

2013

# A COMMUNITY HEALTH NEEDS ASSESSMENT OF PUTNAM COUNTY, IN



Putnam County Hospital  
Bowen Research Center

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## INTRODUCTION

### History

The geographic area that is contemporarily known as Putnam County, IN was purchased through treaties in 1809 and 1818. In 1821, a general assembly approved an act that officially formulated Putnam County. The name “Putnam” was designated to the county after the late General Israel Putnam. Greencastle was selected and currently still is the location of the county seat.<sup>1</sup>

In 1908, 26 Putnam County female citizens started what would be the founding of a hospital to serve their family and friends. The hospital would offer solutions to their ever changing healthcare needs, and would bring technologies only previously offered in larger cities to their rural community. Prior to the hospital opening, Putnam County residents depended on the house calls of local physicians to treat their ailments. Minor operations could be performed in the doctor’s office, but if major surgery was required, the patient had to be transported to Indianapolis.

In 1924, the hospital opened its doors to begin offering services for the members of Putnam County. During the 55 years at the original location, the Hospital served thousands of patients. The Hospital expanded and was moved from the original location on Shadowlawn Avenue to the current site at 1542 South Bloomington Street, in 1979.

Today, over 100 years later, Putnam County Hospital still serves the same mission and standards set by its founders: to provide exceptional healthcare to our friends and family in Putnam County, by continuing to provide a number of outpatient and inpatient services as a Critical Access Hospital in Greencastle, Indiana.<sup>2</sup>

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<sup>1</sup> Putnam County . *Hisotry of Puntam County Indiana (Home)* . Retrieved 2013, from Putnam County, Indiana's county website : <http://www.co.putnam.in.us/#>

<sup>2</sup> Putnam County Hospital . *History* . Retrieved 2013, from Putnam County Hospital's website : <http://www.pchosp.org/history/>

## Mission

The mission of Putnam County Hospital (PCH) is:

- To establish and maintain a hospital in the county of Putnam and State of Indiana formed for “the treatment of sick, wounded and injured persons, and for the care of the infirm...” Also, to establish facilities which include inpatient beds and medical services, to provide diagnosis and treatment for patients as well as associated services, such as, but not limited to, outpatient care, long term care and home care. To deliver services to patients and customers in a high quality, efficient, appropriate and caring manner.
- To carry on any educational activities related to rendering care of the sick and injured, or to the promotion of health that is in the opinion of the Board of Trustees justified by the facilities, personnel, funds and other requirements, which are, or can be, made available.
- To participate, so far as circumstances may warrant, in any activity designed and carried on to promote the general health of the county. (Putnam County Hospital , 2013)

## Vision

To continuously improve the quality of services offered, expand professional knowledge, and exceed the expectations of our customers. This vision is endlessly being implemented by the efforts of The Continuous Quality Improvement Program of Putnam County Hospital. (Putnam County Hospital , 2013)

## Values

The values of Putnam County Hospital are:

- Improving the health care status of individuals in the Hospital’s service area.
- Respectful, courteous, professional inter-actions with all customers.
- Offering the highest quality services possible with efficient use of available resources.
- Pride, ownership, and enthusiasm in all endeavors. (Putnam County Hospital , 2013)

## Community Health and Services

PCH offers various services for the community. Some of these services include support groups, annual health fairs, and educational outreach. PCH also offers emotional and spiritual support, as well as, an emphasis on women health. Through support groups, the hospital offers support for Alzheimer's caregivers, cancer recipients and their family members, and provides resources for other chronic disease recipients. Through annual health fairs, PCH offers cancer screenings, diabetic screenings, exercise assessments, and education on healthy eating habits and stress management. Lastly, pertaining to educational outreach, the hospital provides quarterly sessions on diabetic education. Furthermore, through annual fairs and other efforts, the hospital provides educational sessions for local school staffs, nutrition, women and children health, and chronic diseases such as cancer.

## Description of Putnam County

Putnam County is a 480.53 square miles area in western central Indiana (National Association of Counties, 2010). PCH is a designated critical access hospital. According to the 2010 US Census Report, Putnam County is considered as a metropolitan county. The following table depicts the population characteristics of Putnam County, along with a side by side comparison of Indiana and the United States:

Table 1: 2007-2011 Population Characteristics of Putnam County, Indiana, and the U.S.

	Putnam County	Indiana	U.S.
<b>Total Population</b>	38,082	6,454,254	306,603,772
<b>Demographics</b>			
Gender			
Male	53.0%	49.2%	49.2%
Female	47.0%	50.8%	50.8%
Race			
White	93.8%	85.0%	74.1%
Black/African American	4.0%	8.9%	12.5%
American Indian/Alaskan Native	0.4%	0.2%	0.8%
Asian	0.8%	1.5%	4.7%
Native Hawaiian/Other Pacific Islander	0% (18)	0% (1,233)	0.2%
Other	1.0%	4.3%	7.7%
Ethnicity			
Hispanic or Latino	1.6%	5.8%	16.1%
Age			
< 5 years	5.1%	6.7%	6.6%
5-19 years	20.7%	21.3%	20.5%
20-64 years	61.0%	59.2%	60.0%
65 years or older	13.4%	12.8%	12.9%
Median Age (years)	37.9	36.8	37.0
<b>Socioeconomic Indicators</b>			
Unemployed ( $\geq 16$ years)	8.1%	9.0%	8.7%
Median Household Income	\$50,165	\$48,393	\$52,762
Income Below Poverty Level in the Past 12 Months ( $\geq 18$ years)	10.3%	12.2%	12.5%
<b>Educational Attainment</b>			
High School graduate or higher	86.0%	86.6%	85.4%
<b>Housing</b>			
Total Housing Units	14,682	2,788,797	131,034,946
Occupied Housing Units	84.7% (12,433)	88.7% (2,472,870)	87.6% (114,761,359)
Owner-Occupied	80.0%	71.1%	66.1%
Renter-Occupied	20.0%	28.9%	33.9%

Source: U.S. Census Bureau ACS 5-Year Estimates (United States Census Bureau, 2012)

## Purpose

The purpose of this report is to summarize the health status of Putnam County residents through reliable sources and appropriate indicators of health and disease outcomes, identify unmet health needs, and inform PCH's staff and board. In essence, the information that this report provides should give an insight on current health needs of Putnam County, and inform appropriate personnel who wish to address the identified health needs.

## Partnerships

Putnam County Hospital partnered with both the Bowen Research Center and DePauw University. A student hired as a summer intern through DePauw's "Community Building Internships Program", operated by the Center For Student Engagement at DePauw, was in charge of coordinating the community health needs assessment (CHNA) with assistance from the Bowen Research Center.

## METHODS

### Design

A mixture of two main methods was used to acquire data for Putnam County in order to conduct this CHNA. Firstly, secondary data was extracted from reliable, publicly available sources. These secondary data were used to depict population characteristics, health status, and mortality characteristics. Secondly, key informant interviews were conducted with community stakeholders to further understand the health needs of the community.

## Data Sources and Collection

### Quantitative

Putnam County population data were acquired from the United States Census Bureau American Community Survey. To increase precision, five year estimates were applied (2007-2011). Data pertaining to hospital service area (zip codes and tables) were obtained from the Indiana Hospital Association. Specifically, data found in the tables are from their 2009-2012 Patient In-Migration and Discharge studies. Health indicators and chronic disease burden data were obtained from multiple sources. Majority of health indicators data were extracted from the Center for Disease Control and Prevention's (CDC) Behavioral Risk Factor Surveillance Systems (BRFSS). For a better sample size, data from 2008-2010 was used and weighted based on recommended BRFSS weighting methodology. CDC BRFSS 2011 data was omitted due to a recent change in their collection methodology. A complete list of BRFSS variable definitions may be found in Appendix A.

Several indicators were obtained from County Health Rankings & Roadmaps, a collaborative program operated by the Robert Wood Johnson Foundation and the University of Wisconsin Population Health Institute. County Health Rankings & Roadmaps provided county and state level data, as well as, national benchmarks. County and state level cancer incidence and mortality counts (2006-2010), as well as, natality indicators were both extracted from the Indiana State Department of Health. Mortality data were obtained, by ICD-10 codes, from CDC Wonder for the top eleven leading causes of death (counts and rates) in Putnam County, Indiana, and the United States from 2008-2010. The ICD-10 codes corresponding to each cause of death may be found in Appendix B.

### Qualitative

PCH provided a list of community stakeholders, to be key informants in this assessment. These community stakeholders held occupations in facilities and organizations that were thought could provide a reliable perspective on unmet health needs of Putnam County residents. Due to time constraints, ten key informants were contacted, however, nine were interviewed. Only one potential key informant was unreachable. All interviews were conducted in person over a two week period. All interviewees consented to being recorded and all the interviews were recorded. Simply put, these key informants were

called upon for their insight due to their continuous work in the community and their constant contact with patients and clients that comprise of Putnam County residents in need of services (usually health related). A list of individuals interviewed may be found in Appendix C and a list of key informant interview questions may be found in Appendix D.

### **Data Analysis**

Data were organized into frequency tables and graphical representations to summarize findings. CDC BRFSS statistical analysis was pooled and weighted with IBM SPSS Statistics and primarily analyzed by Timothy MacFarlane at the Bowen Research Center. Finally, a summary of needs was established based on perceived priority of quantitative and qualitative data.

## **RESULTS**

### **Hospital Service Area**

A hospital service area is defined as a collection of ZIP codes of where the hospital receives most of their patients (The Dartmouth Institute for Health Policy and Clinical Practice, 2013). Information within this report was obtained from the Indiana Hospital Association (IHA) as aforementioned.

According to the IHA, the ZIP codes that consist of Putnam County are 46105, 46120, 46121, 46128, 46135, 46170, 46171, 46172, and 46175. Furthermore, as the following tables will depict, according to the IHA's In-Migration and Discharge studies from 2009-2012, it seems that after Putnam County, the second county that PCH receives most of their patients from is Owen County. Also listed on the tables are other counties that PCH frequently received patients from.

Table 2a: 2009-2012 Inpatient In-Migration Discharge Records and Patient Origination

Year	2009	2010	2011	2012
<b>Total Discharges for PCH</b>	1,322	1,156	1,151	611
<b>Patient Origination (County)</b>				
Putnam	81%	78.8%	83.7%	85.9%
Owen	9.4%	11.9%	8.8%	7.4%
Clay	2%	2.9%	1.6%	1.1%
Montgomery	3%	2.2%	2.3%	0.5%
Hendricks	1.1%	0.9%	0.8%	1.3%
Other Counties	2.7%	2.9%	2.2%	3.5%
Other States	0.8%	0.4%	0.6%	0.3%

Table 2b: 2009-2012 Outpatient In-Migration Discharge Records and Patient Origination

Year	2009	2010	2011	2012
<b>Total Discharges for PCH</b>	14,095	13,393	7,697	12,730
<b>Patient Origination (County)</b>				
Putnam	77.6%	79.4%	79%	79%
Owen	9.4%	9.2%	9%	9.4%
Clay	2.6%	2.4%	2.3%	2.3%
Marion	1.3%	1.4%	1.3%	1.4%
Hendricks	1.4%	1.2%	1.4%	1.1%
Montgomery	1.2%	1.2%	1.1%	1%
Parke	1.2%	0.9%	1%	0.9%
Other Counties	3.1%	2.6%	2.8%	2.9%
Surrounding States (IL, KY, MI, OH)	0.7%	0.5%	1%	0.8%
Other States	1.5%	1.2%	1.1%	1.2%

Source: Indiana Hospital Association: 2009-2012 Patient In-Migration and Discharge Study for Putnam County Hospital

## Special Populations

Putnam County Hospital also provides healthcare services to two specific special populations living within the service area:

1. **DePauw University** – DePauw University is a liberal arts college located in Greencastle, IN. The institution has been around for 175 years, previously known as Indiana Asbury University, the university currently houses around 2,400 students and a couple hundred faculty members. DePauw is considered a special population because while the school does have its own health service center, emergencies and other major traumas are directed to Putnam County Hospital. The following table presents numbers of students and faculty members currently reported by the institution's website:<sup>3</sup>

STUDENTS	
Total Enrollment	2,390
Men	44%
Women	56%
FACULTY AND ADMINISTRATION	
Total Faculty	234

2. **Putnamville Correctional Facility** – Putnamville Correctional Facility (PCF) is a medium security level penitentiary located in Greencastle, IN. Established in 1914 and originally known as the Indiana State Farm, PCF is currently an accredited facility that reports an average daily population of around 2,600. The current superintendent of the facility is Stan Knight. Similarly to DePauw, PCF is considered a special population due to proximity; in other words, PCH is the closest hospital to PCF. In addition, even with the healthcare services that PCH provides for PCF, according to the Health Resources and Services Administration (2013), PCF is currently designated as a health professional shortage area.<sup>4</sup>

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<sup>3</sup> DePauw University . (2013). *About DePauw*. Retrieved 2013, from Quick Facts : <http://www.depauw.edu/about/quick-facts/>

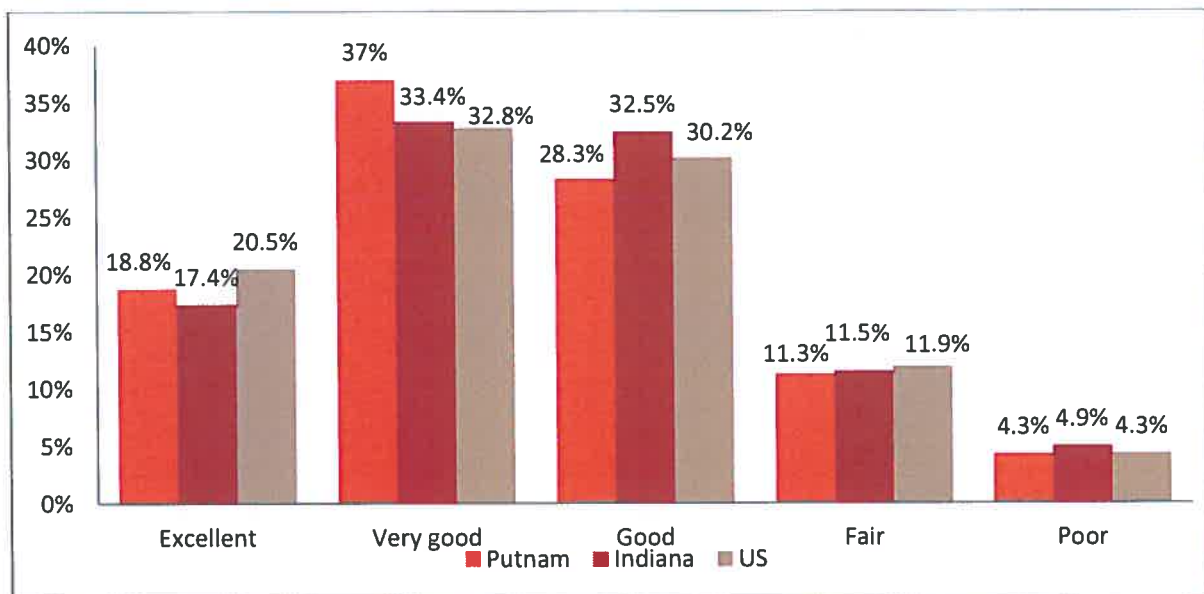
<sup>4</sup> Indiana Department of Correctional. (2013). *Facility Overview/ Facility History*. Retrieved 2013, from Putnamville Correctional Facility's IDOC website : <http://www.in.gov/idoc/2403.htm>

## General Health Indicators

### Perception of General Health

According to the CDC BRFSS, a weighted average of 18.8% of Putnam County residents reported that they perceived their overall health to be excellent. 37% of the same residents perceived their overall health as very good, 28.3% reported it to be simply good, 11.3% deemed it fair, and 4.3% of Putnam County residents reported that their general health was poor. The following graphical representation illustrates these percentages along with a comparison of state-wide and national responses to how residents perceived their general health.

Figure 1: Reported General Health Levels in Putnam County, Indiana, and the U.S. for 2008-2010

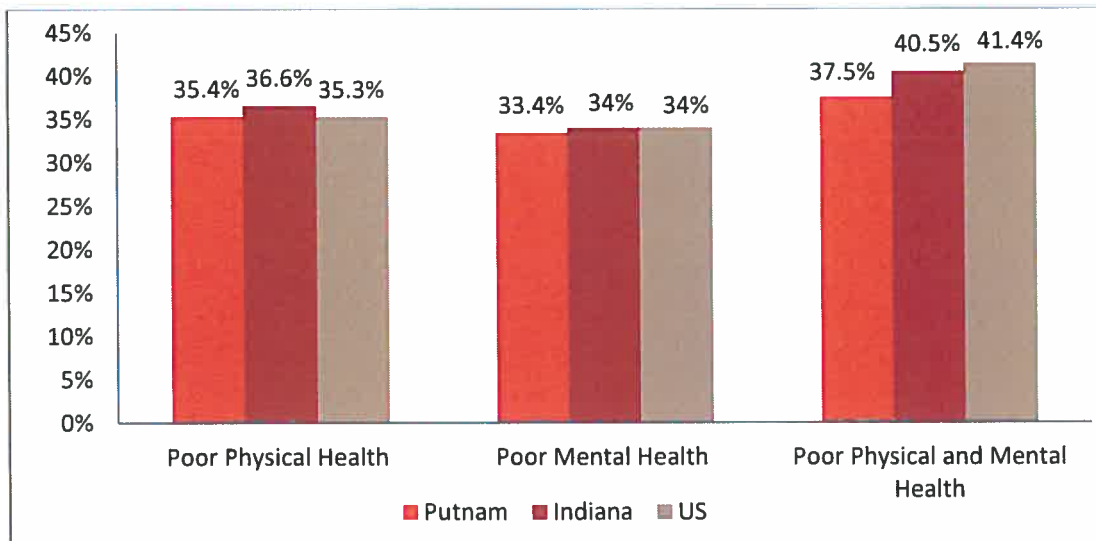


Note: Data collected from CDC BRFSS Annual Survey Data (2008-2010)

### Perception of Physical and Mental Health

Similarly, the following graph portrays percentages of Putnam County, Indiana, and U.S. residents who reported that their physical or mental health was not good, and/or poor physical and mental health prevented them from performing a daily activity in the past 30 days.

Figure 2: Reported poor physical and mental health from Putnam County, Indiana, and U.S. Residents in the past 30 days.

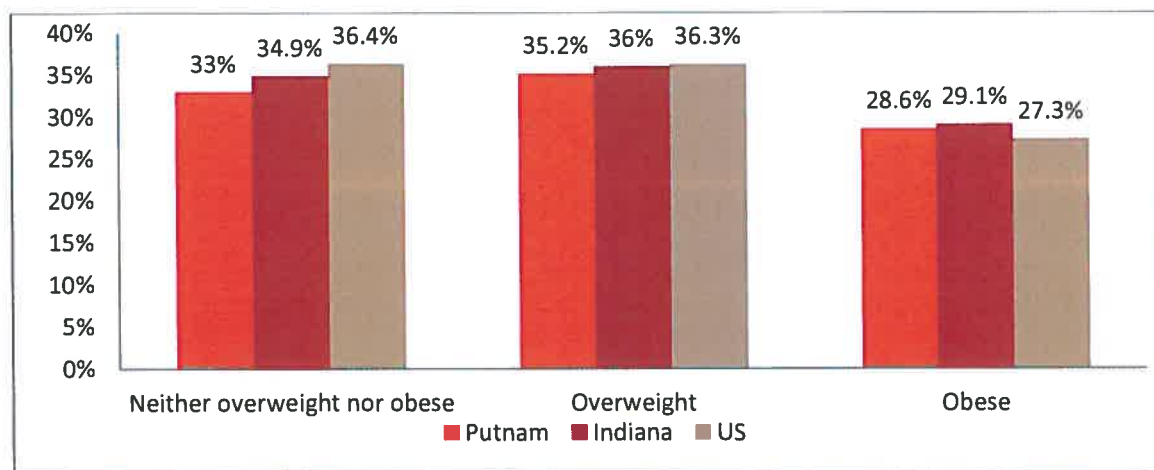


Note: Data extracted from CDC BRFSS Annual Survey Data (2008-2010)

### Weight Status

Body mass index (BMI) is used by the BRFSS to determine overweight and obesity status in adults. BMI is calculated by dividing an individual's weight (in kilograms) by their height (in meters). Results of this calculation are then compared to a benchmark that determines if the individual is standard weight, overweight, or obese. The following graphical representation depicts percentages of Putnam County, Indiana, and U.S. residents who were determined to be overweight, obese, or neither according to BMIs.

Figure 3: Weight Status by Body Mass Index of adults in Putnam County, Indiana, and U.S. for 2008-2010



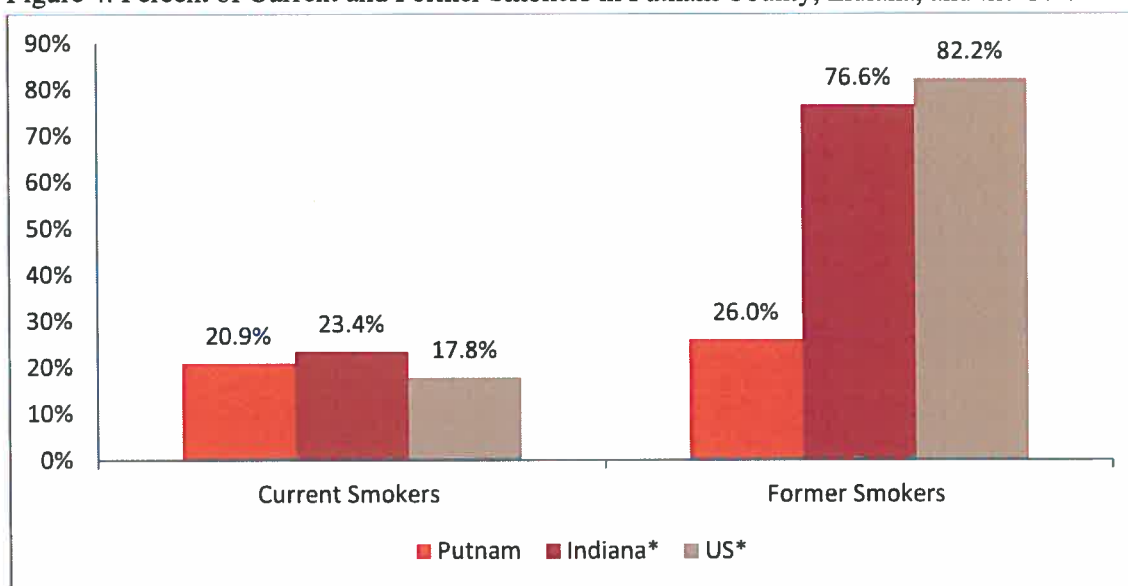
Note: Data Extracted From CDC BRFSS Annual Survey Data (2008-2010)

## Health Behaviors

### Smoking Prevalence

The following figure displays current and former smokers in Putnam County, Indiana, and the U.S. According to the CDC BRFSS, during the period of 2008-2010, Putnam County (20.9%) had a slightly less percentage of current smokers compared to the state of Indiana (23.4%), but slightly higher compared to the national average (17.8%). When it came to former smokers, Putnam County had a drastically lower average than both Indiana and the U.S.

Figure 4: Percent of Current and Former Smokers in Putnam County, Indiana, and the U.S.

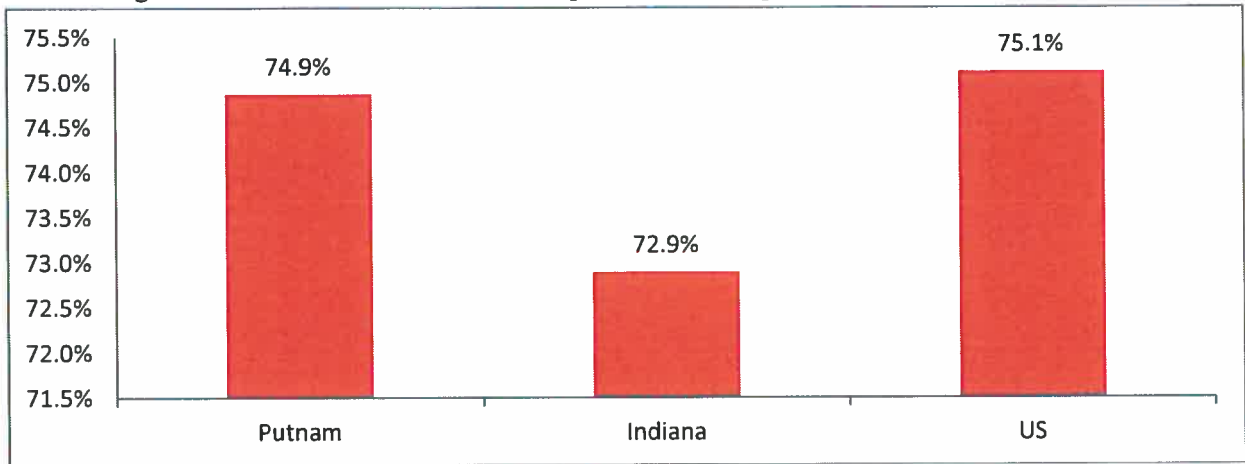


Note: Data Extracted from the CDC BRFSS Annual Survey Data (2008-2010)

### Exercise

In the case of exercise, on average, 74.9% of Putnam County residents reported exercising at least once in the 30 days before taking the BRFSS survey during the period of 2008-2010. This percentage was slightly higher than the average in Indiana (72.9%), and closely less than the national average of 75.1%.

Figure 5: Percent of individuals who reported exercising at least once in 30 days

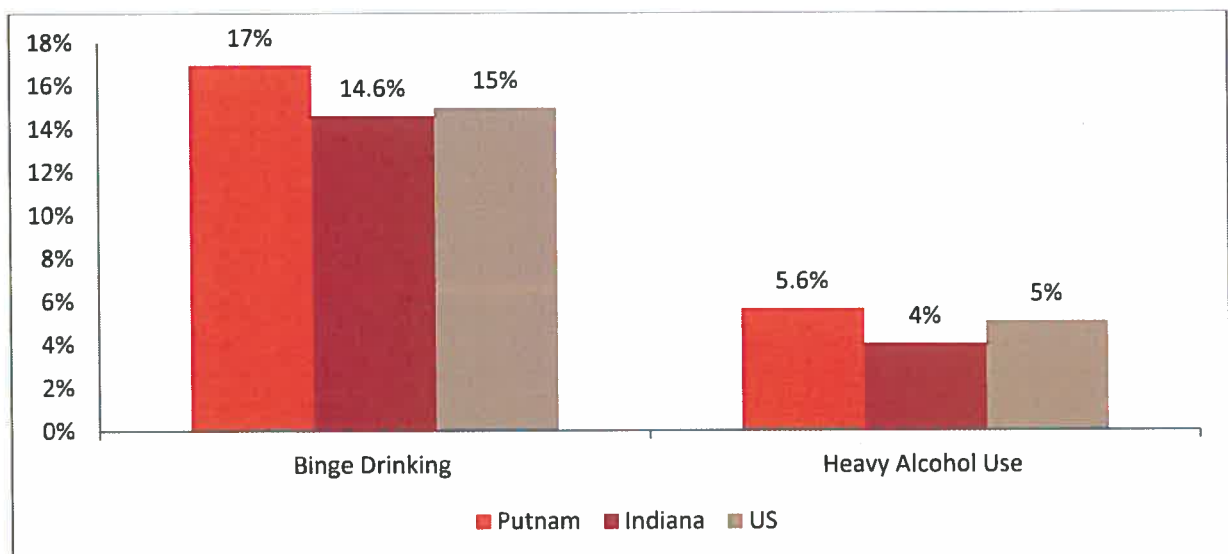


Note: Data Extracted from the CDC BRFSS Annual Survey Data (2008-2010)

### Alcohol Consumption

According to the BRFSS, binge drinking is defined for males as having five or more drinks on one occasion; likewise, it is defined for females as having four or more drinks on one occasion. In like manner, heavy drinking is defined for adult males as having more than two drinks per day and more than one drink per day for adult women. Correspondingly, data gathered from the BRFSS reported that Putnam County residents were above both the state and national average in binge drinking and heavy alcohol usage. The following figure attests to these findings.

Figure 6: Prevalence of Binge and Heavy Alcohol Consumption in Putnam County, Indiana, and U.S. Residents during 2008-2010.

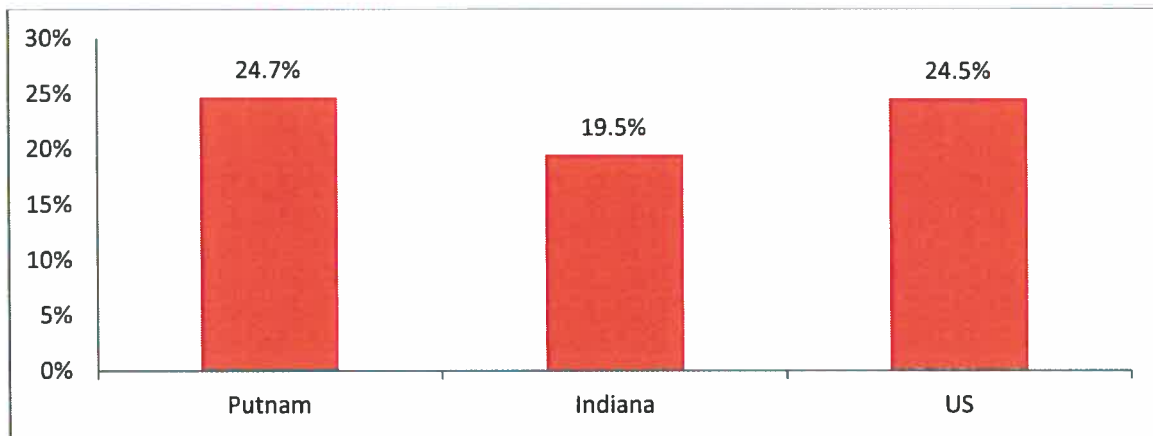


Note: Data Extracted from the CDC BRFSS Annual Survey Data (2008-10)

### Fruit and Vegetable Consumption

The following figure presents BRFSS data concerning Putnam County, Indiana, and U.S. residents who reported consuming 5 or more servings of fruits and vegetables per day during 2008-2010. From what this figure portrays, it seems that Putnam County residents consumed more fruits and vegetables than the state average and about the same percentage when compared to the national average.

Figure 7: Putnam County, Indiana, and U.S. Residents who consumed five or more servings of fruits and vegetables per day



Note: Data Extracted from the CDC BRFSS Annual Survey Data (2008-2010)

### Sexually Transmitted Infections

According to the County Health Rankings and Roadmaps, the weighted chlamydia rate per 100,000 residents in Putnam County was 166, while the rate in Indiana was 351. Putnam County fell well above the reported national benchmark of 92. The following table displays these findings.

Table 3: Chlamydia Rate per 100,000 Population for Putnam County, Indiana, and the U.S.

	Putnam County	Indiana	U.S. Benchmark*
<b>Chlamydia rate per 100,000</b>	166	351	92

Note: 2010 Data Extracted from the County Health Rankings and Roadmaps (County Health Rankings & Roadmaps, 2013)

\*U.S. Benchmark defined as 90<sup>th</sup> percentile among states.

### Teen Birth Rate

County Health Rankings and Roadmaps also reported teen birth rates per 1,000 female residents (ages 15-19) for Putnam County and Indiana. 2004-2010 data was used to calculate these rates. The weighted rate in Putnam County was 31 while the rate in Indiana was 41. Both Putnam County and Indiana were above the reported national benchmark of 21. Table 4 presents these findings below.

Table 4: Teen Birth Rate per 1,000 Female Population (ages 15-19) for Putnam County, Indiana, and U.S.

	Putnam County	Indiana	U.S. Benchmark*
<b>Teen Birth Rate per 1,000 (Female Population, ages 15-19)</b>	31	41	21

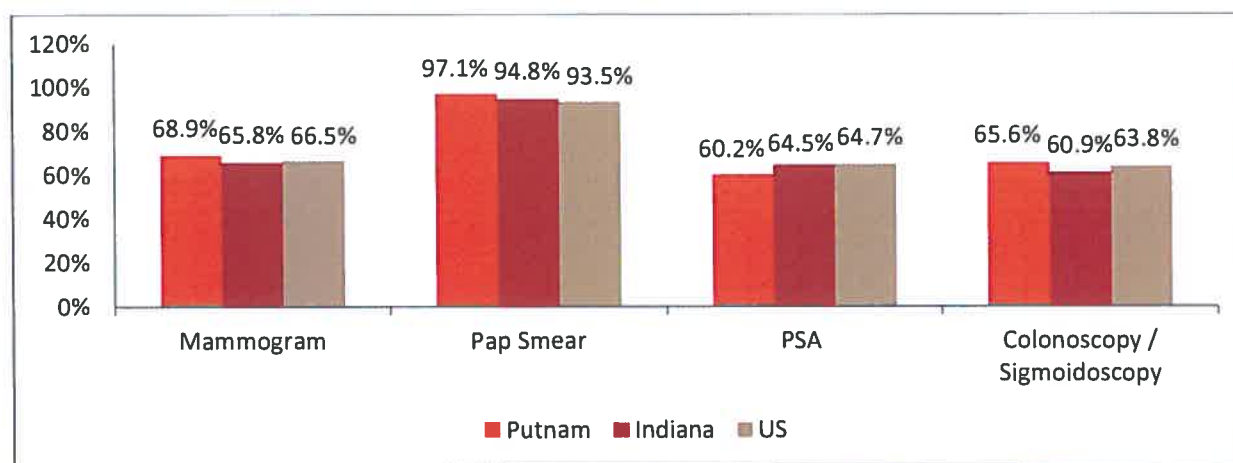
*Note:* (2004-2010) Data Extracted from the County Health Rankings and Roadmaps (County Health Rankings & Roadmaps, 2013)

\*U.S. Benchmark defined as 90<sup>th</sup> percentile among states.

### Cancer Screening

The following graphical representation is a depiction of Putnam County, Indiana, and U.S. residents who reported ever having a mammogram, pap smear, prostate-specific antigen (PSA) test, or Colonoscopy/Sigmoidoscopy performed. According to this BRFSS data, Putnam County was similar to the state and national levels when it came to cancer screenings.

Figure 8: Percentage of Putnam County, Indiana, and U.S. Residents that reported ever having a Mammogram, Pap Smear, PSA, or Colonoscopy/Sigmoidoscopy performed



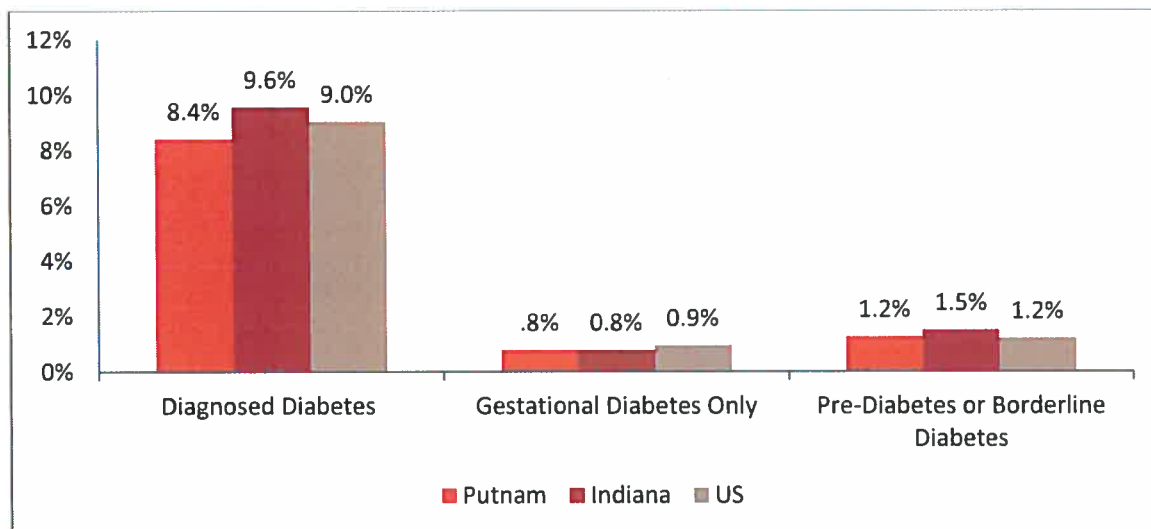
*Note:* Data Extracted from the CDC BRFSS Annual Survey Data (2008-2010)

## Chronic Disease Burden

### Diabetes Prevalence

According to the figure below, the average occurrence of diagnosed diabetes in Putnam County was lower than both Indiana's and the United States' average during 2008-2010. In contrast, when it came to gestational diabetes, Putnam County had the same average as Indiana while both were just one-tenths lower than the U.S. average. Similarly, in terms of borderline diabetes or pre-diabetes, Putnam County's average was equal to the U.S. average while both were slightly lower than Indiana's average at 1.5%.

Figure 9: Prevalence of Diagnosed Diabetes, Gestational Diabetes, and Borderline Diabetes in Putnam County, Indiana, and the U.S.

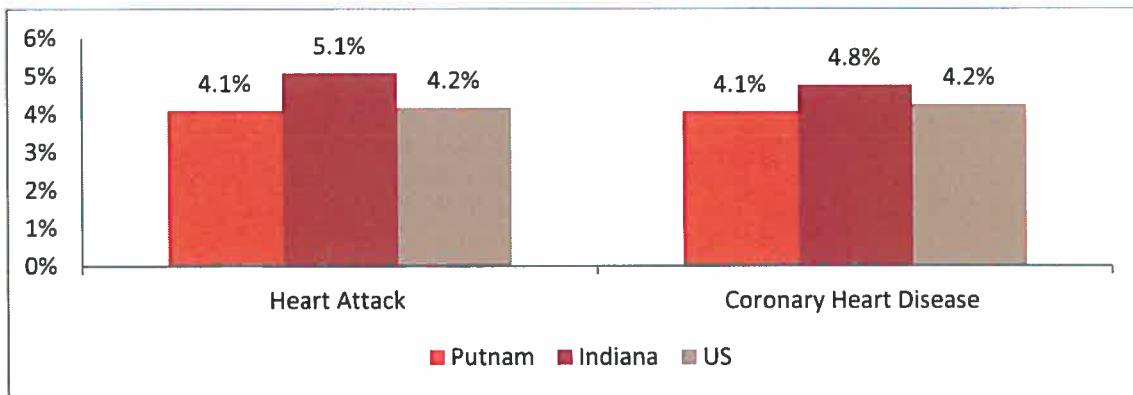


Note: Data Extracted from the CDC BRFSS Annual Survey Data (2008-2010)

### Cardiovascular Disease

When it came to cardiovascular disease in Putnam County during 2008-2010, the average percentage of those who reported ever suffering from a heart attack or coronary heart disease was fairly similar to the nation's average. In terms of these percentage averages, Putnam County (in both heart attacks and coronary heart disease) resulted in 4.1% while the U.S. resulted in 4.2% for both heart attacks and coronary heart disease as well. Indiana's percentage averages were higher than Putnam County's and the U.S. average in heart attacks (5.1%) and coronary heart disease (4.8%). The following figure illustrates these findings.

Figure 10: Percentage of Putnam County, Indiana, and U.S. Residents reporting ever having a diagnosis of Heart Attack and Coronary Heart Disease.

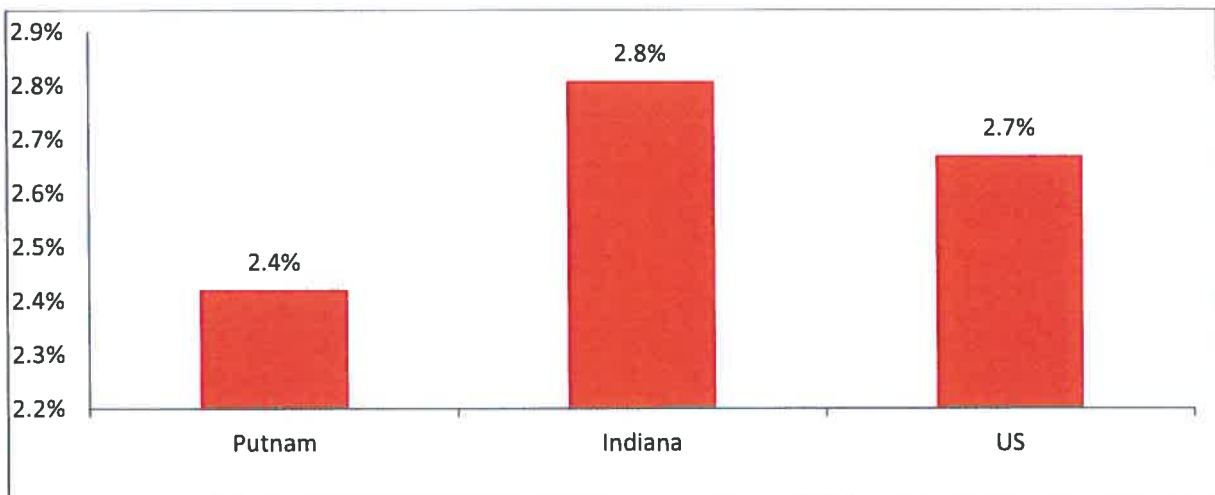


Note: Data Extracted from the CDC BRFSS Annual Survey Data (2008-10)

### Stroke

Through 2008-2010, the CDC BRFSS presented the average percentage of Putnam County, Indiana, and U.S. residents who self-reported being diagnosed with a stroke before. These averages are presented in the figure below where it is clear that Putnam County had the lowest percentage average when compared to Indiana and the U.S. (2.4%). All of the percentage averages were practically near each other but Indiana's and the U.S. average were only one-tenths apart.

Figure 11: Percentage of Putnam County, Indiana, and U.S. Residents who reported ever being diagnosed with a stroke

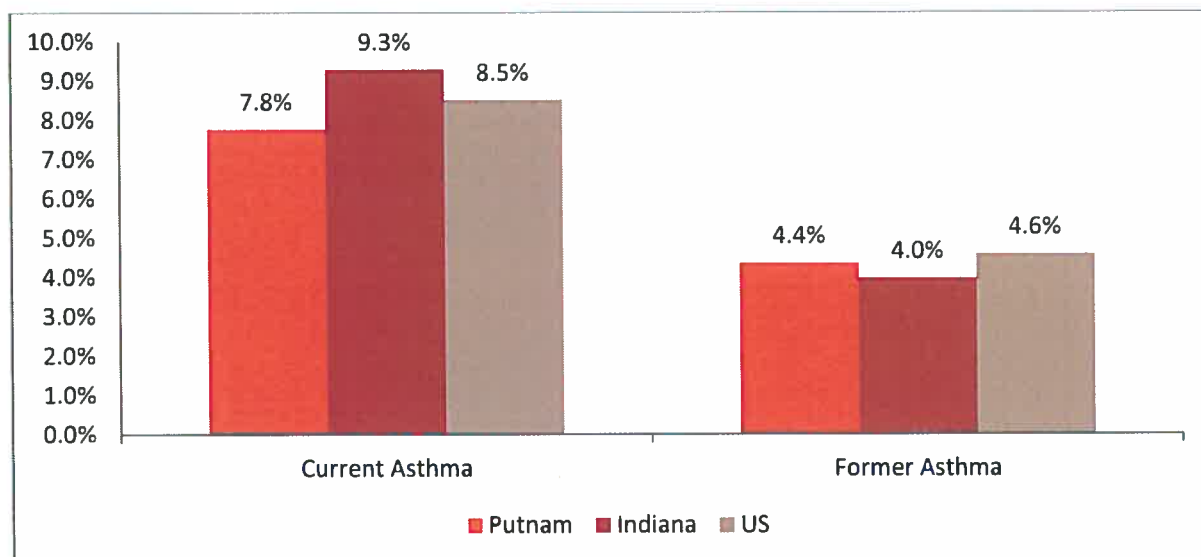


Note: Data Extracted from the CDC BRFSS Annual Survey Data (2008-2010)

### Asthma Prevalence

The percentage average of asthma prevalence in Putnam County during 2008-2010 was 7.8% according to the CDC BRFSS; a percentage lower than both the state of Indiana's and the nation's average. The following figure graphically reports these averages along with weighted percentage averages of Putnam County, Indiana, and U.S. residents who formerly had asthma (2010).

Figure 12: Prevalence of Asthma Reported by Putnam County, Indiana, U.S. Residents

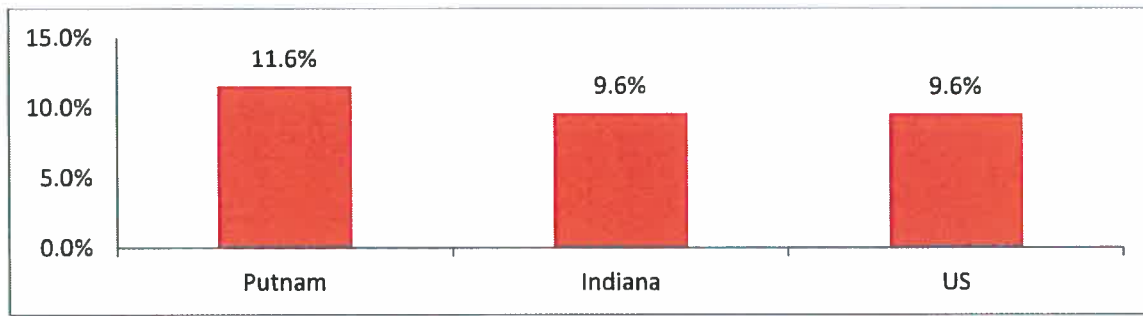


Note: Data Extracted from the CDC BRFSS Annual Survey Data (2008-2010)

### Cancer

Through 2008-2010, an 11.6% average of Putnam County residents reported to the BRFSS of ever being diagnosed by cancer. Similarly, a 9.6% average of Indiana and U.S. residents reported to the BRFSS that they were diagnosed with cancer as least once in the past. Figure 13 graphically concurs with these findings below. In addition, Table 5 reports incidence and mortality counts for Putnam County and the state of Indiana during a five year period (2006-2010). Data found in Table 5 was extracted from the Indiana State Department of Health (ISDH). Included within the table are total counts for all cancer sites reported to the state cancer registry for Putnam County and Indiana. Found below the totals are percentage totals of the fourteen most common cancer sites found in Putnam County and Indiana.

Figure 13: Self-reported percentage of Putnam County, Indiana, and U.S. Residents that have ever been diagnosed with cancer



Note: Data Extracted from the CDC BRFSS Annual Survey Data (2008-2010)

Table 5: Age-Adjusted Cancer Incidences and Mortality Counts for Putnam County & Indiana (2006-2010)

	Putnam County		Indiana	
	Incidences	Mortality	Incidences	Mortality
<b>Total (All Sites)</b>	1,006	402	162,814	64,535
<b>Lung &amp; Bronchus</b>	18.9%	38.6%	16.1%	31.3%
<b>Colon</b>	6.7%	8.2%	7.2%	7.5%
<b>Rectum &amp; Rectosigmoid Junction</b>	3%	2%	2.7%	1.5%
<b>Pancreas</b>	2.8%	6.5%	2.5%	5.7%
<b>Melanoma of Skin</b>	3.1%	2.5%	3.6%	1.6%
<b>Oral Cavity &amp; Pharynx</b>	2.5%	1%	2.4%	1.2%
<b>Urinary Bladder</b>	4.3%	2.7%	4.2%	2.4%
<b>Kidney &amp; Renal Pelvis</b>	3.6%	2.7%	3.6%	2.4%
<b>Thyroid</b>	1.8%	0	2.1%	0.2%
<b>Leukemia</b>	2.7%	3.2%	2.5%	4%
<b>Breast (Female)</b>	11.8%	6.2%	13.2%	7%
<b>Corpus Uteri (Female)</b>	2.8%	0.2%	2.9%	0.6%
<b>Ovary (Female)</b>	1.7%	1.7%	1.4%	2.5%
<b>Prostate (Male)</b>	11.1%	4.7%	11.8%	4.5%

Note: Data obtained from the Indiana State Department of Health (Indiana State Department of Health, 2013)

## Nativity Indicators

Table 6 below presents natality data gathered from the Indiana State Department of Health's (ISDH) reports. Each natality indicator is guided with a descriptive definition found on the ISDH's glossary of terms page. According to ISDH's natality reports, Putnam County recorded a total of 353 live births in 2010. Out of that total, 13.6% were preterm births, 6.5% were low weight births, and 1.7% was categorized as severely low weight births. In terms of mothers, there were high percentages of mothers in Putnam County that received prenatal care during their first trimester. Coupled with these findings, ISDH reported that 19% of mothers in Putnam County smoked during their pregnancy in 2010. Also during this period, 38.2% of mothers were unmarried at the time of their pregnancy. Finally, according to the ISDH's 2010 mortality report, there were a total of six infant and neonatal deaths in Putnam County. Alongside these findings, Table 6 also presents data for the same natality indicators for the state of Indiana.

Table 6: 2010 Natality Statistics for Putnam County and Indiana

Nativity Indicators	Putnam County	Indiana
<b>Crude Birth Rate</b> (Live Births per 1,000 population)	9.3	12.9
<b>Total Live Births</b>	353	83,867
<b>Percentage of Preterm Births</b> (Delivery of a liveborn infant prior to 37 weeks gestation)	13.6%	10%
<b>Percentage of Low Birth Weight</b> [Birthweight less than 2,500 grams (5 lb 8 oz)]	6.5%	8%
<b>Percentage of Very Low Birth Weight</b> [Birthweight less than 1,500 grams (3 lb 5 oz)]	1.7%	1.4%
<b>Percentage of Mothers Who Received Prenatal Care During First Trimester</b>	74.8%	68.5%
<b>Percentage of Mothers Who Smoked During Pregnancy</b>	19%	17.1%
<b>Percentage of Mothers Who Were Unmarried</b>	38.2%	43%
<b>Mortality Rate:</b>		
Infant (<1 yr)	3	630
Neonatal (<28 days)	3	407
Post-neonatal (28-364 days)	0	223

Note: Data obtained from Indiana State Department of Health: 2010 Natality and Mortality Reports  
( Indiana State Department of Health, 2012)

## Physical Environment Indicators

In determining the physical environment status of Putnam County, data was gathered from County Health Rankings and Roadmaps (CHRR). Below, Table 7 displays data of air quality, access to recreational facilities, access to healthy food, and crime rate for Putnam County, Indiana, and U.S. benchmarks. The U.S. benchmarks are defined as the 90<sup>th</sup> percentile among states.

In terms of air quality, Putnam County experienced some days of air pollution due to fine particulate matter. According to the United States Environmental Protection Agency (EPA) (2013), fine particulate matter or “fine particles” are particles found in smoke and haze. These particles are usually 2.5 micrometers in diameter and may even be smaller. The sources of these particles are, usually but not limited to, forest fires and mixtures of gases from power plants, automobiles, and other industries that produce gas emissions. According to CHRR, in 2007, Putnam County experienced two days of air pollution due to fine particles. Similarly, Indiana also went through two days of air pollution due to fine particles. However, the U.S. benchmark was zero, which signified that both Putnam County’s and Indiana’s air was slightly more polluted than the 90<sup>th</sup> percentile among states in 2007. Couple with air quality, air pollution can also be a factor of the ozone. Consequently, the state of Indiana had three ozone days in 2007 while Putnam County had none. The U.S. benchmark for ozone days is zero.

Furthermore, when it came to access to recreational facilities, both Putnam County and Indiana failed to meet the U.S. benchmark rate of sixteen in 2010. While Indiana’s rate of recreational facilities per 100,000 residents was nine, Putnam County’s rate was zero. Access to recreational facilities, through data analysis, seemed to be an area that Putnam County needed to address in 2010. In addition, according to 2012 data, low-income Putnam County residents didn’t have much trouble accessing healthy food. In other words, Putnam County’s percentage of low-income residents who did not live near a grocery store matched the U.S. benchmark at 1% while Indiana’s percentage was slightly higher at 6%.

Finally, according to CHRR, through 2008-2010, the violent crime rate per 100,000 residents for Putnam County and Indiana was higher than the U.S. benchmark of sixty-six. Putnam County’s rate was eighty-eight while Indiana’s rate was three hundred twenty seven. Again, all these findings can be found in Table 7 below.

Table 7: Key Physical Environment Indicators of Health for Putnam County, Indiana, and the U.S.

Physical Environment Indicator	Putnam County	Indiana	U.S. Benchmark*	Data Source/ Year
<b>Air Pollution – Particulate Matter Days</b> (Annual number of unhealthy air quality days due to fine particulate matter)	2	2	0	County Health Rankings / 2007
<b>Air Pollution – Ozone Days</b> (Annual number of unhealthy air quality days due to Ozone)	0	3	0	County Health Rankings / 2007
<b>Access to Recreational Facilities</b> (Rate of recreational facilities per 100,000)	0	9	16	County Health Rankings / 2010
<b>Limited Access to Healthy Foods</b> (Percent of population who are low-income and do not live close to a grocery store)	1%	6%	1%	County Health Rankings / 2012
<b>Violent Crime Rate</b> (Violent crime rate per 100,000)	81	327	66	County Health Rankings / 2008-2010

Note: Data obtained from County Health Rankings and Roadmaps (County Health Rankings and Roadmaps , 2012, 2013).

\*U.S. Benchmark defined as 90<sup>th</sup> percentile among states

### **Mortality Indicator: Leading Causes of Death**

Table 8 indicates below, the top leading causes of deaths found in Putnam County during the period of 2008-2010, as reported by the CDC Wonder. Among the ten causes of death listed, excluding 'all other diseases (residual)', heart disease, cancer, and chronic lower respiratory disease were the top three leading causes of deaths within Putnam County during this time period. To add, heart disease and cancer, alone, were responsible for more than four hundred deaths out of the eight hundred twenty-nine death counts represented in Table 8. For comparative analysis, data for the same causes of deaths were also added to Table 8 for the state of Indiana and the United States.

Among the eleven causes of deaths listed in the following table, Putnam County had an age-adjusted rate (per 100,000 residents) that was higher than a U.S rate in four of these causes of death; cancer, chronic lower respiration disease, kidney related conditions/diseases, and influenza & pneumonia. In addition, Putnam County only had rates that were higher than Indiana's rates in two out of the eleven causes; kidney related conditions/diseases and influenza & pneumonia. The cancer rate for both Putnam County and Indiana were about the same. Data in categories that had fewer than twenty cases were excluded or suppressed by the CDC Wonder to maintain stability in rates.

Table 8: Counts & Age-adjusted Rates (Per 100,000) for the Top 11 Leading Causes of Deaths among Putnam County, Indiana, and U.S. Residents (2008-2010)

<i>Cause of Death/ {ICD-10 Codes}</i>	<b>Putnam</b>		<b>Indiana</b>		<b>U.S.</b>	
	<i>Count</i>	<i>Rate</i>	<i>Count</i>	<i>Rate</i>	<i>Count</i>	<i>Rate</i>
<b>Heart Disease</b>	204	170.9	40,560	196.7	1,813,930	184.6
<b>Cancer</b>	238	191.9	39,394	191.1	1,707,840	174.2
<b>Chronic Lower Respiratory Disease</b>	67	55.3	11,417	56.3	416,523	43.2
<b>Cerebrovascular Diseases (Stroke)</b>	47	39.7	9,200	44.9	392,466	40.2
<b>Diabetes</b>	22	18.0	4,916	23.9	208,329	21.3
<b>Alzheimer's Disease</b>	26	23.5	5,795	28.1	244,932	25.0
<b>Nephritis, Nephrotic Syndrome and Nephrosis (Kidneys)</b>	36	31.7	4,321	21.1	147,648	15.2
<b>Influenza and Pneumonia</b>	32	27.9	3,684	17.9	160,073	16.4
<b>Accidents</b>	35	29.9	7,669	39.1	360,782	38.2
<b>Suicides</b>	15	U	2,501	12.8	111,308	11.8
<b>All Other Diseases (Residual)</b>	107	91.8	17,319	84.2	775,152	79.1

Note: Data Obtained from CDC Wonder - Detailed Mortality Database (Centers for Disease Control and Prevention, 2013)

U = Unstable rate due to less than 20 cases.

## Access to Care

With the assistance of the Bowen Research Center, figures in Table 9 depict ratios of health care professionals and providers per 100,000 residents in Putnam County, Indiana. Data was primarily extracted from health workforce studies reports produced by the Indiana Center for Health Workforce Studies. In addition, healthcare providers and professionals were counted by full-time equivalents (FTEs) in order to “...accurately measure the amount of care provided by each,” according to the 2012 Indiana Primary Care Clinician Workforce Report (Indiana Center for Health Workforce Studies). Coupled with Table 9, are also a series of maps that display estimated ratios of physicians, physician assistants, dentists, and mental health providers within the counties of Indiana in 2010.

Lastly, Table 10 presents health insurance statistics for Putnam County, the state of Indiana, and the national benchmark. According to County Health Rankings and Roadmaps (CHRR), in 2010, sixteen percent of Putnam County residents under the age of sixty-five were without health insurance. In Indiana, that percentage was slightly higher at seventeen percent, while the national benchmark (based on the 90<sup>th</sup> percentile among states) was lower than both the county’s and the state’s percentages at eleven percent. Furthermore, statistical analysis for 2010 Medicare spending was also calculate by the CHRR. Consequentially, the weighted Medicare spending found in Putnam County for individual recipients was nine thousand eight hundred seventy-three dollars, while in Indiana, that figure slightly rose to nine thousand nine hundred thirty-four dollars.

Table 9: Rates of primary care providers, mental health providers, and dental care providers by full-time equivalents (FTE) per 100,000 residents for Putnam County

Health Care Professionals/Providers by FTE	# per 100,000 Residents
<b>Primary Care Providers:</b>	71
Physicians	57
Physician Assistants	3
Nurse Practitioners	12
<b>Mental Health Professionals</b>	41.2
<b>Dental Health Providers</b>	71

*Note:* Data was obtained from the Bowen Research Center (BRC) and Health Workforce Study Reports produced by the Indiana Center for Health Workforce Studies (Indiana Area Health Education Centers 2013).

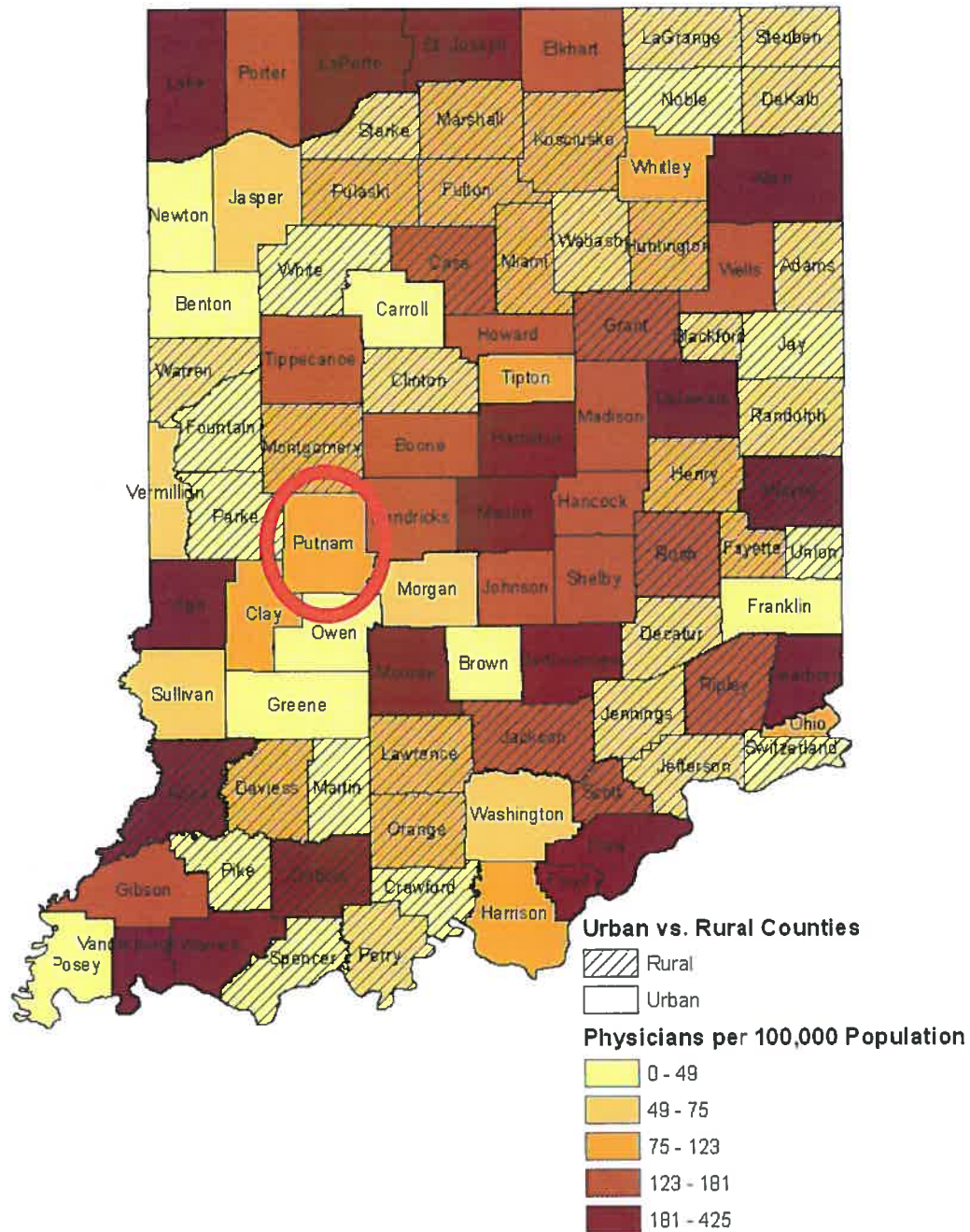
Table 10: 2010 Health Insurance Statistics in Putnam County and Indiana

	Putnam County	Indiana	U.S. Benchmark*
<b>Percent of population under age 65 without health insurance</b>	16%	17%	11%
<b>Price-adjusted Medicare spending per enrollee</b>	\$9,873	\$9,934	Not Reported

*Note:* 2010 Data Extracted from the County Health Rankings and Roadmaps (County Health Rankings & Roadmaps, 2013)

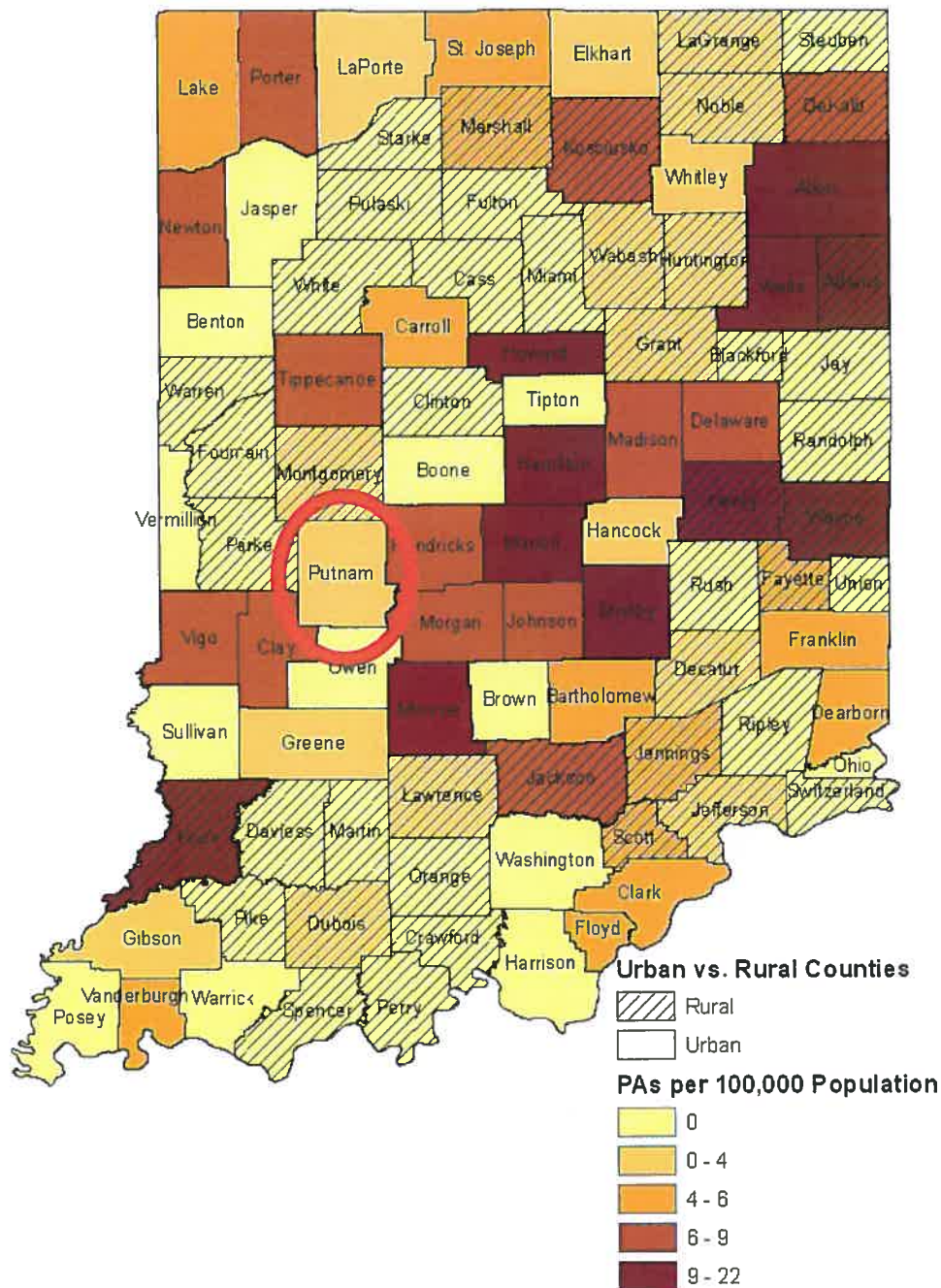
\*U.S. Benchmark defined as 90<sup>th</sup> percentile among states.

Map 1: Estimated Ratio of Physicians per 100,000 Population by County, 2010



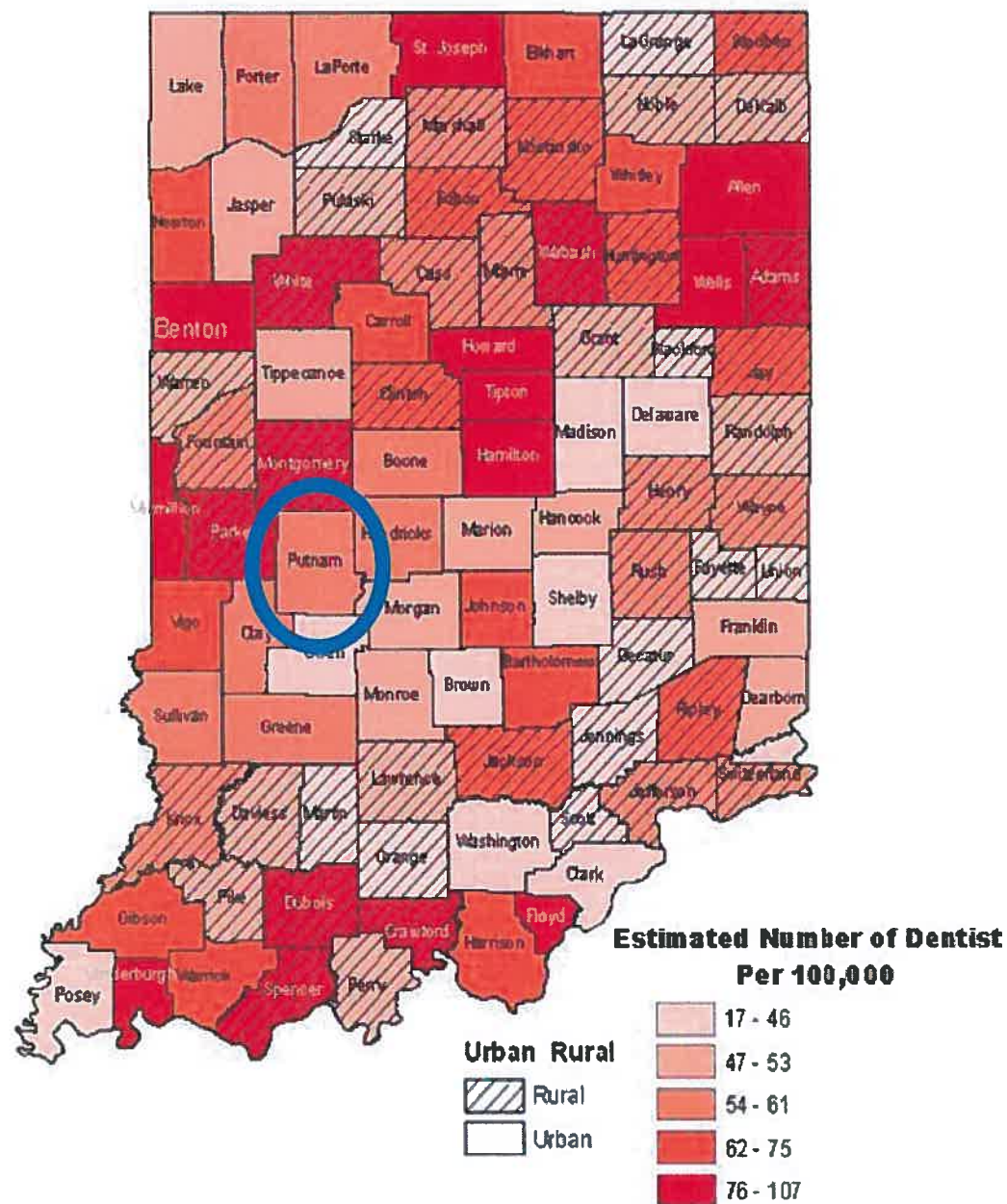
Source: 2010 Physician Assistant Re-Licensure Survey Report (Indiana Center for Health Workforce Studies, 2012)

Map 2: Estimated Ratio of Physician Assistants per 100,000 Population by County, 2010



*Source:* 2010 Physician Assistant Re-Licensure Survey Report (Indiana Center for Health Workforce Studies, 2012)

Map 3: Estimated Number of Dentists Per 100,000 Population by County, 2010



Source: 2010 Indiana Dentist Re-Licensure Survey Report (Indiana Center for Health Workforce Studies, 2011)

**Map 4: Estimated Number of Mental Health Professionals per 100,000 Population by County, 2010**



*Source: 2010 Indiana Mental Health Professionals Re-Licensure Survey Report (Indiana Center for Health Workforce Studies, 2012)*

## Key Findings from Key Informants

Putnam County Hospital provided a list of nine key informants to be interviewed for this assessment. A full list of these key informants can be found below in Appendix C, along with questions asked during the interviews in Appendix D. These key informants were insightful, cooperative, and professional. Key informants held professions such as medical doctors, clinic and organizational directors, mayor, and general staff of appropriate organizations.

When key informants were asked, what were the most common poor health concerns in Putnam County, there were common themes in their responses. Seven out the nine interviewees pinpointed obesity as one of the most alarming health concern in Putnam County. Similarly, six (out of the nine) also pointed at drug abuse as being a recurring health problem in the county; whether that may be tobacco abuse, methamphetamine abuse, and/or prescription drugs abuse. Five interviewees asserted health insurance— more specifically, the lack of insurance and the amount of uninsured residents— as an important health issue that needed to be addressed. Four informants reported that diabetes was a health condition that they commonly saw within the residents they came in contact with. Likewise, another reiterating response was poor nutritional and exercising habits within Putnam County residents. In sum, these five responses – obesity, drug abuse, health insurance, diabetes, and poor habits –were the top answers given to what key informants thought were the most common health issues in Putnam County. Other responses given by key informants included:

- |                                       |   |
|---------------------------------------|---|
| 1. Cardiovascular disease             | 5. Shortage of primary care practitioners |
| 2. Mental Health Illnesses and Issues | 6. Violence within families               |
| 3. Lack of facilities to exercise     | 7. Geriatric Care                         |
| 4. Lack of parental support           |   |

In a similar manner, key informants were also in an accord to the factors that led to these poor health conditions and issues. One recurring factor that key informants stated was economic constraints on not just residents (e.g. lack of jobs), but also within programs and organizations that render services to residents (e.g. budget cuts, lack of federal

funding). Equally important, key informants also noted that there were disorderly efforts within the county to address health concerns. In other words, several key informants added that Putnam County has “a wealth of resources” and many organizations doing wonderful work around the community, but there seem to be a lack of collective or coalitional efforts to directly and more effectively impact some of the health issues that face the county. Other factors that key informant surfaced included a lack of attention to young people (especially those in high school), generational poverty, lack of affordable housing, disease management, and the divide between the county’s economic classes (more specifically, the ignorance of residents “with means” to the residents who are of a lower class status – not necessarily intentional).

Lastly, a factor that resonated within most of the key informants’ responses was access to care. While key informants maintained that health services in Putnam County had improved from previous years, especially in primary care, there were still concerns for specialty care, geriatric care, and child development services. In sum, while key informants expressed what they felt were the urgent health issues that faced the county, many of them also admired and praised the current efforts to battle these needs and remained optimistic about the future.

## Identified Community Health Needs

Table 11 below displays a summary of health indicators presented by secondary data (quantitative data from public existing sources) and health indicators reported by key informant interviews. In regards to secondary data, priority markers were placed on health indicators to demonstrate the urgency of some of these health concerns. Health indicators that need immediate attention were designated as “I” to indicate high priority. Similarly, indicators were also marked “II” to indicate moderate priority and “III” to indicate low priority. Furthermore, health indicators that were mentioned by key informants as a concern within community were labeled with a check mark. Information gap notes were also added to rows that differ between secondary data and key informant interviews in information reported.

Table 11: Summary of Health Indicators and Key Informant Interviews for Putnam County

Health Indicator	Existing Public Data <sup>a</sup>	Key Informant Interviews <sup>b</sup>	Information Gap
Drug/Substance Abuse		√	Lack of supporting public data on substance abuse prevalence
Perception of poor general health	II	√	
Perception of poor physical health	II	√	
Perception of poor mental health	II	√	
Combined poor mental and physical preventing daily activities	III		Key Informants did not report interruption of daily activities
Lack of Exercise	II	√	
Angina, Stroke, and Cardiovascular Disease	III	√	
Cancer	I	√	
Smoking	I	√	
Binge and heavy alcohol consumption	I	√	
Diet – Blood cholesterol, Fruit and Vegetable Consumption	III	√	
Asthma	II		Key Informants did not mention as a primary health concern in the community.
Obesity	I	√	
Sexually Transmitted Infections	I		Key Informants did not mention as a primary health concern in the community.
Teen Birth Rate	I	√	
Diabetes	II	√	
Stroke	III		Stroke was not reported as an urgent health concern in the community by key informants
Access to care	I	√	
Geriatric Care		√	Lack of supporting public existing data on the status of geriatric care
Violence within families		√	Lack of supporting public existing data regarding violence within families

<sup>a</sup>Quantitative Data: I = High Priority; II = Medium Priority; III = Low Priority

<sup>b</sup>Qualitative Data: √ = Key informant interviews revealed item as a cause for concern in the community

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- Picture on front page courtesy of Google Images (search keyword(s): Putnam County)

## Appendix A: Variables used in data analysis

<b><u>Indicator</u></b>	<b><u>BRFSS Exact Variable Selection</u></b>
<ul style="list-style-type: none"> <li>• Number of days mental health was not good</li> <li>• Calculated body mass index</li> <li>• Have ever been diagnosed with asthma</li> <li>• Have ever been diagnosed with angina/cardiovascular disease</li> <li>• Have ever been diagnosed with diabetes</li> <li>• Smoking status</li> <li>• Frequency of heavy drinking</li> <li>• Frequency of binge drinking</li> <li>• Have ever been diagnosed with cancer</li> <li>• Exercise in the past 30 days</li> <li>• Consume 5 or more fruits or vegetables</li> <li>• Perception of general health</li> <li>• Number of days physical health was not good</li> <li>• Health related quality of life</li> <li>• Have ever been diagnosed with a stroke</li> </ul>	<ul style="list-style-type: none"> <li>• MENHLTH</li> <li>• BMI4CAT</li> <li>• ASTHMST</li> <li>• CVDCRHD4</li> <li>• DIABETE2</li> <li>• RFSMOK3</li> <li>• RFDHV3</li> <li>• RFBING4</li> <li>• CNCRHAVE</li> <li>• EXERANY2</li> <li>• FV5SRV</li> <li>• GENHLTH</li> <li>• PHYSHLTH</li> <li>• POORHLTH</li> <li>• CVDSTRK3</li> </ul>

**Appendix B: Leading 10 causes of death with ICD-10 coding**

<b><u>Cause of Death</u></b>	<b><u>ICD-10 Codes</u></b>
1. Heart Disease.....	I00-I09,I11,I13,I20-I51
2. Cancer.....	C00-C97
3. Chronic Lower Respiratory Disease.....	J40-J47
4. Cerebrovascular Diseases (Stroke).....	I60-I69
5. Diabetes.....	E10-E14
6. Alzheimer's Disease.....	G30
7. Kidney Disease.....	N00-N07,N17-N19,N25-N27
8. Influenza and Pneumonia.....	J09-J18
9. Accidents.....	V01-X59,Y85-Y86
10. Suicides.....	U03,X60-X84,Y87.0

**Appendix C: Key Informant List**

<b><u>Name</u></b>	<b><u>Title</u></b>
1. Dr. Robert Heavin	County Health Officer
2. Ruth Ralph	Johnson Nichols Health Clinic Director
3. William B. Dory	Economic Development Center Director
4. Dr. Keith Landry	Medical Staff/Board Member of PCH
5. Cathy Clodfelther	Nurse Practitioner at PCH
6. Eileen Johnson	Mental Health America Director
7. Mayor Sue Murray	Mayor of Greencastle, IN
8. Sharon Pitcock	Senior Citizen Center Director
9. Elizabeth Butts	Staff at Family Support Services

### Appendix D: Key Informant Interview Questions

1. To begin our discussion, what do you think are the most common poor health conditions/concerns in your community?
2. What are the behaviors in the community that you think are connected to these health concerns?
3. What factors in the community do you think contribute to these behaviors? (e.g. cultural, economic, environmental)
4. Do you know of any facilities, organizations, and/or programs that are currently contributing efforts to address these health concerns?
5. Do you feel these efforts are succeeding?
6. What do you think needs to be done to close the gap between “health needs” and implementing solutions?
7. What do you think the drawbacks in implementing solutions are?
8. Can you think of any other health topics/issues and/or underlining factors that online data may not depict?
9. Finally, off the top of your head, can you think of one or two things that would dramatically improve the health status of Putnam County residents?