

Children & Youth with *asthma*

in Washington State



Washington State Department of Health
Division of Prevention and Community Health
Office of Healthy Communities

About This Report

The Washington State Department of Health receives frequent requests for recent data on asthma among children and youth. This report is intended for educators, health care providers, and public health professionals to inform policymakers, prepare grant applications, and support communication about childhood asthma.

Report Data

We obtained data represented in this report from a variety of sources, including the:

- Washington Behavioral Risk Factor Surveillance System (BRFSS), Asthma Random Child Selection and Prevalence Modules
- Washington Healthy Youth Survey (HYS)
- Comprehensive Hospitalization Abstract Reporting System (CHARS).

See the Appendix to learn more about these surveys.

Lifetime and Current Asthma

This report makes a distinction among people who have ever been diagnosed with asthma – referred to as *lifetime* asthma – and those who have current asthma. Lifetime asthma can provide a clearer picture of how many children and youth have been affected by the disease at some point in their life. People with asthma are at higher risk of poor health outcomes and use more health care resources.

To estimate the number of people affected by asthma, people are asked, “Has a doctor or other health professional ever told you that you had asthma?” Those who answer “yes” are considered to have lifetime asthma. People who report that they have lifetime asthma are then asked: “Do you *still have* asthma?” Those who answer “yes” to both questions are considered to have current asthma.

DOH 345-269

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To submit a request, please call 1-800-525-0127 (TDD/TTY call 711).

asthma in washington

Of the 1.5 million children and youth under 18 years of age in Washington, nearly 110,000¹ have asthma. In Washington, asthma has the greatest impact on:

- **Low income children**

The rate of lifetime asthma among children in low-income households (less than \$20,000 per year) is nearly 65 percent higher than children in higher income households (\$50,000 or more).

- **American Indian/Alaska Native and African American Children**

One in four American Indian/Alaska Native households with children has at least one child affected by asthma. Nationally, African American children are three times more likely to be hospitalized or die from asthma than white children.²

- **Families in which at least one parent has asthma**

Children are nearly four times more likely to have asthma if they have a parent with asthma.³

- **Children with weight control issues**

Obese children are nearly twice as likely to have lifetime asthma than youth with typical weight.

- **Children not breastfed during infancy**

Recent studies show that children who were not breastfed are twice as likely to have asthma as children who were breastfed.⁴

- **Children exposed to tobacco or marijuana smoke**

Youth who live with a smoker are more likely to have current and lifetime asthma. Youth who smoke or use marijuana are more likely to have lifetime asthma.



prevalence

Asthma is the most common chronic disease among children worldwide. In Washington, 11 percent of our children and youth have been diagnosed with asthma during their lifetime.

Who is affected?

Around seven percent of children and youth in Washington currently have asthma – that is nearly 110,000.¹ Asthma prevalence is not uniform by age, and the likelihood of having asthma increases as children get older. [Fig. 1]

About 19 percent of middle and high school age youth surveyed have been diagnosed with asthma during their lifetime. The prevalence of lifetime asthma is similar among middle and high school age children, with the exception of sixth graders. [Fig. 2] In the early teens, girls are more likely than boys are to have current asthma. [Fig. 3]

Actual prevalence of current asthma is likely to be under reported. When completing Washington’s *Healthy Youth Survey*, some youth did not know whether they currently had asthma. We define “likely to have current asthma” as youth who said they had an asthma attack or took asthma medication within the past year or reported current asthma.

Of the tenth graders surveyed, 15 percent of the girls and 10 percent of the boys were likely to have current asthma, compared to the 11 percent and 8 percent who reported current asthma. [Fig. 4]

Figure 1. Asthma Among Washington State Children Prevalence by Age

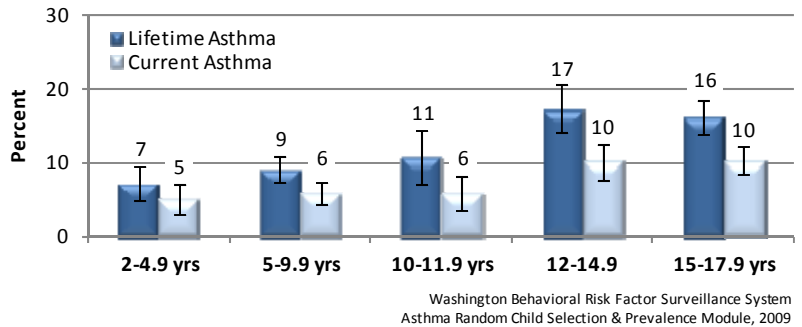


Figure 2. Lifetime Asthma Among Youth Prevalence by Grade and Sex

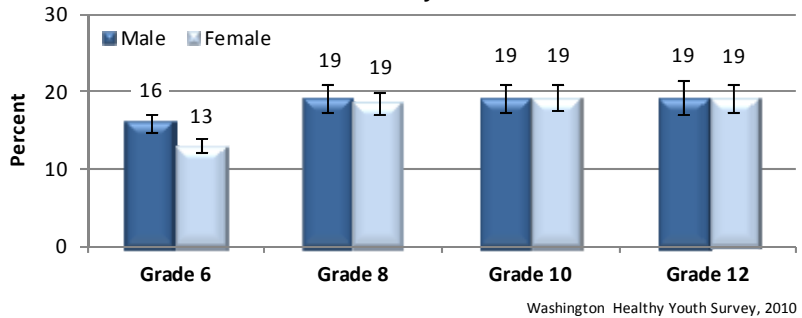


Figure 3. Current Asthma Among Youth Prevalence by Grade and Sex

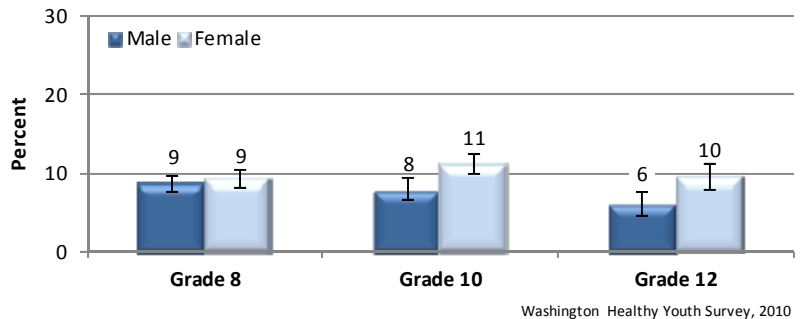
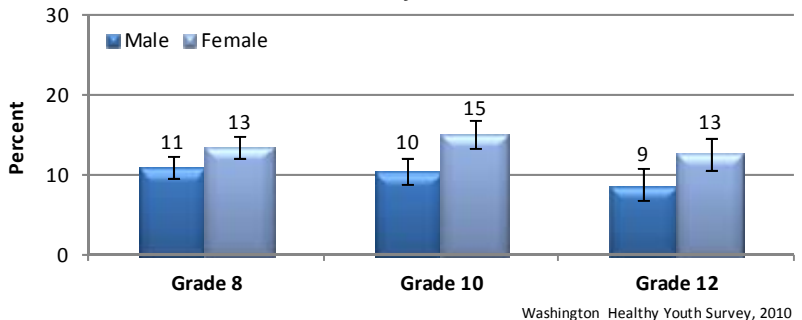


Figure 4. Likely to Have Current Asthma Among Youth Prevalence by Grade and Sex



socio-economic factors

About one in six Washington households with children had at least one child who has had asthma. Among those households, one in ten had one or more children who currently have asthma.

Low-Income Households

Children from households with annual incomes less than \$20,000 are more likely to have asthma than children from families with incomes of \$50,000 or more. [Fig. 5]

In addition, low-income households (200 percent or less of federal poverty level) were more likely to have at least one child with asthma. [Fig. 6]

With only one year of data available, there are insufficient numbers to report prevalence estimates by racial categories based on household income. We will add this information to future reports as more data become available.

Race/Ethnicity

American Indian or Alaska Native (AI/AN) households are more likely to have a child who has been diagnosed with asthma than white and Asian/Pacific Islander households. Combined data for 2007 and 2008 show that **24 percent of AI/AN households with children and 22 percent of African American households with children have at least one child who has been diagnosed with asthma.** [Fig. 7]



Figure 5. Asthma Among Washington State Children Prevalence by Annual Household

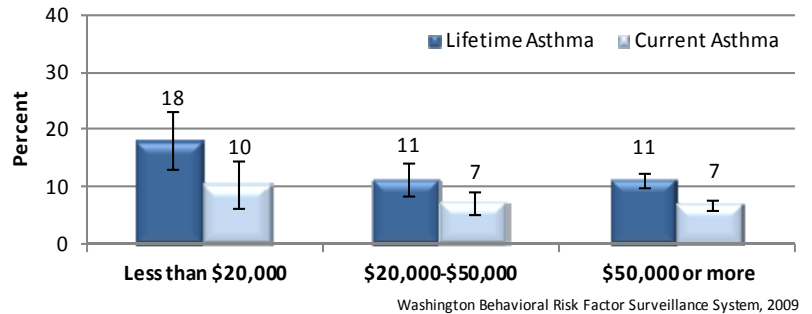


Figure 6. One or More Children with Asthma Among Household with Children Prevalence by Household Income (FPL)*

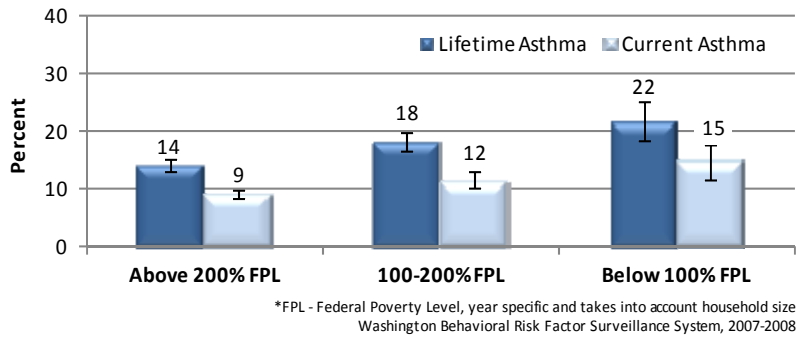
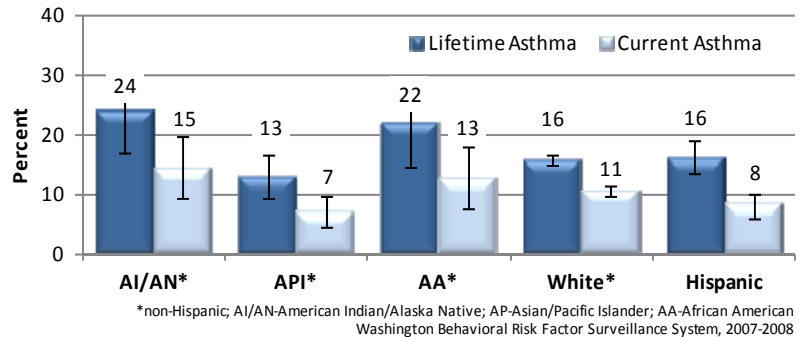


Figure 7. One or More Children w/Asthma Among Household of Children Prevalence by Race/Ethnicity of Respondent



risk factors for asthma

The exact cause of asthma is not known. Researchers think some genetic and environmental factors interact to cause asthma. This happens most often early in life. We do know that some people are more likely than others to get asthma.

Genetic Predisposition

Parents who have current asthma are **two to three times more likely to have a child with asthma** than parents who do not have asthma. [Fig. 8]

People who have a close relative with asthma and people who have allergies are also more likely to develop asthma.³

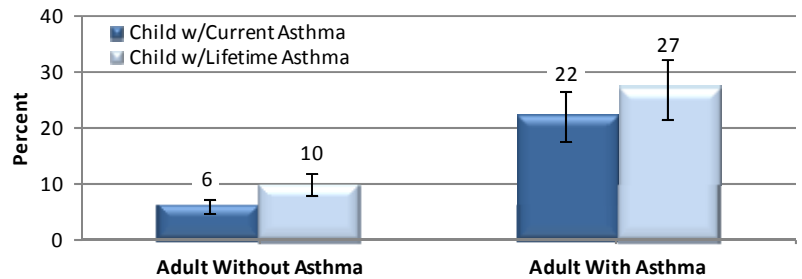
Obesity

Youth who are obese are more likely to have lifetime asthma than youth who were not overweight.

Lifetime asthma prevalence among tenth graders **who are obese was 26 percent compared to 19 percent for youth not overweight.** [Fig. 9]

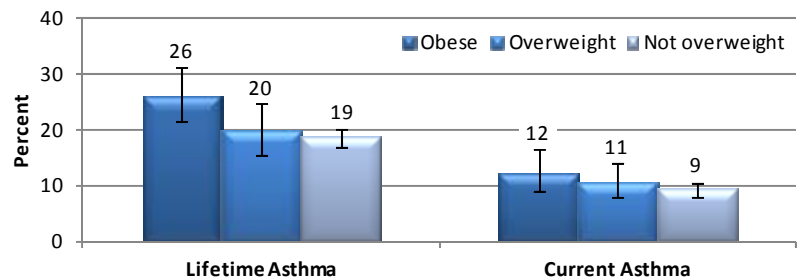
[See Appendix for definitions of “overweight” and “obese”]

Figure 8. Child Asthma Prevalence by Asthma Status of Adult BRFSS Respondent



Washington Behavioral Risk Factor Surveillance System, 2009

Figure 9. Asthma Prevalence Among 10th Grade Youth by Weight Category



Washington Healthy Youth Survey, 2010



Breastfeeding appears to be a protective factor. Recent studies show that children who were breastfed are **half as likely to get asthma.**⁴

The Journal of Pediatrics, January 2012

First, Second, and Third Hand Smoke

Tobacco

About one in eight youth in 10th grade currently smoke. Youth who smoked cigarettes were more likely to have been diagnosed with asthma than youth who did not smoke. [Fig. 10]

Children whose parents smoke are much more likely to get asthma than children of non-smokers.⁵ Youth who lived with someone who smoked were more likely to have asthma than youth who lived with someone who did not smoke. [Fig. 11]

Prenatal exposure to tobacco smoke may be a factor in later developing asthma.⁶ In addition, tobacco smoke is a probable cause of new asthma among adolescents and adults who smoke.⁷

Marijuana

About one in five youth in 10th grade used marijuana in the past month. Youth who used marijuana were more likely to have lifetime asthma than youth who did not. [Fig. 12]

Figure 10. Asthma Prevalence Among 10th Grade Youth by Smoking Status

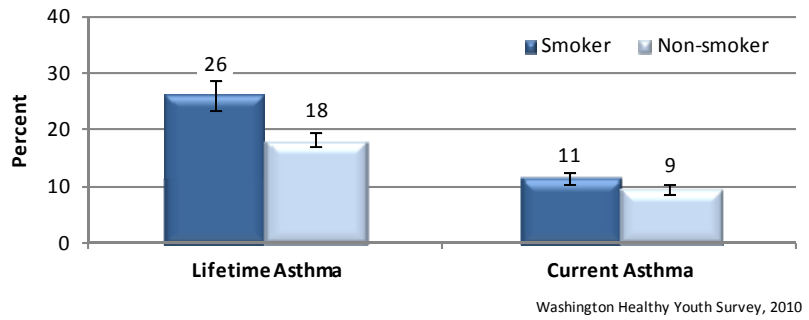


Figure 11. Asthma Prevalence Among 10th Grade Youth by Residence With or Without Smoker

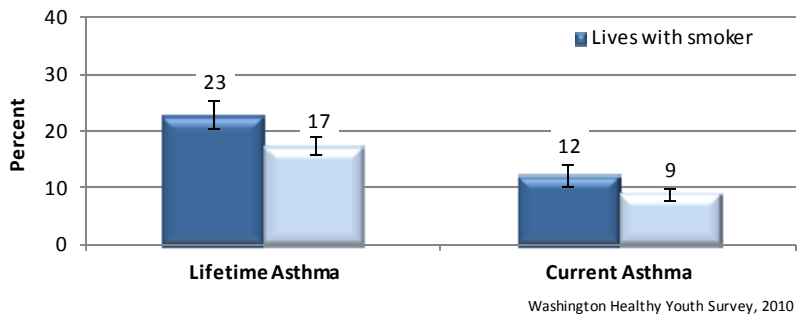
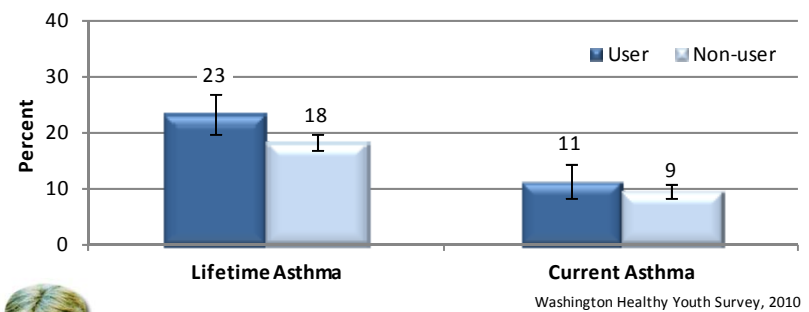


Figure 12. Asthma Prevalence Among 10th Grade Youth by Marijuana Use



asthma control

Asthma is the number one cause of hospitalization for children under 15 years of age in Washington. Nationally, asthma is the third-leading cause of hospitalization for the same age group.⁸

Asthma Hospitalizations

About one in five Washington tenth graders with asthma has been in the emergency department or urgent care for asthma during the past 12 months. [Fig. 13]

Nearly 2,000 children in Washington were hospitalized for asthma in 2009, which accounted for nearly half of all state asthma-related hospitalizations.

Very young children are most likely to be hospitalized. From 1999-2009, the children four and under had the highest asthma hospitalization rate compared to all other age groups in Washington. [Fig. 14] The hospitalization rate for this same group is 211 per 100,000, which is above the national *Healthy People 2020* goal of 181.

Asthma Deaths

Fewer than 100 people die from asthma each year in Washington. Adults over age 65 account for most asthma deaths. From 1999-2009, 24 children in Washington died from asthma.

Symptom Control

Nearly three-quarters of Washington's tenth graders with current asthma said they experienced asthma symptoms in the past month. Almost half used a rescue inhaler in that same time period. [Fig. 15]

Figure 13. Number of Asthma-Related Emergency Room/Urgent Care Visits Among 10th Grade Youth with Current Asthma

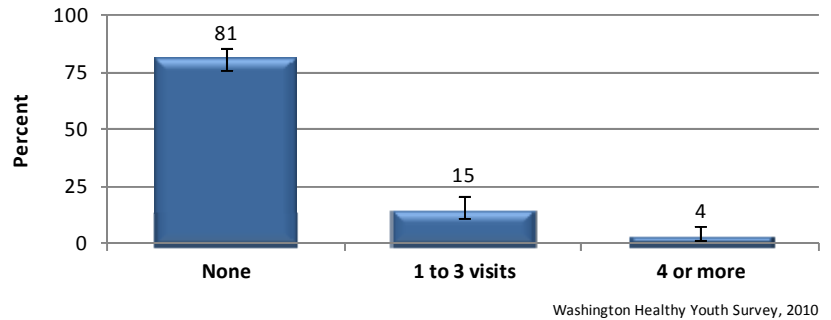


Figure 14. Asthma Hospitalization Rates Among Washington Children by Age Group and Year

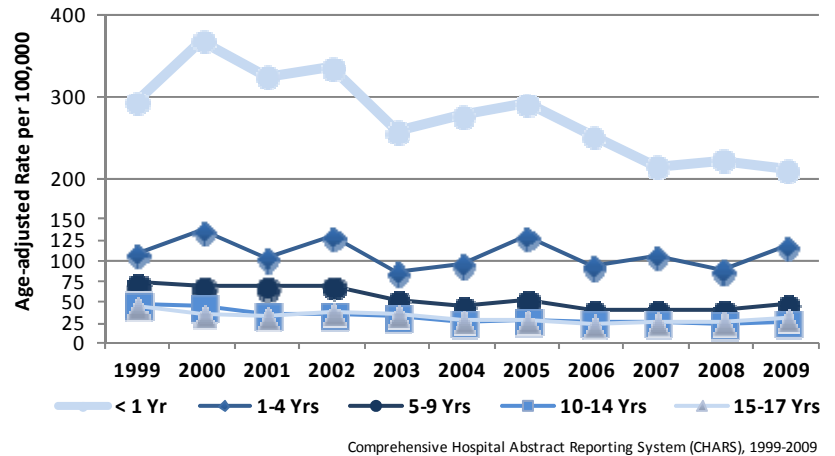
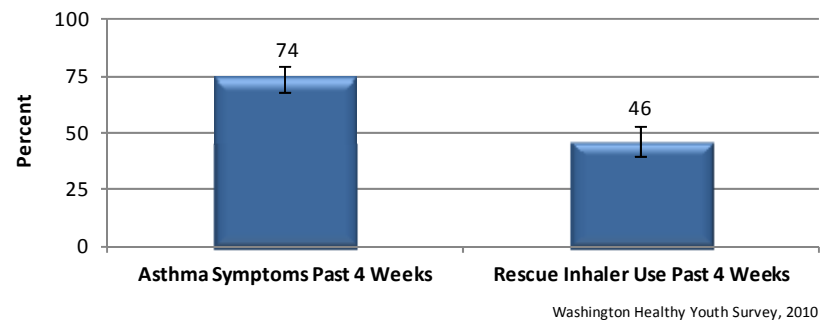


Figure 15. Indicators of Poor Asthma Control Among 10th Grade Youth with Current Asthma



where do we go from here?

Although data is limited, it is clear that asthma is a serious problem for Washington's youth. To improve asthma outcomes for children and youth, we need to address high-risk populations, provide education on reducing risk factors, and improve asthma management and care.

Address High Risk Populations

State and national data show that Native American, African American, and low-income households are at greater risk of having a child with asthma. These groups should be prioritized for asthma control interventions.

■ Native American

One out of four Native American households has at least one child with asthma.

■ African American

African American children are three times more likely to be hospitalized or die from asthma than white children.²

■ Low-Income Households

Low-income households (200 percent or less of federal poverty level) are more likely to have at least one child with asthma.

Reduce Risk Factors

Children with asthma that is not well controlled, often miss school days, are less active, and are hospitalized more often. Families of children with asthma need to learn how to reduce risk factors.

■ Smoking & Secondhand Smoke

Smoking prevention and cessation are among the most important tools to reduce the frequency and severity of asthma symptoms.

■ Obesity

Encouraging healthy eating habits and physical activity may help reduce severity of asthma symptoms.

■ Formula Feeding

Children who are breastfed have lower rates of asthma.

Improve Management and Care

Evidence-based care improves quality of life and reduces hospital visits. Children with asthma need:

■ Regular Checkups

Health care providers should schedule checkups every one to six months; prescribe controller medication to all patients with persistent asthma; assess for environmental triggers; and provide self-management education to patients and their caregivers.

■ A Written Asthma Action Plan

National asthma guidelines recommend a written asthma action plan from their medical provider.⁸ The Plan helps the family manage their child's asthma. There is concern that the number of Washington youth reporting the use of such a plan in 2008 has declined since 2006.

■ A Health Home

All children should have a primary care health home that supports good asthma management. Clinical quality improvement strategies are needed to increase health care providers' use of the national asthma guidelines and improve asthma outcomes for youth.

■ Asthma Triggers Eliminated

Asthma home visits are a cost-effective way to improve asthma control. Home visitors assess the home for asthma triggers, help patients reduce exposure to those triggers, and provide asthma self-management education. These services should be included as part of a comprehensive health home.



Methods and Sources:

Surveys help estimate asthma prevalence among children and youth. Larger surveys tend to be more accurate than smaller surveys. We usually include “95 percent confidence intervals” to show how precise the estimate is. Differences mentioned in this report are statistically significant to a 95 percent level of confidence.

Statistical significance was determined by lower and upper confidence limits that do not overlap. If the confidence intervals overlap, but neither interval includes the other estimates, we used a t-test to determine if the estimates were statistically significant ($p\text{-value} < .05$).

An in-depth discussion of methods used to determine statistical significance is described in *The Burden of Asthma in Washington State 2008* (Technical Notes, Appendix C-1).⁹ Prevalence point estimates shown in tables are rounded to the nearest whole number. Graphed estimates are not rounded.

Data represented in this report were obtained from a variety of sources. Analyses for this report were completed using Intercooled Stata 10.0. Some estimates were obtained from previously published reports.

Behavioral Risk Factor Surveillance System (BRFSS)

The Behavioral Risk Factor Surveillance System (BRFSS) is an annual telephone survey that provides indicators of health risk behavior, preventive practices, attitudes, health care use and access, and prevalence of selected diseases. In 1987, Washington first implemented BRFSS, which is supported in part by the U.S. Centers for Disease Control and Prevention (CDC).

The survey includes a sample of English or Spanish-speaking adults, ages 18 years and older in households with landline telephones. Interviews are conducted in English or Spanish by a survey firm under contract to the Department of Health, following survey administration protocols established by CDC.

The data are weighted to represent all adults. The data may underestimate some health behaviors associated with populations speaking neither English nor Spanish, transient populations, institutionalized people, and personnel in military housing. Due to the nature of self-reported data, risk factors that are seen as socially unacceptable may be underestimated.

For more information on Washington State BRFSS, visit <http://www.doh.wa.gov/DataandStatisticalReports/HealthBehaviors/BehavioralRiskFactorSurveillanceSystemBRFSS.aspx>.

For technical notes on the Washington State BRFSS, visit <http://www.doh.wa.gov/DataandStatisticalReports/HealthBehaviors/BehavioralRiskFactorSurveillanceSystemBRFSS.aspx>

For more information on national BRFSS, visit www.cdc.gov/brfss

Household with Asthma

In 2007-2008, more than 13,000 Washington respondents, who reported they had children in their household, were asked about asthma. They were asked how many children living with them had ever been diagnosed with asthma and, among those, how many still had asthma. Survey results were used to estimate the prevalence of households that have one or more children with asthma among all households with children.

Random Child Selection and Prevalence Module

Beginning in 2009, one child was randomly selected from BRFSS households with children ages 18 and younger. Adult respondents answered questions about that child's asthma status. BRFSS collected data on more than 5,000 children. These data were used to estimate the prevalence of children with asthma and to provide additional information that had not previously been available.

Washington State Healthy Youth Survey (HYS)

The Washington State Healthy Youth Survey (HYS) is a school-based survey of students in grades 6, 8, 10 and 12 in a random sample of public schools in Washington. The survey is administered every other year during class time. It contains questions about behaviors that result in unintentional and intentional injury (seat belt use, fighting and weapon carrying), physical activity and dietary behaviors (fruit and vegetable consumption), alcohol, tobacco, and other drug use, and related risk and protective factors.

The survey includes items from the CDC-sponsored Youth Risk Behavior Survey (YRBS) and Youth Tobacco Survey, the National Institute on Drug Abuse-sponsored Monitoring the Future survey, and the Social Development Research Group's Risk and Protective Factor Assessment instrument.

In 2010, the Healthy Youth Survey was given to 34,000 students. An additional 212,000 students participated and contributed to local results for counties, educational service districts, school districts, and individual schools.

Because of the large sample size, this survey provides more precise estimates among children ages 11 and older than the BRFSS. Youth who reported that at some point a doctor or health professional said they had asthma were designated as having lifetime asthma. Youth who said they still had asthma were designated as having current asthma.

Youth who did not know whether they had current asthma, but who said they had an asthma attack or took asthma medication within the previous year, were grouped with those who reported they still had asthma. This created a designation of “probable current asthma.” Sixth graders were not asked the additional questions used to determine probable cases.

For more information on the HYS, visit <http://www.doh.wa.gov/DataandStatisticalReports/HealthBehaviors/HealthyYouthSurvey.aspx>

For technical notes on the HYS, visit <http://www.doh.wa.gov/DataandStatisticalReports/HealthBehaviors/HealthyYouthSurvey/TechnicalNotes.aspx>

School-based surveys may underestimate risk behaviors associated with youth who drop out of school or do not attend school. Due to the self-reported nature of the data, certain behaviors may be under-reported.

Youth Risk Behavior Surveillance System (YRBS)

Sponsored by the U.S. Centers for Disease Control and Prevention (CDC), the YRBS asks questions about youth asthma for the United States that are similar to Washington's Healthy Youth Survey (HYS) questions. The following tables compare the results of the 2009 national YRBS survey with the 2010 Washington HYS.

Table 1. Lifetime Asthma Prevalence Among Youth, National vs. WA

Lifetime Asthma		2009 National	2010 WA
Grade	Sex	percent (95% CI)	percent (95% CI)
10	F	20.3 (18.0-22.7)	19.5 [17.9-21.3]
10	M	22.0 (19.5-24.7)	20.3 [18.3-22.5]
12	F	20.7 (18.4-23.1)	19.1 [17.3-21.1]
12	M	22.6 (20.1-25.3)	19.2 [17.3-21.4]

Table 2. Current Asthma Prevalence Among Youth, National vs. WA

Current Asthma		2009 National YRBS	2010 WA HYS
Grade	Sex	percent (95% CI)	percent (95% CI)
10	F	11.0 (9.3-12.9)	11.3 (10.1-12.6)
10	M	9.8 (8.1-11.9)	8.2 (6.9-9.7)
12	F	11.5 (9.5-13.9)	9.4 (8.0-11.1)
12	M	9.1 (7.7-10.7)	5.8 (4.6-7.4)

Comprehensive Hospitalization Abstract Reporting System (CHARS)

Hospitalization information for asthma is available from CHARS for 1987 onward. The Washington State Department of Health, Center for Health Statistics maintains the CHARS database. It contains selected data elements for each inpatient discharged from a state-licensed Washington hospital.

The CHARS database contains records of all hospitalizations in acute care (nonfederal hospitals) within Washington only. Hospitalizations for Washington residents treated out-of-state, in emergency departments, or in an ambulatory care setting for their asthma are not included in CHARS.

For more information on the CHARS, visit www.doh.wa.gov/DataandStatisticalReports/HealthcareinWashington/HospitalandPatientData/HospitalDischargeDataCHARS.aspx

Washington Death Certificate Data

Asthma-related deaths in Washington are taken from death certificates of Washington residents coded according to the 9th Revision of the International Classification of Diseases (ICD-9) for 1978-1998 and ICD-10 for 1999 and later.

These data are obtained from the Vital Registration System Annual Statistical Files, issued by Washington State Department of Health. Other than the causes of death, as determined by a physician, medical examiner or coroner, the files also contain information on the age, sex, race, street address, zip code, and county of residence.

For more information on the Death Data, visit <http://www.doh.wa.gov/DataandStatisticalReports/VitalStatisticsData/DeathData.aspx>

Terms:

Poverty Level - Each year, the U.S. Department of Health and Human Services issues poverty thresholds guidelines for administrative purposes such as determining financial eligibility for federal programs. These guidelines are referred to as the "federal

poverty level" (FPL) and take into account household size. To calculate FPL for Washington, we used a midpoint for income ranges from the BRFSS to assign an annual income.¹⁰

Overweight and Obese - The terms "overweight" and "obese" refer to a person's overall body weight and whether it is too high. The most useful measure of overweight and obesity is body mass index (BMI). BMI is based on height and weight and is used for adults, children, and teens. A child who is 5 feet tall and weighs 138 pounds would be overweight. A child who is 5 feet tall and weighs 158 pounds or more would be obese.¹¹

Body Mass Index - Body mass index (BMI) is a measure of body fat based on height and weight. BMI has been shown to be a reliable alternative to direct measure of body fat for most adults. Youth weight status was calculated using BMI with cut points based on the U.S. Centers for Disease Control and Prevention growth curves.¹² Individuals in the top 5 percent for BMI, based on age and gender-specific growth charts, are considered obese. Those in the top 15 percent, but not the top 5 percent, are considered overweight.

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**Division of Prevention and Community Health
Office of Healthy Communities**

**For more information, contact the Asthma Unit
PO Box 47855, Olympia, WA 98405-7855
360-236-3631 www.doh.wa.gov**