to community residents. One way that Pershing Health System will begin to alleviate this issue is through partnership with North Central Missouri Mental Health Center and revised screening procedures in the ER for patients presenting with mental health issues. Stephanie Milfred will be in charge of facilitating this partnership and developing the program for the assessment of mentally ill patients in Pershing Memorial Hospital.

### Helping Children In Poverty

Pershing Memorial Hospital provides residents that are eligible for financial assistance with the proper procedures and forms to begin to apply for aid. Previously the applications were only available on-site and residents would fill out the appropriate paperwork physically in the hospital. Pershing, as a result of this assessment, will begin to make those forms electronically available on the hospital website and individuals can complete them with a greater level of privacy, potentially alleviating some of the apprehension about applying for aid. Lorna Woodside is the Pershing Employee responsible for developing the electronic form for the website. Aside from providing medical care to indigent populations in Linn County, Pershing Memorial Hospital also provides community health improvement services, financial and in-kind contributions, and community benefit operations all totaling over $6,000 dollars for the year 2012. Contributions are given to the programs such as; Baker-Slater Scholarship fund, Marceline Parks and Recreation, Northwestern R-1 School District, North Central YMCA, and the Kearney High School Soccer team.

### A Lack Of Primary Care Access And Physicians

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.

### Medication Education

One concern among the external providers in the area as well as the employees of Pershing Memorial is that patients are not receiving the proper medication education. A proposal has been written to utilize existing resources from Boone County Hospital to develop programs that provide this education based upon the needs of the community. A growing number of patients are reliant upon medications for long-term chronic illnesses such as; asthma, diabetes, heart disease, high blood pressure, mental maladies. With a growing number of patients taking long-term medications, education about certain types of medications are vital to insuring the health and safety of newly diagnosed patients with long-term illnesses. Wendy Engbert will lead this program development for Pershing Health System and work as a liaison between Boone County Hospital and Pershing Memorial Hospital.

# VI. Conclusion

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.

The social demographics of Linn County are a precursor to several future healthcare needs of the community. Any cultural barriers to providing healthcare for non-English speaking residents will need to be addressed. The Hispanic population in Linn County is expected to increase and will further stress any cultural barriers that presently exist. Thus, Pershing Memorial Hospital should encourage the employment of Spanish speaking staff in their hospital inpatient, outpatient, and billing offices in order to support the expected increase in the Hispanic population within the community. The Pershing Health System as well as Pershing Memorial Hospital already has policies and procedures in place to facilitate non-English speaking patients and patient families, but expansion into bilingual staff may be something to consider for the future.

Also indicated by social determinants of Linn County is a positive outlook on unemployment rates, which is vital to the community health status. While unemployment rates for Linn County remain slightly higher than national 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 higher 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. 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.

Linn County ranks 42nd in health outcomes according to *County Health Rankings* and 102nd in health factors for the state of Missouri. Negative trends in adult obesity, smoking, and physical inactivity are all higher than Missouri and National averages and contribute to an increasing premature death rate for the county. Also contributing to the premature death rate are higher rates of adult diabetes, motor vehicle crashes, and sexually transmitted diseases. Community-based prevention programs that address excessive smoking and obesity in the community are warranted.

The health of youth in Linn County will have a significant impact on healthcare measurements in the future. Measurements including low birth weight, child abuse, and neglect are improving but there is still a great deal of work to be done. Since obese children are at a high risk of becoming obese adults, Pershing Memorial Hospital should continue to pursue physician specialties that would increase the amount of help offered in the county. Healthy eating and exercise within the schools also plays a large factor in addressing obesity and obesity related health conditions, so maybe in the future a partnership with the school to create healthy programs could be possible. They could consider implementing multi-component interventions that target both nutrition and physical activity. Some ideas include; providing nutrition education, leading aerobic and strength training classes, supplying self-help materials, and distributing pedometers to students.

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 Figure 2.5. 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 departments.

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.

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.

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1. The percent of adult respondents who reported their health “fair” or “poor” when asked: “In general would you say your health is excellent, very good, good, fair, or poor?”

2 The number of adults that responded “not good” when asked: ““Thinking about your physical health, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good?”

*3Source:* http://www.countyhealthrankings.org/#app/missouri/2012/linn/county/1/overall [↑](#footnote-ref-1)
2. [↑](#footnote-ref-2)
3. [↑](#footnote-ref-3)
4. Moriarty D, Zack M, Kobau R. The Centers for Disease Control and Prevention's Healthy Days Measures--population tracking of perceived physical and mental health over time. *Health Qual Life Outcomes.* 2003;1:37 [↑](#footnote-ref-4)
5. Source: http://www.rand.org/pubs/research\_briefs/RB9336/index1.html [↑](#footnote-ref-5)
6. Estimated percent of the population under age 65 with no health insurance

Source: http://www.countyhealthrankings.org/#app/missouri/2012/linn/county/1/overall [↑](#footnote-ref-6)
7. Primary care providers include; practicing physicians specializing in general practice medicine, family medicine, internal medicine, pediatrics, and obstetrics/gynecology. The measure represents the population per one provider.

 Source: http://www.countyhealthrankings.org/#app/missouri/2012/linn/county/1/overall [↑](#footnote-ref-7)
8. Preventable hospital stays are measured as the hospital discharge rate for ambulatory care-sensitive conditions per 1,000 Medicare enrollees. Source: http://www.countyhealthrankings.org/#app/missouri/2012/linn/county/1/overall [↑](#footnote-ref-8)
9. Diabetic screening is calculated as the percent of diabetic Medicare patients whose blood sugar control was screened in the past year using a test of their glycated hemoglobin (HbA1c) levels. Source: http://www.countyhealthrankings.org/#app/missouri/2012/linn/county/1/overall [↑](#footnote-ref-9)
10. This measure represents the percent of female Medicare enrollees age 67-69 that had at least one mammogram over a two-year period.

 Source: http://www.countyhealthrankings.org/#app/missouri/2012/linn/county/1/overall [↑](#footnote-ref-10)
11. Source: http://muafind.hrsa.gov/index.aspx [↑](#footnote-ref-11)
12. The estimated percent of the adult population that currently smokes every day or “most days” and has smoked at least 100 cigarettes in their lifetime. Source: http://www.countyhealthrankings.org/#app/missouri/2012/linn/county/1/overall [↑](#footnote-ref-12)
13. The adult obesity measure represents the percent of the adult population (age 20 and older) that has a body mass index (BMI) greater than or equal to 30 kg/m2. Source: http://www.countyhealthrankings.org/#app/missouri/2012/linn/county/1/overall [↑](#footnote-ref-13)
14. The excessive drinking measure reflects the percent of the adult population that reports either binge drinking, defined as consuming more than 4 (women) or 5 (men) alcoholic beverages on a single occasion in the past 30 days, or heavy drinking, defined as drinking more than 1 (women) or 2 (men) drinks per day on average.

Source: http://www.countyhealthrankings.org/#app/missouri/2012/linn/county/1/overall [↑](#footnote-ref-14)
15. Motor vehicle crash deaths are measured as the crude mortality rate per 100,000 population due to on- or off-road accidents involving a motor vehicle. Source: http://www.countyhealthrankings.org/#app/missouri/2012/linn/county/1/overall [↑](#footnote-ref-15)
16. The Sexually Transmitted Infection (STI) rate is measured as chlamydia incidence (the number of new cases reported) per 100,000 population. Source: http://www.countyhealthrankings.org/#app/missouri/2012/linn/county/1/overall [↑](#footnote-ref-16)
17. Teen births are reported as the number of births per 1,000 female population, ages 15-19.

Source: http://www.countyhealthrankings.org/#app/missouri/2012/linn/county/1/overall [↑](#footnote-ref-17)
18. Adults that report having diabetes. Source: *http://healthindicators.gov/Indicators/Diabetes-percent\_125/National\_0/Profile/Data* [↑](#footnote-ref-18)
19. Adults that report fewer than 5 servings of fruits/vegetables per day. *Source: http://healthindicators.gov/Indicators/Few-fruitsvegetables-percent\_121/National\_0/Profile/Data* [↑](#footnote-ref-19)
20. Adults that report high blood pressure. Source: *http://healthindicators.gov/Indicators/High-blood-pressure-percent\_123/National\_0/Profile/Data* [↑](#footnote-ref-20)
21. Adults18 years and over that report BMI >= 30. Source: *http://healthindicators.gov/Indicators/Obesity-adult-percent\_15/National\_0/Profile/Data*. [↑](#footnote-ref-21)
22. Adults 18 years and over that report currently smoking cigarettes. Source: *http://healthindicators.gov/Indicators/Smoking-adults---percent\_13/National\_0/Profile/Data* [↑](#footnote-ref-22)
23. Adults that report no leisure-time exercise in past month. Source: *http://healthindicators.gov/Indicators/No-exercise-percent\_120/Profile* [↑](#footnote-ref-23)
24. Adults that report excessive drinking Source: *http://healthindicators.gov/Indicators/Alcohol-Excessive-drinking-percent\_150/Profile* [↑](#footnote-ref-24)
25. Kruzikas, D. T., Jiang, H. J., Remus, D., Barrett, M., Coffey, R., & Andrews, R. (2004). *Preventable hospitalizations: A window into primary and preventive care, 2000*. Rockville, MD: U.S. Department of Health and Human Services, Agency for Healthcare Research and Quality. [↑](#footnote-ref-25)
26. Assessing the Health of Our Communities. Missouri Hospital Association, 2010. [↑](#footnote-ref-26)
27. Health Factors and outcomes include; low birth weight, diet and exercise, and family and social support.
*Source:* http://www.countyhealthrankings.org/health-factors/community-safety [↑](#footnote-ref-27)
28. *Source:* http://www.countyhealthrankings.org/health-factors/community-safety [↑](#footnote-ref-28)
29. Number of days in 2007 that air quality was unhealthy due to ozone.

*Source:* http://www.countyhealthrankings.org/missouri/linn/29 [↑](#footnote-ref-29)
30. Access to healthy foods is measured as the percent of zip codes in a county with a healthy food outlet.

*Source:* http://www.countyhealthrankings.org/missouri/linn/30 [↑](#footnote-ref-30)
31. Number of recreational facilities per 100,000 population in a given county

*Source*: http://www.countyhealthrankings.org/missouri/linn/68 [↑](#footnote-ref-31)
32. *Source:* http://www.countyhealthrankings.org/health-factors/built-environment [↑](#footnote-ref-32)