Prevalence of Asthma-Related Health Conditions Among Michigan Children with Current Asthma
Estimates from the Michigan Asthma Call-Back Survey
2014-2018 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 two 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 children aged less than 18 years from the 2014-2018 Michigan Asthma Call-Back Surveys combined. The total 5-year sample size of completed child interviews was 478, with 91 from 2014, 90 from 2015, 110 from 2016, 83 from 2017, and 104 from 2018. 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 children with current asthma (n=324). 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 {child's name} has asthma?" and "Does {child's name} still have asthma?"

Table 1. Prevalence of Asthma Symptoms, Among Children Aged 0-17 Years with Current Asthma Michigan Asthma Call-Back Survey, 2014-2018 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	**324**	**15.1 (10.9-20.4)**	**19.3 (14.2-25.6)**	**37.9 (31.0-45.3)**
Age				
0-9 years	100	17.1 (10.3-27.1)	23.7 (15.0-35.5)	40.3 (29.6-52.1)
10-17 years	217	13.7 (8.9-20.5)	15.6 (10.3-22.8)	35.4 (26.9-44.9)
Gender				
Male	191	15.3 (10.3-22.3)	19.9 (13.5-28.5)	39.6 (30.9-49.0)
Female	132	14.9 (8.6-24.5)	18.4 (11.6-28.0)	35.5 (25.0-47.5)
Race				
White	236	14.2 (9.6-20.5)	13.7 (9.3-19.8)	33.4 (26.3-41.3)
Black	56	15.3 (7.3-29.3) ˜	30.9 (18.1-47.6)	53.0 (37.0-68.4)
Household Income				
< $50,000	114	22.0 (14.1-32.8)	32.6 (23.1-43.8)	47.7 (36.4-59.2)
≥ $50,000	191	10.4 (6.3-16.7)	9.6 (5.8-15.4)	27.4 (20.2-36.1)
Education of BRFS respondent				
≤ HS graduate	78	22.5 (12.9-36.3)	27.4 (16.3-42.2)	47.5 (33.1-62.3)
Some college	104	14.1 (8.3-22.9)	20.2 (12.3-31.4)	43.5 (32.4-55.4)
College graduate	142	11.2 (6.2-19.4)	13.2 (7.5-22.4)	27.5 (19.1-37.8)

[a] Sample sizes (unweighted) for demographic subpopulations. Cell sample sizes for prevalence estimates will vary because of missing values.
[b] Reported ≥ 9 days to the following question, "During the past 30 days, on how many days did {child's name} 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 {child's name} 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 {child's name} limited {his/her} usual activities due to asthma not at all, a little, a moderate amount, or a lot?"
˜ This estimate should be used with caution due to its low reliability and precision (relative standard error 31%-50%).

Table 2. Percent Distribution of Number of Asthma Symptom-Free Days[a] in Past 2 Weeks, Among Children Aged 0-17 Years with Current Asthma Michigan Asthma Call-Back Survey, 2014-2018 Combined				
	None	**1-6 Days**	**7-13 Days**	**14 Days**
Total	**10.3 (6.8-15.4)**	**10.9 (6.9-16.7)**	**23.4 (18.2-29.6)**	**55.4 (48.2-62.4)**
Age				
0-9 years	10.6 (5.3-20.0)	12.2 (6.0-23.3) ˜	22.8 (14.9-33.3)	54.4 (42.7-65.6)
10-17 years	10.6 (5.7-18.6) ˜	9.7 (5.3-17.1)	23.2 (16.5-31.5)	56.6 (47.3-65.3)
Gender				
Male	9.7 (5.2-17.6) ˜	12.6 (7.3-20.7)	23.2 (16.7-31.2)	54.5 (45.3-63.4)
Female	11.6 (6.3-20.3)	8.0 (3.4-17.7) ˜	24.2 (15.8-35.2)	56.2 (44.7-67.1)
Race				
White	9.2 (5.7-14.5)	8.6 (5.0-14.5)	25.3 (19.2-32.5)	56.9 (48.9-64.5)
Black	--†	17.7 (7.9-35.0) ˜	22.8 (11.7-39.8) ˜	47.6 (32.2-63.4)
Household Income				
< $50,000	11.7 (6.0-21.6)	15.6 (8.7-26.4)	23.7 (15.5-34.6)	49.0 (37.9-60.2)
≥ $50,000	6.1 (3.3-10.7)	4.4 (2.1-9.1) ˜	26.0 (18.8-34.8)	63.5 (54.4-71.7)
Education of BRFS respondent				
≤ HS graduate	15.0 (6.3-31.6)	19.8 (9.9-35.6) ˜	26.9 (15.6-42.2)	38.4 (25.9-52.6)
Some college	12.2 (6.6-21.5)	6.3 (2.8-13.6) ˜	16.9 (10.4-26.2)	64.6 (53.4-74.5)
College graduate	5.9 (2.6-13.0)	8.5 (3.9-17.4) ˜	26.0 (18.2-35.5)	59.7 (49.1-69.4)

[a] Response to the following question, "During the past two weeks, on how many days was {child's name} completely symptom-free, that is no coughing, wheezing, or other symptoms of asthma?"

† 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 (relative standard error 31%-50%).

Table 3. Prevalence of Asthma-Related Health Care Utilization, Among Children Aged 0-17 Years with Current Asthma Michigan Asthma Call-Back Survey, 2014-2018 Combined					
	ER/Urgent Care Visits for Asthma[a]		≥ 1 Hospital Stays for Asthma in Past 12 Months[b]	≥ 2 Routine Asthma Care Visits in Past 12 Months[c]	Received Flu Vaccine in Past 12 Months[d]
	≥ 1 Visit	≥ 2 Visits			
Total	**18.4 (13.3-24.9)**	**10.1 (6.3-16.0)**	**2.9 (1.3-6.1) ˜**	**39.9 (33.2-47.1)**	**56.7 (49.8-63.3)**
Age					
0-9 years	28.1 (18.6-40.0)	15.5 (8.2-27.2)	5.4 (2.2-12.9) ˜	40.3 (33.5-47.6)	58.2 (46.2-69.2)
10-17 years	11.3 (6.8-18.0)	6.4 (3.3-12.1) ˜	--†	55.2 (43.8-66.0)	55.8 (47.2-64.0)
Gender				29.2 (22.4-37.1)	
Male	23.0 (15.9-32.0)	12.9 (7.5-21.4)	3.4 (1.3-8.3) ˜		53.9 (45.1-62.4)
Female	10.5 (5.9-18.0)	5.4 (2.3-12.2) ˜	--†	45.5 (36.7-54.5)	62.9 (52.3-72.4)
Race				30.6 (21.4-41.6)	
White	13.7 (8.7-20.8)	7.2 (3.8-13.3) ˜	--†		62.1 (54.2-69.5)
Black	32.3 (19.5-48.3)	19.9 (9.8-36.3) ˜	--†	37.9 (30.6-45.8)	44.3 (29.4-60.4)
Household Income					
< $50,000	27.0 (18.0-38.4)	13.0 (6.9-23.0) ˜	6.8 (2.9-14.7) ˜	44.7 (34.0-56.0)	56.4 (45.0-67.2)
≥ $50,000	10.5 (6.0-17.8)	6.5 (3.0-13.7) ˜	--†	36.1 (27.7-45.4)	63.0 (54.0-71.1)
Education of BRFS respondent					
≤ HS graduate	16.4 (8.1-30.3) ˜	12.2 (5.0-26.8) ˜	--†	42.7 (29.4-57.1)	52.0 (37.1-66.6)
Some college	23.7 (14.7-36.0)	11.7 (5.4-23.4) ˜	7.5 (3.1-17.0) ˜	34.4 (24.3-46.2)	49.7 (38.2-61.1)
College graduate	15.8 (9.3-25.4)	7.7 (3.4-16.6) ˜	--ᵉ	42.3 (32.2-53.0)	64.6 (54.4-73.6)

[a] Response to the question, "During the past 12 months, how many times did {child's name} visit an emergency room or urgent care center because of {his/her} asthma?"

[b] Responded one or more times to the question, "During the past 12 months, how many different times did {he/she} stay in any hospital overnight or longer because of {his/her} asthma?"

[c] Reported ≥ 2 times to the question, "During the past 12 months, how many times did {child's name} see a doctor or other health professional for a routine checkup for {his/her} 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, did {child's name} have a flu shot?" or "A flu vaccine that is sprayed in the nose is called FluMist. During the past 12 months, did {child's name} have a flu vaccine that was sprayed in {his/her} nose?"

[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 (relative standard error 31%-50%).

Table 4. Prevalence of Any Asthma Controller Medication Use in Past 3 Months, Among Children Aged 0-17 Years with Current Asthma Michigan Asthma Call-Back Survey, 2014-2018 Combined	
	Used ≥ 1 Asthma Controller Medication in Past 3 Months[a]
Total	**44.4 (37.6-51.5)**
Age	
0-9 years	57.6 (46.4-68.1)
10-17 years	35.2 (27.9-43.2)
Gender	
Male	47.7 (38.8-56.8)
Female	39.4 (29.4-50.3)
Race	
White	48.7 (40.8-56.6)
Black	39.1 (25.1-55.2)
Household Income	
< $50,000	42.9 (32.1-54.4)
≥ $50,000	44.5 (35.8-53.6)
Education of BRFS respondent	
≤ HS graduate	44.2 (30.8-58.4)
Some college	45.2 (34.2-56.7)
College graduate	44.0 (34.1-54.5)
[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.	

	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	**3.7 (1.6-8.4) ˜**	**--†**	**5.8 (3.2-10.0)**	**9.1 (5.6-14.5)**
Age				
0-9 years	--†	--†	8.6 (3.8-18.2) ˜	12.5 (6.1-24.1) ˜
10-17 years	2.4 (0.9-6.4) ˜	2.9 (1.1-7.2) ˜	3.9 (1.8-7.9) ˜	7.0 (4.0-11.9)
Gender				
Male	--†	--†	6.1 (2.9-12.4) ˜	11.0 (6.1-18.9)
Female	--†	--†	5.2 (2.2-11.8) ˜	6.0 (2.8-12.7) ˜
Race				
White	2.4 (0.9-6.4) ˜	--†	4.2 (2.1-8.2) ˜	5.9 (3.3-10.4)
Black	--†	--†	--†	15.7 (6.7-32.8) ˜
Household Income				
< $50,000	--†	--†	9.2 (4.6-17.8) ˜	11.9 (6.5-20.7)
≥ $50,000	--†	--†	--†	5.6 (2.5-12.0) ˜
Education of BRFS respondent				
≤ HS graduate	--†	--†	--†	11.2 (4.1-27.1) ˜
Some college	4.8 (1.7-12.5)	--†	11.5 (5.5-22.3) ˜	13.8 (7.2-24.7) ˜
College graduate	--†	--†	--†	4.3 (1.9-9.4) ˜

Table 5. Prevalence of Experiencing Cost Barriers to Asthma Care in Past 12 Months, Among Children Aged 0-17 Years with Current Asthma
Michigan Asthma Call-Back Survey, 2014-2018 Combined

[a] Responded "yes" to the question, "Was there a time in the past 12 months when {child's name} needed to see {his/her} primary care doctor for asthma but could not because of the cost?"

[b] Responded "yes" to the question, "Was there a time in the past 12 months when you were referred to a specialist for {his/her} asthma care but could not go because of the cost?"

[c] Responded "yes" to the question, "Was there a time in the past 12 months when {he/she} needed medication for {his/her} asthma but you could not buy it 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 (relative standard error 31%-50%).

	Ever Taught to Recognize Early Signs of Asthma Episode[a]	Ever Taught What to Do During Asthma Episode[b]	Ever Taught How to Use a Peak Flow Meter[c]
Table 6. Prevalence of Indicators of Knowledge Related to Asthma Management, Among Children Aged 0-17 Years with Current Asthma **Michigan Asthma Call-Back Survey, 2014-2018 Combined**			
Total	**82.2 (76.6-86.7)**	**89.4 (84.7-92.8)**	**37.9 (31.4-44.8)**
Age			
0-9 years	78.0 (66.8-86.2)	90.1 (81.8-94.9) ˜	21.8 (13.5-33.2)
10-17 years	84.7 (78.2-89.6)	88.5 (81.8-92.9)	48.3 (39.6-57.0)
Gender			
Male	84.3 (76.8-89.8)	90.7 (84.6-94.6)	40.7 (32.5-49.4)
Female	78.2 (68.2-85.8)	87.0 (78.2-92.5)	31.9 (22.8-42.7)
Race			
White	84.1 (77.4-89.1)	90.6 (85.2-94.2)	36.9 (29.8-44.6)
Black	81.2 (66.0-90.6) ˜	--[†]	42.9 (27.3-60.2)
Household Income			
< $50,000	79.6 (68.2-87.6)	93.3 (85.5-97.1) ˜	39.8 (29.7-50.8)
≥ $50,000	83.6 (76.2-89.0)	87.2 (79.8-92.1)	34.7 (26.8-43.6)
Education of BRFS respondent			
≤ HS graduate	85.9 (73.5-93.1) ˜	88.2 (77.4-94.2) ˜	47.8 (33.4-62.5)
Some college	76.6 (64.4-85.5)	89.0 (80.2-94.2) ˜	35.8 (25.4-47.6)
College graduate	84.1 (75.5-90.1)	90.6 (82.2-95.2) ˜	33.0 (24.6-42.7)

[a] Responded "yes" to the question, "Has a doctor or other health professional ever taught you or {child's name} how 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 {his/her} daily medications?"

[†] 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 (relative standard error 31%-50%).

Table 6 (continued). Prevalence of Receiving Education Related to Asthma Management, Among Children Aged 0-17 Years with Current Asthma Michigan Asthma Call-Back Survey, 2014-2018 Combined		
	Ever Received Asthma Action Plan[d]	**Ever Taken Asthma Management Class**[e]	**Received ≥ 3 Types of Asthma Education**[f]
Total	**53.7 (46.7-60.6)**	**7.0 (3.9-12.1)**	**55.9 (49.1-62.6)**
Age			
0-9 years	45.9 (34.8-57.5)	3.5 (1.4-8.7) ˜	45.1 (34.0-56.7)
10-17 years	60.2 (51.6-68.2)	9.9 (5.0-18.5) ˜	62.3 (53.6-70.2)
Gender			
Male	58.1 (49.1-66.6)	8.6 (4.3-16.5) ˜	57.6 (48.9-65.8)
Female	46.8 (35.7-58.1)	4.1 (1.8-9.2) ˜	52.3 (41.0-63.5)
Race			
White	52.3 (44.3-60.2)	5.0 (2.8-8.8) ˜	53.9 (45.9-61.7)
Black	55.0 (38.8-70.2)	13.3 (4.9-31.5˜)	59.8 (43.6-74.1)
Household Income			
< $50,000	49.0 (38.4-59.7)	8.2 (4.1-16.0) ˜	49.9 (39.3-60.5)
≥ $50,000	59.6 (50.6-68.1)	4.2 (2.2-8.0) ˜	60.1 (51.1-68.6)
Education of BRFS respondent			
≤ HS graduate	52.3 (38.0-66.3)	--[†]	62.0 (47.6-74.5)
Some college	56.2 (44.7-67.1)	5.7 (2.2-13.8) ˜	50.6 (39.2-61.9)
College graduate	52.8 (42.3-63.0)	6.3 (3.1-12.5) ˜	56.1 (45.5-66.1)

[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 or {child's name} an asthma action plan?"
[e] Responded "yes" to the question, "Have you or {child's name} ever taken a course or class on how to manage {his/her} asthma?"
[f] Responded "yes" to ≥ 3 of the 5 questions above (b-f).
[†] 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 (relative standard error 31%-50%).

Table 7. Prevalence of Asthma Triggers in Home Environment, Among Children Aged 0-17 Years with Current Asthma Michigan Asthma Call-Back Survey, 2014-2018 Combined				
	Cigarettes Smoked in Home[a]	Mold Seen/Smelled in Home[b]	Saw Cockroaches in Home[c]	Saw Mice/Rat in Home[d]
Total	**8.8 (5.5-13.8)**	**6.2 (3.7-10.4)**	**--[e]**	**4.2 (2.1-8.1)˜**
Age				
0-9 years	12.5 (6.4-23.2) ˜	9.7 (4.8-18.5) ˜	--[e]	--[†]
10-17 years	6.4 (3.5-11.2)	3.9 (1.8-8.2) ˜	--[e]	5.0 (2.2-11.3)
Gender				
Male	6.9 (3.3-14.1) ˜	7.2 (3.7-13.3) ˜	--[e]	2.7 (1.1-6.7)
Female	12.3 (6.8-21.1)	4.7 (2.1-10.2) ˜	--[e]	6.9 (2.7-16.6)
Race				
White	3.9 (2.0-7.6) ˜	5.2 (2.8-9.4) ˜	--[e]	3.8 (1.9-7.2)
Black	23.3 (12.5-39.3)	--[†]	--[e]	--[†]
Household Income				
< $50,000	20.0 (12.1-31.0)	5.9 (2.6-13.1) ˜	--[e]	7.3 (2.9-17.1)
≥ $50,000	--[†]	6.5 (3.2-13.0) ˜	--[e]	2.6 (1.1-5.8)
Education of BRFS respondent				
≤ HS graduate	20.6 (11.2-34.7)	--[†]	--[e]	--[†]
Some college	9.3 (4.1-19.8) ˜	9.4 (4.2-19.8) ˜	--[e]	--[†]
College graduate	--[†]	5.5 (2.5-11.7) ˜	--[e]	5.6 (2.0-14.4)

[a] Responded "yes" to the question, "In the past week, has anyone smoked inside {his/her} home?"

[b] Responded "yes" to the question, "In the past 30 days, has anyone seen or smelled mold or a musty odor inside {his/her} home? Do not include mold on food."

[c] Responded "yes" to the question, "In the past 30 days, has anyone seen cockroaches inside {his/her} home?"

[d] Responded "yes" to the question, "In the past 30 days, has anyone seen mice or rats inside {child's name} 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 (relative standard error 31%-50%).

Table 7 (continued). Prevalence of Asthma Triggers in Home Environment Among Children Aged 0-17 Years with Current Asthma Michigan Asthma Call-Back Surveys, 2014-2018 Combined					
	Inside Pets[f]	Pets Allowed in Bedroom[g]	Wood Burning Stove/Fireplace Used[h]	Unvented Gas Logs, Stoves, or Fireplaces Used[i]	Gas Used for Cooking[j]
Total	**61.7 (54.4-68.5)**	**40.7 (34.3-47.5)**	**13.0 (9.0-18.3)**	**7.5 (4.4-12.5)**	**57.9 (50.8-64.7)**
Age					
0-9 years	52.8 (41.1-64.3)	32.9 (23.3-44.3)	10.8 (5.2-21.0) ˜	--†	66.2 (54.6-76.1)
10-17 years	67.7 (58.3-75.9)	45.9 (37.6-54.3)	15.2 (10.2-22.1)	8.1 (4.9-13.3)	50.9 (42.2-59.6)
Gender					
Male	58.8 (49.8-67.3)	36.2 (28.7-44.3)	12.4 (7.8-19.2)	7.3 (3.4-15.1) ˜	55.2 (46.1-64.0)
Female	67.8 (56.0-77.7)	49.6 (38.7-60.5)	14.2 (7.8-24.4)	7.8 (4.0-14.6) ˜	62.1 (50.8-72.2)
Race					
White	77.6 (69.7-83.9)	51.5 (43.7-59.3)	15.6 (10.6-22.3)	9.6 (5.3-16.9)	62.1 (54.3-69.4)
Black	26.8 (15.5-42.2)	14.6 (6.8-28.6) ˜	11.1 (4.2-25.9) ˜	--†	53.4 (37.2-68.9)
Household Income					
< $50,000	57.6 (46.3-68.2)	37.3 (27.5-48.2)	11.3 (5.9-20.6) ˜	3.5 (1.4-8.7) ˜	67.7 (56.7-77.1)
≥ $50,000	65.6 (56.0-74.1)	44.7 (36.4-53.3)	15.7 (10.2-23.6)	9.7 (4.9-18.5) ˜	51.4 (42.3-60.4)
Education of BRFS respondent					
≤ HS graduate	57.3 (41.6-71.6)	31.7 (20.8-45.0)	12.8 (6.4-24.2) ˜	7.9 (3.1-18.7) ˜	62.0 (46.0-75.8)
Some college	64.6 (52.6-75.0)	42.0 (31.5-53.4)	10.5 (5.0-20.6) ˜	7.0 (3.3-14.2) ˜	58.5 (47.2-69.0)
College graduate	62.3 (51.6-72.0)	45.6 (35.7-55.9)	14.9 (8.8-24.3)	7.5 (2.9-18.4) ˜	54.9 (44.6-64.7)

[f] Responded "yes" to the question, "Does the {child's name} home have pets, such as dogs, cats, hamsters, birds, or other feathered or furry pets that spend time indoors?"

[g] Responded "yes" to the question, "Is the pet allowed in {his/her} bedroom?" (Among all respondents).

[h] Responded "yes" to the question, "Is a wood burning fireplace or wood burning stove used in {child's name} home?"

[i] Responded "yes" to the question, "Are unvented gas logs, unvented gas fireplaces, or unvented gas stoves used in {his/her} home?"

[j] Responded "yes" to the question, "Is gas used for cooking in {his/her} home?"

† 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 (relative standard error 31%-50%).

	Kitchen Fan Used When Cooking[a]	Bathroom Exhaust Fan Used[b]	Sheets Washed in Hot Water[c]	Air Cleaner Used in Home[d]
Table 8. Prevalence of Asthma Trigger Avoidance Behaviors in Home Environment, Among Children Aged 0-17 Years with Current Asthma **Michigan Asthma Call-Back Survey, 2014-2018 Combined**				
Total	**57.8 (50.6-64.6)**	**54.7 (47.6-61.7)**	**38.5 (31.8-45.6)**	**33.9 (27.8-40.5)**
Age				
0-9 years	54.5 (42.5-66.0)	41.6 (30.8-53.3)	37.7 (27.1-49.6)	29.2 (20.2-40.1)
10-17 years	59.5 (51.1-67.4)	65.5 (56.9-73.2)	40.1 (31.8-49.1)	36.7 (28.7-45.4)
Gender				
Male	60.1 (51.0-68.5)	54.9 (45.8-63.7)	38.9 (30.5-47.9)	36.6 (29.0-44.9)
Female	54.6 (43.8-64.9)	55.4 (44.4-65.9)	38.4 (28.3-49.6)	27.8 (19.0-38.8)
Race				
White	57.6 (49.4-65.4)	67.0 (59.1-74.1)	39.2 (31.8-47.2)	35.5 (28.3-43.4)
Black	55.9 (40.0-70.7)	26.8 (14.7-43.8)	37.7 (23.1-55.0)	28.6 (16.0-45.6)
Household Income				
< $50,000	61.6 (50.0-72.0)	46.0 (35.5-56.9)	33.6 (23.8-45.1)	31.1 (22.0-42.0)
≥ $50,000	53.7 (44.6-62.6)	63.2 (53.8-71.7)	39.3 (31.0-48.1)	38.2 (29.7-47.4)
Education of BRFS respondent				
≤ HS graduate	69.9 (55.3-81.3)	39.3 (26.8-53.4)	41.9 (28.0-57.3)	31.5 (19.9-46.0)
Some college	50.0 (38.6-61.4)	53.9 (42.2-65.2)	32.5 (22.7-44.2)	34.3 (24.6-45.6)
College graduate	55.8 (45.6-65.4)	65.5 (54.8-74.8)	40.7 (30.8-51.4)	35.1 (26.0-45.3)

[a] Responded "yes" to the question, "Is an exhaust fan that vents to the outside used regularly when cooking in the kitchen in {his/her} home?"

[b] Responded "yes" to the question, "In {child's name} bathroom, does {he/she} regularly use an exhaust fan that vents to the outside?"

[c] Responded "hot" to the question, "Are {his/her} 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 {child's name} home?"

	Dehumidifier Used Regularly in Home[e]	No Carpeting in Child's Bedroom[f]	Child Uses Mattress Cover[g]	Child Uses Pillow Cover[h]
Table 8 (continued). Prevalence of Asthma Trigger Avoidance Behaviors in Home Environment, Among Children Aged 0-17 Years with Current Asthma Michigan Asthma Call-Back Survey, 2014-2018 Combined				
Total	**45.2 (38.4-52.2)**	**63.3 (56.3-69.9)**	**44.3 (37.7-51.2)**	**36.3 (30.1-43.0)**
Age				
0-9 years	39.5 (29.0-51.0)	65.3 (54.0-75.1)	40.2 (29.6-51.9)	35.6 (25.2-47.5)
10-17 years	49.0 (40.4-57.7)	61.9 (53.1-70.0)	48.4 (39.9-57.0)	37.5 (29.8-45.9)
Gender				
Male	51.0 (42.0-60.0)	61.6 (52.5-70.0)	43.3 (34.8-52.2)	35.5 (27.8-44.2)
Female	33.9 (24.9-44.2)	65.7 (55.2-74.9)	47.0 (36.3-58.1)	38.4 (28.4-49.6)
Race				
White	47.2 (39.4-55.2)	66.8 (59.0-73.9)	46.4 (38.7-54.4)	42.0 (34.4-50.1)
Black	38.7 (24.4-55.3)	56.1 (40.0-71.0)	35.8 (21.9-52.6)	23.5 (13.0-38.7)
Household Income				
< $50,000	32.3 (22.7-43.8)	61.6 (50.5-71.6)	37.8 (28.0-48.8)	30.9 (22.1-41.2)
≥ $50,000	53.2 (44.4-61.8)	64.4 (55.1-72.7)	49.4 (40.8-58.1)	43.3 (34.8-52.2)
Education of BRFS respondent				
≤ HS graduate	30.4 (18.9-45.0)	50.6 (36.4-64.6)	44.6 (31.0-59.0)	38.5 (25.9-52.9)
Some college	47.0 (35.7-58.7)	58.7 (46.8-69.6)	43.5 (32.7-55.0)	33.7 (23.8-45.3)
College graduate	53.4 (42.9-63.7)	75.0 (66.2-82.2)	44.8 (34.8-55.3)	36.9 (27.5-47.4)

[e] Responded "yes" to the question, "Is a dehumidifier regularly used to reduce moisture inside {his/her} home?"
[f] Responded "no" to the question, "Does {child's name} have carpeting or rugs in {his/her} bedroom? This does not include throw rugs small enough to be laundered."
[g] Responded "yes" to the question, "Does {he/she} use a mattress cover that is made especially for controlling dust mites?"
[h] Responded "yes" to the question, "Does {child's name} use a pillow cover that is made especially for controlling dust mites?"

Table 9. Prevalence of Ever Being Advised to Modify Child's Environment to Improve Asthma, Among Children Aged 0-17 Years with Current Asthma Michigan Asthma Call-Back Survey, 2014-2018 Combined	
	Ever Advised to Modify Environment to Improve Asthma[a]
Total	**39.2 (32.4-46.5)**
Age	
0-9 years	39.0 (28.1-51.2)
10-17 years	40.4 (32.4-49.0)
Gender	
Male	43.9 (35.0-53.2)
Female	31.5 (22.6-42.0)
Race	
White	39.9 (32.2-48.1)
Black	42.6 (27.7-59.0)
Household Income	
< $50,000	34.5 (24.9-45.4)
≥ $50,000	41.0 (32.3-50.3)
Education of BRFS respondent	
≤ HS graduate	45.6 (31.9-60.0)
Some college	37.1 (26.6-48.9)
College graduate	36.7 (27.1-47.4)
[a] Reported "yes" to the question, "Has a health professional ever advised you to change things in {his/her} home, school, or work to improve his/her asthma?"	

	n[b]	None	1-5 Days	≥6 Days
Table 10. Percent Distribution of Number School Days Missed Due to Asthma,[a] Among Children in Grades K-12 with Current Asthma **Michigan Asthma Call-Back Survey, 2014-2018 Combined**				
Total	305	53.2 (46.0-60.3)	35.0 (28.3-42.4)	11.8 (8.1-16.8)
Age				
0-9 years	87	39.3 (28.2-51.6)	46.4 (34.5-58.7)	14.3 (8.1-24.1)
10-17 years	212	63.5 (54.5-71.7)	26.4 (19.1-35.2)	10.1 (6.1-16.3)
Gender				
Male	180	48.1 (39.3-57.1)	37.5 (29.0-46.8)	14.4 (9.4-21.4)
Female	124	63.0 (51.1-73.5)	29.6 (20.0-41.4)	7.4 (3.4-15.3) ˜
Race				
White	226	58.3 (49.8-66.3)	30.2 (22.8-38.7)	11.5 (7.5-17.4)
Black	49	41.6 (26.1-59.1)	47.7 (31.2-64.7)	10.7 (4.3-24.0) ˜
Household Income				
< $50,000	102	51.9 (40.0-63.6)	28.9 (19.5-40.5)	19.2 (11.4-30.4)
≥ $50,000	185	55.4 (45.9-64.5)	37.4 (28.6-47.2)	7.2 (4.1-12.4)
Education of BRFS respondent				
≤ HS graduate	70	47.4 (32.5-62.8)	37.4 (23.4-53.9)	15.2 (7.5-28.2) ˜
Some college	96	60.6 (48.0-71.9)	27.1 (17.4-39.7)	12.3 (6.7-21.6)
College graduate	139	51.7 (41.2-62.1)	39.0 (29.1-50.0)	9.3 (4.8-17.1) ˜

[a] Response to the following question, "During the past 12 months, about how many days of school did {child's name} miss because of {his/her} asthma?"
[b] Sample size (unweighted) for demographic subgroups.
˜ This estimate should be used with caution due to its low reliability and precision (relative standard error 31%-50%).

	Asthma Action Plan on File at School[a]	School Allows Asthma Medications[b]	Pets in Child's Classroom[c]	Mold Problems in Child's School[d]
Table 11. Prevalence of School-Related Asthma Indicators, Among Children in Grades K-12 with Current Asthma Michigan Asthma Call-Back Survey, 2014-2018 Combined				
Total	**38.1 (31.6-45.2)**	**63.9 (56.6-70.6)**	**2.3 (1.0-5.0)** ~	**--†**
Age				
0-9 years	38.6 (27.4-51.2)	48.2 (35.3-61.4)	--†	--e
10-17 years	37.8 (29.9-46.4)	73.2 (64.8-80.3)	--†	--†
Gender				
Male	44.6 (35.7-53.8)	63.2 (53.9-71.7)	2.6 (1.0-6.7) ~	--†
Female	27.8 (19.6-37.8)	64.2 (52.1-74.8)	--†	--e
Race				
White	38.7 (30.9-47.1)	63.3 (54.6-71.1)	--†	--†
Black	34.0 (20.8-50.4)	74.2 (57.6-85.9)	--†	--e
Household Income				
< $50,000	46.1 (34.6-58.1)	58.2 (45.7-69.7)	--†	--e
≥ $50,000	35.2 (27.2-44.1)	64.7 (55.5-73.0)	--†	--†
Education of BRFS respondent				
≤ HS graduate	46.8 (31.7-62.6)	65.5 (49.8-78.3)	--†	--e
Some college	35.6 (25.0-47.9)	60.0 (46.9-71.9)	--†	--†
College graduate	34.7 (25.6-44.9)	65.3 (54.7-74.5)	--†	--e

[a] Responded "yes" to the question, "Does {child's name} have a written asthma action plan or asthma management plan on file at school?"
[b] Responded "yes" to the question, "Does the school {he/she} goes to allow children with asthma to carry their medication with them while at school?"
[c] Responded "yes" to the question, "Are there any pets such as dogs, cats, hamsters, birds or other feathered or furry pets in {his/her} classroom?"
[d] Responded "yes" to the question, "Are you aware of any mold problems in {child's name} school?"
[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 (relative standard error 31%-50%).