



**“When you can’t breathe,
nothing else matters.”**

The Burden of Asthma in Washington State

Epi Brown Bag, Olympia WA
August 2005

The Report

- Currently available at:
http://www.alaw.org/asthma/washington_asthma_initiative
- Authors:
 - Julia Dilley, Steve Macdonald, Judy Bardin
Washington State Department of Health
 - Barbara Pizacani
Multnomah County Health Department, Oregon State
Division of Health Services
- Supporting State Asthma Plan development

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- n Doris Cordova, Oregon Department of Health and Human Services/Multnomah County Health
- n Christy C. Curwick, MPH, Washington State Department of Labor and Industries/SHARP Program
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- n Lin Song, Ph.D, Public Health – Seattle & King County
- n Sean D. Sullivan, R.Ph., PhD University of Washington Department of Pharmacy/Washington Asthma Initiative Chair
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- n Gayle Thronson, RN, MEd, Office of the Superintendent of Public Instruction
- n Vickie Ybarra, RN, MPH, Yakima Valley Farm Workers Clinic



What is asthma?

“When I have an asthma attack, I feel like a fish with no water”

Jacob, Age 5, as quoted in an EPA asthma awareness campaign



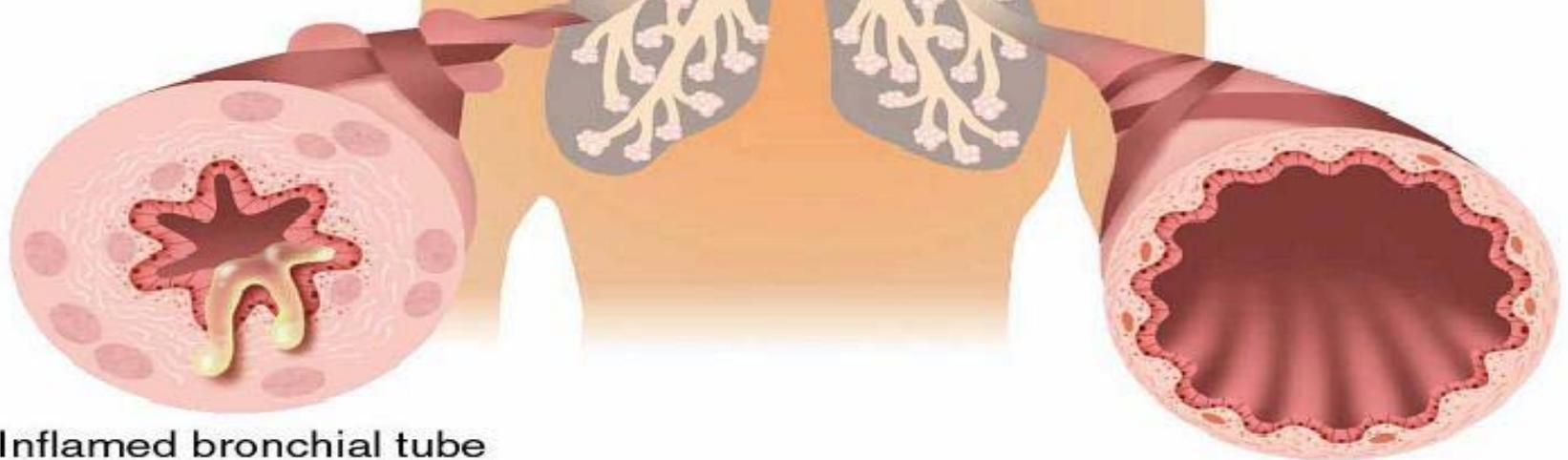
View campaign at <http://www.noattacks.org>

Why asthma makes it hard to breathe

Air enters the respiratory system from the nose and mouth and travels through the bronchial tubes.

In a person with asthma, the muscles of the bronchial tubes tighten and thicken, and the air passage becomes inflamed and mucus-filled making it difficult for air to move.

In a person who does not have asthma, the muscles around the bronchial tubes are relaxed and the tissue thin, allowing for easy airflow.



Inflamed bronchial tube of an asthmatic

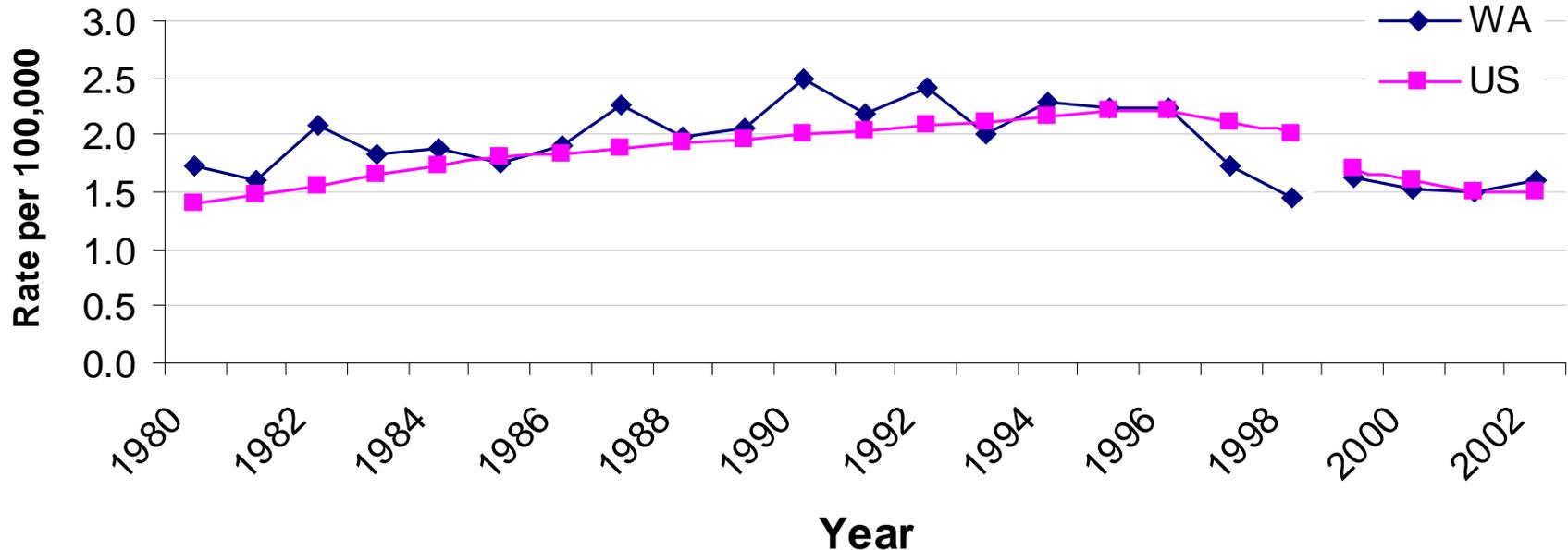
Normal bronchial tube

The Impact of Asthma

Mortality

Asthma death is rare: 93 Washington deaths reported from asthma in 2002

Asthma Mortality Rates Washington and U.S.



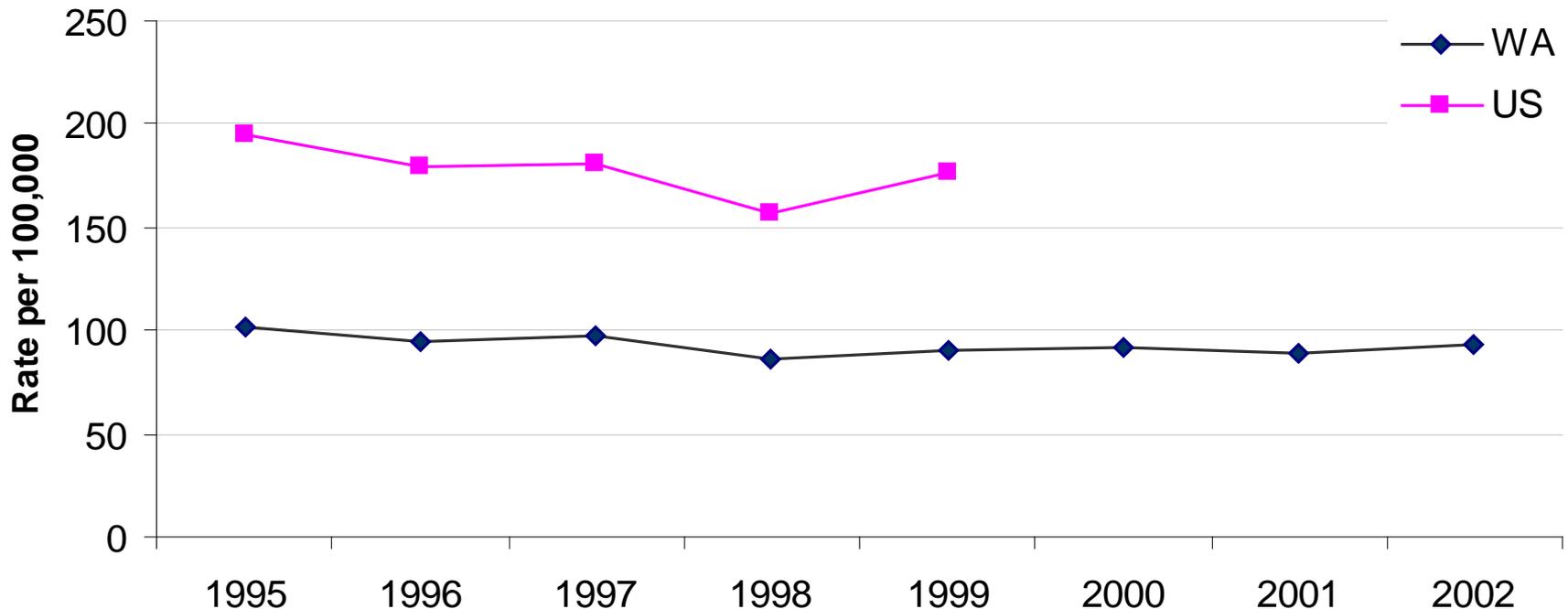
Source: 1980-2002 National Death Certificates, Washington State Death Certificates. Asthma as primary cause of death. Rates per 100,000, age-adjusted to 2000 US population. Data format changed between 1998 and 1999, indicated on chart by discontinuous line.

Morbidity: Hospitalizations

5,540 Washington hospitalizations in 2002

The average stay was 3 days and cost \$7,000

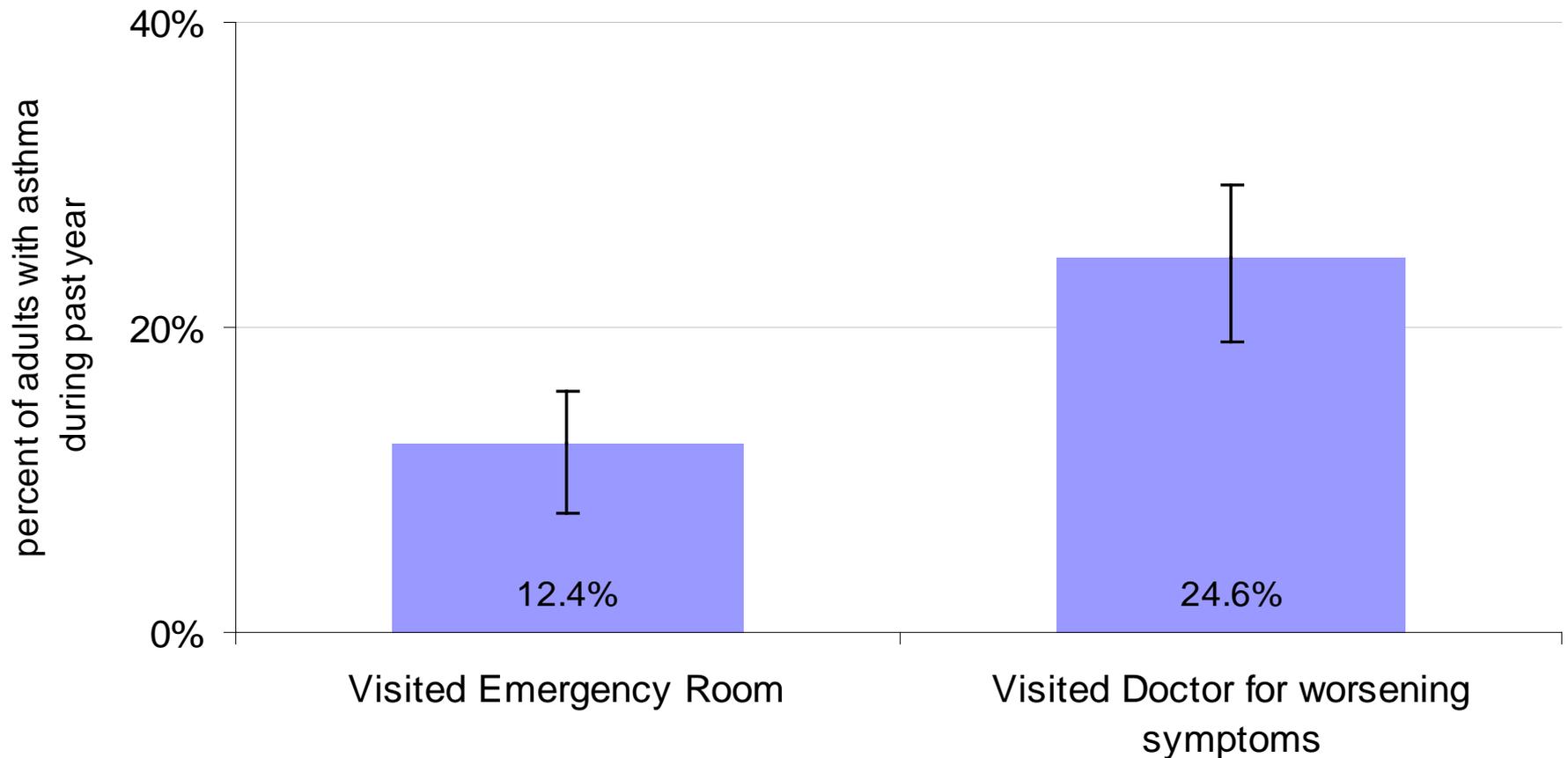
**Asthma Hospitalization Rates
Washington State and U.S.**



Source: National Hospital Discharge Survey, Washington State Comprehensive Hospital Abstract Reporting System (CHARS). Asthma as principal diagnosis, age-adjusted to 2000 US Population. Duplicated counts (individuals may contribute more than one hospitalization per year).

Morbidity: Urgent Medical Care

About 100,000 adults with asthma had a medical visit for symptoms during the past year, about 48,000 visited an ER.



Morbidity: Urgent Medical Care

Emergency care for asthma decreased with age among youth
Among those with ER visits, 13% had 4-9 and 4% had 10+ visits

Economic Costs

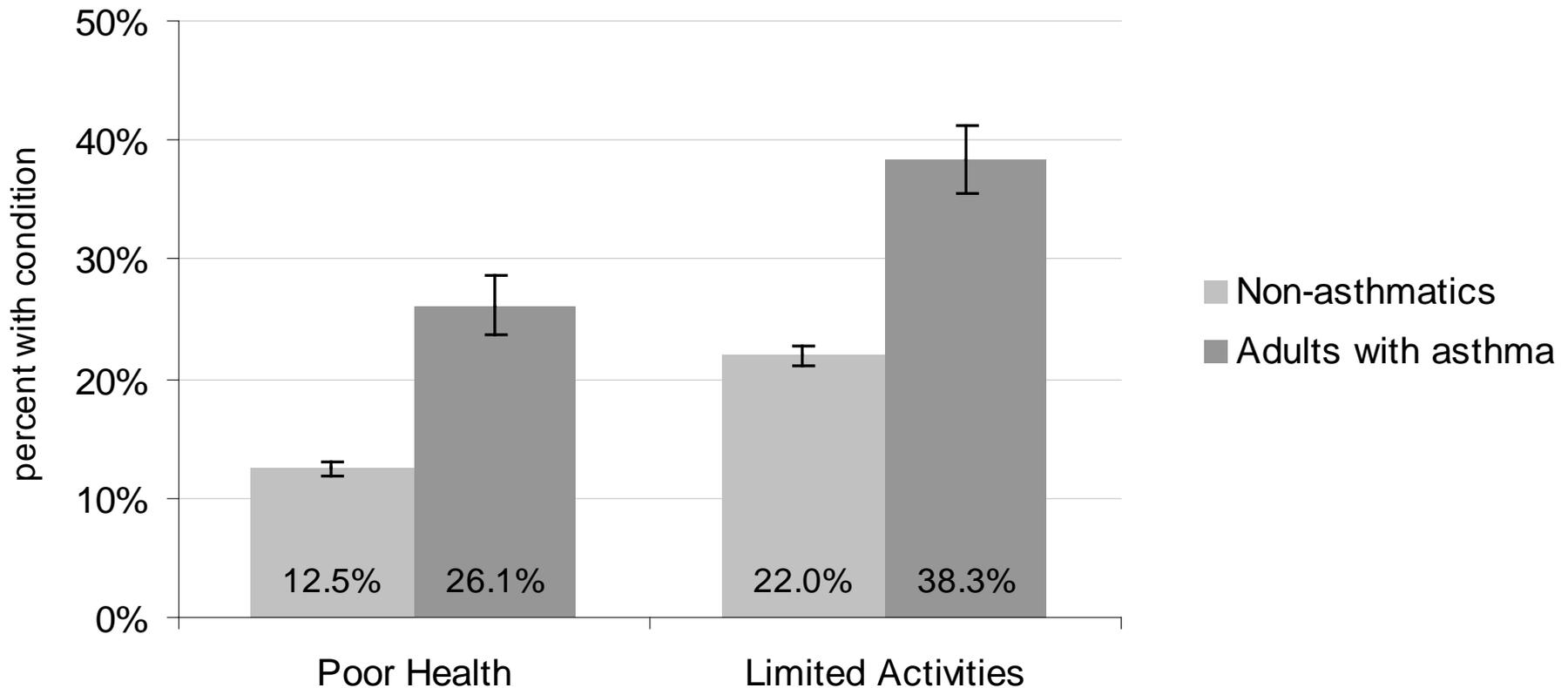
| <i>Costs in \$million per year</i> | US 2002 | WA 2002 |
|---|-----------------|--------------|
| Hospital care (part of direct costs) | | |
| Inpatient: 21% charged to Medicaid, 34% charged to Healthy Options | \$2,592 | \$68 |
| Emergency | \$726 | \$19 |
| Outpatient | \$960 | \$25 |
| Total direct costs | | |
| Hospital care, physician services, prescription | \$9,149 | \$240 |
| Workers' Compensation Costs (avg. \$11,000) | | \$1.5 |
| Total indirect costs | | |
| School/work days lost, housekeeping, mortality | \$6,332 | \$166 |
| GRAND TOTAL Asthma Costs | \$15,481 | \$406 |

Disruption of Life

- n People who have asthma...
- n Have symptoms like cough, wheezing, shortness of breath, chest tightness, phlegm
- n Experienced Asthma Symptoms (past month)
 - n 76.7% adults
 - n 79.0% youth
- n Sleep Disruption from Asthma (past month)
 - n 51.2% adults
 - n 35.1% youth
- n Could not do usual activities/missed school because of asthma (past year)
 - n 28.6% adults
 - n 38.3% 8th grade youth
 - n 24.1% 12th grade youth

Quality of Life: Poor Health/Limited Activities

Adults with asthma were twice as likely to report poor health, fifty percent more likely to report their activities are limited due to health.

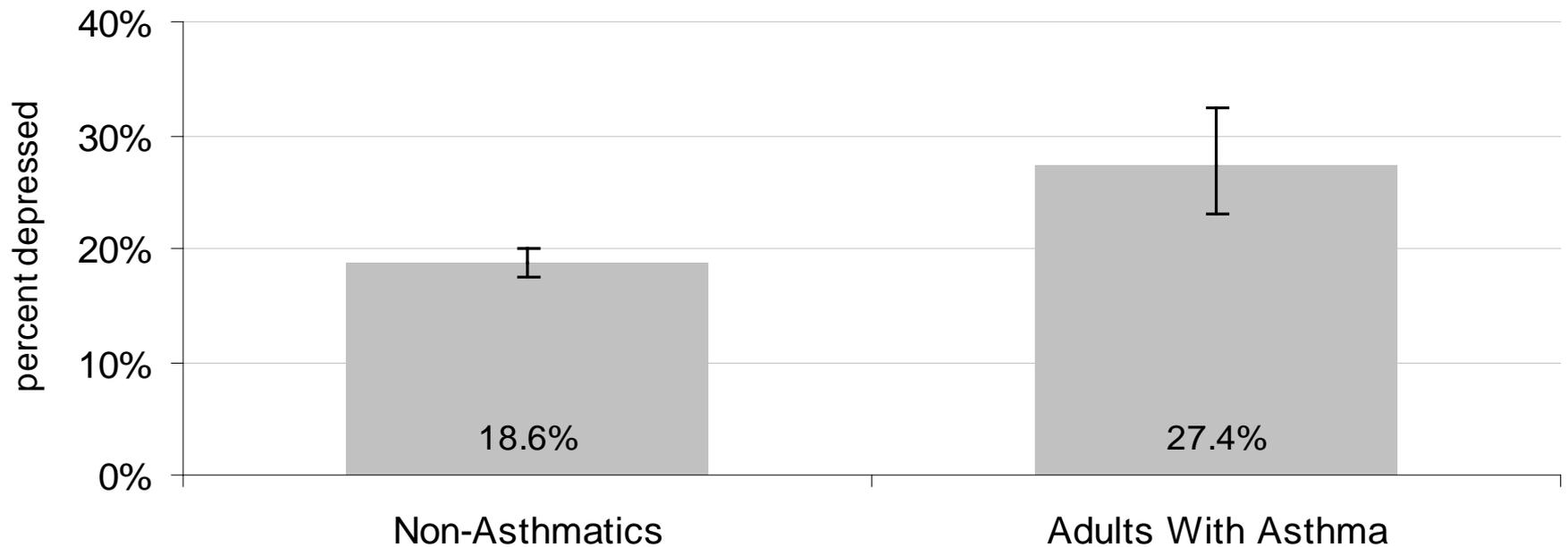


Academic Achievement

The percent youth who report getting As/Bs is significantly lower among youth with moderate or severe persistent asthma.

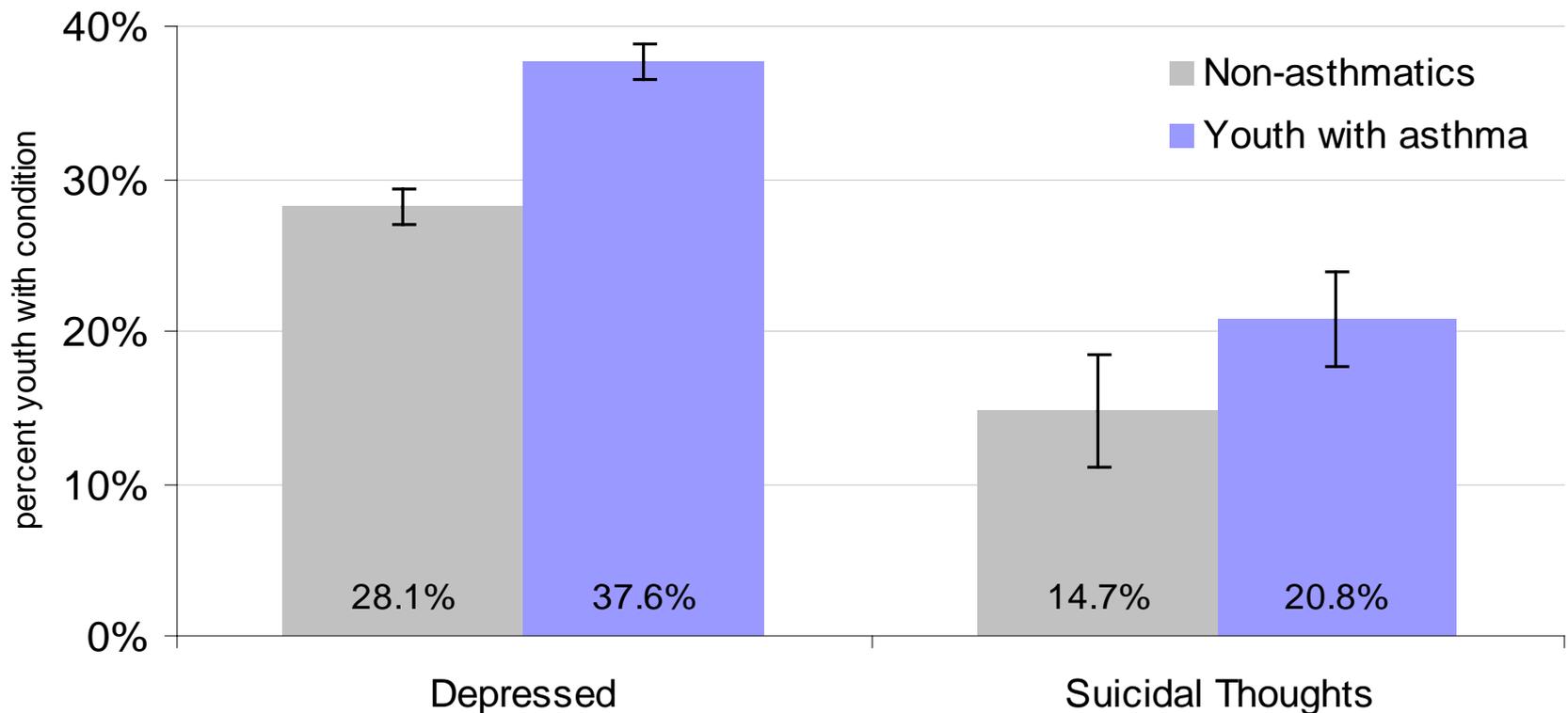
Quality of Life: Depression

Adults with asthma are more likely to report depression than those without asthma



Quality of Life: Depression

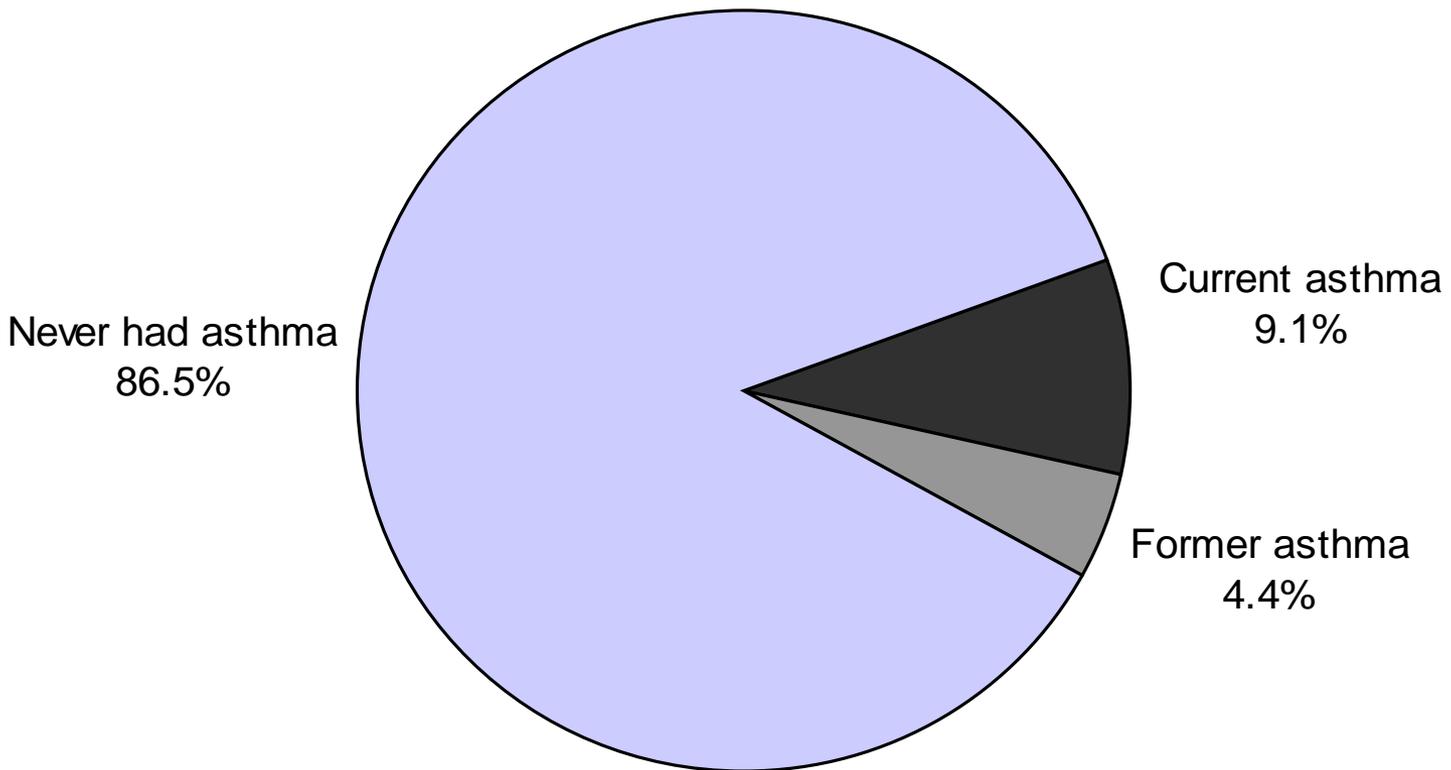
Youth with asthma are more likely to report depression and seriously considering suicide than youth without asthma



Asthma Prevalence

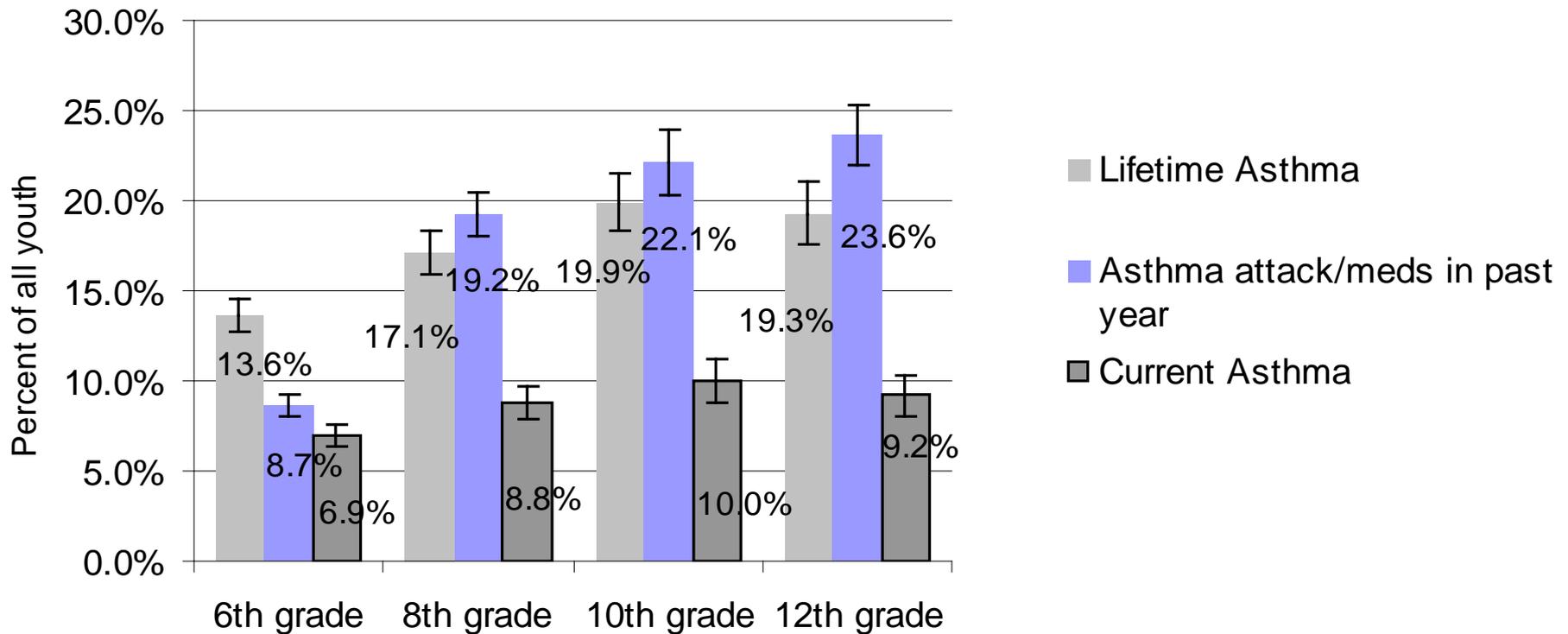
Adult Prevalence

13.5% of adults report they have been diagnosed with asthma during their lifetime; two-thirds of those ever diagnosed report they still have it. About 400,000 Washington adults have current asthma.



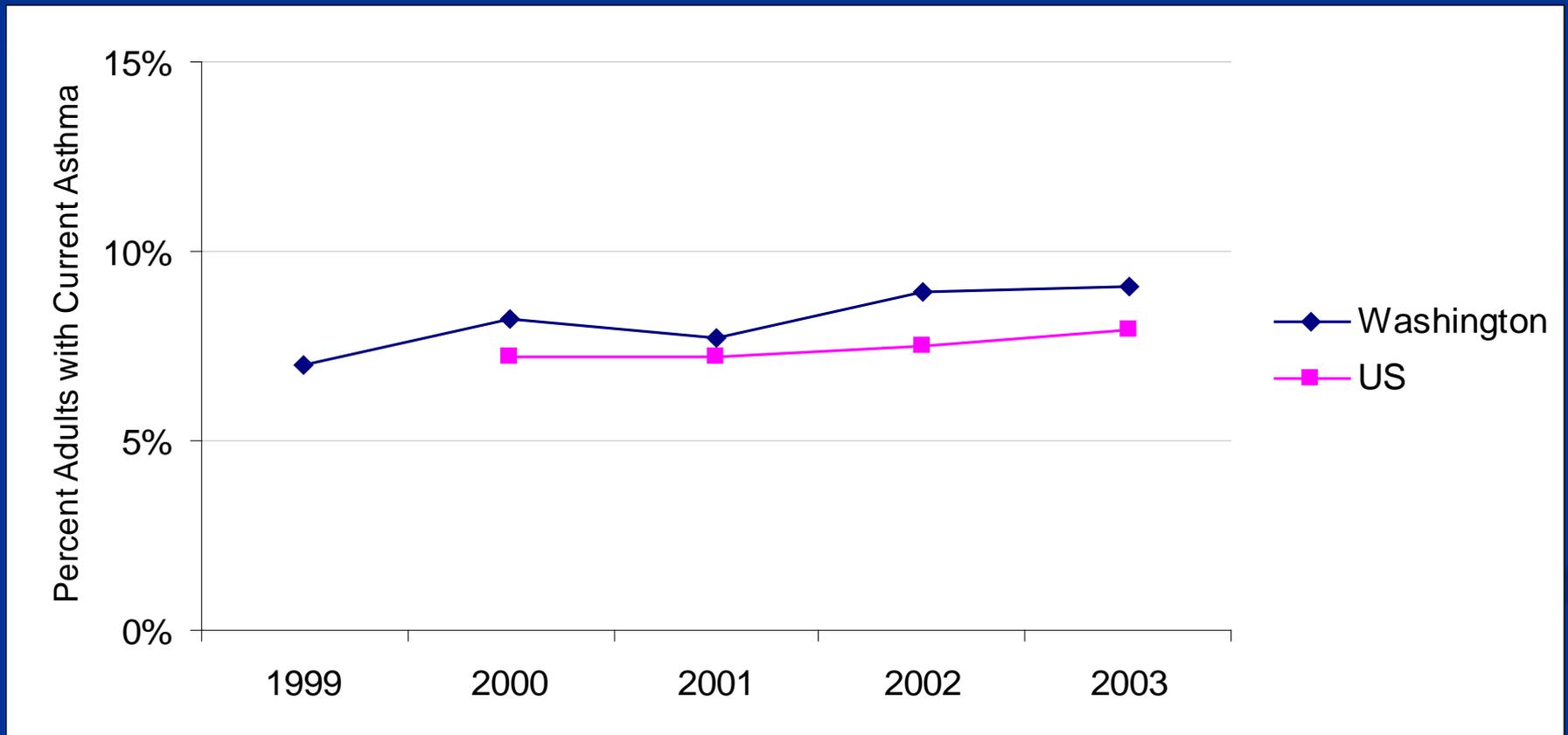
Youth Prevalence

Youth in 8-12th grades more likely than adults to have been diagnosed with asthma during their lifetime; about half of those ever diagnosed report that they still have it (using a two-step definition for “current asthma”). About 120,000 Washington youth have current asthma.



Adult Prevalence Trends

Washington's asthma prevalence has been identified as one of the highest in the nation. Prevalence has increased significantly from 1999-2003.



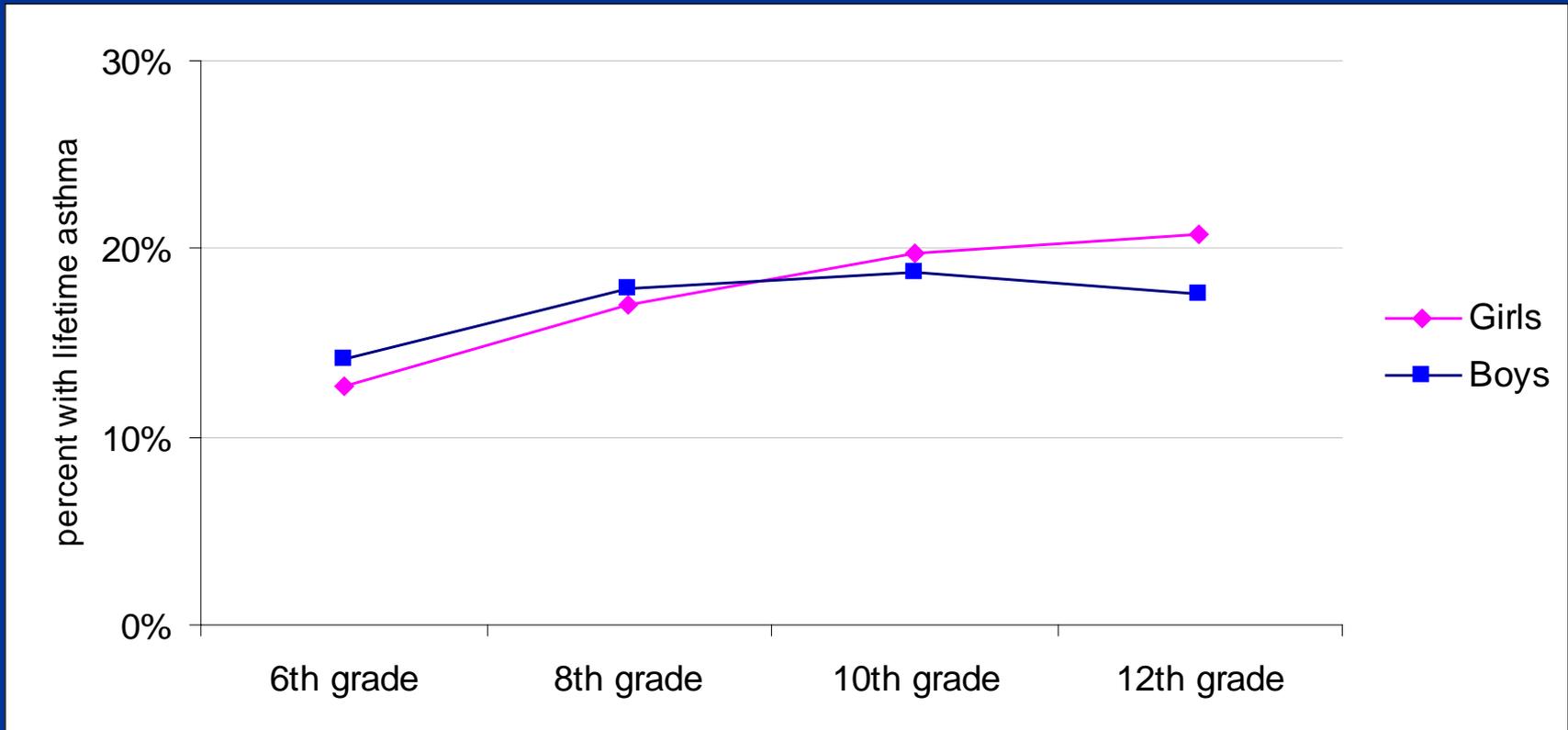
Populations At-Risk

Age & Gender Interactions: Prevalence

During childhood boys are at greater risk than girls for asthma.

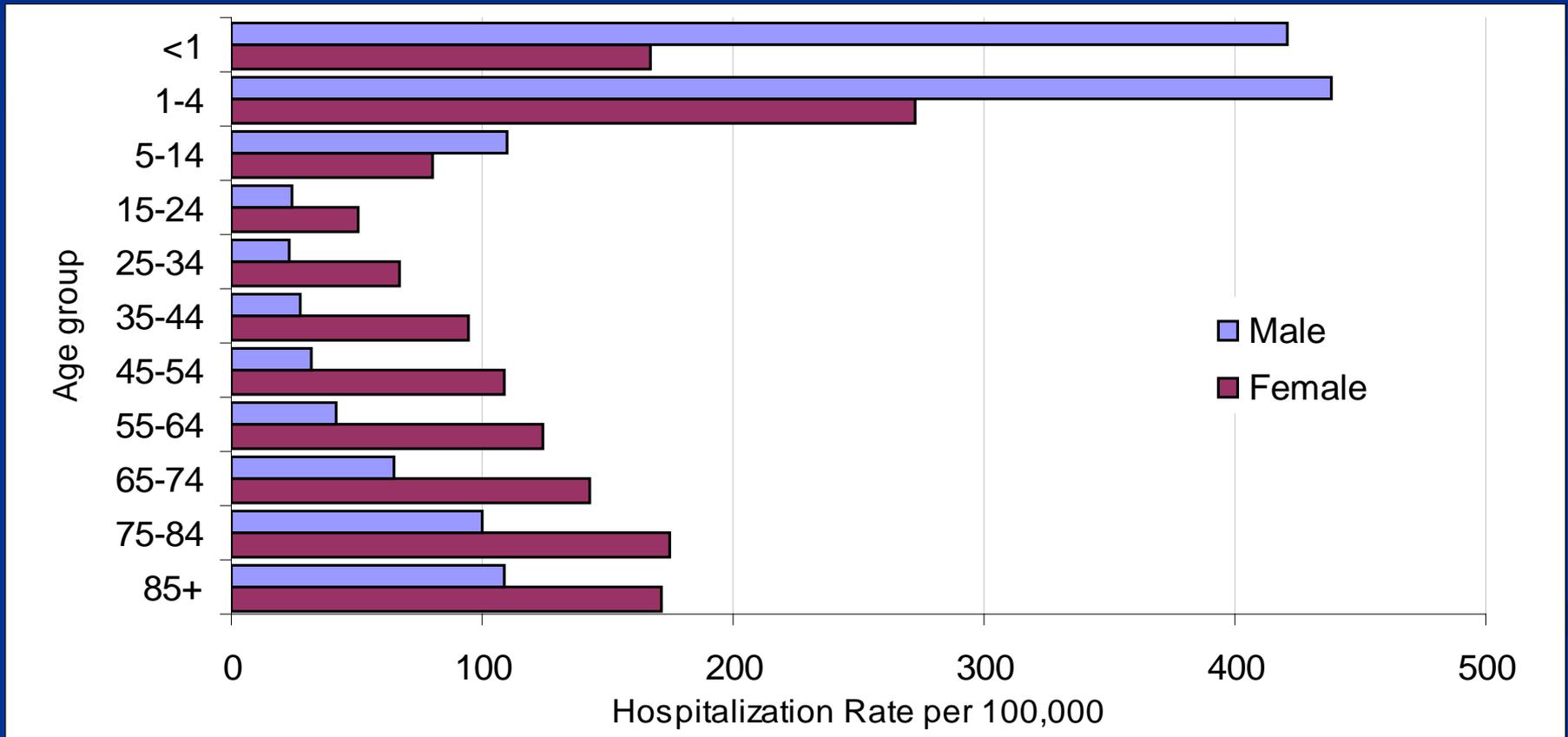
During puberty girls become at greater risk than boys.

Differences in prevalence by gender persist until age 75+ when they become the same (not shown).



Age and Gender Interactions: Hospitalization

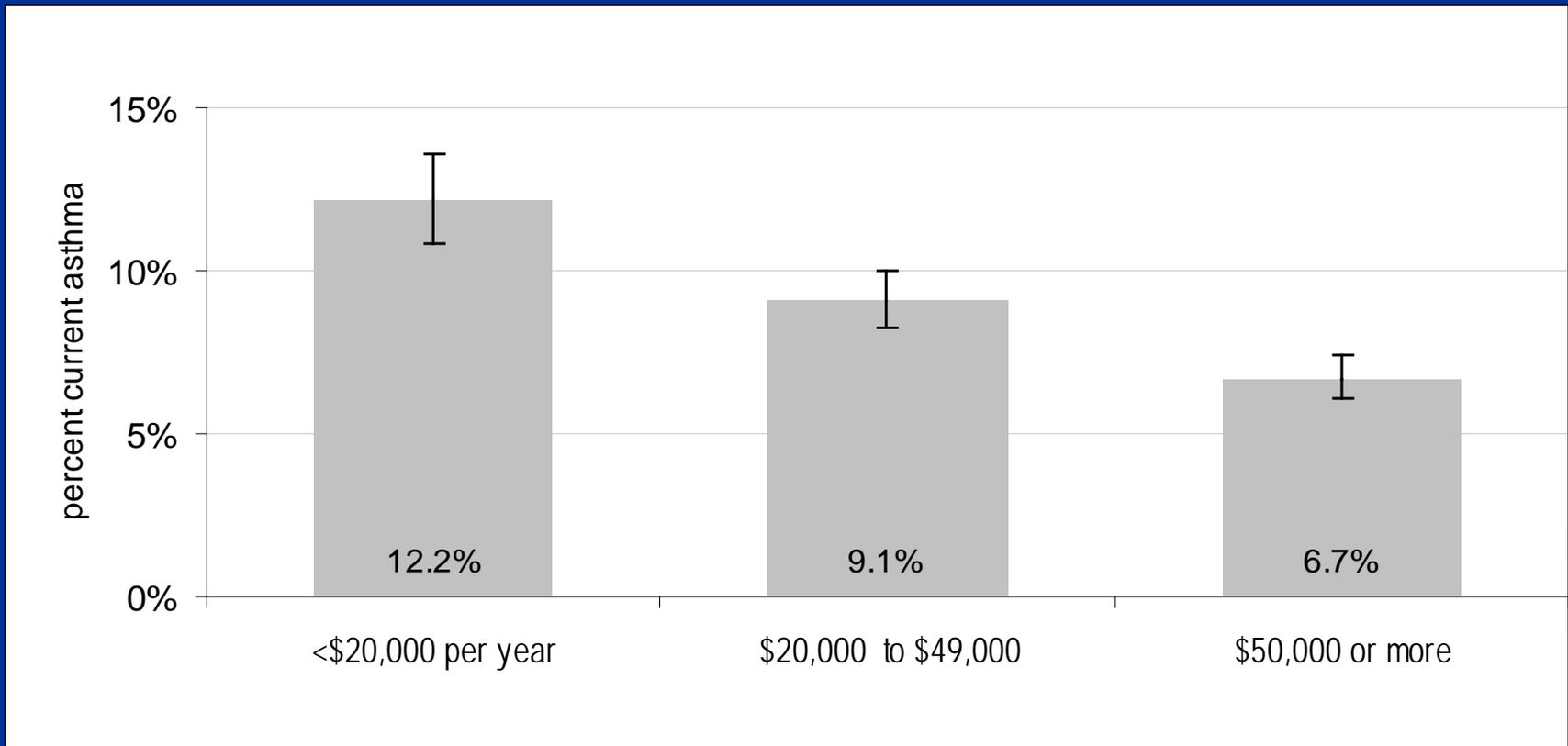
Boys at greater risk than girls for asthma hospitalization among children.
Reversal during puberty, women remain at greater risk than men as adults.



Source: Washington State Comprehensive Hospital Abstract Reporting System (CHARS), 2000-2002 combined.
Asthma as principal diagnosis.

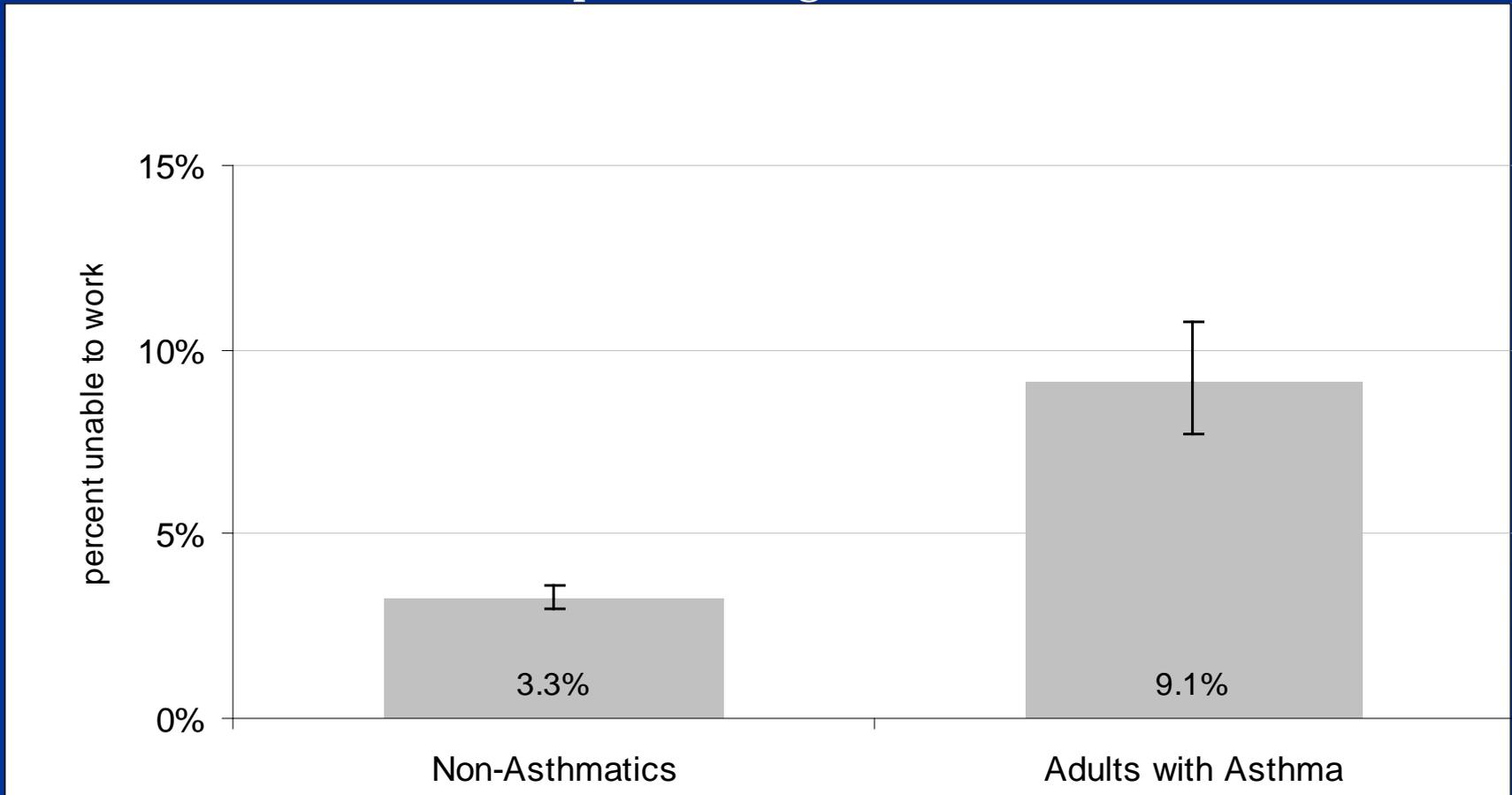
Income Disparities

Lower income groups are at greater risk for asthma.



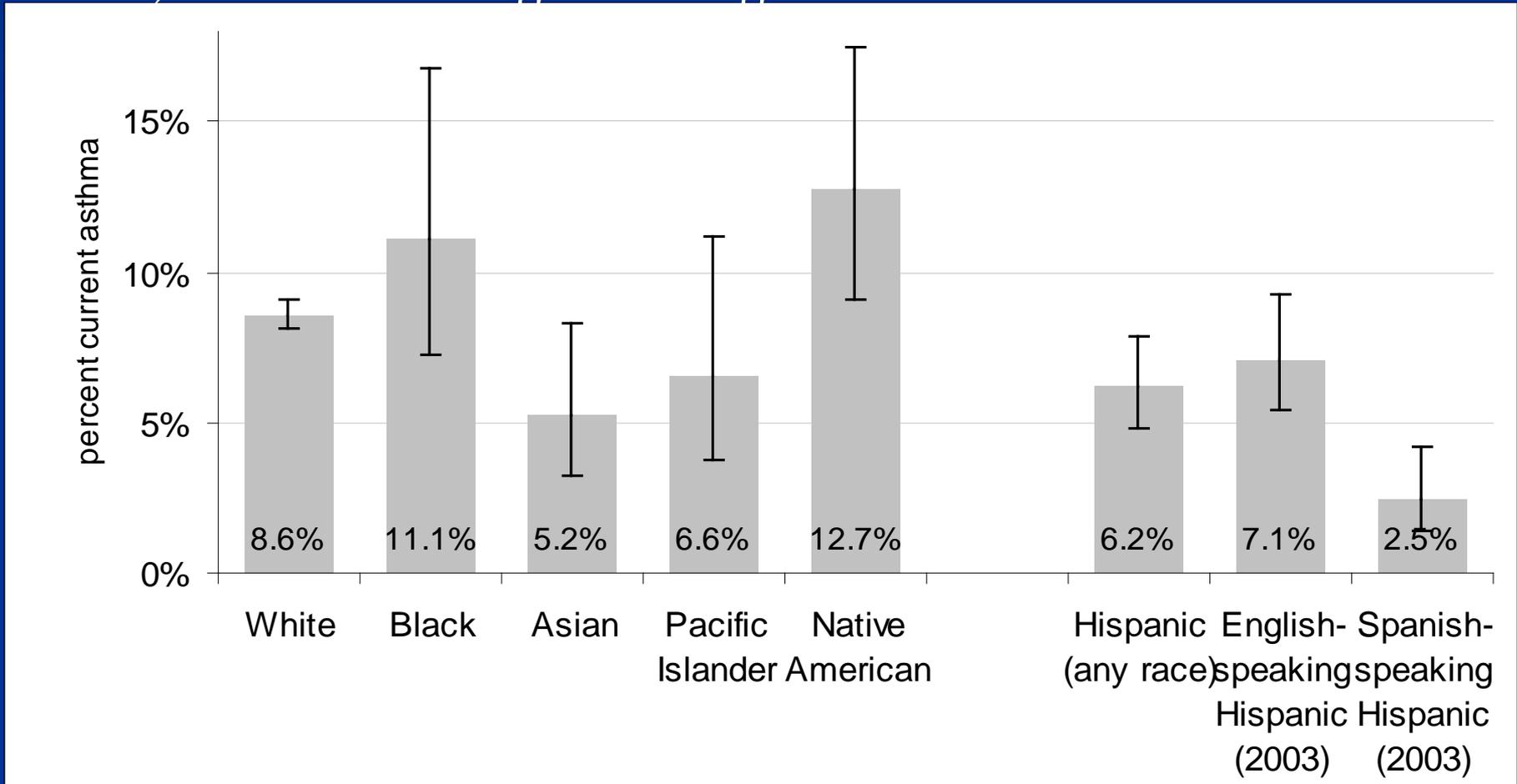
Ability to Work

People with asthma are more likely to report being unable to work. One in ten adults with asthma reports being unable to work due to their health.



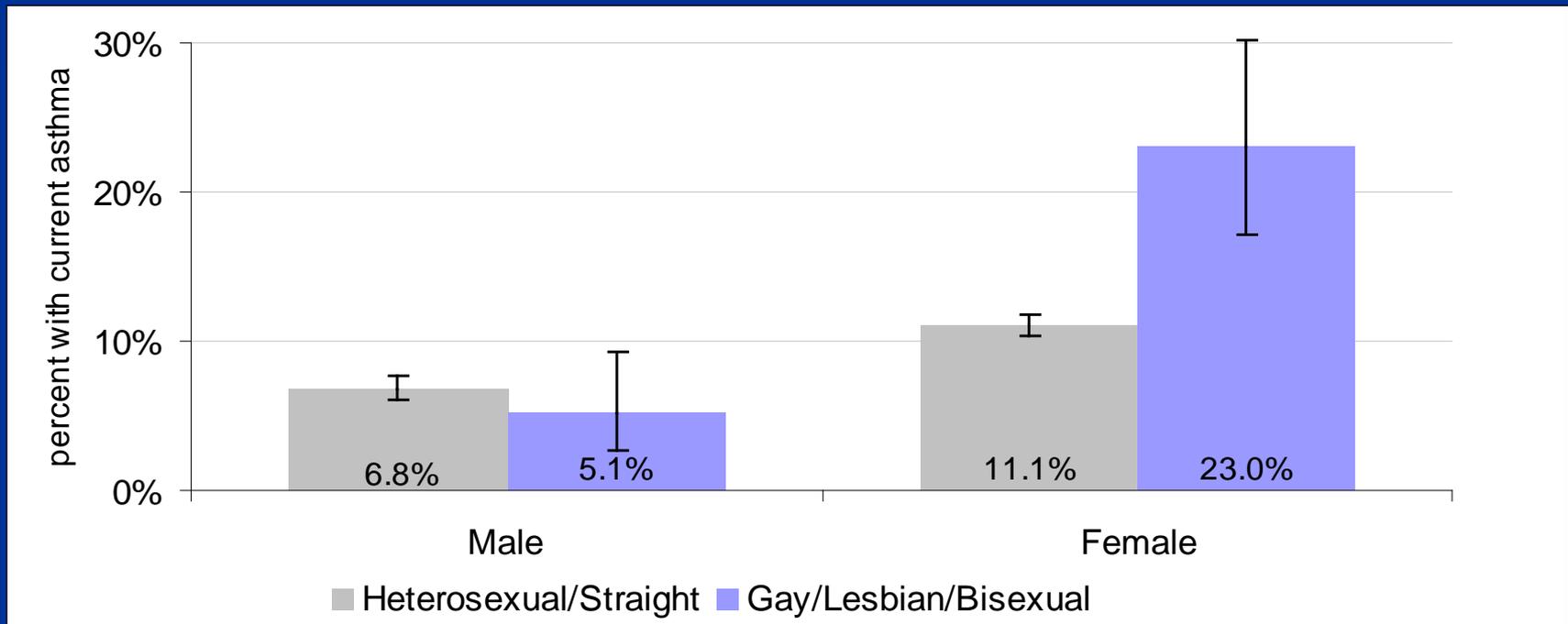
Race/Ethnicity

Death rates for asthma are significantly greater among Blacks and Native Americans than non-Hispanic whites in WA, despite small numbers (not shown). Prevalence is higher among Native Americans than whites.



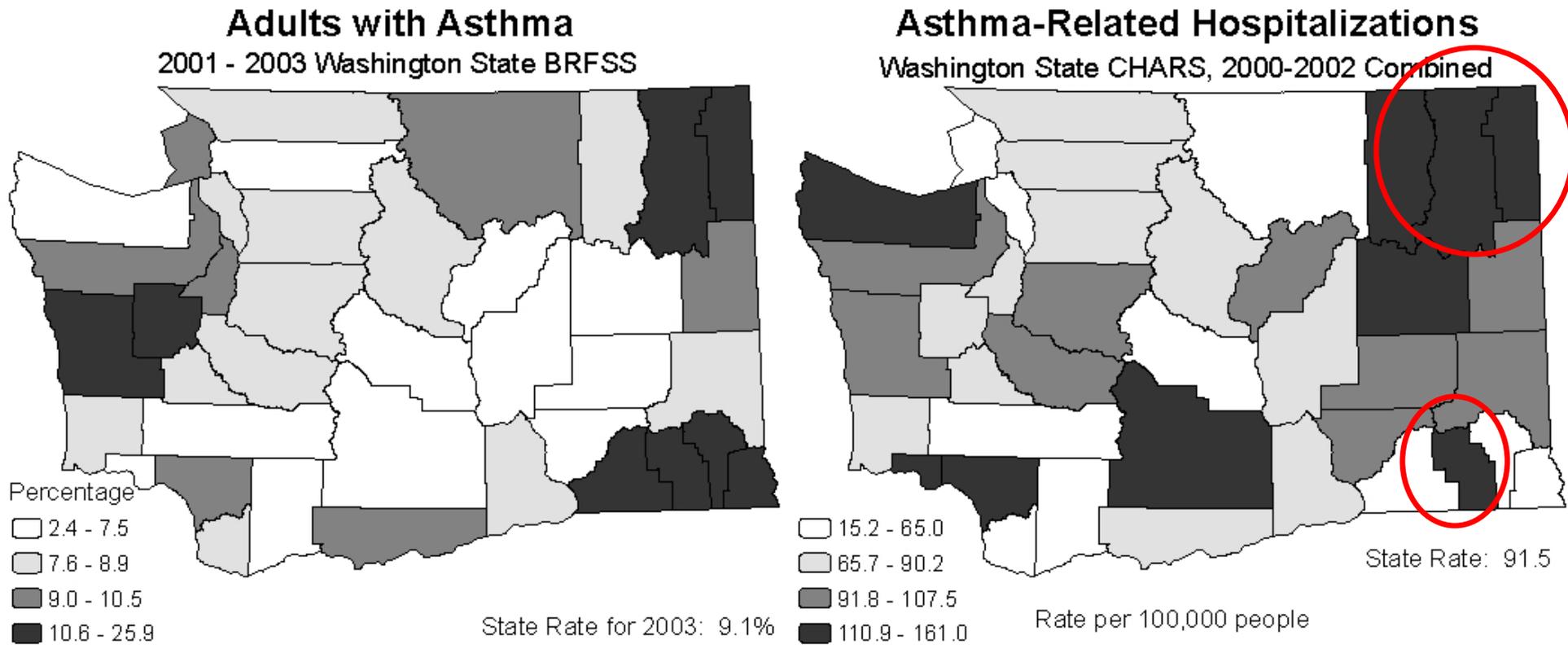
Sexual Orientation

Lesbian/bisexual women are at greater risk for asthma than straight women. No difference among men.



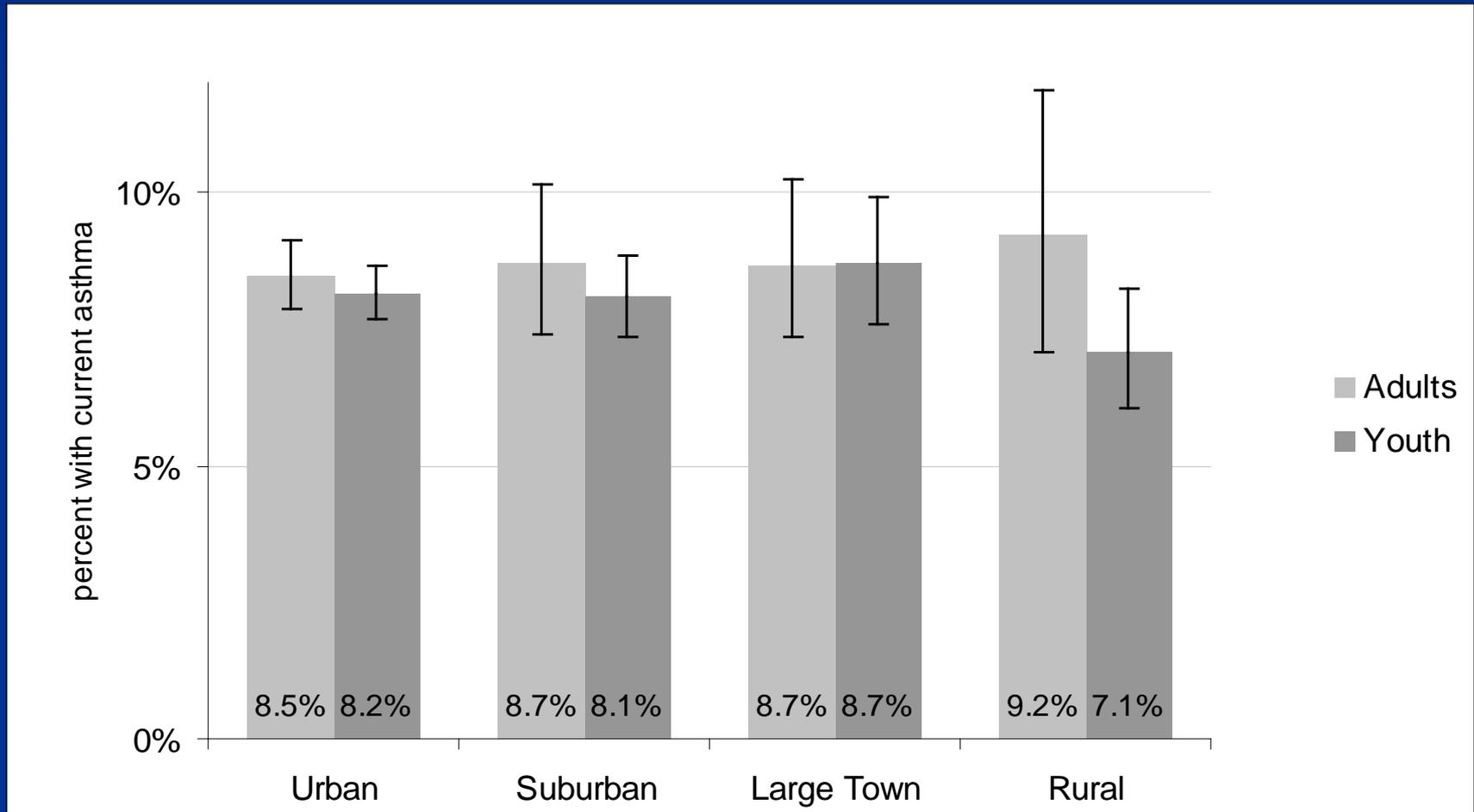
Geographic Areas

Stevens, Pend Oreille and Columbia counties were in the top quartile for both adult asthma prevalence and asthma hospitalizations.



Community Type

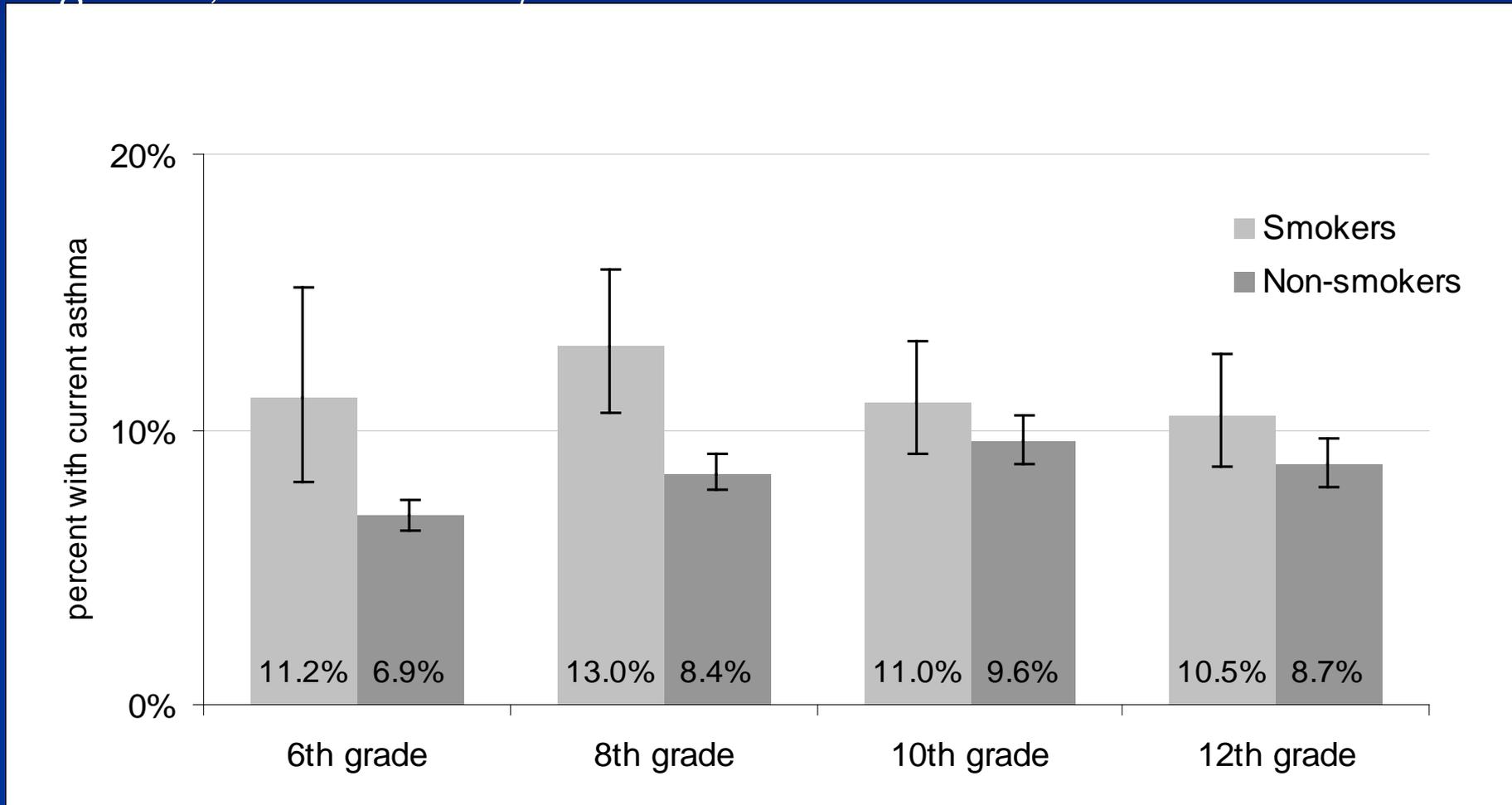
Prevalence is lower among rural youth, otherwise similar.
Hospitalization rates (not shown) are higher in urban areas than other areas.



Individual Risk Factors

Cigarette Smoking

Smoking is associated with increased asthma prevalence among 6th and 8th graders, not for older youth or adults.

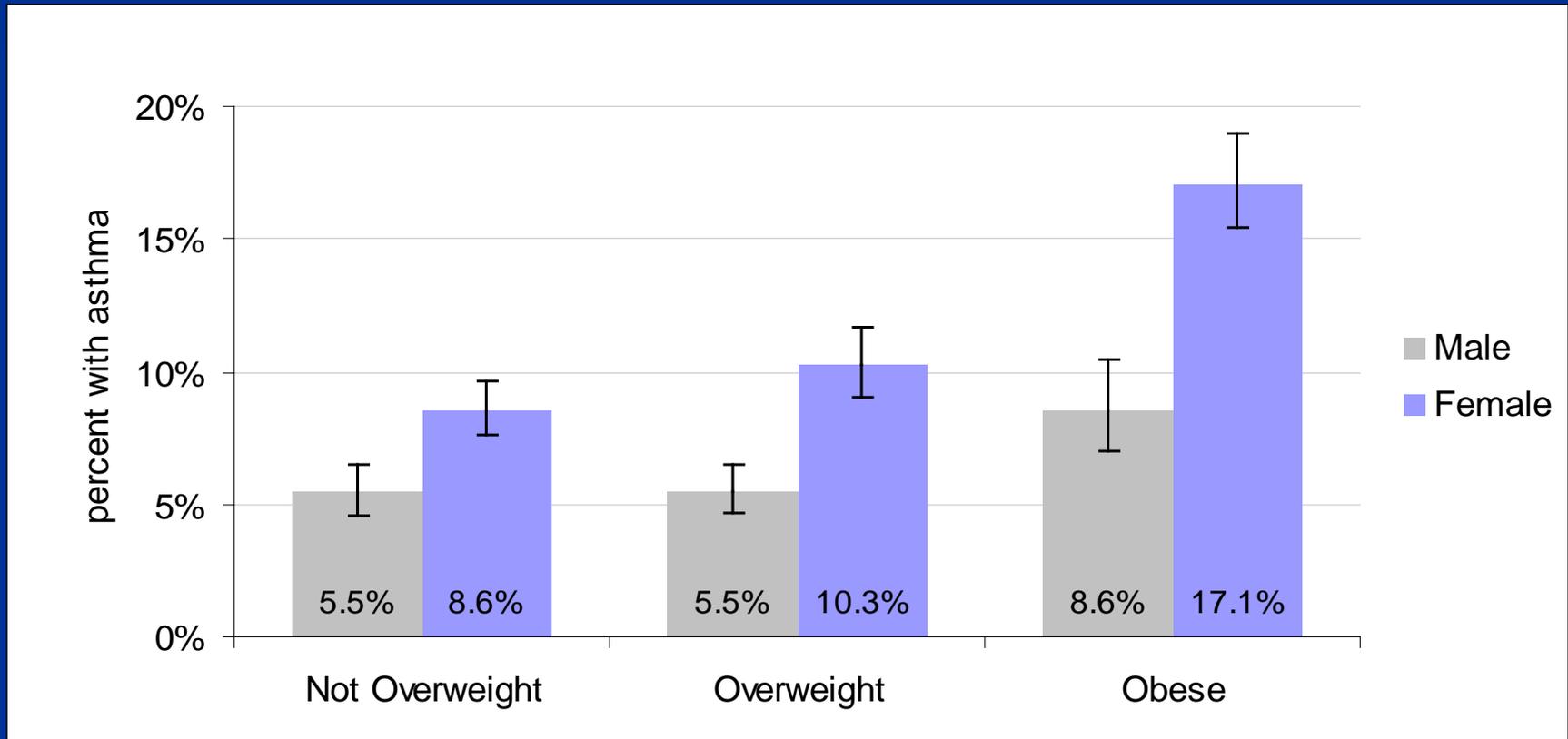


Overweight

Males: Obese men at greater risk than not overweight/overweight

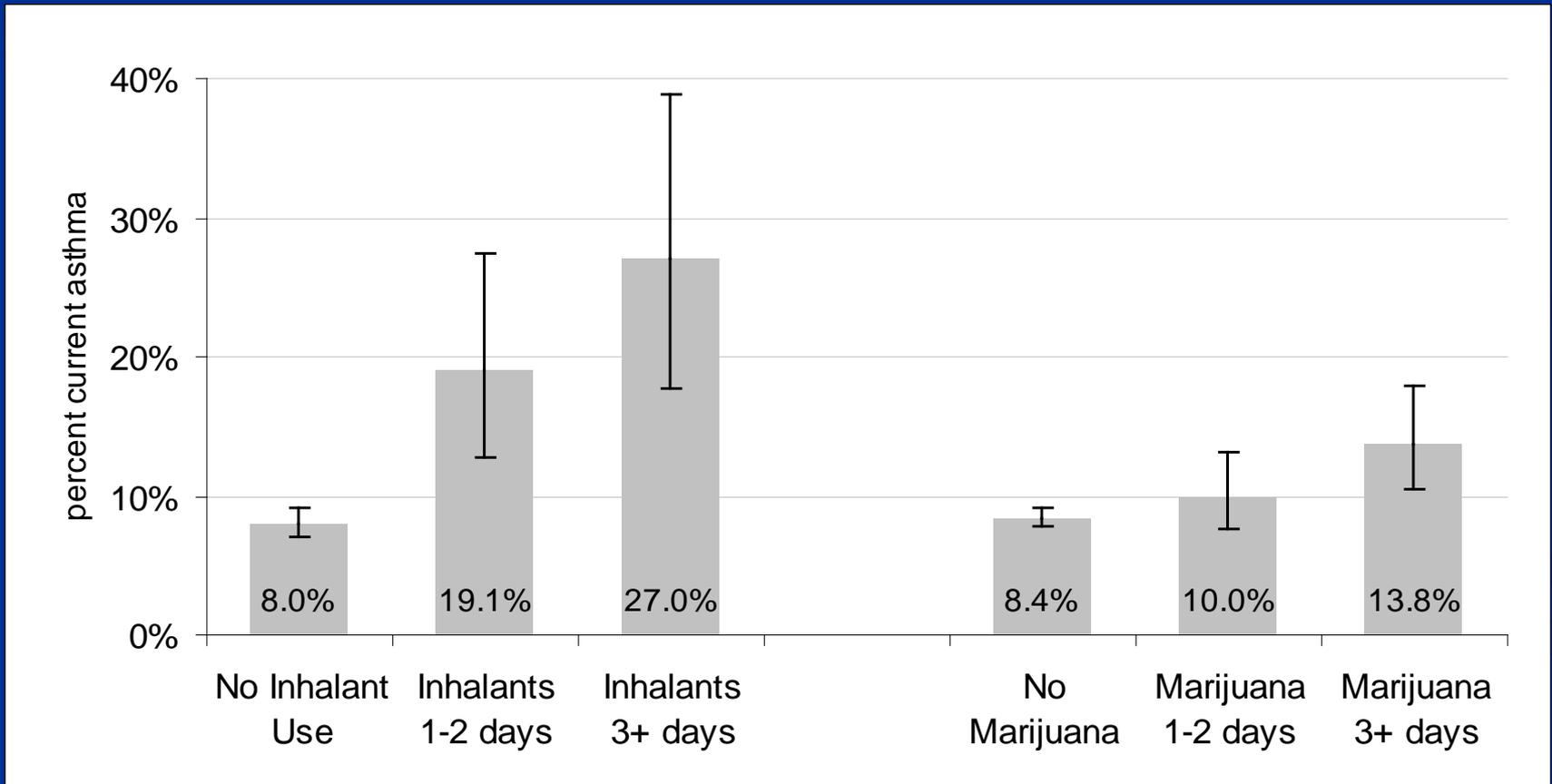
Females: Overweight/obese women at greater risk than not overweight.

Similar findings in HYS. Findings were similar for youth.



Substance Use

Younger youth who use inhaled intoxicants (“huffing” or marijuana) were more likely to report having asthma. Data shown are for 8th grade youth only – associations were not significant for other grades.



Other Individual Characteristics

n Allergies

- n Highly inter-related with asthma
- n Hyper-response to a wide variety of stimuli, (allergens/asthmagens, environmental irritants, viral infection, asthma triggers also include cold air, exercise, or stress)

n Genetics

- n Children of parents with asthma three to six times more likely to develop asthma

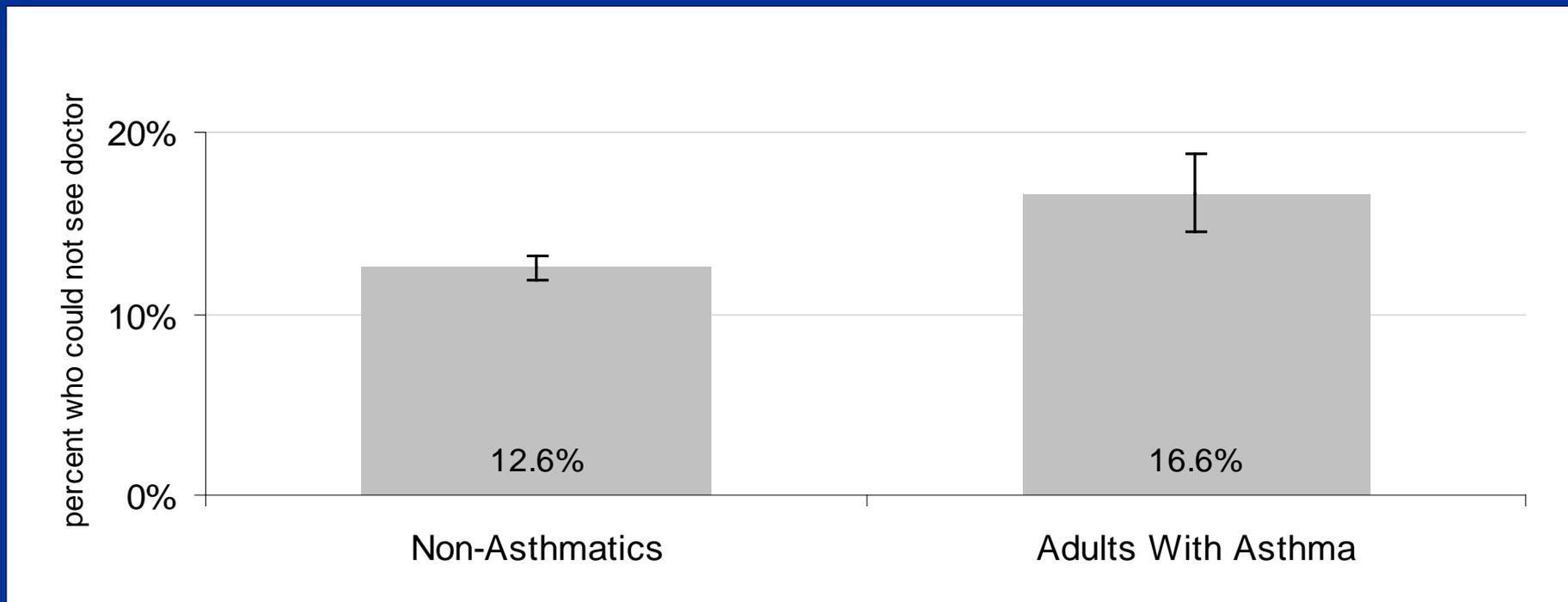
Clinical Control for Asthma

Components of Clinical Care

- n Access to health care
- n Planned visits for asthma care
- n Symptom severity assessed at every visit
- n Written asthma (action) management plan/School health care plans
- n Use preventive medication to minimize use of “rescue” medication (inhalers)
- n Preventive vaccines to limit respiratory illness
- n Smoking interventions
- n Patient education to help people with asthma and families manage environmental exposures

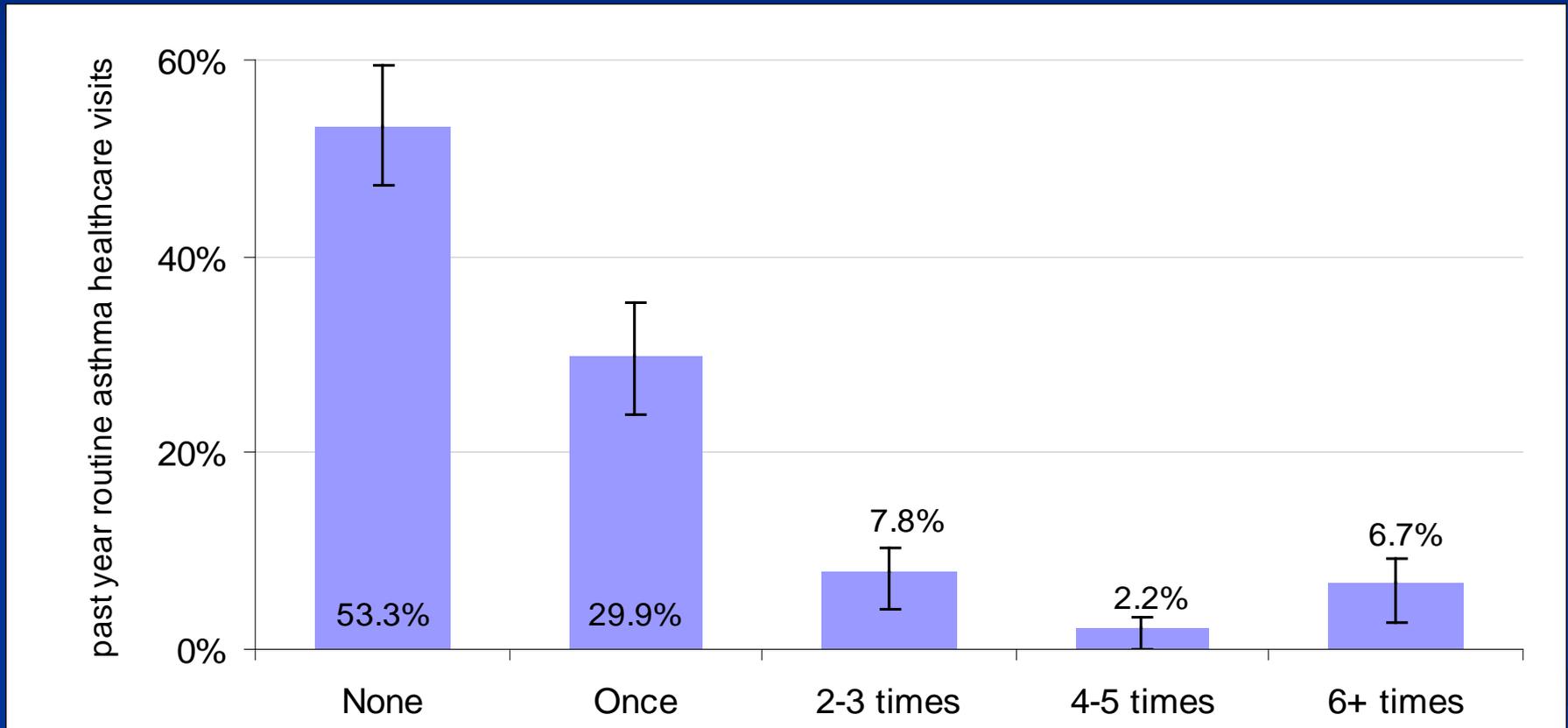
Unmet Health care Needs

Adults with asthma were more likely than those without asthma to say they could not see a doctor when they needed to because of money during the past year.



Planned Care

About half of adults with asthma said that they had a planned asthma care visit with their doctor during the past year.

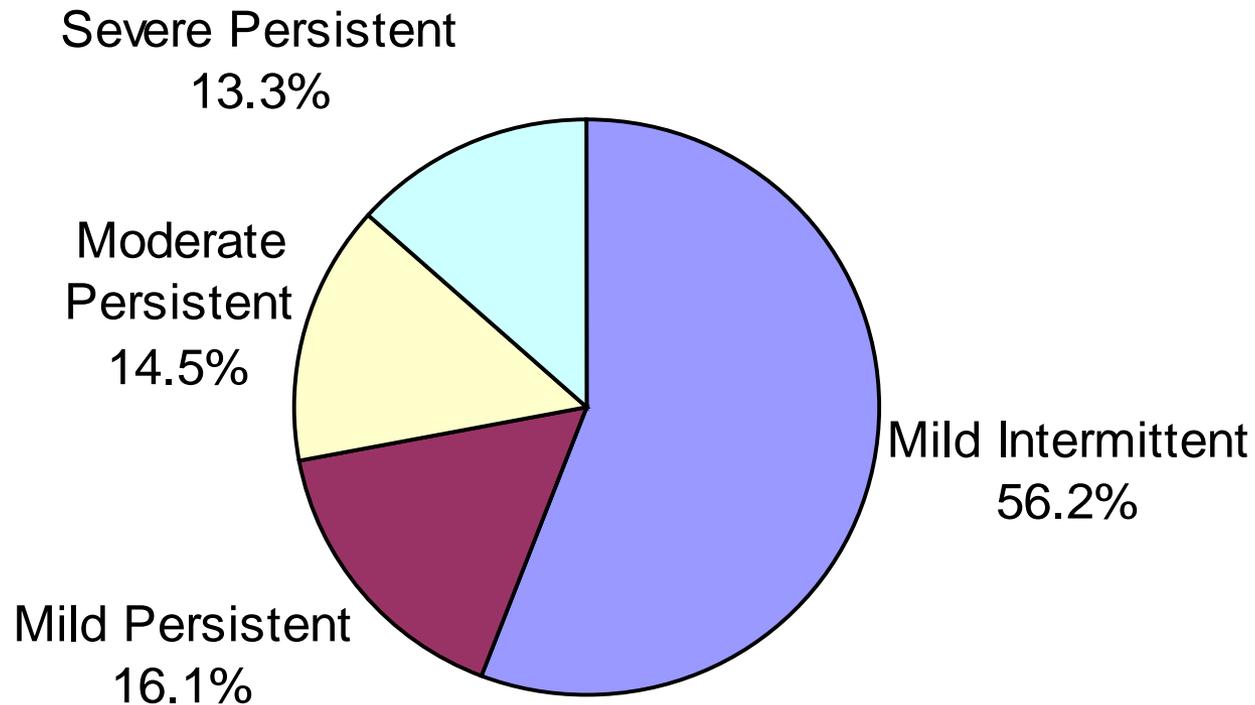


Classification of Severity

| Severity Classification | Symptoms | Nighttime Symptoms | Lung Function |
|------------------------------------|--|------------------------|---|
| Step 4: Severe Persistent | <ul style="list-style-type: none"> Continual symptoms Limited physical activity Frequent exacerbations | Frequent | <ul style="list-style-type: none"> FEV₁ or PEF \leq60% predicted PEF variability > 30% |
| Step 3: Moderate Persistent | <ul style="list-style-type: none"> Daily symptoms Daily use of inhaled short-acting beta₂-agonist Exacerbations after activity Exacerbations \geq2 times a week; may last days | >1 time a week | <ul style="list-style-type: none"> FEV₁ or PEF >60%-<80% predicted PEF variability > 30% |
| Step 2: Mild Persistent | <ul style="list-style-type: none"> Symptoms >2 times a week but <1 time per day Exacerbations may affect activity | >2 times a month | <ul style="list-style-type: none"> FEV₁ or PEF \geq80% predicted PEF variability 20-30% |
| Step 1: Mild Intermittent | <ul style="list-style-type: none"> Symptoms \leq2 times a week Asymptomatic and normal PEF between exacerbations Exacerbations brief (from a few hours to a few days); intensity may vary | \leq 2 times a month | <ul style="list-style-type: none"> FEV₁ or PEF \geq80% predicted PEF variability <20% |

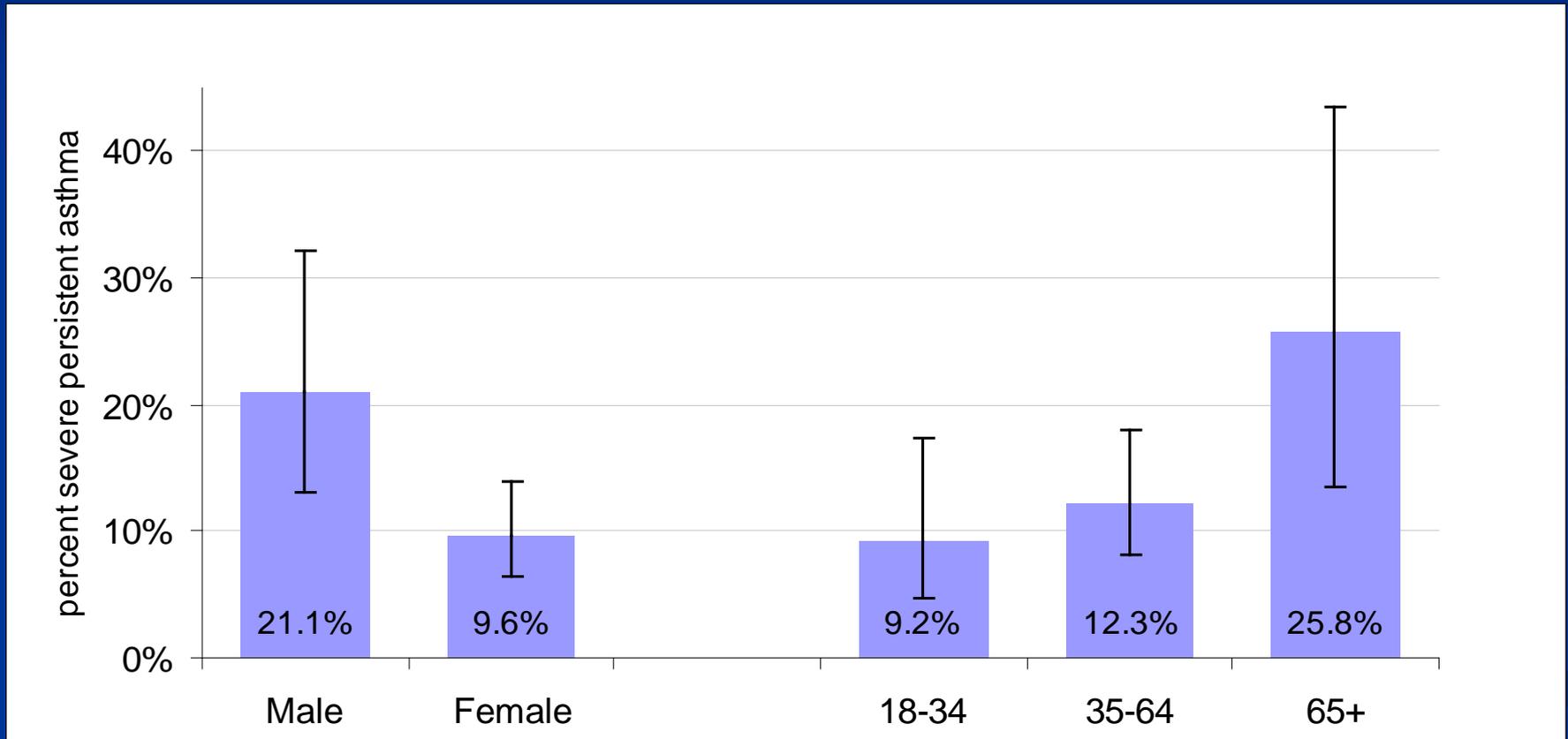
Symptom Severity Distribution

Most adults have “mild” or “moderate” asthma. Youth are similar. People with the least severe symptoms of asthma still have symptoms a few days a week and/or sleep disrupted by symptoms.



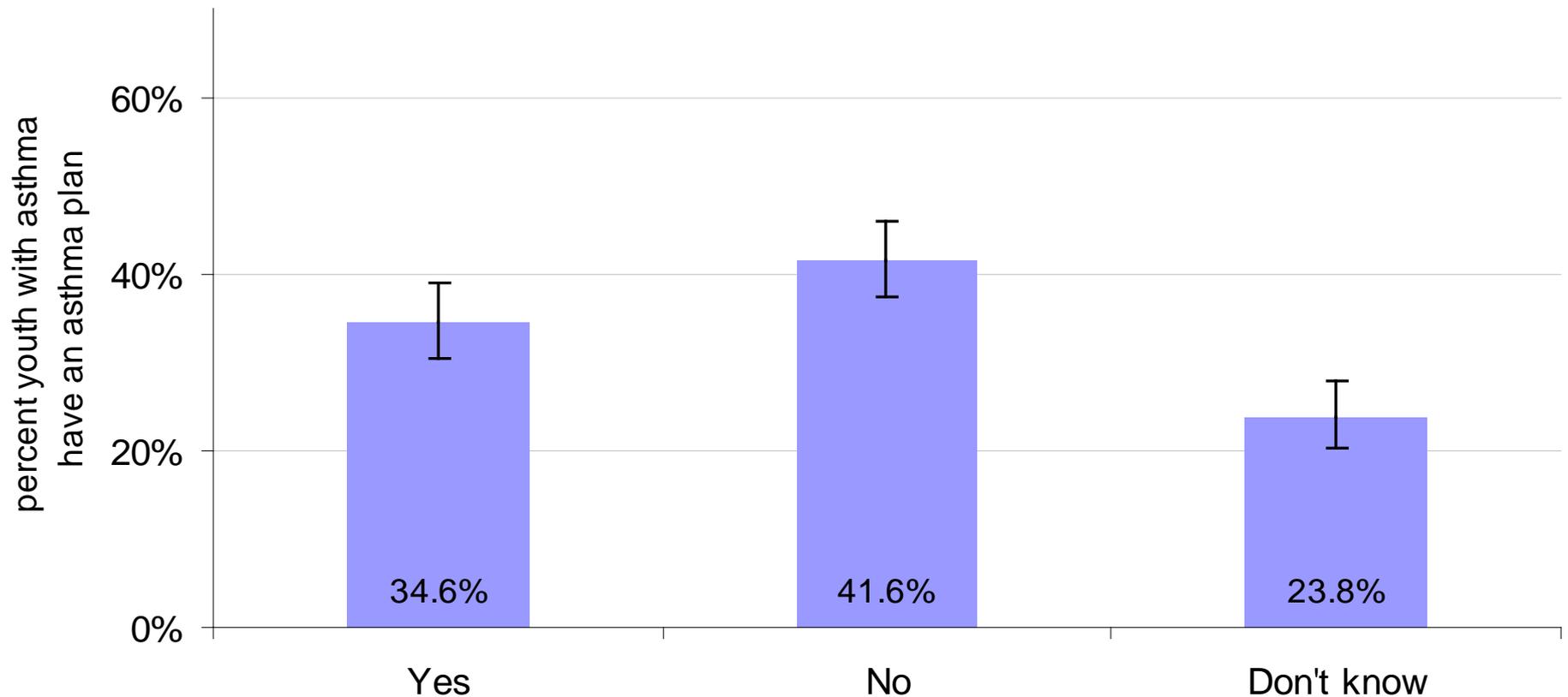
“Severe Persistent” Symptoms

Men and older adults were more likely to report “severe” asthma symptoms.



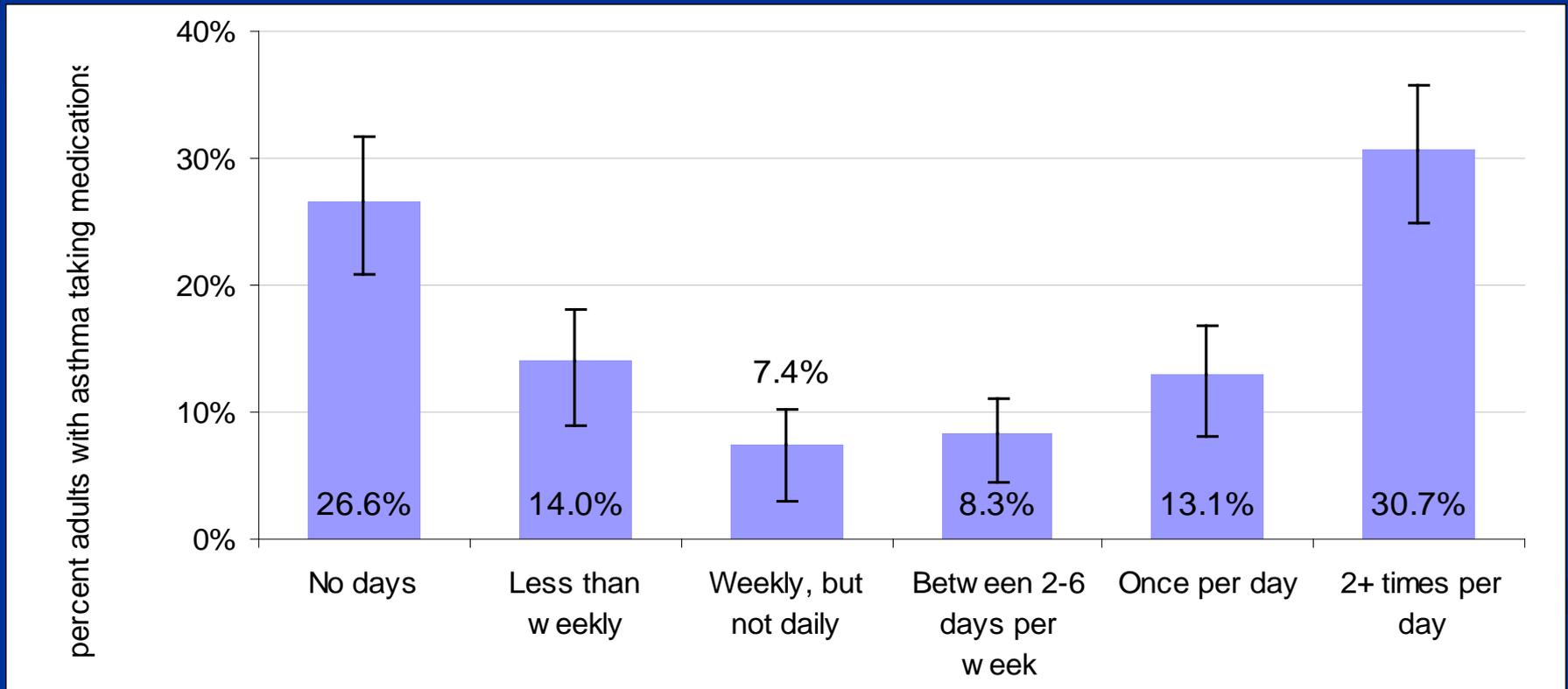
Written Asthma Management Plan

Only one-third of youth ever had a written asthma plan from health care provider (data not available for adults).



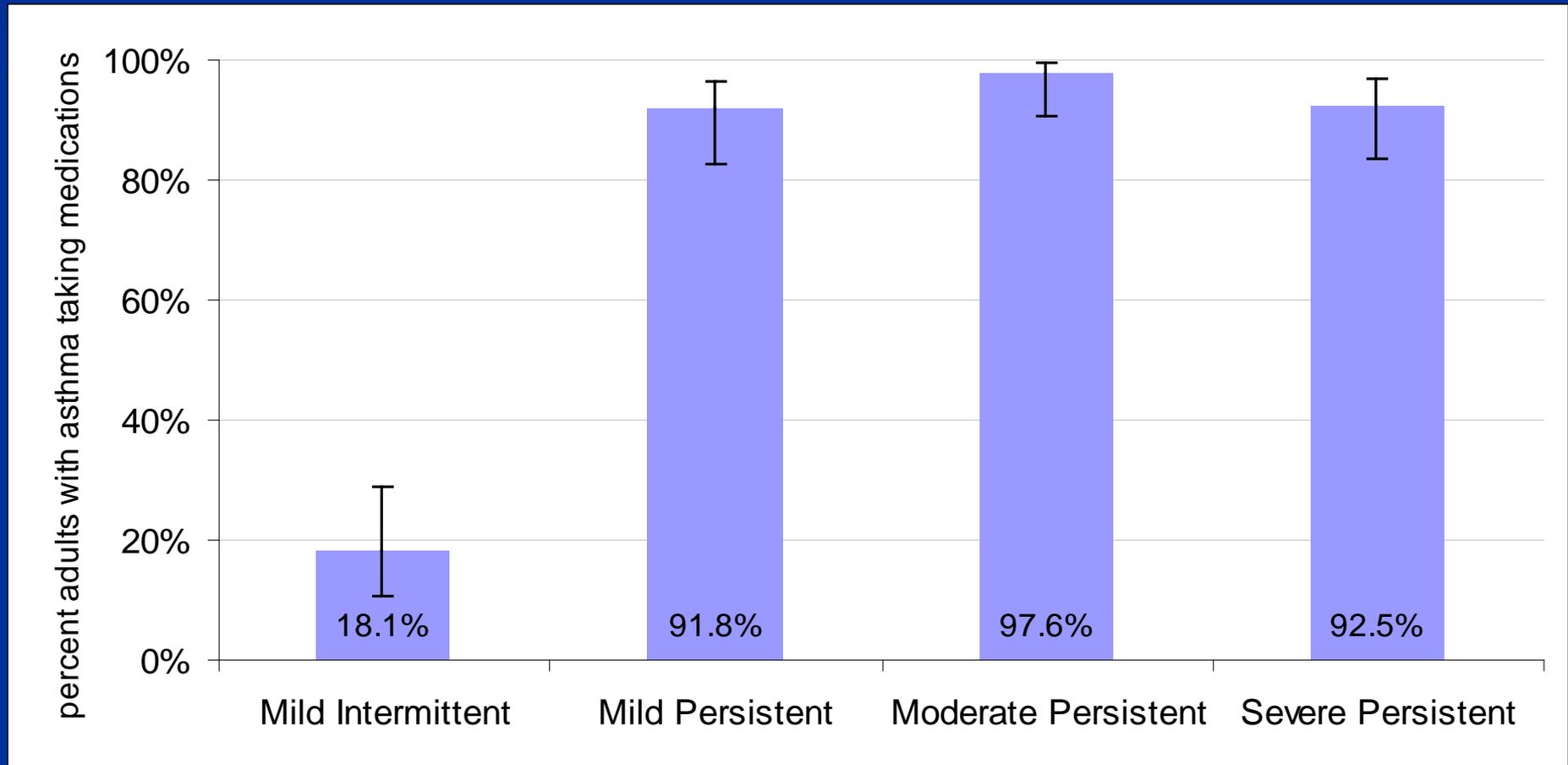
Prescription Medication

Most adults are taking some form of medication for their asthma – more than one-third use a daily medication. We don't know if they are using preventive or “rescue” medications.



Prescription Medication Use & Severity

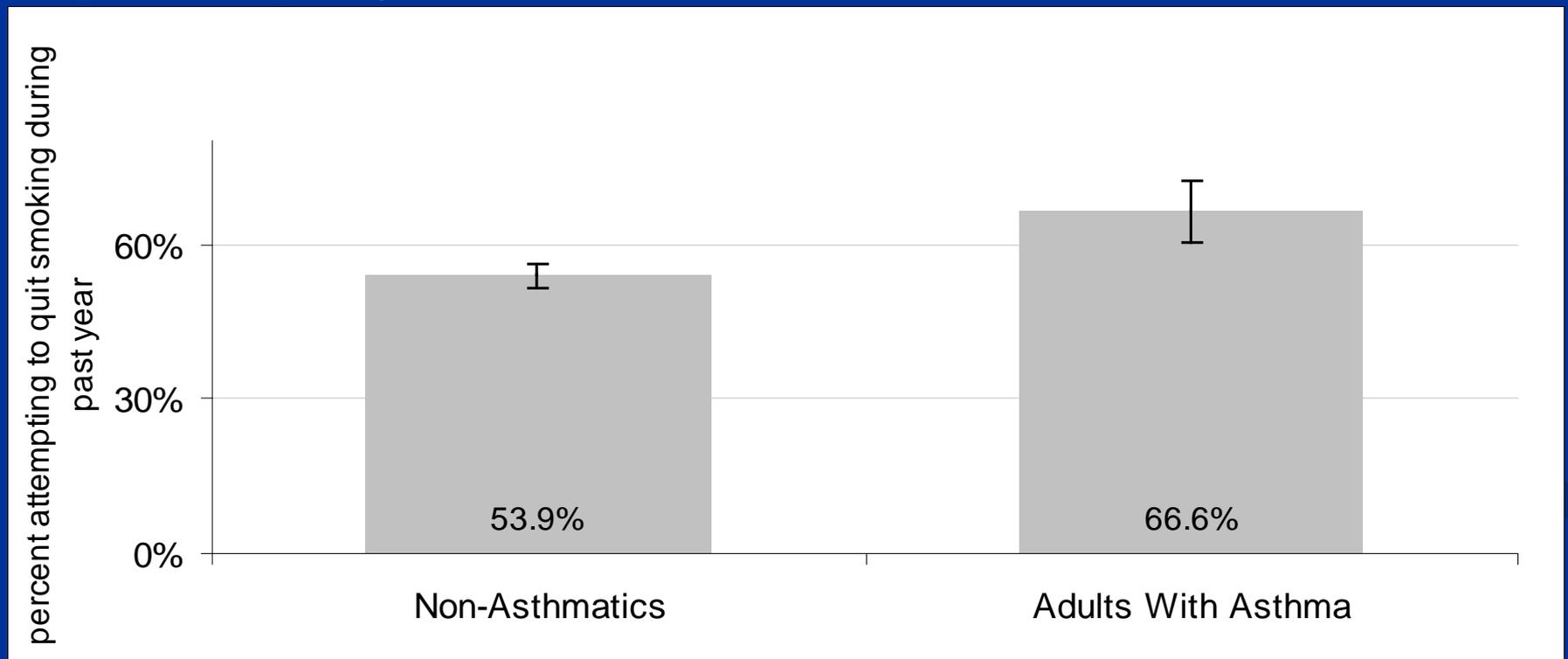
Most adults with more severe symptoms from asthma reported taking some kind of medication.



Source: 2001 Washington State Behavioral Risk Factor Surveillance System (BRFSS)

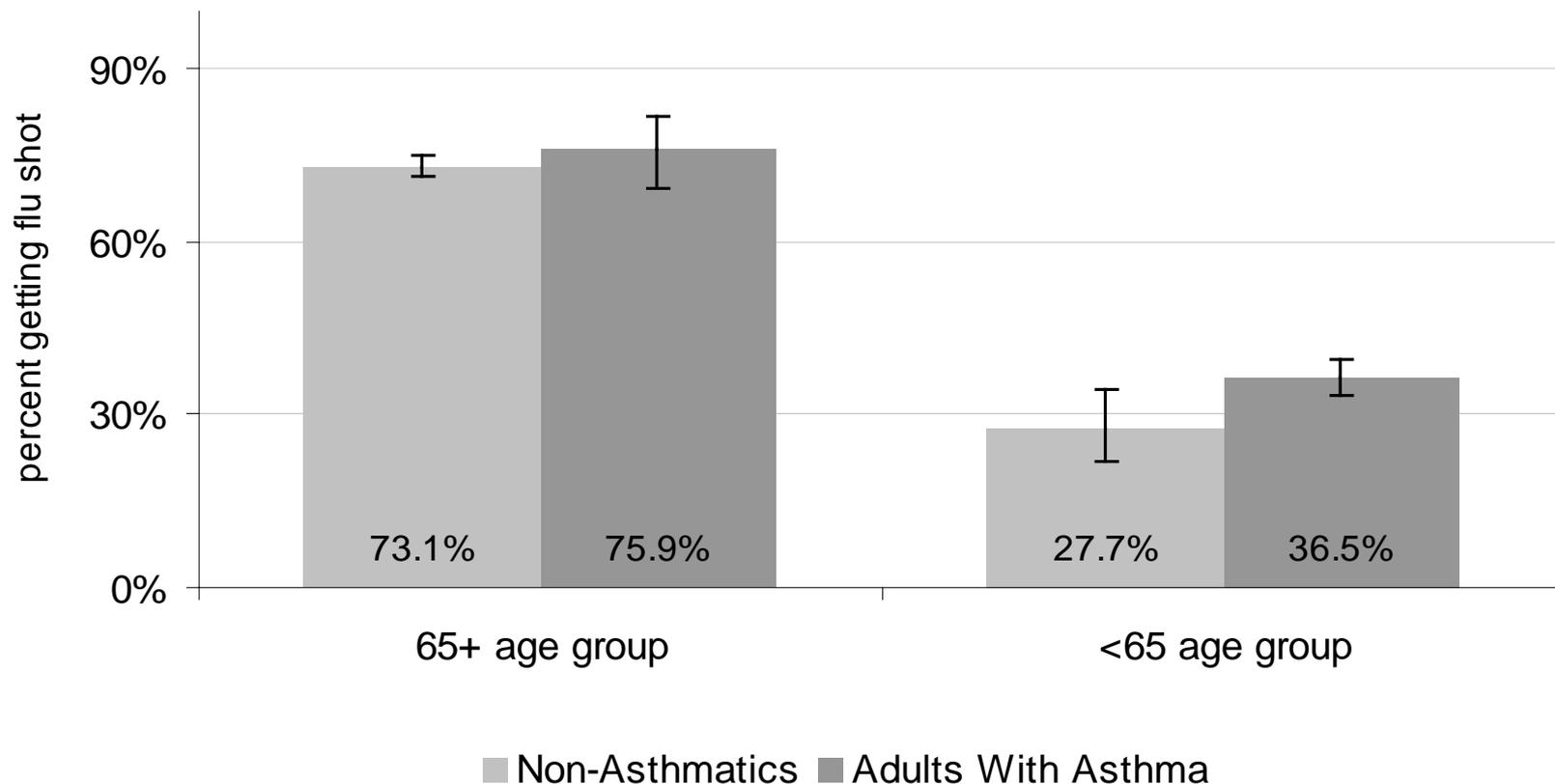
Smoking Interventions

Adults with asthma were similarly likely to get advice to quit from a health care provider during the past year (not shown), although they were generally more likely to have seen a doctor. Although similarly likely to receive advice, smokers with asthma were more likely to have actually made a quit attempt in the past year.



Flu Vaccine

Younger adults with asthma were more likely to receive a flu shot during past year than adults without asthma. There was no difference among older adults.



Pneumonia Vaccine

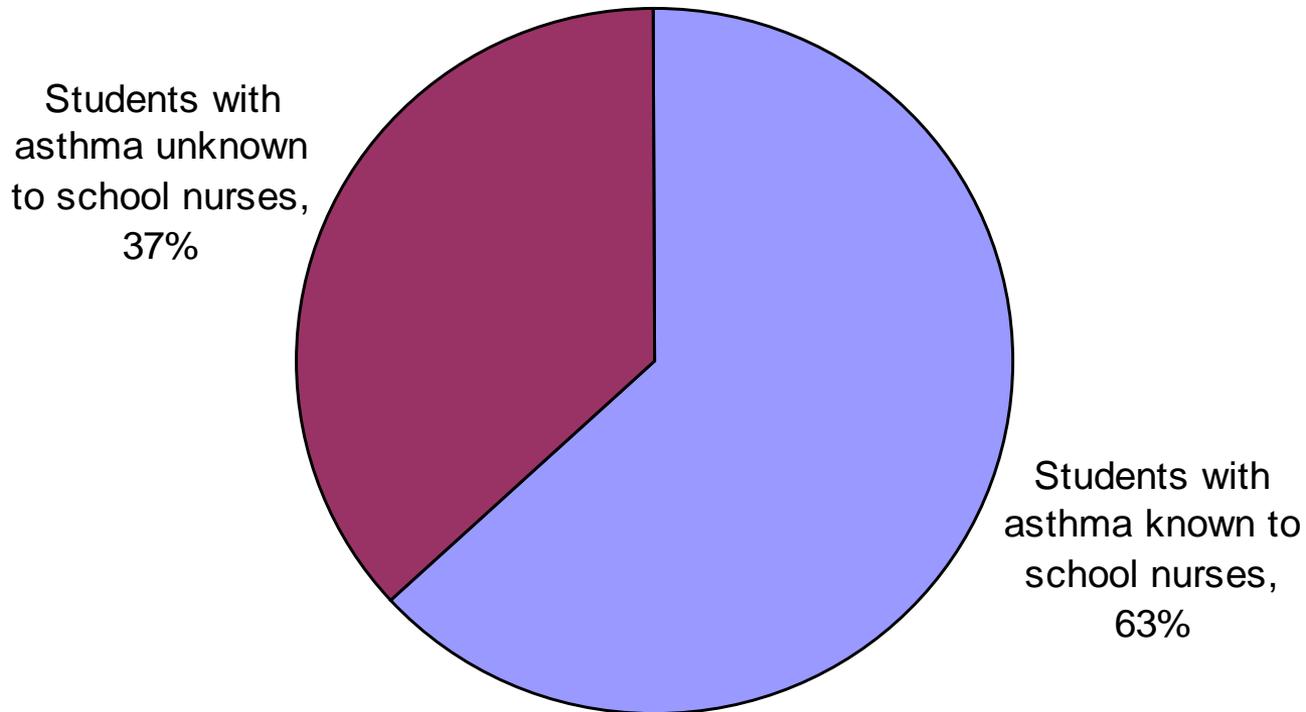
Both younger and older adults with asthma were more likely to have ever received a pneumonia vaccine.

School-based Asthma Control

- Washington middle/high school principals reported:
 - 16% of schools have a full-time Registered Nurse all day & every day
 - 37% provide intensive case management for students with asthma who are absent 10+ days per year
 - 52% educate students with asthma about asthma control
 - 76% obtain and use an asthma action plan for all students with asthma
 - 92% identify/track students with asthma
 - 94% allow students with asthma to carry their own inhaler (as prescribed by physician and with parent permission)

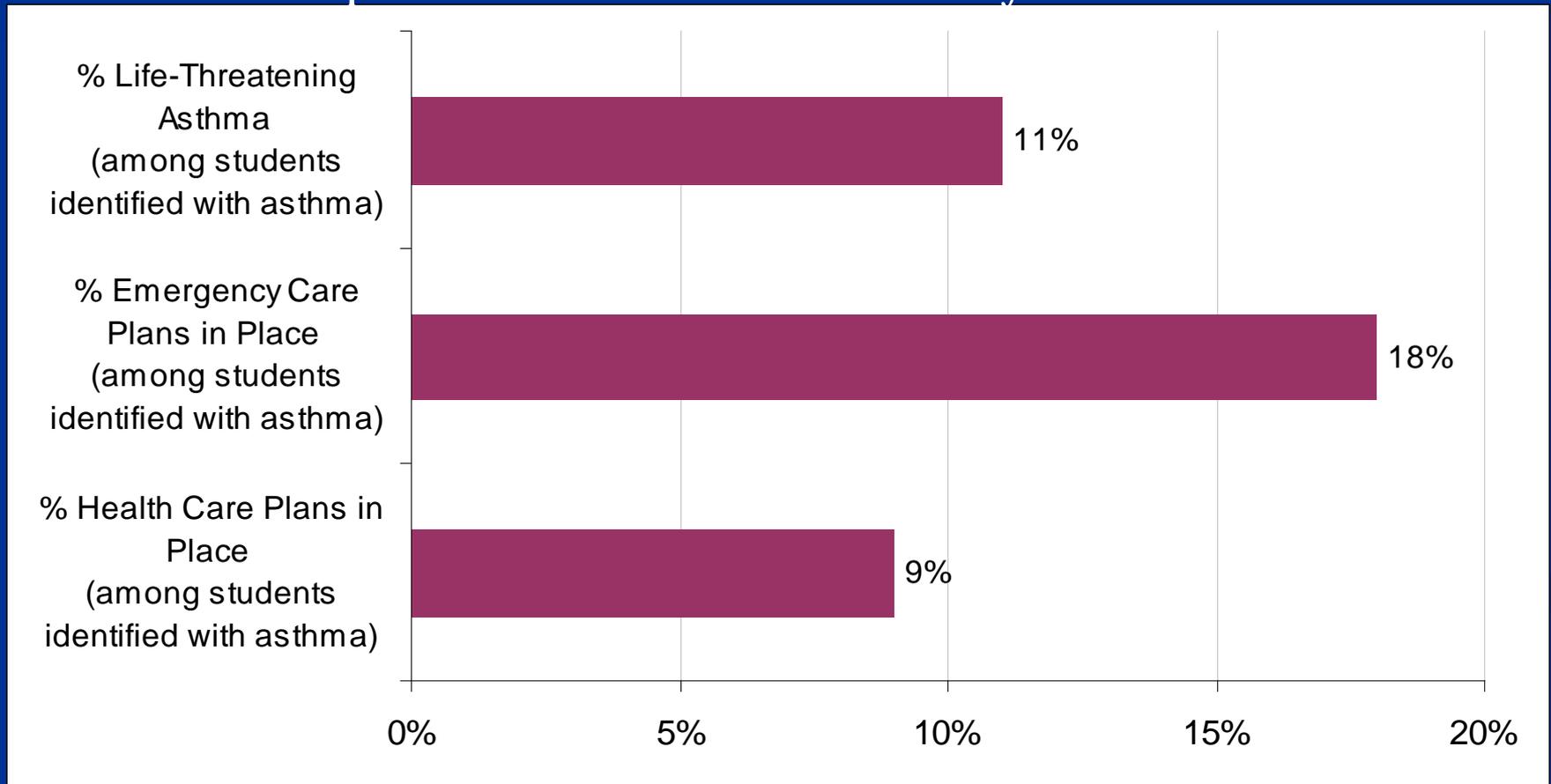
School Nurse – Student Support

School nurses do not have information about all the students with asthma in their schools – more than one-third the number of students with asthma have not been identified to their school nurses.



School Nurse – Student Support

School nurses are not able to create prevention or emergency plans for students with asthma that they do know about, and do not have resources to complete them for all students they do know about.



Associated with Chronic Disease

- Asthma is associated with other chronic diseases, which may complicate medical treatment:
 - Hypertension (31.4% among adults with asthma vs. 23.0%)
 - Diabetes (8.8% among adults with asthma vs. 6.5%)
- Other complicating factors:
 - Obesity
 - Depression

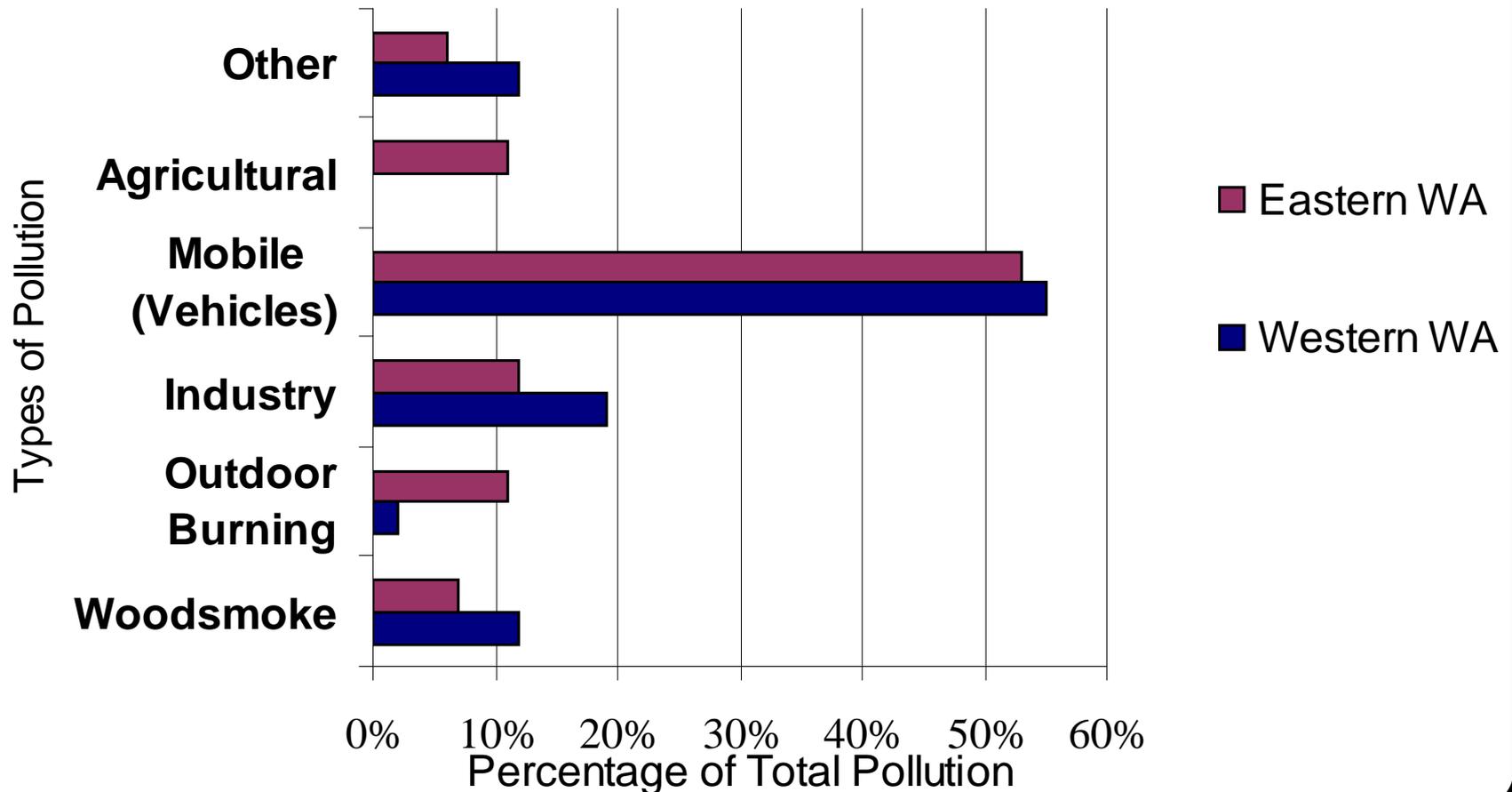
Environmental Risk Factors

Outdoor Air Exposures

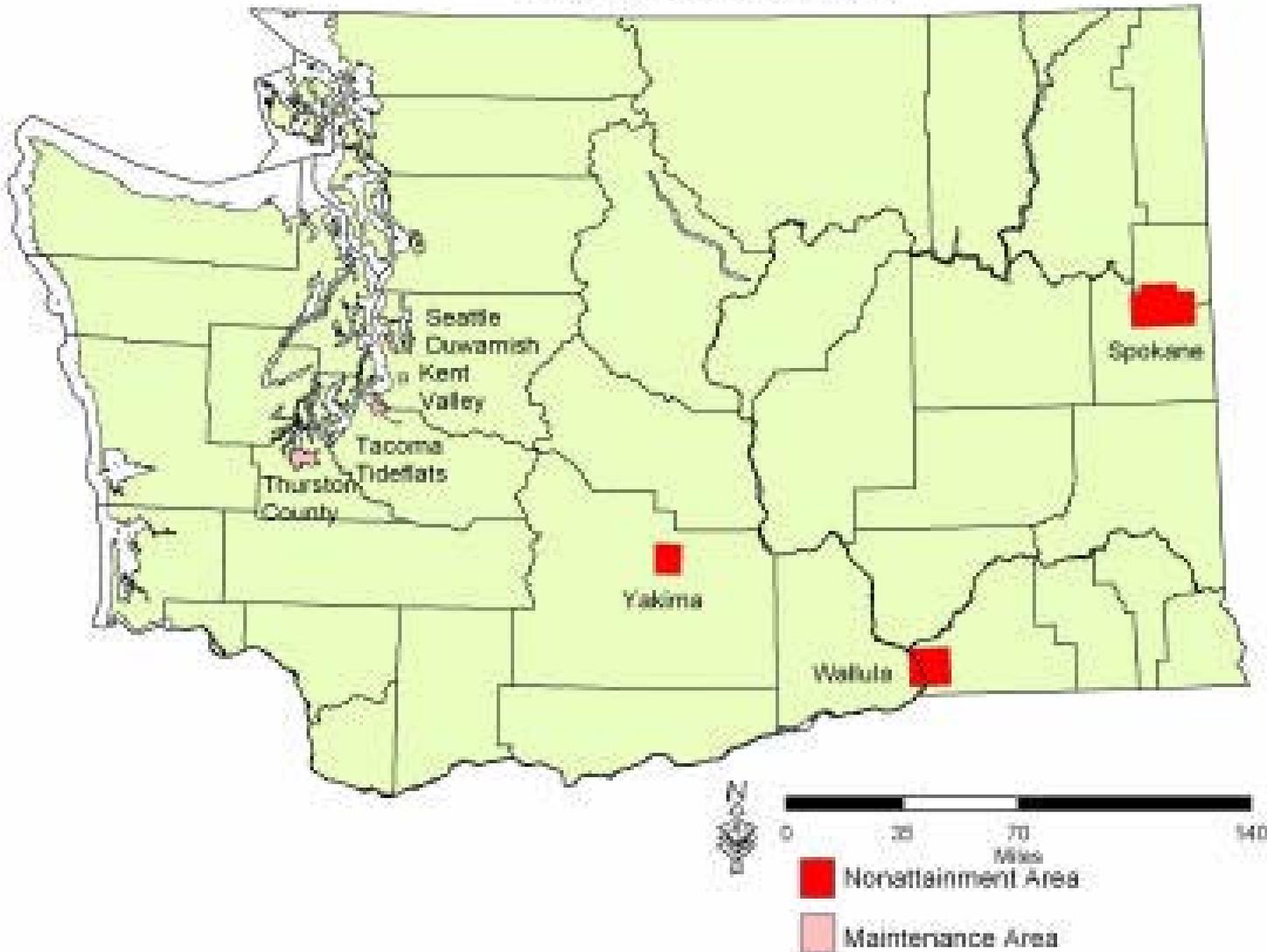
- n Ozone
 - n Causes asthma among children, associated with increased ER visits among people with asthma
 - n “Smog”: usually greatest in summer (sunlight reaction with pollution)
- n Fine Particulate Matter (PM)
 - n Associated with increased ER visits
 - n Tiny particles from dirt, soot, smoke, fuel
- n Carbon Monoxide
 - n Exacerbates symptoms
 - n Combustion from motor vehicles, woodsmoke
- n Nitrogen Oxides (NO_x)
 - n Exacerbates symptoms
 - n Fuel emissions from vehicles, power plants
- n Sulfur Dioxide (SO₂)
 - n Exacerbates symptoms
 - n Mt. St. Helens is periodically a significant source, also industrial sources

Outdoor Air Pollution: Sources

Air Pollution in Western and Eastern Washington



Washington State Maintenance/Nonattainment Areas for Particulates



Indoor Air Exposures

X = Limited evidence for association; XX = Sufficient evidence for association

XXX = Sufficient evident for causation; * young children only

| Exposure | Cause | Trigger |
|--|-------|---------|
| Dust mite allergen (carpet, bedding, stuffed toys) | XXX | XXX |
| Cockroach allergen | XX* | XXX |
| Dog allergen | | XX |
| Cat allergen | | XXX |
| Fungi/Mold | | XX |
| Secondhand Tobacco Smoke | XX* | XXX |
| Indoor Chemicals (fragrance, other) | X | XX |
| Dampness indoors/ homes | X | XX |
| NO ₂ (gas appliance in poorly ventilated kitchen) | | XX |

Indoor Air Quality - Schools

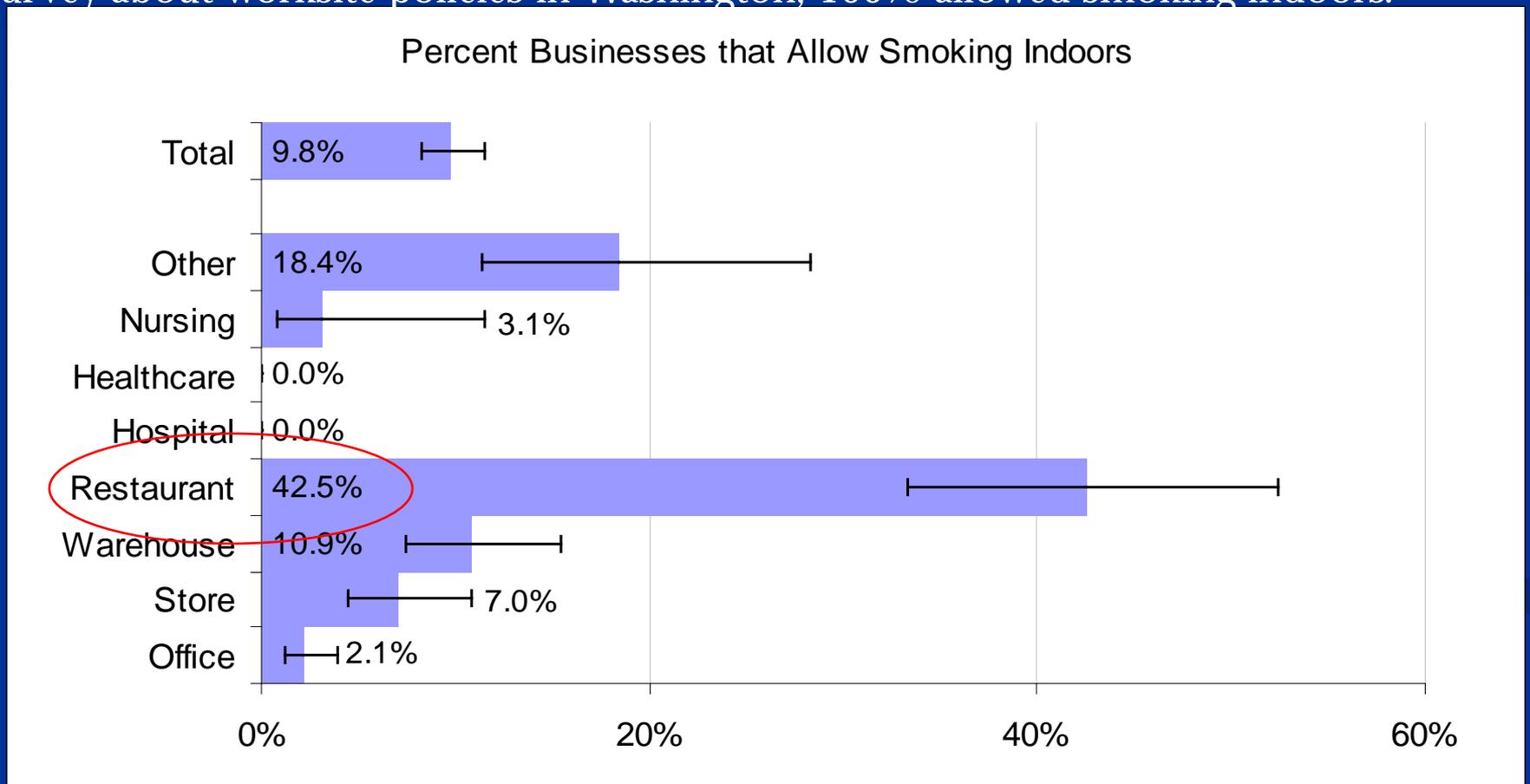
- A study of Washington and Idaho school buildings found:
 - Poor Ventilation ($\text{CO}_2 > 1000$ ppm as a proxy measure)
 - 43% of total classrooms
 - 66% of portable classrooms
 - Good Ventilation
 - 12% of all buildings had NO classrooms with poor air quality
- Poor indoor air quality was associated with 10-20% increased absences among all students

Indoor Air Quality - Schools

- n Inadequate Ventilation Equipment
 - n 10% no mechanical ventilation, 26% were turned off (portable buildings only)
 - n 67% faulty exhaust fans
 - n 23% failed shop exhaust fans
- n Sources of Irritants
 - n 55% water-stained ceiling tiles (indoor dampness/mold)
 - n 46% animals in classroom
 - n 84% carpet in classroom, 51% carpet in hallways
 - n 25% wood or metal shop
 - n 85% combustion equipment
- n Preventive Measures
 - n 5% carbon monoxide detector with combustion equipment
 - n 10% photocopiers, 6% laminators vented to outdoors
 - n 66% custodial chemical metering system

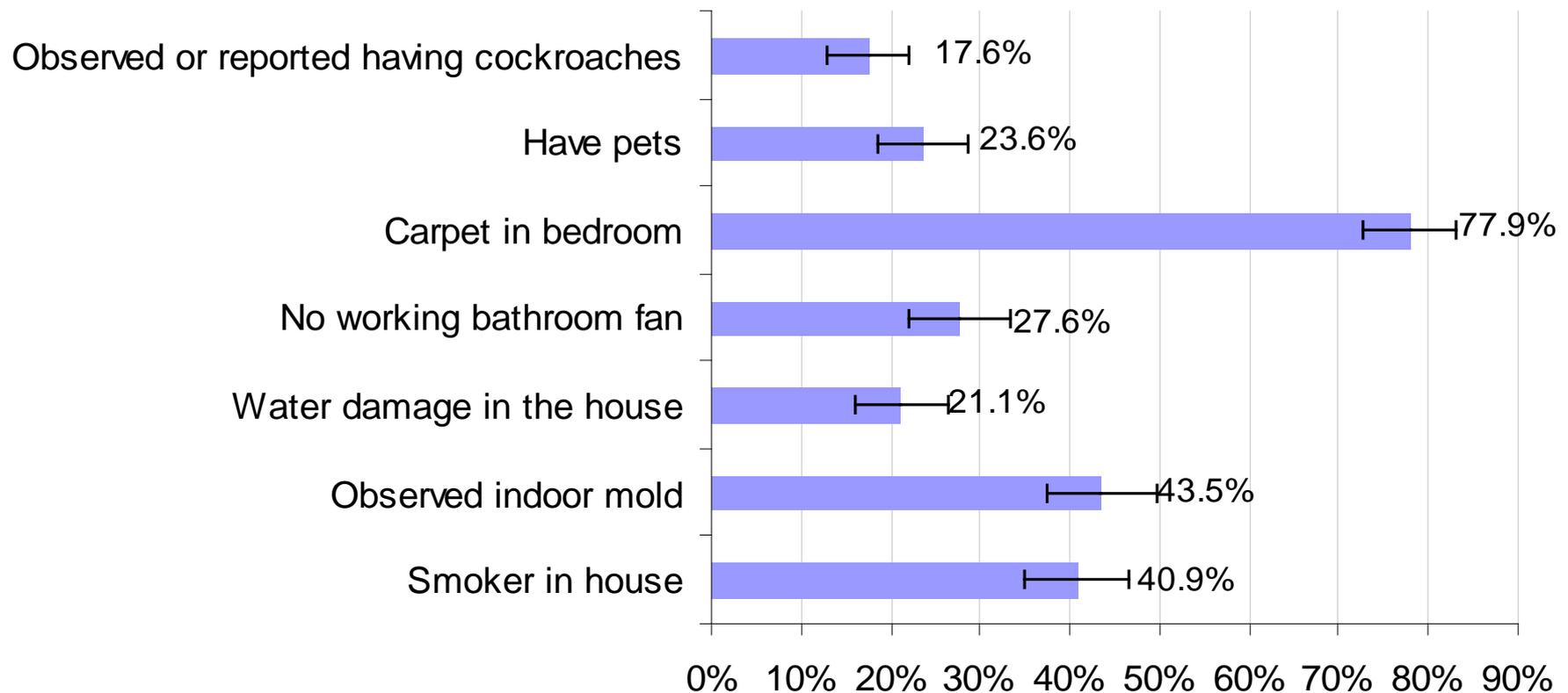
Indoor Air Quality - Worksites

Between 5-25% of adult-onset asthma has been attributed to workplace exposures from diverse occupational sources. About 15% of adults with asthma reported workplace exposure to Secondhand Smoke. Of the small number of Bars and Casinos included in a survey about worksite policies in Washington, 100% allowed smoking indoors.



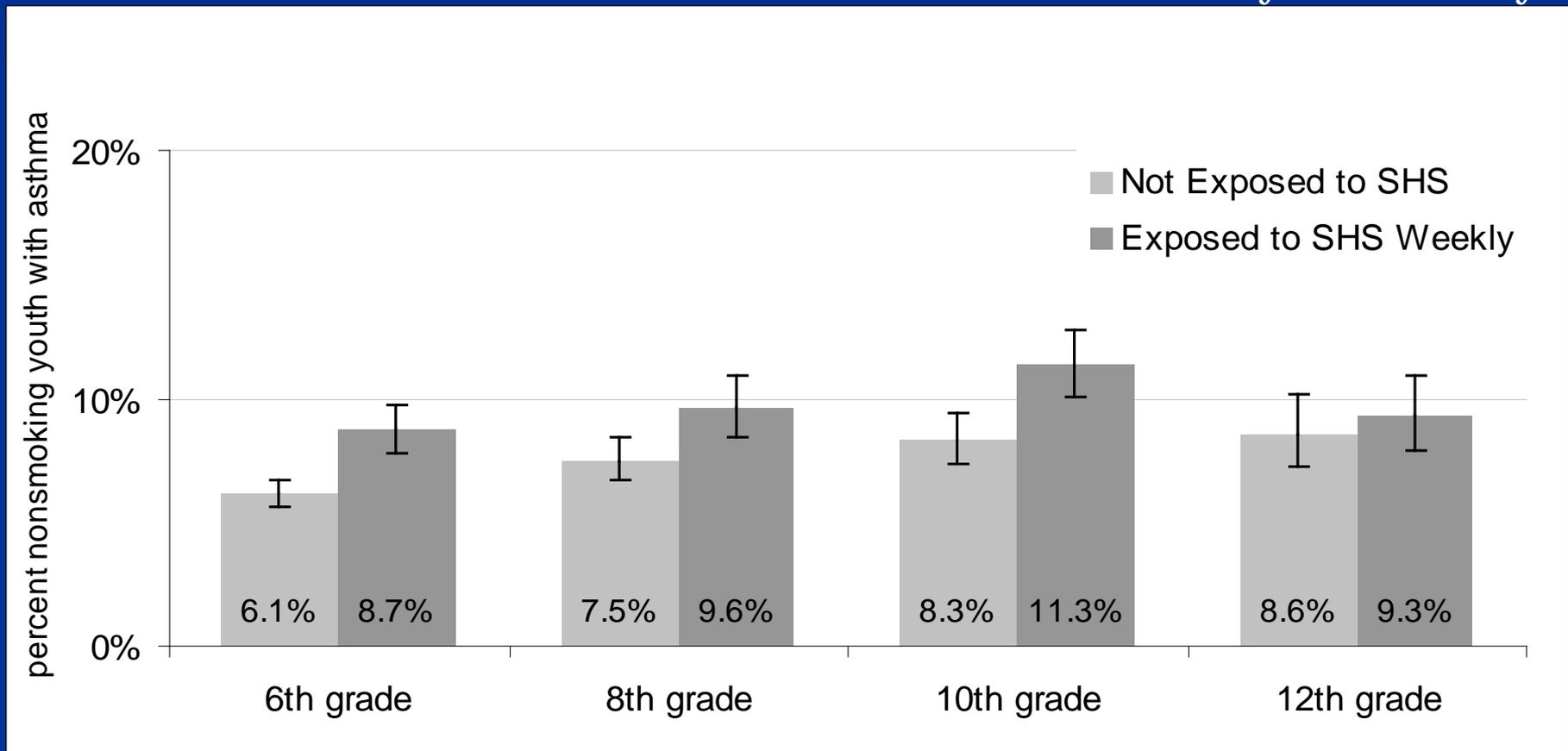
Indoor Air Quality - Homes

People with asthma have multiple sources of triggers in their homes. Low-income or group home environments are potential targets for home-based educational or policy interventions.



Indoor Air Quality - Homes

Children exposed to SHS in the home were more likely to report having asthma. About 50,000 Washington children under 5 are exposed at home – 500 new cases of asthma in children under 5 are caused by SHS each year.



Conclusion

Our Report Findings

- Asthma is a costly disease, and an important public health priority for Washington State
- A large and growing number of people in Washington are affected by asthma – some groups have an unfair burden of disease
- Clinical control for people with asthma in Washington needs improvement
- Washington's outdoor environment can cause asthma or make it worse – different exposures are relevant in different geographic areas
- Opportunities exist for policymakers to improve indoor air quality, and reduce the burden of asthma, in workplaces, schools and homes in Washington.

Next Steps

- A state plan to address asthma
 - To be completed September 2005
 - Led by the Washington Asthma Initiative, a statewide coalition of over 70 stakeholder groups
- For more information about asthma control efforts in Washington:

Amy Manchester Harris

(360) 236-3851

Amymanchester.Harris@doh.wa.gov

Thank you

Comments and feedback always appreciated:

Julia Dilley

julia.dilley@doh.wa.gov

(360) 236-3632