

**Prevalence of Asthma-Related Health Conditions among Michigan Adults with Current Asthma
Estimates from the Michigan Asthma Call-Back Survey
2011-2013 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 of these 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 2011-2013 Michigan Asthma Call-Back Surveys combined. The total 3-year sample size of completed interviews for adults was 2,314, with 748 from 2011, 718 from 2012, and 848 from 2013. 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=1,785). 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, 2011-2013 Combined				
	n^a	Had Asthma Symptoms on ≥ 9 Days in Past Month^b	Difficulty Sleeping Due to Asthma Symptoms on ≥ 2 Days in Past Month^c	Usual Activities Limited at Least a Little During Past 12 Months^d
Total	1,776	45.0 (41.4-48.7)	34.5 (31.0-38.2)	60.9 (57.4-64.3)
Age in years				
18-34	212	40.6 (32.5-49.3)	31.0 (23.5-39.6)	57.6 (49.3-65.5)
35-64	1,016	44.9 (40.6-49.3)	36.6 (32.3-41.1)	62.7 (58.5-66.6)
≥ 65	543	54.0 (48.3-59.5)	34.3 (28.7-40.3)	61.7 (56.2-66.9)
Sex				
Male	522	41.4 (35.4-47.7)	33.9 (27.9-40.4)	57.5 (51.4-63.4)
Female	1,254	47.2 (42.7-51.6)	34.9 (30.7-39.3)	62.8 (58.6-66.9)
Race				
White	1,379	46.3 (42.2-50.4)	29.1 (25.4-33.1)	60.0 (56.0-63.8)
Black	245	39.1 (30.5-48.4)	56.1 (46.8-64.9)	61.8 (52.6-70.3)
Household income				
< \$20,000	448	51.7 (44.6-48.7)	46.7 (39.6-53.9)	70.2 (63.0-76.5)
\$20,000-34,999	372	54.7 (46.9-62.4)	40.5 (33.0-48.4)	63.9 (56.3-70.8)
\$35,000-49,999	221	43.6 (34.0-53.7)	28.6 (19.3-40.1)	56.8 (46.8-66.2)
\$50,000-74,999	224	43.7 (35.0-52.8)	31.8 (23.7-41.3)	54.2 (45.2-62.9)
≥ \$75,000	316	34.2 (26.1-43.3)	17.8 (11.1-27.2)	48.1 (39.4-56.8)
Education				
< HS graduate	126	58.9 (46.0-70.7)	48.5 (36.0-61.3)	75.0 (63.1-84.0)
HS graduate	503	48.7 (42.0-55.4)	39.0 (32.7-45.8)	61.5 (54.8-67.9)
Some college	596	43.4 (37.5-49.4)	33.8 (28.1-40.0)	63.6 (57.8-69.0)
College graduate	596	34.0 (28.9-39.5)	20.8 (16.7-25.6)	45.7 (40.2-51.2)
^a Sample size (unweighted) for demographic subpopulations. Cell sample sizes for prevalence estimates will vary due to missing values. ^b Reported ≥ 9 days to the following question, “During the past 30 days, on how many days did you have any symptoms of asthma?” ^c 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?” ^d 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, 2011-2013 Combined				
	None	1-6 Days	7-13 Days	14 Days
Total	25.1 (22.2-28.3)	15.8 (13.3-18.6)	25.4 (22.2-28.9)	33.7 (30.3-37.2)
Age in years				
18-34	15.8 (10.3-23.4)	15.7 (10.5-22.7)	28.3 (20.9-37.1)	40.3 (32.3-48.8)
35-64	26.6 (23.0-30.5)	16.5 (13.5-20.1)	25.3 (21.6-29.4)	31.6 (27.8-35.7)
≥ 65	38.3 (32.8-44.2)	14.0 (10.5-18.5)	19.6 (15.8-24.2)	28.0 (23.3-33.3)
Sex				
Male	24.1 (19.2-29.7)	14.6 (10.9-19.4)	26.5 (20.9-32.9)	34.8 (29.3-40.8)
Female	25.7 (22.2-29.6)	16.5 (13.4-20.2)	24.8 (20.9-29.0)	33.0 (28.9-37.4)
Race				
White	25.7 (22.3-29.3)	16.0 (13.1-19.3)	23.8 (20.4-27.5)	34.6 (30.8-38.6)
Black	21.0 (15.0-28.6)	16.0 (10.5-23.6)	29.3 (20.5-40.0)	33.7 (25.6-42.9)
Household income				
< \$20,000	29.6 (23.8-36.1)	17.9 (13.3-23.7)	21.6 (16.1-28.3)	30.9 (24.3-38.5)
\$20,000-34,999	30.8 (24.2-38.4)	14.0 (9.4-20.4)	29.0 (22.0-37.1)	26.2 (20.1-33.3)
\$35,000-49,999	23.8 (16.7-32.7)	20.3 (12.9-30.5)	23.7 (15.8-34.0)	32.2 (23.9-41.8)
\$50,000-74,999	26.1 (19.2-34.4)	13.2 (7.4-22.4)	20.9 (15.0-28.4)	39.8 (31.4-48.9)
≥ \$75,000	16.3 (10.4-24.4)	11.7 (7.4-18.1)	29.7 (21.9-38.9)	42.3 (34.3-50.7)
Education				
< HS graduate	40.1 (28.6-52.8)	11.5 (6.4-19.7)	22.0 (12.3-36.2)	26.4 (16.5-39.4)
HS graduate	24.5 (19.8-29.9)	20.9 (15.9-27.0)	23.9 (18.1-30.8)	30.7 (24.7-37.4)
Some college	22.4 (18.3-27.2)	17.1 (12.7-22.6)	27.4 (22.1-33.4)	33.1 (27.8-38.9)
College graduate	20.1 (15.9-25.2)	10.5 (7.7-14.2)	26.3 (21.9-31.2)	43.1 (37.6-48.8)

^aResponse 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, 2011-2013 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	16.5 (13.8-19.6)	8.4 (6.3-11.1)	4.4 (2.9-6.5)	38.3 (34.8-42.0)	43.6 (39.5-47.8)
Age in years					
18-34	21.3 (14.9-29.5)	12.9 (7.7-20.6)	5.4 (2.2-12.5) ~	32.6 (24.8-41.5)	32.6 (24.2-42.3)
35-64	14.9 (12.1-18.1)	6.9 (5.1-9.5)	3.6 (2.3-5.5)	39.9 (35.6-44.3)	44.8 (40.0-49.8)
≥ 65	12.0 (8.7-16.1)	4.7 (2.8-7.7)	5.0 (2.8-8.8)	44.1 (38.5-49.9)	62.6 (56.1-68.6)
Sex					
Male	13.8 (9.4-19.7)	5.7 (3.0-10.8) ~	6.2 (3.2-11.8) ~	35.6 (29.7-41.9)	38.8 (32.2-45.9)
Female	18.1 (14.9-21.9)	10.0 (7.3-13.4)	3.3 (2.2-4.9)	40.0 (35.7-44.5)	46.4 (41.3-51.5)
Race					
White	12.8 (10.0-16.2)	5.6 (3.6-8.6)	3.6 (2.1-6.2)	34.3 (30.5-38.3)	46.6 (41.9-51.4)
Black	31.0 (23.2-40.1)	19.9 (13.4-28.5)	7.5 (3.9-14.0) ~	55.2 (45.8-64.2)	31.5 (22.8-41.8)
Household income					
< \$20,000	24.4 (18.7-31.2)	14.4 (9.8-20.8)	6.9 (4.0-11.6)	43.1 (36.4-50.2)	35.0 (28.0-42.8)
\$20,000-34,999	17.8 (11.7-26.2)	9.8 (5.0-18.3) ~	4.9 (2.7-8.9) ~	43.5 (35.6-51.7)	42.8 (34.2-51.9)
\$35,000-49,999	15.8 (9.3-25.5)	7.7 (4.1-14.3) ~	3.3 (1.4-7.5) ~	40.5 (30.7-51.2)	39.6 (29.2-51.0)
\$50,000-74,999	10.8 (6.2-18.1)	3.8 (1.5-9.0) ~	1.9 (0.8-4.7) ~	33.5 (25.6-42.4)	48.0 (37.7-58.6)
≥ \$75,000	10.2 (5.4-18.6) ~	---†	---†	31.9 (23.8-41.3)	49.4 (39.2-59.7)
Education					
< HS graduate	25.4 (15.8-38.2)	18.9 (10.5-31.5)	15.0 (7.7-27.3) ~	56.4 (43.9-68.1)	35.1 (23.5-48.8)
HS graduate	15.7 (11.6-21.1)	9.0 (5.9-13.3)	3.8 (2.3-6.3)	36.0 (30.2-42.3)	46.1 (38.5-53.8)
Some college	16.4 (12.2-21.6)	6.3 (3.7-10.5)	1.8 (1.0-3.3) ~	36.7 (30.9-42.9)	42.9 (36.2-49.8)
College graduate	11.4 (8.2-15.6)	3.8 (2.2-6.6)	1.6 (0.7-3.4) ~	31.5 (26.6-36.9)	48.4 (42.0-54.9)

^a Response 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 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 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 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, 2011-2013 Combined	
	Used \geq 1 Asthma Control Medication in Past 3 Months^a
Total	47.0 (43.5-50.6)
Age in years	
18-34	36.0 (27.9-44.9)
35-64	49.0 (44.8-53.3)
\geq 65	63.4 (57.8-68.7)
Sex	
Male	46.0 (39.9-52.2)
Female	47.7 (43.3-52.1)
Race	
White	47.6 (43.6-51.6)
Black	44.2 (35.2-53.7)
Household income	
< \$20,000	39.7 (33.1-46.8)
\$20,000-34,999	51.5 (43.7-59.2)
\$35,000-49,999	50.7 (40.9-60.5)
\$50,000-74,999	53.6 (44.6-62.4)
\geq \$75,000	48.3 (39.8-57.0)
Education	
< HS graduate	49.0 (36.8-61.2)
HS graduate	47.4 (40.8-54.1)
Some college	45.0 (39.2-50.9)
College graduate	48.6 (43.1-54.2)
^a Respondent 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, 2011-2013 Combined		
	Ever Diagnosed with COPD, Emphysema, or Chronic Bronchitis^a	Ever Diagnosed with Depression^b
Total	38.8 (35.3-42.3)	36.9 (33.5-40.5)
Age in years		
18-34	23.2 (16.7-31.4)	34.1 (26.4-42.8)
35-64	41.8 (37.5-46.2)	40.8 (36.6-45.1)
≥ 65	59.6 (54.0-64.9)	30.2 (25.4-35.5)
Sex		
Male	36.6 (30.9-42.7)	32.0 (26.4-38.1)
Female	40.0 (35.8-44.4)	39.8 (35.5-44.2)
Race		
White	35.1 (31.5-39.0)	37.5 (33.6-41.6)
Black	55.3 (46.0-64.3)	36.5 (27.7-46.2)
Household income		
< \$20,000	55.6 (48.4-62.6)	47.4 (40.4-54.5)
\$20,000-34,999	51.9 (44.0-59.6)	42.5 (34.8-50.7)
\$35,000-49,999	36.7 (27.5-47.0)	32.5 (24.5-41.5)
\$50,000-74,999	21.0 (14.8-28.8)	25.4 (18.6-33.6)
≥ \$75,000	21.3 (14.7-30.0)	24.1 (17.2-32.7)
Education		
< HS graduate	63.6 (49.9-75.4)	48.3 (36.2-60.6)
HS graduate	43.5 (37.1-50.1)	34.4 (28.5-40.9)
Some college	35.3 (29.9-41.1)	37.8 (32.1-43.8)
College graduate	21.2 (17.4-25.7)	30.4 (25.5-35.7)
^a 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 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, 2011-2013 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	15.0 (12.2-18.1)	7.5 (5.6-10.0)	21.0 (18.0-24.2)	25.7 (22.5-29.2)
Age in years				
18-34	23.2 (16.4-31.7)	11.3 (6.9-18.1)	27.3 (20.4-35.5)	33.1 (25.5-41.6)
35-64	12.7 (10.0-15.8)	7.0 (5.0-9.8)	20.2 (16.8-24.0)	24.1 (20.4-28.1)
≥ 65	5.6 (3.2-9.4)	--- [†]	11.4 (8.2-15.4)	15.9 (12.0-20.8)
Sex				
Male	13.2 (9.4-18.3)	7.3 (4.6-11.6)	18.7 (14.1-24.3)	23.4 (18.4-29.3)
Female	16.0 (12.5-20.2)	7.7 (5.3-11.0)	22.3 (18.6-26.4)	27.0 (23.0-31.4)
Race				
White	13.2 (10.2-16.8)	6.0 (4.1-8.7)	18.6 (15.4-22.2)	23.0 (19.5-26.9)
Black	22.7 (15.5-32.0)	14.9 (9.1-23.6)	30.9 (22.5-40.7)	36.2 (27.5-45.9)
Household income				
< \$20,000	26.2 (20.0-33.5)	16.2 (11.1-22.9)	32.7 (26.2-40.0)	39.4 (32.6-46.7)
\$20,000-34,999	15.7 (10.0-23.8)	7.9 (4.3-14.3) ~	32.0 (24.5-40.5)	34.0 (26.5-42.4)
\$35,000-49,999	15.9 (9.8-24.7)	7.6 (3.5-15.5) ~	21.0 (14.2-29.9)	24.9 (17.5-34.1)
\$50,000-74,999	7.7 (3.1-17.6) ~	--- [†]	9.6 (5.4-16.6)	14.3 (8.2-23.6)
≥ \$75,000	--- [†]	--- [†]	7.3 (3.1-16.3) ~	8.3 (3.9-16.9) ~
Education				
< HS graduate	19.2 (11.1-31.0)	10.8 (5.3-21.1) ~	24.0 (15.1-36.1)	31.2 (21.2-43.3)
HS graduate	12.4 (8.3-18.3)	10.4 (6.5-16.5)	23.6 (18.5-29.7)	27.7 (21.9-34.3)
Some college	18.7 (13.9-24.7)	6.9 (4.3-11.0)	23.2 (18.2-29.0)	28.6 (23.1-34.8)
College graduate	8.9 (5.7-13.7)	2.7 (1.2-6.0) ~	11.9 (8.3-16.8)	14.5 (10.6-19.4)
^a 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 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 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 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, 2011-2013 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 (60.6-67.1)	76.5 (73.2-79.5)	44.4 (40.8-48.0)
Age in years			
18-34	64.4 (55.6-72.4)	75.6 (67.2-82.4)	49.3 (40.8-57.9)
35-64	67.2 (62.9-71.1)	79.6 (75.9-82.8)	43.6 (39.4-48.0)
≥ 65	51.5 (45.7-57.2)	68.2 (62.4-73.5)	37.0 (31.7-42.7)
Sex			
Male	61.2 (55.0-67.1)	75.8 (70.4-80.6)	43.3 (37.2-49.6)
Female	65.1 (60.5-69.3)	76.9 (72.6-80.6)	45.0 (40.6-49.5)
Race			
White	61.7 (57.5-65.6)	75.2 (71.4-78.7)	39.2 (35.2-43.3)
Black	72.9 (63.3-80.8)	83.2 (75.2-89.0)	62.5 (53.1-71.0)
Household income			
< \$20,000	64.0 (56.8-70.7)	71.9 (64.8-78.0)	49.1 (42.0-56.3)
\$20,000-34,999	60.0 (51.9-67.6)	75.8 (68.2-82.1)	41.6 (34.2-49.3)
\$35,000-49,999	70.9 (61.6-78.7)	79.5 (70.9-86.1)	48.2 (38.3-58.2)
\$50,000-74,999	64.9 (55.5-73.2)	82.7 (75.3-88.2)	41.2 (32.6-50.4)
≥ \$75,000	66.8 (57.2-75.1)	83.3 (74.3-89.5)	38.3 (30.5-46.7)
Education			
< HS graduate	52.5 (40.2-64.6)	66.9 (54.2-77.5)	52.9 (40.6-65.0)
HS graduate	63.9 (57.1-70.1)	74.2 (68.0-79.5)	42.1 (35.6-48.8)
Some college	65.4 (59.4-71.0)	78.1 (73.0-82.4)	43.2 (37.3-49.2)
College graduate	68.4 (62.9-73.4)	83.6 (78.7-87.6)	43.1 (37.6-48.7)
^a 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 Responded “yes” to the question, “.....what to do during an asthma episode or attack?” ^c 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, 2011-2013 Combined			
	Ever Received Asthma Action Plan^d	Ever Taken Asthma Management Class^e	Received ≥ 3 Types of Asthma Education^f
Total	29.8 (26.6-33.3)	7.8 (6.2-9.9)	43.0 (39.5-46.6)
Age in years			
18-34	27.5 (20.7-35.5)	7.8 (4.5-13.1)	43.7 (35.5-52.2)
35-64	32.8 (28.8-37.1)	7.9 (5.8-10.5)	45.3 (41.0-49.6)
≥ 65	25.2 (20.8-30.2)	8.0 (5.4-11.6)	35.1 (30.0-40.5)
Sex			
Male	23.7 (19.0-29.2)	6.8 (4.4-10.4)	40.6 (34.7-46.9)
Female	33.4 (29.3-37.7)	8.4 (6.4-11.1)	44.4 (40.0-48.8)
Race			
White	27.3 (23.8-31.0)	4.7 (3.4-6.3)	39.1 (35.2-43.1)
Black	41.2 (32.2-50.8)	21.0 (14.4-29.7)	60.7 (51.3-69.4)
Household income			
< \$20,000	31.1 (24.6-38.3)	14.0 (9.5-20.3)	46.0 (38.9-53.2)
\$20,000-34,999	26.9 (20.5-34.5)	7.1 (4.2-11.7)	38.9 (31.6-46.7)
\$35,000-49,999	39.0 (29.3-49.6)	5.9 (3.0-11.5) [~]	55.1 (45.3-64.5)
\$50,000-74,999	30.2 (22.9-38.7)	4.1 (1.9-8.5) [~]	40.4 (32.1-49.2)
≥ \$75,000	27.2 (20.9-34.5)	4.9 (2.7-8.5)	43.3 (35.1-51.8)
Education			
< HS graduate	35.0 (24.1-47.7)	6.1 (2.8-13.0) [~]	43.7 (32.0-56.2)
HS graduate	25.6 (20.5-31.4)	9.3 (6.2-13.7)	39.6 (33.4-46.1)
Some college	30.3 (25.1-36.1)	7.9 (5.1-12.0)	43.9 (38.0-49.9)
College graduate	30.6 (25.8-35.9)	7.2 (4.9-10.7)	45.2 (39.7-50.8)
^d 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 Responded “yes” to the question, “Have you ever taken a course or class on how to manage your asthma?” ^f 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, 2011-2013 Combined				
	Cigarettes Smoked in Home^a	Mold Seen/Smelled in Home^b	Saw Cockroaches in Home^c	Saw Mice/Rat in Home^d
Total	21.5 (18.6-24.8)	13.0 (10.7-15.9)	1.2 (0.8-2.0)	5.7 (4.1-7.8)
Age in years				
18-34	22.1 (16.0-29.8)	14.5 (9.4-21.7)	---†	6.6 (3.3-13.0)~
35-64	23.9 (20.1-28.2)	13.8 (10.9-17.3)	1.5 (0.8-2.8)~	5.1 (3.5-7.2)
≥ 65	11.6 (8.5-15.7)	8.0 (5.6-11.3)	1.4 (0.6-3.6)~	5.2 (3.3-8.0)
Sex				
Male	17.9 (13.5-23.4)	8.5 (5.8-12.2)	1.1 (0.5-2.4)~	5.6 (3.2-9.5)
Female	23.6 (19.9-27.8)	15.7 (12.4-19.7)	1.3 (0.7-2.3)~	5.8 (3.9-8.4)
Race				
White	16.5 (13.6-19.8)	13.3 (10.6-16.5)	0.8 (0.4-1.5)~	6.5 (4.5-9.1)
Black	38.5 (29.4-48.4)	10.4 (5.4-19.1)~	2.8 (1.2-6.3)~	1.2 (0.6-2.4)~
Household income				
< \$20,000	36.8 (30.3-43.8)	17.7 (12.9-23.8)	2.2 (1.2-4.1)~	4.9 (3.2-7.6)
\$20,000-34,999	26.1 (19.2-34.4)	14.0 (8.5-22.3)	---†	10.3 (6.1-17.0)
\$35,000-49,999	21.4 (13.1-33.0)	13.3 (6.5-25.3)~	3.5 (1.3-9.0)~	4.1 (1.7-9.7)~
\$50,000-74,999	8.4 (4.6-14.8)	8.5 (4.7-14.7)	---†	2.7 (1.2-5.9)~
≥ \$75,000	6.5 (2.8-14.5)~	9.4 (6.0-14.7)	---†	6.9 (2.7-16.6)~
Education				
< HS graduate	38.9 (27.9-51.1)	11.8 (5.3-24.1)~	---†	---†
HS graduate	27.0 (21.4-33.5)	10.9 (7.2-16.3)	1.5 (0.7-3.2)~	4.9 (3.1-7.7)
Some college	18.6 (14.2-24.0)	16.5 (12.4-21.7)	0.5 (0.2-1.1)~	9.9 (6.3-15.3)
College graduate	7.3 (5.2-10.2)	10.9 (7.9-14.8)	1.4 (0.5-3.4)~	2.6 (1.6-4.6)
^a Responded “yes” to the question, “In the past week, has anyone smoked inside your home?” ^b 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.” ^c Responded “yes” to the question, “In the past 30 days, has anyone seen a cockroach inside your home?” ^d 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.” ^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 8 (continued). Prevalence of Asthma Triggers in Home Environment, Among Adults with Current Asthma
Michigan Asthma Call-Back Survey, 2011-2013 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)	44.7 (41.1-48.3)	14.9 (12.6-17.6)	7.2 (5.7-9.2)	53.2 (49.6-56.7)
Age in years					
18-34	64.2 (56.0-71.7)	45.1 (36.9-53.6)	16.3 (11.1-23.5)	9.3 (5.7-14.7)	60.4 (52.2-68.0)
35-64	67.0 (63.0-70.9)	48.5 (44.2-52.8)	14.3 (11.7-17.2)	6.1 (4.5-8.2)	51.0 (46.7-55.2)
≥ 65	41.8 (36.3-47.5)	31.9 (26.8-37.5)	13.8 (10.2-18.5)	5.1 (3.1-8.3)	46.1 (40.4-51.8)
Sex					
Male	60.5 (54.4-66.2)	43.3 (37.3-49.5)	15.9 (12.3-20.3)	8.0 (5.5-11.5)	53.4 (47.2-59.5)
Female	63.1 (58.8-67.1)	45.4 (41.1-49.9)	14.4 (11.5-17.9)	6.8 (4.9-9.3)	53.0 (48.6-57.4)
Race					
White	68.9 (65.1-72.4)	51.0 (46.9-55.1)	16.7 (13.9-20.0)	6.3 (4.8-8.2)	51.7 (47.6-55.7)
Black	31.0 (22.4-41.2)	15.5 (10.1-23.0)	6.8 (3.4-13.0) ~	10.3 (5.6-18.2)	62.1 (53.1-70.4)
Household income					
< \$20,000	57.7 (50.4-64.7)	41.2 (34.4-48.3)	11.1 (7.0-17.0)	7.8 (4.5-13.1)	57.6 (50.6-64.3)
\$20,000-34,999	54.2 (46.4-61.7)	36.8 (29.6-44.6)	7.2 (4.8-10.7)	7.7 (4.6-12.7)	49.7 (42.0-57.5)
\$35,000-49,999	64.2 (54.4-72.9)	47.8 (38.2-57.6)	19.5 (13.3-27.7)	6.9 (3.5-13.1) ~	53.8 (44.0-63.4)
\$50,000-74,999	68.6 (60.5-75.7)	45.9 (37.2-54.9)	19.8 (13.7-27.9)	6.9 (3.9-11.9)	52.2 (43.2-61.0)
≥ \$75,000	71.3 (63.7-77.9)	53.8 (45.1-62.3)	23.0 (16.3-31.5)	6.2 (3.6-10.2)	54.4 (46.0-62.6)
Education					
< HS graduate	51.5 (39.3-63.5)	34.4 (23.5-47.2)	8.0 (3.3-18.2) ~	---†	60.1 (48.2-70.9)
HS graduate	60.2 (53.6-66.3)	45.4 (38.8-52.3)	14.5 (10.6-19.5)	11.0 (7.5-15.9)	54.0 (47.3-60.5)
Some college	68.6 (63.2-73.6)	45.7 (39.9-51.7)	14.5 (10.7-19.3)	6.1 (4.0-9.4)	52.5 (46.5-58.4)
College graduate	61.3 (55.8-66.6)	49.3 (43.7-54.9)	21.2 (16.6-26.7)	7.1 (4.7-10.5)	48.4 (42.8-53.9)

^f 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 Responded “yes” to the question, “Are pets allowed in your bedroom?” (Among all respondents.)
^h Responded “yes” to the question, “Is a wood burning fireplace or wood burning stove used in your home?”
ⁱ Responded “yes” to the question, “Are unvented gas logs, unvented gas fireplaces, or unvented gas stoves used in your home?”
^j 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, 2011-2013 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	54.6 (50.9-58.1)	59.0 (55.5-62.5)	36.1 (32.8-39.6)	33.8 (30.4-37.3)
Age in years				
18-34	49.2 (40.7-57.6)	58.9 (50.5-66.9)	28.0 (20.9-36.4)	32.7 (25.1-41.5)
35-64	57.9 (53.7-62.1)	58.2 (53.8-62.4)	37.7 (33.7-41.8)	32.3 (28.4-36.4)
≥ 65	54.2 (48.4-59.9)	63.4 (57.9-68.5)	46.4 (40.8-52.1)	39.3 (33.9-45.0)
Sex				
Male	50.7 (44.5-56.9)	60.6 (54.3-66.6)	31.9 (26.3-38.1)	32.1 (26.3-38.5)
Female	56.8 (52.4-61.1)	58.1 (53.8-62.4)	38.5 (34.5-42.7)	34.8 (30.7-39.1)
Race				
White	53.2 (49.1-57.2)	64.1 (60.2-67.8)	36.0 (32.3-39.9)	34.0 (30.3-38.0)
Black	56.2 (46.9-65.1)	39.8 (30.7-49.6)	38.5 (30.0-47.7)	32.6 (24.3-42.1)
Household income				
< \$20,000	57.9 (50.9-64.6)	51.9 (44.7-59.0)	35.0 (28.7-42.0)	23.4 (18.0-29.9)
\$20,000-34,999	51.4 (43.6-59.2)	52.8 (45.0-60.4)	42.1 (34.5-50.0)	33.9 (26.8-41.8)
\$35,000-49,999	59.4 (49.8-68.4)	60.4 (50.7-69.4)	30.1 (22.5-39.0)	39.4 (29.8-50.0)
\$50,000-74,999	50.3 (41.5-59.2)	66.1 (56.6-74.5)	37.9 (29.8-46.7)	31.2 (23.7-39.7)
≥ \$75,000	56.6 (47.8-65.0)	73.2 (65.2-79.9)	36.8 (29.2-45.1)	40.1 (32.0-48.7)
Education				
< HS graduate	57.3 (44.9-68.8)	60.4 (48.5-71.1)	39.2 (27.4-52.3)	32.2 (21.4-45.3)
HS graduate	55.6 (48.9-62.1)	51.3 (44.6-58.0)	31.4 (26.0-37.3)	33.5 (27.2-40.4)
Some college	54.7 (48.7-60.7)	58.8 (52.8-64.6)	35.5 (30.2-41.1)	31.2 (26.0-36.9)
College graduate	51.1 (45.5-56.7)	67.8 (62.4-72.8)	41.0 (35.6-46.7)	39.5 (34.1-45.2)
^a Responded “yes” to the question, “Is an exhaust fan that vents to the outside used regularly when cooking in your kitchen?” ^b Responded “yes” to the question, “In your bathroom, do you regularly use an exhaust fan that vents to the outside?” ^c Responded “hot” to the question, “Are your sheets and pillowcases washed in cold, warm, or hot water?” ^d 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, 2011-2013 Combined				
	Dehumidifier Used Regularly in Home^e	No Carpeting in Bedroom^f	Uses Mattress Cover^g	Uses Pillow Cover^h
Total	41.1 (37.5-44.7)	32.1 (28.8-35.6)	31.6 (28.5-34.9)	31.6 (28.4-35.0)
Age in years				
18-34	40.9 (32.6-49.7)	34.3 (26.9-42.5)	20.5 (14.9-27.4)	28.0 (21.0-36.2)
35-64	39.7 (35.5-44.1)	32.4 (28.4-36.7)	36.1 (32.1-40.3)	32.2 (28.4-36.2)
≥ 65	45.8 (40.1-51.6)	25.6 (21.0-30.9)	39.5 (34.1-45.2)	37.5 (32.2-43.1)
Sex				
Male	42.0 (35.8-48.4)	31.0 (25.6-36.9)	25.6 (20.9-31.0)	24.2 (19.5-29.7)
Female	40.6 (36.3-45.0)	32.8 (28.7-37.2)	35.1 (31.2-39.2)	35.9 (31.8-40.2)
Race				
White	42.1 (38.1-46.1)	30.7 (27.0-34.6)	30.9 (27.6-34.5)	32.3 (28.7-36.1)
Black	36.4 (27.4-46.4)	39.5 (30.8-48.9)	34.3 (25.8-43.9)	30.7 (22.5-40.3)
Household income				
< \$20,000	31.2 (24.6-38.6)	38.1 (31.3-45.4)	22.4 (17.1-28.8)	22.2 (16.9-28.6)
\$20,000-34,999	31.7 (25.0-39.2)	25.2 (19.2-32.2)	33.6 (27.0-41.1)	29.4 (23.1-36.6)
\$35,000-49,999	43.6 (34.0-53.8)	39.3 (30.0-49.5)	33.1 (24.3-43.3)	34.2 (25.1-44.8)
\$50,000-74,999	50.6 (41.7-59.4)	22.4 (16.4-29.7)	39.9 (31.6-48.8)	39.8 (31.7-48.6)
≥ \$75,000	45.9 (37.5-54.6)	31.6 (24.1-40.2)	39.3 (31.7-47.4)	36.2 (28.5-44.6)
Education				
< HS graduate	37.4 (26.0-50.4)	28.1 (19.0-39.4)	15.3 (8.8-25.2)	21.2 (13.0-32.8)
HS graduate	38.6 (32.1-45.6)	32.7 (26.7-39.3)	31.2 (25.5-37.5)	29.4 (23.6-35.9)
Some college	42.1 (36.2-48.2)	36.2 (30.5-42.4)	32.3 (27.2-37.9)	33.6 (28.2-39.5)
College graduate	45.0 (39.5-50.6)	27.6 (22.9-32.9)	42.7 (37.2-48.3)	38.2 (33.0-43.8)
^e Responded “yes” to the question, “Is a dehumidifier regularly used to reduce moisture inside your home?” ^f 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 Responded “yes” to the question, “Do you use a mattress cover that is made especially for controlling dust mites?” ^h 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, 2011-2013 Combined	
	Ever Advised to Modify Environment to Improve Asthma^a
Total	46.5 (42.9-50.1)
Age in years	
18-34	45.1 (36.8-53.6)
35-64	51.0 (46.8-55.2)
≥ 65	35.4 (30.4-40.7)
Sex	
Male	42.0 (36.0-48.3)
Female	49.1 (44.7-53.5)
Race	
White	46.0 (42.0-50.1)
Black	49.6 (40.4-59.0)
Household income	
< \$20,000	41.2 (34.4-48.4)
\$20,000-34,999	46.1 (38.4-54.0)
\$35,000-49,999	54.4 (44.5-63.9)
\$50,000-74,999	51.5 (42.6-60.3)
≥ \$75,000	47.3 (38.8-55.8)
Education	
< HS graduate	35.4 (24.4-48.1)
HS graduate	44.9 (38.2-51.9)
Some college	48.3 (42.3-54.2)
College graduate	53.4 (47.7-58.9)
^a 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, 2011-2013 Combined			
	None	1-5 Days	≥ 6 Days
Total	62.4 (58.7-66.0)	20.7 (17.7-24.0)	16.9 (14.2-20.0)
Age in years			
18-34	62.0 (53.1-70.1)	24.2 (17.4-32.4)	13.8 (8.5-21.7)
35-64	60.1 (55.6-64.4)	21.4 (17.8-25.5)	18.5 (15.2-22.5)
≥ 65	71.4 (66.2-76.1)	11.6 (8.6-15.5)	17.0 (13.2-21.5)
Sex			
Male	67.2 (60.5-73.2)	18.5 (13.3-25.1)	14.4 (10.6-19.3)
Female	59.6 (55.1-64.0)	21.9 (18.5-25.9)	18.4 (14.9-22.5)
Race			
White	66.5 (62.3-70.4)	19.8 (16.5-23.6)	13.7 (11.1-16.9)
Black	44.3 (35.2-53.8)	23.1 (15.5-32.8)	32.7 (23.8-42.9)
Household income			
< \$20,000	46.8 (39.7-54.0)	19.3 (14.3-25.6)	33.9 (27.1-41.4)
\$20,000-34,999	64.4 (56.3-71.7)	23.2 (16.6-31.4)	12.4 (8.7-17.4)
\$35,000-49,999	61.3 (50.5-71.0)	23.8 (15.9-34.1)	14.9 (8.1-25.7)
\$50,000-74,999	66.0 (56.4-74.4)	19.0 (12.7-27.4)	15.0 (8.9-24.2)
≥ \$75,000	73.5 (63.8-81.4)	19.1 (12.3-28.5)	7.4 (3.4-15.4) [~]
Education			
< HS graduate	44.0 (32.0-56.7)	22.1 (12.5-35.9)	33.9 (22.9-47.0)
HS graduate	62.3 (55.5-68.6)	19.3 (14.3-25.7)	18.4 (14.0-23.8)
Some college	61.7 (55.5-67.5)	24.4 (19.4-30.1)	14.0 (10.1-19.1)
College graduate	76.0 (70.8-80.4)	15.3 (11.5-20.1)	8.8 (6.3-12.0)
^a Response 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, 2011-2013 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	58.4 (54.0-62.7)	24.7 (21.1-28.7)	59.6 (55.2-63.8)
Age in years			
18-34	44.2 (34.4-54.3)	17.0 (10.2-26.8)	46.0 (36.2-56.1)
35-64	66.5 (61.7-71.1)	28.7 (24.1-33.7)	67.1 (62.3-71.6)
≥ 65	61.4 (54.7-67.7)	27.6 (21.6-34.6)	63.0 (56.4-69.2)
Sex			
Male	67.4 (60.1-74.0)	31.1 (24.3-38.8)	69.7 (62.7-76.0)
Female	53.4 (48.0-58.7)	21.0 (17.1-25.6)	53.8 (48.4-59.1)
Race			
White	56.1 (51.0-61.0)	22.2 (18.5-26.3)	57.4 (52.4-62.3)
Black	66.4 (55.6-75.8)	36.0 (25.1-48.6)	66.7 (55.9-75.9)
Household income			
< \$20,000	66.7 (57.9-74.6)	32.2 (24.6-40.9)	66.9 (58.1-74.7)
\$20,000-34,999	62.1 (52.6-70.6)	24.1 (16.8-33.4)	62.8 (53.4-71.4)
\$35,000-49,999	62.6 (50.2-73.6)	28.1 (17.7-41.4)	63.3 (50.9-74.2)
\$50,000-74,999	65.0 (54.9-73.9)	16.4 (10.8-24.0)	66.6 (56.5-75.3)
≥ \$75,000	45.6 (36.2-57.3)	20.6 (13.1-30.9)	47.2 (36.8-57.8)
Education			
< HS graduate	55.4 (40.6-69.4)	29.2 (17.1-45.2)	59.3 (44.2-72.9)
HS graduate	59.0 (50.7-66.8)	23.9 (18.2-30.8)	59.2 (51.0-67.0)
Some college	62.5 (55.5-69.0)	25.4 (19.8-32.0)	63.1 (56.1-69.6)
College graduate	53.2 (46.5-59.8)	21.0 (16.4-26.5)	54.1 (47.5-60.7)
^a 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 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 Responded “yes” to at least one of the above 6 questions (a and b).			