

SAGINAW COUNTY ROADMAP TO HEALTH

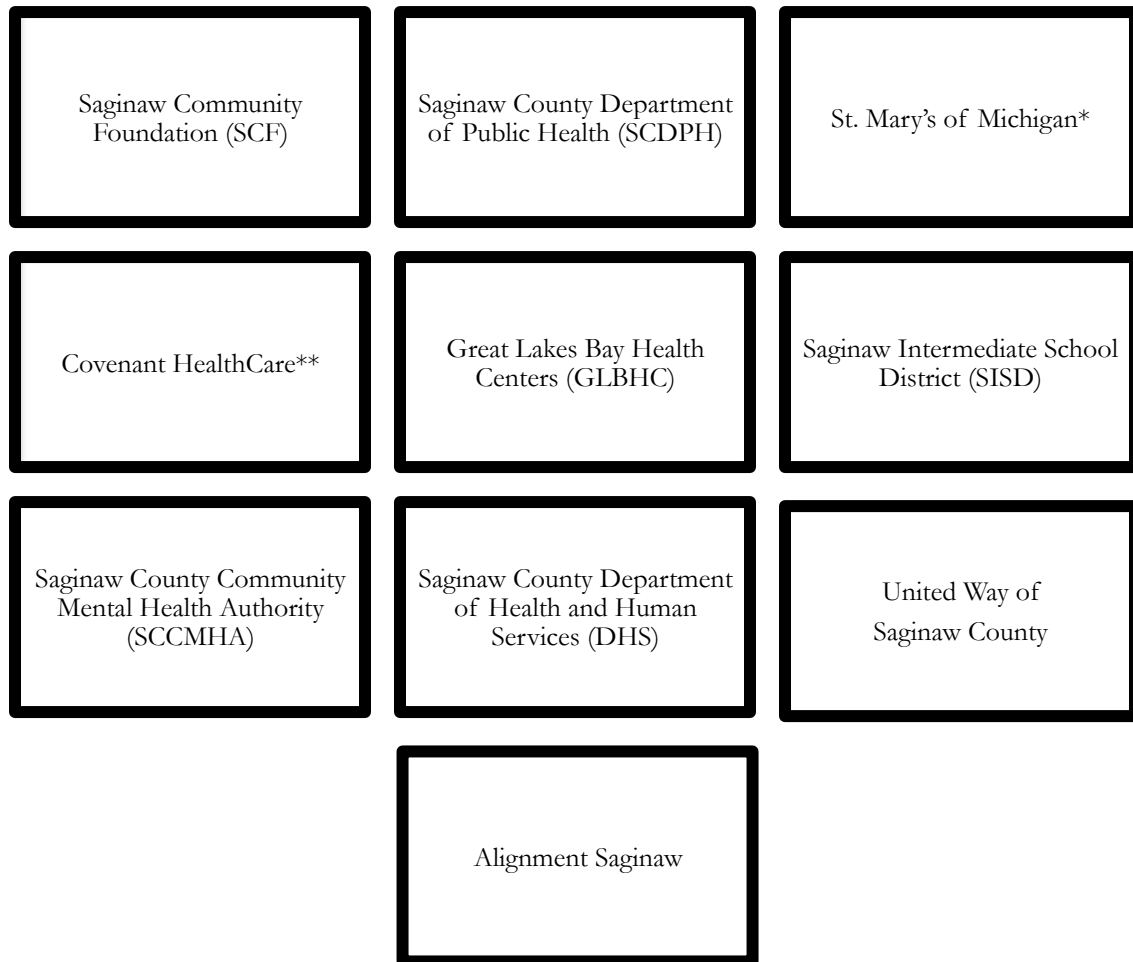


Community Health Needs Assessment and
Community Health Improvement Plan
2017-2020

Saginaw County Community Health Needs Assessment and Health Improvement Plan 2017 – 2020
An Initiative of Alignment Saginaw Community Health Improvement Plan (CHIP) Partners

Alignment Saginaw is a community collaborative with a mission of preparing and mobilizing around opportunities that impact key areas affecting Saginaw County’s quality of life. The Saginaw Community Foundation is the fiduciary and manager of operations of Alignment Saginaw.

This effort was funded by the members of the CHIP Steering Committee Agencies. The following are the Community Health Improvement Steering Committee Agencies:



*St. Mary’s of Michigan refers to a group of affiliated medical campuses, outpatient centers, primary care locations and ancillary health care organizations. **Covenant HealthCare includes: Covenant Medical Center Inc (Cooper), Covenant Medical Center Inc. (Harrison), Covenant Medical Center Inc. (Rehab), Covenant Medical Center Inc. (Michigan).

Saginaw County Community Health Needs Assessment and Health Improvement Plan 2017 – 2020
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Executive Summary

Background

We are pleased to present the updated “*Saginaw County Roadmap to Health - Saginaw County Community Health Needs Assessment (CHNA) and Community Health Improvement Plan (CHIP) - 2017-2020*”. The *Saginaw County Roadmap to Health* outlines the goals and objectives related to the top health needs identified from the CHNA data, also detailed in this report. This effort was funded by the members of the CHIP Steering Committee, including the two major hospital systems that serve Saginaw County residents, St. Mary’s of Michigan and Covenant HealthCare.

From September 2016 through January 2017, members of the Saginaw County CHIP Partners, including the two separate hospital systems, and a collection of multi-sector community stakeholders, completed the joint CHNA for Saginaw County. Information regarding Saginaw County’s most important health needs, as well as their prioritization, are based upon information provided by residents using the four Mobilizing for Action through Planning and Partnerships (MAPP) assessments: 1) community health status, 2) community themes and strengths, 3) local public health system, and 4) forces of change. In an attempt to acquire broad community input regarding the health needs of Saginaw County, individuals who live and/or work in Saginaw County, including residents, health care consumers, community leaders, health care professionals, and multi-sector representatives, were interviewed, participated in meetings of CHIP’s network of community partners, and/or responded to one of the MAPP surveys. These findings are also informed by a collection of over 100 metrics designed to measure health status and chronic disease priorities, social and economic factors impacting residents, and healthcare delivery system access and utilization trends experienced in the County.

Identification and Prioritization of Needs

The joint community health needs assessment identified eight priority health needs for Saginaw County. The needs were prioritized based upon, input gathered from the CHNA, the implications for long term health outcomes, the ability of local health care systems to have an impact on addressing the need, current priorities and programs, and the effectiveness of existing programs. The identified priorities for Saginaw County include:

Priority Needs	
Health Conditions	Determinants of Health
<p>Physical Health Conditions</p> <ol style="list-style-type: none"> 1. Obesity 2. Chronic Illnesses: Diabetes, Cancer, Heart Disease, Asthma 3. Dental Health 4. Maternal, Infant, & Child Health <ul style="list-style-type: none"> • Infant Mortality • Childhood lead poisoning <p>Behavioral Health</p> <ol style="list-style-type: none"> 5. Substance Abuse/Misuse 6. Mental Health 	<p>Environmental (Social & Physical)</p> <ol style="list-style-type: none"> 7. Equal Access to Healthy Choices & Opportunities <ul style="list-style-type: none"> • Eliminating race, place, poverty access inequities • Access to affordable and reliable transportation <p>Health Care</p> <ol style="list-style-type: none"> 8. Access to Health Care and Utilization of Services <ul style="list-style-type: none"> • Affordability • Navigation: Coordination, Outreach/Awareness, Health Literacy • Service Delivery: Location, Hours, Effective Provider-patient Communication

Implementation Plan Development

CHIP Partners and multi-sector community stakeholders met on March 9th, March 22nd, and April 13th to establish goals and objectives pertaining to each of the priority health needs as well as to restructure action groups based on the identified priorities. The action groups along with the Steering Committee will further establish the strategies and action plans aimed at planning, implementing, promoting, and overseeing the success of the Saginaw County Community Health Improvement Plan. The local hospital systems, Covenant HealthCare and St. Mary’s of Michigan, are convening their leadership to develop implementation plans to address identified priority health needs. As part of each hospital’s action planning, they will continue to collaborate with CHIP Partners to align activities where possible to leverage existing programs, avoid duplication, and maximize available resources through combined community benefit investment. These collective implementation plans are the basis of a shared Community Health Improvement Plan to be implemented in collaboration with the CHIP Partners.

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KEY TERMS

3 year moving average/5 year moving average - The number of deaths due to a specific cause are averaged for a THREE year consecutive period to smooth yearly variance in order to make seeing trends in the data easier. Number of deaths due to a specific cause are averaged for a FIVE year consecutive period to smooth yearly variance to make seeing trends in the data easier.

Age-adjusted rate - The crude age-specific rates are averaged by weighting the proportion of persons in each age group against a standard population (typically the U.S. Population Census).

BMI, body mass index, Weight (in kilograms) divided by height (in meters) squared (kg/m²). Overweight for children is defined as a BMI at or above the 85th percentile and lower than the 95th percentile for children of the same age and sex. Obesity for children is defined as a BMI at or above the 95th percentile for children of the same age and sex. Adult obesity is based on the proportion of adults whose BMI was greater than or equal to 30 and adult overweight status is based on the proportion of adults whose BMI was greater than or equal to 25, but less than 30.

Determinant - Any factor, whether event, characteristic, or other definable entity, that brings about change in a health condition, or in other defined characteristics. **Determinants of Health Include:** the social and economic environment, the physical environment, and the person's individual characteristics and behaviors.

Ethnicity - The Federal government of the United States has mandated that "in data collection and presentation, federal agencies are required to use a minimum of two ethnicities: "Hispanic or Latino" and "Not Hispanic or Latino."" The Census Bureau defines "Hispanic or Latino" as "a person of Cuban, Mexican, Puerto Rican, South or Central American or other Spanish culture or origin regardless of race." For discussion of the meaning and scope of the Hispanic or Latino ethnicity, see the Hispanic and Latino Americans and Racial and ethnic demographics of the United States articles.

Health Indicator/Condition - A measure that reflects, or indicates, the state of health of persons in a population, e.g., obesity rates.

Health Literacy – the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions

Health Inequity - A difference or disparity in health outcomes that is systemic, unfair, and about which you can do something.

Health Outcomes - A change in the health status of an individual, group or population which is attributable to a planned intervention or series of interventions, regardless of whether such an intervention was intended to change health status.

Incidence - The number of new cases of a disease or event being identified and reported in a population.

Median - The middle number of a group of numbers that are arranged in numerical order. {1, 3, **10**, 75, 76}.

Proportion - A part of the population with respect to the entire population. {50 men exercise out of 100 men surveyed, so the proportion is 50/100 which is equivalent to 0.5 equivalent to 50%}.

Prevalence – Number of cases of a disease, infected persons, or persons with some other attribute present during a particular interval of time. It is often expressed as a rate (e.g., prevalence of diabetes per 1,000 persons during a year).

Race - According to the U.S. Census Bureau: **White.** Person having origins in any of the original peoples of Europe, the Middle East, or North Africa. It includes people who indicate their race as 'White' or report entries such as Irish, German, Italian, Lebanese, Near Easterner, Arab, or Polish. **Black or African American (AA).** Person having origins in any of the Black racial groups of Africa. It includes people who indicate their race as Black, African Am., or Negro, or provide written entries such as African American, Afro American, Kenyan, Nigerian, or Haitian. **American Indian and Alaska Native.** Person having origins in any of the original peoples of North and South America (including Central America) and who maintain tribal affiliation or community attachment. **Asian.** A person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent including, e.g., Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam. Includes 'Asian Indian,' 'Chinese,' 'Filipino,' 'Korean,' 'Japanese,' 'Vietnamese,' 'Other Asian.'

Rate - Number of individuals affected by an event or disease divided by the population (population at risk for the event or disease) expressed per 100,000 (or rate per 1,000 or another number). {Infant mortality rate would be 10 per 1,000 live births for a population with 2,000 births experiencing 20 infant deaths. $20/2,000 = 0.01 \times 1,000 = 10$ per 1,000}.

Respondent – A person who answered survey questions (i.e., participant in Community Themes and Strengths Assessment)

Introduction

Community Health Needs Assessment Population

For the purpose of the Saginaw County Community Health Needs Assessment (CHNA), the CHIP Partners defined their joint service area and population as Saginaw County, Michigan.

Approximately 70% of the inpatient discharge for Covenant HealthCare is from Saginaw County and 53% of St. Mary's of Michigan's inpatient discharge is from Saginaw County.

Saginaw County is located in the central portion of the Lower Peninsula of Michigan. It is 800.11 Square Miles, 69% urban, 31% rural, and Michigan's 10th largest county. Over 60% of the county's land is used for farming activity that leads to food processing. The three most populous municipalities in the County are Saginaw City, Saginaw Township, and Thomas Township.



Saginaw was known as one of Michigan's most dynamic industrial/manufacturing centers. In the late 70s over 10,000 employees were employed by Original Equipment Manufacturers (OEM). Its automotive sector once included Delphi-Saginaw Steering World Headquarters, Delphi Chassis, GM Powertrain, Saginaw Metal Casting Operations, Saginaw Malleable Iron Plant, and numerous automotive suppliers. Nexteer Automotive, is now the County's leading employer and one of two remaining automotive plants, employing almost 5,000 employees.

Saginaw County is currently emerging as Mid-Michigan's medical center, with Covenant HealthCare and St. Mary's of Michigan Hospital being Saginaw County's second and third leading employers. Additionally, in May 2015, Central Michigan University (CMU) College of Medicine completed its new 46,000-square-foot educational facility. CMU College of Medicine's residents will be located at both St. Mary's of Michigan and Covenant HealthCare. Saginaw County CHIP Partners continue to work to strengthen these growing and concerted efforts toward health improvement in Saginaw County through collective initiatives.

According to the 2017 Robert Wood Johnson Foundation County Health Rankings report, Saginaw County ranks 74th out of 83 Michigan counties for overall health outcomes, including 70th in length of life, and 79th in quality of life. Saginaw County ranks 73rd for overall health factors, including 78th in health behaviors, 70th in physical environment, and 60th in social/economic factors.

Many of Saginaw County's communities of color and low-income communities are overwhelmed with harmful attributes that compromise individual and community health. Moreover, all demographic, social, and economic impact factors are higher among residents within the City of Saginaw, where higher rates of poverty are associated with poorer educational outcomes, income levels, employment levels, crime/incarceration, and inadequate access to health care/coverage. Residents who are low-income, minority, or un/underinsured are disproportionately impacted by environmental issues such as pollution, crime, property abandonment, lack of areas to exercise outdoors, and lack of access to healthy foods. Areas in Saginaw County, particularly Saginaw City, are noted as "food deserts" or areas of relative exclusion where people experience physical and economic barriers to accessing healthy food. According to the U.S. Department of Health and Human Services Health Resources & Services Administration, areas within the City of Saginaw, particularly the East Side, are designated as Medically Underserved Areas (MUA) and Health Professional Shortage Areas (HPSAs) for primary care, dental care, and mental health providers.

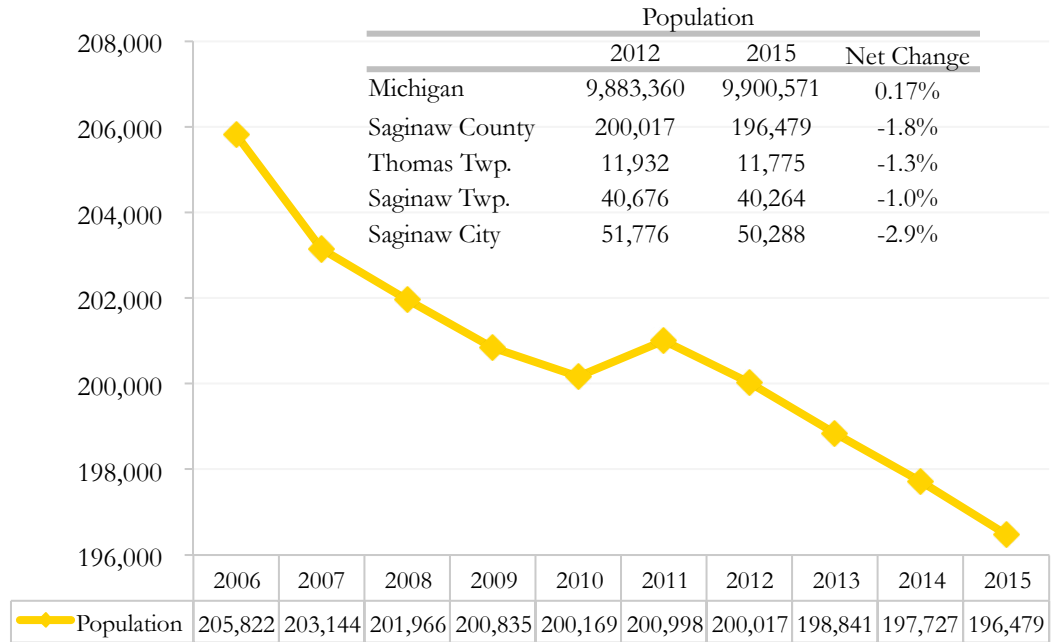
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Community Health Needs Assessment Population

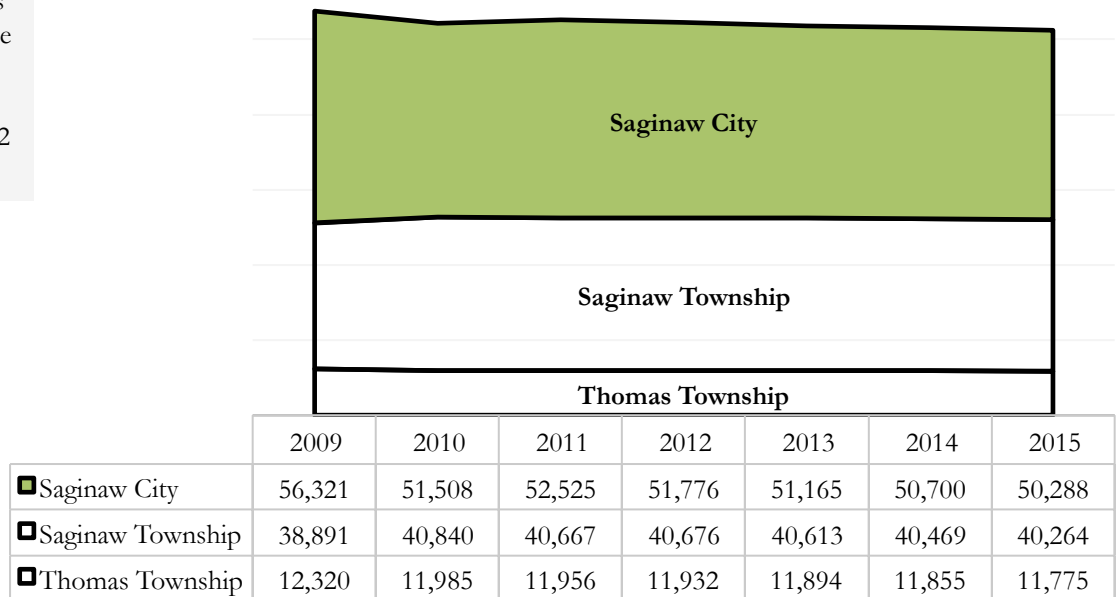
Population Trends

- According to the U.S. Census, the 2015 population estimate for Saginaw County is 196,479.
- In comparing the 2012 and 2015 Census estimates, Saginaw County's population decreased 1.8%, while the rate of the State's population increased slightly, .17%.
- The three most populous municipalities in Saginaw County are Saginaw City, Saginaw Township and Thomas Township.
- The area affected most by the population shifts between 2012 and 2015 is the City of Saginaw where the 2015 population is estimated to be 50,238 – down 2.9% from the 2012 census estimates.

Saginaw County Population Trend 2006-2015



Thomas Township, Saginaw Twp. and City Population Trend 2009-2015



Source: U.S. Census Bureau, 2011-2015 American Community Survey 5-Year Estimates

Introduction

Community Health Needs Assessment Population

Age

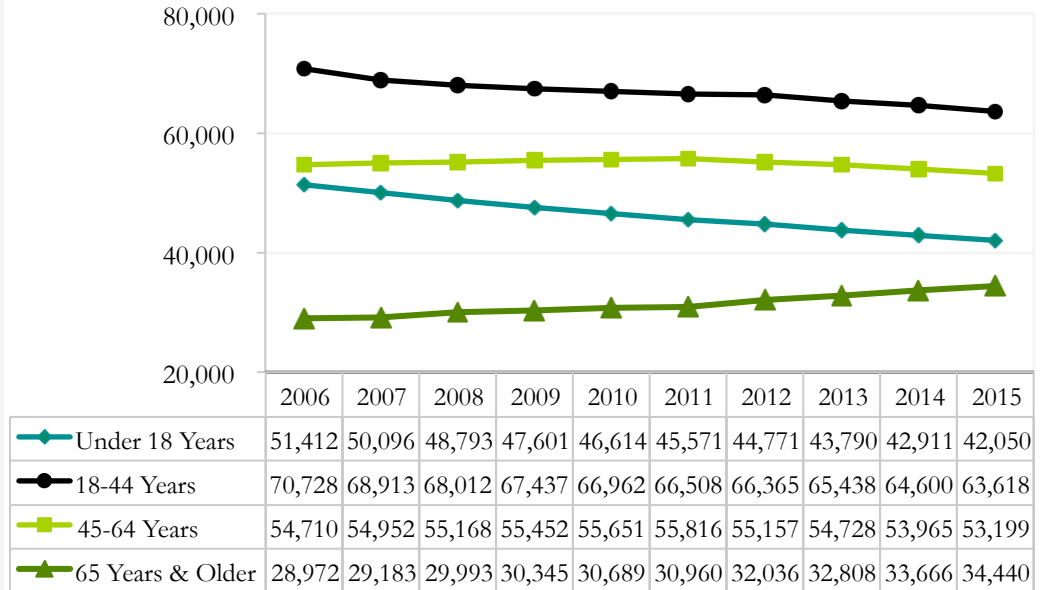
The average age of County Residents for 2015 was 40.3 years. In viewing U.S. Census trends between 2012 and 2015:

- The percentage of Saginaw County residents 65 years and older increased from 32,036 – 34,440, a 7.5% increase.
- All other age groups are declining in Saginaw County with the greatest decline for the population of residents under 18 years old, -6.1%.

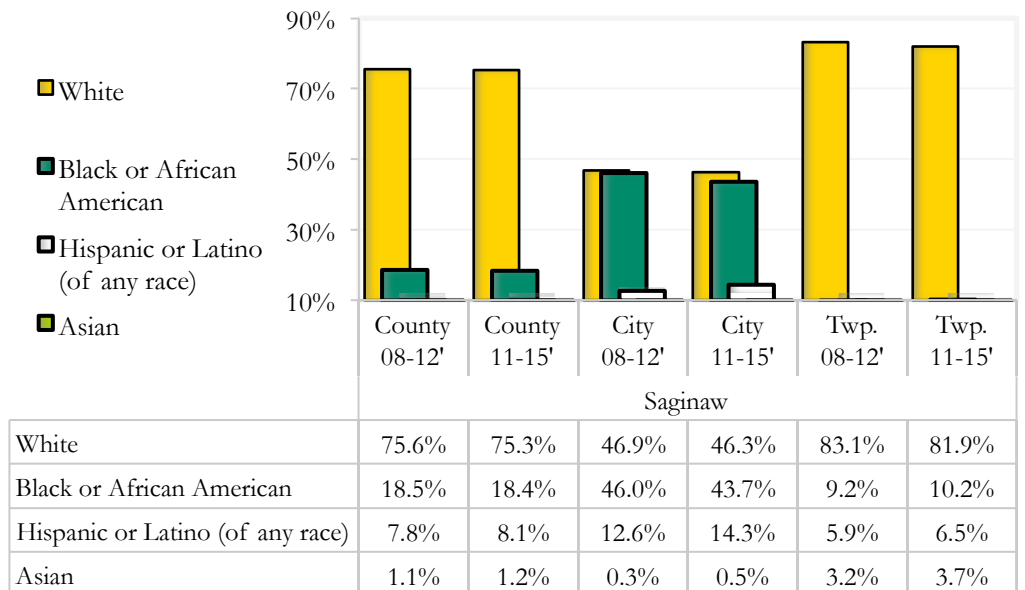
Race and Ethnicity

- According to the U.S. Census, the percentage of White residents in Saginaw County is 75.3%, African American is 18.4%, Hispanic/Latino is 8.1%, and Asian is 1.2%.
- In comparing 2012 to 2015 Census estimates, there was little change in racial/ethnic populations for Saginaw County and Township. Saginaw City had a slight decline in African American population and increase in Hispanic/Latino population.
- Saginaw City is more racially/ethnically diverse in population than the County as a whole, where the 2015 population is 46.3% White, 43.7% African American, 14.3% Hispanic/Latino, and 0.5% Asian.

Saginaw County Population Age Trends 2006-2015



Saginaw County, City, and Township Population by Race/Ethnicity 2008-2012 vs. 2011-2015



Source: U.S. Census Bureau, 2006-2010 – 2011-2015 American Community Survey

Introduction

Community Health Needs Assessment Population

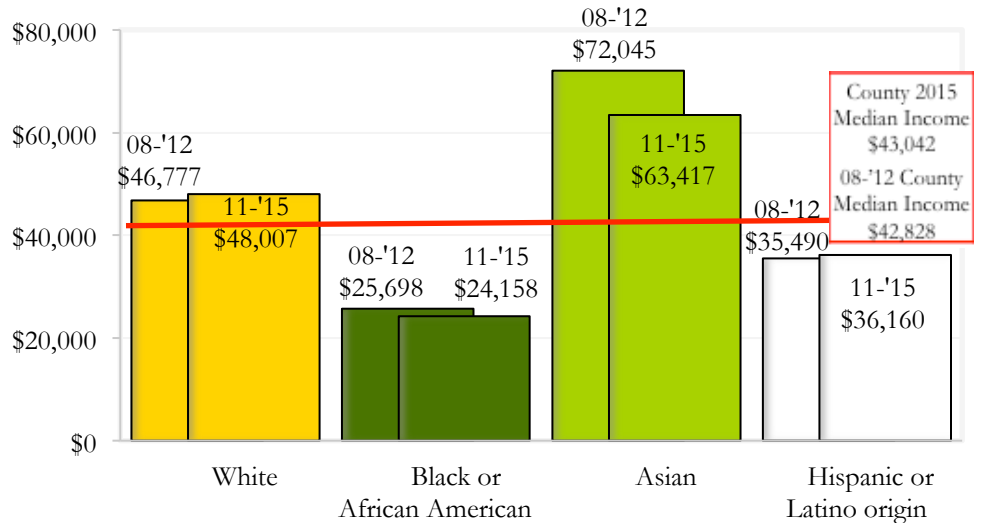
Income

- In comparing 2012 and 2015 census data, the median income for Saginaw County residents increased slightly from \$42,828 to \$43,042.
- The median income decreased for African American and Asian residents and increased for White and Hispanic/Latino residents.
- The 2015 median income for African Americans (\$24,158) and Hispanic/Latino (\$36,160) residents is far below the median income for the entire County (\$42,828).
- According to 2015 census estimates, African Americans median income was 2 times less than that of White residents. Hispanic/Latino residents' median income was 1.3 times less than that of White residents.

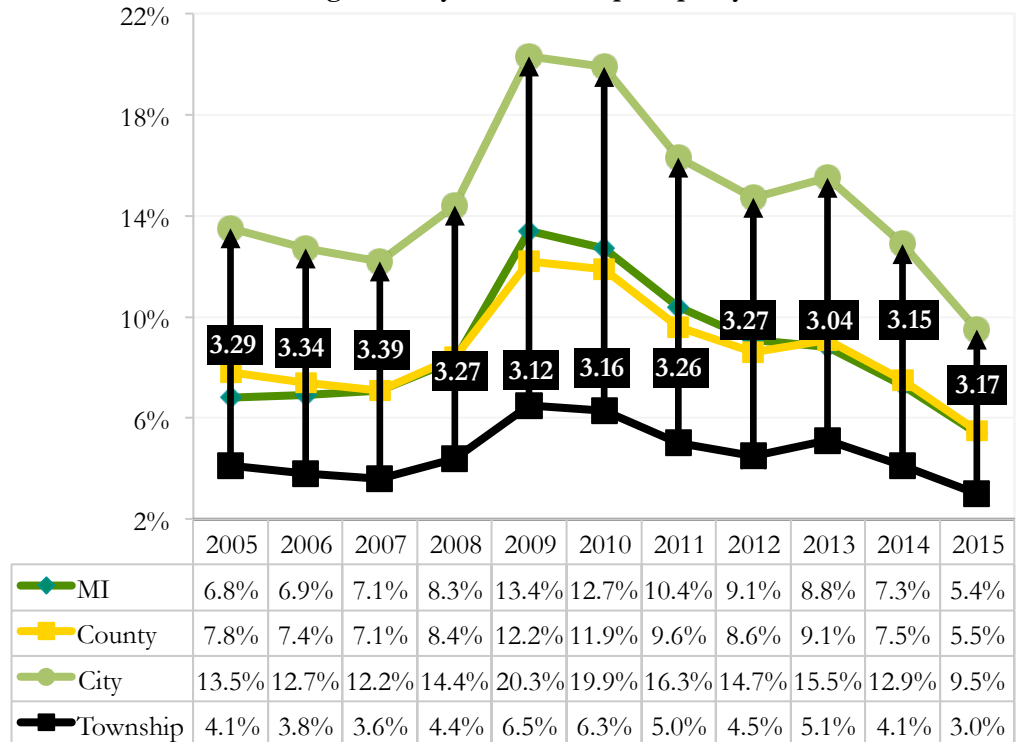
Employment

- In comparing 2012 and 2015 rates, unemployment continues to decline in Saginaw County with rates almost comparable to that of the state.
- Saginaw City's 2015 unemployment rate is almost 2 times higher than that of the County as a whole.
- Saginaw Township's 2015 unemployment rate is 3.2 times lower than that of neighboring, Saginaw City.

Saginaw County Median Household Income by Race/Ethnicity 2008-2012¹ vs. 2011-2015²



Michigan, Saginaw County, City, and Township Unemployment Rate with Saginaw City and Township Disparity Ratio, 2005-2015³



Source: Source: ¹U.S. Census Bureau, 2008-2012 American Community Survey; ²U.S. Census Bureau, 2011-2015 American Community Survey, ³Michigan Department of Labor and Economic Growth, Labor Market Information

Introduction

Community Health Needs Assessment Population

Poverty

- In comparing 2012 and 2015 census, data, poverty rates for individuals of all ages remained the same.
- Saginaw County's 2015 poverty rate (18.3%) slightly exceeds that of the state (16.7%).
- Saginaw City's 2015 poverty rate for individuals of all ages (35.9%) is almost 2 times greater than that of the entire County (18.3%) and over 3.5 times greater than the rate for Saginaw Township residents (10.1%).
- The percentage of Saginaw County African American individuals in poverty (40.5%) is over 3 times that of White individuals (13%). The percentage of Saginaw County Hispanic/Latino individuals is 1.9 times more than White individuals.
- In 2015, the County's percentage of individuals in poverty who are under 18 years old decreased slightly between 2012 and 2015 and was above the percentage for the entire state in 2015.
- City of Saginaw has a greater rate of individuals under 18 years old who are in poverty (50.0%) than the County (26.8%) and Saginaw Township (16.0%).

Education

- According to 2012 and 2015 Census data, Saginaw County high school graduation rates increased slightly between 2012 and 2015.
- In 2015, Saginaw County residents who graduated from high school (88%) is marginally less than that of the entire State (89.6%).
- In 2015, the percentage of Saginaw County new mothers without a high school diploma or GED (17.1%) is greater than that of the state (13.1%).
- According to 2015 Department of Education data, Saginaw County's 3rd grade reading proficiency (43.6%) was a little less than that of the entire state. The Saginaw [City] Public School's 3rd grade reading proficiency rate (31.1%) was lower than that of the County. The Saginaw Township Community School District's 3rd grade reading proficiency rate (53.5%) was greater than that of the County and State.
- The percentage of 3rd graders proficient in math (40.6%) was less than that of the state (45.2%). The Saginaw [City] Public School's 3rd grade math proficiency rate (28.3%) was lower than that of the County. Saginaw Township Community School District's 3rd grade math proficiency rate (53.5%) was greater than County's and State's.

Juvenile Crime Rate

- According to 2014 juvenile crime data, the County's rate (18.0) is greater than the state's (12.3).
- Saginaw County's African American rate (32.7) is 4.7 times greater than the Hispanic rate (7.0) and 1.3 times greater than the states African American ate (25.2)

Poverty Indicators ¹	Saginaw				MI
	County		City	Twp.	
	2012	2015	2015	2015	2015
Individuals of all ages in poverty	18.7%	18.3%	35.9%	10.1%	16.7%
- African American	40.5%	41.0%	44.0%	28.7%	34.6%
- Hispanic/Latino	24.9%	27.2%	37.9%	17.2%	27.1%
- White alone	13.0%	12.3%	28.8%	7.6%	13.1%
Children under 18	27.7%	26.8%	50.0%	16.0%	23.5%

Education Indicators	Saginaw County		MI
	2012	2015	2015
High school graduates ¹	86.8%	88.0%	89.6%
	2012	2014	2014
New mothers without a diploma or GED ²	17.9%	16.3%	13.1%

	Saginaw School Districts			MI
	County	City*	Twp.*	
2015 3 rd grade Reading - advanced or proficient ³	43.6%	31.1%	53.5%	46.0%
2015 3 rd grade Mathematics proficient ³	40.6%	28.3%	53.5%	45.2%

2015 Juvenile Crime Rate ⁴	Saginaw	MI
All Offense Types	18.0	12.3
- White	12.6	9.3
- African American	32.7	25.2
- Hispanic	7.0	4.99

Source: ¹U.S. Census Bureau, 2008-2012 and 2011-2015 American Community Survey. ²Kids Count in Michigan – Data Book 2015; Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics (3 year average). ³Michigan Department of Education, MI School Data, www.mischooldata.org Michigan Student Test of Educational Progress (M-STEP) (2015-2016). ⁴Michigan State Police. Puzanchera, C., Sladky, A. and Kang, W. (2016). "Easy Access to Juvenile Populations: 1990-2015." Online. Accessed September 12, 2016., www.ojjdp.gov/ojstatbb/ezapop/. *Data does not include charter, parochial, or homeschooled students

METHOD

Mobilizing for Action through Planning and Partnership (MAPP)

The **METHODOLOGY** used to conduct the CHNA and design the CHIP follows a national model called Mobilizing for Action through Planning and Partnerships (MAPP), developed by the Centers for Disease Control and Prevention (CDC) and the National Association of County and City Health Officials (NACCHO). MAPP is a community-wide strategic planning tool for improving community health. This tool was selected because of its comprehensive approach to assessment, its national credibility, and because it embodies the principle of collaboration with a community-driven approach.

Organizing for Success and Visioning: The CHIP Steering Committee was formed in 2009 under the auspices of Alignment Saginaw. The Committee is made up of representatives from the Saginaw Community Foundation (SCF), Covenant HealthCare, St. Mary's of Michigan, Saginaw Intermediate School District (SISD), Saginaw County Community Mental Health Authority (SCCMHA), Saginaw County Department of Public Health (SCDPH), Great Lakes Bay Health Centers (GLBHC), Saginaw Department of Health and Human Services (DHS), and the United Way of Saginaw County.



The MAPP (Mobilizing for Action through Planning and Partnerships) model.

Local champions and existing coalitions have been enlisted to form Action Groups. The Action Groups, along with the Steering Committee, are identified as the Community Health Improvement Plan (CHIP) Partners. For over eight years, CHIP Partners have played a vital role in designing strategies aimed at planning, implementing, promoting, and overseeing the success of Health Improvement in Saginaw County.

The purpose of the CHIP Partners is to champion the development and implementation of an integrated plan that will support and maintain a healthy Saginaw Community. The vision of the CHIP Partners is improved health of Saginaw residents; alignment of priorities; efficient deployment of resources; a culture of cooperation and systems thinking; action plans that address identified priorities which are evidence based, data driven, and with stated timelines; necessary persons engaged to inform the process; improved service delivery and awareness of available services; consumers who are partners in the transformation of their health; and unified promotion of improved public policy to support health improvement.

Regeneration LLC, under the leadership of Pamela Pugh, was contracted to manage the Saginaw County Community Health Needs Assessment, including designing the methodology, overseeing the collection of data, compiling the assessment data, and publishing the report. Regeneration LLC was also responsible for facilitating Health Improvement Planning activities. Regeneration LLC is a woman-owned business which serves as a catalyst for economically sustainable and healthy urban communities by assisting public agencies, faith and community-based organizations and businesses to build capacity through effective operations and winning partnerships and is owned by Pamela Pugh. Prior to starting this business, she was employed by the Saginaw County Department of Public Health for 14 years. Dr. Pugh received a Doctorate of Public Health (DrPH) and a Master of Science in Environmental Health from the University of Michigan School of Public Health and a Bachelor of Science in Chemical Engineering from Florida A&M University. Since October 2016, Dr. Pamela Pugh has served as the Chief Public Health Advisor for the City of Flint, Michigan where she is responsible for providing increased capacity for the City of Flint to enhance the health, wellness and resilience of its residents by providing crucial advice and support to the Mayor and City Council on all matters affecting the health of the residents. The Regeneration LLC team also included Melba Denise Baldwin, an education and consumer advocate with over 21 years experience as an educator. Three college students were subcontracted to assist with data collection: Akia Baldwin, Malik Baldwin, and Jessica Cunningham.

METHOD

Mobilizing for Action through Planning and Partnership (MAPP)

Review of Previous CHNA: July to September 2016, comments on the 2014-2016 CHNA publication was solicited from the CHIP Partners and stakeholders. A review/cross walk of the data, data collection tools/process, and all accessible assessments completed for Saginaw County since the publication of the 2014-2016 CHNA mainly resulted in the decision of the CHIP Partners to: 1) again utilize the MAPP model, 2) include more of the collected data in the compiled report, 3) remove the comparison community, Genesee County, and 4) include available sub-population data for more of the indicators.

The Four MAPP Assessments: The CHNA includes input and data from people and organizations throughout the community representing the broad interests of Saginaw County. This includes input from persons with expertise in public health and government, community leaders, members of the medically underserved, low income and minority residents. The network of CHIP Partners and stakeholders that assisted with the CHNA process include:

Covenant HealthCare (CHS)	Saginaw Houghton Jones Neighborhood Association
Ezekiel Project of Saginaw	Saginaw Intermediate School District (SISD)
Great Lakes Bay Health Centers (GLBHC)	GLBHC School-Based Health Centers Student
Michigan State University Extension (MSU-E)	Technical Advisory Board
Habitat for Humanity	Saginaw Soup Kitchen
Michigan Health Information Alliance (MiHIA)	Saginaw Transit Authority Regional Services (STARS)
Saginaw City Rescue Mission	Saginaw Valley State University (SVSU)
Saginaw Community Foundation (SCF)	SISD Great Start Collaborative (GSC)
Saginaw County Community Action Committee (SCCAC)	St. Mary's of Michigan
Saginaw County Community Mental Health Association (SCCMHA)	United Way of Saginaw County
Saginaw County Department of Public Health (SCDPH)	YMCA of Saginaw
Saginaw Health Plan	

From September 2016 through January 2017, CHIP Partners and stakeholders formed four sub-groups in order to refresh the previous CHNA using the four MAPP assessments: the Community Themes and Strengths (CTSA), Community Health Status (CHSA), Local Public Health System (LPHSA), and Forces of Change Assessment (FOCA). Information was gathered at public events, health clinics, and agencies throughout the County; during relevant stakeholder meetings; via e-mail and social media; and from various databases. This provided for comprehensive set of data and broad community input regarding the health concerns of County residents. The process used to conduct the CHNA, including information about assessment participants, is further detailed in the Identified Community Health Needs Section.

Identifying Strategic Issues: From February to April 2017 the CHIP Partners and stakeholders reviewed the data collected. Health conditions and determinants of health were prioritized based upon input gathered from the CHNA, the potential long term health outcomes, the ability of local health care systems to have an impact on addressing the need, current priorities and programs, and the effectiveness of existing programs. The identified priority health needs were placed into 8 categories: 1) Obesity, 2) Obesity-related Chronic Illnesses (Diabetes, Cancer, Heart Disease, Asthma); 3) Dental Health; 4) Maternal, Infant, & Child Health (Infant Mortality and Childhood lead poisoning); 5) Mental Health, 6) Substance Abuse/Misuse; 7) Equal Access to Healthy Choices (Eliminating race, place, and poverty access inequities and access to affordable and reliable transportation); and 8) Access to Health Care and Utilization of Services (Affordability, Navigation, Service Delivery)

Formulating Goals and Action Cycle: In March and April 2017, CHIP Partners and multi-sector community stakeholders were convened and additional information was gathered pertaining to goals, objectives, and strategies that may be used to improve the identified health outcomes and address the determinants of health. The following Action/Advisory Groups were convened: 1) Obesity-related Chronic illnesses and Dental Care; 2) Maternal, Infant, and Child Health; 3) Behavioral Health; 4) Emerging Models of Health Services Delivery; and 5) Health and Social Equity.

These groups used all the data collected to further establish 3 year goals, objectives, and strategies. The Action Groups, along with the Steering Committee will further establish the annual strategies and action plans aimed at planning, implementing, promoting, and overseeing the success of the Community Health Improvement Plan in Saginaw County. The local hospital systems, Covenant HealthCare and St. Mary's of Michigan, are convening their leadership to develop implementation plans to address identified priority health needs. As part of each hospital's action planning, they will continue to collaborate with CHIP Partners to align implementation plan activities where possible to leverage existing programs, avoid duplication, and maximize available resources through combined community benefit investment. These collective implementation plans are the basis of a shared Community Health Improvement Plan to be implemented in collaboration with the CHIP Partners.

METHOD

Data Limitations

The data represented in this report are mainly from secondary, or existing, data sources and may include limitations on direct interpretation due to small sample sizes, representativeness of the county, or data projections and estimates. As an example, the Michigan Behavioral Risk Factor Surveillance System (MiBRFSS) was used to gather obesity rates and other health data (i.e., dental health, health care access, mental, and behavioral health) for Saginaw County adults.

The MiBRFSS collects data of individuals 18 years and older using a state-based telephone survey (random sample of telephone landlines and cellular phone users) administered on a monthly basis. The sample is designed to be representative of the state, not necessarily of the county, and there are various factors that may bias the results (i.e., not all households have phone service). Youth weight status and other health risk and protective factors associated with substance use, violence, physical activity, nutrition, sexual behavior, and emotional health was collected for Saginaw County youth using the Michigan Profile for Healthy Youth (MiPHY). The MiPHY uses an on-line platform to survey Michigan students in grades 7, 9, and 11. These data apply only to youth who attend school and, therefore, are not representative of all persons in this age group. Also, not all Saginaw County schools/school districts participate in this survey.

Therefore, it should be noted that problems exist in estimating county-level prevalence of most risk factors. This is true of Saginaw County BRFSS and MiPHY data and any conclusions that are made should take this into account. Several potential biasing factors include a lack of sampling from low income residents, people in rural areas, people with less than 12 years of education, people in poor health, heads of households younger than 25 years of age, and youth who do not attend school due to telephone coverage being lower for such population subgroups and/or youth not being enrolled in school or a school that was sampled.

Prevalence estimates are shown without the 95 percent confidence intervals (CI). This is true for all data reported, including the BRFSS, MiPHY, and MDHHS data. Therefore, when viewing trend data, comparison of one reporting period to another, consideration should be given to the fact that two values that look different may not be statistically different. This is due to the range of potential values possibly overlapping. For example, the value for Saginaw County adults reported as being obese in 2008-2011 is 40.2% with a 95% CI of 35.1% - 45.5% and the obesity rate for 2013-2015 is 41% with a 95% CI of 36% – 47.6. These values overlap but please note that when CIs for the means of two independent populations don't overlap, there will indeed be a statistically significant difference between the means. However, CIs may overlap, BUT there may be a statistically significant difference between the means. Therefore, in the example given above, it is noted in the report that these values “remained *almost* the same” when comparing the trend between the two rates.

Some rates reported, mainly from MDHHS data, are based on small numbers of events (i.e., Saginaw County Hispanic/Latino infant deaths) or small population base. These rates tend to show considerable variation that can challenge their usefulness for comparative purpose. Care should be taken in drawing conclusions from such rates.

In collecting primary data, using the Community Themes and Strengths Assessment (CTSA), some Saginaw County sub-populations were oversampled and some were undersampled. This comparison is based on known proportions from census population estimates. Populations that were oversampled included Saginaw County females, African Americans, residents with incomes less than \$25,000, and residents living in 48601, 48602, 48607, and 48609 Zip Code areas. These oversampled populations represents Saginaw County residents that are medically underserved, minority, and low-income. Values were weighted using SPSS to adjust survey respondent data to census population estimates and make the sample more representative of the population.

The CTSA, like the BRFSS and YRBSS, was also based on the self-report of respondents and may be subject to a number of sources of possible error. How questions are worded, how respondents recall information or perceive their health status/risk behaviors may cause respondents to answer questions in a certain way. This can result in information that is less accurate than those based on physical measurements. For example, respondents are known to underreport body weight and therefore the prevalence of Saginaw County residents who are obese or overweight may more likely be underestimated.

Finally, most secondary data reported has a lag time of at least two years. This makes it impossible to report on the most current health status of Saginaw County residents. However, because the patterns and trends of health outcomes change slowly over time, this lag in available data does not significantly reduce the value of the data.

Despite the varying limitations listed above, the data provide a basic overview of the health and well-being of the residents of Saginaw County. Further assessment may be warranted for issues identified within this Report.

COMMUNITY HEALTH NEEDS IDENTIFIED

Community Themes and Strengths Assessments

The Community Themes & Strengths Assessment data provides a deep understanding of the issues residents feel are important by answering the questions:

“What is important to our community?” ,

“How is health and quality of life perceived in our community?” ,

“What assets do we have that can be used to improve community health?”, and

“What needs and barriers must be addressed in order to improve health?”

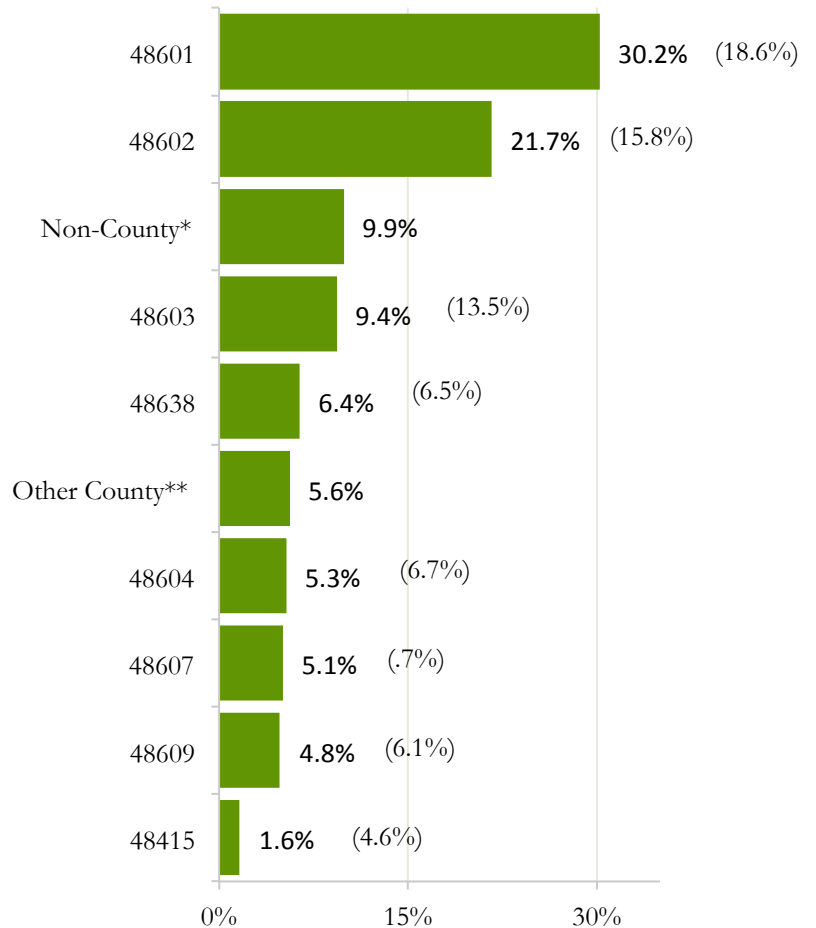
Information was gathered using an electronic and paper survey that was circulated throughout Saginaw County including:

- Facebook filtered for Saginaw County residents
- St. Mary’s of Michigan Center of Hope and patient facilities (Vassar, Birch Run, Frankenmuth, Heritage, Chesaning, and Cathedral Clinics/Offices)
- School-Based Health Center students and staff
- Great Lakes Bay Health Centers
- Neighborhood Associations
- Saginaw Valley State University students and faculty
- Eastside Soup Kitchen and Saginaw Rescue Mission
- Saginaw County Intermediate School District Head Start Parent Council

There were 389 survey respondents (participants) who live and/or work in Saginaw County and were over 18 years old, except respondents from school based health centers. Ninety percent (90%), or 348 of the respondents reported as being Saginaw County residents.

The chart to the right lists the Zip Codes where survey participants reside. In comparison to the census population estimates, shown in parenthesis, there was oversampling of residents living in 48601, 48602, and 48607 Zip Codes.

Percent of Survey Respondents by Zip Code¹ in Comparison to Population Estimates by Zip Code²



*Non-County Zip Codes: 27893, 48236, 48325, 48417, 48420, 48433, 48507, 48532, 48631, 48634, 48640, 48642, 48659

**Other County Zip Codes: 48606, 48616, 48623, 48626, 48637, 48655, 48722, 48724, 48734

Demographic and Socio-Economics of Respondents¹ in Comparison to Saginaw County Population Estimates²

- 66% of the participant Female (51.5%)
- 32% African American/Black (19%)
- 7% Hispanic or Latino (All Races) (7%)
- 55% White (72%)
- 41% Less than \$25,000 annual income (23%)
- 16% \$25,000-\$49,999 annual income (23%)
- 11% \$50,000-\$74,999 annual income (18%)
- 14% \$75,000 or more annual income (36%)

Source: ¹2016 Community Themes and Strength Assessment. ²U.S. Census Bureau, 2011-2015 American Community Survey, shown in parenthesis.

COMMUNITY HEALTH NEEDS IDENTIFIED

Community Health Status Assessments

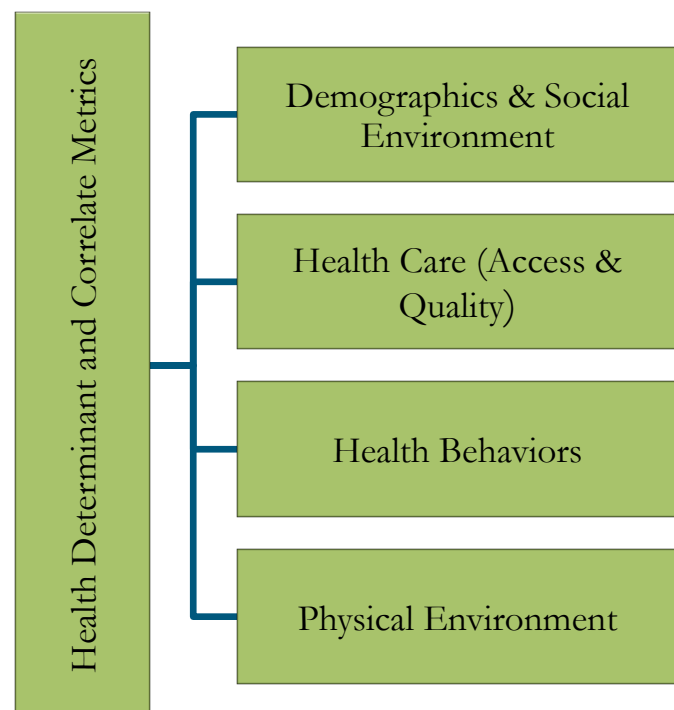
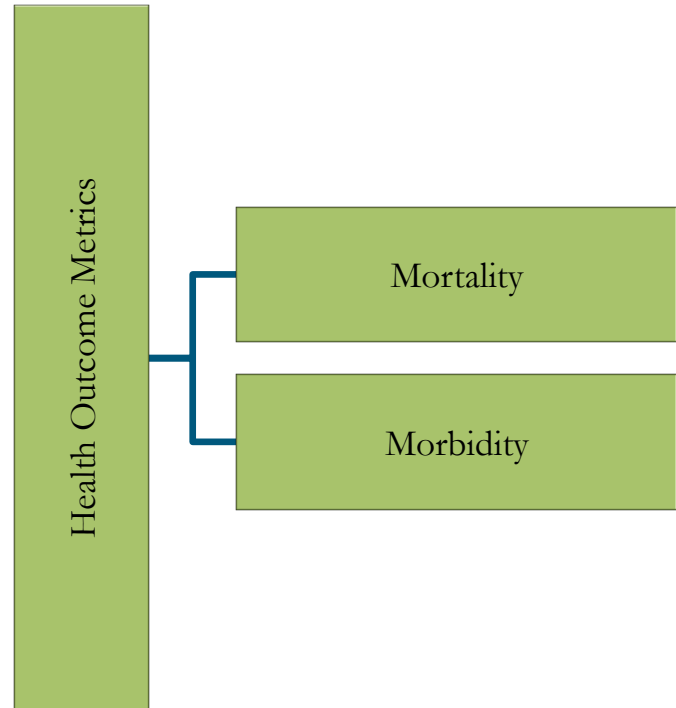
The purpose of the CHSA is to provide an understanding of the community's health status and ensure that the community's priorities include specific health status issues.

Data for the CHSA were collected from:

- Michigan Department of Community Health
- Kids Count Data
- U.S. Census Bureau
- Michigan Behavioral Risk Factor Surveillance System (BRFSS)
- Other county, state, and federal agencies and reports

In some cases, health information for Saginaw County is compared to data for the entire state of Michigan, over consistent time periods.

There are instances when health data are stratified by race/ethnicity (African American, White, and Hispanic/Latino) and geography (Saginaw City and Township statistics) to examine variation in sub-populations statistics.



COMMUNITY HEALTH NEEDS IDENTIFIED

Community Themes and Strengths and Community Health Status Assessments

Priority Physical Health Conditions

There are many health issues that residents in Saginaw County face. Respondents of the Community Themes and Strengths Assessment, made up of both residents and employees of Saginaw County, selected from a list of 18 health conditions ALL of those that they feel are in MOST SERIOUS need of attention in Saginaw County. There were 375 respondents who provided responses for this question.

Listed to the right are each of the physical health condition and the percentage of respondents who selected this issue as a priority. The physical health conditions are grouped into 5 categories: 1) Obesity and Chronic Illnesses; 2) Dental Health; 3) HIV/AIDS; 4) Maternal, Infant, and Child Health (Infant Mortality and Childhood lead poisoning); and Other (High blood pressure, Sickle Cell Anemia, Sleep Deprivation).

The physical health conditions most frequently selected to be in most serious need of attention were obesity, diabetes, cancer, and heart disease. These conditions were each selected by more than 50% of respondents.

The health issues that were related to social, emotional, and/or behavioral health are listed on page 30.

Physical Health Condition	Percent of Respondents
1. Obesity and Chronic Illnesses	
• Diabetes	66.7%
• Obesity	62.7%
• Cancer	53.1%
• Heart disease	53.1%
• Asthma	39.2%
• Stroke	34.9%
2. Dental Health	41.6%
3. Human Immunodeficiency Virus (HIV)/ Acquired Immune Deficiency Syndrome (AIDS)	34.9%
4. Maternal, Child, and Infant	
• Teen pregnancy	41.6%
• Infant Mortality	31.5%
• Childhood lead poisoning	20.5%
5. Other (High Blood Pressure, Sickle Cell Anemia, Sleep Deprivation)	5.9%

COMMUNITY HEALTH NEEDS IDENTIFIED

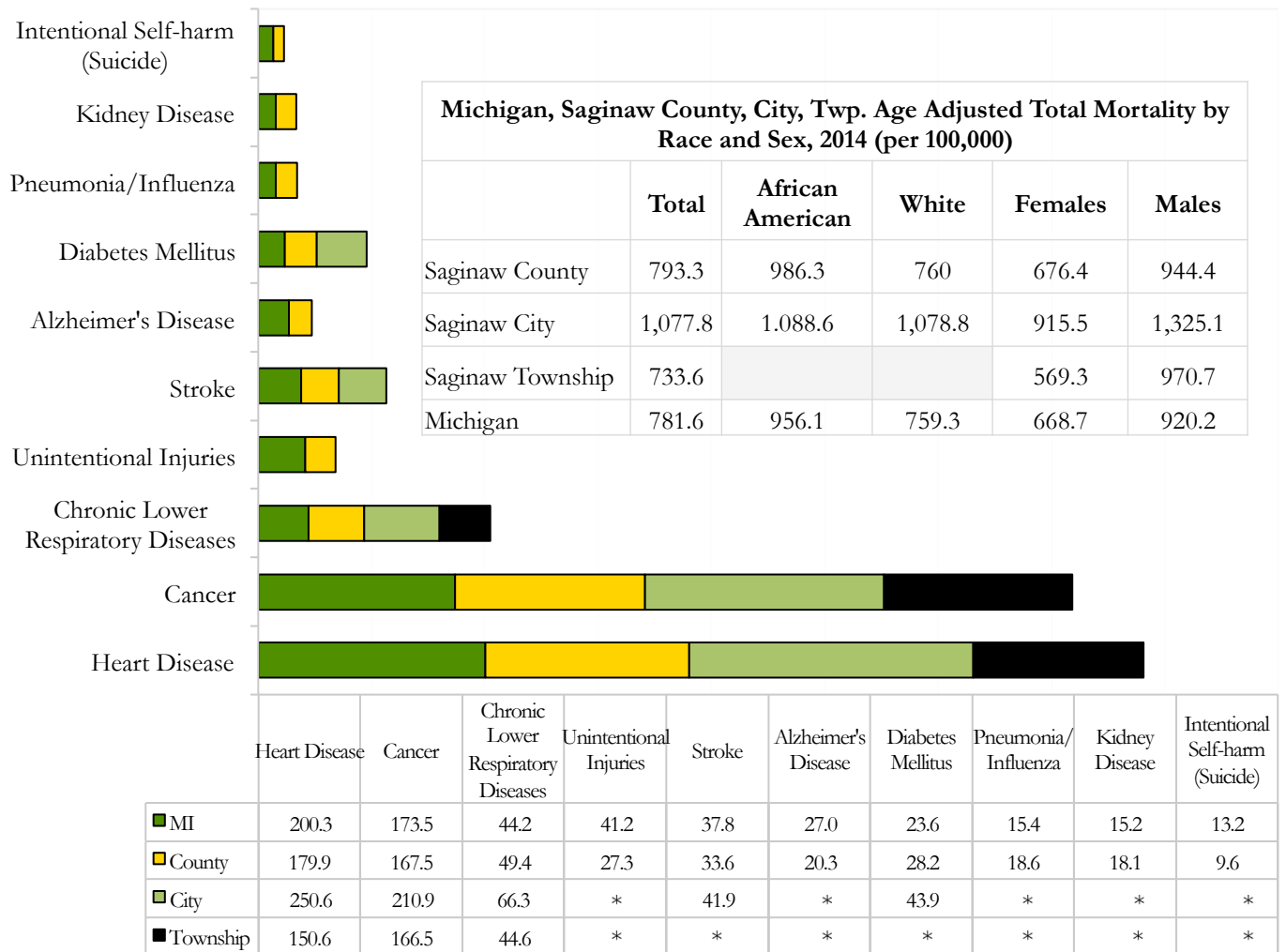
Community Themes and Strengths and Community Health Status Assessments

Physical Health: Chronic Illnesses (Leading Causes of Mortality)

According to 2014 data collected through the Community Health Status Assessment:

- The total age adjusted death rate was greater for the County (793.3) than Michigan (781.6), far greater for the City (1,077.8) than Saginaw County and Township (733.6).
- Saginaw County African American age-adjusted death rate (986.3) was greater than the White rate (760) and Male death rate (944.4) was greater than the female rate. Saginaw County's and Michigan's top two causes of death were heart disease and cancer. Unlike 2011, the County's heart disease death rate (179.9) was below Michigan (200.3) and Saginaw County cancer death rate (167.5) remained below that of the entire state (173.5).
- However, Saginaw County's rates of death due to chronic lower respiratory diseases, diabetes, pneumonia/influenza, and kidney disease remained above the state's.
- Saginaw City's death rates for heart disease, cancer, chronic lower respiratory diseases, stroke, and diabetes mellitus far exceed rates for Saginaw County and Township.

Michigan, Saginaw County, City, Township Age Adjusted Mortality, Selected Diseases, 2014



Source: Michigan Department of Community Health, Community Health Information, 2014. Death records with race/sex not stated are included only in the "Total" column. *Data do not meet standards of reliability or precision.

COMMUNITY HEALTH NEEDS IDENTIFIED

Community Themes and Strengths and Community Health Status Assessments

Physical Health: Adult and Child Obesity

Almost 63% of the Saginaw County residents and employees who participated in the Community Themes and Strengths Assessment selected obesity as a health issue in most serious need of attention.

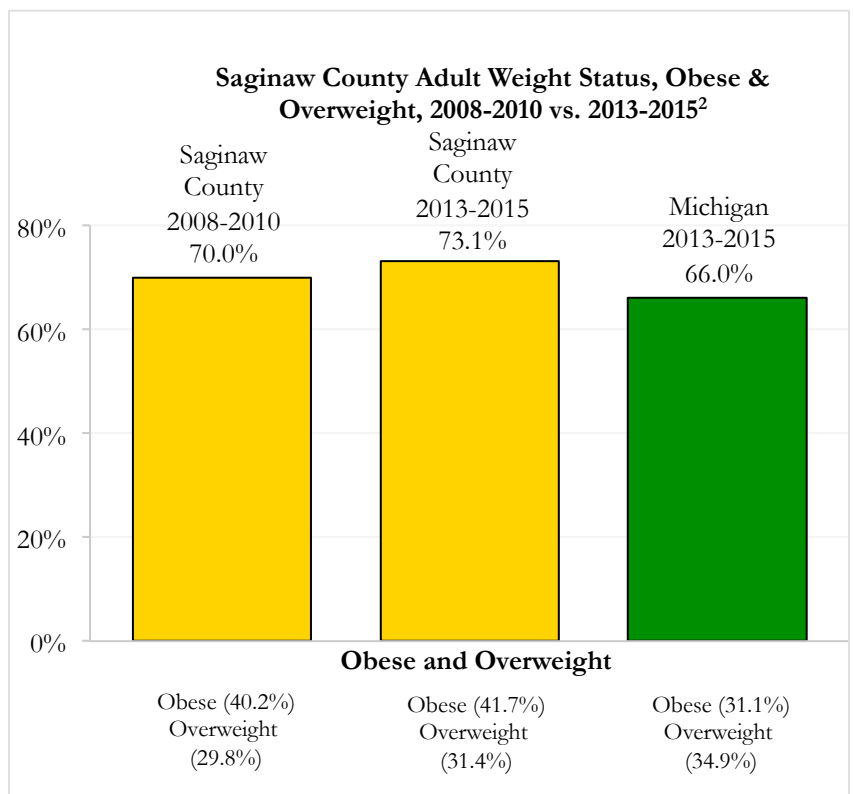
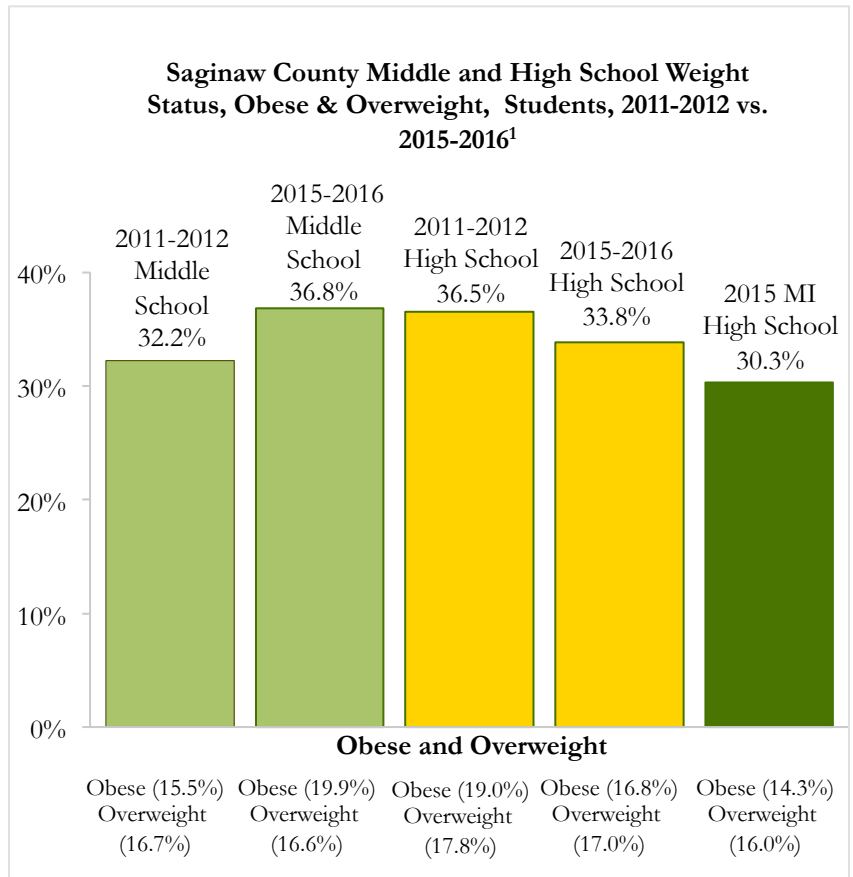
Based on data collected through the Community Health Status Assessment, the following points are made about child and adult obesity in Saginaw County.

Child Obesity

- The percentage of combined obese and overweight middle school students has increased slightly. Where the percentage of obese middle school students has increased and the percentage of overweight middle school students remained the same. This could mean that overweight middle school students have become obese.
- The percentage of obese and overweight high school students has decreased slightly.
- The obesity rate of Saginaw County high school students is slightly greater than that of the entire state.

Adult Obesity

- The percentage of obese and overweight adults increased just slightly between 2010 and 2015.
- The percentage of Saginaw County obese and overweight adults (73.1%) is greater than that of the state (66%) for 2015.



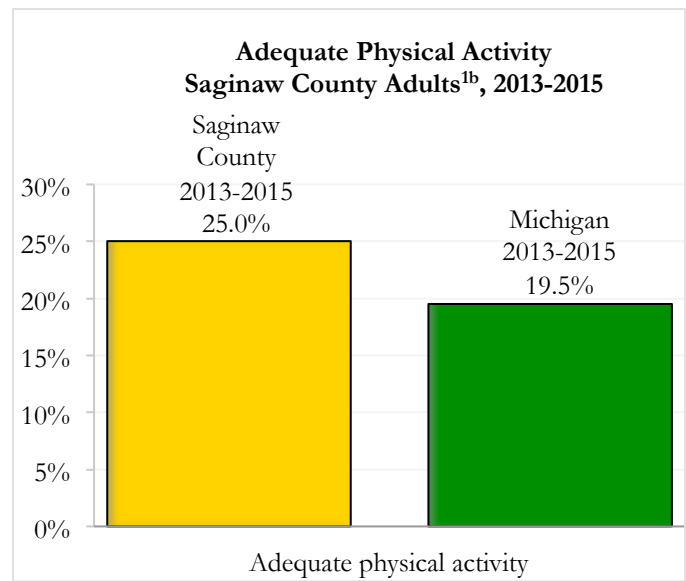
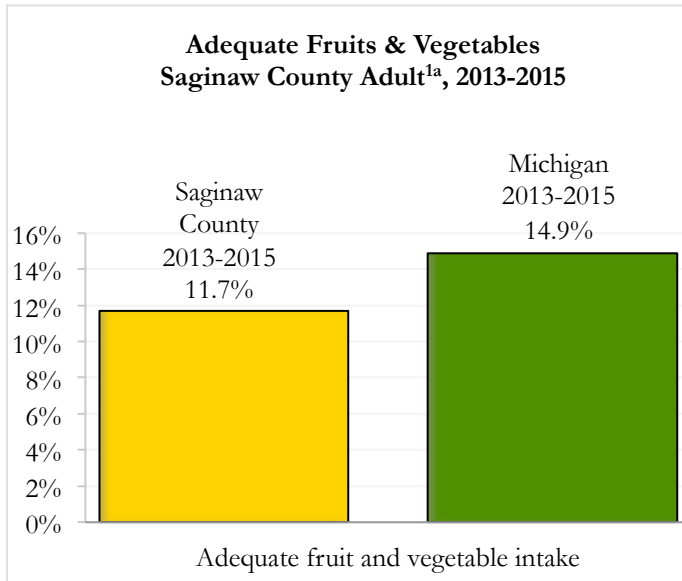
Source: ¹Michigan Department of Education and Michigan Department of Community Health, Michigan Profile for Healthy Youth, 2011-2012 and 2013-2015. ²2008- 2010 and 2013—2015 Combined Michigan BRFSS Regional & Local Health Department Estimates.

COMMUNITY HEALTH NEEDS IDENTIFIED

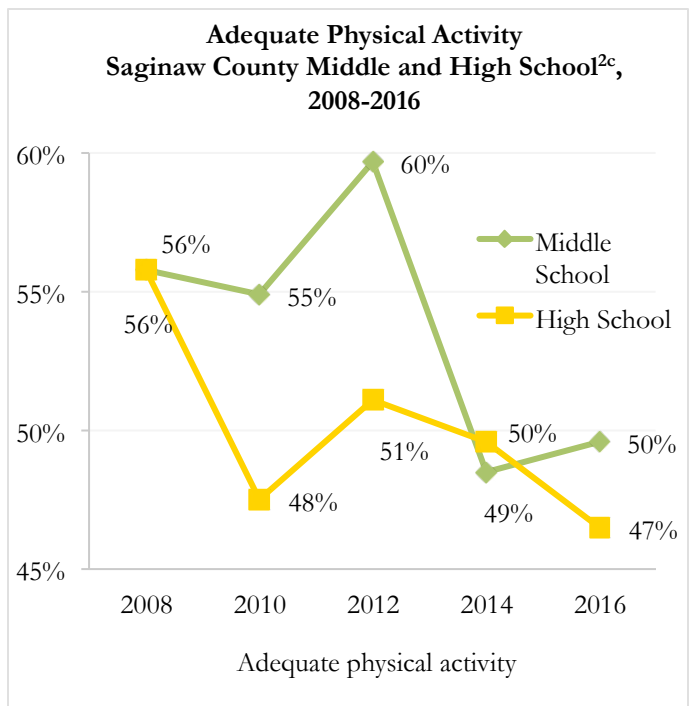
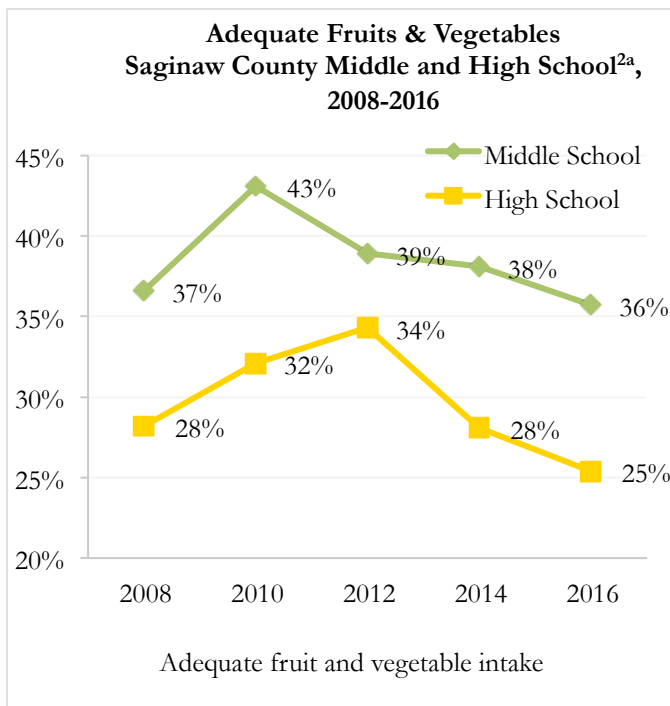
Community Themes and Strengths and Community Health Status Assessments

Physical Health: Adult and Child Obesity (Dietary Intake and Physical Activity)

Adult



Child



Source: ¹Michigan BRFSS Regional & Local Health Department Estimates, 2013—2015. ²Michigan Department of Education and Michigan Department of Community Health, Michigan Profile for Healthy Youth, 2007-2008-2015-2016. ^aProportion whose total reported consumption of fruits (including juice) and vegetables was five or more times per day. ^bProportion who reported that they do either moderate physical activities for at least 150 minutes per week, vigorous physical activities for at least 75 minutes per week, or an equivalent combination of moderate and vigorous physical activities **and** also participate in muscle strengthening activities on two or more days per week. ^cPhysically Active \geq 60 Min./Day for 5+ Days

COMMUNITY HEALTH NEEDS IDENTIFIED

Community Themes and Strengths and Community Health Status Assessments

Physical Health: Chronic Illness (Heart Disease & Cancer)

Fifty-three (53%) of the Saginaw County residents and employees who participated in the Community Themes and Strengths Assessment selected both Heart Disease and Cancer as a health issue in most serious need of attention.

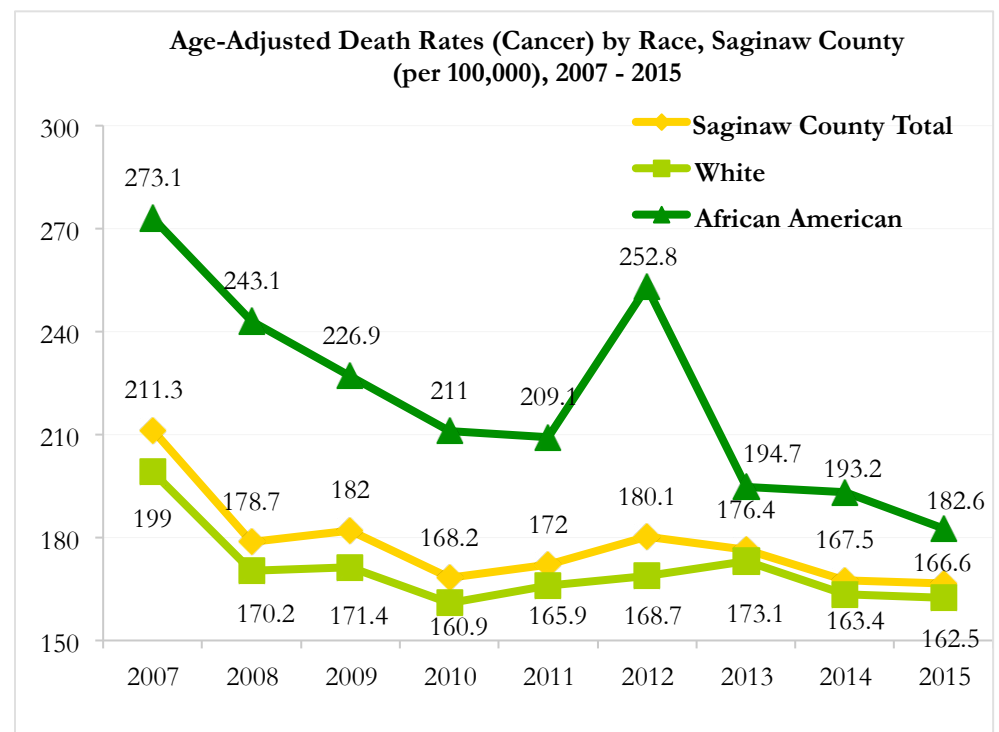
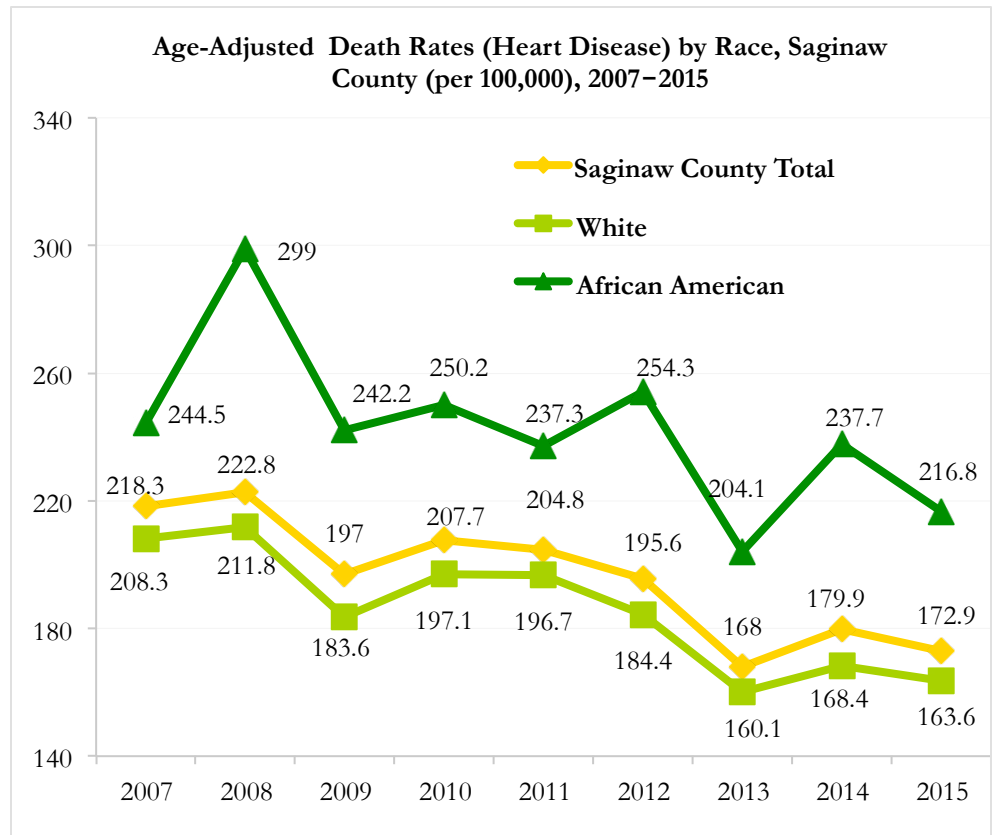
Based on data collected through the Community Health Status Assessment, the following points are made about Heart Disease and Cancer in Saginaw County.

Heart Disease

- According to the latest reportable data, deaths due to heart disease decreased between 2014 and 2015 for all populations.
- Deaths due to heart disease remain greatest for African American County residents.

Cancer

- According to the latest reportable data, deaths due to cancer decreased between 2014 and 2015 for the total county population, including White and African American subpopulations.
- Deaths due to cancer remain greatest for African American County residents.



Source: Michigan Department of Community Health, Community Health Information, 2014. Death records with race/sex not stated are included only in the "Total" column. *Data do not meet standards of reliability or precision.

COMMUNITY HEALTH NEEDS IDENTIFIED

Community Themes and Strengths and Community Health Status Assessments

Physical Health: Chronic Illnesses (Stroke & Asthma)

Asthma was selected by 39% of Community Themes and Strengths Assessment respondents as a health issue in most serious need of attention and 35% of respondents selected stroke. Community Health Status Assessment data shows the following as it relates to stroke deaths and asthma hospitalization rates:

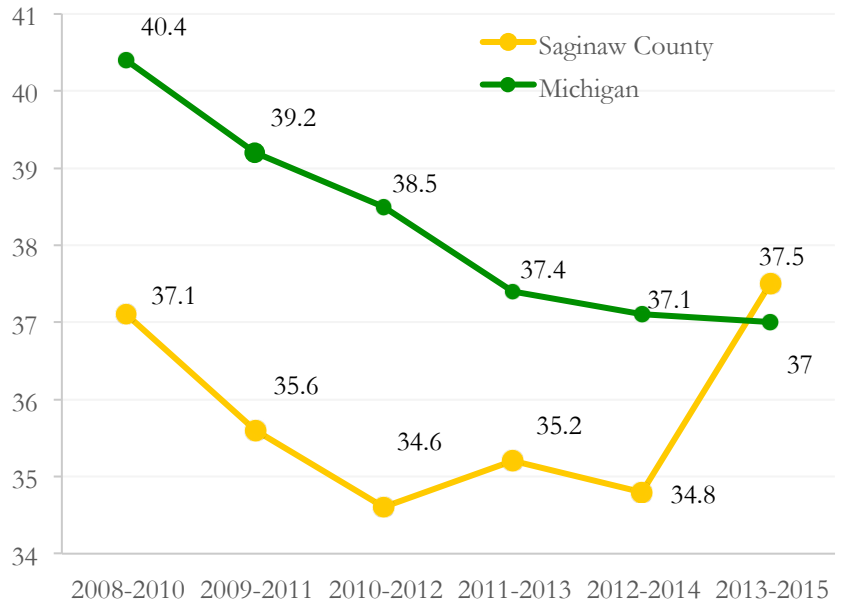
Deaths Due to Stroke

- According to the latest reportable data, deaths due to stroke increased for Saginaw County residents between 2012-2014 and 2013-2015.
- The death rate due to strokes for Saginaw County has typically remained below that of the entire state. However, according to the 2013-2015 data, Saginaw County's rate (37.5) is now almost equal to that of the state as a whole (37).

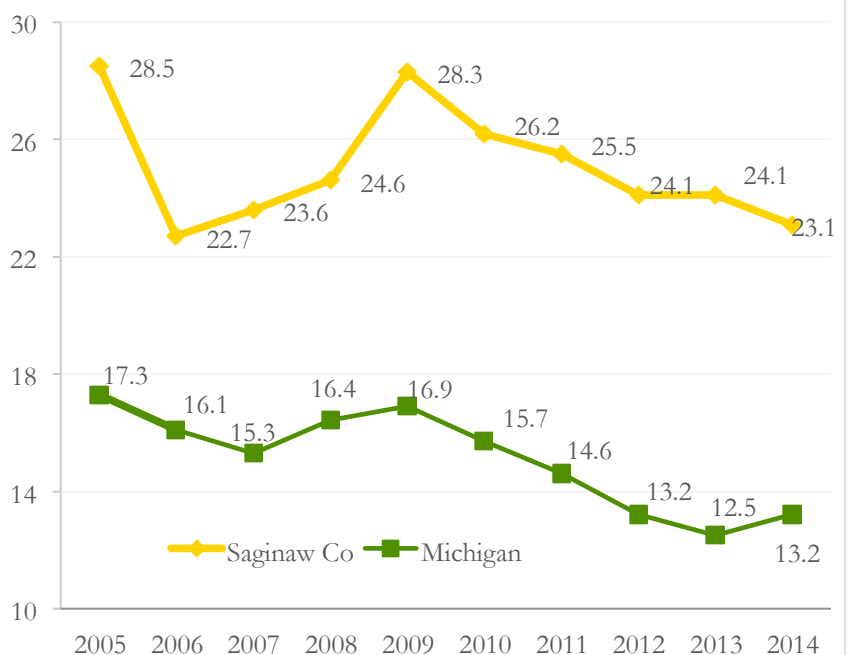
Asthma Hospitalization

- Saginaw County asthma hospitalization rates for all ages remained about the same between 2013 and 2014.
- The County asthma hospitalization rates remain much higher than the rates of the entire state.

Saginaw County Age-Adjusted Death Rates Due to Stroke, Saginaw County and Michigan, 2008-2010 – 2013-2015¹



Age-Adjusted Rate of Asthma Hospitalization, All Ages, 2005-2014²



Source: ¹Michigan Department of Community Health, Community Health Information, 2014. Death records with race/sex not stated are included only in the "Total" column. ²Michigan Resident Inpatient Files created by the Division for Vital Records and Health Statistics, Michigan Department of Health & Human Services, using data from the Michigan Inpatient Database obtained with permission from the Michigan Health & Hospital Association Service Corporation (MHASC).

COMMUNITY HEALTH NEEDS IDENTIFIED

Community Themes and Strengths and Community Health Status Assessments

Physical Health: Dental Health

Almost 42% of Saginaw County residents and employees who participated in the Community Themes and Strengths Assessment selected Dental Health as a health issue in most serious need of attention. Additionally, almost 38% of the respondents said that within the past 12 months, they did NOT visit a dentist for a routine checkup.

According to 2012-2014 data collected through the Community Health Status Assessment:

- The percentage of Saginaw County residents who did not receive a dental visit in the past year (28.1%) was just slightly below that of the entire State (31.7%)
- Saginaw County residents who lost 6 or more teeth (19.3%) was also marginally above that of the entire State (15.6%).

	Saginaw County	Michigan
	2012-2014	2012-2014
No Dental Visit in Past Year	28.1%	31.7%
	2012-2014	2012-2014
Lost 6+ Teeth	19.3%	15.6%

Source: Michigan Behavioral Risk Factor Survey Regional & Local Health Department Estimates; 2012-2014

^aThe proportion of adults who reported that they did not visit a dentist or dental clinic for any reason in the previous year.

^bThe proportion of adults who reported that they were missing 6+ teeth due to tooth decay or gum disease. This excludes teeth lost for other reasons, such as injury or orthodontics.

COMMUNITY HEALTH NEEDS IDENTIFIED

Community Themes and Strengths and Community Health Status Assessments

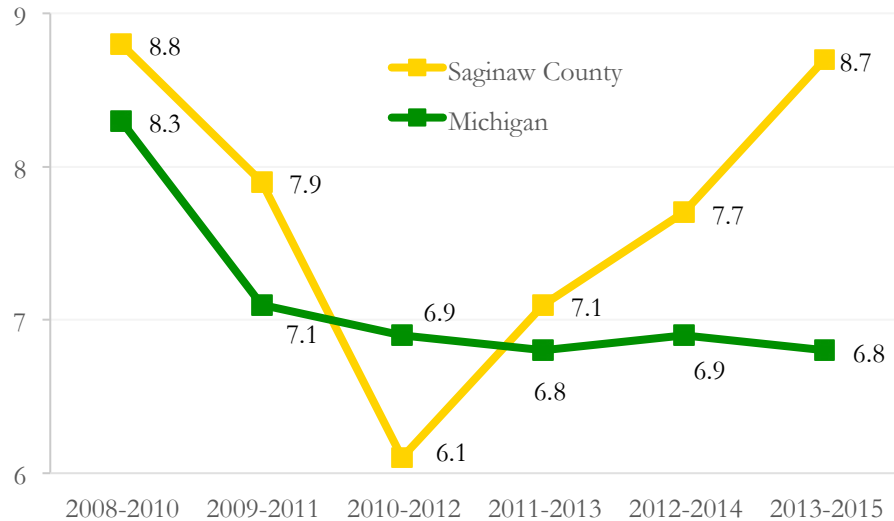
Physical Health: Maternal, Child, Infant Health (Infant Mortality)

Almost 32% of respondents who participated in the Community Themes and Strengths Assessment selected Infant Mortality as a health issue in most serious need of attention.

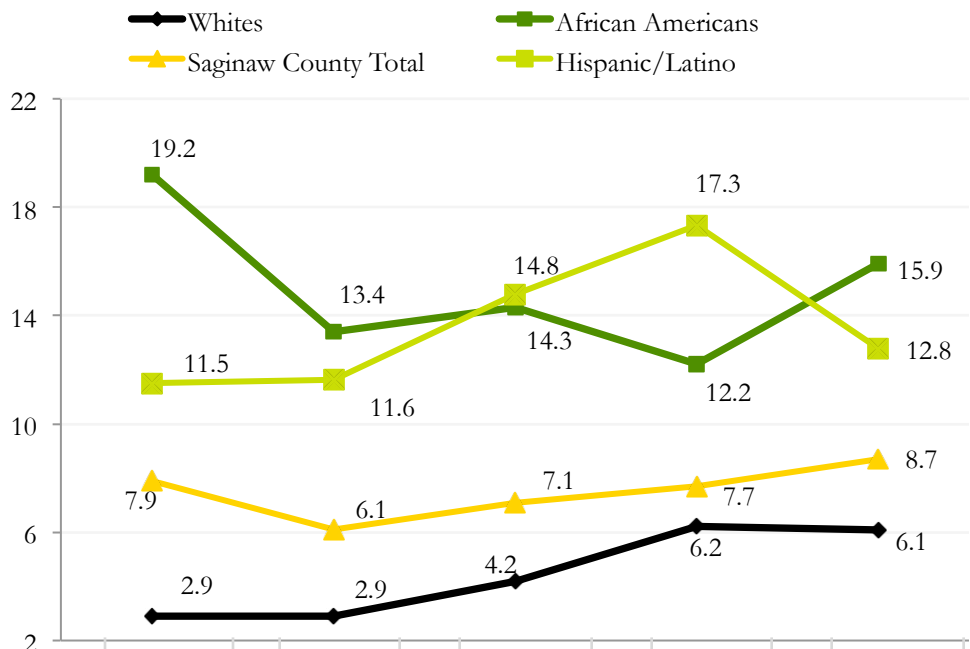
Based on data collected through the Community Health Status Assessment:

- Saginaw County's 3-year moving average Infant Mortality rates for 2011-2013 to 2013-2015 are greater than those for the state.
- In comparing 2010-2012 to 2013-2015 rates, Saginaw County total infant deaths increased.
- Whites and African American infant deaths also increased while Hispanic-Latinos (of any race) infant deaths decreased.
- According to 2013-2015 data, the Saginaw County African American infant death rate (15.9) is 2.6 times greater than the White rate (6.1).
- The Saginaw County Hispanic-Latino infant mortality rate (12.8) is 2 times greater than the White infant death rate.

Saginaw County and Michigan 3-Year Moving Average Infant Mortality Rates, 2008-2010 – 2013-2015



Saginaw County 3-Year Moving Average Infant Mortality Rates by Race/Ethnicity with African American/White and Hispanic-Latino Rate Disparity Ratios, 2009-2011 – 2013-2015



Disparity Ratios	2009-2011	2010-2012	2011-2013	2012-2014	2013-2015
Afr. Amer./White	6.62	4.62	3.40	1.97	2.61
Hisp-Lat./White	3.97	4.01	3.52	2.80	2.10

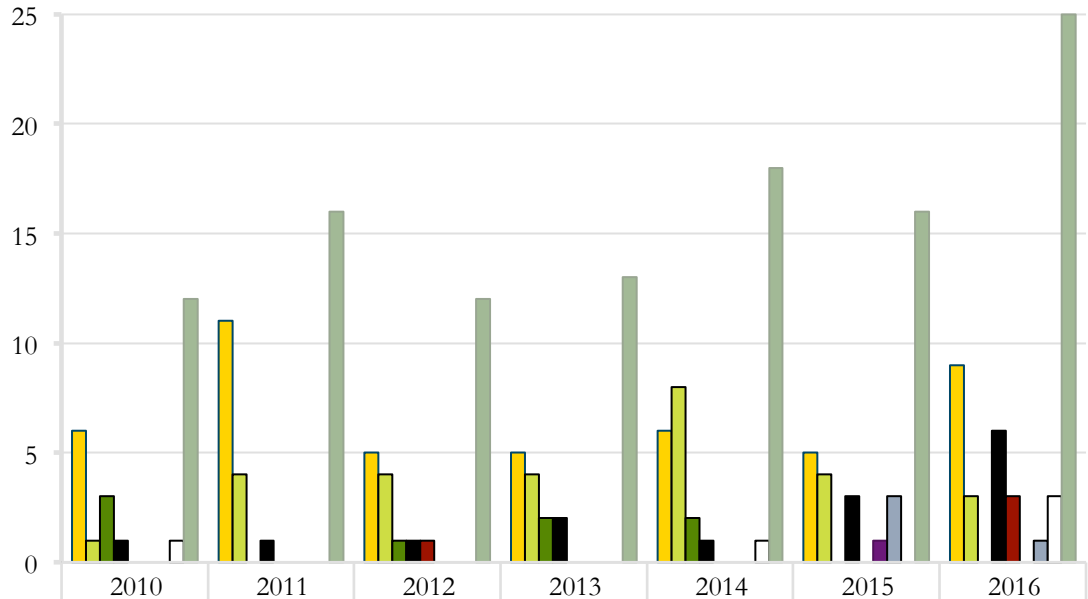
Source: 1989-1999 Michigan Death Certificate Registries; 1999-2013 Geocoded Michigan Death Certificate Registries; 2014 Michigan Death Certificate Registry. Rates per 1,000 births.

COMMUNITY HEALTH NEEDS IDENTIFIED

Community Themes and Strengths and Community Health Status Assessments

Physical Health: Infant, Child, Maternal Health (Infant Mortality)

Saginaw County Infant Mortality (Infant Deaths Before 1 Years Old) by Cause of Death, 2010-2016



	2010	2011	2012	2013	2014	2015	2016
■ Prematurity	6	11	5	5	6	5	9
■ Positional Asphyxia	1	4	4	4	8	4	3
■ Genetic Abnormality	3		1	2	2		
■ Congenital Abnormality	1	1	1	2	1	3	6
■ Homicide/Auto/Fire			1				3
■ Pneumonia						1	
■ Other						3	1
□ Unknown	1				1		3
■ Total	12	16	12	13	18	16	25

Source: Data provided by the Saginaw County Department of Public Health – updated 2/5/2016

COMMUNITY HEALTH NEEDS IDENTIFIED

Community Themes and Strengths and Community Health Status Assessments

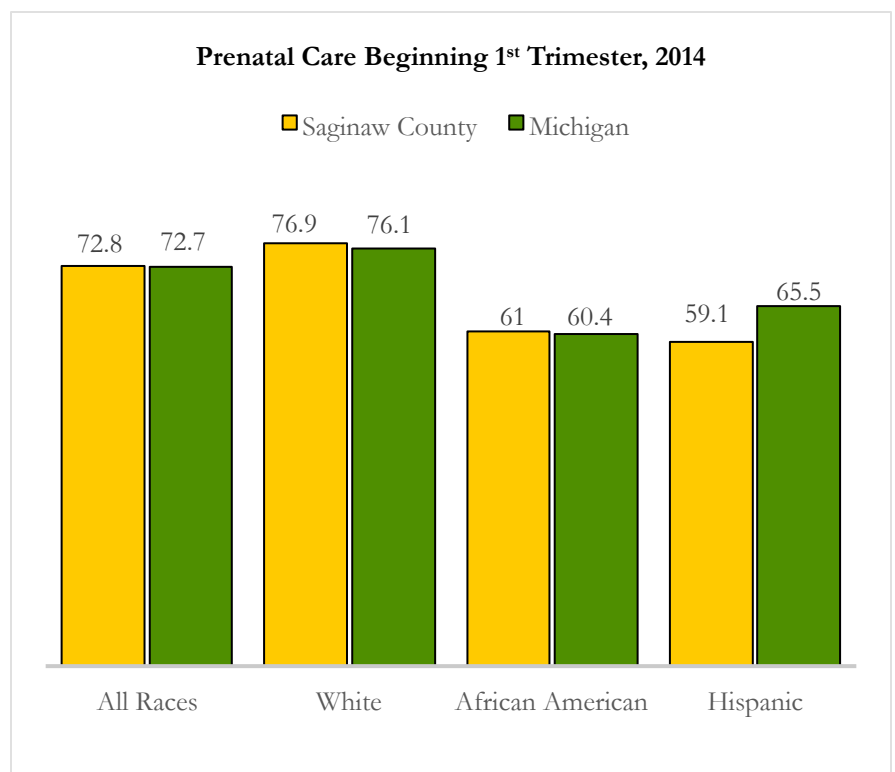
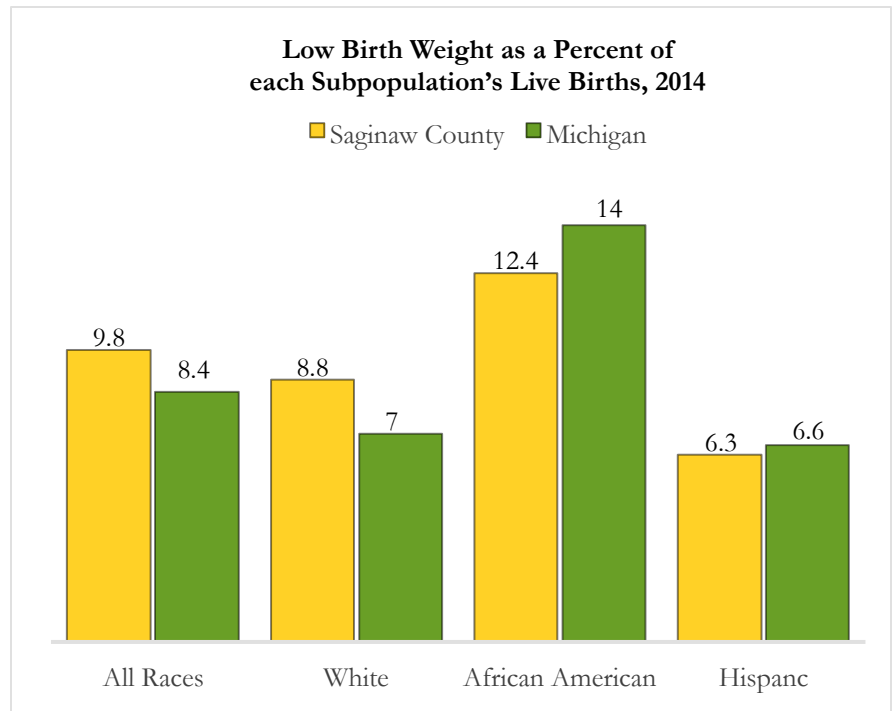
Physical Health: Infant, Child, Maternal Health (Infant Mortality)

Low Birth Weight

- A break down of Saginaw County infant mortality by cause, found on page 24, shows that a majority of deaths are due to premature birth
- It is known that a majority of low birth weight babies are premature
- Low birth weight (LBW) is an infant born weighing less than 5 pounds, 8 ounces (2500 grams)
- The percentage of Saginaw County low birth weight births was greater than the percentage of Michigan's low birth weight births
- A side-by-side comparison of race and ethnicity within Saginaw County and Michigan shows African Americans having a higher percentage of low birth weight outcomes overall.
- However, the percentages of Saginaw County African American and Hispanic low birth weight births are less than the percentage of African American and Hispanic low birth weight births for the entire state

Prenatal Care

- Prenatal care may impact birth outcomes
- The percentage of Saginaw County pregnant women receiving prenatal care beginning in the 1st trimester is equal to that of the entire state
- The percentage of Saginaw County pregnant women who begin prenatal care in the 1st trimester is less for Hispanic pregnant women than White and African American pregnant women



Source: Michigan Department of Community Health, Community Health Information, 2014

COMMUNITY HEALTH NEEDS IDENTIFIED

Community Themes and Strengths and Community Health Status Assessments

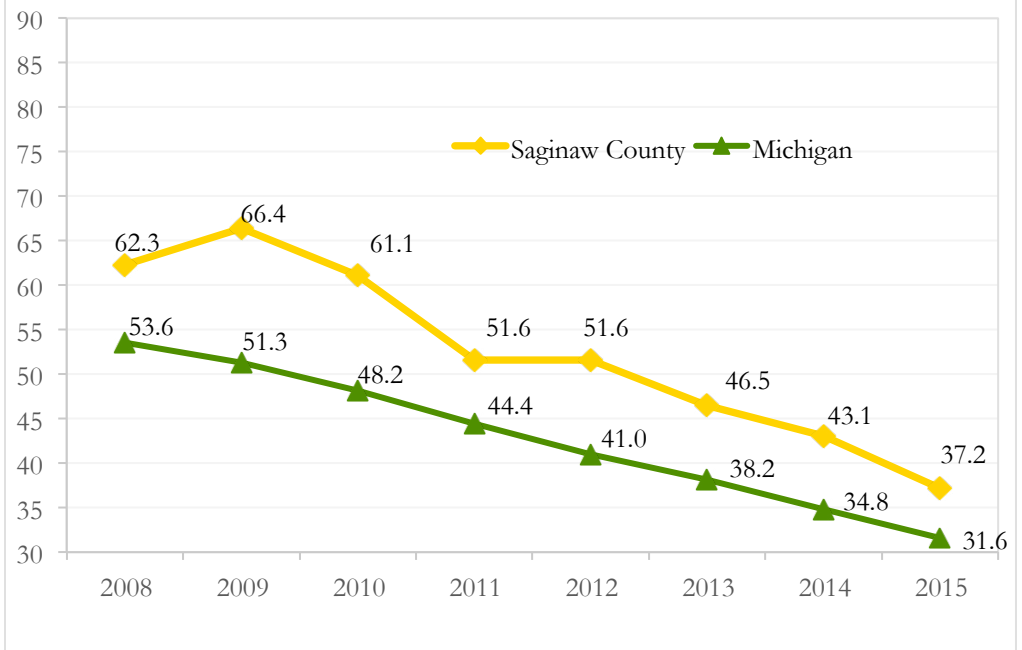
Physical Health: Infant, Child, Maternal Health: Teen Pregnancy

Teen pregnancy was selected by 42% of Saginaw County residents and employees who participated in the Community Themes and Strengths Assessment as a health issue in most serious need of attention.

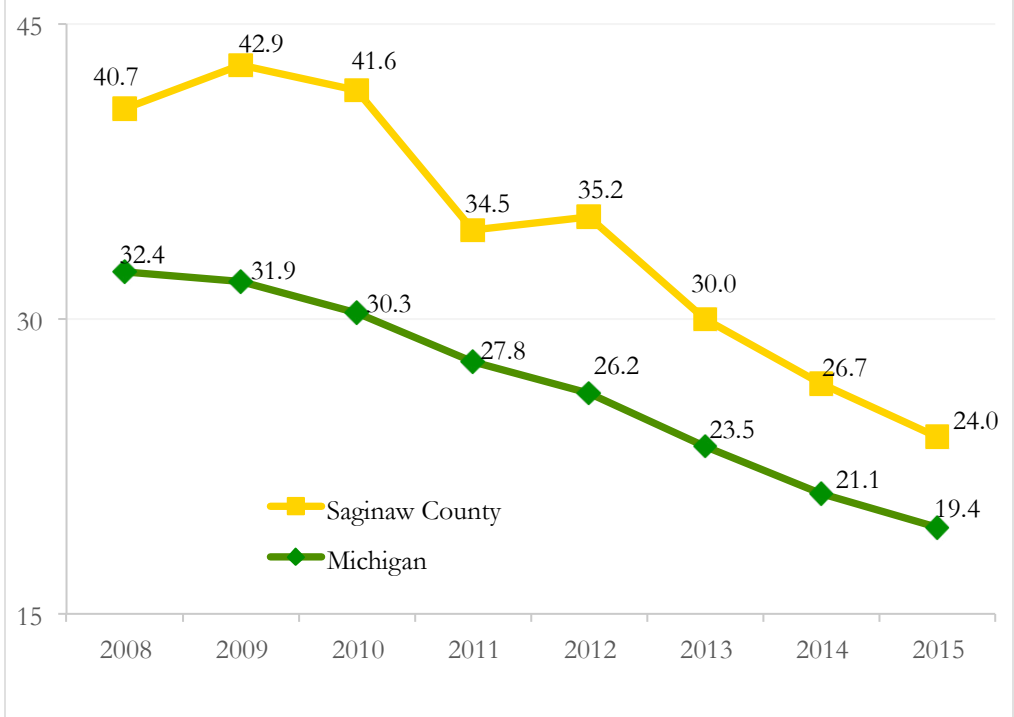
Based on data collected through the Community Health Status Assessment:

- Saginaw County & MI Pregnancies, Ages 15-19 continue to decrease.
- The rate of pregnancies of mother 15-19 is greater for Saginaw County than for the entire state.
- The Saginaw County rate of live births to mothers less than 18 years of age exceeds that of the state from 2008 – 2015.

Saginaw County & MI Pregnancies, Ages 15-19, 2008-2015



Live Births to Mothers 15-19 Years of Age, 2008-2015



Source: 2015 Michigan Abortion File. Division for Vital Records & Health Statistics, Michigan Department of Health & Human Services. Rates per 1,000.

COMMUNITY HEALTH NEEDS IDENTIFIED

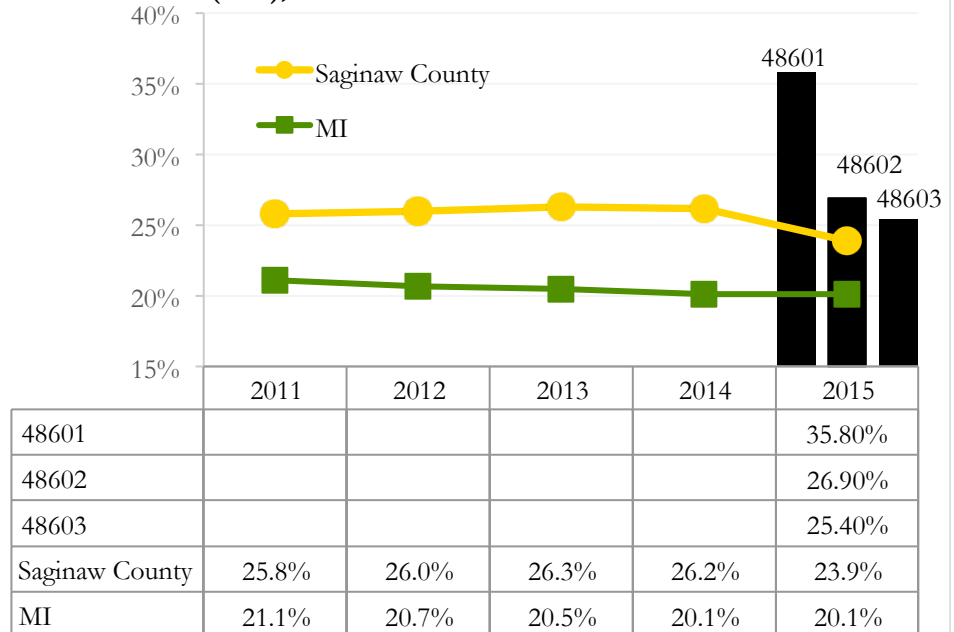
Community Themes and Strengths and Community Health Status Assessments

Physical Health: Child & Maternal Health (Childhood Lead Poisoning)

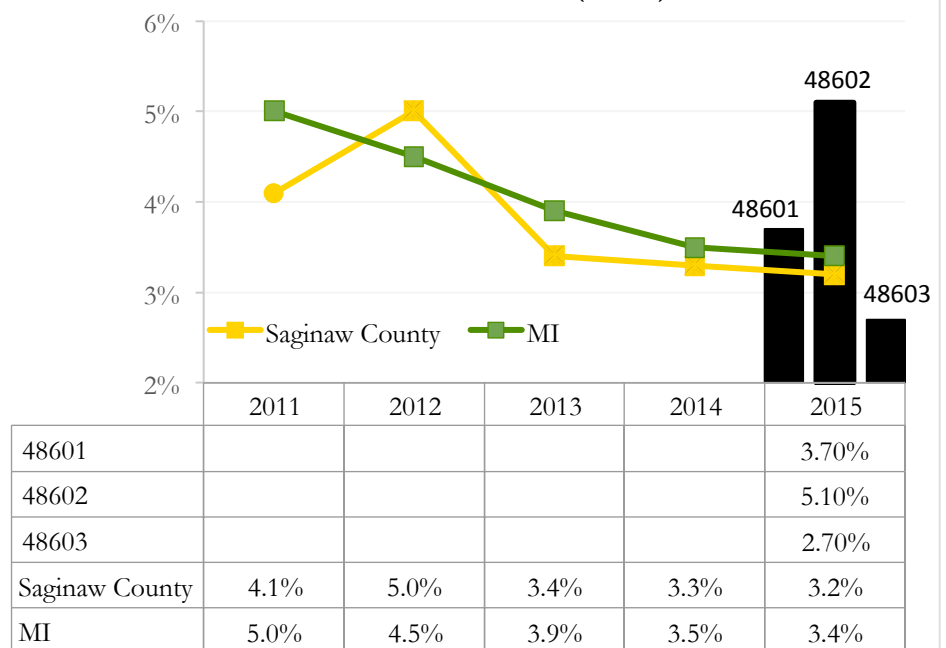
Approximately 21% of respondents of the Community Themes and Strengths Assessment noted that Childhood Lead Poisoning was a health issue in most serious need of attention. Most recent data available and collected through the Community Health Status Assessment shows that:

- The 2015 blood lead testing rate for Saginaw County children is greater than that of the State.
- Blood lead testing rates for children decreased from 2014 to 2015 for Saginaw County children under 6 years old.
- The percentage of Saginaw County children under 6 years old with an elevated blood lead level (EBLL) continues to decline.
- According to 2015 data, the percentage of Saginaw County children under 6 years old with an elevated blood lead level (3.2%) is slightly below that of the entire state (3.4%).
- County Zip Codes, selected based on highest percentage of children with EBLLs living within them, show that children living in the 48601 Zip Code had the highest testing rate (35.8%) in comparison to the rates for all areas listed, including the rate for 48602 Zip Code area (26.9%).
- However, children living in the 48602 Zip Code had an EBLL rate (5.1%) that is 1.4 times greater than the 48601 Zip Code area (3.7%) and greater than the rate for the entire county and state.
- According to Census data, 89.6% of housing in the 48602 Zip Code area in comparison to 73.2% in the 48601 Zip Code area was built before 1970.

Saginaw County and MI (2007-2015), Selected County Zip Codes (2015), Children Under 6 Years Old Tested



Saginaw County and MI (2007-2015), Selected County Zip Codes (2015), Children Under 6 Years Old with Elevated Blood Lead Levels (EBLL)



Source: 2015 Data Report on Childhood Lead Testing and Elevated Blood Lead Levels: Levels for Children under Age Six: Michigan, 2017, J, Maqsood, M., Stanbury, R., Miller, PhD, Childhood Lead Poisoning Prevention Program (CLPPP), Division of Environmental Health, Michigan Department of Health and Human Services Blood Lead; ** Values less six (not including zero) were suppressed to maintain confidentiality. Some numbers greater than or equal to six may have been suppressed to prevent back-calculation.

COMMUNITY HEALTH NEEDS IDENTIFIED

Community Themes and Strengths and Community Health Status Assessments

Physical Health: Communicable Diseases: HIV/AIDS*

Thirty-five (35%) of the Saginaw County residents and employees who participated in the Community Themes and Strengths Assessment selected HIV/AIDS as a health issue in most serious need of attention. Based on 2013 reporting data collected through the Community Health Status Assessment:

Prevalence**

- The current reported prevalence of HIV/AIDS in Bay and Saginaw County, according to county of residence at diagnosis, is 278
- The reported prevalence of HIV/AIDS in Saginaw County is 217
- In 2012, 14 cases of HIV and 6 cases of AIDS were reported for Saginaw and Bay County.
- Remarkably, African Americans make up 13% of Bay and Saginaw County's population yet comprise 50% of all HIV/AIDS cases.

Risk**

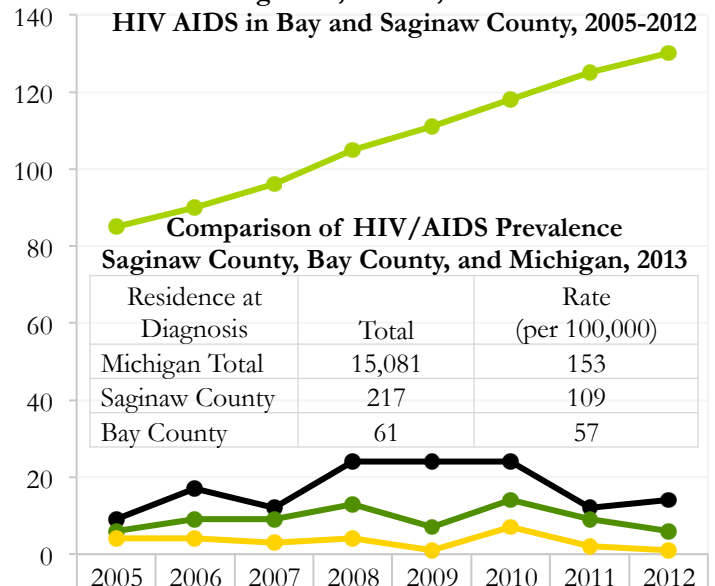
- Male-Male Sex (MSM) (48%)
- Injection Drug Use (IDU) (6%)
- MSM/IDU (4%)
- Heterosexual Contact (HC) (18%)
 - with a female with known risk (4%)
 - with male (HCM)(14%)
- HCM-Female Prenatal and Blood Product (<5)
- Undetermined (23%)

*Stage 3 HIV infection is referred to as AIDS

**Based on Bay and Saginaw County HIV/AIDS prevalence rate of 278

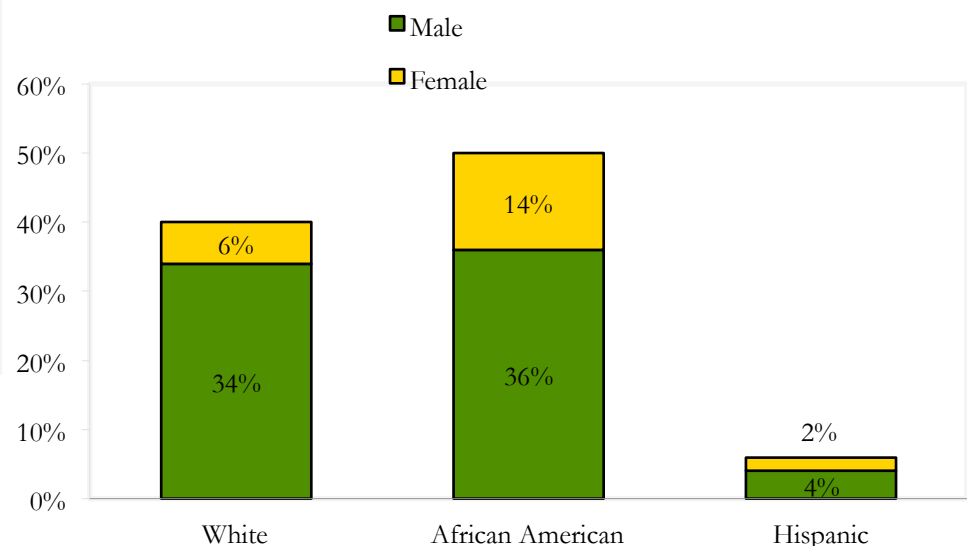
Source: Michigan Department of Community Health, HIV/AIDS County Level Quarterly Analyses, Bay & Saginaw County January 2013. In this report, persons described as White, African American (AA), Asian/Pacific Islander (PI), or American Indian/Alaska Native (AN) are all non-Hispanic, persons described as Hispanic might be of any race.

New Diagnoses, Deaths, and Prevalence of HIV/AIDS in Bay and Saginaw County, 2005-2012



	2005	2006	2007	2008	2009	2010	2011	2012
● New HIV Diagnosis	9	17	12	24	24	24	12	14
● HIV/AIDS Prevalence	85	90	96	105	111	118	125	130
● New AIDS Diagnosis	6	9	9	13	7	14	9	6
● HIV/AIDS Deaths	4	4	3	4	1	7	2	1

Bay and Saginaw County HIV/AIDS Prevalence by Sex, Race, & Ethnicity, 2013



COMMUNITY HEALTH NEEDS IDENTIFIED

Community Themes and Strengths and Community Health Status Assessments

Physical Health: Communicable Diseases

Viral Hepatitis				Vaccine-Preventable			
Disease	Cases 2011	Cases 2012	Cases 2016	Disease	Cases 2011	Cases 2012	Cases 2016
Hepatitis A	6	<5	<5	Mumps	<5	<5	<5
Hepatitis B, chronic	10	30	23	Pertussis	<5	<5	<5
Hepatitis C, chronic	109	146	169	Chickenpox (Varicella)	12	27	<5
Sexually Transmitted				Vectorborne			
Disease	Cases 2011	Cases 2015	Cases 2016	Disease	Cases 2013	Cases 2014	Cases 2015
Chlamydia	1551	1258	1115	Malaria	<5	<5	<5
Gonorrhea	200	364	411	Rocky Mountain Spotted Fever	<5	<5	<5
Syphilis	6	7	10				
Diarrheal				Other			
Disease	Cases 2011	Cases 2012	Cases 2016	Diseases	Cases 2013	Cases 2014	Cases 2015
Campylobacter	7	8	15	Tuberculosis	<5	<5	<5
Cryptosporidium	<5	11	11	Legionella	7	11	8
E. Coli	3	31	0	Meningococcal Disease	<5	<5	6
Giardia	7	10	4	Strep Pneumonia	8	9	24
Salmonella	25	17	19				
Shigella	10	<5	55				

Source: Michigan Department of Community Health, Michigan Disease Surveillance System, 2013-2015, - Data not available.

COMMUNITY HEALTH NEEDS IDENTIFIED

Community Themes and Strengths and Community Health Status Assessments

Priority Social, Emotional, Behavioral Health Conditions

There are many health issues that residents in Saginaw County face. Respondents of the Community Themes and Strengths Assessment, made up of both residents and employees of Saginaw County, were asked to select from a list of 18 physical health conditions ALL of those that they feel are in MOST SERIOUS need of attention in Saginaw County. There were 375 respondents who provided responses for this question.

Those that were related to social, emotional, and behavioral health are listed below and are grouped into four categories: 1) Substance Abuse/Misuse; 2) Mental/Behavioral Health; 3) Gun Violence; and 4) Tobacco Use/Misuse. The social, emotional, behavioral health conditions most frequently selected to be in most serious need of attention are Substance Abuse/Misuse (69.6%), Mental/Behavioral Health (61.9%), and Gun Violence (60.8%). These conditions were selected by respondents at a higher rate than those physical health conditions listed on page 16.

Social, Emotional, Behavioral Health Conditions	Percent of Respondents
1. Substance abuse/misuse	69.6%
2. Mental/behavioral health	61.9%
3. Gun violence	60.8%
4. Tobacco use/misuse	32.5%

COMMUNITY HEALTH NEEDS IDENTIFIED

Community Themes and Strengths and Community Health Status Assessments

Social, Emotional, Behavioral Health: Adult Substance Use and Abuse and Mental Health

Tobacco use/misuse and Substance abuse/misuse were selected as Saginaw County health issues in most serious need of attention by 30% and 70%, respectively, of respondents of the Community Themes and Strengths Assessment. Almost 62% of the respondents selected mental health as a health issue in most serious need of attention.

Based on 2008-2010 and 2013-2015 data collected through the Community Health Status Assessment:

Substance Use and Abuse

- The percentage of Saginaw County residents reporting as being current smoker is marginally less than that of the entire state.
- The percentage of Saginaw County residents reporting as heavy drinkers has increased slightly and is equal to the percentage of residents in the state reporting as heavy drinkers.
- The percentage of Saginaw County residents reporting as binge drinkers increased slightly and is greater than the percentage of residents in the entire state reporting as binge drinkers.
- As shown on page 32, the percentage of Saginaw County 9th and 10th graders who said that they smoked within their lifetime is 17.2% versus 32.5% for Michigan.
- The percentage of Saginaw County 9th and 10th graders who said that they drank within their lifetime (45.6%) is less than that of the State (58.7%). However, the percentage of who have been drunk in their lifetime (28.3%) is greater than that of the State (12.5%).

Mental Health

- The percentage of Saginaw County residents reporting as having poor mental health days increased between 2008-2010 and 2013-2015 reporting periods.
- The percentage of Saginaw County residents reporting as having poor mental health days (15.4%) exceeds that of the entire state (12.2%).
- The percentage of Saginaw County residents reporting ever being told they were depressed (24.4%) also exceeds that of the entire state (20.5%).

Status	Saginaw County		MI
	2008-2010	2013-2015	2013-2015
Current Smoker	19.9%	19.2%	21.1%
Former Smoker	26.8%	28.5%	26.7%
Never Smoked	53.3%	52.2%	52.2%
Heavy Drinker ¹	4.9%	6.5%	6.5%
Binge Drinker ²	18.5%	21.9%	18.8%

Source: Michigan Behavioral Risk Factor Survey 2002-2006, 2008-2010, 2013-2015

¹ Proportion reporting 2 or more alcoholic beverages/day for men; 1 or more/day for women

² Proportion reporting 5 or more alcoholic beverages per occasion at least once in past month

Status	Saginaw County		MI
	2008-2010	2013-2015	2013-2015
Poor Mental Health Days ^a	9.6%	15.4%	12.2%
Ever Told Depressed ^b		24.4%	20.5%

Source: Michigan Behavioral Risk Factor Survey 2013-2015

^aThe proportion of adults who reported 14 or more days, out of the previous 30, on which their mental health was not good, which includes stress, depression, and problems with emotions.

^bAmong all adults, the proportion who reported ever being told by a doctor that they had a depressive disorder including depression, major depression, dysthymia, or minor depression.

COMMUNITY HEALTH NEEDS IDENTIFIED

Community Themes and Strengths and Community Health Status Assessments

Social, Emotional, Behavioral Health: Youth Substance Use/Abuse and Other Risk Behavior

Youth Behavior Profile ¹ , 2008 and 2015	Saginaw County		Michigan
	2008	2015	2015
- Substance Use and Abuse			
Students who ever smoked a whole cigarette (lifetime)	21.8%	17.2%	32.5%
Student who smoked cigarettes in the past 30 days	10.5%	5.8%	10%
Students who ever drank alcohol (lifetime)	49.3%	45.6%	58.7%
Students who had at least one drink of alcohol in the last 30 days	23.2%	20.1%	25.9%
Students who have ever been drunk (lifetime)	30.7%	28.3%	12.5%
Students who had five or more drinks of alcohol in a row, within a couple of hours, during the last 30 days	13.9%	11.4%	2.7%
Students who drove a car or other vehicle when they had been drinking alcohol one or more times during the last 30 days	4.8%	1.5%	N/A
- Other Risk Behavior			
Students who ever had sexual intercourse (lifetime)	39.6%	31.1%	35.8%
Students who had sexual intercourse with one or more people during last 3 months	29.7%	23.1%	25.6%
Students who never or rarely wore a seatbelt in a car driven by someone else	12.2%	N/A	6.6%

Source: ¹Michigan Department of Education and Michigan Department of Community Health, Michigan Profile for Healthy Youth, 2011-2012 Survey. Represents surveyed 9th and 11th graders. ² Number of responses to questions vary)

COMMUNITY HEALTH NEEDS IDENTIFIED

Community Themes and Strengths and Community Health Status Assessments

Social, Emotional, Behavioral Health: Homicide, Firearms/Gun Violence, & Suicide

Gun Violence was noted as a health issue in most serious need of attention by 61% of the Saginaw County residents and employees participating in the Community Themes and Strengths Assessment.

In reviewing 2010-2014 data collected through the Community Health Status Assessment:

Homicides

- According to 2010-2014 rates, the homicide rate (per 100,000) in Saginaw County is almost twice as high as that of Michigan (11.7 versus 6.8 per 100,000 population).
- Saginaw City's 2010-2014 homicide rate (33.1) was almost 3 times that of the entire County (11.7)

Suicide

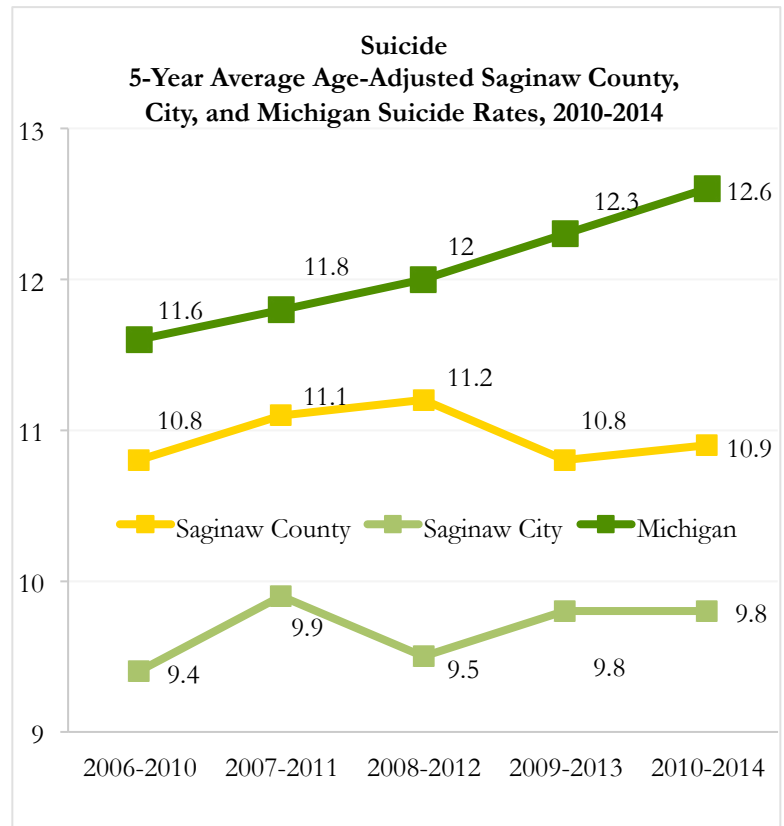
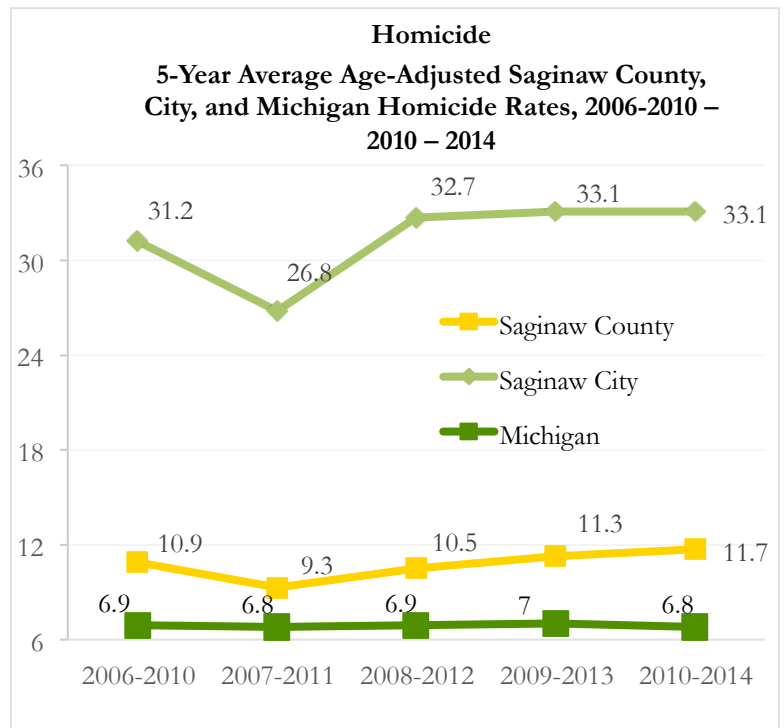
- According to 2010-2014 rates, the suicide rate (per 100,000) in Michigan (12.6) exceeds that of Saginaw County (10.9)
- Saginaw City's suicide rate (9.8) was less than that of the entire County

Guns/Firearms

- A majority of Saginaw County's homicides and suicides involved a firearm.
- In 2014, 63.2% of Saginaw County's homicides and 65% of suicides involved a firearm.

Firearms and Gun Violence

Percentage of Saginaw County Homicides & Suicides Involving a Firearm, 2010-2014					
Saginaw County	2010	2011	2012	2013	2014
Homicides	80%	80%	91.7%	86.7%	63.2%
Suicides	50%	58.3%	35%	38.9%	65%



Source: 2008-2012 Geocoded Michigan Death Certificate Registries Division for Vital Records & Health Statistics, Michigan Department of Health & Human Services; Population Estimate (latest update 9/2014), National Center for Health Statistics, [U.S. Census Populations With Bridged Race Categories](#). Rates per 100,000.

COMMUNITY HEALTH NEEDS IDENTIFIED

Community Themes and Strengths and Community Health Status Assessments

Determinants of Health: Health Care Coverage

Community Themes and Strengths: Of the 389 Saginaw county residents and employees who participated in the 2016 CTSA:

- Almost 14% noted that they did not have any kind of health care coverage
- Approximately 21% had no personal health care provider
- Just under 25% did not have a routine checkup in the past year
- Almost 17% have health care benefits through Saginaw Health Plan
- Approximately 18% have a living will or advance directive

Community Health Status Assessment:

- Saginaw County residents without health care coverage and no personal health care provider slightly increased between 2008-2010 and 2013-2015
- Saginaw County residents with no routine checkup in past year decreased (improved) between 2008-2010 and 2013-2015
- Saginaw County residents with no health care access in past 12 months due to cost remained the same between 2008-2010 and 2013-2015.
- According to 2013- 2015 data, 14% of both Saginaw County and Michigan residents do not have any kind of health care coverage
- In both Saginaw County and Michigan, 16% have no personal health care provider
- In Saginaw County, approximately 24% of individuals have no routine check up in past year versus 29% in Michigan.
- The percentage of Saginaw County residents with no health care access in past 12 months due to cost was 13% in comparison to 14.2% in Michigan

	Saginaw County			Michigan
	2016 ¹	2008-2010 ²	2013-2015 ²	2013-2015 ²
- Health Care Coverage				
Do NOT have any kind of health care coverage	13.9%	12.9%	14.3%	14.0
No personal health care provider	20.8%	9.8%	16%	15.9%
No routine checkup in past year	24.4%	31.3%	23.5%	28.8%
No health care access in past 12 months due to cost		12.8%	13.0%	14.2%
- Other Health Care Coverage				
Have health care benefits through Saginaw Health Plan	16.7%			
Have a living will or advance directives	18.0%			

¹Source: 2016 Community Themes and Strength Assessment, ²Source: Michigan Behavioral Risk Factor Survey, 2006-2008 and 2013-2015

COMMUNITY HEALTH NEEDS IDENTIFIED

Community Themes and Strengths and Community Health Status Assessments

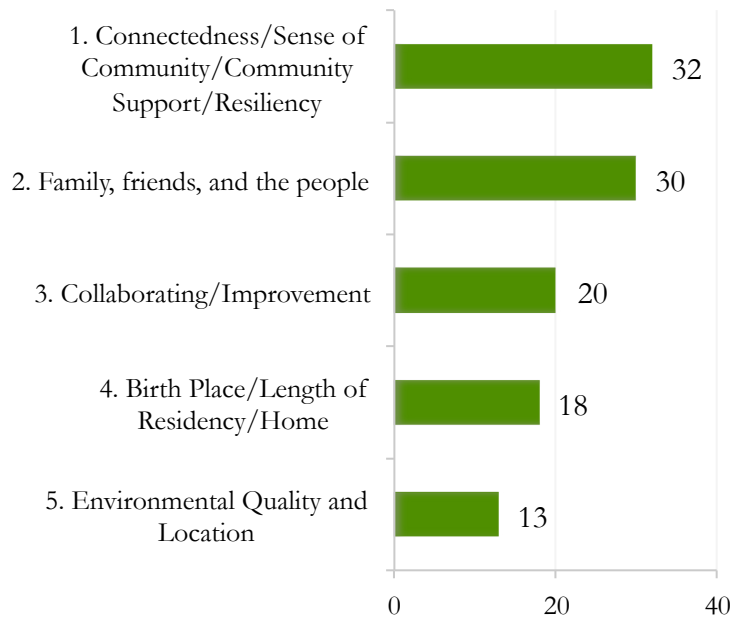
Determinants of Health: Quality of Life Indicators

This page outlines responses to the following open-ended questions posed in the Community Themes and Strengths Assessment:

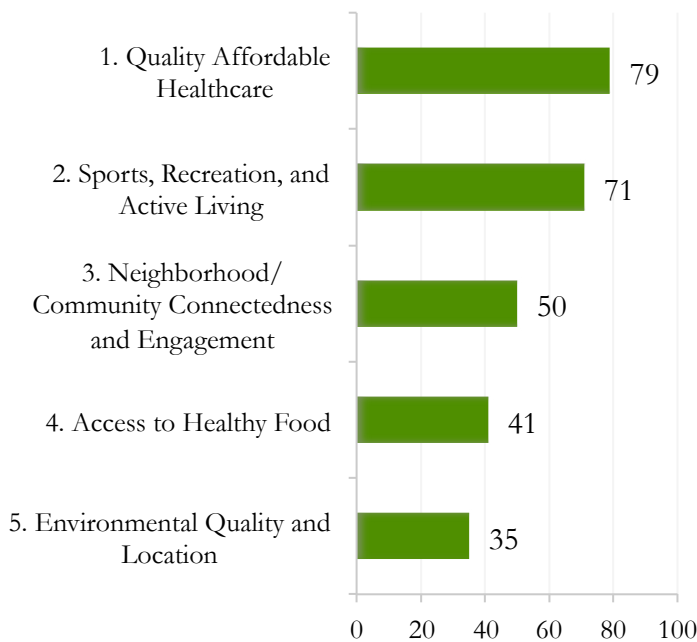
What Are the 2-3 Most Important Issues that Must be Addressed to Improve Health and Quality of Life in Saginaw County?

1. Safety and Security
2. Quality Affordable Healthcare
3. Employment, Poverty, and Economic Stability
4. Access to Food/Nutrition Education
5. Mental Health/Substance Abuse Services
6. Educational Opportunities/Schools
7. Awareness, Education, and Outreach
8. Transportation
9. Environmental Quality and Location
10. Sports, Recreation, and Active Living

What Are 2-3 Things that Make You Proud About Saginaw County (Top 5 Listed)?



What Are 2-3 Things that Make Saginaw County a Healthy Place to Live? (Top 5 Listed)



Source: 2016 Community Themes and Strength Assessment

COMMUNITY HEALTH NEEDS IDENTIFIED

Community Themes and Strengths and Community Health Status Assessments

Determinants of Health: Barriers to Basic Needs, Health Care, & Employment

There are many barriers that stop Saginaw County residents from getting the help that they need or from being healthy and self-sufficient. Using the survey developed for the 2016 Community Themes and Strengths Assessment, residents were asked to look over nine lists of potential barriers related to *Basic Needs, Health Care, Employment, Education, Childcare, Transportation, Housing, Nutrition, and Physical Activity*. Residents were also asked to select all of the items that may stop them or their family members that live in their home from getting help. Respondents that were not Saginaw County residents were answering the question of what they perceived to be barriers of the families that they work with.

Of the 389 respondents who participated in the Community Themes and Strengths Assessment:

- 371 respondents provided a response to the question, “Please check ALL that you believe STOP Saginaw County residents from GETTING the HELP they NEED with **BASIC NEEDS SERVICES.**”
- 359 respondents provided a response to the question, “In the past 12 months, what problems have you or your family had in getting adequate **HEALTHCARE?**”
- 355 respondents responded to the question, “In the past 12 months, what problems have you or your family had in getting adequate **EMPLOYMENT?**”

The top five responses for each question are below.

Barriers to Basic Needs	Barriers to Health Care	Barriers to Employment
1. Don't know about services	1. Costs too much	1. Pay too low to support family
2. Don't know where to go for help	2. Don't have FULL health insurance/health care coverage	2. Physical disability
3. Can't afford fees/costs of assistance	3. Don't know where to go	3. No jobs in my field
4. No transportation to/for assistance	4. No health insurance/health care coverage	4. Lack of training or experience
5. Not eligible/don't qualify for assistance	5. Wait time too long	5. No transportation

COMMUNITY HEALTH NEEDS IDENTIFIED

Community Themes and Strengths and Community Health Status Assessments

Determinants of Health: Barriers to Education, Childcare, Transportation, Housing, Nutrition & Physical Activity

Barriers to Getting Help Needed or Being Healthy And Self-sufficient	Barriers to Education	Barriers to Childcare
<p>Of the 389 respondents to the 2016 Community Themes and Strengths Assessment, there were:</p> <ul style="list-style-type: none"> 355 respondents provided responses for the question “In the past 12 months, what problems have you or your family had in the area of EDUCATION?” 352 responded to the question, “In the past 12 months, what problems have you or your family had in getting adequate CHILDCARE?” 356 respondents answered the question, “In past 12 months, what problems have you or your family had with dependable TRANSPORTATION?” 348 responded to the question, “:In past 12 months, what kind of problems have you or your family had with HOUSING?”. 221 responses were provided by respondents for the question, “In past 12 months, what problems have stopped you or your family from EATING FRUITS/VEGETABLES?” 352 answered the question, “In past 12 months, what problems have stopped you/your family from being PHYSICALLY ACTIVE, exercising, playing a sport?” 	<ol style="list-style-type: none"> Lack of tuition money No high school diploma/ GED Lack of transportation Lack of computer skills High student loans payments 	<ol style="list-style-type: none"> No children/children needing childcare Costs too much Hours not sufficient Children have special needs Unsafe location
	Barriers to Transportation	Barriers to Housing
	<ol style="list-style-type: none"> Can't afford car repairs Car broke down Can't afford car Price of gas No drivers license 	<ol style="list-style-type: none"> Utilities too high Rent too high House needs major repairs House payments too high Can't get a loan
	Barriers to Nutrition	Barriers to Physical Activity
	<ol style="list-style-type: none"> Not enough money to buy food Not time to prepare/cook food Food assistance runs out before end of month Not eligible for food assistance No grocery store in the area 	<ol style="list-style-type: none"> Lack of motivation/ interest No problems No time because of job Can't afford No time because of family commitments

The top five responses for each question are to the right

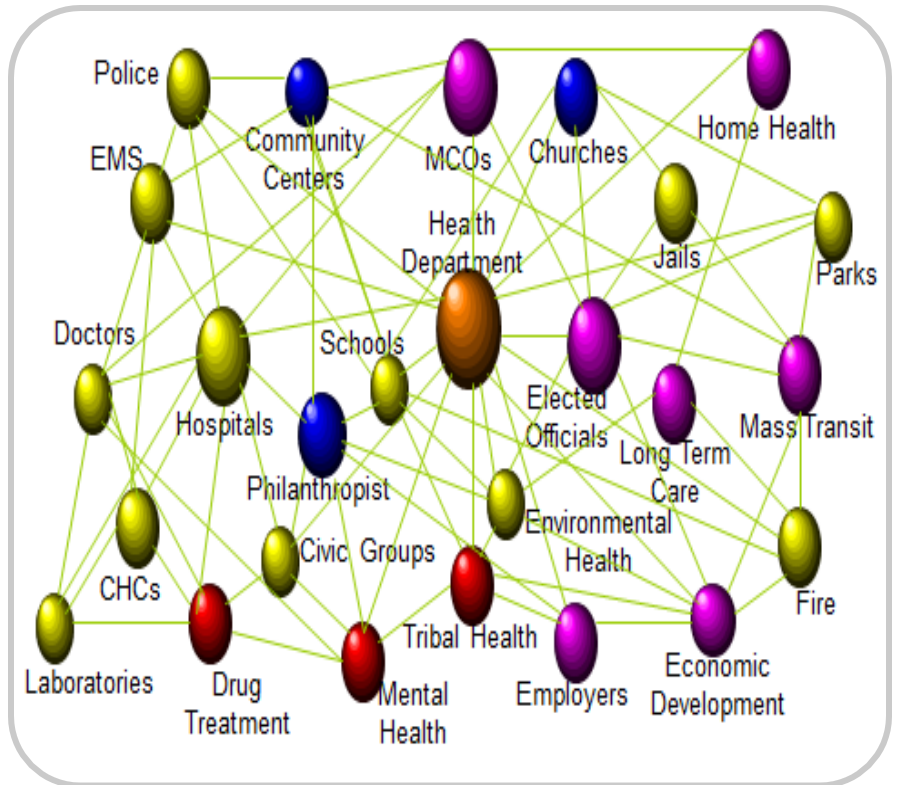
Source: 2016 Community Themes and Strength Assessment

COMMUNITY HEALTH NEEDS IDENTIFIED

Our Local Public Health System (LPHS) Assessment

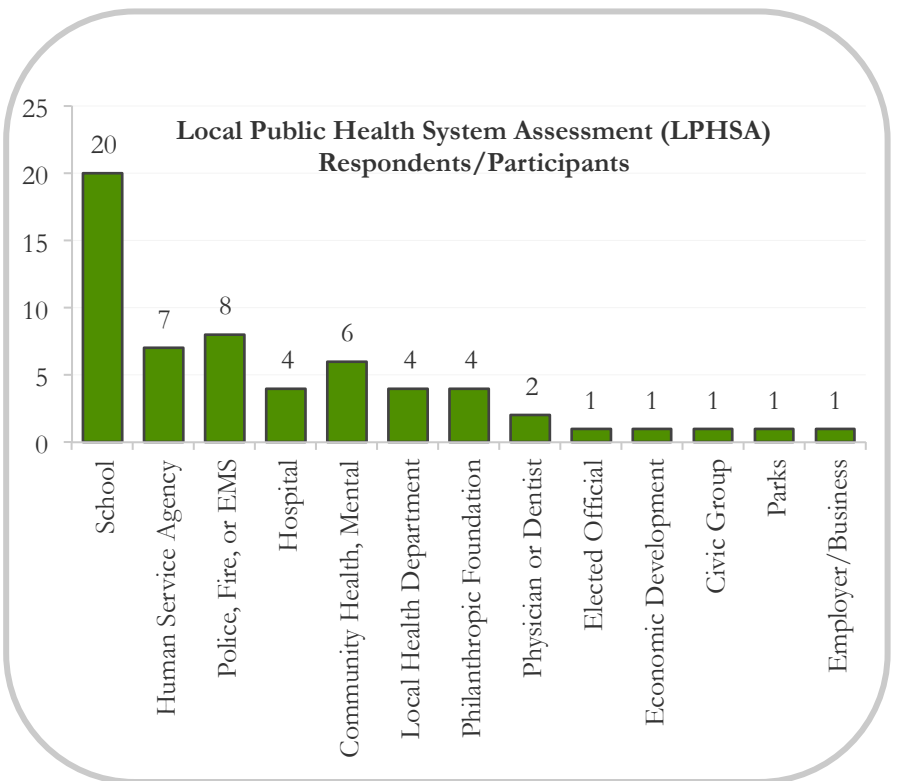
Local Public Health System Assessment

- The goal of the LPHSA was to provide insight and develop strategies toward improving public health in Saginaw County. The electronic survey was developed in partnership with the University of Michigan Prevention Research Center in 2009. It was designed using the Ten (10) Essential Public Health Services, developed by CDC and NACCHO, as the fundamental framework for assessing the local public health system.
- The survey focused on the local public health system, defined as all entities that contribute to the delivery of public health services within a community. As shown in the diagram to the right, the local public health system includes all public, private, and voluntary entities, as well as individuals and informal associations.



Assessment Respondents:

- One hundred twenty-five (125) collaborative partners were identified and e-mailed the survey link.
- One hundred thirty-four (134) partner group representatives responded to the survey, suggesting that some shared the survey with others within their organization
- 134 people completed the first question of the survey, then on average 80 responses per essential service was recorded
- Fifty-seven (57) respondents provided a response to the question, "Please check the public health system sector which best describes the work of your organization and the basis of your responses on this survey."



COMMUNITY HEALTH NEEDS IDENTIFIED

Local Public Health System (LPHS) Assessment

10 Essential Public Health Services

ES 1: Monitor health status to identify and solve community health problems.

ES 2: Diagnose and investigate health problems and health hazards in the community.

ES 3: Inform, educate, and empower people about health issues.

ES 4: Mobilize community partnerships and action to identify and solve health problems.

ES 5: Develop policies and plans that support individual and community health efforts.

ES 6: Enforce laws and regulations that protect health and ensure safety.

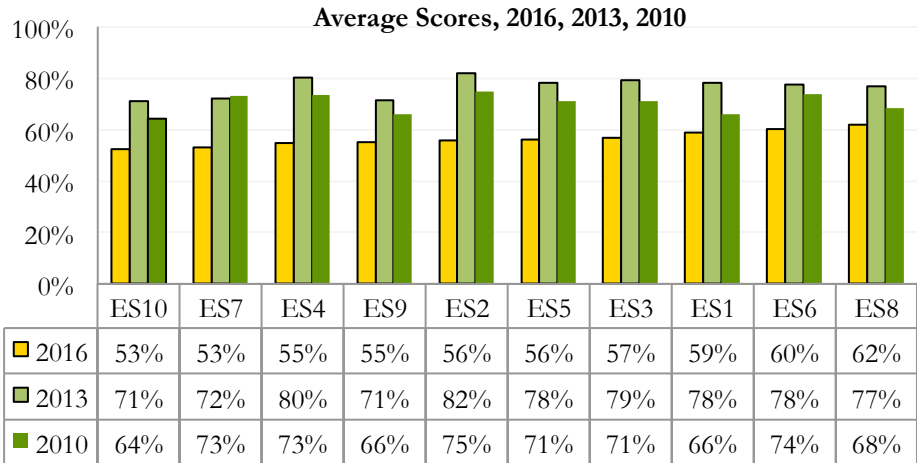
ES 7: Link people to needed personal health services and assure the provision of health care when otherwise unavailable.

ES 8: Assure competent public and personal health care workforce.

ES 9: Evaluate effectiveness, accessibility, and quality of personal and population-based health services.

ES 10: Research for new insights and innovative solutions to health problems.

Essential Health Services, 2016, 2013, 2010



Highest Ranked Essential Services

Lowest Ranked Essential Services

2016

- ▶ ES 8: “Assure competent public and personal health care workforce”
- ▶ ES 6: “Enforce laws and regulations that protect health and ensure safety”
- ▶ ES 1: “Monitor health status to identify and solve community health problems”

2016

- ▶ ES 10: “to research for new insights and innovative solutions to health problems”
- ▶ ES 7: “to link people to needed personal health services and assure provision of health care when otherwise unavailable”
- ▶ ES 4: “Mobilize community partnerships and action to identify and solve health problems”

2013

- ▶ ES 2: “to diagnose and investigate health problems ...”
- ▶ ES 4: “to mobilize community partnerships to identify and solve health problems”
- ▶ ES 3: “to inform, educate, and empower people about health issues”

2013

- ▶ ES 10: “to research ...”
- ▶ ES 9: “to evaluate...personal and population based health services”
- ▶ ES 7: “to link people to needed... services and assure provision of health care...”

2010

- ▶ ES 2: “to diagnose and investigate health problems...”
- ▶ ES 6: “Enforce laws and regulations that protect health and ensure safety”
- ▶ ES 3: “to inform, educate, and empower people about health issues”

2010

- ▶ ES 10: “to research...”
- ▶ ES 9: “to evaluate...personal and population-based health services”
- ▶ ES 1: “to monitor the health status of the community”

Source: Saginaw Community Health Improvement Planning Partners (CHIP) Local Public Health System survey, 2016, 2013 & 2010

Forces of Change (Trends, Events, Factors)

The Forces of Change Assessment is designed to help answer the following questions:

"What is occurring or might occur that affects the health of our community or the local public health system?"

"What specific threats or opportunities are generated by these occurrences?"

The Forces of Change Assessment required participants to dialogue on a broad range of issues affecting Saginaw County, including social (e.g., sustained poverty, transportation, cultural changes, affordable housing), economic (e.g., health care costs, unemployment), environmental, political, and legal, just to name a few.

Information for Forces of Change was gathered using a nominal group technique during the October 13, 2016 CHIP Steering Committee meeting and from additional input gathered during the October 13, 2016: Community Health Improvement Plan Steering Committee.

Forces	Threats	Opportunities
<p><u>AFFORDABLE CARE ACT;</u> Federal, state, and local funding; Changing regulatory environment Health care access/coverage, Medication affordability</p>	<p>Unclear of where law will go (i.e., repeal vs. repair) Loss of health care coverage for residents Unaffordable health care Cuts to vital health & human services programs Diminished a focus on prevention Over use/prescribing of meds/pain meds</p>	<p>Opportunity to improve law Opportunity for education and outreach Use/availability to those in need Exploration of alternatives to medicine Policy related to prescription drug use</p>
<p><u>HEALTH IN ALL POLICIES</u> Recognition of Social determinants of health</p>	<p>Health outcomes not single focus of medical visits Need for cross-trained staff Greater focus on systemic vs. behavioral health determinants</p>	<p>Acknowledgment of impact of personal, social, economic, environmental factors influencing health outcomes Efforts to address root causes of adverse health outcomes Collaboration across multiple sectors Health in All Policies approach in policy making</p>
<p><u>DIVERSE COMMUNITY</u></p>	<p>Need for workforce able to relate to diverse pops Need for awareness/ability to address health inequalities</p>	<p>Appreciation for LGBTQ residents Efforts toward health/social equity Awareness of need for cultural and linguistic competency Educational opportunities</p>
<p><u>FAMILY UNIT</u></p>	<p>Overwhelmed single parents Teen pregnancy (impact on education system) Grandparents parenting Increased strain on foster system</p>	<p>Enhanced parent engagement activities Increased neighbor/community support and connectedness</p>
<p><u>POPULATION SHIFTS</u> Reduction in total population Transient population Increased aging population</p>	<p>Community instability Difficulties with follow-up health care Retiring baby boomers needing assistance Need for public assistance/healthcare "Brain drain" (retirees and young adults moving)</p>	<p>Retirees available to offer expertise</p>
<p><u>CLOSING of COMMUNITY ANCHORS</u> (i.e., schools, places of worship, etc.)</p>	<p>Elimination of community safety-nets Blight/declining property values Loss of resources Greater burden on other systems</p>	<p>Green Space Redesign</p>

Forces of Change (Trends, Events, Factors)

Forces	Threats	Opportunities
<p><u>CHANGES in BUILT ENVIRONMENT</u></p> <ul style="list-style-type: none"> • Aging of housing • Shuttered industrial sites • Suburban sprawl • Revitalization of downtown • CMU medical school • Delta College- Saginaw Campus 	<p>Blight/Abandoned buildings Not enough housing and services Decrease in home values Difficulty finding affordable, safe, healthy housing Increased homelessness Lack of adequate transportation Difficulty getting to work, accessing safe food, services, etc. Decreased mobility/Isolation Unsafe/long routes to schools, Non-walkable/bikeable communities Gentrification</p>	<p>Opportunity for sustainable development/ Smart Growth Blight elimination/neighborhood stability Less dense space/Green space Community gardens Use of public transportation Growth of surrounding suburban areas Downtown upgrades and investments Spurring downtown/suburban development, Increase in tax-base Increase in number of providers</p>
<p><u>FOOD DESERT</u></p>	<p>Access to affordable nutritious food sources for some populations</p>	<p>Promotes buying local/farmers market Healthier choices in schools</p>
<p><u>FLINT WATER CRISIS</u></p>	<p>Concern about water quality and other environmental issues Weakened trust in government</p>	<p>Awareness of link between health and environment Consideration of Health in All Policy approach Attention to infrastructure needs</p>
<p><u>CRIME and VIOLENCE</u> (perception of)</p> <p><u>DRUG USE</u></p>	<p>Trauma (stress, anxiety, depression) can lead to adverse health Need for more mental health services Abandonment of communities Less walkable/bikable neighborhoods Poor image of areas/Negative press HIV/STI exposures and mental health disorders</p>	<p>Increased collaborative prevention programs Resources to address root causes (i.e., education, employment, early childhood health and well being, etc.) Resilience and Trauma informed care awareness Improvement in media/community relations Investment in communities perceived to be unsafe Greater awareness and attentiveness</p>
<p><u>PACE of TECHNOLOGY</u></p> <p>Social media (all the new “things”, speed, etc.) On-line [Tele-medicine] health information Transition from industrial to tech Move toward paperless Electronic medical records Real time data</p>	<p>Less verbal/face-to-face communication Digital divide (Access not afforded to all) Disparity in computer literacy Privacy/Fraud issues Data/Information overload Self diagnosis based on online health care information Stress from expectation to multi-task Cost to support No method of exchange between systems – clearing house Lessor use of human resources</p>	<p>Greater ability to promote activities, information, etc. Medical care solutions for rural communities Convenience/Access/Increased speed of communication Remote meetings, conferences .(less travel time/gas) Educational/Workforce development opportunities Greater opportunity to collaborate Less manual labor/“push of a button” Efficiency of not dealing with paper Lessor need for human support Better understanding of the multifactorial links to health outcome</p>

HEALTH IMPROVEMENT PLANNING

Formulating Goals, Objectives, and Strategies
for Identified Priorities



Plan



Implement



Evaluate



HEALTH IMPROVEMENT PLANNING

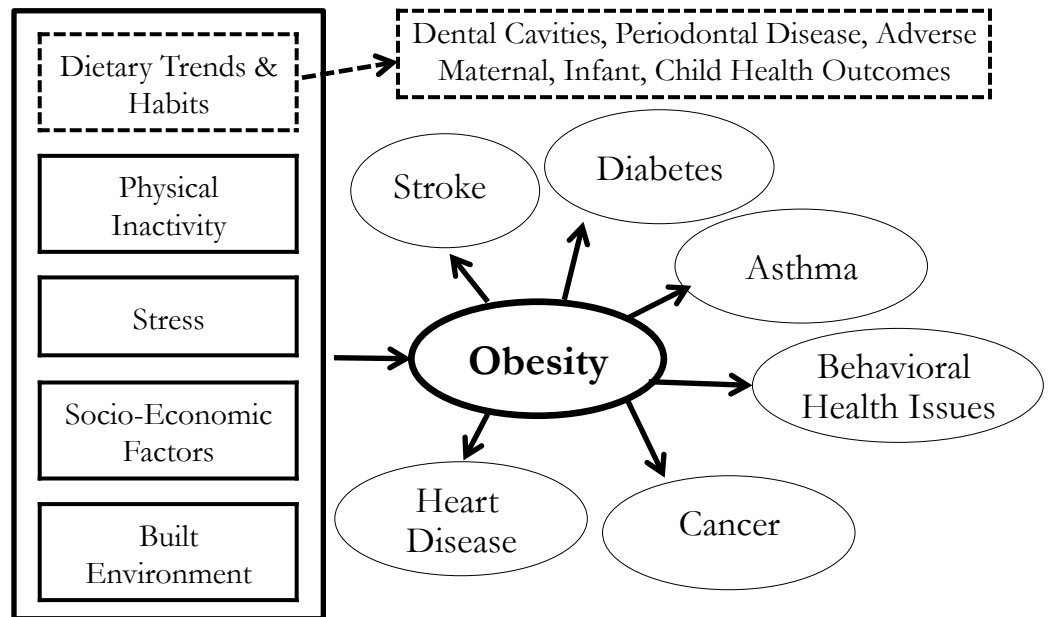
Using a Common Risk Factor Approach - Addressing Determinants of Health

A healthy diet rich in fruits and vegetables and routine physical activity is a way to prevent many chronic illnesses. Obesity, a gateway to chronic illnesses such as stroke, diabetes, asthma, behavioral health issues (i.e., depression), cancer, and heart disease is one of many ailments associated with an imbalance in the energy going into the body, or calories from food and drinks, and energy going out of the body, mainly from physical activity.

Stress, Social factors (i.e, low socioeconomic status) and built environment factors (e.g, easy access to unhealthy fast foods, limited access to recreational facilities or parks, and few safe or easy ways to walk in your neighborhood) is also related to an increased likelihood of being obese and having a obesity-related chronic illness.

Genetics also plays a role in obesity and obesity-related chronic illnesses. However, factors, such as age, family history and genetics, race and ethnicity cannot be changed.

On the other hand, we can change risk factors like unhealthy behaviors, including eating foods high in added sugars and too much saturated and trans fats. As a collective we can also change environmental risk factors, such as creating means for all residents to have access to healthy food and lifestyle choices.



This is important for Saginaw County residents because chronic diseases, including heart disease, cancer, chronic lower respiratory diseases, stroke, and diabetes, count for 6 of the 10 leading causes of death in Saginaw County and the County’s asthma hospitalization rates are above statewide rates. Moreover, Such chronic diseases, which are all obesity-related are among the most common, costly, and preventable of all health problems in the U.S. As shown on page 19, The estimated percentage of Saginaw County adults, high school students, and middle school students eating an adequate amount of fruits and vegetables is 11.7%, 25%, and 36%, respectively. Saginaw County residents getting adequate physical activity is reported as 25% for adults, 47% for high school students, and 50% for middle school students. These figures combined with the County’s obesity rates and poverty disparity rates means that an even greater percentage of county residents are at risk for serious health conditions such as stroke, diabetes, asthma, behavioral health issues (i.e., depression), Cancer, and heart disease. Thus, it is not surprising that a majority of County residents and employees who participated in the Community Themes and Strengths Assessment selected diabetes, obesity, cancer, and heart disease in addition to mental health as the health conditions in most serious need of attention in Saginaw County.

In response to this CHNA data, as a collective led by CHIP Partners, the Saginaw County Local Public Health System will embrace a common risk factor approach, which addresses determinants of health such as access to healthy choices, access to health care/utilization of services, in order to more effectively promote healthy behaviors. This includes policy and programming.

Tackling the behavioral, structural, and environmental determinants of health associated with obesity will allow CHIP Partners and broad stakeholders to address chronic illnesses while at the same time addressing dental and maternal health (infant and child health and developmental outcomes), also associated with dietary trends, access to care, and availability of healthy choices. The CHIP Steering Committee will ensure that each of the CHIP Action Groups and Advisory Group have a focus on one or more of the common risk factors and/or determinants of health related to obesity. There will be a focus on the City of Saginaw, Saginaw Counties low income community’s, African American and Hispanic Latino residents.

Health Improvement Planning

Identified Priority Health Needs and Assigned Action Groups

Priority Area	Prioritized Health Issues & Determinants of Health	Action Group
Physical Health	<ul style="list-style-type: none"> - Obesity and Obesity-related Chronic Illnesses (Diabetes, Cancer, Heart Disease, Asthma) - Dental Health - Maternal, Infant, & Child Health <ul style="list-style-type: none"> • Infant Mortality • Childhood lead poisoning 	<p>Obesity, Chronic Illnesses, and Dental Health</p> <p>Maternal, Infant, & Child</p>
Behavioral Health	<ul style="list-style-type: none"> - Substance abuse/misuse - Mental health 	<p>Behavioral Health</p>
Environmental (Social & Physical)	<ul style="list-style-type: none"> - Equal Access to Healthy Choices & Opportunities <ul style="list-style-type: none"> • Eliminating race, place, poverty access inequities • Access to affordable and reliable transportation 	<p>Health & Social Equity</p>
Health Care	<ul style="list-style-type: none"> - Access to Health Care and Utilization of Services <ul style="list-style-type: none"> • Affordability • Navigation: Coordination, Outreach/ Awareness, Literacy • Service Delivery: Location, Hours, Effective Provider-patient Communication 	<p>Emerging Models of Health Services Delivery</p>

HEALTH IMPROVEMENT PLANNING

OBESITY & CHRONIC ILLNESSES ACTION PLAN

Obesity is more than a cosmetic problem. Several serious medical conditions have been linked to obesity, including type 2 diabetes, heart disease, high blood pressure, and stroke. Obesity is also linked to higher rates of certain types of cancer. Such chronic illnesses are among the most common, costly, and preventable of all health problems in the U.S. and account for 7 of the 10 leading causes of death in Michigan/Saginaw County. Child obesity has been well-documented as a national epidemic and it is equally significant in Saginaw County. Combating childhood obesity is likely the key to eliminating Adult Obesity rates and the dangerous health implications that go along with it. Both adult and child obesity are often the end result of an overall energy imbalance due to poor diet and limited physical activity.



GOALS

Our goal is to reduce the percentage of children, adolescents and adults who are obese and improve health outcomes including diabetes, heart disease, cancer, and asthma.

OBJECTIVES

Our objectives are to:

1. Improve Coordination among agencies/entities working towards reducing obesity and chronic disease, including representatives of municipal planning bodies and policy makers.
2. Enhance Nutrition and Physical Activity Programs/Initiatives.
3. Promote consistent nutrition, physical activity, and healthy lifestyle messaging throughout county.
4. Advocate for county-wide policy and initiatives which increases healthy food choices and physical activity.

Indicator	Baseline	Target*
Child Obesity, Diet, Physical Activity¹ (Percent)	2016	(6-19 Years)
Middle School Obesity	19.9%	14.6%
Middle School Adequate Physical Activity	50%	55%
Middle School Adequate Fruits & Vegetables	36%	39.6%
High School Obesity	16.8%	15.1%
High School Physical Activity	47%	51.7%
High School Adequate Fruits & Vegetables	25%	27.5%
Adult Obesity, Diet, Physical Activity² (Percent)	2013-2015	(>19 Years)
Adult Obesity Rate	41.7%	37.5%
Adult Physical Activity	25%	27.5%
Adult Adequate Fruits & Vegetables	11.7%	12.9%
2015 Chronic Diseases Deaths (Rate age adjusted per 100,000)³		
Death Due to Cancer	166.6	149.9
Death Due to Diabetes Mellitus	24.5	22.0
Death Due to Heart Disease	172.9	155.6
2014 Asthma Hospitalizations (Rate per 10,000 Population)⁴		
Children ≥ 18 years old	21.9	19.7
All ages	23.1	20.8

Source: ¹Michigan Department of Education and Michigan Department of Community Health, Michigan Profile for Healthy Youth, 2011-2012 and 2013-2015. ²Source: 2008- 2010 and 2013—2015 Combined Michigan BRFSS Regional & Local Health Department Estimates. ³Michigan Department of Community Health, Community Health Information, 2014. Death records with race/sex not stated are included only in the "Total" column. ⁴Michigan Resident Inpatient Files created by the Division for Vital Records and Health Statistics, Michigan Department of Health & Human Services, using data from the Michigan Inpatient Database obtained with permission from the Michigan Health & Hospital Association Service Corporation (MHASC). *represents a 10% improvement (reduction in all indicators except adequate physical activity and fruits and vegetables) from baseline.

HEALTH IMPROVEMENT PLANNING

MATERNAL, CHILD, INFANT HEALTH ACTION PLAN

Infant mortality is one of the most important indicators of the health of a nation and predictor of the health of the next generation. Infant mortality rates provide insight into the health of the child and mother and is defined as the number of children dying under one year of age per 1,000 live births. It is associated with a variety of factors including maternal health, quality of and access to medical care, psychosocial conditions, environmental risk factors, and public health practices.

Childhood Lead Poisoning is an environmental-related illness. A wealth of research data show that children may experience reading and learning disabilities, hyperactivity, delinquent behavior, and reduction in IQ and attention span as a result of chronic low level (5µg/dL and 10µg/dL) exposure to inorganic lead.



GOALS

Our goal is to reduce the number of Saginaw County children who die before their first birthday.

OBJECTIVES

Our Objectives are to:

1. Improve Coordination amongst agencies/entities working towards eliminating infant mortality.
2. Provide consistent, relevant, fact-based education and communication message for various target groups/communication mechanisms.
3. Offer one-on-one pre-natal through age five parenting services.
4. Reduce pre-mature birth through improved women's health before, during, and after pregnancy.
5. Decrease the gaps of disparity among African American and White infant deaths through promotion of health equity advocacy and outreach.

Maternal, Child, Infant Indicators	2015	*Target
Infant Mortality Rate¹ (Rate per 1,000 live births)		
All Saginaw County Infant Deaths	8.7	7.8
- African American Infant Deaths	15.9	14.3
- Hispanic/Latino	12.8	11.5
City of Saginaw Infant Deaths		
2015 Children ≥ 5 Years Old with Elevated Blood Lead Level (EBLL) , BLL ≥ 5 µg/dL (Percentage)²		
Saginaw County Children Tested for BLL	23.9%	26.3%
Saginaw County Children with EBLL	3.2%	2.9%
48601 Zip Code Children Tested for BLL	26.9%	29.6%
48601 Zip Code Area with EBLL	5.1%	4.6%

Source: ¹1989-1999 Michigan Death Certificate Registries; 1999-2013 Geocoded Michigan Death Certificate Registries; 2014 Michigan Death Certificate Registry. Rates per 1,000 births. ²2015 Data Report on Childhood Lead Testing and Elevated Blood Lead Levels: Levels for Children under Age Six: Michigan. *represents a 10% improvement (reduction in all indicators except blood lead testing) from baseline.

HEALTH IMPROVEMENT PLANNING

BEHAVIORAL HEALTH ACTION PLAN

It is noted that the prevalence of poor mental health days has the potential to echo throughout the community by influencing the health and safety of citizens.

Behavioral Health is a term of art that refers to the specialty division of health care that typically includes the management and provision of services to address psychiatric disorders/ illness and substance use disorders/illness.



GOALS

Our goal is to:

1. Reduce substance abuse/tobacco use at least 5% by 2020.
2. Increase community knowledge and awareness of mental conditions and where to seek treatment.

OBJECTIVES

Our objectives are:

- 1.1 Increase education.
- 1.2 Increase access to treatment.
- 1.3 Increase early intervention and prevention services.

Indicator	Baseline 2013-2015	Target*
Current Smoker - Adult	19.2%	18.4%
Ever Smoked (Youth)	17.2%	16.3%
	2016	Target
Saginaw citizens trained in Mental Health First Aid Training	338	2000
Saginaw citizens trained in Trauma Informed Care	543	1800

Source: Michigan Behavioral Risk Factor Survey 2013-2015. *represents a 5% improvement (reduction in all indicators except Mental Health First Aid and Trauma Informed Care training) from baseline.

HEALTH IMPROVEMENT PLANNING

EMERGING MODELS OF HEALTH SERVICES DELIVERY ACTION PLAN

Health, socioeconomic, and environmental disparities experienced by Saginaw residents, particularly minority and low income residents, influence the persistence of Saginaw’s health burdens.

Lack of health insurance coverage is a significant barrier to accessing needed health care. Having access to care requires not only having financial coverage but also access to providers.

Residents living in neighborhoods without healthy ingredients - parks and playgrounds, living wages, a good healthcare delivery system, grocery stores selling nutritious food, clean air quality, and neighbors who know one another - are more likely to suffer health burdens such as: obesity, asthma, heart disease, and high blood pressure.



GOALS

Our goal is to increase access to health care and health insurance and improve utilization and quality of health services delivery.

OBJECTIVES

Our objectives are to:

- Improve coordination among agencies/ persons working to improve health services delivery.
- Improve navigation of health & wellness education.
- Promote person-centered engagement and care.
- Enhance the patient experience of care through workforce development.
- Advocate for improved access to health care and delivery of services.
- Improve Navigation through the health care system.
- Improve outreach and education about health insurance and health care (health and wellness) resources.
- Develop a system to better assess population health improvement and patient experience.

	Baseline1 2013-2015	Target*
Adults with no health insurance	14.3%	12.9%
Adults with no personal health care provider	16%	14.4%
Adults with no routine checkup in past 12 months	23.5%	21.2%
Adults with no health care access in past 12 months	13%	11.7%

Source: ¹Michigan Behavioral Risk Factor Survey 2013-2015. *represents a 10% improvement (reduction in all indicators) from baseline.

HEALTH IMPROVEMENT PLANNING

HEALTH AND SOCIAL EQUITY ADVISORY COMMITTEE GOALS, OBJECTIVES, & STRATEGIES

As shown in the community health status assessment data included in this publication, the current economic environment has challenged all communities. However, communities of color, low-income communities, and residents living within some geographical areas have experienced greater economic barriers and health burdens than other Saginaw County residents. Historical factors have left a legacy of inequities in education, housing, employment, income, wealth, and other areas that impact achievement, quality of life, and ultimately health. Addressing determinants of health, factors that drive inequity in health outcomes, is necessary in order to reduce Saginaw County's persistent health burdens.

As identified by Saginaw County residents and workforce, eliminating barriers that prevent access to healthy choices is vital to eliminating persistent inequities and disparate health burdens for Saginaw County residents. The CHNA further distinguishes the following as priority needs:

Equal Access to Healthy Choices and Opportunities

- Eliminating race, place, poverty access inequities
- Access to affordable and reliable transportation

Goal:

Our goal is to advocate for policy, procedures, services aimed at eliminating the determinants of health that lead to health and social inequities.

Objectives & Strategies

1. Improve coordination among groups working to eliminate health and social inequities.
 - 1.1 Routinely engage residents, thought and faith leaders, policy makers, and other decision makers to promote and champion strategies that facilitate health and social equity.
 - 1.2 Provide opportunities for thought leaders/decision makers to do self-critiques and gain tools to better serve fellow residents/constituents (i.e., cultural competency training and poverty simulation)
2. Promoting Access to Healthy Choices and Opportunities
 - 2.1 Transportation Improvement



APPENDIX

- 2016 Community Health Improvement Progress Report
- Data Sources
- References
- Map of Saginaw County

COMMUNITY HEALTH IMPROVEMENT PLANNING 2016 Progress Report

Emerging Models of Health Services Delivery Indicators	2007-2009	2008-2010	2011-2013	2012-2014	Target*	Action Required
Adults with Health Care Coverage ¹	86.5%	87.1%	84.2%	83.8%	100%	Yes
Adults with a Personal health Care Provider ¹	90.0%	90.2%	87.7%	83.6%	100%	Yes
Adults able to obtain Medical care when needed ¹	88.3%	87.2%	82.3%	85.0%	96%	Yes
Chronic Diseases Indicators	2011	2012	2013	2014	Target*	Action Required
Death Due to Cancer ²	172.0	180	176.3	167.8	160.6	Yes
Death Due to Heart Disease ²	204.8	195.7	167.6	179.5	100.8	Yes
Death Due to Diabetes Mellitus ²	29.1	26.3	24.0	28.1	26.2	Yes
- Child Asthma Rates Per 10,000	2010	2012	2013	2014	Target*	Action Required
Asthma Hospitalization Rate, under 18 years old ⁴	14.9	16.8	16.7	21.9	17.3	Yes
Child Obesity Indicators⁵	2008	2010	2011-2012	2013-2014	Target*	Action Required
7 th Grade Students	14.6%	15.2%	15.5%	17.1%	14.6%	Yes
9 th and 11 th Grade Students	18.7%	18.6%	19.0%	16.2%	14.6%	Yes
Adult Obesity Indicators⁶	2007-2009	2008-2010	2011-2013	2012-2014	Target*	Action Required
Adult Obesity	37.5%	40.2%	41.7%	41.6%	30.6%	Yes
Infant Mortality Indicators (Three-Year Rate Per 1,000)	2009-2011	2010-2012	2011-13	2012-14	Target*	Action Required
Saginaw County Overall	7.9	6.1	7.1	7.7	6.0	Yes
Saginaw County African American	19.2	13.4	14.3	12.2	6.0	Yes
Saginaw City Overall	13.7	9.6	12.1	13.8	6.0	Yes
Saginaw City African American	20.5	14.1	15.8	15.0	6.0	Yes
Performance improving						
Performance declining						
Performance staying about the same						

Source: ¹Michigan Behavioral Risk Factor Survey, 2008-. -2010 and 2011-2013 Combined; ²2011 Geocoded Michigan Death Certificate Registry, Division for Vital Records & Health Statistics, Michigan Department of Community Health; ³2013 Annual Data Report on Blood Lead Levels of Children in Michigan; ⁴Michigan Inpatient Database (MIDB), Michigan Department of Community Health; Source: ⁵Michigan Department of Education and Michigan Department of Community Health, Michigan Profile for Healthy Youth, 2011-2012 and 2013-2014 Survey. ⁶2008—2010 and 2013-2014 Combined Michigan BRFSS Regional & Local Health Department Estimates. *Data from the Healthy People 2020 are also included to enable comparison of a Target value. **Prevalence estimates and 95 percent confidence intervals from the 2008 – 2010 and 2011-2013 Saginaw County BRFSS are included to enable trend analysis. In interpreting the 95 percent confidence interval, the following method was used: if two intervals do not overlap then they are probably statistically different from one another (noted as improved or declined in “Progress” column); if they overlap, then the observed difference in the estimates cannot be interpreted as statistically different.

Data Sources

Healthy People

- 2020 Objectives

Kids Count

- 2016/2017 Data Book

Michigan Behavioral Risk Factor Survey

- 2008-2010, 2012-2014, 2013-2015

Michigan Department of Education (Collaborates with MDCH)

- 2011-2012, 2015-2016 Michigan Profile for Healthy Youth
- 2015-2016 MI School Data

Michigan Department of Health and Human Services

- 2005-2014 Asthma Hospitalization Rates for Saginaw County
- 2015 Michigan Resident Inpatient Files
- 1989-1999 Michigan Death Certificate Registries
- 1999-2013 Geocoded Michigan Death Certificate Registries
- 2014-2015 Michigan Death Certificate Registries
1989-1999 Michigan Birth Certificate Registries
- 2000-2015 Geocoded Michigan Birth Certificate Registries **Last Updated: 3/17/2017**
- 2013-2015 Michigan Disease Surveillance System
- January 2013 HIV/AIDS County Level Quarterly Analyses, Saginaw County
- 2011 and 2015 Annual Report on Blood Lead Levels in Michigan

Michigan Department of Labor and Economic Growth

- 2005-2015 Labor Market Information

Michigan Juvenile Arrest Data

- 2015 Saginaw County Juvenile Crime Rates

United States Census Bureau

- 2005-2015 American Community Survey
- 2010 Census

University of Wisconsin Population Health Institute and the Robert Wood Johnson Foundation

- 2017 County Health Rankings Health Rankings

References

U.S. Department of Health and Human Services. 2000. *Healthy People 2010*. Washington, DC: U.S. Government Printing Office. Originally developed for Ratzan SC, Parker RM. 2000. Introduction. In *National Library of Medicine Current Bibliographies in Medicine: Health Literacy*. Selden CR, Zorn M, Ratzan SC, Parker RM, Editors. NLM Pub. No. CBM 2000-1. Bethesda, MD: National Institutes of Health, U.S. Department of Health and Human Services

Saginaw County Chamber of Commerce. Home Page. Accessed 2017. <http://www.saginawchamber.org/>.

Department of Health and Human Services (HHS). *Healthy People 2010: Understanding and Improving Health*. 2nd ed. Washington, DC 2000.

McCormick M. The contribution of low birth weight to infant mortality and childhood morbidity. *N Engl J Med*. 1985; 10(312(2)):82-90.

Ashdown-Lambert J. A review of low birth weight: predictors, precursors and morbidity outcomes. *J R Soc Promot Health*. 2005;125(2):76-83.

Hoyert DL. Medical and lifestyle risk factors affecting fetal mortality 1989-90. *Vital and Health Statistics 20 Data National Vital Statistics System*. 1996;31:1-32.

World Health Organization (WHO). *Obesity: Preventing and Managing the Global Epidemic*. Geneva, Switzerland: WHO; 1998.

Wolf AM and Colditz GA. Current estimates of the economic cost of obesity in the United States. *Obesity Research*. 1998; 6(2):97-106.

Health and Human Services (HHS). *Mental Health: A Report of the Surgeon General Executive Summary*. Rockville, MD: HHS, SAMHSA, CMHS, NIH, NIMH; 1999.

Institute NC. Understanding Cancer. December 12, 2009; <http://www.cancer.gov/>, 2011. 10. Turner A. The Business Case for Racial Equity. Altarum Institute, October 2013

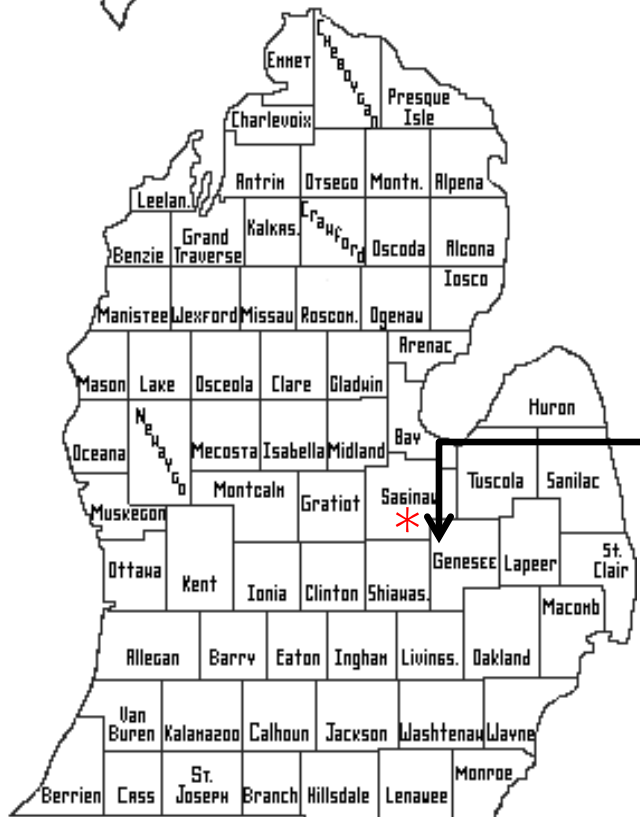
Bellinger D, Stiles, K, Needleman H, (1992). Low-Level Lead Exposure, Intelligence and Academic Achievement: A Long-term Follow-up Study. *Pediatrics* Volume 90 Number 6:855-861.

Needleman,HL, Riess JA, Tobin MJ, Biesecker GE, Greenhouse JB, (1996). Bone lead levels and delinquent behavior. *Journal of the American Medical Association* 275:363-369.

Bernard SM, McGeehin MA, (2003). Prevalence of Blood Lead Levels $\geq 5\mu\text{g}/\text{dL}$ Among US Children 1 to 5 Years of Age and Socioeconomic and Demographic Factors Associated with Blood of Lead Levels 5 to $10\mu\text{g}/\text{dL}$, Third National Health and Nutrition Examination Survey, 1988-1994. *Pediatrics* Vol. 112 No. 6 pp. 1308 – 1313.

Watt, R. G. and Sheiham, A. (2012), Integrating the common risk factor approach into a social determinants framework. *Community Dent Oral Epidemiol*, 40: 289–296. doi:10.1111/j.1600-0528.2012.00680.x

Map of Saginaw County and Michigan



*Saginaw County Road Map to Health
2017 -2020*

Facilitator and Publisher

