



# **BERRIEN COUNTY HEALTH DEPARTMENT**

better health. stronger communities.

## 2018-2019 Berrien County Behavioral Risk Factor Surveillance Survey





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# Introduction

## BACKGROUND

The Behavioral Risk Factor Surveillance System (BRFSS) was designed to show associations among health behaviors and premature morbidity and mortality. The original study, led by the U.S. Centers for Disease Control and Prevention (CDC), began in 1984 with 15 states and today collects data in all 50 states as well as the District of Columbia, Guam, Puerto Rico and the U.S Virgin Islands. Since its original study, it has expanded to include over 500,000 adult interviews each year making it the largest continuously conducted health survey system in the world. The methodology of this surveillance survey has expanded its question bank beyond the purpose of assessing solely for chronic health conditions to include how the built and social environment impacts a population's health. Smaller jurisdictions, such as counties, also have the option of conducting a Behavioral Risk Factor Survey (BRFS) at their desired frequency. Each survey includes a standardized core interview; each jurisdiction is then able to add questions of local interest. The use of the standardized core interview allows for comparisons at the national, state, and local level as well as providing scientific rigor to the survey by using validated questions.

Berrien County has been conducting the BRFS every three years since 2002. Having data spanning fourteen years and five points in time allows Berrien County to track trends and to see longer-term impacts of health interventions. However due to recent changes in methodology the 2018 BRFS is only comparable to surveys conducted after 2011.

**PURPOSE:** The purpose of the Behavior Risk Factor Survey in Berrien County is to:

### 1. Collect data on chronic health conditions including:

- Asthma
- Cardiovascular Disease
- High Cholesterol
- High Blood Pressure
- COPD (Chronic Obstructive Pulmonary Disease)
- BMI (Body Mass Index)
- Diabetes

### 2. Collect data on health screenings for:

- HIV screening
- Cancer
- Access to Dental care
- Routine Medical Checkups
- Access to Healthcare

### 3. Collect behavioral data as it relates to health including:

- Fruit and Vegetable Consumption
- Physical Activity
- Mental Health
- Depression
- Sleep
- Alcohol Use
- Smoking Tobacco
- Vaping Use
- Use of Pain Medication
- ACEs (Adverse Childhood Experiences)

These data are used to track trends over time, compare jurisdictions, measure progress in addressing these common health concerns, and guide governmental and non-governmental organizations to better the public's health in Berrien County. BRFS data can also be used to evaluate county-wide initiatives and spur further investigation into health issues it identifies. It serves as a barometer for the overall health of the county as related to health conditions and behaviors. Most importantly, this data helps facilitate conversations between the public health, health care providers, community groups, elected officials, and residents as we all work towards the goal of improving the wellbeing of Berrien County residents.



# Methods

## INTRODUCTION

The Michigan Department of Health and Human Services (MDHHS), in conjunction with the U.S. Centers for Disease Control and Prevention (CDC), collects statewide data on health behaviors and health risks as part of the Behavioral Risk Factor Surveillance Study (BRFSS). Though the sample size is more than sufficient for analysis at the state level, the county level sample size, especially for smaller counties, is not sufficient on an annual basis to allow for in depth analysis. With assistance from MDHHS, counties contract with the Michigan State University Institute for Public Policy and Social Research's Office for Survey Research (OSR) to collect county level BRFSS type data. This arrangement includes the combining of the Michigan BRFSS (MiBRFSS) annual data from the specific county's residents with the county-level data that is collected by OSR, as well as the application of the CDC interview protocols and weighting methodology (The BRFSS data user guide, 2017).

The Berrien County Health Department contracted with OSR to collect 803 county-level interviews, of which 321 were to be from the landline-sampling frame and 482 from the cell phone sampling frame. With the addition of 27 landline and the 77 cellphone completed interviews conducted by MDHHS, there was 967 total interviews conducted in Berrien County for the 2018 Berrien BRFSS. The average length of call was 24.8 minutes on landlines and 24.9 minutes on cell phones.

## SAMPLE AND ENUMERATION

### Sample Design

The Berrien County BRFSS sample was drawn from both landline and cell phone sampling frames by Survey Sampling Inc. and Genesys (for MiBRFSS) for OSR. The landline sample for the Berrien County BRFSS was drawn using listed-assisted, random digit dial sampling procedures of all Berrien County landline phone numbers to ensure that all Berrien County residents with landlines had a chance of selection. The Berrien County sample was geographically disproportionately stratified to allow for the oversample of Black residents by census tract groups. The landline sample for the MiBRFSS was drawn stratified by regions consisting of multiple counties within the state and not by specific counties. Names and addresses were included in the sample order for those landline cases that were directory listed to enable the sending of pre-notification letters by OSR prior to calling. Letters were addressed to the person listed in the directory listings to appear more personalized. The letter itself mentions that an adult in the household would be randomly selected.

Due to the increasing number of households that are cell phone only, a cell phone component is essential to prevent a non-coverage bias due to the exclusion of this group. Survey Sampling Inc. reported that currently cell phone only households comprise 53.3% of all households in Michigan (2016 Wireless Substitution). Cell phone sampling frames differ from landline sampling frames on three key components. First, there is no directory listing of cell phone numbers to allow for the sending of pre-notification letters. Second, the sampling frame currently can only be dissected down to the geographic level of telephone billing centers, which generally coincide with county borders, but not always, especially in areas of high population or very low population. Billing centers are based on where the cell phone contract was purchased and not on where the phone's owner currently resides. This creates two types of coverage issues. Those who purchased a phone outside of the billing center area are excluded from the local frame of cell phone numbers and those who purchased within the area, but no longer reside there are included and thus need to be screened out as ineligible. The sampling strategy for Berrien County BRFSS focused on the billing center(s) associated with Berrien County and the MiBRFSS sample was drawn from the billing centers in the region that Berrien County was included. Third, due to the inability to define areas smaller than billing centers, it was not possible to stratify disproportionately based on census tract blocks.



# Methods (continued)

## Enumeration

Eligibility for this study required the respondent to be an English-speaking, non-institutionalized Berrien County adult resident of at least 18 years of age who was capable of completing the interview without assistance due to mental, physical or language barrier. Just as in the MiBRFSS, which follows CDC BRFSS protocols, those living in-group quarters were excluded except for those living in college/university housing, such as residence halls. Those living in college/university housing were considered eligible and treated as single person households.

Those contacted by landline were not excluded if they had a cell phone and those who were contacted by cell phone who also had a landline in their household were also not excluded. As such, there were four types of persons contacted in terms of their telephone service:

- 1) those with only landline phones
- 2) those with only a cell phone
- 3) those with both a landline and a cell phone who were sampled via their landline
- 4) those with both a landline and a cell phone who were sampled via their cell phone

This created an overlapping sampling frame of two groups with both types of service that was adjusted for during the weighting process. Within-household enumeration differed between landline and cell phone samples, though both follow the procedures defined by CDC for the MiBRFSS. Landline enumeration involved systematically selecting one adult from eligible households using a modified version of the Trol Dahl-Carter procedure. Given that, cell phones are generally considered “personal” phones for the purposes of most U.S. telephone surveys, enumeration only included verifying that the person 5 who answered did indeed meet the age and geography eligibility criteria mentioned above.

## DATA COLLECTION INSTRUMENT

The interviews were conducted by OSR using CASES 5.6, a Computer Assisted Telephone Interviewing (CATI) software program designed by the University of California at Berkeley. The interviews were all completed at OSR’s survey research lab located on Michigan State University’s East Lansing campus.

The interviewing instrument was composed of two parts. The first part consisted of the standardized CDC core questions that are asked annually or biannually in the MiBRFSS. Certain questions and sections were deleted from the CDC core for the 2018 Berrien BRFSS. The second part of the interview was comprised of a portion of the state-added questions from the 2018 Michigan BRFSS interview along with county specific questions and sections. Some of the county specific questions and sections are part of the odd-year biannual standardized CDC core. Table 1 lists the sections in the order asked within the 2018 Berrien County BRFSS and identifies sections, with their section numbers that are from the 2018 MiBRFSS and the 2014 Berrien County BRFSS.



# Summary

The 2018 Berrien County BRFSS represents a county survey of health behaviors, life experiences, medical conditions and access to health care among residents age 18 and older. These results were evaluated using a weighting system to more accurately estimate prevalence based on varying demographics. The following information is a high level summary a few of the health conditions and behaviors among Berrien county adults. More detailed reports will be released detailing specific areas of health risk.

## Cardiovascular Disease

- According to the American College of Cardiology the leading cause of death in the USA is cardiovascular diseases or CVD (2019). CVD is a disease that pertains to the movement of blood and oxygen throughout the body. 6.8% of Berrien County residents have had a heart attack, 6.4% have angina and 5.1% have had a stroke. The prevalence of CVD in Berrien County is consistent with the prevalence throughout the State of Michigan and in 2014. However, black adults report a higher prevalence of CVD compared to white adults.

## Diabetes

- Diabetes has remained at a steady value of 11.7% in Berrien County and in the State of Michigan. However a significant proportion of black Berrien County adults (21.5%) had been diagnosed with diabetes compared to white Berrien County adults (9.7%).

## Obesity

- The prevalence of obesity in Berrien County (38.9%) remains higher than the State of Michigan average, although it has not increased from the prevalence in the 2014 BRFSS. Overall an estimated 69.1% and 67.5% of Berrien County and State of Michigan adults are either obese or overweight, respectively.

## Physical Activity

- Berrien County has more adults not getting enough aerobic activity (71.5%) compared to the state of Michigan where only 50.5% report an inadequate amount of aerobic activity.

## Fruit and Vegetable consumption

- Adults across the State of Michigan struggle to consume the CDC recommended servings of 5 fruits and vegetables per day. In Berrien County 41.6% of adults consume less than one fruit per day and 35.7% Berrien County adults consume less than one vegetable per day which are both significantly higher than the State average of 36.4% and 18.5% respectively.

## Asthma

- Upper and lower respiratory constriction of the airway and inflammation of the bronchi are known as asthma symptoms. In Berrien County, approximately 15.5% of adults in Berrien County reported that they had been diagnosed with asthma which is very similar to the State of Michigan. However, black adults (24.6%) report a higher prevalence of asthma compared to white adults (14.2%) in Berrien County.

## Smoking/Vaping

- Combustible cigarette smoking or “traditional” smoking remains low among Berrien County and State of Michigan adults around 18% of adults report being a current “traditional” smoker. Electronic cigarette use has seen higher than expected use among adults. 23.1% of Berrien County adults are current users and 7.5% of adults report current electronic cigarette use.

## Adverse Childhood Experiences

- ACE's are a significant predictor of health outcomes; they are reflective of events that took place during a current adult's childhood. 39.3% of Berrien County adults experienced emotional abuse from a parent or adult, 32.8% report that their parents were separated or divorced and 33.0% report that their family had difficulty to cover basic living expenses such as food and housing.



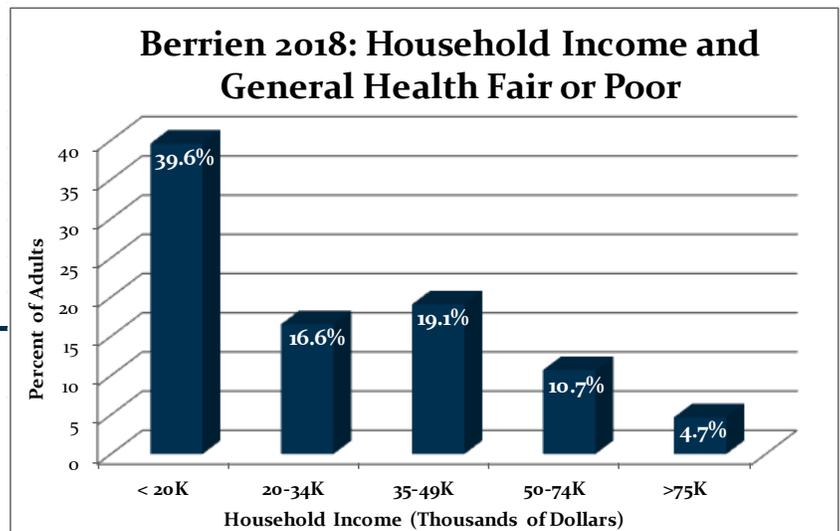
# General Health Status

General health status is a self-reported indicator which asks respondents to rate their health as excellent, very good, good, fair or poor. Other studies have identified a strong correlation between people who rate their health as fair or poor and a higher risk for negative health outcomes. Therefore this indicator is a useful tool for assessing the general health of a population without an in-depth analysis of the many predictors of health.

## General Health, Fair or Poor<sup>a</sup>

Demographic Characteristic	%	95% Confidence Interval
<b>Michigan (2018)</b>	<b>19.3</b>	18.3 - 20.3
<b>Berrien County Overall</b>		
<b>2018</b>	<b>17.1</b>	14.7 - 19.5
2014	18.5	16.0 - 20.9
2011	21.1	18.6 - 23.6
<b>Age</b>		
18-24	8.7	3.2 - 14.1
25-34	21.4	14.7 - 28.1
35-44	10.6	5.5 - 15.6
45-54	16.8	11.0 - 22.6
55-64	15.7	10.4 - 21.1
65-74	26.0	18.3 - 33.6
75+	20.8	12.8 - 28.7
<b>Gender</b>		
Male	17.0	13.5 - 20.4
Female	16.8	13.5 - 20.0
<b>Race</b>		
White	16.4	13.8 - 19.0
Black	24.8	17.6 - 32.1
<b>Education</b>		
< High school	23.9	15.1 - 32.7
High school grad	23.0	18.1 - 27.9
Some college	15.3	11.4 - 19.2
College grad	8.4	4.9 - 11.9
<b>Household Income</b>		
< \$20,000	39.6	31.6 - 47.6
\$20,000 - \$34,999	16.6	10.6 - 22.5
\$35,000 - \$49,999	19.1	11.7 - 26.5
\$50,000 - \$74,999	10.7	5.6 - 15.9
>\$75,000	4.7	2.1 - 7.3

- There is no significant difference in general health status between adults living in the State of Michigan and Berrien County.
- The general health status of Berrien County adults remains virtually unchanged since 2011.
- In general, younger adult respondents (18-44 years) report better health compared to adults over the age of 45 years.
- A significantly greater portion of adults who's annual income is less than \$20,000 reported their health as fair or poor.
- 39.6% of adults with a household income less than \$20,000 per year have poor or fair health compared 8.4% of adults with an annual household income of \$75,000 or more.
- There are no significant trends in general health status associated with gender or race.
- A majority of Berrien County adults said their health was either excellent (12%), very good (33%), or good (37%); while 18.5% described their health as either fair (12%) or poor (6%).



<sup>a</sup> The proportion of adults who reported that their health, in general, was either fair or poor.



# Quality of Life

Quality of life is measured through a series of two questions by using indicators of perceived mental and physical health status over the past 30 days. In the past 30 days, if respondents indicated that they have had physical or mental health that was “not good” for 14 or more days, they are categorized as having poor mental or physical health.

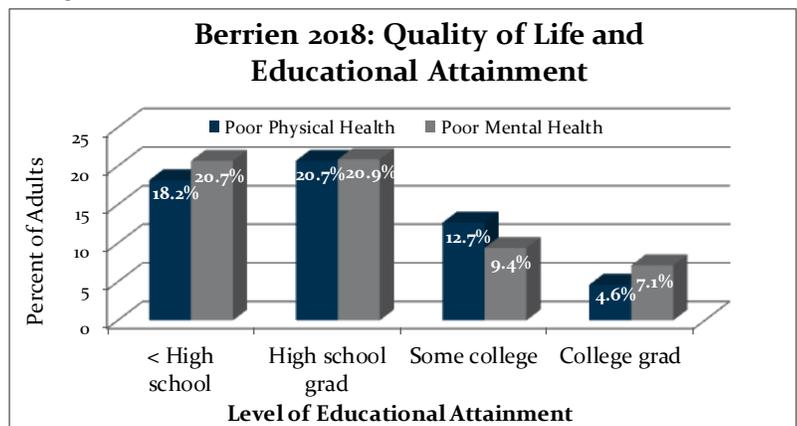
Demographic Characteristic	Poor Physical Health <sup>a</sup>		Poor Mental Health <sup>b</sup>	
	%	95% Confidence Interval	%	95% Confidence Interval
<b>Michigan (2014)</b>	<b>12.6</b>	11.8 - 13.6	<b>12.9</b>	11.9 - 14.0
<b>Berrien County Overall</b>				
<b>2018</b>	<b>14.0</b>	11.8 - 16.2	<b>12.8</b>	10.7 - 15.0
2014	13.3	11.2 - 15.5	10.9	8.9 - 12.8
<b>Age</b>				
18-24	2.9	0.0 - 6.2	23.5	15.3 - 31.8
25-34	17.4	11.2 - 23.6	22.4	15.5 - 29.2
35-44	10.6	5.5 - 15.6	11.4	6.1 - 16.7
45-54	13.3	8.0 - 18.6	8.8	4.4 - 13.2
55-64	17.3	11.8 - 22.9	10.1	5.7 - 14.6
65-74	16.8	10.2 - 23.4	11.9	6.0 - 17.7
75+	17.3	9.8 - 24.9	6.3	1.4 - 11.2
<b>Gender</b>				
Male	12.5	6.9 - 18.0	12.0	9.0 - 15.0
Female	15.4	13.0 - 17.7	14.0	11.0 - 17.1
<b>Race</b>				
White	14.4	11.9 - 16.9	13.0	10.6 - 15.4
Black	15.9	9.8 - 22.1	8.0	3.5 - 12.6
<b>Education</b>				
< High school	18.2	10.1 - 26.3	20.7	12.1 - 29.3
High school grad	20.7	16.0 - 25.4	20.9	16.0 - 25.7
Some college	12.7	9.1 - 16.3	9.4	6.2 - 12.5
College grad	4.6	2.0 - 7.3	7.1	3.9 - 10.4
<b>Household Income</b>				
< \$20,000	27.3	19.9 - 34.8	25.2	17.9 - 32.4
\$20,000 - \$34,999	21.1	14.5 - 27.7	13.7	8.1 - 19.3
\$35,000 - \$49,999	12.7	6.5 - 19.0	15.6	8.8 - 22.4
\$50,000 - \$74,999	8.6	3.9 - 13.3	10.0	5.0 - 15.0
>\$75,000	3.5	1.3 - 5.8	5.1	2.4 - 7.8

- Berrien County adults are just as likely to experience 14 or more days of poor physical or poor mental health as adults throughout the State of Michigan.
- 14.0% of Berrien County adults reported that their physical health was poor and 12.8% reported that their mental health was poor.
- There is no significant difference in quality of life among gender nor race.
- Adults with a college education or a household income greater than \$50,000 annually are significantly less likely to report poor physical and poor mental health compared to other adults.
- The gap between the highest and lowest education levels and income levels is more pronounced in physical health than in mental health.

<sup>a</sup> The proportion of adults who reported 14 or more days of poor physical health during the past 30 days, including illness and injury, was not good.

<sup>b</sup> The proportion of adults who reported 14 or more days of poor mental health during the past 30 days, including stress, depression, and problems with emotions.

Educational attainment seems to be a significant predictor of an adults quality of life. The bar graph to the right demonstrates how a greater level of education arraignment decreases the proportion of adults reporting poor physical or mental health.





# COPD

## (Chronic Obstructive Pulmonary Disease)

Disease of the lung and upper respiratory tract is a broad term used to describe lung diseases such as emphysema that is noted to have chronic inflammation of lung tissue causing the obstruction of airflow from the lungs. These disease can have severe impacts to an individuals health leading to decreased life expectancy, nutritional abnormalities and skeletal muscle and neurological dysfunction (Mayo Clinic, 2019). In 2018 Berrien BRFSS respondents were asked if they were ever told by a doctor, nurse, or other health professional that you had Chronic Obstructive Pulmonary Disease, emphysema or chronic bronchitis.

Demographic Characteristic	Diagnosed COPD <sup>a</sup>	
	%	95% Confidence Interval
<b>Michigan (2018)</b>	<b>8.6</b>	<i>8.0 - 9.3</i>
<b>Berrien County Overall</b>		
<b>2018</b>	<b>8.4</b>	<i>6.7 - 10.2</i>
<b>Age</b>		
18-24	0.0	<i>0.0 - 0.0</i>
25-34	3.6	<i>0.5 - 6.7</i>
35-44	9.2	<i>4.4 - 13.9</i>
45-54	6.9	<i>2.9 - 10.8</i>
55-64	13.3	<i>8.4 - 18.3</i>
65-74	13.5	<i>7.5 - 19.5</i>
75+	10.9	<i>4.8 - 17.0</i>
<b>Gender</b>		
Male	8.6	<i>6.1 - 11.2</i>
Female	8.3	<i>5.9 - 10.7</i>
<b>Race</b>		
White	8.8	<i>6.8 - 10.9</i>
Black	5.9	<i>1.9 - 9.9</i>
<b>Education</b>		
< High school	18.5	<i>10.5 - 26.5</i>
High school grad	11.0	<i>7.3 - 14.6</i>
Some college	7.6	<i>4.7 - 10.4</i>
College grad	3.0	<i>0.8 - 5.1</i>
<b>Household Income</b>		
< \$20,000	17.5	<i>11.2 - 23.7</i>
\$20,000 - \$34,999	11.6	<i>6.4 - 16.8</i>
\$35,000 - \$49,999	10.8	<i>5.0 - 16.6</i>
\$50,000 - \$74,999	5.0	<i>1.4 - 8.6</i>
>\$75,000	2.0	<i>0.3 - 3.7</i>

- 8.4% of Berrien County and 8.6% of State of Michigan adults had been diagnosed with COPD. There are no significant differences among Berrien County and Michigan.
- There are no significant differences among gender or race and COPD.
- Berrien County adults with high school education (11.5%) or less than a high school education (18.5%) have a significantly higher incidence of COPD.
- Berrien County adults with a household income of less than \$49,000 per year have a significantly higher incidence of COPD.
- Berrien County adults who are college educated (3.0%) or have a household income greater than \$75,000 annually (2.0%) have a significantly lower incidence of being diagnosed with COPD .

<sup>a</sup> The proportion of adults who had been diagnosed Coronary Pulmonary Obstructive Disorder (COPD)



# Asthma

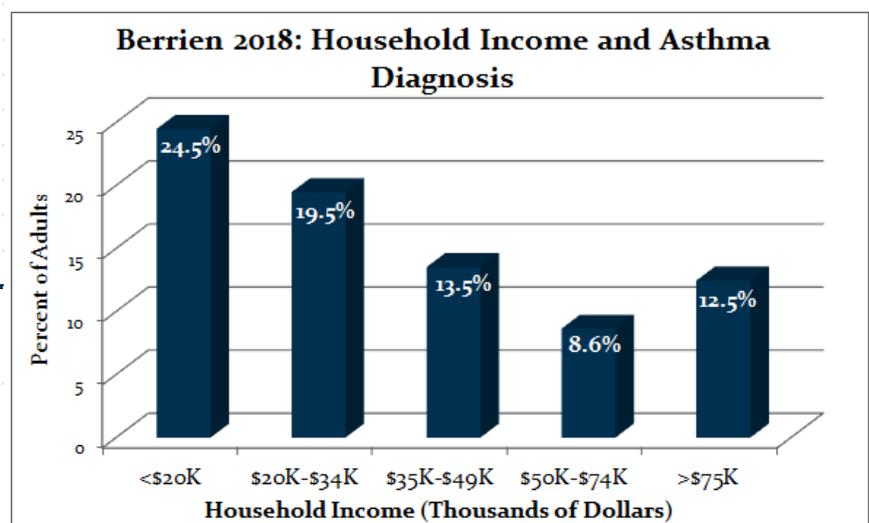
Asthma, a medical condition that affects an individual's breathing, can have a variety of health consequences that may be exacerbated under strenuous physically activities. Minor health issues from asthma can lead to limited physical activity and higher risk of respiratory failure. This question asked respondents if they have ever been diagnosed with asthma by a doctor, nurse, or other health professional. In Michigan, asthma prevalence is nearly double the national average.

## Ever Told Have Asthma<sup>a</sup>

Demographic Characteristic	95% Confidence	
	%	Interval
<b>Michigan (2018)</b>	<b>16.0</b>	15.1 - 16.9
<b>Berrien County Overall</b>		
<b>2018</b>	<b>15.5</b>	13.2 - 17.8
2014	14.5	12.4 - 16.7
2011	14.7	12.6 - 16.8
<b>Age</b>		
18-24	19.4	11.7 - 27.1
25-34	26.4	19.2 - 33.6
35-44	23.2	16.3 - 30.2
45-54	11.2	6.3 - 16.1
55-64	11.2	6.5 - 15.8
65-74	9.6	4.4 - 14.8
75+	7.9	2.6 - 13.2
<b>Gender</b>		
Male	12.2	9.3 - 15.2
Female	18.6	15.2 - 22.0
<b>Race</b>		
White	14.2	11.8 - 16.7
Black	24.6	17.4 - 31.9
<b>Education</b>		
< High school	21.7	13.3 - 30.2
High school grad	15.7	11.5 - 19.9
Some college	16.8	12.8 - 20.8
College grad	13.0	8.7 - 17.3
<b>Household Income</b>		
< \$20,000	24.5	17.4 - 31.5
\$20,000 - \$34,999	19.5	13.1 - 25.8
\$35,000 - \$49,999	13.5	7.1 - 19.9
\$50,000 - \$74,999	8.6	3.9 - 13.3
>\$75,000	12.5	8.4 - 16.5

<sup>a</sup> The proportion of adults who have ever been told that they have asthma by a doctor, nurse, or other health care professional.

- Similar to the State of Michigan (16.0%), 15.5% of adults in Berrien County reported that they had been diagnosed by a medical provider with asthma at some point in their life.
- Between 2014 and 2018 there has not been a significant change in the proportion of Berrien County adults with asthma.
- Asthma prevalence does not appear to fluctuate much between different genders.
- Black adults in Berrien County have a significantly higher prevalence of an asthma diagnosis (24.6%) compared to white adults (14.2%) in Berrien County.
- There is a slight correlation with asthma prevalence and household income. Those who have a household income less than \$20,000 annually reported a higher asthma prevalence compared to those adults who have a household income over \$75,000.





# Cardiovascular Disease

Cardiovascular disease (CVD) are diseases the affects the movement of blood through the body, such as heart attacks, stroke or angina. CVD is more prevalent in persons over the age of 35 whose risk factors may be influenced by diet, exercise, and medication. Cardiovascular disease questions are a series of 12 chronic health condition questions asked in the BRFSS; all of which need to be diagnosed by a doctor, nurse, or other health professional.

Demographic Characteristic	Ever Told Heart					
	Attack <sup>a</sup>		Ever Told Angina <sup>b</sup>		Ever Told Stroke <sup>c</sup>	
	95% Confidence		95% Confidence		95% Confidence	
	%	Interval	%	Interval	%	Interval
<b>Michigan (2018)</b>	<b>5.3</b>	4.7 - 5.8	<b>5.0</b>	4.5 - 5.4	<b>3.4</b>	3.0 - 3.8
<b>Berrien County Overall</b>						
<b>2018</b>	<b>6.8</b>	4.9 - 8.7	<b>6.4</b>	4.6 - 8.2	<b>5.1</b>	3.5 - 6.7
2014	6.8	5.3 - 8.4	6.4	4.9 - 8.0	3.3	2.2 - 4.4
2011	6.3	4.8 - 7.7	7.2	5.7 - 8.8	4.8	3.5 - 6.0
<b>Age</b>						
35-44	4.3	1.1 - 7.4	2.1	0.0 - 4.3	5.6	2.1 - 9.2
45-54	3.1	0.6 - 5.7	1.9	0.0 - 3.9	1.2	0.0 - 2.9
55-64	7.3	2.7 - 11.9	6.1	1.9 - 10.4	4.4	0.8 - 8.1
65-74	12.7	6.2 - 19.2	15.4	8.4 - 22.5	6.3	1.5 - 11.2
75+	8.9	6.8 - 11.0	9.0	6.9 - 11.1	10.0	7.8 - 12.2
<b>Gender</b>						
Male	9.2	6.1 - 12.3	5.6	3.2 - 8.1	4.4	2.2 - 6.6
Female	4.6	2.5 - 6.7	7.1	4.4 - 9.7	5.7	3.3 - 8.1
<b>Race</b>						
White	5.6	3.8 - 7.5	5.5	3.6 - 7.3	3.2	1.8 - 4.7
Black	17.4	9.4 - 25.5	14.1	6.7 - 21.5	17.4	9.4 - 25.5
<b>Education</b>						
< High school	12.9	4.5 - 21.3	1.6	-1.5 - 4.8	4.7	0.0 - 9.9
High school grad	8.2	4.5 - 12.0	8.7	4.9 - 12.6	7.7	4.1 - 11.3
Some college	5.8	2.7 - 8.8	5.3	2.4 - 8.2	4.4	1.7 - 7.0
College grad	3.1	0.7 - 5.6	4.6	1.7 - 7.6	4.2	1.3 - 7.0
<b>Household Income</b>						
< \$20,000	19.1	11.7 - 26.5	12.0	5.9 - 18.1	10.9	5.1 - 16.8
\$20,000 - \$34,999	2.7	0.0 - 5.6	4.5	0.6 - 8.3	6.2	1.7 - 10.7
\$35,000 - \$49,999	6.1	0.9 - 11.3	11.9	4.9 - 19.0	3.6	0.0 - 7.6
\$50,000 - \$74,999	7.0	2.0 - 12.0	6.0	1.3 - 10.7	3.0	0.0 - 6.3
>\$75,000	2.1	0.0 - 4.1	1.6	0.0 - 3.3	2.6	0.3 - 4.9

<sup>a</sup> The proportion adults who were told by a doctor that they have had a heart attack or myocardial infraction

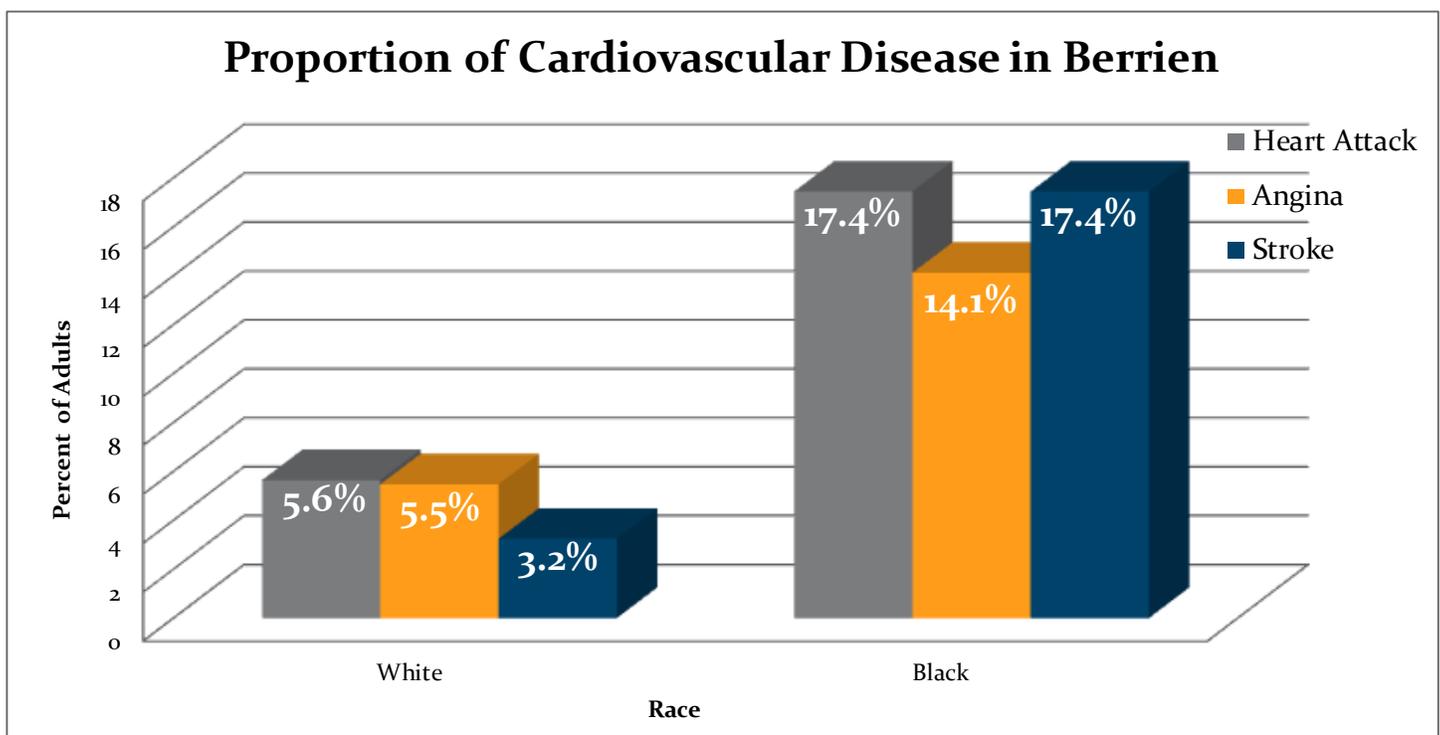
<sup>b</sup> The proportion of adults who were told by a doctor that they had angina.

<sup>c</sup> The proportion of adults who were told by a doctor that they had a stroke.



# Cardiovascular Disease

- Berrien County and the State of Michigan have similar trends in Cardiovascular disease.
- Black adults have a significantly higher incidence of heart attack and stroke compared to white adults.
- There is a significant increase in the likelihood of being diagnosed with cardiovascular diseases as age increases especially adults over the age of 54 years.
- There are no significant differences between males and females with cardiovascular disease.
- Overall, combining all three CVD variables; 14.8% of Berrien County adults ages 35 or older have been told by a medical provider that they had a heart attack, angina/coronary heart disease or a stroke.



The prevalence of heart attacks and strokes disproportionately affect black adults compared to white adults. 5.6% of white adults reported having heart attack where as 17.4% of black adults report having a heart attack. Similarly, 3.2% of white adults report having a stroke where as 17.4%. There is no significant trend associated with race and angina.



# High Cholesterol

Blood cholesterol is a fatty substance found in the blood and measured through the analysis of a blood test which analyzes the different types of cholesterol in the blood stream. Persons who have high cholesterol in their blood have a greater risk for cardiovascular incidence such as atherosclerosis, heart attack and stroke. Therefore, the American Heart Association recommends that all adults 20 or older have their cholesterol and other traditional risk factors checked every four to six years. After age 40, your health care provider will also want to use an equation to calculate your 10-year risk of experiencing cardiovascular disease or stroke (American Heart Association 2019).

Demographic Characteristic	Cholesterol Checked Within Past 5 Years <sup>a</sup>		Told High (If ever checked) <sup>b</sup>	
	%	95% Confidence Interval	%	95% Confidence Interval
<b>Michigan (2017)</b>	<b>89.2</b>	88.4 - 90.1	<b>35.1</b>	33.9 - 36.3
<b>Berrien County Overall</b>				
<b>2018</b>	<b>88.7</b>	86.4 - 91.0	<b>37.8</b>	34.2 - 41.5
2011	-	- -	49.8	46.6 - 53.0
<b>Age</b>				
18-24	55.8	42.1 - 69.4	0.0	0.0 - 0.0
25-34	69.3	60.3 - 78.3	14.5	6.5 - 22.4
35-44	92.6	87.6 - 97.6	28.8	20.1 - 37.6
45-54	93.5	89.4 - 97.6	41.5	33.1 - 49.8
55-64	94.0	90.1 - 97.8	40.8	32.7 - 49.0
65-74	96.4	92.9 - 99.9	53.7	44.3 - 63.2
75+	98.7	96.2 - 101.2	55.3	44.0 - 66.5
<b>Gender</b>				
Male	85.9	82.3 - 89.6	38.6	33.2 - 44.0
Female	90.9	88.0 - 93.7	37.9	32.9 - 42.9
<b>Race</b>				
White	89.6	94.1 - 92.1	37.9	33.9 - 42.0
Black	88.3	88.3 - 94.6	40.0	29.8 - 50.2
<b>Education</b>				
< High school	93.3	87.0 - 99.7	40.4	27.5 - 53.2
High school grad	88.7	84.4 - 93.1	40.1	33.2 - 47.1
Some college	85.0	80.8 - 89.3	37.8	31.6 - 43.9
College grad	91.7	87.8 - 95.6	34.3	27.3 - 41.2
<b>Household Income</b>				
< \$20,000	90.9	85.5 - 96.3	46.7	32.8 - 60.7
\$20,000 - \$34,999	81.5	74.1 - 88.8	40.4	24.2 - 56.7
\$35,000 - \$49,999	94.4	89.7 - 99.2	35.3	17.9 - 52.7
\$50,000 - \$74,999	83.0	75.6 - 90.4	43.3	27.4 - 59.3
>\$75,000	90.0	86.0 - 93.9	28.6	22.5 - 34.8

- The proportion of adults throughout the State of Michigan (89.2%) who get their cholesterol checked is very similar to the proportion of adults in Berrien County (88.7%) who get their cholesterol checked.
- Berrien County does not have a significantly high proportion of adults with high cholesterol compared to the State of Michigan.
- Compared to 2011 (49.8%), a lower proportion of Berrien County adults have been told they have high cholesterol 37.8% (2018).
- On average 94% of Berrien County adults over the age of 35 years old have had their cholesterol levels checked.
- There are no significant differences in cholesterol checks nor high cholesterol among annual household income, educational attainment, race or gender.

<sup>a</sup> The proportion of adults who reported that they had their cholesterol checked within the past 5 years.

<sup>b</sup> The proportion of adults who have ever been told by a doctor, nurse, or other health professional that they have high cholesterol.



# High Blood Pressure

Early detection and treatment of high blood pressure or hypertension, greatly reduces the likelihood of a cardiovascular related event. Therefore the American College of Cardiology recommends that adults 18 years and older be screened at least once per year for high blood pressure. A high blood pressure is considered any value with a systolic pressure equal to or greater than 130mm/Hg over a diastolic value equal to or greater than 80mm/Hg. (American College of Cardiology, 2019). BRFSS respondents were asked if they had been diagnose with high blood pressure by a doctor, nurse, or other health professional and if they were currently taking medication for high blood pressure.

Demographic Characteristic	Ever Told Have Hypertension <sup>a</sup>		Taking Medication (if available) <sup>b</sup>	
	%	95% Confidence Interval	%	95% Confidence Interval
<b>Michigan (2017)</b>	<b>34.7</b>	33.6 - 35.8		
<b>Berrien County Overall</b>				
<b>2018</b>	<b>37.0</b>	33.7 - 40.3	<b>73.1</b>	62.9 - 83.3
2011	35.8	32.9 - 38.7	81.0	77.6 - 84.4
<b>Age</b>				
18-24	9.8	3.3 - 16.2	0.0	0.0 - 0.0
25-34	16.9	10.2 - 23.7	50.0	36.0 - 64.0
35-44	34.5	25.9 - 43.0	43.9	29.1 - 58.8
45-54	29.8	22.2 - 37.4	66.7	55.3 - 78.1
55-64	47.3	39.3 - 55.4	85.9	78.5 - 93.3
65-74	55.8	46.6 - 65.0	87.1	80.0 - 94.2
75+	60.7	50.2 - 71.2	86.5	79.3 - 93.8
<b>Gender</b>				
Male	37.8	31.8 - 43.8	66.7	55.3 - 78.1
Female	36.2	31.6 - 40.8	79.2	70.2 - 88.2
<b>Race</b>				
White	35.1	31.4 - 38.7	69.9	59.0 - 80.7
Black	46.2	37.2 - 55.2	92.6	87.2 - 98.0
<b>Education</b>				
< High school	43.1	31.5 - 54.6	77.4	68.0 - 86.8
High school grad	38.8	32.4 - 45.1	83.0	74.8 - 91.1
Some college	34.1	28.7 - 39.5	58.4	45.7 - 71.2
College grad	35.4	28.9 - 42.0	79.2	70.2 - 88.2
<b>Household Income</b>				
< \$20,000	56.4	47.4 - 65.4	84.6	76.9 - 92.3
\$20,000 - \$34,999	35.0	26.4 - 43.7	70.7	60.1 - 81.4
\$35,000 - \$49,999	33.3	24.0 - 42.7	87.5	80.5 - 94.5
\$50,000 - \$74,999	44.3	35.2 - 53.5	65.4	53.8 - 77.0
>\$75,000	31.6	25.7 - 37.6	62.5	50.4 - 74.6

- There are no significant trends in hypertension among previous Berrien County BRFSS years, nor compared to the most recent State of Michigan BRFSS.
- The proportion of adults being diagnosed with hypertension in Berrien County increases with age.
- There are no significant differences among men and women or black and white adults with hypertension.
- Residents with a household income less than \$20,000 annually have a higher prevalence of hypertension than across all other annual household income levels.
- There is a higher proportion of black adults (92.6%) who are taking medication for their hypertension diagnosis compared to white adults (69.9%).
- A lower proportion of adults making greater than \$75,000 annually are taking medication for their hypertension diagnosis.

<sup>a</sup> The proportion of adults who reported being told by a doctor, nurse, or other health professional that you have high blood pressure.

<sup>b</sup> The proportion of adults who report having high blood pressure and report that they are currently taking medicine for high blood pressure.



# Weight Status

Weight status is classically divided into categories based on an individual's body mass index (BMI). The calculation of an individual's BMI takes into account a person's weight and height to approximate what an appropriate weight would be for said individual. Once the value is obtained the numeric value is assigned to a category. Using the three categories: Not Overweight or Obese, Overweight and Obese, the chart below helps to define trends in weight status for Berrien County adults 18 years and older.

Demographic Characteristic	Not Overweight or Obese <sup>a</sup>		Overweight <sup>b</sup>		Obese <sup>c</sup>	
	%	95% Confidence	%	95% Confidence	%	95% Confidence
		Interval		Interval		Interval
<b>Michigan (2018)</b>	<b>30.7</b>	29.5 - 31.9	<b>34.5</b>	33.3 - 35.7	<b>33.0</b>	31.8 - 34.2
<b>Berrien County Overall</b>						
<b>2018</b>	<b>30.9</b>	28.0 - 33.8	<b>30.2</b>	27.3 - 33.1	<b>38.9</b>	35.8 - 42.0
2014	27.7	24.9 - 30.5	36.5	33.5 - 39.5	35.9	32.9 - 38.9
2011	29.0	26.2 - 31.8	31.1	28.3 - 34.0	39.9	36.8 - 42.9
<b>Age</b>						
18-24	50.0	40.3 - 59.7	27.9	19.2 - 36.5	22.1	14.1 - 30.1
25-34	33.3	25.6 - 41.1	25.7	18.5 - 32.9	41.0	32.9 - 49.0
35-44	28.9	21.4 - 36.4	24.6	17.5 - 31.8	46.5	38.2 - 54.7
45-54	25.5	18.7 - 32.2	28.0	21.0 - 34.9	46.6	38.9 - 54.3
55-64	24.6	18.3 - 30.9	35.2	28.2 - 42.2	40.2	33.0 - 47.4
65-74	28.6	20.7 - 36.5	33.3	25.1 - 41.6	38.1	29.6 - 46.6
75+	34.7	25.3 - 44.0	34.7	25.3 - 44.0	30.7	21.7 - 39.7
<b>Gender</b>						
Male	31.7	27.5 - 35.9	30.6	26.4 - 34.8	37.7	33.3 - 42.1
Female	30.2	26.2 - 34.2	29.8	25.8 - 33.8	40.0	35.7 - 44.3
<b>Race</b>						
White	31.5	28.2 - 34.8	31.1	27.8 - 34.4	37.4	34.0 - 40.9
Black	28.1	20.6 - 35.6	29.5	21.9 - 37.1	42.4	34.2 - 50.7
<b>Education</b>						
< High school	26.1	17.1 - 35.1	29.3	20.0 - 38.7	44.6	34.4 - 54.8
High school grad	31.4	26.0 - 36.7	24.4	19.4 - 29.4	44.3	38.5 - 50.0
Some college	32.8	27.8 - 37.9	31.6	26.6 - 36.6	35.5	30.4 - 40.7
College grad	31.1	25.2 - 37.0	34.9	28.8 - 40.9	34.0	28.0 - 40.1
<b>Household Income</b>						
< \$20,000	29.9	22.4 - 37.4	25.0	17.9 - 32.1	45.1	37.0 - 53.3
\$20,000 - \$34,999	24.2	17.3 - 31.1	34.2	26.6 - 41.9	41.6	33.7 - 49.6
\$35,000 - \$49,999	36.4	27.3 - 45.4	24.5	16.5 - 32.6	39.1	29.9 - 48.3
\$50,000 - \$74,999	27.1	19.7 - 34.5	25.7	18.4 - 33.0	47.1	38.8 - 55.4
> \$75,000	32.4	26.7 - 38.2	37.5	31.6 - 43.4	30.1	24.4 - 35.7

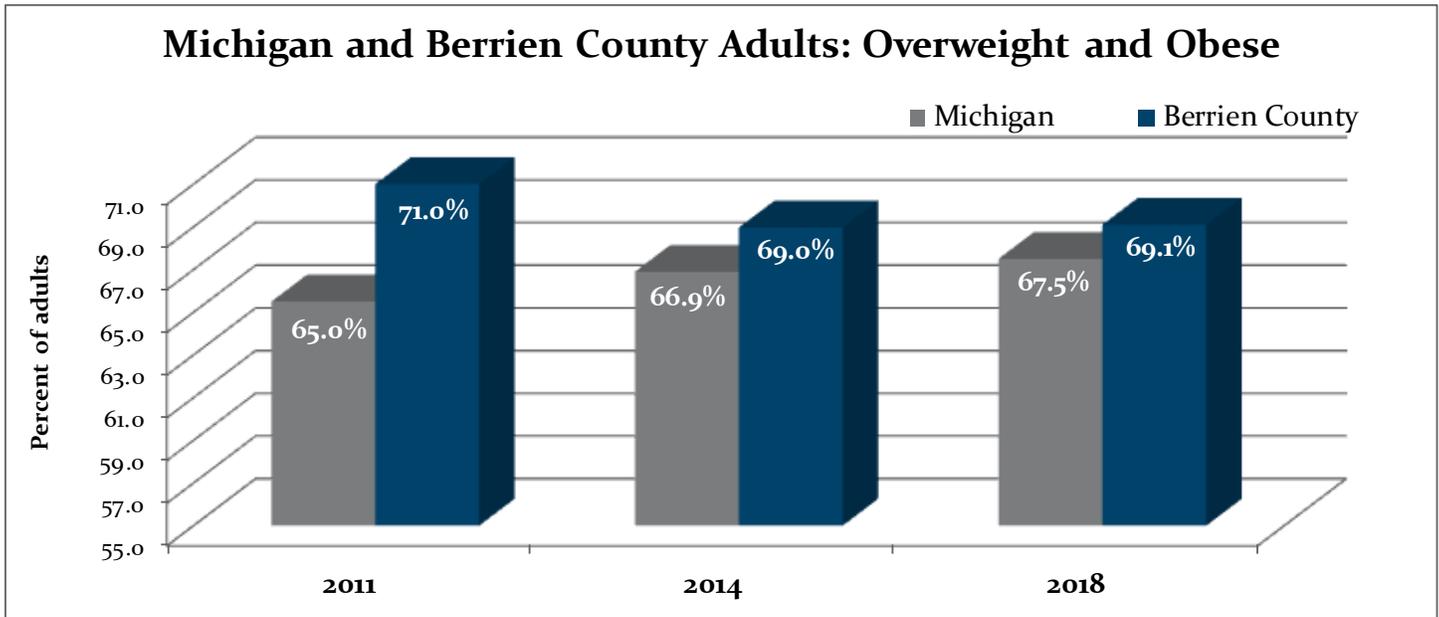
<sup>a</sup> The proportion of adults whose BMI was less than 25.0.

<sup>b</sup> The proportion of adults whose BMI was greater than or equal to 25.0, but less than 30.0.

<sup>c</sup> The proportion of adults whose BMI was greater than or equal to 30.0.



# Weight Status



The proportion of overweight and obese adults in Berrien County has been steadily decreasing since 2011 while the average among Michigan adults has been increasing.

- Among the three BMI categories Berrien County has similar proportions of Not Overweight or Obese adults, fewer Overweight adults, and a greater proportion of obese adults compared to the State of Michigan BRFSS 2018.
- The proportion of Overweight adults in the 2018 Berrien County (30.2%) is significantly less than the Overweight adults in the 2014 Berrien BRFSS (36.5%).
- There is no significant rise in the number of Obese adults in Berrien County from 2014 to 2018.
- 50.0% of 18-24 years old reported having a weight that was not overweight nor obese.
- There are no significant changes in weight status among age groups, gender, and race in Berrien County.
- These data show few weight related trends correlating with household income or educational attainment. Therefore the risk factors for obesity seem to be much more complex than education and household income.

$\text{BMI} = \frac{\text{weight (lbs)} * 703}{\text{height}^2 \text{ (in)}^2}$		<p>The 2018 BRFS recorded respondent's height and weight for the purpose of calculating respondent's body mass index (BMI) and grouping BMIs based on weight status. In this report, weight status was defined using three categories; obese (BMI <math>\geq</math> 30), overweight (BMI 29.9 - 25.0) and not overweight or obese (<math>\leq</math> 24.9). A more simplistic way to represent this data is in the graph to the right which combines the number of overweight and obese individuals to determine how many respondents have a BMI exceeding the normal weight categories (BMI <math>\geq</math> 25.0).</p>
BMI	Weight Status	
0.0-24.9	Not Overweight or Obese	
25.0-29.9	Overweight	
30.0+	Obese	



# Diabetes

Diabetes is a lifelong disease that affects the way the human body is able to process sugars such as glucose. Diabetes can impact wound healing, nerves, eyes, kidneys, the heart and blood vessels. Among several risk factors for diabetes are obesity, high cholesterol, decreased physical activity, smoking and unhealthy sleep patterns. Only those adults who were told by a doctor, nurse, or other health professional that they had diabetes (excluding gestational diabetes) were counted in this survey.

## Diagnosed Diabetes<sup>a</sup>

Demographic Characteristic	%	95% Confidence Interval
<b>Michigan (2018)</b>	<b>11.7</b>	10.9 - 12.5
<b>Berrien County Overall</b>		
<b>2018</b>	<b>11.7</b>	9.6 - 13.7
2014	11.7	9.7 - 13.7
2011	14.5	12.4 - 16.7
<b>Age</b>		
18-24	0.0	0.0 - 0.0
25-34	4.9	1.3 - 8.4
35-44	8.5	3.8 - 13.1
45-54	10.6	5.8 - 15.3
55-64	19.0	13.2 - 24.8
65-74	20.6	13.5 - 27.8
75+	13.0	6.4 - 19.6
<b>Gender</b>		
Male	10.9	8.1 - 13.7
Female	12.4	9.5 - 15.3
<b>Race</b>		
White	9.7	7.6 - 11.8
Black	21.5	14.5 - 28.4
<b>Education</b>		
< High school	12.1	5.4 - 18.8
High school grad	14.8	10.7 - 19.0
Some college	10.3	7.0 - 13.6
College grad	8.0	4.6 - 11.5
<b>Household Income</b>		
< \$20,000	23.6	16.5 - 30.6
\$20,000 - \$34,999	8.8	4.2 - 13.4
\$35,000 - \$49,999	10.7	5.0 - 16.5
\$50,000 - \$74,999	13.0	7.4 - 18.7
>\$75,000	6.3	3.3 - 9.2

- Remarkably, there is no difference among the 2014 Berrien, 2018 Berrien and the 2018 State of Michigan BRFSS in adult respondents reporting they had been diagnosed with diabetes.
- Among all respondents in Berrien County, 11.7% said they had been told by a health professional that they have diabetes.
- There are no significant difference in diabetes prevalence between male and female adults.
- Black adults (21.5%) in Berrien County reported a higher prevalence of diabetes diagnosis compared to white adults (9.7%).
- Those with a household income of \$75,000 or more per year have a significantly lower prevalence of diabetes, compared to some other household income levels.

<sup>a</sup> The proportion of adults who have been told by a doctor, nurse or other health professional that they have diabetes. This does not include 'pre-diabetes' and women told they have diabetes only during pregnancy.



# HIV Testing

In order to ensure the proper management and reduction of the Human Immunodeficiency Virus (HIV), high risk individuals are recommended to be tested for HIV to determine if they are living with the virus. This recommendation is considering that 1 in 4 people living with HIV are unaware of their status and could greatly benefit from receiving treatment. This question asks all adults under age 65 years if they had ever been tested for the presence of HIV.

## Ever Tested for HIV<sup>a</sup>

Demographic Characteristic	%	95% Confidence
		Interval
<b>Michigan (2018)</b>	<b>39.9</b>	38.6 - 41.1
<b>Berrien County Overall</b>		
<b>2018</b>	<b>49.8</b>	46.0 - 53.6
2014	36.0	32.4 - 39.5
2011	49.7	45.6 - 53.7
<b>Age</b>		
18-24	32.7	23.3 - 42.0
25-34	51.5	43.0 - 59.9
35-44	62.9	54.4 - 71.4
45-54	50.3	42.2 - 58.5
55-64	48.4	40.7 - 56.2
<b>Gender</b>		
Male	42.4	37.1 - 47.7
Female	57.3	52.0 - 62.7
<b>Race</b>		
White	44.9	41.0 - 48.8
Black	80.2	72.4 - 88.0
<b>Education</b>		
< High school	52.2	40.2 - 64.3
High school grad	52.5	45.6 - 59.5
Some college	53.7	47.4 - 60.0
College grad	38.3	30.6 - 46.0
<b>Household Income</b>		
< \$20,000	63.1	53.7 - 72.5
\$20,000 - \$34,999	50.0	39.8 - 60.2
\$35,000 - \$49,999	49.3	37.2 - 61.3
\$50,000 - \$74,999	59.8	50.7 - 68.9
>\$75,000	41.6	34.8 - 48.4

- Among Berrien County adults age 18-64 years old, 49.8% indicated that they have been tested for HIV.
- More adults in Berrien County have been tested for HIV (49.8%) compared to the average number of adults being tested throughout the State of Michigan (39.9%).
- Significantly more Berrien County adults in 2018 (49.8%) were tested for HIV compared to 2014 (36.0%), but there has been no change compared to 2011 (49.7%).
- Adults age 18 to 24 (32.7%) years are least likely to report having ever been tested for HIV.
- More female adults in Berrien County (57.3%) report being tested for HIV compared to men (42.4%).
- Black adults (80.2%) are significantly more likely to report having ever been tested for HIV compared to white adults (44.9%).
- In Berrien County, fewer college graduates are tested for HIV compared to other educational levels.
- There is not a strong association with HIV testing and household income among Berrien County adults.

<sup>a</sup> The Proportion of adults 18-64 years of age who reported ever being tested for HIV, not counting tests that were a part of a blood donation.



# Cancer

Over the past 60 years cancer has been emerging as a leading cause of death in the United States as cardiovascular disease has declined. Preventative practices such as cancer screenings are the most effective way to detect cancer at an early stage to begin treatment or removal before it is able to spread. The majority of BRFSS respondents who stated they have had cancer had been diagnosed with skin cancer. The two categories here look at the prevalence of other types of cancers as well as the overall burden of cancer as compared to the State of Michigan in adults.

Demographic Characteristic	Ever Told Had Skin Cancer <sup>a</sup>		Ever told Had Other Form of Cancer <sup>b</sup>	
	%	95% Confidence	%	95% Confidence
		Interval		Interval
<b>Michigan (2017)</b>	<b>6.0</b>	5.5 - 6.5	<b>8.3</b>	7.7 - 8.9
<b>Berrien County Overall</b>				
<b>2018</b>	<b>8.3</b>	5.9 - 10.7	<b>9.1</b>	6.6 - 11.6
2014	4.9	3.6 - 6.3	8.0	6.3 - 9.7
<b>Age</b>				
18-24	0.0	0.0 - 0.0	0.0	0.0 - 0.0
25-34	0.0	0.0 - 0.0	2.8	0.1 - 5.5
35-44	2.1	0.0 - 4.5	4.2	0.9 - 7.5
45-54	7.5	3.4 - 11.5	6.2	2.5 - 10.0
55-64	8.4	4.3 - 12.5	13.5	8.5 - 18.5
75+	18.9	12.1 - 25.7	14.2	8.1 - 20.3
<b>Gender</b>				
Male	7.5	5.1 - 9.9	5.8	3.7 - 7.9
Female	9.0	6.5 - 11.5	12.2	9.3 - 15.1
<b>Race</b>				
White	10.3	8.2 - 12.5	9.7	7.6 - 11.8
Black	0.0	0.0 - 0.0	7.9	3.4 - 12.4
<b>Education</b>				
< High school	3.3	0.0 - 6.9	8.7	2.9 - 14.5
High school grad	5.6	2.9 - 8.2	8.0	4.9 - 11.2
Some college	7.5	4.7 - 10.3	8.1	5.2 - 11.1
College grad	14.3	9.8 - 18.7	10.9	7.0 - 14.9
<b>Household Income</b>				
< \$20,000	5.6	1.8 - 9.4	8.3	3.8 - 12.9
\$20,000 - \$34,999	4.0	0.9 - 7.2	10.7	5.7 - 15.6
\$35,000 - \$49,999	9.9	4.3 - 15.5	11.7	5.7 - 17.7
\$50,000 - \$74,999	10.7	5.6 - 15.9	7.1	2.9 - 11.4
>\$75,000	8.6	5.1 - 12.0	7.1	3.9 - 10.2

- In Berrien County, approximately 8.3% of adults have been diagnosed with skin cancer and 9.1% have been diagnosed with some other form of cancer in their life.
- There is no difference between Berrien County and the State of Michigan, where approximately 6.0% have been diagnosed with skin cancer and 8.3% have been diagnosed with another form of cancer.
- The proportion of adults who had developed cancer increases for adults over the age of 45 years.
- There are no significant trends among the demographic characteristics of Berrien County adults and cancer.

<sup>a</sup> The proportion of adults who were diagnosed by a physician with a form of skin cancer.

<sup>b</sup> The proportion of adults who have been diagnosed by a physician with any form of cancer other than skin cancer.



# Dental Care

Dental visits can be important for early detection of oral cancer, diabetes and cardiovascular disease. While dental offices are often easy to find, affordable insurance coverage for dentistry is not as prevalent. In this question adults were asked if they had seen any type of a dentist such as a orthodontist, oral surgeon, and all other dental specialists as well as dental hygienists and how long it has been since one of these visits.

Demographic Characteristic	No Dental Care Coverage <sup>a</sup>		No Dental Visit in Past Year <sup>b</sup>	
	95% Confidence		95% Confidence	
	%	Interval	%	Interval
<b>Michigan (2018)</b>	-		<b>29.0</b>	27.8 - 30.1
<b>Berrien County Overall</b>				
<b>2018</b>	<b>30.5</b>	27.6 - 33.4	<b>31.8</b>	27.7 - 35.9
2014	39.3	36.0 - 42.6	36.1	33.1 - 39.1
2011	42.8	39.4 - 46.2	32.1	28.9 - 35.3
<b>Age</b>				
18-24	16.8	9.3 - 24.4	33.3	23.8 - 42.9
25-34	29.4	21.9 - 36.8	41.0	32.9 - 49.0
35-44	22.4	15.5 - 29.3	37.3	29.3 - 45.3
45-54	19.4	13.2 - 25.5	31.4	24.2 - 38.7
55-64	28.5	21.8 - 35.1	29.2	22.5 - 35.9
65-74	35.2	26.8 - 43.6	28.0	20.1 - 35.9
75+	37.4	27.9 - 46.9	21.8	13.7 - 29.9
<b>Gender</b>				
Male	30.5	26.3 - 34.7	36.0	31.6 - 40.4
Female	23.3	19.6 - 27.0	28.0	24.0 - 31.9
<b>Race</b>				
White	28.0	24.8 - 31.2	30.8	27.6 - 34.1
Black	18.8	12.2 - 25.4	33.1	25.2 - 41.0
<b>Education</b>				
< High school	25.6	16.4 - 34.7	55.1	44.7 - 65.4
High school grad	30.7	25.3 - 36.1	43.2	37.4 - 48.9
Some college	23.9	19.3 - 28.4	23.8	19.2 - 28.4
College grad	25.8	20.3 - 31.4	18.5	13.5 - 23.4
<b>Household Income</b>				
< \$20,000	25.2	18.0 - 32.4	53.2	44.9 - 61.5
\$20,000 - \$34,999	34.7	27.0 - 42.4	37.8	30.0 - 45.7
\$35,000 - \$49,999	32.4	23.6 - 41.3	26.6	18.3 - 34.9
\$50,000 - \$74,999	35.3	27.3 - 43.2	37.9	29.8 - 45.9
>\$75,000	20.7	15.7 - 25.7	16.4	11.9 - 21.0

- The 2011 and 2014 BRFSS reports roughly 1 in 3 Berrien County residents did not visit the dentist in the past year.
- In 2014, 39.3% of Berrien County respondents reported that they have no dental care coverage which is fairly consistent with the 2011 proportion of respondents without dental coverage (42.8%). There are more adults in Berrien County who have dental coverage in 2018 (30.5%) compared to 2014 (39.3).
- 18-24 year old adults have a lower incidence of not having dental care coverage, although they do not have the lowest proportion of not visiting the dentist.
- There are no significant differences among white, black, male or female adults.
- Dental coverage does not appear to be influenced by educational attainment or household income.
- Adults with higher household incomes typically do have at least one dental visit in the past year.
- Adults making less than \$20,000 annually have the highest prevalence of not having a dental visit in the past year (53.2%).

<sup>a</sup> The proportion of adults who reported having no dental care coverage.

<sup>b</sup> The proportion of adults who reported that they had not visited a dentist or dental clinic for any reason in the previous year.



# Health Care Access

There are many meanings to having “access” to health care. In this report access refers to having health insurance, a healthcare provider and the ability to afford appropriate medical care. Health insurance or coverage helps to make medical care more affordable, but lower costs do not mean that healthcare is obtainable. In an effort to generate the best health outcomes for a population, health care must be both, affordable and obtainable. When analyzing if people have medical coverage, those receiving age-related benefits from Medicare (age  $\geq 65$  years) were excluded from the “No health care coverage” column in the data table.

Demographic Characteristic	No Healthcare Coverage <sup>a</sup>		No Personal Healthcare Provider <sup>b</sup>		No Healthcare Access Due to Cost <sup>c</sup>	
	%	95% Confidence	%	95% Confidence	%	95% Confidence
		Interval		Interval		Interval
<b>Michigan (2014)</b>	<b>12.7</b>	11.6 - 14.0	<b>16.1</b>	15.0 - 17.3	<b>14.6</b>	13.6 - 15.7
<b>Berrien County Overall</b>						
<b>2018</b>	<b>12.8</b>	10.4 - 15.2	<b>18.8</b>	16.3 - 21.3	<b>13.7</b>	11.5 - 15.9
2014	15.8	13.2 - 18.4	17.4	15.0 - 19.8	16.2	13.9 - 18.5
2011	16.6	13.7 - 19.5	18.4	16.0 - 20.7	12.5	10.5 - 14.5
<b>Age</b>						
18-24	18.6	11.0 - 26.2	36.3	26.9 - 45.7	19.4	11.7 - 27.1
25-34	20.8	14.2 - 27.5	41.5	33.4 - 49.7	15.9	9.9 - 21.8
35-44	10.7	5.6 - 15.9	23.6	16.5 - 30.6	23.2	16.3 - 30.2
45-54	7.5	3.4 - 11.5	10.9	6.0 - 15.8	13.0	7.8 - 18.3
55-64	9.5	5.2 - 13.8	12.3	7.5 - 17.1	11.7	7.0 - 16.5
65-74	-		7.9	3.2 - 12.7	8.8	3.8 - 13.8
75+	-		1.0	0.0 - 2.9	2.0	0.0 - 4.7
<b>Gender</b>						
Male	14.6	11.0 - 18.2	25.0	21.0 - 29.0	16.3	13.0 - 19.7
Female	10.8	7.6 - 14.0	13.2	10.2 - 16.2	11.2	8.4 - 14.0
<b>Race</b>						
White	12.0	9.3 - 14.7	17.5	14.8 - 20.2	12.8	10.5 - 15.2
Black	16.7	9.8 - 23.5	24.3	17.0 - 31.5	17.4	11.0 - 23.7
<b>Education</b>						
< High school	13.2	5.5 - 20.8	8.7	2.9 - 14.5	25.0	16.1 - 33.9
High school grad	21.1	15.7 - 26.5	25.0	20.0 - 30.0	16.1	11.8 - 20.3
Some college	8.1	4.8 - 11.5	20.6	16.2 - 25.0	14.4	10.6 - 18.2
College grad	9.6	5.1 - 14.1	13.9	9.5 - 18.3	6.3	3.2 - 9.4
<b>Household Income</b>						
< \$20,000	11.5	5.6 - 17.4	17.6	11.3 - 23.9	25.2	18.0 - 32.3
\$20,000 - \$34,999	17.9	10.6 - 25.3	27.0	19.8 - 34.2	17.3	11.3 - 23.4
\$35,000 - \$49,999	12.7	4.9 - 20.5	23.1	15.2 - 31.1	14.4	7.9 - 21.0
\$50,000 - \$74,999	20.3	13.0 - 27.6	21.2	14.3 - 28.0	13.6	7.9 - 19.3
>\$75,000	8.0	4.4 - 11.7	10.6	6.8 - 14.4	7.8	4.5 - 11.1

<sup>a</sup> The proportion of adults age 18-64 who report having no health care coverage, including health insurance, prepaid plans such as HMOs, or government plans, such as Medicare.

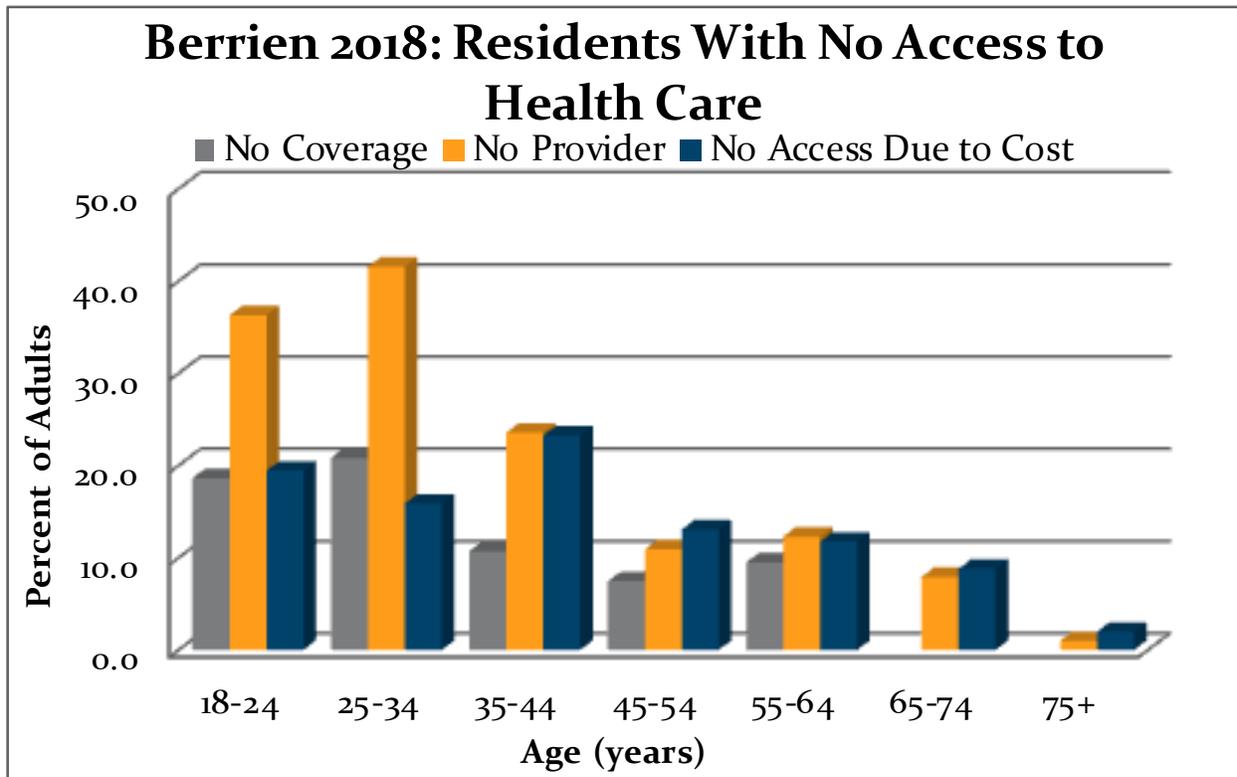
<sup>b</sup> The proportion of adults who reported that they did not have anyone that they thought of as their personal doctor or health

<sup>c</sup> The proportion do adults that reported in the past 12 month they could not see a doctor when they needed to due to the cost.



# Health Care Access

- The proportion of Berrien County adults with no healthcare coverage has remained the same from the 2014 BRFSS and is similar to the State of Michigan's proportion of adults with no healthcare coverage.
- The highest risk groups for limited to no healthcare access are persons from age 25-34 with a lower proportion of this age group having healthcare coverage or a healthcare provider.
- In Berrien County, 25.0% of adult males do not have a personal healthcare provider compared to 13.2% of adult females.
- There is no significant difference in the healthcare accesses in any of the three categories assessed between white and black Berrien County residents.
- Adults with a high school degree or GED are the most likely group in educational attainment to not have healthcare coverage.
- Adults with a college education or a household income greater than \$75,000 annually have the lowest proportion (7.8%) of not having access to healthcare due to cost.



Berrien county adults age 18-34 years experience additional factors causing them difficulty attaining access to healthcare which older adults do not experience. The greatest gap in access is in the establishment of this age group with a healthcare provider such as a family doctor.



# Routine Checkup in Past Year

Routine medical checkups are important to maintain optimal health. Regular medical visits help medical professionals identify early disease onsets and increase the likelihood of detecting a health issue before it becomes a major medical issue. For the 2018 BRFSS, respondents were asked how long has it been since they last visited a doctor for a routine checkup. This question excluded visits for a specific condition, illness or injury.

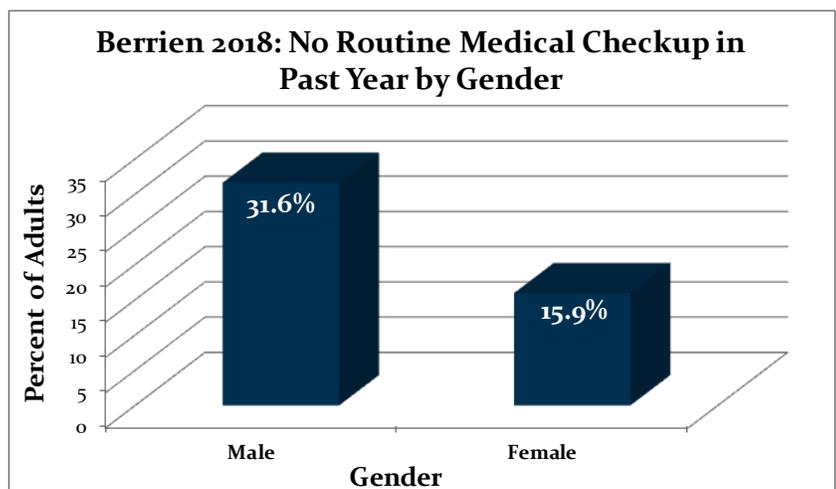
## No Routine Checkup in Past Year<sup>a</sup>

Demographic Characteristic	%	95% Confidence
		Interval
<b>Michigan (2018)</b>	<b>20.5</b>	19.6 - 21.4
<b>Berrien County Overall</b>		
<b>2018</b>	<b>23.5</b>	20.8 - 26.2
2014	28.3	25.4 - 31.1
<b>Age</b>		
18-24	26.5	17.9 - 35.1
25-34	39.4	31.4 - 47.5
35-44	20.9	14.1 - 27.6
45-54	34.4	27.0 - 41.8
55-64	18.9	13.2 - 24.6
65-74	11.9	6.2 - 17.6
75+	6.9	2.0 - 11.9
<b>Gender</b>		
Male	31.6	27.4 - 35.8
Female	15.9	12.7 - 19.2
<b>Race</b>		
White	23.0	20.0 - 26.0
Black	21.0	14.2 - 27.8
<b>Education</b>		
< High school	8.9	3.0 - 14.8
High school grad	26.7	21.5 - 31.8
Some college	25.0	20.3 - 29.7
College grad	21.5	16.3 - 26.8
<b>Household Income</b>		
< \$20,000	19.6	13.1 - 26.1
\$20,000 - \$34,999	25.5	18.4 - 32.6
\$35,000 - \$49,999	20.7	13.1 - 28.3
\$50,000 - \$74,999	34.8	26.7 - 42.9
>\$75,000	21.5	16.4 - 26.5

<sup>a</sup> The proportion of adults that said they did not have a routine checkup in the past year.

Adult males (31.6%) in Berrien County are much less likely to have had a recent medical visit compared to women (15.9%).

- Compared to the State of Michigan (20.5%), Berrien County adults are just as likely to have not had a routine medical checkup in the past year (23.5%).
- Berrien County adults over the age of 55 were much less likely to go a full year without being seen by a medical provider compared to younger age groups.
- Males (31.6%) are more likely to have not had a routine medical checkup in the past year compared to females (15.9%).
- Adults with less than a high school education are more likely have routine medical visits in the past year compared to the rest of the education levels. (8.9% had no routine medical checkup in the past year).
- Adults over 75 years of age are more likely to have had a routine medical visit in the past year compared to other age groups. (only 6.9% reported not having a routine medical visit).





# Fruit and Vegetable Consumption

Consumption of fruits and vegetables reduces the risk of heart diseases, stroke and some forms of cancer. Due to the inherent difficulties in reporting fruit and vegetable consumption by number of servings, respondents are asked how many times per day in the past month they consumed fruits and vegetables. The table below shows the proportion of adults who eat less than one (1) fruit or less than one (1) vegetable per day on average. This section of the BRFSS consists of six separate questions to help identify frequency and types of fruit, 100% fruit juice, salad without other vegetables, vegetables which are not lettuce, and fried, baked and boiled potatoes. Fried potatoes are included in this calculation of foods considered as vegetables for the purposes of this survey.

Demographic Characteristic	Fruits <sup>a</sup> ( <u>&lt;1 Time/Day</u> )		Vegetables <sup>b</sup> ( <u>&lt;1 Time/Day</u> )	
	%	95% Confidence Interval	%	95% Confidence Interval
<b>Michigan 2017</b>	<b>36.4</b>	35.2 - 37.6	<b>18.5</b>	17.4 - 19.5
<b>Berrien County Overall</b>				
<b>2018</b>	<b>41.6</b>	38.5 - 44.7	<b>35.7</b>	32.7 - 38.8
<b>2014</b>	46.1	42.6 - 49.5	30.9	27.8 - 34.1
<b>Age</b>				
18-24	35.8	26.5 - 45.1	51.0	41.3 - 60.6
25-34	39.3	31.3 - 47.4	27.8	20.4 - 35.1
35-44	46.2	38.0 - 54.4	36.6	28.7 - 44.6
45-54	55.6	47.9 - 63.3	31.1	23.9 - 38.2
55-64	39.9	32.7 - 47.1	35.2	28.2 - 42.2
65-74	39.5	30.9 - 48.0	38.9	30.3 - 47.4
75+	26.2	17.6 - 34.8	34.7	25.3 - 44.0
<b>Gender</b>				
Male	45.6	41.2 - 50.0	40.9	36.6 - 45.2
Female	37.9	34.8 - 41.0	30.7	27.8 - 33.6
<b>Race</b>				
White	40.5	37.3 - 43.7	35.5	32.4 - 38.6
Black	44.2	35.9 - 52.5	36.7	28.6 - 44.7
<b>Education</b>				
< High school	58.3	48.1 - 68.5	50.5	40.2 - 60.9
High school grad	48.5	42.7 - 54.3	43.2	37.5 - 48.9
Some college	38.5	33.3 - 43.7	31.5	26.5 - 36.5
College grad	30.6	24.7 - 36.4	24.8	19.3 - 30.3
<b>Household Income</b>				
< \$20,000	53.4	45.2 - 61.6	45.8	37.6 - 54.0
\$20,000 - \$34,999	47.0	39.0 - 55.0	47.7	39.6 - 55.7
\$35,000 - \$49,999	44.4	35.2 - 53.7	33.3	24.5 - 42.1
\$50,000 - \$74,999	45.7	37.4 - 54.0	34.3	26.4 - 42.2
>\$75,000	32.9	27.1 - 38.7	25.8	20.4 - 31.2

- A significantly higher proportion of Berrien County adults (46.1%) consume under one fruit per day compared to the rest of Michigan (36.4%).
- A significantly higher proportion of Berrien County adults (35.7%) consume under one vegetable per day compared to the rest of Michigan (18.5%).
- Males in Berrien County (41.2%) are more likely to consume less than one fruit per day compared to females (37.9%) and males (49.9%) are more likely to consume less than one vegetable per day compared to females (30.7%).
- There are no significant differences among the race of adult respondents in Berrien County and fruit and vegetable consumption.
- Berrien County adults with lower household incomes and educational attainment are more likely to consume less than one fruit and less than one vegetable per day on average.

<sup>a</sup> The proportion of adults who consumed on average less than one fruit (including fruit juice)

<sup>b</sup> The proportion of adults who consumed on average less than one vegetable (fried potatoes included) per day in the last 30 days .



# Physical Activity

Apart from their regular job, respondents were asked if they participated in any leisure time physical activities or exercise in the past 30 days such as running, calisthenics, golf, gardening, or walking for exercise... etc. Those who stated that they did not participate in a physical activity outside of their job are categorized as respondents who receive no leisure time physical activity. Respondents were also asked what types of physical activity (aerobic or strengthening) they perform, how many times a week and for how long they did the activity. Using the recommendations from the CDC, respondents either satisfied the criteria or received an inadequate amount of the specific activity as represented below.

Demographic Characteristic	No Leisure Time Physical Activity <sup>a</sup>		Inadequate Aerobic Activity <sup>b</sup>		Inadequate Strengthening Activity <sup>c</sup>		Inadequate Physical Activity <sup>d</sup>	
	95% Confidence		95% Confidence		95% Confidence		95% Confidence	
	%	Interval	%	Interval	%	Interval	%	Interval
<b>Michigan (2017)</b>	<b>27.2</b>	26.1 - 28.3	<b>50.5</b>	49.2 - 51.8	<b>70.1</b>	68.9 - 71.3	<b>80.9</b>	79.9 - 81.9
<b>Berrien County Overall</b>								
<b>2018</b>	<b>28.1</b>	25.3 - 30.9	<b>71.5</b>	68.6 - 74.3	<b>92.6</b>	90.9 - 94.3	<b>93.2</b>	91.6 - 94.8
2014	32.9	30.0 - 35.9	62.4	58.8 - 65.9	92.9	91.2 - 94.5	94.2	92.8 - 95.7
2011	30.2	27.1 - 33.2	54.9	51.8 - 58.0	79.2	76.7 - 81.7	83.9	81.7 - 86.2
<b>Age</b>								
18-24	10.0	4.1 - 15.9	58.3	48.7 - 67.8	83.5	76.3 - 90.7	84.6	77.6 - 91.6
25-34	31.5	23.8 - 39.1	74.3	67.1 - 81.5	88.9	83.7 - 94.0	88.9	83.7 - 94.0
35-44	26.9	19.3 - 34.6	71.1	63.6 - 78.6	90.8	86.1 - 95.6	92.3	87.8 - 96.7
45-54	31.6	24.2 - 39.0	73.3	66.4 - 80.1	95.0	91.7 - 98.4	95.0	91.7 - 98.4
55-64	32.9	25.8 - 40.1	70.4	63.7 - 77.1	93.9	90.4 - 97.4	93.9	90.4 - 97.4
65-74	28.2	20.3 - 36.2	74.6	67.0 - 82.2	95.3	91.6 - 99.0	96.1	92.7 - 99.5
75+	29.7	20.2 - 39.1	75.2	66.8 - 83.7	99.0	97.1 - 101.0	99.0	97.1 - 101.0
<b>Gender</b>								
Male	27.7	23.6 - 31.9	71.7	67.6 - 75.8	91.2	88.7 - 93.8	91.9	89.4 - 94.3
Female	28.4	24.3 - 32.5	71.2	67.2 - 75.2	93.4	91.2 - 95.6	93.8	91.7 - 95.9
<b>Race</b>								
White	26.4	23.2 - 29.6	70.6	67.4 - 73.8	92.5	90.6 - 94.4	93.1	91.4 - 94.9
Black	37.5	29.1 - 45.9	73.2	65.8 - 80.6	93.5	89.3 - 97.6	93.5	89.3 - 97.6
<b>Education</b>								
< High school	29.9	19.1 - 40.7	74.7	65.7 - 83.7	94.5	89.8 - 99.2	94.5	89.8 - 99.2
High school grad	33.3	27.1 - 39.6	76.3	71.4 - 81.2	93.8	90.9 - 96.6	94.4	91.8 - 97.1
Some college	29.4	24.0 - 34.9	72.1	67.2 - 76.9	91.0	87.9 - 94.1	91.9	89.0 - 94.8
College grad	17.5	12.4 - 22.7	62.2	56.0 - 68.4	91.2	87.6 - 94.8	91.2	87.6 - 94.8
<b>Household Income</b>								
< \$20,000	43.8	34.0 - 53.6	84.7	78.8 - 90.6	93.7	89.7 - 97.7	93.7	89.7 - 97.7
\$20,000 - \$34,999	38.2	28.5 - 47.8	79.2	72.7 - 85.7	96.0	92.8 - 99.1	96.0	92.8 - 99.1
\$35,000 - \$49,999	27.8	18.6 - 37.0	67.6	58.8 - 76.3	91.0	85.6 - 96.3	91.0	85.6 - 96.3
\$50,000 - \$74,999	30.4	22.0 - 38.7	75.7	68.6 - 82.8	91.4	86.8 - 96.1	91.4	86.8 - 96.1
> \$75,000	17.1	12.3 - 21.9	55.1	49.0 - 61.2	88.7	84.8 - 92.6	88.7	84.8 - 92.6

<sup>a</sup> The proportion of adults who had no physical activity in the past month.

<sup>b</sup> The proportion of adults who did not engage in aerobic activity for 150 minutes per week.

<sup>c</sup> The proportion of adults who did not engage in strengthening activities 2 or more times/week.

<sup>d</sup> The proportion of adults who reported less than 150 minutes of aerobic activity and less than 2 days of strengthening activity per week.



# Physical Activity

- Compared to the State of Michigan (27.2%, 50.5%) a higher proportion of Berrien County residents had no leisure time physical activity in the past 30 days (28.1%) and a greater proportion of adults reported inadequate aerobic activity (71.5%) respectively.
- 80.9% of adults across the State of Michigan and 93.2% of Berrien County adults do not meet the CDC recommended amount of weekly physical activity of 150 minutes of aerobic activity and at least 2 days of muscle strengthening activities.
- Berrien County adults 18-24 appear to be the most active and therefore have the lowest proportion of inadequate aerobic activity (58.3%).
- There is no significant difference in levels of aerobic activity among Berrien County adults age 25 years of age and older.
- Other than age, leisure time physical activity and aerobic activity have the greatest correlation among household incomes. Adults with lower household incomes report greater proportions of no leisure time activity and a greater portion of adults who do not meet the recommend amount of weekly aerobic activity.
- Adults making more than \$75,000 annually have a lower proportion of not meeting the recommend muscle strengthening (88.7%) and aerobic activity levels (55.1%).
- There are no significant differences in physical activity among black and white adults in Berrien County.
- Roughly 40% of Berrien County adults identified as having a job that is physically demanding.

There are numerous demonstrations in the scientific literature regarding a link between physical activity and improved cardiovascular health. To best describe the level of physical activity throughout Berrien County this section of the BRFSS analyzes four categories of activity based on the weekly physical activity recommendations from the Centers for Disease Control and prevention. Analysis revealed that majority of respondents are not receiving the appropriate amount of aerobic activity (62.4%) compared to 92.9% who did not meet strengthening activity recommendations. With high proportions of adults not meeting either category, the proportion of adults who do not meet the recommended 150 minutes of aerobic activity and at least 2 days of muscle strengthening activity per week is 93.2% .

Just under one third of the respondents indicated that they had no leisure time physical activity. As these questions did not assess for adults who may have a job that is physically demanding different assessment was used to assess for any physical activity an adult had outside of work. Of the 28.1% adults who report no leisure time physical activity outside of their job, only 9.2% of the adults in Berrien County reported that they did not participate in physical activity at all in the past week outside of their physically demanding work/occupation.



# Mental Health

Unlike physical ailments, mental health ailments are often difficult to detect and diagnose. The Berrien County Health Department included questions from the Kessler 6 Index, a mental health screening tool, in the 2018 BRFSS. This index uses a rating scale of 1 to 5, 5 meaning “all of the time” and 1 meaning “none of the time” to assess the severity of depressive and anxiety symptoms respondents have experienced in their worst month of the previous year. A composite score gives a range of 6-30 (with 6 indicating the lowest level of stress and 30 being the highest) to approximate the severity of psychological distress a respondent may be experiencing. Those scoring in the 6-11 range are likely to be experiencing low levels of psychological distress. Scores from 12-19 indicates mild to moderate levels of psychological distress. Those in this category are likely to benefit from additional information and self-help treatment to improve coping strategies. Those scoring a 20-30 are suffering from severe levels of psychological distress and would be encouraged to seek help from a health care professional.

<b>Kessler 6 Index:</b>					
How often do you feel _____?					
	Never <----->Always				
<b>Nervous</b>	1	2	3	4	5
<b>Hopeless</b>	1	2	3	4	5
<b>Restless</b>	1	2	3	4	5
<b>Depressed</b>	1	2	3	4	5
<b>Everything is an effort</b>	1	2	3	4	5
<b>Worthless</b>	1	2	3	4	5





# Mental Health

Demographic Characteristic	Mild to Moderate Psychological Distress <sup>a</sup>		Severe Psychological Distress <sup>b</sup>	
	%	95% Confidence Interval	%	95% Confidence Interval
<b>Berrien County Overall</b>				
2018	27.4	24.2 - 30.5	12.1	9.8 - 14.4
2014	25.8	22.7 - 28.9	8.7	6.7 - 10.7
<b>Age</b>				
18-24	54.4	43.4 - 65.5	17.7	9.2 - 26.2
25-34	34.2	25.5 - 43.0	22.8	15.1 - 30.5
35-44	39.8	30.8 - 48.9	15.0	8.4 - 21.7
45-54	29.5	21.9 - 37.1	10.1	5.1 - 15.1
55-64	11.8	6.5 - 17.1	9.7	4.9 - 14.6
65-74	16.0	8.8 - 23.2	4.0	0.1 - 7.9
75+	13.8	6.2 - 21.3	6.3	0.9 - 11.6
<b>Gender</b>				
Male	24.7	20.2 - 29.1	10.4	7.3 - 13.5
Female	29.8	25.3 - 34.2	13.7	10.3 - 17.0
<b>Race</b>				
White	26.0	22.5 - 29.4	12.3	9.7 - 14.8
Black	36.4	27.3 - 45.4	13.6	7.2 - 20.1
<b>Education</b>				
< High school	38.2	26.6 - 49.9	25.0	14.6 - 35.4
High school grad	28.3	22.2 - 34.4	15.6	10.7 - 20.5
Some college	27.9	22.7 - 33.2	12.4	8.5 - 16.2
College grad	22.4	16.6 - 28.2	4.5	1.6 - 7.3
<b>Household Income</b>				
< \$20,000	24.8	16.5 - 33.1	31.4	22.5 - 40.4
\$20,000 - \$34,999	29.2	20.8 - 37.6	16.8	9.9 - 23.7
\$35,000 - \$49,999	14.4	7.4 - 21.5	5.2	0.7 - 9.6
\$50,000 - \$74,999	30.0	21.4 - 38.6	10.0	4.4 - 15.6
>\$75,000	33.2	27.1 - 39.3	4.4	1.7 - 7.0

- 27.4% of Berrien County adults report mild/moderate levels of psychological distress.
- Adults ages 18-24 years old have significantly higher levels of mild to moderate psychological distress (54.4% ).
- Mild to moderate psychological distress appears to decrease significantly after the age of 54 years.
- 12.1% of Berrien County adults report severe levels of psychological distress.
- Adults with less than a high school education or who have a household income under \$20,000 annually are at the highest risk for severe psychological distress.
- The State of Michigan BRFSS does not index this data in the same way.

<sup>a</sup> The proportion of adults who scored a 12-19 on the Kessler 6 index.

<sup>b</sup> The proportion of adults who scored a 20-30 on the Kessler 6 index.



# Depression

Depression is a common and treatable mental disorder characterized by changes in mood, and cognitive and physical symptoms over a time period and can be diagnosed by a medical provider. Participating adults were asked if they had been diagnosed with depression by a doctor, nurse, or other health professional in their life.

Demographic Characteristic	Diagnosed Depressive Disorder <sup>a</sup>	
	%	95% Confidence Interval
<b>Michigan (2018)</b>	<b>23.2</b>	22.1 - 24.2
<b>Berrien County Overall</b>		
<b>2018</b>	<b>26.1</b>	22.1 - 24.2
<b>Age</b>		
18-24	39.8	30.3 - 49.3
25-34	38.3	30.2 - 46.4
35-44	29.5	21.9 - 37.1
45-54	25.6	18.8 - 32.4
55-64	18.3	12.7 - 24.0
65-74	18.3	11.5 - 25.0
75+	15.8	8.7 - 23.0
<b>Gender</b>		
Male	20.6	16.9 - 24.3
Female	31.2	27.1 - 35.3
<b>Race</b>		
White	25.5	22.4 - 28.6
Black	28.1	20.5 - 35.8
<b>Education</b>		
< High school	35.9	26.0 - 45.7
High school grad	30.5	25.1 - 35.9
Some college	27.1	22.3 - 31.9
College grad	16.0	11.4 - 20.7
<b>Household Income</b>		
< \$20,000	46.1	37.8 - 54.4
\$20,000 - \$34,999	29.1	21.7 - 36.4
\$35,000 - \$49,999	16.4	9.4 - 23.3
\$50,000 - \$74,999	26.4	19.1 - 33.8
>\$75,000	17.6	12.9 - 22.3

- Adults in Berrien County have very similar proportion of depression compared to the State of Michigan.
- Depression appears to be more prevalent in younger adults.
- Berrien County adult females (31.2%) experience a higher proportion of depression compared to adult males (20.6%).
- There are no significant differences among depressed adults by race in Berrien County.
- Berrien County adults with a college education have a lower proportion of depressive disorders (16.0%)
- Berrien County adults with a household income less than \$20,000 annually have a higher proportion of having had a diagnosed depressive disorder.



# Sleep

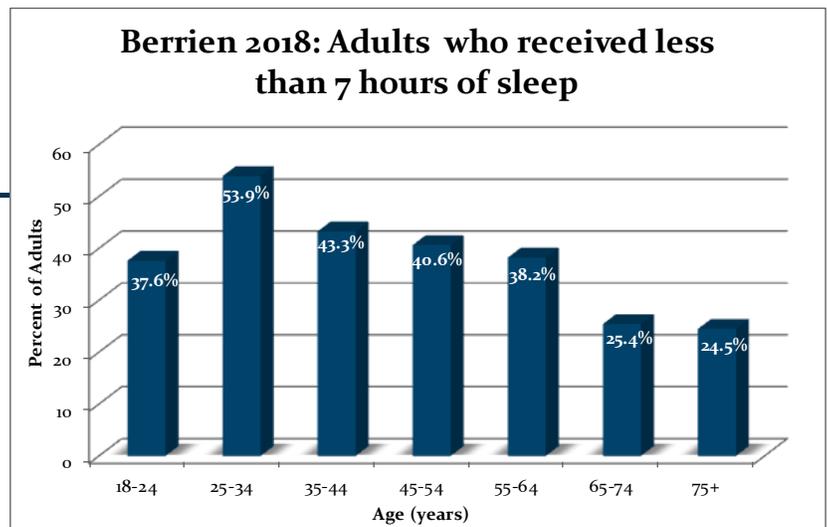
Sleep is an important predictor to health which often gets overlooked. According to the CDC adults need 7 or more hours of sleep per night for their best health and wellbeing (Watson et al, 2015). Inadequate sleep is defined as less than seven (7) hours of sleep per 24-hour period.

Demographic Characteristic	Inadequate Sleep <sup>a</sup>	
	%	95% Confidence Interval
<b>Michigan (2014)</b>	<b>40.2</b>	38.8 - 41.6
<b>Berrien County Overall 2018</b>	<b>38.5</b>	35.4 - 41.6
<b>Age</b>		
18-24	37.6	28.1 - 47.1
25-34	53.9	45.6 - 62.2
35-44	43.3	35.1 - 51.5
45-54	40.6	33.0 - 48.3
55-64	38.2	31.0 - 45.4
65-74	25.4	17.8 - 33.0
75+	24.5	15.7 - 33.2
<b>Gender</b>		
Male	38.9	34.5 - 43.4
Female	38.1	33.7 - 42.4
<b>Race</b>		
White	37.9	34.5 - 41.4
Black	44.0	35.6 - 52.5
<b>Education</b>		
< High school	35.2	25.3 - 45.0
High school grad	47.1	41.2 - 53.0
Some college	42.3	37.0 - 47.6
College grad	25.7	20.2 - 31.3
<b>Household Income</b>		
< \$20,000	51.1	42.7 - 59.4
\$20,000 - \$34,999	46.3	38.3 - 54.3
\$35,000 - \$49,999	34.2	25.4 - 43.1
\$50,000 - \$74,999	43.5	35.2 - 51.8
>\$75,000	30.5	24.8 - 36.1

<sup>a</sup> The proportion of adults who reported less than 7 hours of sleep in a 24 hour period.

Adults 18-24 years and over 55 years old are more likely to get the recommended 7 hours of sleep in a 24 hour period compared to adults age 25-54 years old. Over half of the young adults age 25-34 do not get the recommended amount of sleep.

- There are no significant findings among Berrien County adults compared to the State of Michigan adults pertaining to inadequate sleep.
- 53.9% of adults age 25-34 do not get at least 7 hours of sleep each night.
- There are no significant differences in levels of sleep among adult males and females nor white and black adults in Berrien County.
- College graduates have significantly lower proportions of adults meeting the recommend minimum 7 hours of sleep per 24-hour period. (25.7% of college graduate adults get less than 7 hours of sleep per 24 hour period).
- Berrien County adults making \$75,000 annually have lower proportions of inadequate sleep (30.5%).





# Pain Medication

Prescription pain medications are often opioids used to control an individual's level of pain. These medications have been revolutionary for pain management but have been gaining more attention with over the past few years with their previously unknown addictive properties. The 2018 BRFSS questions in this part of the survey identify if persons recently used pain medication such as Oxycodone, Vicodin, Norco, Percocet, or similar prescribed by their doctor. Additionally, these questions ask if this medication was used other than directed in terms of frequency or dosage.

Demographic Characteristic	Prescribed Pain Medication <sup>a</sup>		Used pain medication other than directed <sup>b</sup>	
	%	95% Confidence Interval	%	95% Confidence Interval
<b>Berrien County Overall</b>				
2018	25.6	22.6 - 28.5	5.0	2.1 - 7.9
<b>Age</b>				
18-24	24.7	15.5 - 33.9	*	
25-34	26.4	18.7 - 34.0	*	
35-44	24.2	16.6 - 31.8	*	
45-54	29.0	21.6 - 36.4	*	
55-64	29.1	22.0 - 36.2	*	
65-74	23.5	15.9 - 31.2	*	
75+	18.2	10.1 - 26.3	*	
<b>Gender</b>				
Male	19.1	15.3 - 22.9	*	
Female	31.4	27.1 - 35.7	*	
<b>Race</b>				
White	24.6	21.3 - 27.8	*	
Black	34.6	26.3 - 43.0	*	
<b>Education</b>				
< High school	32.0	21.4 - 42.6	*	
High school grad	29.0	23.3 - 34.8	*	
Some college	30.3	25.2 - 35.3	*	
College grad	12.7	8.2 - 17.2	*	
<b>Household Income</b>				
< \$20,000	30.2	22.3 - 38.2	*	
\$20,000 - \$34,999	31.5	23.2 - 39.7	*	
\$35,000 - \$49,999	30.1	21.2 - 39.0	*	
\$50,000 - \$74,999	24.6	16.9 - 32.3	*	
>\$75,000	21.3	16.1 - 26.5	*	

- 25.6% of Berrien County adults have been prescribed medication for pain.
- There are no significant trends among age groups who have been prescribed pain medication.
- Female adults (34.6%) in Berrien County are prescribed pain medication more often than males (24.6%).
- Adults with a College education (12.7%) are less often prescribed prescription pain medication.
- There are no trends among household income and prescription of pain medication.
- 5.0% of Berrien County adults admit to using prescription pain medication other than directed by a medical provider.
- 5% of Berrien County adults who use pain medication stated that they had used it other than directed by their provider.

<sup>a</sup> The proportion of adults reporting had received pain medication within the past year.

<sup>b</sup> The proportion of adults reporting they had used pain medication other than directed.

\* Data suppressed due to low n-value.



# Alcohol Consumption

Adults were given three questions pertaining to alcohol consumption in the previous 30 days. How many alcoholic beverages they have had per week in the previous 30 days (defining 1 drink as one 12 ounce beer, one 5 ounce glass of wine, or a drink with one shot of liquor) and how many drinks did they have on average. Then to address any sort of binge drinking habits adults were asked how many times during the past 30 days did they have more than five or more drinks (males) or four or more drinks (females) per occasion.

Demographic Characteristic	Non-Drinker <sup>a</sup>		Binge Drinker <sup>b</sup>	
	%	95% Confidence Interval	%	95% Confidence Interval
<b>Michigan (2018)</b>	<b>44.3</b>	43.1 - 45.6	<b>18.2</b>	17.2 - 19.3
<b>Berrien County Overall</b>				
<b>2018</b>	<b>49.3</b>	46.2 - 52.5	<b>13.3</b>	11.2 - 15.5
2014	49.2	46.0 - 52.5	17.2	14.8 - 19.7
2011	48.1	45.0 - 51.2	15.7	13.5 - 17.9
<b>Age</b>				
18-24	53.8	44.2 - 63.5	14.6	7.8 - 21.4
25-34	43.8	35.6 - 51.9	21.0	14.3 - 27.7
35-44	40.1	32.0 - 48.2	15.3	9.4 - 21.2
45-54	44.7	37.0 - 52.4	14.6	9.1 - 20.1
55-64	51.1	43.8 - 58.4	10.2	5.8 - 14.7
65-74	52.0	43.2 - 60.7	8.2	3.4 - 13.0
75+	65.3	56.0 - 74.7	2.9	0.0 - 6.1
<b>Gender</b>				
Male	45.4	40.9 - 49.9	17.3	13.8 - 20.7
Female	53.0	48.6 - 57.4	8.9	6.4 - 11.4
<b>Race</b>				
White	47.3	43.8 - 50.9	11.1	8.8 - 13.3
Black	56.5	48.2 - 64.8	30.0	22.3 - 37.7
<b>Education</b>				
< High school	66.3	56.6 - 76.0	12.9	6.0 - 19.8
High school grad	56.3	50.5 - 62.0	12.7	8.8 - 16.6
Some college	43.1	37.8 - 48.4	18.9	14.7 - 23.2
College grad	42.2	35.9 - 48.5	2.9	0.8 - 5.1
<b>Household Income</b>				
< \$20,000	66.7	58.9 - 74.4	27.1	19.8 - 34.4
\$20,000 - \$34,999	54.0	46.0 - 62.0	15.9	10.1 - 21.8
\$35,000 - \$49,999	40.5	31.4 - 49.7	10.6	4.9 - 16.4
\$50,000 - \$74,999	45.7	37.4 - 54.0	15.8	9.7 - 21.9
>\$75,000	31.1	25.5 - 36.8	10.2	6.5 - 13.9

- Compared to the State of Michigan (44.3%), Berrien County (49.3%) has a significantly larger proportion of adults who reported consuming no alcohol in the past 30 days.
- There is not a strong relationship between age and alcohol consumption.
- Adult males (17.3%) have a higher prevalence of binge drinking in the past 30 days compared to Berrien County adult females (8.9%).
- A significantly higher proportion of black (30.0%) adults in Berrien County report binge drinking in the past 30 days compared to white adults (11.1%).
- 66.3% of Berrien County adults with low less than a high school education and 66.7% of Berrien county adults in a household making less than \$20,000 annually are non-drinkers.
- Berrien County college graduates (2.9%) are much less likely to be binge drinkers compared to adults with other educational levels.

<sup>a</sup> The proportion of adults who report consuming no alcohol in the previous month.

<sup>b</sup> The proportion of adults who drink alcohol and reported drinking 5 or more alcoholic drinks per occasion (for men) or 4 or more drinks per occasion (for women) at least once in the previous month.



# Cigarette Smoking

The link between cigarette smoking and cancer (especially lung and esophageal cancer), heart disease, and various respiratory problems have been well established for many years. Just as continued smoking increases individuals' risks of experiencing one or more of these health problems, quitting smoking reduces the risks. Respondents were assessed based on if they have smoked over 100 cigarettes in their life to be considered a smoker, non smoker or former smoker.

Demographic Characteristic	Current Smoker <sup>a</sup>		Former Smoker <sup>b</sup>	
	%	95% Confidence Interval	%	95% Confidence Interval
<b>Michigan (2018)</b>	<b>18.9</b>	17.9 - 19.9	<b>26.4</b>	25.4 - 27.5
<b>Berrien County Overall</b>				
<b>2018</b>	<b>17.3</b>	13.9 - 20.7	<b>23.5</b>	19.7 - 27.3
2014	17.5	15.0 - 19.9	27.2	24.3 - 30.0
2011	21.8	19.3 - 24.3	27.9	25.2 - 30.6
<b>Age</b>				
18-24	18.6	11.0 - 26.2	11.8	5.5 - 18.0
25-34	19.4	13.0 - 25.9	16.7	10.6 - 22.8
35-44	26.9	19.3 - 34.4	17.9	11.4 - 24.4
45-54	17.3	11.4 - 23.3	20.5	14.2 - 26.9
55-64	17.2	11.5 - 22.9	31.4	24.3 - 38.4
65-74	15.2	8.9 - 21.5	31.2	23.0 - 39.4
75+	3.3	0.0 - 6.9	35.9	26.0 - 45.7
<b>Gender</b>				
Male	21.4	17.6 - 25.2	26.5	22.4 - 30.6
Female	13.4	10.3 - 16.4	20.7	17.1 - 24.3
<b>Race</b>				
White	17.0	14.3 - 19.7	25.6	22.4 - 28.7
Black	17.9	11.4 - 24.4	17.2	10.8 - 23.6
<b>Education</b>				
< High school	46.7	36.3 - 57.0	15.6	8.0 - 23.1
High school grad	17.0	12.5 - 21.5	30.6	25.0 - 36.1
Some college	17.5	13.4 - 21.6	23.0	18.4 - 27.5
College grad	5.2	2.3 - 8.1	20.8	15.5 - 26.0
<b>Household Income</b>				
< \$20,000	36.9	28.9 - 44.9	22.0	15.1 - 28.8
\$20,000 - \$34,999	17.1	10.9 - 23.4	30.0	22.4 - 37.6
\$35,000 - \$49,999	17.1	10.1 - 24.2	27.0	18.7 - 35.3
\$50,000 - \$74,999	21.2	14.3 - 28.0	27.7	20.2 - 35.3
>\$75,000	6.8	3.7 - 9.9	21.1	16.1 - 26.2

- The proportion of former smokers in Berrien County is consistent with previous BRFSS years and the average for the State of Michigan.
- Overall, 17.3% of Berrien County adults are current smokers, 23.5% are former smokers and 59.2% of Berrien County adults said that they have tried a cigarette or cigar.
- Adults with less than a high school education (46.7%) have the highest proportion of current smokers.
- There is no difference among Berrien County black and white adults and smoking.
- A higher proportion of adult males (21.4%) are current smokers compared to females (13.4%).
- Adults with a annual household income less than \$20,000 have a significantly higher proportion of current smokers (36.9%).

<sup>a</sup> The proportion of adults who report smoking at least 100 cigarettes in the life, and currently smoke every day" or "some days."

<sup>b</sup> The proportion of adults who report smoking at least 100 cigarettes in their life, but do not smoke now.



# E-Cigarette use

E-cigarette use questions are new to the Berrien BRFSS in 2018. These questions are about electronic cigarettes (e-cigarettes) and other electronic “vaping” products including electronic hookahs (e-hookahs), vape pens, e-cigars, and others. These products are battery-powered and usually contain nicotine and flavors such as fruit, mint, or candy that are vaporized in a chamber to be inhaled into a person’s lungs.

Demographic Characteristic	Have used an e-cigarette <sup>a</sup>		Current e-cigarette user <sup>b</sup>	
	%	95% Confidence Interval	%	95% Confidence Interval
<b>Michigan (2017)</b>	<b>22.3</b>	21.5 - 23.1	<b>4.9</b>	4.5 - 5.3
<b>Berrien County Overall</b>				
<b>2018</b>	<b>23.1</b>	20.4 - 25.9	<b>7.5</b>	5.8 - 9.2
<b>Age</b>				
18-24	61.3	51.3 - 71.2	2.8	0.0 - 6.2
25-34	42.4	34.2 - 50.7	2.3	0.0 - 4.7
35-44	22.1	15.0 - 29.3	0.8	0.0 - 2.3
45-54	19.6	13.2 - 26.0	0.8	0.0 - 2.2
55-64	14.8	9.3 - 20.3	0.7	0.0 - 1.9
65-74	6.5	2.1 - 10.9	0.2	0.0 - 1.1
75+	1.1	0.0 - 3.3	0.0	0.0 - 0.0
<b>Gender</b>				
Male	26.6	22.4 - 30.8	10.9	7.9 - 13.8
Female	19.9	16.2 - 23.5	4.3	2.5 - 6.2
<b>Race</b>				
White	24.1	21.0 - 27.2	7.7	5.7 - 9.6
Black	20.2	13.2 - 27.1	7.8	3.1 - 12.4
<b>Education</b>				
< High school	28.4	18.5 - 38.3	11.1	4.2 - 18.0
High school grad	28.0	22.4 - 33.5	7.5	4.2 - 10.7
Some college	27.7	22.8 - 32.6	8.6	5.6 - 11.7
College grad	9.9	5.9 - 13.8	4.5	1.8 - 7.2
<b>Household Income</b>				
< \$20,000	27.4	19.9 - 35.0	9.6	4.6 - 14.6
\$20,000 - \$34,999	31.5	23.5 - 39.6	6.2	2.0 - 10.3
\$35,000 - \$49,999	18.5	11.2 - 25.9	2.8	0.0 - 5.9
\$50,000 - \$74,999	26.4	18.7 - 34.0	10.9	5.5 - 16.2
>\$75,000	19.1	14.2 - 24.0	8.9	5.4 - 12.5

- There are no differences between Berrien County and Michigan when it comes to the proportion of adults who have tried/used a e-cigarette device.
- There are significantly more adults in Berrien County (7.5%) who are current e-cigarette users compared to the Michigan average (4.9%).
- 18-24 year old adults in Berrien County are most likely to have used/tried a e-cigarette.
- College graduates have a significantly lower proportion of adults who have tried/used an e-cigarette.
- 7.5% of Berrien County adults age 18-24 years are current e-cigarette users.
- There is little significance among current e-cigarette users and other demographic categories.

<sup>a</sup> The proportion of adults who have ever used an e-cigarette or other electronic vaping product, even just one time, in their entire lifetime.

<sup>b</sup> The proportion of adults who report they now use electronic vaping products "every day" or "some days"



# Housing

Reliable housing is an important social determinant to health that can be a good predictor of a person’s overall health. According to HealthyPeople.gov ,stable housing is foundational in achieving optimal health similarly to education and transportation. To better understand the level of concern of people paying for housing among Berrien County adults were asked how often they were worried or stressed about paying for their rent/mortgage. Respondents could respond with always, usually, sometimes, rarely and never. What is represented below is the proportion of Berrien County adults who are always, usually or sometimes stressed about paying their rent or mortgage.

Demographic Characteristic	Stressed about paying rent/mortgage <sup>a</sup>	
	%	95% Confidence Interval
<b>Berrien County Overall</b>		
<b>2018</b>	<b>29.0</b>	25.8 - 32.3
<b>Age</b>		
18-24	50.9	37.8 - 64.0
25-34	50.0	40.3 - 59.7
35-44	29.3	21.0 - 37.6
45-54	27.1	19.5 - 34.6
55-64	25.9	18.7 - 33.0
65-74	16.8	9.5 - 24.2
75+	8.5	2.5 - 14.6
<b>Gender</b>		
Male	28.5	23.8 - 33.2
Female	29.5	25.0 - 34.0
<b>Race</b>		
White	24.6	21.2 - 28.1
Black	49.5	40.2 - 58.9
<b>Education</b>		
< High school	65.1	53.2 - 76.9
High school grad	29.8	23.5 - 36.0
Some college	29.7	24.2 - 35.1
College grad	14.3	9.4 - 19.2
<b>Household Income</b>		
< \$20,000	62.6	53.4 - 71.8
\$20,000 - \$34,999	41.8	32.6 - 51.1
\$35,000 - \$49,999	25.0	16.3 - 33.7
\$50,000 - \$74,999	24.3	16.1 - 32.5
>\$75,000	12.4	8.0 - 16.8

- 29.0% of Berrien County residents report being concerned about being able to afford their housing.
- Half of persons 18-34 years old in Berrien County are concerned about paying for their housing.
- People over the age of 35 were significantly less concerned for paying for housing compared to adults 18-34.
- Black adults were significantly more concerned about affording housing compared to white adults in Berrien County.
- Adults with less than a high school education or have a household income less than \$20,000 annually were significantly more concerned about affording their rent or mortgage.
- This questions has not recently been asked on a State of Michigan BRFSS.

<sup>a</sup> The proportion of respondents who are Always, usually or sometimes stressed about paying their rent or mortgage.



# ACEs

## (Adverse Childhood Experiences)

Adverse Childhood Experiences (ACEs) questions collect information regarding an adult’s childhood (before the age of 18 years). These questions are derived from the original CDC-Kaiser ACE study in 1995-1997 to help better understand the social factors which play into the development of an adult. Persons with a high number of ACEs are often associated with poorer health outcomes. There are protective factors (resilience) that play a significant role in helping individuals overcome the adversity of a childhood with multiple adverse experiences; these responses are shared next.

ACE Question	Adverse Childhood Experience Questions	
	%	95% Confidence Interval
<b>Abuse</b>		
Physical Abuse	22.9	19.9 - 25.8
Emotional Abuse	39.3	35.9 - 42.8
Sexual Abuse	17.0	14.4 - 19.6
<b>Household challenges</b>		
Parents Physical Violence	21.7	18.8 - 24.6
<b>Substance Abuse</b>		
Household With Drinking Problem	26.7	23.6 - 29.8
Household with Drug Problem	11.0	8.8 - 13.2
<b>Mental Illness</b>		
Depressed, mentally ill or Suicidal	21.3	18.5 - 24.2
<b>Parental Separation</b>		
Separated or Divorced	34.8	31.5 - 38.1
Parent or Guardian Death	12.4	10.1 - 14.7
<b>Incarcerated Household Member</b>		
Prison, Jail or correctional Facility	10.5	8.4 - 12.7
<b>Urban ACE</b>		
Difficult to cover the basics	33.0	29.7 - 36.4
Treated different/unfair because of race or ethnicity	20.8	17.9 - 23.6

- Of the Berrien County 2018 ACE questions, 39.3% of the Berrien County adults experienced emotional abuse from a parent or an adult.
- 34.8% of Berrien County adults report that their parents were separated or divorced.
- 33.0% of Berrien County adults report that their family had difficulty in covering basic living expenses such as food and housing.
- The lowest proportion of adults relating to these questions were among adults who had a parent or household member who was incarcerated (10.5%) while growing up.
- 21.3% of Berrien County adults reported being depressed, mentally ill or suicidal during their childhood.
- 20.8% of Berrien County adults identified as being treated different or unfairly while growing up because of their race or ethnicity.



# ACEs Resiliency

## (Adverse Childhood Experiences)

Resiliency questions aim towards the discovery of protective factors in peoples lives which can reduce or mitigate the negative consequences of ACE related traumas. In the Berrien BRFSS there were 6 resiliency questions used to assess an adults resiliency. These questions were designed to identify supportive systems in a adult’s childhood that made them feel as if they: belonged at their school, were supported by their group of friends, had adults who took an interest in them, could talk to there family about feelings, participated in community traditions, and felt as if their family stood by them in difficult times.

Resilience Questions	Adverse Childhood Experience Resilience Questions	
	%	95% Confidence Interval
Belong at your School	<b>80.1</b>	77.3 - 83.0
Supported by friends	<b>93.4</b>	91.6 - 95.1
Adults took interest in you	<b>87.5</b>	85.2 - 89.8
Talk to family about feelings	<b>73.9</b>	70.8 - 76.9
Community traditions	<b>77.7</b>	74.7 - 80.6
Family stood by you	<b>88.7</b>	86.5 - 90.9

- The most prevalent resilience factor in Berrien County adults was feeling supported by friends 93.4%.
- 88.7%of Berrien County adults felt that their family stood by them in difficult times while growing up.
- 87.5% of Berrien County adults felt as if adults in their childhood took a genuine interest in them.
- 77.7% of Berrien County adults recall participating in in community traditions making this the least frequent resilience factor.



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Thank you,

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