Health Risk Behaviors in the State of Michigan

2009
Behavioral Risk Factor Survey

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MDCH

2009 Behavioral Risk Factor Survey

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2009 MiBRFS

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2009 MiBRFS

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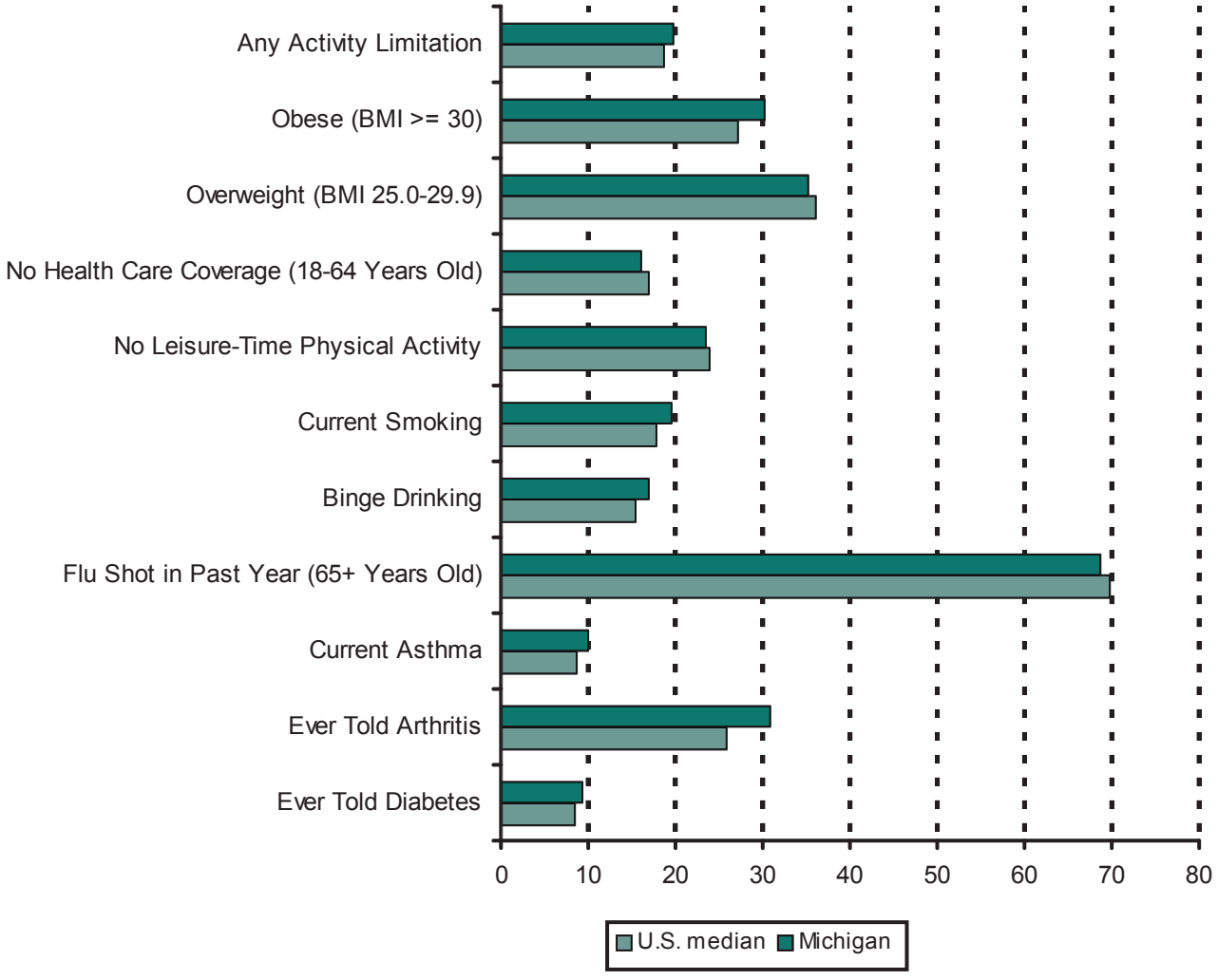
Summary

Overview

This report presents estimates from the 2009 MiBRFS, a statewide telephone survey of Michigan residents aged 18 years and older. It is the only source of state-specific, population-based estimates of the prevalence of various behaviors, medical conditions, and preventive health care practices among Michigan adults. The survey findings are used by public health agencies, academic institutions, non-profit organizations, and others to develop programs to promote the health of Michigan citizens.

The total sample size of completed interviews for the 2009 MiBRFS was 9,259 respondents, which consisted of 7,023 White, non-Hispanics, 1,573 Black, non-Hispanics, 390 Other/Multiracial, non-Hispanics, 170 Hispanics, and 103 of unknown race/ethnicity. All of the 2009 MiBRFS results presented within this report have been weighted as described in the methods section and can be interpreted as estimates of prevalence rates among the general adult population of Michigan. Below we present selected 2009 BRFS indicators comparing Michigan and the United States.

Selected Risk Factors - 2009 CDC BRFS
Michigan vs. Nation*



* The median value of the prevalence estimates compiled from 50 U.S. states, three territories, and Washington, D.C. that participated in the 2009 CDC BRFSS.

Summary, continued

Public Health Implications of Findings

A number of themes emerged from the findings of the 2009 MiBRFS that have implications for public health.

Struggling economy leads to continued problem with access to health care.

In 2009, an estimated 16.2% of Michigan adults aged 18-64 had no health care coverage. This represents a 70.5% increase from the 1999 estimate of 9.5%. This increase in lack of health care coverage can be viewed as an indicator of the continuing economic hardship in Michigan. Furthermore, the percentage of adults who have not had a routine checkup in the past year (1999: 27.9% vs. 2009: 30.9%) and the percentage of adults who have not been able to receive proper health care due to cost (1999: 7.8% vs. 2009: 13.9%) have also increased significantly between 1999 and 2009. Given that adults without health care coverage are less likely to access health care services and more likely to delay getting needed medical attention, this increasing lack of coverage heightens the need for public health services for primary and secondary prevention. Public health programs that provide these services to all Michigan residents, both insured as well as uninsured, are an essential part of improving the overall health of all Michigan residents.

Number of adults who participate in multiple healthy lifestyle behaviors remains low.

Over the past several years, MiBRFS data has been used to calculate a healthy lifestyle index for Michigan adults. This index is used to calculate the proportion of Michigan adults who reported all of the following healthy lifestyle behaviors: having a body mass index (BMI) within the normal range (18.5<=BMI<25.0), consuming fruits and vegetables on an average of at least 5 times per day, participating in adequate amounts of physical activity (i.e., usually participating in moderate physical activities for a total of at least 30 minutes on five or more days per week or vigorous physical activities for a total of at least 20 minutes on three or more days per week while not at work), and being a non-smoker. The results of the 2009 MiBRFS indicate that only 4.6% (4.0-5.3) of Michigan adults reported participating in all four healthy lifestyle behaviors, which is similar to the 4.3% (3.7-5.1) that reported all four healthy lifestyle behaviors in 2002. MDCH currently participates in a number of programs designed to decrease obesity, promote healthy eating, increase physical activity, and increase smoking cessation. Sustaining these programs is key to increasing the healthy lifestyle index among Michigan adults.

Diabetes prevalence increasing while obesity among diabetics remains a problem.

Between 2001 and 2009, the prevalence of doctor-diagnosed diabetes among Michigan adults increased significantly over time ($p<0.001$). Comparing the 2001 and 2009 prevalence estimates for diabetes, the percent increase was 30.6% (2001: 7.2% vs. 2009: 9.4%). Obesity (measured as a body mass index of ≥ 30.0) is a major risk factor for the development of diabetes. The prevalence of obesity among adults with diabetes continues to be a problem in Michigan with 59.0% (55.4-62.4) of Michigan adults with diabetes being classified as obese compared to only 28.1% (26.6-29.5) of non-diabetics in 2009. The MDCH Diabetes and Other Chronic Diseases Section partners with numerous internal and external coalitions and initiatives, such as the Diabetes Partners in Action Coalition and WISEWOMAN, to work towards reducing the impact of diabetes in Michigan. Several of the projects initiated through these partnerships focus on decreasing overweight and obesity among the Michigan diabetic population.

Summary, continued

Use of the Michigan Behavioral Risk Factor Survey

MiBRFS data continue to be used in planning and evaluating programs, establishing program priorities, developing specific interventions and policies, assessing trends, shaping legislation, addressing emerging public health issues, and targeting relevant populations. Notable examples include:

- MiBRFS estimates are used to report on several of the indicators for the Health Policy, Regulation and Professions Administration's Michigan Critical Health Indicators Report,[1] which supports policy making and program planning by stressing the use of outcome indicators to measure improvement.
- A wide variety of MiBRFS data are used to benchmark progress towards several of the 13 goal areas addressed by the Michigan Cancer Consortium.[2] MiBRFS data focusing on screening rates for breast, cervical, colorectal, and prostate cancers, breast and ovarian cancer risk assessment, genetic testing, and adult smoking rates are routinely used by the Michigan Cancer Consortium in the evaluation of their cancer programs.
- The MiBRFS provides opportunity to add questions on emerging issues. For example, questions related to influenza-like illness and H1N1 immunizations were included within the 2009 MiBRFS as part of the nationwide response to the influenza pandemic. In addition, MiBRFS questions on ovarian cancer risk assessment and hereditary predisposition to this cancer were included in 2009 in order to aid in further program planning.
- Several cardiovascular health CDC optional modules were included within the 2009 MiBRFS. Data from these modules were used extensively within several of the cardiovascular health program's fact sheets and surveillance reports. These documents are used when establishing program priorities.
- Child and adult asthma prevalence data by demographic, socioeconomic, and geographic strata continue to be incorporated into comprehensive surveillance reports and used in prioritizing activities and targeting populations for the statewide asthma program.
- MiBRFS data documenting the disparities in health behaviors and risk factors between people with and without disabilities were incorporated into the first strategic plan for the Health Promotion for People with Disabilities Program. These data were also used to highlight the high prevalence of chronic disease comorbidity among persons with disabilities and to encourage outreach by chronic disease self-management programs to persons with disabilities.
- MiBRFS data was used to measure public awareness and use of direct-to-consumer genetic tests, which are genetic tests that can be ordered without the involvement of a healthcare provider. Little data is currently available on this newly emerging, and somewhat controversial topic, and Michigan is one of the first states to include such questions as part of their BRFS questionnaire.

In addition, MiBRFS data are used extensively for external presentations and publications. For example, in the last few years numerous posters have been presented at state and national conferences on subjects such as Major Depression, Fast Food Consumption, Stroke and Heart Attack Risk Factors and Warning Signs, Sudden Cardiac Death, Disabilities, Michigan's Smoke Free Air Law, Stroke Scenarios, and the Michigan Asthma Call-Back Survey. In addition, MiBRFS data have been used in nearly 30 articles by Michigan staff and researchers, including publications on work-related asthma prevalence, chronic disease-related behaviors and health among African Americans and Hispanics, knowledge of stroke risk factors and warning signs by race, public awareness and use of direct-to-consumer genetic tests, knowledge of tissue Plasminogen activator for acute stroke, and the intention to call 911 in response to stroke scenarios.

Future of the Michigan Behavioral Risk Factor Survey

The 2010 MiBRFS is expected to maintain the number of completed interviews (9,000 total) from the 2009 survey, with an African-American over sample as well. The 2010 questionnaire will include over 120 state-added questions on 16 topics, such as binge drinking, caregiving, newborn screening, childhood asthma, and various tobacco-related issues.

The BRFSS continues to adapt to challenges and expand its utility. For example, the random-digit dialing methodology of the MiBRFS is becoming increasingly problematic because of declining participation rates and the increased use of cell phones and other communication modalities, rather than a traditional land line telephone.[3] The MiBRFS will need to adapt in order to continue providing representative estimates for adults. In 2008, Michigan participated in the BRFSS cell phone pilot project which was put in place to increase the capacity of the survey by including cell-phone-only households which in turn should reach more of the younger, urban respondents that tend to be underrepresented in the current land line survey. A cell phone stratum became a permanent component of the BRFSS starting in 2009.

Summary, continued

Efforts have been made to expand the range of subpopulations covered by the MiBRFS data:

- The 2009 survey methodology over samples geographic areas with a high density of African-American residents in order to provide more precise estimates for this population.
- The larger sample size in 2009 (N = 9,000) will allow for somewhat more precise estimates for Hispanics, especially when multiple years of data are combined.
- Since 2005, questions have been included that randomly select one child in each household and obtain demographic characteristics of that child. This information allows us to ask health-related questions about this child and then to calculate estimates for childhood conditions, such as asthma.
- An Asthma Call-Back survey that follows up on children and adults who were identified as having asthma during the BRFS interview has been conducted since 2005, allowing for collection of more detailed information on asthma management, clinical care, and impact of the disease on people's lives. It is anticipated that this methodology could be useful for other diseases and conditions in the future. The CDC has provided funding to some states to conduct in-person, follow-back surveys on specific diseases of interest.

In conclusion, the MiBRFS continues to serve the needs of public health officials, health care providers, researchers and local and state level policy makers, while presenting a number of opportunities for expanding our understanding of the risk factors and preventive behaviors for the major causes of disease and disability in Michigan.

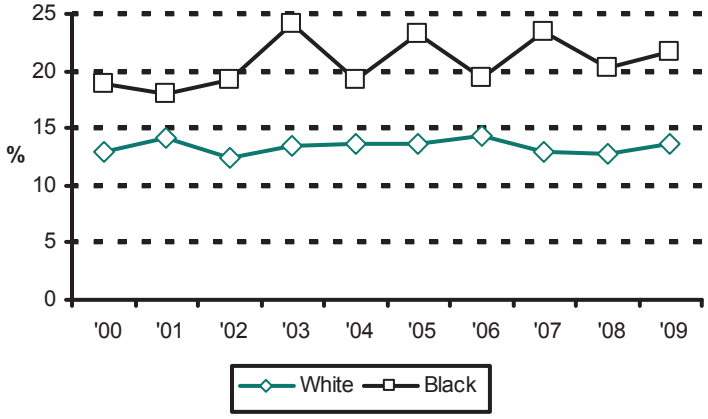
General Health Status

2009 MiBRFS

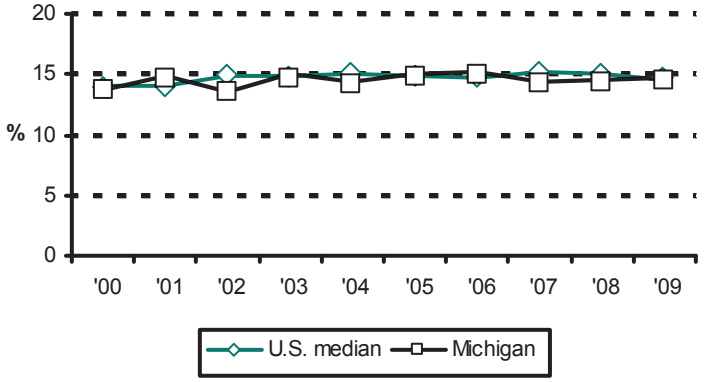
General health status is a reliable self-rated assessment of one's perceived health, which may be influenced by all aspects of life, including behaviors, environmental factors, and community.[4] Self-rated general health status is useful in determining unmet health needs, identifying disparities among subpopulations, and characterizing the burden of chronic diseases within a population.[5] The prevalence of self-rated fair or poor health status has been found to be statistically higher within older age groups, females, and minorities, and has also been associated with lower socioeconomic status in the presence or absence of disease.[5]

In 2009, an estimated 15.0% of Michigan adults perceived that their general health was either fair or poor. This proportion increased with age from 7.7% of those aged 18-24 years to 29.0% of those aged 75 years and older. The proportion who reported fair or poor health decreased with increasing education and income levels. Blacks in Michigan have consistently had a higher prevalence of fair or poor general health than Whites.

General Health, Fair or Poor by Race
Michigan 2000-2009



General Health, Fair or Poor
U.S. vs. Michigan, 2000-2009



Demographic Characteristics	General Health Fair or Poor [a] %	95% Confidence Interval
Total	**15.0**	**(14.1-16.0)**
Age		
18 - 24	7.7	(5.0-11.5)
25 - 34	11.1	(8.2-14.8)
35 - 44	9.6	(7.8-11.7)
45 - 54	14.4	(12.7-16.4)
55 - 64	21.0	(19.1-23.1)
65 - 74	22.0	(19.8-24.4)
75 +	29.0	(26.4-31.8)
Gender		
Male	14.3	(12.9-15.9)
Female	15.7	(14.5-17.0)
Race/Ethnicity		
White non-Hispanic	13.7	(12.7-14.7)
Black non-Hispanic	21.6	(18.3-25.2)
Other non-Hispanic	15.7	(11.7-20.7)
Hispanic	18.9	(12.4-27.8)
Education		
< High school	36.7	(31.4-42.4)
High school grad	19.4	(17.6-21.3)
Some college	14.4	(12.8-16.2)
College grad	7.3	(6.1-8.8)
Household Income		
< $20,000	32.5	(29.3-36.0)
$20,000 - $34,999	19.8	(17.5-22.3)
$35,000 - $49,999	15.1	(12.4-18.2)
$50,000 - $74,999	10.4	(8.4-12.8)
≥ $75,000	4.8	(3.6-6.4)

[a] Among all adults, the proportion who reported that their health, in general, was either fair or poor.

Over the past 10 years, the proportion of Michigan adults who reported fair or poor health has been relatively constant and similar to the U.S. median.

In addition, the prevalence of fair or poor health was higher among adults who were not currently married compared with those who were married (age-adjusted estimates: 20.9% [19.2-22.8] vs. 13.0% [10.5-16.0]).

Quality of Life

2009 MiBRFS

The concept of health-related quality of life refers to a person's or group's perceived physical and mental health over time. Tracking health-related quality of life within different populations can help guide interventions to improve the overall health of the community. The literature indicates that younger adults tend to experience a higher number of days of poor mental health than physical health, while the opposite seems to be true for older adults.[6]

An estimated 10.8% of Michigan adults had experienced physical health that was not good during at least two weeks (14 days) of the past month (30 days). This proportion was higher among older adults and women reported a higher prevalence of poor physical health compared to men (12.1% vs. 9.5%). Poor physical health decreased with higher education and household income levels.

The proportion of Michigan adults whose mental health was not good on at least 14 days in the past month was estimated to be 11.2%. This proportion was lower among older age groups, and women were more likely than men (13.1% vs. 9.2%) to report that their mental health was not good. Poor mental health decreased with higher education and household income levels.

The proportion who reported that either poor physical heath or poor mental health kept them from doing their usual activities (such as self-care, work, and recreation) on at least 14 of the past 30 days was 6.8% (6.2-7.5). This proportion was lower among younger age groups, and was higher among women compared to men (5.8% vs. 7.8%). Activity limitations decreased with higher education and household income levels.

Demographic Characteristics	Physical Health Not Good [a] %	Physical Health Not Good [a] 95% Confidence Interval	Mental Health Not Good [b] %	Mental Health Not Good [b] 95% Confidence Interval
Total	**10.8**	**(10.0-11.7)**	**11.2**	**(10.3-12.2)**
Age				
18 - 24	6.2	(3.8-9.8)	10.8	(7.6-15.1)
25 - 34	9.1	(6.6-12.5)	13.9	(10.9-17.7)
35 - 44	8.1	(6.5-10.0)	12.1	(10.1-14.4)
45 - 54	10.6	(9.0-12.3)	12.7	(11.0-14.6)
55 - 64	15.4	(13.7-17.2)	11.8	(10.4-13.4)
65 - 74	12.7	(11.0-14.7)	5.9	(4.6-7.4)
75 +	17.1	(14.9-19.6)	6.0	(4.6-7.7)
Gender				
Male	9.5	(8.3-10.8)	9.2	(8.0-10.6)
Female	12.1	(11.0-13.2)	13.1	(11.9-14.5)
Race/Ethnicity				
White non-Hispanic	10.5	(9.6-11.4)	10.7	(9.7-11.8)
Black non-Hispanic	12.3	(10.1-14.8)	12.5	(9.9-15.6)
Other non-Hispanic	13.7	(9.5-19.2)	14.5	(10.1-20.5)
Hispanic	7.9	(4.5-13.4)	14.2	(8.8-22.3)
Education				
< High school	25.2	(20.4-30.7)	19.5	(14.9-25.1)
High school grad	12.7	(11.2-14.4)	12.8	(11.1-14.8)
Some college	10.9	(9.5-12.6)	12.7	(11.0-14.5)
College grad	6.3	(5.2-7.5)	6.8	(5.7-8.2)
Household Income				
< $20,000	25.0	(21.9-28.3)	20.9	(18.0-24.2)
$20,000 - $34,999	13.7	(11.7-16.1)	14.0	(11.6-16.9)
$35,000 - $49,999	9.9	(7.8-12.6)	10.1	(8.1-12.5)
$50,000 - $74,999	6.5	(5.1-8.2)	8.9	(7.1-11.1)
≥ $75,000	4.4	(3.2-5.9)	6.5	(5.1-8.3)

[a] Among all adults, the proportion who reported 14 or more days of poor physical health, which includes physical illness and injury, during the past 30 days.
[b] Among all adults, the proportion who reported 14 or more days of poor mental health, which includes stress, depression, and problems with emotions, during the past 30 days.

In 2009, the estimated average number of days per month on which Michigan adults did not have good physical health was 3.6, for mental health the average was 3.7 days, and for limited activities the average was 2.3 days.

Two additional indicators related to quality of life, i.e., life satisfaction and emotional support, are also available. Nearly seven percent (6.9% [6.1-7.7]) of Michigan adults were estimated to be dissatisfied or very dissatisfied with their lives. This indicator decreased with increasing levels of education and household income. Over eight percent (8.1% [7.2-9.0]) reported that they rarely or never get the social and emotional support they need. The prevalence of inadequate social and emotional support was higher for men than women (9.9% [8.4-11.6] vs. 6.4% [5.6-7.2]), and also decreased with increasing levels of education and household income.

Caregiver Status

2009 MiBRFS

The term caregiver is used to refer to anyone who provides assistance to someone else who is incapacitated or in need of some form of help.[7] Although the numbers vary from source to source, it is estimated that approximately 29 million U.S. adults currently provide unpaid care to adults with a disability or chronic illness.[8] In addition, the number of unpaid family caregivers is expected to continue to increase and is estimated to reach 37 million caregivers by 2050, an increase of 85% since 2000.[9]

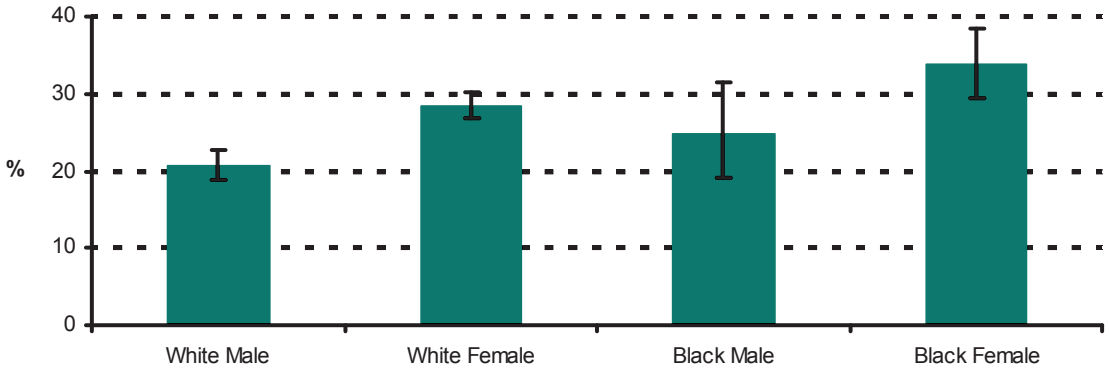
In 2009, an estimated 25.4% of Michigan adults reported that they provided regular care or assistance within the past month to a family member or friend who had a health problem, long-term illness, or disability. The proportion of Michigan adults who were caregivers in the past month increased with age from 17.7% of those aged 18-24 years to 32.0% of those aged 45-54 years, and then decreased back to 18.7% of those aged 75 years and older. Females were more likely that males to have been caregivers within the past month (29.1% vs. 21.3%), and the prevalence of caregiving was consistent across all education and household income levels.

When examining caregiver status by race and gender, it was found that both White females (28.5% [26.9-30.3]) and Black females (33.8% [29.4-38.5]) were more likely to have been caregivers in the past month when compared to White males (20.6% [18.8-22.6]). In addition, caregiving among Black males was compared to that of White females and Black females.

Demographic Characteristics	Caregiver in Past Month [a] %	95% Confidence Interval
Total	**25.4**	**(24.2-26.6)**
Age		
18 - 24	17.7	(13.7-22.5)
25 - 34	19.5	(16.1-23.5)
35 - 44	25.6	(22.8-28.6)
45 - 54	32.0	(29.6-34.6)
55 - 64	31.6	(29.4-34.0)
65 - 74	26.4	(24.0-29.1)
75 +	18.7	(16.4-21.1)
Gender		
Male	21.3	(19.6-23.2)
Female	29.1	(27.6-30.8)
Race/Ethnicity		
White non-Hispanic	24.9	(23.6-26.2)
Black non-Hispanic	29.7	(25.9-33.7)
Other non-Hispanic	26.3	(20.5-33.0)
Hispanic	20.2	(13.5-29.0)
Education		
< High school	21.7	(17.3-26.8)
High school grad	25.2	(23.1-27.5)
Some college	26.1	(24.0-28.4)
College grad	25.6	(23.6-27.7)
Household Income		
< $20,000	27.9	(24.4-31.7)
$20,000 - $34,999	25.0	(22.5-27.7)
$35,000 - $49,999	27.6	(24.5-30.9)
$50,000 - $74,999	25.6	(22.8-28.6)
≥ $75,000	24.2	(21.9-26.7)

[a] Among all adults, the proportion who reported having provided regular care in the past month to a family member or friend with a health problem, long-term illness, or diability.

Caregiver in the Past Month by Race and Gender
Michigan, 2009



Disability

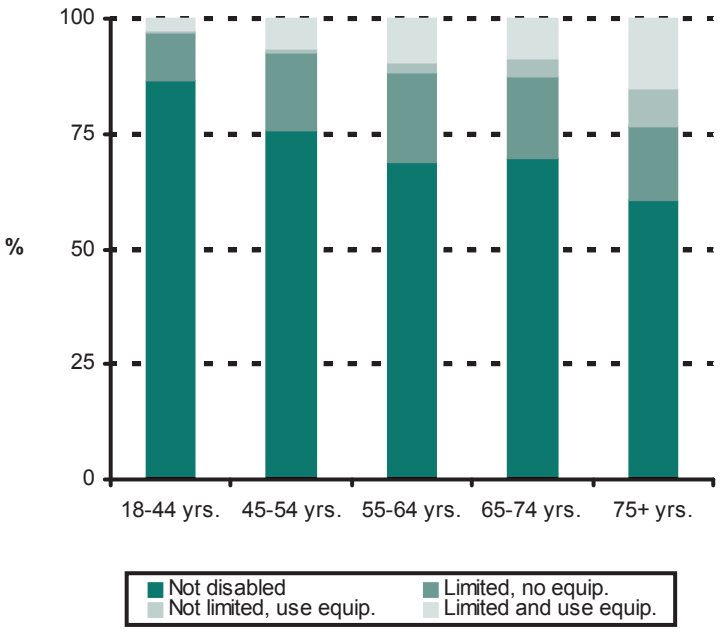
2009 MiBRFS

One Healthy People 2010 goal is to "promote the health of people with disabilities, prevent secondary conditions, and eliminate disparities between people with and without disabilities in the U.S. population."[10] There are many ways in which disability can be defined, ranging from experiencing difficulty in participating in certain activities (such as lifting and carrying objects, seeing, hearing, talking, walking or climbing stairs) to having more severe disabilities that require assistance in personal care needs (i.e., bathing) or routine care needs (i.e. housework).[11]

Disability in the MiBRFS is defined as either being limited in any activities because of physical, mental or emotional problems, or having any health problems that require the use of special equipment (such as a cane, a wheelchair, a special bed, or a special telephone). The estimated proportion of Michigan adults who were limited in any activities was 20.3% (19.2-21.3) and the proportion who used special equipment due to a health problem was 7.8% (7.2-8.5).

Combining responses to the two questions, an estimated 22.1% of Michigan adults were living with a disability in 2009, compared with 19.5% (18.1-20.9) in 2001. In 2009, the proportion who had a disability increased with age from 9.3% of those aged 18-24 years to 39.7% of those aged 75 years or older. The proportion of adults who had a disability declined with higher education and household income levels.

Disability by Age Group and Severity
Michigan, 2009



Demographic Characteristics	Total Disability [a] %	95% Confidence Interval
Total	**22.1**	**(21.0-23.2)**
Age		
18 - 24	9.3	(6.4-13.4)
25 - 34	14.1	(11.1-17.8)
35 - 44	15.7	(13.5-18.2)
45 - 54	24.6	(22.4-27.0)
55 - 64	31.4	(29.1-33.6)
65 - 74	30.4	(27.8-33.1)
75 +	39.7	(36.9-42.7)
Gender		
Male	20.4	(18.7-22.1)
Female	23.8	(22.4-25.2)
Race/Ethnicity		
White non-Hispanic	22.4	(21.2-23.7)
Black non-Hispanic	21.2	(18.3-24.3)
Other non-Hispanic	21.6	(16.7-27.4)
Hispanic	15.5	(10.1-22.9)
Education		
< High school	43.0	(37.3-49.0)
High school grad	23.9	(22.0-26.0)
Some college	23.1	(21.1-25.2)
College grad	15.7	(14.2-17.3)
Household Income		
< $20,000	40.4	(36.8-44.2)
$20,000 - $34,999	27.5	(24.8-30.4)
$35,000 - $49,999	19.2	(16.7-22.0)
$50,000 - $74,999	19.0	(16.5-21.7)
≥ $75,000	13.1	(11.3-15.2)

[a] Among all adults, the proportion who reported being limited in any activities because of physical, mental, or emotional problems, or reported that they required use of special equipment (such as a cane, a wheelchair, a special bed, or a special telephone) due to a health problem.

When investigating disability by age group and severity, individuals aged 75 years and older reported more severe disability (i.e., activities limited and use of special equipment) when compared to all other age groups.

In 2009, Michigan adults with a disability were over 7 times as likely to have reported 14 or more days of physical health that was not good (33.3% [30.8-36.0] vs. 4.5% [3.8-5.2]), over 3 times as likely to have reported that their mental health was not good (23.8% [21.5-26.4] vs. 7.6% [6.7-8.6]), and nearly 14 times as likely to have reported activity limitations (24.6% [22.3-27.0] vs. 1.8% [1.4-2.4]) when compared to individuals without disabilities.

Weight Status

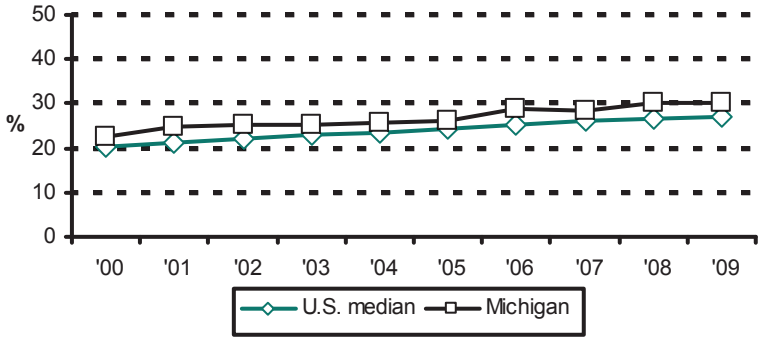
2009 MiBRFS

Obesity increases the risk of many diseases and health conditions, such as high blood pressure, diabetes, coronary heart disease, stroke, gallbladder disease, high cholesterol, and some forms of cancer.[12] Obesity-related medical expenditures in Michigan were estimated to be $2.9 billion based on 2003 dollars.[13] Since obesity rates have increased since 2003, obesity-related medical expenditures are expected to have increased as well.

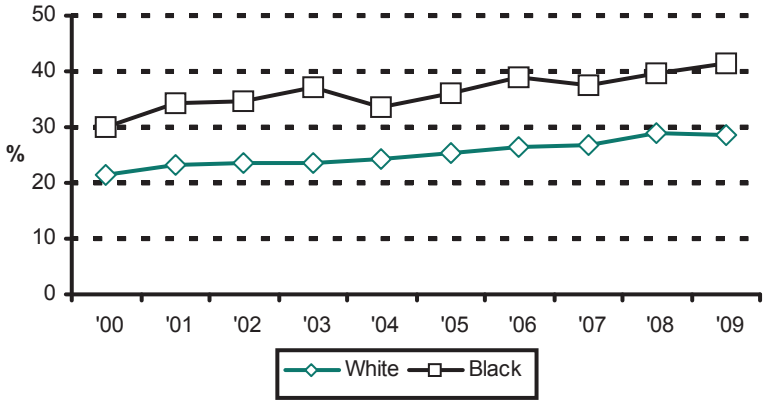
Overweight is defined as having a body mass index (BMI) between 25.0 and 29.9, and obesity is a BMI greater than or equal to 30.0. BMI is defined as weight in kilograms divided by height in meters squared (w/h^2) and was calculated from the self-reported height and weight measurements of Michigan residents participating in the 2009 BRFS.

An estimated 30.9% of Michigan adults were obese in 2009, compared with 22.5% (20.7-24.3) in 2000. The proportion of adults who were obese in 2009 increased with age from 16.6% of those aged 18-24 years to 36.9% of those aged 55-64 years, and then decreased back to 21.9% of those aged 75 years and older. Blacks were more likely than Whites (41.6% vs. 28.7%) to be obese.

Obesity
U.S. vs. Michigan, 2000-2009



Obesity by Race
Michigan, 2000-2009



Demographic Characteristics	Obese [a] %	Obese [a] 95% Confidence Interval
Total	**30.9**	**(29.6-32.3)**
Age		
18 - 24	16.6	(12.6-21.7)
25 - 34	32.3	(27.8-37.2)
35 - 44	34.1	(30.9-37.5)
45 - 54	33.6	(31.1-36.2)
55 - 64	36.9	(34.5-39.4)
65 - 74	34.8	(32.1-37.6)
75 +	21.9	(19.4-24.6)
Gender		
Male	30.8	(28.7-33.0)
Female	31.0	(29.4-32.7)
Race/Ethnicity		
White non-Hispanic	28.7	(27.3-30.1)
Black non-Hispanic	41.6	(37.2-46.1)
Other non-Hispanic	30.2	(24.2-37.1)
Hispanic	42.6	(30.5-55.7)
Education		
< High school	32.1	(27.1-37.6)
High school grad	33.9	(31.5-36.4)
Some college	32.6	(30.1-35.2)
College grad	26.4	(24.1-28.7)
Household Income		
< $20,000	34.5	(31.0-38.0)
$20,000 - $34,999	34.7	(31.5-38.0)
$35,000 - $49,999	32.8	(29.2-36.5)
$50,000 - $74,999	34.5	(31.2-38.1)
≥ $75,000	25.7	(23.1-28.6)

Note: BMI, body mass index, is defined as weight (in kilograms) divided by height (in meters) squared [weight in kg/(height in meters)^2]. Weight and height were self-reported. Pregnant women were excluded.
[a] Among all adults, the proportion of respondents whose BMI was greater than or equal to 30.0.

In 2009, an estimated 35.7% (34.3-37.1) of Michigan adults were overweight, having a BMI between 25.0 and 29.9. This proportion increased with age from 23.3% (18.4-29.0) of those aged 18-24 years to 38.9% (36.1-41.4) of those aged 75 years and older. The cumulative proportion of obese and overweight Michigan adults was 66.6% (65.1-68.0).

Michigan has consistently had higher obesity prevalence rates than the U.S. median. In 2009, the State of Michigan was tied for the tenth highest obesity level among all participating states and territories.

No Health Care Coverage

2009 MiBRFS

Adults who do not have health care coverage are less likely to access health care services and more likely to delay getting needed medical attention.[14] Utilization of preventive health care services, such as mammography, pap tests, prostate exams, adult vaccinations, and cholesterol tests, could reduce the prevalence and severity of diseases and chronic conditions in the United States.[15]

In 2009, an estimated 16.2% of Michigan adults aged 18-64 years had no health care coverage. This proportion decreased with age from 24.2% of those aged 18-24 years to 8.6% of those aged 55-64 years. Blacks (23.6%) had a higher rate of non-coverage than Whites (14.2%). The proportion who were uninsured decreased with increasing education and household income levels.

The highest non-coverage rates were found among younger persons, those with less education, and those in low-income households. When lack of health insurance was examined more closely among those aged 18-29 years, it was found that 25.6% (21.5-30.1) of this age group were without health insurance and that the same inverse relationships existed with education and household income. The proportion with no health insurance decreased from 31.8% (18.0-49.7) among 18-29 year-olds with less than a high school degree to 9.1% (5.1-15.7) among college graduates in this age group. Similarly, 42.8% (32.5-53.7) of 18-29 year-olds living in households with incomes of less than $20,000 had no health insurance while only 8.5% (4.3-16.3) of those in the highest income group (≥ $75,000) had no health insurance.

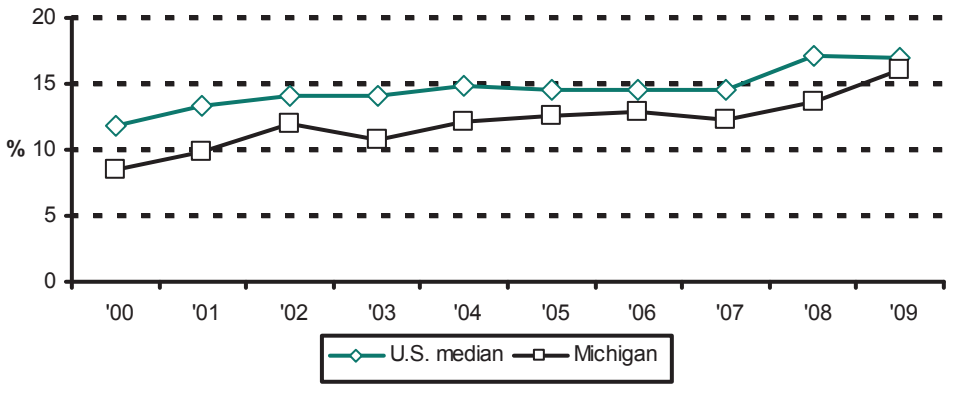
U.S. adults without health insurance are more likely than those with insurance to have more health risk factors, such as current cigarette smoking and lack of physical activity.[16] In Michigan, among those aged 18-64 years who did not have health insurance, the proportion who were current smokers was 40.5% (35.9-45.3) in 2009, whereas among insured adults in the same age range, an estimated 18.9% (17.5-20.3) were current smokers. No differences in physical activity were observed by insurance status.

From 2000 to 2007 the proportion of Michigan adults aged 18 years or older who reported having no health care coverage has been relatively constant and slightly lower than the U.S. median. Over the past two years, the proportion of uninsured Michigan adults has increased to nearly that of the U.S. median.

Demographic Characteristics	No Health Care Coverage Among Adults Aged 18-64 Years [a] %	95% Confidence Interval
Total	**16.2**	**(14.8-17.6)**
Age		
18 - 24	24.2	(19.3-29.8)
25 - 34	21.9	(18.0-26.4)
35 - 44	15.7	(13.2-18.7)
45 - 54	12.9	(11.2-14.8)
55 - 64	8.6	(7.3-10.0)
Gender		
Male	19.1	(16.9-21.5)
Female	13.3	(11.8-15.0)
Race/Ethnicity		
White non-Hispanic	14.2	(12.8-15.7)
Black non-Hispanic	23.6	(19.1-28.8)
Other non-Hispanic	19.9	(13.7-28.1)
Hispanic	25.9	(16.2-38.6)
Education		
< High school	32.1	(24.4-40.9)
High school grad	24.9	(21.9-28.1)
Some college	15.5	(13.2-18.0)
College grad	7.1	(5.7-8.8)
Household Income		
< $20,000	36.2	(31.7-41.0)
$20,000 - $34,999	29.8	(25.6-34.4)
$35,000 - $49,999	14.9	(11.4-19.3)
$50,000 - $74,999	6.2	(4.4-8.5)
≥ $75,000	3.9	(2.5-6.0)

[a] Among adults aged 18-64, the proportion who reported having no health care coverage, including health insurance, prepaid plans such as HMOs, or government plans, such as Medicare.

No Health Care Coverage Among Adults Aged 18 Years and Older U.S. vs. Michigan, 2000-2009



Limited Health Care Coverage

2009 MiBRFS

Two additional indicators related to health care access are: 1) not having a personal doctor or health care provider and 2) having had a time during the past 12 months when they needed to see a doctor but could not because of the cost. These indicators are very important to health care due to the fact that increases in primary care have been shown to improve health-related outcomes substantially.[17]

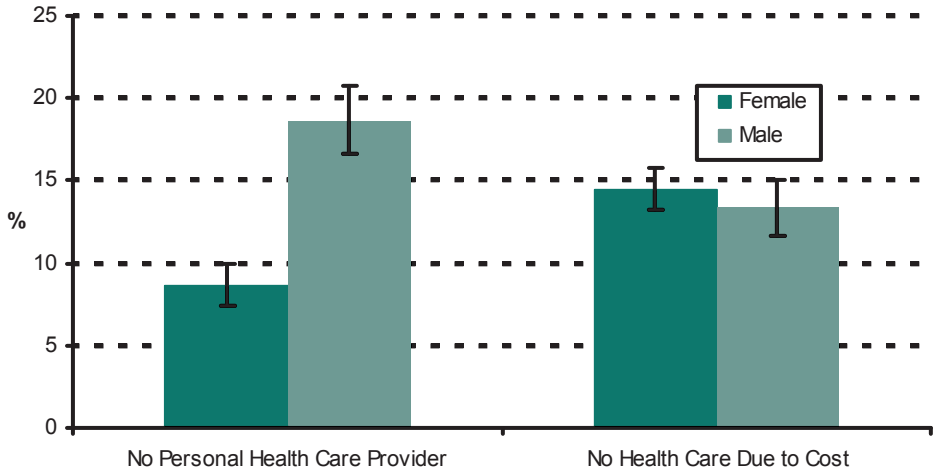
An estimated 13.4% of Michigan adults did not have a personal doctor or health care provider in 2009. The proportion of Michigan adults who needed to see a doctor in the past year but could not due to the cost was estimated to be 13.9%, an increase from 8.9% in 2000. When comparing individuals with and without insurance coverage, uninsured individuals were over five times as likely to not have a personal health care provider and five times as likely to have needed health care in the past 12 months, but was not able to get it due to cost.

Men were more likely than women to not have a personal health care provider (18.6% vs. 8.6%), while men and women were similar in terms on having no health care access during the past 12 months due to cost (13.3% vs. 14.5%). The proportion for both indicators decreased with increasing education and household income levels. When analyzed by race-ethnicity, the proportion of Whites who had no health care access during the past 12 months due to cost was lower than that of Blacks (12.2% vs. 20.3%).

Demographic Characteristics	No Personal Health Care Provider [a] %	No Personal Health Care Provider [a] 95% Confidence Interval	No Health Care Access Due to Cost [b] %	No Health Care Access Due to Cost [b] 95% Confidence Interval
Total	**13.4**	**(12.3-14.7)**	**13.9**	**(12.9-15.0)**
Age				
18 - 24	27.2	(21.8-33.4)	15.3	(11.6-19.8)
25 - 34	22.9	(19.1-27.3)	18.5	(15.0-22.5)
35 - 44	15.2	(12.8-17.9)	17.9	(15.2-20.9)
45 - 54	10.3	(8.8-12.1)	15.5	(13.7-17.5)
55 - 64	6.0	(5.0-7.3)	11.2	(9.8-12.7)
65 - 74	3.3	(2.5-4.5)	5.3	(4.0-6.8)
75 +	2.9	(2.1-4.0)	4.3	(3.2-5.7)
Gender				
Male	18.6	(16.6-20.7)	13.3	(11.7-15.1)
Female	8.6	(7.4-10.0)	14.5	(13.2-15.8)
Race/Ethnicity				
White non-Hispanic	11.8	(10.6-13.0)	12.2	(11.1-13.3)
Black non-Hispanic	19.2	(15.5-23.6)	20.3	(16.7-24.5)
Other non-Hispanic	22.6	(15.7-31.4)	21.4	(16.1-27.9)
Hispanic	17.7	(8.6-32.9)	16.8	(10.7-25.5)
Education				
< High school	18.9	(14.0-25.0)	23.2	(18.1-29.3)
High school grad	15.4	(13.2-17.9)	17.9	(15.8-20.3)
Some college	14.6	(12.4-17.1)	15.2	(13.4-17.2)
College grad	9.4	(7.8-11.3)	7.1	(6.0-8.3)
Household Income				
< $20,000	23.4	(20.0-27.1)	33.0	(29.4-36.9)
$20,000 - $34,999	18.6	(15.5-22.2)	20.1	(17.4-23.1)
$35,000 - $49,999	11.7	(8.9-15.3)	11.7	(9.5-14.3)
$50,000 - $74,999	8.4	(6.4-10.9)	8.7	(6.9-11.0)
≥ $75,000	7.7	(6.0-9.8)	3.2	(2.2-4.7)

[a] Among all adults, the proportion who reported that they did not have anyone that they thought of as their personal doctor or health care provider.
[b] Among all adults, the proportion who reported that in the past 12 months, they could not see a doctor when they needed to due to the cost.

Health Care Access Indicators by Gender
Michigan, 2009



No Leisure-Time Physical Activity

2009 MiBRFS

Regular physical activity has been shown to reduce the risk of many diseases including cardiovascular disease, diabetes, colon and breast cancers, and osteoporosis. Keeping physically active also helps to control weight, maintain healthy bones, muscles, and joints, and can relieve symptoms of depression.[18]

In 2009, an estimated 24.1% of Michigan adults did not participate in any leisure-time physical activity (physical activities or exercises such as running, calisthenics, golf, gardening, or walking for exercise in the past month). This proportion was higher among older adults than younger adults. Women were more likely than men (25.9% vs. 22.2%), and Blacks were more likely than Whites to not participate in leisure-time physical activity. Inactivity during leisure time decreased with higher education and household income levels.

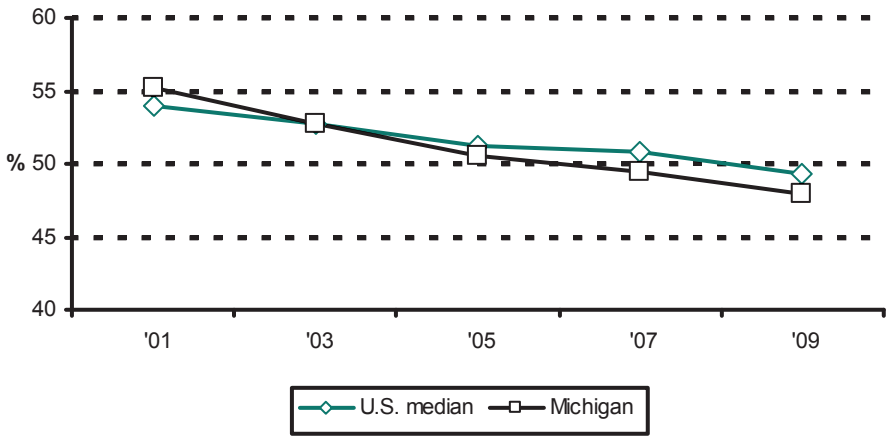
Nearly half (48.6%) of Michigan adults reported inadequate physical activity in 2009 (i.e., no moderate physical activities for a total of at least 30 minutes on 5 or more days per week and no vigorous physical activities for a total of at least 20 minutes on 3 or more days per week while not at work). Inadequate physical activity increased with age of the population, and decreased with increasing household income levels. In addition, Blacks (54.6%) reported higher levels of inadequate physical activity than Whites (47.9%).

Since 2001, the median prevalence of inadequate physical activity for the United States has decreased from 54.0% to 49.3% in 2009. In addition, the prevalence of inadequate physical activity within Michigan also decreased significantly over the same time period (2001: 55.2% vs. 2009: 48.6%).

Demographic Characteristics	No Leisure-Time Physical Activity[a] %	No Leisure-Time Physical Activity[a] 95% Confidence Interval	Inadequate Physical Activity[b] %	Inadequate Physical Activity[b] 95% Confidence Interval
Total	**24.1**	**(22.9-25.3)**	**48.6**	**(47.1-50.1)**
Age				
18 - 24	15.3	(11.2-20.5)	37.8	(31.7-44.2)
25 - 34	21.7	(18.0-25.8)	45.4	(40.6-50.3)
35 - 44	19.5	(17.1-22.3)	47.0	(43.6-50.4)
45 - 54	24.6	(22.3-26.9)	49.2	(46.4-51.9)
55 - 64	27.6	(25.5-29.9)	52.0	(49.4-54.5)
65 - 74	27.9	(25.4-30.5)	53.0	(50.0-56.0)
75 +	39.2	(36.3-42.1)	64.8	(61.6-67.8)
Gender				
Male	22.2	(20.3-24.1)	46.3	(43.9-48.7)
Female	25.9	(24.5-27.4)	50.9	(49.0-52.7)
Race/Ethnicity				
White non-Hispanic	23.1	(21.9-24.4)	47.9	(46.3-49.6)
Black non-Hispanic	30.6	(26.9-34.5)	54.6	(49.8-59.3)
Other non-Hispanic	21.3	(16.7-26.7)	44.6	(37.2-52.4)
Hispanic	26.6	(16.6-39.7)	49.8	(36.9-62.8)
Education				
< High school	42.9	(37.4-48.7)	64.5	(58.0-70.4)
High school grad	32.1	(29.7-34.5)	51.7	(49.0-54.5)
Some college	23.5	(21.4-25.8)	47.8	(44.9-50.6)
College grad	13.3	(11.9-14.8)	44.1	(41.6-46.7)
Household Income				
< $20,000	36.1	(32.6-39.6)	56.5	(52.3-60.6)
$20,000 - $34,999	31.4	(28.4-34.5)	53.3	(49.7-56.8)
$35,000 - $49,999	24.6	(21.5-27.9)	48.5	(44.5-52.5)
$50,000 - $74,999	21.1	(18.5-23.9)	47.3	(43.7-50.9)
≥ $75,000	12.6	(10.8-14.7)	41.4	(38.4-44.5)

[a] Among all adults, the proportion who reported not participating in any leisure-time physical activities or exercises, such as running, calisthenics, golf, gardening, or walking, during the past month.
[b] Among all adults, the proportion who reported that they do not usually do moderate physical activities for a total of at least 30 minutes on five or more days per week or vigorous physical activities for a total of at least 20 minutes on three or more days per week while not at work.

Inadequate Physical Activity
U.S. vs. Michigan, 2001-2009



Inadequate Fruit and Vegetable Consumption

2009 MiBRFS

Research shows that fruits and vegetables are important promoters of good health. When compared with people whose diets are low in fruits and vegetables, those who eat more generous amounts of fruits and vegetables have a reduced risk of some chronic diseases, such as stroke and certain forms of cancer.[19]

An estimated 77.8% of Michigan adults in 2009 did not consume fruits (including juice) and vegetables five or more times per day. Men were more likely than women to not consume fruits and vegetables the recommended number of times per day (81.9% vs. 74.1%). This proportion was lower among college graduates (70.7%) compared with other educational levels, and was lower among those aged 75 years and older (69.0%) compared with younger age groups.

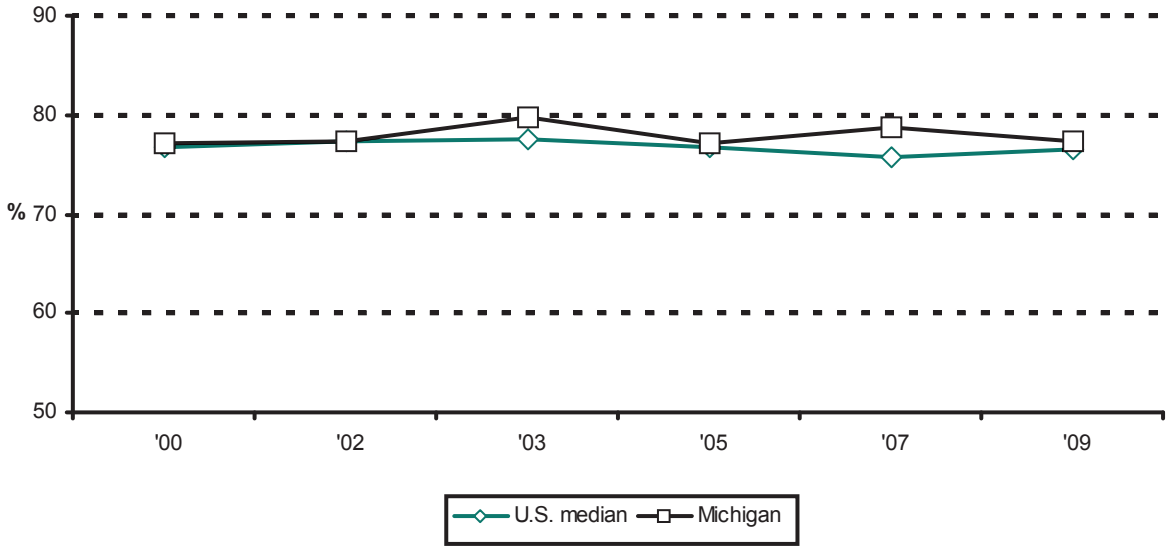
The median number of times per day Michigan adults consumed fruits and vegetables was 3.3 in 2009; the median number for fruits and juice was 1.1 times per day and for vegetables was 2.0 times per day.

The median prevalence of inadequate fruit and vegetable consumption among participating states and U.S. territories has remained relatively consistent over time. The proportion of inadequate fruit and vegetable consumption among Michigan adults has also remained relatively stable over the past ten years, and is currently only slightly higher than that of the U.S. median.

Demographic Characteristics	Inadequate Fruit and Vegetable Consumption[a] %	95% Confidence Interval
Total	**77.8**	**(76.6-79.0)**
Age		
18 - 24	77.4	(71.6-82.3)
25 - 34	80.2	(76.4-83.6)
35 - 44	79.8	(76.9-82.3)
45 - 54	77.8	(75.5-79.9)
55 - 64	79.2	(77.1-81.1)
65 - 74	75.7	(73.2-78.1)
75 +	69.0	(66.2-71.7)
Gender		
Male	81.9	(79.9-83.6)
Female	74.1	(72.5-75.6)
Race/Ethnicity		
White non-Hispanic	77.5	(76.2-78.8)
Black non-Hispanic	80.4	(76.8-83.6)
Other non-Hispanic	73.4	(66.4-79.4)
Hispanic	82.5	(71.1-90.0)
Education		
< High school	80.9	(75.0-85.7)
High school grad	83.8	(81.9-85.5)
Some college	78.7	(76.3-80.8)
College grad	70.7	(68.5-72.9)
Household Income		
< $20,000	80.8	(77.7-83.7)
$20,000 - $34,999	79.3	(76.7-81.7)
$35,000 - $49,999	77.6	(74.0-80.8)
$50,000 - $74,999	78.8	(75.7-81.5)
≥ $75,000	73.0	(70.2-75.7)

[a] Among all adults, the proportion whose total reported frequency of consumption of fruits (including juice) and vegetables was less than five times per day.

Inadequate Fruit and Vegetable Consumption
U.S. vs. Michigan, 2000-2009



Cigarette Smoking

2009 MiBRFS

Smoking contributes to the development of many kinds of chronic conditions, including cancers, respiratory diseases, and cardiovascular diseases, and "remains the leading preventable cause of premature death in the United States."[20] It has been estimated that smoking costs the United States $193 billion in annual health-related economic losses and 5.1 million years of potential life lost each year.[21]

Current smoking status was defined as ever having smoked 100 cigarettes (five packs) in their life and smoking cigarettes now, either every day or on some days, whereas former smoking status was defined as having smoked at least 100 cigarettes but not currently smoking.

In 2009, an estimated 19.8% of Michigan adults were current smokers, and 25.8% (24.7-26.9) were estimated to be former smokers. Men were more likely than women to be current smokers (21.5% vs. 18.2%), and former smokers (28.6% [26.8-30.5] vs. 23.1% [21.8-24.5]), while women were more likely to have never smoked (58.7% [57.0-60.5] vs. 49.8% [47.5-52.1]). Current smoking prevalence was similar among Blacks and Whites, and declined with increasing levels of education and household income.

The proportion of Michigan adults who were current smokers has remained above the U.S. median during the past ten years. To achieve the Healthy People goal of a cigarette smoking prevalence of 12% by 2010[22], the proportion of current smokers in Michigan will need to drop by nearly eight percentage points within the next year. The recent implementation of the Michigan smoke-free air law may aid in these efforts.

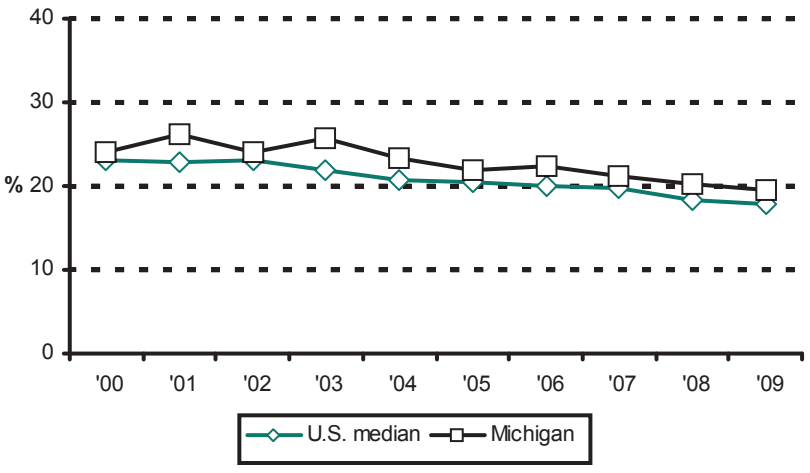
An estimated 61.7% (58.4-64.9) of current smokers in Michigan tried to quit smoking for one day or longer in the past year.

Research has shown a potential relationship between self-rated health status and current smoking status.[23] In Michigan, those who reported fair to poor general health were more likely to be current smokers than those who reported good to excellent general health (30.0% [26.9-33.4] vs. 18.0% [16.8-19.3]).

Demographic Characteristics	Current Smoking [a] %	95% Confidence Interval
Total	**19.8**	**(18.6-21.0)**
Age		
18 - 24	18.8	(14.7-23.6)
25 - 34	28.3	(24.2-32.8)
35 - 44	21.4	(18.8-24.3)
45 - 54	24.0	(21.8-26.4)
55 - 64	18.3	(16.4-20.2)
65 - 74	11.1	(9.5-12.8)
75 +	4.0	(3.0-5.2)
Gender		
Male	21.5	(19.7-23.5)
Female	18.2	(16.8-19.6)
Race/Ethnicity		
White non-Hispanic	19.3	(18.1-20.7)
Black non-Hispanic	21.6	(18.3-25.4)
Other non-Hispanic	22.0	(16.7-28.3)
Hispanic	20.8	(12.6-32.3)
Education		
< High school	35.2	(29.7-41.2)
High school grad	27.1	(24.8-29.6)
Some college	20.5	(18.4-22.8)
College grad	9.1	(7.8-10.7)
Household Income		
< $20,000	35.2	(31.5-39.0)
$20,000 - $34,999	25.5	(22.6-28.6)
$35,000 - $49,999	19.9	(17.0-23.3)
$50,000 - $74,999	16.5	(14.0-19.3)
≥ $75,000	11.6	(9.6-14.0)

[a] Among all adults, the proportion who reported that they had ever smoked at least 100 cigarettes (5 packs) in their life and that they smoke cigarettes now, either every day or on some days.

Current Cigarette Smoking
U.S. vs. Michigan, 2000-2009



Smokeless Tobacco

2009 MiBRFS

The two main types of smokeless tobacco sold within the United States are chewing tobacco and snuff. Smokeless tobacco is known to cause cancer of the oral cavity and pancreas, and should not be considered as a safe substitute for smoking cigarettes.[24]

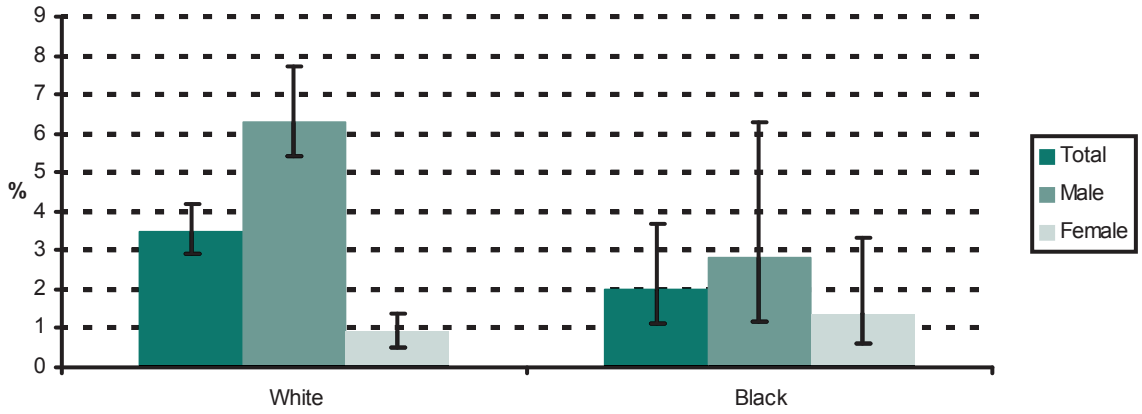
In 2009, an estimated 3.4% of Michigan adults reported that they currently used chewing tobacco, snuff or snus, either every day or on some days. The proportion of Michigan adults who were current smokeless tobacco users decreased with age from 6.6% of those aged 18-24 years to 1.2% of those aged 75 years and older. Males were more likely that females to be current smokeless tobacco users (6.0% vs. 1.0%), and the prevalence of current smokeless tobacco use decreased with increasing education and household income levels.

When examining current smokeless tobacco use by race and gender, it was found that both Whites and Blacks had a similar smokeless tobacco use prevalence. In addition, current smokeless tobacco use was similar among White males and Black males, as well as among White females and Black females.

Demographic Characteristics	Current Smokeless Tobacco Use [a] %	95% Confidence Interval
Total	**3.4**	**(2.9-4.0)**
Age		
18 - 24	6.6	(4.2-10.0)
25 - 34	4.0	(2.5-6.3)
35 - 44	4.0	(2.8-5.6)
45 - 54	2.8	(2.0-3.9)
55 - 64	2.6	(1.9-3.7)
65 - 74	1.7	(1.1-2.6)
75 +	1.2	(0.8-2.0)
Gender		
Male	6.0	(5.0-7.2)
Female	1.0	(0.7-1.4)
Race/Ethnicity		
White non-Hispanic	3.5	(2.9-4.2)
Black non-Hispanic	2.0	(1.1-3.7)
Other non-Hispanic	5.3	(2.6-10.2)
Hispanic	3.2	(1.3-7.8)
Education		
< High school	6.3	(3.9-10.0)
High school grad	5.2	(4.0-6.6)
Some college	3.2	(2.3-4.4)
College grad	1.4	(0.9-2.2)
Household Income		
< $20,000	5.6	(4.0-8.0)
$20,000 - $34,999	4.3	(3.0-6.0)
$35,000 - $49,999	2.9	(1.7-4.7)
$50,000 - $74,999	2.3	(1.4-3.8)
≥ $75,000	2.1	(1.4-3.3)

[a] Among all adults, the proportion who reported that they currently use chewing tobacco, snuff or snus, either every day or on some days.

Current Smokeless Tobacco Use by Race and Gender
Michigan, 2009



Alcohol Consumption

2009 MiBRFS

Alcohol abuse has been associated with serious health problems, such as cirrhosis of the liver, high blood pressure, stroke, and some types of cancer, and can increase the risk for motor vehicle accidents, injuries, violence, and suicide.[25] In Michigan, the percent of fatal motor vehicle crashes that involved any alcohol was 29.0% in 2009.[26]

In 2009, 16.9% of Michigan adults were estimated to have engaged in binge drinking, i.e., the consumption of five or more drinks per occasion (for men) or four or more drinks per occasion (for women) at least once in the previous month. The proportion for binge drinking decreased with age from 25.2% of those aged 18-24 years to 2.5% of those aged 75 years and older. Men were more likely than women (23.8% vs. 10.5%), and Whites were more likely than Blacks to have engaged in binge drinking.

When compared to the median for all participating states, Michigan has consistently had a slightly higher prevalence of binge drinking. To achieve the Healthy People goal of a binge drinking prevalence of 6% by 2010[27], this proportion among Michigan adults will need to drop over ten percentage points over the next year.

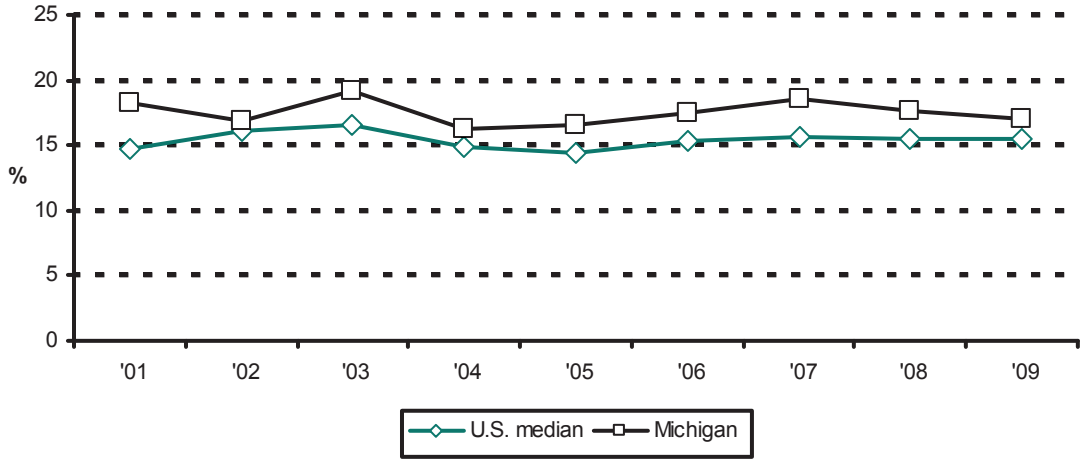
In 2009, the proportion who engaged in heavy drinking, i.e., the consumption of more than two alcoholic beverages per day for men or more than one alcoholic beverage per day for women was 5.2% (4.5-5.9).

Approximately one-sixth of Michigan underage adults, aged 18-20 years, reported binge drinking in the previous month (15.6% [10.5-22.7]). An estimated 6.1% (3.1-11.4) of underage adults reported heavy drinking in 2009.

Demographic Characteristics	Binge Drinking [a] %	95% Confidence Interval
Total	**16.9**	**(15.8-18.1)**
Age		
18 - 24	25.2	(20.3-30.7)
25 - 34	23.5	(19.7-27.7)
35 - 44	22.3	(19.6-25.3)
45 - 54	17.5	(15.4-19.7)
55 - 64	11.0	(9.6-12.7)
65 - 74	5.8	(4.6-7.4)
75 +	2.5	(1.7-3.7)
Gender		
Male	23.8	(21.8-25.9)
Female	10.5	(9.4-11.8)
Race/Ethnicity		
White non-Hispanic	18.5	(17.2-19.9)
Black non-Hispanic	9.3	(6.9-12.5)
Other non-Hispanic	14.7	(10.4-20.4)
Hispanic	13.7	(8.4-21.6)
Education		
< High school	10.9	(7.0-16.8)
High school grad	16.9	(14.8-19.1)
Some college	17.4	(15.3-19.8)
College grad	17.6	(15.7-19.8)
Household Income		
< $20,000	12.5	(9.8-15.7)
$20,000 - $34,999	15.3	(12.7-18.4)
$35,000 - $49,999	17.4	(14.5-20.8)
$50,000 - $74,999	18.7	(15.9-21.9)
≥ $75,000	22.5	(19.9-25.2)

[a] Among all adults, the proportion who reported consuming five or more drinks per occasion (for men) or four or more drinks per occasion (for women) at least once in the previous month.

Binge Drinking
U.S. vs. Michigan, 2001-2009



Hypertension Awareness and Medication Use

2009 MiBRFS

Adults with hypertension are at a higher risk for stroke, cardiovascular disease, and end stage renal disease.[28] According to the Seventh Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure, hypertension should be diagnosed when the mean systolic blood pressure or the mean diastolic blood pressure is measured in two or more office visits to be greater than or equal to 140 millimeters of mercury (mmHg) or 90 mmHg, respectively.[28] In 2001, an estimated $54.0 billion was spent on health care for patients with hypertension.[29]

Over one quarter of Michigan adults were estimated in 2009 to have ever been told by a health care professional that they had high blood pressure (30.4%). This proportion increased with age from 7.7% of those aged 18-24 years to 62.5% of those 75 years and older. Blacks were more likely than the other race-ethnic groups to have ever been told by a health care professional that they had high blood pressure with an estimate of 36.8%. The prevalence of high blood pressure decreased with increasing education and household income levels.

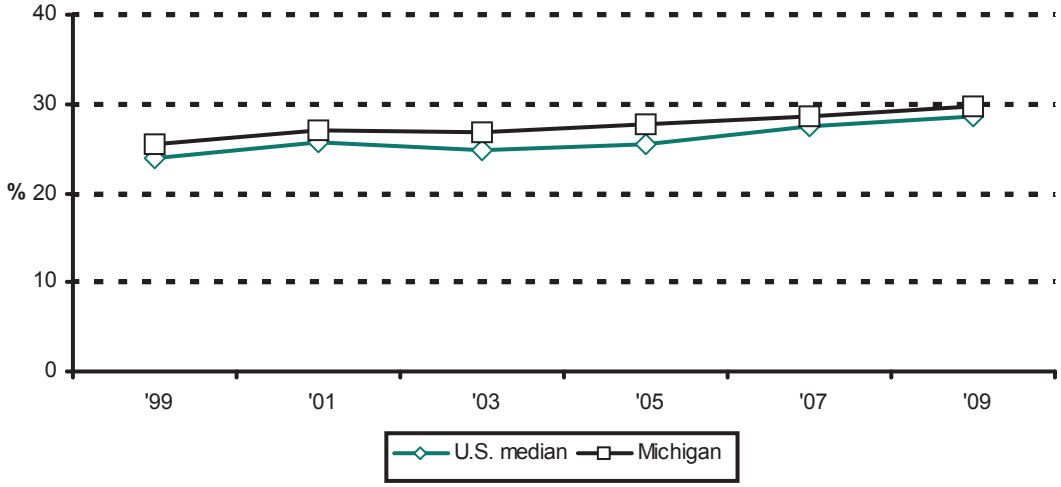
The median prevalence of high blood pressure among participating states and U.S. territories has increased slightly over the past decade. In addition, the prevalence of high blood pressure among Michigan adults has increased significantly from 25.5% (23.7-27.3) in 1999 to 30.4% (29.2-31.6) in 2009.

Among those who had ever been told that they had high blood pressure, an estimated 79.5% (77.3-81.5) were currently taking blood pressure medication in 2009. This proportion increased with age, from 49.5% (35.0-64.2) in the 25-34 years group to 94.0% (92.0-95.5) in the 75 years and older group. Men were more likely than women to have ever been told that they had high blood pressure (32.6% [30.6-34.7] vs. 28.4% [27.0-29.8]), but women were more likely than men to be currently taking blood pressure medication (84.7% [82.5-86.6] vs. 74.7% [71.1-77.9]).

Demographic Characteristics	Ever Told HBP[a] %	95% Confidence Interval
Total	**30.4**	**(29.2-31.6)**
Age		
18 - 24	7.7	(5.3-11.3)
25 - 34	13.6	(10.3-17.8)
35 - 44	19.4	(16.8-22.3)
45 - 54	29.3	(26.9-31.8)
55 - 64	45.9	(43.5-48.3)
65 - 74	60.9	(58.1-63.6)
75 +	62.5	(59.5-65.3)
Gender		
Male	32.6	(30.6-34.7)
Female	28.4	(27.0-29.8)
Race/Ethnicity		
White non-Hispanic	29.8	(28.5-31.1)
Black non-Hispanic	36.8	(32.8-40.9)
Other non-Hispanic	26.6	(21.2-32.7)
Hispanic	21.4	(13.6-32.0)
Education		
< High school	39.3	(34.1-44.8)
High school grad	36.7	(34.3-39.1)
Some college	28.5	(26.4-30.7)
College grad	24.4	(22.5-26.4)
Household Income		
< $20,000	38.0	(34.6-41.6)
$20,000 - $34,999	38.6	(35.6-41.8)
$35,000 - $49,999	33.7	(30.4-37.2)
$50,000 - $74,999	25.3	(22.6-28.2)
≥ $75,000	22.1	(19.8-24.5)

[a] Among all adults, the proportion who reported that they were ever told by a health care professional that they have high blood pressure (HBP). Women who had high blood pressure only during pregnancy and adults who were borderline hypertensive were considered not to have been diagnosed.

Ever Told High Blood Pressure
U.S. vs. Michigan, 1999-2009



Routine Checkup in Past Year

2009 MiBRFS

A yearly routine checkup with a health care professional provides an opportunity to raise awareness regarding adult preventive services, conduct individual risk assessments, promote informed decision-making, and potentially benefit from early detection of disease.[30-31]

In 2009, an estimated 69.1% of Michigan adults had a routine checkup in the past year, a decrease from 75.5% in 2000. This proportion was lowest among those less than 45 years old (56.8-65.1%), and then increased to 86.7% of those aged 75 and older. Women were more likely to have had routine checkup in past year compared with men (75.2% vs. 62.6%), as were Blacks compared with Whites (77.9% vs. 68.2%).

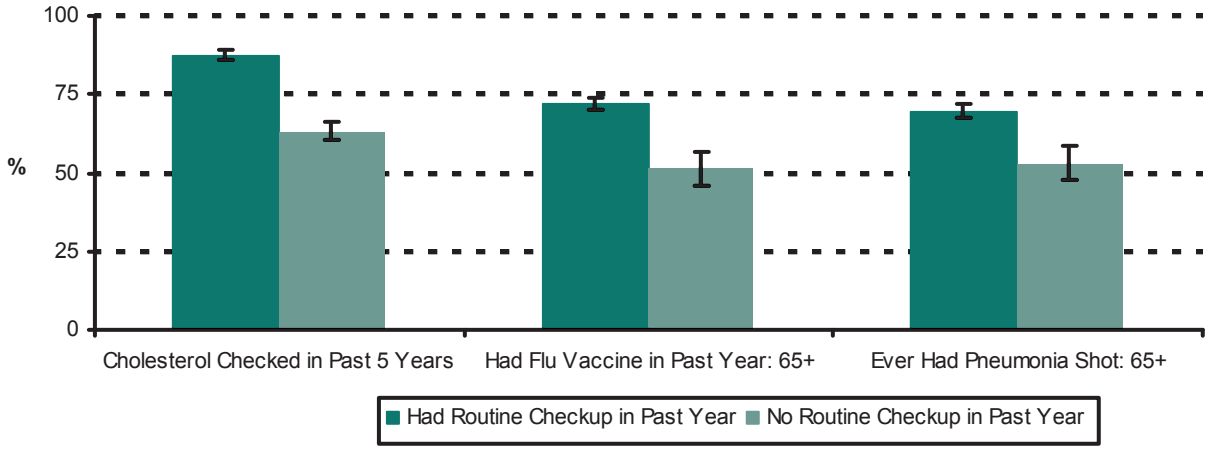
During the routine checkup, the health care professional can suggest appropriate screenings and immunizations. The figure shows the proportion who received appropriate clinical preventive services by routine checkup status. Those who received a routine checkup in the past year were more likely to have had their cholesterol checked within the past five years (87.5% vs. 63.2%), and among those aged 65 years and older to have had a flu vaccine in the past year (72.2% vs. 51.6%), and ever had a pneumonia vaccination (69.7% vs. 53.3%). In addition, individuals who received a routine checkup in the past year were more likely to have a regular health care provider (75.6% vs. 27.5%).

Among those who had a routine checkup in the past year, the majority (91.2%) did currently have health care coverage.

Demographic Characteristics	Had Routine Checkup in Past Year[a]	
	%	95% Confidence Interval
Total	**69.1**	**(67.7-70.5)**
Age		
18 - 24	65.1	(58.9-70.8)
25 - 34	56.8	(52.0-61.5)
35 - 44	62.5	(59.1-65.7)
45 - 54	67.2	(64.6-69.7)
55 - 64	76.4	(74.2-78.4)
65 - 74	84.7	(82.5-86.6)
75 +	86.7	(84.5-88.6)
Gender		
Male	62.6	(60.3-64.9)
Female	75.2	(73.6-76.8)
Race/Ethnicity		
White non-Hispanic	68.2	(66.6-69.7)
Black non-Hispanic	77.9	(73.5-81.7)
Other non-Hispanic	67.4	(59.9-74.1)
Hispanic	60.1	(47.3-71.6)
Education		
< High school	72.0	(66.0-77.4)
High school grad	68.0	(65.3-70.6)
Some college	70.3	(67.7-72.8)
College grad	68.5	(66.1-70.9)
Household Income		
< $20,000	66.3	(62.4-70.0)
$20,000 - $34,999	66.1	(62.7-69.3)
$35,000 - $49,999	68.4	(64.4-72.0)
$50,000 - $74,999	69.9	(66.4-73.2)
≥ $75,000	72.3	(69.4-74.9)

[a] Among all adults, the proportion who reported that they had a routine checkup in the past year.

Health Screenings and Immunizations by Routine Checkup Status Michigan, 2009



Cholesterol Screening and Awareness

2009 MiBRFS

High blood cholesterol is a major risk factor for coronary heart disease (CHD), the leading cause of death in the United States. Clinical approaches to preventing CHD include testing adults aged 20 years and older at least once every five years to determine the blood level of low density lipoprotein cholesterol (LDL-C), and more often for those who have multiple risks, such as cigarette smoking, hypertension, family history, and age. Therapeutic lifestyle changes such as a better diet, increased physical activity, and proper weight control have been shown to decrease LDL-C levels in the blood.[32]

In 2009, an estimated 83.3% (81.9-84.6) of Michigan adults had ever had their blood cholesterol checked and 79.8% had it checked within the past five years. Women were more likely than men to have their blood cholesterol checked within the past five years (82.3% vs. 77.1%). This proportion increased with age, education, and household income levels.

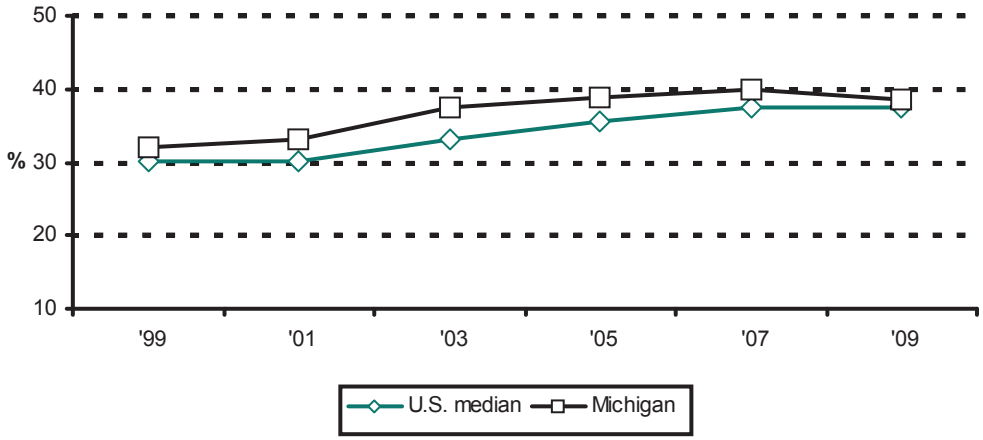
Among Michigan adults who had ever had their cholesterol checked, an estimated 38.9% were ever told by a health care professional that it was high. This proportion increased with age from 9.7% of those aged 18-24 years to 59.3% of those aged 65-74 years, and then decreased to 52.7% of those aged 75 years and older. Even though women were more likely than men to have had their cholesterol checked, men were more likely to have been told it was high (41.2% vs. 36.8%).

The prevalence of high cholesterol among those tested has increased significantly from 32.1% (29.8-34.4) in 1999 to 38.9% in 2009. The prevalence of having been tested in the past five years has also significantly increased over this time period. In addition, the median prevalence of high cholesterol among participating states and U.S. territories has increased significantly over the past decade.

Demographic Characteristics	Cholesterol Checked Within Past 5 Years[a] %	95% Confidence Interval	Told High Cholesterol[b] %	95% Confidence Interval
Total	**79.8**	**(78.3-81.2)**	**38.9**	**(37.5-40.2)**
Age				
18 - 24	36.9	(31.0-43.3)	9.7	(5.2-17.3)
25 - 34	68.9	(64.1-73.3)	13.6	(10.4-17.6)
35 - 44	81.2	(78.1-83.9)	29.5	(26.3-32.9)
45 - 54	87.8	(85.9-89.5)	42.0	(39.3-44.8)
55 - 64	92.5	(91.1-93.7)	53.6	(51.1-56.1)
65 - 74	96.7	(95.4-97.6)	59.3	(56.5-62.2)
75 +	94.3	(92.6-95.7)	52.7	(49.6-55.7)
Gender				
Male	77.1	(74.7-79.3)	41.2	(38.9-43.5)
Female	82.3	(80.5-84.0)	36.8	(35.2-38.5)
Race/Ethnicity				
White non-Hispanic	80.1	(78.5-81.6)	40.4	(38.9-41.9)
Black non-Hispanic	79.4	(74.7-83.3)	32.7	(28.9-36.7)
Other non-Hispanic	79.9	(71.3-86.4)	37.9	(31.3-45.0)
Hispanic	73.8	(58.5-84.9)	28.2	(19.6-38.7)
Education				
< High school	68.5	(61.9-74.3)	46.2	(40.1-52.3)
High school grad	76.8	(74.0-79.4)	44.1	(41.5-46.7)
Some college	78.2	(75.3-80.8)	36.3	(33.9-38.9)
College grad	86.2	(83.8-86.2)	35.6	(33.3-37.9)
Household Income				
< $20,000	69.8	(65.6-73.7)	42.1	(38.4-4
$20,000 - $34,999	76.8	(73.1-80.1)	45.3	(42.0-48.6)
$35,000 - $49,999	82.4	(78.6-85.7)	40.5	(36.9-44.2)
$50,000 - $74,999	81.5	(77.8-84.7)	36.5	(33.2-39.9)
≥ $75,000	87.8	(85.1-90.0)	33.6	(30.9-36.3)

[a] Among all adults, the proportion who reported that they have had their blood cholesterol checked within the past five years.
[b] Among adults who have ever had their blood cholesterol checked, the proportion who reported that a doctor, nurse, or other health professional had told them that their cholesterol was high.

Ever Told High Cholesterol
U.S. vs. Michigan, 1999-2009



Adult Immunizations

2009 MiBRFS

Adult immunizations against influenza and pneumococcal disease are important health indicators that need to be routinely monitored since morbidity and mortality are associated with both of these diseases among different demographic groups.[33-34] Influenza and pneumococcal infections cause an estimated 36,000 and 40,000 deaths each year, respectively. In addition, deaths from pneumococcal infection account for more deaths than any other vaccine-preventable bacterial disease. Approximately half of these deaths could potentially be prevented through the use of the pneumococcal vaccine.[33, 35]

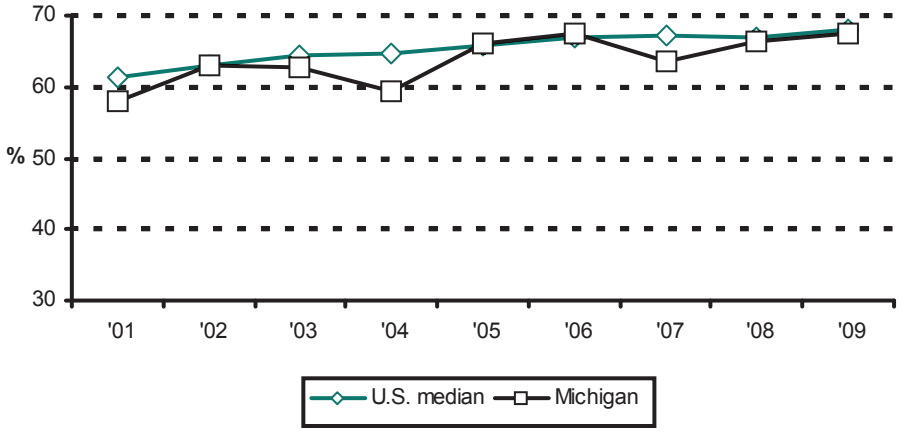
A Healthy People 2010 objective is to ensure that 90% of adults aged 65 years and older are vaccinated annually against influenza and ever vaccinated against pneumococcal disease.[36] Results from the 2009 MiBRFS indicate that 69.0% of Michigan adults aged 65 years and older were immunized against influenza in the past year, 67.3% had ever received a pneumococcal vaccination, and 55.3% (53.2-57.4) had received both. Both the prevalence of current flu vaccination and the prevalence of ever receiving the pneumonia vaccine have increased significantly since 2001.

Another Healthy People 2010 objective is to increase the vaccination rate to 60% among those aged 18-64 years who have chronic health conditions such as diabetes and asthma.[4] Among those aged 18-64 years in Michigan, an estimated 51.3% (46.2-56.3) of those who had diabetes had an influenza vaccination in the past year compared with 29.0% (27.5-30.6) of those who did not have diabetes. An estimated 44.8% (39.7-50.0) of those who had diabetes had a pneumococcal shot compared to 15.2% (13.9-16.6) of those who did not have diabetes. Those who had current asthma in this age group were also more likely to have had an influenza vaccination than those who did not have asthma (39.2% [34.5-44.1] vs. 29.5% [27.9-31.1]).

Demographic Characteristics	Had Flu Vaccine in Past Year[a] %	Had Flu Vaccine in Past Year[a] 95% Confidence Interval	Ever Had Pneumonia Vaccine[b] %	Ever Had Pneumonia Vaccine[b] 95% Confidence Interval
Total	**69.0**	**(67.0-70.9)**	**67.3**	**(65.3-69.3)**
Age				
65 - 74	63.4	(60.6-66.2)	60.0	(57.1-62.8)
75 +	75.0	(72.4-77.5)	75.2	(72.5-77.8)
Gender				
Male	69.3	(66.1-72.4)	65.0	(61.7-68.2)
Female	68.8	(66.3-71.1)	69.0	(66.5-71.4)
Race/Ethnicity				
White non-Hispanic	71.0	(68.9-73.0)	69.7	(67.6-71.7)
Black non-Hispanic	56.0	(49.7-62.2)	50.7	(44.3-57.2)
Other non-Hispanic	49.9	(37.9-61.9)	55.3	(42.7-67.2)
Hispanic	-[c]		-[c]	
Education				
< High school	64.3	(58.2-70.0)	65.0	(58.9-70.6)
High school grad	67.8	(64.6-70.8)	66.4	(63.2-69.5)
Some college	68.8	(64.6-72.7)	69.4	(65.3-73.2)
College grad	74.5	(70.7-77.9)	68.0	(63.9-71.9)
Household Income				
< $20,000	65.6	(61.0-69.9)	67.7	(63.0-72.0)
$20,000 - $34,999	68.3	(64.5-71.9)	67.7	(63.9-71.3)
$35,000 - $49,999	69.5	(64.1-74.4)	66.3	(60.9-71.3)
$50,000 - $74,999	72.2	(65.8-77.9)	75.0	(68.6-80.5)
≥ $75,000	72.7	(65.9-78.5)	63.1	(56.1-69.5)

[a] Among adults aged 65 years and older, the proportion who reported that they had a flu vaccine, either by an injection in the arm or sprayed in the nose during the past 12 months.
[b] Among adults aged 65 years and older, the proportion who reported that they ever had a pneumococcal vaccine.
[c] The denominator in this subgroup was less than 50.

Ever Had a Pneumococcal Vaccination Among Adults Aged 65 and Older U.S. vs. Michigan, 2001-2009



HIV Testing

It is estimated that 18,800 people are living with HIV/AIDS in Michigan, 4,200 of whom do not know that they are infected.[37] Early awareness of an HIV infection through HIV testing can prevent further spread of the disease, and an early start on antiretroviral therapy can increase the quality of life among those who are living with HIV/AIDS.[38]

An estimated 38.2% of Michigan adults aged 18-64 years had ever been tested for HIV, apart from blood donations. The prevalence of HIV testing decreased with age from 51.6% among those aged 35-44 years to 21.4% among those aged 55-64 years. Women were more likely than men (42.3% vs. 34.0%) to have ever been tested and Blacks were more likely than Whites.

Since 2000, the lifetime prevalence of HIV testing in Michigan among adults aged 18-64 years has decreased 21.7% (from 48.8% to 38.2%).

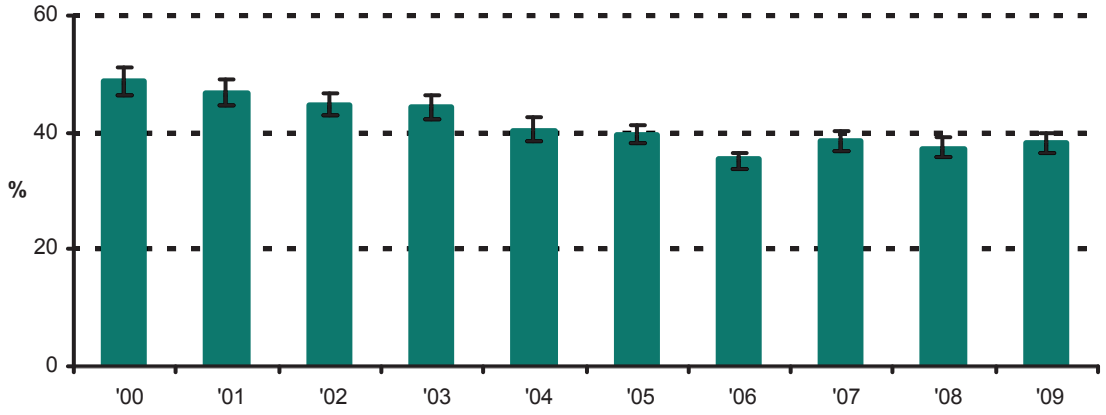
The most frequently reported places where Michigan adults had their last HIV test were at a private doctor or HMO office (47.0% [44.2-49.8]), at a hospital (19.5% [17.4-21.8]), and at a clinic (18.6% [16.5-20.9]).

Rapid HIV antibody tests provide results within a couple of hours. Of those tested for HIV in the past 12 months, 23.5% (18.7-29.1) reported that a rapid test was used, and 76.5% (70.9-81.3) reported that a conventional test was used.

Demographic Characteristics	Ever Had an HIV Test[a] %	95% Confidence Interval
Total	**38.2**	**(36.5-39.9)**
Age		
18 - 24	27.2	(22.2-32.8)
25 - 34	53.4	(48.6-58.2)
35 - 44	51.6	(48.2-55.0)
45 - 54	34.2	(31.7-36.8)
55 - 64	21.4	(19.5-23.5)
Gender		
Male	34.0	(31.4-36.6)
Female	42.3	(40.2-44.5)
Race/Ethnicity		
White non-Hispanic	33.6	(31.8-35.3)
Black non-Hispanic	63.3	(58.2-68.2)
Other non-Hispanic	40.0	(32.2-48.3)
Hispanic	45.2	(32.5-58.7)
Education		
< High school	40.0	(32.0-48.5)
High school grad	32.0	(29.0-35.1)
Some college	39.5	(36.5-42.6)
College grad	41.9	(39.2-44.7)
Household Income		
< $20,000	51.4	(46.6-56.2)
$20,000 - $34,999	37.8	(33.7-42.1)
$35,000 - $49,999	34.7	(30.4-39.2)
$50,000 - $74,999	40.4	(36.6-44.4)
≥ $75,000	37.5	(34.3-40.7)

[a] Among adults aged 18-64 years the proportion who reported that they ever had been tested for HIV, apart from tests that were part of a blood donation.

Ever Tested for HIV
Among Adults Aged 18-64 Years
Michigan, 2000-2009



Asthma in Adults

2009 MiBRFS

Asthma is a chronic inflammatory disorder of the lungs, and is characterized by wheezing, coughing, difficulty breathing, and chest tightness. Asthma attacks can be triggered by a variety of factors, such as cold air, allergens, irritants, and respiratory viral infections. Allergies, a family history of asthma or allergy, low birth weight, and exposure to tobacco smoke are just a few potential risk factors that are associated with the development of asthma.[39]

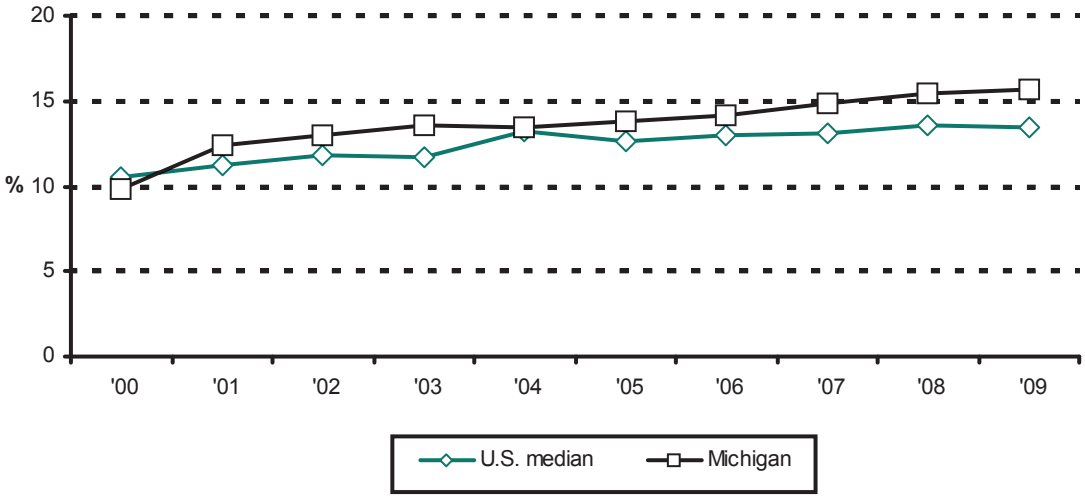
In 2009, the estimated proportion of Michigan adults ever told by a health care professional that they had asthma was 15.6% and an estimated 9.9% of all Michigan adults currently had asthma. Women (12.2%) were more likely than men (7.3%) to have current asthma. In addition, individuals with household incomes of less than $20,000 (15.5%) were more likely to have current asthma when compared to individuals with household incomes of greater than or equal to $75,000 (7.0%).

Over the past ten years, the proportion of Michigan adults who ever reported having asthma has significantly increased from 9.8% (8.6-11.0) in 2000 to 15.6% (14.6-16.7) in 2009. Since asthma is often difficult to diagnose, this increase may be partially due to an increase in the misdiagnosis of this disorder. In addition, the prevalence of lifetime asthma among Michigan adults has been consistently higher than that of the U.S. median.

Demographic Characteristics	Lifetime Asthma[a] %	Lifetime Asthma[a] 95% Confidence Interval	Current Asthma[b] %	Current Asthma[b] 95% Confidence Interval
Total	**15.6**	**(14.6-16.7)**	**9.9**	**(9.1-10.8)**
Age				
18 - 24	21.5	(17.2-26.6)	12.7	(9.3-17.0)
25 - 34	16.8	(13.7-20.5)	9.3	(7.1-12.1)
35 - 44	15.5	(13.1-18.3)	9.6	(7.6-12.1)
45 - 54	15.7	(13.8-17.7)	10.4	(9.0-12.1)
55 - 64	14.8	(13.2-16.6)	10.3	(8.9-11.9)
65 - 74	12.8	(11.1-14.8)	9.0	(7.6-10.7)
75 +	8.8	(7.2-10.6)	6.4	(5.1-8.0)
Gender				
Male	12.8	(11.3-14.5)	7.3	(6.2-8.6)
Female	18.3	(16.9-19.7)	12.3	(11.1-13.5)
Race/Ethnicity				
White non-Hispanic	14.7	(13.6-15.9)	9.3	(8.5-10.3)
Black non-Hispanic	18.2	(15.0-21.9)	11.2	(8.7-14.4)
Other non-Hispanic	24.3	(18.4-31.4)	14.4	(10.2-20.1)
Hispanic	14.1	(8.7-21.9)	10.5	(6.3-17.2)
Education				
< High school	19.9	(15.4-25.2)	14.5	(10.7-19.3)
High school grad	14.7	(12.9-16.8)	10.3	(8.8-12.1)
Some college	17.2	(15.3-19.4)	10.4	(9.0-12.1)
College grad	14.2	(12.6-16.1)	8.1	(6.9-9.5)
Household Income				
< $20,000	20.5	(17.6-23.7)	15.5	(13.0-18.5)
$20,000 - $34,999	16.0	(13.7-18.6)	10.7	(8.9-12.9)
$35,000 - $49,999	13.5	(11.1-16.2)	7.8	(6.1-9.8)
$50,000 - $74,999	13.2	(10.9-15.8)	9.2	(7.3-11.5)
≥ $75,000	14.1	(12.2-16.3)	7.0	(5.8-8.4)

[a] Among all adults, the proportion who reported that they were ever told by a doctor, nurse, or other health care professional that they had asthma.
[b] Among all adults, the proportion who reported that they still had asthma.

Lifetime Adult Asthma
U.S. vs. Michigan, 2000-2009



Asthma in Children

2009 MiBRFS

Although asthma can affect people of all ages, in most cases it begins during childhood. Children with a family history of asthma and allergy are at higher risk of developing asthma during childhood. In children, more boys develop asthma than girls, which is the exact opposite of what is reported in adults (i.e., more adult females have asthma than adult males).[40]

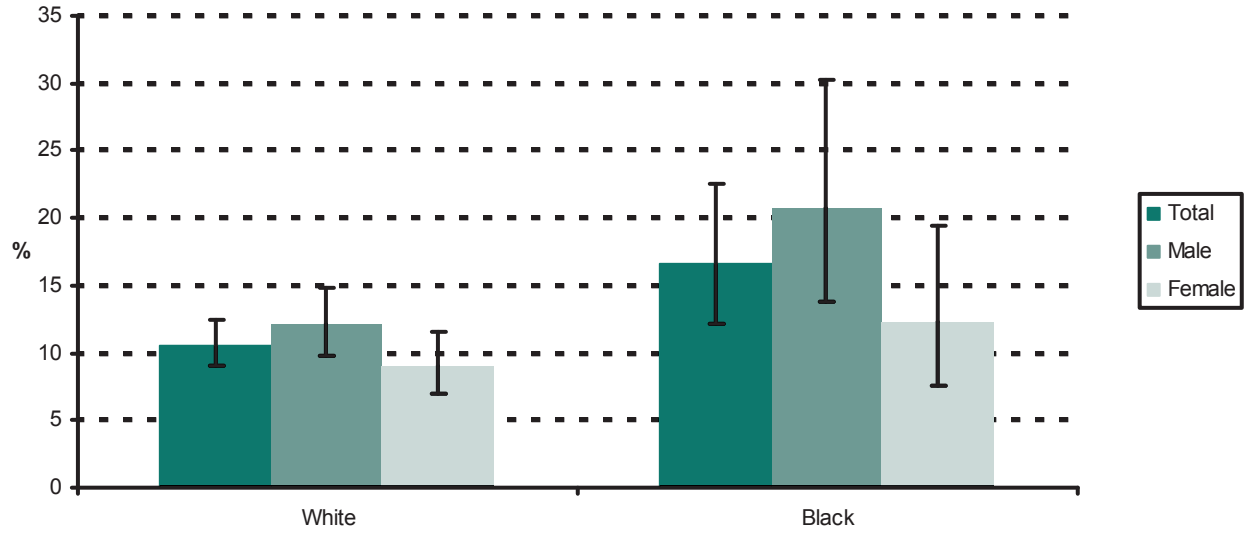
Based on proxy information provided by the adult respondent, the estimated proportion of Michigan children aged 0-17 years who were ever told by a health care professional that they had asthma for 2009 was 11.7% and an estimated 8.4% of children currently had asthma. Boys and girls were similar in terms of both lifetime (13.3% vs. 10.1%) and current asthma prevalence (8.9% vs. 7.9%).

There was no significant differences between White boys and White girls (8.5% vs. 11.8%), as well as Black boys and Black girls (9.7% vs. 16.3%), in terms of having ever been told they had asthma.

Demographic Characteristics	Lifetime Asthma[a] %	Lifetime Asthma[a] 95% Confidence Interval	Current Asthma[b] %	Current Asthma[b] 95% Confidence Interval
Total	**11.7**	**(10.2-13.4)**	**8.4**	**(7.1-9.9)**
Age				
0 - 4	4.6	(2.8-7.4)	4.2	(2.5-7.1)
5 - 9	11.6	(8.7-15.3)	8.7	(6.2-12.0)
10 - 14	13.8	(11.0-17.2)	8.8	(6.6-11.8)
15 - 17	17.7	(13.6-22.8)	12.6	(8.9-17.6)
Gender				
Male	13.3	(11.1-15.8)	8.9	(7.1-11.3)
Female	10.1	(8.3-12.4)	7.9	(6.3-10.0)
Race/Ethnicity				
White non-Hispanic	10.6	(9.0-12.4)	7.5	(6.1-9.1)
Black non-Hispanic	16.6	(12.1-22.5)	13.4	(9.2-19.1)
Other non-Hispanic	10.9	(6.9-16.7)	6.8	(3.8-11.8)
Hispanic	11.0	(5.8-20.0)	5.2	(2.0-12.8)
Respondent Education				
< High school	15.1	(7.9-26.9)	12.5	(6.0-24.3)
High school grad	11.2	(8.6-14.4)	8.2	(6.0-11.1)
Some college	13.1	(10.2-16.7)	10.2	(7.5-13.6)
College grad	10.6	(8.6-13.1)	6.8	(5.1-8.9)
Household Income				
< $20,000	16.7	(12.1-22.6)	14.3	(10.0-20.1)
$20,000 - $34,999	10.7	(7.6-14.8)	8.0	(5.3-11.8)
$35,000 - $49,999	10.8	(7.5-15.4)	7.2	(4.5-11.3)
$50,000 - $74,999	12.4	(9.2-16.6)	7.6	(5.0-11.3)
≥ $75,000	10.4	(8.2-13.1)	6.9	(5.1-9.2)

[a] Estimated proportion of Michigan children aged 0-17 years ever diagnosed with asthma, using proxy information from adult respondent.
[b] Estimated proportion of Michigan children aged 0-17 years with current asthma.

Lifetime Child Asthma by Race and Gender
Michigan, 2009



Arthritis

2009 MiBRFS

Arthritis and rheumatism are the leading causes of disability in the United States.[41] In 2003, the total costs attributed to arthritis and rheumatism in Michigan were approximately $5.5 billion.[42] With an aging Michigan population, it is estimated that the number of persons in Michigan with doctor-diagnosed arthritis will increase to over 2.5 million by 2030.[43]

In 2009, an estimated 31.3% of Michigan adults had ever been told by a health care professional that they had some form of arthritis, rheumatoid arthritis, gout, lupus, or fibromyalgia. This proportion increased with age from 7.2% of those aged 18-34 years to 61.0% of those aged 75 years and older. Women were more likely than men to be diagnosed with arthritis (35.7% vs. 26.5%). Among the race-ethnic groups, Hispanics had a lower estimate (15.5%) when compared to Whites (32.5%).

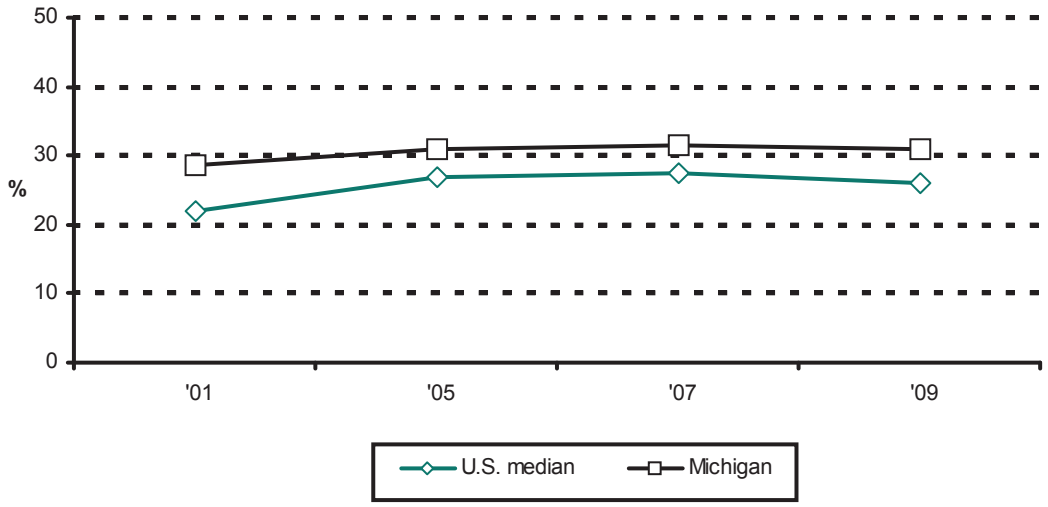
Nearly one-half (44.1% [42.1-46.1]) of those with doctor-diagnosed arthritis reported that they were limited in their usual activities because of arthritis or joint symptoms. The proportion limited by arthritis or joint symptoms decreased with increasing levels of both education and household income.

Over the past nine years, the proportion of Michigan adults who reported a doctor diagnosis of arthritis has been constantly higher than the U.S. median. In addition, both the Michigan and U.S. median arthritis prevalence have been increasing over this same time period.

Demographic Characteristics	Ever Told Arthritis[a] %	95% Confidence Interval
Total	**31.3**	**(30.1-32.5)**
Age		
18 - 34	7.2	(5.5-9.3)
35 - 44	21.0	(18.4-23.9)
45 - 54	36.1	(33.5-38.7)
55 - 64	49.4	(46.9-51.9)
65 - 74	59.7	(56.8-62.5)
75 +	61.0	(58.0-63.9)
Gender		
Male	26.5	(24.8-28.3)
Female	35.7	(34.1-37.3)
Race/Ethnicity		
White non-Hispanic	32.5	(31.2-33.9)
Black non-Hispanic	28.4	(25.2-31.9)
Other non-Hispanic	27.0	(21.4-33.5)
Hispanic	15.5	(10.3-22.7)
Education		
< High school	45.6	(39.9-51.4)
High school grad	35.4	(33.1-37.7)
Some college	31.5	(29.3-33.8)
College grad	24.6	(22.8-26.5)
Household Income		
< $20,000	42.1	(38.5-45.8)
$20,000 - $34,999	37.7	(34.8-40.8)
$35,000 - $49,999	33.5	(30.3-36.8)
$50,000 - $74,999	28.6	(25.8-31.6)
≥ $75,000	22.7	(20.6-25.0)

[a] Among all adults, the proportion who reported ever being told by a health care professional that they had some form of arthritis, rheumatoid arthritis, gout, lupus, or fibromyalgia.

Ever Told Arthritis
U.S. vs. Michigan, 2001-2009



Cardiovascular Disease

2009 MiBRFS

Heart disease and stroke are the first and third leading causes of death, respectively, in both Michigan and the United States.[44-45] More than 630,000 people in the United States died from heart disease in 2008.[45] Cardiovascular disease costs an estimated $475 billion annually.[46] Modifying risk factors offers the greatest potential for reducing death and disability from cardiovascular disease.[46]

In 2009, 4.5% of Michigan adults had ever been told they had a heart attack or myocardial infarction, 4.4% had ever been told angina or coronary heart disease, and 2.7% had ever been told stroke. All three indicators of cardiovascular disease decreased with education and household income, and increased with age.

8.5% (7.9-9.1) of Michigan adults reported ever being told that they had cardiovascular disease (i.e., ever told heart attack, angina/coronary heart disease, or stroke).

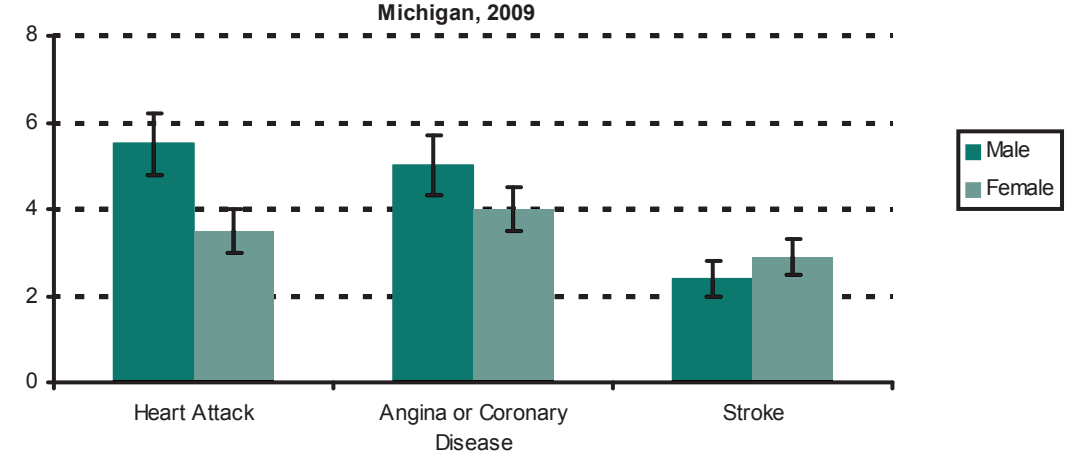
Men were more likely than women to have ever been diagnosed with a heart attack (5.5% vs. 3.5%). In addition, men (9.4% [8.5-10.4]) where also more likely than women (7.7% [7.0-8.4]) to have ever been diagnosed with any form of cardiovascular disease.

When comparing gender-specific rates of heart attack, angina or coronary disease, and stroke among Michigan adults to the gender-specific U.S. median rates it was found that cardiovascular disease rates among Michigan males were comparable to the U.S median rates for males, while Michigan females reported slightly higher rates than the U.S. median rates for females.

Demographic Characteristics	Ever Told Heart Attack[a] %	Ever Told Heart Attack[a] 95% Confidence Interval	Ever Told Angina or Coronary Heart Disease[b] %	Ever Told Angina or Coronary Heart Disease[b] 95% Confidence Interval	Ever Told Stroke[c] %	Ever Told Stroke[c] 95% Confidence Interval
Total	**4.5**	**(4.0-4.9)**	**4.4**	**(4.0-4.9)**	**2.7**	**(2.4-3.0)**
Age						
18 - 34	0.3	(0.1-0.9)	0.1	(0.0-0.5)	0.2	(0.0-0.6)
35 - 44	1.6	(0.9-2.6)	1.4	(0.9-2.4)	1.0	(0.5-1.9)
45 - 54	3.3	(2.5-4.4)	2.9	(2.2-3.9)	1.9	(1.3-2.8)
55 - 64	6.9	(5.8-8.3)	7.9	(6.6-9.3)	4.2	(3.3-5.3)
65 - 74	11.2	(9.4-13.3)	13.4	(11.5-15.7)	6.1	(4.9-7.7)
75 +	16.6	(14.5-19.0)	14.3	(12.3-16.6)	10.2	(8.5-12.1)
Gender						
Male	5.5	(4.8-6.3)	5.0	(4.3-5.7)	2.4	(2.0-2.9)
Female	3.5	(3.0-4.0)	4.0	(3.5-4.5)	2.9	(2.5-3.4)
Race/Ethnicity						
White non-Hispanic	4.7	(4.2-5.2)	4.4	(4.0-4.9)	2.4	(2.1-2.8)
Black non-Hispanic	3.7	(2.7-5.0)	4.6	(3.3-5.7)	3.7	(2.8-4.8)
Other non-Hispanic	3.9	(2.5-6.0)	4.6	(3.0-6.9)	3.7	(2.2-6.2)
Hispanic	2.7	(1.1-6.3)	2.4	(0.9-6.3)	1.1	(0.3-3.4)
Education						
< High school	9.7	(7.4-12.6)	7.3	(5.5-9.6)	6.2	(4.6-8.4)
High school grad	6.0	(5.2-7.0)	5.1	(4.4-5.9)	3.4	(2.8-4.2)
Some college	3.9	(3.3-4.7)	4.8	(4.1-5.7)	2.2	(1.7-2.7)
College grad	2.4	(1.9-3.1)	2.9	(2.4-3.6)	1.6	(1.2-2.1)
Household Income						
< $20,000	8.1	(6.7-9.8)	6.2	(5.1-7.5)	6.3	(5.1-7.7)
$20,000 - $34,999	7.3	(6.1-8.8)	6.6	(5.5-8.0)	3.4	(2.6-4.3)
$35,000 - $49,999	5.0	(3.9-6.3)	5.4	(4.3-6.8)	1.8	(1.2-2.8)
$50,000 - $74,999	3.2	(2.4-4.4)	3.4	(2.5-4.6)	1.2	(0.7-1.8)
≥ $75,000	1.5	(1.0-2.2)	2.2	(1.7-3.0)	0.8	(0.5-1.3)

Among all adults, the proportion who had ever been told by a doctor that: [a] they had a heart attack or myocardial infarction, [b] they had angina or coronary heart disease, or [c] they had a stroke.

Cardiovascular Disease by Gender
Michigan, 2009



Diabetes

2009 MiBRFS

Diabetes mellitus is a chronic disease characterized by high glucose levels, owing to insufficient production of insulin by the pancreas or to a reduction in the body's ability to use insulin. In Michigan, diabetes was the sixth leading cause of death with 2,749 individuals in 2008 and was considered the primary cause in approximately three percent of all deaths.[45] Obesity, poor diet, physical inactivity, and high blood pressure are just a few risk factors that are associated with the development of diabetes.[47]

In 2009, an estimated 9.4% of Michigan adults had ever been told by a health care professional that they have diabetes. This prevalence increased with age from 1.7% of those aged 18-24 years to 23.7% of those aged 65-74 years. The proportion of those who had diabetes declined with increasing education and household income levels. Blacks were more likely than Whites to have ever been told by a health care professional that they had diabetes (12.6% vs. 8.6%).

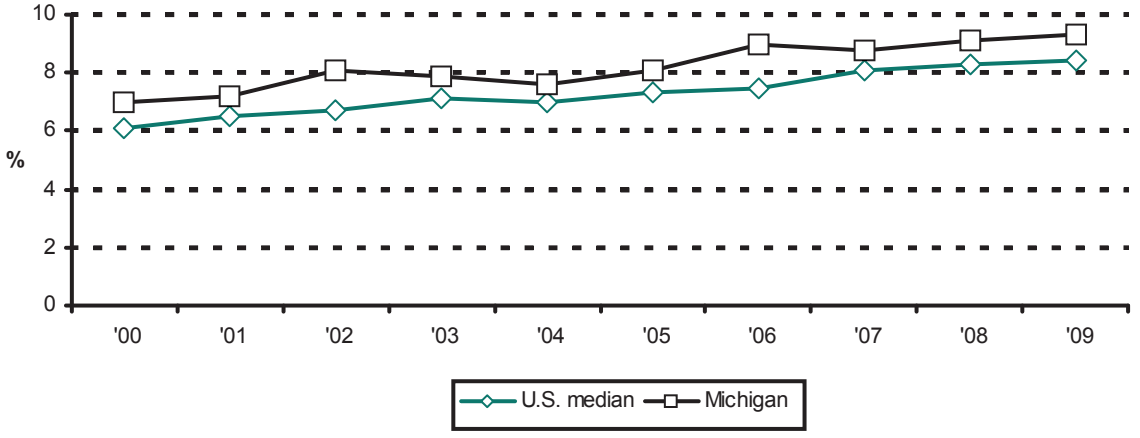
In Michigan, there has been an increase in the prevalence of diabetes between 2000 and 2009 from 7.1% to 9.4%. Michigan's diabetes prevalence estimate has been consistently higher than the U.S. median throughout this entire time period.

Michigan adults who were obese were over two and a half times as likely as those who were overweight and nearly four and a half times as likely as those who were not overweight or obese to have diabetes in 2009 (17.8% [16.2-19.5], 7.0% [6.2-8.0], 4.0% [3.2-4.9] respectively). In addition, Michigan adults with a disability were nearly three times as likely to have ever been told they had diabetes when compared to non-disabled individuals (18.4% [16.7-20.3] vs. 6.8% [6.1-7.5]).

Demographic Characteristics	Ever Told Diabetes [a] %	95% Confidence Interval
Total	**9.4**	**(8.8-10.1)**
Age		
18 - 24	1.7	(0.7-4.2)
25 - 34	1.4	(0.7-2.6)
35 - 44	4.8	(3.6-6.4)
45 - 54	8.5	(7.2-10.1)
55 - 64	17.1	(15.3-19.0)
65 - 74	23.7	(21.3-26.2)
75 +	19.5	(17.3-22.0)
Gender		
Male	9.7	(8.7-10.7)
Female	9.2	(8.4-10.1)
Race/Ethnicity		
White non-Hispanic	8.6	(7.9-9.3)
Black non-Hispanic	12.6	(10.7-14.7)
Other non-Hispanic	11.0	(8.1-14.9)
Hispanic	12.6	(7.7-19.9)
Education		
< High school	15.4	(12.6-18.8)
High school grad	11.9	(10.6-13.3)
Some college	9.3	(8.2-10.5)
College grad	6.0	(5.2-6.9)
Household Income		
< $20,000	14.0	(12.1-16.1)
$20,000 - $34,999	14.2	(12.5-16.2)
$35,000 - $49,999	7.9	(6.5-9.5)
$50,000 - $74,999	8.7	(7.2-10.6)
≥ $75,000	4.2	(3.4-5.2)

[a] Among all adults, the proportion who reported that they were ever told by a doctor that they have diabetes. Adults who had been told they have prediabetes and women who had diabetes only during pregnancy were classified as not having been diagnosed.

Diabetes
U.S. vs. Michigan, 2000-2009



Cancer

Cancer should not be considered a single disease, but rather a group of more than 200 different diseases.[48] Cancer is currently the second leading causes of death in both Michigan and the United States.[45] More than 20,000 people in Michigan died of cancer in 2008.[45]

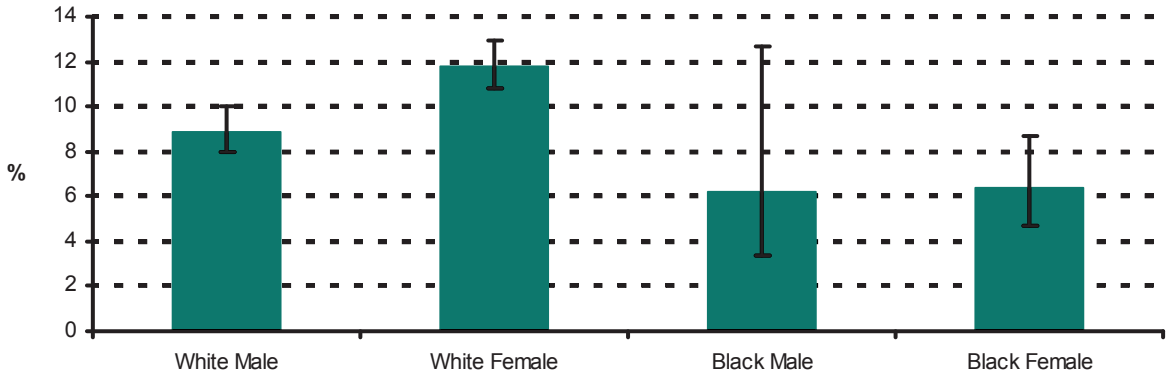
In 2009, an estimated 9.9% of Michigan adults reported that they had ever been told by a doctor, nurse, or other health professional that they had cancer. The proportion of Michigan adults with cancer increased with age from 0.9% of those aged 18-24 years to 32.5% of those aged 75 years and older. Females were more likely that males to have had cancer (11.0% vs. 8.7%), and the prevalence of cancer decreased with increasing education and household income levels.

When examining cancer status by race and gender, it was found that White females reported the highest cancer prevalence rate at 11.8% (10.8-12.9). In addition, White females (11.8% [10.8-12.9]) reported a significantly higher cancer prevalence rate than that of both White males (8.9% [8.0-10.0]) and Black females (6.4% [4.7-8.7]). The high cancer prevalence rates among Whites, particularly White females, may be partially explained by the fact that Whites are more likely to participate in cancer screening activities than other racial-ethnic groups.

Demographic Characteristics	Ever Told Cancer [a] %	95% Confidence Interval
Total	**9.9**	**(9.2-10.6)**
Age		
18 - 24	0.9	(0.3-2.9)
25 - 34	2.4	(1.2-4.5)
35 - 44	4.8	(3.3-7.0)
45 - 54	7.3	(6.1-8.9)
55 - 64	13.5	(11.9-15.2)
65 - 74	24.6	(22.2-27.2)
75 +	32.5	(29.7-35.4)
Gender		
Male	8.7	(7.7-9.8)
Female	11.0	(10.2-12.0)
Race/Ethnicity		
White non-Hispanic	10.6	(9.8-11.3)
Black non-Hispanic	6.4	(4.4-9.1)
Other non-Hispanic	9.5	(6.0-14.7)
Hispanic	6.6	(3.2-13.1)
Education		
< High school	12.9	(10.0-16.5)
High school grad	9.9	(8.8-11.1)
Some college	9.3	(8.1-10.7)
College grad	9.9	(8.7-11.3)
Household Income		
< $20,000	11.7	(9.8-13.9)
$20,000 - $34,999	10.4	(9.1-12.0)
$35,000 - $49,999	10.7	(8.8-12.9)
$50,000 - $74,999	8.7	(7.3-10.4)
≥ $75,000	8.6	(7.2-10.4)

[a] Among all adults, the proportion who reported ever being told by a doctor, nurse, or other health professional that they have cancer.

Ever Told Cancer by Race and Gender
Michigan, 2009



BRFSS Methods

The national Behavioral Risk Factor Surveillance System (BRFSS) consists of annual telephone surveys conducted independently by the states, District of Columbia, and U.S. territories and is coordinated through cooperative agreements with the Centers for Disease Control and Prevention (CDC). The annual Michigan Behavioral Risk Factor Surveys (MiBRFS) follow the CDC protocol for the BRFSS and use the standardized English core questionnaire. The 2009 MiBRFS data were collected quarterly by the Institute for Public Policy and Social Research at Michigan State University (http://www.ippsr.msu.edu). The sample of telephone numbers was selected using a list-assisted, random-digit-dialed methodology with disproportionate stratification based on listedness and population density of African Americans.

The 2009 MiBRFS data were weighted to adjust for the probabilities of selection (based on the probability of telephone number selection, the number of adults in the household, and the number of residential phone lines) and a post-stratification weighting factor that adjusted for sex, age, and race (using 2008 estimated Michigan population distributions with bridged race categories).[49]

Prevalence estimates and asymmetric 95% confidence intervals (CIs) were calculated using SAS-Callable SUDAAN (version 10.0), a statistical computing program that was designed for analyzing data from multistage sample surveys.[50] 95% CIs for analyses that do not appear within the topic-specific tables and figures are included in the text within either parentheses or brackets. If the CIs for two estimates from different subpopulations or different survey years did not overlap, they were assumed to be statistically different. In addition, selected pair-wise comparisons were tested for statistical significance using a t-test or chi-square. Although results of these statistical tests are not reported, they were used to guide the presentation of results.

Unless otherwise specified, respondents who answered that they did not know or refused to answer were not included in the calculation of estimates.

For comparison purposes, the median of estimates from all participating states and territories was used as a national estimate. All 50 states, three territories (Puerto Rico, Guam, and the Virgin Islands), and the District of Columbia participated in the 2009 BRFSS.

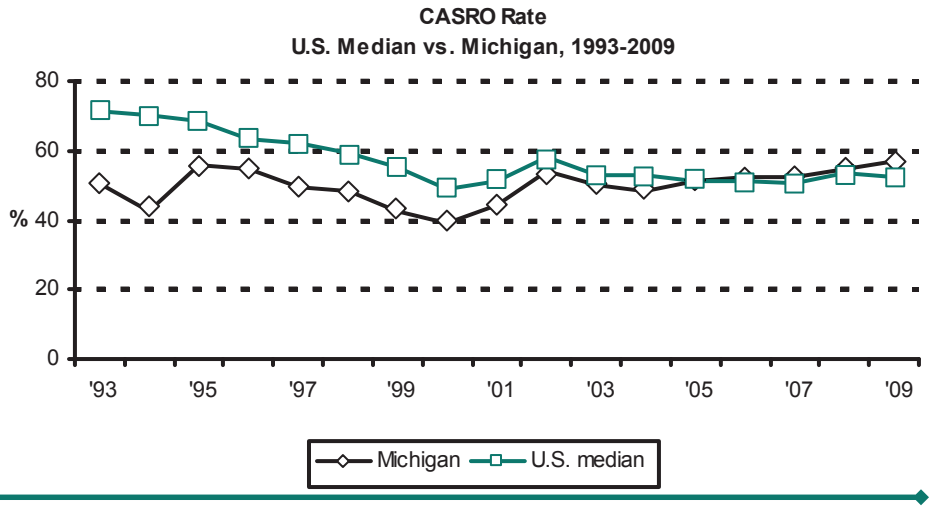
Sample Results for the 2009 MiBRFS

A total of 107,820 telephone numbers were used for the 2009 MiBRFS. The total number of eligibles was 13,295, of which 9,259 resulted in a completed or partially completed interview; 73,584 were ineligible; and 20,941 were of unknown eligibility.

The CASRO (Council of American Survey Research Organizations) response rate is a measure of respondent contact and cooperation. This rate includes completed interviews and partial interviews, in which at least 50 percent of the core questionnaire has been completed, in the numerator and an estimate of the number of eligible sample units in the denominator (including a proportion of the unknowns). The CASRO response rate for the 2009 MiBRFS was 56.9%.[51]

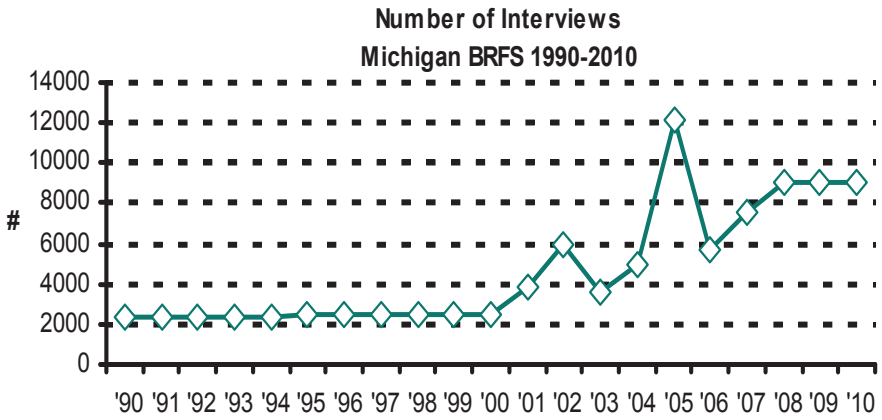
Health of the MiBRFS

The CASRO response rate for MiBRFS has increased or held steady in the recent past, at a time when the median of CASRO rates for other states has been dropping. The survey contractor, Office for Survey Research in the Institute for Public Policy and Social Research at Michigan State University, has worked diligently to improve the CASRO rate.



BRFSS Methods, continued

In addition, MDCH has recently been able to increase the number of interviews each year. A larger sample size increases the utility of the survey by providing more precise estimates, allowing for increased number of topics to be covered each year, and enabling the calculation of estimates for more demographic and geographic subpopulations. For example, single year estimates were calculable for Hispanic adults for the first time in 2005, because the large sample size allowed for adequate number of completed interviews in this group.



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