Data Pages

Asthma Data 2008

Prevalence

Asthma Data 2008

Adult Demographics

Among Vermont adults, the highest rates of asthma are observed in non-whites, women, those with less education, and those with lower income.

Lifetime Prevalence: In 2008, 15.4% of adult Vermonters reported that they have ever had asthma.

Current Prevalence: In 2008, 9.9%, or approximately 48,390 adult Vermonters have current asthma according the Behavioral Risk Factor Surveillance System. The Vermont rate is significantly higher than the U.S. white rate of 8.9%.

Among people with asthma,

- 49% report having mild intermittent asthma,
- 21% report having mild persistent asthma,
- 17% report having moderate persistent asthma, and
- 14% report having severe persistent asthma.

Gender: The overall prevalence of asthma among adult men in 2008 is 8.1% compared to a significantly higher rate in women, of 12.1%. Asthma severity does not vary by gender.

Race: In 2007-2008, whites have lower rates of asthma (9.6%) than non-whites (14.1%). This relationship is inconsistent with U.S. trends, which in 2008, show whites having higher rates (8.9%) of asthma compared to non-whites (7.6%).

Income: Adults with the lowest incomes and educational background have the highest rates of asthma. In Vermont, 18.0% of those making less than 125% of the Federal Poverty Level have asthma compared to only 6.9% in those making 350% or more of the Federal Poverty Level. Additionally, Vermonters making under 125% of the Federal Poverty Level have higher rates of severe persistent asthma (33%) compared to those with higher incomes.

Education:
19.3% of Vermonters with less than a high school diploma have asthma compared to 7.6% of those with a college degree or higher. Similar to income, the highest rates of severe persistent asthma are found in Vermonters with lower education.

Data source: BRFSS

County-level Prevalence

Although some variation is observed in asthma prevalence rates by county, when developing asthma prevention and control programs, it is important to target populations with known risk factors for asthma: income, education, and race.

There is little variation in adult asthma prevalence between counties in Vermont according to BRFSS data from years 2004-2008 combined. When comparisons are made against the rest of the state, current asthma prevalence in Chittenden county is lower than in the rest of the state. Prevalence in Bennington county is higher.

DATA TABLES

Prevalence of current asthma by county – Vermont adult residents, 2004-2008.

	2004-2008
	%
Addison	9.1
Bennington*	11.5
Caledonia	10.7
Chittenden*	8.4
Essex	9.1
Franklin	10.4
Grand Isle	10.3
Lamoille	8.1
Orange	8.6
Orleans	10.4
Rutland	9.8
Washington	8.7
Windham	10.6
Windsor	10.3
Total	9.8

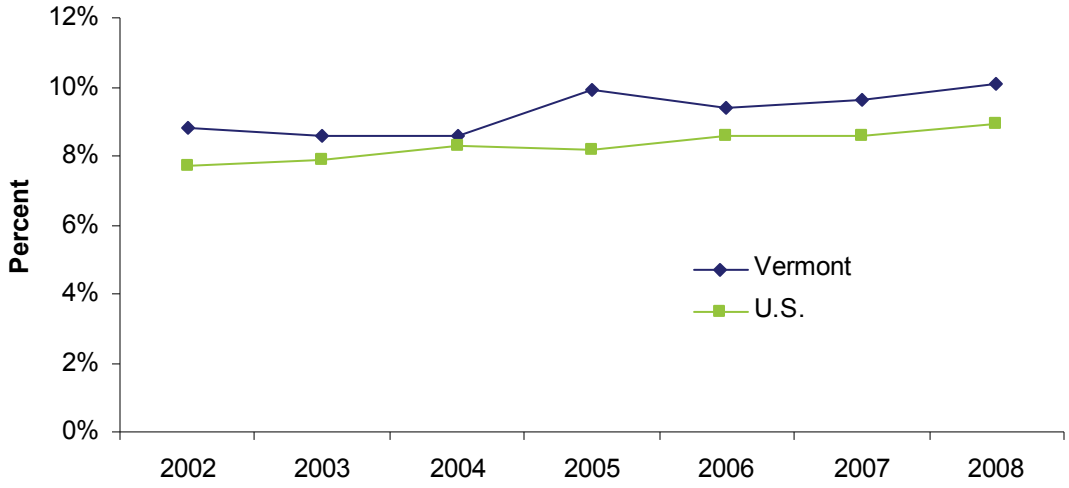
Data Source: BRFSS, age-adjusted rates
* Statistically different from rest of state (p<.05)

Adults - Time Trends

When compared to the United States, asthma rates remain high in Vermont over the past seven years.

While nationally, asthma rates have increased in the last seven years, there have been no statistically significant changes in asthma prevalence in Vermont between 2002 and 2008. Overall, asthma rates trend higher in Vermont that in the U.S.

Prevalence of current asthma – Vermont and U.S. white non-Hispanic adult residents, 2002-2008, age-adjusted rates.



DATA TABLES

Prevalence of current asthma – Vermont and U.S. adult residents, 2002-2008, crude and age-adjusted rates.

	Vermont		U.S. White non-Hisp
	Crude	Age-adjusted	Age-adjusted
	%	%	%
2002	8.7	8.8	7.7
2003	8.4	8.6	7.9
2004	8.5	8.6	8.3
2005	9.8	9.9	8.2
2006	9.3	9.4	8.6
2007	9.6	9.6	8.6
2008	9.9	10.1	8.9

Data source: BRFSS
*Not available.

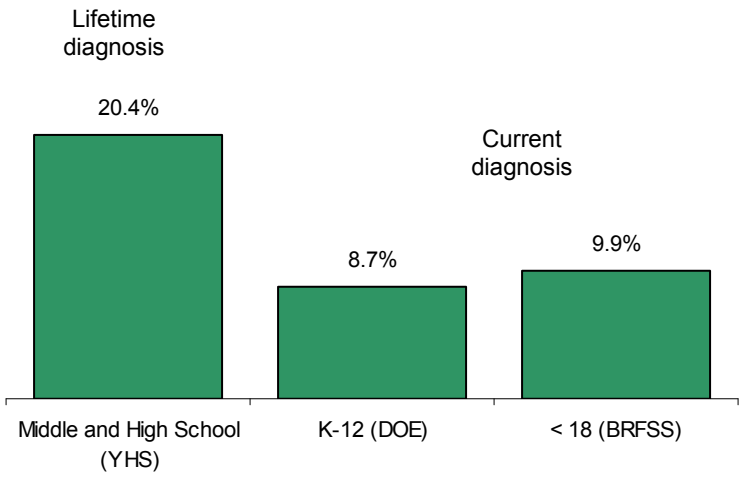
Prevalence in Youth

Approximately 1 in 10 students currently has asthma, and 1 in 5 students has ever had asthma.

The Vermont Department of Health uses a variety of sources to collect asthma data among students.

- The **Youth Health Survey (YHS)** only collects lifetime prevalence (having ever been diagnosed) among high school and middle school students. 22.3 percent of all middle and high school students have ever been diagnosed with asthma.
- The **Behavioral Risk Factor Surveillance System (BRFSS)** estimates current asthma prevalence for youth under age 18. Approximately 9.9% (or 12,800) youth under 18 years of age have current asthma.
- The **Department of Education** collected data on asthma prevalence as part of their School Nurse Reports during the 2008-2009 school year. Based on nurse reports, current asthma prevalence in Vermont schools (K-12) is 8.7%.

Prevalence of lifetime and current asthma among youth—2008-2009.



DATA TABLES

Prevalence of lifetime asthma—Middle and high school students, 2004-2008.

	2004	2006	2008
	%	%	%
Middle and High School (YHS)	22.3	21.7	20.4
Male	22.8	20.4	22.6
Female	21.8	23.1	18.2

Crude rates. Data source = YHS and Department of Education.

Morbidity

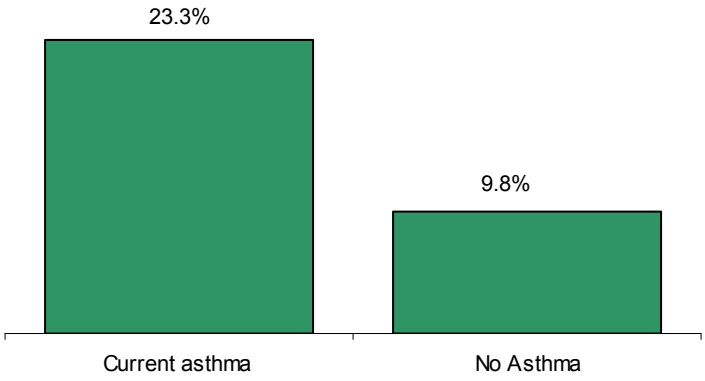
Asthma Data 2008

Quality of Life

Data show Vermonters with asthma are more likely to report having a fair or poor quality of life, being unable to work, and having impaired sleep than Vermonters without asthma.

Quality of Life: In Vermont, people with asthma report having a "fair" or "poor" quality of life at significantly higher rates than people without asthma (23.3% versus 9.8%).

Percent reporting "fair" or "poor" quality of life by asthma status – Vermont adult residents, 2008.



Employment Status: Persons with asthma report being unable to work at three times the rate of people who do not have asthma (10.7% versus 2.9%).

Impaired Sleep: 33% of Vermonters with asthma reported that their asthma symptoms made it difficult for them to stay asleep for one or more days in the past 30 days. This is down from 46% in 2006.

DATA TABLES

Percent reporting "fair" or "poor" quality of life and moderate to severe depression by asthma status – Vermont adult residents, 2008.

	Fair or Poor Quality of Life	Employment Status
	%	%
Current asthma	23.3	10.7
No asthma	9.8	2.9
Total population	11.1	3.7

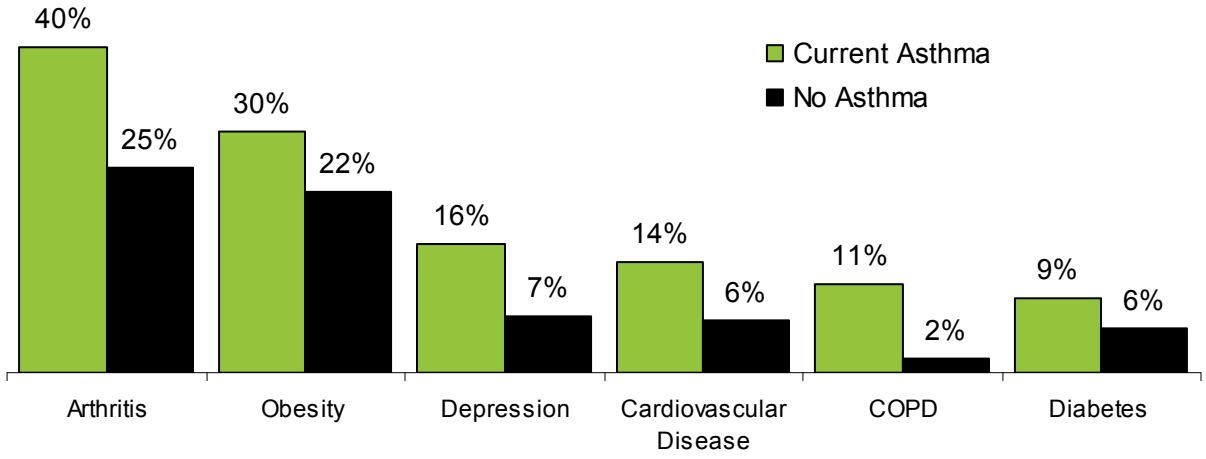
Data source: BRFSS
Age-adjusted rates

Co-morbidities

Given that people with asthma may be dealing with multiple chronic conditions, initiatives aimed at reducing chronic disease will benefit from working together.

Because many chronic diseases have similar risk factors, it is not surprising to find people with more than one chronic disease. Compared to Vermonters without asthma, Vermonters with asthma are significantly more likely to have arthritis, obesity, depression, cardiovascular disease, COPD and diabetes.

Asthma and chronic disease co-morbidities - Vermont adult residents, 2007-2008.



DATA TABLES

Asthma and chronic disease co-morbidities - Vermont adult residents, 2007-2008.

	Total population	Current asthma	No asthma
	%	%	%
Arthritis (2007)	26.6	40.0	25.2
Obesity* (2008)	23.2	29.7	22.4
Depression (2008)	8.0	15.8	7.0
Cardiovascular Disease (2008)	7.1	13.5	6.4
COPD (2008)	2.6	10.9	1.8
Diabetes (2008)	5.9	9.2	5.5

Data source: BRFSS
Age-adjusted rates
*Data for obesity are often presented for 20+

Risk Factors

Asthma Data 2008

Workplace and School Exposure

There is increasing concern and research regarding the possible role of environmental and occupational exposures in the development and exacerbation of asthma.

According to the 2008 Behavioral Risk Factor Surveillance System– Asthma Callback Study:

- 9.4% of Vermonters with asthma were told by a health professional that their asthma was related to a job they have had.
- 8.7% of Vermonters with asthma told a health professional that their asthma was related to a job they had had.
- 7.5% of Vermonters with asthma reported that their asthma was caused by chemicals, smoke, fumes, or dust in their current job
- 19.2% reported that their asthma was made worse by chemicals, smoke, fumes, or dust in their current job.
- 28.8% changed or quit a job because chemicals, smoke, fumes, or dust either caused their asthma or made it worse.

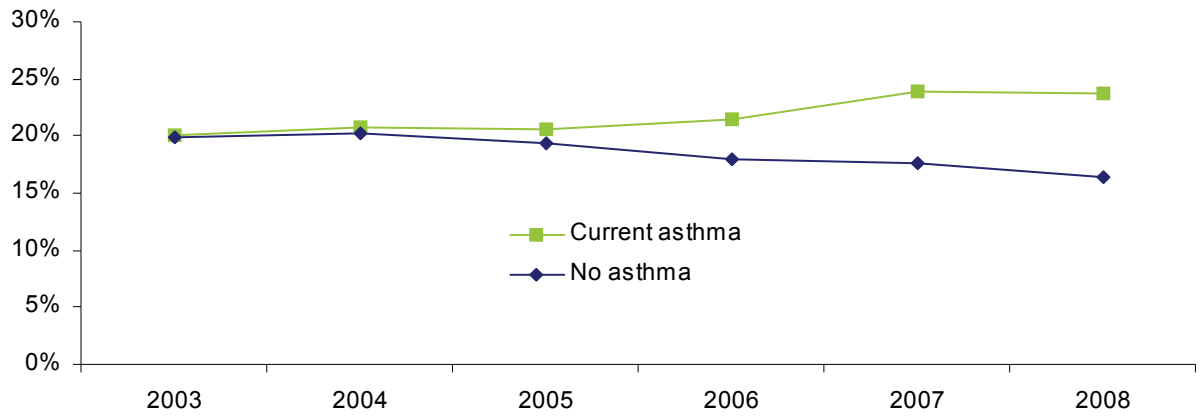
ENVISION: Efforts to improve environmental health are also carried out through the "*ENVISION*—Promoting Healthy School Environments" program. ENVISION is a direct result of the passing of the Act 125 Legislation which directs the Commissioners' of Health, of Education, and of Buildings and General Services to:

- create and maintain a clearinghouse of environmental health information on the Department of Health's website
- provide technical assistance to schools
- provide workshops on environmental health for school personnel
- to develop a model environmental health plan and policy
- to encourage and assist schools in developing programs that will enable them to address and prevent environmental health issues through the voluntary participation of schools.

Cigarette Smoking

Smoking can exacerbate existing asthma, resulting in increased frequency and severity of symptoms. Programs must work to decrease smoking rates in Vermont, particularly among students, with 1 in 10 middle and high school students currently smoking.

Current smokers by asthma status - Vermont adult residents, 2003-2008.



Adults: The disparity in rates of smoking in adults with and without asthma is growing.

Youth: Among middle and high school students, cigarette smoking rates are higher in those with asthma, compared to those without asthma.

DATA TABLES

Current smokers by asthma status - Vermont residents, 2003-2008.

	Total current smokers	People with asthma who are current smokers	People without asthma who are current smokers
Adults	**%**	**%**	**%**
2003	19.8	20.1	19.8
2004	20.2	20.7	20.2
2005	19.6	20.6	19.4
2006	18.4	21.4	18.0
2007	18.1	23.9	17.6
2008	17.2	23.7	16.4
Youth			
Middle and High School - 2008	10	11	8

Data source: BRFSS (Adults), YHS (youth)
Age-adjusted rates (Adults), Crude (youth)

Self– and Clinical Care Management

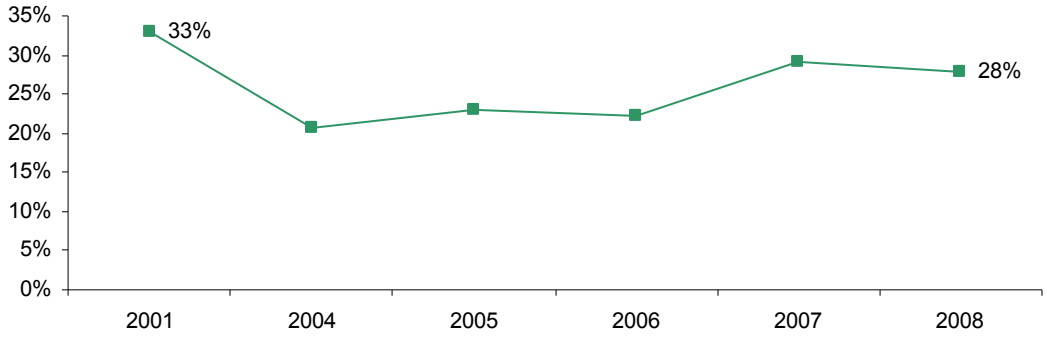
Asthma Data
2008

Written Management Plans

With only 1 in 4 Vermonters with asthma on a written asthma management plan, programs must work to increase use and awareness of the importance of these plans among both adults and youth.

The National Heart, Lung, and Blood Institute recommends that seeing a physician for regular check-ups, using medications as directed by a doctor, and following an asthma action plan prescribed by a doctor can prevent or decrease asthma symptoms. (source: National Heart, Lung, and Blood Institute).

Asthma self-management plan use – Vermont residents with asthma, 2001, 2004-2008.



Adults: While use of written asthma management plans decreased significantly among adult Vermonters from 32.9% in 2001 to 22.3% in 2006, it has begun increasing again in recent years.

Youth: The Department of Education also collected data on use of the Vermont Asthma Action Plan (VAAP) in schools. School nurses reported similar rates of use of asthma management plans (22.1%) among their students compared to the rate observed among adults (school year 2008-2009).*

DATA TABLES

Asthma self-management plan use – Vermont residents with asthma, 2001, 2004-2008.

	2001	2004	2005	2006	2007	2008
Written Asthma Plan:	%	%	%	%	%	%
Adults**	32.9	20.7	23.1	22.3	29.1	27.9

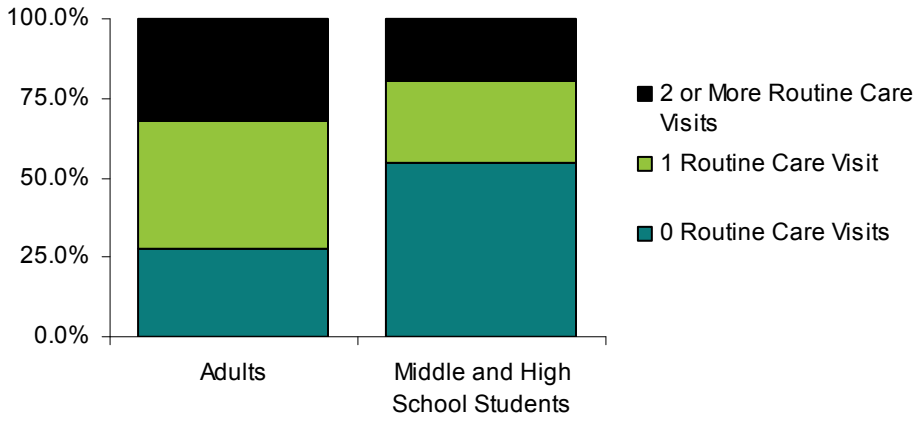
Data sources: BRFSS and School Nurse Survey
BRFSS: Age-adjusted rates, School Nurse Survey: Crude rates
*Nurse reported Asthma Action Plan on file.
**Respondents indicated they and their doctor or other health care provider had worked out a written plan for taking care of their asthma in the past 12 months (written asthma plans can include information about medicines, asthma triggers, and what to do when you have an attack).

Routine Care Visits and Asthma Education

Physicians, other health care professionals, and patients must be educated on the importance of routine care visits for persons with asthma.

Routine Care Visits
More than one quarter of Vermont adults with asthma did not see a physician for a routine care visit in the past year. More than half of Vermont middle and high school students with asthma did not see a physician for a routine care visit in the past year.

Frequency of routine care visits in past year for asthma - Vermont residents with current asthma, 2008.



Among adults with asthma:
- 8.2% had ever taken a course on how to manage their asthma
- 67.1% had been taught how to recognize early signs and symptoms of an asthma episode
- 76.3% had been taught what to do during an asthma attack
- 45.8% had been taught how to use a peak flow meter to adjust their daily medications.

DATA TABLES

Frequency of routine care visits in past year for asthma - Vermont residents with

	0 routine care visits	1 routine care visit	2 or more routine care visits
	%	%	%
Adults	27.6	40.3	32.1
Middle and High School Students	54.4	25.9	19.7

Data source: BRFSS, YHS, Crude rates

Medication Use

Vermonters use a variety of different medications, including conventional, complementary, and alternative, to control their asthma. Almost half of adult Vermonters used medication in the past week to prevent an asthma attack.

The National Asthma Education Prevention Program Guidelines recommend daily medication for long-term control of persistent asthma among adults. (source: NAEPP Expert Panel Report Guidelines for the Diagnosis and Management of Asthma-Update on Selected Topics).

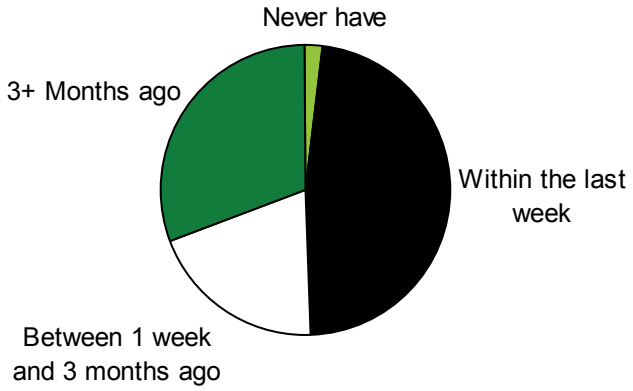
Conventional Medicine
28% of Vermont adults have ever used over-the-counter medication for their asthma. Almost everyone (99%) has ever used a prescription inhaler.

Almost half of adult Vermonters with asthma used medication to prevent an asthma attack in the past week.

Complementary and Alternative Medicine
41% of adults with current asthma used complementary or alternative medicine (CAM). Types of CAM most frequently used are:

- Breathing techniques (31%)
- Yoga (8%)
- Vitamins (6%)
- Herbs (6%)
- Aromatherapy (5%)

Frequency of asthma medication used to prevent an asthma attack – Vermont adult residents with current asthma, 2008.



DATA TABLES

Frequency of asthma medication used to prevent an asthma attack – Vermont adult residents with current asthma, 2006-2008.

	Never	Within the last week	Between 1 week and 3 months ago	More than 3 months ago
	%	%	%	%
2006	3.2	57.5	9.9	29.4
2007	1.7	52.8	18.6	27.0
2008	1.8	47.5	19.8	30.8

Indications of Poor Asthma Management

Asthma Data
2008

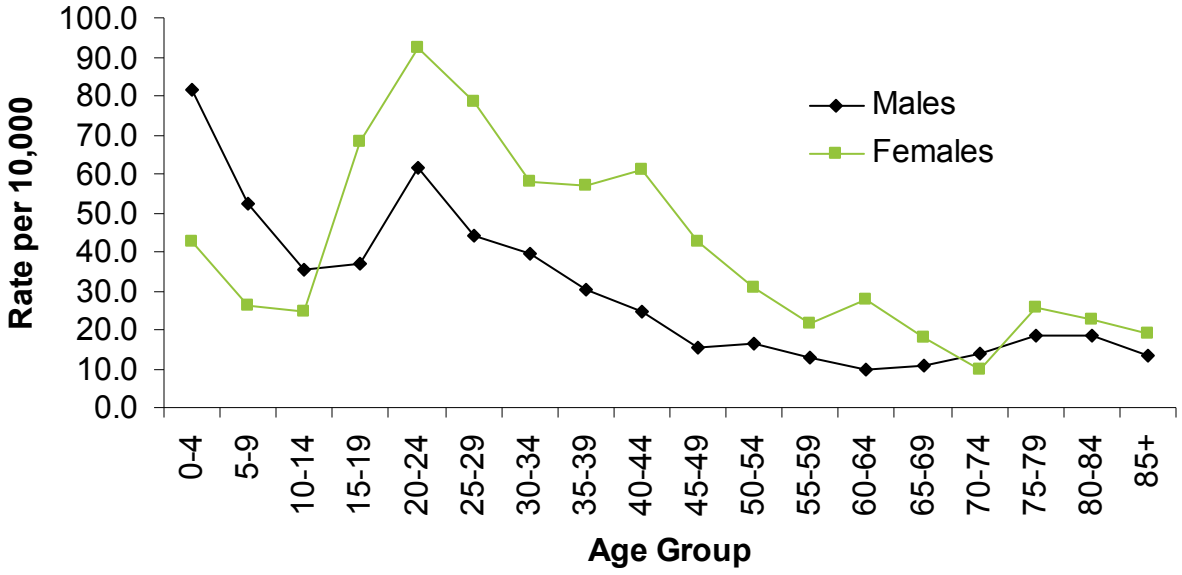
Emergency Room Visits by Age and Sex

The age and sex distribution of ER visits mirrors prevalence trends, suggesting asthma severity does not vary by age or sex.

There were a total of 2347 visits (37.8 per 10,000) to the Emergency room by Vermont residents in 2007.

In addition to having overall higher prevalence rates than men, females visited the ER for their asthma more often than males in 2007, with 1383 visits or 43.8 visits per 10,000 population compared to 964 visits, or 31.5 visits per 10,000 among males. Within each gender, females aged 15-29 and males aged 0-5 had the highest rates of ER visits. This age/gender distribution is similar to what is seen nationally. Vermont data tables are presented on the following page.

Emergency room visits for asthma by age and sex – Vermont residents, 2007.



Data source: Hospital Discharge Data
NOTE: ER visits that result in a hospital admittance are excluded

Emergency Room Visits by Age and Sex

Emergency room visits for asthma by age and sex – Vermont residents, 2007.

	Total		Males		Females	
Age group	#	Rate (per 10,000)	#	Rate (per 10,000)	#	Rate (per 10,000)
0-4	204	62.9	137	81.6	67	42.8
5-9	134	39.5	91	52.4	43	26.0
10-14	116	31.3	70	35.6	46	24.6
15-19	238	52.0	86	36.7	152	68.1
20-24	323	76.6	133	34.7	190	92.2
25-29	219	60.8	81	43.9	138	78.5
30-34	167	48.6	67	39.3	100	57.7
35-39	178	43.8	61	30.4	117	56.8
40-44	203	43.2	57	24.8	146	60.8
45-49	154	29.3	40	15.5	114	42.7
50-54	122	23.7	42	16.6	80	30.5
55-59	80	17.3	30	13.0	50	21.6
60-64	67	18.7	17	9.6	50	27.8
65-69	36	14.5	13	10.9	23	18.0
70-74	22	11.6	12	13.7	10	9.9
75-79	37	22.8	13	18.6	24	25.9
80-84	26	20.9	9	18.4	17	22.5
85+	21	17.4	5	13.3	16	19.2
All ages	2347	37.8	964	31.5	1383	43.8

Data source: Hospital Discharge Data
NOTE: ER visits that result in a hospital admittance are excluded

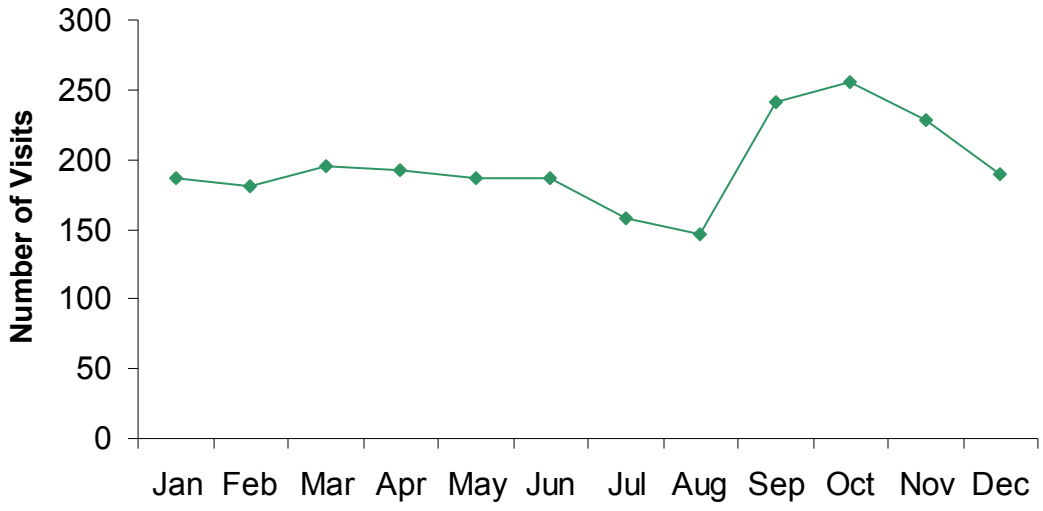
Temporal Patterns of Emergency Room Visits

With the seasonal variation in asthma-related ER visits in Vermont, the media could play a valuable role in publicizing the importance of asthma self– and clinical care management during times of the year with the highest rates of ER visits.

Frequency of ER visits among people with asthma often vary by the time of year. The reason for this variation remains unclear however there are several known causes of asthma attacks that may correspond with seasonal patterns. Tree and grass pollen, known allergens that can cause asthma attacks, have the highest counts in spring and early fall. Cold air, or changes in weather may also cause asthma attacks. (source: National Heart, Lung, and Blood Institute)

In Vermont, ER visits for asthma peak between September and November.

Emergency Room visits for asthma by month – Vermont residents, 2007.



DATA TABLES

Emergency Room visits for asthma by month – Vermont residents, 2007.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	#	#	#	#	#	#	#	#	#	#	#	#
2007	187	181	195	193	186	187	158	147	241	255	228	189

Data source: Hospital Discharge Data

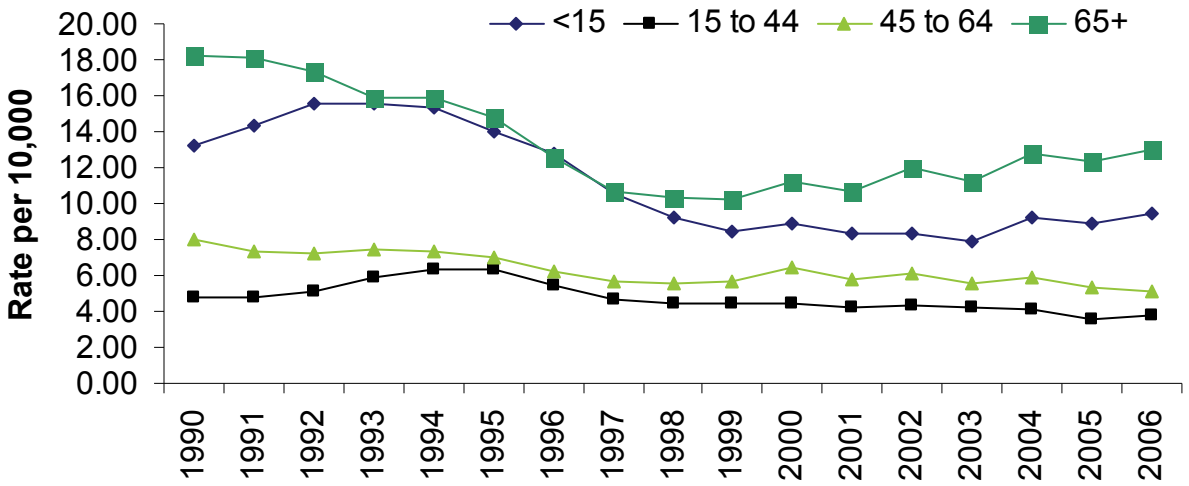
Hospitalizations and Deaths

Increased efforts are needed to continue the decline in asthma hospitalizations observed in the 1990s. Efforts to decrease the number of hospitalizations related to asthma should focus on the youngest and oldest age groups.

Hospitalization for asthma is a sign of ineffective management of the disease.

There were 402 hospitalizations for asthma among Vermonters in 2007. CDC's national objective is to decrease hospitalization rates for asthma by 9% from 2000 to 2009. Vermont made significant progress in decreasing hospitalization rates between 1990 and 2000, mainly due to large decreases in hospitalizations among youth under 15 and adults 65 and older. Since 2000, hospitalization rates for asthma have remained relatively unchanged, except among those 65 and older and those under 15, who have experienced a slight increase in rates. Vermont data tables are presented on the following page.

Asthma hospital discharge rates by age group, 3-year moving averages - Vermont residents, 1990-2007.



Deaths: Between 1999 and 2007 there were 67 deaths due to asthma in Vermont, 8 of which occurred in 2007. Because of small numbers, data cannot be presented by demographic breakdown. Research has suggested that following an asthma management plan may prevent deaths related to asthma.

Data source: Hospital Discharge Data, Vermont Vital Statistics
NOTE: These data include ER visits when the ER visit resulted in a hospital admittance

Hospitalizations

Asthma hospital discharge rates by age group - Vermont residents, 1990-2007.

	1990	1991	1992	1993	1994	1995	1996	1997	1998
Total number of hospitalizations	486	525	503	551	581	546	486	396	350
Rate per 10,000									
<15	12.8	15.4	15.0	16.1	15.4	14.4	12.3	1.8	7.7
15-44	4.5	4.7	5.1	5.6	6.8	6.5	5.6	4.1	4.4
45-64	8.4	7.0	6.7	7.9	7.7	6.3	7.1	5.3	4.7
65+	18.4	20.3	15.8	15.8	16.2	15.9	12.3	9.5	10.0
Total	8.6	9.3	8.8	9.5	9.9	9.2	8.1	6.6	5.8

	1999	2000	2001	2002	2003	2004	2005	2006	2007
Total number of hospitalizations	408	380	428	336	444	364	355	429	402
Rate per 10,000									
<15	8.1	9.5	9.2	6.5	9.4	7.6	10.6	8.5	9.4
15-44	4.9	4.2	4.2	4.2	4.6	3.9	3.8	2.9	4.5
45-64	6.6	5.6	7.0	4.6	6.7	5.4	5.7	5.0	4.5
65+	11.4	9.4	13.0	9.7	13.4	10.6	14.3	11.9	12.9
Total	6.8	6.2	7.0	5.5	7.2	5.9	6.9	5.7	6.5

Data source: Hospital Discharge Data
NOTE: These data include ER visits when the ER visit resulted in a hospital admittance

Costs

Improvements in asthma management will result in decreases in the number of hospitalizations and emergency room visits related to asthma. In addition to improving the overall quality of life of those suffering from asthma, these efforts will dramatically decrease health care costs related to asthma.

Charges related to asthma hospital visits – Vermont, 2005-2007.

Hospital charges related to asthma were approximately $4.6 million in Vermont for 2006.

DATA TABLES

Charges related to asthma hospital visits – Vermont, 2005-2007.

	2005	2006	2007
In-patient	$3,294,589	$3,004,688	$4,067,524
Emergency room	$1,410,219	$1,517,217	$1,591,005
Out-Patient	$115,875	$123,904	$85,086
Total	$4,820,684	$4,645,809	$5,743,615

Data source: Hospital Discharge Data