MARION COUNTY PUBLIC HEALTH DEPARTMENT

Prevent. Promote. Protect.

2019 —— Marion County ——

Community Health Assessment Report

2018 MARION COUNTY COMMUNITY HEALTH ASSESSMENT

Contents

Dear Partner in Health,

On behalf of the Marion County Public Health Department (MCPHD), the Community Health Assessment Advisory Board and many local partners, I am pleased to present the 2018 Marion County Community Health Assessment. Together, the Advisory Board and I hope you will use the Health Assessment to become more informed about your community and to join with other city residents to help us develop concrete and effective next steps for the MCPHD's emerging Community Health Improvement Plan.

What is the purpose of the Community Health Assessment? The Community Health Assessment describes the health status of Marion County residents. An Advisory Board of community stakeholders reviewed data on more than 60 important health issues, and selected the priorities presented here using accepted, pre-set criteria. The top priorities will become the focus of our Community Health Improvement Plan.

That plan will set out specific policies, strategies and lead partners for reaching the goals to improve our community's health. It will provide a road map for specific community actions. I sincerely thank all who made their time and expertise available to the Community Health Assessment.

I invite you to look at the Community Health Assessment and become involved!

Yours in health,

Virginia A. Caine, M.D.

Virginia A. Caine, MD

Director and Chief Medical Director

MARION COUNTY PUBLIC HEALTH DEPARTMENT

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EXECUTIVE SUMMARY

The Community Health Assessment guides the Marion County Public Health Department's allocations of time and effort to improve health in Marion County. Through the subsequent Community Health Improvement Plan, which Marion County Public Health Department (MCPHD) and its community partners develop plans and commit resources to address the top three priorities identified in the Community Health Assessment.

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[i] U.S. Census Bureau 2018 population estimate for of July 1, 2018 https://data.census.gov/cedsci/profile?g=0500000US18097

[ii] 2013-2017 American Community Survey 5-Year Estimates, Table DP03 https://www.census.gov/quickfacts/marioncountyindiana

[iii] 2013-2017 American Community Survey 5-Year Estimates, Table S1501 https://www.census.gov/quickfacts/marioncountyindiana

[iv] 2013-2017 American Community Survey 5-Year Estimates, Table DP05 https://www.census.gov/quickfacts/marioncountyindiana

[v] National Center for Health Statistics. Health, United States, 2018. Hyattsville, MD. 2019. https://www.cdc.gov/nchs/data/hus/hus18.pdf. Note that some deaths of county residents that occurred outside of Indiana are not included, so the difference may be slightly greater.

[vi] Marion County death certificates and MCPHD projections of U.S. Census population estimates (DR4273)

[vii] 2018 Marion County Community Health Assessment Survey (DR4205)

[viii] Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health. BRFSS Prevalence & Trends Data [online]. 2015. [accessed Nov 08, 2019]. URL: https://www.cdc.gov/brfss/brfssprevalence

[ix] Big Cities Health Coalition Data Platform, data for 2015. https://www.bigcitieshealth.org/bchi-2-release

[x] Epidemiology Department, DR3512. Health Equity 2018: The State of Health in Marion County. Marion County Public Health Department. 2018; Indianapolis, IN. https://drive.google.com/file/d/1Ny0bmvAHaYHtm2IW3nDF-EA5pInvgPp1/view

Marion County Background

Marion County contains the city of Indianapolis and several smaller municipalities. It has about 950,000 residents.[i] Poverty is more common in Marion County than in Indiana or the U.S. overall; 20% of county residents (30% of children) live below the poverty level, compared to 15% (20% of children) for both Indiana and the U.S.[ii] Of adults over 25 years old, 86% have a high school diploma and 20% have a college degree.[iii] The county It is moderately diverse, racially; of every 10 residents, about 6 (57%) are white non-Hispanic, 3 (27%) are black, 1 in 10 (10%) are Hispanic, and 5% Asian, Native American, or other races or ethnicities.[iv]

The health issues in Marion County are similar to those throughout the United States, although the 2018 county death rate was 8% higher than the U.S. rate.[v] Of every 100 deaths in 2018, about 20 were from heart disease and 20 from cancer, 8 from accidents (including overdoses) and 7 from chronic respiratory problems (COPD), 4 from stroke (cerebrovascular disease), 3 each from diabetes, kidney disease, and Alzheimer's Disease, and two each from homicide, suicide, and liver disease, the remaining 10 deaths being from other causes. Residents under 55 years old made up 20% of deaths, 4% being for residents less than 25 years old.[vi] The smoking rate continues to decline, as it does throughout the U.S.; 18% of county adults were current smokers in 2018[vii], compared to a national rate of 16%.[viii] As shown later in this report, obesity among adults appears to continue its increase, but obesity among children may be starting to drop. Compared to other large U.S. cities, Marion County is in the middle regarding its overall death rate, but in the worse-off third regarding obesity, smoking, gonorrhea, and adults getting influenza vaccine.[ix] Like other urban areas, Marion County has notable health disparities; for instance, life expectancy ranges from 70 to 86 years for different ZIP codes within the county.[x]
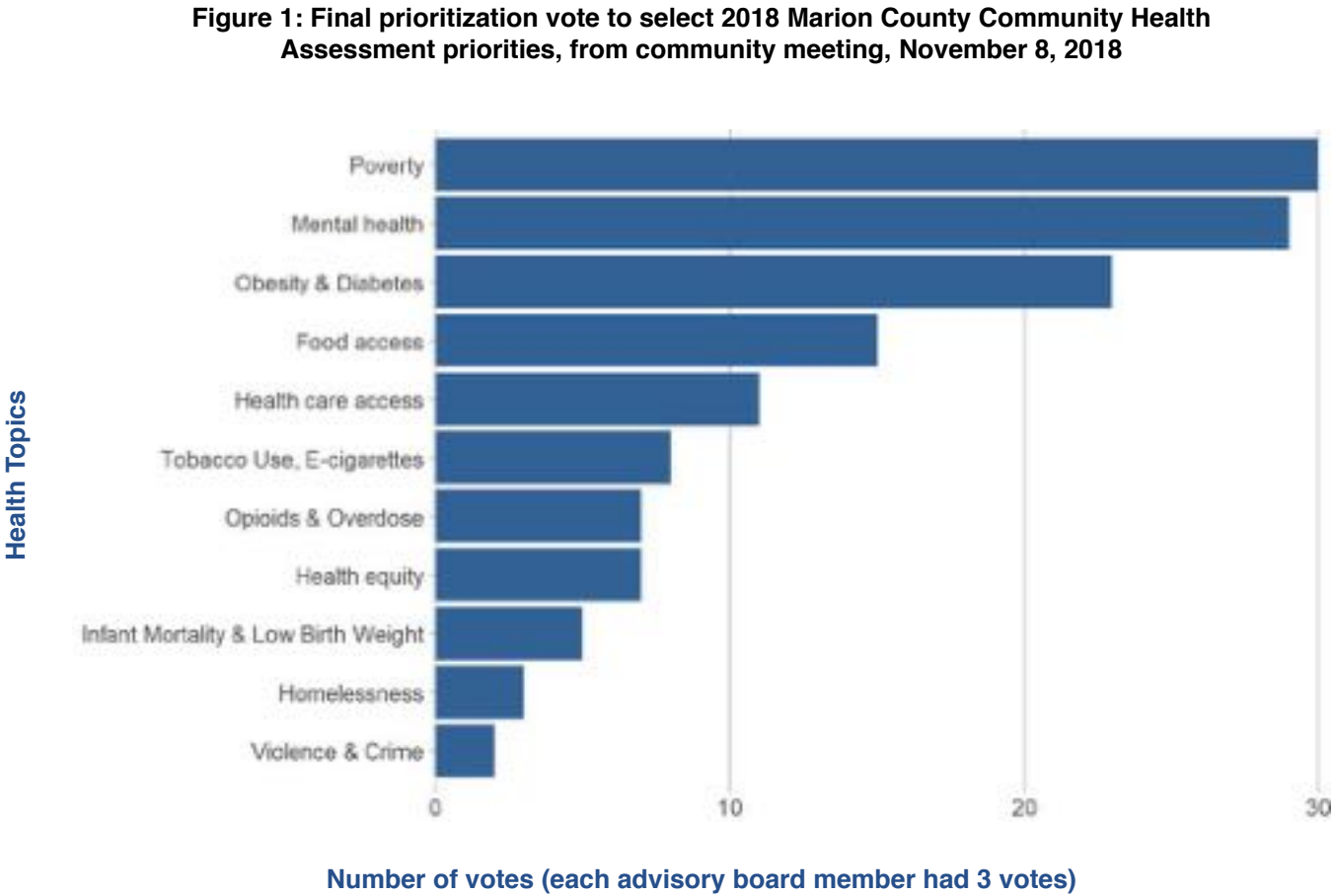
Marion County has a wealth of community organizations, businesses, agencies, and citizens who are engaged in making this a better place to live. There are organizations and coalitions already working to address each issue highlighted in this report, and improvements in many health outcomes do credit to those efforts. Using this report, the Marion County Public Health Department and partner organizations will work to accelerate that progress through a Community Health Improvement Plan (CHIP). The CHIP will specify who will take what steps for making progress, and how we will measure the change.

Community Health Assessment Process

This Community Health Assessment report presents health priorities identified by community stakeholders, informed by analyses of a spectrum of health data. Using information provided by MCHPD, as well as their own insights, the stakeholders narrowed a list of over 70 potential priorities to a list of 15. Then, through discussions in a large, community meeting, the stakeholders refined and ranked those issues to produce the 11 priorities presented in this report.[xi]

Figure 1: Final prioritization vote to select 2018 Marion County Community Health Assessment priorities, from community meeting, November 8, 2018

Number of votes (each advisory board member had 3 votes)

[xi] The process is described in more detail in the Introduction of this report.

Top Priorities

Figure 1 lists the 11 health priorities identified by Marion County's 2018 CHA Advisory Board. The top three were poverty, mental health, and the inter-related issues of diabetes and obesity. The MCPHD Community Health Improvement Plan will focus on these 11 priorities.

POVERTY

Poverty has pervasive impacts on health. Having little income makes it difficult to maintain safe and stable housing, timely and good quality health care, and good nutrition, among other things. Poverty has been linked to chronic stress, particularly among children, which has been linked to a decreased executive function.[xii] Poverty is also associated with a shorter life expectancy, hypertension, asthma, and many other chronic diseases that decrease well-being and quality of life.

In Marion County, we found that higher poverty was strongly related to higher rates of asthma, hypertension, high blood cholesterol, and heart disease diagnoses, among other health outcomes. For all four conditions, a higher percentage of people below the poverty guideline had been diagnosed with the condition than those who earned an income three times or more of the Federal Poverty Guidelines (FPG). Adults who make less than 100% FPG are 43.3% more likely to have been diagnosed with asthma, 44.0% more likely to have been diagnosed with hypertension, 27.5% more likely to have been diagnosed with high blood cholesterol, and just over twice as likely to have been diagnosed with heart disease than adults who make more than 300% FPG.

To decrease poverty is difficult, but possible, and important. In fact, the CHA advisory group identified poverty as the top priority to address in improving health within the county. A primary way to address poverty is through policy changes. Policies that improve employment, increase wages, and support social programs that soften the impact of unexpected health or financial needs can lessen the health consequences of poverty, and even decrease poverty itself. For example, providing Medicaid coverage has increased the use of health care services, reduced financial strain, increased diagnosis and management rates of diabetes, and decreased the rate of depression among Medicaid recipients.[xiii]

MENTAL HEALTH

Mental health diseases can reduce productive activities, the capacity for fulfilling relationships with other people, and the ability to adapt to change and to cope with challenges. Some of the more common mental health diseases include depression, anxiety, addictions, and eating disorders. Without treatment or good management, any of these can be very debilitating, resulting in estrangement from friends and family, loss of income, job, or home, and even death. There are notable impacts on family and the community, as well.

Mental distress (having frequent poor mental health days) was similarly common in Marion County (13%)[xiv], Indiana (13%) and the U.S. overall (12%).[xv] In 2018, 23.7% of Marion County adults reported ever having been diagnosed with depression[xvi], which is somewhat higher than the 18% reported in the U.S. overall.[xvii] Each year in the last decade, Marion County has had close to 14 suicides per 100,000 residents. Over that period, the national rate rose from 12 to the Marion County rate of 14 per 100,000. As in the rest of the U.S., overdose deaths have risen rapidly; overdose deaths in Marion County doubled from 2010 to 2017, reaching 39 per 100,000 residents. The rise is almost entirely due to opioid overdose.

Two important strategies to improve mental health are to increase access to treatment, and to decrease the stigma attached to mental health diseases. With increased access to care and decreased stigma, people will be more likely to seek treatment and other support needed to manage their illness. Increasing access to treatment includes increasing the number of treatment providers and improving insurance or other financial coverage of the costs of treatment. Technologies such as online therapy may also expand the reach and convenience of counseling and other treatment. Anti-stigma work will involve education and awareness programs and campaigns in workplaces, schools, faith communities, and other settings.

[xii] Blair and Raver, "Poverty, Stress, and Brain Development."

[xiii] Baicker et al., "The Oregon Experiment — Effects of Medicaid on Clinical Outcomes."

[xiv] University of Wisconsin Population Health Institute. County Health Rankings & Roadmaps 2019. Indiana "Frequent mental distress" 2016 data https://www.countyhealthrankings.org/app/indiana/2019/measure/outcomes/145/data

[xv] 2016 BRFSS, CDC BRFSS Web Enabled Analysis Tool, https://nccd.cdc.gov/weat/?#/crossTabulation "frequent (14+ days) poor mental health (MENTHLTH)", "All" locations and "Indiana."

[xvi] 2018 Marion County Community Health Assessment Survey (DR3708)

[xvii] 2018 BRFSS, CDC BRFSS Web Enabled Analysis Tool, https://nccd.cdc.gov/weat/?#/crossTabulation "Ever told you that you have a depressive disorder, including depression, major depression, dysthymia, or minor depression (ADDEPEV2)", "All" locations.

OBESITY AND DIABETES

Diabetes and obesity lead to many problems among individuals and populations. Each contributes to negative health impacts, and therefore increased medical costs, and decreased years of life. Diabetes is a chronic disease characterized by high blood sugar (blood glucose), due to problems with the body's insulin. The high levels of blood sugar cause damage to organs and tissue throughout the body, resulting in an increased risk of developing many chronic health conditions. In addition, 9 out of 10 people with diabetes are obese, which brings its own health problems. Obesity, or having too much body fat, increases the risk of developing nearly every chronic disease, including hypertension, coronary heart disease, stroke,[xviii] cancer,[xix] Alzheimer's disease, and any other type of dementia.[xx] In the U.S. in 2017, the cost of diagnosed diabetes was $327 billion,[xxi] and the estimated national cost of obesity is $147 billion - $210 billion per year.[xxii] With Marion County having about 0.3% of the U.S. population, that translates to a local, annual cost of $950 million for diabetes and $430 million to $610 million for obesity.

Among Marion County adults in 2018, about four out of ten (38%) are obese, and more than one in ten (14%) have chronic diabetes. Roughly half (46-53%) of those with obesity indicated that they had been diagnosed with asthma, depression, high cholesterol, heart conditions, or high blood pressure. Similarly, those with diabetes were nearly twice as likely to have asthma, and three times more likely to have heart conditions than the Marion County population.[xxiii] Nationally, diabetes was the 7th leading cause of death in 2017, accounting for over 80,000 deaths.[xxiv] In Marion County diabetes was the 6th leading cause of death in 2017, with a mortality rate of 27 per 100,000.

Lifestyle changes and system-level interventions are two of the valuable strategies for decreasing obesity and diabetes rates. Increasing physical activity and eating more healthy foods, such as fruits and vegetables, are the safest and most cost-effective solutions to reduce fat and weight. However to see significant county-wide decreases, system-level changes are needed. Research suggests that education, without environmental or economic changes, has little influence on behavior.[xxv] Increasing safe and convenient access to grocery stores with fresh fruits and vegetables and green space for exercise will remove some of the barriers to making these lifestyle changes.

[xviii] Reilly and Kelly, "Long-Term Impact of Overweight and Obesity in Childhood and Adolescence on Morbidity and Premature Mortality in Adulthood."

[xix] Polednak, "Estimating the Number of U.S. Incident Cancers Attributable to Obesity and the Impact on Temporal Trends in Incidence Rates for Obesity-Related Cancers."

[xx] Anstey et al., "Body Mass Index in Midlife and Late-Life as a Risk Factor for Dementia."

[xxi] Drive, Arlington, and Va 22202 1-800-Diabetes, "Statistics About Diabetes."

[xxii] Cawley and Meyerhoefer, "The Medical Care Costs of Obesity."

[xxiii] 2018 Marion County Community Health Assessment Survey (DR3708)

[xxiv] National Center for Health Statistics, "Diabetes."

[xxv] Mozaffarian, "Dietary and Policy Priorities for Cardiovascular Disease, Diabetes, and Obesity – A Comprehensive Review."

ACKNOWLEDGEMENTS

We greatly appreciate the time and thought contributed by our Advisory Board members, whose judgement led to the priorities presented in this report.

Advisory Board

The following Marion County Public Health Department divisions and individuals made substantial contributions to this report:

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Goals

In the spring of 2017, the Marion County Public Health Department (MCPHD) convened an Advisory Board of providers, consumers, and topical experts to guide MCPHD's 2018 Community Health Assessment (CHA).

The goals of the CHA are to:
- Increase awareness of topics which affect community health, and their social determinates and risk factors.
- Compare the community health status of Marion County to urban peers and national standards.
- Engage coalitions, the public, and health partners to provide their input to the process.
- Identify important health trends and disparities in the community.
- Identify significant causes of poor health.
- Prioritize the identified community health topics.
- Provide public information to drive future policy, program planning, and the Community Health Improvement Plan.

The CHA findings will be used to develop a Community Health Improvement Plan, again with significant involvement by community members. The Community Health Improvement Plan will describe how our community will address the high priority topics identified in the CHA.

This report presents the CHA findings.

Process

Many topics influence health in Marion County. The objectives of the CHA were to identify the top priority topics, and to provide focus for the Community Health Improvement Plan and other efforts to improve our community health. To identify those priorities, we used the following process:

1. Form an Advisory Board
2. Create a draft topic list
3. Refine and approve the initial list
4. Reduce the initial list to a final list
5. Circulate data summaries for the final list topics
6. Prioritize the final list

1. FORM AN ADVISORY BOARD

Advisory Board members were identified through review of participants in prior community health assessments, cross-checked with the CHA guidance from national organizations.[1] We invited people from civic and community organizations, businesses and corporations, faith-based organizations, health care providers, government agencies, non-profit and advocacy groups, and universities or other academic institutions. Of the 111 people invited to participate, 55 voted in refining the initial topic list, and at least 49 Advisory Board members attended the final, in-person meeting to prioritize the final list.

2. CREATE A DRAFT TOPIC LIST

MCPHD's Epidemiology staff assembled a list of 70 topics[2] to consider as possible health priorities for Marion County. They created the list using topics from:

· the 1995, 2008, and 2014 Marion County Community Health Assessments (CHAs),
· other Marion County Public Health Department reports,
· national health surveys,
· CHAs from other public health agencies around the country, and
· topics known to be important, per analyses of health data about Marion County.

Each topic is intended to be something around which a coalition might be formed, to improve public health regarding the topic.

[1] https://www.healthycommunities.org/resources/community-health-assessment-toolkit;
    CHA toolkit, Step 2 http://www.healthycommunities.org/Resources/Toolkit/files/step2-identify-engage-stakeholders.shtml;
[2] The list of 70 topics can be found at http://indyindicators.iupui.edu/CHA/Topics_for_Prioritization_%281st_CHA_Advisory_Board_mailing%29.pdf

3. REFINE AND APPROVE THE INITIAL LIST

Via email, the Advisory Board reviewed and edited the draft list of 70 topics, suggesting additions and consolidations. The MCPHD Director of Epidemiology consolidated those comments, resulting in a list of 66 topics.

4. REDUCE THE INITIAL LIST TO A FINAL LIST

From that initial list of 66 topics, each Advisory Board member was invited to vote for the 15 topics that they would most like to see included in the final prioritization discussion. For each of the 66 topics, MCPHD's Epidemiology staff provided an estimate of the number of persons directly impacted, the average severity of that impact, and, where possible, compared Marion County to Indiana and the United States regarding the topic. Fifteen topics got votes from more than 30% of the 55 Advisory Board members who voted. Those 15 topics became the second round topic list that would be discussed in the in-person Advisory Board meeting.

5. CIRCULATE DATA SUMMARIES FOR THE FINAL LIST TOPICS

MCPHD prepared data summaries for each of the 15 topics in the second round topic list. The summaries included information about the severity and impact of each topic, prevalence and trend data, analysis of subgroups and disparities, and comparisons to other urban counties and cities. The Advisory Board received those data summaries two weeks before their in-person meeting.

6. PRIORITIZE THE FINAL LIST

On November 8, 2018, the Advisory Board met in person to decide on a final set of priorities, using the process described below. Some topics were combined, resulting in 11 topics for the final vote. After in-depth discussion of every topic and two rounds of voting, three topics stood out as the top priorities. This report contains in-depth, local information about those three priorities, as well as brief summaries of the other 8 finalist topics.

[1] The list of 70 topics can be found at http://indyindicators.iupui.edu/CHA/Topics_for_Prioritization_%281st_CHA_Advisory_Board_mailing%29.pdf

[2] The summary of the 66 topics' impacts can be found at http://indyindicators.iupui.edu/CHA/66_Issue_Summary.pdf, with supporting information at http://indyindicators.iupui.edu/CHA/66_issues_extra_details.xlsx.

[3] The summaries of the 15 topics can be found at http://indyindicators.iupui.edu/CHA/Marion_Co_CHA_Topic_Summaries_v4.pdf, with supporting information at http://indyindicators.iupui.edu/CHA/Marion_Co_CHA_Topic_Appendices_v4.pdf.

Final prioritization process

The participants in the final, in-person meeting of the Advisory Board represented a wide spectrum of perspectives and expertise about our community, health, and the topics to be discussed. After a review of the final fifteen topics,[1] the Advisory Board reviewed and refined the prioritization criteria from the prior CHA. The resulting prioritization criteria were:

- How many people are affected by this condition?
- How severe is this condition for each individual who has it?
- Does this condition impact multiple outcomes? If so, what other outcomes?
- Does our community have resources to address these issues?
- What type of prevention, if any, can be used?
- Is this a problem area that has increased, decreased or stayed the same?
- Is there a disparity in incidence of occurrence among subpopulations?

Participants then visited topic-specific tables to help make the argument for that topic to be a top priority. Each table was facilitated by a MCPHD expert in the topic to be discussed.[2] All Advisory Board members then participated in an initial vote (three votes per member), to get an initial indication of people's thoughts. Then, starting with the topic that got the fewest votes, the argument for each topic was presented to the entire group and discussed. The group then discussed combining various topics, which was done if the majority agreed. Finally, the Advisory Board members voted (three votes per member) on the final prioritization.

The three top priorities will form the basis of MCHPD's Community Health Improvement Plan, and be a source of information for community-based groups working on health-related topics relevant to our citizens.

Figure 2: Results of final prioritization vote
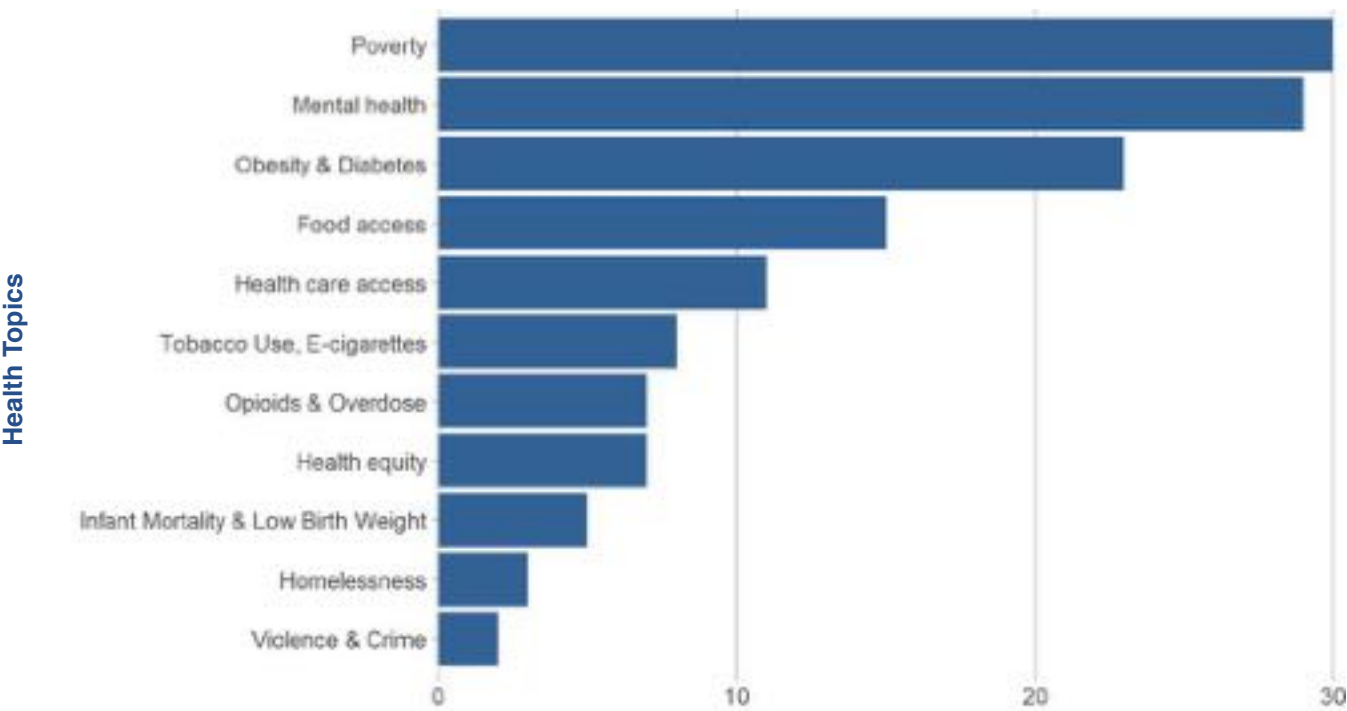
Number of votes (each advisory Board member had 3 votes)

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[1] http://indyindicators.iupui.edu/CHA/Topics_for_Prioritization_%281st_CHA_Advisory_Board_mailing%29.pdf
[2] http://indyindicators.iupui.edu/CHA/Table_Leader_Instructions.pdf

Confidence intervals

We present 95% confidence intervals with statistics in this report, when the information to calculate confidence intervals was available. A confidence interval indicates how accurate the statistic may be; the narrower the confidence interval, the more reliable the statistic. For example, in "Example: **Figure 9**," the "I" on the first vertical bar indicates that the statistics estimating poverty among whites in Marion County (14.8%) is fairly reliable; it is accurate to within 0.6 percent.

In other words, given the underlying data, we are 95% confident that between 14.2% and 15.4% of white Marion County residents had household incomes below the federal poverty level. In contrast, the statistic estimating poverty among Hispanics is less reliable, accurate to within 2.3 percent (34.1%, 95% CI: 31.8-36.4). In general, as the amount of data used for a statistic increases, the statistic becomes more reliable, and therefore the confidence intervals get narrower.

Example: Figure 9: Percent of population in poverty by race/ethnicity, Marion County, 2013-2017
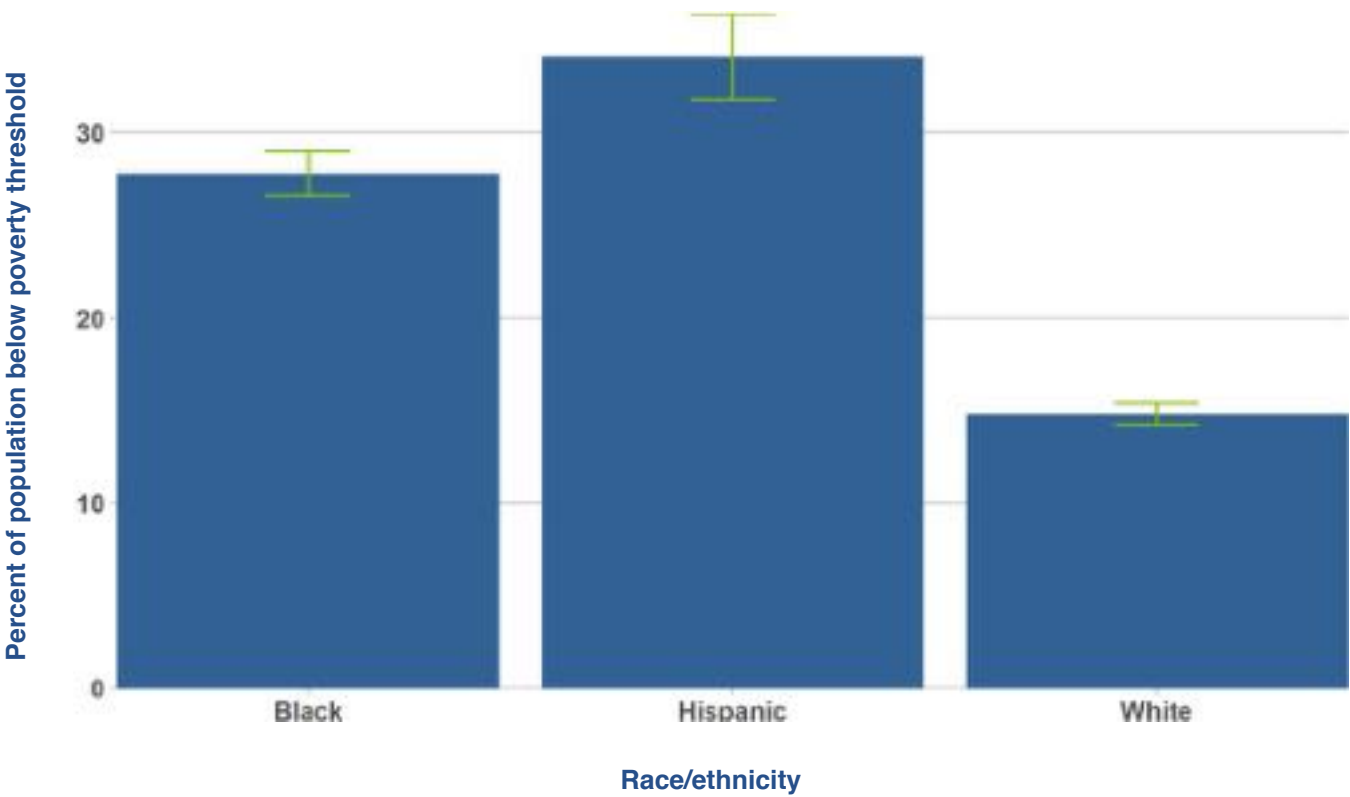
Data Source: 2013-2017 ACS 5-Year Estimates, DR3851

The small vertical line (I) at the top of each bar on the graph specifies the width of the 95% confidence interval for the associated estimate.

POVERTY

Summary

CAUSES:
· Growing up in poverty
· Low educational attainment

OUTCOMES INCLUDE INCREASED RISK OF:
· Lower life expectancy
· Hypertension/high blood pressure among adults
· Asthma among adults

SOLUTIONS:
· Policy changes
· Living wage (increased minimum wage)
· Increasing social safety net programs

Status

From an economic standpoint, poverty is when an individual or family fails to meet a set income threshold.[1] In the United States, that threshold is determined annually by the U.S. Census Bureau. Specific poverty thresholds are calculated based on income sources and the age of household members, among other factors.[2] Poverty thresholds are most often used for calculating statistics, such as annual estimates of the number of people who live in poverty.[3] In 2017, the poverty threshold for a single-person household was $12,488. For a four-person household in which three individuals were under the age of 18, the poverty threshold was $24,944.[4]

The percent of the U.S. population in 2017 below the poverty threshold was 12.3%. This rate has been decreasing since 2014, when the U.S. poverty rate was 14.8%.[5] The 2017 poverty rate in Indiana was 13.5%.[6] **Figure 3** shows that the percent of the Marion County population living below the poverty threshold fluctuated between 2005 and 2017. In 2005, it was at its lowest point for the period shown, with 14.8% of the population living below the poverty threshold.

The percent of Marion County residents living below the poverty threshold rose to its high point in 2012, with 21.5% of the population below the poverty threshold. In 2017, the poverty rate was estimated to be 17.1%.

A second, slightly different, measure of poverty is the federal poverty guideline (FPG). The FPG is updated annually by the U.S. Department of Health and Human Services. The FPG is based on the Census Bureau's poverty threshold and is used primarily as an administrative tool to determine financial eligibility for some, but not all, federal programs. Unlike the poverty threshold, the FPG does not take age into account in its family size calculation.[7] Both the poverty threshold and the FPG are used as measures of poverty. In this report, the measure (poverty threshold or FPG) will be specified. The FPG is typically a little lower than the poverty threshold.

[1] United Nations Educational, Scientific, and Cultural Organization, "Poverty | United Nations Educational, Scientific and Cultural Organization."

[2] U. S. Census Bureau, "How the Census Bureau Measures Poverty."

[3] Office of the Assistant Secretary for Planning and Evaluation, "2017 Poverty Guidelines."

[4] U. S. Census Bureau, "Poverty Thresholds."

[5] U. S. Census Bureau, "Income and Poverty in the United States."

[6] U. S. Census Bureau, "U.S. Census Bureau QuickFacts."

[7] Office of the Assistant Secretary for Planning and Evaluation, "Frequently Asked Questions Related to the Poverty Guidelines and Poverty."

Figure 3: Percent of population in poverty, Marion County, 2005-2017
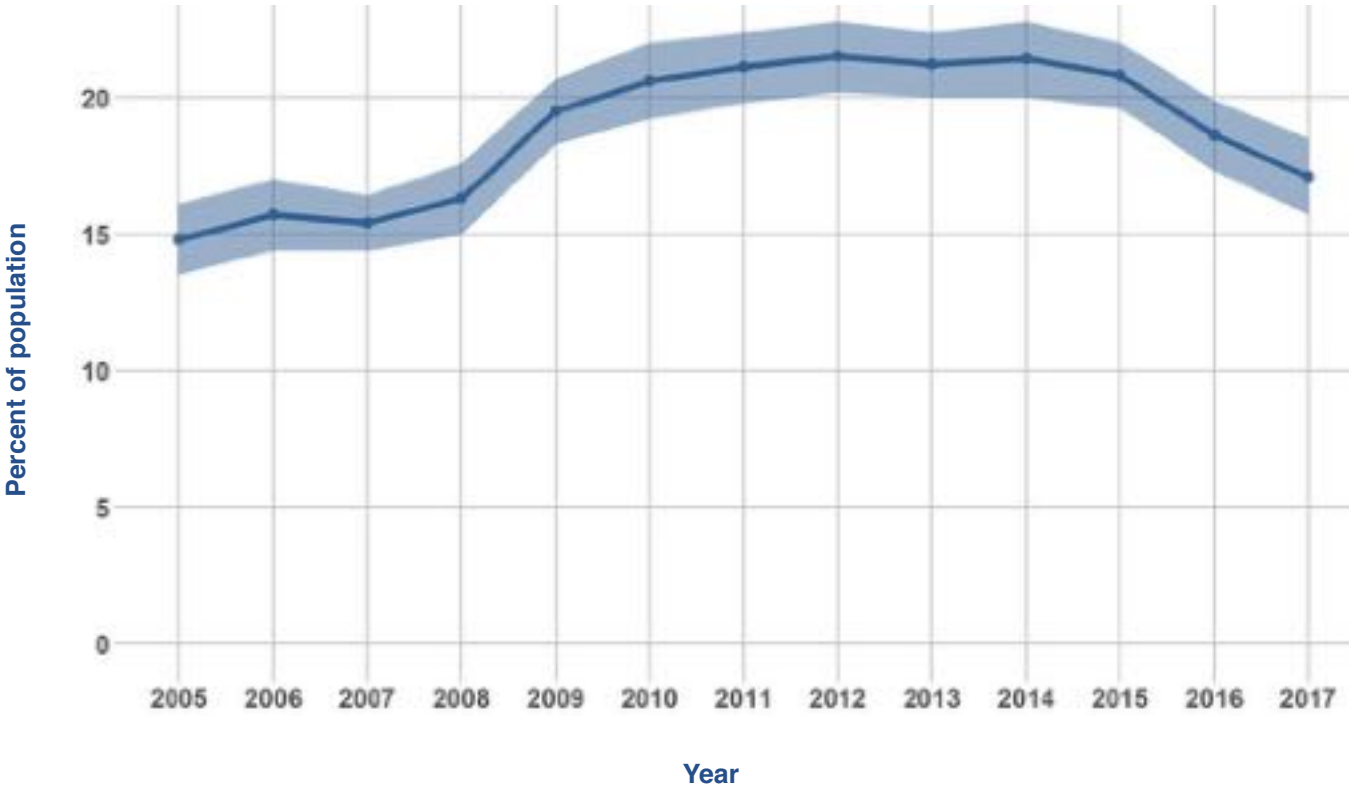
Data Source: 2005-2017 ACS 1-Year Estimates, DR3851

Using the same examples provided above to describe poverty thresholds, the FPG for a single-person household in 2017 was $12,060. For a four-person household, the 2017 FPG was $24,600. [1] The percent FPG or poverty threshold is used to describe populations at varying degrees of poverty. To explain, if someone is said to be at 100% FPG (or poverty threshold), that means that their income is that of the annual FPG for their household size. If someone is said to be at 200% FPG, their income is determined by multiplying the annual FPG by 2 (or 200%), which means that they earn twice the FPG. If someone is said to be at 50% FPG, their income is determined by multiplying the annual FPG by .5 (or 50%), which means that they earn half the FPG. **Figure 4** shows the percent of the Marion County population in with household incomes at various increments of the poverty threshold.

Figure 4: Percent of population by household income as a percent of the poverty threshold, Marion County, 2013-2017

Data Source: 2013-2017 ACS 5-Year Estimates, DR3851

Figure 5 shows the 2017 poverty rate for those living below the poverty threshold in Marion County as it compares to select U.S. cities, Indiana, and the U.S. as a whole. In 2017, Marion County had a higher poverty rate than the U.S., Indiana, and some cities. However, Marion County had a lower poverty rate than cities like Baltimore, Columbus (Ohio), and Detroit. **Figure 6** is a map that shows the percent of the Marion County population that lived below the poverty

threshold in 2017 by census tract. The middle of the county had a higher density of the population living below the poverty threshold, though the downtown area had a lower poverty percentage. Lower downtown poverty rates may reflect gentrification that began in the 1980s.[1] Gentrification refers to a process by which housing and the built environment are improved, often displacing lower-income residents who can no longer afford to live in the area.[2] Gentrification often leads to populations that are disproportionately middle-to-upper income, white, and college-educated.[3]

[1] Nowlin, Davila, and Andres, "Neighborhood Change 1970-2016: Suburbanization, Gentrification, and Suburban Redevelopment."
[2] Goetz, "Gentrification in Black and White."
[3] Nowlin, Davila, and Andres, "Neighborhood Change 1970-2016: Suburbanization, Gentrification, and Suburban Redevelopment."

Figure 5: Percent of population in poverty, Marion County compared to other geographies, 2017

Percent of population in poverty
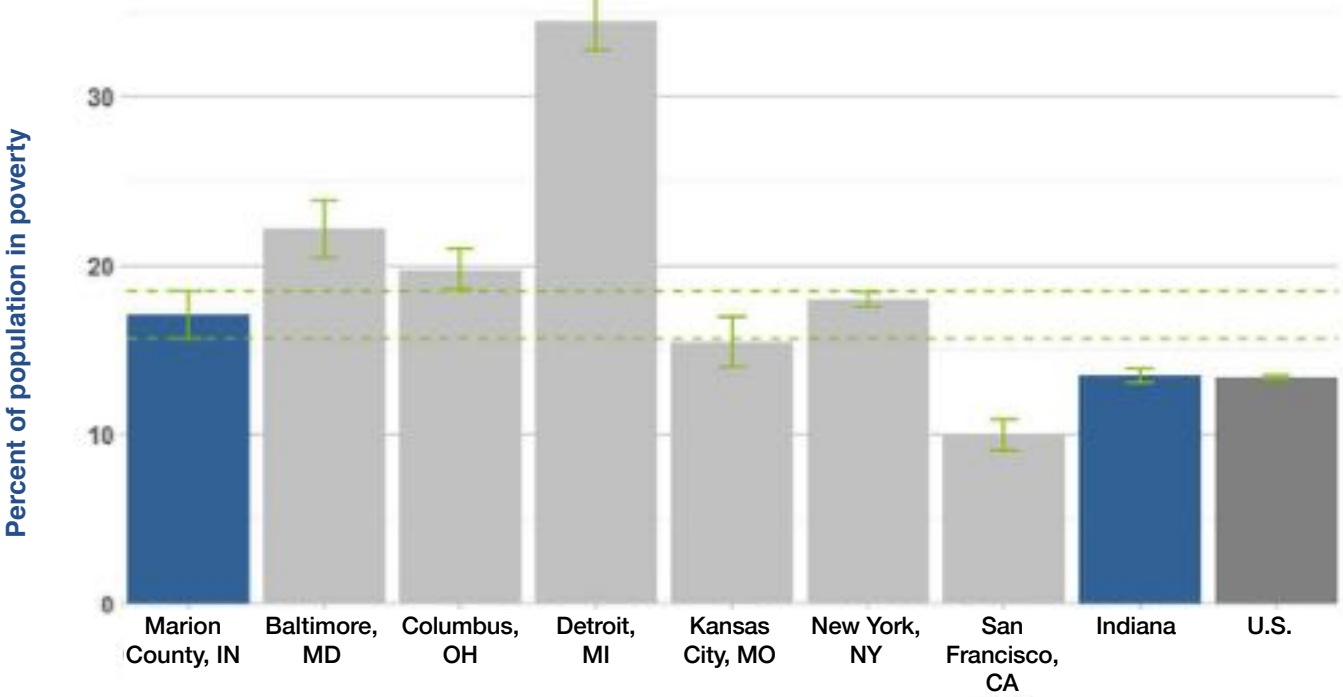
Data Source: 2017 ACS 1-Year Estimates, DR3851

0 - 13%	25 - 35%	47 - 57%
14 - 24%	36 - 46%	—— Roads

Data Source: 2012-2016 ACS 5-Year Estimates, DR3428

For additional information on poverty in Marion County, visit
http://indyindicators.iupui.edu/advanced.aspx?qs_terms=1335&qs_start=2012&qs_end=2018.

Figure 7: Percent of adults 25 and older in poverty by education status, Marion County, 2017

Education status of population 25 and over
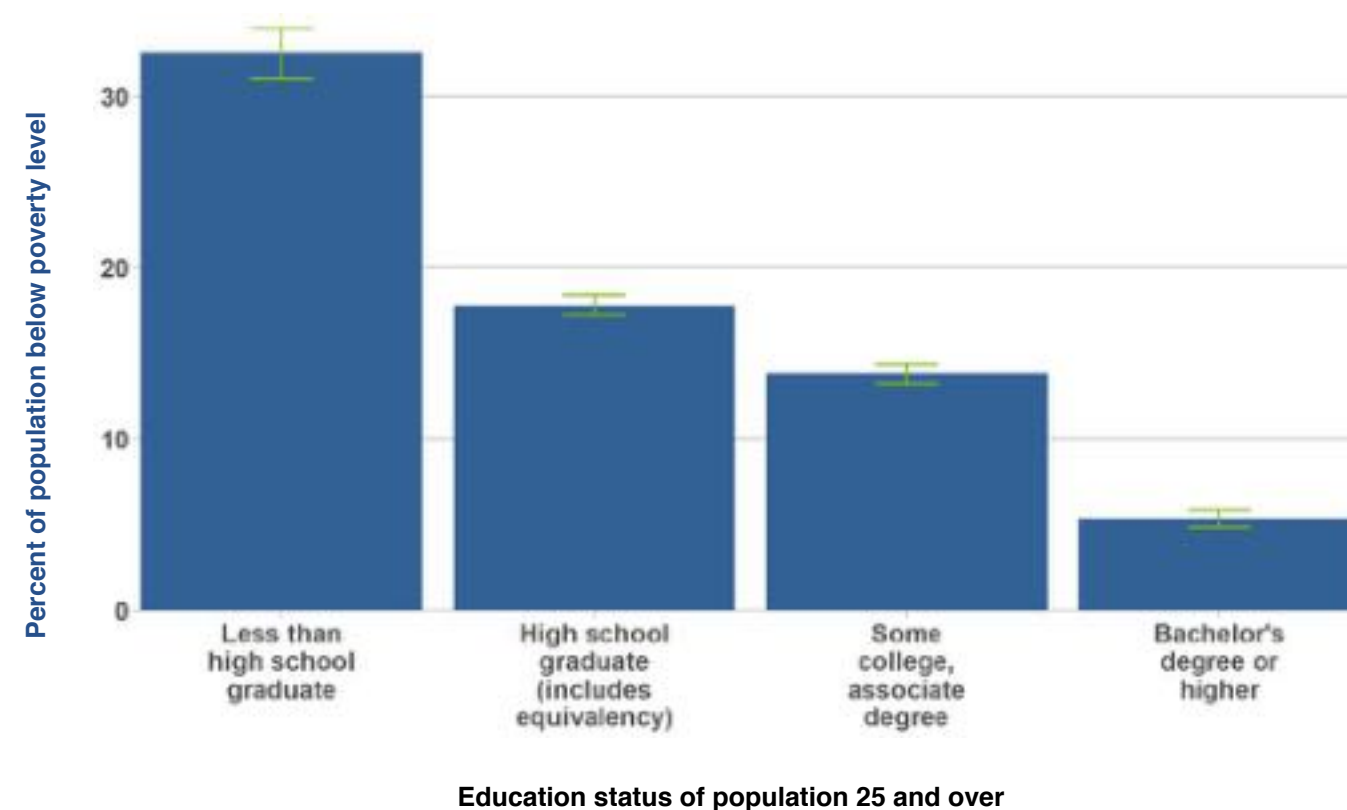
Data Source: 2013-2017 ACS 5-Year Estimates, DR3851

Causes

What causes poverty? Poverty is not a new issue; a journal article from 1919 asserted that poverty is rooted in health, economic, and education problems.[1]

The social determinants of health play a large role in the risk of poverty, and health and poverty are inextricably linked. Poor health can reduce one's ability to work and earn an income, and the medical costs associated with poor health can be the tipping point into poverty.[2] Some researchers use five dimensions to describe poverty: low household income, limited education, no health insurance, living in a low-income area, and unemployment.[3] Poverty is often considered a generational issue; children raised in poverty are more likely to live in poverty as adults.[4]

Children are more likely to live in poverty than other age groups, and poor neighborhoods are disproportionately home to children of color. In U.S. census tracts with poverty rates of 50% or higher, 81.3% of the children are children of color.[5]

As this report shows, education, age, race/ethnicity, and sex, in that order, can lead to a higher risk of poverty for Marion County residents. Differences among education levels raise poverty risk sixfold, differences among age groups triple poverty risk, differences by race/ethnicity double that risk, while differences between the sexes only marginally raise poverty risk.

A lower education level and poverty are interchangeable risk factors. Those with higher education levels are less likely to live in poverty, and those who live in poverty are less likely to have higher education levels. This is often cited as a major contributor to the generational effect of poverty.[6]

[1] Stapleford, "Causes of Poverty."

[2] Kim, "Eliminating Poverty in the 21st Century: The Role of Health and Human Capital."

[3] Reeves, Rodrigue, and Kneebone, "Five Evils: Multidimensional Poverty and Race in America."

[4] Najman et al., "The Inter- and Intra- Generational Transmission of Family Poverty and Hardship (Adversity)."

[5] Bruner, "ACE, Place, Race, and Poverty."

[6] Najman et al., "The Inter- and Intra- Generational Transmission of Family Poverty and Hardship (Adversity)."

In Marion County, poverty varies drastically by education level (see **Figure 7**). In 2017, among county residents 25 years and older, 32.5% of those with less than a high school diploma lived below the poverty threshold, which means that nearly 1 in 3 adults with less than a high school education lived in poverty.

On the opposite end of the education spectrum, only 5.3% of those with a bachelor's degree or higher (M.D., Ph.D., J.D., etc.) lived in poverty, meaning that about 1 in 20 adults with a bachelor's degree or higher lived in poverty. Comparatively speaking, Marion County residents with a bachelor's degree or higher were 83.7% less likely to live in poverty than residents with less than a high school diploma.

Beyond those two ends of the education scale, poverty prevalence decreased with increasing education: Earning a high school diploma or equivalent, versus having less than a high school degree, reduced the prevalence of poverty by close to 45% (from 32.5% down to 17.8%). Getting some college or an associate's degree further decreased poverty prevalence, though not as drastically, from 17.8% to 13.8% (a 22% reduction). Earning a bachelor's degree or higher resulted in a 62% reduction in poverty prevalence as compared to having some college or an associate degree (from 13.8% to 5.3%).

As mentioned, children are more likely than other age groups to live in poverty in the U.S.[1] Among children under 18 years of age in Marion County in 2017, 29.6% lived below the poverty threshold (see **Figure 8**). The poverty rate dropped in older age groups, with progressively lower rates for those age 18 to 34, 35 to 64, and 65 and over, respectively. The higher rate of poverty among children is notable because poverty has been linked to chronic stress, particularly among children. This stress has been linked to a reduced executive function and emotional regulation, which are essential for school readiness and self-regulation and may in turn account for some of the education attainment gap seen by income level.[2]

Figure 8: Percent of population in poverty by age group, Marion County, 2013-2017

Education status of population 25 and over

Data Source: 2013-2017 ACS 5-Year Estimates, DR3851

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[1] Bruner, "ACE, Place, Race, and Poverty."   [2] Blair and Raver, "Poverty, Stress, and Brain Development."
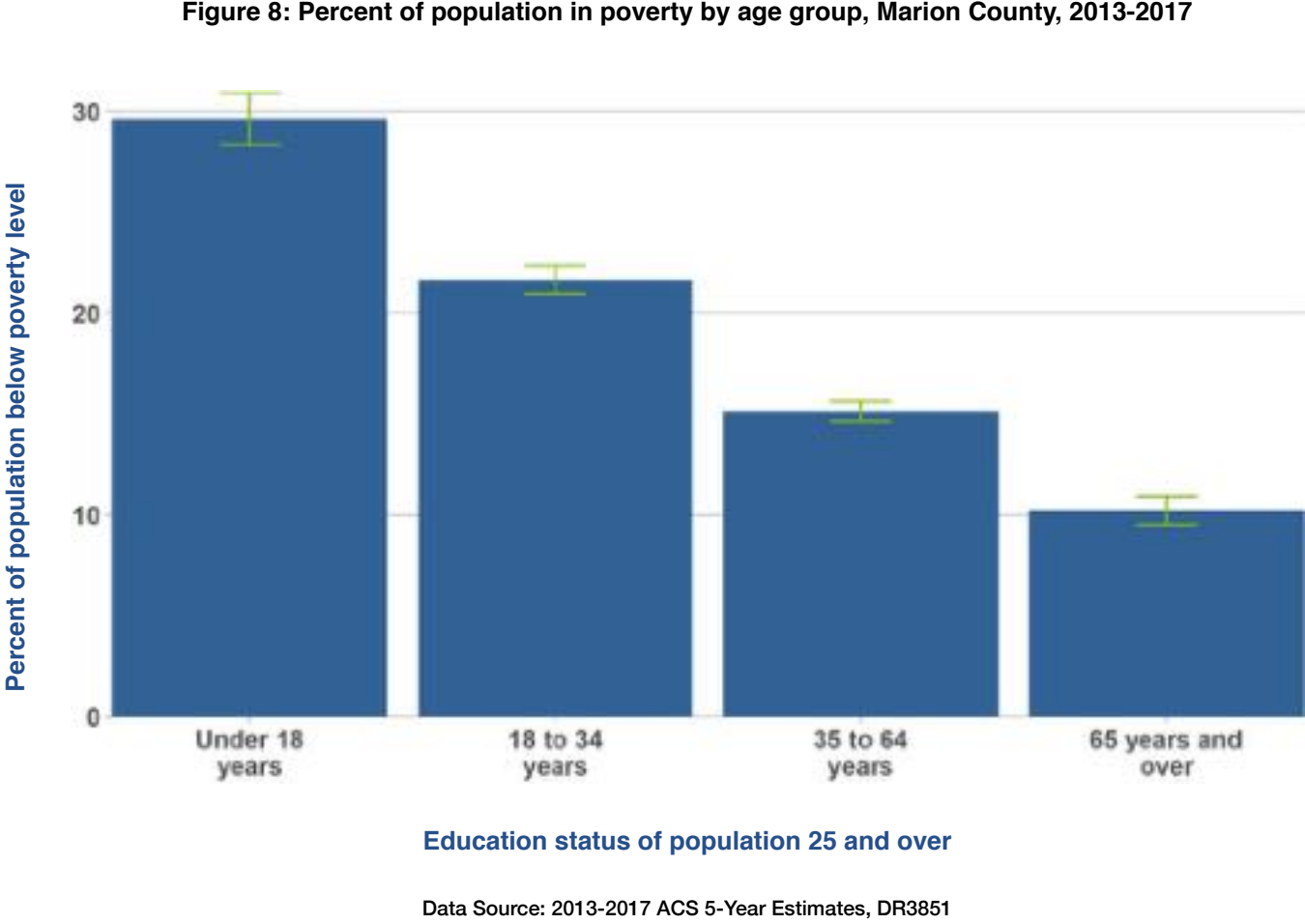
Racial and ethnic minorities have higher rates of poverty than white Americans. Based on income alone, Hispanic and black Americans have at least twice the poverty rate of white Americans.[1] As seen in **Figure 9**, in 2017 racial and ethnic minorities were more likely to live below the poverty threshold in Marion County than their white, non-Hispanic counterparts.

Figure 9: Percent of population in poverty by race/ethnicity, Marion County, 2013-2017

Data Source: 2013-2017 ACS 5-Year Estimates, DR3851

According to the Kaiser Family Foundation, in 2017 a higher (or equivalent in two cases) percentage of females lived in poverty than males in every state, U.S. territory, and the U.S. as a whole. The percentage point difference between the rates of females and males living in poverty ranged from zero (Alaska and Utah) to five (Alabama, the District of Columbia, and Louisiana). In Indiana, 11% of females and 9% of males lived in poverty in 2017.[1] In Marion County, there was a small difference in the likelihood of living below the poverty threshold by sex in 2017 (see **Figure 10**). Compared to state and national trends, females in Marion County were slightly more likely to live below the poverty threshold than males.

Figure 10: Percent of population in poverty by sex, Marion County, 2013-2017

Data Source: 2013-2017 ACS 5-Year Estimates, DR3851

[1] Reeves, Rodrigue, and Kneebone, "Five Evils: Multidimensional Poverty and Race in America"; The Henry J. Kaiser Family Foundation, "Poverty Rate by Race/Ethnicity."
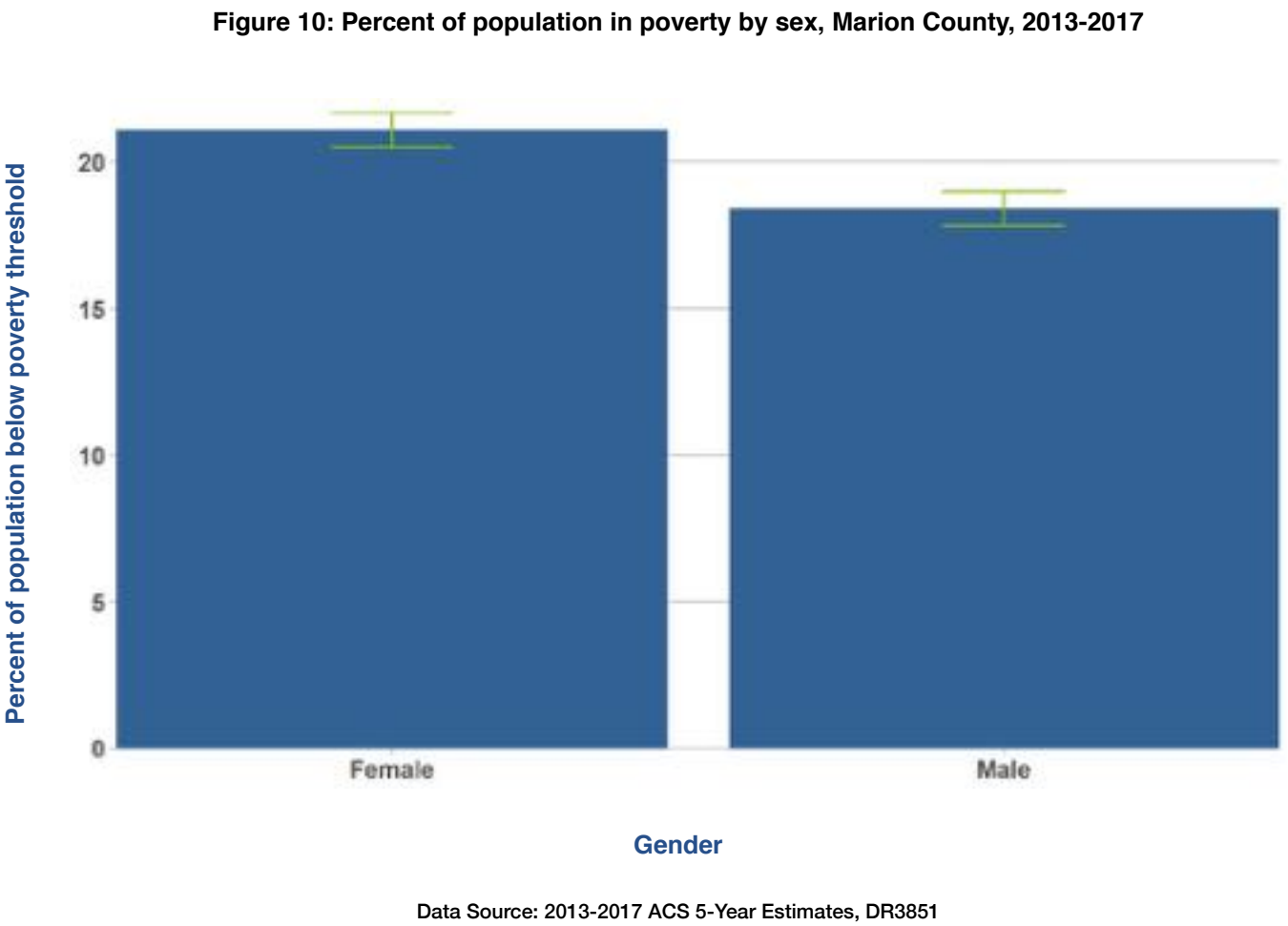
[1] The Henry J. Kaiser Family Foundation, "Nonelderly Adult Poverty Rate by Gender."

"Socioeconomic status" is a term that incorporates different factors including income, education, and employment.[1] These factors are so interrelated that in research, it is often difficult to separate them in order to determine the cause of an issue. Some of the research presented below is based on socioeconomic status rather than solely income level.

Impacts

The Marion County Public Health Department (MCPHD) 2018 Community Health Assessment survey (2018 CHA survey) asked questions about income level and household size, which were used to determine poverty status, as well as questions about various health conditions and diseases. The survey responses were weighted to represent the entire Marion County resident population.[2] Using that data, the following graphs look at some of these health conditions (specifically, if an adult was ever diagnosed with asthma, hypertension, high blood cholesterol, or heart disease) for Marion County, broken out by poverty status. Each of the four graphs (**Figure 11**-**Figure 14**) shows a decrease in the percent of the population with a specified condition when going from those who make less than 100% FPG, to those who make more than 300% FPG. For all four conditions, a higher percentage of people below the poverty guideline had been told they have the condition than had those who earned an income three times or more of the FPG. The Centers for Disease Control and Prevention (CDC) note that there is other research suggesting that substantial income disparities exist across multiple health indicators.[3] Those living in poverty are often at increased risk of worse mental and physical health.[4]

Figure 11 shows the percent of Marion County adults ever diagnosed with asthma. The asthma diagnosis rate is higher for those living below 100% FPG than for the four higher income groups; adults who make less than 100% FPG are 43.3% more likely to have been diagnosed with asthma than adults who make more than 300% FPG. These asthma trends reflect trends found in scientific literature. One study found that there was a significant difference by poverty level among adults suffering asthma attacks. Adults with incomes below 100% FPG were 10% more likely to suffer an asthma attack than adults with incomes above 450% FPG.[1]

Figure 12 shows the percent of Marion County adults who have ever been diagnosed with high blood pressure, or hypertension. The high blood pressure/hypertension diagnosis rate is higher for residents living below 100% FPG than for the four higher income groups; adults who make less than 100% FPG are 44.0% more likely to have been diagnosed with hypertension than adults who make more than 300% FPG. The hypertension prevalence difference between income groups is greater in Marion County than in one national study conducted by the CDC. In the national study, those with incomes below 100% FPG were 18.8% more likely to have hypertension than those with incomes above 500% FPG (32.8% versus 27.6%).[2] Another national study looked at hypertension prevalence by county economic status: The prevalence of hypertension in the poorest counties was 9% higher than the prevalence in the most affluent counties.[3]

[1] Winkleby et al., "Socioeconomic Status and Health."
[2] For more information about the survey methods and weighting, see http://indyindicators.iupui.edu/docs/MetricsForQualityLife_Web.pdf
[3] Centers for Disease Control and Prevention, "CDC Health Disparities and Inequalities Report: United States, 2013."
[4] Najman et al., "The Inter- and Intra- Generational Transmission of Family Poverty and Hardship (Adversity)."

[1] Centers for Disease Control and Prevention, "CDC Health Disparities and Inequalities Report: United States, 2013."
[2] Centers for Disease Control and Prevention.
[3] Shaw et al., "Chronic Disease Disparities by County Economic Status and Metropolitan Classification, Behavioral Risk Factor Surveillance System, 2013."

Figure 13 shows the percent of Marion County adults who have ever been diagnosed with high blood cholesterol (or simply, high cholesterol). The high cholesterol diagnosis rate is greater for residents living below 100% FPG than for the four higher income groups; adults who make less than 100% FPG are 27.5% more likely to have been diagnosed with high cholesterol than adults who make more than 300% FPG. Nationally, from 2011-2014 adults with incomes below 100% FPG were 6.5% more likely to have high cholesterol than adults making 400% FPG or greater (12.3% versus 11.5% high cholesterol prevalence).[1]

Heart disease is the leading cause of death in the U.S., so understanding any differences in heart disease prevalence among groups is of critical importance to reducing its impact.[2] There are well-documented differences in cardiovascular disease, or heart disease, by socioeconomic status.[3]

One national study showed that more adults living at or below the FPG had a greater than 20% risk of cardiovascular disease for the years 2011-2014 than high-income adults (approximately 1 in 6, versus 1 in 10).[1] Because high blood pressure and high cholesterol are risk factors for heart disease, it makes sense that the overall trends seen in **Figure 12** and **Figure 13** appear in **Figure 14** as well.[2] **Figure 14** shows the percent of Marion County adults who had ever been diagnosed with heart disease. The heart disease diagnosis rate was higher or the same for residents living below 100% FPG than for the four higher income groups. Although there was more variation in the middle income groups for this diagnosis, adults in households with incomes less than 100% FPG are just over twice as likely to have been diagnosed with heart disease than adults in households with incomes more than 300% FPG.

[1] Centers for Disease Control and Prevention, "Health, United States, 2015, Trend Tables."

[2] Centers for Disease Control and Prevention, "CDC Health Disparities and Inequalities Report: United States, 2013."

[3] Waldstein et al., "Cross-Sectional Relations of Race and Poverty Status to Cardiovascular Risk Factors in the Healthy Aging in Neighborhoods of Diversity across the Lifespan (HANDLS) Study."

[1] Odutayo et al., "Income Disparities in Absolute Cardiovascular Risk and Cardiovascular Risk Factors in the United States, 1999-2014."

[2] Winkleby et al., "Socioeconomic Status and Health"; Centers for Disease Control and Prevention, "CDC Health Disparities and Inequalities Report: United States, 2013."

Figure 11: Percent of adults ever diagnosed with asthma by FPG, Marion County residents, 2018
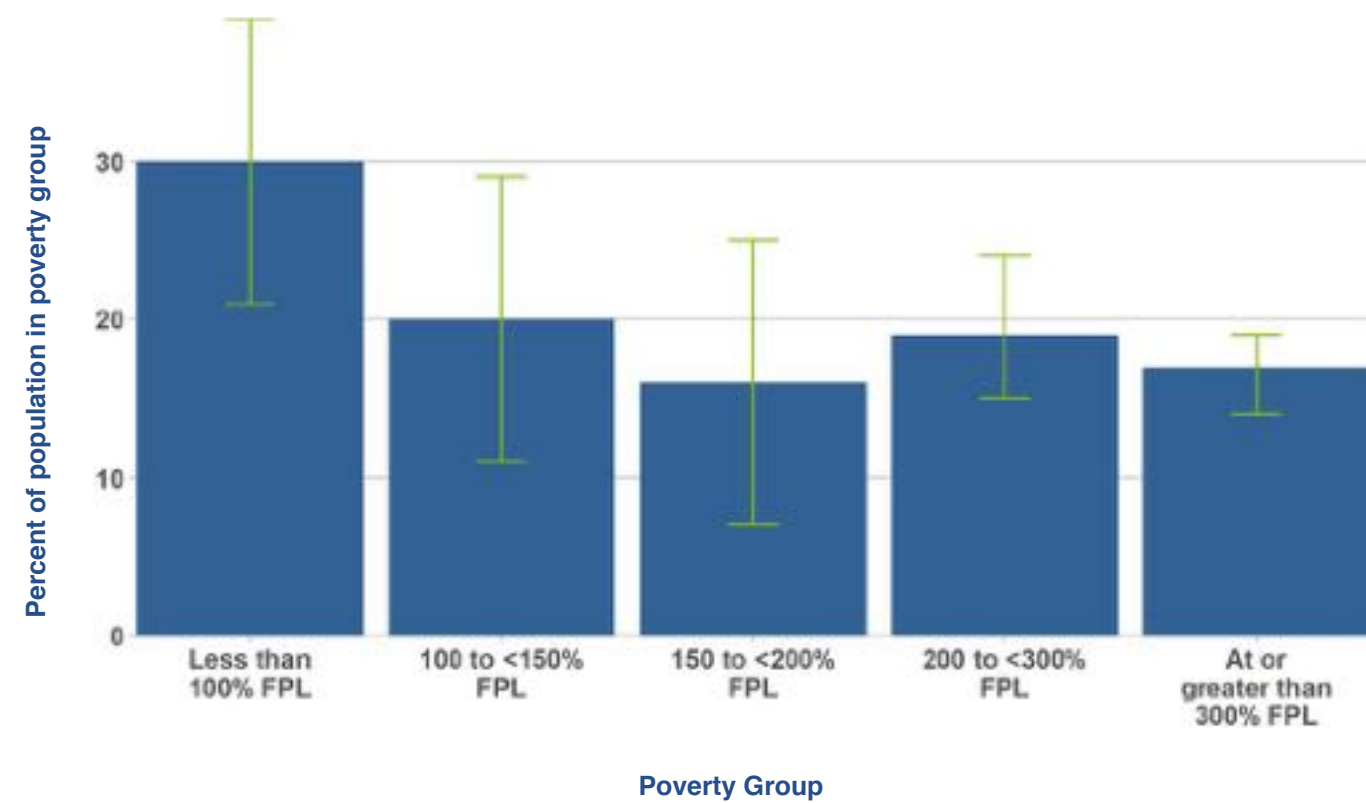
Data Source: 2018 Marion County Community Health Assessment Survey, DR3851

Figure 12: Percent of adults with high blood pressure or hypertension by FPG, Marion County, 2018
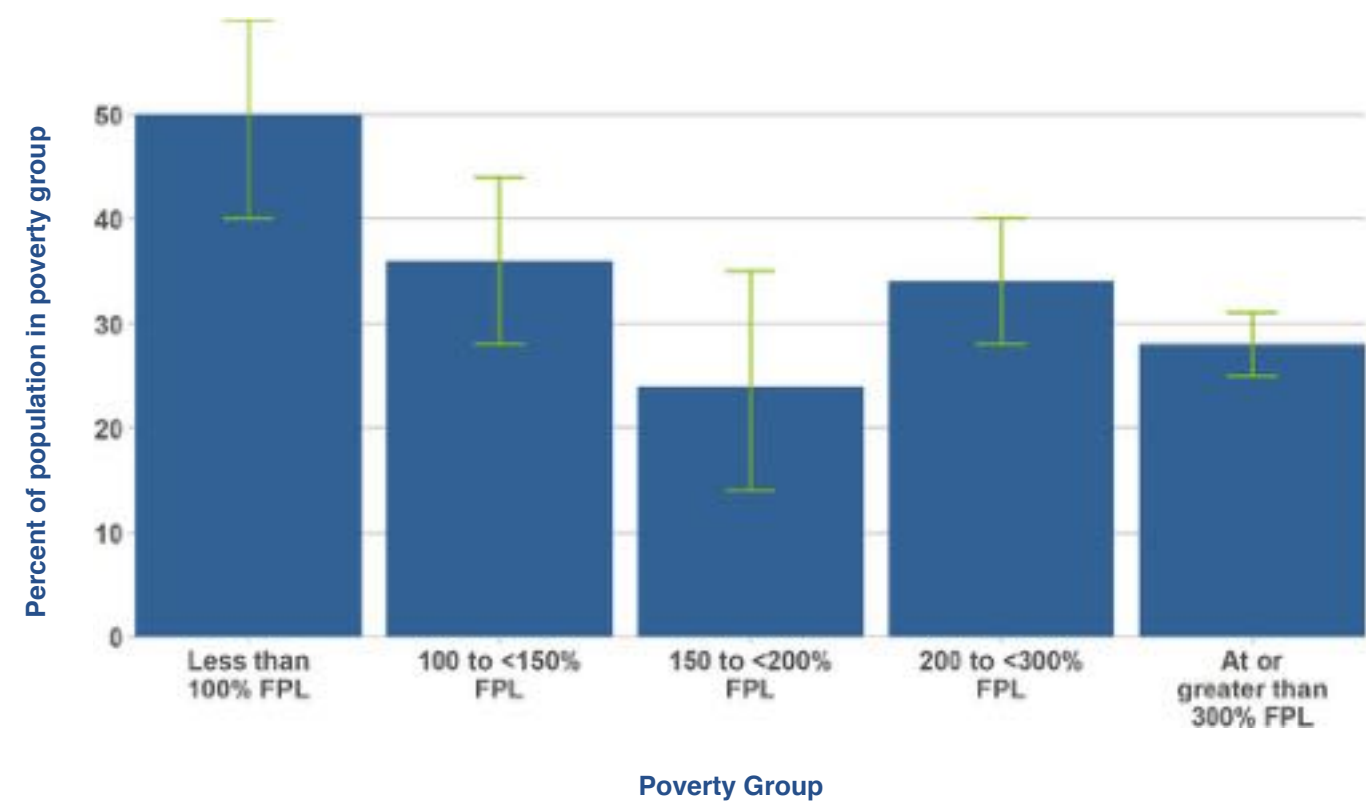
Data Source: 2018 Marion County Community Health Assessment Survey, DR3851

Figure 13: Percent of adults with high blood cholesterol by FPG, Marion County, 2018
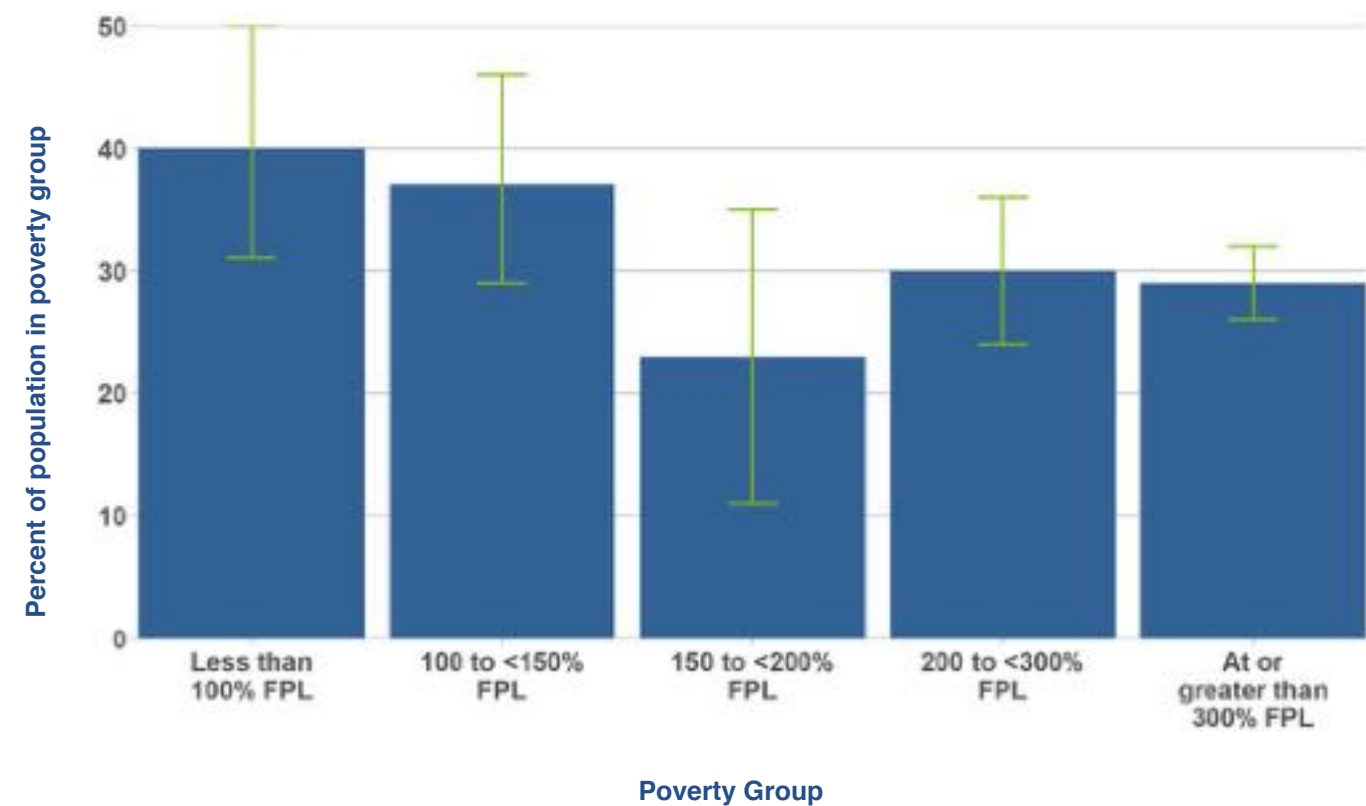
Data Source: 2018 Marion County Community Health Assessment Survey, DR3851

Figure 14: Percent of adults with heart disease by FPG, Marion County, 2018
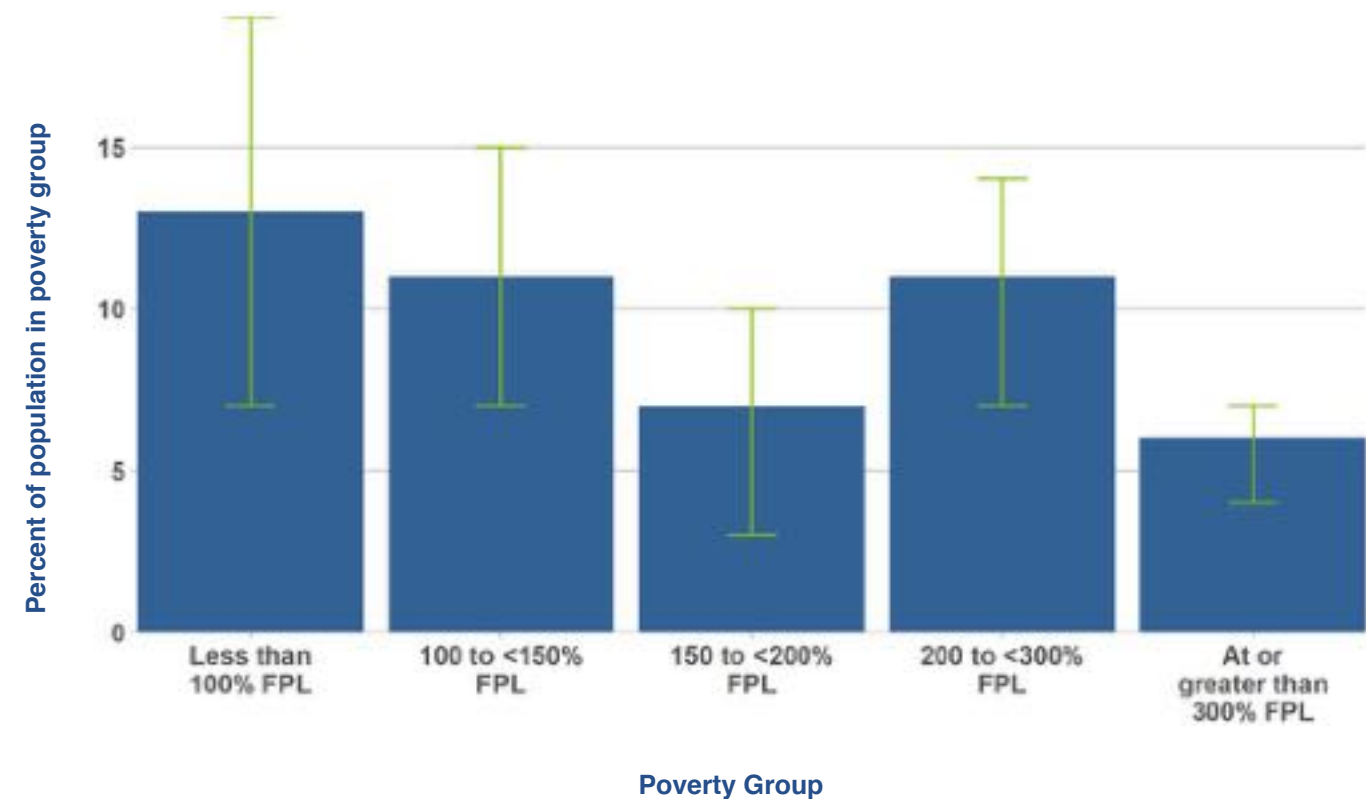
Data Source: 2018 Marion County Community Health Assessment Survey, DR3851

Lack of access to health care may mask community measures of health disparities. Among Marion County adults, at every poverty level, about half reported ever being told that they had dental decay or cavities (**Figure 15**). However, adults living below 100% FPG were 41.3% less likely as adults living over 300% FPG to have received dental care in the past 12 months (**Figure 16**), so their dental problems may be less likely to be detected, even though they may have more dental problems than groups with lower poverty rates.

Poverty can impact ability to access health care for multiple reasons, one being health insurance status. A study looking at the percentage of American adults without health insurance found that in 2015, those living below 138% FPG were five times less likely to have health insurance than those living at or above 400% FPG (17.2% versus 3.3% uninsured).[1] It is thought that for every adult without health insurance, three lack dental insurance.[2] Poor oral healthcare has the potential to lead to poor physical health outcomes like cardiovascular disease, respiratory infection, chronic pain, and poor birth outcomes.[3] In the 2018 Marion County CHA, the percentage of adults who had received dental care in the past 12 months varied drastically by poverty level (**Figure 16**). Only 47% of those living below 100% FPG had dental care within the past 12 months, while 4 out of 5 of those making 300% or more of the poverty level had dental care in the past 12 months.

This is consistent with national data: In 2010, 42% of adults with incomes below 200% FPG, compared to 70% of adults living above 200% FPG, had visited a dental professional within the past year in the U.S.[1]

Figure 15: Percent of adults reporting ever having dental decay or cavities, Marion County, 2018
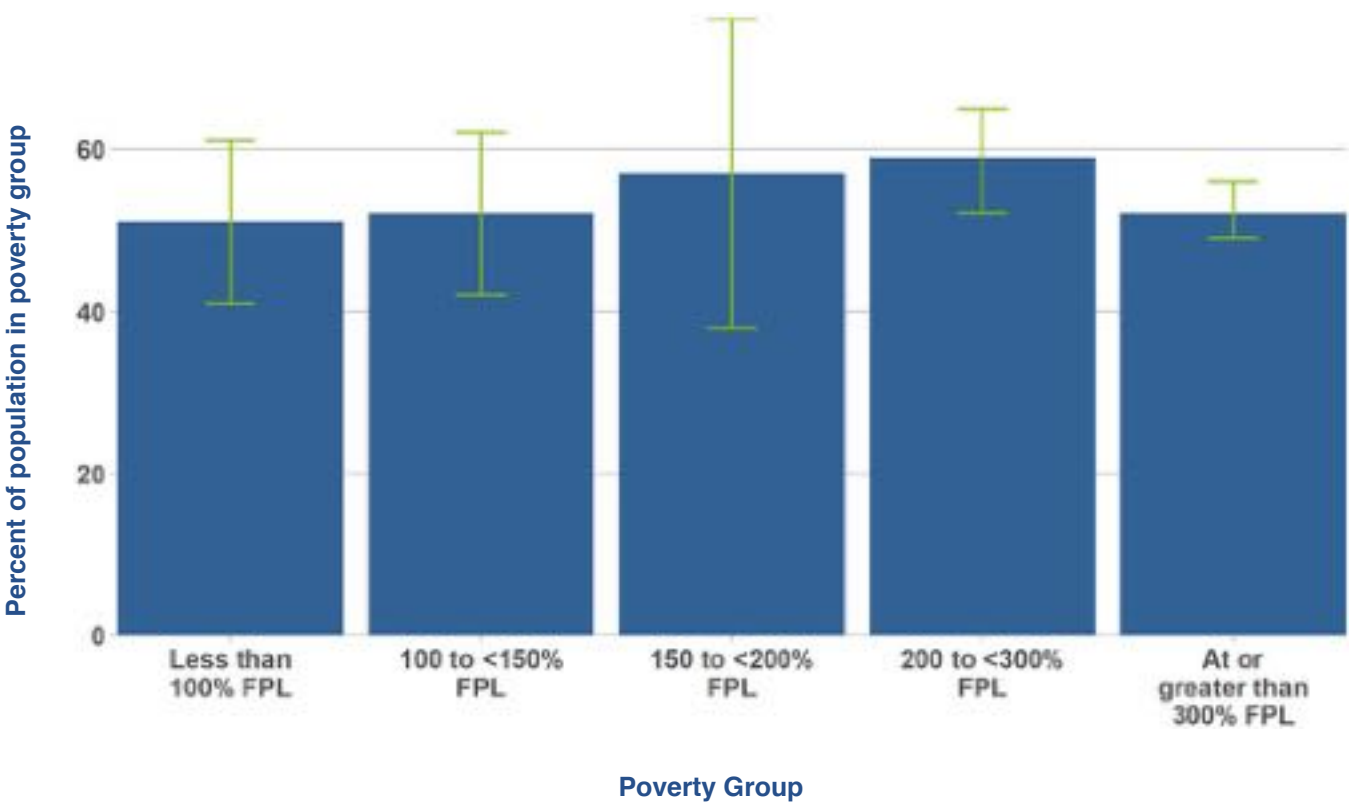
Data Source: 2018 Marion County Community Health Assessment Survey, DR3851

[1] Singh et al., "Social Determinants of Health in the United States."

[2] The Henry J. Kaiser Family Foundation, "Oral Health and Low-Income Nonelderly Adults: A Review of Coverage and Access."

[3] The Henry J. Kaiser Family Foundation; MacDougall, "Dental Disparities among Low-Income American Adults."

[1] The Henry J. Kaiser Family Foundation, "Oral Health and Low-Income Nonelderly Adults: A Review of Coverage and Access."

Figure 16: Percent of adults with dental care in the past 12 months, Marion County, 2018
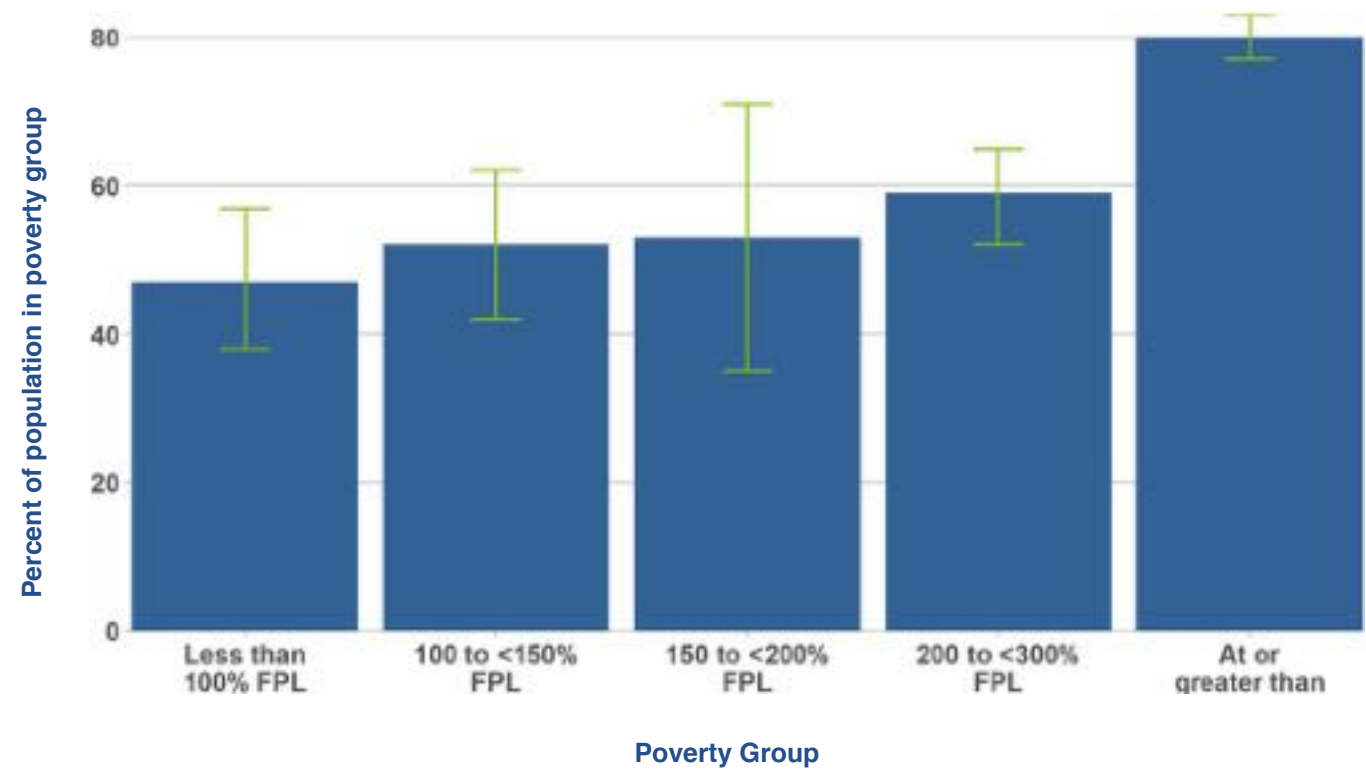
Data Source: 2018 Marion County Community Health Assessment Survey, DR3851

As stated above, poverty can affect health conditions in the population, often making people more likely to have a disease or condition. Beyond that, poverty can also impact the number of years of life a person can expect to live. Life expectancy at birth estimates the average age at death for a specified group of people[1]. One study found that those living below the poverty threshold lived 5.6 fewer years than those living above the poverty threshold.[2] Another study found that the mortality rate (defined here as deaths per 100 person-years of follow-up) increased as income relative to the FPG decreased. Those with incomes under 100% FPG had a mortality rate of 5.36, as compared to a mortality rate of 2.39 for those with incomes above 500% FPG.[3] In Marion County, as shown in **Figure 17** an individual born today in a ZIP Code where less than 10% of the population lives below the poverty threshold is expected to live about 80.2 years. For someone born in a ZIP Code where 10-19.9% of the people live below the poverty threshold, the life expectancy is 79.3 years on average. For a resident who is born in a ZIP Code in which 20% or more of the population lives below the poverty threshold, the number of expected years of life drops to 75.

[1] Kochanek, "Mortality in the United States, 2016."

[2] Muennig et al., "The Income-Associated Burden of Disease in the United States."

[3] Lubetkin and Jia, "Burden of Disease Associated with Lower Levels of Income among US Adults Aged 65 and Older."

Figure 17: Life expectancy at birth variation by percent of ZIP Code residents below 100% poverty status threshold, Marion County, 2016
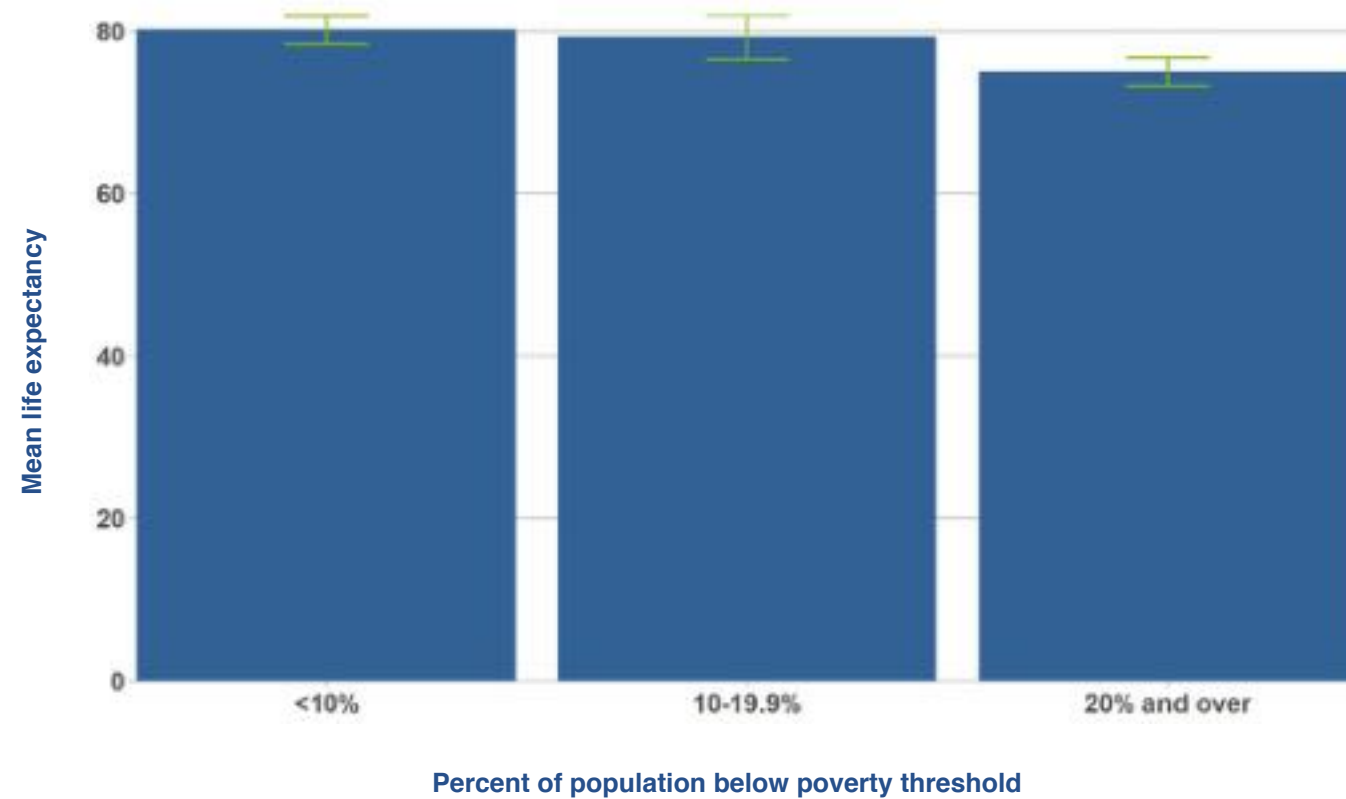
Mean life expectancy

Percent of population below poverty threshold

Data Source: 2013-2017 ACS 5-Year Estimates and 2016 Marion County death certificates, DR3852

Figure 18: Life expectancy variation by percent of ZIP Code residents below 200% poverty status threshold, Marion County, 2016

Mean life expectancy

Percent of population below poverty threshold

Data Source: 2013-2017 ACS 5-Year Estimates and 2016 Marion County death certificates, DR3852

Perhaps even more telling is **Figure 18**. Unlike **Figure 19**, which showed poverty status at 100% poverty threshold, **Figure 18** shows groups broken out by those with incomes of 200% poverty threshold; that is, by the percent of the population in a given ZIP Code that makes less than twice the poverty threshold. The same trend from **Figure 17** persists: People in those ZIP Codes where less than 25% of the population lives below 200% poverty threshold have a longer life expectancy (80.7 years) compared to those ZIP Codes in which 50% or more of the population lives below 200% poverty threshold (74.2 years of expected life). This difference results in a 6.5 year decrease in average life expectancy.

MENTAL HEALTH

Solutions

Many plans to reduce poverty focus on children. Some advocate broader monetary support systems for children living in poverty, others support wages and benefits that meet minimum requirements for living and eating, and others demand cultural awareness in neighborhood programs that support children.[1] The World Bank Group supports improving human capital, or "the knowledge, skills, and health that people accumulate over their lives" to increase economic growth and reduce poverty. When policymakers consider a Health in All Policies approach, vulnerable populations can be better protected from major risks, such as a job loss or health emergency.[2]

Some solutions discussed during the CHA Advisory Board meeting include offering affordable childcare, creating more opportunities for job training/workforce development, encouraging employers to provide a living wage, and ensuring there is access to affordable and safe housing and transportation. Whatever solutions are pursued need to be culturally competent, and extend across family generations.

The mission of many organizations and programs in Marion County is to combat poverty. Some of these organizations include the United Way of Central Indiana, the Indy Chamber, the Local Initiatives Support Corporation Indianapolis, the Salvation Army, and Christel House.

Current efforts

The Marion County Public Health Department's (MCPHD) mission is to promote and protect the health of everyone in the community and provide healthcare to those who are underserved. MCPHD offers low-cost services to every Marion County resident—including, but not limited to, diabetes education classes, vaccinations, sexually transmitted infections testing, safe-sleep classes, home visiting programs for pregnant and new mothers, baiting for rodents, mosquito spraying, and water (including well water) testing. Future efforts include the 2019 Community Health Improvement Plan, which will attempt to make strides against issues such as poverty.

Summary

Healthy People 2020 defines mental health as "a state of successful performance of mental function, resulting in productive activities, fulfilling relationships with other people, and the ability to adapt to change and to cope with challenges" and mental disorders as "health conditions that are characterized by alterations in thinking, mood, and/or behavior that are associated with distress and/or impaired functioning."

CAUSES:
- Genetic predisposition and biological factors
- Social and economic circumstances such as poverty, low household income, social isolation
- Environmental factors such as cultural beliefs and practices

OUTCOMES:
- Loss of productivity and unemployment
- Financial instability
- High rates of comorbid illness and suicide

SOLUTIONS:
- Increase prevention, treatment and recovery services
- Increase mental health workforce
- Educate general public

Status

INTRODUCTION

Healthy People 2020 defines mental health as "a state of successful performance of mental function, resulting in productive activities, fulfilling relationships with other people, and the ability to adapt to change and to cope with challenges" and mental disorders as "health conditions that are characterized by alterations in thinking, mood, and/or behavior that are associated with distress and/or impaired functioning."[1] Mental illness is not just one disorder, but an array of complex conditions, such as depression, schizophrenia, anxiety, stress, bipolar disorder, autism, dementia, etc., which are influenced by various factors, including the environment, genetics, and biology.

DEFINITIONS

Any mental illness (AMI) - Any mental, behavioral or emotional disorder which may or may not result in impairment.[2]

[1] Bruner, "ACE, Place, Race, and Poverty"; O'Connell, Brannen, and Knight, "Child Food Poverty Requires Radical Long Term Solutions"; Shaefer et al., "A Universal Child Allowance."

[2] Kim, "Eliminating Poverty in the 21st Century: The Role of Health and Human Capital"; Scheil-Adlung, "Response to Health Inequity."

[1] "Mental Health and Mental Disorders | Healthy People 2020."

[2] "NIMH » Mental Illness."

Serious mental illness (SMI) - A mental, behavioral, or emotional disorder resulting in serious functional impairment, which substantially interferes with or limits one or more major life activities.2 SMI includes schizophrenia, severe forms of bipolar disorder, and other conditions.

Frequent mental distress - Percentage of adults who reported their mental health was not good 14 or more days in the past 30 days.[1]

Depression - A period of two weeks or longer during which there is either depressed mood or loss of interest or pleasure, and at least four other symptoms that reflect a change in functioning, such as problems with sleep, eating, energy, concentration, self-image or recurrent thoughts of death or suicide.[2]

Suicide - Death caused by self-directed injurious behavior with intent to die as a result of the behavior.[3]

WHY IS MENTAL HEALTH IMPORTANT?

Mental illness is one of most common forms of disability. It is estimated that 18.1% of adults in the U.S. are suffering from some type of mental illness, and at least 4.2% are suffering from a serious form of mental illness. Neuropsychiatric disorders significantly affect quality of life, and account for 18.7% of all years of life lost due to disability and early mortality.[4] Suicide is the 10th leading cause of death in the U.S., with an average of 123 adults committing suicide per day.[5]

There is a direct correlation between mental and physical health, with one affecting the other, thereby having a significant impact on daily living.[6]

WHERE DO INDIANA AND MARION COUNTY STAND?

Mental Health America ranked U.S. states based on 15 key mental health indicators, including mental illness prevalence and access to care among adults and youth. In 2011 Indiana ranked 19th best, but declined to 45th in 2014.[7] **Table 1,** shows Indiana's percentages and overall rank in each category, compared to the national data.

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[1] "FAQs About HRQOL Measures | CDC."
[2] "NIMH » Depression."
[3] "Definitions|Suicide|Violence Prevention|Injury Center|CDC."
[4] "Mental Health and Mental Disorders | Healthy People 2020."
[5] "Suicide Statistics."
[6] "NIMH » Chronic Illness & Mental Health."
[7] "Ranking the States."

Table 1: Mental health indicators ranking for Indiana, 2017

Mental health indicators (Indiana's overall rank = 45)	Indiana	USA
Prevalence (Indiana's rank = 43)		
Adult prevalence of any mental illness	20.3%	18.3%
Adults with dependence or abuse of illicit drug or alcohol	8.9%	8.5%
Adults with serious thoughts of suicide	4.1%	3.9%
Youth with at least one past year major depressive episode	12.2%	11.0%
Youth with severe major depressive episode	9.0%	7.4%
Youth with dependence or abuse of illicit drugs or alcohol	5.0%	5.1%
Adults with a mental illness who did not receive treatment	57.2%	56.5%
Access to care (Indiana's rank = 33)		

Mental health indicators (Indiana's overall rank = 45)	Indiana	USA
Adults with a mental illness reporting unmet need	24.5%	20.6%
Adults with a mental illness who are uninsured	12.3%	12.2%
Adults with disability who could not see a doctor due to costs	22.8%	21.6%
Youth with major depression who did not receive mental health services	61.6%	61.5%
Youth with major depressive disorder who received some consistent treatment	23.7%	25.1%
Children with private insurance that did not cover mental or emotional problems	5.7%	7.8%
Students identified with emotional disturbance for an individualized education program	13.3%	7.3%
Resident population per mental health worker	700:1	529:1

Data Source: 2017 State of Mental Health in America – Prevalence and Access to Care, Mental Health America (MHA)

Marion County is the largest county in Indiana with a total population of 950,082 as of July 2017.[1] Mental health was one of the top priorities in Marion County's last two health assessments (2014 and 2018). To address mental health, the Marion County Public Health Department (MCPHD) collaborated with other local organizations to improve the mental health of county residents through programs such as depression screenings, and Narcan trainings and distributions. In 2016, at least 18% of Central Indiana adult residents suffered from some type of mental illness, and 12% of Marion County adults reported that they suffered from frequent mental distress. **Table 2** compares the prevalence of common mental disorders in Marion County, Indiana, and the nation. Marion County has equal or slightly lower levels of common adult mental disorders when compared to the state. Compared to the nation, Marion County has a slightly higher prevalence (**Table 2**).

Table 2: Prevalence of common mental health conditions in Marion County, Indiana, and USA, 2016-2017

Condition	Marion County	Indiana	USA	Source
Any mental illness (18 years and older)	18.3%	20.1%	18.1%	SAMHSA (NSDUH 2016) Small area estimate
Frequent mental distress (18 years and older)	12.4%	13%	11.2%	BRFSS 2016
Depression (18 years and older)	23.7%	23.5%	20%	CHA 2017
Suicide (age-adjusted deaths per 100,000 population)	15.3	15.4	13.4	CDC Wonder (2016)
Serious mental illness (18 years and older)	4.3% (Central Indiana)	5.0%	4.1%	SAMHSA (NSDUH 2016) Small area estimate

Depression is the most common form of mental illness. Approximately one out of every four Marion County adults has ever been diagnosed with depression by a health care provider (**Figure 19**).[1] Depression was also the second most prevalent chronic disease, after hypertension, and more prevalent than heart disease, diabetes, or ever having had asthma. One out of every eight Marion County adults reported being mentally distressed for more than 10 days in a month (**Figure 19**).

Figure 19: Percent of adults with depression and mental distress, Marion County, 2018
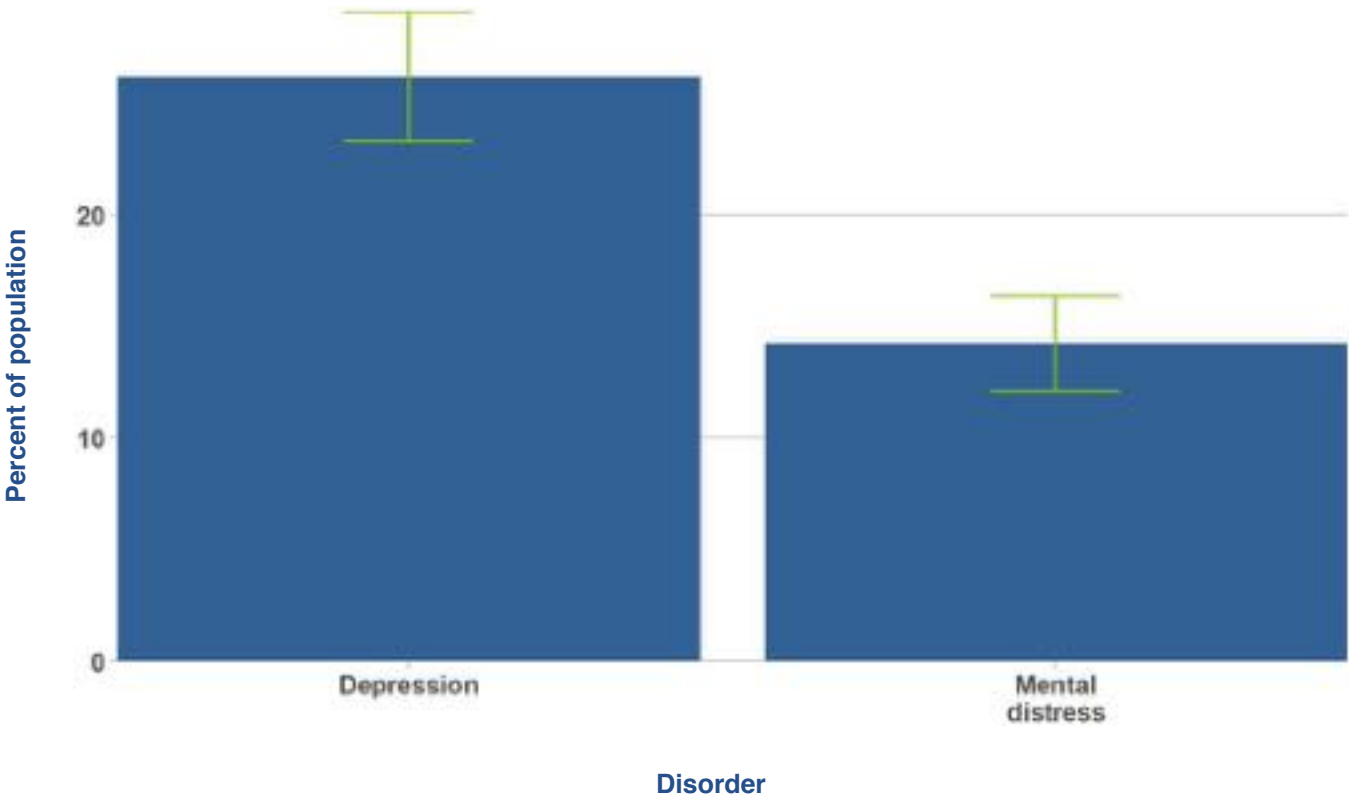
Data Source: 2018 Marion County Community Health Assessment Survey, DR3783

[1] "U.S. Census Bureau QuickFacts."

[1] 2018 Marion County Community Health Assessment Survey. The survey responses were weighted to represent the entire Marion County resident population. For more information about the survey methods and weighting, see http://indyindicators.iupui.edu/docs/MetricsForQualityLife_Web.pdf.

Suicide is ranked as the 10th leading cause of death in the U.S. and is one of the major health impacts of mental illness. According to 2016 national statistics, approximately 9.8 million Americans seriously thought about suicide, 1.3 million attempted suicide, and nearly 45,000 successfully committed suicide.[1] Suicide affects almost all age groups, but middle-aged and older adults were affected the most in 2016.[2] Racial differences exist as well, with non-Hispanic white and non-Hispanic American Indian/Alaska Native populations having higher rates than other racial groups.[3] Other groups disproportionately affected include veterans, active-duty military personnel, and sexual minority (lesbian, gay, bisexual, and transgender) youth.[4] In addition to the impact on the family members and friends of those committing suicide, suicide has a large economic impact, with suicides and suicide attempts costing approximately 70 billion dollars every year.[5] There has been a steady increase in the U.S. suicide rates each year since 1999, with an overall increase of 72% from 1999 to 2015.[6] More than half the suicides used firearms, followed by suffocation, and poisoning.[7]

Suicide was the 11th leading cause of death among Indiana residents in 2015, according to an Indiana State Department of Health suicide report.[1] Between 2011 and 2015, twelve people on average died of injuries each day in Indiana, with 20% of those deaths caused by suicide. In 2017, the age-adjusted suicide mortality rate for Marion County was 13.7 per 100,000 residents, similar to that for 1999, showing little to no improvement over the years (**Figure 20**).

Figure 20: Suicide deaths per 100,000 residents, Marion County, 1999-2017
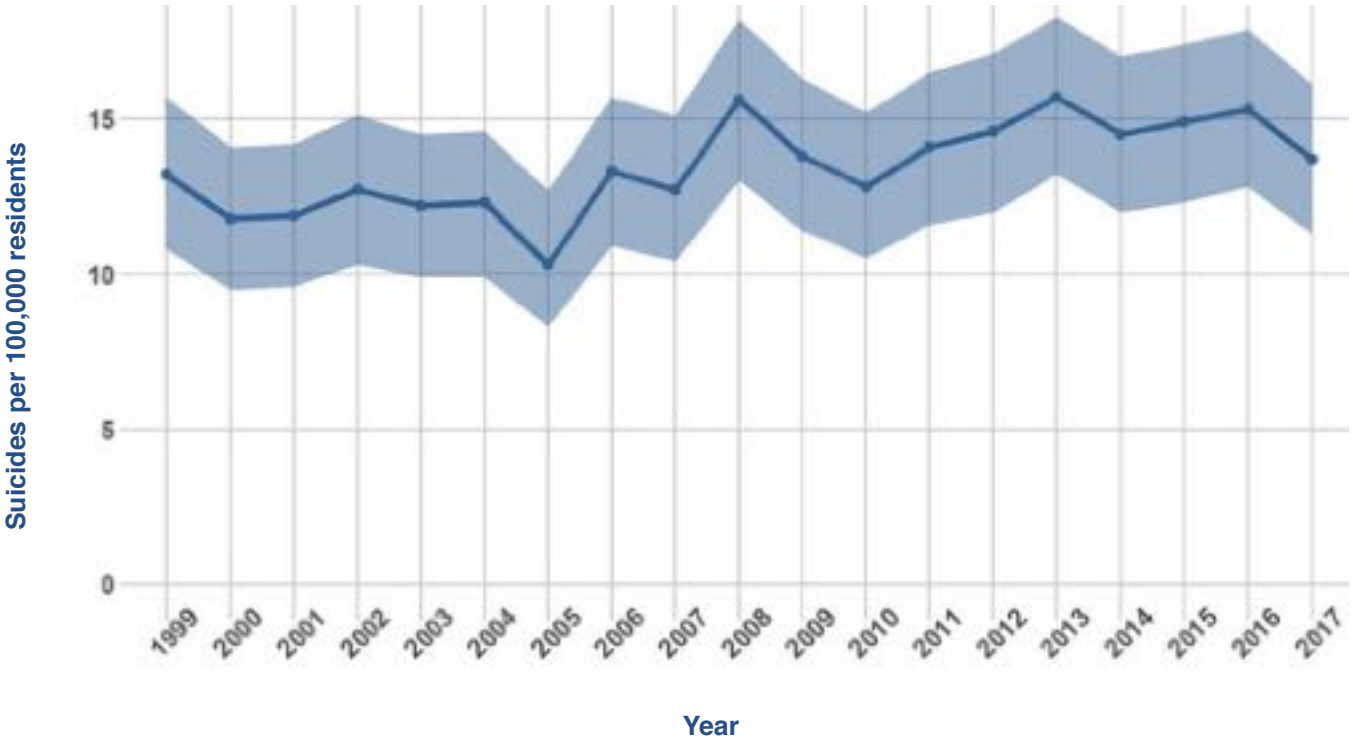
Data Source: CDC Wonder Marion County Suicide rates 1999-2017, DR3783

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[1] "Preventing Suicide."
[2] "Suicide Statistics."
[3] "Suicide Statistics."
[4] "Preventing Suicide."
[5] "Preventing Suicide."
[6] "ISDH: Suicide in Indiana."
[7] "ISDH: Suicide in Indiana."

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[1] "ISDH: Suicide in Indiana."

In terms of mental health care access, Indiana was ranked 33rd among all states in 2014. Over half (57.2%) of adults with any mental illness did not receive treatment, which was similar to the national average of 56.5%. The percentage of youth with major depressive disorder not receiving mental health services was even higher, with at least 71% reporting that they had not seen any mental health provider in the past year (**Table 1, page 55**). There was one mental health provider for every 700 persons in Indiana, which could be one reason why 1 in 4 adults with mental illness reported an unmet need for treatment.[1]

For additional information on mental health in Marion County,
visit http://indyindicators.iupui.edu/advanced.aspx?qs_terms=921&qs_start=2012&qs_end=2018.

Causes

RISK FACTORS

According to the World Health Organization (WHO), "a risk factor is any attribute, characteristic or exposure of an individual that increases the likelihood of developing a disease or injury."[1] Mental illness risk factors can be broadly divided into individual attributes (such as genetic and biological factors), social and economic circumstances, and environmental factors (such as cultural beliefs and practices). As mental disorders consist of an array of diseases, each one has unique risk factors. **Table 3** illustrates risk factors for some common mental health conditions.

Table 3: Risk factors associated with mental distress, depression, and suicide

Mental distress[2]	Depression[3]	Suicide[4]
1. Surviving a disaster in the past	1. Personal or family history of depression	1. Family history of suicide
2. Losing loved one or friend in the disaster	2. Major life changes, trauma, or stress	2. Previous suicide attempts
3. Financial difficulties	3. Chronic physical illness and medications	3. History of mental disorders such as depression
4. Lacking knowledge of the English language		4. History of substance abuse
5. Difficulties with daily living and mobility especially among older adults		5. Aggressive behavior
		6. Social isolation
		7. Cultural and religious beliefs
		8. Chronic medical illness

[1] "2017 State of Mental Health in America - Access to Care Data."

[1] "WHO | Risk Factors."   [3] "NIMH » Depression."
[2] Meissner, "Warning Signs and Risk Factors."   [4] "Suicide | Violence Prevention | Injury Center | CDC."

SOCIAL DETERMINANTS OF HEALTH EQUITY

The Substance Abuse and Mental Health Service Administration (SAMHSA) defines behavioral health equity as "the right to access quality health care for all populations regardless of the individual's race, ethnicity, gender, socioeconomic status, sexual orientation, geographical location and social conditions through prevention and treatment of mental health and substance use conditions and disorders."[1] To provide a fair and just opportunity to access health care services, we first need to assess the disparities present among these populations. Per a 2018 survey,[2] Marion County women were slightly more likely than men to experience mental distress, but were twice as likely to be diagnosed with depression (**Figure 21**). However, suicide was four times more likely among Marion County males than females (**Figure 25**). In terms of race, Whites were more likely to experience mental distress, and are also more likely to be diagnosed with depression than their black counterparts. Hispanics are being diagnosed with depression more than the blacks but less than whites (**Figure 22**). The suicide rate among whites was double that of blacks in 2017 (**Figure 26**). With regards to age, both depression and mental distress are higher among middle-aged adults between the age group of 35 to 54 years than young adults (18 to 34 years), or older adults (55 and above) (**Figure 23**). Depression and mental distress are strongly linked to social factors. National statistics suggest that at least 26% of homeless adults are affected by serious mental illness, and 70% of youth in juvenile justice systems have at least one mental health condition. Poverty and income levels have a strong correlation with mental illness. Marion County data shows a direct correlation of federal poverty levels with both mental distress and depression prevalence (**Figure 24**).

Figure 21: Mental distress and depression by gender, Marion County, 2018
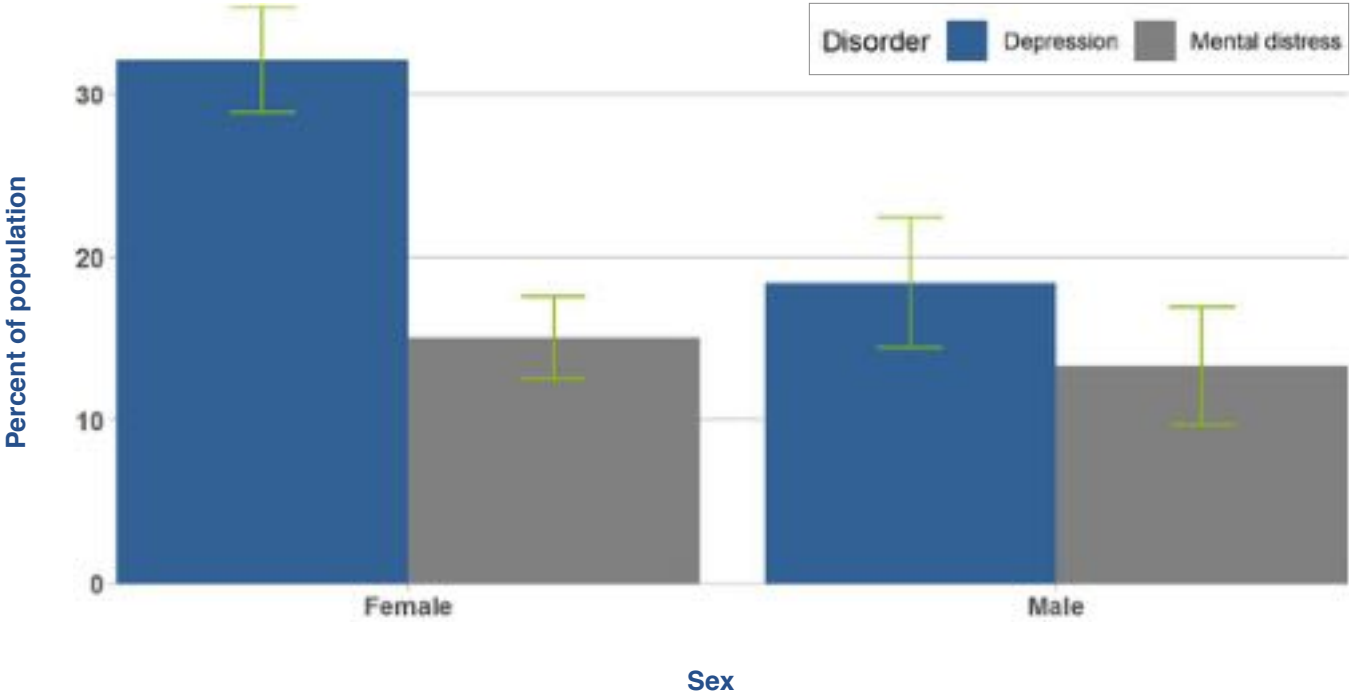
Data Source: 2018 Marion County Community Health Assessment Survey, DR3783

Figure 22: Mental distress and depression by race, Marion County, 2018

Data Source: 2018 Marion County Community Health Assessment Survey, DR3783

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[1] Carr, "Behavioral Health Equity." [2] 2018 Marion County Community Health Assessment Survey

Figure 23: Mental distress and depression by age, Marion County, 2018
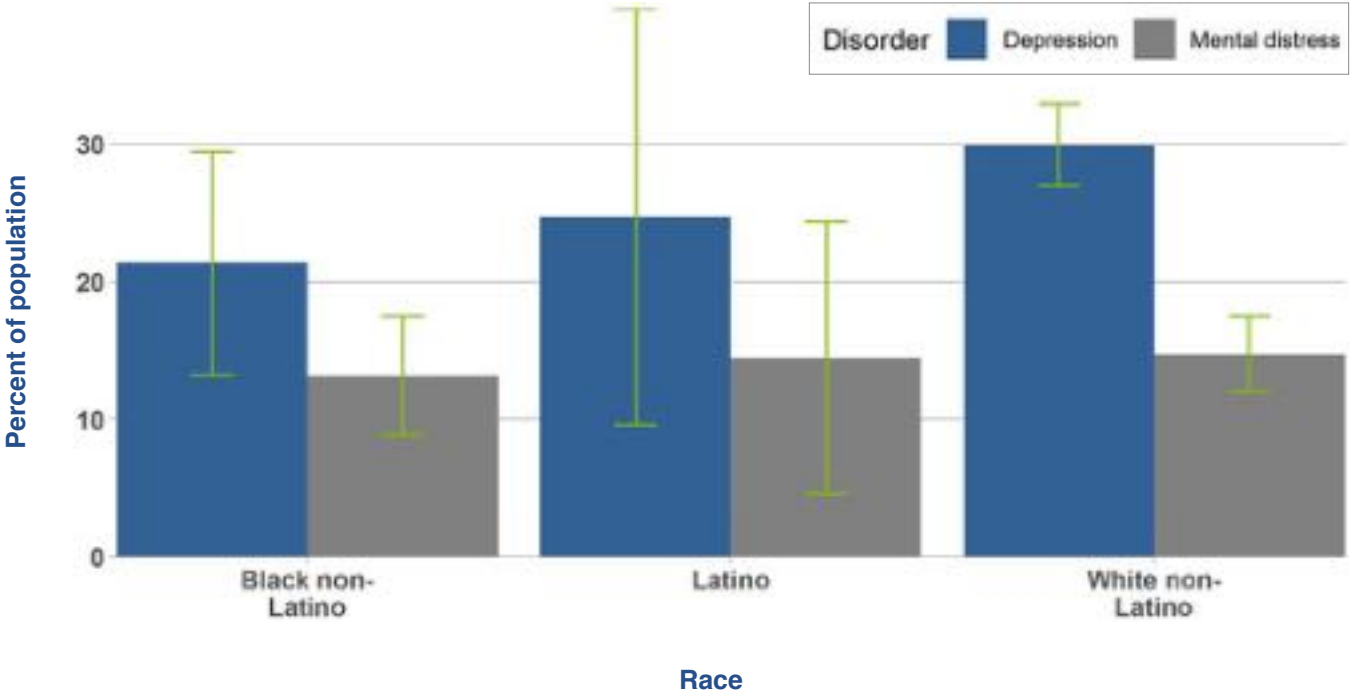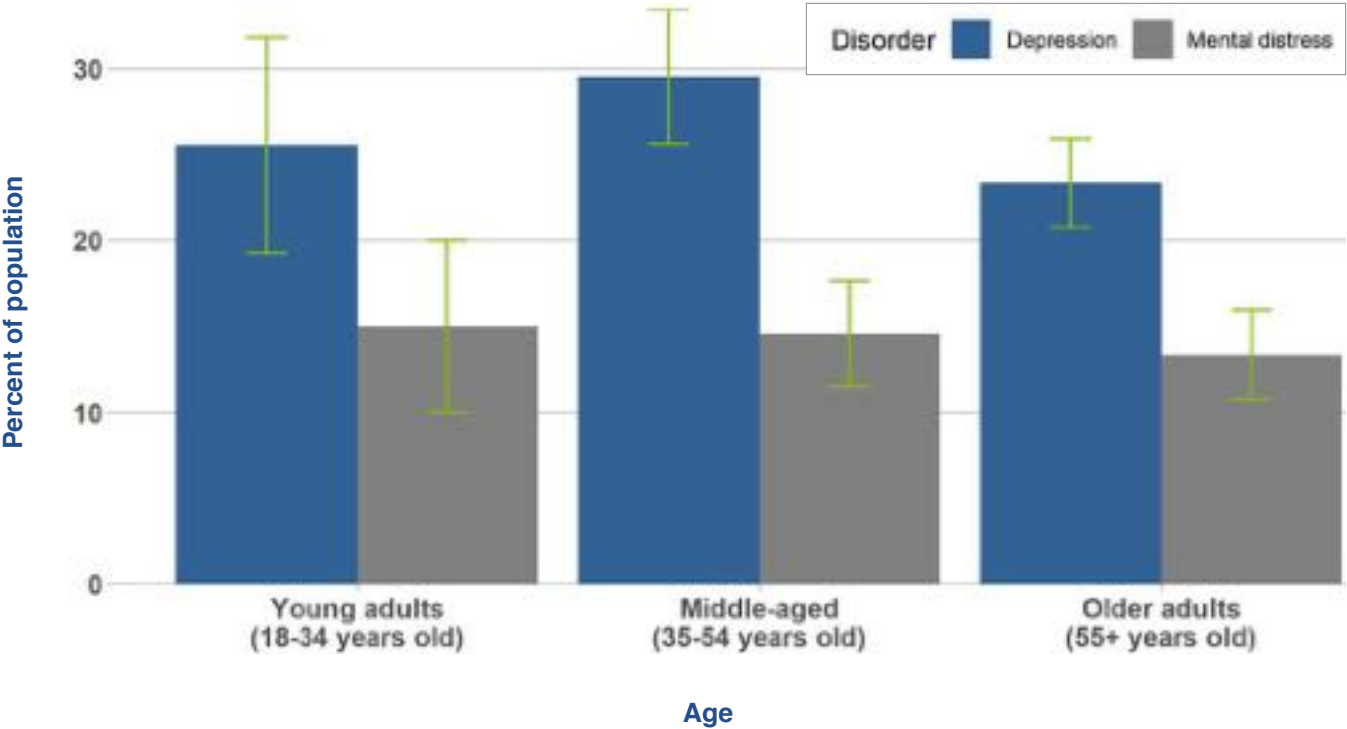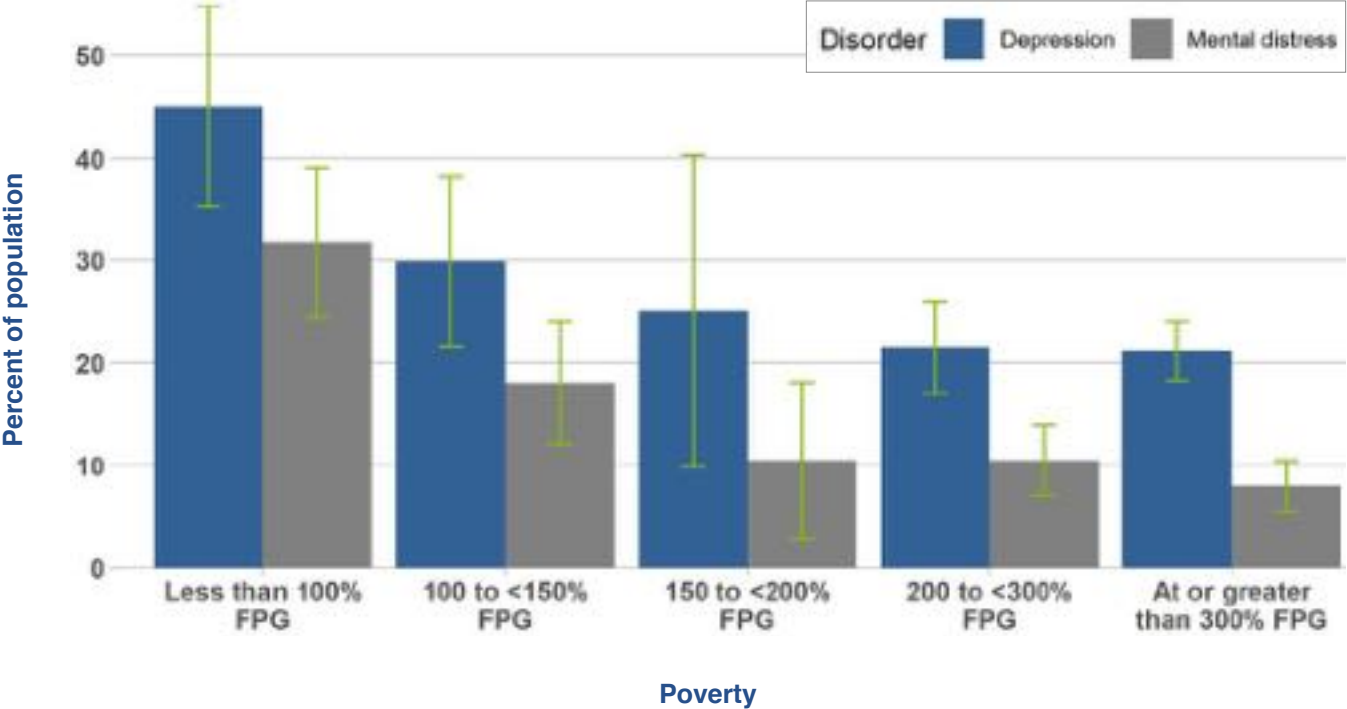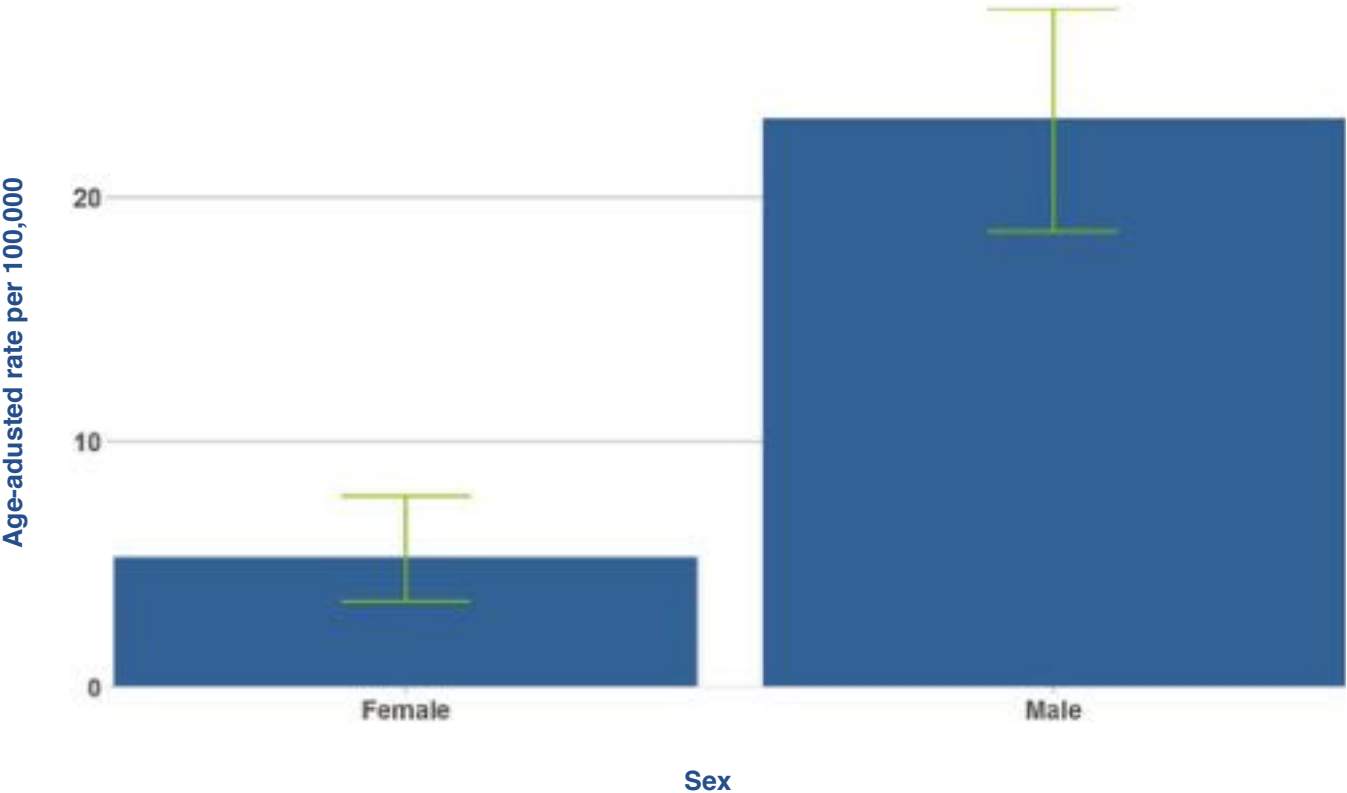

Data Source: 2018 Marion County Community Health Assessment Survey, DR3783

Figure 24: Mental distress and depression by FPG Marion County, 2018
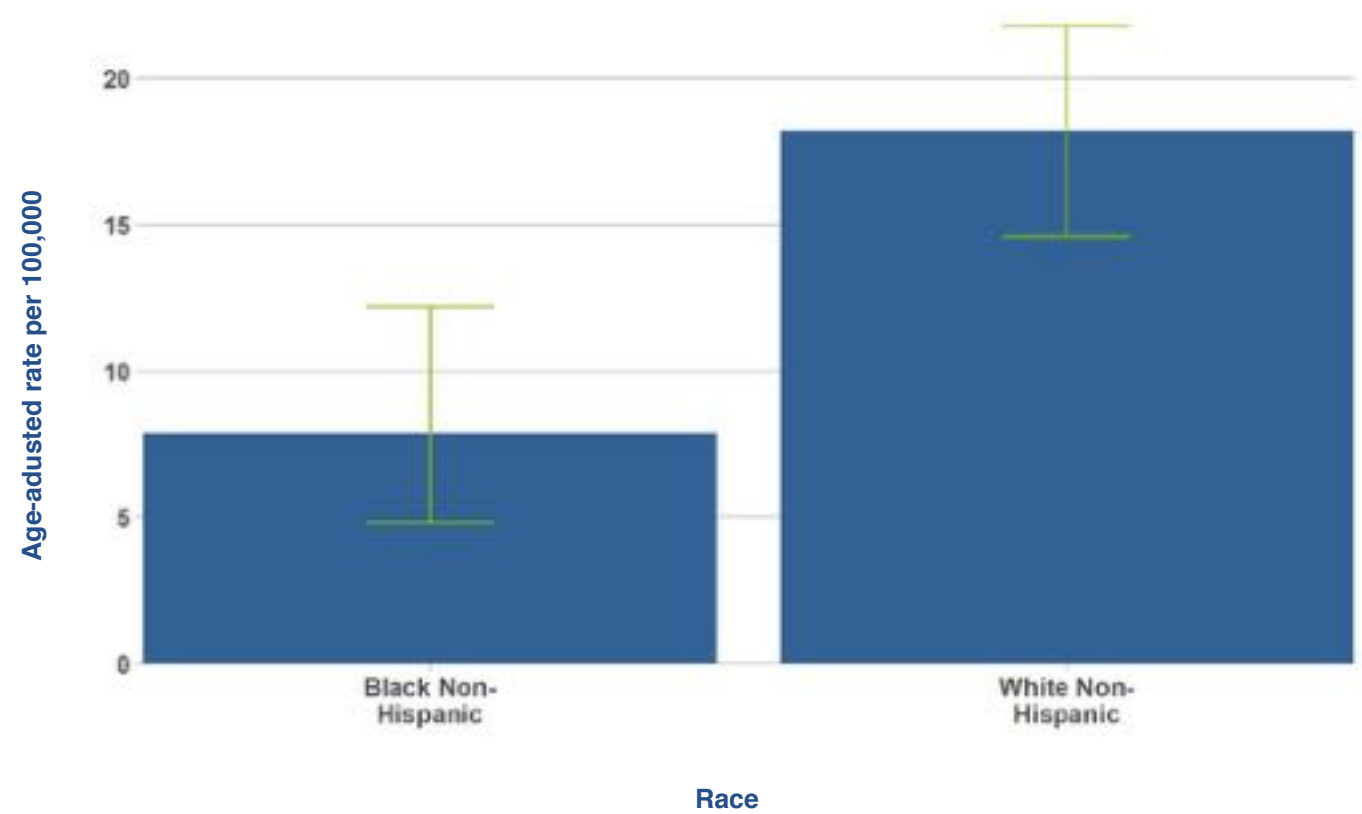

Data Source: 2018 Marion County Community Health Assessment Survey, DR3783

Figure 25: Marion County suicide deaths per 100,000 residents by gender, Marion County, 2017

Data Source: 2017 CDC Wonder Marion County suicide rates, DR3783

Figure 26: Marion County suicide deaths per 100,000 residents, Marion County, 2017

Data Source: 2017 CDC Wonder Marion County suicide rates, DR3783

Impacts

Due to more focus on communicable and life-threatening diseases, mental illness is often overlooked as a public health issue. However, it has catastrophic and long-lasting impacts on affected individuals, caregivers, and communities, so understanding these impacts is the key to developing robust mental health care models.

INDIVIDUALS

Mental illness greatly affects the quality of life of the affected individual and negatively impacts various facets of daily life. Research shows that individuals with early-onset psychiatric disorders are less likely to attain higher education.[1] Loss of productivity and unemployment are other indirect consequences of mental illness, with at least 5-6 million people of age 16 to 54 years unable to find work due to mental illness.[2] It also has an indirect effect on annual income, with a decrease of at least $3500 to $6000 per year.[3] Research suggests that poverty is a consequence, as well as a cause of mental illness.[4] Other impacts include higher rates of comorbid mental illnesses in individuals with untreated depression, higher rates of non-compliance to treatment (at least three times as likely among patients with depression), and presence of depression in 50% of persons who commit suicide.[5] At least 50% of persons with mental illness develop substance abuse.[6]

FAMILIES AND CAREGIVERS

Due to the high prevalence of mental illness and shortage of mental health providers, family and caregivers have a significant role in supporting and caring for people affected with mental illness. [7] Individuals suffering from mental illness are being taken care of by at least 8.4 million caregivers nationwide, who provide an average of 32 hours per week of care. Most caregivers are middle-aged adults who are either the parents or spouses of the affected individuals. About half of them report financial difficulties, and social isolation due to mental illness stigma. This indirectly affects their emotional well-being, and exposes them to higher risk of mental stress. A study revealed that at least three-fourths of them report experiencing mental stress, and about four in ten report feeling physically unhealthy, as well as difficulty in taking care of their own health.[8]

[1] Kessler et al., "Social Consequences of Psychiatric Disorders, I."

[2] Marcotte and Wilcox-Gök, "Estimating the Employment and Earnings Costs of Mental Illness."

[3] Marcotte and Wilcox-Gök.

[4] Lund et al., "Poverty and Mental Disorders."

[5] "American Association of Suicidology: Depression and Suicide Risk."

[6] Abuse, "Comorbidity."

[7] Abuse.

[8] "On Pins & Needles: Caregivers of Adults with Mental Illness."

COMMUNITIES

Mental illness has a huge impact on healthcare spending and the economy, both globally and nationally. Mental disorders affect the economy not only via direct costs related to the diagnosis and treatment of mental illnesses, but also through indirect costs related to disability, care seeking and work absenteeism. In 2010, those indirect costs (U.S. $1.7 trillion) exceeded the direct costs (U.S. $0.8 trillion) globally, and will continue to rise making mental disorders the most expensive chronic disease group by 2030.[1]

In addition to the economy, mental illness can affect various other public health parameters. For example, some researchers have linked infectious diseases with mental illnesses, with mental illness being the cause as well as the consequence of infectious diseases.[1] Various behaviors such as sexual activity, sharing needles, and substance abuse can increase the burden of diseases such as HIV and hepatitis in the population. Maternal depression can greatly impact infant mortality, child immunizations, and other childhood health problems, targeting society's most vulnerable group.[2]

STIGMA RELATED TO MENTAL ILLNESS

"Stigma refers to a cluster of negative attitudes and beliefs that motivate the general public to fear, reject, avoid, and discriminate against people with mental illnesses."[3] Negative attitudes and beliefs about mental illness in general can deprive those affected by mental illness of basic societal needs and give them feelings of shame, self-blame, and social discrimination. Mental illness stigma negatively impacts help-seeking behavior, with only 20% of affected individuals seeing a mental health provider in a given year. Moreover, it greatly affects quality of life of both the affected individuals and their family members resulting in a loss of social support, and the adoption of negative coping strategies.[4] Limited research reveals that while there has been improvement in popular understanding of neurobiological causes of mental illness, attitudes towards mental disorders have remained the same or even deteriorated over the years, with the general public showing a desire to maintain social distance, a sense of insecurity, and stressing the importance of physical illnesses over mental illnesses in terms of treatment.[5]

In the years 2005, 2007 and 2009, the Centers for Disease Control and Prevention (CDC) in collaboration with the Substance Abuse and Mental Health Services Administration (SAMHSA), added optional mental illness stigma modules to the BRFSS survey and encouraged various states to complete them. In the 2007 survey, Indiana participated in the module and it was revealed that at least 36% of Hoosiers disagreed with the statement that people are caring and sympathetic towards individuals affected with mental illness. This disagreement was seen more among females, adults aged 35 to 54 years, blacks and non-Hispanic groups, and individuals suffering from mental disorders, especially serious psychological distress.[6] These results suggest a high level of mental illness-related stigma among Hoosiers and call for immediate action.

[1] Trautmann, Rehm, and Wittchen, "The Economic Costs of Mental Disorders."

[1] McSweegan, "Infectious Diseases and Mental Illness."

[2] "WHO | Investing in Mental Health."

[3] "The President's New Freedom Commission on Mental Health."

[4] "Attitudes towards Mental Illness: Results from Behavioral Risk Factor Surveillance System."

[5] "Attitudes towards Mental Illness: Results from Behavioral Risk Factor Surveillance System."

[6] "Attitudes towards Mental Illness: Results from Behavioral Risk Factor Surveillance System."

Solutions

The problem of poor mental health and mental health disorders is chronic and deep-rooted, and in order to find relevant solutions at both the individual and community level there is a need to target several areas, and utilize multiple resources. Despite high prevalence of mental illness at the national, state, and local levels, the U.S. investment to prevent and manage mental health conditions does not meet the needs of the population as well as it does for other diseases[1]. Indiana and Marion County lack adequate resources, health services, and strong government policies targeted to improve the mental health of residents compared to other states and counties, as recently discussed in the Community Health Assessment (CHA) Advisory Board meeting.

Mental health emerged as one of the top three priorities in the Marion County CHA, due to the needs of the population exceeding the efforts to cope with mental illness. Other important issues discussed at the board meeting included high levels of stigma, effects on the family and caregivers, underreporting of suicide and other comorbidities, and lack of an adequate mental health workforce to match the high prevalence of mental illness in the county and state. Some of the solutions that emerged during the discussion emphasized education, collaboration, early screening and diagnosis, and targeting vulnerable sub-populations that do not have adequate mental health care access. In order to improve the current situation, decrease burden on the existing mental health care system, and provide evidence-based care to affected individuals not only at the national but also at local levels, the following five steps can be taken.[1]

1. Increase prevention, treatment and recovery services – Prevention strategies should be targeted towards reducing the effect of modifiable risk factors, such as improving the environment by promoting conditions that support the overall mental health of the community. This can be done by introducing public health interventions that motivate communities to improve their mental and physical health by good diet, exercise and positive attitude. Educating individuals and their families about mental health and available resources is also helpful in preventing negative mental health outcomes such as serious mental disorders and suicide. Early diagnosis and treatment is important to prevent the occurrence of full-blown disease. Therefore, screening of common mental disorders such as depression, anxiety and stress disorders should be performed periodically, and basic treatment of mental disorders should be provided at the primary care level. Recovery services such as supported housing and employment, as well as peer services should also be provided to those who are affected by serious mental illness. Since disparities are based on gender, race, disabilities, sexual orientation, culture, and socioeconomic and refugee status, services should be tailored to the needs of each group to reduce mental health disparities and improve outcomes among them.

[1] "Five Point Plan to Improve the Nation's Mental Health | SAMHSA Blog."

[1] "Five Point Plan to Improve the Nation's Mental Health | SAMHSA Blog."

2. Expand the mental health workforce – As there is a shortage of mental health providers at the county and state level, a trauma-informed, recovery-oriented and culturally competent workforce in numbers and locations adequate to meet the need is essential for increased service delivery capacity and system improvement.[1] Moreover, there is a need to educate the "informal entities" such as faith leaders, police, recovery coaches and other laypersons highly trusted by the community, about the basics of mental illness so that they become involved in the community-oriented mental health care model, and help in decreasing the burden on an already deficient and exhausted mental health workforce. They can help by identifying common mental health conditions, counseling individuals with mild to moderate mental illness and their family members, referring them to professional help, and advocating for the mentally ill in the community to reduce mental illness-related stigma.

3. Using health information technology – Electronic health records, tele-psychiatry and online psychotherapy are some of the information technologies which could be incorporated into the community-based mental health care model, so that health care is accessible to those who are not able to travel to the point of care. In addition to making mental health care accessible to all, they can provide knowledge on the latest trends and developments in mental health to the workforce.

4. Education -- Evidence-based education and awareness programs and campaigns in workplaces, schools, faith communities and other settings could help in reducing mental illness-related stigma.

5. Research and development – Research can help us to understand mental illness in a scientific manner, improve the current clinical management options for mental illness, and find specific biomarkers so as to increase objectivity and precision in current diagnosis criteria.

Current efforts

In 2018, the Social Work Department at the MCPHD conducted 311 depression screenings using the PHQ-9 questionnaire. The staff saw a total of 1372 clients, 203 of whom had an 1CD10 depression flag. Referrals to mental health providers were made on the basis of a positive screen, presence of risk factors for depression, and the client's desire to see a mental health provider. In 2018, a total of 7 such individuals were referred to ongoing services, 3 of them were referred internally to MCPHD providers, and 4 of them were referred to an outside primary/mental health provider. The Social Work Department intends to incorporate better ways to capture data using the Zung, Geriatric & Edinburgh depression scales already being used by the staff internally. The department also aims to increase the number of individuals referred for further counseling/treatment.

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[1] "Five Point Plan to Improve the Nation's Mental Health | SAMHSA Blog."

OBESITY AND DIABETES

Summary

CAUSES:
· Individual behaviors such as poor nutrition, a sedentary lifestyle, and unhealthy sleep practices
· Social determinants of health equity, such as race and income level

OUTCOMES:
· Increased risk of developing other chronic diseases and conditions
· Lower life expectancy
· Increased economic burden

SOLUTIONS:
· Programs promoting diabetes management, physical activity, and healthy nutritional choices
· Increasing the availability of healthier foods at schools

Status

Obesity means having too much body fat. We estimate obesity by calculating body mass index (BMI), using a person's height and weight. A BMI of 30 or greater usually indicates obesity, although very athletic persons with a lot of muscle may have a high BMI without being obese. The various BMI classifications for adults and children are defined in **Table 4**. The table also shows the percent of Marion County adults for each BMI category, based on the 2018 Marion County Community Health Assessment survey.[1] Two out of three (66%) Marion County adults are overweight or obese. Two out of every five (40%) Marion County children are overweight.

Table 4: BMI categories and prevalence rates, Marion County, 2018

BMI Category	Criteria*	Percent (95% CI)
Adults		
Underweight	BMI <18.5	4% (1.4%-5.9%)
Normal weight	BMI of 18.5-24.9	30% (27.1%-32.9%)
Overweight	BMI of 25-29.9	29% (26.1%-31.2%)
Obese	BMI of 30-39.9	29% (26.7%-32.1%)
Morbidly obese	BMI ≥40	8% (6.9%-9.6%)
Children*		
Underweight	Less than the 5th percentile	8% (4.7%-10.3%)
Normal weight	5th to less than the 85th percentile	53% (46.9%-59.0%)
Overweight	85th to less than the 95th percentile	14% (9.6%-17.8%)
Obese	95th percentile or greater	26% (20.3%-31.4%)

* The children categories are based on age- and gender-specific BMI percentiles of U.S. children from 1963 to 1994.[1]

Data Source: 2018 Marion County Community Health Assessment Survey, DR3857

Diabetes is a chronic disease that occurs when a person's blood glucose is too high because the body is not able to produce enough, or does not properly use, insulin to remove the glucose from the bloodstream.[2] The different types of diabetes are defined in **Table 5**.

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[1] The survey responses were weighted to represent the entire Marion County resident population.
    For more information about the survey methods and weighting, see http://indyindicators.iupui.edu/docs/MetricsForQualityLife_Web.pdf.

[1] Kuczmarski et al., "2000 CDC Growth Charts for the United States."   [2] Lal, "DIABETES."

Table 5: Percent of adults with diabetes by type of diabetes, Marion County, 2018

Type of Diabetes	Definition	Percent (95% CI)
Type 1 diabetes (~10% of diabetes)	The body does not produce insulin. Generally diagnosed during adolescence or early adulthood.[1]	1.9% (1.2%-2.6%)
Type 2 diabetes (~90% of diabetes)	The body does not produce enough insulin or body cells do not react to insulin. Can be diagnosed with Type 2 diabetes at any point in life. Generally gets worse over time without treatment.[2]	11.6% (10.0%-13.2%)
Prediabetes (Borderline diabetes)	Blood sugar levels are higher than what is considered to be normal, but not high enough to be considered Type 2 diabetes.[3]	10.6% (8.9%-12.4%)
Gestational diabetes	A woman who has never previously been diagnosed with diabetes develops high blood glucose levels during pregnancy.[4]	2.3% (1.4%-3.1%)

Data Source: 2018 Marion County Community Health Assessment Survey, DR3857

A person who is considered obese (BMI ≥30) is over three times more likely to develop diabetes than a person with a normal body weight.[5] Ninety percent of Marion County adults who, by 2018, had ever been diagnosed with diabetes had BMIs indicating they were overweight or obese. Though being at an unhealthy weight greatly increases the risk of developing diabetes, some people who are overweight do not develop diabetes. Only 18% of the surveyed overweight or obese adults had ever been diagnosed with diabetes.

Table 4 and **Figure 27** show the proportion of Marion County adults in 2018 who were overweight or obese, or had diabetes. The largest circle represents all adults. The middle circle represents the 66% who reported being overweight or obese. The smallest circle represents the 14% who have ever been diagnosed with diabetes. This circle largely overlaps with the overweight or obese circle to signify that 9 out of 10 Marion County adults diagnosed with diabetes were also overweight or obese.

Figure 27: Overweight and diabetes percent among adults, Marion County, 2018
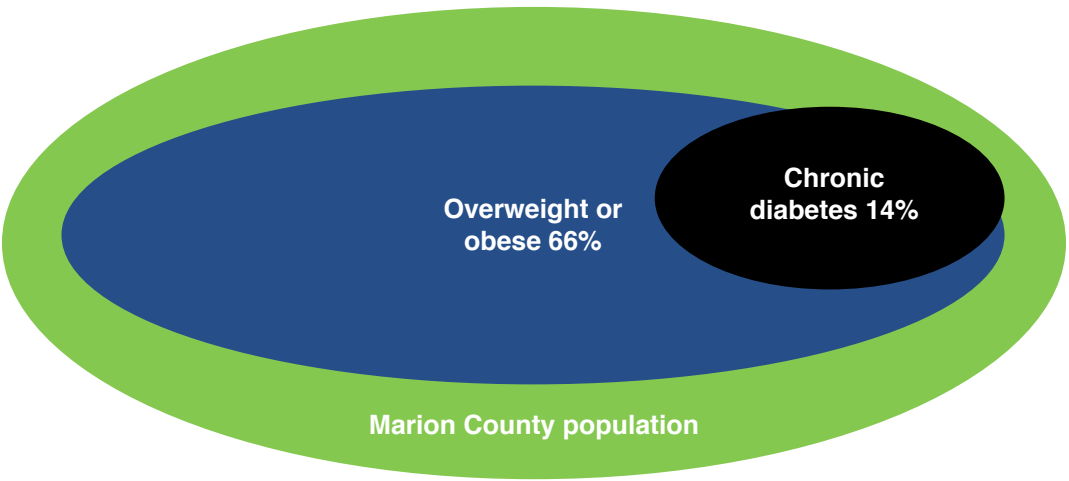
Data Source: 2018 Marion County Community Health Assessment Survey, DR3857

Figure 28 and **Figure 29** compare diabetes mortality and obesity between Marion County and other locations. Marion County's 2015 diabetes mortality rate was similar to the U.S. overall, and in the middle compared to other large midwest cities. The 2015 obesity prevalence in Marion County was similar to that in other midwest cities, Indiana, and the U.S. overall.

[1] Lal.
[2] Lal.
[3] Drive, Arlington, and Va 22202 1-800-Diabetes, "What Is Gestational Diabetes?"
[4] Drive, Arlington, and Va 22202 1-800-Diabetes.
[5] Twig et al., "Diabetes Risk Among Overweight and Obese Metabolically Healthy Young Adults."

Figure 28: Diabetes-related deaths per 100,000 residents, Marion County vs. other locations, 2015-2016
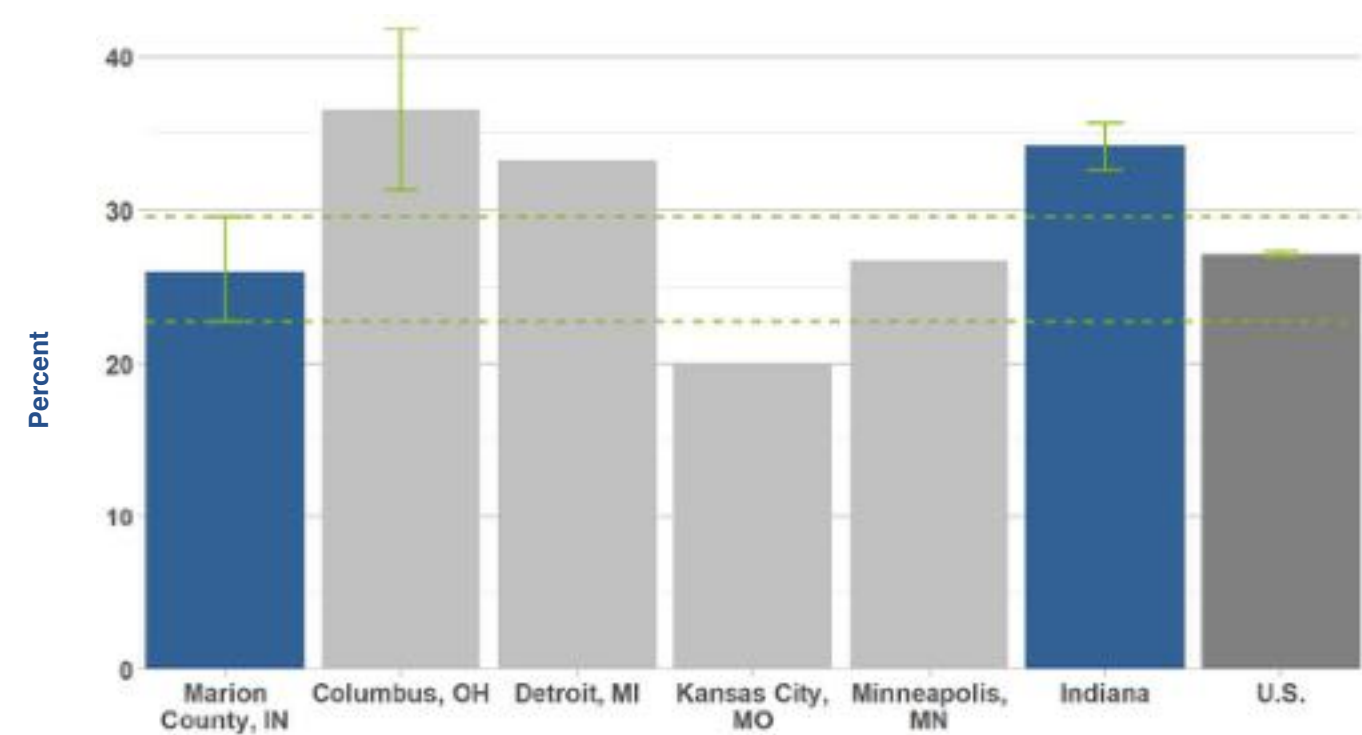
Data Source: Big Cities Health Inventory https://www.bigcitieshealth.org/data-and-research-center, DR3857

Figure 29: Obesity prevalence, Marion County vs. other locations, 2015
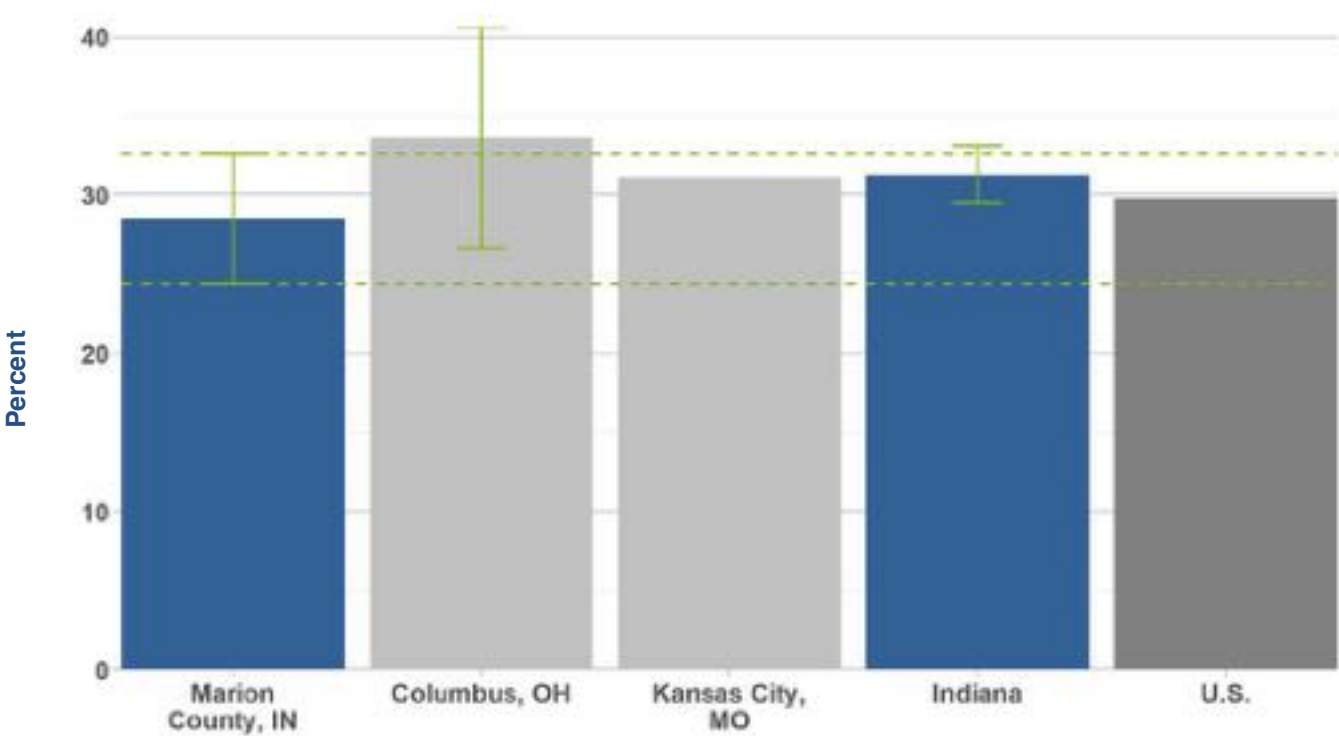
Data Source: Big Cities Health Inventory, https://www.bigcitieshealth.org/data-and-research-center, DR3857

Adult obesity and diabetes rates appear to be increasing in Marion County, as shown in **Table 6**. From 2005 to 2018, Marion County's adult obesity rate increased about one percentage point per year, from 26% in 2005 to 33% in 2012 to 38% in 2018. A study using National Health and Nutrition Examination Study data projected that 85% of Americans will be overweight or obese by 2030.[1]

Table 6 indicates that the change in obesity prevalence among Marion County children (age 5 to 17 years old) was more encouraging than the steady increase among adults. Among public school students in 2005, about two out of ten (22%) were obese. In 2012, a telephone survey of Marion County residents indicated that about three out of ten (31%) children were obese. But our mailed survey in 2018 indicated that 27% were obese; an increase from 2005, but a decrease since 2012. The 2012 and 2018 child estimates were only accurate to 5 or 6 percentage points, and the different data collection methods may have a small impact on the comparability of the results, but it appears that child obesity in Marion County is no longer following the steady increase we see among adults.

Table 7 shows an increase in diabetes among Marion County adults from 2005 to 2018, but little change since then. The prevalence of diabetes in 2012 and 2018 (about three adults in twenty, or 14%) is about 50% higher than the 2015 national rate (about two in twenty, or 9.4%).[2]

For additional information on obesity in Marion County, visit http://indyindicators.iupui.edu/advanced.aspx?qs_terms=807&qs_start=2012&qs_end=2018. For additional information on diabetes in Marion County, visit http://indyindicators.iupui.edu/advanced.aspx?qs_terms=497&qs_start=2012&qs_end=2018.

Table 6: Obesity estimates for adults and children, Marion County, 2005-2018

Year	Adults, age 18+	Adult data source	Children, ages 5-17	Child data source
2005	26% (24.2-27.0)	Telephone survey	22% (22.0-22.2)	Measurement in schools
2012	33% (30.8-34.8)	Telephone survey	31% (25.1-36.1)	Telephone survey
2018	38% (34.9-40.5)	Mailed survey	27% (20.8-32.7)	Mailed survey

Data Sources: MCPHD 2005 Adult Obesity Survey, 2005 Child Health and Wellbeing Initiative, 2012 & 2018 Marion County CHA Surveys. DR3857

Table 7: Diabetes estimates for adults, Marion County, 2005-2018

Year	Adults, age 18+	Adult data source
2005	11% (9.8-11.5)	Telephone survey
2012	14% (12.6-15.5)	Telephone survey
2018	14% (11.8-15.2)	Mailed survey

Data Sources: MCPHD 2005 Adult Obesity Survey, 2012 & 2018 Marion County CHA Surveys. DR3857

[1] Wang et al., "Will All Americans Become Overweight or Obese?"

[2] Drive, Arlington, and Va 22202 1-800-Diabetes, "Statistics About Diabetes."

Figure 30: Diabetes prevalence among persons with a health care encounter by ZIP Code, Marion County, 2011-2013
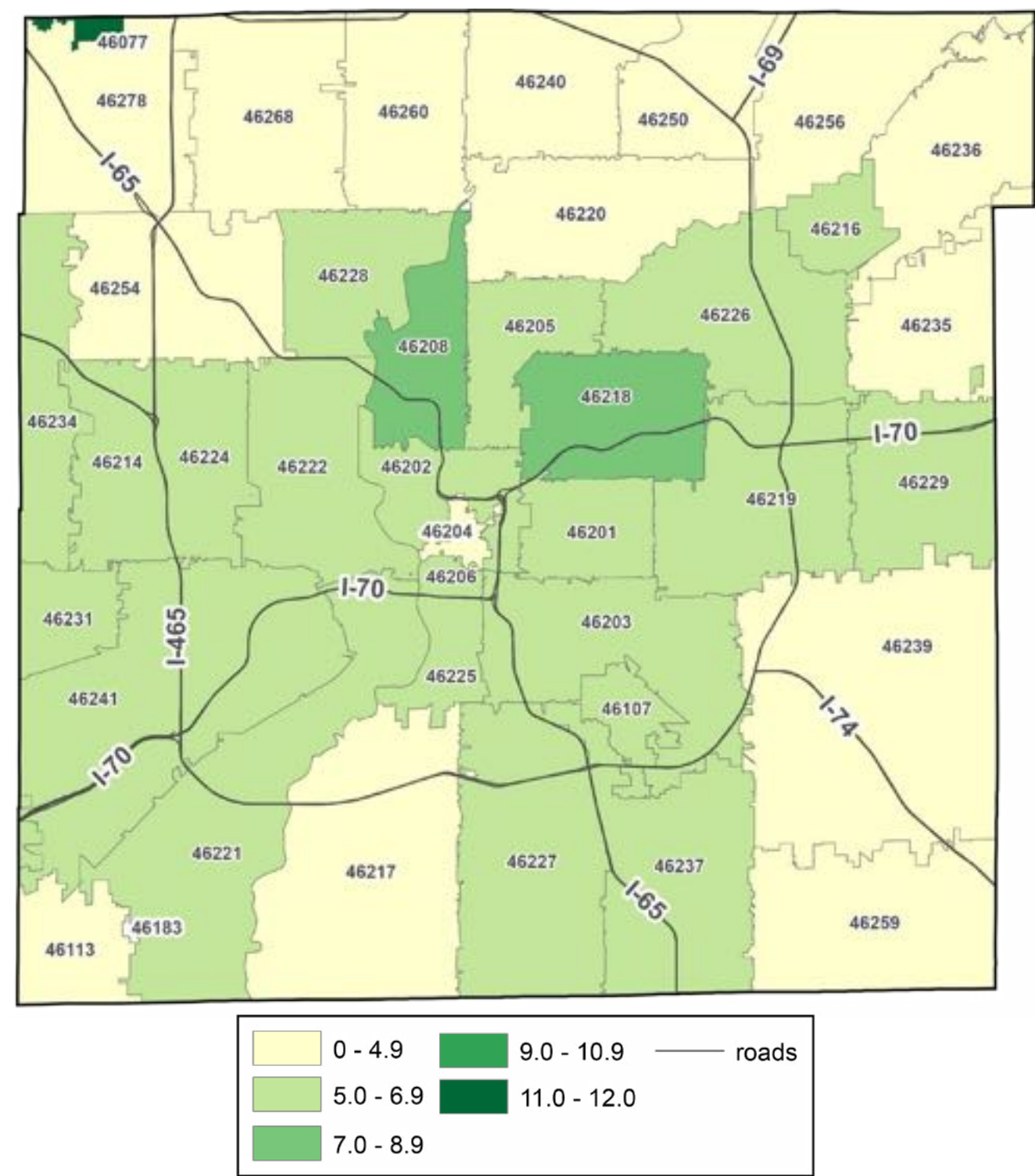
Data Source: Indiana Network for Patient Care data, from IU Fairbanks School of Public Health and the Polis Center at IUPUI. These data were generated with support from the Robert Wood Johnson Foundation (No. 71271). DR3884.

[1] Spruijt-Metz et al., "Behavioral Contributions to the Pathogenesis of Type 2 Diabetes."

[2] Cooper et al., "A Prospective Study of the Association Between Quantity and Variety of Fruit and Vegetable Intake and Incident Type 2 Diabetes."

Causes

INDIVIDUAL BEHAVIORS

The sections below describe how the behaviors of individuals increase the likelihood of developing diabetes and/or obesity. This is not intended to be a comprehensive list of behaviors leading to obesity and diabetes.

DIET AND NUTRITION

Eating foods that are high in fiber, such as fruits, vegetables, and whole grains, has been proven to be protective against developing prediabetes and Type 2 diabetes.[1] A study found that a combined intake of fruits and vegetables was associated with 21% lower hazard of Type 2 diabetes.[2] The Health and Human Services (HHS) and United States Department of Agriculture (USDA) Dietary Guidelines for Americans recommend eating 2.5 cups of a variety of vegetables, and 2 cups of fruit every day.[3] Only about half (56%) of Marion County adult residents reported eating at least two fruits per day in the past 30 days, and nearly 10% reported eating none. When asked about vegetable consumption, 9% reported eating no green vegetables, and 29% reported eating no orange vegetables in the past 30 days.

Consuming foods and beverages with large amounts of sugar and calories and little nutritional value negatively impacts a person's health. Consumption of sugar-sweetened beverages has been found to be associated with both obesity and diabetes.[4] Sugar-sweetened beverages are the largest source of added sugar in the United States.[5] A study found that individuals who consumed at least one serving of sugar-sweetened beverage per day showed more than twice the genetic effect on obesity risk compared to those who consumed less than one serving per month.[6] Similarly, a large cohort study found that women who consumed one sugar-sweetened beverage per day had an 80% increased risk of developing Type 2 diabetes when compared to women who consumed less than one per month.[7]

[3] "A Closer Look Inside Healthy Eating Patterns - 2015-2020 Dietary Guidelines - Health.Gov."

[4] Hu, "Resolved."

[5] Hu.

[6] Hu.

[7] Schulze et al., "Sugar-Sweetened Beverages, Weight Gain, and Incidence of Type 2 Diabetes in Young and Middle-Aged Women."

INACTIVE LIFESTYLE

A lack of physical activity is associated with an increased BMI and a higher risk of developing Type 2 diabetes.[1],[2] The HHS Physical Activity Guidelines recommend that adults get at least 150-300 minutes of moderate or vigorous-intensity aerobic activity per week.[3] In Marion County, fewer than half (41%) of adult residents reported getting 150 minutes or more of moderate physical activity in the past week. While many adults do not appear to be getting the adequate amount of physical activity, the children in Marion County are reporting higher rates than the HHS recommended amount. More than three out of four (78%) children in Marion County were reported to have at least 60 minutes of physical activity per day in the past 30 days.

"Screen time" refers to the time that a person spends using technology, including watching television, playing video games, or using a computer or tablet. It is usually thought of as an unhealthy behavior because it is inherently sedentary and takes time away from being active.[4] Increased screen time among children has been associated with an increased risk of becoming obese in adulthood.[5] The American Academy of Pediatricians (AAP) recommends that children ages 2-5 only have 1 hour of screen time per day, with adult supervision.[6] For children over the age of five, the AAP recommends that parents place limits on media, and that screen time does not replace sleep or physical activity time.[7]

In Marion County, over half (54%) of parents reported their child had an average of 4 hours or more of screen time per day that did not include school work in the past 30 days.

SLEEP BEHAVIORS

Unhealthy sleeping behaviors, such as sleeping less than 7 hours or more than 9 hours have been linked to a higher risk of developing diabetes.[1] A cohort study found that men who reported sleeping 6 or fewer hours were twice as likely, and men who reported sleeping more than 8 hours were over 3 times more likely to develop diabetes than men who slept 7 hours per night.[2] A cross-sectional study using National Health Interview Survey data found that persons who reported getting less than 7 hours of sleep had a 6% higher probability, and people who reported getting more than 8 hours of sleep had a 3% higher probability of becoming obese.[3] According to the 2016 Marion County BRFSS results, only 60% of adult residents reported getting between 7 and 9 hours of sleep per night.

ENVIRONMENT

Increased physical activity and consumption of nutritious foods are proven to be protective factors for both diabetes and obesity; however, there are some environmental factors that may restrict certain individuals from accessing them. The following two sections describe some of the environmental factors that can increase the risk of developing obesity and diabetes.

NEIGHBORHOOD/COMMUNITY

The built environment contains all of the physical parts of where we live and work, including homes, buildings, streets, parks, and infrastructure.[4] It can shape health behaviors by providing opportunities or creating barriers to physical activity and access to healthy foods. As previously stated, in order to control and prevent obesity and diabetes, it is important for everyone to have a nutritious diet and to engage in regular physical activity. However, some individuals do not live in a neighborhood environment where outdoor physical activity and healthy foods can be easily obtained. Research suggests that exercising outdoors rather than indoors might be more beneficial for health and increase motivation for exercise. A study comparing walking outdoors

[1] Tudor-Locke et al., "A Step-Defined Sedentary Lifestyle Index."

[2] U.S. Department of Health and Human Services, "Physical Activity Guidelines for Americans, 2nd Edition."

[3] U.S. Department of Health and Human Services.

[4] Wethington, Pan, and Sherry, "The Association of Screen Time, Television in the Bedroom, and Obesity Among School-Aged Youth."

[5] Wethington, Pan, and Sherry.

[6] "American Academy of Pediatrics Announces New Recommendations for Children's Media Use."

[7] "American Academy of Pediatrics Announces New Recommendations for Children's Media Use."

[1] Spruijt-Metz et al., "Behavioral Contributions to the Pathogenesis of Type 2 Diabetes."

[2] Yaggi, Araujo, and McKinlay, "Sleep Duration as a Risk Factor for the Development of Type 2 Diabetes."

[3] Buxton and Marcelli, "Short and Long Sleep Are Positively Associated with Obesity, Diabetes, Hypertension, and Cardiovascular Disease among Adults in the United States."

[4] "Impact of the Built Environment on Health."

instead of indoors found that participants tended to walk faster outdoors and reported lower rates of perceived exertion.[1] Another study found that people who reported using trails at least once per week were two times more likely to meet physical activity requirements than those who reported rarely or never using trails.[2] In Marion County, when asked if they felt safe in their neighborhood, nearly one in ten (9%) residents responded that they "somewhat disagreed" or "strongly disagreed." Additionally, more than one in four (26%) residents reported that their neighborhood did not have sidewalks. These results suggest that many residents might not feel safe to engage in outdoor activities in their neighborhood.

OBESOGENS

Obesogens are a type of endocrine disruptor (chemicals that are toxic to humans and interfere with the body's hormone functions) that are involved in weight gain.[1] Obesogens have not been found to directly cause obesity but are believed to increase sensitivity to gaining weight, particularly if exposure occurs during development.[2] Obesogens can increase fat storage capacity, change how the body perceives feeling hunger or fullness, and increase the effects of high fat and sugar diets.[3] Below are some chemicals found in everyday life that might be obesogens.[4]

· Cigarette smoke
· Air pollution
· Bisphenol A (BPA)
· Some pesticides

SOCIAL DETERMINANTS OF HEALTH EQUITY

There are certain social and economic factors, beyond an individual's control, that make one more susceptible to developing conditions and diseases. The sections below detail how income level, gender, educational attainment, and race/ethnicity can increase the likelihood of developing diabetes and obesity.

INCOME

Individuals with lower incomes are much more likely to develop diabetes than those with higher incomes. Adults in the lowest income households were 2.5 times more likely to have diabetes than adults in the highest income households (**Figure 31**). Research suggests that living in poverty at

[1] Focht, "Brief Walks in Outdoor and Laboratory Environments."

[2] Librett, Yore, and Schmid, "Characteristics of Physical Activity Levels among Trail Users in a U.S. National Sample."

[1] "Obesogens."   [2] "Obesogens."   [3] "Obesogens."   [4] "Obesogens."

any point in time can increase an individual's risk of developing diabetes by 26%.[1] A study from the American Diabetes Association found that individuals with diabetes who were experiencing food insecurity were more likely to report difficulty in following a diabetes-appropriate diet than those who did not experience food insecurity.[2]

On the other hand, the association between income and obesity in Marion County is less strong. About 30% to 45% of Marion County adults at all income levels were obese, and adults in the lowest income households were only about 1.4 times more likely to have diabetes than adults in the highest income households (**Figure 32**). This is consistent with national data, which suggest that counties with a poverty rate of greater than 35% have obesity rates 1.45 times greater than wealthy counties.[3]

Figure 31: Diabetes prevalence by FPG Marion County, 2018
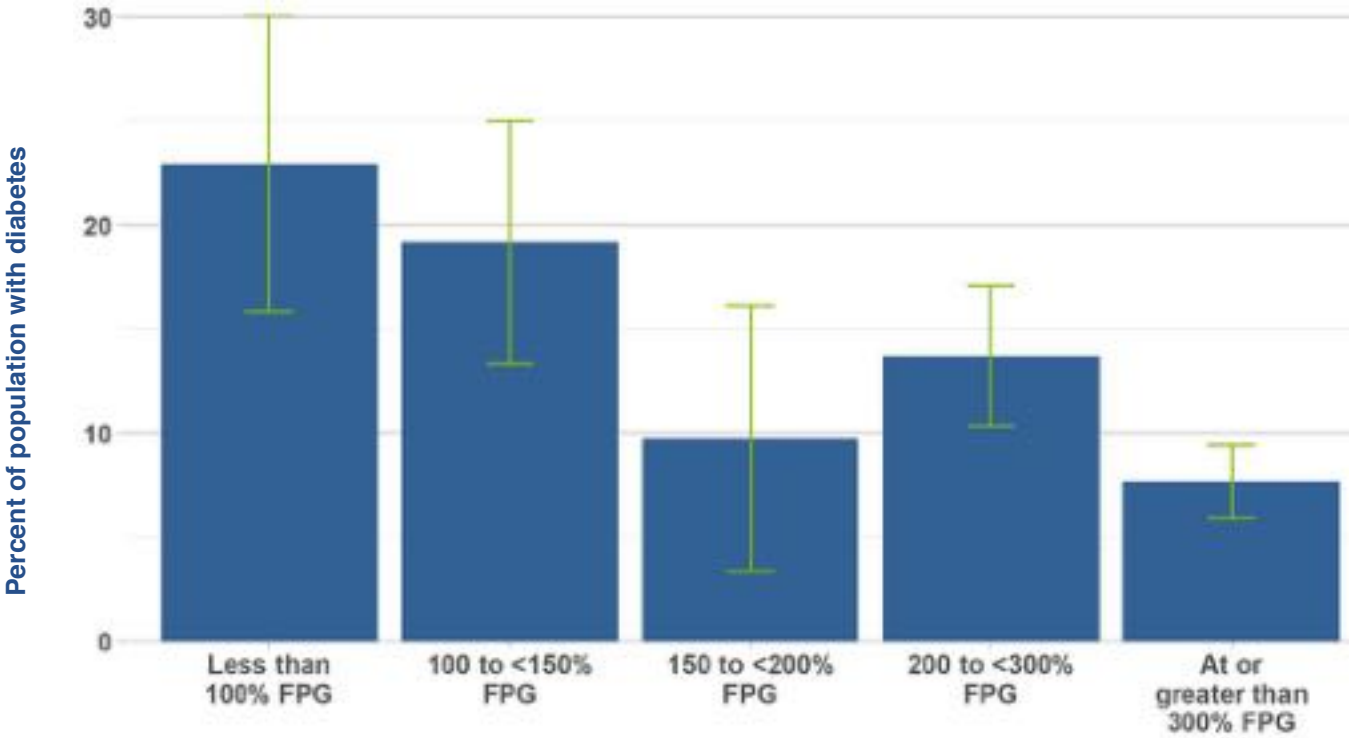
Household income relative to the federal poverty level

Data Source: 2018 Marion County Community Health Assessment Survey, DR3857

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[1] "Poverty a Leading Cause of Type 2 Diabetes, Studies Say."

[2] Seligman et al., "Food Insecurity and Glycemic Control Among Low-Income Patients With Type 2 Diabetes."
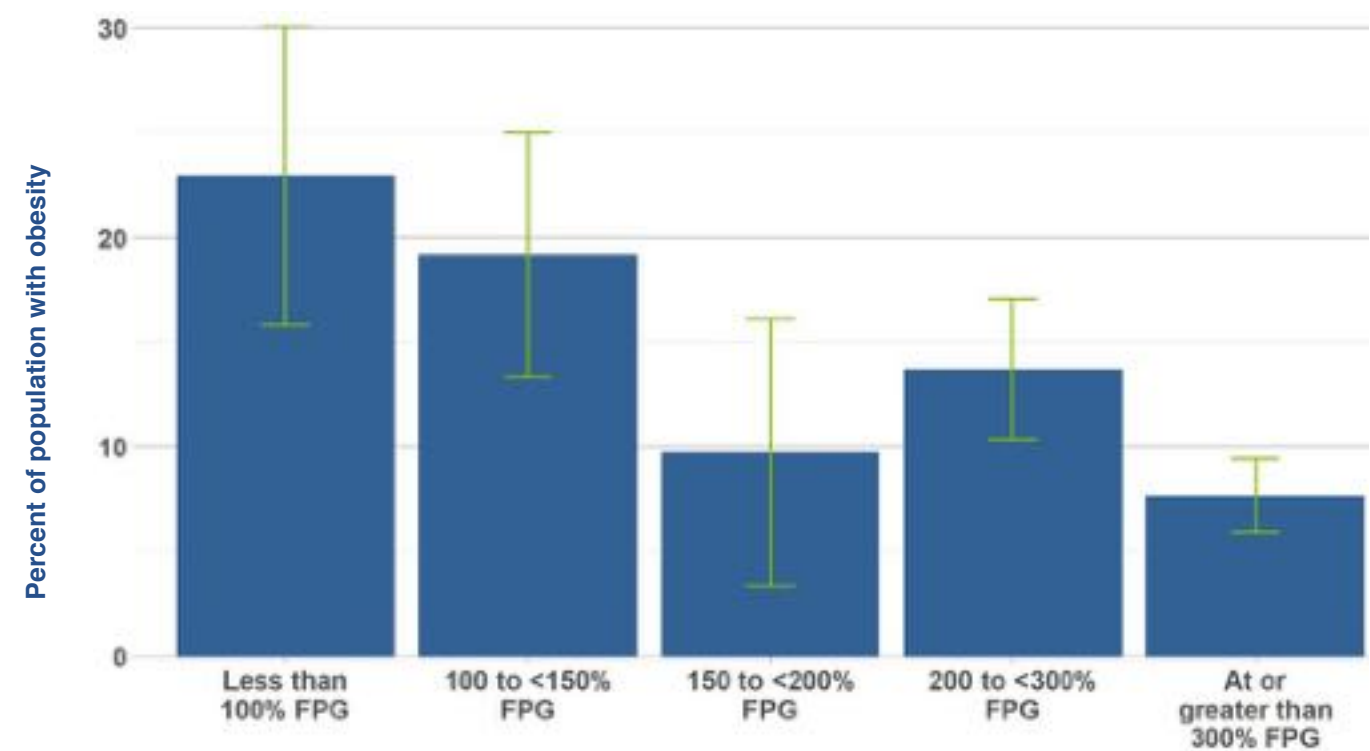
[3] Levine, "Poverty and Obesity in the U.S."

Figure 32: Obesity prevalence by FPG, Marion County, 2018

Percent of population with obesity (y-axis)

30
20
10
0

Less than 100% FPG | 100 to <150% FPG | 150 to <200% FPG | 200 to <300% FPG | At or greater than 300% FPG

Household income relative to the federal poverty level

Data Source: 2018 Marion County Community Health Assessment Survey, DR3857

GENDER AND RACE/ETHNICITY

Figure 33 depicts Marion County diabetes and obesity prevalence by sex. Diabetes rates were similar between men and women. **Figure 34** shows the diabetes prevalence among white, black, and Latino Marion County residents. Blacks reported almost twice the diabetes prevalence of whites. CDC estimates from 2011 showed that, compared to non-Hispanic whites, the risk of being diagnosed with diabetes was 66% higher among Hispanics, and 77% higher among non-Hispanic blacks.[1]

Figure 35 shows the overweight and obesity prevalence rates by race/ethnicity and sex. About five out of ten black females and Hispanic males were obese, compared to about four of ten white or Hispanic females, and about three in ten white or Hispanic males. Nationally, among children and adolescents ages 2-17, Hispanics were found to have a higher prevalence of obesity than any other racial or ethnic group.[2]

[1] CDC, "National Diabetes Fact Sheet."   [2] "Childhood Obesity Facts | Overweight & Obesity | CDC."

Figure 33: Diabetes prevalence by sex, Marion County, 2018
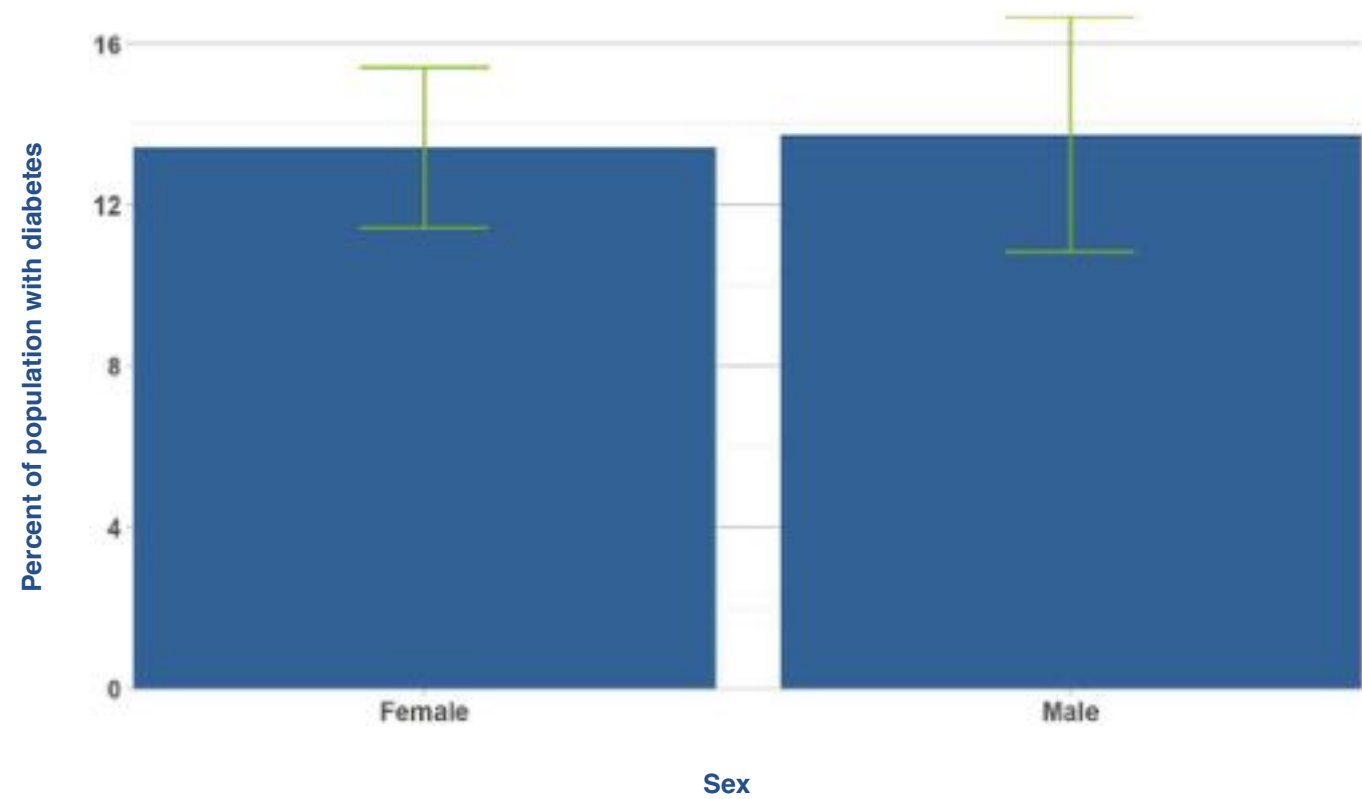
Data Source: 2018 Marion County Community Health Assessment Survey, DR3857

Figure 34: Diabetes prevalence by race/ethnicity, Marion County, 2018
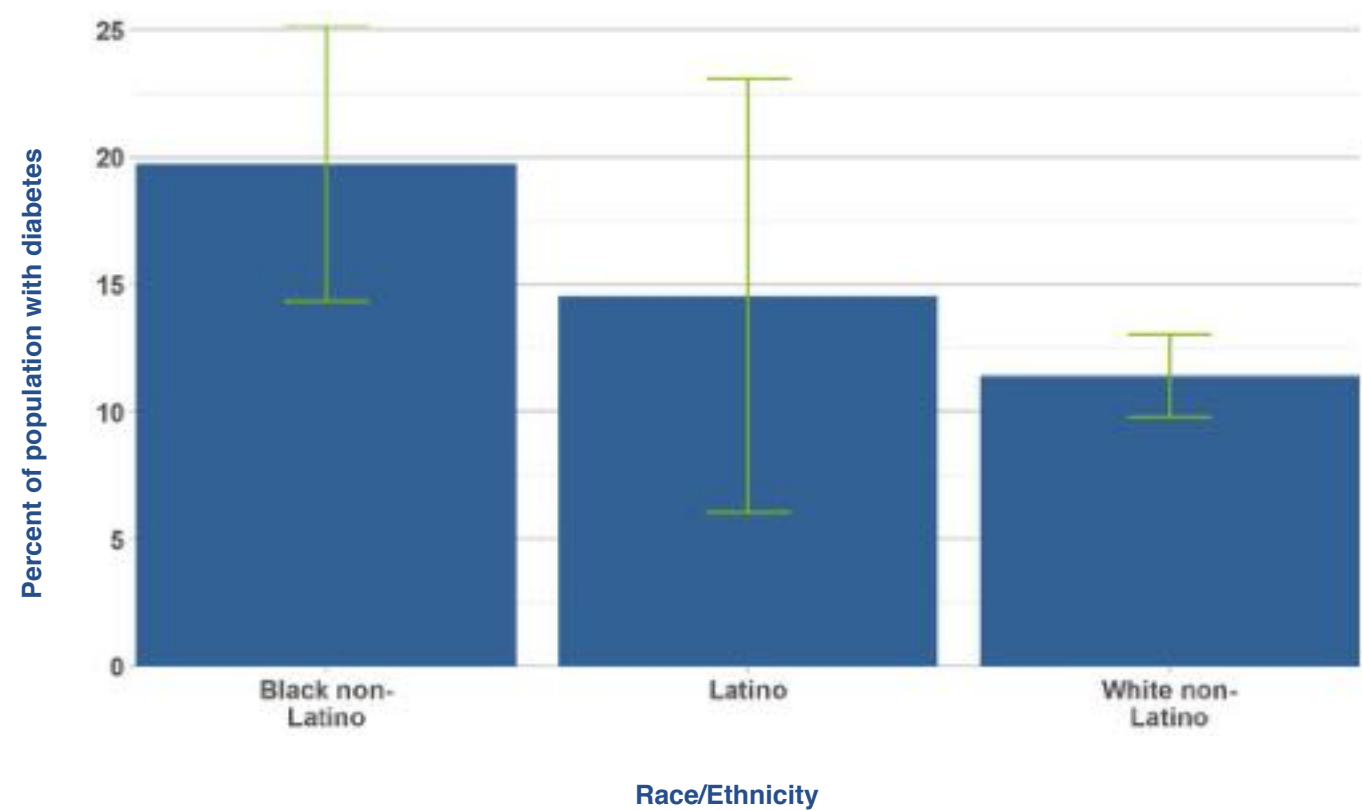
Data Source: 2018 Marion County Community Health Assessment Survey, DR3857

Figure 35: Obesity prevalence by race/ethnicity and sex, Marion County, 2018
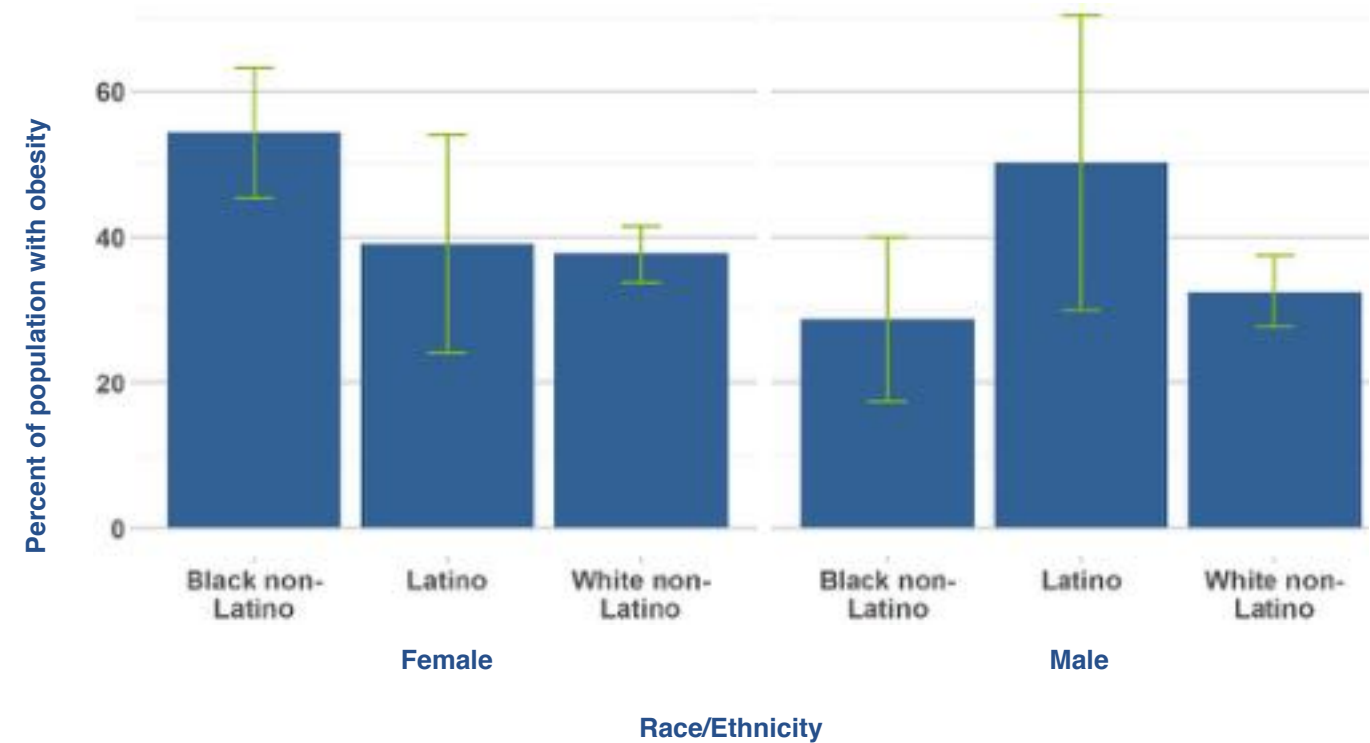
Data Source: 2018 Marion County Community Health Assessment Survey, DR3857

EDUCATION

Similar to household income, education is strongly related to having diabetes, but not to being obese. **Figure 36** and **Figure 37** display the prevalence rates of diabetes, and overweight or obesity among the various levels of educational attainment in Marion County. **Figure 36** clearly shows a decrease in the rate of diabetes diagnosis as level of education increases, with persons without a high school degree having diabetes three times as often as person with a college degree. This is consistent with CDC's 2017 National Diabetes Statistic Report results. However, **Figure 37** indicates that education has much less association with obesity.

Figure 36: Diabetes prevalence by educational attainment, Marion County, 2018

Data Source: 2018 Marion County Community Health Assessment Survey, DR3857

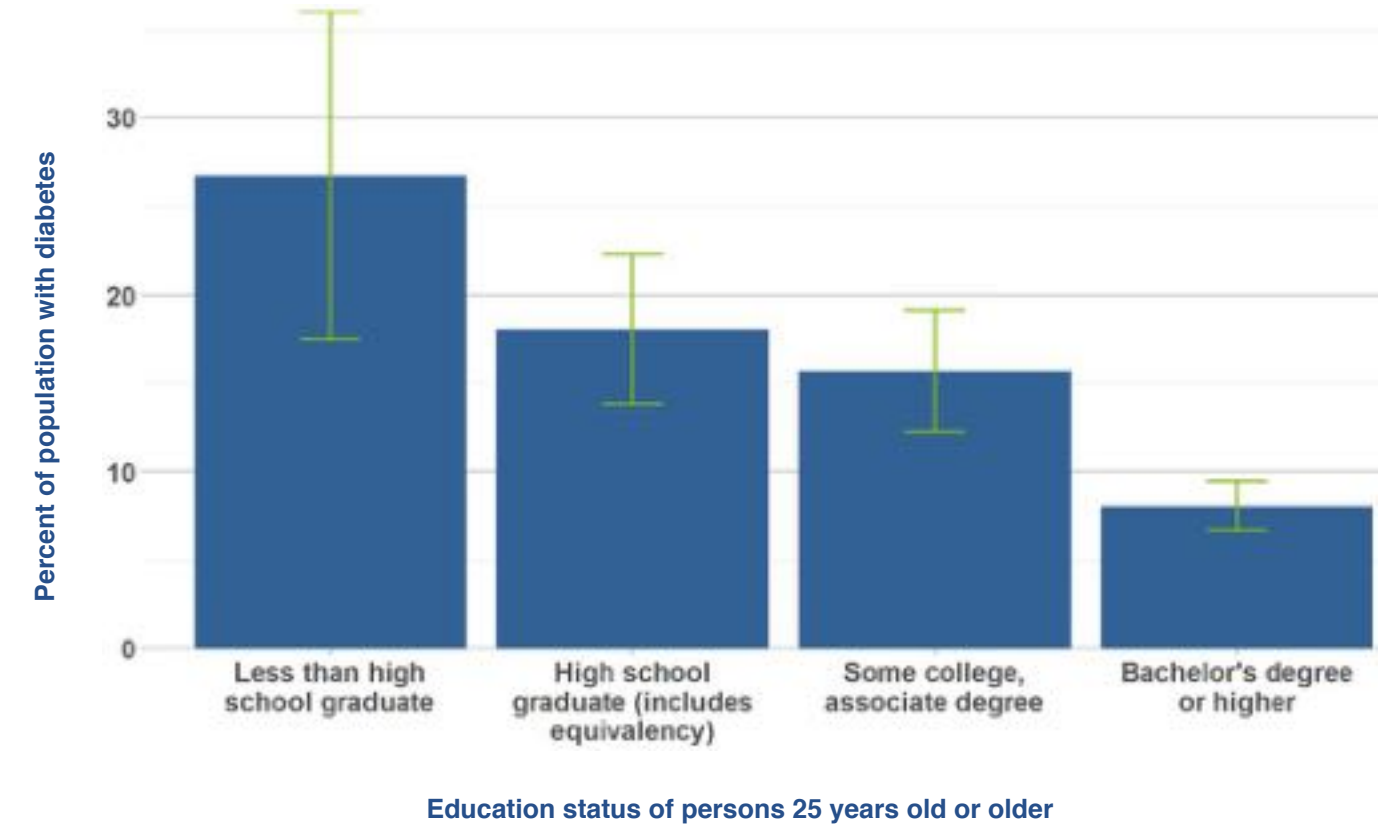**Figure 37: Obesity prevalence by educational attainment, Marion County, 2018**

Education status of persons 25 years old or older
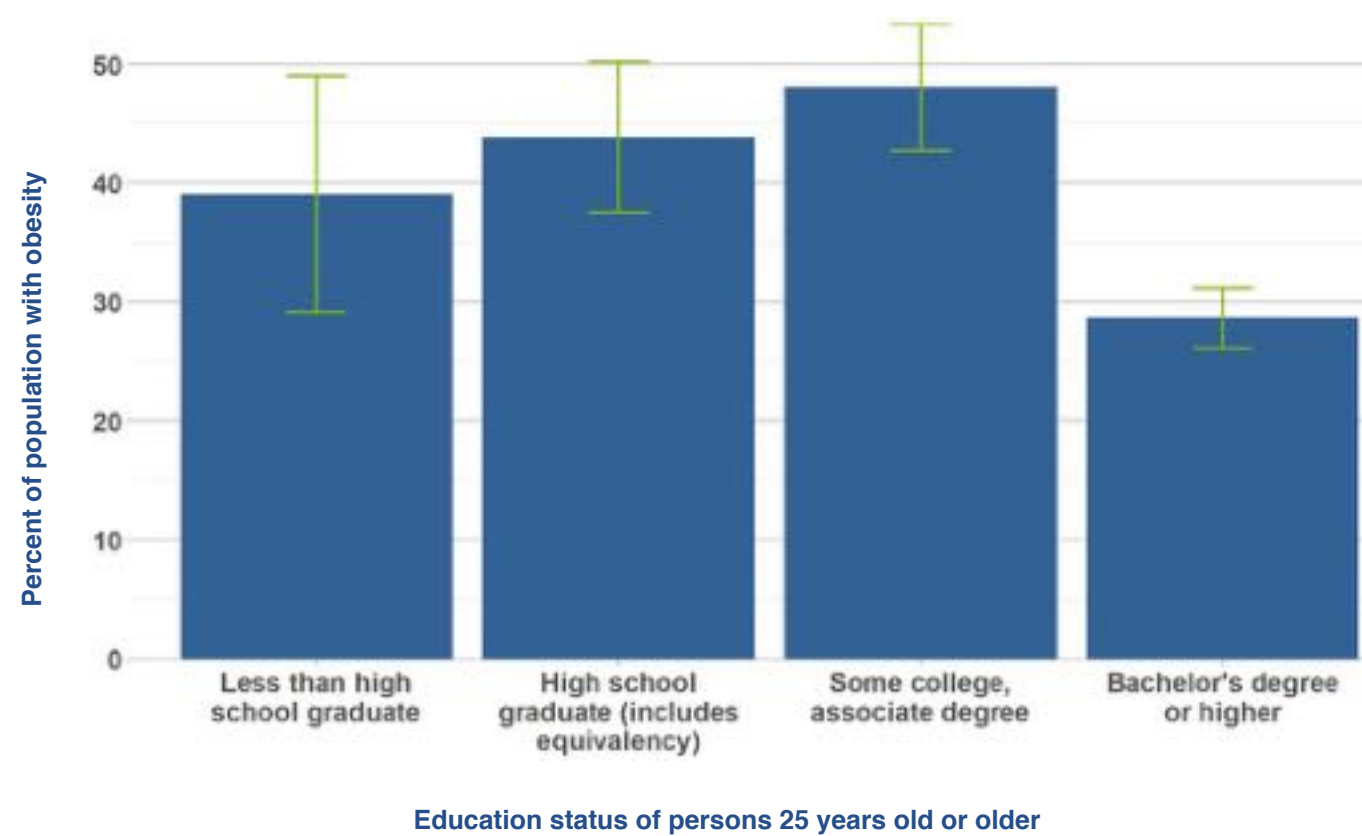
Data Source: 2018 Marion County Community Health Assessment Survey, DR3857

Impacts

Diabetes and obesity lead to many negative outcomes among individuals and populations. Each contributes to negative health consequences, and therefore increased medical costs, decreased years of life, and detrimental economic impacts. The following sections describe many of the impacts of diabetes and obesity for individuals and the community.

OBESITY, DIABETES AND OTHER CHRONIC CONDITIONS

Obesity and diabetes are not only inherently detrimental to a person's health, but also greatly increase the risk of developing other chronic diseases and conditions. Individuals who were obese

as children are two times more likely to develop adult hypertension, coronary heart disease, and stroke.[1] Another study found that 6% of all cancers diagnosed in 2007 could be attributed to obesity.[2] Being at an unhealthy weight in mid-life increases the risk of developing Alzheimer's disease by 35%, vascular dementia by 33%, and any other type of dementia by 26%.[3]

Table 8 depicts how obesity and diabetes are associated with other chronic health problems. The first column represents the overall percentage of Marion County residents who have ever been told that they have any of these conditions. The second and third columns represent the

[1] Reilly and Kelly, "Long-Term Impact of Overweight and Obesity in Childhood and Adolescence on Morbidity and Premature Mortality in Adulthood."

[2] Polednak, "Estimating the Number of U.S. Incident Cancers Attributable to Obesity and the Impact on Temporal Trends in Incidence Rates for Obesity-Related Cancers."

[3] Anstey et al., "Body Mass Index in Midlife and Late-Life as a Risk Factor for Dementia."

prevalence rate of each of obesity and diabetes among person with each condition. The "Overall" row shows the county-wide prevalence of obesity and diabetes, for reference. For Marion County adults overall, about four out of ten (38%) are obese, but about five in ten are obese among those with any of the listed conditions (between 46% and 53%, depending on the condition). The relation between the listed conditions and diabetes is ever stronger; persons with any of the conditions except depression are at least twice as likely to have diabetes as is the general Marion County population.

Table 8: Proportion of Marion County adults with obesity and/or diabetes along with other chronic conditions

Condition	% with condition	Obese (95% CI)	Diabetes (95% CI)
Overall	N/A	38% (34.9 - 40.5)	14% (11.8 - 15.2)
Asthma	10% (8.3 - 11.6)	50% (41.4 - 58.9)	27% (19.9 - 34.7)
Depression	26% (23.3 - 29.1)	46% (40.3 - 51.0)	17% (12.6 - 20.6)
High cholesterol	32% (29.4 - 34.9)	50% (45.7 - 55.0)	32% (27.9 - 36.5)
Heart conditions	9% (7.2 - 10.0)	46% (38.0 - 54.8)	41% (32.4 - 50.2)
High blood pressure	34% (31.4 - 36.9)	53% (48.9 - 56.9)	33% (29.3 - 37.1)

Data Source: 2018 Marion County Community Health Assessment Survey, DR3857

MORTALITY

Nationally, diabetes was the 7th leading cause of death in 2017, accounting for 80,058 deaths.[1] In Marion County, diabetes was the 6th leading cause of death in 2017, with a mortality rate of 26.9 per 100,000. Obesity in itself is rarely recorded as an underlying cause of death; however, research suggests that 2.8 million adult deaths each year are attributable to overweight and obesity, making it the 5th leading risk for worldwide deaths.[2] Similarly, life expectancy is reduced by 5-20 years for an individual who is severely obese.[3]

ECONOMIC BURDEN

Diabetes and obesity negatively impact the population as a whole by increasing health costs and decreasing productivity in the workforce. The American Diabetes Association found that the total cost of diagnosed diabetes in the United States in 2017 was $327 billion. Of that, $237 billion accounted for direct medical costs, and $90 billion accounted for reduced productivity.[4] Among individuals diagnosed with diabetes, average medical expenses were 2.3 times higher than for those who did not have diabetes.[5]

Obesity is one of the greatest burdens to preventable health care costs in the United States.[6] The estimated national cost of obesity is between $147 billion to $210 billion per year.[7] Between work absenteeism and decreased productivity, it is estimated that obesity costs employers $506 per obese employee per year.[8] Adults with obesity spend 42% more on health care costs than those at a healthy weight.[9]

[1] National Center for Health Statistics, "Diabetes."

[2] "Obesity Statistics."

[3] Fontaine et al., "Years of Life Lost Due to Obesity."

[4] Drive, Arlington, and Va 22202 1-800-Diabetes, "Statistics About Diabetes."

[5] Drive, Arlington, and Va 22202 1-800-Diabetes.

[6] "The Healthcare Costs of Obesity."

[7] Cawley and Meyerhoefer, "The Medical Care Costs of Obesity."

[8] Gates et al., "Obesity and Presenteeism."

[9] Finkelstein et al., "Annual Medical Spending Attributable to Obesity."

Solutions

TREATMENT AND MANAGEMENT OF SYMPTOMS AMONG INDIVIDUALS

The evidence-based methods for preventing and controlling obesity and diabetes are similar. To be cured of obesity, a person must lose enough weight in order to reduce their BMI to less than 30 (less than 26 to be considered a normal weight). A 5-7% decrease in body weight can prevent or delay Type 2 diabetes among high-risk individuals.[1] People diagnosed with diabetes cannot be cured, but can manage their symptoms in order to control the disease. One of the most effective ways to control diabetes is to lose weight in order to achieve a normal weight. A study monitoring obese patients with diabetes found that even a modest weight loss (5% of body weight) resulted in decreased fasting blood glucose and hemoglobin A1c concentrations after one year.[2] Persons with diabetes also need to control their blood glucose level. If this cannot be achieved with exercise and healthy eating, medication may be needed. Below are some of the behavioral changes and medications that are effective in treating obesity and controlling diabetes.

· **Physical activity —** Physical activity involves increased energy expenditure and will generally lead to weight loss, unless more calories are consumed than expended.[3] It can help control blood glucose levels, weight, blood pressure, and cholesterol.[4] The American Diabetes Association recommends that patients with diabetes reduce the amount of daily sedentary behavior time, break up long periods of sitting with light activity every 30 minutes, and increase overall exercise and physical activity.[5] Aerobic exercise is associated with lower mortality risks among patients with diabetes.[6] Resistance training is associated with improved glycemic control, insulin resistance, fat mass, blood pressure, and lean body mass among individuals with Type 2 diabetes.[7]

· **Dietary changes —** In order to lose weight, a person needs to consume fewer calories from foods and beverages than they expend throughout the day. Eating smaller portions and healthy foods can help prevent or delay Type 2 diabetes.[8] The National Institute of Diabetes and Digestive and Kidney Diseases recommends eating a variety of nutrient-dense, high fiber foods like fruits, vegetables, and whole grains, and decreasing consumption of foods and beverages with added sugars and salt, and refined carbohydrates in order to follow a healthy eating plan and lose weight.[9]

· **Bariatric surgery —** Bariatric surgery makes the stomach smaller and is used to treat extreme obesity when lifestyle changes are ineffective.[10] A large retrospective cohort study of persons

[1] "National Diabetes Prevention Program | Diabetes | CDC."

[2] Wing et al., "Long-Term Effects of Modest Weight Loss in Type II Diabetic Patients."

[3] Boston and Ma 02115 +1495-1000, "Physical Activity."

[4] "Get Active! | Living with Diabetes | Diabetes | CDC."

[5] Colberg et al., "Physical Activity/Exercise and Diabetes."

[6] Sluik et al., "Physical Activity and Mortality in Individuals With Diabetes Mellitus."

[7] "Gordon: Resistance Training Improves Metabolic Health... - Google Scholar."

[8] "Eat Well! | Living with Diabetes | Diabetes | CDC."

[9] "Eating & Physical Activity to Lose or Maintain Weight | NIDDK."

[10] "Bariatric Surgery | NIDDK."

with obesity found a 40% decrease in long-term mortality from any cause in the group who received gastric bypass survey (a type of bariatric surgery) compared to those who did not have surgery.[1] The cause-specific mortality rate decreased by 92% for diabetes, 56% for coronary artery disease, and 60% for cancer for the group that received surgery.[2] Another study found an 89% decrease in the mortality rate among patients with obesity who had surgery compared to those who had not, after a mean follow-up of 2.6 years.[3]

· **Insulin —** Insulin is a hormone secreted by the pancreas to remove glucose from the blood.[4] A person with Type 1 diabetes must use insulin in order to control their diabetes.[5] If a person with Type 2 diabetes is not able to control the disease with lifestyle changes, their doctor may prescribe injectable insulin to help them meet their target blood glucose levels.[6]

SYSTEMS APPROACH

Although it is important to address individual behaviors that can lead to obesity and diabetes, in order to see significant, county-wide decreases, system-level changes are needed. Research suggests that education, without environmental or economic changes, has little influence on behavior.[7] Below are some evidence-based, system-level interventions recommended by the Community Preventative Services Task Force (CPSTF) to control and prevent diabetes and obesity.

· **Nutrition and physical activity promotion programs —** These are programs that encourage people to improve their nutritional choices and increase physical activity. They have been associated with improved blood pressure, glucose levels, and weight.[8]

· **Multicomponent interventions to increase the availability of healthier foods and beverages at schools —** These interventions involve making healthier foods and beverages more affordable, placing them where they are easy to select, promoting healthier choices, and decreasing access to less healthy options.[9] This has been found to be cost-effective and to reduce or maintain the rate of obesity.[10]

· **Interventions to reduce screen time —** These behavioral interventions involve teaching children self-management skills to reduce screen time and can include ways to increase physical activity and improve nutrition through one or more of the following components: classroom-based education, tracking and monitoring, coaching or counseling sessions, family-based or peer social support.[11]

[1] Adams et al., "Long-Term Mortality after Gastric Bypass Surgery."

[2] Adams et al.

[3] Christou et al., "Surgery Decreases Long-Term Mortality, Morbidity, and Health Care Use in Morbidly Obese Patients."

[4] Drive, Arlington, and Va 22202 1-800-Diabetes, "Medication."

[5] Drive, Arlington, and Va 22202 1-800-Diabetes.

[6] Drive, Arlington, and Va 22202 1-800-Diabetes.

[7] Mozaffarian, "Dietary and Policy Priorities for Cardiovascular Disease, Diabetes, and Obesity – A Comprehensive Review."

[8] "Diabetes."

[9] "Obesity," February 14, 2017.

[10] "Obesity," February 14, 2017.

[11] "Obesity," October 15, 2016.

- **Worksite wellness programs —** These programs are designed to improve nutrition and physical activities in order to improve health outcomes among employees. These interventions can include information and education, or changes to the organizational structure to make health choices easier.[1]

- **Technology-supported coaching or counseling —** These interventions involve coaches or counselors using technology to educate and communicate with groups or individuals in order to help them lose weight or maintain their weight loss.[2]

- **Engaging community health workers —** A community health worker serves as a liaison between a community and health/social services to increase access to services and improve cultural competency.[3] These interventions include one-on-one or group sessions to provide education, coaching, and/or support to improve diabetes testing and monitoring, adherence to medications, nutrition and physical activity, and weight control.[4] These methods have been found to be cost-effective, improve glycemic and lipid control, and decrease health care use.[5]

- **Team-based care —** This involves a multidisciplinary team including the patient, the primary care provider, and one or more health professionals working together to control the patient's diabetes. The team will work to ensure that the patient receives appropriate tests and medications, manage their care and treatment, and improve lifestyle choices and quality of life.[6] These interventions have been found to increase the proportion of patients who reach target blood glucose, lipid, and blood pressure levels.[7]

- **Intensive lifestyle interventions[8] —** This involves assisting patients with Type 2 diabetes to change their nutrition habits and/ physical activity through ongoing counseling, coaching or individualized guidance. It requires patients to interact with program staff several times for a period of at least six months.[9] These interventions have been found to improve blood pressure and blood glucose.

Some of the solutions for diabetes control and prevention suggested at the CHA advisory meeting were increased funding for prevention programs, and screening for prediabetes. Some of the solutions for obesity prevention were to begin teaching healthy habits at a young age, improve nutrition standards for places that serve large populations such as schools, universities, and hospitals, and decrease barriers for all county residents to getting physical activity and fresh, nutritious food.

Current efforts

The Marion County Public Health Department (MCPHD), along with many local organizations, is working to increase and improve community resources in order for all Marion County residents to have the opportunity to maintain a healthy weight and prevent and control diabetes.

[1] "Obesity," April 16, 2014.

[2] "Obesity," April 16, 2014.

[3] "Community Health Workers."

[4] "Diabetes Management," July 18, 2017.

[5] "Diabetes Management."

[6] "Diabetes Management," March 29, 2017.

[7] "Diabetes Management."

[8] CDC, "What Works: Diabetes Prevention and Control Evidence-Based Interventions for Your Community."

[9] "Diabetes Management," December 12, 2016.

Below are some of the programs and initiatives in Marion County intended to address obesity and diabetes.

- **ABCs of Diabetes program —** The ABCs of Diabetes, accredited by the American Association of Diabetes Educators, is a four-part series that includes instruction on medications, nutrition, exercise, monitoring, complications and available community resources. It is free and open to anyone with diabetes, pre-diabetes, family members and friends.

- **Food/Policy, Systems, Environment —** Under this program, MCPHD supports the development of community and organization-based initiatives on the accessibility, affordability, and availability of healthy foods.

- **Heart Alive —** A cardiovascular screening and education program offered to businesses and organizations in Marion County to help individuals reduce their risk of cardiovascular disease. It provides an initial biometric screening for total cholesterol, HDL cholesterol, Hemoglobin A1C for diabetes, blood pressure and pulse, weight, height, and waist/hip measurements, with a series of classes on heart health, physical activity, and nutrition, ending with a follow-up 6 month biometric re-screening.

- **Racial and Ethnic Approaches to Community Health (REACH) —** REACH is a community-based program to address racial inequities in several public health issues in Marion County. The main purposes of REACH are to reduce barriers that prevent people from buying healthier foods, improve the built environment to increase physical activity, and connect the community with various clinics and health resources.

- **Sodium Reduction in Communities program —** This five-year program supports MCPHD to partner with government worksites, distributive meal programs providing meals to seniors and children, and their food service management companies to elevate the nutritional profile of food served in their institutions by reducing sodium and ensuring closer alignment with the USDA 2015-2020 Dietary Guidelines for Americans.

- **Top 10 Coalition —** MCPHD is part of this coalition of partnerships in central Indiana, formed by the YMCA of Greater Indianapolis, whose focus is to improve the health of Marion County residents by improving the built environment, increasing access to safe physical activity and better nutrition, and promoting smoke-free air and smoking cessation.[1]

- **WalkWays —** MCPHD participates in the WalkWays Initiative to create safe places in Indianapolis to walk, and to promote walking.

- **Jump IN —** Jump IN for Healthy Kids is a community-wide effort to promote opportunities for children and families to make healthy choices. Jump IN is implementing several evidence-based strategies to address the complex causes of childhood obesity. MCPHD works with JumpIN to promote the strategies and monitor their impact.

[1] "About – Top Ten."

FOOD ACCESS

Food security occurs "when all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences for an active and healthy life."[1] Lack of access to adequate food is often a symptom of poverty. One measure of food access is food deserts,[2] which are areas having many low-income households and no nearby, large grocery store. Approximately 21% of Marion County residents live within a food desert (see **Figure 38**).

Food-insecure households may qualify for the Supplemental Nutrition Assistance Program (SNAP), a federal program that provides nutrition assistance to low-income individuals and families.[3] **Figure 39** shows an increase in the number of Marion County households receiving SNAP benefits from 2012-2016.

It is difficult to quantify health outcomes that result from food insecurity. One national study of urban areas found that households reporting food insecurity without hunger were 75% more likely to report fair or poor child health than food-secure households. Households reporting food insecurity with hunger were 233% more likely to report fair or poor child health than food-secure households.[4] The study found that SNAP benefits decreased, but did not eliminate, the odds of fair or poor child health in food-insecure households. The odds of fair or poor child health increased by 2.1 times in food-insecure households not receiving SNAP benefits, as compared to an increase of 1.5 times in food-insecure households receiving SNAP benefits.[5]

For additional information on food access in Marion County, visit http://indyindicators.iupui.edu/advanced.aspx?qs_terms=1356&qs_start=2012&qs_end=2018.

Figure 38: Food deserts by Marion County census tract
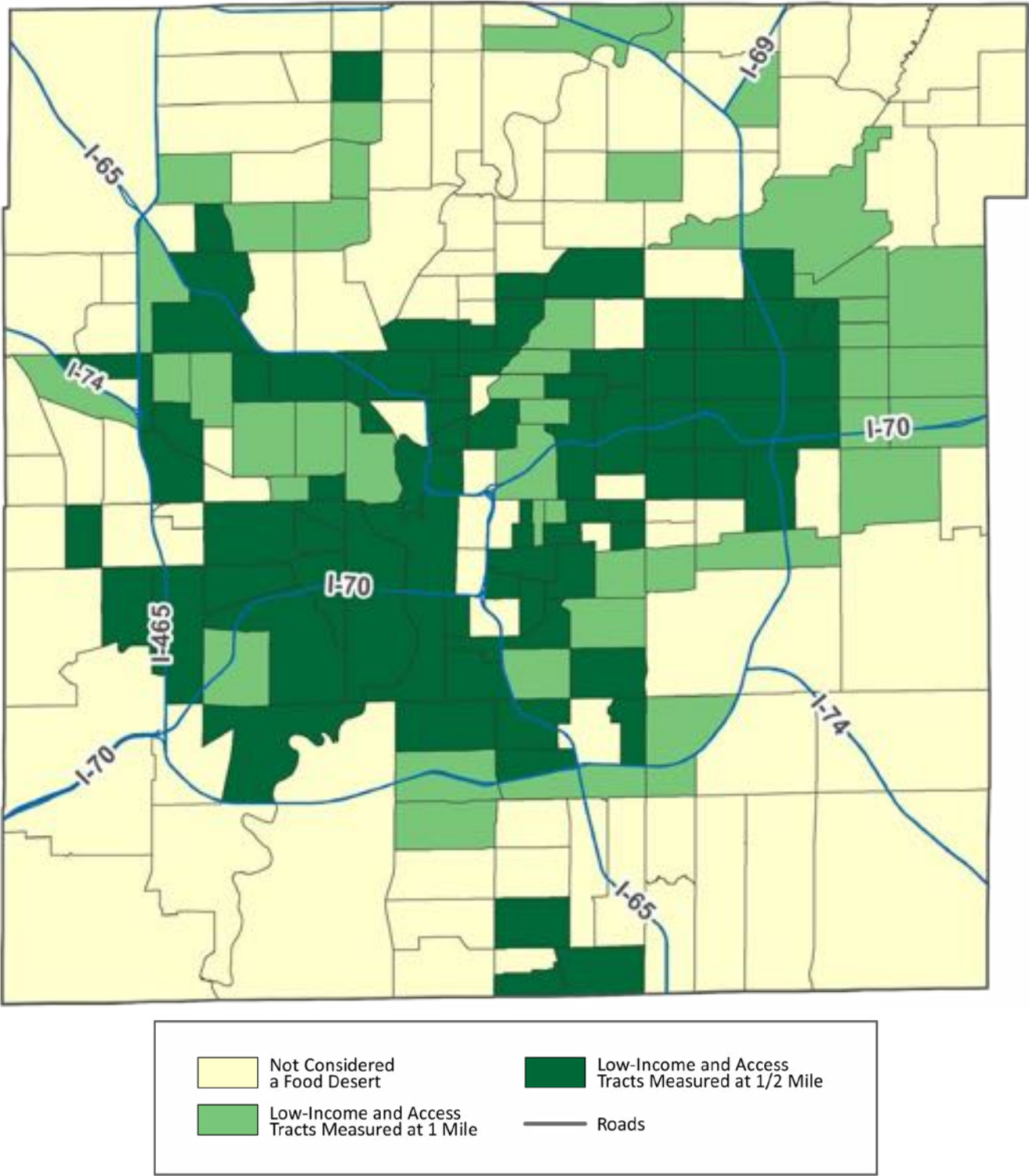
Data Source: USDA, Food Access Research Atlas, 2015, DR3576

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[1] Leroy et al., "Measuring the Food Access Dimension of Food Security."

[2] A food desert is a low-income census tract in which at least 500 people, or at least 33% of the population, live more than 1 mile from the nearest supermarket, supercenter, or large grocery store. - United States Department of Agriculture, "USDA ERS - Documentation."

[3] "Supplemental Nutrition Assistance Program (SNAP) | Food and Nutrition Service."

[4] Cook et al., "Food Insecurity Is Associated with Adverse Health Outcomes among Human Infants and Toddlers."

[5] Cook et al.

Figure 39: Number of Marion County SNAP households, 2010-2017
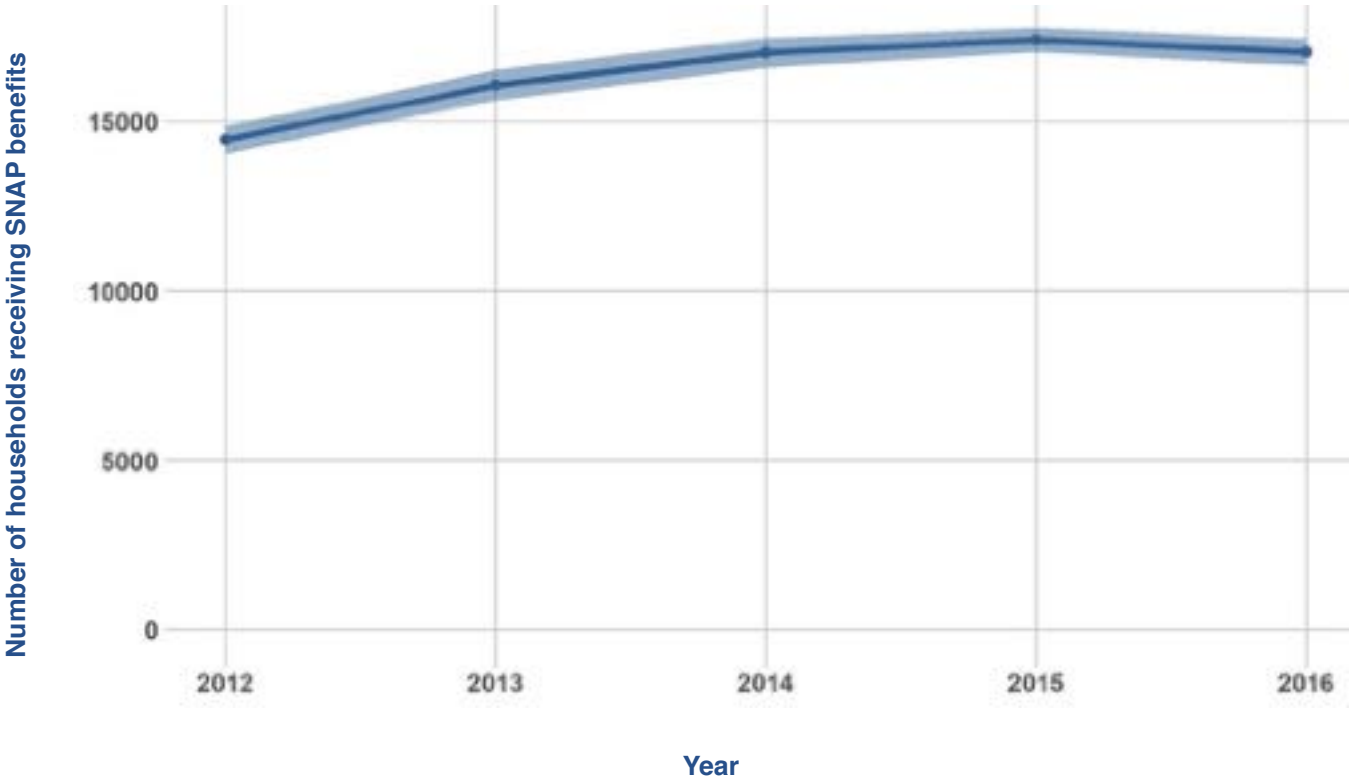
Data Source: 2012-2016 ACS 5-Year Estimates, DR3792

For more information about food access in Marion County, see the Indy Hunger Network, https://www.indyhunger.org.

Health care access is the ease with which an individual can obtain health services. The elements of health care access are health insurance coverage, the services available, and the timeliness of service delivery. When health care access is limited, there are increased delays in receiving care, later diagnosis of health conditions, increased financial burdens, and increases in untreated health complications, preventable hospitalizations--even premature deaths.[1]

In Marion County, the percentage of the uninsured population has decreased slightly, from about 18% in 2012 to about 14% in 2018 (**Figure 40**).[2] However, many of the county's residents have no transportation (in the central part of the county, up to 38% of homes may have no vehicle), and bus routes are not always convenient or timely for transportation from home to medical provider (**Figure 41**).[3]

Marion County residents with lower incomes are less likely to have health coverage; 30% of those who make less than $15,000 per year are uninsured compared to 5% of those who make more than $75,000 annually (**Figure 42**). The rate of those uninsured also differs by race or ethnicity; 48% of Hispanic residents had no insurance, compared to about 13% of black residents and 11% of white residents. Males are also less likely to have insurance; about 18% of males are uninsured compared to about 11% of females.[4]

In comparison with other locations that have released data on uninsured residents, Marion County has a higher proportion of uninsured than Indiana (8.1%), the U.S. as a whole (8.6%), Chicago (9.6%), Columbus, OH (7.1%), Denver (9.0%), and Detroit (8.2%).[5]

[1] National Center for Health Statistics, "Diabetes"; "Access to Health Services | Healthy People 2020."

[2] "Marion County, Indiana."

[3] "SAVI - Map."

[4] "CDC - BRFSS."

[5] "Big Cities Health Coalition."

Risk factors for Marion County residents having poor health care access include inadequate or no insurance coverage (14%), distance from or lack of health services, lack of culturally competent care including language barriers (6% of residents speak English less than very well), the high costs of health care ($9,782 per person in 2017), and unemployment (nationally 25% of unemployed are uninsured compared to 10% of those employed).[1]
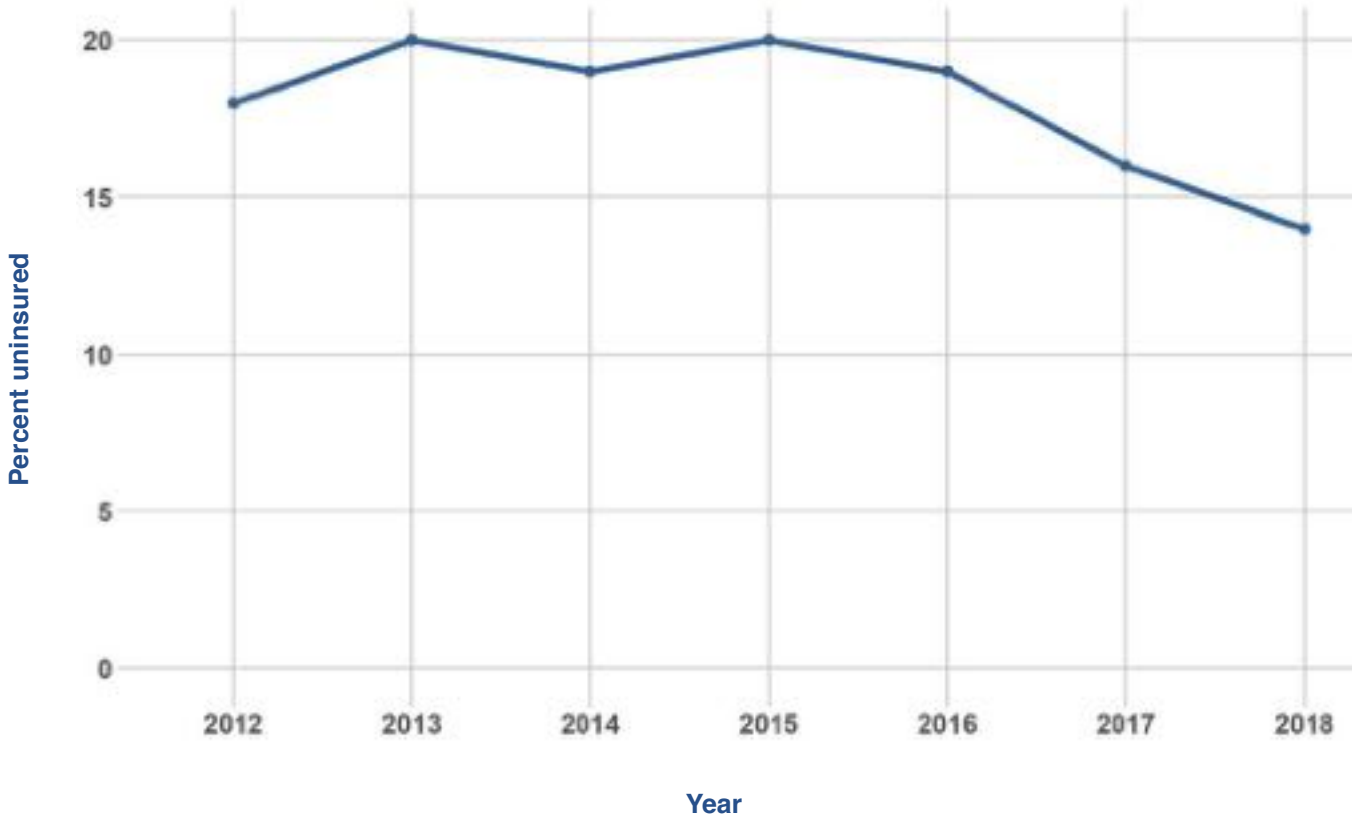
To decrease the impact of poor health care access, health insurance could be provided for unemployed and low-income individuals, as well as affordable or free transportation to health services, more access to translation services, and culturally competent care where appropriate.[2]

For additional information on health care access in Marion County, visit http://indyindicators.iupui.edu/advanced.aspx?qs_terms=1399&qs_start=2012&qs_end=2018.

Figure 40: Percent uninsured, Marion County, 2012-2018

Data Source: County Health Rankings and Roadmaps, 2018, DR3794

[1] Bureau, "American Community Survey - 2016 5 Year Estimate"; "Access to Health Services | Healthy People 2020"; "Seasonally Adjusted Metropolitan Area Estimates"; "Marion County, Indiana"; Bureau, "American Community Survey- 2016 5 Year Estimate"

[2] "Access to Health Services | Healthy People 2020"; "Goal 1: Improve Access to Quality Health Care and Services | Official Web Site of the U.S. Health Resources & Services Administration."

Figure 41: Percent households with no vehicle, Marion County, 2016

0 - 1%	11 - 20%	31 - 38%
2 - 10%	12 - 30%	Roads
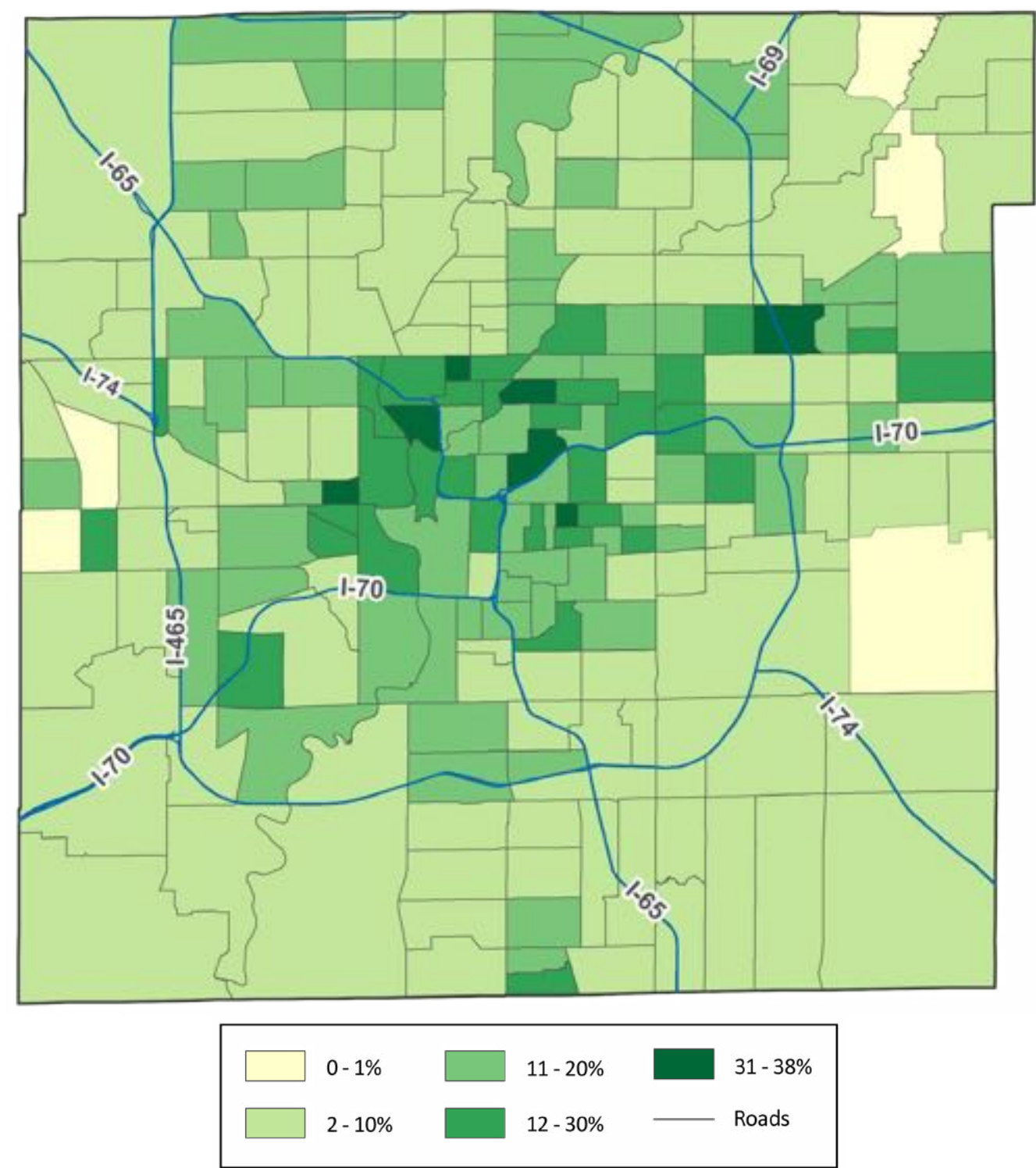
Data Source: SAVI, Polis Center, DR3869

Figure 42: Uninsured by income, Marion County, 2016

Data Source: CDC BRFSS 2016, DR3794

TOBACCO USE, E-CIGARETTES

Tobacco products contain harmful chemicals and nicotine, which can lead to addiction.[1] Smoking cigarettes increases the risk of developing coronary heart disease and stroke by two to four times.[2] Eighty percent of lung cancer deaths among women and 90% among men are attributable to smoking.[3] Men are 23 times more likely to develop lung cancer, and women 13 times more likely, 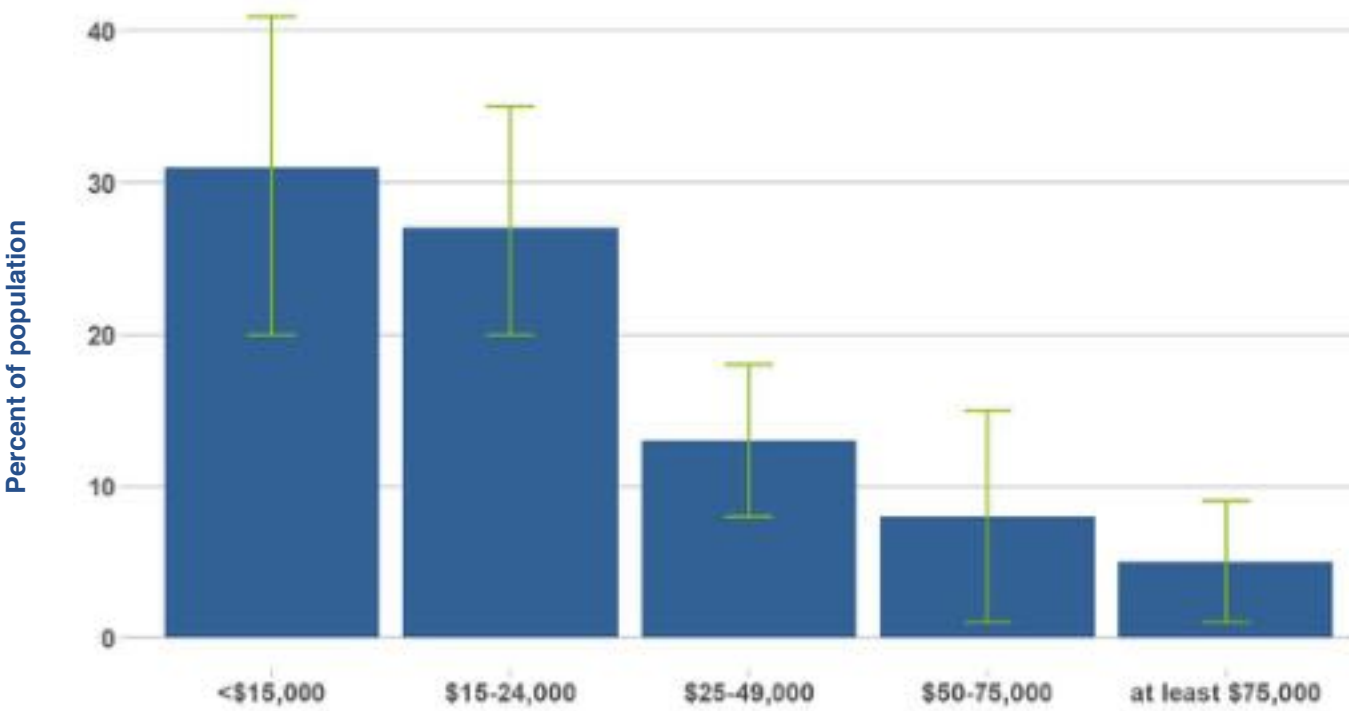if they smoke cigarettes.[4] A person who smokes cigarettes is 12-13 times more likely to die from chronic obstructive pulmonary disease (COPD) than a person who does not smoke.[5]

Figure 43 depicts the relatively stable trend in cigarette use in Marion County from 2012 to 2016. Among Indiana high school students, the use of cigarettes decreased more than 10% since 2011, but at 38% is still 6% higher than the national rate of 32%.[6] **Figure 44** shows that Marion County's smoking prevalence is lower than for some other Midwest cities, is similar to the prevalence for Indiana, and is higher than for the U.S. overall.

Smoking is not only dangerous to the people who smoke, but can also be deadly to others nearby. The CDC reports that roughly 41,000 adult deaths and 400 infant deaths can be attributed to secondhand smoke annually.

Figure 43: Adult smoking prevalence, Marion County, 2012-2016

Data Source: CDC BRFSS 2015, DR3855

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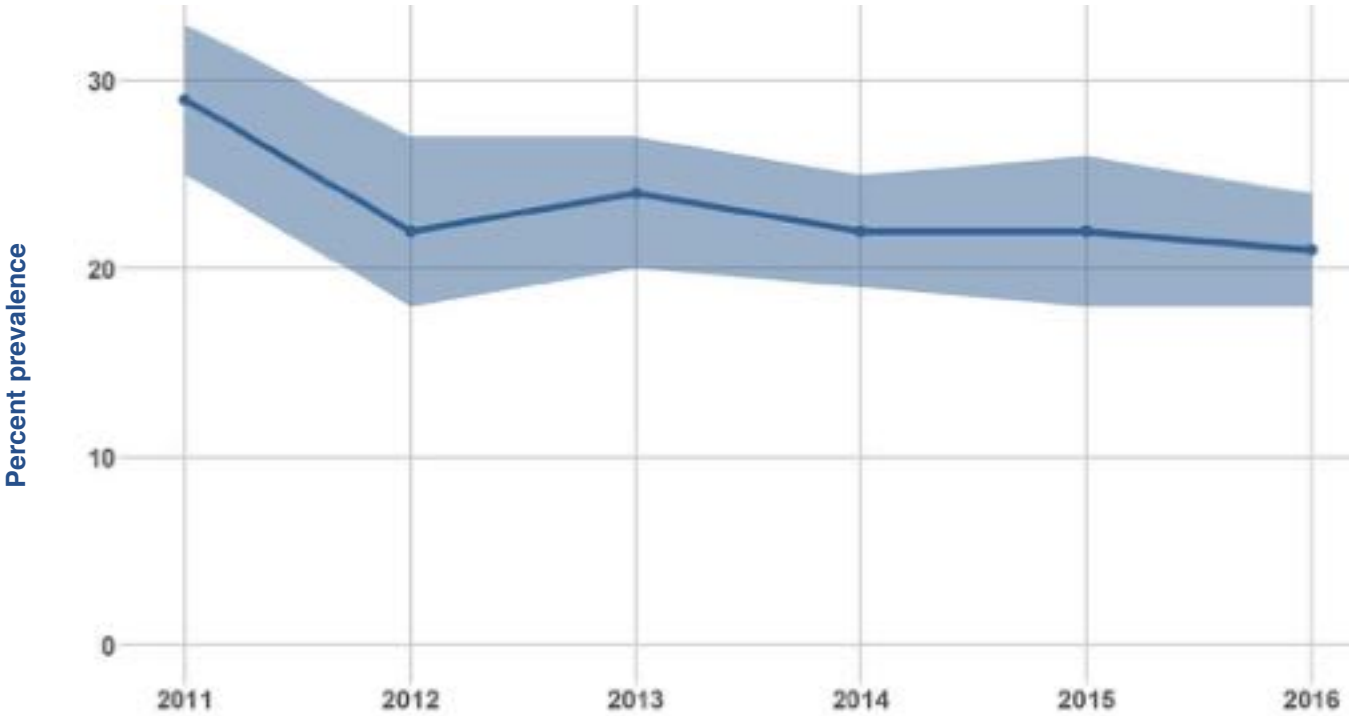
[1] Abuse, "Cigarettes and Other Tobacco Products."

[2] Health, "Smoking and Tobacco Use; 50th Anniversary Surgeon General's Report."
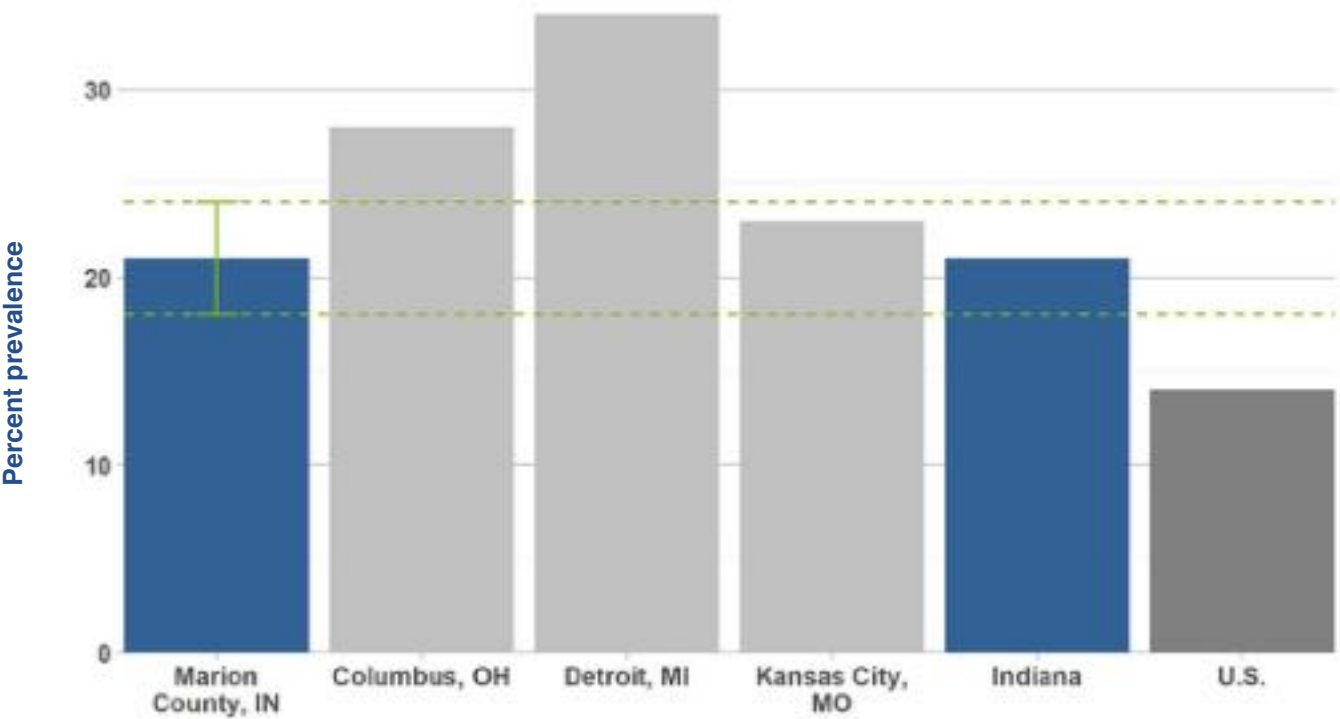
[3] Health.

[4] Health.

[5] Health.

[6] "Youth Online: High School YRBS - Home Page | DASH | CDC."

Figure 44: Cigarette use, Marion County vs. other locations 2015-2016

Data Source: Big Cities Health Inventory https://www.bigcitieshealth.org/our-members-big-cities-health-coalition-bchc, DR3786

E-cigarettes

E-cigarettes, or electronic cigarettes, deliver nicotine and tobacco through vapor rather than smoke.[1] While the use of traditional cigarettes is decreasing, use of e-cigarettes is increasing, especially among adolescents.[2] **Table 9** shows the prevalence rate of e-cigarette use among high school students in Indiana.[3] The use of e-cigarettes is higher among students who identify as gay, lesbian, or bisexual than students who identify as heterosexual, and is higher among Hispanic and white male students.[4]

Table 9: E-cigarette use at any time among high school students in Indiana, 2015

	Percent	95% confidence interval
Overall e-cigarette use		
Indiana	43.9	(39.5-48.5)
United States	43.2	(38.8-47.6)
Sexual orientation		
Lesbian, gay, or bisexual	52	(42.8-61.1)
Heterosexual	43.1	(38.9-47.5)

	Percent	95% confidence interval
Race/ethnicity and gender		
White	44.6	(39-50.2)
Male	48.4	(41.2-55.7)
Female	40.5	(34.9-46.4)
Black	39.8	(29.9-50.6)
Male	Unstable	Unstable
Female	39.6	(27.9-52.6)
Hispanic	48.5	(40.9-56.3)
Male	50.8	(38.2-63.3)
Female	45.3	(33.6-57.5)

Data Source: CDC BRFSS 2015, DR3855

[1] Abuse, "Cigarettes and Other Tobacco Products."
[2] "Youth Online: High School YRBS - Home Page | DASH | CDC."
[3] "Youth Online: High School YRBS - Home Page | DASH | CDC."
[4] "Youth Online: High School YRBS - Home Page | DASH | CDC."

HEALTH EQUITY

Health equity, according to the Robert Wood Johnson Foundation, means that everyone should have a fair and just opportunity to be healthier, without obstacles to health such as poverty, discrimination, and the consequences that result from those things, which include powerlessness and lack of access to jobs with fair pay, quality education and housing, safe environments, and health care.[1]

There is no single metric for health equity. Instead, health inequities affect most indicators in public health. Because life expectancy captures the impact of many health factors, we use it here to assess health equity within Marion County. Life expectancy at birth estimates the average age at death for a group of people.[2] For the ten years from 2007 to 2016, life expectancy for Marion County hovered between 77 and 78 years. The overall life expectancy in 2016 for all residents was 77.3 years. The overall U.S. life expectancy in 2016 was 78.6 years.[3] For white, non-Hispanic residents in Marion County in 2016 it was 78.3 years, while for black, non-Hispanic residents it was 73.7 years—a difference of 4.6 expected years of life.

From 2-5 years after a person quits smoking, their risk for stroke may decrease to nearly that of a person who has never smoked. Within 5 years, their risk of developing mouth, throat, esophageal and bladder cancer decreases by half, and within 10 years their lung cancer risk drops by half.[1] Treatment for tobacco addiction includes aids such as nicotine gum, nicotine patches, and medication assisted therapy. The Quit Line, Smoke-Free Indy, and the Truth Initiative are some of the local programs to help prevent tobacco use and exposure, and aid in cessation.

For more information about tobacco-related health issues in Marion County, see http://indyindicators.iupui.edu/advanced.aspx?qs_terms=968&qs_start=2012&qs_end=2018.

[1] Centers for Disease Control and Prevention (US), National Center for Chronic Disease Prevention and Health Promotion (US), and Office on Smoking and Health (US), How Tobacco Smoke Causes Disease.

[1] "What Is Health Equity?"   [3] Kochanek.
[2] Kochanek, "Mortality in the United States, 2016."

Figure 45: Life expectancy by ZIP Code, Marion County, 2016

70 - 73.9 78.0 - 81.9 Life expectancy not calculated
74.0 - 77.9 82 - 86 Roads
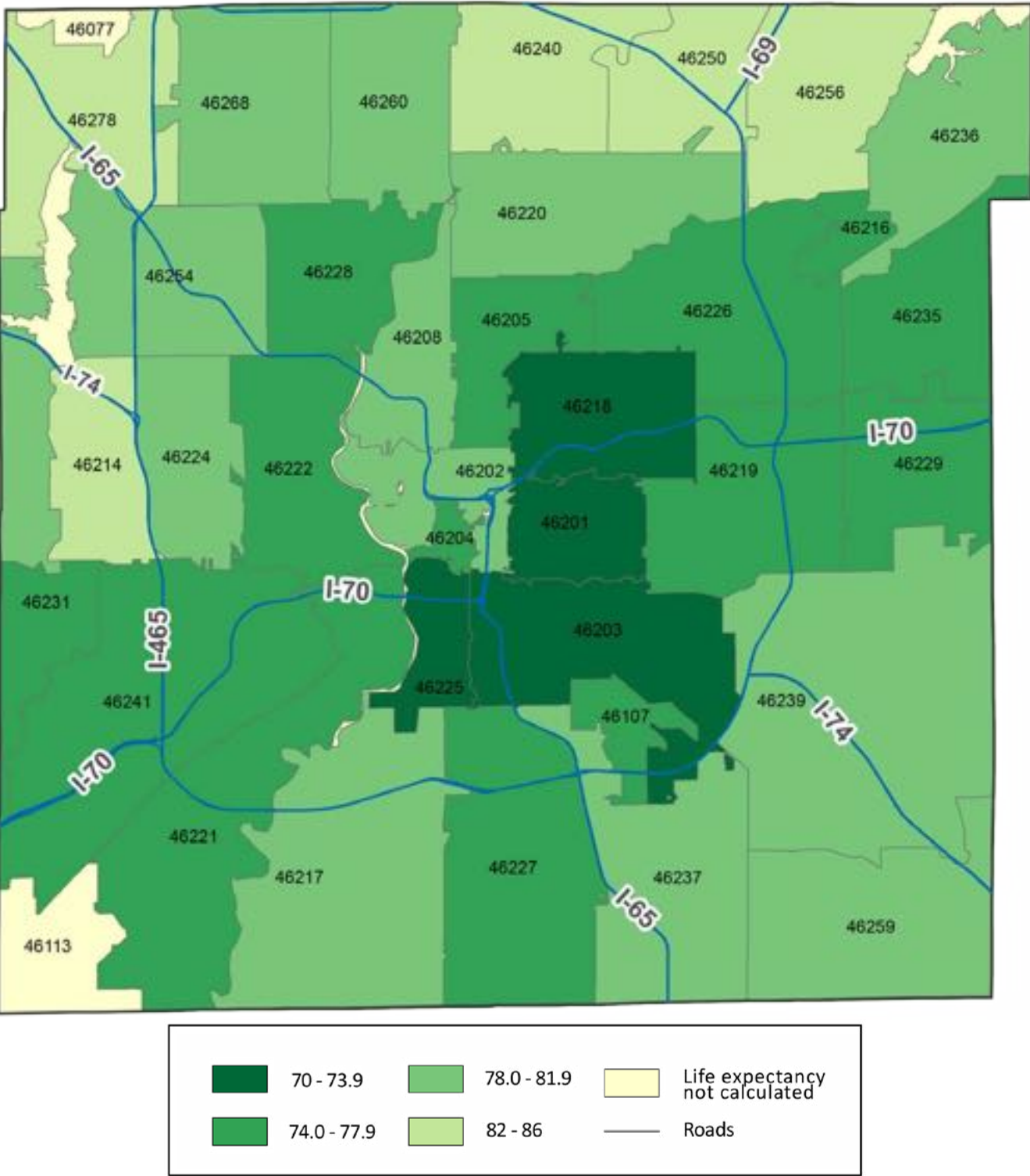
Data Source: Marion County death certificates, DR3589

Figure 45 shows life expectancy in 2016 in Marion County by ZIP Code. The ZIP Code with the lowest life expectancy was 46201, with an average life expectancy of 70 years. The ZIP Code with the highest life expectancy was 46250, with an average life expectancy of 86 years—a difference of 16 years of life.

How does one improve health equity, and thus improve things such as life expectancy? Health inequities can be reduced by reducing poverty and other obstacles to health, and by providing quality education, housing, and a safe environment to all.[1] Until those issues are addressed, inequities in health and life expectancy are likely to persist.

For more measures of health equity in Marion County, see http://indyindicators.iupui.edu/advanced.aspx?qs_terms=1409&qs_start=2012&qs_end=2018 and the 2018 Marion County Health Equity Report at http://indyindicators.iupui.edu/CHA/2018_Health_Equity_Report_final.pdf. For more statistics about life expectancy in Marion County, see http://indyindicators.iupui.edu/advanced.aspx?qs_terms=1293&qs_start=2012&qs_end=2018.

[1] "What Is Health Equity?"

OPIOIDS AND OVERDOSE

Overdose is the act of taking more than the recommended amount of a potentially harmful substance.[1] Drug overdose may cause heart attack, brain damage, hyperthermia, and death.[2] Opioid overdose deaths are usually caused by slow and ineffective breathing.[3] Opioids include heroin, pain relief medications such as oxycontin, and synthetic opioids such as fentanyl. Commonly abused opioids include heroin, hydrocodone, oxycodone, oxymorphone codeine, morphine, and fentanyl.

OPIOIDS IN THE U.S.

U.S. drug overdose deaths have been increasing for two decades, driven by opioid overdoses.[4] In 2017, there were over 70,237 drug overdose deaths in the United States.[5] Opioids accounted for 6.7% of drug overdose deaths in 2017, with increases across age groups, racial/ethnic groups, and urbanization levels.[6] Death rates for overdoses involving synthetic opioids other than methadone nearly doubled from 2015 to 2016, and death rates also increased for prescription opioids, heroin (+19.5%), cocaine (+52.4%), and psychostimulants (+33.3%).[7] Deaths rates for overdoses involving synthetic opioids other than methadone nearly doubled again from 2016 to 2017.[8] Illicitly manufactured fentanyl (IMF) has flooded the illicit drug supply in many regions of the United States. IMF is thought to be causing the recent, more rapid increase in overdose deaths.[9]

OPIOIDS IN MARION COUNTY

In 2017, there were an estimated 365 overdose drug deaths among Marion County residents. The resulting age-adjusted mortality rate of 38.8 per 100,000 was higher than for Indiana, the United States, and many other urban, Midwest counties (**Figure 46**). Like much of the country, the opioid death rate in Marion County is increasing rapidly (**Figure 47**). Of the 406 Marion County overdose deaths with toxicology results in 2017, including residents and non-residents, 79% involved an opioid.

For more information on opioids and overdoses in Marion County, visit http://indyindicators.iupui.edu/content.aspx?content_id=164.

1] "WHO | Information Sheet on Opioid Overdose."

[2] "How Drugs Can Kill."

[3] "WHO | Information Sheet on Opioid Overdose."

[4] National Institute on Drug Abuse, "Overdose Death Rates."

[5] "Products - Data Briefs - Number 329 - November 2018."

[6] Seth, "Overdose Deaths Involving Opioids, Cocaine, and Psychostimulants — United States, 2015–2016."

[7] Seth; "U.S. Drug Overdose Deaths Continue to Rise; Increase Fueled by Synthetic Opioids | CDC Online Newsroom | CDC."

[8] "Products - Data Briefs - Number 329 - November 2018."

[9] Seth, "Overdose Deaths Involving Opioids, Cocaine, and Psychostimulants — United States, 2015–2016."

Figure 46: Overdose death rates, Marion County and other locations, 2017
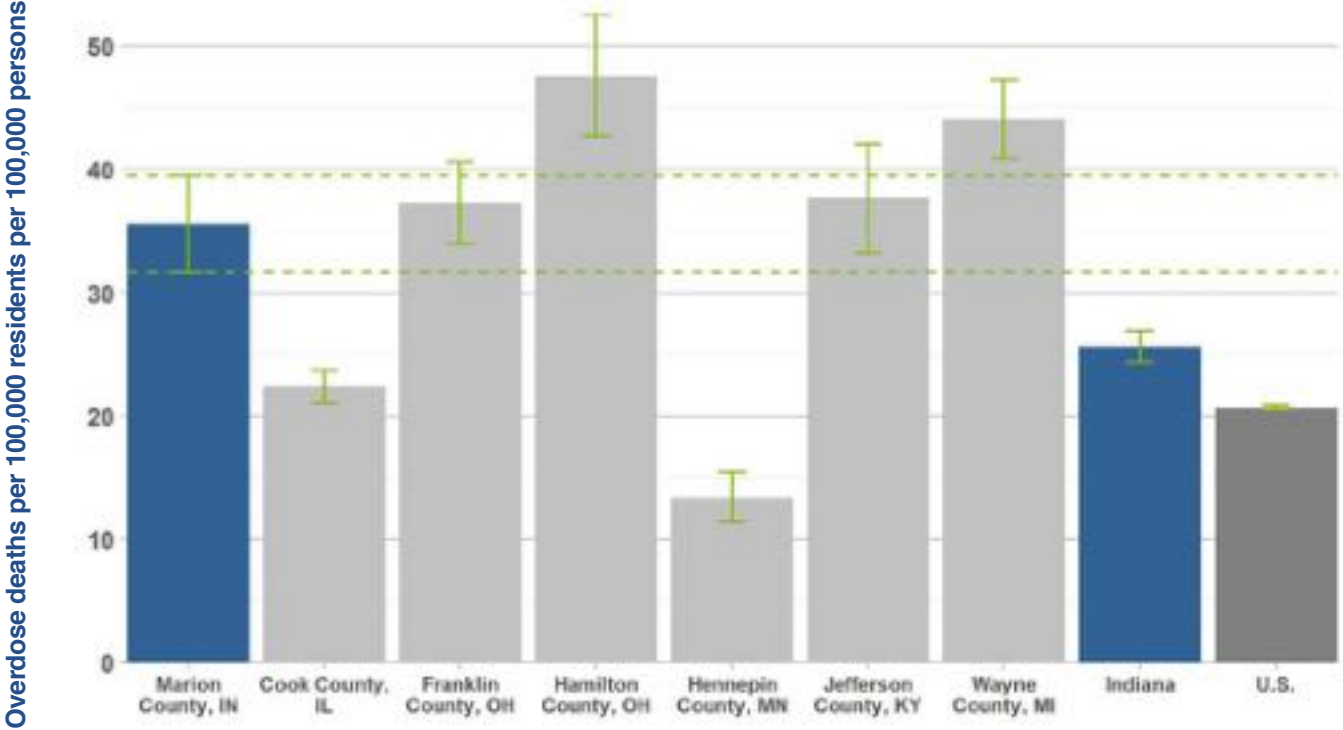
Data Source: CDC Wonder, DR3871

Figure 47: Opioid death rate, Marion County, 2010-2017
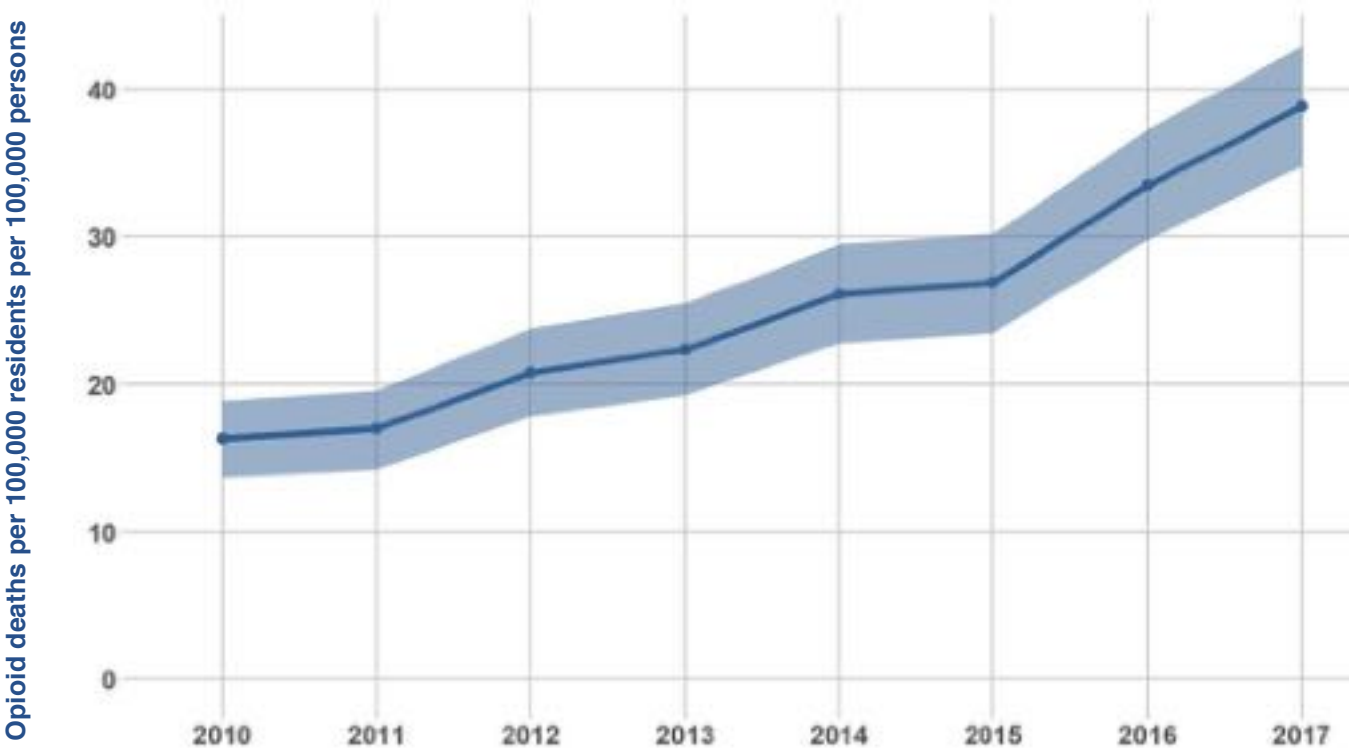
Data Source: CDC Wonder, DR3871

TREATMENT

Many treatment options are available for substance abuse disorder including medication assisted therapy, cognitive-behavioral therapy, motivational enhancement therapy, inpatient and residential treatment, and intensive outpatient treatment. There is evidence that syringe service programs (SSPs) can serve as a gateway to help people who inject drugs get into treatment and recovery. [1] Nearly 40% of individuals who engaged in a Scott County, Indiana medication assisted treatment program had previously utilized a SSP. [2] MCPHD's SSP called Safe Syringe Access and Support Program launched in early 2019.

[1] Sightes, "SSP_Report_20180516.Pdf."   [2] Sightes.

INFANT MORTALITY AND LOW BIRTH WEIGHT

Infant mortality is the death of an infant that occurs during the first 365 days of life.[1] Infant mortality has a profound impact on families, communities and society at large. It is often used as an indicator of a population's overall health.[2] Data from 2014 to 2015 showed that Indiana ranked 43 out of 50 states for infant mortality with a rate of 7.4 infant deaths per 1,000 live births. [3] Marion County residents accounted for 17.4 % of Indiana births,[4] and 17.7% of the state's infant deaths in 2017 (107 out of 602).[5] The infant mortality rate in Marion County varies by ZIP Code, as shown in **Figure 48**. The differences are large: ZIP Code 46204 had 6 deaths per 1,000 live births, while the adjacent ZIP Code 46202 had tripled that rate with 19 deaths per 1,000 live births, despite having 3 major hospitals in that ZIP Code. In 13 of Marion County's 36 large ZIP Codes, the IMR is above 10 per 1,000 live births.

Figure 48: Infant deaths per 1,000 births by ZIP Code, Marion County, 2007- 2017
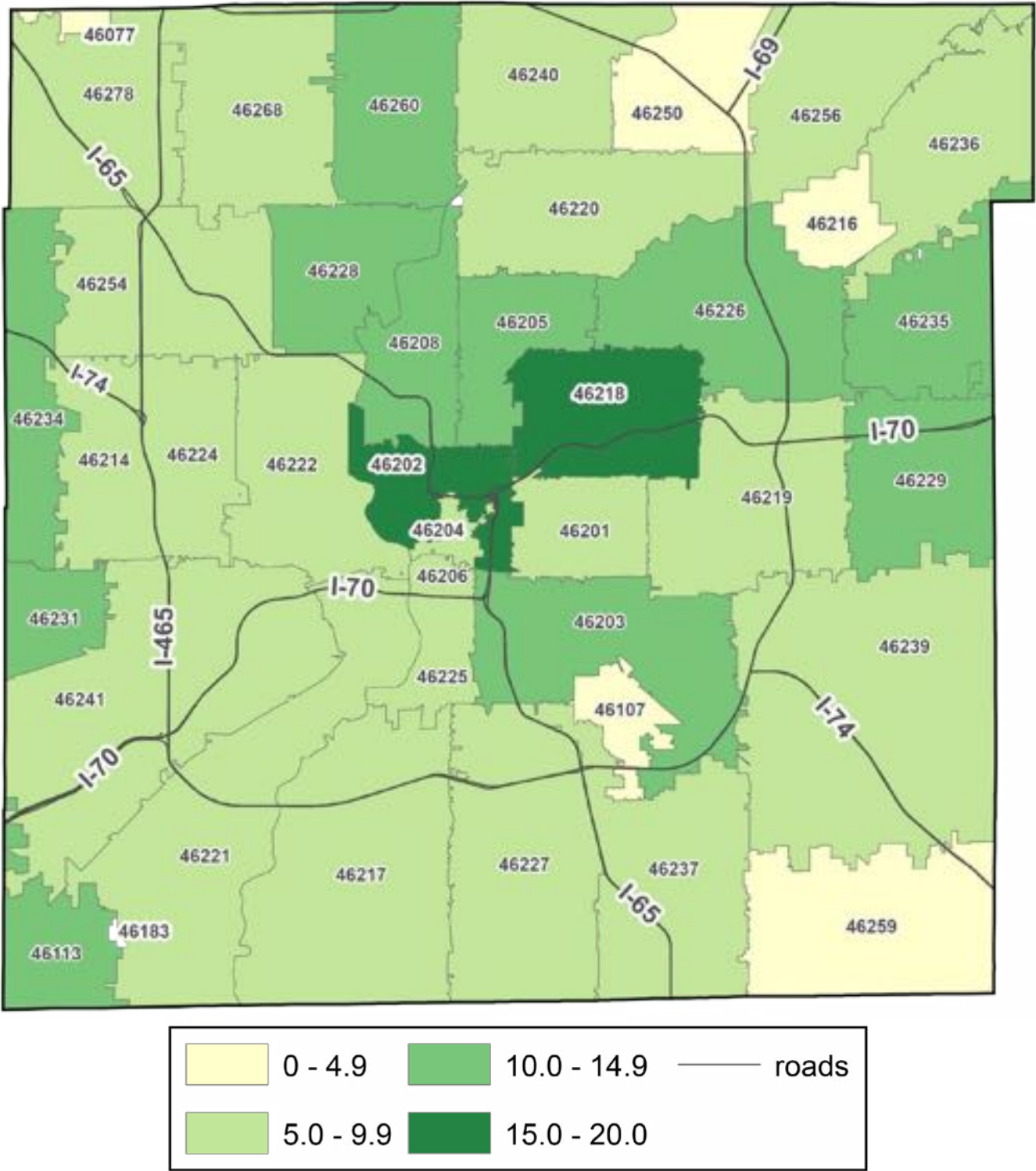
Data Source: Marion County death and birth certificates, DR3847

[1] "Infant Mortality | Maternal and Infant Health | Reproductive Health | CDC."
[2] "Infant Mortality."
[3] "Explore Infant Mortality in the United States | 2018 Annual Report."
[4] "Table 29 - Number of Live Births by County of Residence, Age, and Race/Ethnicity of Mother: Indiana Counties, 2017."
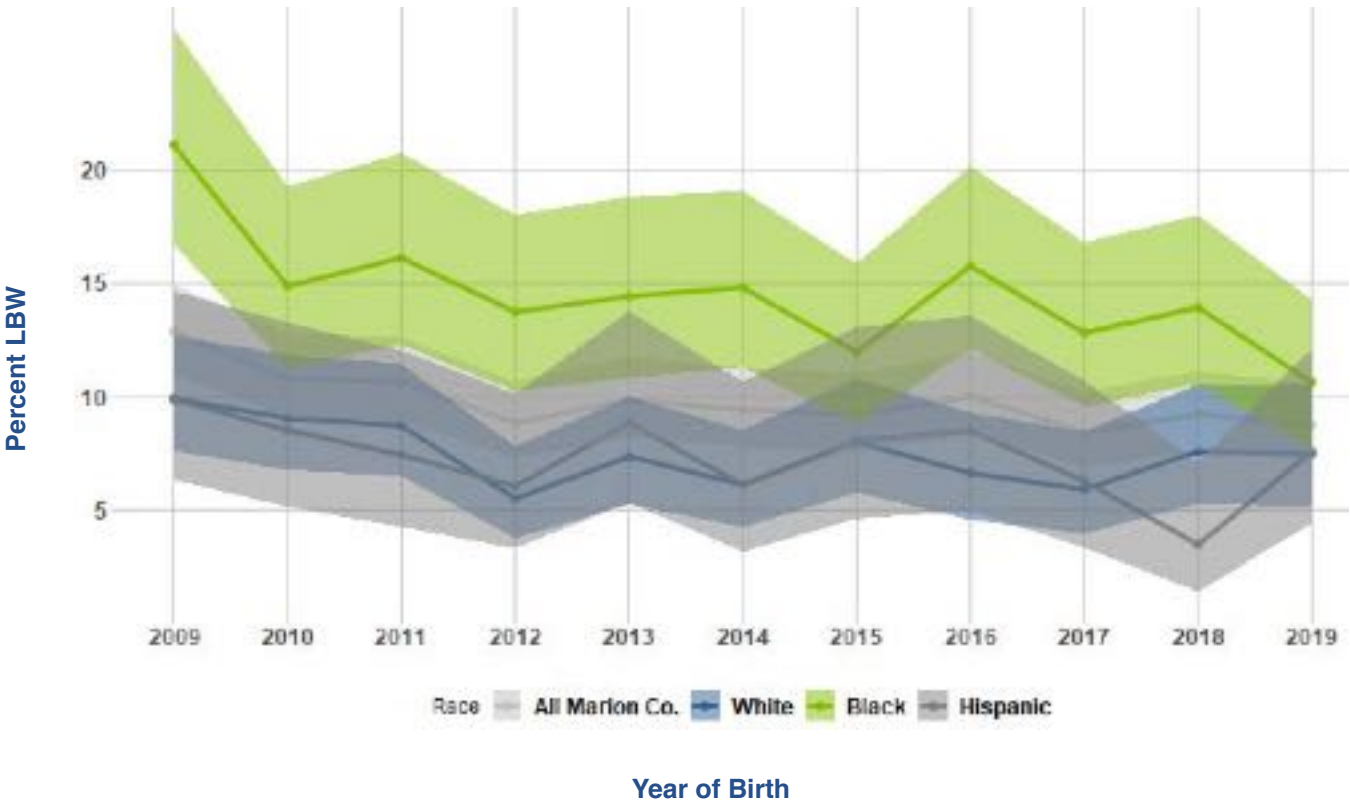[5] "ISDH: Infant Mortality."

Programs in Marion County that help address infant mortality include WIC, Nurse Family Partnership, Healthy Start, Healthy Families, and the Mom Helpline.

Low birth weight (LBW) is defined as a birth weight less than 2,500 grams, or 5.5 pounds.[1] LBW and preterm birth were the second leading causes of infant death in 2016, behind birth defects.[2] LBW babies have a significant risk of developing cardiovascular diseases, respiratory problems, infections, delayed motor and social development, and learning disabilities.[3] Black infants have a much higher risk than other infants of being low birth weight (see **Figure 49**). In 2017, the percent of LBW babies was 1.5 times higher for black non-Hispanics (13.3%) compared to white non-Hispanics (8.7%) and Hispanics (8.0%).

Figure 49: Low birth weight by race/ethnicity, Marion County, 2007- 2017

Year of Birth

Data Source: Marion County death and birth certificates, DR3789

For more information about infant mortality in Marion County, see http://indyindicators.iupui.edu/advanced.aspx?qs_terms=1564&qs_start=2012&qs_end=2018. For information on low birth weight in Marion County, visit http://indyindicators.iupui.edu/advanced.aspx?qs_terms=1202&qs_start=2012&qs_end=2018.

[1] "Health Effects Low Birthweight and the Environment - CDC Tracking Network."

[2] "Infant Mortality | Maternal and Infant Health | Reproductive Health | CDC."

[3] "Low Birthweight."

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