



*Stone City, Iowa* by Grant Wood

# COMMUNITY HEALTH NEEDS ASSESSMENT AND HEALTH IMPROVEMENT PLAN

JONES COUNTY, IOWA

2016

# TABLE OF CONTENTS

## Contents

Executive Summary	1
Health Data Sources	2
Community Survey	3
County Profile	4
Demographics	4
Economics	6
General Health Status	8
Leading Causes of Death	8
Hospitalizations	9
Healthy Behaviors and Healthy Living	10
Physical Activity, Nutrition, and Overweight & Obesity	10
Addictive Behaviors	12
Clinical Preventive Services	17
Oral Health	19
Maternal, Infant, Child & Family Health	21
Maternal Health	21
Infant Health	21
Child & Adolescent Health	23
Older Adults	24
Sexual & Reproductive Health	25
Family Planning	25
Teen Pregnancies	25
Chronic Conditions	26
Asthma	26
Cancer	26
Heart Disease and Stroke	27
Diabetes	28

# TABLE OF CONTENTS

Mental Health and Illness	29
Disability, Injuries & Violence	32
Disability	32
Unintentional Injuries	33
Intentional Injuries	34
Communicable Diseases	37
Immunizations	37
Sexually Transmitted Infections (STI)	38
HIV	39
Environmental Hazards	40
Drinking Water	40
Lead	41
Radon	42
Air Quality	42
Emergency Response	43
Communication Networks & Risk Communication	43
Emergency Planning & Emergency Response	43
Community Preparedness	44
Health Infrastructure	45
Social Determinants of Health	45
Health Care Access	48
Public Health Infrastructure	50
Health Improvement Plan	51
Priority 1: Physical Activity, Nutrition, and Overweight & Obesity	51
Priority 2: Mental Health and Illness	52
Priority 3: Addictive Behaviors	52
Contact Information	53
References	54

## Executive Summary

At least every five years, local boards of health lead a community-wide discussion about their community's health needs and what subsequently must be done to address those needs. This document, Jones County's Community Health Needs Assessment (CHNA) and Health Improvement Plan (HIP), is the result of the process. Qualitative and quantitative data were collected through a meticulous process of identifying data sources, as well as distributing and evaluating a community-wide perceptual survey. The statistical data and community input shaped the health improvement plan by identifying health concerns in the county, and the Jones County Board of Health used this information to prioritize the concerns. Priorities to be included in the health improvement plan were selected using a multi-voting technique at the Jones County Board of Health meeting on February 11, 2016; all people present at the meeting were invited to participate in the voting process. The health improvement plan will be used to guide public health activities in the county for the next few years.

The following health concerns, and goals to address these concerns, were identified for inclusion in the health improvement plan, which is outlined in more detail on page 51:

- I. Priority 1. Physical Activity, Nutrition, and Overweight & Obesity
  - a. Goal #1: Increase physical activity levels among Jones County residents.
  - b. Goal #2: Reduce the proportion of Jones County residents who are considered overweight or obese based on BMI.
- II. Priority 2. Mental Health and Illness
  - a. Goal #1: Improve the understanding of mental health and mental illness, and increase awareness of available resources and services.
- III. Priority 3. Addictive Behaviors
  - a. Goal #1: Reduce the proportion of Jones County adults who drink excessively.
  - b. Goal #2: Reduce the proportion of Jones County adults who currently smoke.

## Health Data Sources

Jones County Public Health conducted a comprehensive search of all available health data sources. To best capture a clear snapshot of the health status of county residents, the most current information was compiled utilizing the following sources:

Jones County Attorney  
Jones County Clerk of Courts  
Jones County Emergency Management Agency

Jones County Safe and Healthy Youth Coalition  
Hawkeye Area Community Action Program  
Hillcrest Family Services

Iowa Department of Public Health  
Iowa Department of Education  
Iowa Department of Transportation  
Iowa Youth Survey  
Iowa Consortium for Substance Abuse Research and Evaluation

United States Census Bureau  
U.S. Bureau of Labor Statistics  
U.S. Department of Health and Human Services  
Centers for Disease Control and Prevention  
Substance Abuse and Mental Health Services Administration  
Healthy People 2020  
Federal Emergency Management Agency

County Health Rankings  
Community Commons  
Kids Count  
Guttmacher Institute

# JONES COUNTY CHNA/HIP 2016

## Community Survey

The Jones County Board of Health, with assistance from the Iowa Department of Public Health Regional Community Health Consultant, created and distributed a survey to community members to help identify health priorities in the community. The survey was emailed to groups and available on the public health page of the county website. A total of 99 people responded to the survey; 45.8 percent were age 46-64 years and 38.5 percent were age 25 -45 years. The twenty items receiving the most response are presented below.

	TOPIC	PERCENT OF RESPONDENTS IDENTIFYING TOPIC AS A COMMUNITY HEALTH PRIORITY
1	Immunizations/Vaccinations	84.9%
2	Violent and Abusive Behavior	74.8%
3	Drinking Water Protection	65.7%
4	Disease Control and Surveillance	65.7%
5	Sexually Transmitted Infections	65.7%
6	Mental Health	56.6%
7	Risk Communication	56.6%
8	Healthy Homes	54.6%
9	Suicide	50.5%
10	Access to Quality Healthcare	49.5%
11	Emergency Response	48.5%
12	Emergency Planning	47.5%
13	Alcohol and Other Drugs	46.5%
14	Individual Preparedness	46.5%
15	Physical Activity	41.4%
16	Food Safety	40.4%
17	Motor Vehicle Crashes	39.4%
18	Communication Networks	39.4%
19	Disease Investigation	36.4%
20	Community Engagement	36.4%

## County Profile

### DEMOGRAPHICS

With 20,454 people and a population density of 35.9 people per square mile, Jones County is the 33<sup>rd</sup> most populated county in Iowa [1, 2]. According to a projection by Woods and Poole Economics, Inc., the population of Jones County is expected to increase to 21,021 by the year 2040 (Figure 1) [3, 4].

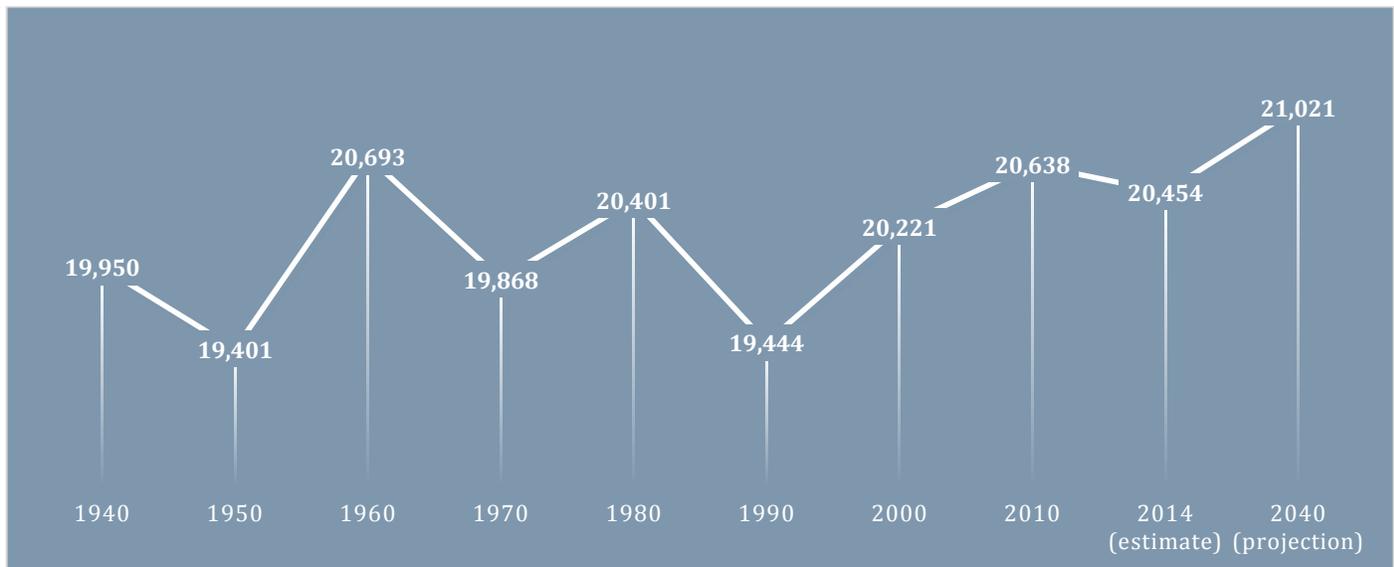


Figure 1. Population of Jones County, Iowa

### Age

The median age of Jones County residents is 43.1 years, which is above the state median age of 38 years and the national median age of 37.4 years [5]. The current median age is also older than the median age of Jones County residents in 2000 of 38.5 years, which is a result of the gradual increase in the proportion of older residents (Figure 2).

### Births

The birth rate in Jones County has consistently stayed around ten live births per 1,000 population, which is slightly lower than the state and national averages of approximately 13 live births per 1,000 population (Table 1) [6]. Birth rates ranging from 10–20 births per 1,000 are considered low. Low birth rates may stress the government to provide adequate senior welfare systems and stress families who must support the elders themselves. There will also be fewer children and a smaller working-age population to support the aging population.

# JONES COUNTY CHNA/HIP 2016

	JONES COUNTY	IOWA
<b>2008-2012</b>	10.4	13.0
<b>2009-2013</b>	10.3	12.9
<b>2010-2014</b>	10.4	12.8

Table 1. Birth Rate per 1,000 Population [6]

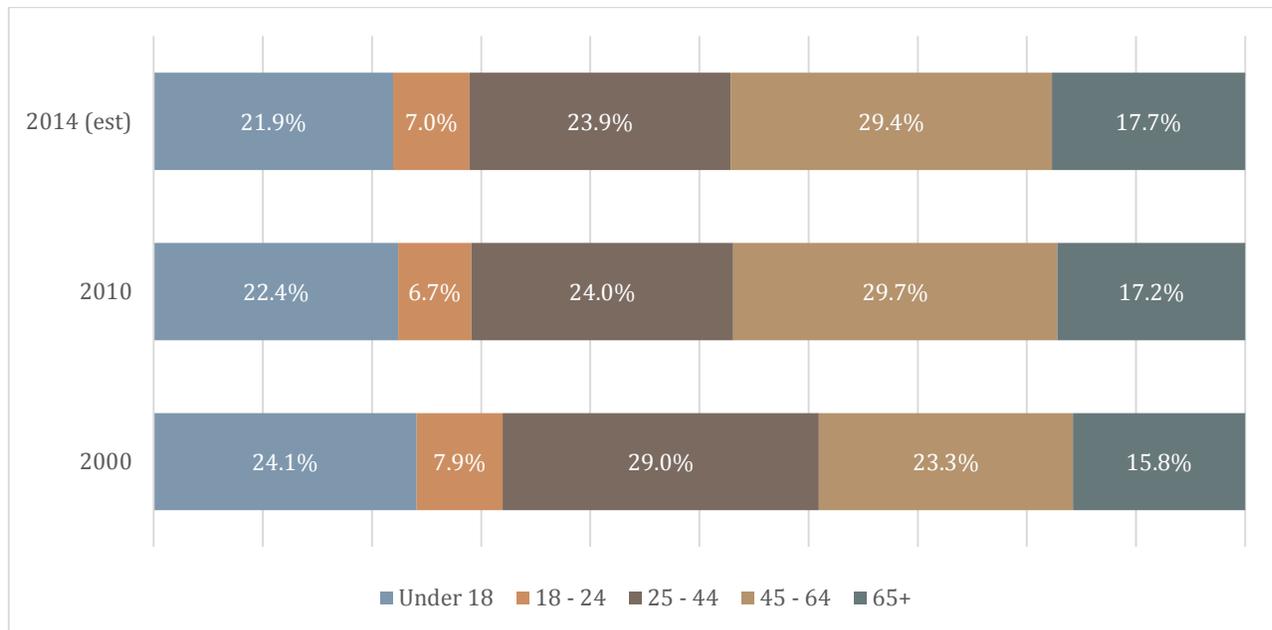


Figure 2. Age Distribution of Jones County Residents [5]

## Race & Ethnicity

Jones County residents are predominantly white (95.6 percent) and non-Hispanic or Latino [5]. There has been a slow increase in the diversity of the population since 2000 (Table 2).

	RACE	2000	2010	2014 (EST)
<b>White</b>		96.7%	95.9%	95.6%
<b>Black or African American</b>		1.8%	1.8%	2.1%
<b>American Indian or Alaska Native</b>		0.3%	0.2%	0.6%
<b>Asian</b>		0.2%	0.4%	0.4%
<b>Native Hawaiian or Other Pacific Islander</b>		0.0%	0.2%	0.0%
<b>Some Other Race</b>		0.2%	0.6%	0.7%
<b>Two or More Races</b>		0.8%	0.9%	0.6%
ETHNICITY				
<b>Hispanic or Latino</b>		1.1%	1.3%	1.5%

Table 2. Race and Ethnicity Distribution of Jones County, Iowa [5]

# JONES COUNTY CHNA/HIP 2016

## ECONOMICS

### Employment

Jones County has experienced unemployment rates slightly higher than the state averages, but lower than the national averages in recent years (Figure 3) [7]. Unemployment rates in the county, as well as across the state and nation, have been consistently decreasing since 2011. In 2014, 59.4 percent of Jones County residents were employed, while 36.8 percent did not actively participate in the labor force (e.g., hold a job or actively search for one) [5]. These numbers are similar to 2010, during which time 60.9 percent of residents were employed and 36.6 percent did not actively participate in the labor force.

Overall, Iowa ranks 8 out of 50 for underemployment, with a rate of 8.8 percent [8]. The underemployment rate is the percentage of the civilian labor force that is unemployed, plus all marginally attached workers, plus those employed part-time for economic reasons. Underemployment is associated with ill health, although this connection has not been studied as much as that between unemployment and health [9]. The underemployed are more likely to report lower general well-being independent of prior health and well-being [10].

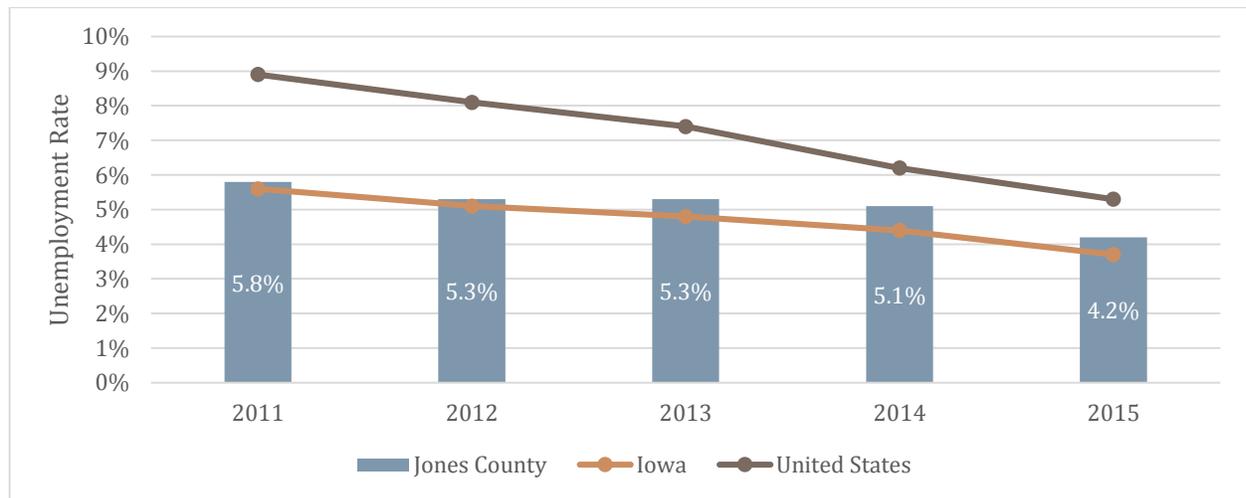


Figure 3. Unemployment Rate for Jones County, State of Iowa, and the United States [7]

Jones County major employers include local school districts, Anamosa State Penitentiary, Bennett Machine and Fabrication, Energy Manufacturing Company, Georgia Pacific, Innovative Ag, J&P Cycles, Jones Regional Medical Center, ORBIS Corporation, and Polo Custom Products.

# JONES COUNTY CHNA/HIP 2016

## Income

Median household income for Jones County is \$54,264, which is higher than the state and national median incomes of \$52,716 and the \$53,482, respectively [5]. Income distribution in Jones County is shown in Table 3. Income provides economic resources which affect choices about housing, education, child care, food, medical care, and more [11]. As income and wealth increase or decrease, so does health. Adults in the highest income brackets are healthier than those in the middle class and will live, on average, more than six years longer than those with the lowest income [12]. According to County Health Rankings, Jones County has an income inequality ratio of 3.7, which is among the lowest in the country [11]. Income inequality is the ratio of household income at the 80th percentile to that at the 20th percentile; a higher inequality ratio indicates greater division between the top and bottom ends of the income spectrum. The overall income inequality ratio for Iowa is 4.2.

	ESTIMATE	PERCENT
<b>Less than \$10,000</b>	384	4.7%
<b>\$10,000 to \$14,999</b>	472	5.7%
<b>\$15,000 to \$24,999</b>	722	8.8%
<b>\$25,000 to \$34,999</b>	757	9.2%
<b>\$35,000 to \$49,999</b>	1,371	16.6%
<b>\$50,000 to \$74,999</b>	1,943	23.6%
<b>\$75,000 to \$99,999</b>	1,207	14.7%
<b>\$100,000 to \$149,999</b>	910	11.1%
<b>\$150,000 to \$199,999</b>	287	3.5%
<b>\$200,000 or more</b>	182	2.2%

Table 3. Household Income and Benefits Distribution, Jones County, Iowa [5]

## General Health Status

In 2015, Jones County ranked 21 out of 99 Iowa counties with respect to health outcomes (how healthy a county is) and 71 out of 99 in health factors (what influences the health of the county) [11]. Approximately 11 percent of Jones County residents reported fair or poor health, which is the same as the state average. However, Jones County residents reported more physically unhealthy days (3.2 days) within a 30 day period compared to the state average (2.8 days) [11].

In addition, 19.4 percent of adults in Jones County report inadequate social support, which is similar to the U.S. median of 19.6 percent, but worse than that of peer counties as determined by the Centers for Disease Control (CDC) [13]. In Iowa, 15.3 percent of adults report inadequate social support [14]. Social relationships are fundamental to emotional fulfillment, behavioral adjustment, and cognitive function. Social isolation predicts morbidity and mortality from cancer, cardiovascular disease, and a host of other causes [13].

According to County Health Rankings, there are 16.5 social associations per 10,000 population in Jones County. Associations include membership organizations such as civic organizations, bowling centers, golf clubs, fitness centers, sports organizations, religious organizations, political organizations, labor organizations, business organizations, and professional organizations [11]. In addition, the majority (84 percent) of Jones County youth participate in some form of extra-curricular activities (sports, music, clubs, 4-H, etc.), and 59 percent spend time at religious services, programs, or activities [15]. A 2001 study found the magnitude of health risk associated with social isolation is similar to the risk of cigarette smoking [16]. Furthermore, social support networks have been identified as powerful predictors of health behaviors, suggesting individuals without a strong social network are less likely to make healthy lifestyle choices than individuals with a strong network [11].

### LEADING CAUSES OF DEATH

The overall leading cause of death in Jones County in 2014 was diseases of the heart, which includes a variety of conditions such as myocardial infarction, heart failure, acute and chronic ischemic heart disease, hypertensive heart disease, endocarditis and myocarditis, and atherosclerotic cardiovascular disease [6]. Diseases of the heart were also the leading cause of death for residents age 65 years older, while the leading causes of death for those age 18 years and under and 19 to 64 years were congenital and chromosomal anomalies and trachea, bronchus and lung cancers, respectively. The leading causes of death in Jones County are similar to those of the state overall (Table 4).

# JONES COUNTY CHNA/HIP 2016

	0 – 18 YEARS	19 – 64 YEARS	65+ YEARS	OVERALL	IOWA (OVERALL)
1	Congenital and Chromosomal Abnormalities	Trachea, Bronchus, and Lung Cancers	Diseases of the Heart	Diseases of the Heart	Diseases of the Heart
2	No Data Available	Non-transport Accidents	All Other Diseases (Residual)	All Other Diseases (Residual)	All Other Diseases (Residual)
3	No Data Available	Diseases of the Heart	Other Chronic Lower Respiratory Diseases	Other Chronic Lower Respiratory Diseases	Other Chronic Lower Respiratory Diseases
4	No Data Available	Transport Accidents	Alzheimer’s Disease	Trachea, Bronchus, and Lung Cancers	Trachea, Bronchus, and Lung Cancers
5	No Data Available	Alcoholic Liver Disease	Cerebrovascular Diseases	Non-transport Accidents	Cerebrovascular Diseases

Table 4. Leading Causes of Death in Jones County and Iowa [6]

All other diseases includes injuries, poisonings, and other consequences of external causes (such as infections due to prosthetics, implants, and grafts); mental and behavioral disorders; pregnancy and childbirth; endocrine, nutritional, and metabolic diseases; as well as diseases of the blood, ear, eye, skin, and the immune, digestive, genitourinary, musculoskeletal, and nervous systems.

## HOSPITALIZATIONS

The leading cause of hospitalization in Jones County is heart disease, followed by normal pregnancy and delivery [6]. Other leading causes include complications of pregnancy, childbirth, and the puerperium; mental health conditions; signs, symptoms, and ill-defined conditions; respiratory infections; and injuries. These are similar to the leading causes of hospitalization in the state, with normal pregnancy and delivery; complications of pregnancy, childbirth, and the puerperium; and mental health conditions being the top three causes for Iowa overall [6].

## Healthy Behaviors and Healthy Living

### PHYSICAL ACTIVITY, NUTRITION, AND OVERWEIGHT & OBESITY

#### Physical Activity

Regular physical activity can improve health and quality of life for people of all ages, regardless of the presence of a chronic disease or disability [17]. Among adults and older adults, physical activity can lower the risk of: early death; coronary heart disease; stroke; high blood pressure; type 2 diabetes; breast and colon cancer; falls; and depression. In children and adolescents, physical activity is important for improving bone health, improving cardiorespiratory and muscular fitness, decreasing body fat, and reducing symptoms of depression. For people who are inactive, even small increases in physical activity are associated with health benefits.

Within Jones County, an average of 14 percent of adults age 18 years and older self-report no leisure time for activity from 2006-2012, based on the question: "During the past month, other than your regular job, did you participate in any physical activities or exercises such as running, calisthenics, golf, gardening, or walking for exercise?" [14]. Current behaviors are determinants of future health and this indicator may illustrate a cause of significant health issues, such as obesity and poor cardiovascular health. Overall in Iowa, 23.5 percent of adults age 18 years and older self-report no leisure time physical activity, and the *Healthy People 2020* target is 32.6 percent [13]. Among youth in Jones County, 50 percent reported being physically active for a total of at least 60 minutes per day six or seven days week; only 16 percent reported being physically active for a minimum of 60 minutes per day on two or fewer days a week [15].

Sixty-five percent of Jones County residents have adequate access to exercise opportunities [11]. In Iowa, 79 percent of people have adequate access to exercise opportunities [11]. Locations for physical activity are defined as parks or recreational facilities. Parks include local, state, and national parks. Recreational facilities include a wide variety of facilities including gyms, community centers, YMCAs, dance studios and pools. However, according to the Centers for Disease Control and Prevention (CDC) Environmental Public Health Tracking Network, only 35 – 41 percent of Iowans live within a half mile of a park [18]. The role of the built environment is important for encouraging physical activity; individuals who live closer to sidewalks, parks, and gyms are more likely to exercise [19, 20, 21].

The *Healthy Iowans* goal is to have 53 percent of adult Iowans attaining the recommended level of aerobic physical activity [22]. Iowa's level of 46.9 percent falls short of this. However, recent research indicates, irrespective of meeting physical activity guidelines, those who spend a significant proportion of their day sedentary are still susceptible to a number of adverse health

## JONES COUNTY CHNA/HIP 2016

outcomes such as increased waist circumference, blood pressure and blood glucose, and lipid profiles [23]. Although not a perfect measure of sedentary behavior, 48 percent of Jones County youth report spending more than two hours per week during the school year playing electronic games, and 45 percent report spending more than two hours per week watching TV [15]. It is recommended children and adolescents spend no more than two hours per day viewing television, videos, playing video games, or playing computer games [17].

### **Nutrition**

Good nutrition is important to the growth and development of children, and a healthful diet also helps Americans reduce their risks for many health conditions, including: overweight and obesity; malnutrition; iron-deficiency anemia; heart disease; high blood pressure; dyslipidemia (poor lipid profiles); type 2 diabetes; osteoporosis; oral disease; constipation; and some cancers [17].

In Jones County, 82.5 percent of adults report consuming fewer than five servings of fruits and vegetables per day [14]. Among youth, 92 percent and 94 percent report consuming fewer than five servings of fruit and vegetables per day, respectively [15]. Approximately 81 percent of adult Iowans report inadequate fruit and vegetable consumption, compared with 76 percent of U.S. adults [14]. *Healthy Iowans 2020* has an objective of 20 percent of Iowans eating five or more fruit and vegetables per day [24]; at 17.5 percent, Jones County is slightly below that goal. Furthermore, according to the Health in Iowa Annual Report, 39 percent of Iowans consume less than one serving of fruit per day and 27 percent consume less than one serving of vegetables per day [22]. Women, older people, people with more education, and people with higher household incomes were all more likely to eat fruit and vegetables every day. Eighteen percent of Jones County youth consume less than one serving of fruit per day and 23 percent consume less than one serving of vegetables per day [15].

In addition to fruit and vegetable consumption, a healthful diet includes consuming a variety of other nutrient-dense foods, especially whole grains, dairy (or other calcium-containing) products, and lean meats and other protein sources [17]. It is also important to limit the intake of saturated and trans fats, cholesterol, added sugars, and sodium (salt). Although there are no data specific to Jones County, some data are available for the state. When asked about soda consumption, 38.6 percent of Iowans said they did not drink soda at all, while 5.9 percent said they drank sweetened soda three or more times a day [22]. In regards to sweetened fruit drinks, 50.4 percent said they did not drink them at all, while 9.8 percent drank sweetened fruit drinks once a day or more [22]. When asked how often they use whole-grain products such as whole-wheat bread or pasta, oatmeal, or bran cereal, 48.3 percent of respondents said once a day, but 11.3 percent said less than once a week [22].

# JONES COUNTY CHNA/HIP 2016

## Overweight & Obesity

Obesity is often the result of an overall energy imbalance due to poor diet and limited physical activity [11]. Obesity increases the risk for health conditions such as coronary heart disease, type 2 diabetes, cancer, hypertension, dyslipidemia, stroke, liver and gallbladder disease, sleep apnea and respiratory problems, osteoarthritis, and poor health status [25, 26]. The estimated annual medical cost of obesity in the U.S. was \$147 billion in 2008 dollars; the medical costs for people who are obese were \$1,429 higher than those of normal weight [13].

In Jones County, 31.8 percent of adults aged 18 and older self-report that they have a Body Mass Index (BMI) between 25.0 and 30.0 (overweight), and 31.1 percent of adults aged 20 and older self-report that they have a Body Mass Index (BMI) greater than 30.0 (obese) [27]. Compared to state and national averages, Jones County has a lower percentage of overweight adults, but a higher percentage of obese adults (Table 5).

	OVERWEIGHT	OBESE	TOTAL
<b>Jones County</b>	31.8%	31.1%	62.9%
<b>Iowa</b>	35.0%	30.4%	65.4%
<b>United States</b>	35.8%	27.1%	62.9%

Table 5. Overweight and Obesity in Jones County, Iowa, and the United States [27]

## ADDICTIVE BEHAVIORS

### Tobacco

Each year approximately 443,000 premature deaths can be attributed to smoking. Cigarette smoking is identified as a cause of various cancers, cardiovascular disease, and respiratory conditions, as well as low birthweight and other adverse health outcomes [11]. In Jones County, 22.1 percent of adults age 18 or older self-report currently smoking cigarettes some days or every day, and 47.2 percent report ever smoking 100 or more cigarettes (Table 6) [14]. An estimated 78.6 percent of adult smokers in Jones County attempted to quit smoking for at least one day in the past year [14].

	PERCENT OF POPULATION SMOKING CIGARETTES	PERCENT OF ADULTS EVER SMOKING 100 OR MORE CIGARETTES	PERCENT OF SMOKERS WITH QUIT ATTEMPT IN PAST 12 MONTHS
<b>Jones County</b>	22.1%	47.2%	78.6%
<b>Iowa</b>	18.1%	44.3%	56.1%
<b>United States</b>	18.1%	44.2%	60.0%

Table 6. Tobacco Usage in Jones County, Iowa, and the United States [27]

# JONES COUNTY CHNA/HIP 2016

Preventing tobacco use among youth is critical to ending the tobacco epidemic in the United States, as tobacco use is started and established primarily during adolescence [28]. If smoking continues at the current rate among youth in the United States, approximately one out of every thirteen of today's Americans younger than age 18 will die early from a smoking-related illness [28]. Cigarette smoking has declined among youth in Jones County (Figures 4 and 5); the trends seen in Jones County are similar to those in the state [29].

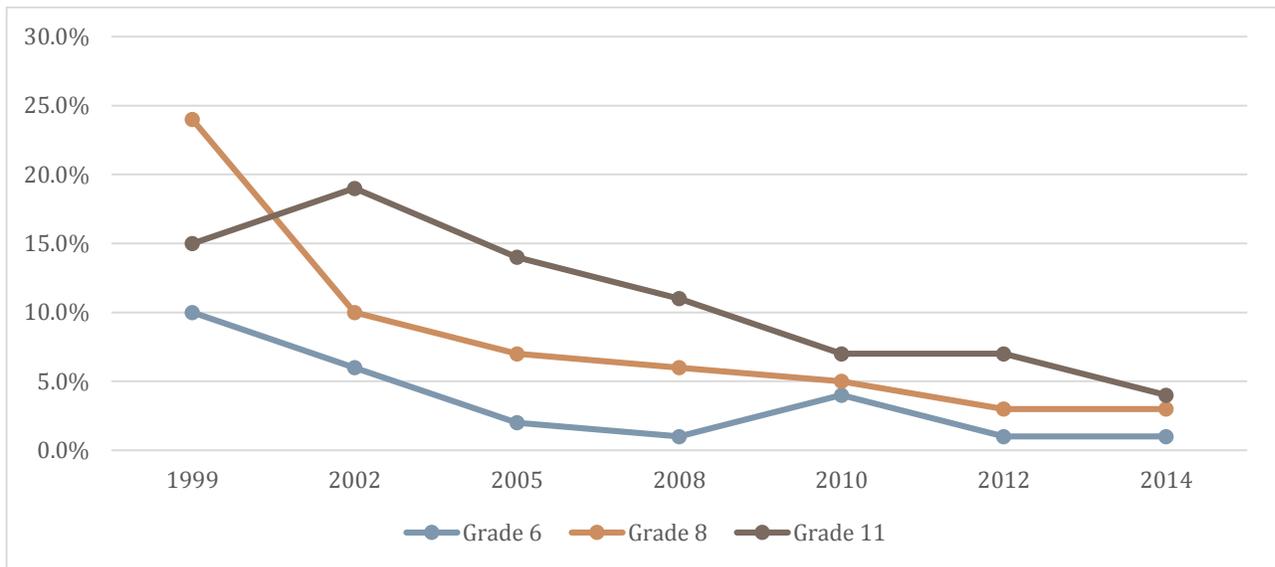


Figure 4. Percent of Jones County Students Who Smoked First Whole Cigarette Before Age 13 [29]

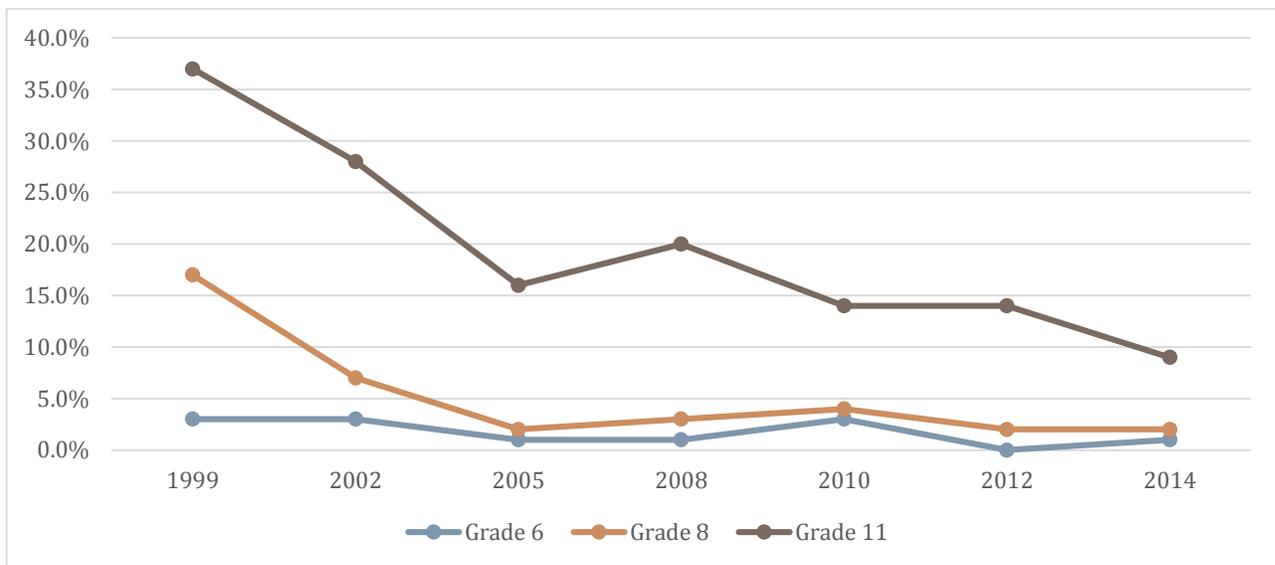


Figure 5. Percent of Jones County Students Who Smoked At Least One Cigarette in Previous 30 Days [29]

# JONES COUNTY CHNA/HIP 2016

However, in the United States, the use of some other tobacco products has increased in recent years. Nationwide, current use of electronic cigarettes increased among middle school students from 0.6 percent in 2011 to 3.9 percent in 2014 [28]. In high school students, 1.5 percent reported electronic cigarette use in 2011 and 13.4 percent in 2014. There has also been an increase in the use of hookahs among middle and high school students [28].

In Iowa and Jones County, data on use of electronic cigarettes and dissolvable tobacco was gathered for the first time during the 2014 Iowa Youth Survey. According to the survey, 7 percent of eleventh graders in Jones County and 11 percent of eleventh graders in Iowa reported using electronic cigarettes [15]. One percent of eleventh graders in Jones County and Iowa reported using dissolvable tobacco. In addition, two percent of Jones County eleventh graders and six percent of Iowa eleventh graders reported using smokeless tobacco [15].

In 2014, 24.6 percent of U.S. high school students, 14 percent of Iowa eleventh graders, and 13 percent of Jones County eleventh graders reported using some type of tobacco product [28, 15]. Furthermore, 12.7 percent of U.S. high school students report using multiple tobacco products. Youth who use multiple tobacco products are at higher risk for developing nicotine dependence and might be more likely to continue using tobacco into adulthood [28].

## Alcohol

Excessive drinking is a risk factor for a number of adverse health outcomes such as 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 [30]. Approximately 80,000 deaths are attributed annually to excessive drinking, and excessive drinking is the third leading lifestyle-related cause of death in the United States [31]. The economic costs of excessive alcohol consumption in 2010 were estimated at \$249 billion, or \$2.05 per drink [32]. In Iowa, the economic costs were estimated at \$1.9 billion, or \$1.59 per drink; this equates to \$635 per person. Iowa residents spend almost 15 percent of their food-at-home expenditures on alcohol, compared with 11.7 percent for fruits and vegetables. Alcohol sales in Jones County and Iowa have increased steadily for several years. In 2013, 1.75 gallons of alcohol per capita were sold in Jones County (Figure 6).

Jones County has the second highest percentage in the state (Clayton County is first at 33 percent) of adults who report excessive drinking (Table 7). Excessive drinking is the percentage of adults that report either binge drinking, defined as consuming more than four (women) or five (men) alcoholic beverages on a single occasion in the past 30 days, or heavy drinking, defined as drinking more than one (women) or two (men) drinks per day on average [11]. Between 2014 and 2015, there was a decrease in OWI offenses in Jones County (Table 8); however, there has been a steady increase in the number of OWI license revocations since 2010 (Figure 7).

# JONES COUNTY CHNA/HIP 2016

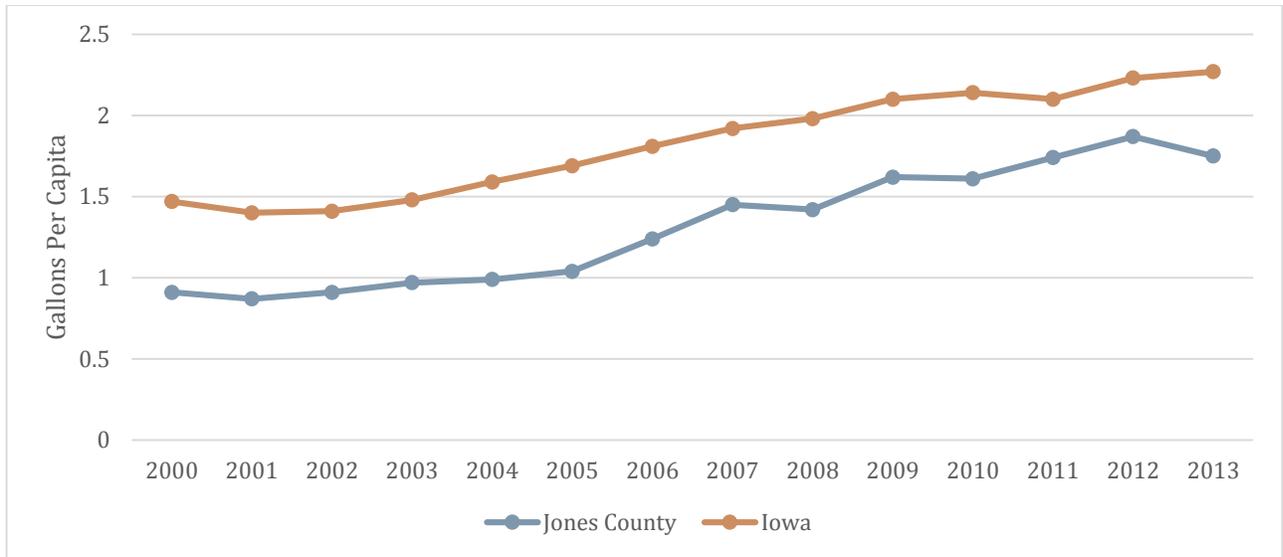


Figure 6. Per Capita Alcohol Gallon Sales, Jones County and Iowa [29]

	ESTIMATED ADULTS DRINKING EXCESSIVELY
<b>Jones County</b>	32.4%
<b>Iowa</b>	21.4%
<b>United States</b>	16.9%

Table 7. Adult Excessive Drinking [14]

	2014	2015
<b>First Offense</b>	65	67
<b>Second Offense</b>	24	10
<b>Third Offense</b>	6	8
<b>Total</b>	95	85

Table 8. OWI Offenses, Jones County [33]

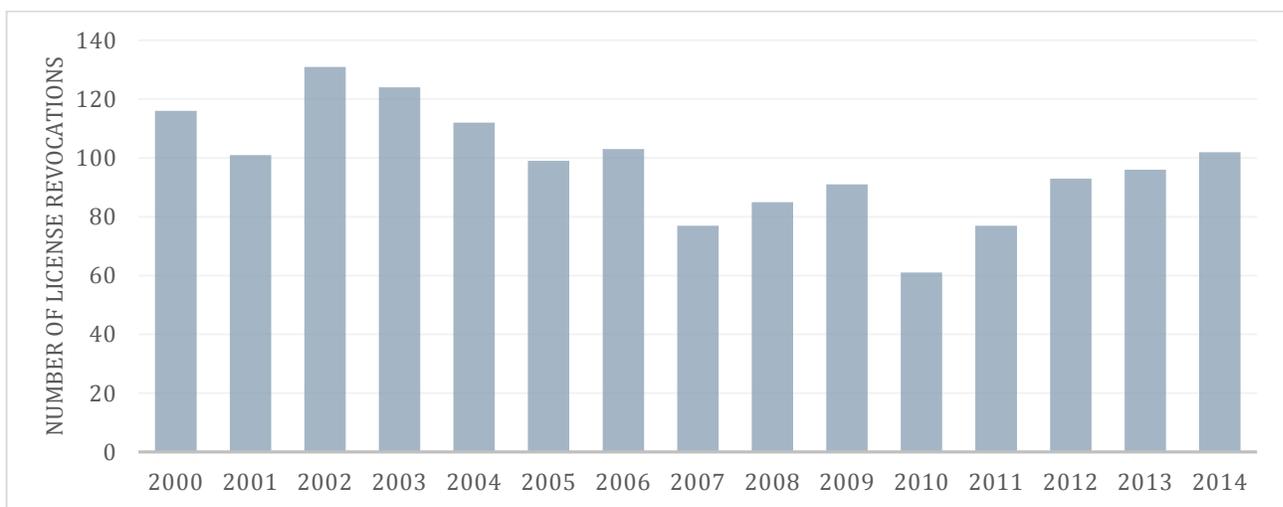


Figure 7. OWI License Revocations, Jones County [34]

# JONES COUNTY CHNA/HIP 2016

Among youth in the United States, alcohol is the most commonly used and abused drug, and excessive drinking is responsible for more than 4,300 deaths among underage youth each year [31]. In addition, people age 12 to 20 years drink 11 percent of all alcohol consumed in the United States. Youth who start drinking before age 15 years are six times more likely to develop alcohol dependence or abuse later in life than those who begin drinking at or after age 21 years [31].

Youth alcohol consumption has been decreasing in Jones County. Figure 8 illustrates the percent of eleventh graders who reported: taking their first drink before age 13 years (Age); drinking alcohol in the previous 30 days (30 Day Use); and binge drinking in the previous 30 days (Binge Drinking).

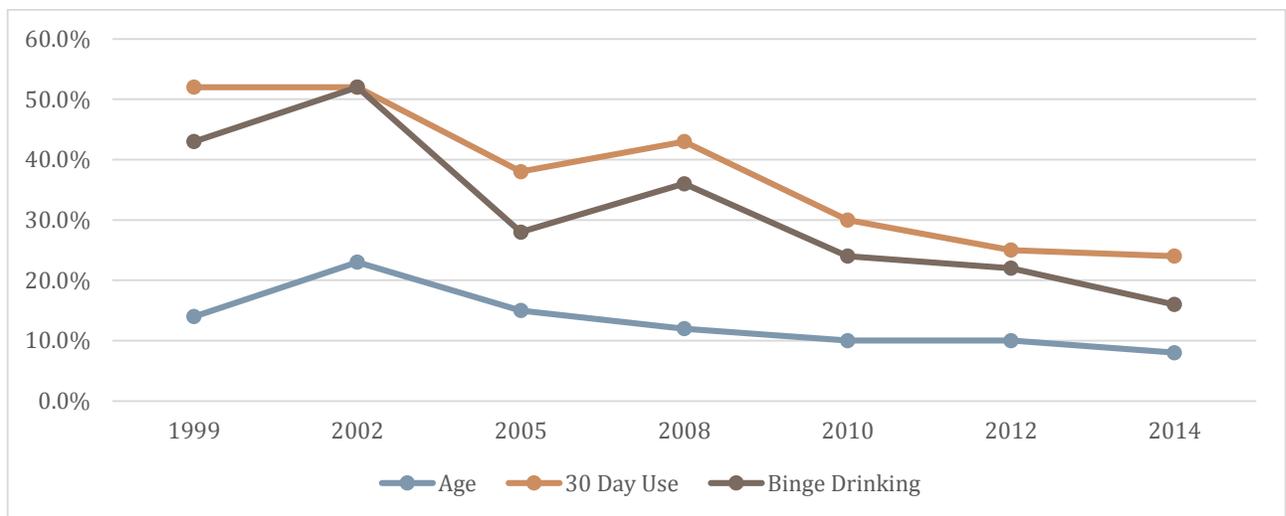


Figure 8. Jones County Youth Alcohol Consumption [29]

## Illicit Drugs

Most drugs of abuse can alter a person's thinking and judgment, leading to health risks, including addiction, drugged driving and infectious disease [35].

Among adults in Jones County, alcohol is the most reported substance of use by individuals on admission to Iowa substance abuse treatment services, reinforcing alcohol as the primary substance of use in the county [29]. Methamphetamine, marijuana, other opiates and synthetics, heroin, and cocaine/crack are the next most cited substances. In addition, there were 13 drug-related felonies and 34 serious misdemeanor drug charges in 2015 in Jones County [36].

Among youth in Jones County, prescription medications and marijuana are the most frequently used substances (Table 9). According to the 2014 Iowa Youth Survey, the vast majority of Jones County youth perceive marijuana, methamphetamine, cocaine, and amphetamine use as a moderate or great risk to themselves (Table 10) [15].

# JONES COUNTY CHNA/HIP 2016

	JONES COUNTY				IOWA			
	Grade 6	Grade 8	Grade 11	Overall	Grade 6	Grade 8	Grade 11	Overall
<b>Any Other Drug Use</b>	10%	9%	13%	11%	10%	9%	17%	12%
<b>Amphetamines</b>	0%	0%	2%	1%	1%	1%	2%	1%
<b>Cocaine</b>	1%	0%	2%	1%	1%	1%	1%	1%
<b>Inhalants</b>	3%	3%	2%	2%	2%	2%	1%	2%
<b>Marijuana</b>	1%	3%	7%	3%	0%	2%	11%	4%
<b>Methamphetamine</b>	0%	0%	1%	0%	0%	1%	1%	1%
<b>OTC Medications</b> (taken differently than instructions)	1%	1%	8%	3%	2%	3%	5%	3%
<b>Prescription Medications</b> (without prescription)	3%	3%	4%	3%	2%	3%	5%	3%
<b>Prescription Medications</b> (taken differently than instructions)	3%	3%	5%	4%	5%	3%	4%	4%
<b>Steroid Use</b> (without prescription)	0%	1%	2%	1%	1%	1%	1%	1%
<b>Synthetic Drugs</b>	0%	0%	3%	1%	1%	1%	2%	1%

Table 9. Percent of Youth Reporting Drug Use in Previous 30 Days [15]

	MARIJUANA		METHAMPHETAMINE		COCAINE		AMPHETAMINES	
	2012	2014	2012	2014	2012	2014	2012	2014
<b>Grade 6</b>	74%	80%	71%	77%	72%	77%	71%	78%
<b>Grade 8</b>	86%	80%	91%	82%	90%	82%	90%	82%
<b>Grade 11</b>	69%	69%	90%	83%	90%	84%	89%	83%

Table 10. Percent of Youth Perceiving Use as a Moderate or Great Risk, Jones County [15]

## CLINICAL PREVENTIVE SERVICES

Clinical and community-based preventive services are central to improving and enhancing physical and mental health [37]. Certain clinical preventive services have proven to be both effective and cost-saving through decades of practice and research. In the United States, less than half of older adults are up-to-date on a core set of clinical preventive services, such as cancer screenings and immunizations [37].

Breast cancer is the second most common type of cancer among women in the United States and cost nearly \$7 billion dollars to treat in 2007 [38]. Evidence suggests mammography screening reduces breast cancer mortality, especially among older women [39]. There is, however, debate

## JONES COUNTY CHNA/HIP 2016

around the effectiveness and cost/benefit of regular mammograms for women under age 50, and whether screening for breast cancer ultimately does more harm than good [11]. Some researchers point out while screening reduces breast cancer mortality by 15 percent, it also leads to 30 percent over-diagnosis and overtreatment [40]. In Jones County, 67.3 percent of female Medicare enrollees age 67 – 69 years have had a mammogram in the past two years (Table 11). This is similar to the rate in Iowa and higher than the U.S. average.

Cervical cancer was once one of the most common causes of cancer death for American women, but over the last 30 years, the cervical cancer death rate has gone down by more than 50 percent [41]. The main reason for this change was the increased use of the Pap test. This screening procedure can find changes in the cervix before cancer develops; it can also find cervical cancer early, in its most curable stage [41]. In Jones County, 78.8 percent of women age 18 years and older reported they have had a Pap test in the previous three years (Table 11). This is similar to the average rates in both Iowa and the United States, though lower than the *Healthy People 2020* goal of 93 percent [17].

Excluding skin cancers, colorectal cancer is the third most common cancer diagnosed in both men and women in the United States [42]. It is also the third leading cause of cancer-related deaths in the United States when men and women are considered separately, and the second leading cause when both sexes are combined. The death rate from colorectal cancer has been dropping in both men and women for several decades. One reason for this is colorectal polyps are now being found more often by screening and removed before they can develop into cancers or are being found earlier when the disease is easier to treat [42]. Approximately 68 percent of Jones County residents age 50 years and older reported they have ever had a sigmoidoscopy or colonoscopy (Table 11). This is higher than both the Iowa and U.S. averages, and slightly below the *Healthy People 2020* target of 70.5 percent [17].

Each year in the United States, about one million people have to seek care in a hospital due to pneumonia, and about 50,000 people die from the disease [43]. The CDC recommends two pneumococcal vaccines for adults 65 years or older. About 70 percent of Jones County residents age 65 years and older reported they have ever received a pneumonia vaccination (Table 11). The *Healthy People 2020* target is 90 percent [17].

	MAMMOGRAM	PAP TEST	SIGMOIDOSCOPY OR COLONOSCOPY	PNEUMONIA VACCINATION
<b>Jones County</b>	67.3%	78.8%	68.3%	70.1%
<b>Iowa</b>	66.4%	79.5%	60.0%	69.9%
<b>United States</b>	63.0%	78.5%	61.3%	67.5%

Table 11. Clinical Preventive Services [11, 14, 27]

# JONES COUNTY CHNA/HIP 2016

## ORAL HEALTH

The health of the mouth and surrounding craniofacial (skull and face) structures is central to a person’s overall health and well-being [17]. Good oral health improves a person’s ability to speak, smile, smell, taste, touch, chew, swallow, and make facial expressions to show feelings and emotions. However, oral diseases, from cavities to oral cancer, cause pain and disability for many Americans [17]. About 24 percent of Jones County residents age 18 years and older reported they have not visited a dentist, dental hygienist, or dental clinic within the past year; this is lower than the Iowa average of 25.6 percent and the U.S. average of 30.2 percent [14, 27]. Approximately 14.3 percent of Jones County adults age 18 years and older report six or more of their permanent teeth have been removed due to tooth decay, gum disease, or infection; this is similar to the Iowa average of 14.8 percent, and lower than the national average of 15.7 percent [14, 27].

One important emerging oral health issue is the increase of tooth decay in preschool children. A CDC publication reported, over the past decade, dental caries (tooth decay) in children ages two to five have increased [44]. All children newly enrolling in an Iowa elementary or high school are required to have a dental screening. Data on dental screenings for Jones County students in kindergarten and ninth grade are in Table 12; however, these data are most likely incomplete as schools are encouraged, but not required, to report the screenings to the Iowa Department of Public Health (IDPH).

SCHOOL	GRADE	TREATMENT NEEDS				VALID CERTIFICATES		WITHOUT VALID CERTIFICATES	
		No Obvious Problems	Requires Dental Care	Requires Urgent Care	Total Treatment Needs	N	%	N	%
<b>Anamosa High</b>	9	80	15	0	95	95	94.1	6	5.9
<b>St. Patrick</b>	K	2	0	0	2	2	20.0	8	80.0
<b>Strawberry Hill</b>	K	77	9	0	86	86	100.0	0	0.0
<b>Midland Elementary</b>	K	24	3	2	29	29	82.9	6	17.1
<b>Midland Middle/High</b>	9	25	3	1	29	29	72.5	11	27.5
<b>Monticello High</b>	9	53	21	0	74	74	79.6	19	20.4
<b>Sacred Heart</b>	K	3	1	0	4	4	44.4	5	55.6
<b>Shannon Elementary</b>	K	57	5	0	62	62	82.7	13	17.3
<b>Olin Elementary</b>	K	7	0	0	7	7	87.5	1	12.5
<b>Total</b>		328	57	3	388	388	84.9	69	15.1

Table 12. School Dental Screening Requirement – State Compliance, 2014-2015 School Year [45]

## JONES COUNTY CHNA/HIP 2016

In addition, the I-Smile Dental Home Initiative is a statewide program working toward access to oral health care for Iowa children [46]. The program is administered by the Iowa Department of Public Health and the Department of Human Services through contracts with various organizations; in Jones County, the Hawkeye Area Community Action Program (HACAP) provides the services. According to the I-Smile Coordinator for Jones County, there is limited access to dental care for children, especially before the age of three. There are no pediatric dentists in the county, and few primary care providers do oral checks during well child visits.

During the 2014-2015 school year, the I-Smile Coordinator for Jones County placed 733 sealants, referred 71 kids to a dentist, and found eight kids with obvious to severe decay. The Coordinator also sees children at Head Start programs and WIC clinics in the county. Between May 2015 and December 2015, she screened 28 kids at Head Start and 120 kids at WIC clinics. Five children from Head Start and 62 from the WIC clinics were referred to a dentist. In addition, three children from Head Start and seven children at WIC clinics had obvious to severe decay. The dental referrals for children without signs of decay occurred if the children did not yet have an established dentist or were overdue for a check-up.

## Maternal, Infant, Child & Family Health

### MATERNAL HEALTH

Pregnancy can provide an opportunity to identify existing health risks in women and to prevent future health problems for women and their children. Engaging in prenatal care decreases the likelihood of maternal and infant health risks. This indicator can also highlight a lack of access to preventive care, a lack of health knowledge, insufficient provider outreach, and/or social barriers preventing utilization of services [27]. In Jones County, approximately 14 percent of pregnant women did not receive prenatal care during their first trimester (Table 13), which means 86 percent did receive prenatal care beginning in the first trimester. In the U.S., 70.8 percent of females delivering a live birth received prenatal care beginning in the first trimester in 2007; the *Healthy People 2020* target is 77.9 percent.

	JONES COUNTY	IOWA
<b>2008-2012</b>	15%	16%
<b>2009-2013</b>	14%	15%
<b>2010-2014</b>	14%	15%

Table 13. Mothers with No Prenatal Care in First Trimester [6]

In Iowa, the Maternal Health Services' maternal health clinics provide prenatal and postpartum care to Medicaid eligible and other low income women. Clinics offer medical and dental assessments; health and nutrition education; psychosocial screening and referral; care coordination; and assistance with plans for delivery. In Jones County, Hillcrest Family Services provides these services for residents at monthly WIC clinics in Monticello and Anamosa. Between October 1, 2014 and September 30, 2015, Hillcrest served 90 women at WIC clinics in Jones County; of these, 44 were pregnant.

### INFANT HEALTH

#### Mortality

The death of a baby before his or her first birthday is called infant mortality [47]. The infant mortality rate is an estimate of the number of infant deaths for every 1,000 live births. This rate is often used as an indicator to measure the health and well-being of a nation, because factors affecting the health of entire populations can also impact the mortality rate of infants. Over 23,000 infants died in the U.S. in 2014. The leading causes of infant mortality are birth defects, preterm births, maternal complications of pregnancy, Sudden Infant Death Syndrome (SIDS), and injuries [47]. The infant mortality rate in Jones County is similar to the rate in the state and lower than the

# JONES COUNTY CHNA/HIP 2016

national rate (Table 14). The *Healthy People 2020* target is an infant mortality rate less than or equal to six percent [17].

INFANT MORTALITY RATE	
<b>Jones County</b>	5.4
<b>Iowa</b>	5.2
<b>United States</b>	6.5

Table 14. Infant Mortality Rate per 1,000 Births [27]

## Preterm Birth & Low Birth Weight

Preterm birth is the birth of an infant before 37 weeks of pregnancy [47]. In 2014, preterm birth affected about one of every ten infants born in the United States. Preterm birth is the greatest contributor to infant death, with most preterm-related deaths occurring among babies who were born very preterm (before 32 weeks). Preterm birth is also a leading cause of long-term neurological disabilities in children [47]. Jones County has low rate of preterm births (Table 15).

Low birth weight (LBW) is defined as a birth weight of a live born infant of less than 2,500 grams (5 pounds 8 ounces) regardless of gestational age. Low birth weight infants are at high risk for health problems. Medical risk factors for having a low-birth weight baby include: preterm labor; chronic health conditions, such as high blood pressure, diabetes, and heart, lung, and kidney problems; infections; problems with the placenta; not gaining enough weight during pregnancy; and smoking, drinking alcohol, or drug abuse [48]. Approximately 8.2 percent of infants born in the United States have a low birth weight. Jones County is well below this average (Table 16), as well as below the *Healthy People 2020* target of less than or equal to 7.8 percent of live births [17].

	JONES COUNTY	IOWA
<b>2008-2012</b>	5%	7%
<b>2009-2013</b>	4%	7%
<b>2010-2014</b>	4%	7%

Table 15. Premature Birth (% of singleton births) [6]

	JONES COUNTY	IOWA
<b>2008-2012</b>	3%	5%
<b>2009-2013</b>	4%	5%
<b>2010-2014</b>	4%	5%

Table 16. Low Birth Weight (% of singleton births) [6]

## Breastfeeding

One of the most highly effective preventive measures a mother can take to protect the health of her infant is to breastfeed. However, in the United States, although most mothers hope to breastfeed, and 79 percent of babies start out being breastfed, only 19 percent are exclusively breastfed six months later [49]. Of the women who attended WIC clinics in Jones County, 12 were breastfeeding their infants, while 34 were not. Unfortunately, additional data specific to Jones County are not available; however, state and national data on breastfeeding are presented in Table 17.

# JONES COUNTY CHNA/HIP 2016

	IOWA	UNITED STATES	HEALTHY PEOPLE 2020 TARGET
<b>Ever Breastfed</b>	82.1%	79.2%	81.9%
<b>Breastfeeding at 6 months</b>	51.6%	49.4%	60.6%
<b>Breastfeeding at 12 months</b>	28.9%	26.7%	34.1%
<b>Exclusive breastfeeding at 3 months</b>	41.2%	40.7%	46.2%
<b>Exclusive breastfeeding at 6 months</b>	20.1%	18.8%	25.5%

Table 17. Proportion of Infants Who Are Breastfed [50]

Birth facility policies and practices significantly impact whether a woman chooses to start breastfeeding and how long she continues to breastfeed [50]. The Baby-Friendly Hospital Initiative is a global program sponsored by the World Health Organization (WHO) and the United Nations Children’s Fund (UNICEF) to encourage and recognize hospitals and birth centers that offer an optimal level of care for lactation. Less than one percent of live births in Iowa occur in baby-friendly hospitals, compared with 7.8 percent nationally [50].

## CHILD & ADOLESCENT HEALTH

Adverse Childhood Experiences (ACEs) are potentially traumatic events that can have negative, lasting effects on health and well-being [51]. These experiences range from physical, emotional, or sexual abuse to parental divorce or the incarceration of a parent or guardian [51]. According to an analysis done by Iowa ACEs 360 and other stakeholders, 56 percent of Iowa adults have experienced at least one of eight types of child abuse and household dysfunction, and 14.2 percent have experienced four or more [52]. Seven percent of Jones County adults reported experiencing four or more types of ACEs. Another study by Child Trends found 55 percent of Iowa children aged birth to 17 years reported experiencing zero ACEs, while 33 percent reported experiencing one or two and 12 percent reported three or more [32].

In Jones County, HACAP provides child health services, including Head Start, a child care nurse consultant, and the 1<sup>st</sup> Five Healthy Mental Development Initiative. In fiscal year 2015, HACAP served 835 households in Jones County through their Child Health programs. The 1<sup>st</sup> Five Initiative works with medical practitioners who identify social/emotional or developmental concerns, family stressors or caregiver depression during well child medical exams. If any issues are detected, the 1<sup>st</sup> Five participating provider can refer the family to 1<sup>st</sup> Five HACAP for care coordination services to address the needs of the entire family. The 1<sup>st</sup> Five Initiative started receiving referrals in Jones County in May 2015, and had ten referrals in 2015.

Adolescence is a crucial period with marked physical, emotional, and intellectual changes, as well as changes in social roles, relationships and expectations [53]. Lifestyle behaviors developed during adolescence have immediate consequences that often continue into adulthood. These

# JONES COUNTY CHNA/HIP 2016

behaviors influence short- and long-term prospects for health, educational attainment, risk of chronic disease, and quality of life [53]. In addition to the data provided in a previous section on youth substance abuse, data collected from the Iowa Youth Survey on perceptions of their peer, family, school, and neighborhood/community environments are shown in Table 18.

	GRADE 6	GRADE 8	GRADE 11
<b>Secure &amp; Supportive Family</b>			
Positive Family Relationships	90%	75%	73%
Family Involvement & Support	77%	71%	74%
Parental/Guardian Boundaries	87%	86%	84%
<b>Safe &amp; Supportive School Climate</b>			
School Expectations/Boundaries	80%	76%	57%
School Staff/Student Support	71%	50%	43%
Positive Student Norms	98%	88%	54%
Social Pressure to Use Substances Limited	93%	92%	56%
<b>Safe &amp; Supportive Community</b>			
Youth Access to Substances Limited	89%	66%	28%
Safe Neighborhood	86%	80%	81%
Supportive Neighborhood	65%	56%	47%
<b>Socially Competent Youth</b>			
Empathy	91%	89%	85%
Self-Confidence	81%	76%	67%
Positive Values	83%	64%	30%
<b>Commitment to School/Learning</b>			
	96%	83%	77%

Table 18. Iowa Youth Survey Results, Jones County – Percent of Students Responding Favorably [15]

## OLDER ADULTS

Jones County Board of Health provides funding of last resort for services such as skilled nursing, home care aides, and homemaker services; these services allow people with special needs or those recovering from illness or injury to stay in their homes. In the current fiscal year (2016), Unity Point at Home is providing services for 25 clients using funding from Jones County. However, with decreasing levels of county funds available, certain services, especially homemaker, have been decreased. Homemaker services include light housekeeping, laundry, and grocery shopping; therefore, services such as skilled nursing and home care aide are of higher priority. According to the social worker at Unity Point at Home, there is a high level of need for services in the county. As homemaker services are still important to enable people to stay at home, Jones County Public Health is interested in working with community partners to ensure these services remain accessible for those in need.

## Sexual & Reproductive Health

### FAMILY PLANNING

The availability of family planning services allows individuals to achieve desired birth spacing and family size, and contributes to improved health outcomes for infants, children, women, and families [17]. In 2010, 3,500 women in Jones County age 13 to 44 years were in need of contraceptive services and supplies, and 880 of them were in need of publicly funded services and supplies [54]. Title X clinics are available in Anamosa and Monticello, as well as in Cedar Rapids, Mt. Vernon, and Maquoketa [55].

Unintended pregnancies are associated with many negative health and economic consequences; in 2010, 43 percent of all pregnancies in Iowa were unintended [56]. For women, negative outcomes associated with unintended pregnancy can include delays in initiating prenatal care; reduced likelihood of breastfeeding; maternal depression; and increased risk of physical violence during pregnancy [17]. In addition, 40 percent of resident births in Iowa were reimbursed by Medicaid in 2012; among mothers who were not first time mothers, 33 percent had an inter-pregnancy interval of less than 18 months [57]. Inter-pregnancy intervals of less than 18 months put mothers at increased risk for anemia, and for having a low birth weight infant or a preterm birth.

### TEEN PREGNANCIES

The negative consequences associated with unintended pregnancies are greater for teen parents and their children [17]. Eighty-two percent of pregnancies to mothers ages 15 to 19 are unintended. Teen mothers are less likely to graduate from high school or attain a GED by the time they reach age 30; earn an average of approximately \$3,500 less per year, when compared with those who delay childbearing until their 20s; and receive nearly twice as much Federal aid for nearly twice as long. Similarly, early fatherhood is associated with lower educational attainment and lower income [17]. Evidence suggests teen pregnancy significantly increases the risk of repeat pregnancy and of contracting a sexually transmitted infection (STI). Jones County has a relatively low rate of teen births (Table 19). Since teen birth rates are associated with unsafe sexual activity, this suggests teens are either having less sex in the first place, or more teens who are sexually active are using contraceptives and using them more effectively.

	JONES COUNTY	IOWA
<b>2008-2012</b>	23.4	29.2
<b>2009-2013</b>	15.2	27.0
<b>2010-2014</b>	14.9	24.5

Table 19. Teen Birth Rate – Ages 15 to 19 per 1,000 [6]

## Chronic Conditions

Chronic diseases are responsible for seven of ten deaths each year, and treating people with chronic diseases accounts for 86 percent of health care costs in the United States [58].

### ASTHMA

Asthma is a chronic lung disease that inflames and narrows the airways [59]. Asthma affects people of all ages, but it most often starts during childhood. In the United States, more than 25 million people are known to have asthma; about 7 million of these people are children [59]. Asthma is a serious health and economic concern in the United States [60]. Asthma costs the United States \$56 billion each year, and the average yearly cost of care for a child with asthma was \$1,039 in 2009. In addition, asthma caused 10.5 million missed days of school and 14.2 million missed days of work in the United States in 2008. Furthermore, about nine people die from asthma every day [60].

Approximately 27.6 percent of Jones County adults age 18 years and older report they have ever been told by a health professional they had asthma [14, 27]. This is higher than the state average of 11.8 percent and the national average of 13.4 percent. The highest rates of asthma hospitalizations in Jones County are in children age 4 years and under, while the highest rate of emergency department visits for asthma are in children age five to 14 years (Tables 20 and 21).

AGE	JONES COUNTY	IOWA
<b>0 - 4</b>	145.4	149.1
<b>5 - 14</b>	78.6	65.4
<b>15 - 34</b>	No data	27.5
<b>35 - 64</b>	46.6	64.3
<b>65+</b>	81.8	100.4

Table 20. Asthma Hospitalization Rate per 100,000 Population, 2010-2014 [6]

AGE	JONES COUNTY	IOWA
<b>0 - 4</b>	472.4	686.9
<b>5 - 14</b>	534.6	509.0
<b>15 - 34</b>	434.5	462.6
<b>35 - 64</b>	188.8	257.1
<b>65+</b>	76.3	115.4

Table 21. Asthma Emergency Department Visit Rate per 100,000 Population, 2010-2014 [6]

### CANCER

Every year, cancer claims the lives of more than half a million Americans [58]. Cancer is the second leading cause of death in the United States, exceeded only by heart disease; one of every four deaths in the United States is due to cancer [58]. The cancer death rate in Jones County has been consistently lower than the cancer death rate in Iowa (Table 22). Incidence rates for various types of cancer in Jones County are shown in Table 23; these rates are consistent with or lower than state and national rates.

# JONES COUNTY CHNA/HIP 2016

	JONES COUNTY	IOWA
<b>2008-2012</b>	142.2	171.6
<b>2009-2013</b>	153.6	169.5
<b>2010-2014</b>	152.2	168.7

Table 22. Cancer Death Rate (age-adjusted per 100,000 population) [6]

	BREAST	CERVICAL	PROSTATE	COLON & RECTUM	LUNG
<b>Jones County</b>	122.3	5.8	108.1	43.9	60.1
<b>Iowa</b>	123.0	7.0	126.2	47.2	65.7
<b>United States</b>	123.0	7.7	131.7	41.9	63.7

Table 23. Cancer Incidence Rates (age-adjusted per 100,000 population), 2008-2012 [27, 61]

## HEART DISEASE AND STROKE

Heart disease and stroke are among the nation's leading causes of death and major causes of disability, yet these conditions are largely preventable [58]. Together, heart disease and stroke are among the most widespread and costly health problems facing the United States today, accounting for more than \$500 billion in health care expenditures and related expenses in 2010 alone [17]. The leading modifiable (controllable) risk factors for heart disease and stroke are: high blood pressure; high cholesterol; cigarette smoking; diabetes; poor diet and physical inactivity; and overweight and obesity [17].

Almost 59 percent of adults in Jones County report they have ever been told by a health professional they had high blood cholesterol, which is about 20 percent higher than the state and national averages (Table 24). Approximately 23 percent of Jones County adults report high blood pressure. In Iowa, 19.1 percent of adults with high blood pressure are not taking medication [27]. For the Medicare fee-for-service population, 38.1 percent have been diagnosed with hyperlipidemia (typically associated with high cholesterol) and 51.3 percent have high blood pressure; these percentages are similar to the state and national averages (Table 24). In addition, 6.5 percent of adults in Jones County report they have ever been told by a health professional they have coronary heart disease or angina (Table 25); this is approximately two percent higher than state and national averages. Within the Medicare fee-for-service population, 24.3 percent have been diagnosed with ischemic heart disease (Table 25).

	HIGH CHOLESTEROL		HIGH BLOOD PRESSURE	
	Adults (Self-Report)	Medicare Population	Adults (Self-Report)	Medicare Population
<b>Jones County</b>	<b>58.5%</b>	38.1%	23.3%	51.3%
<b>Iowa</b>	37.9%	40.3%	25.2%	51.2%
<b>United States</b>	38.5%	44.8%	28.2%	55.5%

Table 24. Percent of Population with High Cholesterol and High Blood Pressure [27]

# JONES COUNTY CHNA/HIP 2016

	ADULTS (SELF-REPORT)	MEDICARE POPULATION
<b>Jones County</b>	<b>6.5%</b>	24.3%
<b>Iowa</b>	4.2%	25.3%
<b>United States</b>	4.4%	28.6%

Table 25. Percent of Population with Heart Disease [27]

Additional data on heart disease and stroke in Jones County are presented in Tables 26 and 27. The hospitalization rates for heart failure and stroke have been increasing in Jones County, while they have been decreasing in the state; however heart attack hospitalization rates and heart disease death rates in the county have been decreasing.

	HEART ATTACK HOSPITALIZATION RATE		HEART FAILURE HOSPITALIZATION RATE		HEART DISEASE DEATH RATE	
	Jones County	Iowa	Jones County	Iowa	Jones County	Iowa
<b>2008-2012</b>	173.8	156.3	181.3	209.4	177.0	172.2
<b>2009-2013</b>	172.5	150.7	185.6	200.5	169.8	168.7
<b>2010-2014</b>	166.1	149.3	203.8	195.7	166.7	165.2

Table 26. Heart Attack and Heart Failure Hospitalization Rates, and Heart Disease Death Rates (age-adjusted per 100,000 population) [6]

	STROKE HOSPITALIZATION RATE		STROKE DEATH RATE	
	Jones County	Iowa	Jones County	Iowa
<b>2008-2012</b>	147.5	171.6	38.1	37.6
<b>2009-2013</b>	145.6	165.3	31.8	35.8
<b>2010-2014</b>	149.6	162.0	32.6	34.5

Table 27. Stroke Hospitalization and Death Rates (age-adjusted per 100,000 population) [6]

## DIABETES

Diabetes can cause serious health complications including heart disease, blindness, kidney failure, and lower-extremity amputations [58]. Diabetes is the seventh leading cause of death in the United States. Approximately 29 million Americans, or 1 out of every 11 people, have diabetes, and nearly 86 million Americans have prediabetes [58]. Risk factors that increase the likelihood of developing diabetes include: being overweight or obese; having a parent, brother, or sister with diabetes; being African American, American Indian, Asian American, Pacific Islander, or Hispanic American/Latino heritage; having a prior history of gestational diabetes or birth of at least one baby weighing more than 9 pounds; having high blood pressure measuring 140/90 or higher; having abnormal cholesterol with HDL ("good") cholesterol is 35 or lower, or triglyceride level is 250 or higher; and being physically inactive (exercising fewer than three times a week) [62].

# JONES COUNTY CHNA/HIP 2016

In 2012, 7.8 percent of Jones County adults age 20 years and older reported they had ever been told by a health professional they have diabetes [27]. This is lower than the 8.5 percent of Iowans and 9.1 percent of adults nationally who reported being diagnosed with diabetes. However, among the Medicare fee-for-service population, 25.4 percent have been diagnosed with diabetes in Jones County, compared to 23.8 percent in the state and 27 percent nationally [27].

Regular HbA1c monitoring among diabetic patients is considered the standard of care [11]. It helps assess the management of diabetes over the long term by providing an estimate of how well a patient has managed his or her diabetes over the past two to three months. When hyperglycemia is addressed and controlled, complications from diabetes can be delayed or prevented [11]. In Jones County, 285 out of 305 (93.8 percent) Medicare enrollees with diabetes have had an annual exam that included HbA1c monitoring; this is higher than the statewide percentage of 89.4 percent and the national average of 84.6 percent [27].

Rates of diabetes hospitalization and emergency department visits for Jones County and Iowa are presented in Table 28.

	DIABETES HOSPITALIZATION RATE		DIABETES EMERGENCY DEPARTMENT VISIT RATE	
	Jones County	Iowa	Jones County	Iowa
<b>2008-2012</b>	95.6	113.3	158.5	160.2
<b>2009-2013</b>	90.9	111.8	140.5	161.9
<b>2010-2014</b>	91.5	112.3	159.2	165.4

Table 28. Diabetes Hospitalization and Emergency Department Visit Rates (age-adjusted 100,000) [6]

## MENTAL HEALTH AND ILLNESS

Mental health is “a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community” [63]. It is estimated only about 17 percent of U.S adults are considered to be in a state of optimal mental health, and there is emerging evidence positive mental health is associated with improved health outcomes [64]. Between 2006 and 2011, the most recent data available, the average number of days Jones County adults reported their mental health was not good was 3.7 days per month, compared to 2.6 days per month overall in Iowa [14].

Mental illness is defined as “collectively all diagnosable mental disorders” or “health conditions that are characterized by alterations in thinking, mood, or behavior (or some combination thereof) associated with distress and/or impaired functioning” [64]. Depression is the most common type of mental illness, affecting more than 26 percent of the U.S. adult population [64]. Evidence has shown mental disorders, especially depressive disorders, are strongly related to the occurrence,

# JONES COUNTY CHNA/HIP 2016

successful treatment, and course of many chronic diseases including diabetes, cancer, cardiovascular disease, asthma, and obesity. Mental disorders are also related to many risk behaviors for chronic disease, such as physical inactivity, smoking, excessive drinking, and insufficient sleep [64].

There are limited data available on diagnosed mental illness for Jones County residents. Among the Medicare fee-for-service population, 14.2 percent have been diagnosed with depression, compared to 14.9 percent in the state and 15.4 percent nationally [27]. Approximately 4.2 percent of Iowan adults in 2009 – 2013 had serious thoughts of suicide within the year prior to being surveyed, and 4.7 percent had a serious mental illness [65]. Almost half (49.3 percent) of adults in Iowa with any mental illness received treatment in 2009 – 2013 [65].

Some information pertaining to youth were provided in the Child & Adolescent Health section above. As a brief review, the HACAP 1<sup>st</sup> Five Healthy Mental Development Initiative received ten referrals from Jones County for their program in 2015. In addition, overall, the majority of sixth, eighth, and eleventh graders in the county feel they have safe and supportive family, school, and community environments. However, 10 percent of sixth graders, 11 percent of eighth graders and 16 percent of eleventh graders report they have felt so sad or hopeless almost every day for two weeks or more that they stopped doing some of their usual activities [15]. In addition, about five percent of youth report feeling worthless all the time and seven percent report taking medicine because they felt restless, nervous, or sad [15]. In Iowa, about 8.3 percent of all adolescents per year in 2009 – 2013 had at least one major depressive episode within the year prior to being surveyed; the percentage increased from 7.6 percent in 2009 to 10 percent in 2013 [65]. Approximately 51.2 percent of adolescents in Iowa did not receive treatment for depression [65].

## **Mental Health Care Access**

In Jones County there are 2,944 people for every one mental health providers, which includes psychiatrists, psychologists, licensed clinical social workers, counselors, marriage and family therapists and advanced practice nurses specializing in mental health care [11]. In Iowa, the ratio is 904:1. Approximately 30 percent of the U.S. population lives in a county designated as a Mental Health Professional Shortage Area [11].

## **Suicide**

Suicide is a serious public health problem that can have lasting harmful effects on individuals, families, and communities [66]. Suicide is an indicator of poor mental health. The crude suicide death rate in Jones County is higher than the state and national rates (Table 29). In addition, about ten percent of Jones County youth have seriously thought about killing themselves, eight percent have made a plan about how they would kill themselves, and three percent have attempted to kill

# JONES COUNTY CHNA/HIP 2016

themselves (Table 30) [15]. Female youth reported more suicidal thoughts, plans, and attempts than male youth, and students in eleventh grade also generally reported more suicidal thoughts, plans, and attempts than students in sixth or eighth grade (Table 30).

	AVERAGE ANNUAL DEATHS, 2007-2011	CRUDE DEATH RATE (PER 100,000 POP.)	AGE-ADJUSTED DEATH RATE (PER 100,000 POP.)
<b>Jones County</b>	4	18.4	No Data Available
<b>Iowa</b>	397	13.0	13.0
<b>United States</b>	39,308	12.6	12.3

Table 29. Suicide Deaths per 100,000 Population [27]

	GRADE 6		GRADE 8		GRADE 11		ALL GRADES		
	M	F	M	F	M	F	Total	M	F
<b>Suicidal thoughts</b>	4%	4%	10%	18%	10%	18%	10%	8%	13%
<b>Suicide plans</b>	1%	3%	4%	14%	8%	20%	8%	4%	12%
<b>Attempted suicide</b>	0%	1%	3%	4%	3%	6%	3%	2%	3%
<b>Suicide attempt resulted in injury, poisoning, or overdose that was treated by a medical professional</b>	0%	0%	0%	2%	1%	3%	1%	0%	2%

Table 30. Youth Suicidal Thoughts and Attempts [15]

## Disability, Injuries & Violence

Injuries and violence affect everyone, regardless of age, race, or economic status [66]. In the first half of life, more Americans die from violence and injuries — such as motor vehicle crashes, falls, or homicides — than from any other cause, including cancer, HIV, or the flu. This makes injury the leading cause of death among persons age one to 44. Approximately one person dies every three minutes from injury or violence; however, millions of people are injured and survive. These people are often faced with life-long mental, physical, and financial problems [66].

Years of potential life lost (YPLL) is a measure used to help quantify social and economic loss owing to premature death, and it has been promoted to emphasize specific causes of death affecting younger age groups, such as injuries and violence. The sum of life-years lost among Jones County residents dying before age 75 is approximately 1,313 years (Table 31). The premature death rate in people age 69 years and younger in Jones County and Iowa is also shown in Table 32.

	TOTAL POPULATION, 2008-2010 AVERAGE	TOTAL PREMATURE DEATHS, 2008-2010 AVERAGE	TOTAL YPLL, 2008- 2010 AVERAGE	YPLL, RATE PER 100,000 POPULATION
<b>Jones County</b>	20,608	70	1,313	6,369
<b>Iowa</b>	3,062,309	10,015	184,182	6,014
<b>United States</b>	311,616,188	1,074,667	21,327,690	6,851

Table 31. Years of Potential Life Lost (YPLL) Before Age 75 [27]

	JONES COUNTY	IOWA
<b>2008-2012</b>	2.3	2.5
<b>2009-2013</b>	2.4	2.4
<b>2010-2014</b>	2.4	2.4

Table 32. Premature Death Rate – Age 69 and Younger (age-adjusted per 1,000 population) [6]

### DISABILITY

A disability is any condition of the body or mind (impairment) that makes it more difficult for the person with the condition to do certain activities (activity limitation) and interact with the world around them (participation restrictions) [67]. Although “people with disabilities” sometimes refers to a single population, this is actually a diverse group of people with a wide range of needs.

This indicator reports the percentage of the total civilian non-institutionalized population with a disability (Table 33). Disabled individuals comprise a vulnerable population that requires targeted services and outreach by providers. People with disabilities can find it more difficult to eat healthy, control their weight, and be physically active [67]. In addition, for the millions of Americans who have disabilities, emergencies such as fires, floods and acts of terrorism present a real challenge.

# JONES COUNTY CHNA/HIP 2016

	JONES COUNTY	IOWA
<b>Percent of Population with a Disability</b>	12.9%	11.4%
<b>PERCENT OF POPULATION WITH A DISABILITY BY AGE</b>		
<b>Under 18 years</b>	3.8%	3.8%
<b>18 to 64 years</b>	10.3%	9.3%
<b>65 years and older</b>	33.1%	32.5%

Table 33. Percent of Population with a Disability [27]

## UNINTENTIONAL INJURIES

Accidents, also called unintentional injuries, are the fourth leading cause of death in the United States. Approximately three million people were hospitalized due to injuries in 2013 and 27 million were treated in emergency departments [66]. The rates for unintentional injury hospitalization, emergency department visits, and deaths in Jones County and Iowa are presented in Tables 34 and 35. The rates of emergency department visits and deaths have been increasing in Jones County and Iowa; hospitalization rates have been increasing Jones County, but decreasing in Iowa. The *Healthy People 2020* target for the unintentional injury age-adjusted mortality rate is less than or equal to 36 per 100,000 population [17].

	HOSPITALIZATION RATE		EMERGENCY DEPARTMENT VISIT RATE		DEATH RATE	
	Jones County	Iowa	Jones County	Iowa	Jones County	Iowa
<b>2008-2012</b>	432.1	519.9	2758.0	6668.1	36.0	37.9
<b>2009-2013</b>	426.3	513.7	4588.6	6991.2	38.2	38.2
<b>2010-2014</b>	444.9	511.9	6452.5	7326.0	39.8	39.3

Table 34. Unintentional Injury Hospitalization, Emergency Department Visit, and Death Rate (age-adjusted per 100,000 population) [6]

	MALE	FEMALE
<b>Jones County</b>	51.9	24.5
<b>Iowa</b>	52.1	26.4
<b>United States</b>	52.3	26.0

Table 35. Unintentional Injury Mortality, Age-Adjusted Rate (per 100,000 population) by Gender [27]

## Falls

Each year, 2.5 million older people are treated in emergency departments for fall injuries. Falls are a threat to the health of older adults and can reduce their ability to remain independent. Data on falls in Jones County are shown in Tables 36 and 37.

# JONES COUNTY CHNA/HIP 2016

	HOSPITALIZATION RATE		EMERGENCY DEPARTMENT VISIT RATE	
	Jones County	Iowa	Jones County	Iowa
<b>2008-2012</b>	224.1	295.0	803.6	2185.6
<b>2009-2013</b>	211.5	286.6	1354.5	2295.2
<b>2010-2014</b>	222.1	286.2	1949.0	2425.9

Table 36. Falls Hospitalization and Emergency Department Visit Rates (age-adjusted per 100,000 population) [6]

	2008-2012	2009-2013	2010-2014
<b>Ages 0-4</b>	1333.6	2587.9	3942.6
<b>Ages 5-14</b>	770.4	1336.2	2114.6
<b>Ages 15-34</b>	845.8	1276.7	1685.8
<b>Ages 35-64</b>	577.9	918.3	1305.5
<b>Ages 65-84</b>	952.3	1892.0	2736.1
<b>Ages 85+</b>	3501.5	5700.0	7569.3

Table 37. Falls Emergency Department Visit Rates by Age (per 100,000 population), Jones County [6]

## Motor Vehicle Crashes

Motor vehicle crashes are a leading cause of death in the United States; more than 33,000 people died from motor vehicle crashes in 2013 [66]. Jones County has a higher death rate from motor vehicle accidents than the state (Table 38).

	JONES COUNTY	IOWA
<b>2008-2012</b>	15.8	12.7
<b>2009-2013</b>	15.8	11.9
<b>2010-2014</b>	15.2	11.7

Table 38. Motor Vehicle Accident Death Rate (age-adjusted per 100,000 population) [6]

## INTENTIONAL INJURIES

Violence is a significant problem in the United States [66]. From infants to the elderly, it affects people in all stages of life. In 2013, 16,121 people were victims of homicide and 41,149 took their own life. The number of violent deaths tells only part of the story. Many more survive violence and are left with permanent physical and emotional scars. Violence also erodes communities by reducing productivity, decreasing property values, and disrupting social services [66]. Jones County has a violent crime rate of 39.4 per 100,000 population, compared to 266 per 100,000 for the state and 395.5 per 100,000 for the United States [27].

# JONES COUNTY CHNA/HIP 2016

## Bullying

Bullying is unwanted, aggressive behavior among school aged children that involves a real or perceived power imbalance [68]. The behavior is repeated, or has the potential to be repeated, over time. Bullying includes actions such as making threats, spreading rumors, attacking someone physically or verbally, and excluding someone from a group on purpose [68]. In Jones County, 60 percent of sixth graders, 53 percent of eighth graders, and 50 percent of eleventh graders report they have ever been bullied; females were more likely than males to report being bullied [15].

## Violence & Abuse

Child maltreatment includes all types of abuse and neglect of a child under the age of 18 by a parent, caregiver, or another person in a custodial role [66]. The youngest children are the most vulnerable with about 27 percent of reported victims being under the age of three. Child Protective Services (CPS) reports may underestimate the true occurrence of abuse and neglect; a non-CPS study estimated that one in four children experience some form of child maltreatment in their lifetimes [66]. The rate of children who are confirmed to have been abused or neglected from 2009 to 2013 in Jones County and Iowa are shown in Figure 9.

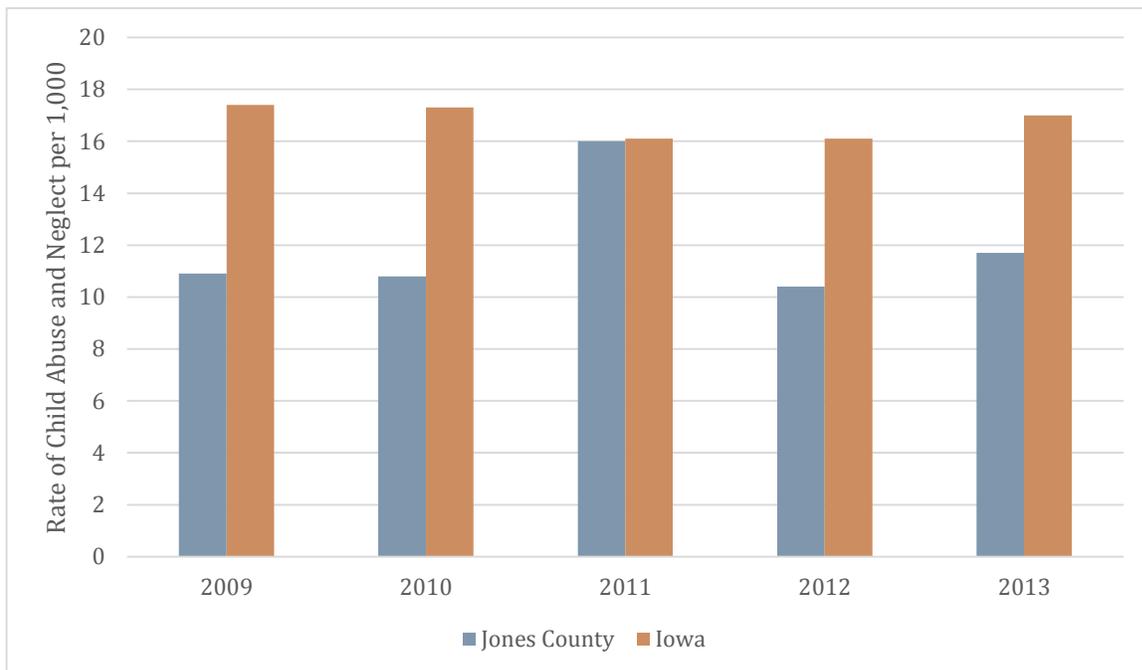


Figure 9. Rate of Child Abuse and Neglect per 1,000 Children Age 0 – 17 [69]

## JONES COUNTY CHNA/HIP 2016

Intimate partner violence (IPV) is a serious, preventable public health problem that affects millions of Americans [66]. The term "intimate partner violence" describes physical, sexual, or psychological harm by a current or former partner or spouse. This type of violence can occur among heterosexual or same-sex couples and does not require sexual intimacy [66]. There were no data specific to Jones County, and limited state data available. In 2007, a 24-hour survey of 26 identified domestic violence programs in Iowa found they served 813 victims in one day and answered 460 hotline calls [70]. According to analysis done by the Iowa Department of Public Health on data from the 2005 BRFSS survey, 12.1 percent of adult Iowans have been threatened with physical violence and 14.5 percent have been hit, slapped, pushed, kicked, or physically hurt in some way; women were almost twice as likely to report being threatened or physically harmed than men [71].

# JONES COUNTY CHNA/HIP 2016

## Communicable Diseases

### IMMUNIZATIONS

Immunizations have had an enormous impact on improving the health of children and adults in the United States and worldwide [72]. One of the best ways to protect infants, children, and adults against these potentially harmful diseases is through vaccination.

Immunization coverage levels for children in Jones County are presented in Tables 39 and 40; these data are limited by the availability of records in the Iowa Immunization Registry Information System (IRIS). Jones County is below the *Healthy People 2020* target coverage levels for four doses of the combination of diphtheria, tetanus, and acellular pertussis antigens (DTaP) and four doses of pneumococcal conjugate vaccine (PCV) in two year-olds. In adolescents, Jones County is below most of the target coverage levels, with the exception of one dose of a Tdap booster; the target coverage levels listed for three doses of hepatitis B and two doses of measles-mumps-rubella (MMR) vaccine are meant to be achieved by kindergarten. In addition, the number and percent of medical and religious exemptions for children in kindergarten through twelfth grade are shown in Table 41, as well as children missing acceptable certificates of immunization.

YEAR	PERCENT OF POPULATION IN IRIS	PERCENT OF POPULATION						
		4 DTAP	3 POLIO	1 MMR	3 HIB	3 HEPITITIS B	1 VARICELLA	4 PCV
2010	59%	76%	95%	91%	90%	92%	90%	87%
2011	51%	79%	92%	85%	91%	89%	83%	79%
2012	70%	83%	95%	91%	92%	92%	90%	84%
2013	75%	82%	94%	87%	93%	90%	86%	80%
2014	77%	83%	96%	92%	94%	94%	92%	84%
<b>Target</b>		90%	90%	90%	90%	90%	90%	90%

Table 39. Percent Coverage of Individual Vaccines in 2 Year-Olds, Jones County [73, 17]

YEAR	PERCENT OF POPULATION IN IRIS	PERCENT OF POPULATION						
		3 HEPATITIS B	2 MMR	2 VARICELLA	1 TDAP	1 MENINGITIS	3 HPV (FEMALE)	3 HPV (MALE)
2010	72%	67%	59%	28%	66%	63%	25%	-
2011	91%	72%	69%	37%	68%	64%	21%	-
2012	82%	78%	76%	49%	73%	69%	17%	-
2013	88%	80%	81%	58%	75%	66%	21%	3%
2014	89%	84%	84%	64%	80%	71%	24%	6%
<b>Target</b>		95%	95%	90%	80%	80%	80%	80%

Table 40. Percent Coverage of Individual Vaccines in Adolescents Age 13-15 Years, Jones County [73, 17]

# JONES COUNTY CHNA/HIP 2016

YEAR	MEDICAL EXEMPTIONS		RELIGIOUS EXEMPTIONS		INVALID CERTIFICATE	
	N	%	N	%	N	%
<b>2010</b>	9	0.29%	9	0.29%	16	0.52%
<b>2011</b>	0	-	22	0.71%	1	0.03%
<b>2012</b>	4	0.13%	14	0.46%	3	0.10%
<b>2013</b>	4	0.13%	13	0.43%	9	0.30%
<b>2014</b>	6	0.20%	16	0.54%	6	0.20%
<b>2015</b>	5	0.16%	28	0.92%	39	1.28%

Table 41. Immunization Exemptions and Invalid Certificates, Grades K – 12, Jones County [73]

Flu vaccination is the most effective strategy to prevent people from getting the flu and potentially serious flu-related complications [74]. For this reason, the Advisory Committee on Immunization Practices (ACIP) recommends flu vaccination for everyone six months and older. During the 2014 – 2015 season, Iowa had the fifth highest rate of vaccination in all people age six months and older at 53.8 percent. The average coverage level for the United States was 47.1 percent, and the *Healthy People 2020* target is 70 percent [74].

## SEXUALLY TRANSMITTED INFECTIONS (STI)

Many cases of chlamydia, gonorrhea, and syphilis continue to go undiagnosed and unreported, and data on several additional STIs, such as human papillomavirus, herpes simplex virus, and trichomoniasis, are not routinely reported [75]. As a result, the data available capture only a fraction of the true burden of STIs in the county. STIs are a substantial health challenge facing the United States. The CDC estimates nearly 20 million new sexually transmitted infections occur every year in this country, half among young people aged 15–24, and account for almost \$16 billion in health care costs. Each of these infections is a potential threat to an individual’s immediate and long-term health and well-being. In addition to increasing a person’s risk for acquiring and transmitting human immunodeficiency virus (HIV) infection, STIs can lead to severe reproductive health complications, such as infertility and ectopic pregnancy [75]. Jones County has relatively low rates of STIs, though the rate of syphilis in Jones County is higher than that in the state (Table 42).

	CHLAMYDIA	GONORRHEA	SYPHILIS
<b>Jones County</b>	184.4	29.1	4.9
<b>Iowa</b>	371.5	65.5	2.3
<b>United States</b>	456.7	107.5	5.0

Table 42. STI Rates (per 100,000 population), 2012 [13, 75, 27]

# JONES COUNTY CHNA/HIP 2016

## HIV

HIV and AIDS remain a persistent problem for the United States and countries around the world [76]. The best way to prevent HIV is to limit the number of sexual partners, never share needles, and use condoms correctly every time when having sex. The only way to know for sure whether you have HIV is to get tested. The CDC recommends everyone between the ages of 13 and 64 get tested for HIV at least once as part of routine health care. About one in eight people in the United States who have HIV don't know they have it [76]. Jones County has a low rate of HIV infection (Table 43); however, 85.6 percent of Jones County adults have never been screened for HIV, compared to 62.8 percent nationally [27].

	HIV/AIDS RATE
<b>Jones County</b>	34.4
<b>Iowa</b>	68.1
<b>United States</b>	340.4

Table 43. Population with HIV/AIDS, Rate per 100,000 Population [27]

## Environmental Hazards

The environment is everything around us - the air we breathe, the water we drink and use, and the food we consume. It's also the chemicals, radiation, microbes, and physical forces with which we come into contact [77].

### DRINKING WATER

Recent studies estimate that contaminants in drinking water sicken 1.1 million people each year [11]. Ensuring the safety of drinking water is important to prevent illness, birth defects, and death for those with compromised immune systems. A number of other health problems have been associated with contaminated water, including nausea, lung and skin irritation, cancer, kidney, liver, and nervous system damage [11]. Approximately 60 percent of the population in Jones County is served with public system drinking water [6]. Fifteen percent of Jones County residents were potentially exposed to water exceeding a violation limit during 2013-2014, compared to seven percent in Iowa overall [11].

Private water wells supply drinking water to households in the county that are not served by public water systems. Regulatory oversight of private water wells is provided by the Iowa Department of Natural Resources Private Well program [61]. The groundwater that supplies the water well can become contaminated through natural processes and human related activities; therefore, it is important to periodically sample and test well water to assess the health related safety of the water source [61].

### Bacteria

Coliform bacteria are microorganisms that are present in soil, sewage, surface water and very shallow groundwater that is under the influence of surface water [61]. Most coliform bacteria are not pathogenic. The presence of coliform bacteria in drinking water indicates a possible sanitary defect in the drinking water system that could provide a pathway of entry for contamination into the well or distribution system (plumbing into the home). This pathway may provide an opportunity for harmful material to enter the drinking water creating a potential health hazard [61]. The percent of wells positive for coliform bacteria in Jones County are shown in Table 43.

### Nitrates

Nitrate and nitrite originate in drinking water from nitrate-containing fertilizers, sewage and septic tanks, and decaying natural material such as animal waste [61]. The U.S. Environmental Protection Agency (EPA) set levels of 10 mg/L for total nitrate and nitrite. Infants under the age of six months who drink water containing more than this level could become seriously ill and, if

# JONES COUNTY CHNA/HIP 2016

untreated, may die. In the body, nitrate converts to nitrite. Nitrite interferes with the oxygen-carrying capacity of blood. Symptoms include shortness of breath and blueness of the skin. Researchers continue to explore if there are associations with long-term exposures to nitrate, including adverse reproductive effects and some cancers [61]. The percent of wells tested for nitrate in Jones County that had a result exceeding the Maximum Concentration Level (MCL) for nitrate of 10 mg/L are shown in Table 44.

YEAR	BACTERIA			NITRATE	
	Number of Tests	Percent Positive – Total Coliform	Percent Positive – Fecal Coliform	Number of Tests	Percent Exceeding MCL ≤10
<b>2010</b>	133	36%	2%	133	11%
<b>2011</b>	117	26%	2%	116	10%
<b>2012</b>	104	27%	2%	103	16%
<b>2013</b>	121	31%	2%	121	13%
<b>2014</b>	114	39%	6%	113	14%

Table 44. Bacteria and Nitrate Measures in Wells, Jones County [61]

## LEAD

The health effects associated with lead are the same whether it enters the body through breathing or swallowing [61]. Lead can affect almost every organ and system in the body. The main target for lead toxicity is the nervous system. Lead poisoning can cause learning disabilities, behavioral problems, and, at very high levels, seizures, coma, and even death. Because lead poisoning often occurs with no obvious symptoms, it frequently goes unrecognized. Even low levels of lead in blood have been shown to affect IQ, ability to pay attention, and academic achievement, and the effects of lead exposure cannot be corrected. The CDC uses a reference level of five micrograms per deciliter (µg/dL) to identify children with blood lead levels that are much higher than most children's levels [61]. In 2013, approximately 32 percent of Jones County children under age six were tested for lead, and slightly less than two percent had elevated levels of lead (Table 45).

YEAR	NUMBER TESTED	PERCENT TESTED	NUMBER ELEVATED	PERCENT ELEVATED
<b>2011</b>	520	37.0%	8	1.5%
<b>2012</b>	460	34.5%	8	1.7%
<b>2013</b>	422	31.6%	7	1.7%

Table 45. Blood Lead Level Tests in Children Under Age 6, Jones County [61]

In the United States, the major source of lead exposure among children is lead-based paint and lead-contaminated dust found in older buildings [61]. Lead-based paints were banned for use in housing in 1978; houses and other buildings built before 1978, especially those built before 1950,

## JONES COUNTY CHNA/HIP 2016

may contain lead-based paint [61]. About 39.5 percent of houses in Jones County were built before 1950 and 29.6 percent were built between 1950 and 1979 [13], which means almost 70 percent of homes in Jones County are potentially contaminated with lead.

### RADON

Radon is a natural odorless and tasteless radioactive gas that can cause cancer [78]. According to the Environmental Protection Agency (EPA), radon is the first leading cause of lung cancer in nonsmokers and the second leading cause of lung cancer in smokers. The entire state of Iowa is considered at high risk for radon gas in homes [78]. The EPA recommends taking action to reduce radon in homes that have a radon level at or above 4 picocuries per liter (pCi/L) of air. The average national indoor radon level is 1.3 pCi/L. The average indoor radon levels of Jones County, as determined by radon test results from Air Chek, Inc., is 6.3 pCi/L [79]. Fifty percent of homes tested in Jones County had radon levels above 4 pCi/L, and 23 percent had levels between 2 and 3.9 pCi/L [79].

### AIR QUALITY

Poor air quality is linked to premature death, cancer, and long-term damage to respiratory and cardiovascular systems [13]. The average daily amount of fine particulate matter in microgram per cubic meter (PM<sub>2.5</sub>) in Jones County was 11.7  $\mu\text{g}/\text{m}^3$ , which was higher than the U.S. median of 10.7  $\mu\text{g}/\text{m}^3$ . Fine particulate matter is defined as particles of air pollutants with an aerodynamic diameter less than 2.5 micrometers. The number of days the air was rated as unhealthy for fine particulate matter in Jones County was three days in 2008 [13].

Numerous studies have documented concentrations of traffic-related pollutants are highest in the near-road environment [13]. A recent review determined there is sufficient evidence of a causal association between exposure to traffic-related air pollution and asthma exacerbation, and suggestive evidence of a causal association for onset of childhood asthma, non-asthma respiratory symptoms, impaired lung function, all-cause mortality, cardiovascular mortality, and cardiovascular morbidity. Approximately 2.4 percent of the population in Jones County lives within 150 meters of a highway, which is worse than the U.S. median of 1.5 percent [13].

## Emergency Response

Communities in the United States, and around the world, face many threats with the potential for large-scale health consequences, including disease outbreaks, natural disasters, and terrorist attacks. The public health, health care, and emergency response systems must be prepared to mitigate the morbidity and mortality associated with these threats [17].

### COMMUNICATION NETWORKS & RISK COMMUNICATION

Communication failures have been a defining part of natural disasters, and even some human-generated events. Jones County has a very strong and active amateur radio group, which meets and trains on a regular basis. Amateur radio can make communications better during a crisis when “normal” modes of communication have failed.

During a disaster, agencies must communicate life-saving information to partners, stakeholders, and the public [80]. Communication during an emergency can determine the success of a response, affect the reputation of an agency, and inform the decisions and health behaviors of the public. Jones County needs to improve its risk communication strategies. The Board of Health, and the county, do not have a designated Public Information Officer (PIO); however, the county auditor has taken the PIO course and the sheriff could also serve as the PIO if necessary. In addition, public health and emergency management have active social media accounts that can be used to communicate with the public. Furthermore, the emergency management agency manages the ALERT Iowa system in the county, which can send out alerts via voice, text, and email during an emergency or severe weather. About 74, 446 messages have been sent out via this system since February 2015, and approximately six percent of Jones County residents have signed up for the service as of December 2015.

### EMERGENCY PLANNING & EMERGENCY RESPONSE

The Iowa Department of Public Health (IDPH) receives federal Public Health Emergency Preparedness (PHEP) and Hospital Preparedness Program (HPP) grant funds to assist with preparedness efforts. These funds have assisted local public health agencies and hospitals to build and improve preparedness planning efforts. As part of these efforts, the Jones-Linn Health Care Coalition (HCC) have been working on addressing the preparedness capabilities outlined by the CDC; approximately 60 percent of the capabilities have been completed so far. The Jones County Public Health Emergency Response plan was last fully updated in 2007; it is currently being updated as the coalition works through the capabilities.

## JONES COUNTY CHNA/HIP 2016

In Jones County, Anamosa and Monticello have EMS services, while the other communities have volunteer EMS services. It is difficult for the volunteer services to maintain enough volunteers, especially paramedics, with the changes in EMS provider certification standards. Rather than taking the certification test again, many EMS providers are either quitting or dropping to a lower level provider (e.g., from paramedic to emergency medical responder). There have not been any refresher courses offered to help providers interested in re-certifying, nor have there been funds available to help pay for the test. In addition to certification concerns, volunteer shortages are also occurring due to retirements; according to a survey done by the Iowa Emergency Medical Services Association (IEMSA), 75 percent of EMS providers are over age 35. Furthermore, EMS is not considered an essential service in Iowa, which means limited funding and support from the state.

### COMMUNITY PREPAREDNESS

One factor that can affect a community's level of preparedness and its ability to recover after an emergency is whether or not individual community members have planned and prepared for an emergency. In 2012, only 52 percent of U.S. residents surveyed by the Federal Emergency Management Agency (FEMA) reported having supplies for a disaster, a decline from 57 percent who reported having such supplies in 2009 [81]. In addition, the public readiness index (PRI) score for the United States is 3.31 out of ten [82]. The Public Readiness Index (PRI) is a barometer of how prepared individuals and families in a given community are for an emergency. The PRI is scored on a scale from zero to ten, based on the responses to ten questions that examine key emergency preparedness knowledge and behavior elements [82].

Another survey performed by FEMA was designed to understand how individuals self-identify around personal preparedness; FEMA found more than a quarter of all respondents were contemplating preparing in the next six months (19 percent) or preparing to take action in the next month (9 percent) [83]. Another 15 percent reported they had recently begun preparing, and approximately 34 percent had been prepared for more than six months and were maintaining their level of preparedness. However, 21 percent of respondents stated they were not planning to do anything about preparing for emergencies. Frequently cited barriers to preparedness included preparing is too expensive (26 percent); don't know how to get prepared (24 percent); don't think they have time to prepare (18 percent); and getting information is too hard (17 percent) [83]. This is consistent with a more recent analysis by the CDC that found compared with people with basic preparedness knowledge, people with advanced knowledge were more likely to have assembled an emergency kit, developed a written household disaster plan, and received county emergency alert notifications [81]. In addition, the CDC analysis found people who identified as having strong beliefs in the effectiveness of disaster preparedness engaged in preparedness behaviors at levels seven to thirty percent higher than those with weaker preparedness beliefs [81].

## Health Infrastructure

### SOCIAL DETERMINANTS OF HEALTH

#### Poverty

An estimated 10.1 percent of Jones County residents have an income below the poverty level [5]. This proportion is below the state (12.6 percent) and national (15.6 percent) rates for the same time period. Of the residents living below the poverty level, approximately 14.5 percent are under 18 years old and 8.4 percent are age 65 years or older.

In addition, an estimated 6.1 percent of families in Jones County live in poverty. Of those families, 11.7 percent have children under age 18 years and 24 percent are single-parent households with a female head of household [5]. This is important, because food insecurity rates for single-parent households are substantially higher than the national average, especially for single-mother households [84]. In 2014, 35.3 percent of single-mother households and 21.7 percent of single-father households in the United States were food insecure.

The proportion of children eligible for a free or reduced lunch program in Jones County is 39.6 percent, compared to 41.8 percent throughout the state [85]. To be eligible for this program, the child's family must have an income at or below 185 percent of the federal poverty level. The number of students eligible for this program provides an indication of the percent of low-income families living in each school district (Table 46). The Olin Consolidated School District has the highest percentage of eligible students at 74.1 percent.

DISTRICT	2013-2014	2014-2015	2015-2016
<b>Anamosa</b>	42.8%	44.9%	45.7%
<b>Midland</b>	51.6%	48.2%	46.7%
<b>Monticello</b>	32.0%	31.0%	27.1%
<b>Olin Consolidated</b>	67.0%	67.5%	74.1%

Table 46. Percentage of Children Eligible for Free or Reduced Lunch [85]

Low-income neighborhoods are less likely to have access to recreational facilities and full-service grocery stores and more likely to have higher concentrations of retail outlets for tobacco, alcohol, and fast food. Adolescents who grow up in neighborhoods characterized by concentrated poverty are more likely to be a victim of violence; use tobacco, alcohol, and other substances; become obese; and engage in risky sexual behavior [13].

# JONES COUNTY CHNA/HIP 2016

## Education

According to the 2014 American Community Survey, 91.4 percent of Jones County residents age 25 and over have at least a high school diploma (Table 47) [5]. Iowa leads the nation in high school graduation rates; according to the U.S. Department of Education, 90.5 percent of Iowa's seniors graduated from high school in the 2013-2014 school year [86].

	2000	2014
<b>Less than 9<sup>th</sup> grade</b>	6.0%	3.3%
<b>9<sup>th</sup> to 12<sup>th</sup> grade, no diploma</b>	8.7%	5.3%
<b>High school graduate (includes equivalency)</b>	42.3%	40.7%
<b>Some college, no degree</b>	22.7%	22.4%
<b>Associate's degree</b>	7.6%	12.6%
<b>Bachelor's degree</b>	9.4%	12.1%
<b>Graduate or professional degree</b>	3.3%	3.6%

Table 47. Educational Attainment in Residents Age 25 Years and Older, Jones County, Iowa [5]

Education, employment, and health are linked. Without a good education, prospects for a stable and rewarding job with good earnings decrease. Education is associated with living longer, experiencing better health, and practicing health-promoting behaviors such as exercising regularly, refraining from smoking, and obtaining timely health checkups and screenings [13].

## Food Systems & Food Security

The World Food Summit of 1996 defined food security as existing “when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life” [87]. Commonly, the concept of food security is defined as including both physical and economic access to food that meets people's dietary needs as well as their food preferences [87]. Approximately 32.8 percent of the population in Jones County lives in a census tract with no healthy food outlets and 67.2 percent live in tracts with moderate healthy food access [27]. However, according to the County Health Rankings Food Environment Index, Jones County scored 8.3 out of ten, with ten being the best [11]. The Food Environment Index weights two indicators of the food environment: limited access to healthy foods and food insecurity [11]. Jones County has a food insecurity rate of 11.5 percent, compared to 12.6 percent in the state [27]. About 9.5 percent of households in Jones County receive Supplemental Nutrition Assistance Program (SNAP) benefits.

There are an estimated six food pantries in Jones County. The county food pantry is run by HACAP in Anamosa, and they served 1,343 individuals living in 427 low-income households, for an estimated amount totaling over \$60,860 in fiscal year 2015. This was a 25 percent increase in families served from the prior fiscal year. Data from the other food pantries were not available. In addition, the HACAP Food Reservoir distributed 102,998 pounds of food to partner agencies in

# JONES COUNTY CHNA/HIP 2016

Jones County. Furthermore, HACAP's Operation Back Pack serves children in the Monticello, Midland, and Olin school districts.

As previously mentioned Hillcrest Family Services provides two WIC clinics in Jones County each month, one in Monticello and one in Anamosa. The number of unduplicated WIC participants served by Hillcrest between October 1, 2014 and September 30, 2015 is shown in Table 48. Additional women and children may travel to Cedar Rapids for WIC services provided by HACAP.

	NUMBER
<b>Women (Total)</b>	90
Pregnant	44
Breastfeeding	12
Non-breastfeeding	34
<b>Infants (Total)</b>	108
<b>Children (Total)</b>	114
Special Diet	3
<b>Grand Total</b>	312

Table 48. Unduplicated WIC Participants, Hillcrest Family Services, FY2015

## Housing

In 2014, there were an estimated 8,235 occupied housing units in Jones County, and 77.1 percent of residents owned their own homes [5]. The home ownership rate in Jones County exceeds the statewide rate of 71.8 percent. Thirty-five percent of Jones County residents who own their home have high housing costs (greater than or equal to 30 percent of household income). For residents who rent their homes, 40 percent have high rental costs [5].

According to County Health Rankings, eight percent of households in Jones County have severe housing problems [11]. This includes households with at least one or more of the following housing problems: (1) housing unit lacks complete kitchen facilities; (2) housing unit that lacks complete plumbing facilities; (3) household is severely overcrowded; and (4) household is severely cost burdened. For comparison, 12 percent of households in Iowa have severe housing problems. Living environments, including housing and institutional settings, can support health [13]. Quality housing is associated with positive physical and mental well-being. How homes are designed, constructed, and maintained, their physical characteristics, and the presence or absence of safety devices have many effects on injury, illness, and mental health.

# JONES COUNTY CHNA/HIP 2016

## HEALTH CARE ACCESS

### Insurance

About 14.4 percent of the Jones County population receives Medicaid, compared to 17 percent in Iowa [27]. Approximately 11 percent of Jones County adults and 4.5 percent of children did not have medical insurance in 2013. The lack of health insurance is considered a key driver of health status [27].

### Providers

Access to care requires not only financial coverage, but also, access to providers [11]. While high rates of specialist physicians have been shown to be associated with higher, and perhaps unnecessary utilization, sufficient availability of primary care physicians is essential for preventive and primary care, and when needed, referrals to appropriate specialty care. The ratio of the population in Jones County to primary care providers is 2,293:1, which is quite a bit higher than the ratio for Iowa of 1,375:1 [11]. In addition, 18.5 percent of adults age 18 years and older in Jones County report they do not have at least one person who they think of as their personal health care provider [14, 27].

In Jones County there are 2,944 people for every one mental health providers, which includes psychiatrists, psychologists, licensed clinical social workers, counselors, marriage and family therapists and advanced practice nurses specializing in mental health care [11]. In Iowa, the ratio is 904:1. Approximately 30 percent of the U.S. population lives in a county designated as a Mental Health Professional Shortage Area [11].

Untreated dental disease can lead to serious health effects including pain, infection, and tooth loss [11]. Although lack of sufficient providers is only one barrier to accessing oral health care, much of the country suffers from shortages. The ratio of the county population to total dentists in the county is 2,944:1, compared to 1,670:1 for Iowa [11].

Jones County is home to Jones Regional Medical Center, which is a 22-bed critical access hospital located in Anamosa [88]. Services include: 24-hour emergency care, provided in a Level IV Trauma Center, urgent care; lab and radiology; skilled, intermediate and medical surgical inpatient nursing care; outpatient surgeries and procedures; specialty clinics including cardiology, podiatry, oncology, expanded wound care, orthopedics, ophthalmology, pulmonology, and urology; outpatient infusions, diabetic and nutrition education; full-time mental health counseling; and rehabilitation [88].

# JONES COUNTY CHNA/HIP 2016

## Transportation

Approximately four percent of households in Jones County do not have a motor vehicle [27]. Assistance for traveling to medical appointments is provided by JETS and Volunteer Services. In 2015, Jones County Volunteer Services served a total of 199 clients for approximately 780 transports and 64,000 miles.

## Preventable Hospitalizations

Jones County has a high rate of preventable hospital stays at 78 per 1,000 Medicare enrollees, and this rate has been increasing since 2008 (Figure 10) [11]. Ambulatory care-sensitive conditions include: convulsions, chronic obstructive pulmonary disease, bacterial pneumonia, asthma, congestive heart failure, hypertension, angina, cellulitis, diabetes, gastroenteritis, kidney/urinary infection, and dehydration. The rate of preventable hospital stays is often used to assess the effectiveness and accessibility of primary healthcare. Hospitalization for diagnoses treatable in outpatient services suggests that the quality of care provided in the outpatient setting was less than ideal. The measure may also represent a tendency to overuse hospitals as a main source of care. The rate of preventable hospital stays in Iowa is 56 per 1,000 Medicare enrollees.

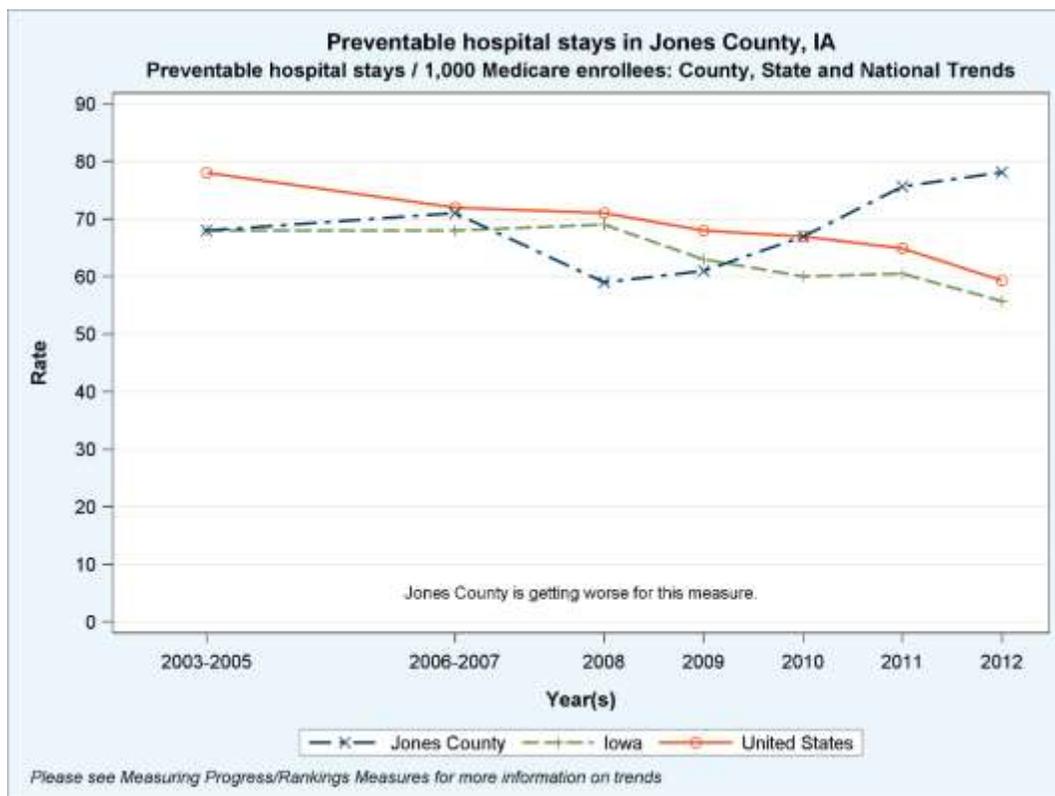


Figure 10. Preventable Hospital Stays, Jones County, Iowa [11]

# JONES COUNTY CHNA/HIP 2016

## PUBLIC HEALTH INFRASTRUCTURE

Public health infrastructure is fundamental to the provision and execution of public health services at all levels [17]. A strong infrastructure provides the capacity to prepare for and respond to both acute (emergency) and chronic (ongoing) threats to the county's health. Infrastructure is the foundation for planning, delivering, and evaluating public health. Public health infrastructure includes three key components that enable a public health organization to deliver public health services: (1) A capable and qualified workforce; (2) Up-to-date data and information systems; and (3) Public health agencies capable of assessing and responding to public health needs [17].

These components are necessary to fulfill the 10 Essential Public Health Services:

1. Monitor health status to identify and solve community health problems.
2. Diagnose and investigate health problems and health hazards in the community.
3. Inform, educate, and empower people about health issues.
4. Mobilize community partnerships and action to identify and solve health problems.
5. Develop policies and plans that support individual and community health efforts.
6. Enforce laws and regulations that protect health and ensure safety.
7. Link people to needed personal health services and assure the provision of health care when otherwise unavailable.
8. Ensure competent public and personal health care workforces.
9. Evaluate effectiveness, accessibility, and quality of personal and population-based health services.
10. Research for new insights and innovative solutions to health problems.

Jones County Public Health has one part-time employee. There is also one full-time employee in the Environmental Health office.

## Health Improvement Plan

The goals, objectives, and strategies to address each of the selected health priorities are outlined below. Jones County Public Health will work with a variety of community partners to implement the strategies and meet the objectives.

### PRIORITY 1: PHYSICAL ACTIVITY, NUTRITION, AND OVERWEIGHT & OBESITY

- I. *Goal 1: By 2021, increase physical activity levels among Jones County residents.*
  - a. *Objective 1-1: Increase the percentage of Jones County youth in grades 6, 8, and 11 who report being physically active for a total of at least 60 minutes per day seven days a week from 39 percent in 2014 to 44 percent by 2021.*
    - i. *Strategy 1-1.1: Collaborate with schools and community partners to promote physical activity and increase awareness about health benefits through health promotion and social marketing campaigns.*
  - b. *Objective 1-2: Reduce the proportion of Jones County adults who engage in no leisure-time physical activity from 12 percent in 2012 to 10 percent by 2021.*
    - i. *Strategy 1-2.1: Collaborate with existing state and county initiatives to promote outdoor recreation and increase participation.*
    - ii. *Strategy 1-2.2: Develop a resource to help community members find physical activity opportunities available for all fitness levels, ages, and cost.*
- II. *Goal 2: By 2021, reduce the proportion of Jones County residents who are considered overweight or obese based on BMI.*
  - a. *Objective 2-1: Reduce the proportion of adults who are considered obese based on BMI from 31.1 percent in 2012 to 29 percent by 2021.*
    - i. *Strategy 2-1.1: Increase awareness of health-related concerns due to overweight and obesity through health promotion campaigns.*
    - ii. *Strategy 2-1.2: Collaborate with at least one school district to increase awareness of youth at risk for overweight and obesity using report cards and/or newsletters for families.*
  - b. *Objective 2-2: Increase the percentage of adults who consume five or more servings of fruit and vegetables per day from 17.5 percent in 2012 to 20 percent by 2021.*
    - i. *Strategy 2-2.1: Increase awareness of good nutrition and healthful diets through health promotion and social marketing campaigns.*

# JONES COUNTY CHNA/HIP 2016

## PRIORITY 2: MENTAL HEALTH AND ILLNESS

- I. *Goal 1:* By 2021, improve the understanding of mental health and mental illness, and increase awareness of available resources and services.
  - a. *Objective 1-1:* Reduce the percentage of Jones County youth in grades 6, 8, and 11 who have experienced sadness or hopelessness lasting two weeks or more that resulted in decreased participation in normal activities from 12 percent in 2014 to 10 percent by 2021.
    - i. *Strategy 1-1.1:* Increase parental and teacher awareness of signs and symptoms of youth depression and available services.
  - b. *Objective 1-2:* Reduce the percentage of eleventh graders who seriously consider attempting suicide from 13 percent in 2014 to 11 percent by 2021.
    - i. *Strategy 1-2.1:* Increase parental and teacher awareness of warning signs for suicide and how to connect individuals in crisis with assistance.
  - c. *Objective 1-3:* Decrease the number of poor mental health days, as reported in the Behavioral Risk Factor Surveillance System, from 3.7 days per month in 2011 to 2.6 days per month by 2021.
    - i. *Strategy 1-3.1:* Increase awareness of mental health, mental illness diagnoses, services, and community support through health promotion and social marketing campaigns.

## PRIORITY 3: ADDICTIVE BEHAVIORS

- I. *Goal 1:* By 2021, reduce the proportion of Jones County adults who drink excessively.
  - a. *Objective 1-1:* Reduce the proportion of Jones County adults who drink excessively from 32.4 percent in 2012 to 28 percent by 2021.
    - i. *Strategy 1-1.1:* Raise awareness about the beer tax and support efforts to increase it.
    - ii. *Strategy 1-1.2:* Help sustain responsible beverage service training in Jones County.
    - iii. *Strategy 1-1.3:* Use positive education campaigns and social marketing to promote responsible drinking.
- II. *Goal 2:* By 2021, reduce the proportion of Jones County adults who currently smoke.
  - a. *Objective 2-1:* Reduce cigarette smoking by adults from 22.1 percent in 2012 to 18 percent by 2021.
    - i. *Strategy 2-1.1:* Increase the number of smoke-free public areas in Jones County, such as parks and other public recreation areas.
    - ii. *Strategy 2-1.2:* Support efforts to raise the legal smoking age to 21.
    - iii. *Strategy 2-1.3:* Increase awareness of health-related concerns associated with smoking, benefits of quitting, and available support and resources.

## Contact Information

Jones County Public Health

105 Broadway Place, Suite 11

**Tel:** 319-462-6945

**Fax:** 319-462-5302

**Email:** [publichealth@co.jones.ia.us](mailto:publichealth@co.jones.ia.us)

[www.jonescountyiowa.org](http://www.jonescountyiowa.org)



**Public Health**  
Prevent. Promote. Protect.

**Jones County, Iowa**

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