Burden of Disease Report
St. Joseph County, Indiana 2020

Disease Burden in St. Joseph County

The long term aim of the St. Joseph County Department of Health (SJC DoH) is to minimize the morbidity and mortality associated with various health conditions and risk factors.

In working towards this aim, the current department strategic plan 2020-2024 affirms that the SJC DoH will be data-driven and equity-focused, and will control the spread of respiratory viral illnesses address social factors impacting health, most notably poverty, racism, and trauma.

This initial analysis and report by the St. Joseph County Department of Health will help to:

- Identify the extent of disease burden in the county, and the opportunities to improve on the documentation of health status of our community.
- Plan interventions and deliver services towards disease prevention and control of disease spread.
- Improve health outcomes and reduce health disparities and inequities in the county.
- Establish a foundation and baseline metrics for the St. Joseph County Health Equity report.

Report Methodology

This report was created using data from the Indiana State Department of Health and St. Joseph County Department of Health Vital records for birth and death, and the local inpatient hospitalization records. In cases where the reporting system at the county level was incongruent with other systems reporting the mortality, the CDC data was used. The data on prevalence of other diseases were not available, making it difficult to appropriately assess the burden of disease in the county.

County rates were also retrieved from the County Health Rankings by the Robert Wood Johnson Foundation, the American Community Survey, County Annual Reports and the Centers for Disease Prevention and Control. Where county level data lacked, the report used the available state data to provide an idea of the health burden. The data used to calculate County Health Rankings for the year 2021 are from 2019 and earlier.

Comparative state and population data on health outcomes and disparities are from Healthy People 2020 initiative, Office of Minority Health and the National Information Center on Health Services Research and Healthcare Technology. Additional data resources are stated directly below the information charts, tables and graphics.

The demographics data were sourced from the 2015-2019 5-year and 2019 1-year American Community Survey estimates, available from the US Census Bureau. Supplemental data is included with references. While this report reflects health outcomes prior to 2020, it includes an appendix with COVID-19 data to give insight into one burden that changed the health landscape last year.

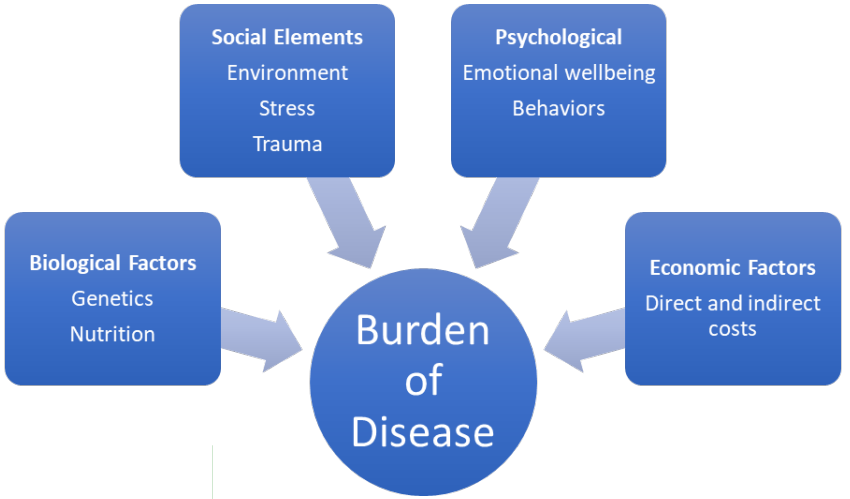
What is 'Burden of Disease'?

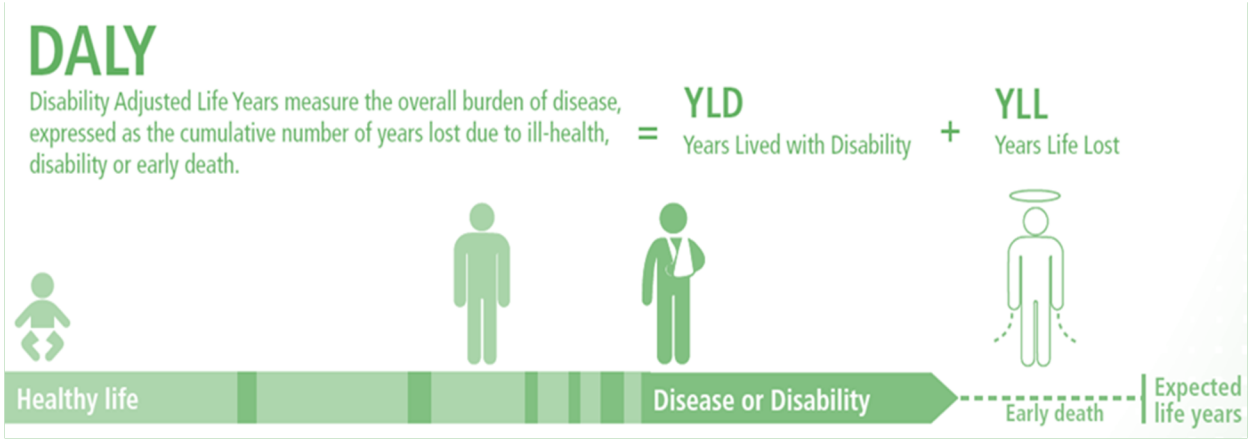
Burden of disease is the measure of disease and disabilities in the population. It considers the factors that determine the impact of disease and disability on the individual and the society.

It is a measure of population health that aims to quantify the gap between the ideal of living to old age in good health, and the current situation where healthy life is shortened by illness, injury, disability and premature death.

Additional concepts to measure Burden of disease include the Years of Life Lost (YLL), Years of Life with Disability (YLD), Disability-Adjusted Life Years (DALYs), and Quality- Adjusted Life Years (QALYs).

Assessing the Burden of Disease





Health outcomes depend on the social, political, environmental, and economic factors.

Mapping the Disease Burden in St. Joseph County

For our County the report looks at:

- Years of Potential Life Lost
- Mortality and Morbidity
- Economic Costs
- Hospital Discharges
- Disease disparities

Glossary Terms

Disability-Adjusted Life Years is the total number of years lost to illness, disability (health utility), or premature death within a given population.

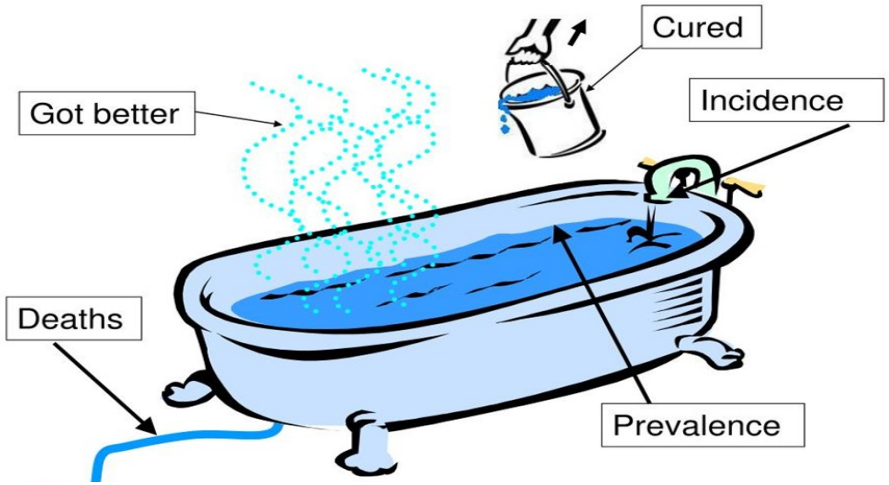
Quality-Adjusted Life Year gives us an idea of how many extra months or years of life of reasonable quality a person might gain as result of treatment**.**

Health is a state of complete physical, mental, and social wellbeing and not merely the absence of disease or infirmity. It is an outcome of biological and social factors.

Incidence is the development of new cases of a disease that occur during a specified period of time in previously disease-free or condition-free ("at risk") individuals.

Mortality is the number of deaths per population in a given time or place. It is also known as "crude death rate" and typically expressed in units of death per 100,000 individuals annually.

Prevalence is a measure of the existing cases of disease divided by the population count. It is measured at a point in time and typically shown as a percentage.



Source: https://www.slideserve.com/phuong/erpho-a-whistle-stop-tour-of-public-health-intelligence-james-harrison-erpho-uk-powerpoint-ppt-presentation

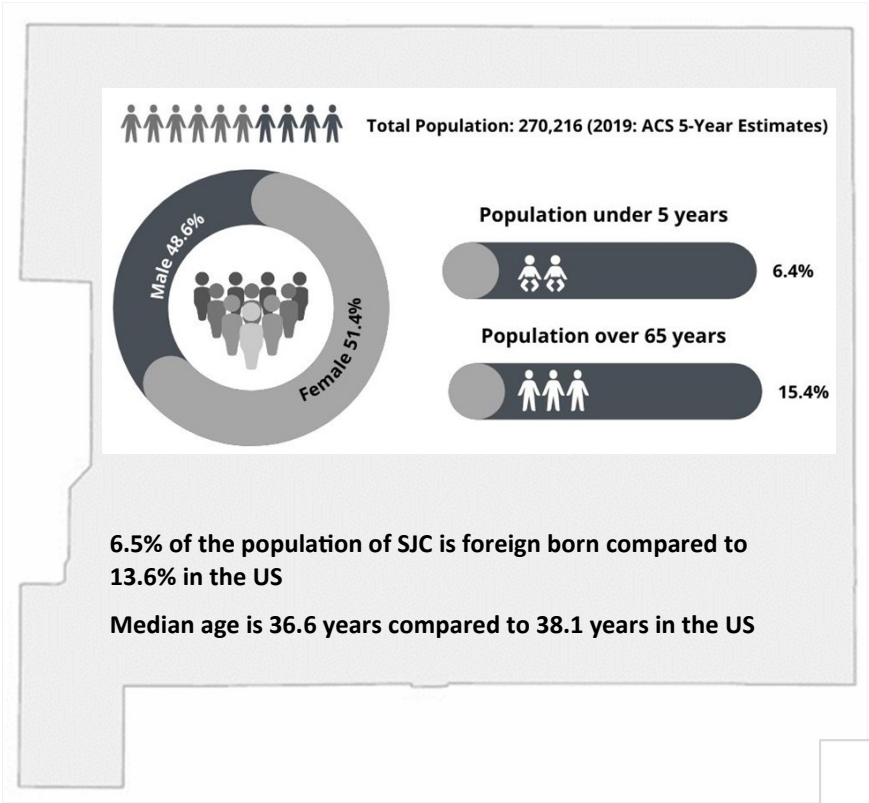
Risk Factors include exposure and behaviors that can significantly impact a person's health. This can include genetics or individual behaviors like diet, alcohol consumption, sexual practices, and sanitation. It can also include characteristics of a person's social, political, economic and physical environment.

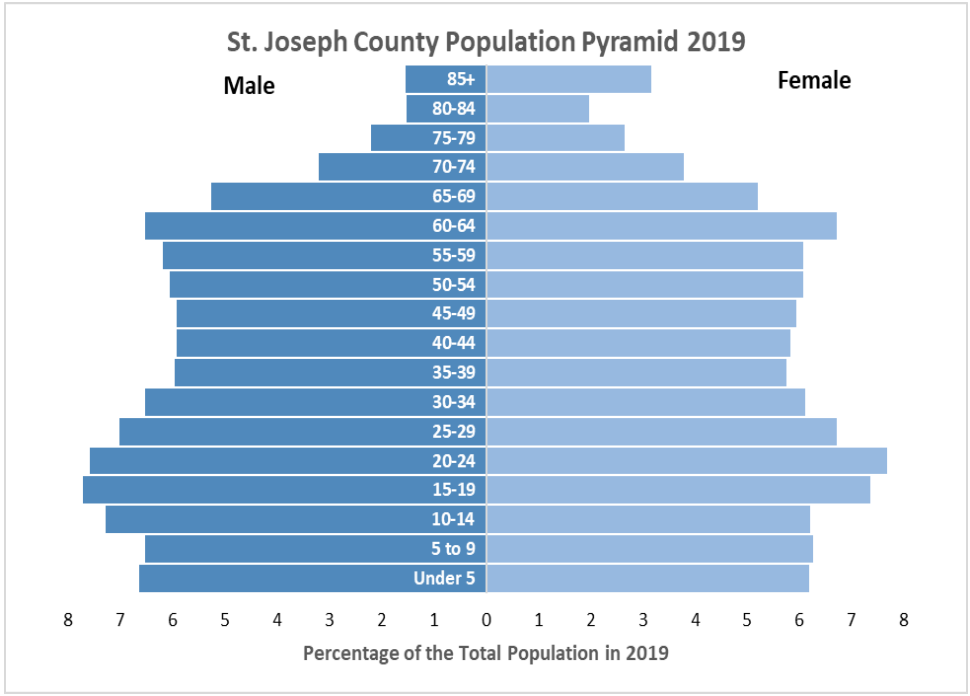
Years of Life Lost measures the years of life lost due to premature mortality. It is based on the number of deaths and the standard life expectancy at age of death.

Years of Life with Disability measures years of healthy life lost due to living in states of less than full health.

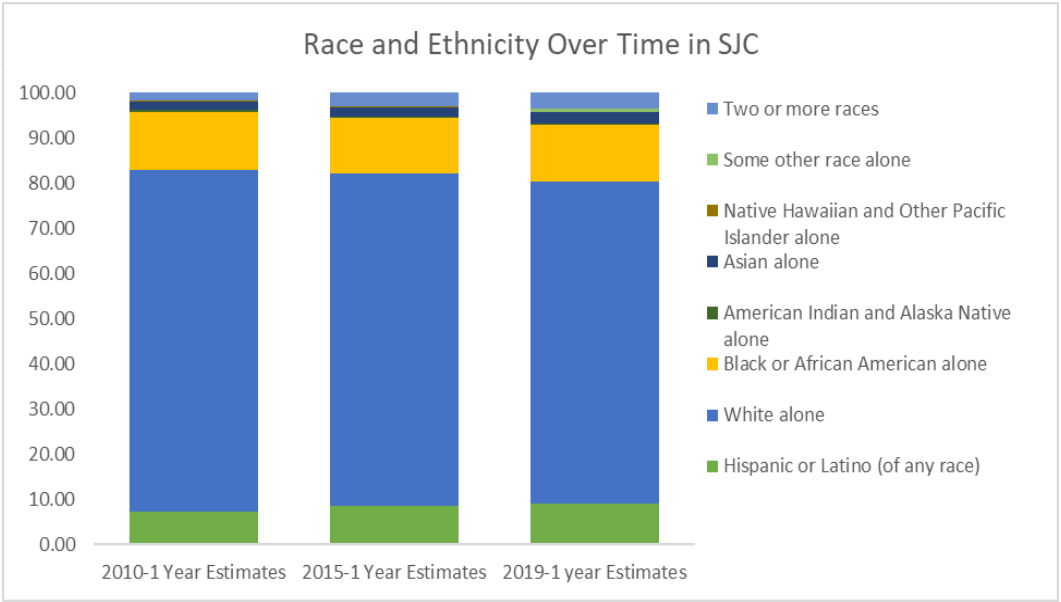
Health disparities
Systemic, preventable differences in the burden of disease, injury, violence, or opportunities to achieve optimal health that are experienced by socially disadvantaged populations.
Disparities result from unjust, unfair, or avoidable exposure to detrimental health factors. Not all members of a disadvantaged group will necessarily be disadvantaged, and not all socially disadvantaged groups will necessarily manifest measurable adverse health consequences.
The extent (whether in a single or multiple domains), depth (severity), and duration (e.g., across multiple generations) of disadvantage matters.

St. Joseph County (SJC) Demographics



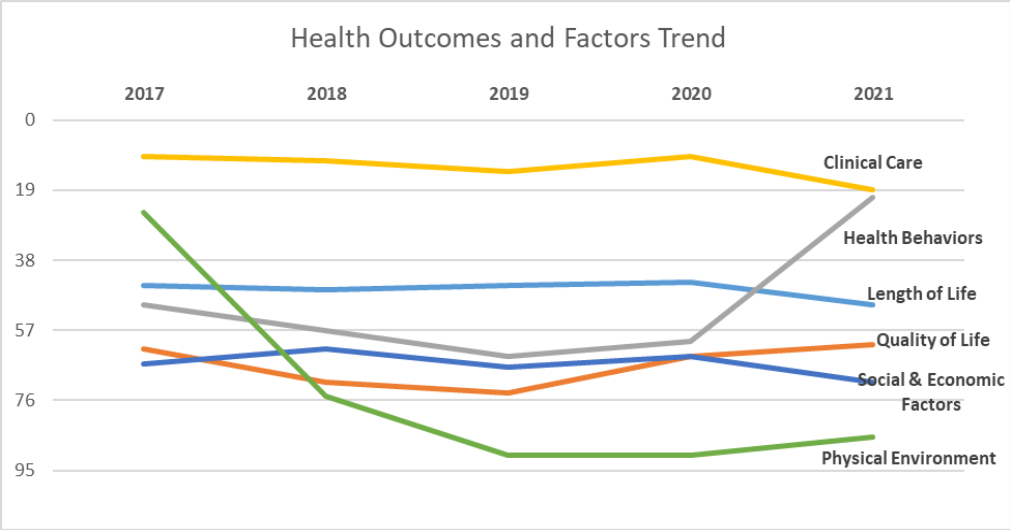


Race/Ethnicity	Total	%
Hispanic or Latino (of any race)	23,501	8.70%
White alone	196,069	72.56%
Black or African American alone	34,235	12.67%
American Indian and Alaska Native alone	769	0.28%
Asian alone	6,458	2.39%
Native Hawaiian and Other Pacific Islander	217	0.08%
Some other race alone	712	0.26%
Two or more races	8255	3.05%
Total Population	**270,216**	100%



County Health Outcomes

SJC Health Outcomes and Factors Trend out of 92 counties in Indiana



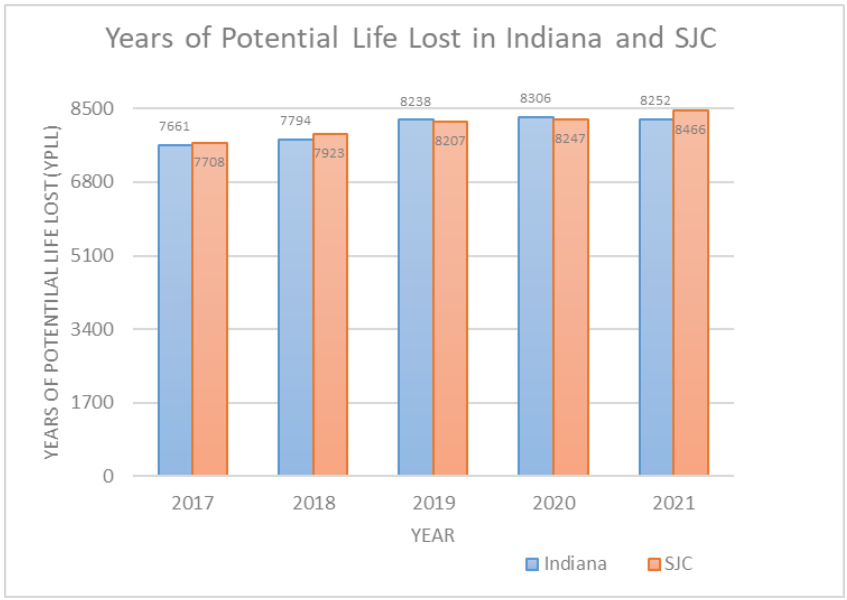
Source: County Health Rankings Year 2017—2021

SJC ranks 19th in clinical care out of 92 counties in Indiana. Clinical care reflects the number of uninsured people, ratio of primary care providers to population, and health screening activities. The county ranks lower in social and economic factors and physical environment. Significant improvement was recorded in health behaviors. In quality of life and length of life as ranked by the RWJF, the county ranked 61st and 50th in the state.

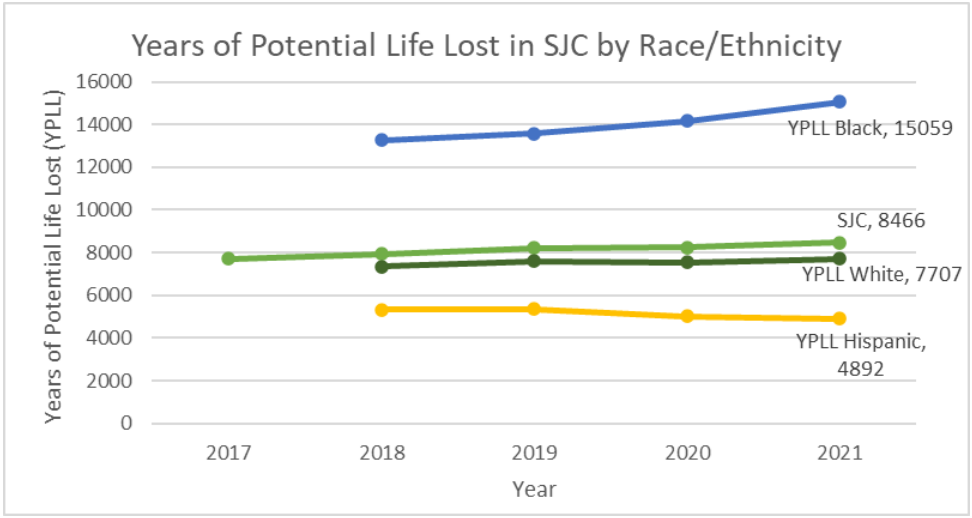
Years of Potential Life Lost

Years of Potential Life Lost (YPLL) Rate is widely used to measure the rate and distribution of premature mortality or deaths that could have been prevented. Over the past 5 years, the rates of Years of Potential Life Lost in the county remained similar to those of Indiana. The better performing states and counties in the top 10th percentile across the nation have an average rate of 5500 Years of Potential Life Lost.

Significant differences emerge when the data is analyzed based racial and ethnicity groups. In the 2021 rankings using data from 2017-2019, the Robert Wood Johnson Foundation (RWJF), show that the Years of Potential Life Lost (YPLL) Rate for the Black population in SJC is three times that of the Hispanic population and almost twice that of the White population.



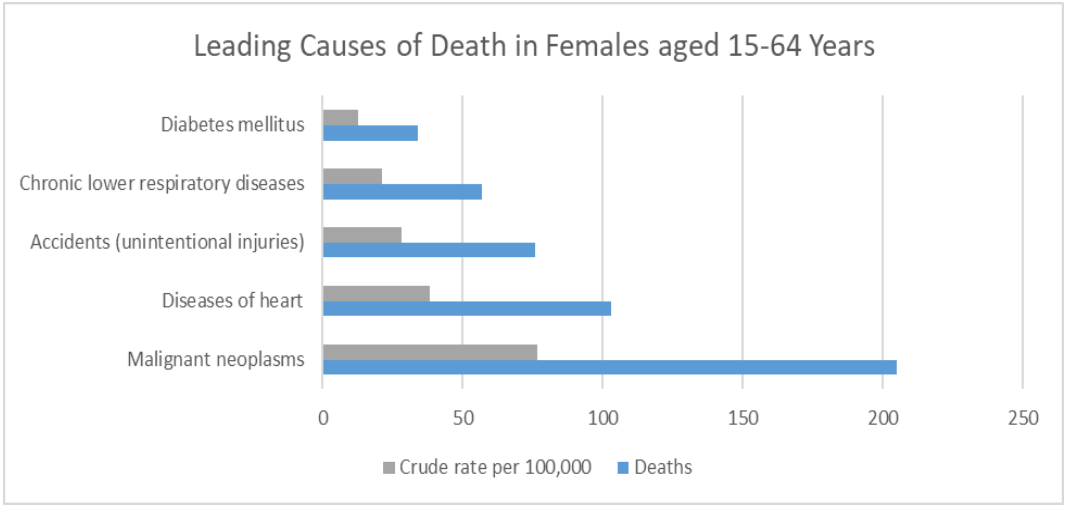
Data Source: County Health Rankings 2017—2021



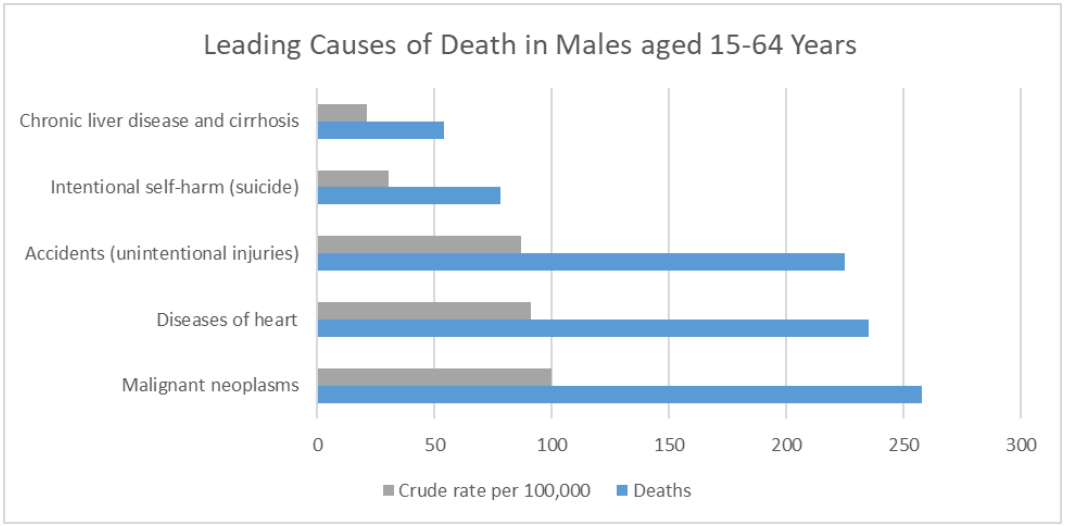
Data Source: County Health Rankings 2017—2021

Deaths in St. Joseph County

Leading Cause of Death 2017-2018	Deaths	Crude rate per 100,000
Diseases of the heart	1,149	212.3
Malignant neoplasms	1,094	202.1
Chronic lower respiratory diseases	363	67.1
Cerebrovascular diseases	359	66.3
Accidents and injuries	296	54.7
Alzheimer disease	289	53.4
Diabetes mellitus	196	36.2
Septicemia	118	21.8
Nephritis, nephrotic syndrome and nephrosis	98	18.1
Chronic liver disease and cirrhosis	96	17.7
Essential hypertension and hypertensive renal disease	93	17.2
Influenza and pneumonia	79	14.6
Intentional self-harm (suicide)	69	12.7
Parkinson disease	62	11.5
Assault (homicide)	46	8.5



The top 5 causes of death between 2016 and 2018 in females reflect the general population deaths in the county. The top 5 causes of death among males include intentional harm or suicide and chronic liver disease and cirrhosis.



Source: CDC WONDER

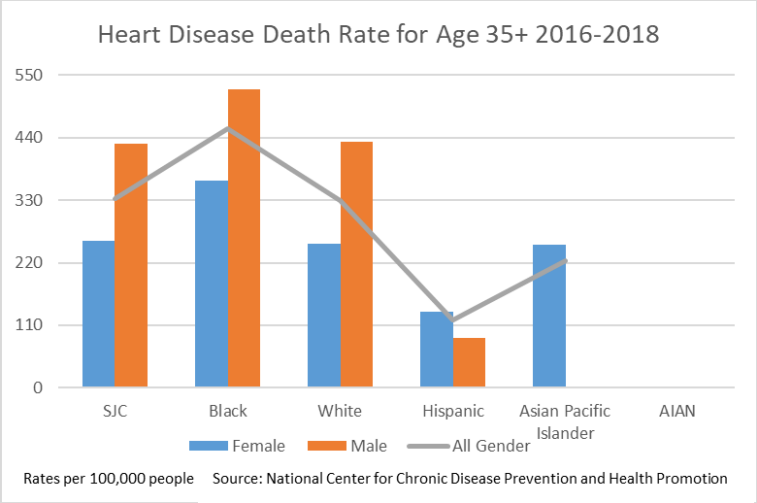
Heart Diseases

According to the Centers for Disease Control and Prevention:

'The term 'heart disease' refers to multiple types of heart conditions. Coronary artery disease is the most common type of heart disease in the United States and is also known as the ischemic heart disease. A heart disease may remain undiagnosed until an individual experiences the symptoms of a heart attack, arrhythmia, or heart failure.'

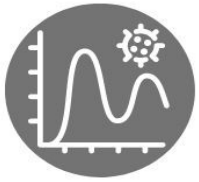
Risk Factors for Heart Diseases

- High blood pressure, high blood cholesterol, and smoking
- Medical conditions such as diabetes and overweight
- Unhealthy diet, physical inactivity, and excessive consumption of alcohol



Note: Rates are age standardized and spatially smoothed 3 year averages, 2016-2018, ages 35+

The Black and White male populations had significantly higher death rates than the general county rate. The Hispanic population has the lowest rate and data for the American Indian and Alaskan Native (AIAN) were insufficient.



One in **four** Americans die from heart disease annually.

In 2017, 7802 males and 6635 females died from heart disease in Indiana.

For every **100,000** people, **212** died from heart disease in the county between 2016 and 2018.

The rate of death due to heart diseases among The Black population is 1.4 times that of the county rate.

There were 3518 hospitalizations due to diseases of the heart in 2018 in the county.

Medicaid and Medicare were the primary payers for diagnoses of heart diseases for that period. These payments were more than twice those of commercial insurance.

Diseases of the Heart Inpatient Hospitalizations 2018			
Key Payer 2018	**Total Patients**	**Total days**	**Total Charges**
Medicare	1946	8855	$ 122,199,764.00
Medicaid	298	1461	$ 18,663,617.00
Other Government	33	175	$ 2,090,672.00
Commercial Insurance	1103	4946	$ 80,324,676.00
Self-Pay	58	198	$ 3,073,997.00
Other/Unknown	80	334	$ 4,691,109.00
Totals	**3518**	**15969**	**$ 231,043,835.00**

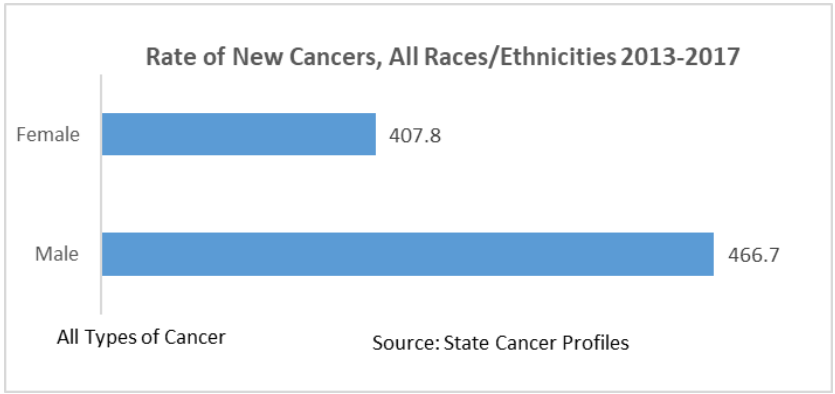
Cancer

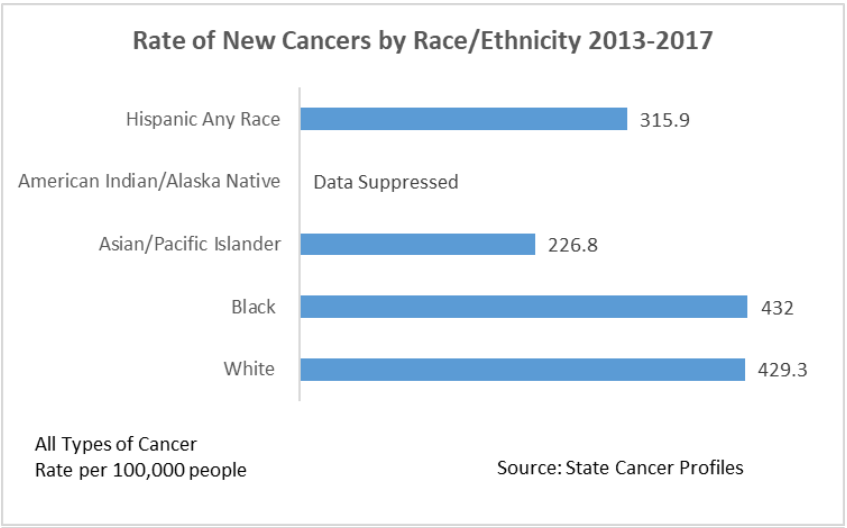
The Centers for Disease Control and Prevention define Cancer as:

'The term Cancer is used for diseases in which abnormal cells divide without control and can invade other tissues. Cancer cells spread to other parts of the body through the blood and lymph systems. It is not just one disease, but many diseases. There are more than 100 kinds of cancer.'

Cancer is also known as neoplasm and malignant tumors. Lung, prostate, colorectal, stomach, and liver cancer are the most common types of cancer in men. Breast, colorectal, lung, cervical, and thyroid cancer are the most common among women. The rates of new cancer were higher in males than females.

There were **6,663 new cases** of cancer in St. Joseph County between 2013 and 2017. For every 100,000 people, **432 new cancer cases** were reported in the county compared to **459** cases in Indiana and **449** cases nationally.

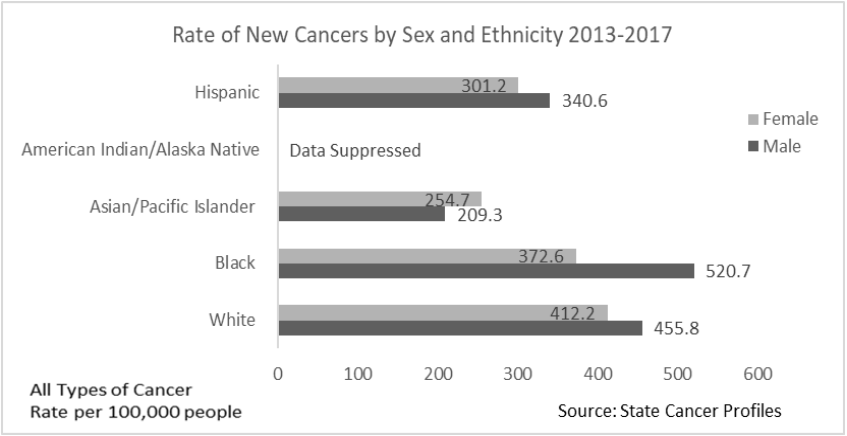




Notes:

- Rates are the number of cases per 100,000 people and are age-adjusted to the 2000 U.S Standard Population.
- Rates and counts are suppressed if fewer than 16 cases were reported in a specific category such as cancer type, race, and ethnicity.
- Race categories are not mutually exclusive from Hispanic origin.

The cancer burden exerts physical, emotional, and financial strains on individuals, families, communities, and health systems.



Cancer

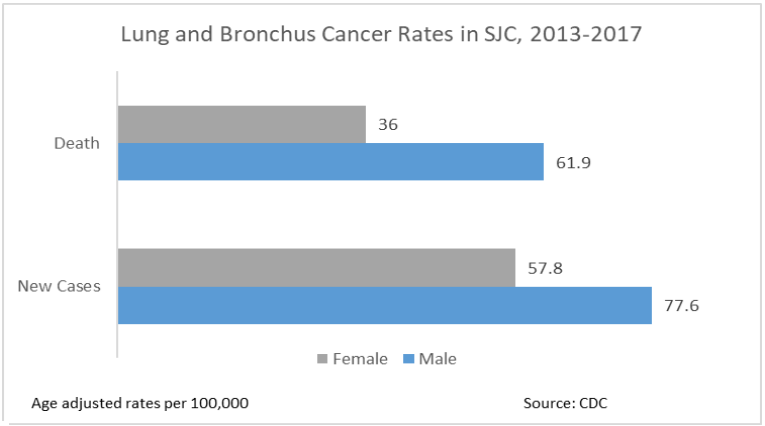
The Cancer mortality data show that the rate of deaths among the black population is higher than that of the average county rate and other population groups. For **every 100,000 people in the county, 175 died of cancer**. The Indiana rate is 176 deaths per 100,000 people and the U.S rate was 158.

Cancer Deaths	Age Adjusted Rate per 100,000	Male	Female	Death Count
SJC	174.4	211.8	148	2733
White	171	208.4	143.2	2432
Black	229.9	266.5	204.4	309
American Indian/ Alaska Native	Data Suppressed	Data Suppressed	Data Suppressed	Data Suppressed
Asian/Pacific Islander	Data Suppressed	Data Suppressed	Data Suppressed	Data Suppressed
Hispanic	83.9	Data Suppressed	Data Suppressed	36

Source: United States Cancer Statistics (CDC) and National Cancer Institute

Lung and Bronchus Cancer

It is the leading form of cancer deaths in Indiana. In the United States, 55 new cases were reported and 37 deaths for every 100,000 people. **In the county, the death rate in males was 1.7 times that of females and the rate of new cases among males was 1.3 times that of females.**



Risk Factors

Cigarette smoking is the leading risk factor and is linked to 80 to 90 percent of the lung cancer deaths. This includes the use of other tobacco products. Secondhand smoke also causes lung cancer. Additional factors include family history of lung cancer, supplemental vitamins intake, and exposure to chemicals like radon and asbestos.

Top 10 Cancers in the United States	Age-adjusted Death Rate per 100,000 (US)
Lung and Bronchus	36.7
Female Breast	19.9
Prostate	18.9
Colon and Rectum	13.5
Pancreas	11.1
Liver and Intrahepatic Bile Duct	6.6
Ovary	6.6
Leukemias	6.2
Non-Hodgkin Lymphoma	5.3
Corpus and Uterus, NOS	5

Economic Burden of Disease

The hospitalization data shows that the number of inpatient discharges due to any form of malignant neoplasms in the county increased from 799 in 2017 to 902 in 2018. **Medicare payments for cancer account for nearly 1.5 times the payments** those of commercial insurance in the county.

Malignant Neoplasms Public Inpatient Data St. Joseph County 2018			
Key Payer 2018	**Total Patients Discharges**	**Total days in Hospital**	**Total Charges**
Commercial Insurance	298	1710	$19,782,750.00
Medicaid	97	633	$7,004,089.00
Medicare	462	2732	$31,179,100.00
Other Government	16	151	$1,719,389.00
Self-pay	16	126	$1,575,222.00
Other/Unknown	13	69	$869,870.00
Totals	**902**	**5421**	**$62,130,420.00**

Radon is a naturally occurring gas that gets trapped in houses and buildings causes about 20,000 cases of lung cancer. Nearly 1 in 15 homes in the United States are thought to have Radon.

Chronic Respiratory Diseases

Chronic respiratory diseases cause airflow blockage and breathing related problems. Examples of chronic respiratory diseases include Chronic Obstructive Pulmonary Disease (COPD), asthma, emphysema, chronic bronchitis, and Chronic Lower Respiratory Disease (CLPD). Although there is no cure for chronic respiratory diseases, various forms of treatment can help control symptoms and improve the quality of life for people with the disease. **For every 100,000 people in the United States, 48.7 died from Chronic respiratory diseases. The rate in SJC was 67.1 deaths per 100,000 people in 2017 to 2018.**

Asthma

This is a chronic disease caused by the inflammation of the breathing tubes that carry air in and out of the lungs. There is no cure for asthma but with proper diagnosis, medication, and management, the symptoms can be regulated.

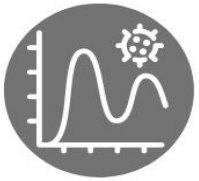
Symptoms

- Shortness of breath
- Chest tightness
- Wheezing
- Nighttime or early morning coughing

How does Asthma affect the quality of life?

Asthma affects the quality of life and wellbeing of communities, families and individuals. People dealing with the symptoms may find it difficult sleeping, worry about having an attack, miss some school days, physical events, and work days, and incur costs in physician visits.

People living with asthma often experience the symptoms when they get exposed to triggers that affect their lungs and cause a flare-up of the symptoms. Examples of the triggers include dust, pollen, smoke, and air pollution.



In the United States, 7.7% of adults aged 18 and over and 7.5% of children under the age of 18 years have asthma. The 2018 Behavioral Risk Factor Surveillance System shows that 10% of the population in Indiana live with Asthma and 10 people per one million population die from Asthma.

The 2016 -2018 National Health Interview Survey on Asthma indicated that across all age groups, the burden of Asthma is highest among those aged 15-19 years. The rate is higher in males aged less than 18 years compared to those aged 18 and above. In females, the rate is higher in those over 18 years. Overall, the rate is higher in females than in males. Households living below 100% of the poverty threshold presented higher rates of asthma. The rates were higher in the Black Non-Hispanic and American Indian/Alaska Native population and lowest among the Asian Non-Hispanic population. Significantly higher rates were presented in the Black children population across the United States.

Economic Burden of Disease

Hospitalizations due to any form of respiratory disease and disorder decreased from 2805 patient discharges in 2017 to 2603 in 2018. There were about 845 inpatient hospitalizations in the county in 2017 and about 624 in 2018 with the principal diagnosis as chronic lower respiratory disease. This included asthma, influenza and pneumonia cases.

The age adjusted incidence rate for asthma per 10,000 based on hospital discharges in the county was 4.6 in 2017 and 4.1 in 2018. The inpatient hospitalizations due to Asthma for children aged **5 to 17 years was 7.9 in 2017 and decreased to 4.2 in 2018**.

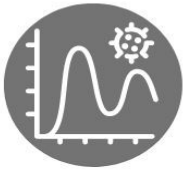
The main payer for the costs incurred in diagnosis and treatment was Medicare accounting for nearly three times costs those of the commercial insurance and twice those of Medicaid costs.

Cerebrovascular Disease

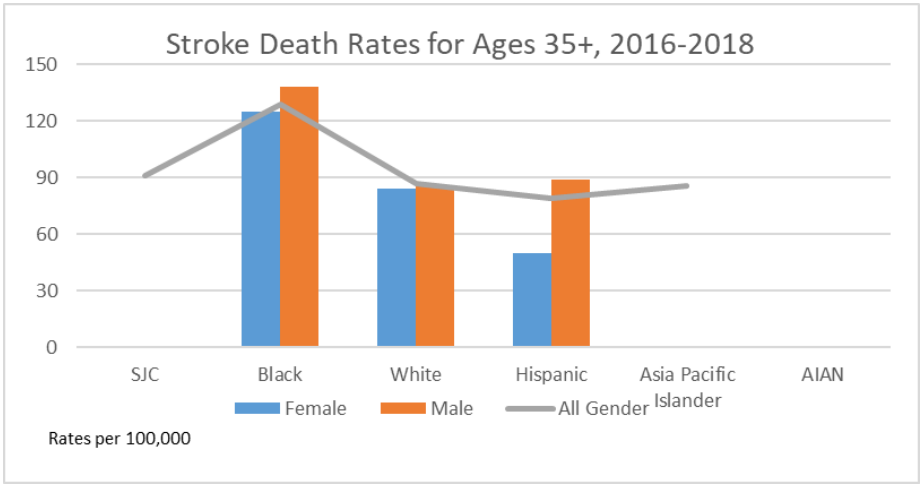
This refers to a group of conditions that affect blood flow and the blood vessels in the brain. This results from narrowed blood vessels, clot formation, artery blockage and blood vessel rupture.

Factors and Diseases that increase the likelihood of having a stroke?

- High blood pressure, high cholesterol, diabetes, and sickle cell disease.
- Unhealthy diet, physical inactivity, obesity, tobacco use, and excessive alcohol intake increases the risk for stroke.
- Other factors that predispose individuals to stroke include genetic, age, racial, and gender disparities.



Stroke death rates for those older than 35 years in SJC were 1.4 times higher among the Black population, and highest in the Black male. The rates were lowest in the Hispanic population. The overall SJC rate of 91 stroke death rates per 100,000 was higher than the state and national rates.



Rates are age standardized and spatially smoothed 3 year averages, 2016-2018

How do strokes affect heath and quality of life?

The effect of a stroke depends on the location of the obstruction and the extent of the brain tissue affected. It leads to physical, behavioral and communication challenges in some people, psychological stress in individuals and families, and financial constraints as stroke victims and their families navigate the cost of care and management of the disease.

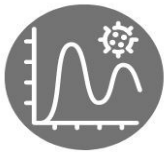
Economic Burden of Disease

The age adjusted inpatient hospitalizations due to Stroke were to 28 per 10,000 people in 2018. The rate was 27.9 in 2017. An assessment of the hospitalization data shows that most of the costs for cerebrovascular disease were paid under Medicare.

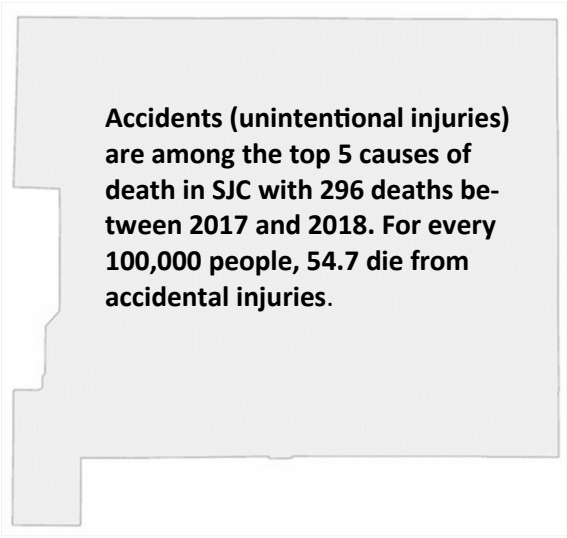
Cerebrovascular Diseases Inpatient Hospitalizations 2018			
Key Payer 2018	**Total Patients Discharges**	**Total days**	**Total Charges**
Commercial Insurance	322	2088	$19,558,932.00
Medicaid	105	842	$7,761,389.00
Medicare	734	4668	$42,090,045.00
Other Government	9	69	$797,388.00
Self-pay	27	233	$2,398,992.00
Other/Unknown	19	74	$730,618.00
Totals	**1216**	**7974**	**$73,337,364.00**

Accidents and Injuries

Unintentional injuries are among the leading causes of death in the US and for those under the age of 35. The top three causes of fatal unintentional injuries are motor vehicle accidents, poisoning including drug overdoses, and falls.



The number of physician office visits for unintentional injuries are about 39.5 million in the United States. Those that are considered as emergency department visits for unintentional injuries are 29.4 million. Annually, the deaths per 100,000 population in the US is 51.1.



Accidents (unintentional injuries) are among the top 5 causes of death in SJC with 296 deaths between 2017 and 2018. For every 100,000 people, 54.7 die from accidental injuries.

In 2017, the death rate due to Motor vehicle accidents per 100,000 people in the county was 14.77. **The accidents were nearly 1.8 times higher in males compared to those among females**. Non-transport accidents that include accidental poisoning and exposure to noxious substances were high among those aged 25 to 64 years.
In 2017, St Joseph County had 33 deaths by intentional harm (suicide), and 24 deaths from assault (homicide).
Nationally, the deaths due to drug overdose or poisoning are 20.6 per 100,000. Those involving any opioid use are 14.3 per 100,000.

Death from Selected Injury and Poisoning Causes of Death by Age Group in 2017							
	External Cause of Mortality	Accidents (Unintentional Injuries)	Motor Vehicle Accidents	Non-transport Accidents	Accidental poisoning	Intentional self-harm (suicide)	Assault (Homicide)
Under 1	3	2	0	2	0	0	1
1-14	7	6	2	4	0	0	1
15-19	10	3	3	0	0	4	3
20-24	12	4	2	2	2	3	4
25-34	41	27	5	22	20	5	8
35-44	28	22	4	18	18	3	3
45-54	41	32	11	21	17	8	1
55-64	32	24	5	19	10	4	2
65-74	14	10	2	8	1	3	0
75-84	20	16	5	11	1	2	0
Over 85	16	11	0	11	0	1	1
Total	**224**	**157**	**39**	**118**	**69**	**33**	**24**

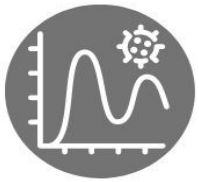
Source: https://www.in.gov/isdh/reports/mortality/2017/table09/tbl09_71.htm

Diabetes

Diabetes is a long-lasting health condition that affects how the body turns food into energy. With diabetes, the body does not make or use insulin properly. Diabetes occurs in three forms: type 1, type 2, and gestational diabetes (diabetes while pregnant).

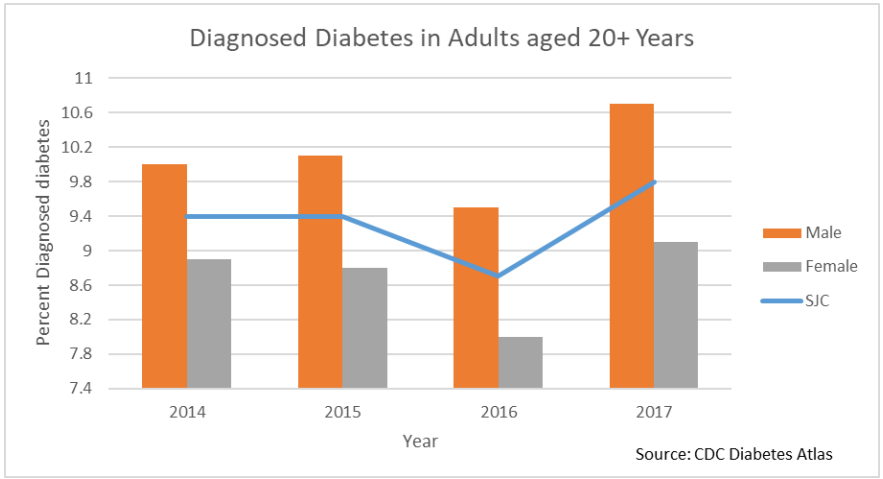
Type 1 diabetes is due to an autoimmune reaction that stops your body from making insulin. About 5-10% of diabetes diagnoses are type 1. The risk factors for Type 1 diabetes where the body does not make enough insulin include family history and age. It usually develops during childhood and young adulthood.

Type 2 diabetes results when the body does not use insulin well and cannot maintain normal blood sugar levels. About 90-95% of diagnosed diabetes are Type 2. The risks for Type 2 diabetes are prediabetes, overweight, age (45 years or older), family history, physical inactivity, and previous gestational diabetes.



Diabetes is the fourth leading cause of death among Black population in Indiana. In 2019, the percentage of Diabetes in the prevalent cases in Indiana was higher in males aged 50 years and above. It is among the 5 leading causes of mortality for people under 75 years in SJC.

In 2018 in SJC , the age-adjusted mortality rate from diabetes was 28.1 per 100,000 people. The prevalence of diabetes in individuals aged 20 and above was 9.8% of the total population in 2017. The percentage **diabetes prevalence among males in SJC is higher than in females** as shown here.



Risk Factors for Diabetes

The indicators for the risk factors for diabetes show that among the **diagnosed cases on diabetes**, **34.5% had obesity and 23% reported physical inactivity in males while in females, 34.3% had obesity and 27.6% reported physical inactivity.**

Obesity, Total, Adults Aged 20+ Years, SJC		
Year	Obesity % in Population (Age adjusted to year 2000)	Population Number
2014	30.8	60539
2015	31.9	62845
2016	32.7	64743
2017	34.4	67844

Source: CDC's Behavioral Risk Factor Surveillance System (BRFSS) and from the US Census Bureau's Population Estimates Program

Physical inactivity is based on responses to the Behavioral Risk Factor Surveillance Survey. Physical Inactivity is the percentage of adults ages 20 and above reporting no leisure-time physical activity in a month.

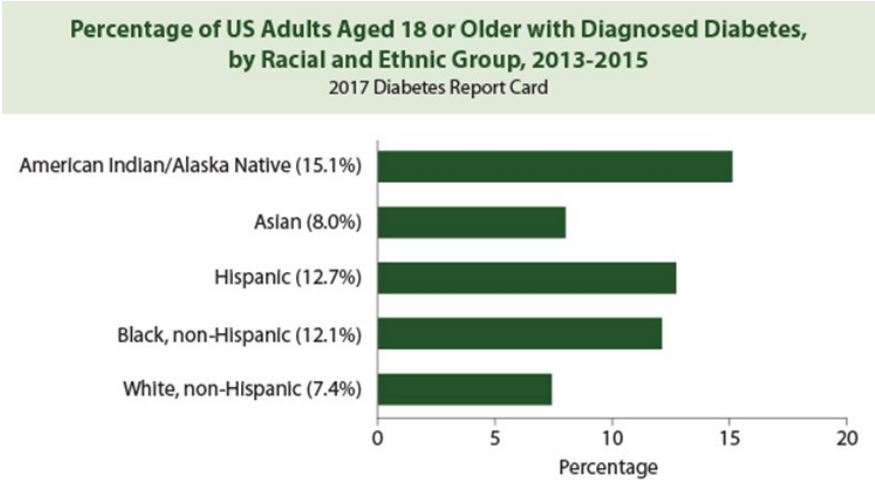
Obesity is defined as the body mass index (BMI) greater than or equal to 30kg/m2 in the adult population aged 20 and over. The percentage of the population reporting obesity in St. Joseph County increased from 30.8% in 2014 to 34.4% in 2017.

Diabetes

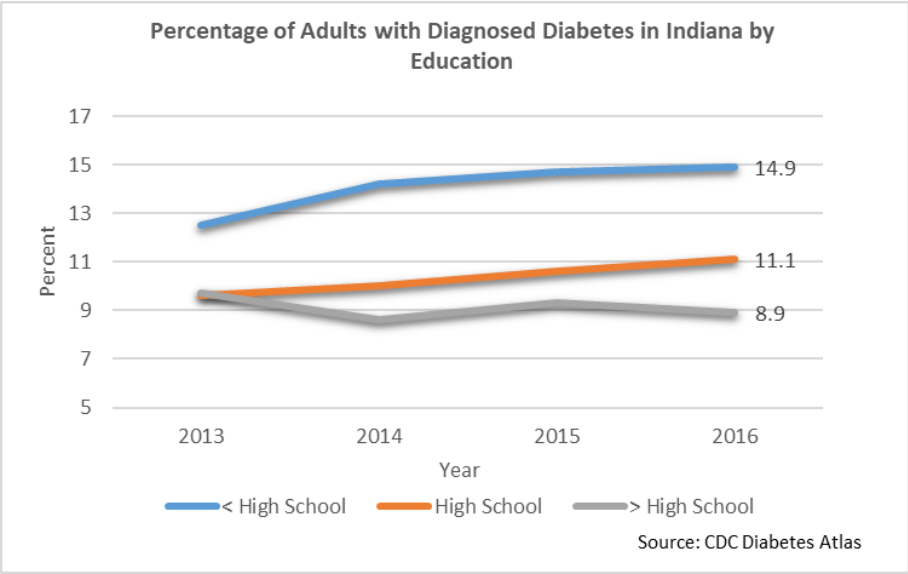
African American, Hispanic/Latino American, AIAN and Asian American are at higher risk for Type 2 diabetes while the Whites are more likely to develop Type 1 diabetes.
Nationally, the American Indian/Alaskan Native have the highest percentage of diagnosed diabetes.

How does Diabetes affect health and quality of life?
Diabetes **prevalence in Indiana by education shows that the percentage rates are highest among those with less than high school level education. This group may also have lower income levels, hence bear the burden of diabetes heavily**.

According to the Institute for Health Metrics and Evaluation (IHME), Diabetes has the highest health spending in the United States. In Indiana, the Years of Life Lost rates due to Diabetes in 2016 were 726 per 100,000 with higher rates in males. Notably, the Years of Life Lost in the state due to overweight and obesity in the same year were 3776 per 100,000 with the rates higher in males.



Source: CDC https://www.cdc.gov/diabetes/disparities.html



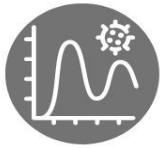
Economic Burden of Disease

In 2017, there were 761 inpatient hospitalizations in the county due to diabetes and 739 in 2018. Medicare accounted for the largest share of the costs incurred and paid in diagnosis and treatment of Diabetes.

Diabetes Inpatient Hospitalizations 2018			
2018	**Total Patients Discharges**	**Total days**	**Total Charges**
Commercial Insurance	221	1075	$8,914,272.00
Medicaid	196	846	$7,208,673.00
Medicare	260	1796	$15,521,667.00
Other Government	9	70	$445,022.00
Self-pay	22	59	$478,882.00
Other/Unknown	31	154	$1,092,326.00
Totals	**739**	**4000**	**$33,660,842.00**

Septicemia

Septicemia is the clinical name for blood poisoning by bacteria. This leads to sepsis which is the body's most extreme response to an infection. It can lead to tissue damage, organ failure and death when left unattended. Sepsis is associated with infections of the lung, urinary tract, intestines, or gut and skin. People with chronic medical conditions, weak immune systems, community-acquired pneumonia, and previous hospitalization are at risk for developing sepsis. Children younger than one year and adults aged above 65 are also at risk.



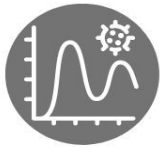
Septicemia is among the leading cause of death in the county with 118 deaths between 2017 and 2018 and a crude death rate of 21.8 per 100,000 people.

In 2018, 2344 hospitalizations were due to different causes of sepsis. There were 2023 patient discharges related to Sepsis in 2017. Medicare accounted for the highest payments on diagnosis and treatment of patients. Across the main diseases affecting the people of St. Joseph County, **the economic cost burden of sepsis ranks second highest after diseases of the heart.**

Sepsis Inpatient Hospitalizations 2017/2018			
2018	**Total Patients Discharges**	**Total days**	**Total Charges**
Commercial Insurance	646	4206	$37,787,280.00
Medicaid	358	2433	$23,335,816.00
Medicare	1218	8726	$74,374,334.00
Other Government	25	358	$2,765,105.00
Self-pay	52	328	$3,015,831.00
Other/Unknown	45	366	$3,266,722.00
Totals	**2344**	**16417**	**$144,545,088.00**
2017	**Total Patients Discharges**	**Total days**	**Total Charges**
Commercial Insurance	534	3787	$30,809,225.00
Medicaid	291	2276	$19,629,948.00
Medicare	1105	8051	$66,871,703.00
Other Government	26	335	$2,574,997.00
Self-pay	34	183	$1,732,776.00
Other/Unknown	33	269	$1,912,078.00
Totals	**2023**	**14901**	**$123,530,727.00**

Alzheimer

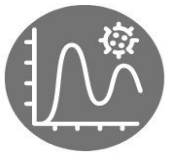
It is among the leading causes of death in SJC. Alzheimer disease is the most common type of dementia that affects memory and how one thinks, behaves, and speaks. The symptoms of the disease generally first appear after age 60, and the risk increases with age. It is not a normal part of aging.



In 2017-2018, 289 deaths in St. Joseph County were due to Alzheimer disease accounting for 53.4 deaths for every 100,000. **It is the leading cause of death for the people aged 65 and above**.

Chronic Kidney Disease

Chronic Kidney Disease (CKD) occur when the kidneys are damaged and cannot filter blood as well as they should. This results in accumulation of excess fluid and waste from the blood in the body. CKD may cause other health problems such as heart disease, stroke, anemia, increased infection, loss of appetite, depression and lower quality of life.



One in seven Americans have chronic kidney disease. It is the ninth leading cause of death in the United States. Three out of four kidney failures result from diabetes and high blood pressure. CKD is among the leading causes of death in St. Joseph County. **In 2017-2018, the crude death rate due to kidney failure was 18.1 per 100,000 people in the county.**

African Americans, Hispanics, and American Indians are at high risk for developing kidney failure. This is in part attributed to high rates of diabetes and high blood pressure among these population groups. Thirty five percent of people with kidney failure in the United States are African Americans. Hispanics are almost 1.3 times more likely to be diagnosed with kidney failure compared to non-Hispanics. American Indians are 1.2 times more likely to be diagnosed with kidney failure compared to Whites.

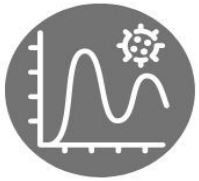
St. Joseph County had 1281 hospital discharges related to kidney and urinary tract diseases in 2017 and about 1238 hospitalization cases in 2018. Acute Kidney failure ranked high in this group with 496 cases in 2018 and 514 cases in 2017. Urinary Tract infections ranked second.
Like many other diseases, Medicare was the highest payer for the diseases in this category.

Chronic Kidney Disease Inpatient Hospitalizations 2017/2018			
2018	**Total Patients Discharges**	**Total days**	**Total Charges**
Commercial Insurance	367	1507	$12,418,214.00
Medicaid	151	639	$5,082,323.00
Medicare	673	3212	$22,840,465.00
Other Government	7	36	$223,282.00
Self-pay	19	66	$580,398.00
Other/Unknown	21	99	$828,376.00
Totals	**1238**	**5559**	**$41,973,058.00**
2017	**Total Patients Discharges**	**Total days**	**Total Charges**
Commercial Insurance	391	1794	$14,324,226.00
Medicaid	178	634	$5,181,128.00
Medicare	672	3090	$21,074,586.00
Other Government	13	84	$557,605.00
Self-pay	8	60	$531,837.00
Other/Unknown	19	87	$725,980.00
Totals	**1281**	**5749**	**$42,395,362.00**

Chronic Liver Disease and Cirrhosis

Cirrhosis occurs when scar tissue replaces healthy liver tissue. It is a long-term disease that leads to decreased function of the liver and eventual liver failure. Chronic liver disease or cirrhosis is commonly caused by hepatitis C and other viruses, alcohol abuse and nonalcoholic fatty liver disease resulting from obesity, high cholesterol, and high blood pressure.

In 2017-2018, the crude rate of deaths due to chronic liver disease and cirrhosis in St. Joseph County was 17.7 deaths per 100,000 people. It ranks among the top causes of death in the county.



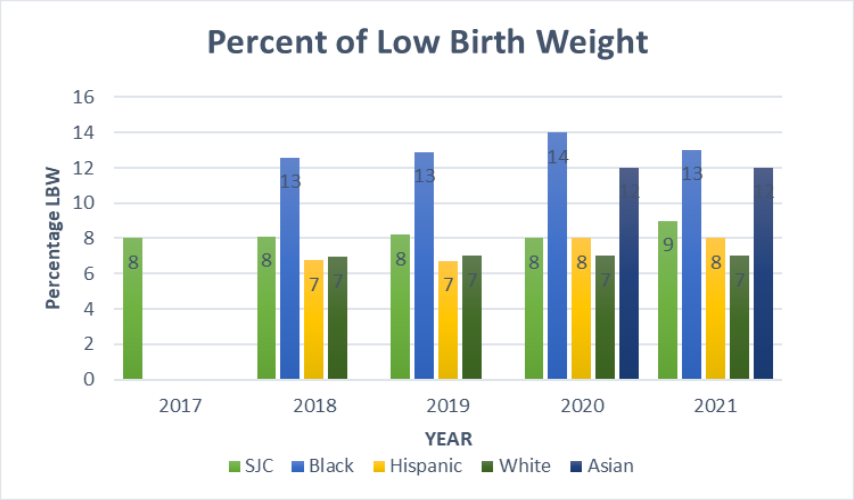
The cost of hospitalizations due to chronic liver disease and cirrhosis are accounted for by Medicaid, Medicaid and commercial insurance as shown here.

Chronic Liver Disease and Cirrhosis Inpatient Hospitalizations 2017/2018			
2018	**Total Patients Discharges**	**Total days**	**Total Charges**
Commercial Insurance	53	303	$2,027,949.00
Medicaid	36	266	$1,745,032.00
Medicare	93	434	$3,298,383.00
Other Government	3	13	$153,592.00
Self-pay	10	82	$457,190.00
Other/Unknown	6	20	$164,230.00
Totals	**201**	**1118**	**$7,846,376.00**
2017	**Total Patients Discharges**	**Total days**	**Total Charges**
Commercial Insurance	61	310	$2,107,922.00
Medicaid	57	261	$1,917,032.00
Medicare	74	368	$2,687,077.00
Other Government	1	12	$61,584.00
Self-pay	2	10	$57,001.00
Other/Unknown	10	56	$357,385.00
Totals	**205**	**1017**	**$7,188,001.00**

Additional county health outcomes are indicated on the next page.

Infant Mortality

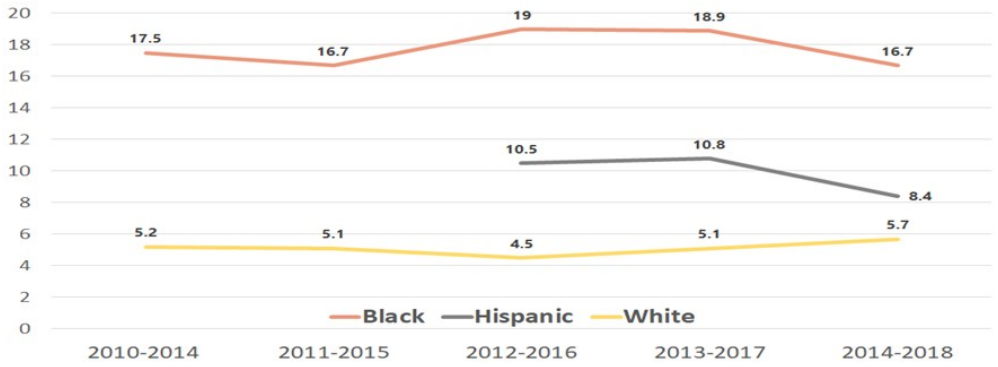
CDC defines infant mortality as the death of an infant before their first birthday. This is an important indicator of maternal and infant health as well as the overall health of society.
In the United States, the infant mortality rate for black infants is 2.5 times that of white infants. In St. Joseph County, the disparity is nearly three-fold as seen in the chart here.



Teen Birth Rates

This is the number of births to females aged 15-19 per 1,000 females. In 2018, the U.S rate was **17.4 births per 1000** females. In Indiana it was **21.8 per 1,000** births in 2017-2018, while in **St. Joseph County, the rate was 29 births per 1000.**
The 2018 National Vital Statistics illustrate the Teen Birth Rates for the Hispanic teenagers and Non-Hispanic black teenagers as 26.7 and 26.3 per 1000 births respectively. **The SJC rates are twice these national rates for the same racial/ethnic groups.**
Teen childbearing is a public health concern due to the elevated health risks for mothers and their infants and the social and economic costs in terms of heath care, child welfare, and the potential loss of the mother's educational and occupational opportunities.

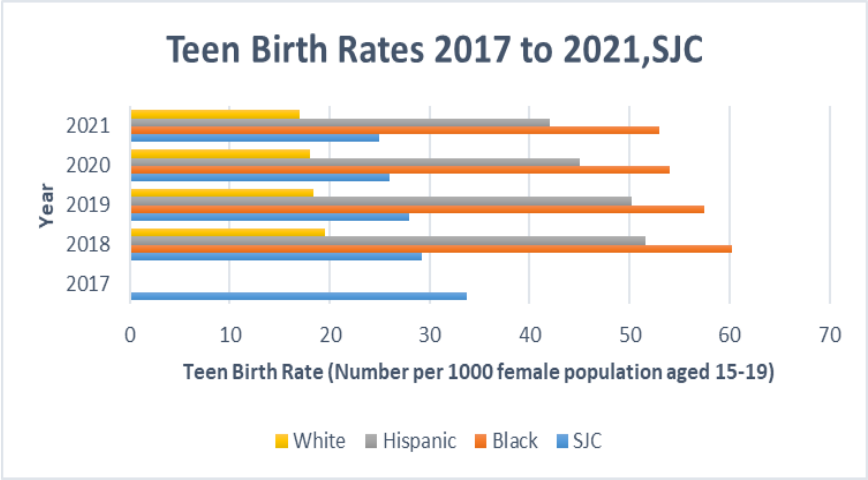
Infant Mortality by Race in 5 year Time Frames in SJC



Low Birth Weight (LBW)

This is when a baby is born weighing less than 5 pounds, 8 ounces. LBW is associated with preterm birth where the baby is born before 37 weeks of pregnancy or when the baby does not gain enough weight before birth –also known as fetal growth restriction. In some cases, low birth weight babies are healthy but others have complications that require further treatment.

There are 10.02% preterm births in the U.S and 8.28% of births are low birth weights. The SJC data shows that **13% of Black population births are low weight, which is higher than the county percentages and 1.6 times that of the Hispanic rates and nearly twice the White LBW rates.** In years with available data for the Asian population, the LBW rates are nearly equal to the Black population.



Way Forward...

This Burden of Disease Report is the initial step toward a more detailed health equity report and plan for St. Joseph County. Subsequent reports will assess the disparities in health based on social determinants such as housing, income, location, race and neighborhood conditions that influence health outcomes. Using an evidence-based, data driven approach, subsequent reports will demonstrate how social determinants contribute to differences in health outcomes among various populations within the county.

The Health Equity, Epidemiology, and Data (HEED) Unit's vision is a county where all residents have the resources and opportunities to achieve optimal health and well-being throughout their lives. Over the coming year, the HEED Unit will advance health equity through community engagement, capacity building, and dissemination of actionable data to support policy and systems changes. We will evaluate systems, programs and policies that shape the outcomes described in this report; and, we will improve and expand our own data systems.

Since the onset of the COVID 19 pandemic, the HEED Unit has played a critical role in collecting, analyzing, and reporting pertinent data. This data informed the public and the decision-making process of healthcare leaders and elected officials. This Burden of Disease Report comes at a time when the Department of Health is delivering COVID-19 vaccinations and ensuring the process is accessible and equitable. Insights gained through the vaccine initiative will inform the Department of Health's efforts to improve health outcomes and promote equity throughout the county.

References

1. Definition of Health Disparities. https://ajph.aphapublications.org/doi/pdfplus/10.2105/AJPH.2010.300062
2. Definition of Terms: https://www.cdc.gov/globalhealth/healthprotection/fetp/training_modules/2/ncd-burden-of-disease_ppt_final_09252013.pdf
3. Burden of Disease. https://www.cdc.gov/globalhealth/healthprotection/fetp/training_modules/2/ncd-burden-of-disease_ppt_final_09252013.pdf
4. Demographics: https://www.census.gov/prod/cen2010/briefs/c2010br-10.pdf, https://www.census.gov/prod/cen2010/briefs/c2010br-11.pdf, https://www.census.gov/prod/cen2010/briefs/c2010br-06.pdf, https://www.census.gov/prod/cen2010/briefs/c2010br-04.pdf, https://www.census.gov/prod/cen2010/briefs/c2010br-12.pdf, https://www.census.gov/topics/population/race/about.html
5. NCD Burden of Disease. CDC. https://www.cdc.gov/globalhealth/healthprotection/fetp/training_modules/2/ncd-burden-of-disease_ppt_final_09252013.pdf
6. Burden of Disease. Queensland Health. https://www.health.qld.gov.au/research-reports/population-health/burden-disease
7. Burden of disease. National Collaborating Centre for Infectious Diseases. https://nccid.ca/publications/exploring-the-concept-of-burden-of-disease/ Accessed 29 November 2020
8. Health Related Needs. https://next50.urban.org/question/health-related-social-needs
9. Religion data, https://www.thearda.com/rcms2010/rcms2010a.asp?U=18141&T=county&Y=2010&S=Name Retrieved January 7, 2021
10. County Health Rankings https://www.countyhealthrankings.org/explore-health-rankings/measures-data-sources/county-health-rankings-model/health-outcomes/length-of-life/premature-death-ypll
11. CDC WONDER. U.S. Cancer Statistics Working Group. U.S. Cancer Statistics Data Visualizations Tool, based on 2019 submission data (1999-2017): U.S. Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; www.cdc.gov/cancer/dataviz, released in June 2020.
12. Heart Disease, https://www.cdc.gov/heartdisease/about.htm. Accessed November 20, 2020.
13. Heart Disease Mortality. https://www.in.gov/isdh/reports/mortality/2017/graphs_sas_pdf.pdf#page=1 Accessed November 20, 2020.
14. Underlying Causes of Death. Centers for Disease Control and Prevention, National Center for Health Statistics. Underlying Cause of Death 1999-2018 on CDC WONDER Online Database, released in 2020. Data are from the Multiple Cause of Death Files, 1999-2018, as compiled from data provided by the 57 vital statistics jurisdictions through the Vital Statistics Cooperative Program. Accessed at http://wonder.cdc.gov/ucd-icd10.html on Nov 23, 2020 10:27:31 AM
15. Diseases of the Heart, Hospital Discharge rate. Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team, Indiana Hospital Association. Retrieved from https://gis.in.gov/apps/isdh/meta/stats_layers.htm
16. Public Inpatient Data sets. Retrieved from https://www.in.gov/isdh/20624.htm
17. Heart Disease. Centers for Disease Control and Prevention. https://www.cdc.gov/heartdisease/about.htm
18. Cardiac Rehabilitation. https://millionhearts.hhs.gov/tools-protocols/action-guides/cardiac-change-package/index.html. Accessed November 23, 2020.
19. Cancer. Centers for Disease Control and Prevention. https://www.cdc.gov/cancer/dcpc/prevention/index.htm
20. Cancer. World Health Organization. https://www.who.int/health-topics/cancer#tab=tab_1
21. U.S. Cancer Statistics Working Group. U.S. Cancer Statistics Data Visualizations Tool, based on 2019 submission data (1999-2017): U.S. Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; www.cdc.gov/cancer/dataviz, released in June 2020.
22. U.S. Cancer Statistics Working Group. U.S. Cancer Statistics Data Visualizations Tool, based on 2019 submission data (1999-2017): U.S. Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; www.cdc.gov/cancer/dataviz, released in June 2020.
23. Risk Factors, https://www.cdc.gov/cancer/lung/basic_info/risk_factors.htm
24. Lung Cancer Risk Factors, https://www.hopkinsmedicine.org/health/conditions-and-diseases/lung-cancer/lung-cancer-risk-factors
25. CDC WONDER. U.S. Cancer Statistics Working Group. U.S. Cancer Statistics Data Visualizations Tool, based on 2019 submission data (1999-2017): U.S. Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; www.cdc.gov/cancer/dataviz, released in June 2020.
26. Learn about Asthma. American Lung Association Website. https://www.lung.org/lung-health-diseases/lung-disease-lookup/asthma/learn-about-asthma. Published October 23, 2020. Accessed November 20, 2020
27. Asthma definition. Retrieved from https://www.aaaai.org/conditions-and-treatments/conditions-dictionary/asthma
28. Chronic Respiratory Diseases. Retrieved from https://www.who.int/health-topics/chronic-respiratory-diseases#tab=tab_1
29. Asthma. Centers for Disease Control and Prevention Website. https://www.cdc.gov/nchs/fastats/asthma.htm . Reviewed October 30, 2020. Accessed November 20, 2020
30. Most Recent Asthma Data. Centers for Disease Control and Prevention website. https://www.cdc.gov/asthma/most_recent_data_states.htm. Reviewed March 24, 2020. Accessed November 20, 2020.
31. Most Recent Asthma Data. Centers for Disease Control and Prevention website. https://www.cdc.gov/asthma/most_recent_national_asthma_data.htm Reviewed October 26, 2020. Accessed November 20, 2020.
32. Cerebrovascular disease. University of Michigan Neurosciences. https://www.uofmhealth.org/conditions-treatments/brain-neurological-conditions/cerebrovascular
33. Stroke. https://www.cdc.gov/stroke/about.htm. Accessed November 23.2020.
34. Stroke. Centers for Disease Control and Prevention. https://www.cdc.gov/stroke/index.htm. Accessed November 23, 2020.
35. Stroke. Centers for Disease Control and Prevention. https://www.cdc.gov/stroke/family_history.htm Accessed November 23.2020.
36. Effects of Stroke. American Stroke Association. https://www.stroke.org/en/about-stroke/effects-of-stroke. Accessed November 24, 2020.

References

37. Unintentional Injury Statistics. John Hopkins Medicine website. https://www.hopkinsmedicine.org/health/wellness-and-prevention/unintentional-injury-statistics#:~:text=Unintentional%20injuries%20continue%20to%20be,crashes%2C%20poisoning%2C%20and%20falls. Accessed November 25, 2020.
38. Accidental Injuries. https://www.cdc.gov/nchs/fastats/accidental-injury.htm
39. Accidental Injuries. Centers for Disease Control and Prevention. CDC WONDER.
40. Motor Vehicle Accidents. Indiana State Department of Health website. https://www.in.gov/isdh/reports/mortality/2017/table05/tbl05_71.htm.
41. Death from Selected Injury and Poisoning Causes by Age Group. Indiana State Department of Health website. https://www.in.gov/isdh/reports/mortality/2017/table09/tbl09_71.htm
42. Alzheimers. Centers for Disease Control and Prevention. https://www.cdc.gov/aging/aginginfo/alzheimers.htm. Accessed November 24, 2020.
43. Diabetes Risk Factors. https://www.cdc.gov/diabetes/basics/risk-factors.html
44. Diabetes in African American Population. https://www.in.gov/isdh/files/African%20American%20and%20Diabetes.pdf
45. Diagnosed Diabetes https://gis.cdc.gov/grasp/diabetes/diabetesatlas.html
46. Diabetes Basics https://www.cdc.gov/diabetes/basics/diabetes.html http://www.healthdata.org/sites/default/files/files/infographics/Infographic_State_burden_Diabetes_risk_profile_0.pdf
47. State Burden of Disease. http://www.healthdata.org/sites/default/files/files/infographics/Infographic_State_burden_Diabetes_risk_profile_0.pdf
48. Septicemia. John Hopkins Medicine. https://www.hopkinsmedicine.org/health/conditions-and-diseases/septicemia. Accessed November 30, 2020.
49. Chronic Kidney disease. Centers for Disease Control and Prevention. https://www.cdc.gov/kidneydisease/basics.html
50. Race, Ethnicity and Kidney Disease. National Institute of Diabetes and Digestive and Kidney Diseases. https://www.niddk.nih.gov/health-information/kidney-disease/race-ethnicity
51. Cirrhosis. John Hopkins Medicine. https://www.hopkinsmedicine.org/health/conditions-and-diseases/chronic-liver-disease-cirrhosis#:~:text=points%20about%20cirrhosis-,Cirrhosis%20is%20when%20scar%20tissue%20replaces%20healthy%20liver%20tissue.,problems%20can%20also%20cause%20it.
52. Infant Mortality. Centers for Disease Control and Prevention. https://www.cdc.gov/reproductivehealth/maternalinfanthealth/infantmortality.htm
53. County Infant Health from Dixon, S. St. Joseph Department of Health Fetal Infant Mortality Review Annual Report, 2015 -2019.
54. Low Birth Weight. March of Dimes. https://www.marchofdimes.org/complications/low-birthweight.aspx#
55. Martin, J.A. et.al. Births. National Vital Statistics Report Volume 68, Number 13. November 17, 2019. https://www.cdc.gov/nchs/data/nvsr/nvsr68/nvsr68_13-508.pdf
56. Hamilton B. E. State Teen Birth Rates by Race and Hispanic Origin, National Vital Statistics Reports, Volume 69, No. 6, July 10, 2020.https://www.cdc.gov/nchs/data/nvsr/nvsr69/NVSR69-6-508.pdf
57. Hoffman, SD, Maynard, RA. Kids having kids: Economic costs and social consequences of teen pregnancy. Washington, DC: Urban Institute Press. 2008

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Questions and Feedback can be sent to cwhite@sjcindiana.com
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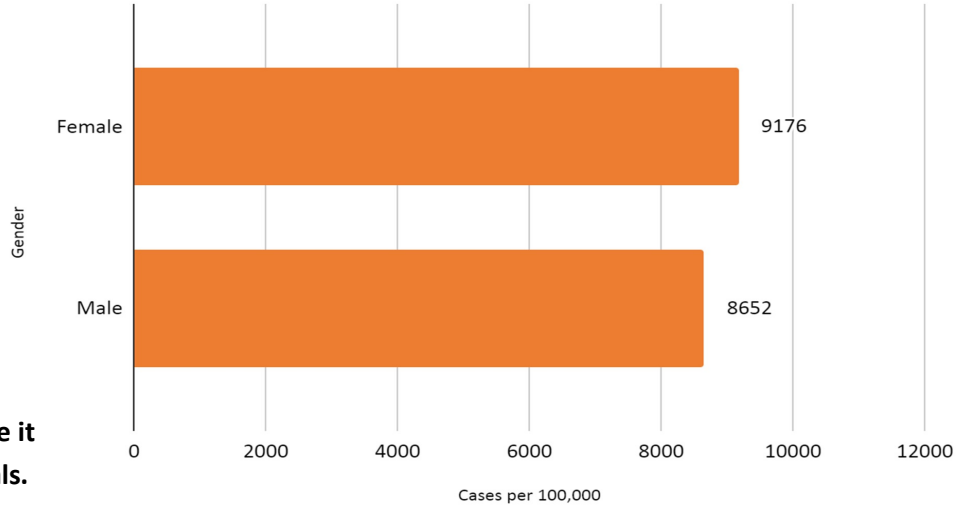
Appendix – COVID 19 Data

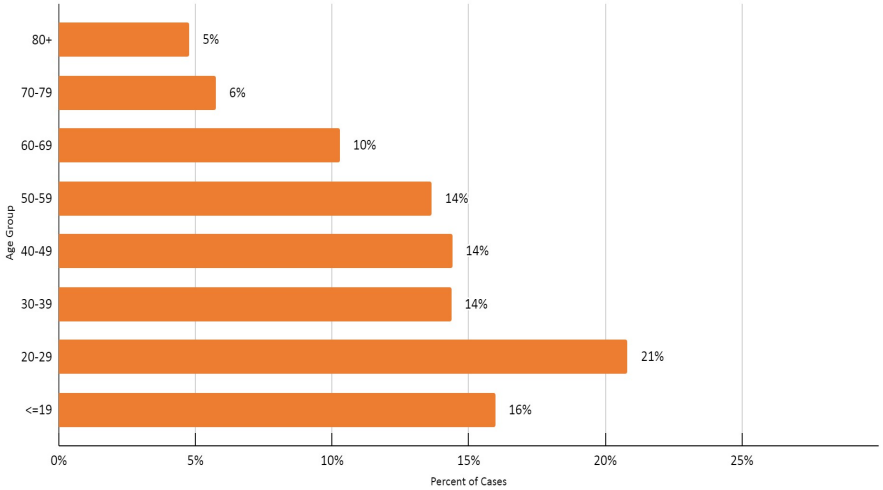
2020 Summary Data (as of 11:59 pm 12/31/20)	
Total Cases in St. Joseph County	24,527
Percent of County Residents Infected	9%
Deaths	450
Cases per 100,000 Residents	9,023

The number of deaths due to COVID-19 in 2020 for the county would place it among the top 3 causes of death when ranked against previous years totals.

Percent Cases of COVID-19 by Gender

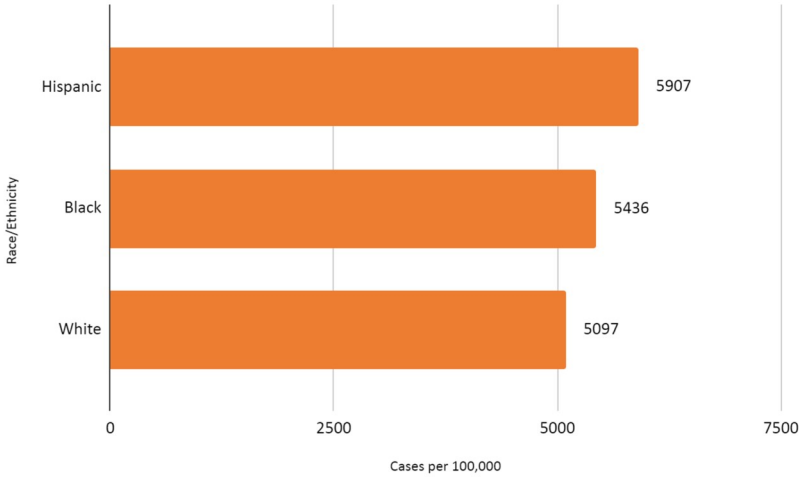


Percent Cases of COVID-19 by Age Groups



While the positive cases of COVID-19 through 2020 were highest among those aged 20 –29 in the county, the rates and number of deaths was highest among those aged 80 and above followed by those between 70 and 79.

Case Rates per 100,000 Residents by Race/Ethnicity



More females were affected by COVID-19. Fifty one percent of deaths were female. When disaggregated by race, the Hispanic population had the highest number of case rates per 100,000 people, followed by the Black and White population. Seven in ten deaths due to COVID-19 were among the White population.