Health Equity Report 2022

ST. JOSEPH COUNTY
DEPARTMENT OF HEALTH
Prevent. Promote. Protect.

Created by the Health Equity, Epidemiology, and Data (HEED) Team

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Key Recommendations

Implement interventions at multiple levels to achieve greater impact on health.

- Individual
- Community
- Organizational
- County
- State
- Nation

Enhance the systems for data collection, sharing, evaluation, and analysis.

Develop and implement interventions for root causes of health outcomes.

Key Concepts and Themes

- Health disparities are variances in health outcomes between demographic groups. They are created by differences in access to opportunities and resources within society. These differences emerge from current and historical policies, practices, and programs influencing the context in which people live. Disparities that result from unjust exposure to detrimental factors are called health inequities.[1]
- Health equity is the principle underlying a commitment to improve social determinants of health for socially disadvantaged groups in society with the goal of reducing and/or eliminating differences in health outcomes. Health equity is achieved when every individual in a society has equal opportunity to be optimally healthy regardless of skin color, race, education level, gender identity, sexual orientation, occupation, neighborhood, or disability status.[2]
- Health outcomes range from wellbeing to sickness and death. Different root causes lead to different health outcomes and can influence life expectancy. This report builds on the burden of disease report that documented the health outcomes within the county. The health outcomes are discussed in five categories.
- Interconnection of action and policies in health equity recognizes that multiple factors overlap and influence individuals' choices and opportunities for health. The actions and public policies to prevent diseases and reduce health disparities need to reach different community levels. This multilevel approach to improve health outcomes is also referred to as the socioecological model.[3]

Key Concepts and Themes

- Intersectionality is the concept that individuals have different overlapping categories of social identity including race/ethnicity, gender, location, and age.[4] These identities shape how an individual experiences the world. When a data set is broken down into complex subgroups like Hispanic/Latinx Male, or Black male over 35 years of age, different patterns begin to emerge. Using disaggregated and nuanced data that reflects this intersectionality improves our understanding of specific health outcomes for different population groups, whether at a national, state, or county level.
- Life course approach is the study of how experiences across the lifespan have led to current patterns of health and disease. This approach also acknowledges that today's experiences influence tomorrow's mental and physical health.[5] A life course approach emphasizes childhood and adolescence as especially critical periods of growth with well-documented, long-term impacts on health, and quality of life.
- Social Determinants of Health refers to the conditions and environments in which people are born, live, learn, play, work, age, and die that shape the health outcomes of individuals and communities.[6,7] Multiple factors within the social determinants of health have an impact on individuals' health. These factors are referred to as the upstream root causes that influence the ability of individuals and communities to make healthy choices.[8] For example, an individual may develop asthma due to poor housing conditions, miss medical appointments due to lack of reliable transportation, or have diabetes-related compilations due to food insecurity. These determinants or upstream root causes must be addressed to improve individual and community health. This report will consider the relationships between these upstream root causes and health outcomes for the county.

Key Concepts and Themes: Resources

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5. World Health Organization. (2000). A Life Course Approach to Health. Retrieved from 565 ILC 12pp Brochure (who.int)

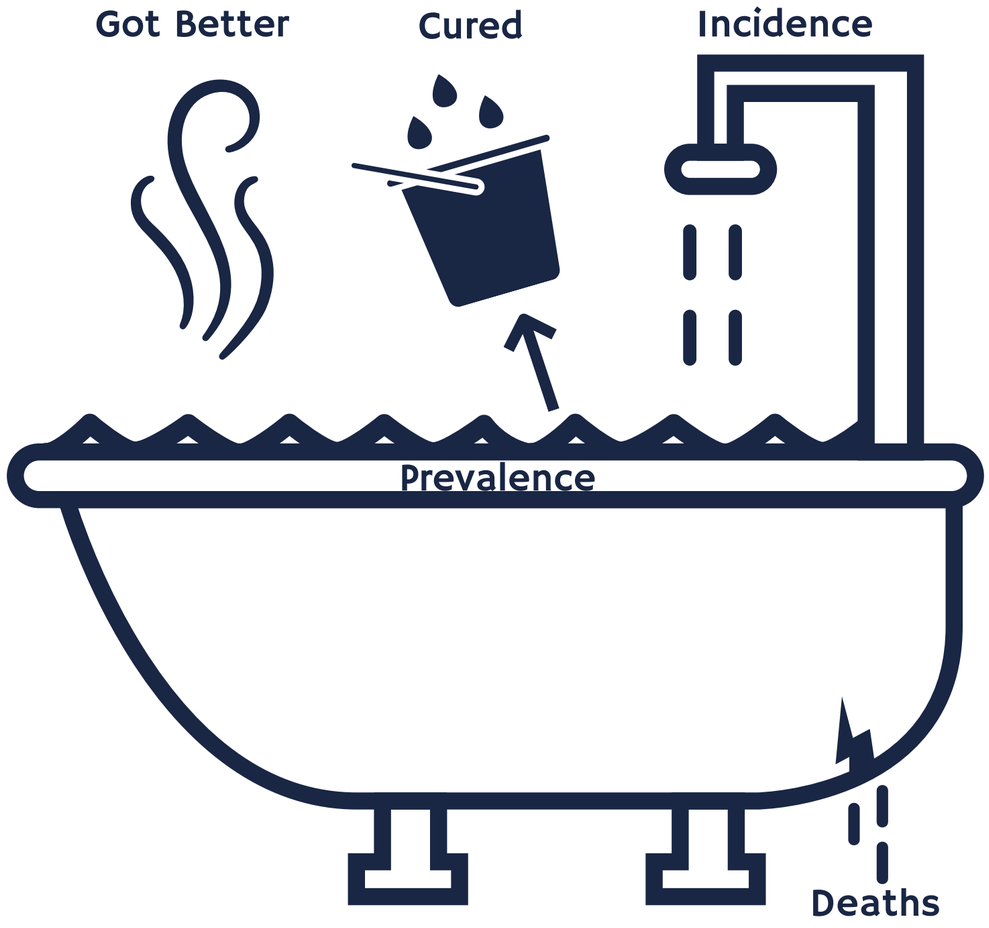
6. W.H.O. Social Determinants of Health. World Health Organization website. Retrieved from https://www.who.int/health-topics/social-determinants-of-health#tab=tab_1

7. SDOH. Healthy People 2020. https://www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-of-health

8. AHIP, (April 2021, Issue Brief) The Impact of Social Determinants of Health on Health Equity and Their Root Causes. America’s Health Insurance Plans. Retrieved from AHIP_IB-SDOH_HealthEq.pdf

Glossary

- Disability-Adjusted Life Years is the total number of years lost to illness, disability (health utility), or premature death within a given population.
- 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.
- 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.
- 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.
- Medicaid is a federal and state health insurance program providing free or low-cost health coverage to certain people with limited incomes, families and children, pregnant women, the elderly, and people with disabilities. Medicaid benefits and program vary by state.
- Medicare is the United States health insurance program to help cover some costs of care for people age 65 or older. Certain people below age 65 can qualify for Medicare, including those with disabilities and those who have permanent kidney failure.



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

Making the Health Equity Report

In this report, we view the main causes of death and illness in the county that were first identified and documented in the Burden of Disease Report 2020 through a social determinants of health lens. Additional health outcomes are included in this report. The data analyzed included the causes of hospitalization, illness, and death by age, year, race, and sex . These data revealed differences in the county health outcomes across population and gender groups.

The different diseases and conditions are categorized into Infant and Maternal Health, Chronic Disease and Care, Communicable Diseases, Injuries and Violence, and Mental Health and Substance Abuse. The data used were from the national, state and county health databases. Health outcomes were based on the Centers for Disease Control and Prevention data and the Indiana State Department of Health statistics. The 2017 and 2018 hospital discharge data accounts for the principal diagnosis for which a resident is admitted, the time spent in hospital, the costs of diagnosis and treatment, and the primary payer for the incurred costs were sourced from the Indiana Department of Health (IDOH). The hospitals initially submit the data to the Indiana Hospital Association for verification before final submission to IDOH.

The health outcomes in each section are then viewed through two or three conditions in which people are born, live, learn, work, play and age known as the social determinants of health. The associations between the social determinants of health and health outcomes were determined from multiple diseases and disparities literature, county, state, and national statistics. Further resources included literature reviews of academic articles, government and public health websites, and community health assessments. At the county level, the annual reports, department of health's projects, strategic plans and departments' websites of the Parks and Recreation, Infrastructure, Planning and Growth, the Department of Health, Police department, and the city governments' provided resourceful examples on the relationship between community context and health.
Since this report was prepared during the COVID-19 pandemic, we reflect on how the response to pandemic affected different health outcomes and some of the community conditions.

The Department of Health recognizes that health equity is everybody's work. Each section has a list of best practices compiled from detailed research programs on policies and programs that can be implemented at every level of society. The aim of the practices is to provide evidence-based actions to improve the health outcomes. The best practices are organized along a socio-ecological model which recommends interventions at all levels so as to reinforce interventions, and make sustainable long-term change. Multiple resources are cited at the end of each section.

Making the Health Equity Report

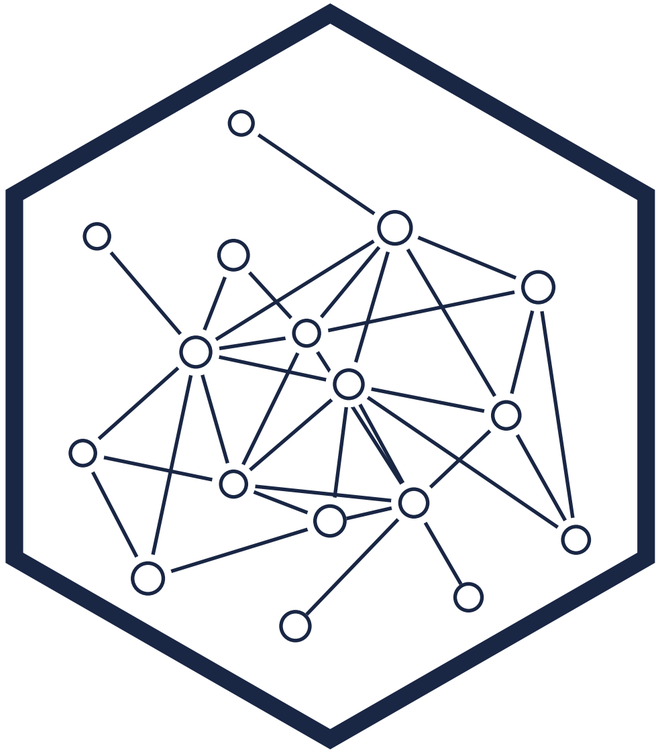
Key Data Sources

- Centers for Disease Control and Prevention— https://wonder.cdc.gov/
- Indiana State Department of Health—https://gis.in.gov/apps/isdh/meta/stats_layers.htm
- County Health Rankings and Roadmaps —https://www.countyhealthrankings.org/
- NCHHSTP Atlas—https://www.cdc.gov/nchhstp/atlas/index.htm
- Healthy People 2020—https://www.healthypeople.gov/2020/
- Healthy People 2030— https://health.gov/healthypeople
- US Census Data—https://www.census.gov/

Social Determinants of Health and Root Causes

- In this report, we discuss some of the root causes connected to leading causes of death (mortality) and suffering (morbidity) in St. Joseph County. These root causes represent examples of social determinants of health within our community. The examples given are not an all-encompassing explanation of each health outcome but are meant to provide insight and context into the multifactorial origins of morbidity and mortality.
- Social determinants of health are in six broad categories; economic stability, neighborhood and built environment, education, food, community and social context, and the healthcare system as shown in the next six slides.
- To improve local health outcomes, we advocate a systems approach.
- All the social determinants of health require attention and action.

Economic Stability	Neighborhood and Built Environment	Education	Food	Community and Social Context	Healthcare
Systems of Power: Policies, Racism, Discrimination					
• Employment • Income • Expenses • Debt and Medical Bills • Support	• Housing • Transportation • Safety • Parks & Playgrounds • Walkability • Zip Code	• Literacy • Language • Early Childhood Education • Vocational Trainings • Higher Education	• Food Security • Access to Healthy Options	• Social Integration • Support Systems • Community Engagement • Stress • Exposure to Violence	• Health Coverage • Quality of Care • Provider Ability • Provider Linguistic and Cultural Competency
Health Outcomes: Mortality, Morbidity, Life Expectancy, Healthcare Expenditures, Functional Limitations, Health Status					



Community and social context include the type of local social organizations, the level of community involvement, and adverse exposures like trauma, violence, and crime. Social context also considers a community's perception of safety and criminal justice. These factors influence the mutual trust of residents and their shared willingness to intervene on behalf of the common good. Healthy, functional communities provide resources and opportunities that support wellbeing and positive development of residents across the life course.

Associated health outcomes: drug and alcohol use, homicide and suicide, mental health, teen pregnancies, sexual assault and intimate partner violence, adverse childhood experiences

Economic stability allows people to afford and access essential resources like quality housing, food, healthcare services, and transportation. Economic stability also provides a sense of security and social well-being. Key components of economic stability include employment, work opportunities, work benefits, income, and generational wealth. Economic instability has been strongly correlated with worse health outcomes.

Associated health outcomes: cancer, diabetes, stroke, heart disease, substance use, homicide, infant mortality, mental health, sexually transmitted infections, suicide

Education includes the resources and opportunities available at each stage of learning from early childhood education through postsecondary education, including vocational training programs, apprenticeships, and internships as well as degree-earning programs. Language and literacy are also important elements of education. This root cause considers the level of learning achieved by residents and the support available to help people reach their career goals.

Associated health outcomes: drug and alcohol use, mental health, reproductive health, general wellbeing

Food systems include access and affordability of healthy food options. This includes food supply locations, farms, and food programs. Limited access to healthy food options impacts diet quality and can result in poor health.

Associated health outcomes: cardiovascular disease, diabetes, cancer, maternal and infant health

Health care system refers to the services, providers, quality of care provided, and the ease of navigation and access to this care. It considers factors like the linguistic and cultural competency of providers and insurance coverage. The healthcare system also encompasses community resources like health programs, health education, and public policies that improve population health.

Associated health outcomes: mental health, sexually transmitted infections, oral health, teen pregnancy, chronic diseases

Neighborhood and built environment explores the social infrastructure and physical characteristics of a place.
Neighborhood considers qualities such as walkability, land use mix and urbanity, intergenerational wealth, cultural institutions, historical segregation, recreational areas, restaurants and fast food outlets, and pollution. Some of these qualities influence the social infrastructure of a place and capacity o a community to organize to demand change or influence decisions.

Associated health outcomes: homicide, mental health, sexual assault, intimate partner violence, STIs, teen pregnancy, tobacco use

The **built environment** examines the physical characteristics of place. These include quality of housing, walkways, transportation, environmental quality, community centers, libraries, access to internet, and access to green spaces like parks or playgrounds. Built environment is shaped by zoning laws and development decisions.
Transportation determines how people move through a community, whether by walking, biking, driving, using public transportation, etc. It includes the existing infrastructure and the various transportation modes it supports. It also considers the laws and policies that make the environment easier or more difficult to navigate.

Associated health outcomes: asthma, heart disease, and stroke, arthritis, lead poisoning, accidents, and injuries

Systems of Power

- The intrapersonal, interpersonal, institutional, and systemic mechanisms that shape the distribution of resources in society are known as systems of power. These systems act across social domains like law, governance, and culture. They are rooted in historic and current policies, practices, and programs. These systems often distribute resources differentially across social groups, leading to structural inequities. Structural inequities introduce and embed systemic disadvantages on one social group compared to other groups with whom they co-exist.[1,2]

- Individual choices and behavior alone are not sufficient to account for the health disparities observed in the population. Rather, some apparent “behaviors” emerge because of disparate access to economic, social, and political opportunities and choices. This access is determined by systems of power.
- For example, poverty, family structure, family dynamics, racism, discrimination and other factors shape an individual's experience of community, health, and quality of life.[2] Stereotypical thinking, assumptions, and implicit biases are some of the mechanisms that affect attitudes and behaviors at an intrapersonal and interpersonal level. At the institutional level, policies determine what resources are available, how they are distributed, and who accesses the indicated resources. The cumulative product of these mechanisms is reflected in the socioecological model that includes practices, policies, and institutions across all levels of society.
- The impact of structural inequities can follow individuals from conception through life, ultimately causing health disparities. Furthermore, structural disadvantage diminishes the ability of individuals to participate in policy decision-making. Policies that lack the input of lower- and middle- income citizens are less likely to be to their benefit and may ultimately further harm them. [3]

To improve health, we need to examine how our policies, systems, and governance can work to create environments that are healthy for all our population

References
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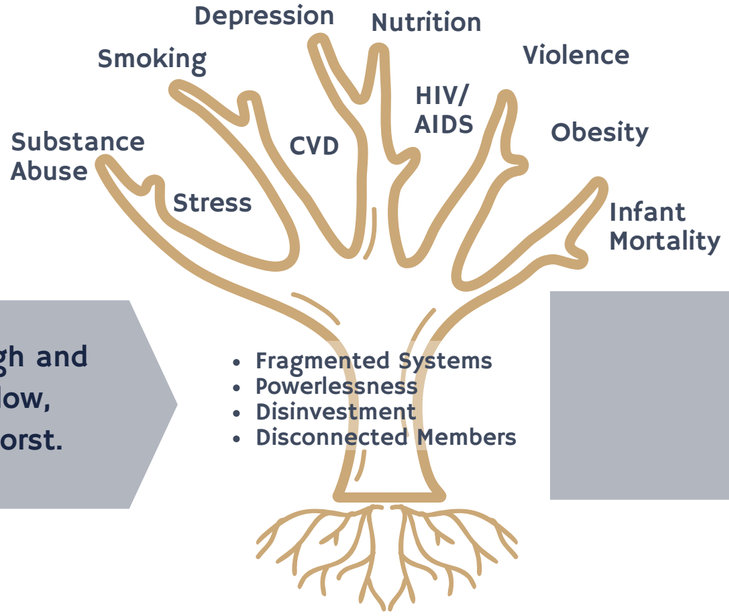
Health disparities result from differential access to opportunities and resources among population groups. Health disparities become inequities when they result from historic or current inequitable distribution of resources based on socio-economic status, race/ethnicity, religion, gender, sexual orientation, disability, or geographic location.

If inequities in policies and practices were remedied, the health disparity could be prevented.

This report uses a tree analogy to show the relationship between root causes and outcomes in health. The soil correlates to the systems of power and its nutrients represent community assets, policies, and practices . The leaves and fruits represent health outcomes. When the systems of power are advantageous, i.e. healthy community policies and practices, the soil quality is good, the roots are healthier, and health outcomes improve. When the soil is lower quality, the health of the tree (and the community) is diminished.[2]

To improve health outcomes for St. Joseph County, we must work to align resources and enhance policies and practices *at all levels*. Working at all levels involves addressing the immediate health needs of socially disadvantaged populations; intermediary determinants like employment, housing, and food access; and systems of power like racism and discrimination.

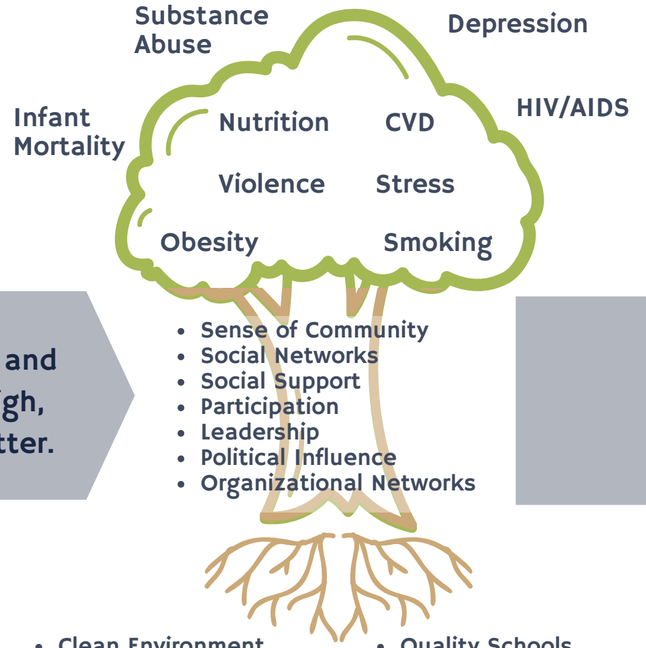


When inequities are high and community assets are low, health outcomes are worst.

- Fragmented Systems
- Powerlessness
- Disinvestment
- Disconnected Members

- Environmental Toxins
- Occupational Hazards
- Institutional Racism
- Unemployment
- Discrimination
- Adverse Living Conditions
- Poverty
- Segregation
- Marketing for Tobacco and Alcohol

When inequities are low and community assets are high, health outcomes are better.



- Sense of Community
- Social Networks
- Social Support
- Participation
- Leadership
- Political Influence
- Organizational Networks

- Clean Environment
- Access to Healthy Foods
- Access to Healthcare
- Quality Housing
- Transportation Resources
- Quality Schools
- Access to Recreational Facilities
- Adequate Income
- Health Insurance
- Jobs

Health Equity

Health equity is achieved when all residents have equal opportunity for optimum health[1] Health equity reflects principles of nondiscrimination and equality. Health equity is inherently multi-sectoral.

Achieving health equity requires shared vision and values. It also requires consideration and inclusion of various systemically disadvantaged groups and seeks to remedy historic and present inequities through collective community action.

1. Braveman, P.A., Kumanyika S., Fielding, J., Laveist, T., Borell, L.N., Mandersheid, R., & Troutman, A. (2011). Health Disparities and Health Equity: The Issue Is Justice. American Journal of Public Health (1971), 101(12), S149–S155. https://doi.org/10.2105/AJPH.2010.3000622

This initial health equity report by the St. Joseph County Department of Health seeks to:

Use data-driven approaches to document health outcomes and identify health disparities in the county

Examine the relationships between health disparities, and social determinants of health and systems of power within the county

Outline policies, practices, and programs in which the department, community organizations, and St. Joseph County residents can engage as we collectively work to reduce and eliminate health disparities

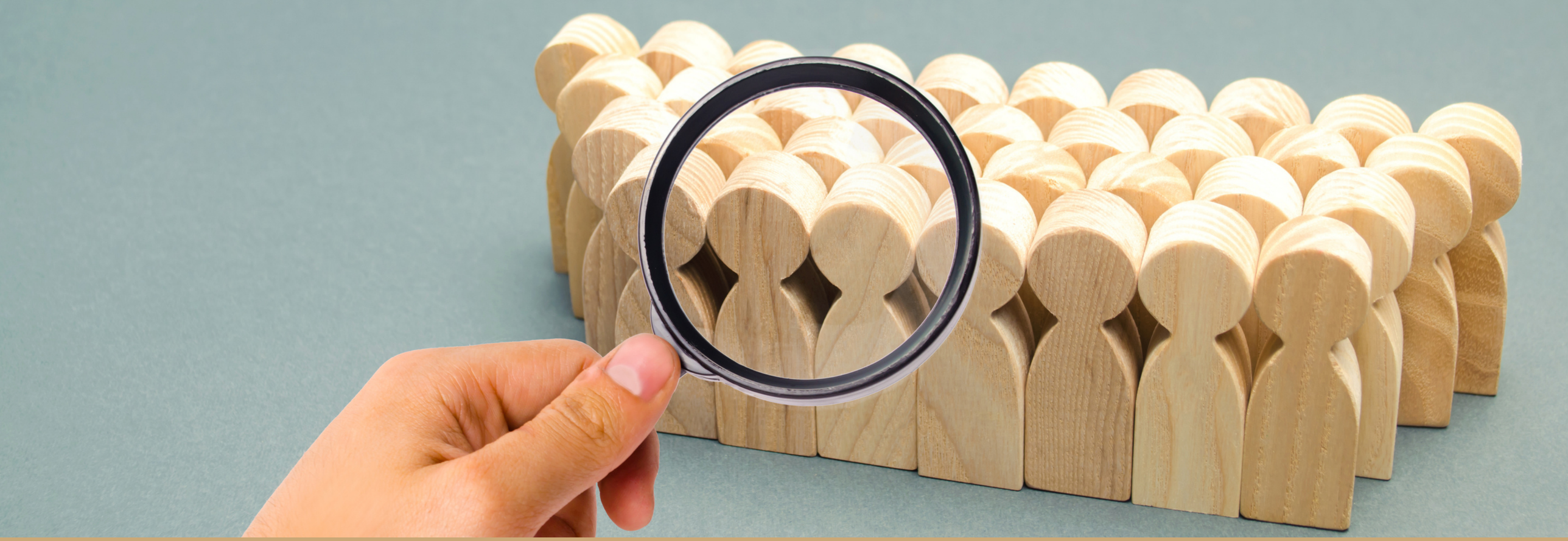
This report is an invitation to residents of St. Joseph County, community organizations and institutions, and local leadership to learn about the county health landscape and to join us in shaping future community health outcomes.

The evidence-based policies and practices provided in this report, when adapted across various community levels, can improve the conditions influencing the health of residents, promote opportunities for all residents to pursue optimum wellbeing, and ultimately improve health disparities.

The adoption of policies and practices across the community levels considers the interplay between individual, relationship, organizational, community, and societal factors. This can be shown in overlapping version known as socioecological model.

The individual level considers knowledge, skills, and behavior changes that influence their health. The interpersonal level looks at the relationships that support health. The organizational level explores the built environment and interaction spaces in the community. The community section reflects the culture, norms, and values that shape health. The policy sphere looks at the health, economic, educational and social policies that maintain the distribution of resources, power, and attention to the communities and ultimately to individual health.[2]

2. Wallerstein N, Duran B. (2003). The conceptual, historical and practice roots of community-based participatory research and related participatory traditions. In: Minkler M, Wallerstein N (editors). Community-based participatory research for health (1st ed., pp. 27-52). San Francisco: Jossey-Bass.



St. Joseph County Demographics

Race, Ethnicity, Gender

Population Characteristics

American Indian and Alaska Native refers to a person having origins in any of the original peoples of North and South America (including Central America) and who maintains tribal affiliation or community attachment. In SJC, the identified individuals on the American Community Survey data include members of the Cherokee, Chippewa, Navajo, and Sioux tribal groupings.

Asian category refers to a person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent. In the SJC data, this includes (and is not limited to) people that identify as Asian Indian, Chinese, Filipino, Japanese, Korean, Vietnamese and other Asian.

Black or African American refers to individuals having origins in any of the black racial groups in Africa. This includes those who identify as African American, Sub-Saharan African, and Afro-Caribbean.

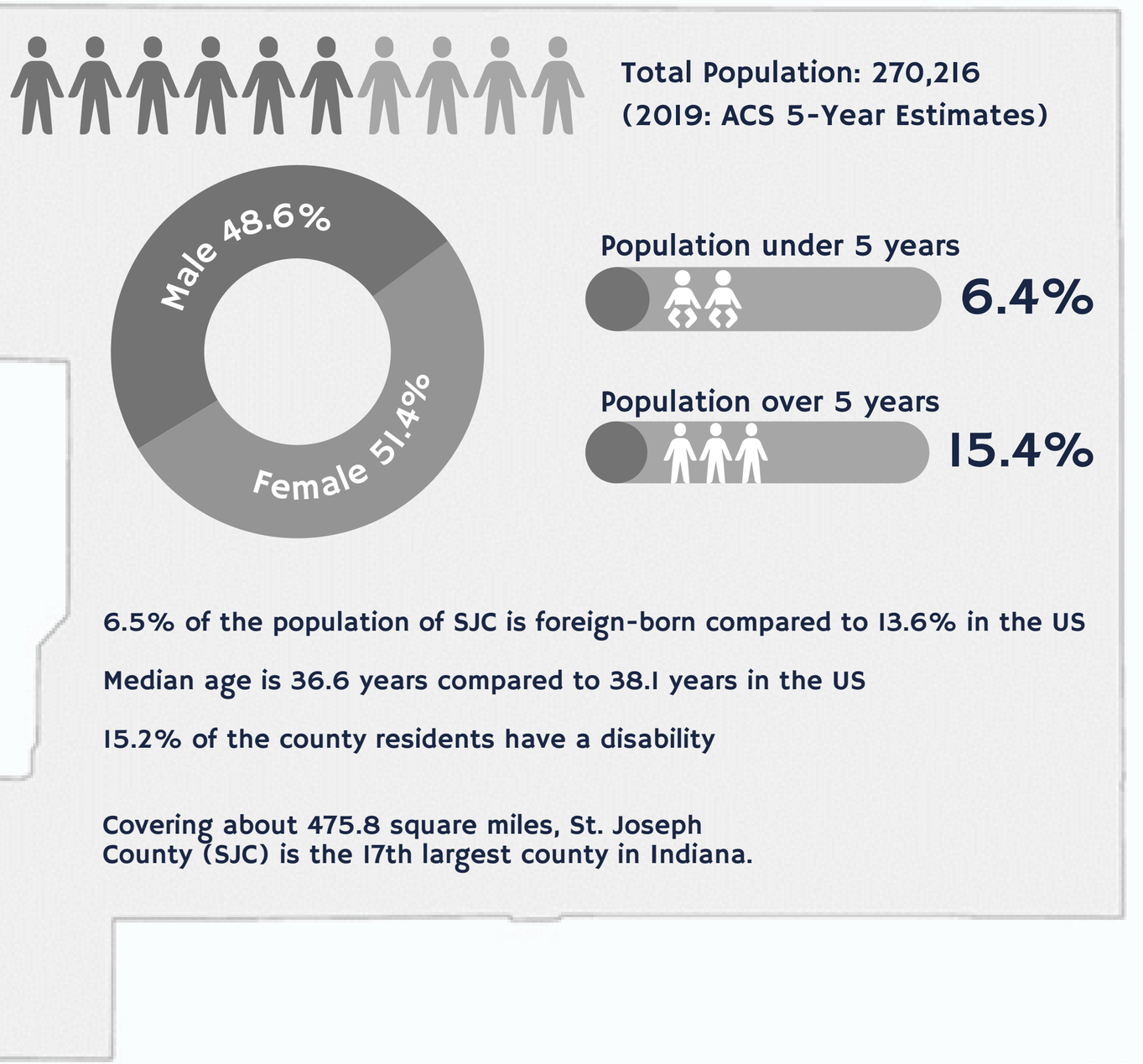
Native Hawaiian and Other Pacific Islander refers to a person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.
White refers to a person having origins in any of the original peoples of Europe, the Middle East, or North Africa.[1]

Hispanic or Latino refers to the ethnicity of a person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin regardless of race.

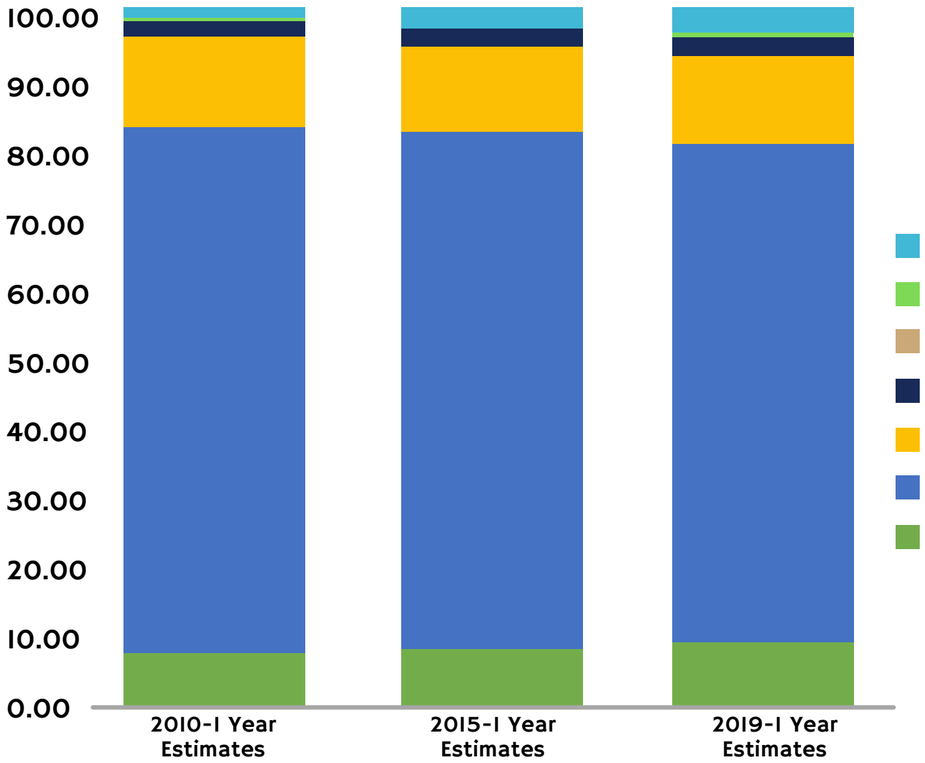
1. https://www.census.gov/topics/population/race/about.html

Race/Ethnicity	Total	%
Hispanic or Latino Ethnicity (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 Alaskan Native Alone	769	0.28%
Asian Alone	6,458	2.39%
Native Hawaiian & Other Pacific Islander Alone	217	0.08%
Some Other Races Alone	712	0.26%
Two or More Races	8,225	3.05%
Total Population	270,216	100%

Source: American Community Survey (ACS)
2019 5-year estimates

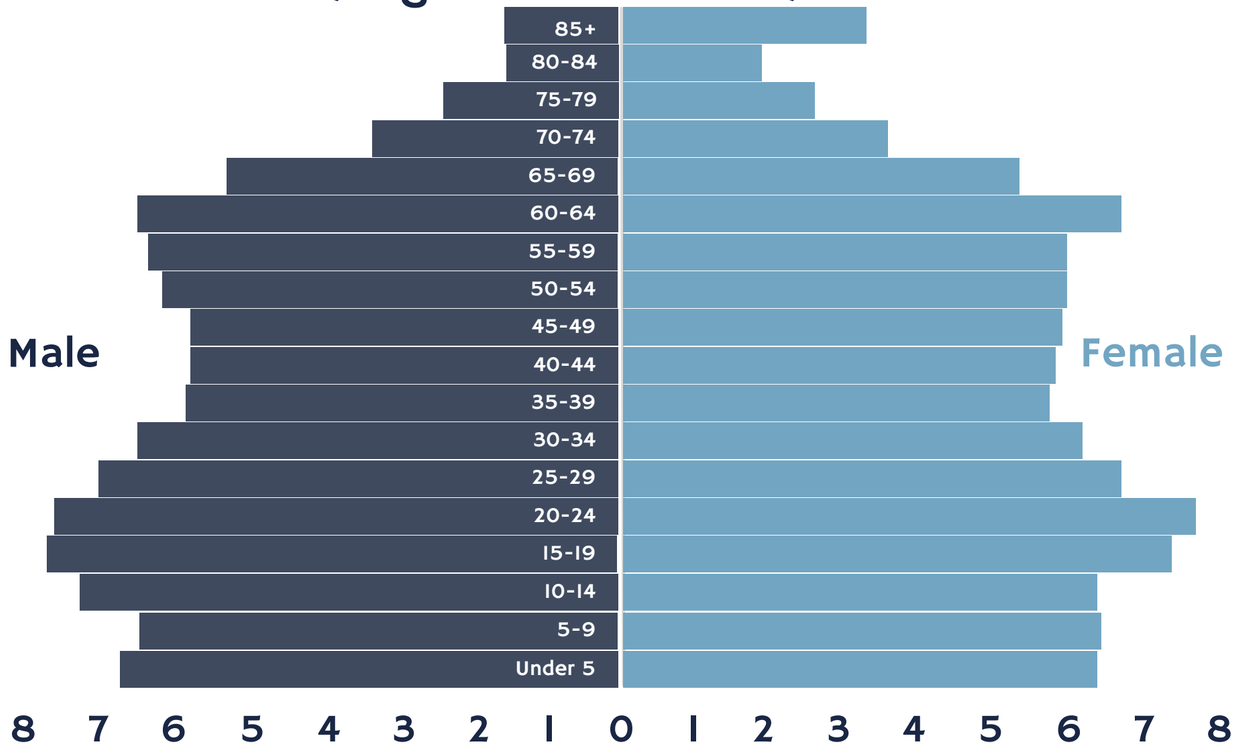


Race and Ethnicity Trends in SJC



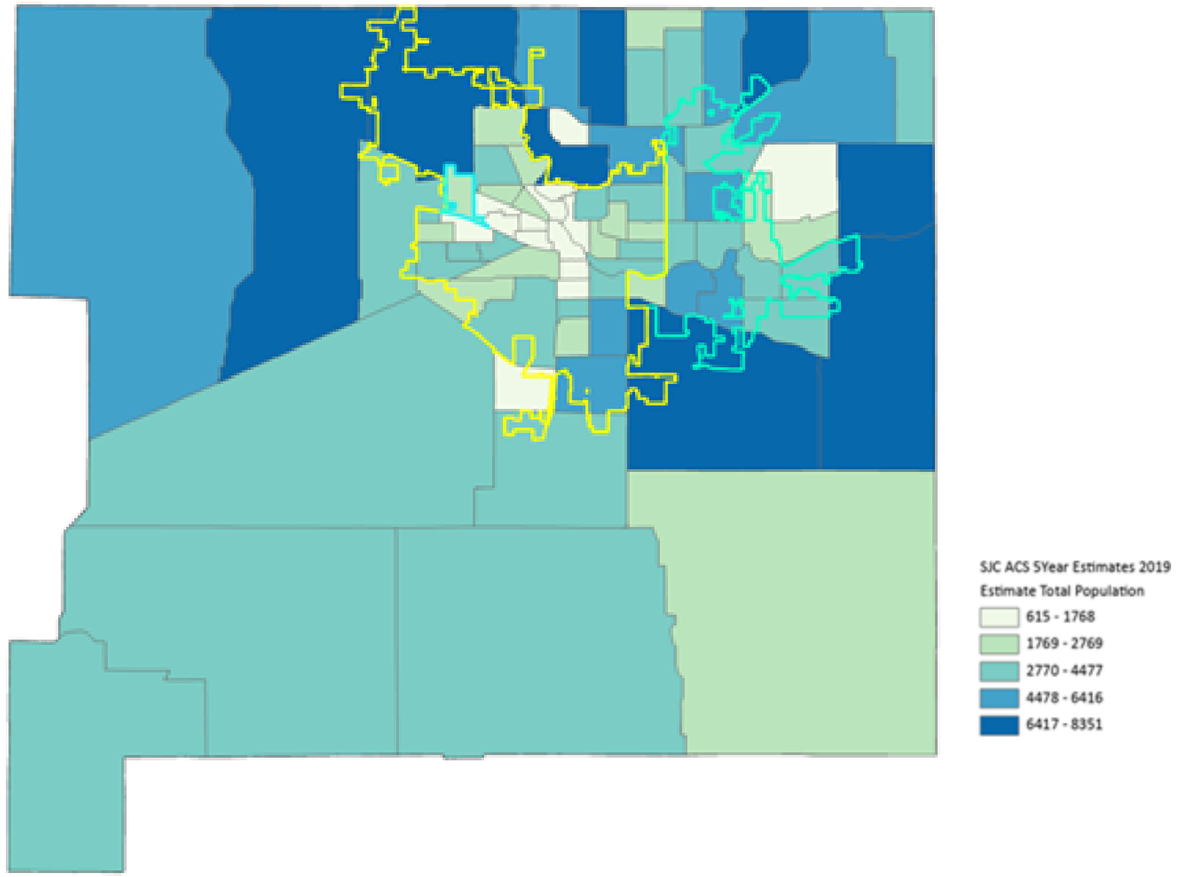
Source: U.S Census Bureau, American Community Survey Estimates

County Age Distribution by Gender



Source: U.S Census Bureau, American Community Survey 5 Year Estimates, 2019

Population Distribution in the County



U.S Census Bureau, ACS 5-Year 2019 Estimates

On the map, the intensity of the color shades increases with an increase in numbers or percentages. The lighter shades reflect a decrease in number or percentages.

SJC Population Trends Since 2010		2010 1-Year Estimates		2015 1-Year Estimates		2019 1-Year Estimates	
		Estimates	%	Estimates	%	Estimates	%
	Total Population	266,961		268,441		271,826	
Race/Ethnicity	Hispanic or Latino (or any race)	19,591	7.34	22,812	8.43	24,812	9.13
	White Alone	201,880	75.62	197,752	73.67	193,751	71.28
	Black or African American Alone	34,174	12.80	32,977	12.28	33,963	12.49
	American Indian and Alaskan Alone	1,208	0.45	492	0.18	688	0.25
	Asian Alone	5,071	1.90	6,026	2.24	7,108	2.61
	Native Hawaiian and Other Pacific Islander Alone	133	0.05	233	0.09	73	0.03
	Some Other Race Alone	299	0.11	166	0.06	1,867	0.69
	Two or More Races	4,605	1.72	8,177	3.05	9,564	3.52
Gender	Male	129,637	48.6	130,075	48.5	132,996	48.9
	Female	137,324	51.4	138,366	51.5	138,830	51.1
Age Groups	Under 5	17,367	6.5	17,422	6.5	17,015	6.3
	5 to 9	18,513	6.9	18,255	6.8	17,304	6.4
	10 to 19	39,514	14.8	37,508	14.0	38,677	14.2
	20 to 34	54,405	20.4	56,080	20.9	56,995	21.0
	35 to 64	101,198	37.9	99,913	37.2	98,390	36.2
	65 to 84	29,997	11.2	33,406	12.4	37,643	13.8
	85 and Over	5,967	2.2	5,857	2.2	5,802	2.1

Source: U.S Census Bureau, American Community Survey 1-Year Estimates

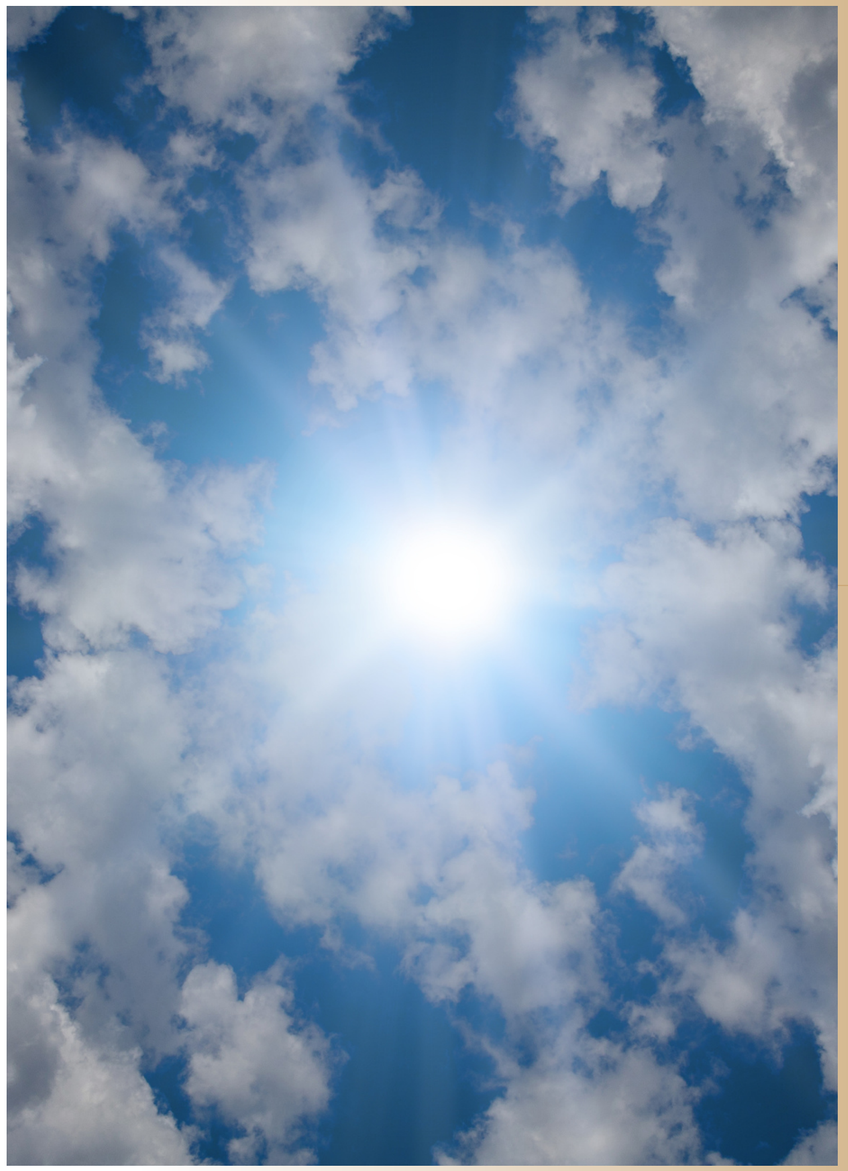
Religion

There are 71 religious' bodies in St. Joseph County represented by 273 congregations. Sixty-five percent of the total county population in 2010 indicated a religious affiliation.

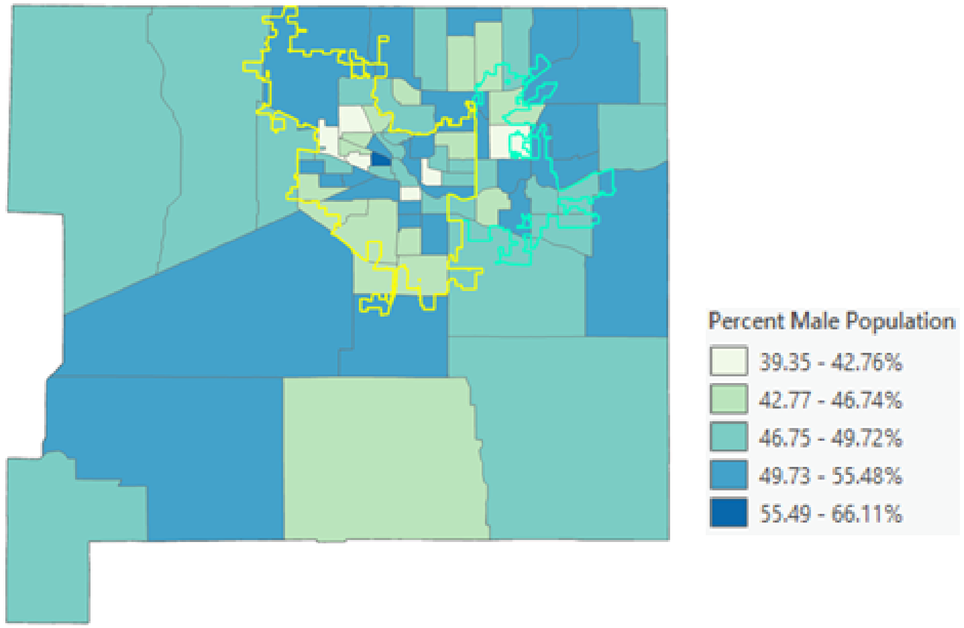
The main religious traditions are:

- Mainline Protestant
- Catholic
- Evangelical Protestant
- Black Protestant
- Orthodox 1

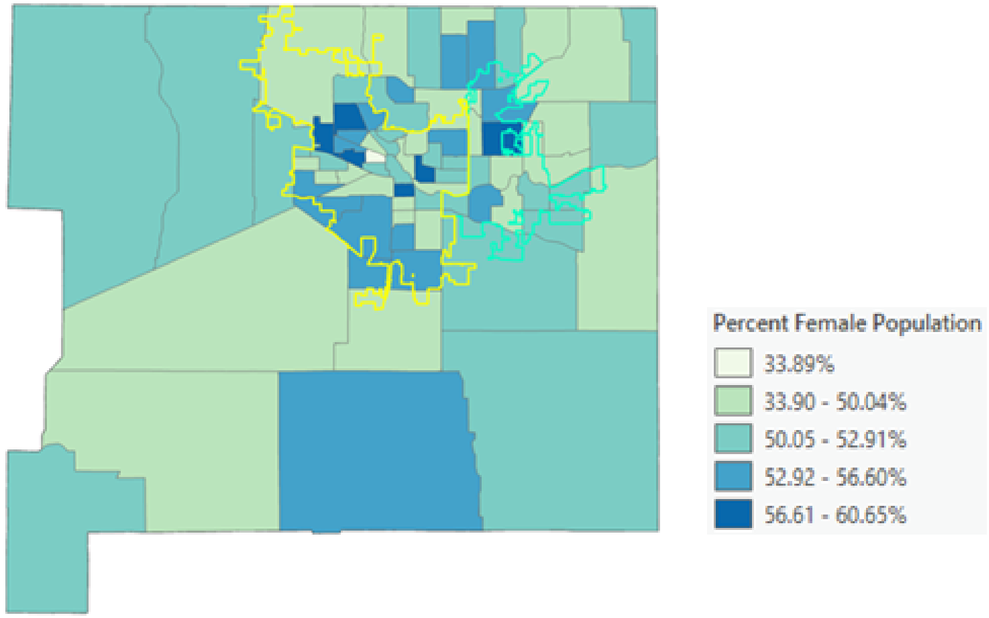
1.Religion data, https://www.thearda.com/rcms2010/rcms2010a.asp?U=18141&T=county&Y=2010&S=Name Retrieved January 7, 2021



Male Population Distribution, 5-Year 2019 Estimates



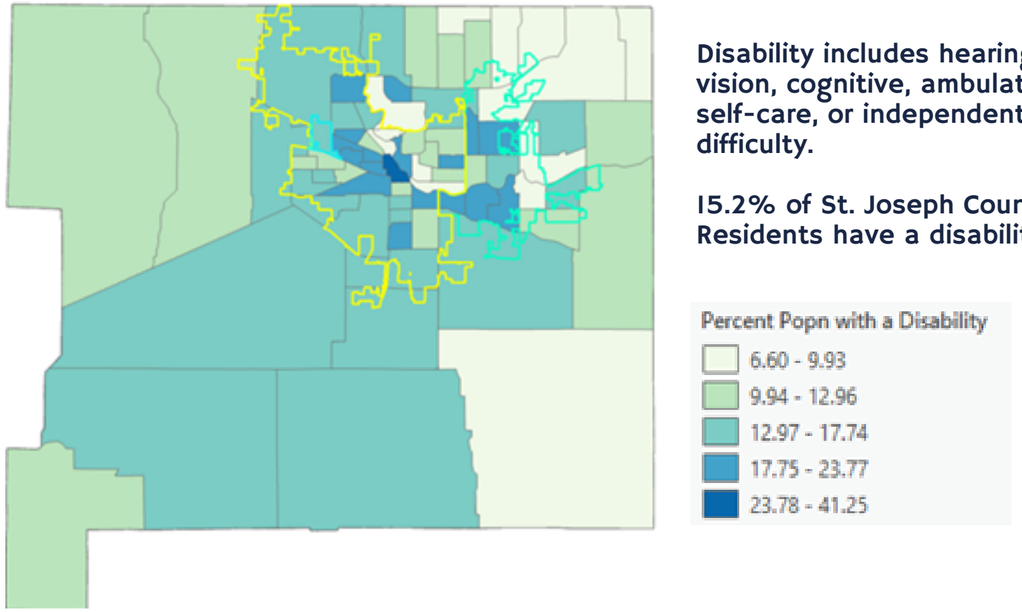
Female Population Distribution, 5-Year 2019 Estimates



On the maps, the intensity of the color shades increases with an increase in numbers or percentages. The lighter shades reflect a decrease in number or percentages.

The data for the following maps is from the U.S Census Bureau, ACS 5-Year 2019 Estimates unless indicated otherwise.

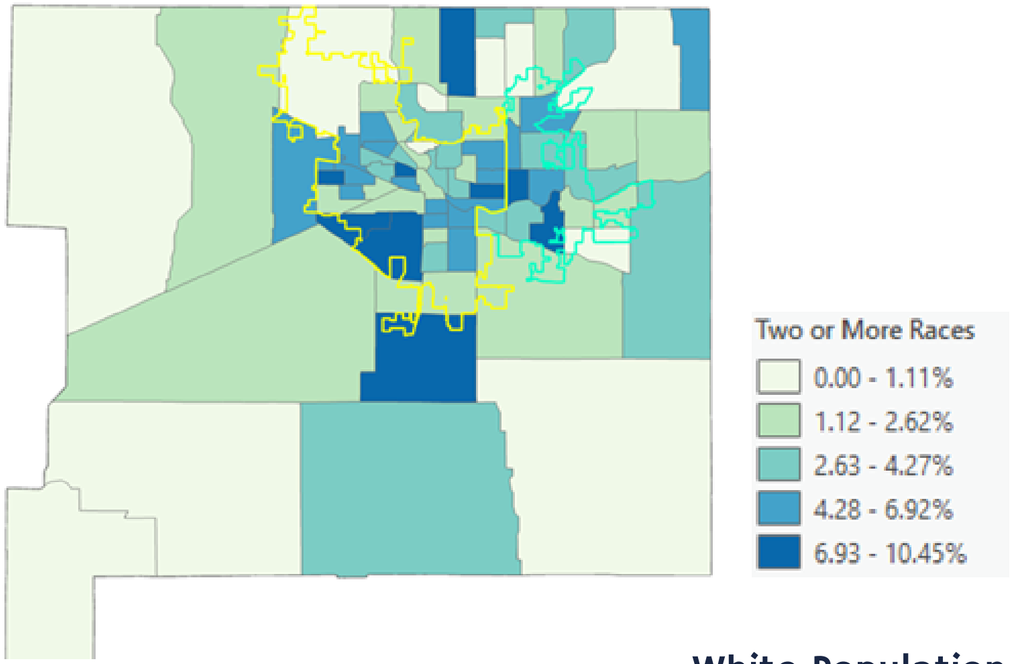
Distribution of Population with a Disability, 5-Year 2019 Estimates



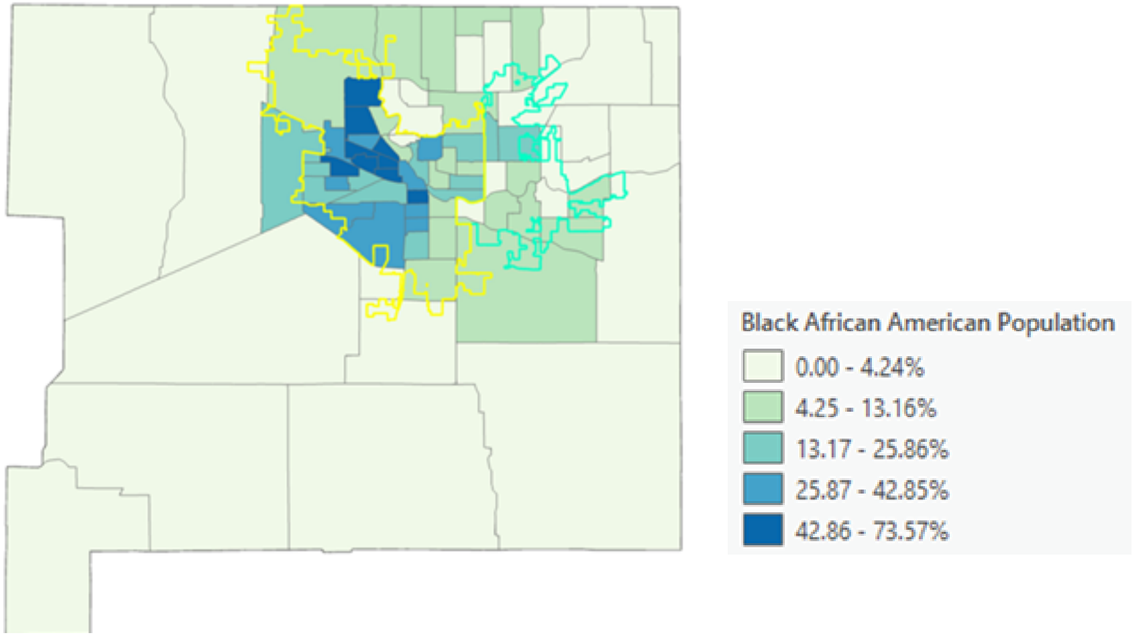
Disability includes hearing, vision, cognitive, ambulatory, self-care, or independent living difficulty.

15.2% of St. Joseph County Residents have a disability.

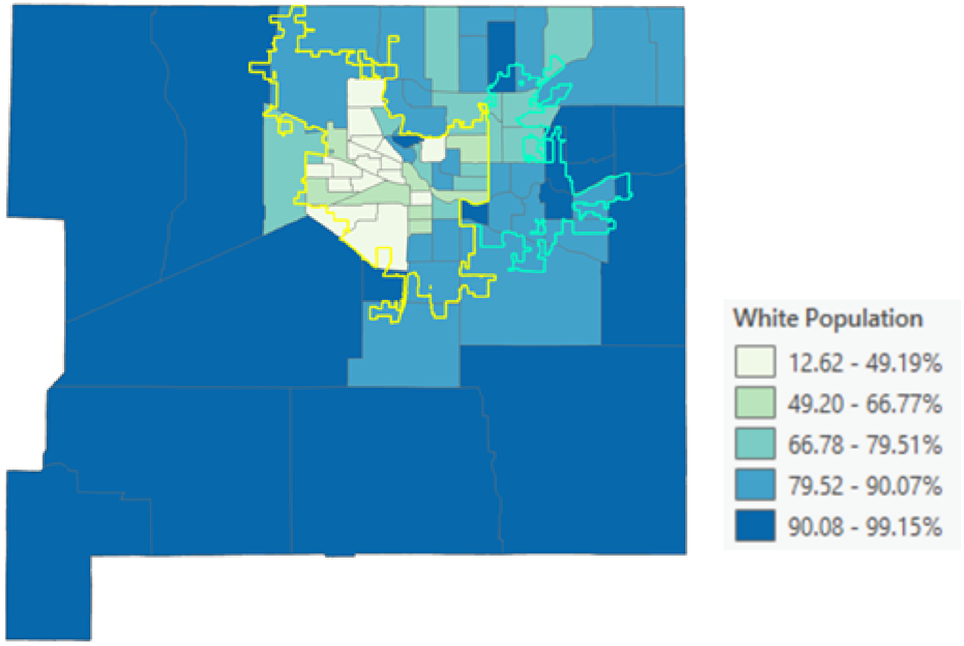
Two or More Races



Black African American Population



White Population



On the maps, the intensity of the color shades increases with an increase in numbers or percentages. The lighter shades reflect a decrease in number or percentages.

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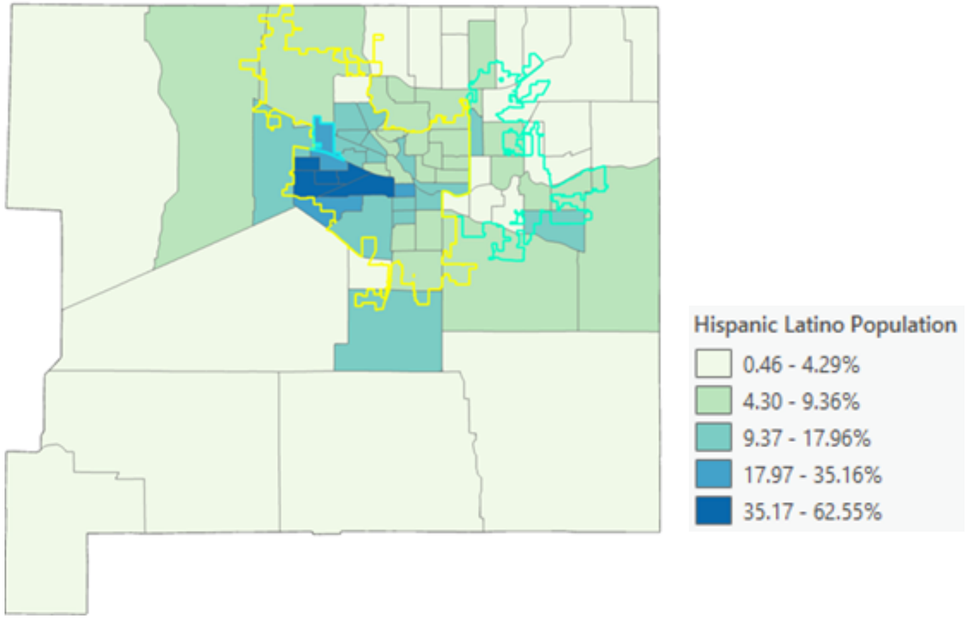
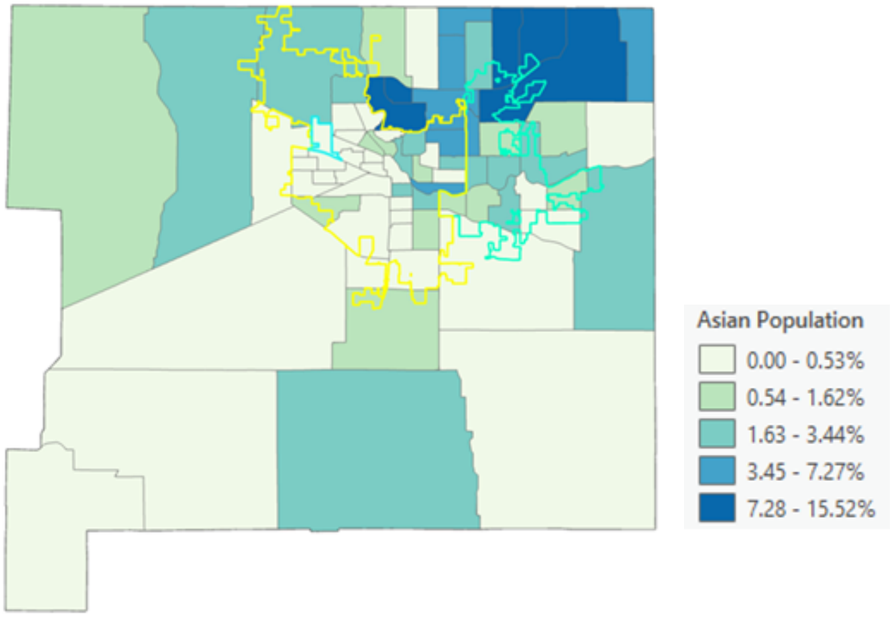
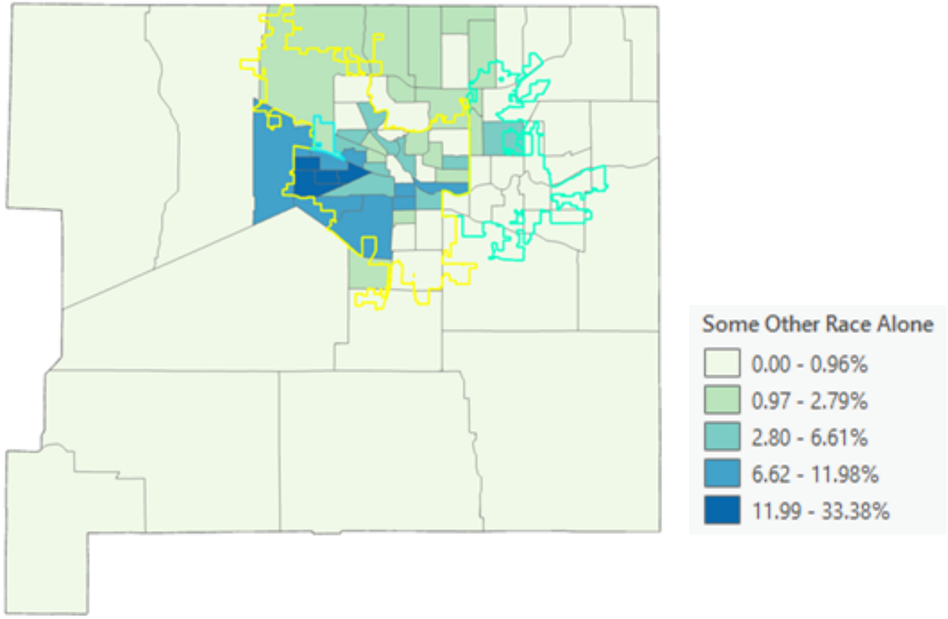
Hispanic Latino Population



Asian Population



Some Other Race Alone

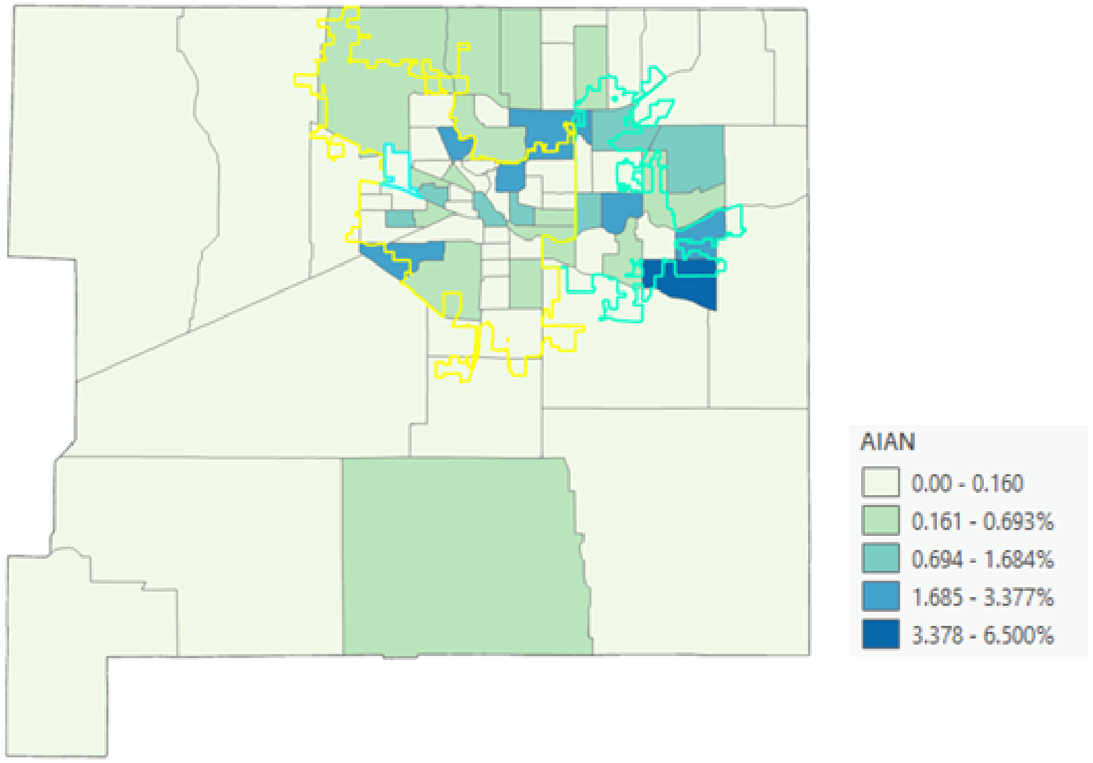


On the maps, the intensity of the color shades increases with an increase in numbers or percentages. The lighter shades reflect a decrease in number or percentages.

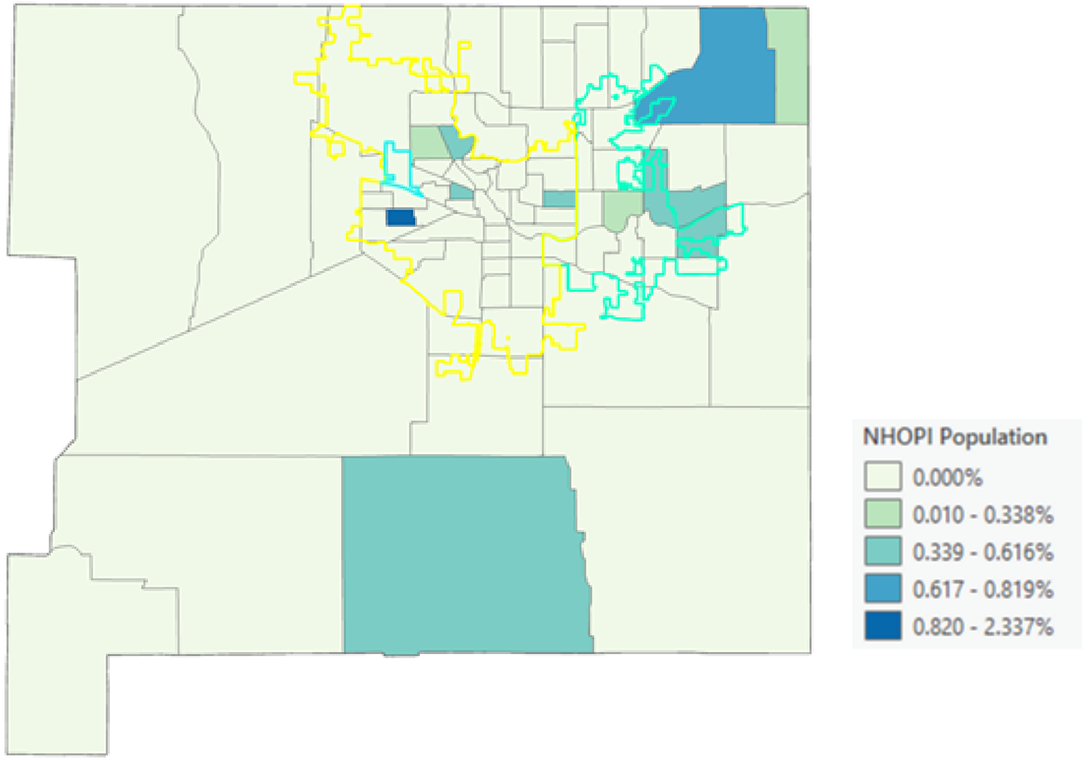
The data for the following maps is from the U.S Census Bureau, ACS 5-Year 2019 Estimates unless indicated otherwise.

AIAN - American Indian and Alaskan Native
NHOPI - Native Hawaiian and Other Pacific Islander

AIAN



NHOPI



On the maps, the intensity of the color shades increases with an increase in numbers or percentages. The lighter shades reflect a decrease in number or percentages.

The data for the following maps is from the US Census Bureau, 5-Year 2019 Estimates unless indicated otherwise.

Years of Potential Life Lost (YPLL)

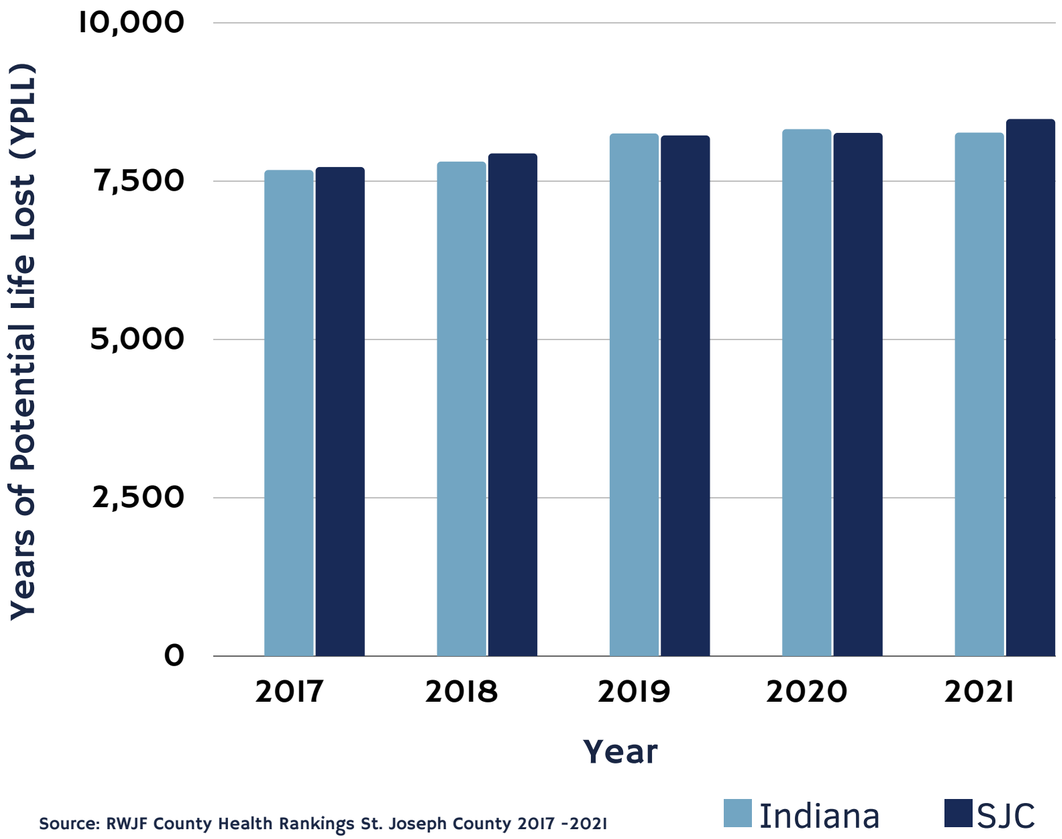
Years of Potential Life Lost (YPLL) before the age 75 per 100,000 population is widely used to measure the rate and distribution of premature mortality or deaths that could have been prevented.[1]

YPLL emphasizes deaths of younger persons, whereas statistics that include all mortality are dominated by deaths of the elderly. For example, using YPLL-75, a death at age 55 counts twice as much as a death at age 65, and a death at age 35 counts eight times as much as a death at age 70. Taking into account that a full potential lived life is up to 75 years, then in the above examples, a death at 55 and 65 means one lost 20 and 10 years respectively of full-potential lived life.

Over the past 5 years, the rates of Years of Potential Life Lost in the county remained like those of Indiana. The better performing states and counties in the top 10th percentile across the nation have an average rate of 5400 Years of Potential Life Lost.

1. 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

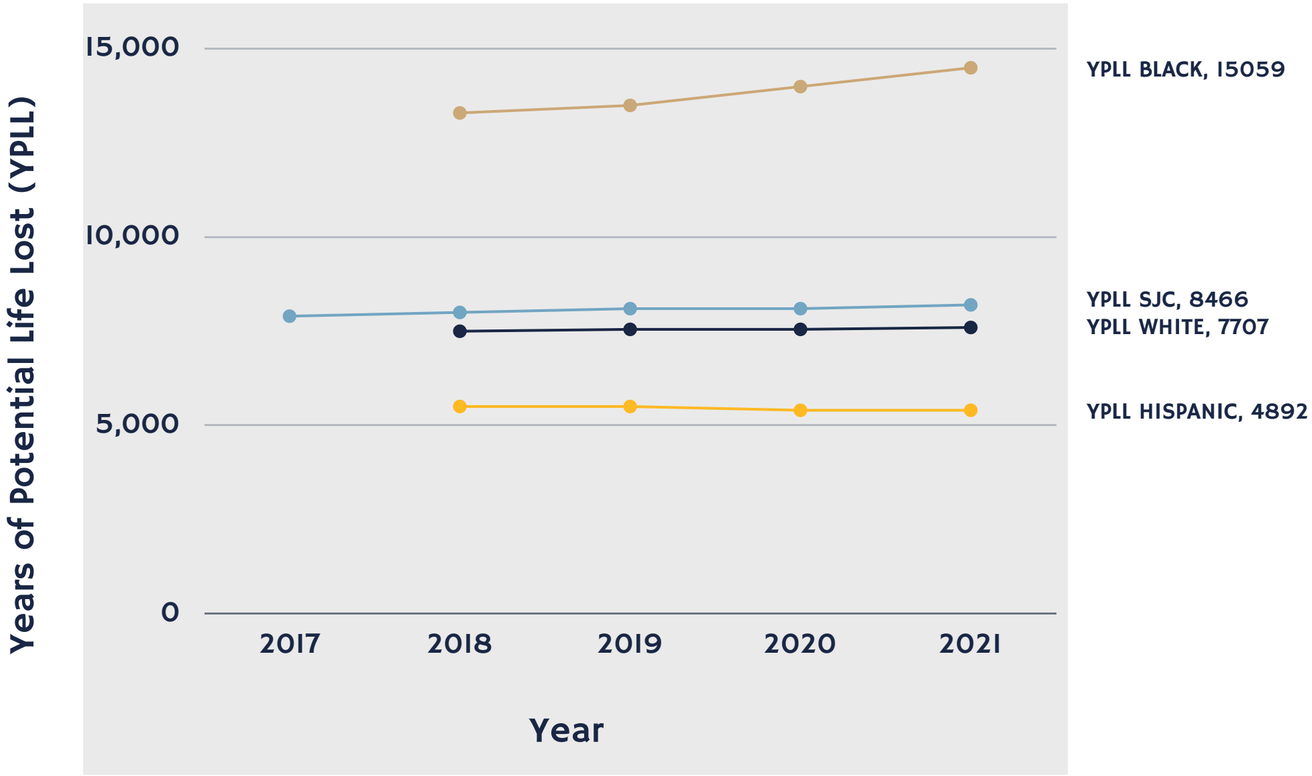
Years of Potential Life Lost in Indiana and SJC



Source: RWJF County Health Rankings St. Joseph County 2017 -2021

Each year represents a 3-year average around the middle year and the most recent data is for 2019 and earlier.

Years of Potential Life Lost in SJC by Race/Ethnicity



Source: RWJF County Health Rankings St. Joseph County 2017 -2021

Significant differences emerge when the data is analyzed according to different racial and ethnicity groups.
Since 2019, this disparity in Years of Potential Life Lost (YPLL) Rate before the age of 75 per 100,000 has only increased.

The State of Health in the County

In 2019, there were 3,437 live births in St. Joseph County and the estimated birthrate per 1,000 births was 62.

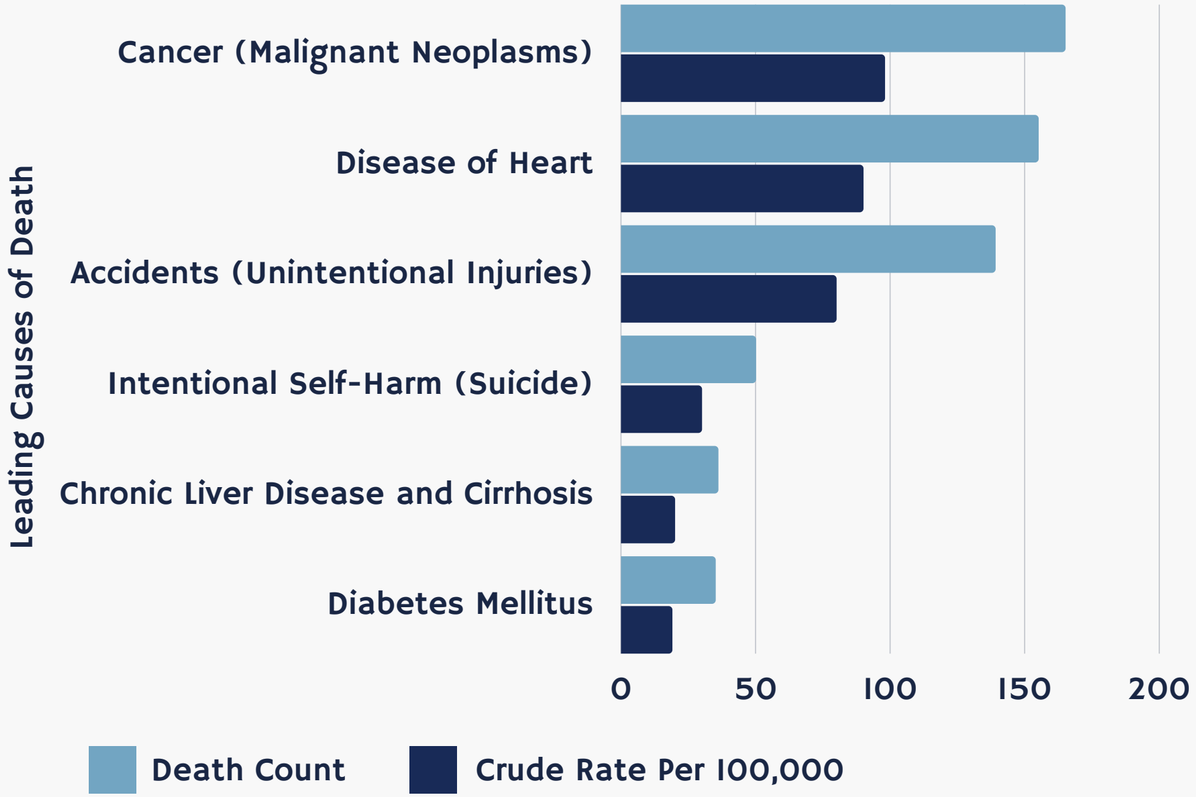
The average number of deaths for the years 2019 was 2,824.[2]

2. Stats Explorer. Office of Data Analytics. Indiana Department of Health. https://gis.in.gov/apps/isdh/meta/stats_layers.htm

Leading Cause of Death in SJC (2018 & 2019)	Death	Rate / 100,000 People
Diseases of Heart	1208	222.6
Malignant Neoplasms / Cancer	1121	206.6
Chronic Lower Respiratory Diseases	367	67.6
Cerebrovascular Diseases	342	63
Alzheimer Disease	313	57.7
Accidents (Unintentional Injuries)	256	47.2
Diabetes Mellitus	158	29.1
Septicemia	126	23.2
Essential Hypertension and Hypertensive Renal Disease	112	20.6
Chronic Liver Disease and Cirrhosis	90	16.6
Nephritis, Nephrotic Syndrome and Nephrosis	90	16.6
Intentional Self-Harm (Suicide)	81	14.9
Influenza and Pneumonia	77	14.2
Parkinson Disease	75	13.8
Pneumonitis Due to Solids and Liquids	41	7.6

Source: CDC WONDER

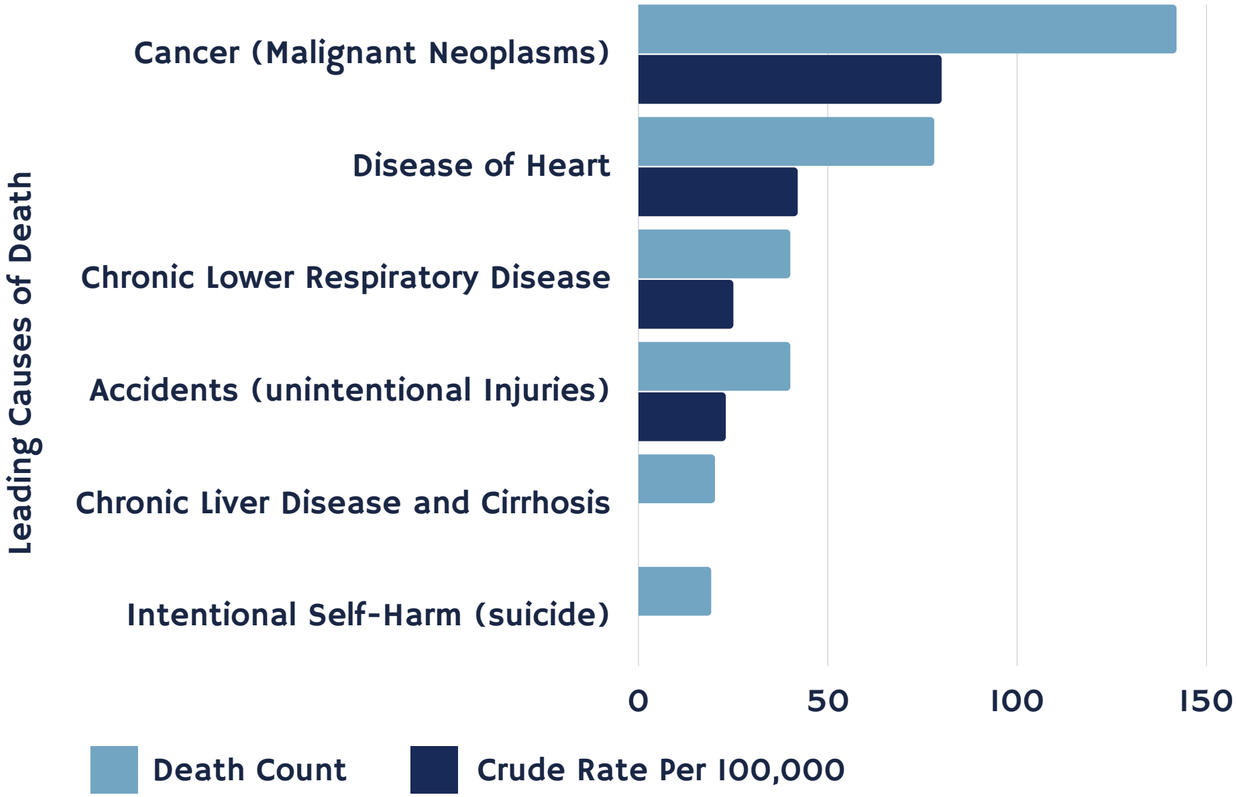
Leading Causes of Death in Males aged 15-64 Years in SJC 2018-2019



Source: CDC WONDER

In the male population aged 15-64 years, unintentional injuries rank third as the leading cause of death and occur more than three times as frequently among men than women.

Leading Causes of Death in Females aged 15-64 Years in SJC 2018-2019



Source: CDC WONDER

The female population die from cerebrovascular deaths nearly 1.6 times more than the male population. Accidents are the fourth leading causes of death in the female population aged 15-64 years.

Lead Causes of Death

An assessment of leading causes of death in 2018 and 2019 for different racial groups in the15-64 age group shows that unintentional injuries rank in the top five among the Hispanic, Black, and White population. All other top 5 causes of death are chronic diseases except in the Black population.

Infant and Maternal Health

Infant and maternal health refers to the health of an infant before their first birthday, and the wellbeing of the pregnant woman before, during, and after pregnancy and baby delivery.

Infant Mortality

Low Birthweight

Teen Birth Rates

Infant Mortality

The Centers for Disease Control and Prevention define infant mortality as the death of an infant before his or her first birthday. The infant mortality rate is the number of infant deaths for every 1,000 live births.[1]

Birth outcomes are associated with long-term population health and quality of life.

Importance of birth outcomes and infant mortality as population health indicators:

- **They are correlated to social and economic development, which enables comparisons of population health outcomes across different social or economic contexts.**
- **These outcomes are sensitive to short-term changes in social or economic circumstances, making them useful indicators of how real-time changes in environment and experiences are impacting health.**
- **Birth outcomes such as preterm births or low birthweight are associated with lifelong differences in health, social, and economic outcomes including Years of Potential Life Lost.**[3]

Preterm births occur when a baby is born before 37 weeks of pregnancy. This presents a serious risk of disability and shortened life expectancy for the baby.[2]

Causes of Infant Death

- Premature (pre-term) births
- Low birth weight
- Sudden Unexpected Infant Death (SUID)
- Birth defects
- Assault or accidental injuries
- Maternal pregnancy complications

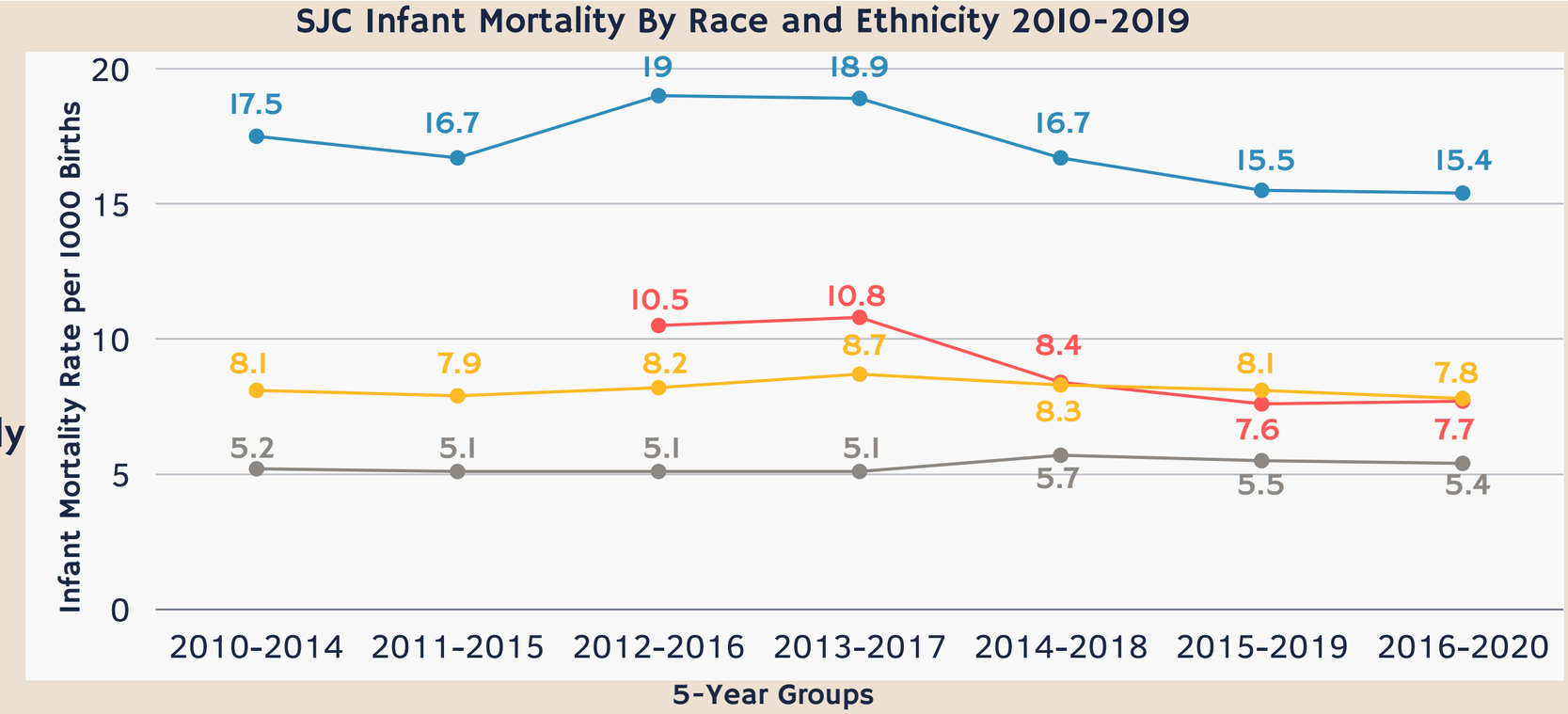
Infant Mortality Rate (IMR) per 1,000 Live Births					
	2015	2016	2017	2018	2019
United States	5.9	5.9	5.8	5.7	5.6
Indiana	7.3	7.5	7.3	6.8	6.5
St. Joseph County	7.5	7.3	10.3	6.9	8.7

Source: FIMR September 2020 Report, St. Joseph County

In the United States, the infant mortality rate for Black infants was 2.3 times the rate for White infants in 2018.[1]

When county infant mortality rates are assessed by racial groups, the Black population has 3 times higher rates than the White population, and twice the infant mortality rates as the Hispanic population.

The decrease in county infant mortality rates over the past ten years is associated with policy interventions such as the Indiana Medicaid expansion in 2015 that saw increased enrollment and early access to prenatal care in pregnant women.[4]



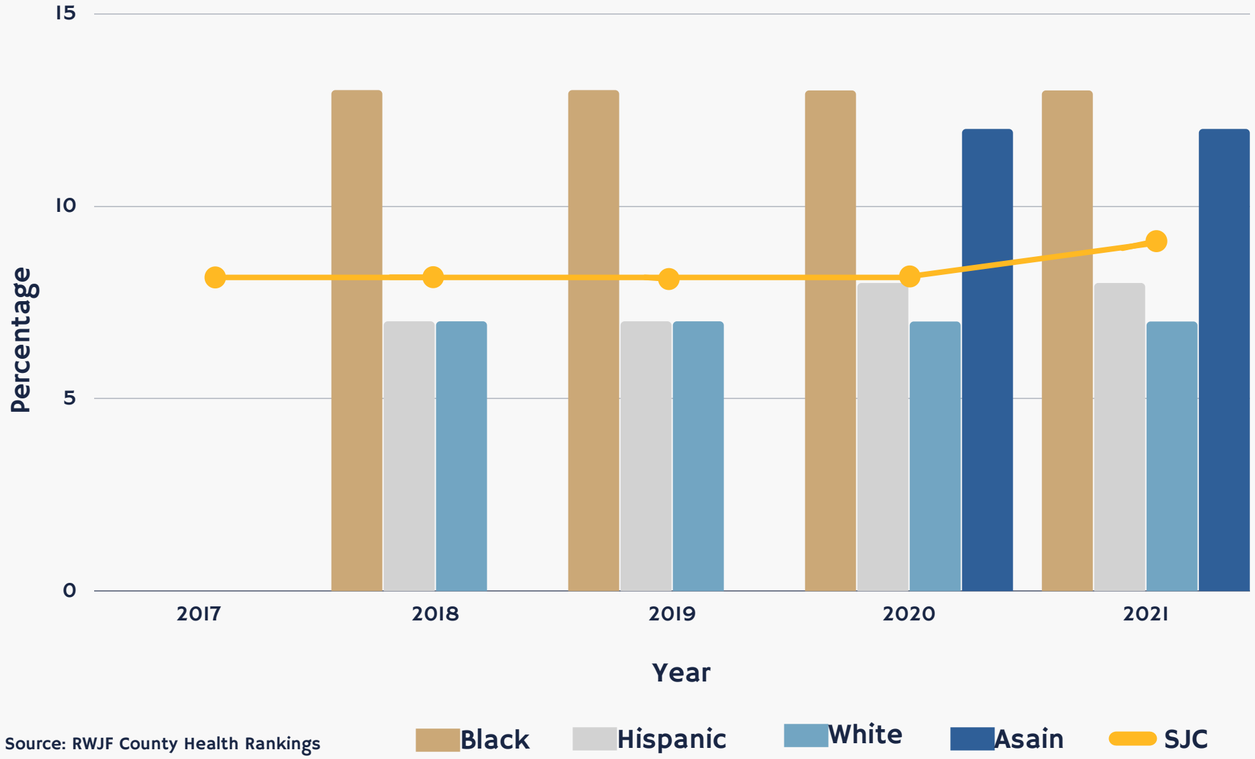
Source: FIMR December 2021 Report, St. Joseph County

Low Birth Weight

Low birth weight is when a baby is born weighing less than 5 pounds, 8 ounces. This is attributed to a preterm birth 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.[5]

Low birth weight infants are prone to additional health problems such as developing infections, becoming ill during the first six days of life, and long term problems such as delayed motor and social and learning skills.[5] **Low birth weight also increases the risk for sudden infant death.**[6,7]

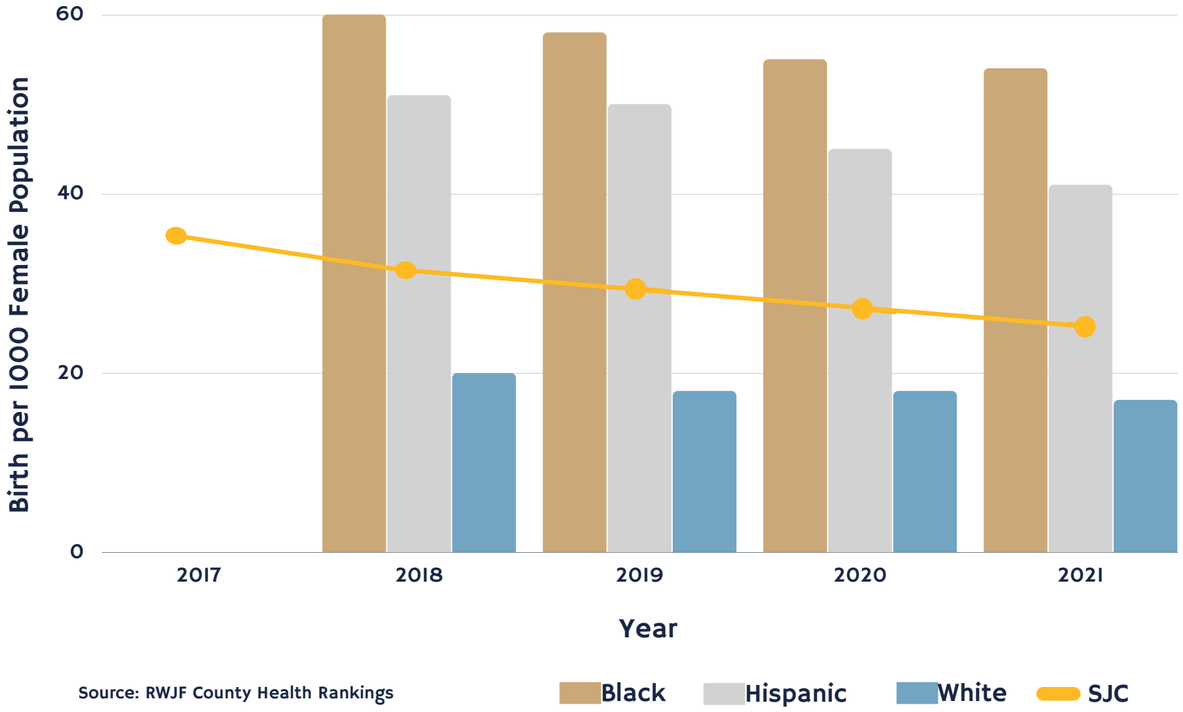
SJC Percentage of Live Births and Low Birthweight



Source: RWJF County Health Rankings

The rate of live births with low birth weights in St. Joseph are high among Black and Asian groups compared to the county average. In 2017, race data was unavailable.

SJC Teen Birth Rates 2017-2021



Source: RWJF County Health Rankings

Over the past 4 years, teen birth rates were higher among the Black and Hispanic population in the county.[8]

Teen Birth Rates

Teen childbearing is a public health concern due to the elevated health risks for mothers and their infants, as well as the social and economic costs of heath care, child welfare, and the potential loss of the mother's educational and occupational opportunities.[9]

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 overall U.S teen birthrate was 17.4 births per 1000 females for the same year.[10]

Refers to the number of births per 1,000 live births to females aged 15 to 19.

Between 2013 and 2019, the Teen Birth Rates among the Black (53) and Hispanic (42) population in St. Joseph County were three times and more than twice, respectively those of the White (17) population. The average county rate over three years between 2017—2019 was 25 teen births per 1,000, like that of Indiana.[11] *On the chart below each year represents a 3-year average around the middle year and the most recent data is for 2019 and earlier.*

Teen Birth Rates per 1000 Live Births		
Year	Indiana	SJC
2019	20.7	20.9
2018	21.6	24
2017	22.8	25.9
2016	23.5	23.5

Source: Indiana Public Health Geographics Data

Risk Factors for Different Birth Outcomes and Infant Mortality

The risk factors for low birthweight can be medical, social, or environmental.[12]

Risk Factors for Different Birth Outcomes and Infant Mortality

Medical factors include preterm labor, chronic health conditions, medications to treat certain conditions like epilepsy and high blood pressure, infections that affect reproductive health, problems with the placenta, being pregnant with multiples and not gaining enough weight during the pregnancy.[12]

A growing body of research on social risk factors suggests that the stress of life as a woman of color, such as the stressors of racism, poverty, access to resources and education present a measurable risk factor for increased rates of infant mortality. Even when controlled for education and income, the disparity remains, suggesting that the difference in outcomes is attributed to racial differences rather than economic ones. The presence of structural racism and implicit biases within daily life have been shown to contribute to disparities in infant and maternal health.[13]

Environmental factors include exposure to lead or air pollution, low social economic status, domestic violence or drug use.

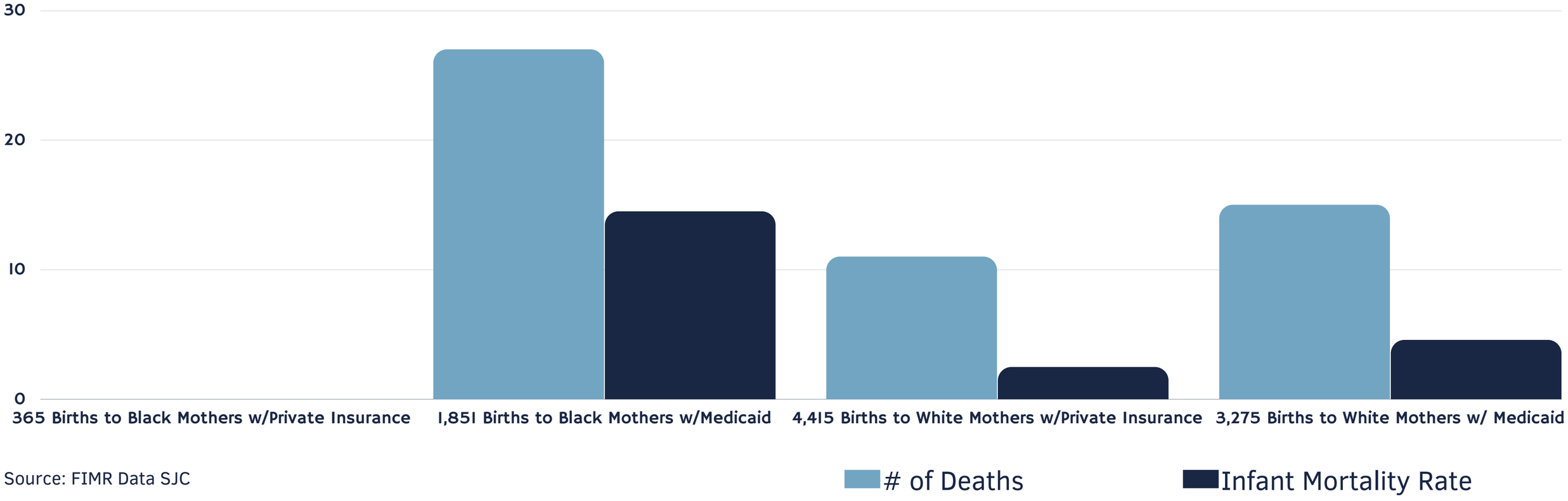
The infant mortality rate in St. Joseph County is higher than the Healthy People 2020 target of 6.0 infant deaths per 1000 live births. The Healthy People 2030 new target is to reduce the rate to 5.0 infant deaths per 1000 births.

Proposed objectives towards reducing infant mortality and low birth weight include increasing access to early and adequate prenatal care, increasing the proportion of women of childbearing potential taking folic acid intake[14] and the policies listed in this section.

Infant Mortality Rate and Maternal Socioeconomic Status

Adequate health insurance is correlated with reduced infant mortality, although this correlation does not fully explain the higher infant mortality for Black infants.[15]
The SJC Fetal Infant Mortality Review 2020 noted that White mothers with Medicaid coverage had nearly twice the infant mortality rate of White mothers with private insurance. Black mothers with Medicaid insurance had nearly three times the infant mortality rate of White mothers with Medicaid coverage. Only 16% of all Black mothers who gave birth between 2015 and 2018 had private insurance compared to 57% of White mothers.[16]

2015-2017 Infant Mortality Rate by Race of Mother and Insurance Coverage, SJC



Source: FIMR Data SJC

- 16% of Black mothers had private insurance
- 84% of Black mothers had Medicaid Insurance

- 57% of White mothers had private insurance
- 43% of White mothers had Medicaid insurance

To qualify for the Indiana Medicaid coverage during pregnancy, income must be below 213% of poverty level. Pregnant women with household incomes above 213% FPL but below 400% can apply for subsidized coverage through the federal health program.[17] Occupations or employment sectors least likely to offer a health benefit, such as self-employment, working for a small private sector firm or having a low income, are correlated to low insurance coverage across different demographics in the United States.[18]

Healthcare Eligibility Chart for Pregnant Women Indiana [16]

Household Size	Projected Gross Family Income Levels (2021)	
	Indiana	Federal
1	$27,440.40 or Less	$27,440.40 - $51,520.00
2	$37,111.20 or Less	$37,111.20 - $69,680.00
3	$46,482.00 or Less	$46,482.00 - $87,840.00
4	$56,453.40 or Less	$56,453.40 - $106,000.00
5	$66,124.20 or Less	$66,124.20 - $124,160.00
6	$75,795.00 or Less	$75,795.00 - $142,320.00
7	$85,466.40 or Less	$85,466.40 - $160,480.00
8	$95,137.20 or Less	$95,137.20 - $178,640.00
Poverty Level (1 Person)	Below $12, 880	

COVID-19 and Maternal Infant Health

Maternal health outcomes in the US are likely negatively affected by the current COVID-19 pandemic which requires new behavioral measures to minimize spread across populations. Some of the policies in response to the COVID-19 pandemic since 2020 included social distancing and reduced human interactions.

The rising COVID-19 infections strained the healthcare infrastructure. Transition to telehealth care and the reduction of routine prenatal care may have affected the type of support that pregnant women receive.

During the pandemic, women have been more likely to lose their income than men, and working mothers have faced rising childcare demands.

Additionally, COVID-19 hurt maternal health outcomes by worsening pre-existing health inequities across marginalized communities,[28] delaying access to care and worsening the mental health of expectant women.[29]

Social Determinants of Health associated with Infant and Maternal Health

Economic Stability

Systems of Power

The SDOH discussed here influence maternal and infant health outcomes but are not an exhaustive list. Since the categories play key roles in shaping these health outcomes, paying attention to improving these conditions can translate to better maternal and infant health.

Economic Stability

The connection between birth outcomes, income and (un)employment is essential to understand. A steady income helps meet and support the needs of a healthy pregnancy. Such needs include health insurance, prenatal care, healthy foods, and housing. Stress due to financial uncertainty may impact fetal growth and health.

One study showed that a $1 increase in minimum wages was associated with a decline in teenage birth rates. This was particularly evident in states with existing Earned Income Tax Credit laws.[19] Another study demonstrated that an increase in minimum wages is linked to an increase in birth weight primarily driven by increased fetal growth rate.[20]

The Georgetown University Health Policy Institute reviewed the states that expanded Medicaid access to people who could not afford commercial health insurance despite being in employment. They note that this Affordable Care Act expansion saw a 50% reduction in infant mortality compared to non-expansion states.

This was achieved through increased access to prenatal care during and after the pregnancy as well as reduced maternal mortality.[21] After the Medicaid expansion, Indiana's maternal coverage increased by 47% from 2015 to 2018.[22]

Systems of Power

The link between the race of the pregnant woman and birth outcomes is critical to understand and address. Chronic stress among women of color due to experiences of racism and weathering in African American[23] is associated with the disparities in birth outcomes. Heightened inflammation is a key biological pathway in which stress may affect birth outcomes.[24] Weathering refers to the process of deteriorating health in African American women in early adulthood that is associated with cumulative socioeconomic disadvantage[25] and physical stress.

When controlled for education and income, the birth outcomes disparities remain, underscoring the need to address other factors to help close the gap. A life-course approach towards individual and community healthcare is helpful in improving outcomes

This includes quality healthcare throughout the woman's life, reproductive health education and enhancing community systems to support the health of pregnant women.[26]

A study assessing the state-level measures of structural racism and infant mortality among Black and White populations showed that increasing racial inequity in unemployment was connected to a 5% increase in Black infant mortality. Similarly, decreasing racial inequity in education was associated with almost 10% reduction in Black infant mortality.[27]

The SDOH discussed here influence maternal and infant health outcomes but are not an exhaustive list. Since the categories play key roles in shaping these health outcomes, paying attention to improving these conditions can translate to better maternal and infant health.

Best Practices to Improve Maternal and Infant Health

For improved birth outcomes and infant health in St. Joseph County, collaborative work across various levels of the community is required. This includes investing in policies that enhance the structural and social determinants of health in maternal care to reduce current disparities.[30]

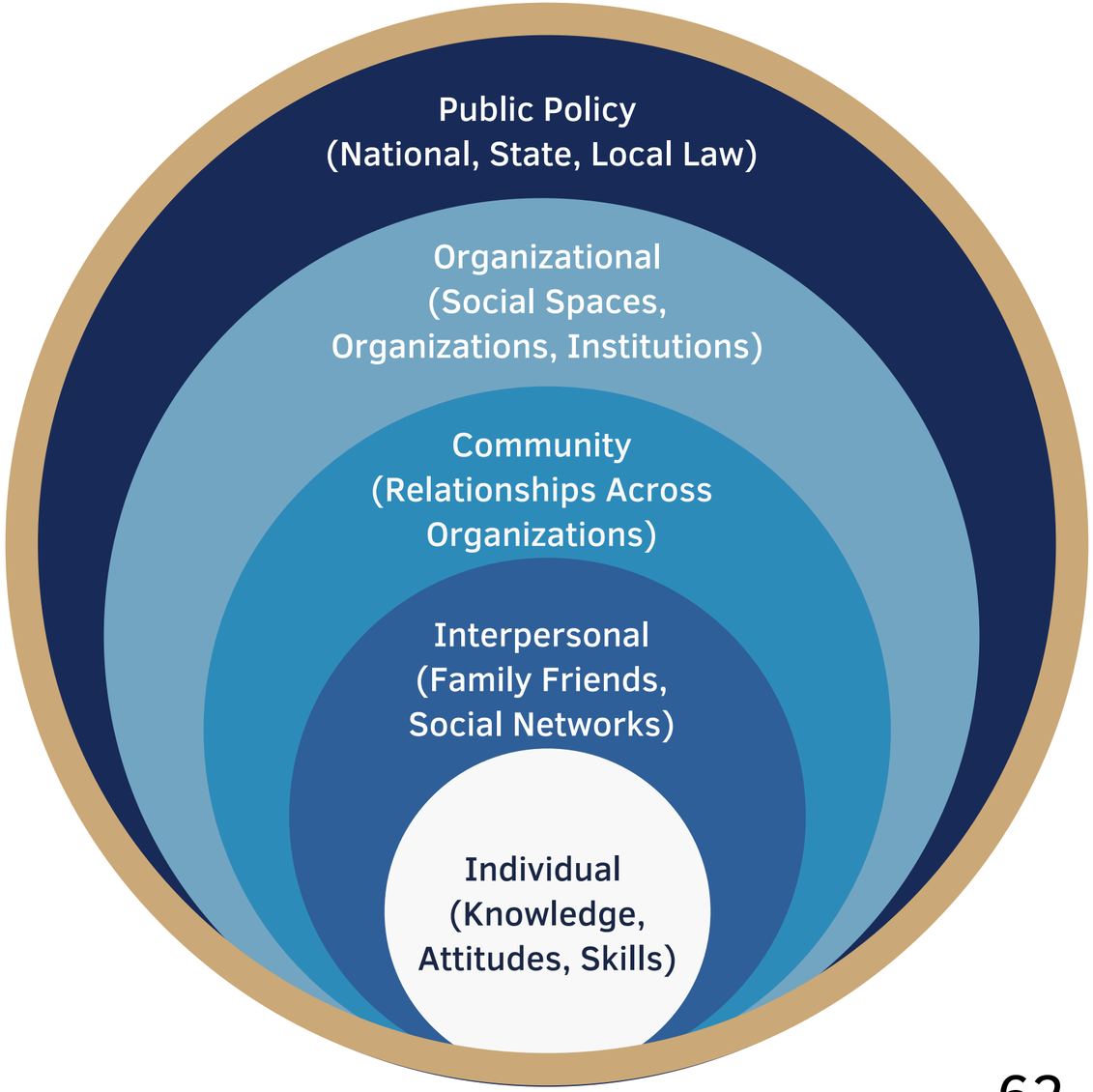
Below are evidence-based actions that can be taken on various levels towards improving infant health and birth outcomes

Actions with an asterisk (*) are already practiced in the county.

Public Policy

National, State, Local Law

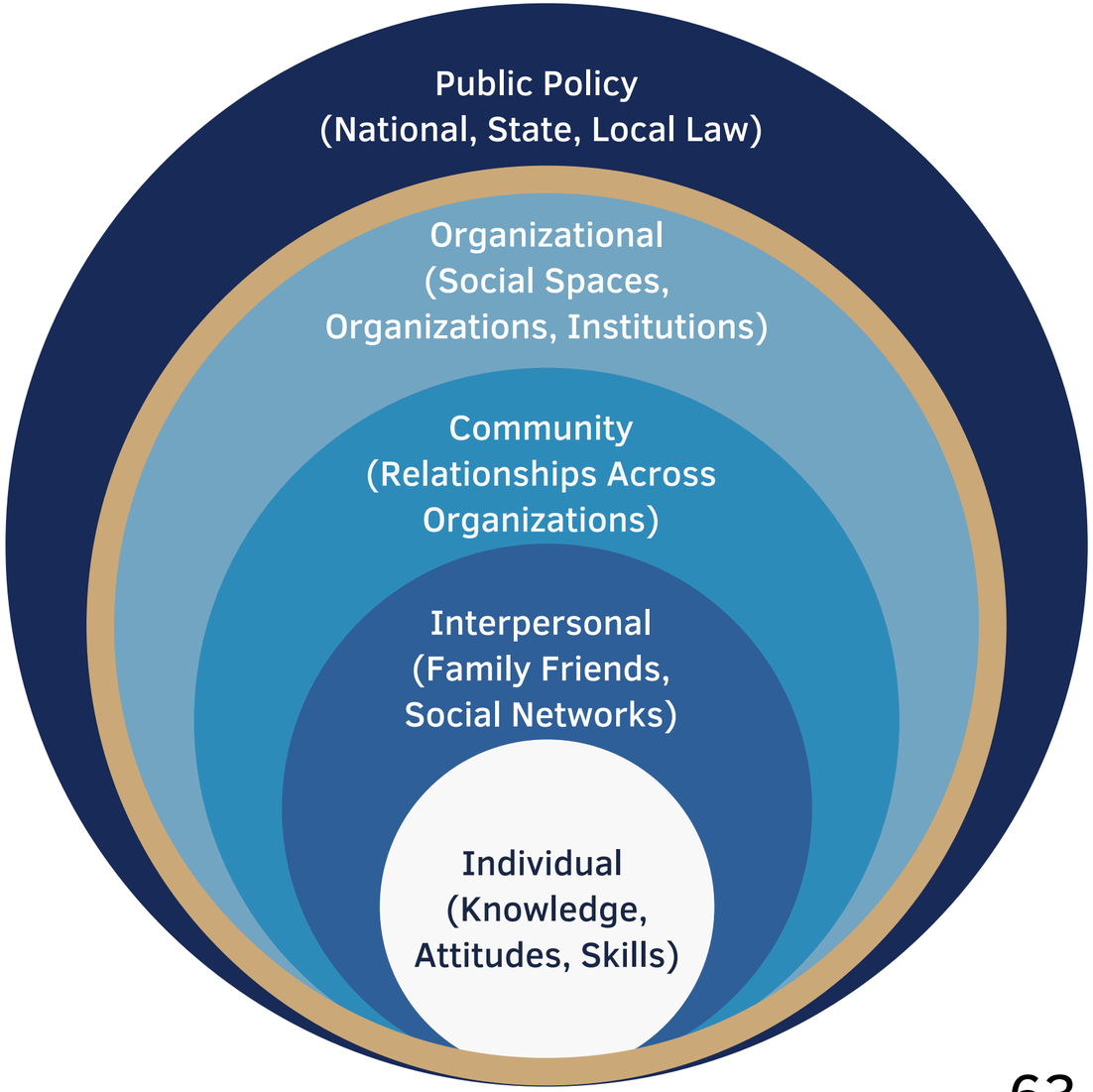
- Implement state level initiatives to alleviate poverty and promote wealth building for parents. This includes the Earned Income Tax Credit*[31] and minimum wage increases. [32,33]
- Reduce barriers to access and increase Temporary Assistance for Needy Families (TANF).[34]
- Ensure child support payments have full pass through for TANF families.[34]
- Implement childcare subsidies to help parents with low-income work more hours, stay in jobs longer and increase overall earnings.[35]
- Increase access to insurance coverage and healthcare before, during and after pregnancy.* Increase acceptance of Medicaid Presumptive eligibility among prenatal care to facilitate early entry into prenatal care. [36]
- Implement paid maternity leave to predict improved maternal and infant health outcomes.[37]



Organizational

Social Spaces, Organizations, Institutions

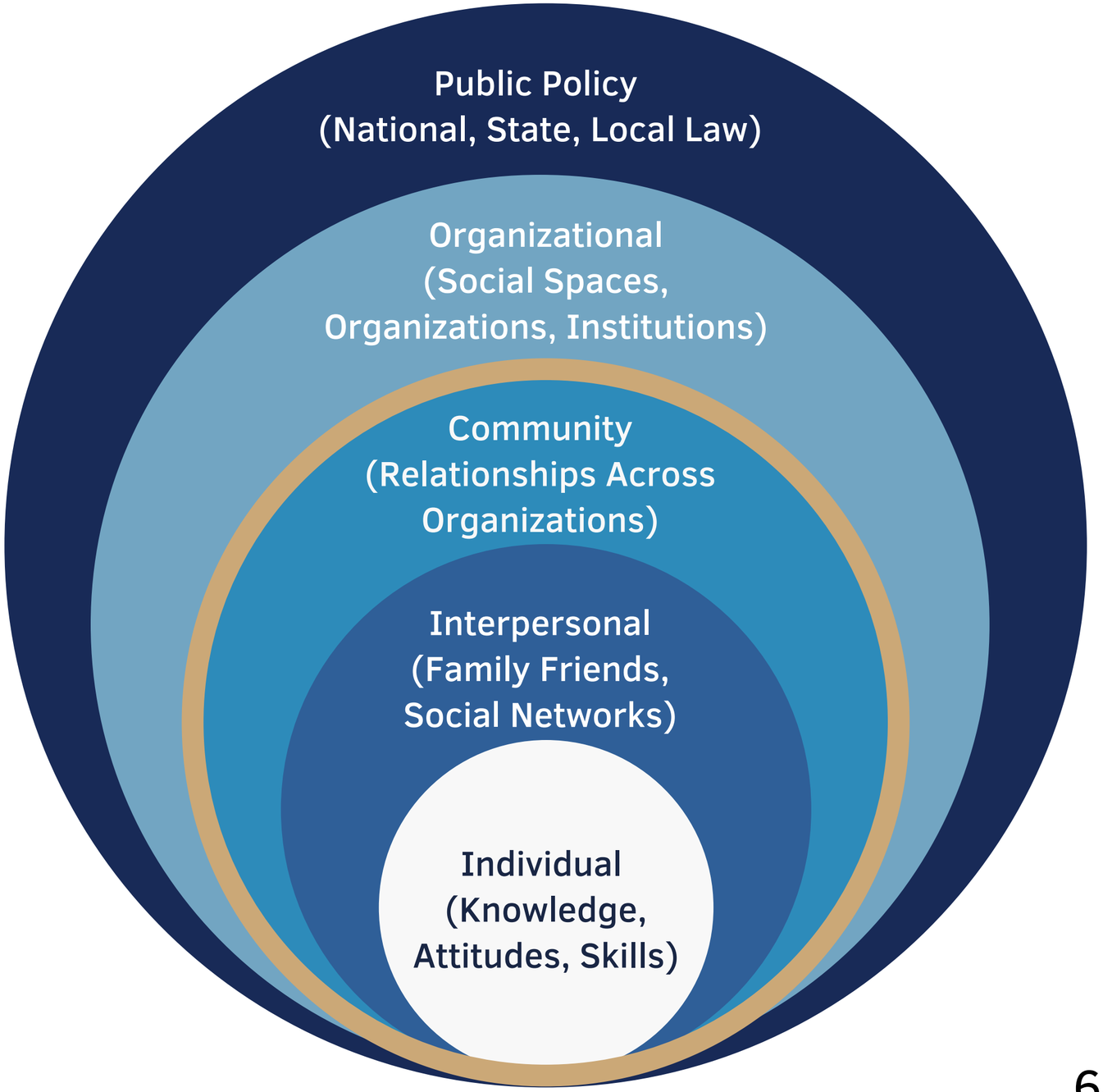
- Cultural competence training for clinical care providers and culturally adaptive health care services. [38]
- Standardize the assessment of maternal, fetal, and infant wellbeing during inpatient care.[39]
- Expand adolescent reproductive health education to include information about pregnancy intention and importance of health prior to, during and after pregnancy.[40]
- Support on-site childcare support in workplaces and flexible scheduling to promote breastfeeding rates.[41]
- Expand Sudden Unexpected Infant Death (SUID) prevention education for providers and families to include factors that increase risks of sleep related death and SAFE sleet practices.*[17]



Community

Relationships Across Organizations

- Enhance utilization of community-based and home visiting programs.[42]
- Integrate clinical care and community-based organizations providing connections to support[43] and resources through doula care,[44] community health workers, social work and nursing care.*



Interpersonal

Family, Friends, Social Networks

- Participate in birthing networks and play groups.[42]
- Promote community sessions on birth education.[42]

Individual

Knowledge, Attitudes, Skills

- Take pre-pregnancy folic acid 400mcg daily for all women of childbearing age, 15-45 years.[45]
- Use SAFE sleep practices every time your baby is sleeping.
- Attend prenatal appointments before, during and after pregnancy, for you and your baby.[17]

Maternal and Infant Health References

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Chronic Health and Care

The Centers for Disease Control and Prevention defines chronic diseases as conditions that last 1 year or more and need continuous medical care or limit activities of daily living.

Examples include heart disease, cancer, diabetes, and chronic lower respiratory diseases including asthma.[1] *Managing chronic diseases is costly and drives up medical costs for individuals, families, organizations, and government.*

About six in ten adults in the United States have a chronic disease and four in ten have two or more.[1]

The top four causes of death in the county between 2018 and 2019 were chronic diseases:

- **Heart disease**
- **Cancer**
- **Cerebrovascular diseases**
- **Chronic lower respiratory diseases**

Heart Disease

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 ischemic heart disease. A heart disease may remain undiagnosed until an individual experiences the symptoms of a heart attack, arrhythmia, or heart failure.[2]

Risk Factors for Heart Diseases

- **High blood pressure and high cholesterol.**
- **Medical conditions such as diabetes and obesity.**
- **Unhealthy foods, physical inactivity, excessive consumption of alcohol, smoking, stress and anxiety.**

Heart Disease

The SJC 3-year average death rate due to heart disease is higher than the national average and lower than the state average.

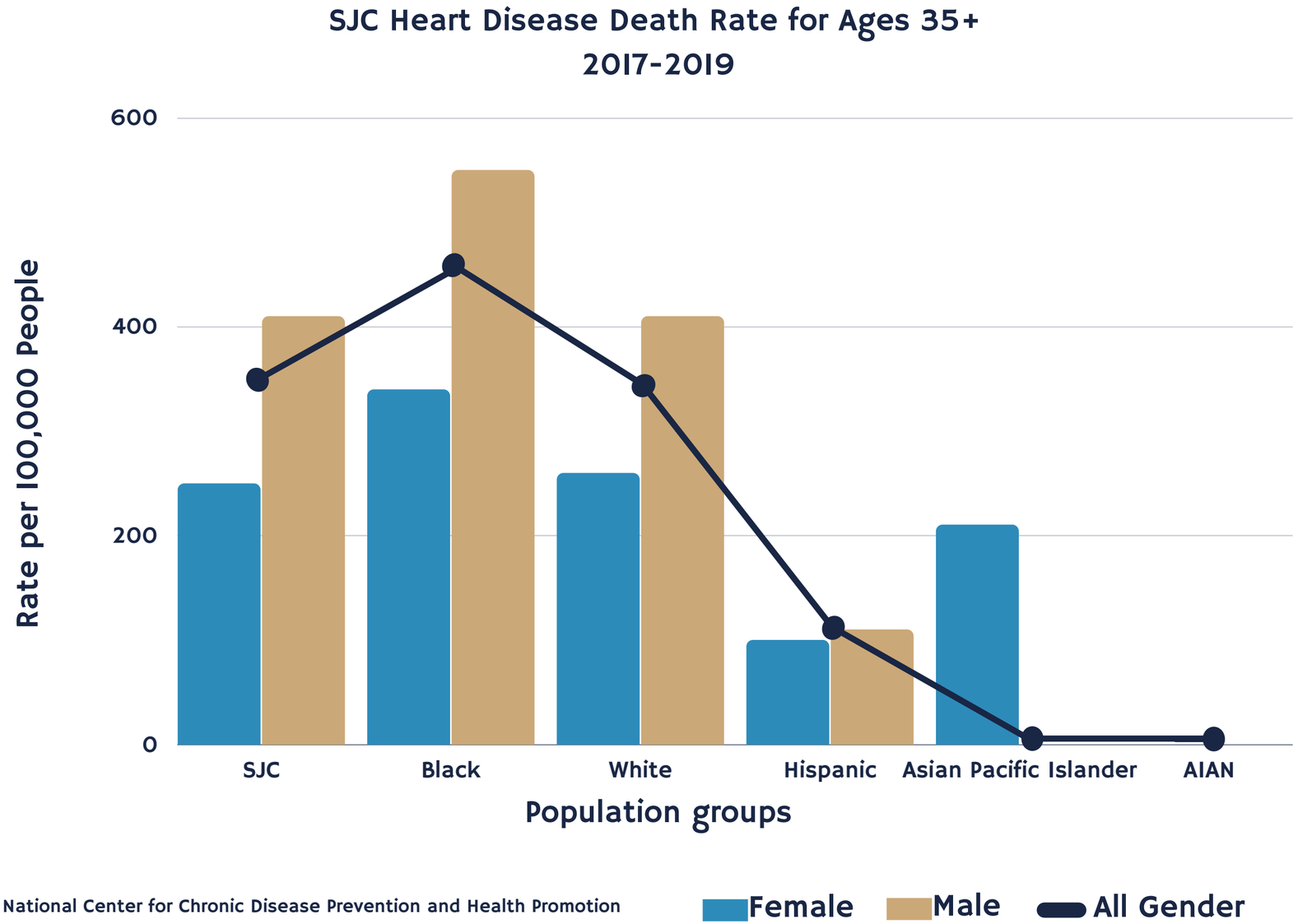
- In 2017-2019 the rate of death due to heart diseases among the Black population was 1.3 times that of the county average, an improvement from 1.4 times between 2016 and 2018.
- The Black male and White male populations aged above 35 years had higher death rates than the county average in 2017 –2019.[5]

Heart Disease Death Rates for Ages 35+		
	Rate per 100,000 Population	
	2016-2018	2017-2019
United States	320	317.4
Indiana	352	350.1
SJC	332	337.1

Source: National Center for Chronic Disease Prevention and Health Promotion[3,4]

The average rate of death due to heart diseases for all age groups in the county is 174.5 deaths per 100,000 population.

Note:
Rates are age standardized and spatially smoothed 3 year averages, 2017-2019, ages 35+.[5] The Asian Pacific Islander data is suppressed when below 16 to ensure confidentiality.



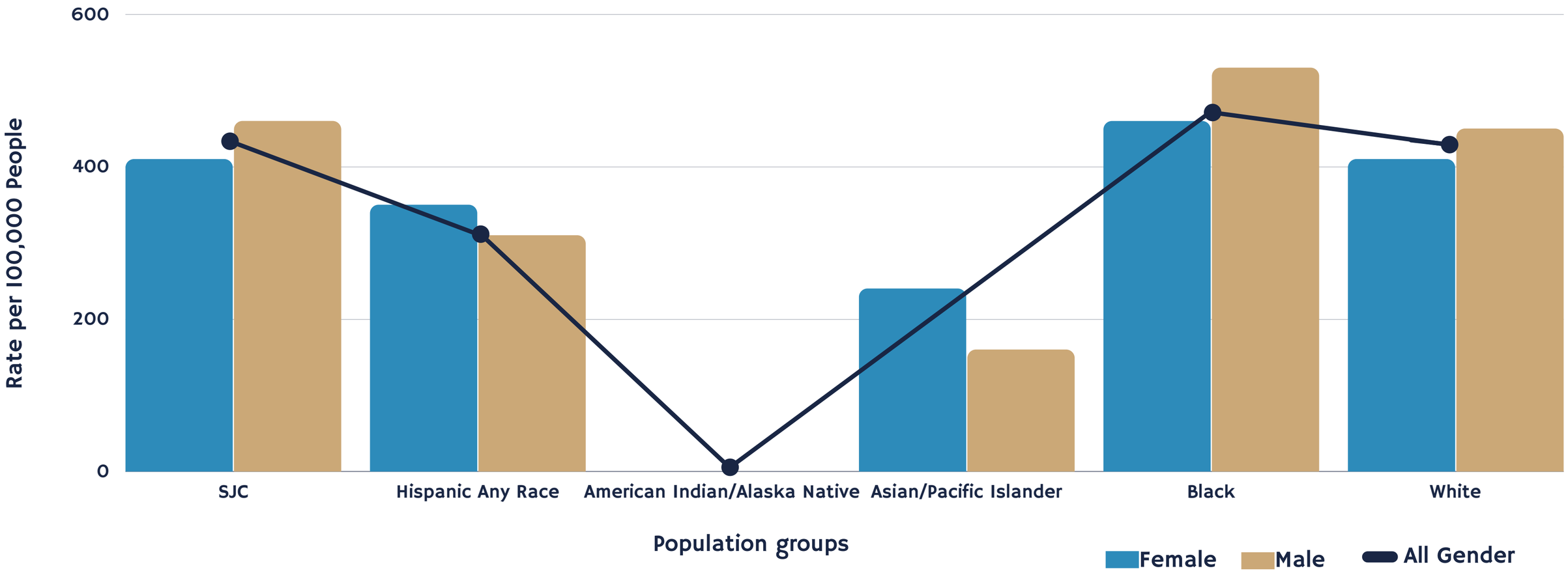
Source: National Center for Chronic Disease Prevention and Health Promotion

Cancer

The Centers for Disease Control and Prevention define Cancer as:
'The term 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.[6]*Cancer is also known as neoplasm and malignant tumors.*

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

SJC All Cancer Incidence 2014-2018 by Gender and Race/Ethnicity



Source: National Center for Chronic Disease Prevention and Health Promotion

For the 5-year period between 2014-2018 437 new cancer cases were reported compared to 432 new cancer cases in a similar period between 2013-2018.[8]

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

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.[7]

More men than women die from cancer in SJC. population groups.

SJC All Cancer Death Rates 2015-2019 by Gender and Race/Ethnicity			
US Rate - 152.4	Rates per 1000,000 Population		
	Female	Male	Both Genders
SJC	151.1	200.3	172.1
Hispanic	83.5	122.4	101.3
AIAN	Data Suppressed		Data Suppressed
Asian/Pacific Islander	Data Suppressed		89.9
Black	181.6	264.7	214.7
White	149	197.2	169.5

Source: State Cancer Profiles [8]

Lung Cancer

- Lung cancer is the leading cause of cancer deaths in Indiana.
- In SJC, 67 new cases (2014-2018) were reported and 45 deaths for every 100,000 pepole (2015-2019).
- In the country, the death rate in males was 1.5 times that of females in 2015-2019 improving from 1.7 times in the previous 5-year period.[8]

Cigarette smoking is the leading risk factor for lung cancer and is linked to 80%-90% of the lunch 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 such as beta carotenes intake among smokers, and exposure to chemicals like radon and asbestos.[9, 10]

Cerebrovascular Diseases

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 or blood vessel rupture.[11] *Stroke occurs when blood supply to part of the brain is blocked or when a blood vessel in the brain bursts.*

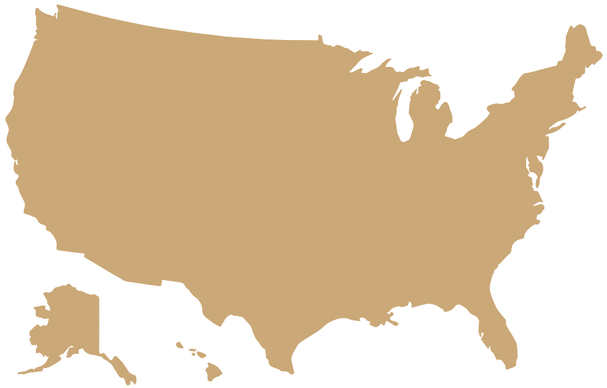
Factors and diseases that increase the likelihood of having a stroke[12]

- **High blood pressure, high cholesterol, diabetes, and sickle cell disease**
- **Unhealthy diet, physical inactivity, obesity, tobacco use, and excessive alcohol consumption**
- **Other factors that predispose individuals to stroke include genetics, age, race, and gender**

Cerebrovascular Diseases

How do strokes affect health and quality of life?

The effect of a stroke depends on the location of the stroke and the extent of the brain tissue affected. It can lead to physical, behavioral, psychological, and cognitive challenges in addition to profound financial and psychological stress on stroke victims and their families.



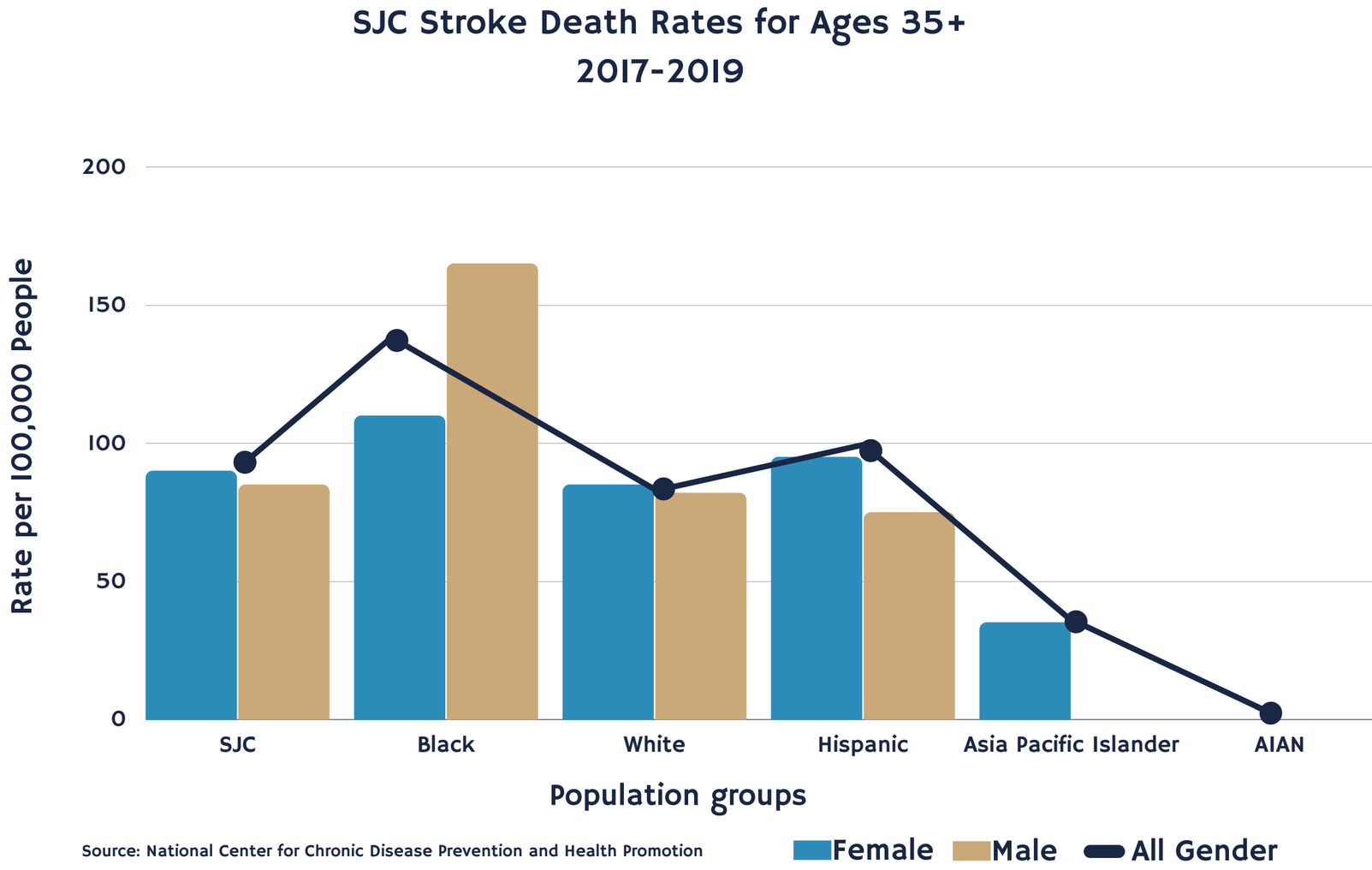
Stroke is the fifth leading cause of death in the United States.
It is both preventable and treatable.[12]

Stroke death rates for those older than 35 years in SJC were 1.2 times more than the county average among the Black population, and highest among Black Males. The rates were lowest in the Hispanic population.

The overall SJC rate of 94 stroke death rates per 100,000 was higher than the state (78) and national (72) rates in 2017 to 2019.

Notes

- *Rates are age standardized and spatially smoothed 3-year averages.*[5]
- *Rates and counts are suppressed if fewer than 16 cases are reported in a category such as region, race, and ethnicity.*



Cerebrovascular Diseases

Economic Burden of Disease

The county age adjusted inpatient hospitalization rate due to stroke was to 28 per 100,000 people in 2018. An assessment of the St. Joseph County hospitalization data shows that most of the costs for cerebrovascular disease were paid under Medicare.[14]

Chronic Respiratory Disease

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).[15]

Burden of Disease

Although there is no cure for chronic respiratory diseases, various forms of treatment can help control symptoms and improve the quality of life.[15] **For every 100,000 people in the United States, 47.8 died from chronic respiratory diseases in 2019. The rate in St. Joseph County was 67.6 deaths per 100,000 people in 2018 to 2019. Chronic respiratory diseases are among the top five leading causes of death in the county.**[16]

Asthma

This is a chronic disease caused by 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.[17]

Symptoms of asthma include:

- **shortness of breath**
- **chest tightness**
- **wheezing**
- **nighttime or early morning coughing**

It can start at any age.

People living with asthma often experience the symptoms when they are exposed to triggers that irritate their lungs. Examples of the triggers include mold, chemical irritants in household products, dust, danderpollen, smoke, and air pollution.[17, 18]

How does Asthma affect quality of life?

Asthma affects 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 time at work or school and incur costs in physician visits.[19]

In the United States, 8% of adults aged 18 and over and 7% of children under the age of 18 years had asthma in 2019.[20]
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.[21]

The 2019 national data on asthma indicated that across all age groups, the burden of asthma is highest among those aged 12-14 years, a shift from the previous years where 15-19 years bore the highest burden. 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 prevalence rate is higher in females(8.9) than in males(6.6).[21]

Households living below 100% of the poverty threshold have higher rates of asthma.[21]

Rates were higher in the American Indian/Alaska Native and Black Non-Hispanic population and lowest among the Asian Non-Hispanic population. Significantly higher rates presented in Black children across the United States.[21]

Preventing Asthma Attacks

Make an action plan with your doctor that includes identifying the triggers for asthma attacks, how to eliminate the triggers in your home, and the recommended medication. Asthma control is mainly about responding to and treating sudden asthma symptoms.[22]

Diabetes

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

Type I Diabetes

Is due to an autoimmune reaction that stops your body from making insulin. The risk factors for Type 1 diabetes include family history and age. It usually develops during childhood and young adulthood.[23]

5-10% of People with Diabetes

90-95% of People with Diabetes

Type 2 Diabetes

Results when the body does not use insulin well and cannot maintain normal blood sugar levels. Risk factors for Type 2 diabetes are prediabetes, overweight, age (45 years or older), family history, physical inactivity, and previous gestational diabetes.[21]

Gestational Diabetes

Results when women develop high blood sugar during pregnancy. It increases the risk for type 2 diabetes later in life.[23]

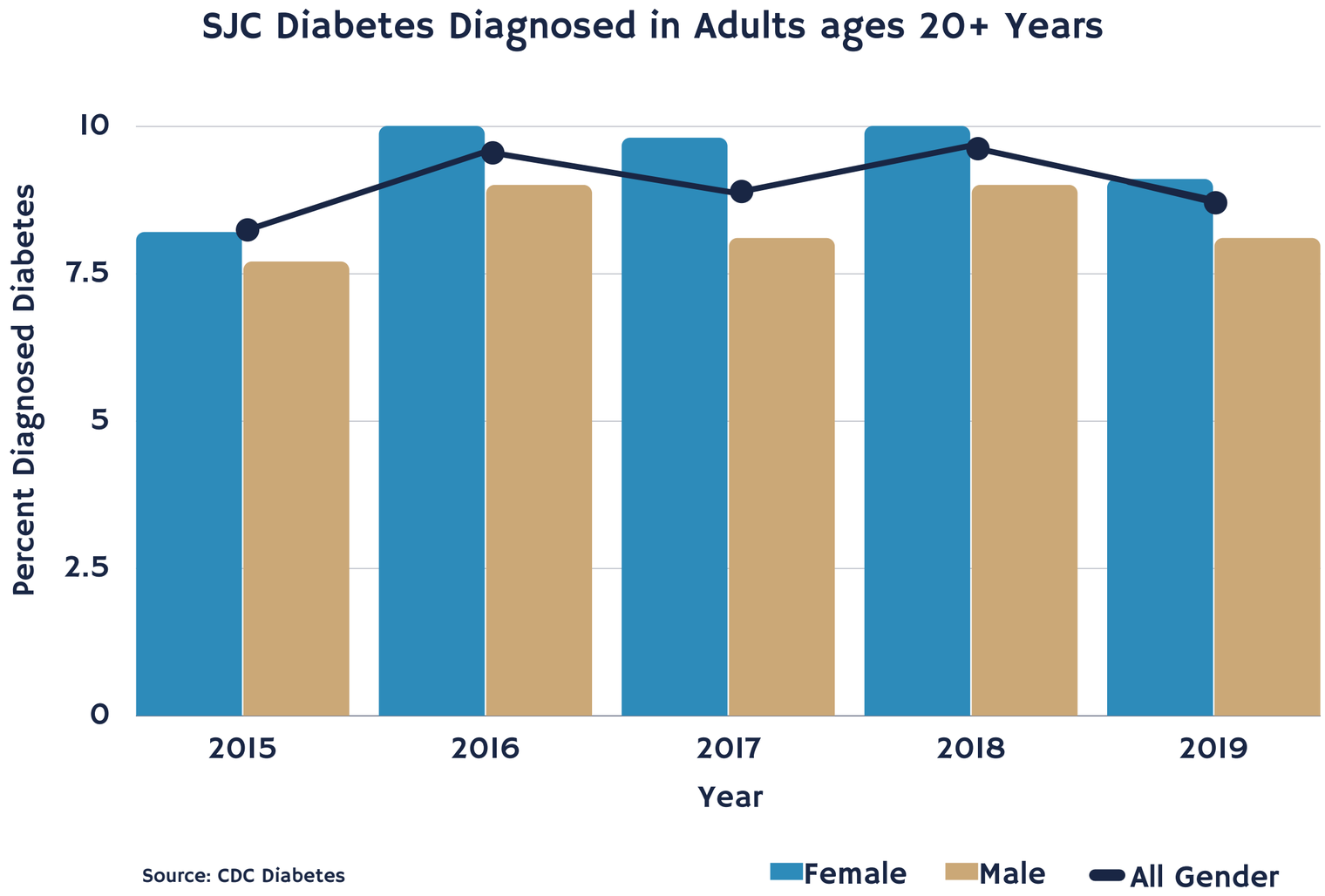
Diabetes is the fourth leading cause of death among the Black population in Indiana and among the top 5 causes of death for people under 75 years.[24]

In 2019, the percentage of prevalent diabetes cases in Indiana was higher in males aged 50 years and above.[25]

In 2018 and 2019, the age-adjusted mortality rate from diabetes was 29.1 per 100,000 people in SJC.[25, 26]

The prevalence of diabetes in individuals aged 20 and above was 8.9% of the total population in 2019.

In SJC, more males than females have diabetes.[26]



How does diabetes affect health and quality of life?

The statewide prevalence of diabetes when assessed by education levels shows that prevalence is highest among those with less than high school level education. This group may also have lower income levels, and thus bear the economic burden of diabetes heavily.[27]

According to the Institute for Health Metrics and Evaluation (IHME), diabetes has the highest health spending in the United States. In Indiana, diabetes ranked among the top 10 causes of death and disability in 2019.[28]

Among the people with diagnosed diabetes aged above 20 years, 36.3% had obesity and 23.5% reported physical inactivity in males while in females 37.7% had obesity and 25.9% reported physical inactivity in 2019.

In both factors and gender, these was an increase from previous years.[26] Physical inactivity data shows the percentage of adults ages 20 and above reporting no leisure-time physical activity in a month.[29]

Physical activity is anything that gets your body active. About 30 minutes daily for 5 days to enhance aerobic activity and strengthen muscle improves health.[30]

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% on 2014 to 36.3% in 2019.[29]

Community conditions associated with physical inactivity include neighborhood safety, expenditures on recreational activity, access to infrastructure, and socioeconomic conditions.

COVID-19 and Chronic Health

The interplay of clinical characteristics of chronic diseases and social determinants of health accelerate the risk for COVID-19 among minority communities. Such factors include the underlying health conditions, high exposure in essential service work, immune response profile, access to care, and the zip code.[48] About 45.4% of US adults had heightened risk for complications from the coronavirus due to existing chronic diseases. This rate rose with increasing age, although more than half of those at risk were less than 60 years.[49]

Multiple factors may have led to an observed decrease in new diagnosis and inpatient numbers of non-COVID chronic conditions during the pandemic. Patients may have avoided emergency care for fear of COVID-19, lost health insurance, behavior change, and self-management of chronic conditions in the context of social distancing measures.[50]

The compounded outcomes from the convergence of preexisting health conditions, the COVID-19 virus, and socioeconomic factors is likely to have increased vulnerability in different population groups such as those already experiencing inequity where they live, work, learn, or seek health services. The minimized social interaction and adopted use of telemedicine in response to the COVID-19 pandemic may have enhanced health disparities among populations with limited digital access, for example; low income, older adults, those in rural areas, racial/ethnic minorities, and those with limited health literacy and English proficiency.[51]

Social Determinants of Health Associated with Chronic Disease and Care

Economic Stability and Education

Lower socioeconomic factors like education, income, and occupation are associated with increased prevalence and incidence of cardiovascular risk factors and death from the disease. Adverse socioeconomic conditions in childhood predispose the individual to adult cardiovascular diseases.[35]
Adverse childhood experiences (ACEs) are associated with chronic health problems and top five causes of death.[36, 37]
Nationally, one in six adults experienced four or more types of ACEs.[37]

Income is linked to food security, stable housing and affordable healthcare. Employment plays a critical role in maintaining a healthy diet. Individuals with limited financial resources adopt coping strategies that are harmful to health. Such include trade-off between other basic needs,[38] **foregoing required foods for special medical diets in diabetes,**[39] **postponing preventive medical care, delay in cost-related medication needs,**[40, 41] **and purchasing low cost diets that are energy dense but nutrient deficient foods.**[42]

Lower education levels are associated with greater prevalence of cardiovascular risk factors.[43]

These educational differences lead to increased disparities in population health outcomes as evidenced in cardiovascular mortality, increasing life expectancy gaps, and cancer deaths.[44, 45]

Health literacy and numeracy are associated with better health outcomes.

Having less than high school education has been linked to lower health literacy and poor health outcomes.[46]

Food Systems

Available, accessible, and affordable healthy and nutritious food reduces the risk of related chronic diseases.[47] Dependable food systems provide diverse, healthy, and vibrant nutrition to communities. These systems include grocery stores, corner stores, farmers' markets, pharmacies, community gardens, and food pantries.

Healthy foods and lifestyle can enhance the management of illnesses. Elevated levels of salt intake can increase blood pressure and the risk of heart disease. Limiting sugar in diet can lower blood sugar level and that is helpful in regulating diabetes. Foods high in fiber and low in saturated fats, trans fats, and cholesterol reduce the risk of high cholesterol.[48]

People living in food insecure areas are at risk of reduced ability in learning and growth among children and higher risk of diet related health conditions such as obesity, diabetes, and cardiovascular disease.[49]

Areas with high density of establishments retailing high calorie fast food and junk meals rather than healthier and nutritious options are associated with poor health.[50]

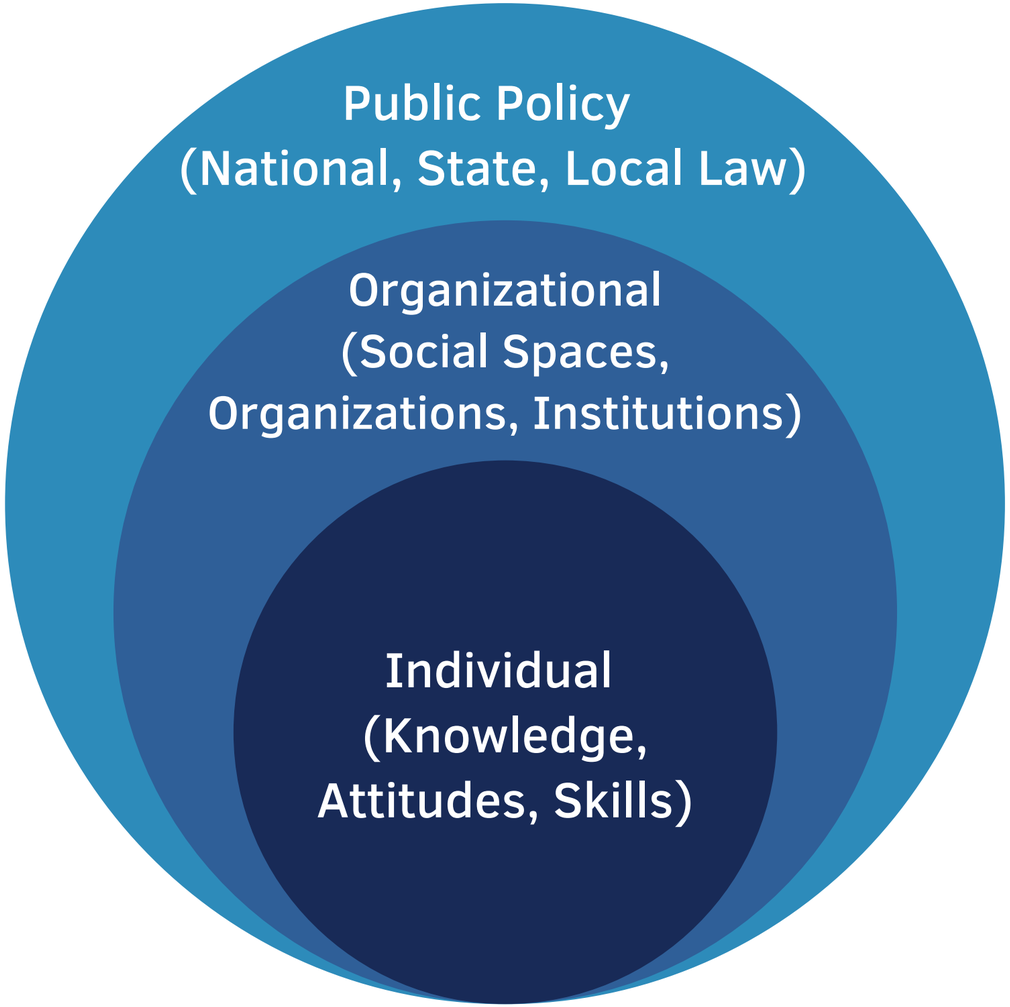
Food insecure neighborhoods are likely to have tobacco and alcohol easily available through the convenience stores rather than healthy foods options.[51]

Best Policies, Programs and Practices to Improve Chronic Disease and Care

Policies, programs, and practices aiming to address chronic diseases ought to reflect four elements:

- Epidemiology and surveillance metrics on chronic illnesses and factors that support healthy choices.
- Initiatives to improve neighborhood safety and access to healthy foods and parks to encourage healthier habits.
- Healthcare interventions that promote early screening and prevention of diseases.
- Functional link between clinical services and community programs to support chronic disease management, promote health information, and improve quality of life[52] for people with chronic illnesses.

Practices followed by an asterisk (*) are ongoing in the county.



Public Policy

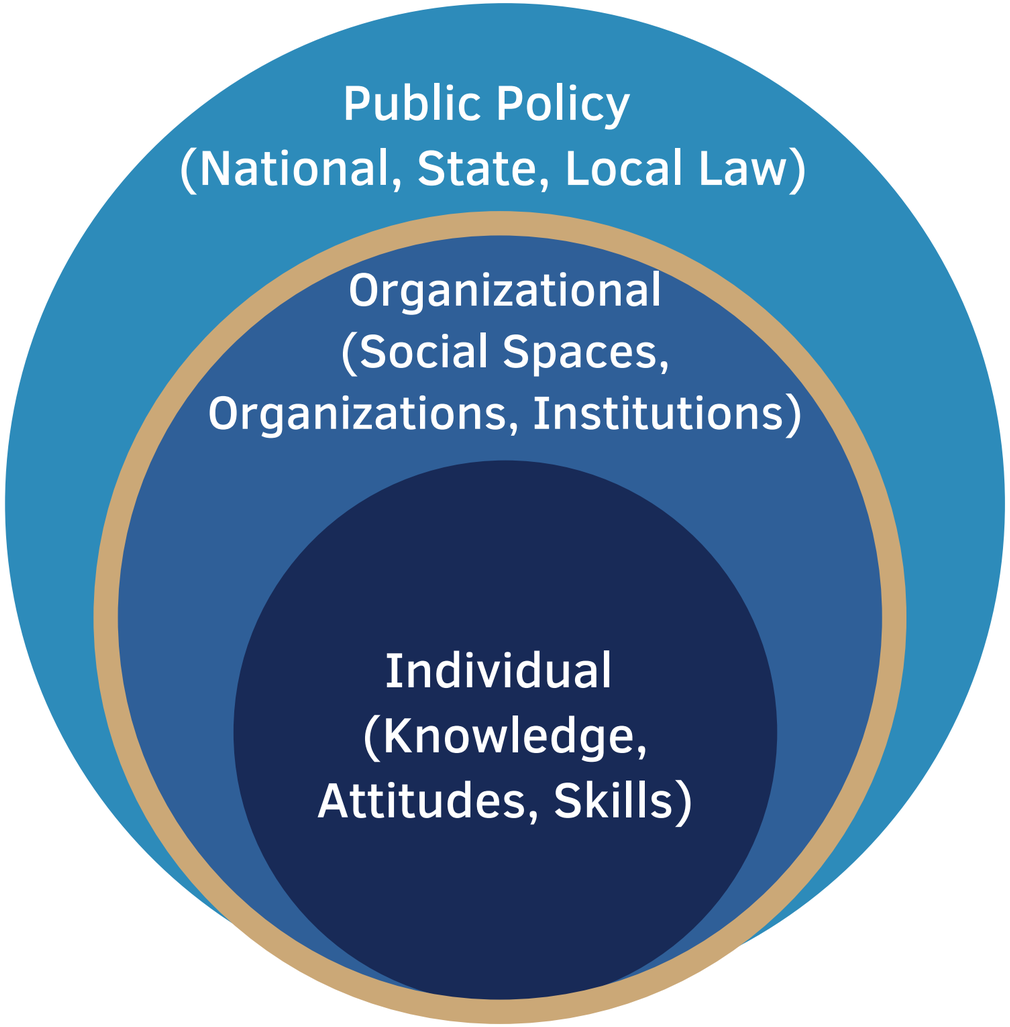
National, State, Local Law

- Encourage early screening for prevention and health management. Continuous documentation and reporting of incidence and prevalence of chronic illness provides epidemiological evidence on what policies and programs can be pursued to improved outcomes.
- Universal health insurance coverage for preventive health services and screening, inclusive of chronic health education and disease management. [53, 54]
- Continue to implement comprehensive smoke-free policies to reduce secondhand exposure to smoking in public places and support hazard free workplaces. [55*]
- Promote zoning policies that ensure creation of accessible public spaces that encourage physical activities.[56]

Organizational

Social Spaces, Organizations, Institutions

- Encourage the involvement of insurance peer navigators in the community to enroll and assist community members to access early and timely preventive and treatment services.[57, 58*]
- Subsidize healthy foods to encourage nutritious eating.[59] Local community organizations and the department of health can collaborate in promoting mobile fresh vegetables and fruit markets in food deserts/swamps in the community.*
- The department of health and community organizations can promote key information on chronic health and nutritional guidelines through different media spaces and meetings.
- Promote preventive services and cancer preventing vaccinations such as human papillomavirus vaccine in the healthcare systems.[52]
- Increase pre-diabetes diagnosis and other screening opportunities in the local community.[60]
- Promote workplace and school wellness programs on nutrition and physical activity as well as identification of health problems, behavioral risk factors, and prevention of chronic illnesses.[61]
- Promote the parks and public spaces access and activities.[56]
- Encourage workplace, faith-based, and community groups sessions on diabetes and chronic health education.[62]
- Integrate screening, risk assessment and referral tools for adverse childhood experiences and substance use in case management, patient care, and school settings.[63, 64*]

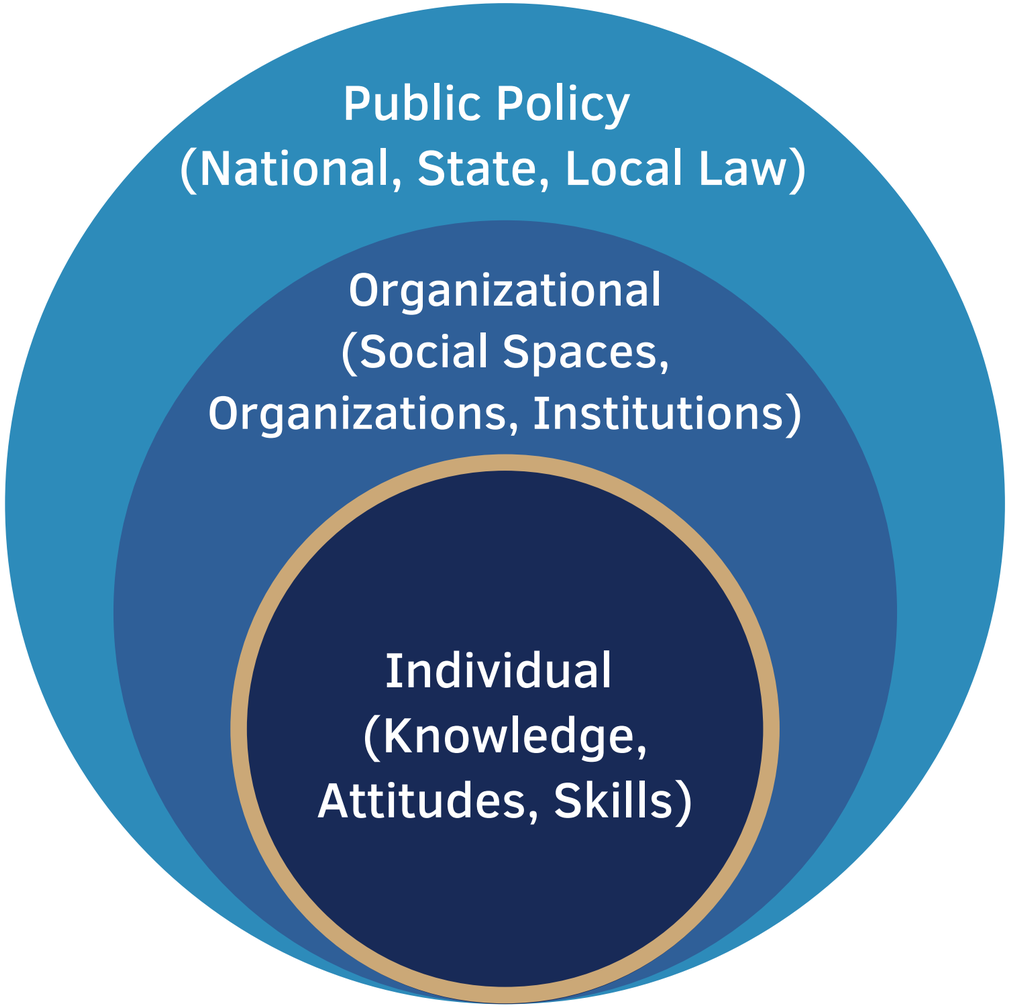


Individual

Knowlege, Attitudes, Skills

The CDC recommends various lifestyle habits to reduce the risk of getting chronic diseases and improve quality of life.[65]

- Engage in regular physical activities such as walking, cycling, and gardening.
- Eat healthy foods.
- Avoid excessive alcohol. Excessive drinking can lead to hypertension, heart disease, stroke, liver disease, and forms of cancer.
- Follow evidence-based screening guidelines, such as United States Preventive Services Task Force (USPSTF) guidelines.



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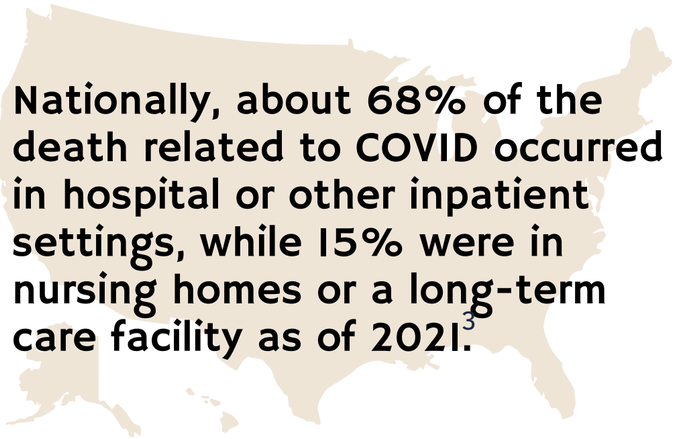
Communicable Diseases

Communicable diseases result from viruses, bacteria and other organisms that people spread to one another through contact with contaminated surfaces, bodily fluids, blood products, insect bites, or through the air.[1] *Examples of communicable diseases include Human Immunodeficiency Virus (HIV), Hepatitis A, B and C, measles, sexually transmitted infections, blood borne illnesses, influenza, and COVID-19.*

- **COVID-19**
- **HIV/AIDs**
- **Sexually Transmitted Infections**
  - **Chlamydia**
  - **Syphilis**
  - **Gonorrhea**

COVID-19

COVID-19 is an infectious disease caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The contagious virus was identified in December 2019 in Wuhan China, and quickly spread to other parts of the world. Symptoms of COVID-19 are similar to symptoms of the common cold, flu, and pneumonia; but the it can harm other parts of the body. Older adults and people with preexisting health conditions are at risk for severe illness from COVID-19. Most people have mild symptoms once they contract the virus.[2]



Nationally, about 68% of the death related to COVID occurred in hospital or other inpatient settings, while 15% were in nursing homes or a long-term care facility as of 2021.[3]

U.S. COVID-19 Deaths[3]	
February 1st to December 2021	
Age	Percent Deaths
Less than 45	4.2%
45-64	21.2%
Above 65	74.6%

COVID-19

The total deaths due to COVID-19 ranked among the top 5 causes of mortality in the US in in 2020. In the county, deaths from COVID ranked third in leading causes of death.[5]

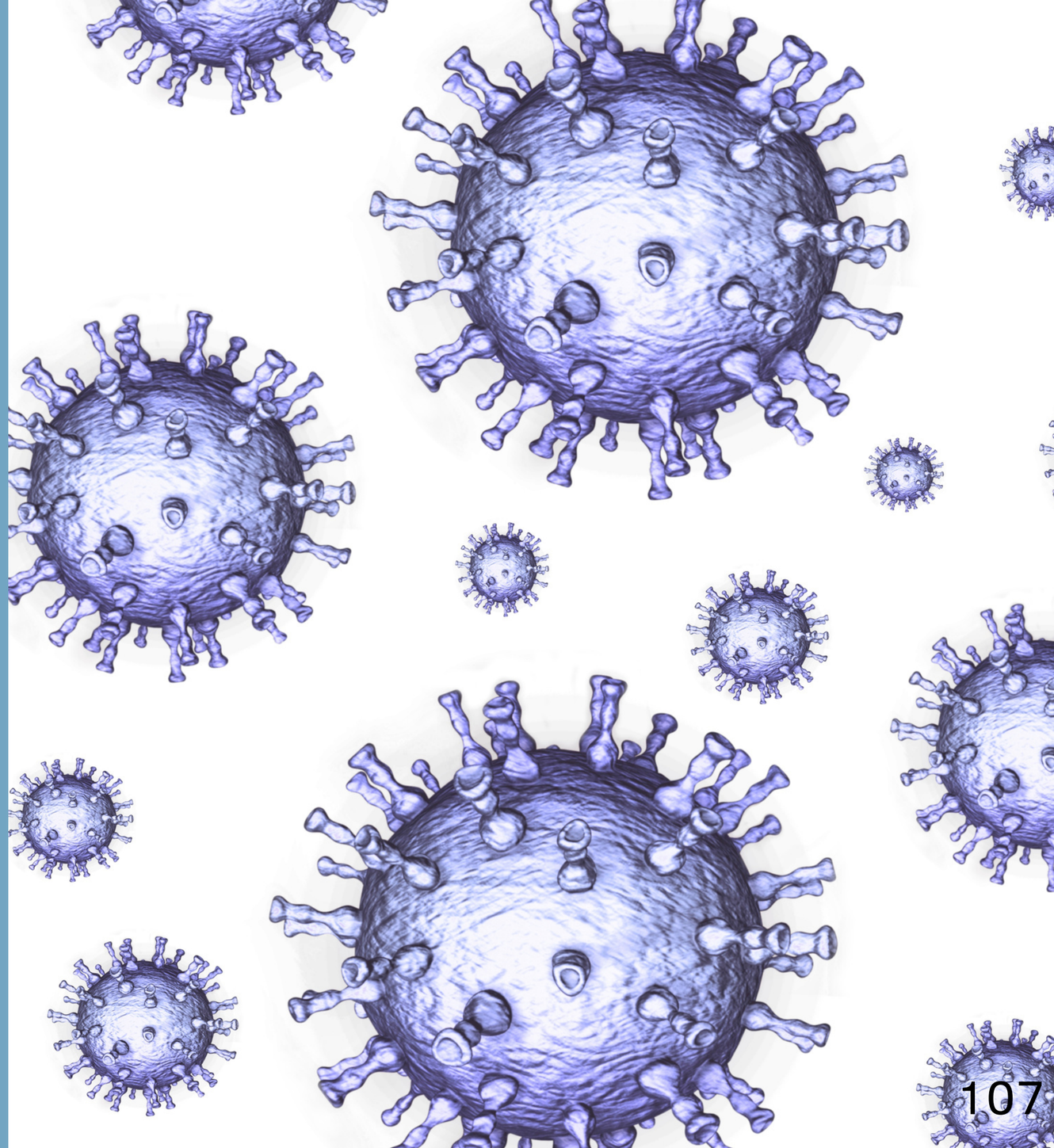
Most death counts are non-Hispanic White population. The death rates per 100,000 in 2020 based on race and the Hispanic ethnicity show that COVID-19 deaths disproportionately affected Hispanic, non-Hispanic Black, and the non-Hispanic American Indian/Alaskan Native populations.[4]

United States	2020 Statistics	
	Death Count	%
Total	385,201	
By Racial Groups		
Non-Hispanic White	232,714	60%
Hispanic	69,427	18%
Non-Hispanic Black	61,443	16%
Non-Hispanic Asian	13,566	4%
NH American Indian/Alaskan Native	4,616	1%
NH Native Hawaiian/Pacific Islander	693	0.2%

Source: National Center for Health Statistics, CDC Website

Today, new variants of the virus are emerging as the vaccination process against SARS-CoV-2 continues. The vaccine reduces the risk of transmission and hospitalization. By December 2021, the National Center for Health Statistics reported about 822,995 provisional deaths from COVID-19 in the United States. COVID-19 was the underlying cause in 90% of the deaths, and a contributing cause of death in 10%.[6]

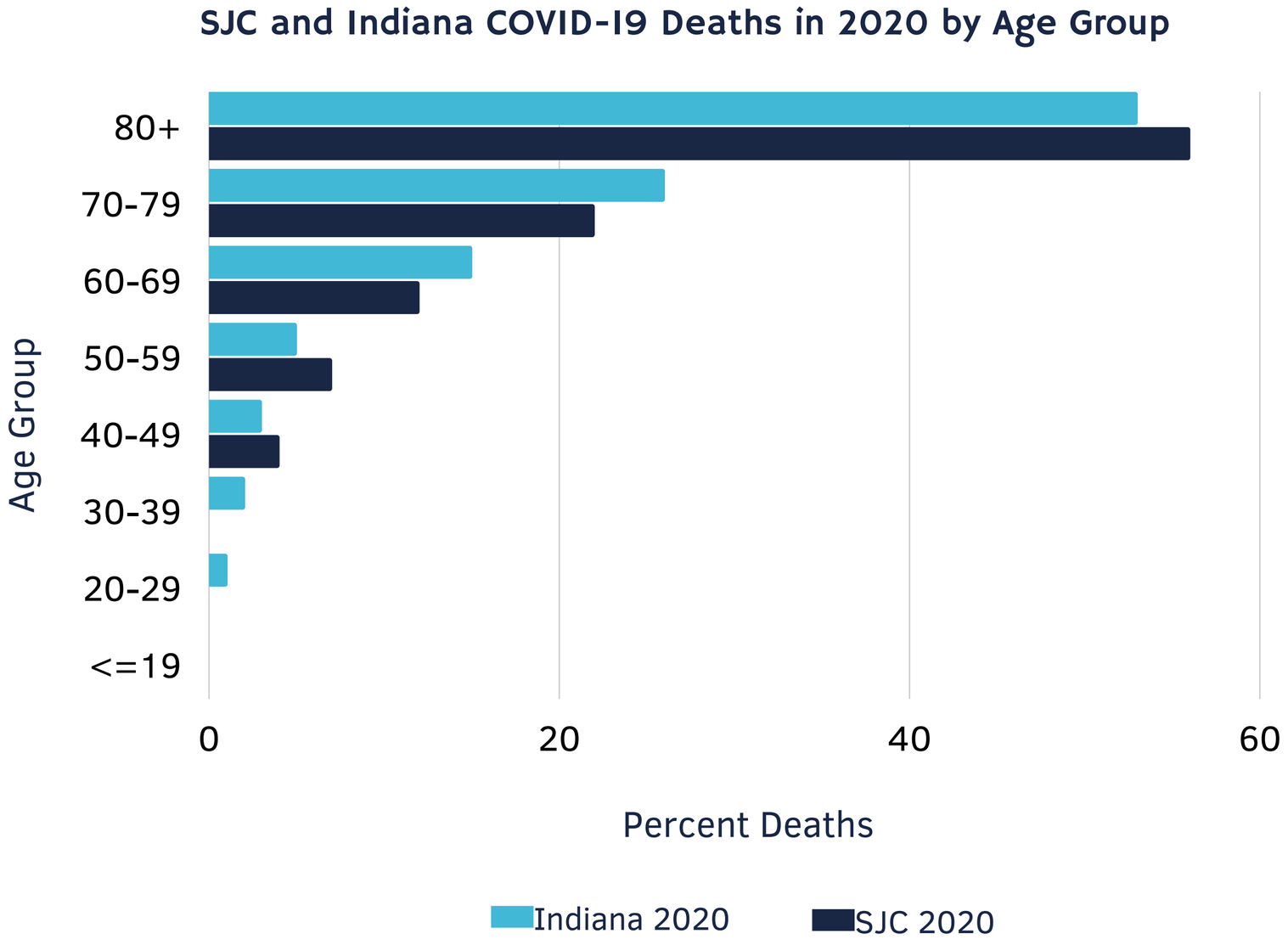
The effects of COVID-19 continued into 2021, although mortality rates may reduce due to availability of vaccines, better detection of the disease, and growing immunity in the population.[5]



Indiana documented 9,511 deaths due to COVID-19 in 2020.

Among the deaths, 48.67% were female and 50.93% were male.

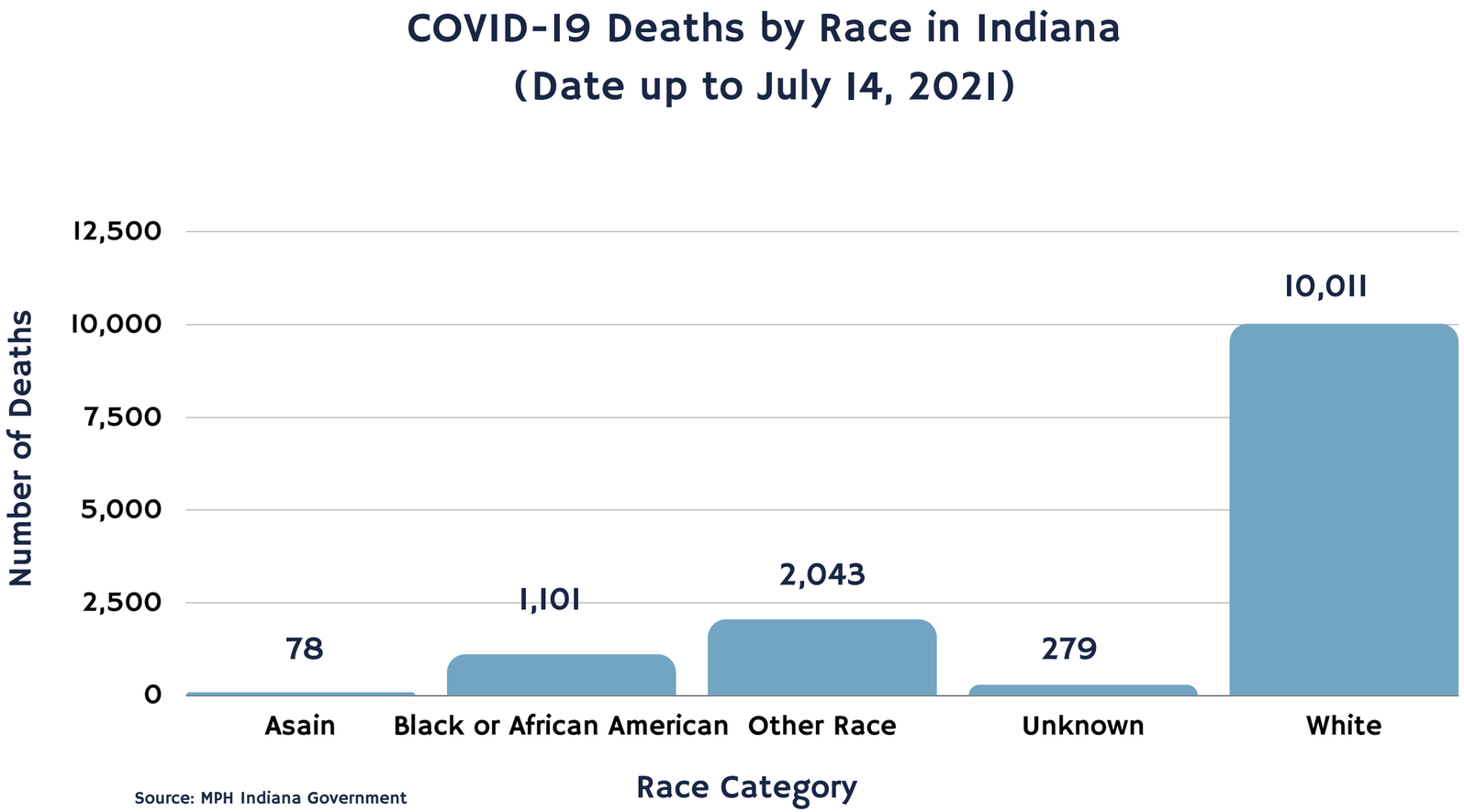
Eight deaths were for people aged 19 years and below.



Source: SJC Department of Health and Indiana MPH

The Indiana race data for COVID-19 is as indicated in the chart.

The ethnicity data showed that Hispanic or Latino deaths were 358, non-Hispanic/Latino were 7942, while 5212 deaths were from unknown ethnicity groups.[7]



By December 31, 2020, four hundred and fifty (450) people had died of COVID-19 in St. Joseph County. People aged 80 and above made up 57% of the deaths followed by those aged between 70 and 79 at 22%. Among the deaths, 51% were female and 49% male.[8]

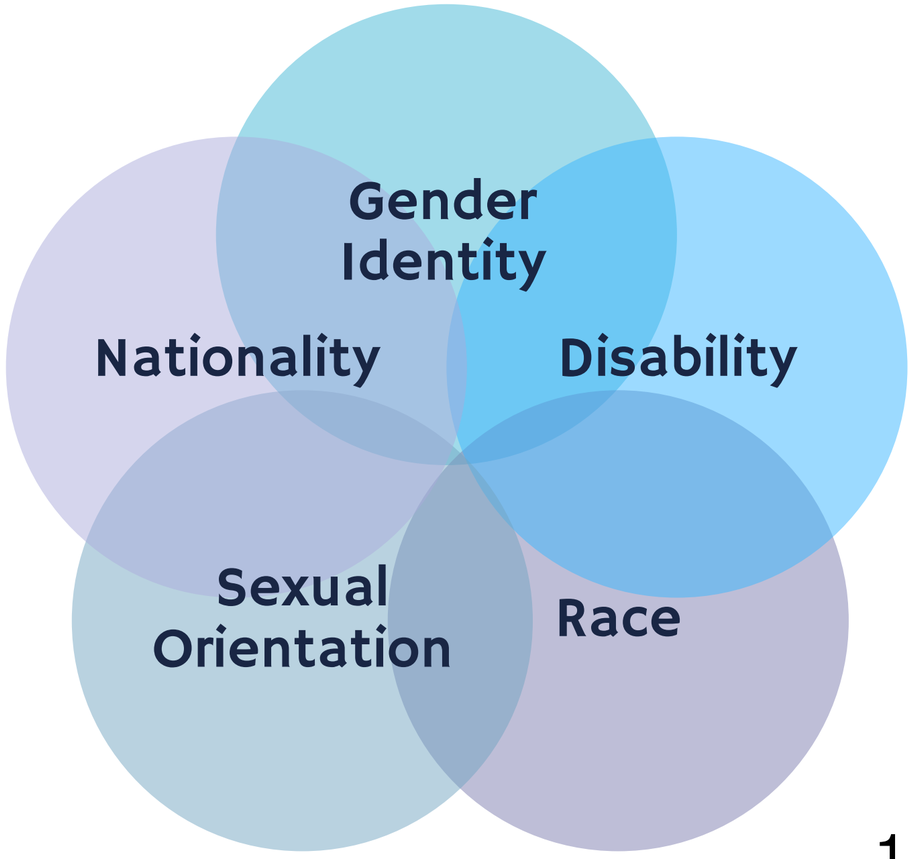
In the county, case counts and percentages were highest in the White population, followed by the Black and Hispanic population in 2020.

When assessed by case rates per 100,000 people – COVID-19 cases were higher in the Hispanic population with 5907 cases per 100,000, followed by the Black and White population. The percentages of cases in 2020 were high among the following age groups; 30-39, 40-49, and 50-59 each at 14%.[8]

COVID-19 and Social Determinants of Health

The intersections of race, socioeconomic status, ethnicity, gender, and geographical location with poor health status due to underlying medical conditions exacerbated the risks and health of the vulnerable and disadvantaged population groups during COVID-19. High rates of incidences and hospitalizations were noted among the Black and Hispanic population during the crisis.[9]

The levels of unemployment for women increased during the COVID-19 pandemic. Closure of schools and childcare services added to the burden of unpaid care work done by 75% of women globally.[10]
School closures magnified food insecurity among children and families that participate in the lunch programs in the US. The homeless population and people living in congregate settings were at increased risk of COVID-19.[11]



Social distancing measures, lockdowns, and requirements to work from home caused economic distress. Unemployment, reduced income, and financial instability prevented many families from meeting all of their basic needs.

COVID-19 amplified the adverse effect of social determinants that had already[11] *adversely affected health, particularly of vulnerable and marginalized populations. This amplification shone a stark light on the need for improved social protections, fairer distribution of resources, and greater empowerment of vulnerable and marginalized individuals.*

HIV/AIDS

Human Immunodeficiency Virus (HIV) attacks the body's immune system and weakens its immunity against infections. When the individual's immune system becomes severely compromised, they become susceptible to opportunistic infections. This condition is called the Acquired Immunodeficiency Syndrome (AIDS).[12]

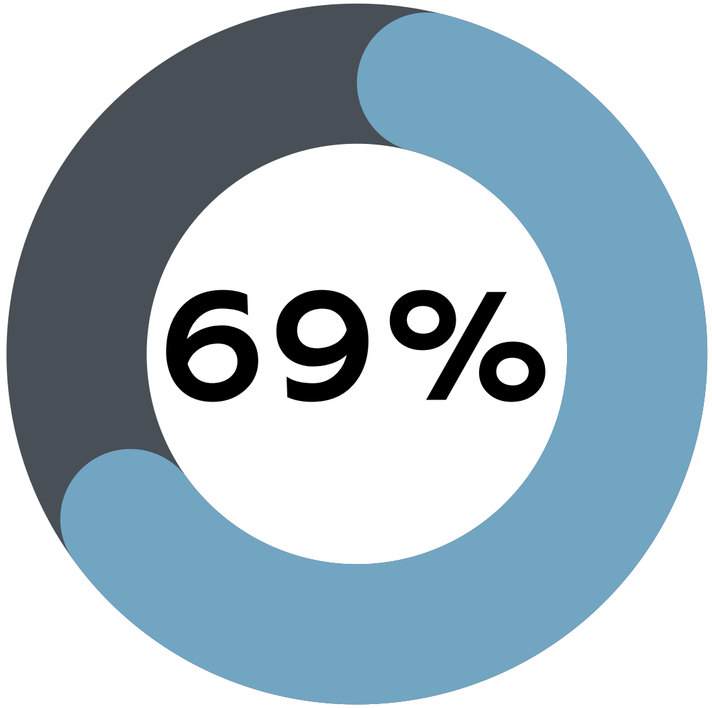
Without treatment, HIV progresses through three stages:

- **Acute HIV infection**
- **Chronic HIV infection**
- **Acquired Immunodeficiency Syndrome (AIDS)**[14]

There is no cure for HIV, but proper medical care can help people with HIV to live long, healthy lives and protect their partners.

HIV can be managed using antiretroviral (ARV) treatment. ARV treatment also prevents HIV transmission from mother to child during pregnancy, delivery, and breastfeeding.[12]

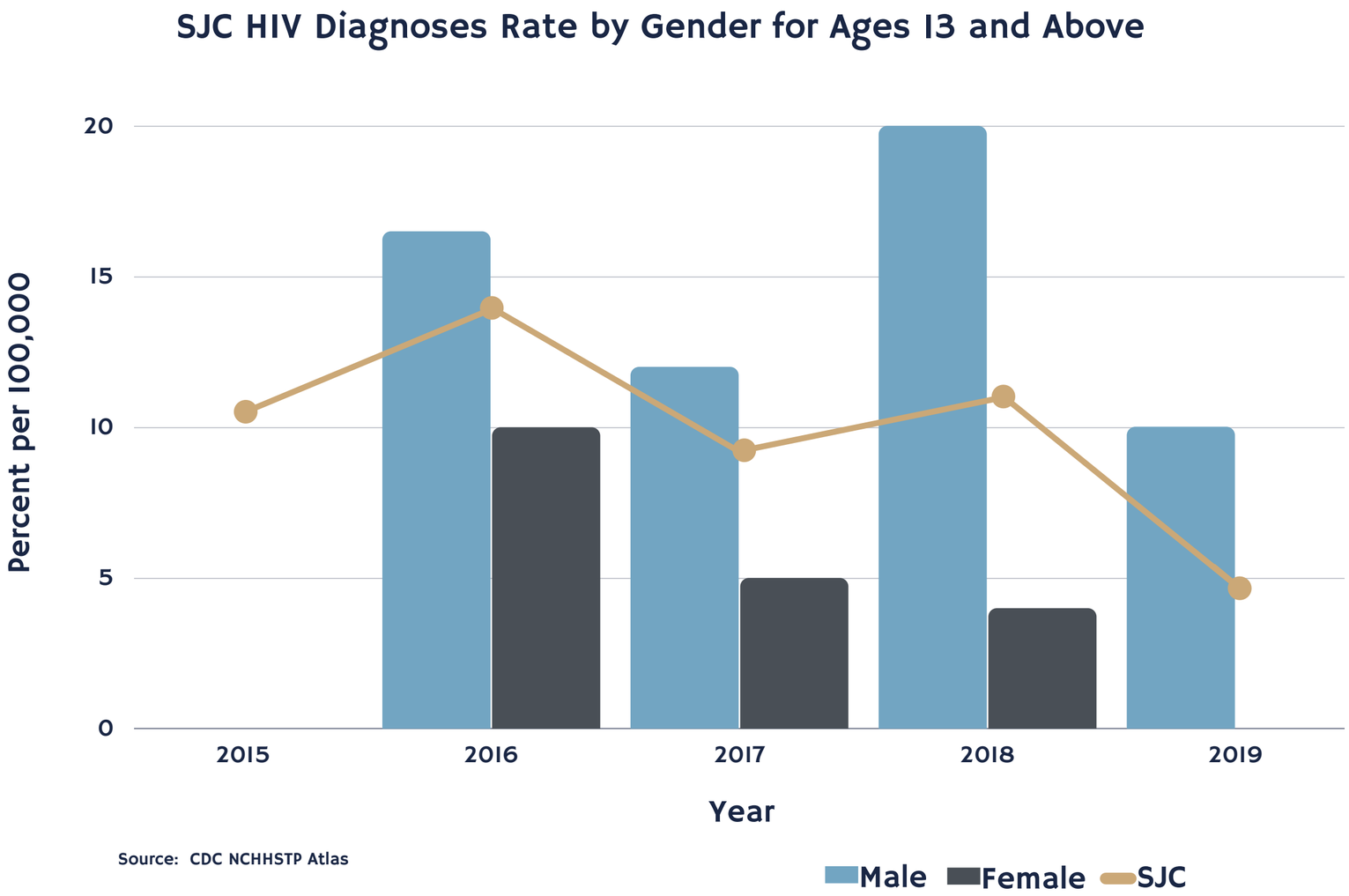
Pre-exposure prophylaxis (PrEP) can reduce the risk of contracting the disease.[13]



of the new HIV diagnosis in the United States in 2019 were among gay and bisexual men. When disaggregated by race/ethnicity, the Black population had the highest percentage (37%) of HIV diagnosis, followed by the Hispanic (32%) and the White population (25%) in 2019.[15]

The rates of HIV diagnosis in St. Joseph County are shown here. In 2018, the diagnosis rates in SJC for ages 13 and older were 12 cases per 100,000 and the United States rates were 13.6.

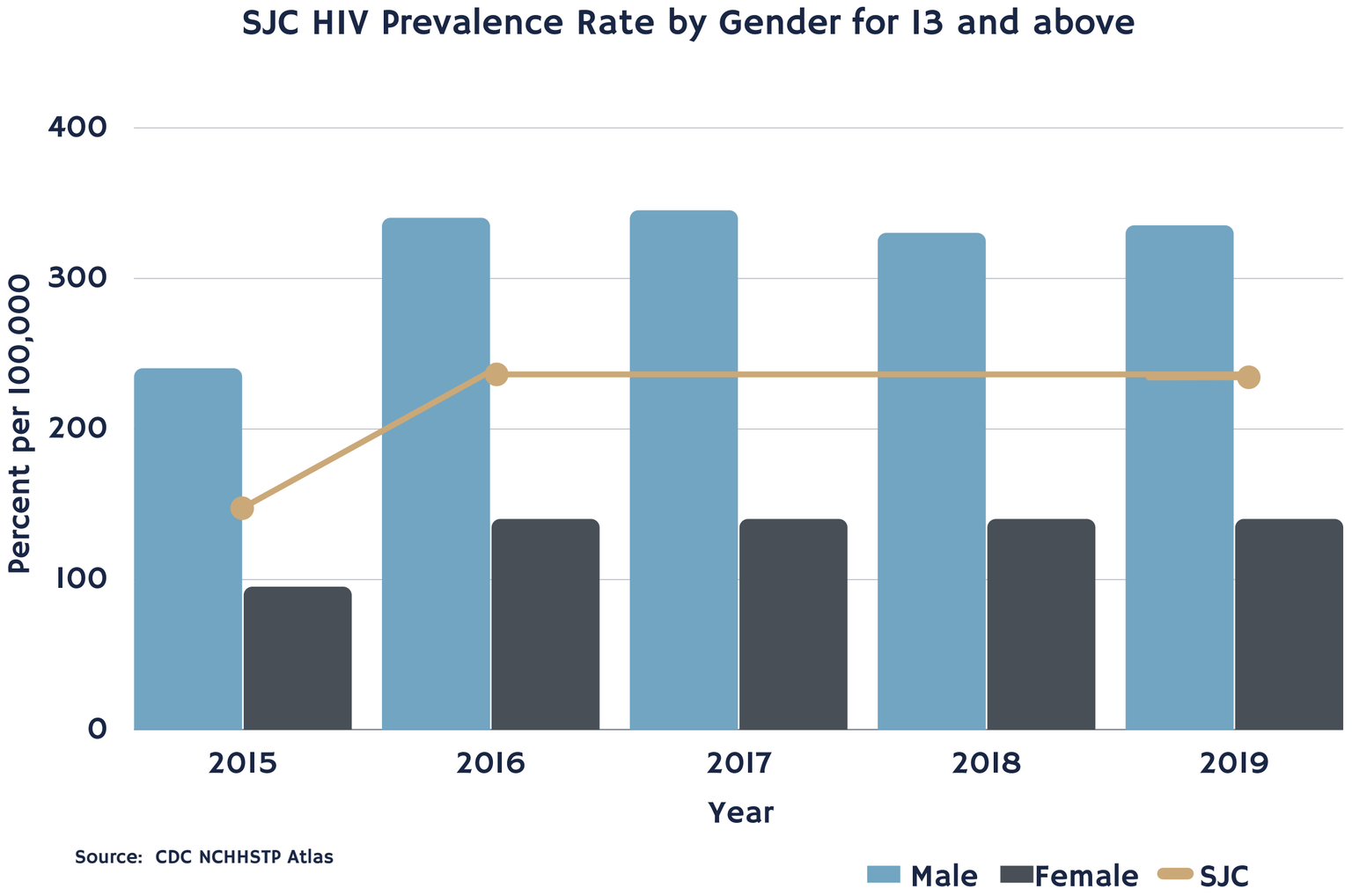
More men than women were diagnosed with HIV in the county between 2016 and 2019.[16]



Source: CDC NCHHSTP Atlas

Between 2015 and 2019, HIV prevalence rates among males in the county were greater than two times those of females.

In 2019, prevalence was also high in the age groups 35-44 and 45-54 years with 353.7 and 511.9 rate per 100,000 population.[16]



Source: CDC NCHHSTP Atlas

Sexually Transmitted Infections: Chlamydia

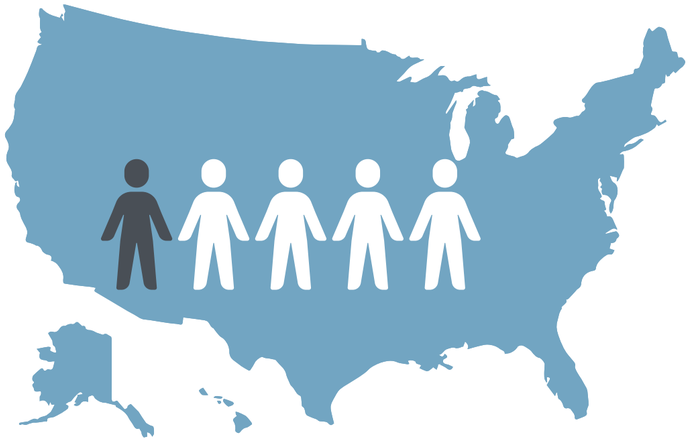
Chlamydia is a sexually transmitted infection (STI) affecting both men and women. Chlamydia can be easily cured but if left untreated it can lead to serious infections.

Chlamydia infections can lead to pelvic inflammatory disease, tubal infertility, ectopic pregnancy, and chronic pelvic pain. It is the most frequently reported bacterial STI in the United States.[18]

Most chlamydia cases are asymptomatic and this presents a challenge in reducing the incidence. Asymptomatic individuals can still transmit the infection to a sexual partner.[19]

In 2018, one in 5 people in the United States had a STI. In 2018, there were 26 million new cases of STIs nationally.

About 50% of these new diagnosis were among young people aged 15 - 24 in the US.[17]



The rates were highest in the age group 20-24 at 2,797 new cases, followed by 15-19 years at 2,237 cases, and 25-29 at 1,331 cases per 100,000 in Indiana.[20]

Cases by gender are seen here.
The rates in the county are higher than those in the state. Chlamydia rates in females are twice those of men in SJC as well as in Indiana.

Chlamydia Rates per 100,000 by Gender in 2019		
	SJC	Indiana
Female	866.3	700.4
Male	440.4	346.9

Source: CDC NCHHSTP Atlas[20]

In SJC, there were 659 new chlamydia cases per 100,000 people in 2019 for all age groups.

The rate was a decrease from 687 new cases per 100,000 in 2018.

The 2019 rate is higher than the Indiana rate of 526 chlamydia cases per 100,000 population.

Chlamydia Rates by age Groups in 2019 (Rates per 100,000)		
Age Group	SJC	Indiana
0-14	41.7	20.3
15-19	2,504.6	2,337.9
20-24	3,273	2,797.4
25-29	1,643.4	1,331.7
30-34	812.3	650.8
35-39	421.8	318.8
40-44	207.9	169.8
45-54	76.8	59.7
64-64	11.7	17.7

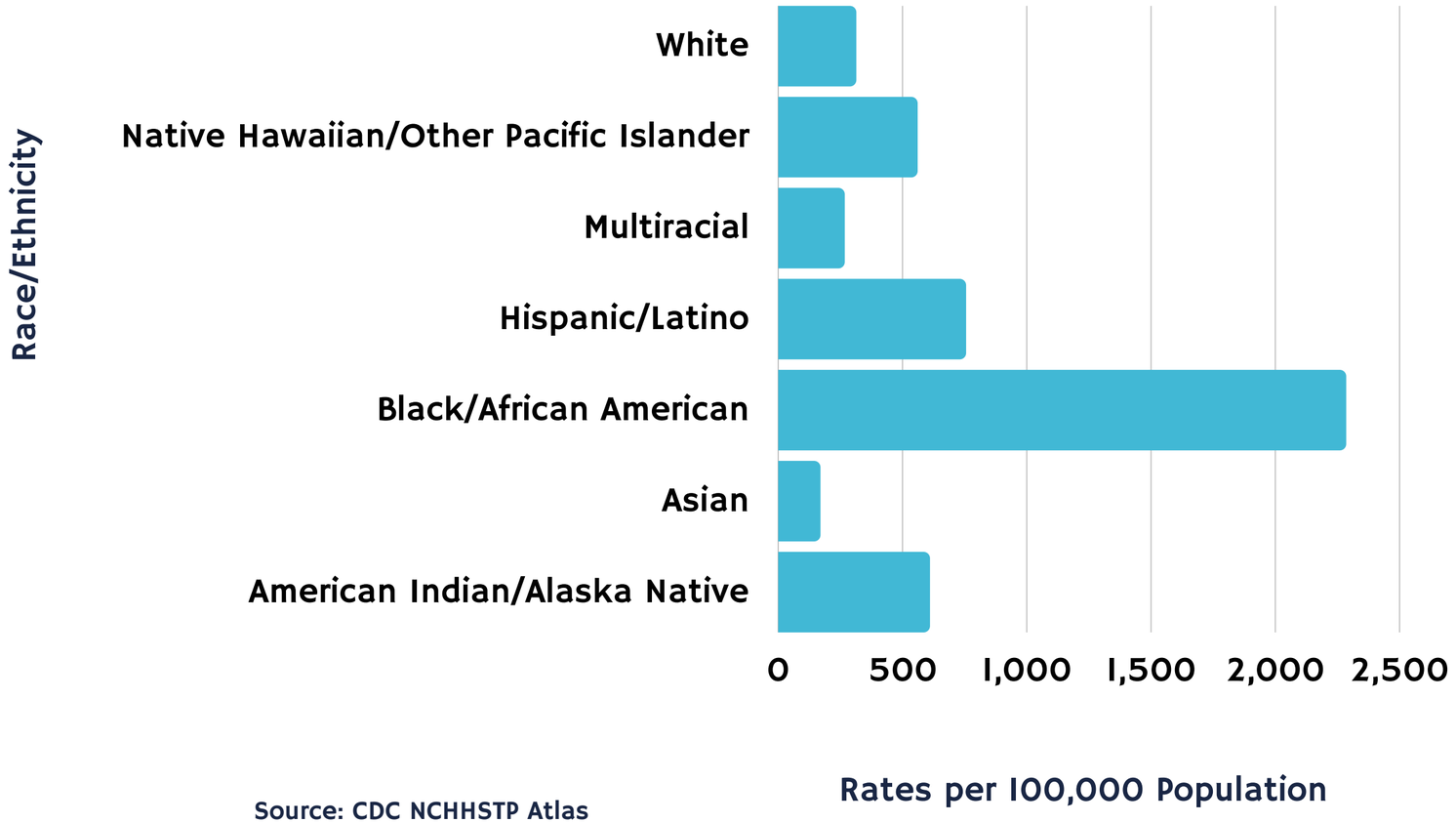
Source: CDC NCHHSTP Atlas[20]

The breakdown of the chlamydia rates by race/ethnicities and sex groups in the county is shown here.

Chlamydia rates in the county are disproportionately higher in:

- **Age groups 15-24**
- **Female population**
- **Black/African American groups**

SJC Chlamydia Rates per 100,000 Population, All Age Groups, Both Sexes, and Race/Ethnicity in 2019



Source: CDC NCHHSTP Atlas

Syphilis and Gonorrhea

Syphilis and gonorrhea are other sexually transmitted diseases that can lead to serious complications if left untreated. Like chlamydia, the rates have surged over the years, and the most affected age groups are those between 20 and 29 years.

Syphilis occurs in four stages that have different signs and symptoms:

1. **Primary**
2. **Secondary**
3. **Latent**
4. **Tertiary**

The initial symptoms show up in 21 days but can also range between 10-90 days. The progression of symptoms can last for years.[21]

In 2019, St. Joseph County had 2.9 cases of primary and secondary syphilis per 100,000 people which was a decrease from 4.4 in 2018.

In 2019 the rate in males with syphilis infection in Indiana was 8.5 compared to 6 per 100,000 persons in the county.

The infection rate is high in the Black and Hispanic/Latino population groups in the county and state.[20]

Gonorrhea and Syphilis Rates by Age Groups in Indiana 2018 –2019 (Rates per 100,0000)				
Age Group	Gonorrhea 2018	Gonorrhea 2019	Syphilis 2018	Syphilis 2019
0-14	5.8	7.6	0	0
15-19	485.7	688	3.5	4.9
20-24	752.6	1,074.8	17.1	4.9
25-29	614.4	731	18.8	15.6
30-34	369.9	400.4	12.7	-
35-39	220.8	178.2	10.4	5.9
40-44	111.9	129.9	5.3	-
45-54	54.9	57.6	5.0	6.4
55-64	16.2	14.7	2.4	-
65+	2.2	4.5	0.3	-

Source: CDC Atlas Plus 2019[20]

Gonorrhea is the second most common reported STI in the United States. *It can also be transmitted through the birth canal from mother to baby during delivery.*[22]

The increased resistance to recommended treatment has led to antibiotic-resistant gonorrhea that complicates the ability for successful treatment.[23]

Congenital syphilis results from transmission of syphilis to an unborn baby by the pregnant woman.

If left untreated, it can result in complications for the baby.[21]

Gonorrhea disproportionately affects the Black and the Native Hawaiian/ Other Pacific Islander (NHOPI) populations in Indiana. In 2019, the rates of new gonorrhea cases in those population groups were 1,087 and 785 per 100,000 people respectively. The rates in male and female are 184 and 170 cases per 100,000 population respectively.[20]

Across all population groups in the county, there were 239 cases of gonorrhea per 100,000 people in 2019.

This was a decrease from 288 in 2018. St. Joseph County is among the top 5 counties with high infections of Gonorrhea and Chlamydia in Indiana.[20]

Why are HIV and Sexual Transmitted Infections an important measure in health equity?

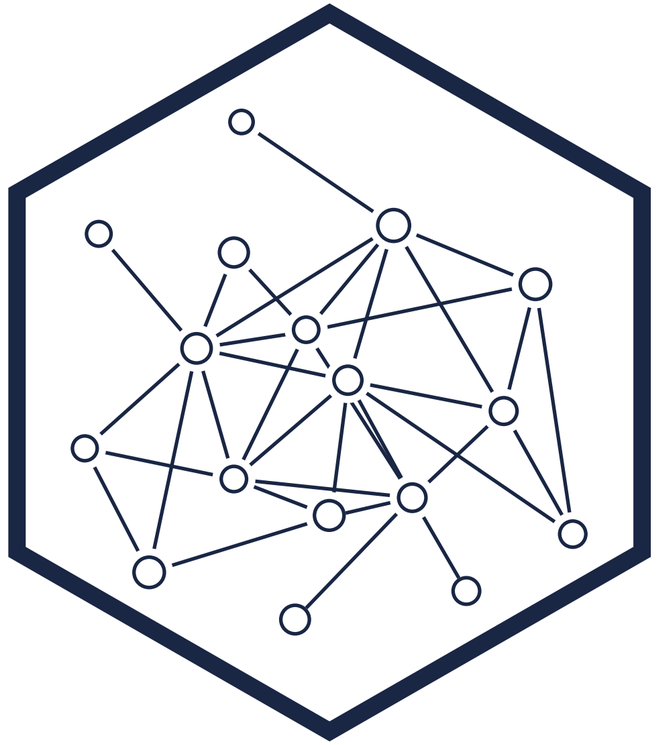
The estimates of HIV incidence, prevalence, and percentage of diagnosed infections among people living with HIV (who are aware of their infection) are important in determining whether prevention efforts are reducing the annual number of new infections and achieving prevention outcomes.[23]

To attain the goals of Ending the HIV Epidemic (EHE) one key objective is increasing the percentage of persons living with HIV who are aware of their infection. These people can then be linked to care and receive treatment to reduce illness and viral load levels and potentially reduce transmissions.[23]

Chlamydia incidence rates and other STIs are attributed to unsafe sex or needle sharing. In addition to the increased risk of morbidity and mortality, STI infections have a high economic burden on the society.

About 16 billion dollars were spent in direct medical costs related to STIs in the US in 2018. Treatment of STIs reduces the risks of complications.

Chlamydia disproportionally affects adolescent minority women.[24, 25]
This can be attributed to social barriers such as lack of health information and limited access to healthcare services.



In St. Joseph County, we have strong community organizations addressing the STIs by encouraging screening and promoting prevention education.

COVID-19 and Communicable Diseases

A comparison between pre-pandemic and pandemic STI testing encounters for adolescents shows that the numbers of tests decreased and positivity increased. This is associated with disruptions in the testing systems during the pandemic.[26]

COVID related sexual behavior change may also drive the STI/HIV transmission downwards. In contrast, this may also reduce health seeking behaviors. The redeployment of healthcare resources and personnel to address COVID-19 likely reduced the capacity and services in STI and HIV control programs.[27]

The non-pharmaceutical public health interventions during the COVID-19 pandemic are associated with the decrease in pediatric influenza related hospitalizations,[28] **and the reduced transmission of common respiratory viruses in the United States.**[29]

Employment and Income

Factors such as poverty, educational levels, income, residential segregation, and social inequality influence risky sexual practices.[30] *Risky sexual practices include intercourse with multiple partners, early sexual activity among adolescents, transactional sex for drugs or money, having sex with partners who have substance use disorder, and unprotected sexual intercourse.*[31]

Research conducted in 66 large metropolitan areas in the United States showed that an increase in minimum wage resulted in protective effects on STI rates among women. A structural shift towards high incomes would help reduce poverty and other economic disparities in the community.[32] *Such change is shown to translate to better health outcomes.*

Additional variables such as Supplemental Nutrition Assistance Programs (SNAP),[33] *Temporary Assistance for Needy Families (TANF), and Earned Income Tax Credit (EITC) and EITC refund policies*[34] *may potentially influence the total income of low-income populations and improve their health outcomes.*

Neighborhood and Built Environment

Residential segregation of Black communities is hypothesized as resulting in STI disparities through discrimination in access to health services and related information. This segregation can lead to poverty, lower male to female gender ratios linked to disproportionate incarceration and mortality of Black men, and eventual racially segregated sexual networks that facilitate transmission of infections.[35]

Residential instability has been associated with increased rates of chlamydia and gonorrhea,[36] and HIV sexual risks infections. Landlord-related forced moves and evictions are associated with increased transactional sex,[37] impact social capital, and predispose individuals to sexual vulnerability. Neighborhood conditions, social contexts, and behavioral factors are linked with STI acquisition.[38] Addressing community and individual needs can help promote prevention and early interventions.

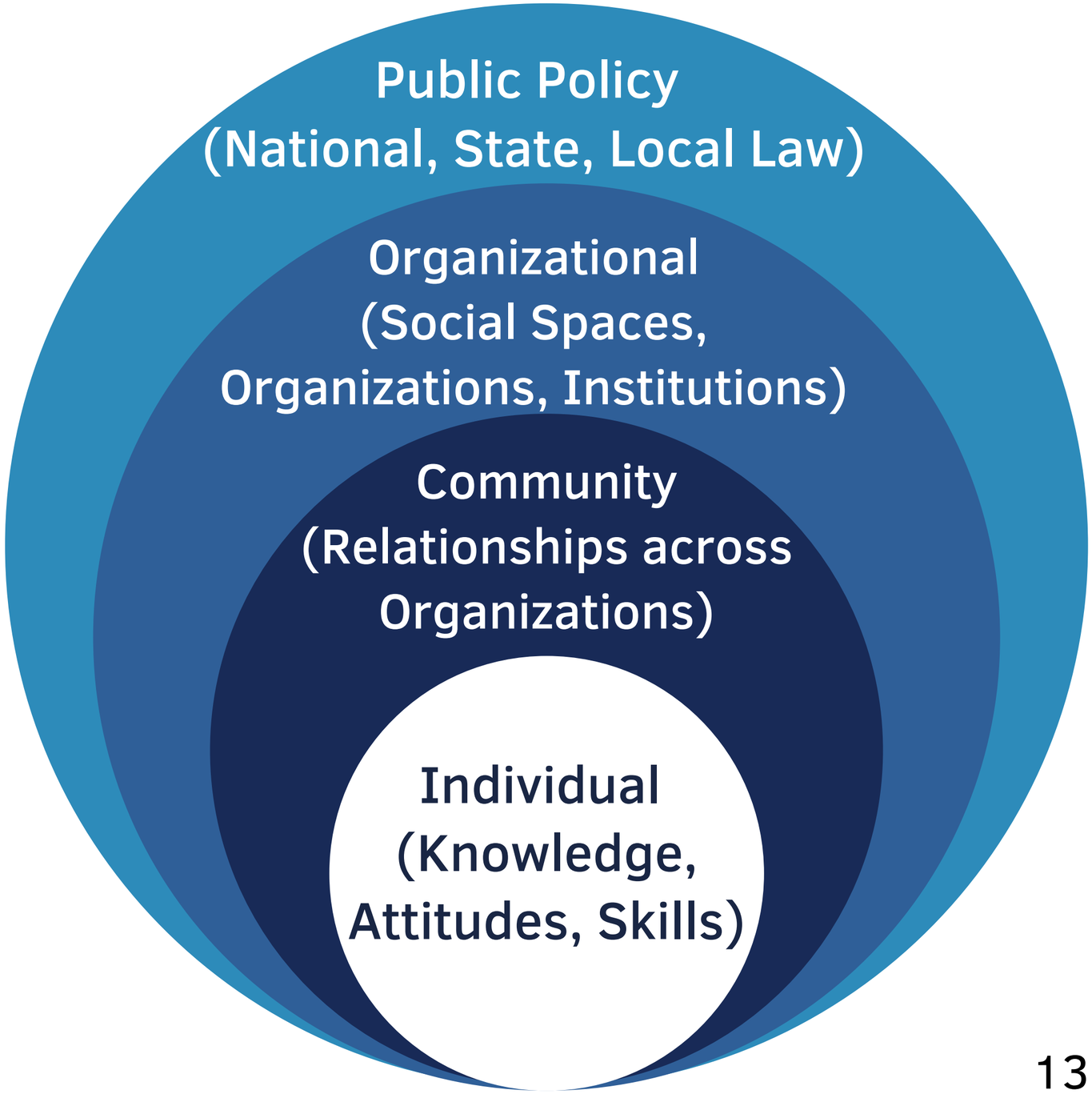
Education

Among the young people, education is a key factor in controlling STIs.

Quality theory-based information, accessible and effective health clinics, and improved socioeconomic environments reduce the incidence of STIs.[39]

Educational interventions can address stigma and promote screening in sexual health.[40]

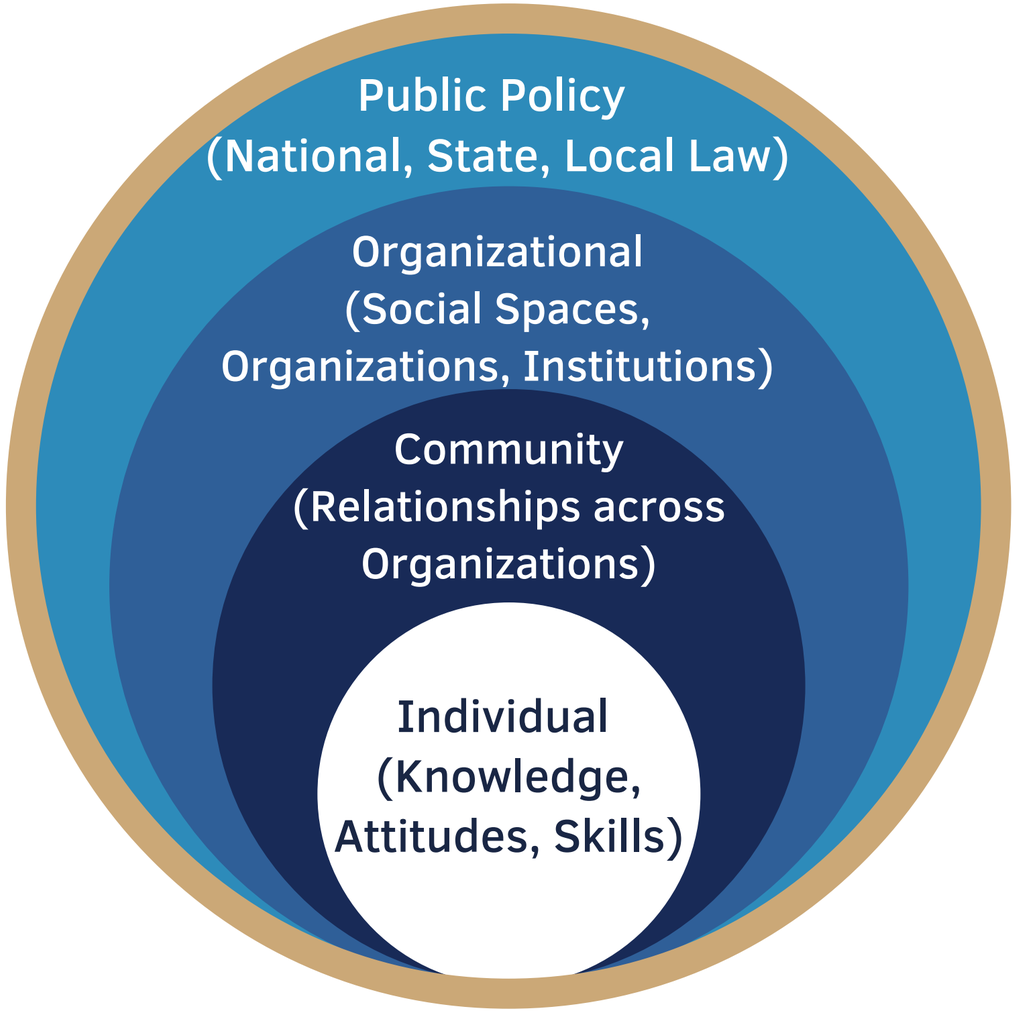
Best Policies, Practices, and Programs in Addressing Communicable Diseases



Public Policy

National, State, Local Law

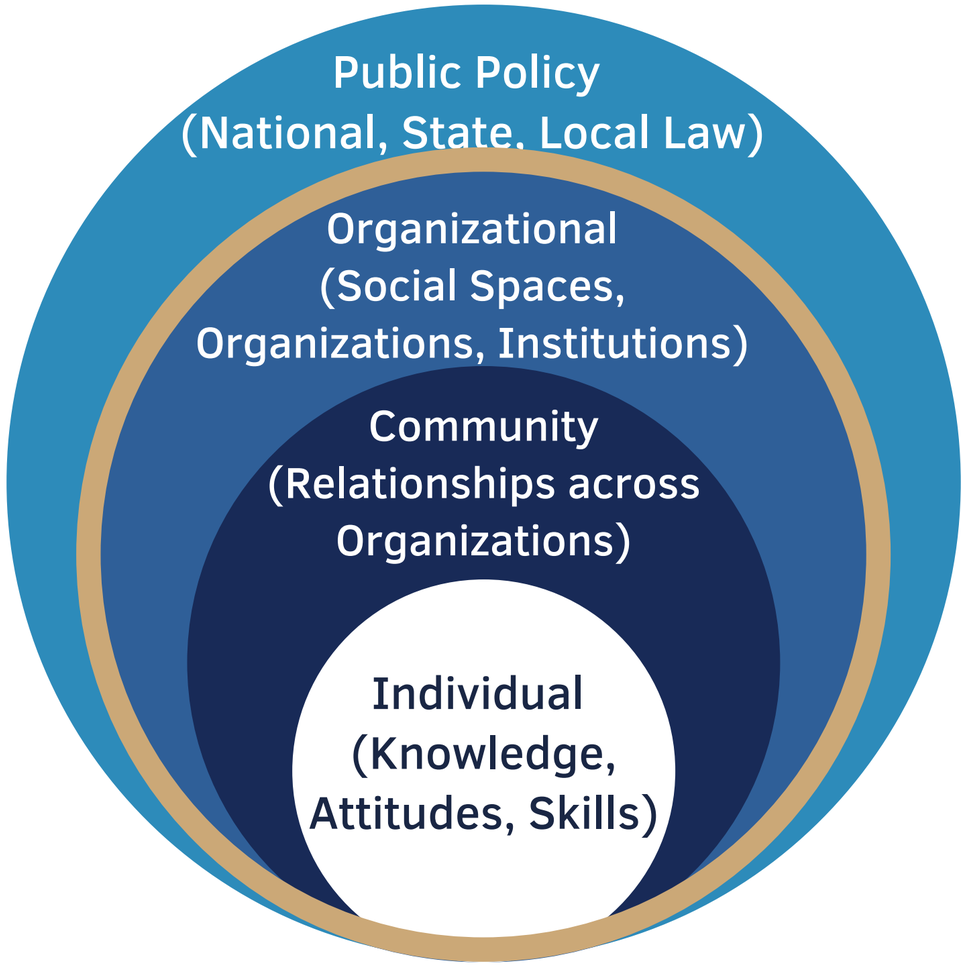
- Advocate for increased minimum wage. Higher incomes are associated with reduced incidence of STIs.[19, 28]
- Improve adolescent clinical services through diagnosis, treatment, and counselling as well as education and research.[34]
- Frame the STI narrative as a health and wellness issue to destigmatize sexual health strategies.[19]
- Expand affordable prevention, screening, care, and treatment in populations vulnerable to infections and communicable diseases.[19]



Organizational

Social Spaces, Organizations, Institutions

- Provide tailored health information and computer-mediated decision making, behavior change, and emotional support via interactive options such as emails, videoconferencing, and phone calls.
- Provide sexual and reproductive health resources free of charge or at a reduced cost in community and youth-serving settings such as libraries, movie theaters and community centers.
- Provide prescriptions or medications to patients diagnosed with STIs to give to their partners, without requiring the partner to see a provider. This is also known as patient-delivered partner therapy.
- Elicit information about sex or needle sharing partners from STI-positive patients and notify partners of risk, testing, and services such as partner counselling and referral services. [41]
- Encourage screening practices for communicable diseases and provide accessible confidential STI services to adolescents. [42]
- Increase awareness of the Human Papilloma Virus (HPV) vaccine and vaccine recommendation by health providers.[19]
- Connect individuals to resources that can help address poverty, housing and food insecurities.[19]
- Promote provider education, awareness, and training on adequate screening and treatment.[19]
- Expand surveillance on emerging infections and programs to reduce transmission in the community. [43]



Community

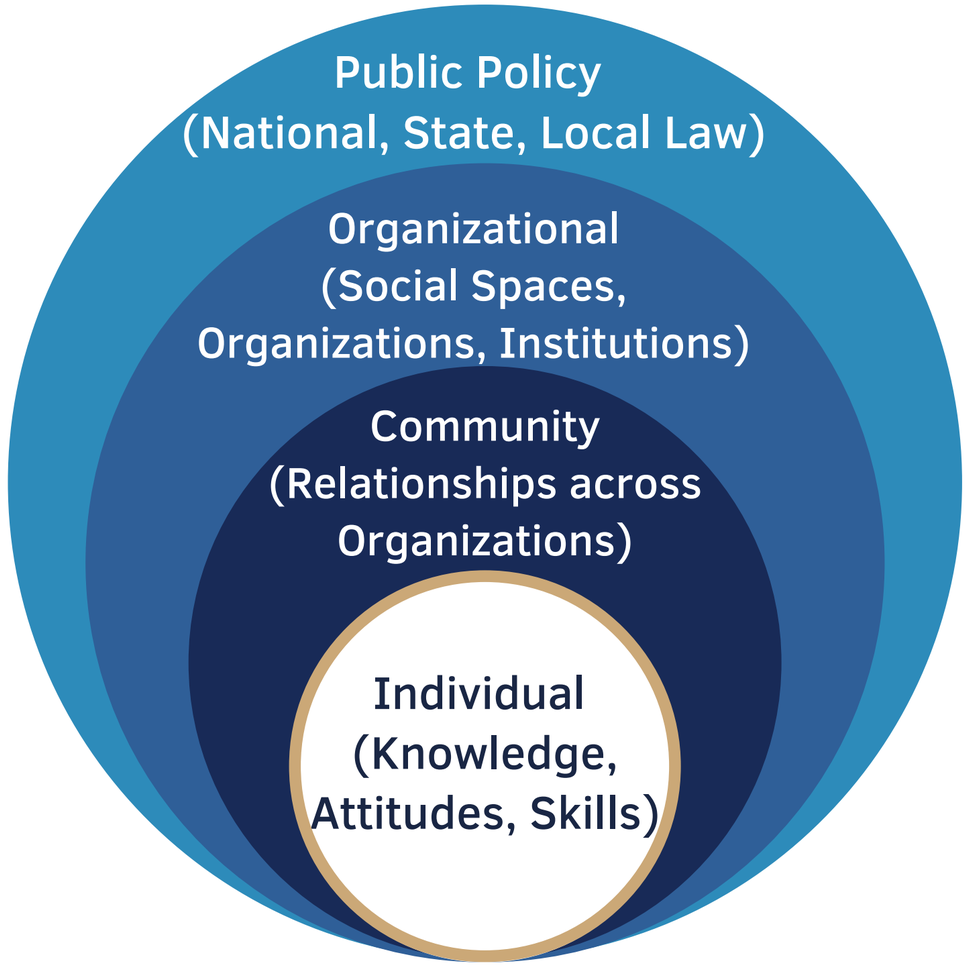
Relationships Across Organizations

- Education, support, and training at individual, group, and community levels. Include mass media campaigns to disseminate information on safe sex behaviors and prevention of STIs.[41]
- Community engaging initiatives focused on sexual and reproductive health, as well as promote screening, distribution of prevention services and information, and treatment in high incidence areas.[44]
- Implicit bias training for care providers.[19]

Individual

Knowledge. Attitudes, Skills

- Seek screening services annually once sexually active.[19]
- When you have the symptoms of an infectious illness such as a fever for flu, limit social interactions and stay at home to control spread of disease.[45]
- Get vaccinated with the appropriate vaccine to prevent complications in the event of an illness.[45]



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Injuries and Violence

Injuries refer to harm caused by accidents, falls, weapons, hits and other external elements. Injuries can range from minor to life threatening.[1]*Injuries and violence related deaths are indicators of community safety. Violence is a major public health problem. Violence and injuries exert both medical and socio-economic burdens on victims and their communities.*[2]

Exposure to violence has long-term effects on the physical, behavioral, and mental wellbeing of individuals and communities.[3]*The direct and indirect costs of violence extend beyond homes and victims to neighborhoods and communities.*[2]

Illnesses or deaths due to accidents and violence including physical and environmental factors, conditions such as injury, substance misuse, homicide, suicides, medical misadventures or abnormal reactions, war operations, and legal interventions are referred to as external causes of morbidity or death.[4]

- **Unintentional Injuries**
- **Suicides and Homicides**
- **Adverse Childhood Experiences**
- **Lead Poisoning**

Unintentional Injuries

Unintentional injuries are among the leading causes of death in the US. People under the age of 35 are at highest risk of dying due to unintentional injuries. The top three causes of fatal unintentional injuries are motor vehicle crashes, poisoning, and falls.[5]

In the United States in 2018, there were 24.5 million emergency department visits for unintentional injuries. Emergency department visits related to injury, poisoning and adverse effects were 37.9 million nationally in 2018.[6]

In 2019, the rate of deaths due to all accidental injuries in the country was 52.7 per 100,000 people, ranking as the third highest cause of death in the nation.[7]

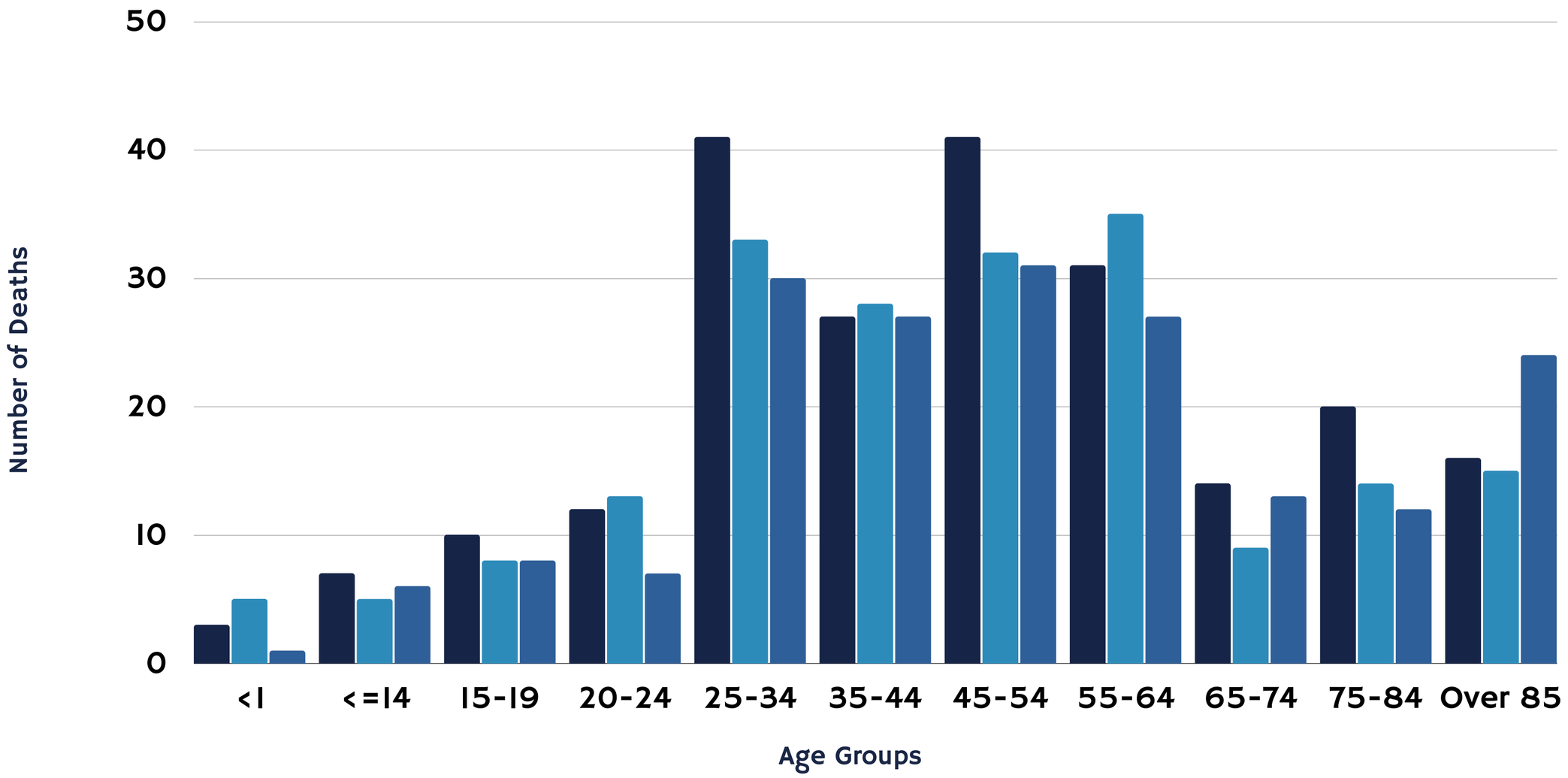
Unintentional injuries are among the top 5 causes of death in SJC with 266 deaths between 2018 and 2019. For every 100,000 people, 47.2 died from accidental injuries.[8]

In 2017, the death rate due to motor vehicle accidents per 100,000 people in the county was 14.77 and decreased to 12.1 in 2019. The accidents were nearly 1.8 times higher in males compared to those among females.[8, 9]

Non-transport accidents that include accidental poisoning and exposure to noxious substances were high among those aged 25 to 64 years between 2017 and 2019.[9]

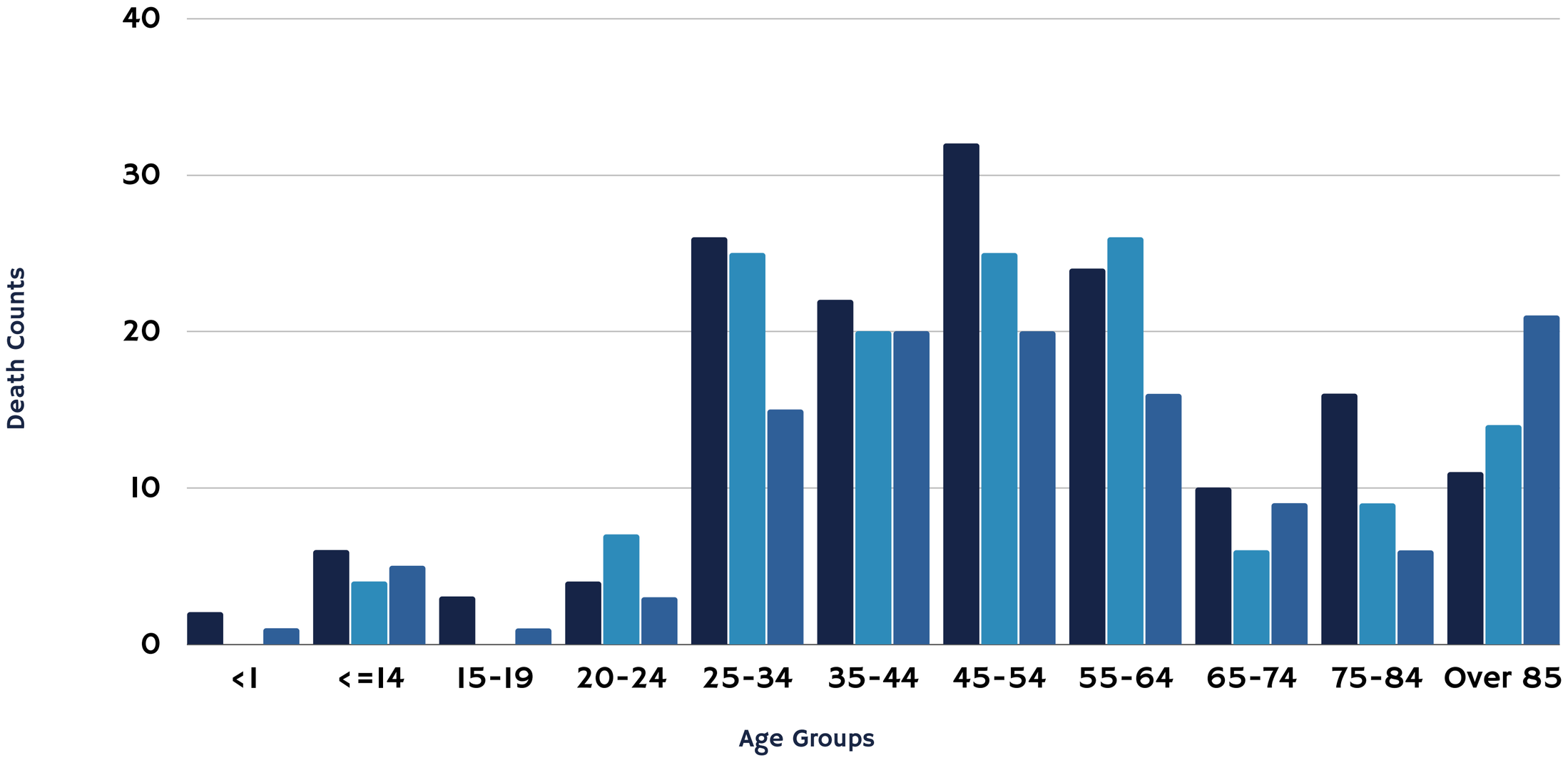
The Infant and Early Childhood Injury report in 2018 noted that the leading causes of injury deaths in children between one and five years in Indiana were homicide, drowning, suffocation, and fire incidences.[10]

SJC Death from External Causes 2017-2019



Source: ISDH Mortality Reports 2017 and Number of Deaths from Selected Injuries

SJC Deaths due to Accidents/Unintentional Injuries 2017-2019



Source: Number of Deaths from Selected Injuries

Suicides and Homicides

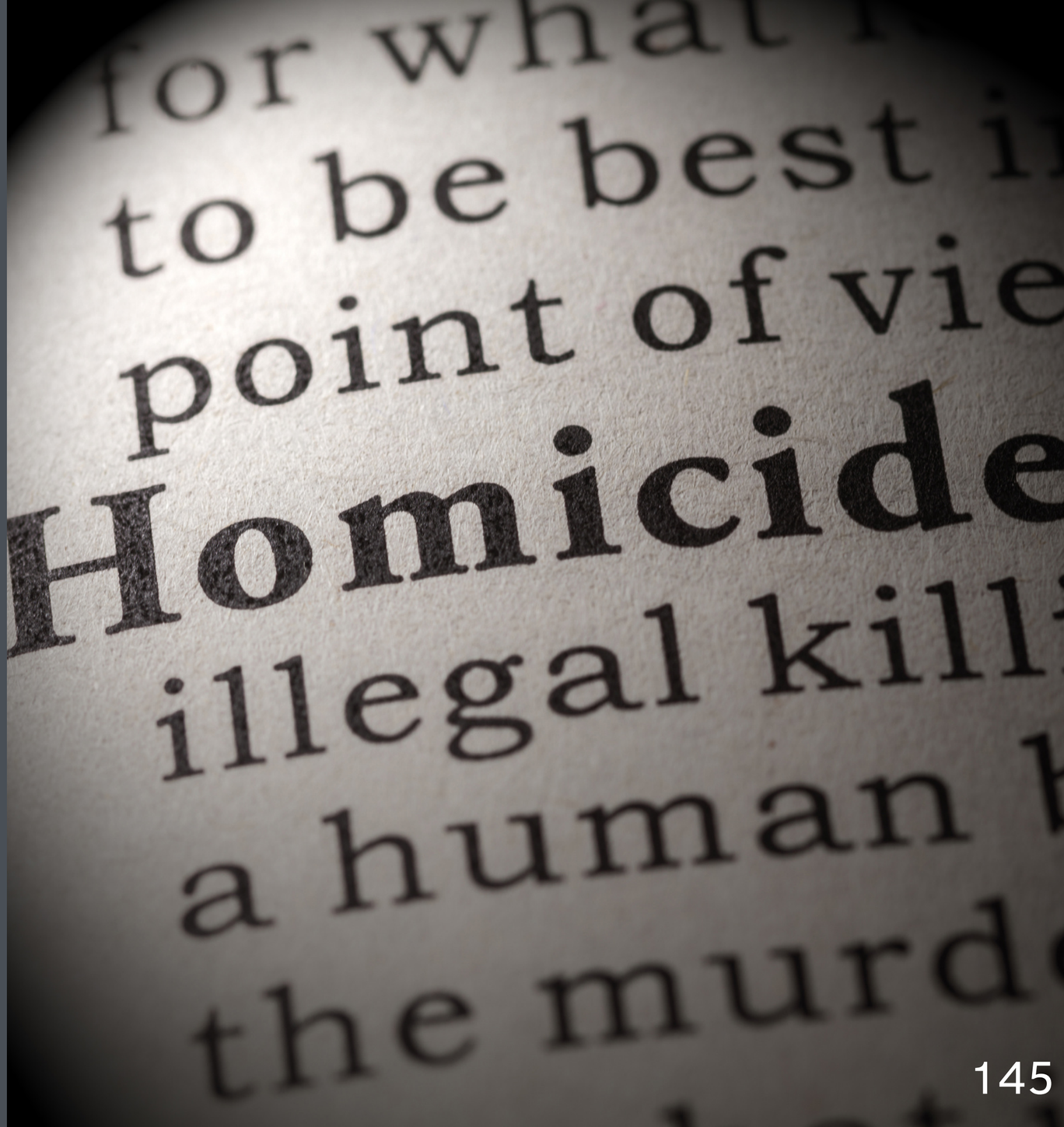
Homicides and firearm related deaths and violence have both medical impacts and lost productivity costs. Violence affects community physical wellbeing and sense of security, in addition to reducing the quality of life for the survivors of violence.[2]

Death by suicide results when an individual dies due to self-harm because of the desire to end their life. Not all suicide attempts result in death or physical injuries. When a person' thinks about, considers, or plans suicide, this is referred to as suicidal ideation. Suicidal ideation is an important indicator for wellbeing.[15] **A previous attempt at suicide is the strongest risk factor for another suicidal attempt.**[16]

Firearm injuries are a serious public health concern. In 2019, there were 39,707 firearm-related deaths in the United States.

Six out of 10 were firearm suicides, and three out of 10 were firearm homicides. Seven out of 10 medically treated injuries are due to firearm related assaults. Males account for most of the firearm deaths and injuries.

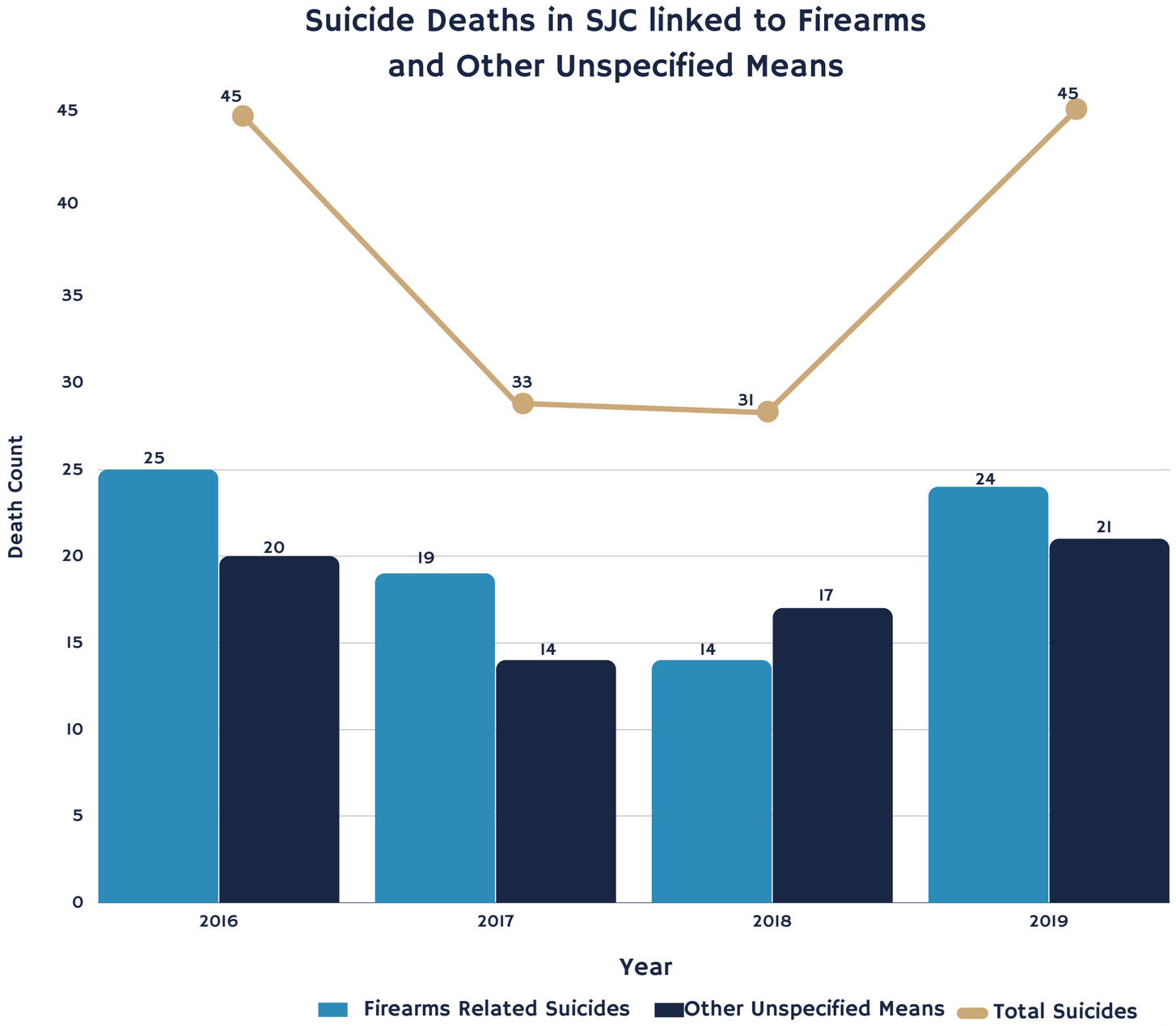
The rates of homicides are higher among those aged 15 - 34 and among the Black, American Indian/Alaskan Native, and Hispanic Populations across the nation.[11]



In SJC, firearms, hanging, and drugs were the most commonly used methods of suicide. In 2018, 5 out of 10 suicide deaths were linked to use of firearms.

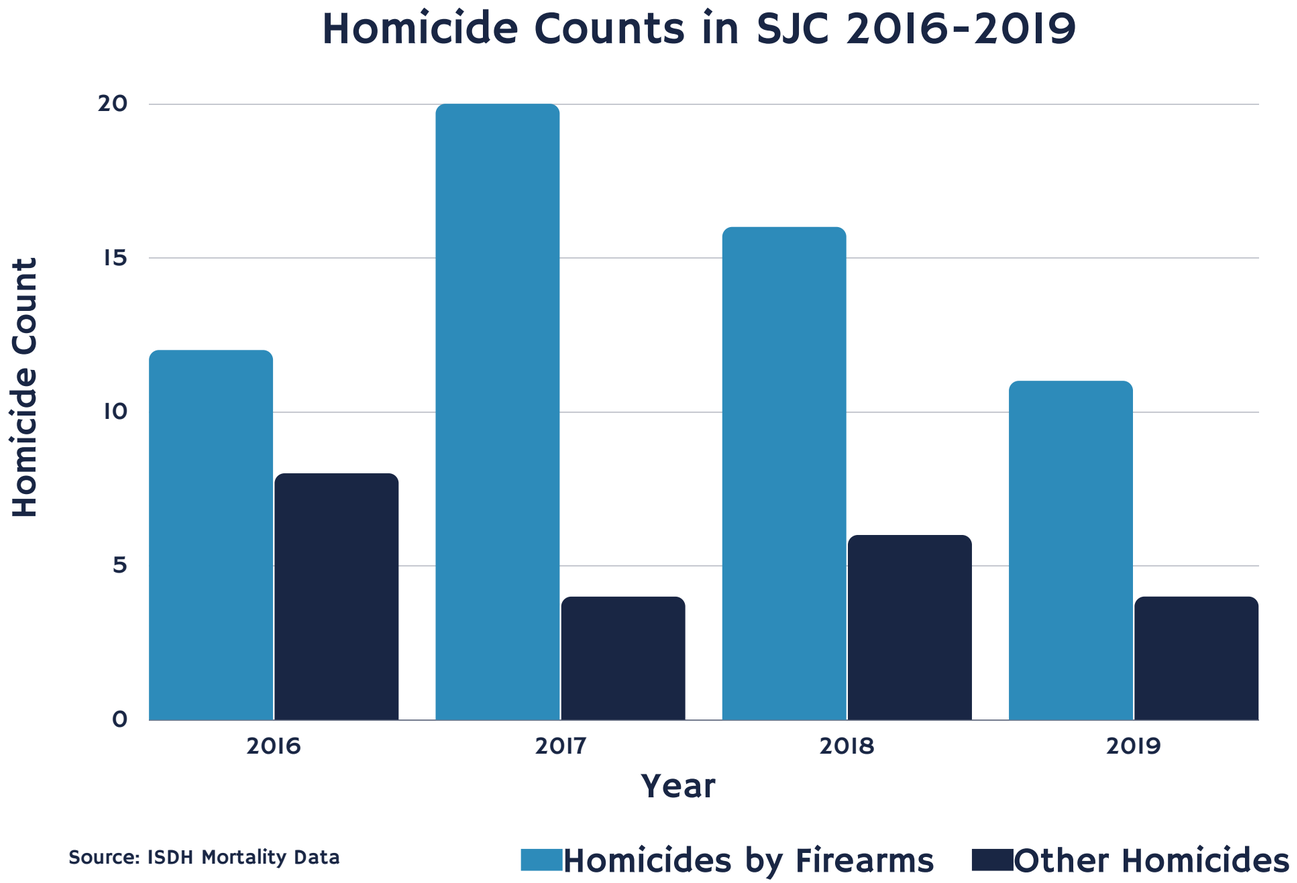
In 2018, 47,511 deaths nationally resulted from suicide with more than half related to use of firearms.[11,17]

Thirty-one suicide deaths were recorded in St. Joseph County in 2018 and increased to 45 in 2019.[12-14]



Source: ISDH Mortality Data

Here are the counts of death by suicide and homicide, as well as those linked to firearms use in the county,[12] Like national statistics, firearms are used in most suicide and homicide cases in St. Joseph County.



Source: ISDH Mortality Data

Counts of Death by Suicide[12-14]			
	2016	2017	2018
Suicides	46	39	40
Drugs	4	0	4
Firearms	24	28	21
Hanging	15	9	7
Other	3	2	8

Risk Factors for Suicides and Homicides

Different situations could lead to suicidal ideation but are not necessarily direct causes of suicide. The accumulation of risk factors can increase an individual's vulnerability to suicidal behavior. Risk factors for suicide include:

- At an individual level: Previous suicidal attempt, mental illness, financial, legal, or economic problems, social isolation, chronic pain, or substance use disorder.[18]
- Interpersonal level: Bullying, adverse childhood experiences, history of suicides in the family, dysfunctional relationships, discrimination, or history of sexual violence.[18]
- Community and Societal level: healthcare access barriers, cultural and religious beliefs, stigma associated with seeking help, easy access to lethal means among people at risk, unsafe media portrayals of suicide, and suicide clusters in the community.[18] Events and situations like disasters, war and conflict, stresses of acculturation into new communities and dislocation, discrimination, trauma, or abuse are also risk factors.[19]

Risk Factors for Suicides and Homicides

A suicide cluster is the situation where more than expected episodes of death by suicide occur in a group of people close in geography and time, typically days or weeks.[20] *Suicide clusters are a public health concern. Recognizing the cluster early is important to create interventions and prevent further deaths. Young persons aged less than 25 years are more likely to be involved in suicide clusters.*[21]

Protective factors are important in suicide prevention as well as building resilience in individuals and communities. Some protective factors counter specific risk factors while others protect against several risk factors. The protective factors include:

- **Cultivation and maintenance of healthy relationships. Such relationships can offer social, emotional, and financial support and act as buffers against external stressors.**
- **Religious or spiritual beliefs.**
- **The practice of personal wellbeing and effective coping strategies. The ability to seek help, good self-esteem, and effective problem-solving skills can mitigate the impact of stressors and childhood adversity.** [19, 22]

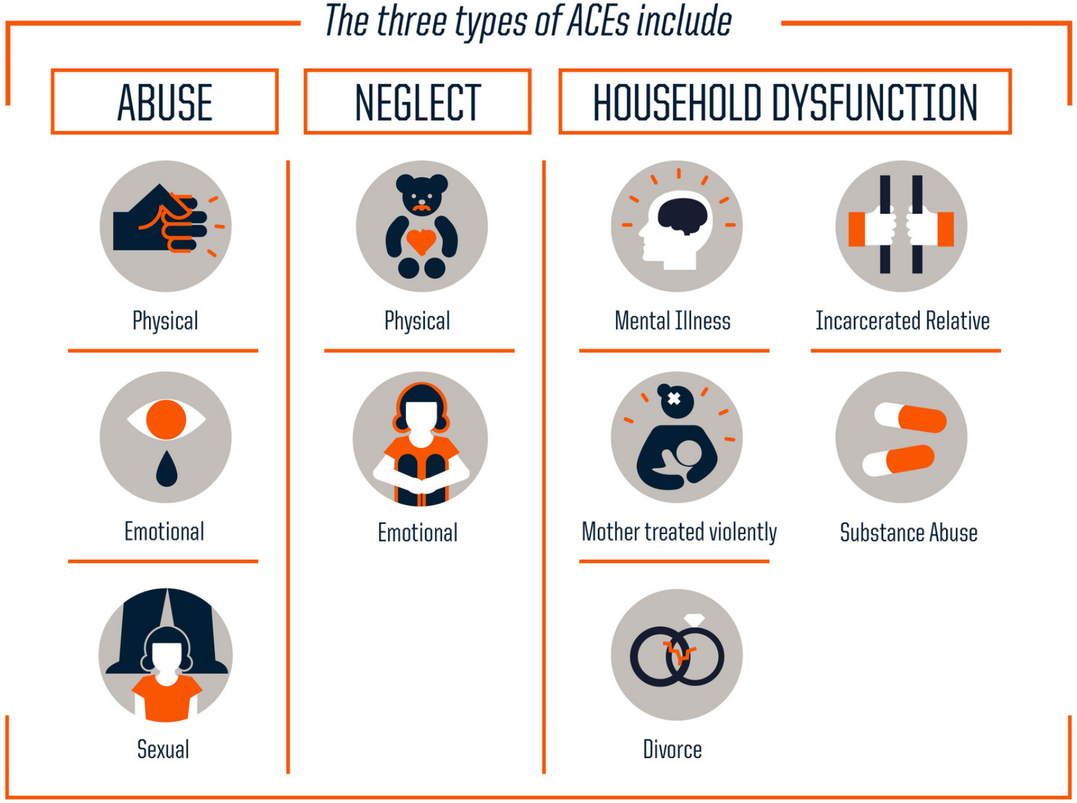
Adverse Childhood Experiences

Adverse Childhood Experiences (ACEs) are a set of childhood experiences that can have lifelong impacts on physical health, mental health, and behaviors. There are 10 childhood experiences that have been shown to increase risk for long-term health issues. These 10 experiences are grouped into three categories: abuse, neglect, and household dysfunction.

Exposure to ACEs is measured through the ACE score. The ACE score is a simple count of the number of different ACEs an individual encountered before their 18th birthday.

For example, an individual who, during childhood, experienced physical abuse, emotional neglect, parental mental illness, and divorce would have an ACE score of four.

2 in 3 adults have an ACEs score of at least one.



Source: Centers for Disease Control and Prevention
Credit: Robert Wood Johnson Foundation

Adverse Childhood Experiences

While ACEs are a relatively new area of research and much remains to be discovered, recent studies have shown that ACEs are preceded by the lived environment, social context, and generational traumas.

The original research on ACEs was published in 1998 by a team of physicians led by Drs. Vincent Felitti and Robert Anda. The ACE study was groundbreaking for two reasons:

1. *It showed the **relationships** between a set of potential adversities and a set of potential health outcomes, rather than a single adversity and a single outcome.*
2. *It identified a **dose-response relationship** between ACEs and health outcomes.*

These provide a scientific basis to discuss how multiple or co-occurring adversities in childhood may impact a wide set of health outcomes.

A dose-response relationship means that as exposure (the “dose”) increases, the outcome (“response”) increases proportionally.

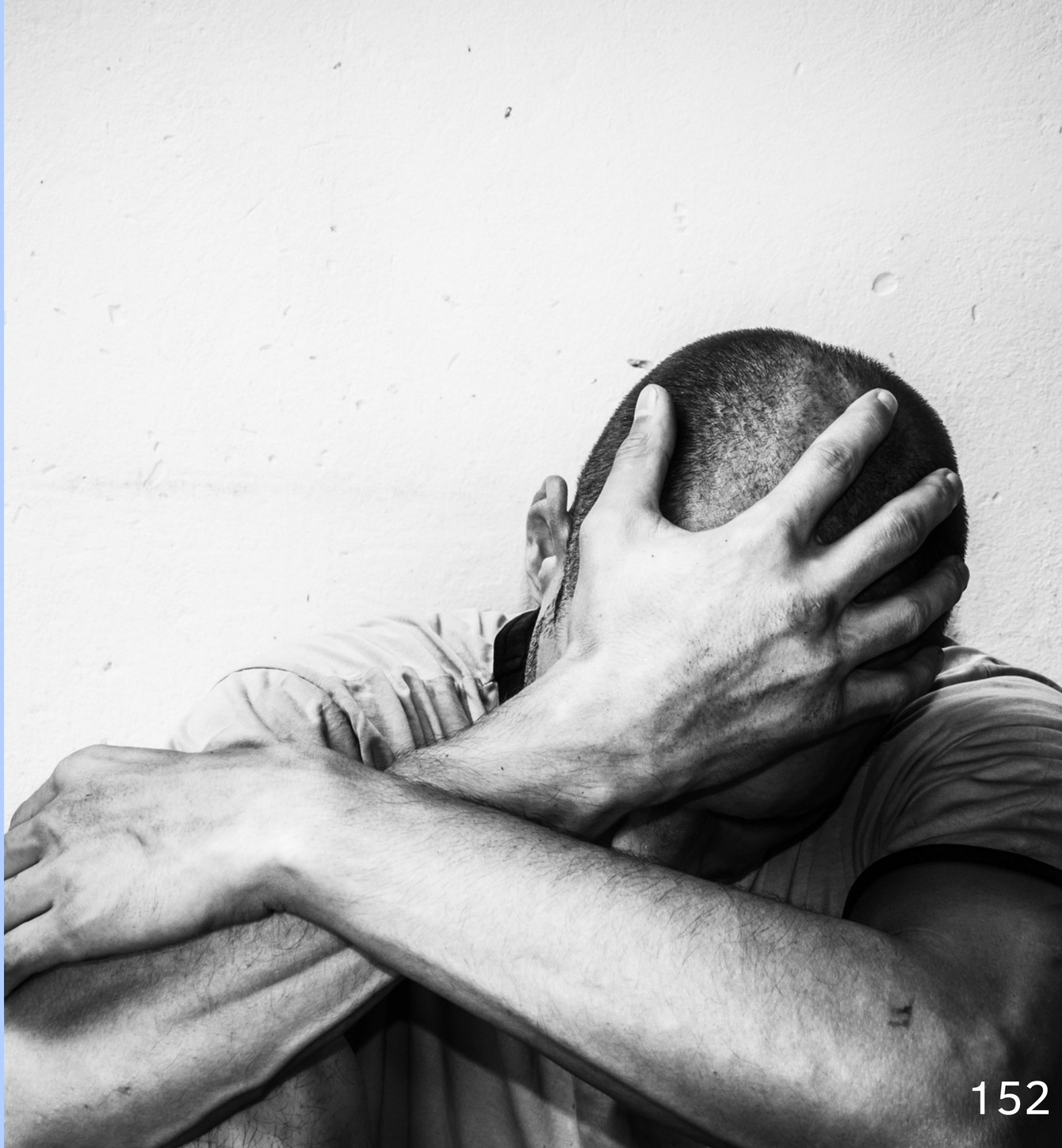
For example, as we put more gas in our cars (the dose) the distance we can drive increases proportionally (the response).

This finding was significant because it means that there is no “safe” amount of childhood adversity.

ACEs are associated with physical and mental health challenges and with a variety of health behaviors. These behaviors often precede different health outcomes.

For example, ACEs are associated with behaviors such as smoking and alcohol use, and outcomes such as cancer and kidney disease.

A similar relationship is seen with mental health challenges and outcomes. ACEs are associated with depression and anxiety, and also with suicide.[24]



Relationship between ACEs and Health Outcomes

ACEs are strongly associated with nine of the ten leading causes of death in the United States, and are associated with over 40 different health outcomes. These associations are measured with odds ratios.[24]

Odds ratios are a measure of association between an exposure and an outcome.

An odds ratio of 1 means that there is no association.

An odds ratio of 2 indicates that the odds for a given outcome are twice as likely with the exposure; an odds ratio of 1.4 means that the odds are 40% greater given the exposure.

In the figure shown, the odds ratios describe the association between exposure to 4 or more ACEs and the listed cause of death, compared to an individual with 0 ACEs.

ACE Associations with Leading Causes of Death[24]

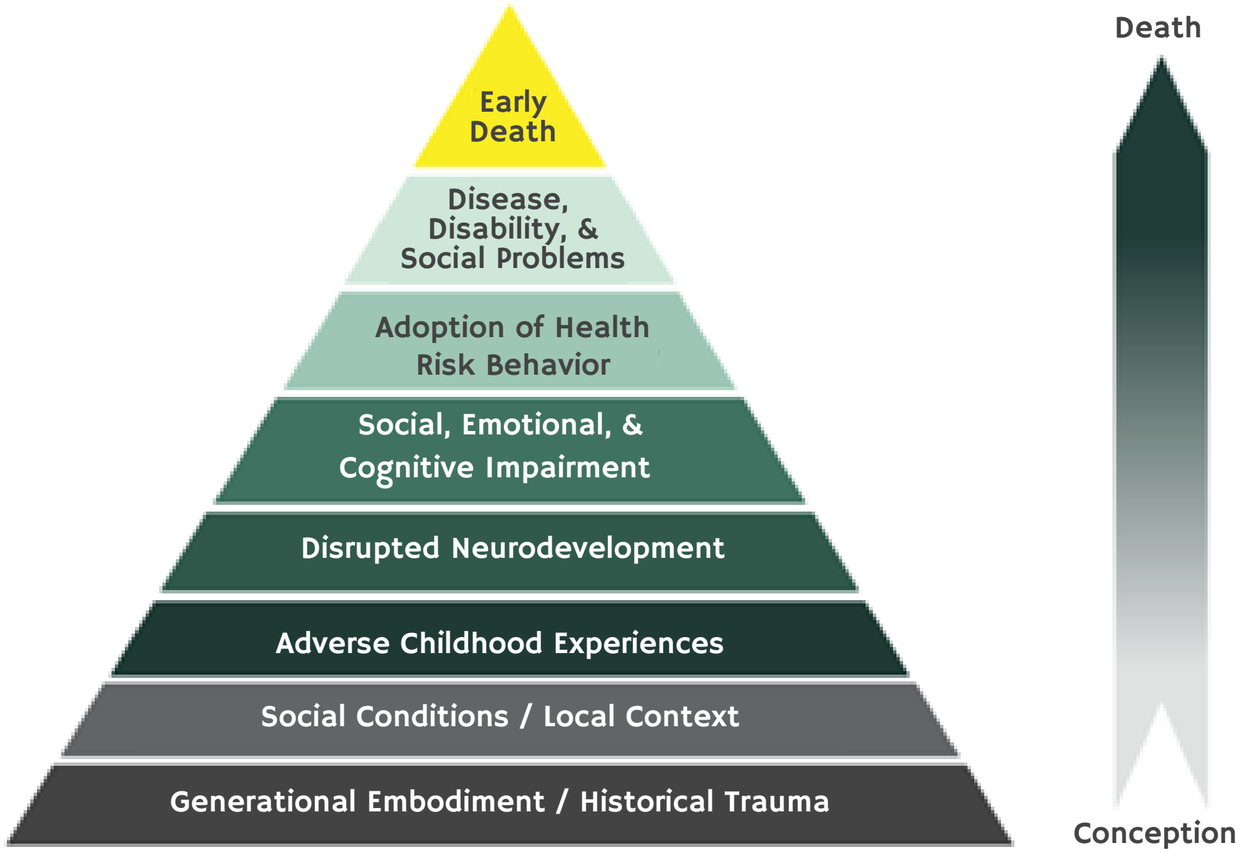
	Leading Causes of Death in US, 2017	Odds Ratio Associated with ≥ 4 ACEs
1	Heart Disease	2.1
2	Cancer	2.3
3	Accidents	2.6
4	Chronic Lower Respiratory Disease	3.1
5	Stroke	2.0
6	Alzheimer's	11.2
7	Diabetes	1.4
8	Kidney Disease	1.7
9	Influenza and Pneumonia	N/A
10	Suicide (Attempts)	37.5

As seen in the ACE pyramid[25] above, ACEs impact neurodevelopment; then social, emotional, and cognitive capacity; then health behaviors and disease; ultimately leading to an elevated risk for early death.

Preceding the incidence of ACEs, there are social conditions and local contexts that elevate the risk of ACEs occurring. This can include unemployment, regional economic depressions, neighborhood violence, unstable housing, racism or discrimination, or social isolation.

Preceding those social contexts are generational embodiments of trauma and historical trauma, such the lingering effects of legalized racism or the epigenetic impacts of generations of addiction and trauma.

Identifying these social and generational types of adversity is critical to understanding the contexts in which ACEs can develop, and to identify areas that are at particularly high risk for ACEs and their associated health risks.



Mechanism by which Adverse Childhood Experiences Influence Health and Well-being Throughout the Lifespan

Adverse childhood experiences (ACEs) are associated with chronic health problems, mental illness, and substance disorders in adulthood. One in six adults experienced four or more types of ACEs and the leading causes of death are linked to ACEs. [26]

Without interventions, early adverse experiences predispose individuals to prolonged limited quality of life and limited social involvement in the community.[27]

ACEs in Indiana

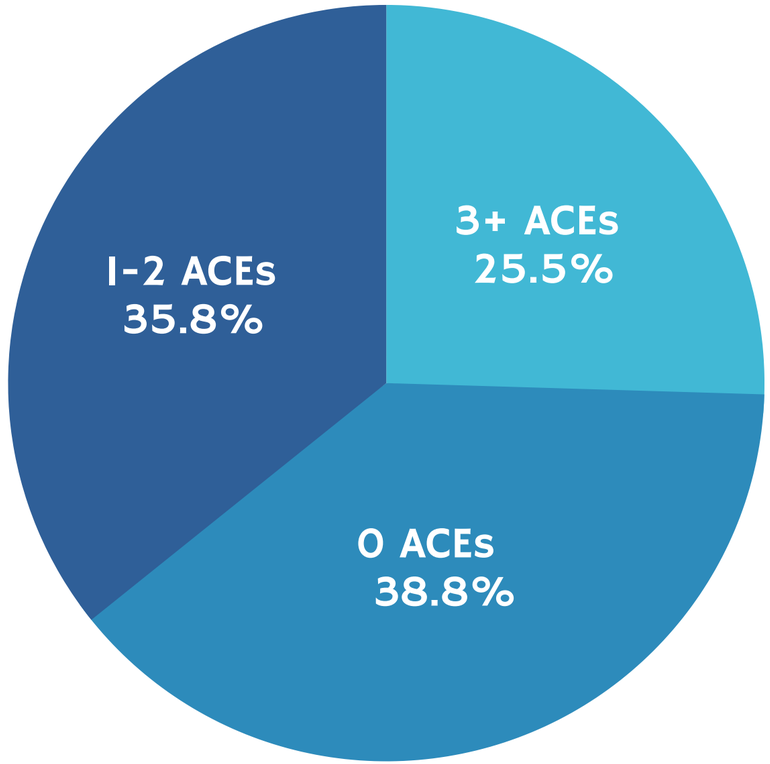
Preventing ACEs is a critical priority for public health, but measuring the prevalence of ACEs is difficult. The CDC uses a public health survey called the Behavioral Risk Factor Surveillance System (BRFSS) to ask individuals about their health history, habits and outcomes. These surveys give an estimate of the prevalence of ACEs at the state level.

Based on the BRFSS data,[29] ACEs do not appear to be more prevalent in Indiana than the rest of the country. This suggests that the health issues experienced in South Bend are atypical for the state of Indiana, which in turn suggests that the upstream causes of poor health, such as ACEs or social determinants of health, are misunderstood, unrecognized, or inadequately addressed.

ACEs in Indiana

The Percentage of Children Ages 0-17 with ACEs[28]				
	2011-2012		2016	
	Indiana	U.S.	Indiana	U.S.
Any ACE (Total)	52.3%	47.9%	47.3%	46.3%
1 ACE	25.3%	25.3%	23.1%	24.6%
2 or More ACEs	27.0%	22.6%	24.2%	21.7%

Percentage of Adults in Indiana with 0, 1-2, or 3+ ACEs,[29] 2018



Source: Indiana BRFSS[29]

ACEs in St. Joseph County[31]

Based on the BRFSS data,[29] ACEs do not appear to be more prevalent in Indiana than the rest of the country. This suggests that the health issues experienced in South Bend are atypical for the state of Indiana, which in turn suggests that the upstream causes of poor health, such as ACEs or social determinants of health, are misunderstood, unrecognized, or inadequately addressed.

In the absence of public health data on the prevalence of ACEs in St. Joseph County, the preceding factors and ACE associated health outcomes can be examined to determine how vulnerable our county is to ACEs.

The City Health Dashboard data compare over 35 different domains of health for over 650 cities across the United States. The data suggest that ACEs are more prevalent in South Bend than in the average US city.

When these data are viewed through an ACEs lens, it becomes clear that South Bend has an acute ACEs problem.

ACEs in South Bend[30]

Adults who reported:	South Bend	Average in other Dashboard Cities
Frequent Mental Distress	16.9%	14%
Diabetes	14.1%	10.3%
Smoking	24%	16.7%
Obese	38.9%	30.4%

As seen with the ACEs pyramid, there are several steps between the incidence of an ACE and the health outcomes seen in dashboard data.

When health outcomes are consistently worse in South Bend than a typical US city, it means not only that upstream prevention is lacking but that there are breakdowns in the mid-stream response system.

Specifically this suggests that not only are ACEs unrecognized as a causal factor for poor adult health, even if ACEs were identified as an upstream factor contributing to poor adult health, the local systems of healthcare in the county do not adequately respond to ACEs after they occur.

It is important to recognize that in the ACEs puzzle sick adults result in sick children, and healthy adults lead to healthy children.

Setting aside the need to view ACEs as a causal factor for poor health, and the need to engage healthcare systems to prevent ACEs from impacting health behaviors, the data highlight the need to change how adult health is discussed.

It is more than hoping an obese smoker with diabetes quits smoking to preserve their own health. Adults pass behaviors and perceptions on to children, and unhealthy adults increase the next generation's vulnerability to ACEs and poor health.

ACEs Prevention

There are four barriers that make ACEs prevention difficult to accomplish:

- ACEs are still a new science, presenting a moving target for what specifically must be prevented.
- ACEs occur largely in the home, which makes external intervention difficult.
- ACEs are associated with a wide range of physical and mental health outcomes and behaviors, which requires a broad range of sectors and individuals to be involved in prevention and treatment efforts.
- ACEs are still not broadly understood, presenting additional challenges around raising awareness and engagement among stakeholders on ACEs impact and prevention.

The CDC has set four strategic goals for ACEs Prevention[31]

- Support surveillance of ACEs and data innovation to guide ACEs prevention, identification, response, and evaluation efforts.
- Expand the ACEs evidence base by conducting and supporting innovative research and evaluation.
- Build local, state, tribal, territorial, and key partner capacity to implement ACEs prevention and response policies, programs and practices based on the best available evidence.
- Increase awareness and understanding among key partners of the public health approach to preventing, identifying, and responding to ACEs.[32]
- These strategic goals broadly address the four barriers to effective ACEs prevention.

Exemplary State-Level Prevention: California[24]

California leads innovatively in statewide ACEs prevention efforts. Since 2019, their ACEs Aware Initiative has Screened over 500,000 children and adults for ACEs. Some of the strategies in California include:

- Developing learning groups and professional development opportunities to help doctors learn about ACEs science and develop strategies to implement ACEs science into their practice.
- Statewide ACEs surveillance, providing a basis for monitoring and evaluation for specific ACE interventions.
- Creating publicly available resources that describe ACEs science and the basics of ACE prevention for a wide audience.

The ACEs Aware successfully addresses three of the four barriers to ACEs prevention and three of the four recommended ACEs prevention strategies from the CDC. The ACEs Aware efforts have increased capacity to develop interventions directly for families despite struggling to address the private and family based sources of many ACEs.[31]

Indiana and St. Joseph County ACEs Prevention

There ACE prevention in Indiana focuses on piecemeal approaches:

- Medical responses through trauma-informed care and awareness efforts,[32] and using the lens of mental health prevention[33] to understand, track, treat, and prevent ACEs. Both approaches are not ACEs specific but the department of health needs to identify the need to amplify the voices of end users and the needs of practitioners and experts in the field. In the future the department of health is positioned to develop ACE-specific objectives for learning and practices.
- Awareness and training efforts to support ACE prevention efforts coordinated by the Indiana Youth Services Association (IYSA).[34] The approaches in Indiana address two of the four priority areas for ACE prevention as set by the CDC.

The St. Joseph County Department of Health is developing a local public health response to ACEs.[35] This prevention plan has five priority areas: improving clinical responses to ACEs, strengthening ACEs surveillance, incorporating strengths-based approaches to ACE prevention, increasing ACE awareness, and connecting ACE prevention efforts with a network of ACEs-oriented individuals and organizations. While these prevention efforts are in their nascent stages, they establish concrete goals for what county-level ACE prevention should look like in the future.

Lead Poisoning

Lead poisoning results when an individual is exposed to and ingests lead from their environment. This oftentimes occurs from dust in the environment originating from lead-based paint. ***No lead level is safe for the body.***

Lead is a naturally occurring element that has increased its presence in everyday environments through its utilization in commercial goods and a variety of industrial and residential processes.[36]

It can be particularly harmful to fetuses, infants, and young children as it can hinder their development.[36]

The most common source of lead exposure for children in Indiana occurs through lead-based paint.

Lead was an additive to most paints prior to the ban on lead-based paint in 1978. As lead-based paint deteriorates with age, or when it is disturbed, such as during remodeling and repair projects, lead paint can generate paint fragments, chips, and dust.[36]

These particles can be ingested or inhaled by small children, leading to poor health.

Lead Poisoning in Children

Lead's ability to mimic calcium in the body is its greatest risk. Since calcium is an essential player in brain chemistry, lead can sneak into the otherwise well-protected brain and disrupt the movement and storage of calcium in cells. This can lead to the death of neurons and other brain cells and is harmful during a child's development. [37]

This can lead to decreased brain volume and smaller prefrontal cortexes - the area responsible for attention, complex decision-making, and regulating social behavior. Lead exposure during development is also connected to increased Body Mass Index, renal damage, blood pressure, and other various impairments of the physiological systems of the maturing child. [38]

The Centers for Disease Control and Prevention (CDC) uses a blood lead reference value of 3.5 micrograms per deciliter (µg/dL) to categorize children with blood lead levels that are higher than most children's levels.

This value has recently been decreased from 5 as this threshold is based on the 97.5th percentile of the blood lead values among U.S. of children ages 1-5 years from the 2015-2016 and 2017-2018 National Health and Nutrition Examination Survey (NHANES) cycles. [39]

In St. Joseph County, the current blood lead level threshold to be considered an "elevated blood lead level" is 10 µg/dL and will soon be lowered to 5 µg/dL.

From 2015-2019, 371 blood lead level readings had a result over 10 µg/dL.

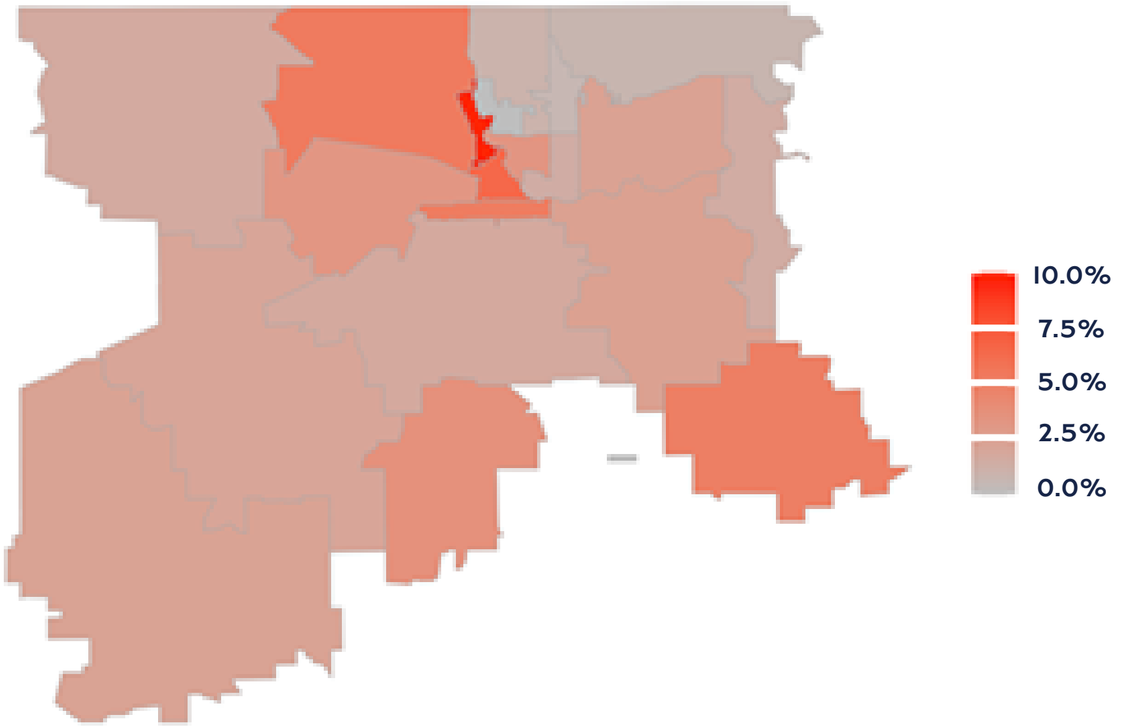
This number goes up to 1400 tests when including those at and above a reading of 5 µg/dL. Most of these tests were clustered near the city of South Bend.

Nationally, 24 million homes in the U.S. contain deteriorated lead-based paint and elevated levels of lead-contaminated dust.[39] *In 2015, less than 4.5% of children under the age of 7 were tested for lead.*

In Indiana, the U.S. census data shows that more than 1.7 million homes, or nearly 60% of all Indiana housing, were built before 1980.[40]
Houses built before 1980 are likely to have deteriorated lead based paint.

In St. Joseph County, 67% of homes were built before 1978. If not handled properly, these homes have a high risk of exposing residents to lead.[41] *From 2005-2015, less than 10% of children under 7 years old were tested for lead blood levels in SJC.*[42] *Lead exposure and consequent poisoning clearly presents itself as a major public health hazard.*

Proportion of Children Sampled with High BLL (>5 dg/µL)
St. Joseph County (2015-2020)



Source: St. Joseph County Department of Health Lead Data

The COVID-19 Pandemic and Injuries and Violence

The restricted movements, social distancing, and stay-in-shelter requirements were helpful in slowing down the spread of COVID-19 virus but in some cases, they may have confined people experiencing relational violence with their abusers. Research indicated an increase in reported cases of domestic violence particularly in families without a history of domestic violence between March and May 2020.[43]

The number of emergency department visits related to child abuse decreased in 2020. In the same period, the number of hospitalizations related to child abuse increased. The different policies established to slow down COVID-19 spread affected hospital emergency visits. A decrease in reported cases of abuse or neglect is attributed to decreased contact with mandated reporters such as teachers and physicians.[44]

Firearm-related and stabbing injury mechanisms increased during COVID-19. Some of these injuries involved children or were inflicted by children.[45]

Unintentional shootings by children, risk of youth gun suicide, and firearm-related homicides increased by nearly one-third in March to December 2020 compared to a similar period in 2019.[46]

In 2020, hate fueled violence against the Asian American and Pacific Islander community in the United States increased. Closure of businesses to contain the virus disproportionately affected people of color who are majorly in businesses that could not be conducted remotely or those who were single wage earners.[46,47]

The resulting economic distress and regulated social interactions and participation during the COVID-19 pandemic curtailed some of the protective factors in physical and mental wellbeing among individuals and in the community.[47]

In terms of lead poisoning and remediation, COVID has taken a toll on the implementation of federal funds. Delays in the remediation efforts has resulted from additional difficulty finding contractors to carry out the work.

Social distancing protocols have reduced the accessibility of households that might require remediation. Additionally, the COVID-19 pandemic has drastically affected blood lead level testing rates.

In a disease where preventative measures are critical to prevent long-term sequalae, the reduced social interaction and consequently testing of children, coupled with potential increased lead exposure with children spending more time inside their homes, could have negative consequences.[48]

Social Determinants of Health Associated with Injuries and Violence

Neighborhood and Built Environment

Built environment impacts individual wellbeing and safety choices. Physical environment can affect rate of injuries connected to fires, falls, drownings, motor accident, and violence. Home is the second most common location for unintentional fatal injuries. Some of the housing risk factors for falls include inadequate lighting, lack of window guards, and structural deficiencies.[49]

In the event of a fire, the lack of fire suppression requirements such as functional smoke alarms, carbon monoxide detectors, and sprinklers predispose house occupants to fire injury and death. Such injuries and deaths are higher in lower income groups, potentially due to their likelihood to live in older homes that may be substandard and carry greater risks and fewer protections.[50]

Neighborhood and Built Environment

Due to lead's previous use in paint for years, many homes built before 1978 might still be a significant source of lead exposure. About 40 percent of the city's households are renters and just under 60 percent own their units, a minimal change over the past eight years.[51] This complicates the remediation of homes as these responsibilities fall upon the homeowner and not the tenant. The program used to set a standard for healthy homes in the county is currently under review in the city of South Bend and not functional. As a result, there is little to no enforcement of lead standards for rental properties.[51]

Neighborhood and Built Environment

Neighborhood characteristics impact health behaviors. Enhanced community support and quality employment is linked to better mental health and sense of belonging among community residents. Collective efficacy is the combination of mutual trust and the shared willingness of residents to intervene on behalf of the common good.[52] Dependable social networks, employment and work opportunities, and residential stability are associated with lower crime rates. Limited collective efficacy is associated with adolescents' suicidal ideation.[53]

Social Determinants of Health Associated with Injuries and Violence

Economic Stability

Social protection policy and practices can act as a buffer against poverty by helping individuals meet their basic needs and navigate market dynamics that negatively affect their quality of life. Limited incomes, unemployment, and poverty are strongly associated with increased homicides.[54] This is linked to individuals trying to navigate economics, livelihoods, and safety outside the law.[55]

Economic Stability

Research shows that a reduction in a given year of one homicide in a zip code resulted in a 1.5 percent increase in housing values in the same zip code in the subsequent year.[56] High housing costs lead to people living in substandard housing and instability which is likely to cause poor health outcomes, particularly in children, seniors and chronically homeless populations. Economic advancement initiatives, housing, and education programs may reduce crime rates and violence.[57]

Research shows that people living in unaffordable housing were likely to report poor health and nonadherence to prescriptions and healthcare recommendations.[58] Prescription nonadherence can lead to poor health outcomes for the individual, premature mortality,[59] or an amplification of risky behavior that can trigger an increase in community violence.[60]

Economic Stability

The impact of redlining policies and lending practices[61] is still felt in the present day.[62] A 2020 Analysis of Impediments to Fair Housing Choice for St. Joseph County revealed that certain areas throughout the county still have concentrations of low-income persons and minorities that exceeds 70% of the area's population.[63] As a result, the communities in these areas have dealt with the repercussions of significant disparity in wealth accumulation.

Low income households oftentimes do not have the means to fix the dilapidated and aging houses where they live, thus compounding the hazard posed to all family members, particularly the children. Many low income renters do not report health hazards like lead out of fear of being kicked out of their homes or having their rent increased.

Best Policies, Practices, and Programs in Addressing Violence and Injuries

Practices followed by an asterisk (*) are ongoing in the county.

Public Policy

National, State, Local Law

- Economic policies that strengthen household financial security, encourage wealth building and alleviate poverty.[31, 64, 65]
- Improve housing stability in communities for individuals to live in safe and risk-free homes.*
- Community based policies to reduce drug use and access to lethal means among persons at risk for suicide.
- Institute permit-to-purchase laws that require individuals to apply for a permit prior to purchasing a firearm, thus decreasing access to lethal means of homicide and suicide.[66]
- Statewide ACEs surveillance, providing a basis for monitoring and evaluation for specific ACE interventions.[24]
- Establish family-friendly work spaces, economic supports to families to support childcare costs and healthy nutrition, or child tax credits for working families.[31]
- Legislative policies that reduce corporal punishment can help create norms around safer and effective discipline strategies to reduce harm of physical punishment.[31]

Organizational

Organizations, Institutions

- Create publicly available resources that describe ACEs science and the basics of ACE prevention for a wide audience.[24]
- Develop learning groups and professional development opportunities to help doctors learn about ACEs science and develop strategies to implement ACEs science into their practice.[24]
- Support strong starts for children such as early childhood home visits, training in child health and development, quality child care, and family-involving preschool sessions.[31]
- Implement family-centered treatment for substance use disorders and treatment to lessen the harms of ACEs.[31]

Community

Social Spaces

- Promote safe organizational policies and culture. Promote social norms that protect against violence and adversity.[31]
- Teach skills such as social-emotional learning and coping skills, parenting, and family relationships in schools from as early as Pre-K.*[31, 67]
- Identify and support people at risk through crisis prevention, gatekeeper training, prevention practices, treatment and support for those bereaved or affected by suicide.*[19]
- Identify and support people affected by community violence.*
- Promote safe reporting and messaging around suicide cases and safer suicide care for those at risk.[22]
- Provide culturally appropriate and safe support to persons going through dislocation and acculturation in the community. Vulnerable populations include refugees, migrants, indigenous peoples, the incarcerated, military and veterans, and LGBTQI.[19]
- Promote peer group and community participation activities. Connect youth to caring adults and activities like mentoring and after-school programs.[31]
- Utilize the National Violent Death Reporting System to understand why the violent deaths occurred in the community and locate opportunities for prevention of violence.[68]
- Raise awareness on mental health coverage in health insurance policies, provider coverage, and number of mental health support and providers in the community.*[19]

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Mental Health and Substance Abuse

Mental health discussions are held as a continuum range of wellness to illness. Mental wellness includes high levels of psychosocial functioning in relationships with family and friends, lower sense of helplessness, fewer health limitations in daily activities, and lower reports of chronic diseases.[1]

- **Mental Health**
- **Substance Use Disorders**

Mental Health

The World Health Organization defines mental health as a state of well-being in which an individual realizes his or her own abilities, copes with normal stresses of life, can work productively and contribute to the community life and activities. It is an essential part of health and it is more than the absence of mental health disorders. [2]

The Substance Abuse and Mental Health Service Administration indicates that:

For those aged above 18, serious mental illness is a diagnosable mental, behavioral, or emotional disorder causing serious functional impairment.

For those under the age of 18, 'serious emotional disturbance' refers to diagnosable mental, behavioral, or emotional disorder for the past one year that results in functional impairment and subsequent interference with or limitation in a child's functioning in family, school, or community activities.[3]

Mental health disorders cause changes in thinking and mood, and can influence how people perceive, act, and/or make choices. These disorders can affect people from all age groups and categories of life. The disorders are treatable.

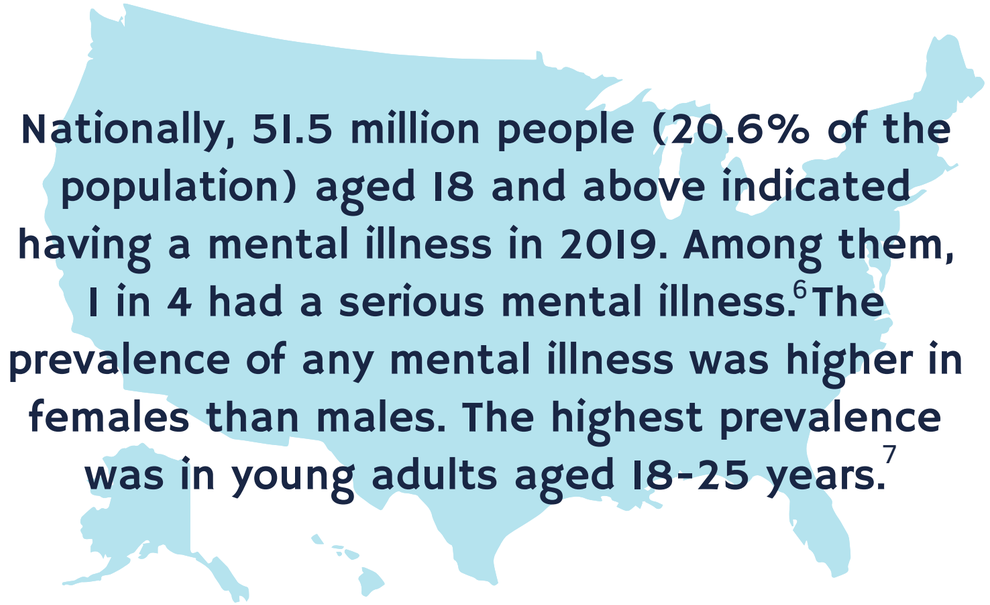
Many people go undiagnosed until there is reduction in the person's ability to function due to the disorder.[3] *Commonly thought of mental disorders include anxiety, major depression, schizophrenia, psychosis, neurological diseases, and alcohol and drug dependency.*

Mental health conditions can affect school or work performance, relationships, and capacity to participate in community life. Mental health conditions contribute to poor health outcomes, premature death, human rights violations, and economic losses.[4]

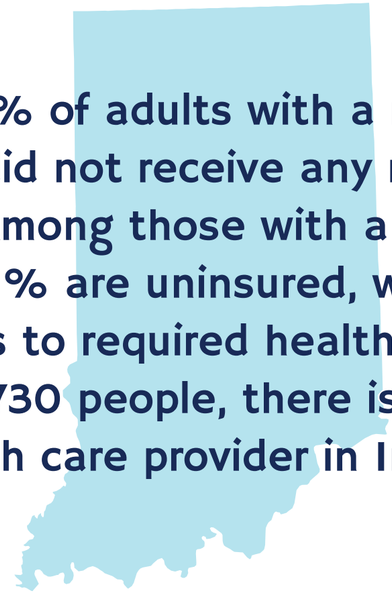
Major depression is the most common mental disorder characterized by persistent sadness and a lack of interest or pleasure in previously rewarding or enjoyable activities.

Depression may interrupt sleep and appetite in individuals in addition to causing tiredness and limited concentration.

The interactions between social, psychological, and biological factors, childhood adversities, loss, and unemployment can contribute to depression.[5]



Nationally, 51.5 million people (20.6% of the population) aged 18 and above indicated having a mental illness in 2019. Among them, 1 in 4 had a serious mental illness.[6] The prevalence of any mental illness was higher in females than males. The highest prevalence was in young adults aged 18-25 years.[7]



About 55.4% of adults with a mental illness in Indiana did not receive any mental health treatment. Among those with a mental health disorder, 16.1% are uninsured, which may limit their access to required healthcare services. For every 730 people, there is one mental health care provider in Indiana.[8]

In the county, mental health treatment and substance use disorder support services are available in various locations. Services include outpatient detoxification, regular outpatient treatment, cognitive and behavioral therapy, substance abuse counseling, trauma related counseling,[9] and motivational interviewing.

Multiple factors and contexts can contribute to mental illness. These include:

- **Experiences related to existing chronic illness like cancer, heart disease, or diabetes.[10]**
-
- **Adverse Childhood Experiences (ACEs) such as trauma, abuse, witnessing violence, and social structural issues like poverty, unemployment, and unstable housing among other factors.[11]**
- **Social isolation, having feelings of loneliness, and having few friends or family.[11]**
- **A family history of mental and addictive disorders can increase the risk of mental disorders. Genetic and biological factors also play a role in mental illness.[12]**

Substance Use Disorder

Substance abuse refers to the pattern of using a drug that results in distress or significant negative health, behavioral, emotional, or social outcomes.[13]*Some of the drugs or substances are illegal substances like marijuana, heroin, cocaine, or methamphetamine while others may be legal such as alcohol, nicotine, and prescription medicines.*

Substance abuse and dependence results from environmental stressors, social pressures, individual characteristics, and psychiatric problems.[14]

Substance abuse has significant social, physical, and mental costs and can result in public health problems such as domestic violence, sexually transmitted diseases, child abuse, motor vehicle accidents, crimes, homicide, and suicide.[15]

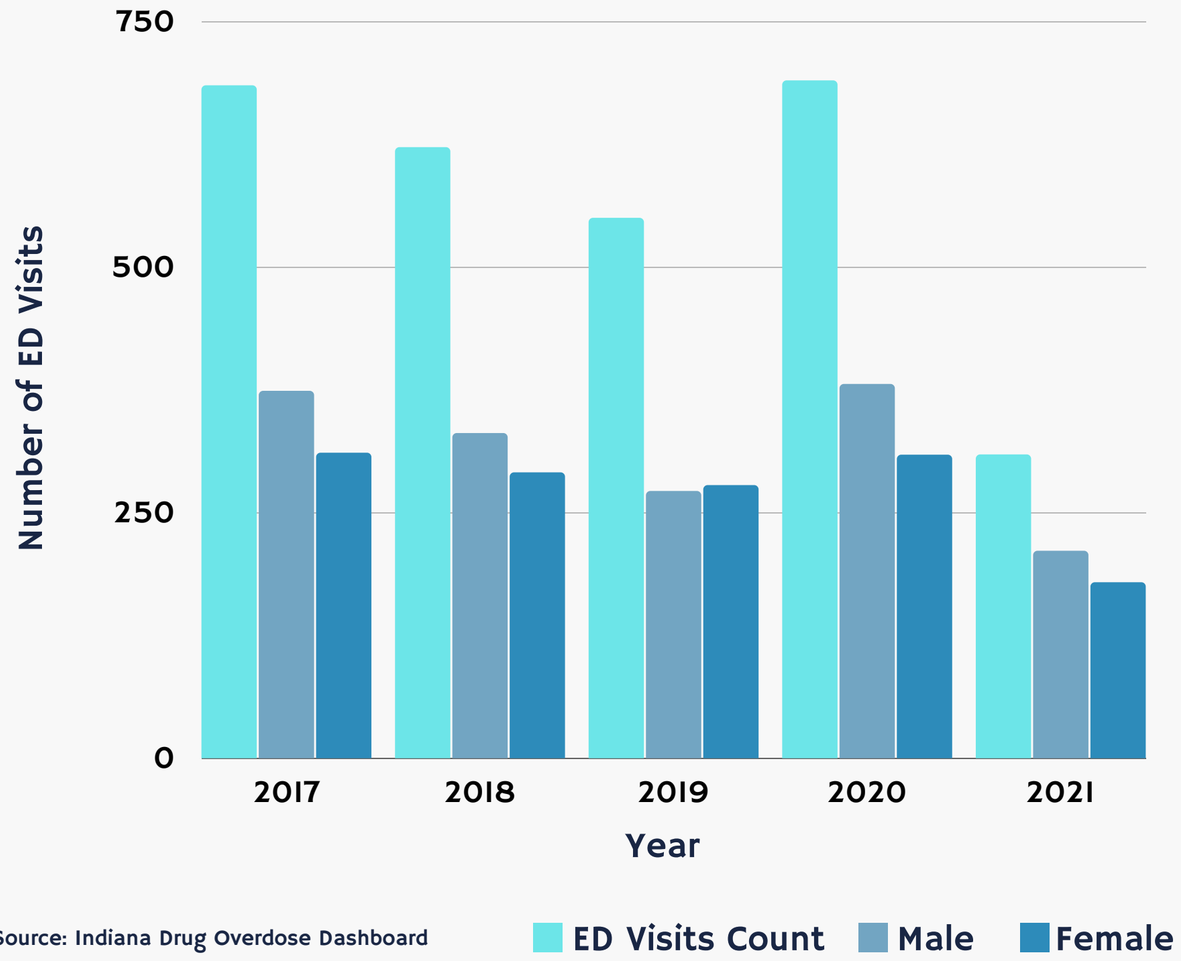
Nationally, the drug-induced deaths in 2017 were22.8 per 100,000. By gender, the rates were 30.5 in males and 15.2 in females per 100,000 people.

When disaggregated by race, the rates were high in the White (non-Hispanic) population at 28.8 and Black population at 21.9.[15]
In 2019, the National Survey on Drug Use and Health noted that among those with substance use disorder, 3 in 4 struggled with alcohol use and 2 in 5 with illicit drugs.

About 19.3 million people (7.7% of the population) of those aged 18 and above had a substance use disorder. About 9.5 million had both substance use disorder and mental illness.[6]

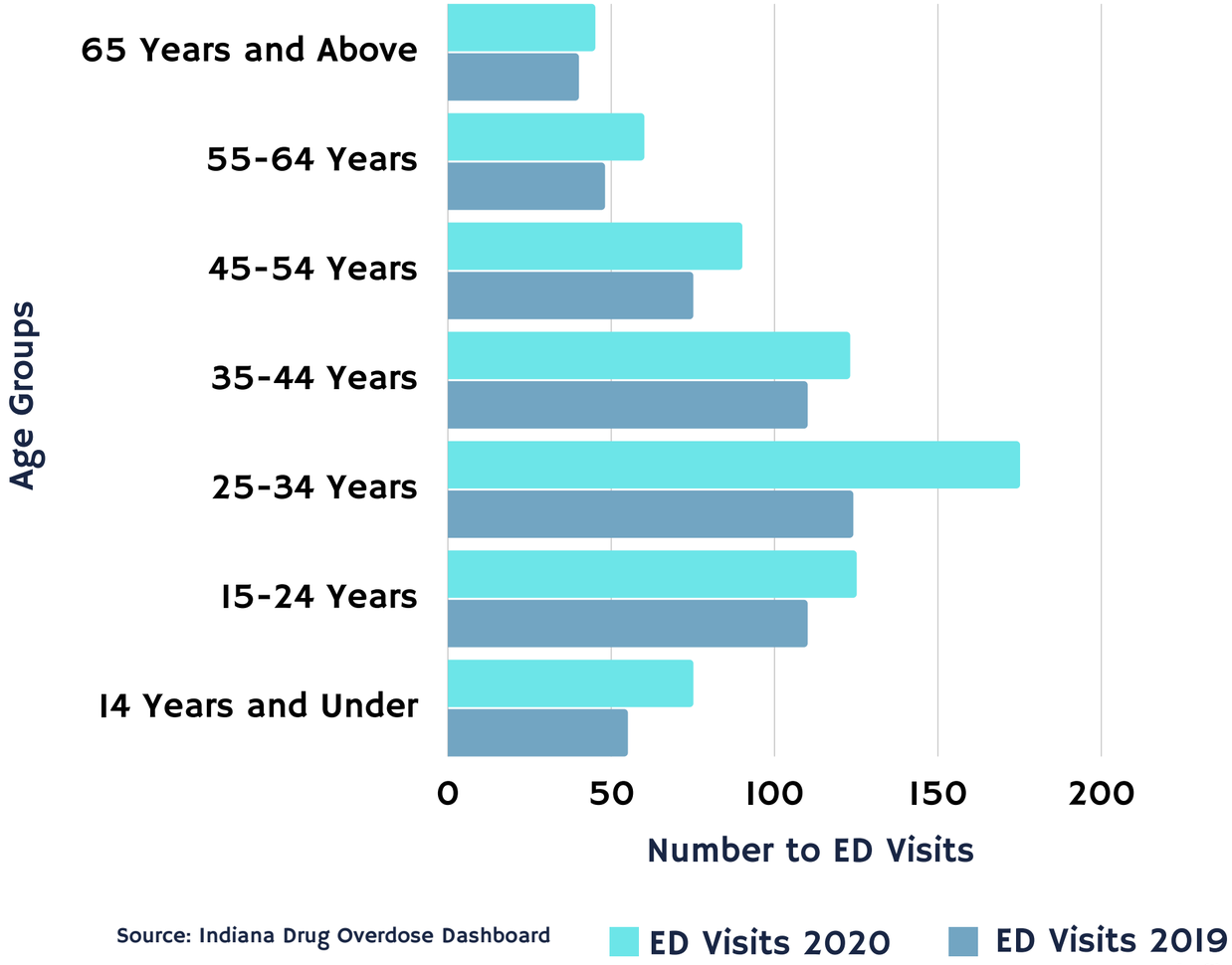
The Indiana Drug Overdose Dashboard notes that emergency department visits due to any drug overdose in 2019 ad 2020, were highest among those aged between 25 and 34 years in St. Joseph County.[16]

SJC ED Visits Due to Any Drug Overdose, 2017-2021



Source: Indiana Drug Overdose Dashboard

SJC ED Visits by Age Due to Any Drug Overdose, 2019-2020



Source: Indiana Drug Overdose Dashboard

Three hundred and fifty one (351) people in the county were hospitalized due to any drug in 2020.

The Indiana Drug Overdose Dashboard notes that emergency department visits in SJC due to any drug overdose totaled 690 in 2020 , and this was a 25% increase from 2019.

309 of these visits were female. An analysis by racial groups notes that the White population made up 79% of the emergency department visits while 15.5% were from the Black population in 2020. The 2021 results are provisional.[16]

Opioid Use

Opioids are drugs that can be used to alleviate pain. Some opioids are legally prescribed, and others are considered illegal such as heroin. Prescription opioids can treat moderate to severe pain, but they also have serious risks and side effects. Nonprescription use of opioids can result in adverse side effects, and death in some cases.

For every ten opioid overdose deaths in the United States, seven involve synthetic opioids (excluding methadone).[17]

The growing use of injection opioids without prescription has been associated with increased infectious diseases in the country. Most of the new hepatitis C virus (HCV) cases and about 2,500 new HIV infections are linked to injection drug use.[19, 20]

About 40 people die daily in the US due to heroin overdose. Heroin is an illegal opioid.17 More than 70% of the 71,000 drug overdose deaths in the country in 2019 involved an opioid.[18]

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 people

The top 5 opioids prescribed in the state of Indiana include acetaminophen; hydrocodone, oxycodone, tramadol, acetaminophen; oxycodone, and buprenorphine; naloxone.[21]

In the second quarter of 2021, there were about 130.5 opioid prescriptions per 1,000 population in SJC compared to 177.6 per 1,000 population in Indiana. The prescription rate is on a decline since 2017. [16, 21]

Opioid Use

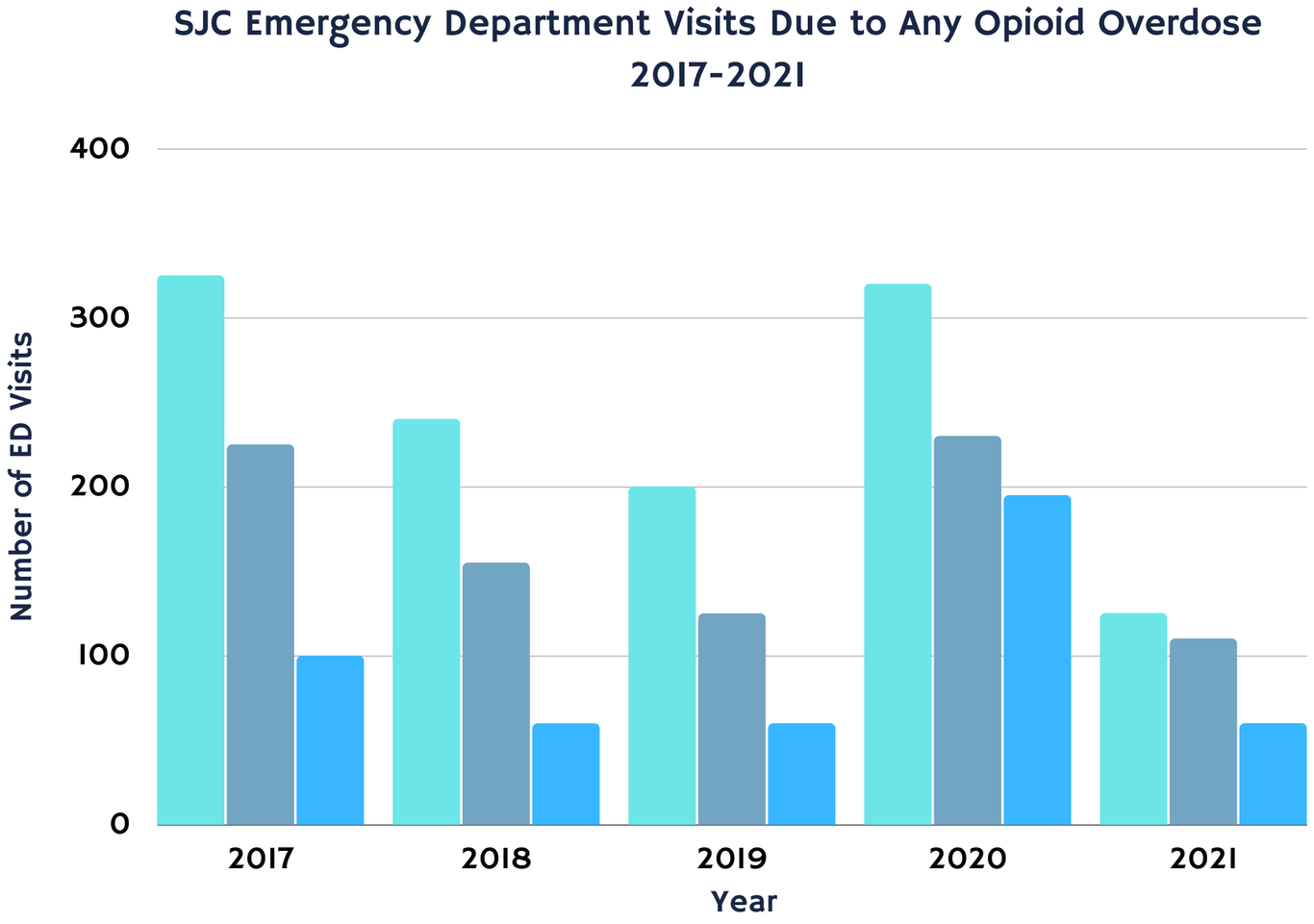
In SJC, there were 201 non-fatal emergency department visits related to any opioid overdose in 2019, a decrease from 236 visits in 2018. Twenty-seven deaths in 2019 and 45 deaths in 2018 were from drug poisoning involving any opioid.[22]

In 2019, twelve deaths in SJC resulted from heroin overdose. The non-fatal emergency visits involving heroin overdose for the same year were 144 in the county. Inpatient hospitalizations due to heroin overdose were 18.[23]

The county emergency department (ED) visits decreased between 2018 and 2019. There was a 59% increase in ED visits in the county in 2020. The 2021 data are provisional.

In 2020, there were 320 non-fatal emergency department visits related to opioid overdose. Seventy percent of these visits were male.

In the same year, 73 deaths were associated with drug poisoning involving any opioid.[16, 22]



Source: Indiana Drug Overdose Dashboard

The COVID-19 Pandemic and Mental Health and Substance Use Disorders

The resulting economic distress due to job loss or income insecurity during the COVID-19 pandemic negatively affected many people's physical and mental health. Different policies and measures to reduce the spread of the virus produced new health care access barriers for people with mental health disorders and substance use disorders. The closure of schools and businesses, loss of income, and reduced social participations contributed to poor mental health.[24]

Communities of color that have persistently faced challenges in mental health care access were also disproportionately affected by the pandemic. More people have reported symptoms of anxiety, depression, or increased substance abuse to cope with stress in the pandemic. Elevated levels of adverse mental health and increased substance use were self-reported and noted among essential service workers, unpaid caregivers for adults in the community, and people receiving treatment for preexisting psychiatric conditions during the pandemic.[25]

Social Determinants of Health Associated with Mental Health and Substance Abuse

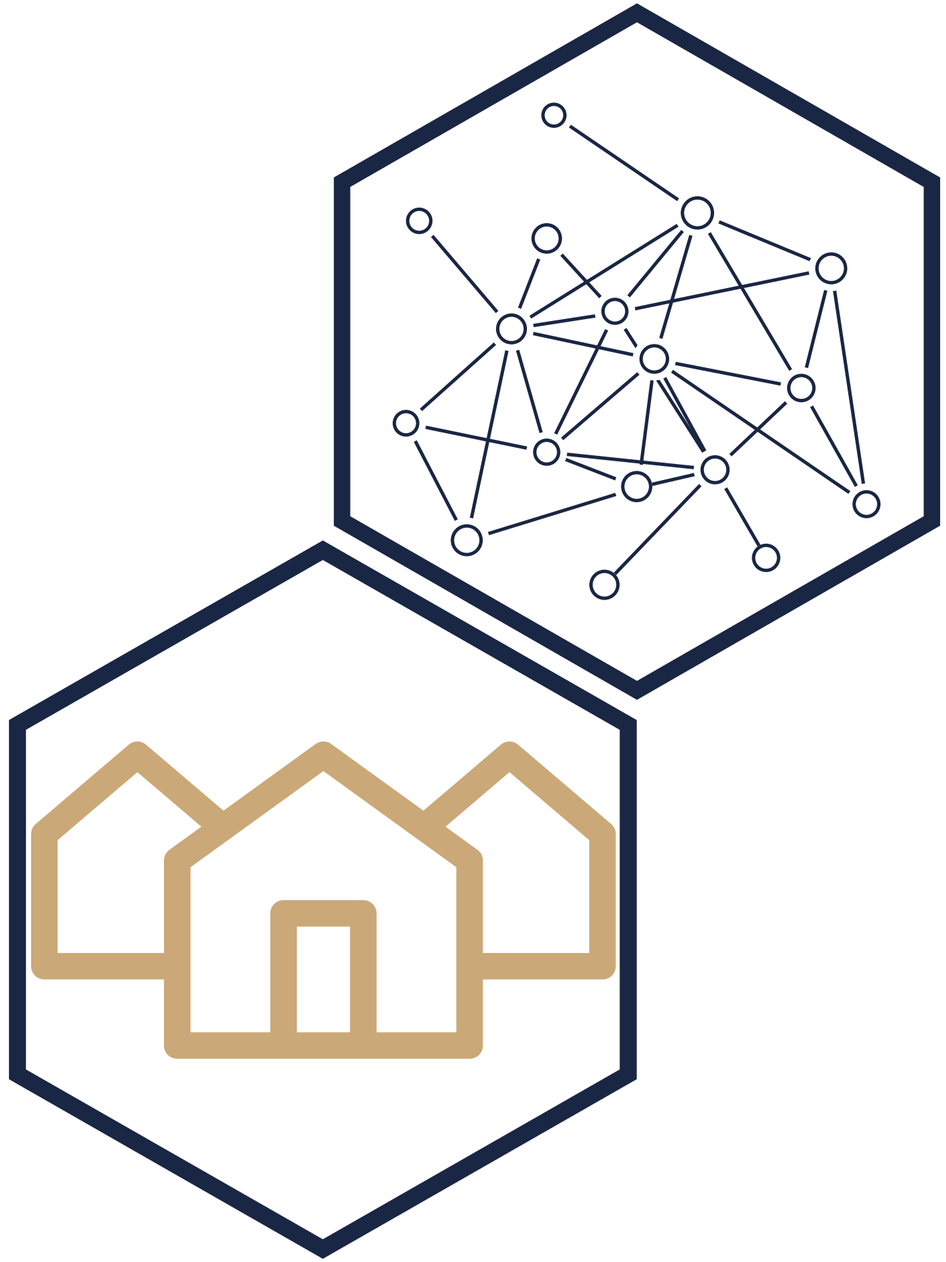
Neighborhood, Built Environment, and Community and Social Context

People spend most of their time in residential settings and built environments. Different housing and neighborhood characteristics affect individuals' mental health. The lack of access to recreation spaces due to the type of housing and neighborhood quality can lead to social isolation.[26]*Parks and playgrounds provide spaces and opportunities for physical activity, psychological health benefits, rest, and social interactions.*[27]

The social context in which individuals live is associated with their psychological wellbeing. Increase in psychological distress has been documented in cases where people live in crowded housing. However, children in crowded or noisier homes showed fewer illnesses if they have a room where they can spend time alone.[28]

Less secure housing tenure has been linked to poor health. If individuals are concerned about safety and the hygiene of their environment, they may likely have anxiety and worry. In children, housing instability may impact their developmental and behavioral outcomes, minimize school readiness, and affect their learning outcomes.[29][30]

The community and social context determine the collective efficacy among residents. Collective efficacy is the combination of mutual trust and the shared willingness of residents to intervene on behalf of the common good.[31] Healthy and functional communities can provide experiences, resources, and services for the wellbeing and thriving of the children, adolescents, and adults. Research showed that children growing in neighborhoods where social expectations are shared had fewer depressive and anxiety symptoms in adolescence.[32]



Economic Stability

When employment and working environments are favorable, they can provide financial security, enhance social status and relations, self-esteem, and protection from physical and psychological risks.[33] *Unstable forms of employment such as part-time work, contracts, and informal work are associated with poor health status.*[34]

Economic recessions, declined incomes, and unmanageable debts are associated with poor mental wellbeing, increased rates of common mental disorders, substance disorders, and suicidal behaviors.[35] **People with low incomes and debt were more likely to have a mental disorder than those with high incomes. When people have low incomes, they have to sometimes trade-off their health needs with basic needs, and in some cases have stress, anxiety and worry on how to meet those needs.**[36]

Prolonged unemployment affects food access, housing stability, and ability to pay bills. Chronic stress is noted in communities that are experiencing collective job loss and the mental wellbeing of these communities is likely to decline with continued unemployment.[37] *This decline in mental wellness can be linked to decreased social capital and resources that support community wellness particularly among young people.*

Children living in poverty and those who had adverse experiences such as trauma, witnessing violence and abuse may have impaired learning, behavior, physical and mental wellbeing.[38] **Without interventions, early adverse experiences predispose individuals to prolonged limited quality of life and limited social involvement in the community.**[39]

Health Care System

Inadequate insurance, delayed access, lack of sufficient treatment providers and types of mental health and substance abuse treatments, and insufficient costs are barriers to accessing care for individuals in need.[40, 41]
In some cases, depending on the insurance policy, one in five Americans indicated needing to choose between getting treatment for a physical health condition and mental health. The waiting periods to access mental health services can affect service utility as well as delay timely treatment.[42]

Research shows that the stigma associated with mental health leads to disparities in health outcomes. The disparities in access emerge based on income levels, racial/ethnic groups, and location of individuals. The Black and Hispanic as well as migrant population living in low income neighborhoods are likely to have limited access to mental health services.[43]

Best Policies, Practices, and Programs to Address Mental Health and Substance Abuse

Public Policy

National, State, Local Law

- Continue to expand health insurance plans to integrate unconditional mental health coverage and substance disorder treatments in all policies towards increasing access and use of the services. Support treatment completion to promote positive post-treatment outcomes.[44]
- Implement childcare subsidies to help parents with low-income work more hours, stay in jobs longer, and increase overall earnings.[45]
- Encourage flexible scheduling that allows workers to have a healthy work-life balance.[46]
- Integrate mental health care with other healthcare systems, school services, and support systems. Increase financing and training of peer workforce to increase capacity of service delivery in the community.[47]
- Support harm reduction practices and Syringe Service Programs to reduce risk of infections, promote safe needle disposal, and referrals to health services and medication-assisted treatment.[48, 49] (Medically Supervised Safer injection Facilities are not legally allowable in Indiana)

Community

Social spaces, Organizations, Institutions - Mental Health

- To address stigma issues, promote appropriate pathways to care in communities. This can include cultural competency development and mental health awareness in primary care providers. Tailor healthcare to patients' norms, beliefs, values, language, and literacy skills to improve mental health outcomes, knowledge, and awareness.[50]
- Promote extracurricular programs that allow opportunities for self-expression, community involvement, and leadership development.[51]
- Prioritize appropriate mental health services to diverse populations and immigrant communities.[52]
- Increase options to expand access by using strategies such as the telehealth to reach people unable to seek healthcare services and information in person.[53] Expand telehealth practice beyond the pandemic season and increase access to locations of mental health services providers.[54]
- Coordinate delivery of services across multiple systems such as housing, food, child welfare, and disciplinary boundaries to improve access to social services and better health outcomes.[55]
- Promote and continue to incorporate social and emotional learning programs in educational settings to enhance problem solving, coping and relational skills.[56, 57]
- Maintain green spaces and encourage park and recreational activities to improve physical and mental health.[58]

Community

Organizations, Institutions - Substance Abuse

- Increase public awareness about prescription opioid use, overdose, and making safe choices.
- Collaborative engagement with public safety officials and community support programs to address the use of opioids.[59] Strategies can also involve parents, organizations that work with young people, healthcare support, and policy makers.*[60]
- Support recovering employees and individuals in communities who are struggling with opioid use disorder or misuse.[61] This includes funding for recovery programs, increasing sober living environments, employment for those in rehabilitation, and supported housing for those in recovery.
- Sustain the work of the Overdose Fatality Review Team to understand the underlying conditions among those who use opioids and identify different ways to support the communities, and workplaces towards addressing substance abuse. The team identifies trends and prevention opportunities, improves agency responses to specific barriers and system issues, promotes consistent identification and coding of cause and manner of death, and advocates for community safety.*[62]
- Participate in the Indiana Communities Advancing Recovery Efforts Extension of Community Health Outcomes (IN CAREs ECHO) that provide an opportunity to learn about best practices and address substance use disorders and opioid overdoses in 16 counties.*[63]

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