

# MICHIGAN BRFSS SURVEILLANCE BRIEF



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## Healthy Living for Cardiovascular Disease Management

### Background

Healthy living is the pursuit of complete physical health and mental health, which includes stress, depression disorders, and problems with emotions, and not merely the prevention of disease or infirmity.<sup>1</sup> Healthy living prolongs the life of adults with cardiovascular disease (CVD) and developing complications with other comorbidities.<sup>2-4</sup> In 2019, an estimated one in 11 (738,000) Michigan adults reported having been told by a primary care provider that they had CVD, i.e., heart attack, coronary heart disease, angina, and/or stroke. Research studies have shown a connection between food insecurity and the development or worsening of cardiovascular disease and other health conditions.<sup>5</sup> CVD-related complications also have been partially attributed to poor diet.<sup>6</sup>

There are additional studies tying mental health status to increased cardiovascular risk.<sup>7</sup> The American Heart Association (AHA) recognizes that depression has a bidirectional relationship with CVD and stresses the importance of mental health, stress management, healthy diet and adequate physical activity.<sup>7</sup> This brief reports the estimated prevalences and disparities in healthy food access, nutrition, adequate physical activity, and mental health between those with CVD and without CVD among Michigan adults (18 years and older). Considerations for intervention and policy as well as next steps are included at the end of the brief.

### Methods

Michigan Behavioral Risk Factor Surveillance System (MiBRFSS) is a telephone-based health survey of adult Michigan residents that provides statewide prevalence of chronic health conditions, health-related behaviors, medical conditions, and preventive health care practices. The MiBRFSS provides cross-sectional data, and a temporal (causal) relationship cannot be established.

To improve the generalizability of the data, making it possible to draw conclusions about the health of Michigan adults, CDC-weighted survey data using iterative proportional fitting, also known as raking, to account for demographic differences between the survey sample and Michigan's population.

The study population consisted of Michigan adults (18 years and older) who responded to Michigan Behavioral Risk Factor Survey (MiBRFS) questionnaires. Because indicators were asked on three different time periods, the results depend on the data collection year. The years analyzed were 1) 2019, 2) 2017 and 2019 combined, and 3) from 2017 to 2019 combined. Respondents with CVD were defined as those who reported ever being told by a doctor that they had had a heart attack or myocardial infarction, had angina or coronary heart disease, and/or they had a stroke. Both heart attack and stroke events may happen more than once. Prevalence estimates and 95% confidence intervals were reported for the following indicators by CVD status: healthy food access/nutrition, depression, poor health, and physical activity. The definitions and years of the indicator data were collected can be found in the Supplemental information at the end of the brief.

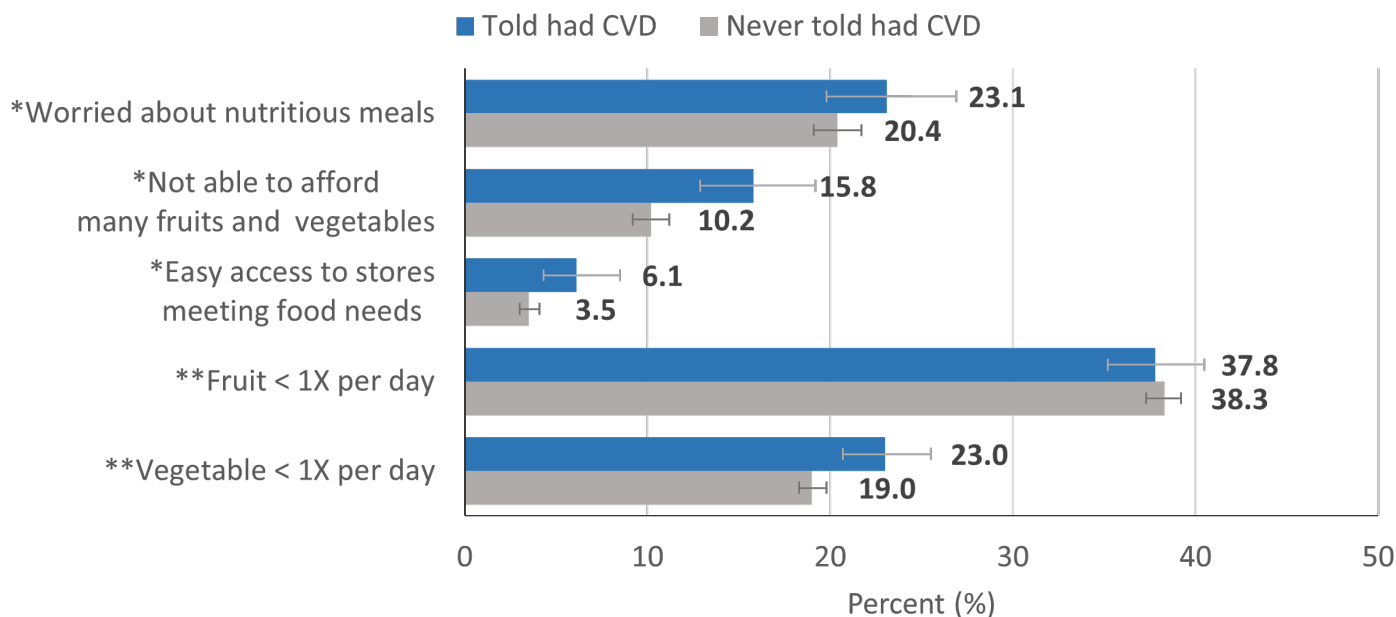
## Results

In 2019, 9.4% of Michigan adults reported being told that they had CVD at some point. Besides medication management, three important factors contribute to well-being: healthy food, mental health, and physical health. Significant disparities of healthy living by CVD were observed in this study.

### Healthy Food Access and Nutrition

Figure 1 shows food behaviors and experiences based on CVD status among Michigan adults. Nearly one-quarter of Michigan adults with CVD reported always, usually, or sometimes worrying about nutritious meals. This estimate was comparable to adults without CVD. However, disparities were observed for other food-related questions. Approximately one in six adults with CVD compared to one in 10 without CVD reported not buying fruits and vegetables frequently because they were not affordable. In addition, the percentage of adults with CVD who reported it was difficult to access a store that meets their food needs was 74% higher than adults without CVD (6.1% and 3.5%, respectively). An estimated 23.0% of adults with CVD reported not consuming vegetables daily compared to 19.0% of adults without CVD.

Figure 1. Food Indicators by Cardiovascular Disease Status among Michigan Adults (18 years and older)



\*MiBRFSS 2019; \*\*MiBRFSS 2017 and 2019 Combined  
CVD – Cardiovascular Disease

### Mental Health

Table 1 shows how Michigan adults reported on mental health indicators by CVD status. The estimated prevalence of depression among adults with CVD was 2.2 times that of those without CVD (48% and 21.5%, respectively). An estimated 34.7% of adults with CVD felt in poor physical health at least 14 days in the past month compared to 11.9% without CVD. An estimate 21.8% of adults with CVD felt in poor mental health at least 14 days in the past month compared to 13.8% of adults without CVD.

Table 1. Mental Health by Cardiovascular Disease Status Among Michigan Adults (18 years and older), BRFSS 2017-2019 Combined

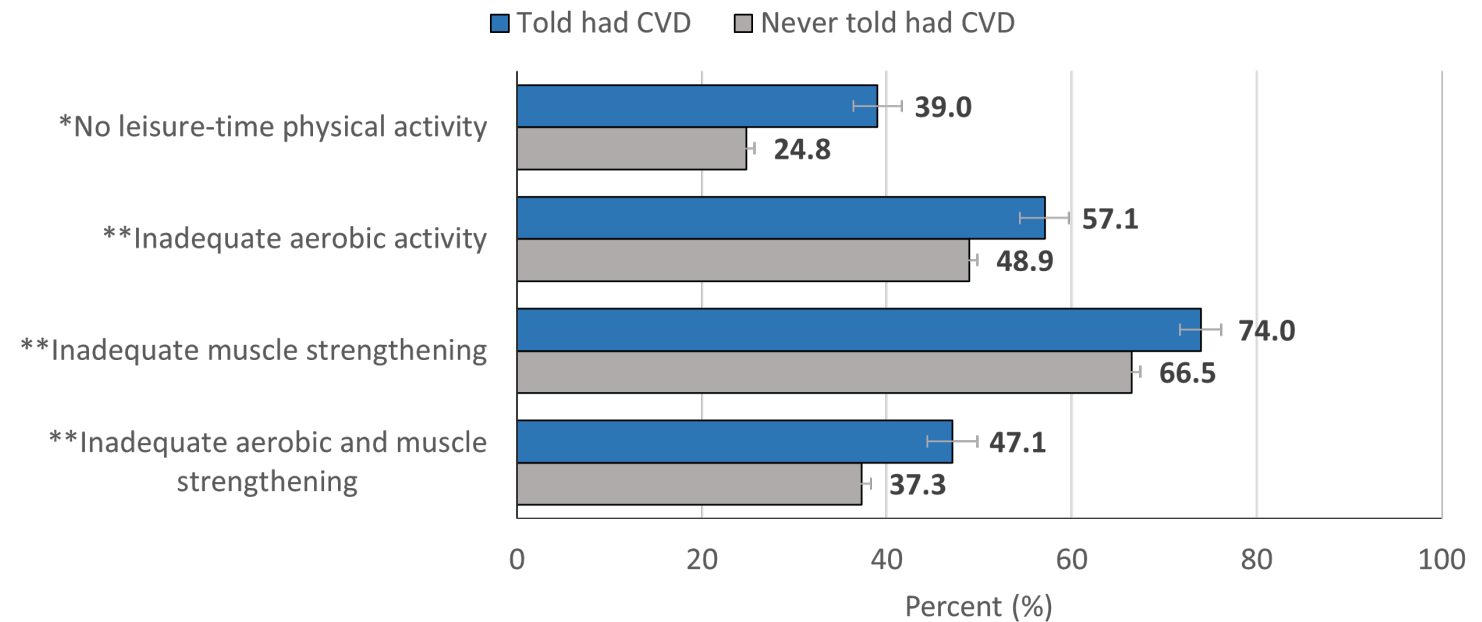
|                           | <b>Depression<br/>Percent (95% CI)</b> | <b>Poor Physical Health<br/>Percent (95% CI)</b> | <b>Poor Mental Health<br/>Percent (95% CI)</b> |
|---------------------------|--|--|--|
| <b>Told had CVD</b>       | 48.0 (42.8-53.1)                       | 34.7 (32.7-36.9)                                 | 21.8 (20.0-23.8)                               |
| <b>Never told had CVD</b> | 21.5 (20.9-22.2)                       | 11.9 (11.4-12.4)                                 | 13.8 (13.2-14.4)                               |

95% CI – 95 % Confidence Interval  
CVD – Cardiovascular Disease

### **Physical Activity**

Michigan adults with CVD appeared to be less physically active than adults without CVD (Figure 2). No leisure-time physical activity was about 57% higher among adults with CVD compared to those without CVD. The 2018 Physical Activity Guidelines for Americans recommends adequate aerobic activity and muscle-strengthening weekly. For substantial health benefits, adults should do at least 75 minutes (2 hours and 30 minutes) to 300 minutes (5 hours) a week of aerobic physical activity depending on intensity.<sup>8</sup> An estimated 57.1% of adults with CVD did not meet the aerobic physical activity guidelines compared to 48.9% of adults without CVD. The Guidelines also recommend muscle-strengthening activities two or more days a week.<sup>8</sup> About three-quarters of adults with CVD did not meet the muscle-strengthening recommendations compared to two-thirds of adults without CVD. Combining aerobic activity and muscle-strengthening, a higher percentage of adults with CVD did not meet both recommendations compared to those without CVD (47.1% and 37.3%, respectively)

Figure 2. Physical Activity Indicators by Cardiovascular Disease Status Among Michigan Adults (18 years and older)

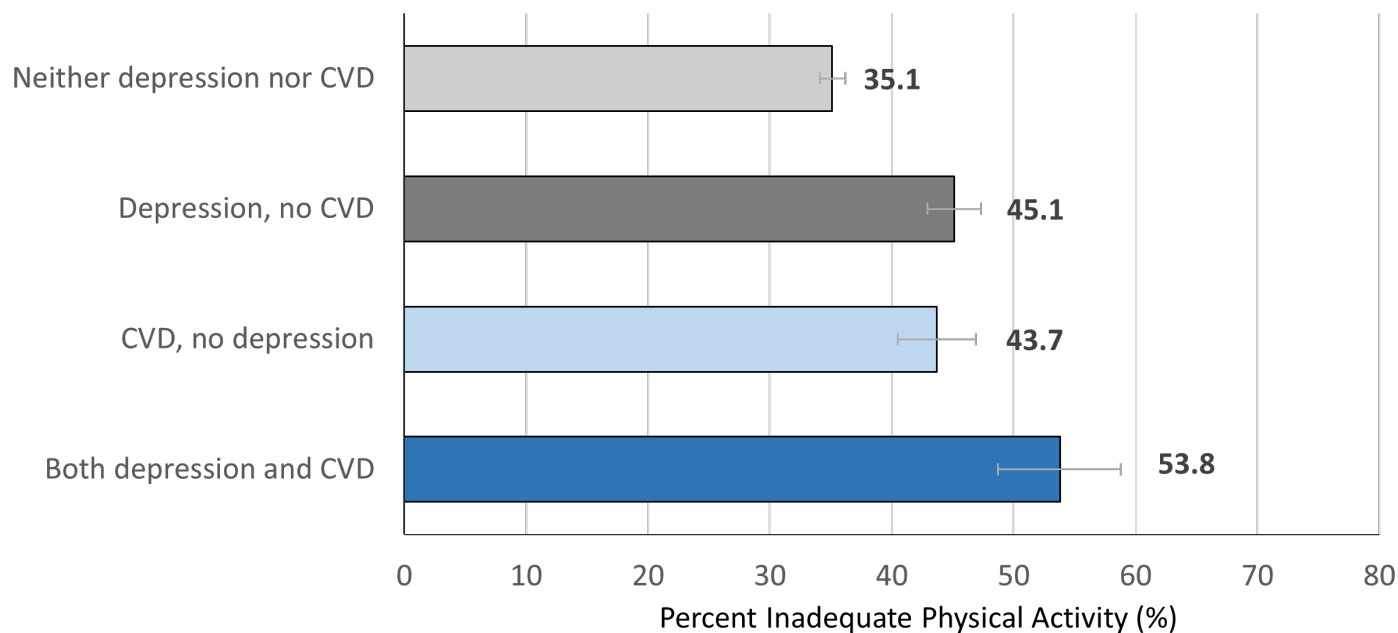


\*MiBRFSS 2017 – 2019 Combined; \*\*MiBRFSS 2017 and 2019 Combined;  
CVD – Cardiovascular Disease

## **Mental Health and Inadequate Physical Activity**

A significantly higher prevalence of adults with CVD, who also reported having depression, did not meet the recommended physical activity guidelines compared to adults who had CVD but no depression and those without CVD regardless of depression status (Figure 3).

Figure 3. Inadequate Physical Activity by Depression and Cardiovascular Disease Status Among Michigan Adults (18 years and older), MiBRFS 2017 and 2019 Combined



CVD – Cardiovascular disease

## **Discussion**

Healthy food access and affordability continue to be barriers to health among Michigan adults, and these barriers may be more concerning for those managing cardiovascular disease or who are at higher risk. In a recent review on food insecurity and cardiovascular disease risk, several studies hypothesized pathways by which reduced food security could lead to development or worsening of chronic diseases and health conditions.<sup>5</sup> Cardiovascular-related complications have also been partially attributed to poor diet.<sup>6</sup> Clinical practice guidelines recommend dietary strategies as the cornerstone of therapy to prevent and manage cardiovascular disease. Interventions such as Dietary Approaches to Stop Hypertension (DASH) and the Mediterranean Diet have shown to be effective in chronic disease management.<sup>7</sup>

Physical activity is important for managing CVD. Inadequate physical activity was more prevalent among adults with CVD who also reported depression compared to adults without depression regardless of CVD status. The American Heart Association recommends that depression be recognized as a major risk factor for coronary heart disease, similar to hyperlipidemia, diabetes, hypertension, and smoking.<sup>6</sup> Some research has shown that there is an increase in the risk of developing or worsening CVD in adults with depression with or without prior CVD.<sup>7</sup> Cardiac rehabilitation (CR) is an intervention program designed to improve CVD health post cardiac-related event or procedure.<sup>6</sup> CR programs have been shown to prolong life, reduce readmissions, and help patients recover.<sup>4</sup> There is evidence that CR participants are less likely to feel depressed.<sup>4</sup>

## Considerations for Implementation and Policy

Themes in the report findings show possible avenues for policy professionals to consider:

- Healthy food access and affordability continue to be a barrier to health among Michigan adults, and these barriers may be more concerning for those managing CVD or who are at higher risk.
  - Incorporate food insecurity screening and linkages to resources into standard medical practice.
  - Institute public and private payor policies that provide reimbursement for nutrition evaluation and counselling services, healthy food prescription programs, and participation in evidence-based lifestyle change programs.
  - Support programs such as the Sodium Reduction in Communities Program and the National Salt and Sugar Reduction Initiative that seek to increase the availability of lower-sodium foods.
  - Create community driven healthy food retail initiatives to increase access to and affordability of nutritious foods.
- Physical activity is important for managing CVD. Adults with CVD are more likely to report no leisure-time physical activity or inadequate physical activity compared to those without CVD.
  - Reduce out-of-pocket costs for patients with high blood pressure and high blood cholesterol to make cardiovascular disease preventative services such as nutrition counseling, and community-based weight management, cardiac rehabilitation, and blood pressure self-monitoring programs more affordable.
  - Institute public and private payor policies that provide reimbursement for evidence-based lifestyle change programs.
  - Enhance public spaces and infrastructure that promote physical activity.
- Inadequate physical activity was more prevalent among adults with CVD who also reported depression compared to adults without depression regardless CVD status.
  - Strengthen the focus on integrated treatment teams.
  - Implement evidence-based and promising wellness interventions.
  - Support effective program structures (e.g., primary care and mental health access, information sharing, and treatment planning, etc.).
  - Conduct routine performance monitoring and continuous quality improvement.

## Next Steps

The Michigan Department of Health and Human Services is working to address the intersecting effects of nutrition, physical activity, and mental health on CVD management. The 2022 MiBRFSS questionnaire will include the United States Department of Agriculture household food security questions so that the food security scores may be determined. The data collected from this survey module can be used in public health intervention programs and policy decisions on the factors that enable or prevent healthy living for adults with CVD.

## References

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## Supplemental (Definitions used for BRFs surveys)

Cardiovascular disease (2017 and 2019 Combined, 2017-2019 Combined, and 2019): Among all adults, the proportion ever told by a doctor that they had had a heart attack or myocardial infarction, had angina or coronary heart disease, and/or they had a stroke.

Concerned about nutritious meals (2019): Among all adults, who were worried or stressed about having enough money to buy meals always, usually, or sometimes.

Not buying many fruits and vegetables (2019): All adults who were not able to buy many fruits and vegetables because unable to afford very many.

Not easy access to store that meets food needs (2019): All adults who strongly agreed or agreed that it was not easy to access to a store that meets food needs.

Fruit consumption (2017 and 2019 Combined): Among all adults, the proportion who reported consuming at least one fruit per day, including fruit juice.

Vegetable consumption (2017 and 2019 Combined): Among all adults, the proportion who reported consuming at least one vegetable per day.

No leisure-time physical activity (2017-2019 Combined): Among all adults, the proportion reporting they had not participated in any leisure-time physical activities or exercises such as running, calisthenics, golf, gardening, or walking for exercise during the past month.

Adequate physical activity (2017 and 2019):

- 1) Aerobic activity - Among all adults, the proportion reporting that they do either moderate physical activities for at least 150 minutes per week, vigorous physical activities for at least 75 minutes per week;
- 2) Muscle strengthening - Among all adults, an equivalent combination of moderate and vigorous physical activities and also participates in muscle strengthening activities on two or more days per week.

Poor physical activity (2017-2019 Combined): Among all adults, the proportion reporting 14 or more days of poor physical health, which includes physical illness and injury, during the past 30 days.

Poor mental health (2017-2019 Combined): Among all adults, the proportion reporting 14 or more days of poor mental health, which includes stress, depression, and problems with emotions during the past 30 days.

Depression (2017-2019 Combined): Among all adults, the proportion reporting ever being told by a doctor that they had a depressive disorder including depression, major depression, dysthymia, or minor depression.

### What is the Michigan Behavioral Risk Factor Surveillance System (MiBRFSS)?

The MiBRFSS comprises annual, statewide telephone surveys of Michigan adults aged 18 years and older and is part of the national BRFSS coordinated by the CDC. The MiBRFSS follow the CDC BRFSS protocol and use the standardized English core questionnaire that focuses on various health behaviors, medical conditions, and preventive health care practices related to the leading causes of mortality, morbidity, and disability. Landline and cell phone interviews are conducted across each calendar year. Data are weighted to adjust for the probabilities of selection and a raking weighting factor is used to adjust for the distribution of the Michigan adult population based on eight demographic variables. All analyses are performed using SAS-callable SUDAAN® to account for the complex sampling design.

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