

**Prevalence of Asthma-Related Health Conditions Among Michigan Children with Current Asthma  
Estimates from the Michigan Asthma Call-Back Survey  
2012-2016 Combined**

**Standard Tables**

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January 2020*

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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 2012-2016 Michigan Asthma Call-Back Surveys combined. The total 5-year sample size of completed child interviews was 578, with 147 from 2012, 140 from 2013, 91 from 2014, 90 from 2015, and 110 from 2016. 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=405). 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?”

<b>Table 1. Prevalence of Asthma Symptoms, Among Children Aged 0-17 Years with Current Asthma Michigan Asthma Call-Back Survey, 2012-2016 Combined</b>				
	<b>n<sup>a</sup></b>	<b>Had Asthma Symptoms on ≥ 9 Days in Past Month<sup>b</sup></b>	<b>Difficulty Sleeping Due to Asthma Symptoms on ≥ 2 Days in Past Month<sup>c</sup></b>	<b>Usual Activities Limited at Least a Little During Past 12 Months<sup>d</sup></b>
<b>Total</b>	<b>405</b>	<b>14.6 (10.7-19.6)</b>	<b>18.9 (14.5-24.3)</b>	<b>37.6 (31.5-44.0)</b>
<b>Age</b>				
0-9 years	124	14.9 (8.8-24.2)	20.3 (13.0-30.3)	34.1 (24.7-44.8)
10-17 years	273	13.9 (9.6-19.8)	17.0 (12.0-23.5)	39.4 (31.9-47.5)
<b>Gender</b>				
Male	244	15.5 (10.6-22.2)	20.8 (15.0-28.2)	43.3 (35.3-51.7)
Female	160	13.2 (7.8-21.6)	15.9 (10.0-24.1)	28.1 (20.1-37.8)
<b>Race</b>				
White	308	12.3 (8.6-17.2)	14.5 (10.4-20.1)	31.8 (25.7-38.5)
Black	56	11.6 (4.5-26.9) <sup>~</sup>	22.1 (11.1-39.0) <sup>~</sup>	51.0 (34.3-67.5)
<b>Household Income</b>				
< \$50,000	149	19.6 (12.6-29.1)	29.0 (20.7-39.0)	52.4 (42.4-62.3)
≥ \$50,000	227	9.2 (5.6-14.7)	10.4 (6.7-15.8)	23.6 (18.0-30.3)
<b>Education of BRFSS respondent</b>				
≤ HS graduate	83	28.0 (16.9-42.6)	30.6 (19.4-44.6)	49.0 (35.6-62.5)
Some college	141	11.0 (6.8-17.3)	19.4 (12.4-29.0)	41.2 (31.5-51.5)
College graduate	181	10.4 (5.9-17.7)	11.8 (6.9-19.5)	27.8 (20.2-37.1)
<sup>a</sup> Sample sizes (unweighted) for demographic subpopulations. Cell sample sizes for prevalence estimates will vary because of missing values. <sup>b</sup> 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?" <sup>c</sup> 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?" <sup>d</sup> 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?" <sup>~</sup> This estimate should be used with caution due to its low reliability and precision (relative standard error 31%-50%).				

<b>Table 2. Percent Distribution of Number of Asthma Symptom-Free Days<sup>a</sup> in Past 2 Weeks, Among Children Aged 0-17 Years with Current Asthma Michigan Asthma Call-Back Survey, 2012-2016 Combined</b>				
	<b>None</b>	<b>1-6 Days</b>	<b>7-13 Days</b>	<b>14 Days</b>
<b>Total</b>	<b>11.2 (7.6-16.2)</b>	<b>11.7 (8.1-16.6)</b>	<b>21.2 (16.7-26.5)</b>	<b>55.9 (49.6-62.0)</b>
<b>Age</b>				
0-9 years	11.6 (6.2-20.6) <sup>~</sup>	12.6 (7.3-21.0)	21.0 (13.8-30.5)	54.9 (44.3-64.9)
10-17 years	11.4 (6.6-18.9)	10.9 (6.6-17.6)	21.6 (16.2-28.1)	56.1 (48.2-63.8)
<b>Gender</b>				
Male	13.2 (8.0-21.0)	11.7 (7.4-18.0)	21.4 (15.5-28.8)	53.6 (45.5-61.6)
Female	7.8 (4.1-14.5) <sup>~</sup>	11.8 (6.3-20.9) <sup>~</sup>	20.9 (14.7-28.8)	59.5 (49.7-68.6)
<b>Race</b>				
White	8.2 (5.3-12.6)	9.5 (6.1-14.4)	23.2 (18.1-29.4)	59.1 (52.2-65.6)
Black	-- <sup>†</sup>	21.2 (10.1-39.2) <sup>~</sup>	17.3 (7.8-34.3) <sup>~</sup>	49.6 (33.0-66.3)
<b>Household Income</b>				
< \$50,000	13.9 (7.9-23.1)	20.3 (13.0-30.2)	17.6 (11.3-26.4)	48.3 (38.5-58.2)
≥ \$50,000	5.8 (3.2-10.2)	4.5 (2.4-8.6) <sup>~</sup>	26.4 (20.0-34.0)	63.3 (55.4-70.4)
<b>Education of BRFS respondent</b>				
≤ HS graduate	18.6 (8.7-35.5) <sup>~</sup>	20.4 (11.6-33.3)	19.5 (10.5-33.4)	41.4 (29.2-54.9)
Some college	12.1 (7.2-19.8)	9.4 (4.7-18.0) <sup>~</sup>	18.8 (12.6-27.0)	59.7 (49.7-69.0)
College graduate	6.2 (2.8-13.0) <sup>~</sup>	8.5 (4.2-16.5) <sup>~</sup>	24.2 (17.5-32.4)	61.2 (51.8-69.8)
<sup>a</sup> 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?" <sup>†</sup> This estimate was suppressed due to it having a denominator of less than 50 and/or a relative standard error of greater than 50%. <sup>~</sup> This estimate should be used with caution due to its low reliability and precision (relative standard error 31%-50%).				

<b>Table 3. Prevalence of Asthma-Related Health Care Utilization, Among Children Aged 0-17 Years with Current Asthma Michigan Asthma Call-Back Survey, 2012-2016 Combined</b>					
	<b>ER/Urgent Care Visits for Asthma<sup>a</sup></b>		<b>≥ 1 Hospital Stays for Asthma in Past 12 Months<sup>b</sup></b>	<b>≥ 2 Routine Asthma Care Visits in Past 12 Months<sup>c</sup></b>	<b>Received Flu Vaccine in Past 12 Months<sup>d</sup></b>
	<b>≥ 1 Visit</b>	<b>≥ 2 Visits</b>			
<b>Total</b>	<b>15.8 (11.7-21.0)</b>	<b>8.7 (5.6-13.3)</b>	<b>1.6 (0.6-4.3)<sup>~</sup></b>	<b>42.3 (36.3-48.5)</b>	<b>62.9 (56.7-68.7)</b>
<b>Age</b>					
0-9 years	21.3 (13.9-31.1)	10.3 (5.2-19.3) <sup>~</sup>	-- <sup>†</sup>	53.8 (43.6-63.8)	65.9 (55.2-75.2)
10-17 years	11.2 (7.3-16.7)	6.8 (3.7-11.9)	-- <sup>†</sup>	34.1 (27.7-41.1)	59.8 (52.2-66.9)
<b>Gender</b>					
Male	16.3 (11.0-23.6)	8.4 (4.5-15.2) <sup>~</sup>	-- <sup>†</sup>	44.5 (36.6-52.7)	58.7 (50.6-66.4)
Female	15.0 (9.9-22.1)	9.2 (5.2-15.9)	-- <sup>†</sup>	38.8 (29.9-48.5)	69.7 (60.8-77.4)
<b>Race</b>					
White	12.6 (8.6-18.2)	5.0 (2.7-9.0)	-- <sup>†</sup>	37.5 (31.2-44.3)	64.9 (58.1-71.1)
Black	22.1 (11.7-37.8)	16.3 (7.4-32.1) <sup>~</sup>	-- <sup>†</sup>	50.5 (33.5-67.3)	48.8 (32.2-65.7)
<b>Household Income</b>					
< \$50,000	23.8 (16.2-33.6)	14.3 (8.3-23.5)	-- <sup>†</sup>	50.2 (40.2-60.1)	63.0 (52.9-72.1)
≥ \$50,000	8.6 (5.1-14.1)	3.6 (1.4-8.8) <sup>~</sup>	-- <sup>e</sup>	37.0 (29.4-45.3)	64.9 (56.9-72.1)
<b>Education of BRFS respondent</b>					
≤ HS graduate	15.6 (8.0-28.2) <sup>~</sup>	13.1 (6.1-25.8) <sup>~</sup>	-- <sup>†</sup>	46.8 (33.6-60.4)	64.3 (49.7-76.7)
Some college	20.5 (13.0-30.8)	9.0 (4.2-18.3) <sup>~</sup>	-- <sup>†</sup>	36.3 (27.0-46.8)	54.2 (43.8-64.2)
College graduate	12.1 (7.5-19.0)	5.9 (2.7-12.5) <sup>~</sup>	-- <sup>e</sup>	44.5 (35.5-54.0)	69.2 (60.6-76.6)

<sup>a</sup> 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?"

<sup>b</sup> 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?"

<sup>c</sup> 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?"

<sup>d</sup> 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?"

<sup>e</sup> No positive responses in this cell.

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

<sup>~</sup> This estimate should be used with caution due to its low reliability and precision (relative standard error 31%-50%).

<b>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, 2012-2016 Combined</b>	
	<b>Used ≥ 1 Asthma Controller Medication in Past 3 Months<sup>a</sup></b>
<b>Total</b>	<b>47.4 (41.3-53.6)</b>
<b>Age</b>	
0-9 years	56.0 (45.7-65.8)
10-17 years	41.6 (34.7-48.8)
<b>Gender</b>	
Male	49.0 (41.0-57.0)
Female	44.4 (35.1-54.2)
<b>Race</b>	
White	49.4 (42.5-56.3)
Black	40.7 (25.3-58.1)
<b>Household Income</b>	
< \$50,000	49.5 (39.5-59.5)
≥ \$50,000	48.3 (40.5-56.2)
<b>Education of BRFS respondent</b>	
≤ HS graduate	45.5 (32.6-59.0)
Some college	41.4 (31.9-51.5)
College graduate	53.4 (44.3-62.4)
<sup>a</sup> 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.	

<b>Table 5. Prevalence of Experiencing Cost Barriers to Asthma Care in Past 12 Months, Among Children Aged 0-17 Years with Current Asthma</b> <b>Michigan Asthma Call-Back Survey, 2012-2016 Combined</b>				
	<b>Cost Barrier to Primary Care Doctor<sup>a</sup></b>	<b>Cost Barrier to Asthma Specialist<sup>b</sup></b>	<b>Cost Barrier to Obtaining Medication<sup>c</sup></b>	<b>Cost Barrier to Primary Care, Specialist, or Medication<sup>d</sup></b>
<b>Total</b>	<b>1.9 (0.9-4.0)<sup>~</sup></b>	<b>2.2 (1.0-4.6)<sup>~</sup></b>	<b>7.0 (4.2-11.4)</b>	<b>8.7 (5.7-13.2)</b>
<b>Age</b>				
0-9 years	--†	--†	7.6 (3.3-16.9) <sup>~</sup>	8.6 (3.9-17.8) <sup>~</sup>
10-17 years	2.7 (1.1-6.4)	3.0 (1.3-6.9)	5.8 (3.2-10.2)	8.1 (5.0-13.0)
<b>Gender</b>				
Male	--†	2.4 (1.0-5.7)	8.0 (4.2-14.7) <sup>~</sup>	10.0 (5.8-16.7)
Female	--†	--†	5.3 (2.6-10.7) <sup>~</sup>	6.6 (3.4-12.6) <sup>~</sup>
<b>Race</b>				
White	1.9 (0.7-4.8)	2.1 (0.8-5.2)	5.0 (2.8-9.1)	6.7 (4.0-10.9)
Black	--†	--†	13 (5.1-29.7) <sup>~</sup>	13.6 (5.5-30.0) <sup>~</sup>
<b>Household Income</b>				
< \$50,000	2.8 (1.1-6.9)	--†	11.6 (6.4-20.1)	12.9 (7.4-21.5)
≥ \$50,000	--†	--†	4.3 (1.6-10.7) <sup>~</sup>	6.6 (3.2-12.9) <sup>~</sup>
<b>Education of BRFSS respondent</b>				
≤ HS graduate	--†	--†	--†	11.7 (4.9-25.4) <sup>~</sup>
Some college	--†	--†	10.4 (5.3-19.5) <sup>~</sup>	11.9 (6.4-21.1)
College graduate	2.2 (0.8-5.6)	--†	3.0 (1.2-7.3) <sup>~</sup>	4.3 (2.0-9.0) <sup>~</sup>
<sup>a</sup> 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?” <sup>b</sup> 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?” <sup>c</sup> 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?” <sup>d</sup> Responded “yes” to at least one of the above 3 questions. † 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%).				

<b>Table 6. Prevalence of Indicators of Knowledge Related to Asthma Management, Among Children Aged 0-17 Years with Current Asthma</b>			
<b>Michigan Asthma Call-Back Survey, 2012-2016 Combined</b>			
	<b>Ever Taught to Recognize Early Signs of Asthma Episode<sup>a</sup></b>	<b>Ever Taught What to Do During Asthma Episode<sup>b</sup></b>	<b>Ever Taught How to Use a Peak Flow Meter<sup>c</sup></b>
<b>Total</b>	<b>81.3 (76.0-85.6)</b>	<b>89.1 (84.3-92.5)</b>	<b>42.3 (36.5-48.4)</b>
<b>Age</b>			
0-9 years	75.5 (65.3-83.4)	87.6 (78.5-93.2)	27.8 (19.5-38.1)
10-17 years	86.2 (80.6-90.4)	90.8 (85.3-94.4)	52.9 (45.3-60.3)
<b>Gender</b>			
Male	81.4 (74.0-87.0)	86.8 (79.9-91.5)	42.7 (35.2-50.6)
Female	81.1 (72.7-87.3)	92.9 (86.1-96.5) <sup>~</sup>	41.4 (32.8-50.6)
<b>Race</b>			
White	81.9 (75.9-86.7)	87.7 (82.2-91.7)	39.2 (32.9-45.9)
Black	77.4 (60.3-88.5) <sup>~</sup>	-- <sup>†</sup>	51.3 (34.3-67.9)
<b>Household Income</b>			
< \$50,000	78.3 (68.2-85.9)	90.9 (81.8-95.6) <sup>~</sup>	48.9 (39.3-58.6)
≥ \$50,000	83.2 (76.3-88.4)	88.0 (81.2-92.6)	36.3 (29.6-43.6)
<b>Education of BRFs respondent</b>			
≤ HS graduate	80.9 (67.3-89.7)	87.7 (74.9-94.4) <sup>~</sup>	47.9 (34.8-61.3)
Some college	83.5 (73.3-90.3)	88.9 (80.1-94.0) <sup>~</sup>	42.2 (32.6-52.3)
College graduate	79.7 (71.6-85.9)	90.1 (82.6-94.6)	39.2 (31.1-47.9)
<sup>a</sup> 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?" <sup>b</sup> Responded "yes" to the question, ".....what to do during an asthma episode or attack?" <sup>c</sup> Responded "yes" to the question, ".....how to use a peak flow meter to adjust {his/her} daily medications?" <sup>†</sup> This estimate was suppressed due to it having a denominator of less than 50 and/or a relative standard error of greater than 50%. <sup>~</sup> This estimate should be used with caution due to its low reliability and precision (relative standard error 31%-50%).			

<b>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, 2012-2016 Combined</b>			
	<b>Ever Received Asthma Action Plan<sup>d</sup></b>	<b>Ever Taken Asthma Management Class<sup>e</sup></b>	<b>Received ≥ 3 Types of Asthma Education<sup>f</sup></b>
<b>Total</b>	<b>54.1 (48.0-60.1)</b>	<b>10.4 (7.0-15.1)</b>	<b>60.8 (54.7-66.6)</b>
<b>Age</b>			
0-9 years	48.9 (38.6-59.3)	8.6 (4.5-16.0) <sup>~</sup>	50.9 (40.6-61.0)
10-17 years	58.8 (51.3-65.9)	12.2 (7.5-19.4)	67.9 (60.4-74.6)
<b>Gender</b>			
Male	57.2 (49.2-64.9)	11.6 (7.0-18.8)	61.1 (53.1-68.5)
Female	49.2 (39.7-58.8)	8.3 (4.9-13.7)	60.1 (50.1-69.3)
<b>Race</b>			
White	52.0 (45.1-58.8)	8.9 (5.8-13.3)	58.0 (51.0-64.6)
Black	57.2 (40.1-72.7)	-- <sup>†</sup>	65.0 (47.4-79.3)
<b>Household Income</b>			
< \$50,000	49.8 (40.2-59.5)	10.7 (6.1-17.9)	59.0 (49.0-68.3)
≥ \$50,000	59.4 (51.3-66.9)	7.8 (4.9-12.1)	62.3 (54.3-69.7)
<b>Education of BRFS respondent</b>			
≤ HS graduate	52.7 (39.5-65.5)	16.2 (7.3-32.3) <sup>~</sup>	64.7 (51.4-76.1)
Some college	52.1 (41.9-62.1)	10.9 (6.2-18.7)	56.9 (46.5-66.7)
College graduate	56.6 (47.3-65.5)	6.4 (3.8-10.8)	61.7 (52.4-70.2)
<sup>d</sup> 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?” <sup>e</sup> Responded “yes” to the question, “Have you or {child’s name} ever taken a course or class on how to manage {his/her} asthma?” <sup>f</sup> Responded “yes” to ≥ 3 of the 5 questions above (b-f). <sup>†</sup> This estimate was suppressed due to it having a denominator of less than 50 and/or a relative standard error of greater than 50%. <sup>~</sup> This estimate should be used with caution due to its low reliability and precision (relative standard error 31%-50%).			

<b>Table 7. Prevalence of Asthma Triggers in Home Environment, Among Children Aged 0-17 Years with Current Asthma Michigan Asthma Call-Back Survey, 2012-2016 Combined</b>				
	<b>Cigarettes Smoked in Home<sup>a</sup></b>	<b>Mold Seen/Smelled in Home<sup>b</sup></b>	<b>Saw Cockroaches in Home<sup>c</sup></b>	<b>Saw Mice/Rat in Home<sup>d</sup></b>
<b>Total</b>	<b>10.0 (6.6-14.8)</b>	<b>8.3 (5.6-12.2)</b>	-- <sup>†</sup>	<b>3.7 (1.9-7.0)<sup>~</sup></b>
<b>Age</b>				
0-9 years	11.0 (5.5-20.9) <sup>~</sup>	7.8 (3.9-15.1) <sup>~</sup>	-- <sup>†</sup>	3.1 (1.2-7.8) <sup>~</sup>
10-17 years	7.4 (4.6-11.8)	7.8 (4.9-12.3)	-- <sup>e</sup>	4.3 (1.8-10.0) <sup>~</sup>
<b>Gender</b>				
Male	9.5 (5.2-16.7)	9.5 (5.7-15.2)	-- <sup>†</sup>	1.9 (0.7-4.7) <sup>~</sup>
Female	10.8 (6.5-17.5)	6.5 (3.5-11.6) <sup>~</sup>	-- <sup>e</sup>	6.6 (2.8-15.0) <sup>~</sup>
<b>Race</b>				
White	5.8 (3.4-9.6)	8.0 (5.2-12.1) <sup>~</sup>	-- <sup>e</sup>	2.6 (1.4-4.8) <sup>~</sup>
Black	23.1 (11.6-40.8) <sup>~</sup>	12.3 (4.7-28.8)	-- <sup>†</sup>	-- <sup>†</sup>
<b>Household Income</b>				
< \$50,000	19.3 (12.1-29.2)	8.6 (4.7-15.1)	-- <sup>†</sup>	-- <sup>†</sup>
≥ \$50,000	2.2 (1.0-5.1) <sup>~</sup>	9.0 (5.2-15.1)	-- <sup>e</sup>	2.6 (1.2-5.3) <sup>~</sup>
<b>Education of BRFs respondent</b>				
≤ HS graduate	22.9 (12.9-37.3)	8.4 (3.6-18.3) <sup>~</sup>	-- <sup>†</sup>	-- <sup>†</sup>
Some college	11.0 (5.8-19.8) <sup>~</sup>	8.9 (4.4-17.3) <sup>~</sup>	-- <sup>e</sup>	-- <sup>†</sup>
College graduate	1.5 (0.6-3.7) <sup>~</sup>	7.8 (4.5-13.3)	-- <sup>e</sup>	5.9 (2.5-13.4) <sup>~</sup>
<sup>a</sup> Responded "yes" to the question, "In the past week, has anyone smoked inside {his/her} home?" <sup>b</sup> 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." <sup>c</sup> Responded "yes" to the question, "In the past 30 days, has anyone seen cockroaches inside {his/her} home?" <sup>d</sup> 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." <sup>e</sup> No positive responses in this cell. <sup>†</sup> This estimate was suppressed due to it having a denominator of less than 50 and/or a relative standard error of greater than 50%. <sup>~</sup> This estimate should be used with caution due to its low reliability and precision (relative standard error 31%-50%).				

<b>Table 7 (continued). Prevalence of Asthma Triggers in Home Environment Among Children Aged 0-17 Years with Current Asthma</b>					
<b>Michigan Asthma Call-Back Surveys, 2012-2016 Combined</b>					
	<b>Inside Pets<sup>f</sup></b>	<b>Pets Allowed in Bedroom<sup>g</sup></b>	<b>Wood Burning Stove/Fireplace Used<sup>h</sup></b>	<b>Unvented Gas Logs, Stoves, or Fireplaces Used<sup>i</sup></b>	<b>Gas Used for Cooking<sup>j</sup></b>
<b>Total</b>	<b>62.5 (56.0-68.5)</b>	<b>40.8 (35.0-46.9)</b>	<b>11.3 (8.0-15.6)</b>	<b>6.4 (3.7-10.8)</b>	<b>55.2 (49.1-61.2)</b>
<b>Age</b>					
0-9 years	53.4 (42.9-63.7)	35.6 (26.3-46.2)	9.0 (4.3-17.7) <sup>~</sup>	-- <sup>†</sup>	61.0 (50.8-70.3)
10-17 years	67.6 (59.5-74.8)	43.7 (36.7-51.0)	13.4 (9.4-18.7)	6.1 (3.6-10.1) <sup>~</sup>	50.9 (43.4-58.4)
<b>Gender</b>					
Male	57.3 (49.0-65.2)	36.4 (29.3-44.1)	10.2 (6.4-15.8)	-- <sup>†</sup>	52.1 (44.2-60.0)
Female	70.9 (61.2-79.1)	48.1 (38.9-57.3)	13.1 (7.9-20.9)	6.7 (3.6-12.2) <sup>~</sup>	60.6 (51.2-69.3)
<b>Race</b>					
White	69.5 (62.5-75.7)	47.0 (40.5-53.7)	12.5 (8.6-17.7)	8.0 (4.4-13.9)	57.0 (50.2-63.6)
Black	34.5 (20.7-51.7)	15.5 (7.0-30.7) <sup>~</sup>	-- <sup>†</sup>	-- <sup>†</sup>	45.5 (29.4-62.6)
<b>Household Income</b>					
< \$50,000	61.4 (51.2-70.7)	38.8 (29.6-48.8)	11.4 (6.7-18.6)	4.9 (2.3-10.1) <sup>~</sup>	61.8 (51.8-70.9)
≥ \$50,000	64.4 (55.9-72.1)	43.1 (35.6-50.9)	12.6 (8.1-19.0)	7.8 (3.6-16.0) <sup>~</sup>	49.5 (41.6-57.4)
<b>Education of BRFS respondent</b>					
≤ HS graduate	61.8 (47.1-74.6)	37.2 (25.5-50.6)	10.7 (5.2-20.6) <sup>~</sup>	7.0 (2.6-17.6) <sup>~</sup>	63.7 (49.3-76.0)
Some college	66.7 (55.9-75.9)	40.7 (31.4-50.7)	10.5 (5.6-18.6)	4.6 (2.2-9.4) <sup>~</sup>	51.4 (41.5-61.2)
College graduate	59.4 (49.9-68.2)	43.0 (34.3-52.2)	12.3 (7.5-19.6)	7.6 (3.1-17.3) <sup>~</sup>	53.4 (44.4-62.2)
<sup>f</sup> 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?” <sup>g</sup> Responded “yes” to the question, “Is the pet allowed in {his/her} bedroom?” (Among all respondents.) <sup>h</sup> Responded “yes” to the question, “Is a wood burning fireplace or wood burning stove used in {child’s name} home?” <sup>i</sup> Responded “yes” to the question, “Are unvented gas logs, unvented gas fireplaces, or unvented gas stoves used in {his/her} home?” <sup>j</sup> Responded “yes” to the question, “Is gas used for cooking in {his/her} home?” <sup>†</sup> This estimate was suppressed due to it having a denominator of less than 50 and/or a relative standard error of greater than 50%. <sup>~</sup> This estimate should be used with caution due to its low reliability and precision (relative standard error 31%-50%).					

<b>Table 8. Prevalence of Asthma Trigger Avoidance Behaviors in Home Environment, Among Children Aged 0-17 Years with Current Asthma</b>				
<b>Michigan Asthma Call-Back Survey, 2012-2016 Combined</b>				
	<b>Kitchen Fan Used When Cooking<sup>a</sup></b>	<b>Bathroom Exhaust Fan Used<sup>b</sup></b>	<b>Sheets Washed in Hot Water<sup>c</sup></b>	<b>Air Cleaner Used in Home<sup>d</sup></b>
<b>Total</b>	<b>57.9 (51.7-63.9)</b>	<b>56.6 (50.4-62.6)</b>	<b>40.9 (34.9-47.2)</b>	<b>35.1 (29.7-41.0)</b>
<b>Age</b>				
0-9 years	56.5 (45.7-66.6)	47.8 (37.6-58.1)	37.6 (28.0-48.2)	31.8 (23.2-42.0)
10-17 years	57.0 (49.5-64.1)	65.2 (57.8-71.9)	42.6 (35.3-50.3)	37.5 (30.7-44.9)
<b>Gender</b>				
Male	58.6 (50.6-66.1)	56.8 (48.8-64.6)	42.7 (34.9-50.9)	36.7 (29.7-44.3)
Female	56.7 (47.2-65.6)	56.0 (46.4-65.2)	38.1 (29.4-47.7)	32.3 (24.5-41.3)
<b>Race</b>				
White	54.9 (48.0-61.6)	63.6 (56.9-69.9)	40.7 (34.3-47.6)	34.1 (28.0-40.8)
Black	63.4 (46.1-77.8)	33.1 (18.4-52.0)	46.2 (29.5-63.7)	34.2 (20.1-51.8)
<b>Household Income</b>				
< \$50,000	57.9 (47.7-67.5)	45.4 (35.9-55.2)	30.8 (22.1-41.1)	31.8 (23.4-41.6)
≥ \$50,000	55.3 (47.3-63.0)	65.2 (57.2-72.4)	47.7 (39.8-55.7)	39.2 (31.7-47.2)
<b>Education of BRFS respondent</b>				
≤ HS graduate	70.6 (58.6-80.3)	40.2 (27.9-53.8)	36.7 (23.9-51.7)	30.6 (20.1-43.5)
Some college	57.7 (47.1-67.6)	60.4 (50.1-69.8)	37.0 (27.8-47.3)	33.8 (25.2-43.6)
College graduate	50.6 (41.9-59.3)	63.3 (53.9-71.7)	46.6 (37.5-56.0)	39.0 (30.6-48.0)
<sup>a</sup> 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?” <sup>b</sup> Responded “yes” to the question, “In {child’s name} bathroom, does {he/she} regularly use an exhaust fan that vents to the outside?” <sup>c</sup> Responded “hot” to the question, “Are {his/her} sheets and pillowcases washed in cold, warm, or hot water?” <sup>d</sup> 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?”				

<b>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, 2012-2016 Combined</b>				
	<b>Dehumidifier Used Regularly in Home<sup>e</sup></b>	<b>No Carpeting in Child's Bedroom<sup>f</sup></b>	<b>Child Uses Mattress Cover<sup>g</sup></b>	<b>Child Uses Pillow Cover<sup>h</sup></b>
<b>Total</b>	<b>44.2 (38.2-50.5)</b>	<b>35.6 (29.8-41.7)</b>	<b>44.9 (38.9-51.0)</b>	<b>39.1 (33.4-45.1)</b>
<b>Age</b>				
0-9 years	36.8 (27.5-47.2)	31.7 (22.9-42.1)	39.2 (29.6-49.7)	37.8 (28.3-48.4)
10-17 years	50.9 (43.3-58.4)	36.4 (29.5-44.0)	50.6 (43.1-58.1)	41.3 (34.2-48.7)
<b>Gender</b>				
Male	49.4 (41.4-57.3)	36.1 (28.6-44.3)	46.4 (38.6-54.4)	41.4 (33.8-49.4)
Female	35.4 (27.1-44.7)	34.4 (26.4-43.5)	42.1 (33.1-51.6)	35.0 (26.8-44.1)
<b>Race</b>				
White	44.2 (37.6-51.0)	34.1 (28.0-40.9)	44.7 (38.0-51.5)	43.4 (36.8-50.3)
Black	49.6 (32.9-66.4)	41.6 (25.7-59.6)	46.4 (29.9-63.7)	23.7 (12.6-40.1)
<b>Household Income</b>				
< \$50,000	33.1 (24.5-43.1)	40.0 (30.9-49.9)	34.6 (26.2-44.0)	28.7 (21.2-37.5)
≥ \$50,000	51.3 (43.3-59.2)	31.0 (24.2-38.9)	54.1 (45.9-62.0)	50.9 (42.8-58.9)
<b>Education of BRFSS respondent</b>				
≤ HS graduate	36.9 (24.7-51.1)	44.2 (31.1-58.2)	40.7 (28.2-54.4)	30.8 (20.5-43.4)
Some college	40.0 (30.6-50.2)	37.6 (28.1-48.1)	47.0 (37.2-57.1)	41.5 (31.9-51.8)
College graduate	52.1 (42.9-61.1)	28.8 (21.7-37.0)	45.6 (36.6-54.9)	42.0 (33.2-51.5)
<sup>e</sup> Responded "yes" to the question, "Is a dehumidifier regularly used to reduce moisture inside {his/her} home?" <sup>f</sup> 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." <sup>g</sup> Responded "yes" to the question, "Does {he/she} use a mattress cover that is made especially for controlling dust mites?" <sup>h</sup> Responded "yes" to the question, "Does {child's name} use a pillow cover that is made especially for controlling dust mites?"				

<b>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, 2012-2016 Combined</b>	
	<b>Ever Advised to Modify Environment to Improve Asthma<sup>a</sup></b>
<b>Total</b>	<b>42.0 (35.9-48.3)</b>
<b>Age</b>	
0-9 years	37.4 (27.7-48.3)
10-17 years	46.1 (38.7-53.7)
<b>Gender</b>	
Male	44.6 (36.7-52.8)
Female	37.8 (29.2-47.3)
<b>Race</b>	
White	41.1 (34.4-48.1)
Black	44.0 (27.7-61.7)
<b>Household Income</b>	
< \$50,000	35.8 (26.9-45.7)
≥ \$50,000	46.5 (38.6-54.6)
<b>Education of BRFS respondent</b>	
≤ HS graduate	48.2 (35.0-61.6)
Some college	44.2 (34.5-54.5)
College graduate	36.5 (28.0-45.9)
<sup>a</sup> 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?"	

<b>Table 10. Percent Distribution of Number School Days Missed Due to Asthma,<sup>a</sup> Among Children in Grades K-12 with Current Asthma</b>				
<b>Michigan Asthma Call-Back Survey, 2012-2016 Combined</b>				
	<b>n<sup>b</sup></b>	<b>None</b>	<b>1-5 Days</b>	<b>≥6 Days</b>
<b>Total</b>	<b>384</b>	<b>54.1 (47.7-60.4)</b>	<b>30.1 (24.4-36.5)</b>	<b>15.7 (11.6-20.9)</b>
<b>Age</b>				
0-9 years	107	42.4 (32.0-53.6)	38.2 (28.0-49.5)	19.4 (12.1-29.5)
10-17 years	269	60.6 (52.7-67.9)	25.3 (18.9-33.0)	14.1 (9.6-20.2)
<b>Gender</b>				
Male	230	47.0 (39.0-55.2)	32.9 (25.4-41.4)	20.0 (14.2-27.5)
Female	153	65.6 (55.6-74.5)	25.4 (17.6-35.2)	9.0 (4.9-15.9)
<b>Race</b>				
White	294	57.8 (50.5-64.7)	27.2 (21.1-34.3)	15.1 (10.7-20.8)
Black	51	37.3 (21.9-55.9)	44.5 (27.4-62.9)	18.2 (8.6-34.5) <sup>~</sup>
<b>Household Income</b>				
< \$50,000	134	51.1 (40.6-61.5)	28.4 (20.2-38.5)	20.5 (12.9-30.8)
≥ \$50,000	222	57.0 (48.5-65.1)	30.2 (22.8-38.8)	12.8 (8.5-18.9)
<b>Education of BRFS respondent</b>				
≤ HS graduate	74	48.9 (34.8-63.1)	33.2 (20.8-48.4)	17.9 (9.3-31.8) <sup>~</sup>
Some college	132	54.3 (43.6-64.6)	26.5 (18.2-36.9)	19.2 (12.1-29.0)
College graduate	178	56.7 (47.1-65.7)	31.3 (22.9-41.2)	12.0 (7.2-19.3)
<sup>a</sup> 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?" <sup>b</sup> Sample size (unweighted) for demographic subgroups. <sup>~</sup> This estimate should be used with caution due to its low reliability and precision (relative standard error 31%-50%).				

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<b>Table 11. Prevalence of School-Related Asthma Indicators, Among Children in Grades K-12 with Current Asthma Michigan Asthma Call-Back Survey, 2012-2016 Combined</b>				
	<b>Asthma Action Plan on File at School<sup>a</sup></b>	<b>School Allows Asthma Medications<sup>b</sup></b>	<b>Pets in Child's Classroom<sup>c</sup></b>	<b>Mold Problems in Child's School<sup>d</sup></b>
<b>Total</b>	<b>41.2 (35.2-47.6)</b>	<b>59.2 (52.7-65.3)</b>	<b>3.3 (1.8-5.9)</b>	<b>--<sup>†</sup></b>
<b>Age</b>				
0-9 years	43.5 (32.9-54.7)	37.5 (26.7-49.7)	3.9 (1.8-8.3) <sup>~</sup>	-- <sup>e</sup>
10-17 years	40.1 (33.0-47.6)	71.8 (64.4-78.1)	3.0 (1.2-7.0) <sup>~</sup>	-- <sup>†</sup>
<b>Gender</b>				
Male	43.1 (35.0-51.6)	58.0 (49.4-66.1)	3.0 (1.3-6.8) <sup>~</sup>	-- <sup>†</sup>
Female	38.0 (29.5-47.2)	61.2 (51.0-70.5)	3.8 (1.7-8.3) <sup>~</sup>	-- <sup>e</sup>
<b>Race</b>				
White	38.0 (31.4-45.2)	55.1 (47.9-62.2)	2.9 (1.4-6.2) <sup>~</sup>	-- <sup>†</sup>
Black	48.2 (31.1-65.8)	75.6 (56.3-88.1) <sup>~</sup>	-- <sup>†</sup>	-- <sup>e</sup>
<b>Household Income</b>				
< \$50,000	46.6 (36.2-57.3)	57.0 (45.8-67.6)	3.6 (1.4-8.8) <sup>~</sup>	-- <sup>e</sup>
≥ \$50,000	41.0 (33.1-49.3)	59.5 (51.1-67.3)	3.5 (1.6-7.5) <sup>~</sup>	-- <sup>†</sup>
<b>Education of BRFS respondent</b>				
≤ HS graduate	45.9 (31.7-60.9)	59.2 (43.8-73.0)	-- <sup>†</sup>	-- <sup>e</sup>
Some college	42.5 (32.5-53.2)	57.0 (46.1-67.3)	4.0 (1.7-9.0) <sup>~</sup>	-- <sup>†</sup>
College graduate	38.0 (29.6-47.2)	60.7 (51.4-69.3)	2.8 (1.0-7.5) <sup>~</sup>	-- <sup>e</sup>
<sup>a</sup> Responded "yes" to the question, "Does {child's name} have a written asthma action plan or asthma management plan on file at school?" <sup>b</sup> 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?" <sup>c</sup> 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?" <sup>d</sup> Responded "yes" to the question, "Are you aware of any mold problems in {child's name} school?" <sup>e</sup> No positive responses in this cell. <sup>†</sup> This estimate was suppressed due to it having a denominator of less than 50 and/or a relative standard error of greater than 50%. <sup>~</sup> This estimate should be used with caution due to its low reliability and precision (relative standard error 31%-50%).				