

**Prevalence of Asthma-Related Health Conditions among Michigan Adults with Current Asthma
Estimates from the Michigan Asthma Call-Back Survey
2012-2014 Combined**

Standard Tables

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Introduction

The Michigan Asthma Call-Back Survey has been conducted annually since 2005 in conjunction with the Michigan Behavioral Risk Factor Survey (MiBRFS), an annual, statewide landline and cellular telephone survey of Michigan adults aged 18 years and older. Both surveys are conducted through a collaborative effort among the Population Health Surveillance Branch (PHSB) at the Centers for Disease Control and Prevention (CDC), the Office for Survey Research at Michigan State University's Institute for Public Policy and Social Research, and the Michigan Department of Health and Human Services. The MiBRFS participates in the national [Behavioral Risk Factor Surveillance System](#) that is coordinated by PHSB.

Landline and cell phone respondents to the MiBRFS who had ever been diagnosed with asthma or whose randomly selected child had ever been diagnosed with asthma were asked at the end of the MiBRFS interview if they would be willing to participate in an additional interview focused on asthma. Those who agreed were called back within 2 weeks of the MiBRFS interview and administered a comprehensive, standardized questionnaire on asthma-related symptoms, health care, medication, and management. Two separate, but very similar, questionnaires were used: one with questions about the adult respondent with asthma and the other with questions about the selected child with asthma.

This report presents the results for adults from the 2012-2014 Michigan Asthma Call-Back Surveys combined. The total 3-year sample size of completed interviews for adults was 2,113, with 718 from 2012, 848 from 2013, and 547 from 2014. Estimates were weighted to adjust for the probabilities of selection and a raking adjustment factor that adjusted for the distribution of Michigan adults by telephone source, detailed race/ethnicity, education level, marital status, age by gender, gender by race/ethnicity, age by race/ethnicity, and renter/owner status all at the state level. Analyses were performed in SAS-Callable SUDAAN®, a statistical computing program that was designed for complex sample surveys.

The prevalence estimates and 95% confidence intervals included within the tables that follow were restricted to adults with current asthma (n=1,628). Current asthma was defined as a “yes” response to both of the following questions: “Have you ever been told by a doctor or other health professional that you had asthma?” and “Do you still have asthma?”

Table 1. Prevalence of Asthma Symptoms, among Adults with Current Asthma Michigan Asthma Call-Back Survey, 2012-2014 Combined			
	Had Asthma Symptoms on ≥ 9 Days in Past Month^a	Difficulty Sleeping Due to Asthma Symptoms on ≥ 2 Days in Past Month^b	Usual Activities Limited at Least a Little During Past 12 Months^c
Total	43.2 (39.6-46.8)	33.4 (29.9-37.2)	54.4 (50.7-57.9)
Age			
18-34	36.6 (28.6-45.5)	28.7 (21.1-37.8)	49.3 (40.9-57.8)
35-64	45.1 (40.8-49.4)	36.2 (31.9-40.6)	56.2 (51.9-60.4)
≥ 65	48.9 (43.4-54.5)	33.5 (28.1-39.5)	58.2 (52.6-63.5)
Gender			
Male	39.5 (33.7-45.7)	31.5 (25.6-38.0)	49.9 (43.8-56.0)
Female	45.2 (40.7-49.8)	34.5 (30.2-39.2)	56.9 (52.4-61.2)
Race			
White	43.5 (39.5-47.7)	29.0 (25.2-33.1)	52.6 (48.5-56.7)
Black	40.7 (31.8-50.2)	51.8 (42.1-61.3)	58.3 (48.7-67.3)
Household Income			
< \$20,000	52.3 (44.9-59.6)	48.4 (40.9-56.1)	63.9 (56.3-70.8)
\$20,000-34,999	48.6 (40.7-56.5)	36.8 (29.3-44.9)	57.2 (49.3-64.7)
\$35,000-49,999	41.0 (30.8-52.1)	31.4 (21.5-43.3)	48.0 (37.6-58.5)
\$50,000-74,999	42.1 (33.4-51.3)	27.9 (20.3-37.1)	48.9 (39.9-58.0)
≥ \$75,000	32.3 (25.0-40.5)	17.1 (11.3-25.1)	46.9 (38.9-55.1)
Education			
< HS graduate	53.2 (40.5-65.4)	53.1 (40.0-65.8)	64.6 (51.7-75.8)
HS graduate	49.5 (42.4-56.7)	40.2 (33.1-47.8)	59.5 (52.4-66.2)
Some college	39.8 (34.2-45.7)	30.0 (24.8-35.9)	55.7 (49.8-61.4)
College graduate	34.2 (29.3-39.6)	18.3 (14.5-22.8)	38.8 (33.6-44.3)
^a Weighted percent and corresponding 95% confidence interval (CI) for individuals reported ≥ 9 days to the following question, “During the past 30 days, on how many days did you have any symptoms of asthma?” ^b Weighted percent and corresponding 95% confidence interval (CI) for individuals reported ≥ 2 days to the following question, “During the past 30 days, on how many days did symptoms of asthma make it difficult for you to stay asleep?” ^c Weighted percent and corresponding 95% confidence interval (CI) for individuals reported “a little,” “a moderate amount,” or “a lot” to the following question, “During the past 12 months, would you say you limited your usual activities due to asthma not at all, a little, a moderate amount, or a lot?”			

Table 2. Percent Distribution of Number of Asthma Symptom-Free Days^a in Past 2 Weeks, among Adults with Current Asthma Michigan Asthma Call-Back Survey, 2012-2014 Combined				
	None	1-6 Days	7-13 Days	14 Days
Total	24.4 (21.5-27.5)	15.1 (12.7-17.8)	24.8 (21.7-28.1)	35.8 (32.3-39.4)
Age				
18-34	14.1 (8.8-21.8)	14.7 (9.6-21.7)	27.2 (20.3-35.4)	44.1 (35.8-52.7)
35-64	27.1 (23.5-31.0)	15.4 (12.5-18.8)	25.1 (21.4-29.2)	32.4 (28.5-36.5)
≥ 65	36.0 (30.6-41.7)	14.6 (11.0-19.1)	18.6 (14.9-23.1)	30.8 (25.9-36.2)
Gender				
Male	20.8 (16.3-26.1)	13.5 (9.8-18.2)	27.8 (22.5-33.9)	38.0 (32.2-44.1)
Female	26.4 (22.8-30.5)	16.0 (12.9-19.6)	23.0 (19.4-27.1)	34.6 (30.2-39.1)
Race				
White	24.2 (21.0-27.9)	14.7 (12.0-17.8)	24.8 (21.4-28.5)	36.3 (32.3-40.5)
Black	24.5 (17.6-32.9)	19.3 (12.8-27.9)	23.2 (15.0-34.1)	33.0 (24.9-42.4)
Household Income				
< \$20,000	29.9 (23.5-37.3)	18.0 (13.1-24.1)	20.0 (14.7-26.6)	32.1 (25.4-39.8)
\$20,000-34,999	28.0 (22.1-34.8)	13.9 (9.2-20.4)	26.9 (20.0-35.1)	31.2 (24.4-38.9)
\$35,000-49,999	23.2 (15.8-32.8)	20.5 (13.1-30.8)	18.6 (11.5-28.6)	37.6 (27.0-49.6)
\$50,000-74,999	27.1 (20.2-35.4)	9.9 (5.0-18.6)	26.4 (18.9-35.6)	36.6 (28.3-45.8)
≥ \$75,000	15.8 (10.5-23.1)	10.0 (6.7-14.7)	35.0 (27.4-43.4)	39.3 (32.1-47.0)
Education				
< HS graduate	37.0 (26.4-49.1)	13.9 (7.8-23.6)	18.2 (9.9-30.8)	30.9 (19.8-44.8)
HS graduate	25.8 (20.0-32.5)	18.8 (13.7-25.2)	21.3 (16.0-27.6)	34.2 (27.8-41.3)
Some college	22.0 (17.9-26.7)	14.8 (11.0-19.6)	27.9 (22.6-33.8)	35.4 (30.0-41.2)
College graduate	18.1 (14.4-22.4)	11.8 (8.6-16.0)	28.4 (23.6-33.7)	41.7 (36.3-47.3)
^a Weighted percent and corresponding 95% confidence interval (CI) for individuals who responded to the following question, "During the past two weeks, on how many days were you completely symptom-free, that is no coughing, wheezing, or other symptoms of asthma?"				

Table 3. Prevalence of Asthma-Related Health Care Utilization in the Past 12 Months, among Adults with Current Asthma Michigan Asthma Call-Back Survey, 2012-2014 Combined					
	ER/Urgent Care Visits for Asthma^a		≥ 1 Hospital Stays for Asthma^b	≥ 2 Routine Asthma Care Visits^c	Received Flu Vaccine^d
	≥ 1 Visit	≥ 2 Visits			
Total	15.8 (13.2-18.8)	7.9 (5.9-10.4)	4.6 (3.2-6.7)	37.6 (34.0-41.2)	44.1 (40.6-47.6)
Age					
18-34	18.9 (13.1-26.5)	10.2 (5.9-17.0)	4.7 (1.8-11.6) ~	29.1 (21.5-38.0)	31.8 (24.6-40.1)
35-64	15.4 (12.4-19.0)	7.5 (5.3-10.6)	4.7 (3.2-6.8)	41.1 (36.8-45.5)	46.6 (42.4-50.9)
≥ 65	10.8 (8.0-14.4)	4.5 (2.7-7.3)	4.4 (2.6-7.1)	42.1 (36.5-47.8)	61.1 (55.5-66.4)
Gender					
Male	13.0 (8.8-18.7)	6.7 (3.8-11.7)	6.3 (3.3-11.8) ~	33.3 (27.6-39.6)	39.9 (34.3-45.8)
Female	17.4 (14.2-21.0)	8.5 (6.2-11.7)	3.7 (2.5-5.3)	40.0 (35.6-44.5)	46.5 (42.0-50.9)
Race					
White	12.3 (9.7-15.5)	5.7 (3.8-8.5)	4.1 (2.6-6.5)	34.6 (30.7-38.6)	47.5 (43.5-51.6)
Black	29.3 (21.4-38.8)	17.1 (10.9-25.8)	---†	49.7 (40.1-59.4)	29.9 (22.5-38.4)
Household Income					
< \$20,000	23.3 (17.7-30.0)	14.0 (9.5-20.2)	8.3 (5.3-12.8)	48.6 (41.2-56.1)	36.2 (29.8-43.1)
\$20,000-34,999	15.3 (10.1-22.6)	7.4 (3.9-13.8) ~	4.4 (2.4-7.7)	37.1 (29.7-45.1)	44.7 (37.3-52.5)
\$35,000-49,999	17.1 (10.4-27.0)	6.5 (3.3-12.5) ~	2.8 (1.2-6.6) ~	35.5 (25.8-46.4)	42.0 (31.4-53.5)
\$50,000-74,999	9.2 (5.4-15.3)	4.3 (1.9-9.7) ~	---†	29.7 (22.3-38.4)	48.0 (39.1-57.1)
≥ \$75,000	12.7 (7.4-21.0)	---†	---†	32.6 (25.1-41.1)	50.5 (42.5-58.4)
Education					
< HS graduate	21.3 (12.7-33.6)	16.6 (9.1-28.4)	13.7 (6.8-25.7) ~	60.3 (47.7-71.7)	37.8 (26.8-50.2)
HS graduate	15.7 (11.5-21.1)	6.8 (4.3-10.7)	4.6 (2.9-7.3)	35.1 (28.7-42.0)	41.8 (35.3-48.6)
Some college	16.3 (12.1-21.6)	7.0 (4.1-11.7)	2.3 (1.3-4.0)	34.2 (28.7-40.1)	45.0 (39.3-50.7)
College graduate	11.2 (8.1-15.2)	4.6 (2.7-7.7)	2.0 (1.1-3.7)	30.2 (25.4-35.4)	49.9 (44.3-55.4)

^a Weighted percent and corresponding 95% confidence interval (CI) for individuals who responded to the question, “During the past 12 months, how many times did you visit an emergency room or urgent care center because of your asthma?”

^b Weighted percent and corresponding 95% CI for individuals who responded at least one time to the question, “During the past 12 months, how many different times did you stay in any hospital overnight or longer because of your asthma?”

^c Weighted percent and corresponding 95% CI for individuals who reported ≥ 2 times to the question, “During the past 12 months, how many times did you see a doctor or other health professional for a routine checkup for your asthma?”

^d Weighted percent and corresponding 95% CI for individuals who responded “yes” to either of the following questions, “A flu shot is an influenza vaccine injected in your arm. During the past 12 months, have you had a flu shot?” or “During the past 12 months, have you had a flu vaccine that was sprayed in your nose? The flu vaccine sprayed in the nose is also called FluMist.”

† This estimate was suppressed due to it having a denominator of less than 50 and/or a relative standard error of greater than 50%.

~ This estimate should be used with caution due to its low reliability and precision.

Table 4. Prevalence of Any Asthma Control Medication Use in Past 3 Months, among Adults with Current Asthma	
Michigan Asthma Call-Back Survey, 2012-2014 Combined	
	Used \geq 1 Asthma Control Medication in Past 3 Months^a
Total	43.9 (40.4-47.5)
Age	
18-34	31.9 (24.4-40.4)
35-64	46.6 (42.4-50.9)
\geq 65	59.8 (54.1-65.2)
Gender	
Male	41.5 (35.7-47.5)
Female	45.3 (40.9-49.8)
Race	
White	45.8 (41.8-49.9)
Black	37.0 (28.4-46.5)
Household Income	
< \$20,000	39.2 (32.5-46.4)
\$20,000-34,999	49.2 (41.5-57.0)
\$35,000-49,999	41.9 (31.6-52.8)
\$50,000-74,999	49.9 (40.8-58.9)
\geq \$75,000	46.9 (39.0-54.9)
Education	
< HS graduate	44.7 (32.9-57.1)
HS graduate	43.8 (37.2-50.7)
Some college	43.4 (37.8-49.2)
College graduate	44.4 (39.0-49.9)
^a Weighted percent and corresponding 95% CI for individuals who reported they had taken at least one asthma control medication in the past 3 months, as defined by the CDC national Asthma Call-Back Survey Analysis Workgroup on Medications.	

Table 5. Prevalence of Comorbid Conditions, among Adults with Current Asthma Michigan Asthma Call-Back Survey, 2012-2014 Combined		
	Ever Diagnosed with COPD, Emphysema, or Chronic Bronchitis^a	Ever Diagnosed with Depression^b
Total	36.7 (33.3-40.2)	37.4 (33.9-41.0)
Age		
18-34	21.5 (15.3-29.2)	32.3 (24.7-40.8)
35-64	40.1 (35.9-44.4)	42.3 (38.1-46.6)
≥ 65	57.3 (51.7-62.7)	31.9 (26.9-37.3)
Gender		
Male	37.0 (31.3-43.0)	31.8 (26.3-37.7)
Female	36.6 (32.4-40.9)	40.6 (36.3-45.1)
Race		
White	32.6 (29.1-36.3)	38.3 (34.4-42.4)
Black	53.5 (43.8-62.9)	33.7 (25.0-43.6)
Household Income		
< \$20,000	54.7 (47.0-62.1)	49.7 (42.2-57.1)
\$20,000-34,999	50.0 (42.2-57.8)	47.1 (39.4-55.0)
\$35,000-49,999	34.1 (24.6-45.1)	30.5 (22.7-39.6)
\$50,000-74,999	19.0 (13.4-26.2)	25.7 (19.1-33.7)
≥ \$75,000	16.6 (11.4-23.6)	22.9 (16.8-30.5)
Education		
< HS graduate	60.0 (46.5-72.1)	44.2 (32.7-56.3)
HS graduate	41.0 (34.5-47.8)	36.8 (30.0-44.2)
Some college	34.6 (29.4-40.2)	40.8 (35.2-46.7)
College graduate	18.8 (15.2-23.0)	27.9 (23.4-32.8)
^a Weighted percent and corresponding 95% CI for individuals who replied “yes” to at least one of the following questions: “Have you ever been told by a doctor or health professional that you have chronic obstructive pulmonary disease also known as COPD?” “Have you ever been told by a doctor or other health professional that you have emphysema?” “Have you ever been told by a doctor or other health professional that you have chronic bronchitis?”		
^b Weighted percent and corresponding 95% CI for individuals who replied “yes” to the following question, “Have you ever been told by a doctor or other health professional that you were depressed?”		

**Table 6. Prevalence of Experiencing Cost Barriers to Asthma Care in Past 12 Months, among Adults with Current Asthma
Michigan Asthma Call-Back Survey, 2012-2014 Combined**

	Cost Barrier to Primary Care Doctor^a	Cost Barrier to Asthma Specialist^b	Cost Barrier to Obtaining Medication^c	Cost Barrier to Primary Care, Specialist, or Medication^d
Total	13.7 (11.2-16.6)	7.4 (5.6-9.8)	21.2 (18.2-24.4)	24.8 (21.7-28.2)
Age				
18-34	17.1 (11.7-24.5)	8.4 (4.7-14.5)	22.5 (16.2-30.2)	26.6 (19.8-34.8)
35-64	13.5 (10.5-17.1)	7.9 (5.7-11.0)	23.0 (19.4-27.0)	25.9 (22.1-30.0)
≥ 65	7.2 (4.6-11.0)	3.5 (1.8-7.0) ~	11.5 (8.3-15.7)	17.0 (13.0-21.9)
Gender				
Male	12.0 (8.4-16.8)	7.8 (4.9-12.3)	19.8 (15.2-25.5)	23.4 (18.5-29.3)
Female	14.6 (11.4-18.5)	7.2 (5.0-10.2)	21.9 (18.3-26.0)	25.6 (21.7-29.9)
Race				
White	11.0 (8.5-14.2)	5.4 (3.7-7.8)	18.1 (15.1-21.6)	21.6 (18.3-25.3)
Black	24.2 (16.6-33.9)	16.8 (10.5-25.9)	34.4 (25.5-44.5)	38.7 (29.6-48.7)
Household Income				
< \$20,000	24.4 (18.6-31.3)	16.1 (11.3-22.4)	31.4 (25.0-38.6)	37.3 (30.5-44.6)
\$20,000-34,999	13.5 (8.9-20.1)	7.2 (3.7-13.5) ~	30.8 (23.6-39.2)	33.4 (26.1-41.6)
\$35,000-49,999	15.5 (9.5-24.2)	6.7 (3.2-13.8) ~	20.5 (13.7-29.6)	23.9 (16.4-33.3)
\$50,000-74,999	---†	---†	9.0 (5.4-14.7)	12.3 (7.0-20.7)
≥ \$75,000	6.9 (2.9-15.4) ~	---†	9.9 (5.3-17.7) ~	10.8 (6.1-18.5)
Education				
< HS graduate	16.1 (9.4-26.3)	12.0 (6.4-21.4) ~	19.2 (11.8-29.6)	23.9 (15.7-34.6)
HS graduate	13.6 (9.3-19.5)	11.0 (6.9-17.2)	27.3 (21.4-34.2)	31.1 (24.8-38.2)
Some college	16.7 (12.2-22.5)	5.4 (3.2-9.1)	23.8 (18.7-29.7)	27.9 (22.5-33.9)
College graduate	6.9 (4.5-10.6)	2.9 (1.4-6.0) ~	11.0 (7.9-15.1)	13.2 (9.9-17.5)

^a Weighted percent and corresponding 95% confidence interval (CI) for individuals who responded “yes” to, “Was there a time in the past 12 months when you needed to see your primary care doctor for your asthma but could not because of the cost?”

^b Weighted percent and corresponding 95% CI for individuals who responded “yes” to, “Was there a time in the past 12 months when you were referred to a specialist for asthma care but could not go because of the cost?”

^c Weighted percent and corresponding 95% CI for individuals who responded “yes” to, “Was there a time in the past 12 months when you needed to buy medication for your asthma but could not because of the cost?”

^d Weighted percent and corresponding 95% CI for individuals who responded “yes” to at least one of the above 3 questions.

^e No positive responses in this cell.

† This estimate was suppressed due to it having a denominator of less than 50 and/or a relative standard error of greater than 50%.

~ This estimate should be used with caution due to its low reliability and precision.

Table 7. Prevalence of Knowledge Indicators Related to Asthma Management, among Adults with Current Asthma Michigan Asthma Call-Back Survey, 2012-2014 Combined			
	Ever Taught to Recognize Early Signs of Asthma Episode^a	Ever Taught What to Do During Asthma Episode^b	Ever Taught How to Use Peak Flow Meter^c
Total	63.6 (59.9-67.1)	78.1 (74.9-80.9)	44.3 (40.7-47.9)
Age			
18-34	62.6 (53.6-70.8)	78.5 (70.2-84.9)	48.8 (40.3-57.3)
35-64	66.9 (62.7-70.8)	79.9 (76.3-83.0)	43.3 (39.1-47.6)
≥ 65	54.9 (49.2-60.6)	71.8 (66.4-76.7)	39.1 (33.7-44.7)
Gender			
Male	64.0 (57.9-69.6)	78.0 (73.1-82.3)	44.2 (38.2-50.4)
Female	63.4 (58.7-67.8)	78.1 (73.8-81.8)	44.3 (39.9-48.8)
Race			
White	62.2 (58.0-66.3)	76.6 (72.9-79.9)	39.2 (35.3-43.3)
Black	69.3 (59.2-77.8)	85.8 (77.5-91.3)	59.0 (49.4-68.0)
Household Income			
< \$20,000	61.2 (53.5-68.3)	77.8 (71.7-82.9)	47.6 (40.3-55.0)
\$20,000-34,999	65.5 (57.7-72.5)	77.4 (70.9-82.9)	47.3 (39.5-55.2)
\$35,000-49,999	66.4 (55.2-76.0)	77.7 (65.8-86.3)	49.4 (38.8-60.0)
\$50,000-74,999	67.7 (58.0-76.2)	84.7 (77.5-90.0)	33.7 (25.7-42.8)
≥ \$75,000	64.2 (55.7-71.9)	79.5 (71.2-85.8)	37.7 (30.6-45.5)
Education			
< HS graduate	57.2 (44.6-69.0)	72.8 (59.4-83.0)	54.9 (42.5-66.6)
HS graduate	61.1 (53.8-67.9)	72.6 (66.1-78.2)	41.9 (35.1-48.9)
Some college	64.9 (58.9-70.4)	80.1 (75.5-84.0)	42.8 (37.1-48.7)
College graduate	69.2 (63.8-74.0)	85.0 (80.8-88.4)	42.0 (36.5-47.6)
^a Weighted percent and corresponding 95% confidence interval (CI) for individuals who responded “yes” to the question, “Has a doctor or other health professional ever taught youhow to recognize early signs or symptoms of an asthma episode?” ^b Weighted percent and corresponding 95% CI for individuals who responded “yes” to the question, “.....what to do during an asthma episode or attack?” ^c Weighted percent and corresponding 95% CI for individuals who responded “yes” to the question, “.....how to use a peak flow meter to adjust your daily medications?”			

Table 7 (continued). Prevalence of Knowledge Indicators Related to Asthma Management, among Adults with Current Asthma Michigan Asthma Call-Back Survey, 2012-2014 Combined			
	Ever Received Asthma Action Plan^d	Ever Taken Asthma Management Class^e	Received ≥ 3 Types of Asthma Education^f
Total	30.1 (27.0-33.5)	8.5 (6.7-10.7)	44.0 (40.4-47.6)
Age			
18-34	25.9 (19.5-33.6)	6.8 (3.5-12.8) ~	45.6 (37.4-54.0)
35-64	33.3 (29.2-37.6)	9.3 (7.0-12.3)	44.3 (40.1-48.6)
≥ 65	28.7 (24.0-33.9)	9.3 (6.6-12.9)	40.0 (34.7-45.6)
Gender			
Male	23.1 (18.4-28.6)	7.6 (5.0-11.6)	41.2 (35.3-47.5)
Female	34.1 (30.0-38.4)	8.9 (6.7-11.9)	45.5 (41.1-50.0)
Race			
White	28.0 (24.6-31.7)	6.8 (5.0-9.2)	40.3 (36.4-44.4)
Black	34.2 (25.6-44.0)	16.2 (10.5-24.3)	56.3 (46.6-65.6)
Household Income			
< \$20,000	33.9 (27.1-41.5)	12.2 (8.0-18.2)	44.7 (37.5-52.2)
\$20,000-34,999	30.2 (23.5-37.9)	7.5 (4.6-12.1)	44.0 (36.4-51.9)
\$35,000-49,999	33.6 (24.3-44.4)	6.0 (3.1-11.1) ~	53.7 (43.0-64.0)
\$50,000-74,999	25.7 (19.2-33.4)	5.2 (2.6-10.0) ~	34.8 (27.2-43.3)
≥ \$75,000	30.1 (23.8-37.1)	6.9 (4.3-10.7)	43.9 (36.3-51.8)
Education			
< HS graduate	37.1 (25.9-49.8)	5.9 (2.4-13.8) ~	45.5 (33.7-57.9)
HS graduate	24.6 (19.5-30.5)	8.8 (5.2-14.3)	40.4 (33.8-47.5)
Some college	31.1 (26.0-36.7)	9.4 (6.4-13.6)	45.5 (39.7-51.4)
College graduate	30.1 (25.3-35.3)	8.3 (5.7-11.9)	44.5 (39.0-50.1)
^d Weighted percent and corresponding 95% confidence interval (CI) for individuals who responded “yes” to the question, “An asthma action plan, or asthma management plan, is a form with instructions about when to change the amount or type of medicine, when to call the doctor for advice, and when to go to the emergency room. Has a doctor or other health professional ever given you an asthma action plan?” ^e Weighted percent and corresponding 95% CI for individuals who responded “yes” to the question, “Have you ever taken a course or class on how to manage your asthma?” ^f Weighted percent and corresponding 95% CI for individuals who responded “yes” to ≥ 3 of the 5 questions above (b-f). ~ This estimate should be used with caution due to its low reliability and precision.			

Table 8. Prevalence of Asthma Triggers in Home Environment, among Adults with Current Asthma Michigan Asthma Call-Back Survey, 2012-2014 Combined				
	Cigarettes Smoked in Home^a	Mold Seen/Smelled in Home^b	Saw Cockroaches in Home^c	Saw Mice/Rat in Home^d
Total	21.2 (18.4-24.4)	13.9 (11.4-17.0)	2.0 (1.2-3.3)	7.2 (5.3-9.6)
Age				
18-34	18.9 (13.4-25.9)	14.1 (8.8-21.9)	---†	8.5 (4.5-15.6) ~
35-64	25.1 (21.3-29.3)	15.2 (12.1-18.9)	2.7 (1.4-5.2) ~	6.8 (4.9-9.5)
≥ 65	13.5 (9.8-18.2)	9.4 (6.6-13.1)	2.2 (1.1-4.5) ~	5.7 (3.8-8.7)
Gender				
Male	18.3 (13.9-23.8)	11.4 (8.0-15.9)	2.1 (0.9-5.0) ~	7.2 (4.4-11.4)
Female	22.9 (19.3-26.9)	15.4 (12.0-19.5)	1.9 (1.0-3.5) ~	7.2 (4.9-10.4)
Race				
White	15.8 (13.2-18.9)	13.9 (11.1-17.4)	1.2 (0.6-2.5) ~	7.9 (5.7-10.9)
Black	38.7 (29.5-48.8)	11.5 (5.9-21.3) ~	5.6 (2.5-12.0) ~	---†
Household Income				
< \$20,000	40.1 (33.2-47.4)	18.0 (12.2-25.6)	3.8 (1.9-7.6) ~	5.6 (3.6-8.7)
\$20,000-34,999	25.2 (18.7-33.1)	13.8 (8.7-21.1)	---†	10.0 (5.9-16.5)
\$35,000-49,999	21.5 (13.3-32.8)	12.7 (6.4-23.4) ~	---†	4.7 (2.1-10.0) ~
\$50,000-74,999	4.9 (2.4-9.9) ~	10.4 (6.0-17.6)	---†	5.9 (3.1-10.8) ~
≥ \$75,000	4.9 (2.4-9.6) ~	13.8 (9.4-19.8)	---†	9.4 (4.6-18.1) ~
Education				
< HS graduate	43.3 (32.1-55.3)	12.7 (6.3-23.9) ~	---†	4.8 (1.8-11.9) ~
HS graduate	25.7 (20.1-32.1)	16.2 (10.5-24.3)	2.4 (1.1-5.0) ~	7.4 (4.0-13.3) ~
Some college	17.9 (13.7-23.0)	15.6 (11.9-20.2)	0.6 (0.3-1.4) ~	10.1 (6.6-15.3)
College graduate	5.8 (4.0-8.4)	9.4 (6.7-13.0)	---†	3.9 (2.4-6.2)
<p>^a Weighted percent and corresponding 95% confidence interval (CI) for individuals who responded “yes” to the question, “In the past week, has anyone smoked inside your home?”</p> <p>^b Weighted percent and corresponding 95% CI for individuals who responded “yes” to the question, “In the past 30 days, has anyone seen or smelled mold or a musty odor inside your home? Do not include mold on food.”</p> <p>^c Weighted percent and corresponding 95% CI for individuals who responded “yes” to the question, “In the past 30 days, has anyone seen a cockroach inside your home?”</p> <p>^d Weighted percent and corresponding 95% CI for individuals who responded “yes” to the question, “In the past 30 days, has anyone seen mice or rats inside your home? Do not include mice or rats kept as pets.”</p> <p>† No positive responses in this cell.</p> <p>† This estimate was suppressed due to it having a denominator of less than 50 and/or a relative standard error of greater than 50%.</p> <p>~ This estimate should be used with caution due to its low reliability and precision.</p>				

Table 8 (continued). Prevalence of Asthma Triggers in Home Environment, among Adults with Current Asthma Michigan Asthma Call-Back Survey, 2012-2014 Combined					
	Inside Pets^f	Pets Allowed in Bedroom^g	Wood Burning Stove/Fireplace Used^h	Unvented Gas Logs, Stoves, or Fireplaces Usedⁱ	Gas Used for Cooking^j
Total	62.1 (58.6-65.5)	46.5 (42.9-50.1)	15.4 (12.7-18.6)	6.2 (4.8-8.1)	54.1 (50.5-57.6)
Age					
18-34	63.8 (55.5-71.4)	45.2 (37.0-53.7)	19.7 (13.1-28.7)	9.2 (5.7-14.6)	59.2 (50.7-67.2)
35-64	66.8 (62.7-70.7)	50.9 (46.7-55.2)	13.7 (11.4-16.4)	5.0 (3.7-6.8)	52.4 (48.1-56.6)
≥ 65	42.7 (37.3-48.3)	34.0 (28.9-39.4)	12.6 (9.4-16.7)	4.2 (2.6-6.7)	48.0 (42.5-53.6)
Gender					
Male	57.2 (51.1-63.1)	42.1 (36.3-48.1)	12.2 (9.3-15.8)	6.1 (3.9-9.4)	53.7 (47.6-59.7)
Female	64.8 (60.6-68.9)	48.9 (44.4-53.5)	17.2 (13.5-21.8)	6.3 (4.5-8.7)	54.3 (49.8-58.7)
Race					
White	68.7 (65.0-72.3)	53.3 (49.1-57.4)	17.2 (13.9-21.1)	6.1 (4.6-8.0)	53.1 (49.1-57.1)
Black	33.9 (24.9-44.1)	18.7 (12.5-27.0)	7.6 (4.0-14.0) ~	7.7 (3.6-15.4) ~	61.7 (52.3-70.3)
Household Income					
< \$20,000	59.6 (52.2-66.6)	42.9 (35.7-50.4)	10.5 (5.8-18.1)	7.3 (4.2-12.6)	52.5 (45.0-59.8)
\$20,000-34,999	51.8 (44.0-59.5)	37.0 (29.9-44.6)	8.9 (5.8-13.4)	8.3 (5.1-13.3)	53.4 (45.6-61.0)
\$35,000-49,999	69.6 (59.6-78.0)	50.4 (39.4-61.4)	18.9 (10.3-32.0)	3.9 (1.5-10.0) ~	55.4 (44.6-65.7)
\$50,000-74,999	67.0 (58.5-74.5)	49.9 (40.8-59.0)	18.9 (13.1-26.6)	5.8 (2.9-11.0) ~	53.3 (44.2-62.2)
≥ \$75,000	68.9 (61.6-75.4)	54.5 (46.5-62.3)	21.6 (15.6-29.0)	4.8 (2.8-8.2)	56.2 (48.5-63.6)
Education					
< HS graduate	57.0 (44.9-68.4)	35.6 (25.0-47.9)	10.6 (3.9-25.7) ~	---†	58.4 (46.0-69.7)
HS graduate	61.7 (54.8-68.1)	47.4 (40.3-54.5)	17.3 (11.6-25.1)	8.3 (5.3-12.9)	53.4 (46.3-60.4)
Some college	64.7 (59.1-70.0)	46.8 (41.0-52.6)	12.9 (9.5-17.3)	6.7 (4.5-10.1)	56.1 (50.3-61.7)
College graduate	61.8 (56.2-67.1)	52.7 (47.1-58.2)	20.8 (16.5-25.7)	5.8 (3.6-9.1)	48.4 (42.8-53.9)

^f Weighted percent and corresponding 95% confidence interval (CI) for individuals who responded “yes” to the question, “Does your household have pets, such as dogs, cats, hamsters, birds, or other feathered or furry pets that spend time indoors?”

^g Weighted percent and corresponding 95% CI for individuals who responded “yes” to the question, “Are pets allowed in your bedroom?” (Among all respondents.)

^h Weighted percent and corresponding 95% CI for individuals who responded “yes” to the question, “Is a wood burning fireplace or wood burning stove used in your home?”

ⁱ Weighted percent and corresponding 95% CI for individuals who responded “yes” to the question, “Are unvented gas logs, unvented gas fireplaces, or unvented gas stoves used in your home?”

^j Weighted percent and corresponding 95% CI for individuals who responded “yes” to the question, “Is gas used for cooking?”

† This estimate was suppressed due to it having a denominator of less than 50 and/or a relative standard error of greater than 50%.

~ This estimate should be used with caution due to its low reliability and precision.

Table 9. Prevalence of Asthma Trigger Avoidance Behaviors in Home Environment, among Adults with Current Asthma Michigan Asthma Call-Back Survey, 2012-2014 Combined								
	Kitchen Fan Used When Cooking^a		Bathroom Exhaust Fan Used^b		Sheets Washed in Hot Water^c		Air Cleaner Used in Home^d	
Total	56.6	(52.9-60.1)	60.2	(56.6-63.7)	37.8	(34.5-41.3)	32.4	(29.1-36.0)
Age								
18-34	52.2	(43.7-60.5)	59.0	(50.3-67.1)	27.9	(21.0-36.1)	28.2	(21.1-36.7)
35-64	59.4	(55.3-63.5)	60.1	(55.8-64.2)	41.7	(37.6-45.9)	33.6	(29.6-37.8)
≥ 65	55.2	(49.5-60.8)	63.5	(58.1-68.6)	45.0	(39.5-50.6)	37.3	(32.0-42.9)
Gender								
Male	51.6	(45.4-57.7)	64.3	(58.3-69.8)	34.9	(29.1-41.2)	28.8	(23.3-34.9)
Female	59.4	(54.9-63.7)	58.0	(53.4-62.3)	39.4	(35.3-43.6)	34.5	(30.4-38.9)
Race								
White	55.1	(51.0-59.2)	64.0	(60.0-67.9)	38.5	(34.7-42.4)	33.5	(29.7-37.5)
Black	59.0	(49.5-68.0)	42.4	(32.9-52.5)	33.1	(25.1-42.2)	29.0	(21.0-38.6)
Household Income								
< \$20,000	61.3	(53.9-68.2)	50.4	(43.0-57.9)	36.3	(29.7-43.4)	25.2	(19.5-31.9)
\$20,000-34,999	50.7	(42.9-58.5)	53.7	(45.9-61.3)	39.8	(32.6-47.5)	27.3	(21.3-34.3)
\$35,000-49,999	57.0	(46.2-67.2)	62.5	(51.2-72.5)	26.4	(19.1-35.1)	38.8	(27.7-51.1)
\$50,000-74,999	54.5	(45.1-63.5)	66.4	(56.9-74.8)	38.2	(30.1-47.0)	30.3	(22.6-39.4)
≥ \$75,000	58.8	(50.8-66.3)	74.9	(68.0-80.8)	42.6	(35.1-50.6)	40.1	(32.6-48.2)
Education								
< HS graduate	61.9	(49.3-73.0)	54.5	(42.2-66.3)	37.2	(26.0-49.9)	34.1	(22.6-47.8)
HS graduate	54.3	(47.1-61.4)	52.8	(45.6-59.8)	36.3	(29.9-43.3)	27.3	(21.7-33.7)
Some college	58.4	(52.4-64.0)	64.0	(58.3-69.3)	37.5	(32.2-43.1)	34.1	(28.8-39.7)
College graduate	52.4	(46.7-57.9)	66.8	(61.2-72.0)	40.5	(35.2-46.1)	34.3	(29.3-39.6)
^a Weighted percent and corresponding 95% confidence interval (CI) for individuals who responded “yes” to the question, “Is an exhaust fan that vents to the outside used regularly when cooking in your kitchen?” ^b Weighted percent and corresponding 95% CI for individuals who responded “yes” to the question, “In your bathroom, do you regularly use an exhaust fan that vents to the outside?” ^c Weighted percent and corresponding 95% CI for individuals who responded “hot” to the question, “Are your sheets and pillowcases washed in cold, warm, or hot water?” ^d Weighted percent and corresponding 95% CI for individuals who responded “yes” to the question, “An air cleaner or air purifier can filter out pollutants like dust, pollen, mold and chemicals. It can be attached to the furnace or free standing. It is not, however, the same as a normal furnace filter. Is an air cleaner or purifier regularly used inside your home?”								

Table 9 (continued). Prevalence of Asthma Trigger Avoidance Behaviors in Home Environment, among Adults with Current Asthma Michigan Asthma Call-Back Survey, 2012-2014 Combined				
	Dehumidifier Used Regularly in Home^e	No Carpeting in Bedroom^f	Uses Mattress Cover^g	Uses Pillow Cover^h
Total	41.1 (37.5-44.8)	34.3 (30.9-37.9)	32.7 (29.5-36.0)	32.1 (28.8-35.6)
Age				
18-34	39.2 (30.9-48.2)	35.8 (28.2-44.3)	23.4 (17.1-31.2)	28.1 (20.9-36.7)
35-64	40.5 (36.3-44.9)	35.8 (31.7-40.0)	36.4 (32.5-40.6)	33.2 (29.4-37.3)
≥ 65	46.6 (41.0-52.3)	27.0 (22.3-32.3)	39.6 (34.3-45.3)	36.5 (31.3-42.0)
Gender				
Male	39.2 (33.2-45.4)	33.5 (27.9-39.5)	27.9 (23.0-33.4)	25.6 (20.7-31.3)
Female	42.1 (37.6-46.8)	34.8 (30.6-39.3)	35.4 (31.3-39.7)	35.8 (31.5-40.2)
Race				
White	43.0 (38.9-47.2)	32.6 (28.8-36.7)	33.3 (29.7-37.1)	33.6 (29.8-37.6)
Black	36.6 (27.6-46.7)	42.5 (33.3-52.1)	27.0 (19.2-36.5)	27.0 (19.1-36.8)
Household Income				
< \$20,000	33.3 (26.2-41.4)	35.1 (28.4-42.5)	23.4 (17.9-29.9)	23.0 (17.6-29.5)
\$20,000-34,999	28.9 (22.6-36.1)	32.6 (25.6-40.4)	31.9 (25.4-39.1)	26.2 (20.5-32.9)
\$35,000-49,999	47.4 (36.3-58.7)	48.2 (37.2-59.4)	38.0 (27.3-50.0)	39.1 (28.2-51.3)
\$50,000-74,999	43.3 (34.5-52.5)	26.3 (19.5-34.5)	41.5 (33.0-50.6)	39.0 (30.9-47.8)
≥ \$75,000	50.5 (42.5-58.4)	30.1 (23.6-37.6)	38.7 (31.7-46.2)	36.4 (29.2-44.1)
Education				
< HS graduate	47.1 (34.8-59.7)	33.6 (23.1-46.1)	20.4 (11.6-33.3)	24.6 (14.8-38.1)
HS graduate	37.2 (30.3-44.6)	33.2 (26.8-40.3)	30.3 (24.5-36.8)	29.6 (23.7-36.4)
Some college	39.8 (34.2-45.6)	38.0 (32.4-44.0)	34.7 (29.5-40.2)	33.3 (28.0-39.0)
College graduate	43.5 (38.1-49.0)	30.1 (25.2-35.4)	41.1 (35.8-46.6)	38.4 (33.2-43.9)
^e Weighted percent and corresponding 95% confidence interval (CI) for individuals who responded “yes” to the question, “Is a dehumidifier regularly used to reduce moisture inside your home?” ^f Weighted percent and corresponding 95% CI for individuals who responded “no” to the question, “Do you have carpeting or rugs in your bedroom? This does not include throw rugs small enough to be laundered.” ^g Weighted percent and corresponding 95% CI for individuals who responded “yes” to the question, “Do you use a mattress cover that is made especially for controlling dust mites?” ^h Weighted percent and corresponding 95% CI for individuals who responded “yes” to the question, “Do you use a pillow cover that is made especially for controlling dust mites?”				

Table 10. Prevalence of Ever Being Advised to Modify Environment to Improve Asthma, among Adults with Current Asthma Michigan Asthma Call-Back Survey, 2012-2014 Combined	
	Ever Advised to Modify Environment to Improve Asthma^a
Total	42.2 (38.6-45.8)
Age	
18-34	40.7 (32.7-49.3)
35-64	45.7 (41.5-50.0)
≥ 65	34.0 (29.1-39.2)
Gender	
Male	41.1 (35.2-47.3)
Female	42.8 (38.4-47.2)
Race	
White	42.0 (38.1-46.1)
Black	41.0 (31.8-50.8)
Household Income	
< \$20,000	39.7 (32.6-47.4)
\$20,000-34,999	38.6 (31.2-46.6)
\$35,000-49,999	41.0 (31.2-51.5)
\$50,000-74,999	49.8 (40.7-58.9)
≥ \$75,000	43.9 (36.4-51.7)
Education	
< HS graduate	33.9 (23.4-46.2)
HS graduate	39.5 (32.5-47.0)
Some college	44.9 (39.2-50.8)
College graduate	46.9 (41.4-52.4)
^a Weighted percent and corresponding 95% confidence interval (CI) for individuals who responded “yes” to the question, “Has a health professional ever advised you to change things in your home, school, or work to improve your asthma?”	

Table 11. Percent Distribution of Number Days Unable to Work or Carry Out Usual Activities Because of Asthma^a among Adults with Current Asthma			
Michigan Asthma Call-Back Survey, 2012-2014 Combined			
	None	1-5 Days	≥ 6 Days
Total	63.2 (59.5-66.8)	20.8 (17.8-24.1)	16.0 (13.4-19.0)
Age			
18-34	64.3 (55.5-72.3)	25.9 (18.8-34.4)	9.8 (5.6-16.7)
35-64	61.2 (56.7-65.5)	19.8 (16.6-23.4)	19.1 (15.5-23.2)
≥ 65	68.1 (62.7-73.1)	13.9 (10.5-18.2)	17.9 (14.0-22.6)
Gender			
Male	65.2 (58.6-71.3)	18.5 (13.4-25.0)	16.3 (12.1-21.4)
Female	62.1 (57.6-66.5)	22.0 (18.5-26.0)	15.8 (12.6-19.7)
Race			
White	67.5 (63.4-71.4)	19.7 (16.4-23.5)	12.8 (10.3-15.7)
Black	44.9 (35.5-54.7)	22.4 (15.0-32.2)	32.6 (23.6-43.2)
Household Income			
< \$20,000	49.1 (41.5-56.6)	19.1 (14.0-25.5)	31.8 (25.1-39.3)
\$20,000-34,999	62.9 (54.7-70.3)	23.5 (16.8-31.8)	13.7 (9.6-19.1)
\$35,000-49,999	65.5 (54.3-75.1)	23.3 (15.5-33.6)	11.2 (5.4-21.7) ~
\$50,000-74,999	69.2 (60.0-77.1)	17.4 (11.5-25.3)	13.4 (8.0-21.8)
≥ \$75,000	75.3 (66.5-82.3)	15.3 (9.9-22.8)	9.5 (4.9-17.6) ~
Education			
< HS graduate	42.3 (30.3-55.4)	25.1 (15.2-38.4)	32.6 (21.7-45.7)
HS graduate	60.7 (53.4-67.5)	21.6 (15.9-28.7)	17.7 (13.3-23.3)
Some college	64.3 (58.4-69.9)	22.0 (17.4-27.4)	13.7 (10.0-18.3)
College graduate	77.9 (72.9-82.2)	15.1 (11.4-19.7)	7.0 (4.9-10.0)
^a Weighted percent and corresponding 95% confidence interval (CI) for individuals who responded to the following question, "During the past 12 months, how many days were you unable to work or carry out your usual activities because of your asthma?" ~ This estimate should be used with caution due to its low reliability and precision.			

Table 12. Prevalence of Work-Related Asthma Using 3 Definitions, among Adults with Current Asthma Michigan Asthma Call-Back Survey, 2012-2014 Combined			
	Asthma Caused or Aggravated by Current or Previous Job^a	Ever Told or Told by Doctor That Asthma Was Work-Related^b	Any Indication of Work-Related Asthma^c
Total	56.7 (53.0-60.4)	23.9 (20.8-27.3)	57.9 (54.2-61.5)
Age			
18-34	45.7 (37.2-54.4)	18.0 (11.7-26.5)	46.9 (38.4-55.6)
35-64	62.8 (58.5-66.9)	27.0 (23.3-31.1)	63.9 (59.6-68.0)
≥ 65	59.3 (53.6-64.8)	25.8 (20.8-31.4)	60.7 (55.0-66.1)
Gender			
Male	62.1 (55.8-68.0)	29.4 (23.8-35.6)	63.7 (57.6-69.5)
Female	53.8 (49.2-58.3)	20.8 (17.3-24.8)	54.7 (50.1-59.2)
Race			
White	54.5 (50.3-58.7)	21.7 (18.5-25.3)	55.9 (51.7-60.0)
Black	62.2 (52.6-71.0)	34.1 (24.9-44.8)	63.0 (53.4-71.6)
Household Income			
< \$20,000	63.5 (55.8-70.5)	27.3 (21.4-34.3)	63.6 (56.0-70.6)
\$20,000-34,999	60.9 (52.8-68.4)	23.7 (17.4-31.3)	61.5 (53.4-69.0)
\$35,000-49,999	59.8 (49.1-69.7)	31.1 (20.4-44.4)	61.2 (50.4-70.9)
\$50,000-74,999	58.6 (49.2-67.4)	18.6 (13.0-26.0)	60.8 (51.4-69.4)
≥ \$75,000	46.5 (38.5-54.7)	20.9 (15.0-28.3)	47.5 (39.5-55.7)
Education			
< HS graduate	60.3 (47.4-72.0)	30.7 (19.7-44.5)	63.1 (50.1-74.4)
HS graduate	58.9 (51.6-65.8)	23.8 (18.4-30.1)	59.4 (52.1-66.4)
Some college	58.7 (52.7-64.4)	23.6 (19.1-28.8)	59.8 (53.8-65.5)
College graduate	48.5 (42.9-54.2)	19.7 (16.0-24.2)	49.4 (43.7-55.1)
^a Weighted percent and corresponding 95% confidence interval (CI) for individuals who responded “yes” to one or more of the following 4 questions: “Was your asthma caused by chemicals, smoke, fumes, or dust in your current job?” “Is your asthma made worse by chemicals, smoke, fumes, or dust in your current job?” “Was your asthma caused by chemicals, smoke, fumes, or dust in any previous job you ever had?” “Was your asthma made worse by chemicals, smoke, fumes, or dust in any previous job you ever had?” ^b Weighted percent and corresponding 95% CI for individuals who responded “yes” to one or more of the following 2 questions: “Were you ever told by a doctor or other health professional that your asthma was related to any job you ever had?” “Did you ever tell a doctor or other health professional that your asthma was related to any job you ever had?” ^c Weighted percent and corresponding 95% CI for individuals who responded “yes” to at least one of the above 6 questions (a and b).			