



# Asthma in Idaho 2003 Surveillance Report

PROTECTING IDAHO'S BREATH



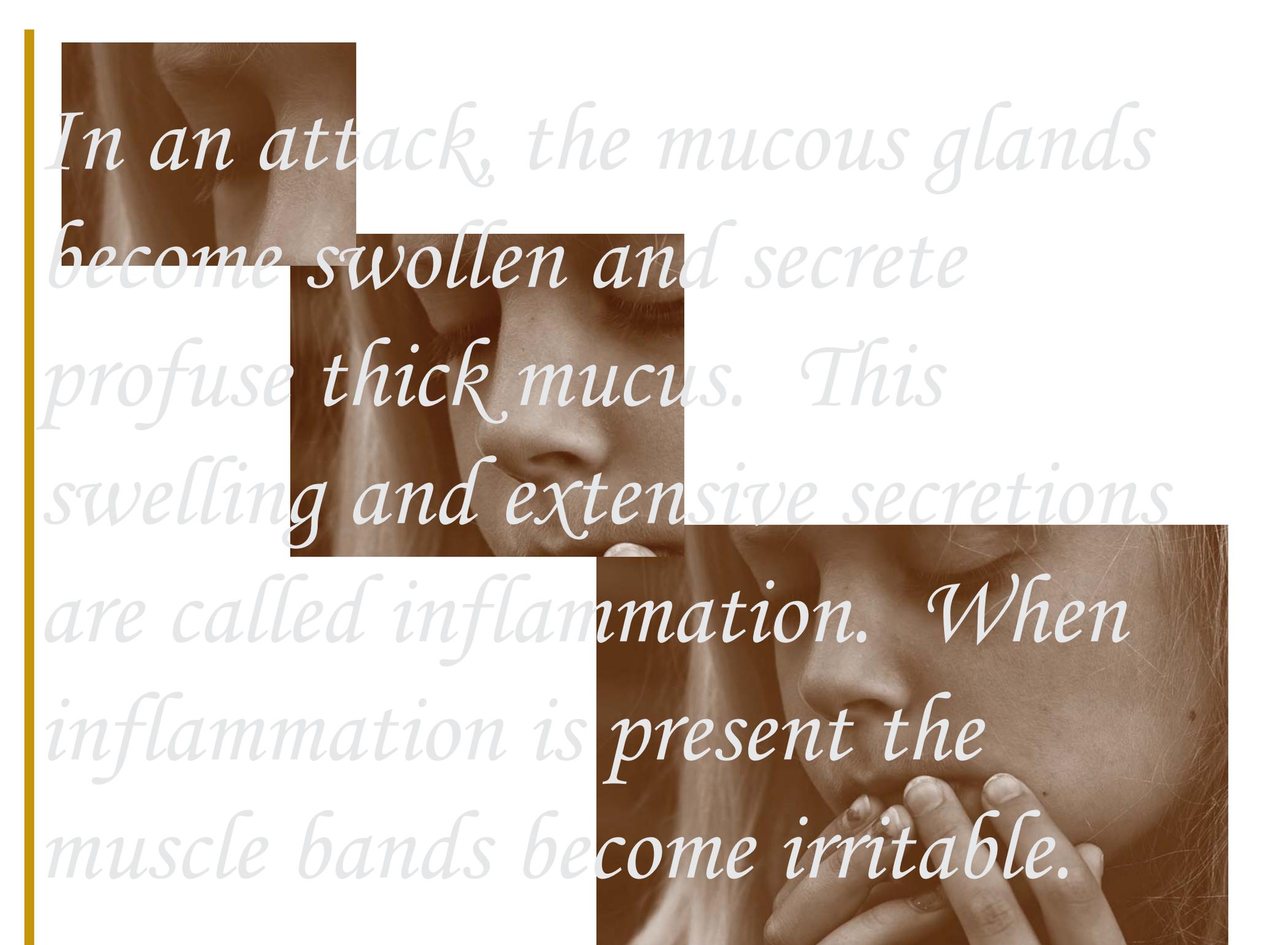
IDAHO DEPARTMENT OF  
HEALTH & WELFARE

**ASTHMA**  
PREVENTION AND CONTROL

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*In an attack, the mucous glands become swollen and secrete profuse thick mucus. This swelling and extensive secretions are called inflammation. When inflammation is present the muscle bands become irritable.*

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# Asthma At-A-Glance

## Idaho Adult Asthma Prevalence

- In 2003, it was estimated that 8% (approximately 75,000) of Idaho adults reported currently having asthma.
- Women (10.4%) were almost twice as likely as men (5.5%) to report currently having asthma.
- More than 25% of adults in households with less than \$20,000 annual income reported currently having asthma, compared with a little more than 10% of adults in households with greater than \$20,000 annual income.

## Economic Impact of Asthma

- In 2003, the conservatively estimated annual cost for asthma in Idaho was \$69.4 million, which included direct medical expenditures (\$38.0 million) and indirect costs (\$31.4 million).
- Among adults reporting current asthma who had visited the emergency department (ED) in the last year, 14.1% reported that they had no health care coverage.

## Child Asthma

- Nearly one in ten (9.1%) of Idaho's children is estimated to currently have asthma.
- In 2003, 14% of Idaho households with children reported one or more children with asthma.
- Nearly 30% of households reporting one or more children with asthma had no health care coverage in 2003.

## Risk Factors

- Nearly 25% of all Idaho adults reporting current asthma are also current smokers.
- Nearly 50% of Idaho adults reporting current asthma did not meet CDC recommended guidelines for physical activity.
- Almost 33% of Idaho adults reporting current asthma were obese, compared with 20% of adults without asthma.

## Co-Morbid Chronic Conditions

- Over 33% of Idaho adults reporting current asthma had high blood pressure, compared with 20% of adults without asthma.
- Nearly 40% of Idaho adults reporting current asthma also had arthritis, compared with 25% of adults without asthma.
- Idaho adults reporting current asthma were 1.7 times more likely to report diabetes than adults without asthma.

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## Asthma Severity

- In 2003, it was estimated that over 10,000 adults with asthma visited a hospital ED because of their asthma.
- Among adult males reporting current asthma, nearly 20% had an ED visit, as did more than 10% of females reporting current asthma.
- Almost 23% of Idaho adults reporting current asthma saw their doctor because of worsening symptoms.
- Over 44,000 adults reporting current asthma had an asthma attack (exacerbation of symptoms) in the last year.

## Quality of Life

- More than 20% of adults reporting current asthma had activity limitations in the last year because of their asthma.
- Nearly 35,000 adults reporting current asthma had difficulty sleeping because of their asthma.
- Among adults reporting current asthma, nearly 25% reported fair to poor general health status, compared with a little over 10% of adults without asthma.
- On average, Idaho adults reporting current asthma reported more days of poor physical health, poor mental health, restricted activity, and total unhealthy days per month than adults without asthma.

## Prevention of Other Serious Respiratory Infections

- Nearly 40% of Idaho adults reporting current asthma received an influenza vaccination in the last year, compared with just over 30% without asthma.
- Idaho adults reporting current asthma were 1.7 times more likely to have ever received a pneumococcal vaccination than adults without asthma.

## Asthma Among the Idaho Medicaid Population

- In 2003, an estimated 16% of Idaho Medicaid-eligible adults reported current asthma, with women notably higher than men.
- More than 33% of Medicaid-eligible adults with asthma reported asthma-related activity limitation in the last year.
- More than 50% of Medicaid-eligible adults with asthma went to their doctor for worsening asthma symptoms in the last year.

## Quality of Life - Medicaid Eligibles

- On average, Idaho Medicaid-eligible adults reporting current asthma reported more days of poor physical health, poor mental health, restricted activity, and total unhealthy days per month than Medicaid eligible adults without asthma.

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# *I*ntroduction

The Idaho Asthma Prevention and Control Program (IAPCP) is committed to reducing asthma-associated morbidity and mortality and improving quality of life for residents of Idaho with asthma. Defining the impact of asthma on the people of Idaho, identifying the populations that are most affected, and implementing best-practice interventions based upon surveillance are IAPCP goals. However, surveillance is incomplete due to a lack of reportability and availability of electronic data at this time. The 2003 Asthma in Idaho report summarizes analyses of data gathered from available asthma surveillance sources.

## **Purpose**

Evaluation of asthma surveillance data gathered over multiple years can provide guidance for health planning and intervention by public health and other health professionals in the future. This report highlights state-specific asthma surveillance data available in 2003 describing the burden of asthma and associated risk factors for Idaho.

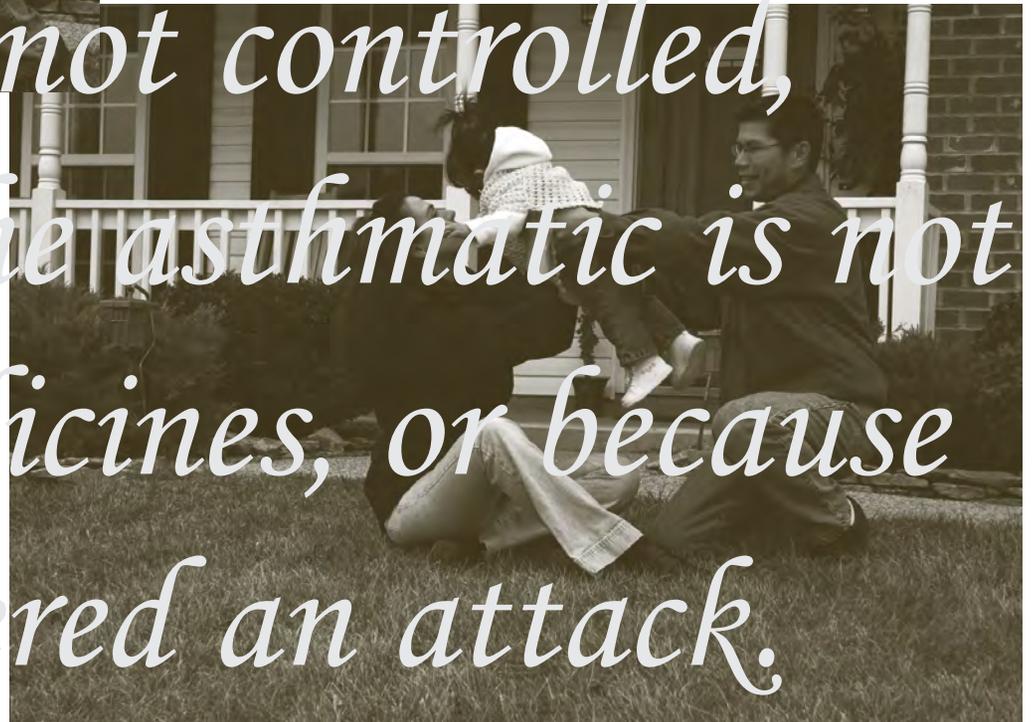
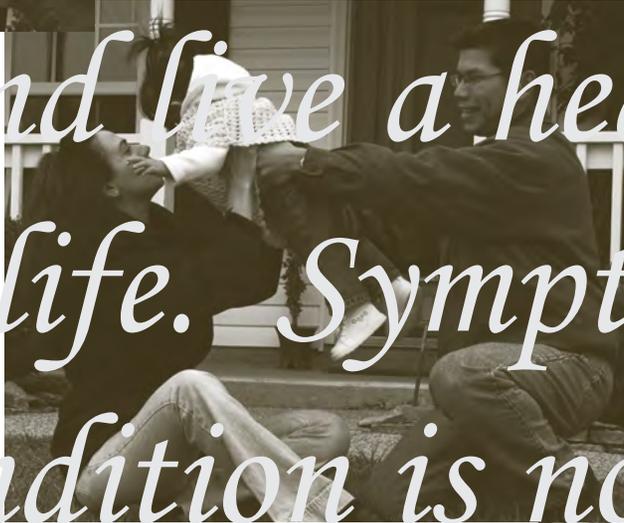
## **Asthma Overview**

Asthma is a chronic, potentially life-threatening, inflammatory disease of the airways that is recognized as a major public health issue. The prevalence of asthma has risen and continues to rise in every region of the country and across all demographic groups, whether measured by age, race, or gender, according to the Centers for Disease Control and Prevention. As stated in the May 2000, Action against Asthma - a Strategic Plan for the Department of Health and Human Services, "The steady rise in the prevalence of asthma constitutes an epidemic."

Nationally, studies have yet to pinpoint specific causes of asthma, but it is suspected that multiple factors may play a role in the initial onset of asthma and the exacerbation of existing asthma. Genetics and environmental exposures are considered strong contributors but not the only risk factors associated with asthma. Therefore, it is necessary to examine multiple risk factors and co-morbid conditions in an effort to assess the burden of asthma in Idaho.

The actual burden of asthma is unclear in Idaho, since there is no mechanism for reporting of asthma diagnoses. One reason asthma is not reportable in Idaho is the lack of a nationally defined or accepted case definition to guide the diagnosis. This lack of standardized reporting requires that other methods of surveillance be employed to assess asthma prevalence and risk factors in Idaho. Accessing hospital discharge data statewide, a potentially significant source of information on severe cases of asthma, is not yet an option in Idaho. This limits the description of asthma in Idaho to analysis of self-reported, surveillance survey data and the review of death certificate data.

*A well controlled asthmatic can be free from symptoms most of the time and live a healthy fully active life. Symptoms occur when the condition is not controlled, either because the asthmatic is not on effective medicines, or because something triggered an attack.*



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# National Standards

## Risk Factors and Prevention

Asthma is a complex illness with significant potential to impact the quality of life. The mechanisms responsible for the initial onset of asthma and exacerbation of asthma symptoms are not well understood. Postulated causes include an inherited predisposition to develop the disease (genetics) and environmental stimuli or triggers. Data have also suggested that asthma may be linked in some fashion to obesity and low levels of physical activity. Co-morbidity with other chronic conditions has been described, possibly occurring due to similar risk factors. The National Institute of Health (NIH), National Heart, Lung, and Blood Institute (NHLBI), and the National Asthma Education and Prevention Program (NAEPP) have developed the following list of factors strongly associated with asthma onset or exacerbation:

### Genetic Predisposition to Develop Asthma

Atopy - inherited tendency to experience immediate allergic reactions. If one parent is atopic, a child has a 40% chance of being atopic. If both parents are atopic, a child has an 80% chance of being atopic. Airways and skin of atopic individuals are more likely to react to allergens.

### Environmental Stimuli Linked to Asthma

#### Indoor Exposures

- Environmental Tobacco Smoke
- Dust Mites
- Cockroaches
- Dander of Furred or Feathered Animals
- Molds

#### Outdoor Exposures

- Pollen
- Molds

#### Occupational Sensitizers (inhalation)

- Chemical Vapors
- Fumes
- Smoke
- Metal Vapors and Dust

#### Other Risk Factors

- Smoking
- Obesity
- Low Physical Activity Levels

## Health Care

Data from the 1998 Idaho BRFSS (the most recent year that included questions to assess whether individuals received adequate healthcare as determined by the NAEPP) indicated that 66% of Idaho adults with asthma had been educated on the use of their medications to prevent asthma exacerbations, and less than half (42%) of Idaho adults had been instructed on strategies to decrease asthma triggers in their homes.<sup>1</sup> This suggests that many residents of Idaho who have been diagnosed with asthma are not receiving health care guidance that meets the key clinical activities recommended by the NAEPP, as listed below.

### NAEPP Key Clinical Activities for Quality Asthma Care Include:

1. Measures of assessment and monitoring
  - Establish asthma diagnosis
  - Classify severity of asthma
  - Schedule routine follow-up care
  - Assess for referral to specialty care
2. Control of factors contributing to asthma severity
  - Recommend measures to control asthma triggers
  - Treat or prevent co-morbid conditions
3. Pharmacotherapy
  - Prescribe medications according to severity
  - Monitor use of 2-agonist drugs
4. Education for partnership in care
  - Develop a written asthma management plan
  - Provide routine education on patient self-management

## NAEPP Self-Management Guide

Evidence shows that self-management of asthma can lead to a reduction in the number and severity of episodes of asthma exacerbation, an improved quality of life and a sense of well-being. In addition, the benefits of training in self-management of asthma both medically and environmentally at early stages of the condition may help prevent asthma exacerbations and may have added benefits by reducing other co-morbid conditions with similar apparent risk factors.

NAEPP outlines some key factors that those with asthma should know related to asthma self-management, knowledge and life-skills.

1. Understanding basic facts about asthma
  - Normal lungs vs lungs with asthma
  - Understanding the effects of asthma exacerbation on airways
2. Roles of medications
  - How medications work
    - ◆ Long-term control: medications that prevent symptoms
    - ◆ Quick relief: short-acting bronchodilators

- 
3. When and how to take rescue actions
    - Responding to changes in asthma severity (Asthma Management Plan)
  4. Skills
    - Inhaler use
    - Spacer/holding chamber use
    - Peak flow
    - Recognize early signs of exacerbations
  5. Environmental control measures
    - Identify and avoid environmental factors that make their asthma worse

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## Healthy People 2010 Asthma Objectives

The IAPCP utilizes the CDC's Healthy People 2010 (HP 2010)<sup>2</sup> objectives for asthma as a guide for programmatic priorities and efforts. The targets specified for each of the objectives provide a benchmark against which programmatic progress can be measured and tracked. Idaho does not have data sources available for tracking some of the objectives, as noted below:

### 24-1 Reduce asthma deaths. HP2010 Target and Baseline:

Objective	Age Group	1998 Baseline	2010 Target
		<i>Rate per Million</i>	
24-1a.	Children under age 5 years	2.1	1.0
24-1b.	Children aged 5 to 14 years	3.3	1.0
24-1c.	Adolescents and adults 15 to 34 years	5.0	2.0
24-1d.	Adults aged 35 to 64 years	17.8	9.0
24-1e.	Adults aged 65 years and older	86.3	60.0

### 24-2 Reduce asthma hospitalization. HP2010 Target and Baseline:

Objective	Age Group	1998 Baseline	2010 Target
		<i>Rate per 10,000</i>	
24-2a.	Children under age 5 years	45.6	25.0
24-2b.	Children aged 5 to 64 years	12.5	7.7
24-2c.	Adults aged 65 years and older	17.7	11.0

Hospital discharge data are not currently available in Idaho, nor does it appear that they will be available in the foreseeable future. This is a recognized data gap for the IAPCP.

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**24-3 Reduce hospital emergency department (ED) visits for asthma. HP2010 Target and Baseline:**

Objective	Age Group	1995 - 97 Baseline	2010 Target
		<i>Rate per 10,000</i>	
<b>24-3a.</b>	Children under age 5 years	150.0	80.0
<b>24-3b.</b>	Children aged 5 to 64 years	71.1	50.0
<b>24-3c.</b>	Adults aged 65 years and older	29.5	15.0

The BRFSS currently provides the best Idaho estimate of ED usage among Idaho adults with asthma. In the 2003 BRFSS, 13.6% of Idaho adults currently reporting asthma visited a hospital emergency department for asthma in the last year. Since there is no mechanism for determining actual ED utilization for asthma in Idaho, there are no data for comparison to HP2010 objectives. Other possible data sources applicable to this objective are under development.

**24-4 Reduce activity limitations among persons with asthma.**

**HP2010 Target: 10%**

**Baseline: 20% of persons with asthma experienced activity limitations between 1994-96 (age adjusted to the year 2000 standard population).**

In 2003, 21.0% of Idaho adults with asthma reported limitations to their work and/or usual activities because of asthma (BRFSS).

**24-5 Reduce the number of school or work days missed by persons with asthma.**

There is currently no data resource in Idaho for this objective. As a developmental objective, there are no target or baseline data for this objective.

**24-6 Increase the proportion of persons with asthma who receive formal patient education, including information regarding community and self-help resources, as an essential part of the management of their condition.**

**HP2010 Target: 30%**

**Baseline: 20% of persons with asthma received formal patient education in 1998 (age adjusted to the year 2000 standard population).**

There is currently no data resource in Idaho to address this objective.

**24-7 Increase the proportion of persons with asthma who receive appropriate asthma care according to the NAEPP guidelines.**

24-7a. Persons with asthma who receive written asthma management plans from their health care provider.

24-7b. Persons with asthma with prescribed inhalers who receive instruction on how to use them properly.

24-7c. Persons with asthma who receive education about recognizing early signs and symptoms of asthma episodes and how to respond appropriately, including instruction on peak flow monitoring for those who use daily therapy.

24-7d. Persons with asthma who receive medication regimens that prevent the need for more than one canister of short-acting inhaled beta agonists per month for relief of symptoms.

There is currently no data resource in Idaho to address this objective.

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24-7e. Persons with asthma who receive follow-up medical care for long-term management of asthma after any hospitalization due to asthma.

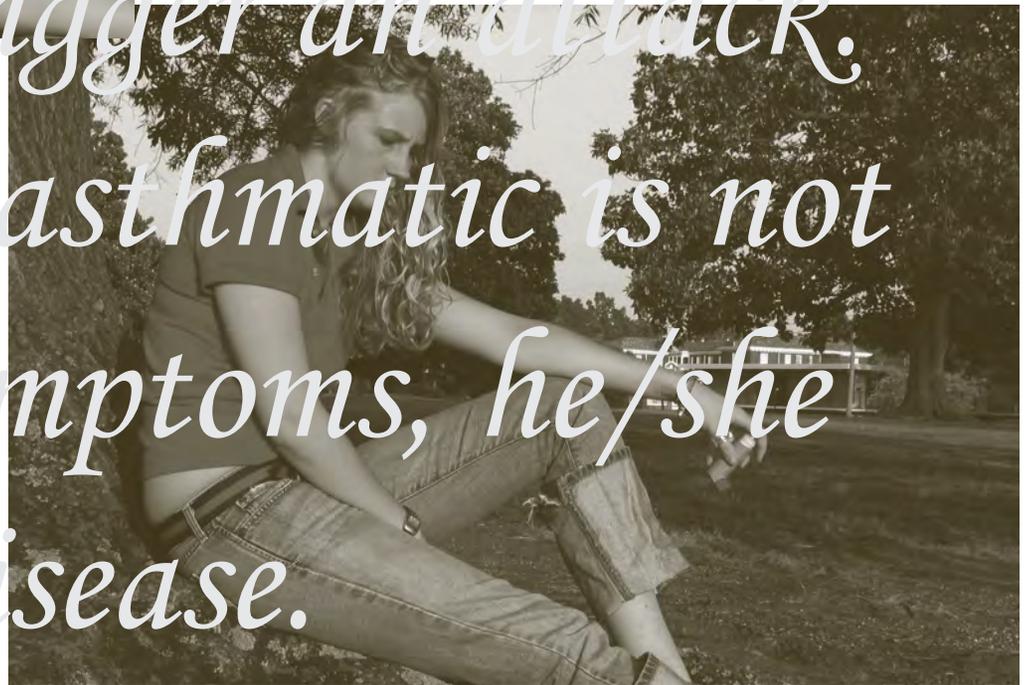
24-7f. Persons with asthma who receive assistance with assessing and reducing exposure to environmental risk factors in their home, school, and work environments.

**24-8 Establish in at least 25 states a statewide surveillance system for tracking asthma deaths, illness, disabilities, impact of occupational and environmental factors on asthma, access to medical care and asthma management.**

Existing Idaho data sources and prospective data sources are insufficient to track these outcomes.



*Asthma is not contagious. It does tend to run in families and is associated with allergies. Exercise or emotional stress or allergens can trigger an attack. Even when an asthmatic is not experiencing symptoms, he/she still have the disease.*



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## **Idaho Asthma Prevention and Control Program**

The Idaho Asthma Prevention and Control Program (IAPCP) was created by the Idaho Department of Health and Welfare, Division of Health in 1999 to reduce the growing burden of asthma in the State. IAPCP is housed in the Bureau of Community and Environmental Health, and is part of the Chronic Disease Management Section. In May 2003, IAPCP published the Idaho Statewide Asthma Plan. The Plan was developed with the assistance of 425 stakeholders statewide involved in asthma diagnosis, treatment, and management. The intent of the Plan was to coordinate and provide guidance for the multitude of stakeholders to improve the quality of life for those in Idaho with asthma.

### **IAPCP GOALS**

- Increase community awareness - using mass media and other public education channels - that asthma is a serious, chronic disease that can be controlled through a physician-directed asthma management plan, and that asthma disease and exacerbations may be prevented by avoidance of exposure to environmental triggers
- Conduct asthma surveillance which is complete, accurate, and timely
- Educate those with asthma and their families to prevent asthma exacerbations, recognize asthma symptoms early, and seek appropriate care from their physicians and other health care providers
- Promote and provide education for physicians and other health care professionals to diagnose and treat asthma more effectively by using the latest clinical practice guidelines from the National Heart, Lung, and Blood Institute
- Develop state, local, and organizational policies that promote programs to reduce the prevalence, severity, and limitations associated with asthma

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## Current Projects

- School Asthma Management Model for Idaho (SAMMI) - The purpose of SAMMI is to provide an administrative and educational manual that addresses asthma-friendly policies, asthma management, and emergency response to asthma exacerbations in the school setting. SAMMI is designed with modules for administrators, teachers, school nurses, staff, coaches, students, and parents.
- Asthma Educator Institute - The goals of the Institute are to increase statewide capacity for the appropriate management of asthma, provide community-level asthma education services throughout Idaho, and encourage systems change. Forty-four health professionals statewide have participated in the Institute.
- Healthy Homes, Head Start - The purpose of Healthy Homes, Head Start is to decrease in-home exposures to environmental triggers of asthma among a defined high-risk population. WICAP Head Start has institutionalized the Healthy Homes, Head Start project, and has become a vocal advocate of the Healthy Homes, Head Start project. This has resulted in a three year plan to implement the Healthy Homes, Head Start project within Head Start centers statewide.
- Migrant and Seasonal Farm Worker (MSFW) Pilot - The goals of the Pilot are to gather asthma prevalence data and provide culturally appropriate asthma education to this unique population. The IAPCP will be working in collaboration with Terry Reilly Health Services (a non-profit low cost healthcare service), Hispanic Profile Group, Farm Worker Advisory Committee (composed of community leaders from these three MSFW communities), and La Buena Salud (the Hispanic Mobile Wellness Initiative project that is operated through Boise State University). The Pilot will provide training and educational materials to lay Hispanic Community Health Workers (HCHW) in the Wilder, Marsing, and Caldwell-Farmway Village camps in Idaho. The use of HCHW to provide health education to MSFW communities has been documented in several public health journals as a successful means of helping these communities prevent and manage chronic disease.
- Child Care Provider Training - The purpose of the course is to give child care providers the tools and knowledge they need to care for children with asthma and allergies (including food and latex allergies). IAPCP is working in collaboration with the Asthma and Allergy Foundation of America and the seven public health districts to provide Asthma & Allergy Essentials for Child Care Providers training to 210 child care providers statewide.
- Asthma Coalition of Idaho (ACI) and Local Asthma Coalitions - ACI is an advisor and partner with IAPCP in developing and piloting interventions to address the burden of asthma in Idaho and providing asthma education services statewide. Additionally, in each of the seven public health districts in Idaho, there is a local asthma coordinator and a local asthma coalition. The purpose of local coalitions is to address local needs and coordinate local asthma intervention activities.

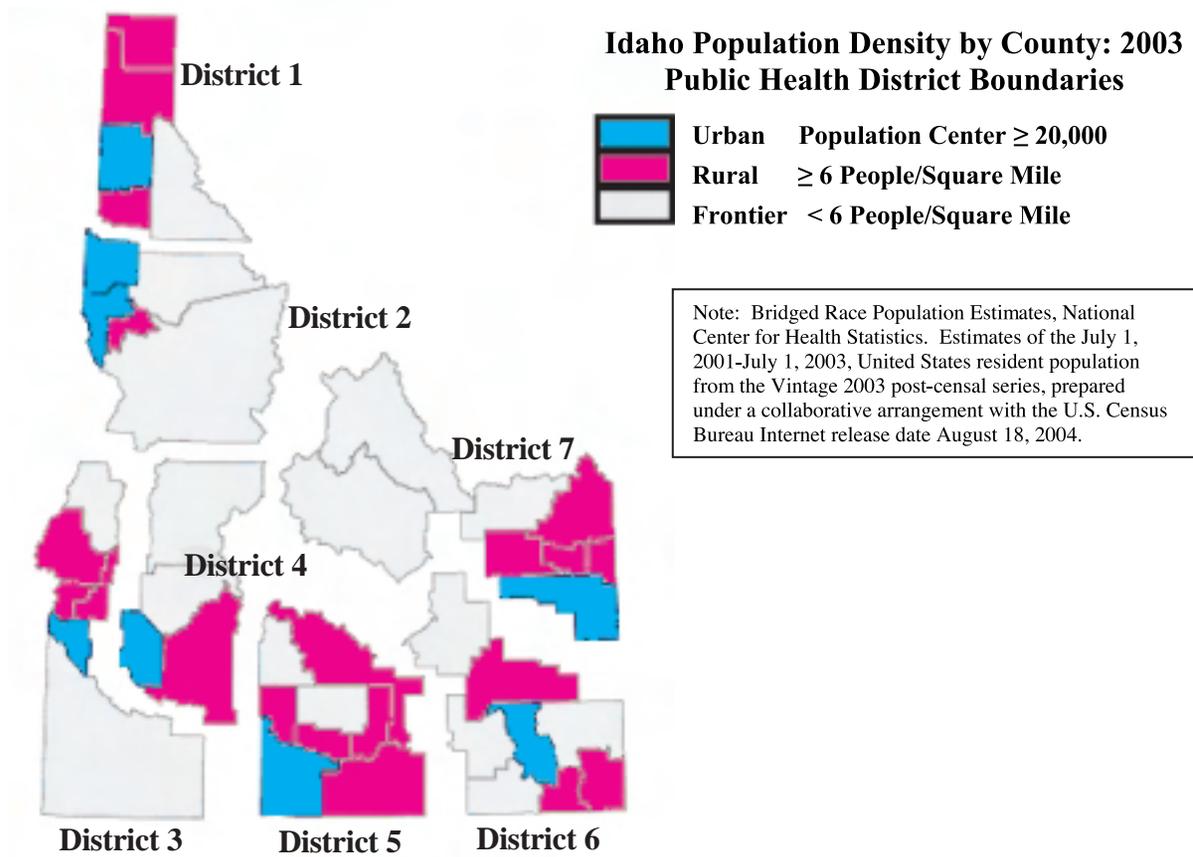
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## Geography and Population

- Idaho ranks 11th in land area among the states with 82,751 square miles.
- Idaho is comprised of 44 counties. Eight of these counties are classified as urban by the U.S. Census Bureau meaning that each contains a population center with at least 20,000 people.<sup>3</sup> Twenty counties are deemed to be rural, i.e. contain six or more people per square mile, while 16 counties are classified as frontier with fewer than six people per square mile.
- Idaho ranks 39<sup>th</sup> in population among the states and the District of Columbia. The population of Idaho totals 1.37 million people composed of the racial groups detailed below (as reported in the 2003 inter-censal estimates<sup>4</sup>):

White	96.4%
Native American/Alaskan Native	1.6%
Asian, Pacific Islander	1.3%
Black	0.7%

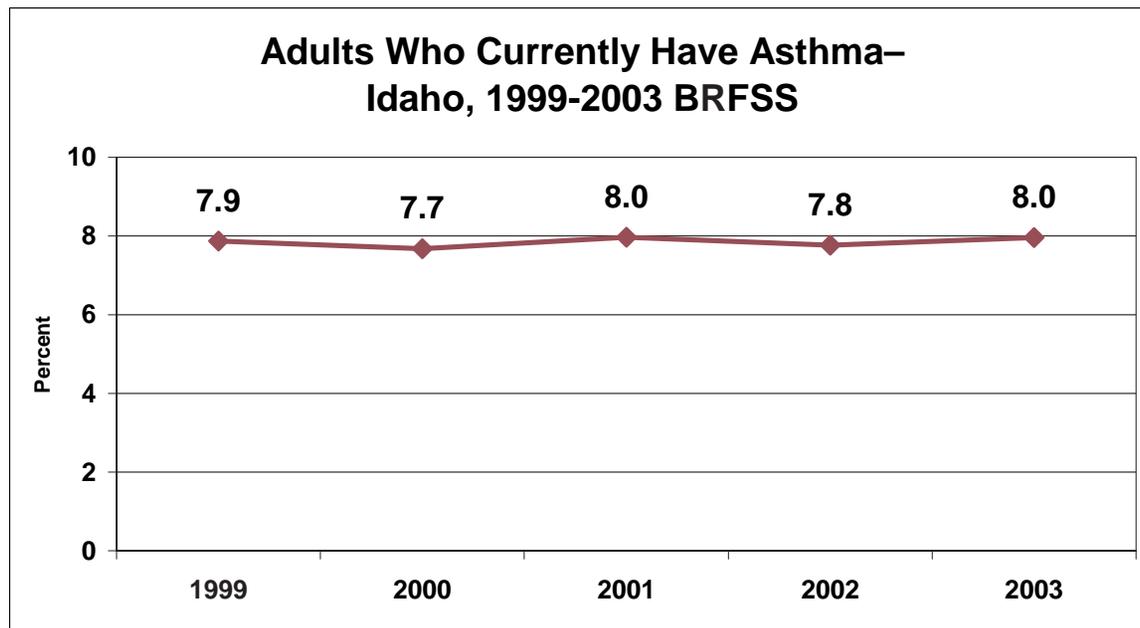
- Hispanics of any race comprise 8.7% of the state's population.<sup>4</sup>
- Seven autonomous public health districts serve all 44 Idaho counties (see map next page).



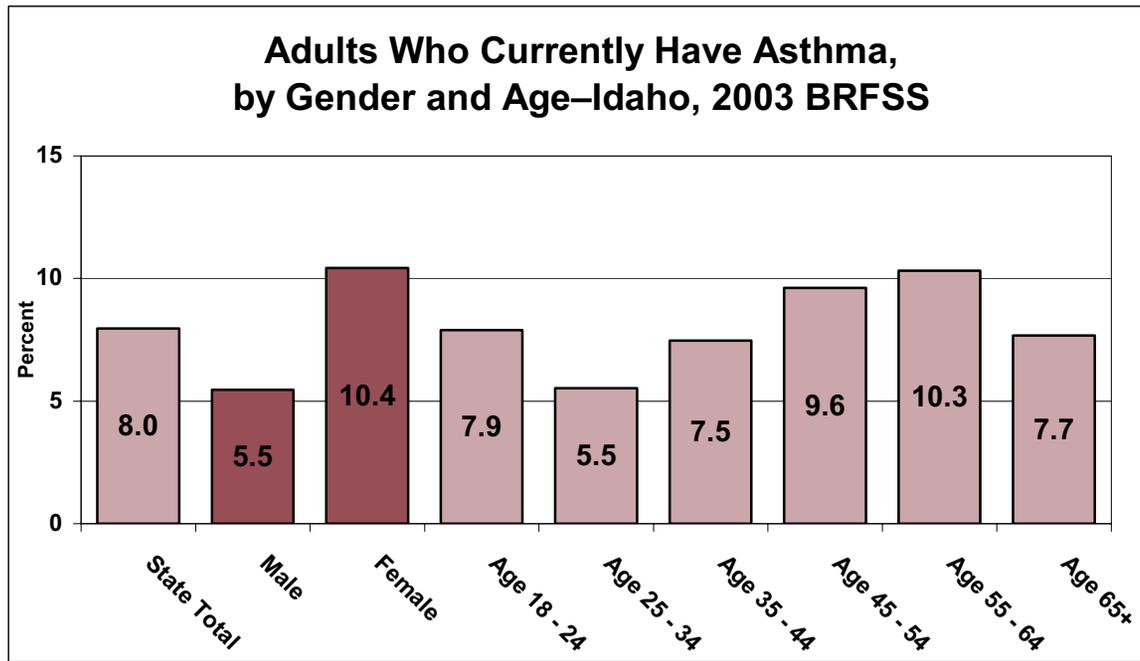
## Analysis of 2003 BRFSS Data

### Idaho Adult Asthma Prevalence

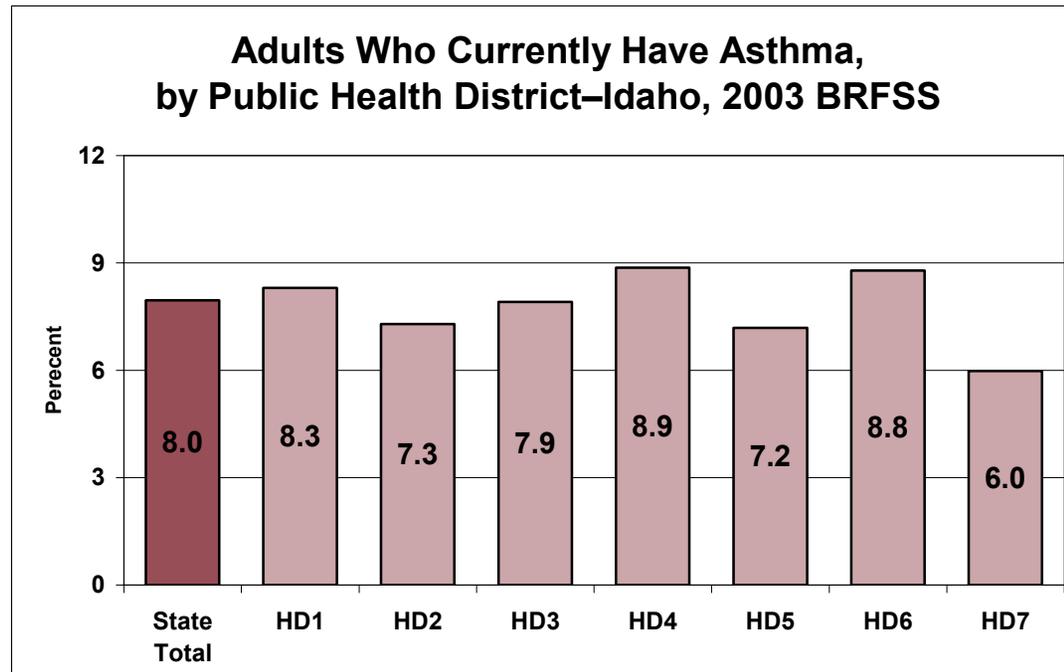
- In 2003, eight percent (8.0%) or 75,000 Idaho adults currently had asthma.<sup>5</sup>
- The prevalence of asthma has remained fairly constant over the last five years, from 7.9% in 1999 to 8.0% in 2003.<sup>6</sup>



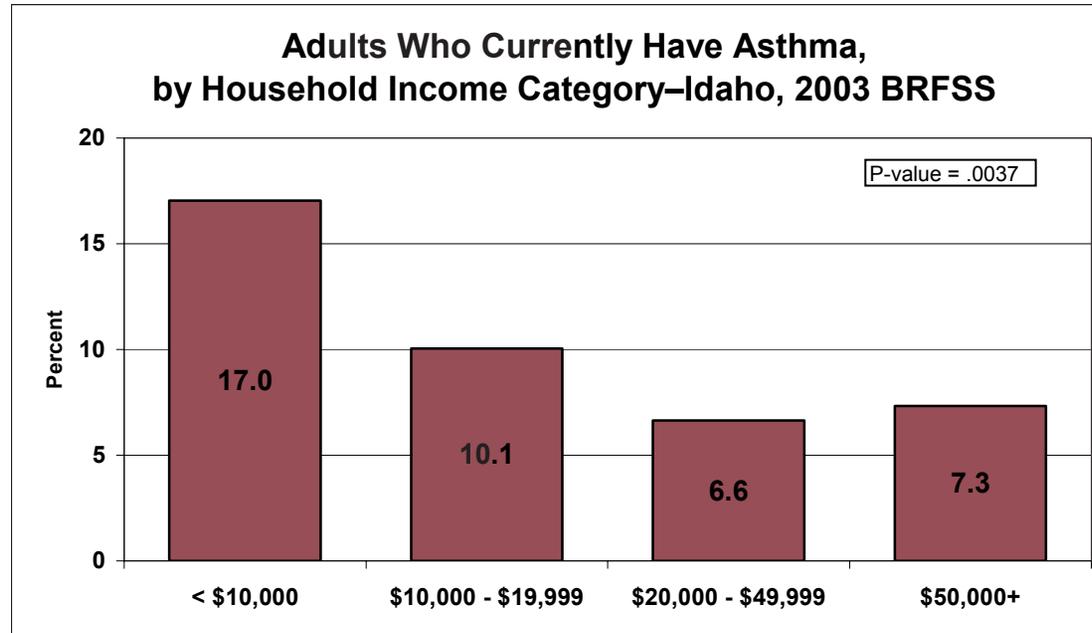
- Females (10.4%) were almost twice as likely to have asthma as males (5.5%, p-value=0.000).



- Although the prevalence of asthma varied slightly between Idaho's seven public health districts, ranging from a high of 8.9% in Health District 4 to a low of 6.0% in Health District 7, no statistically significant geographic differences were detected.

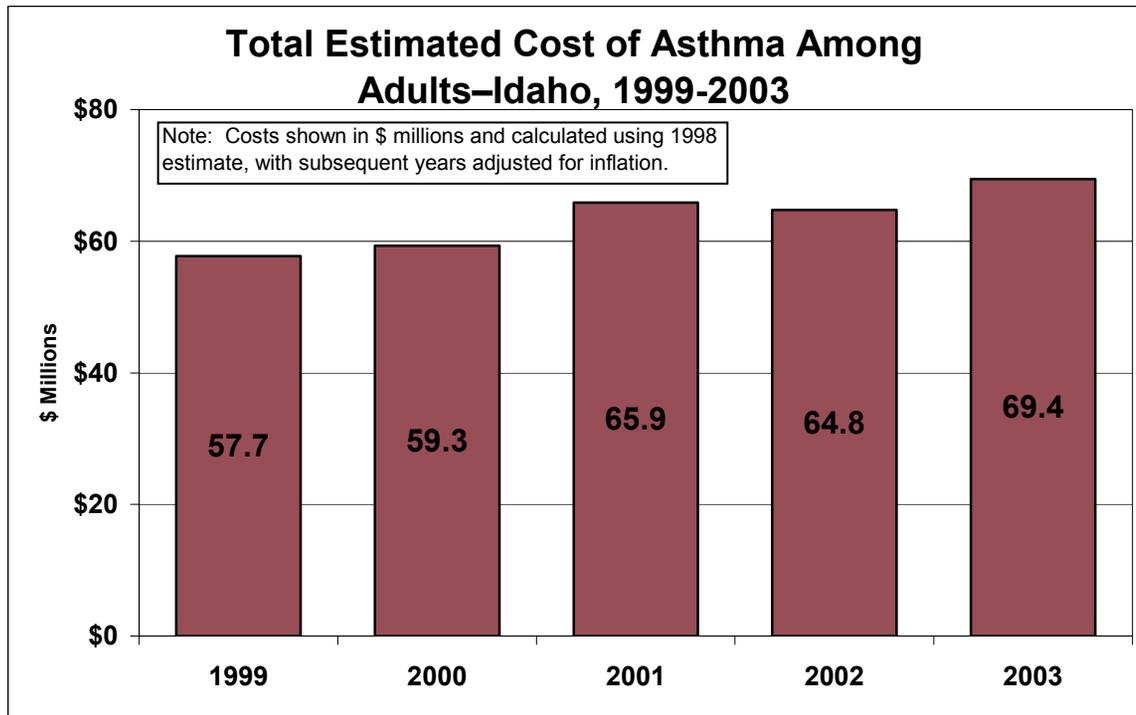


- Idaho adults with less than \$10,000 annual household income had a significantly higher prevalence of asthma (17.0%) than those with higher annual household incomes.
- More than one in four (27.1%) households with less than \$20,000 annual income had an adult with asthma. It is worth noting that most of the variation in prevalence across the income categories may be attributed to age, as the oldest and youngest age groups typically have the lowest incomes.



## Economic Impact of Asthma

In 2003, an estimated 75,000 adults in Idaho were affected by asthma at a conservatively estimated cost of \$69.4 million, including direct medical expenditures (\$38.0 million) and indirect costs (\$31.4 million) attributable to disability, lost days of work, and mortality.<sup>7</sup> This Idaho estimate is calculated utilizing a cost estimate conducted by the Asthma and Allergy Foundation in 1998. This is generally recognized as a conservative estimate of the economic impact of asthma. Additionally, as all of these figures are in 1998 dollars, and medical costs have risen sharply, the costs represented are likely to be much greater than estimated.



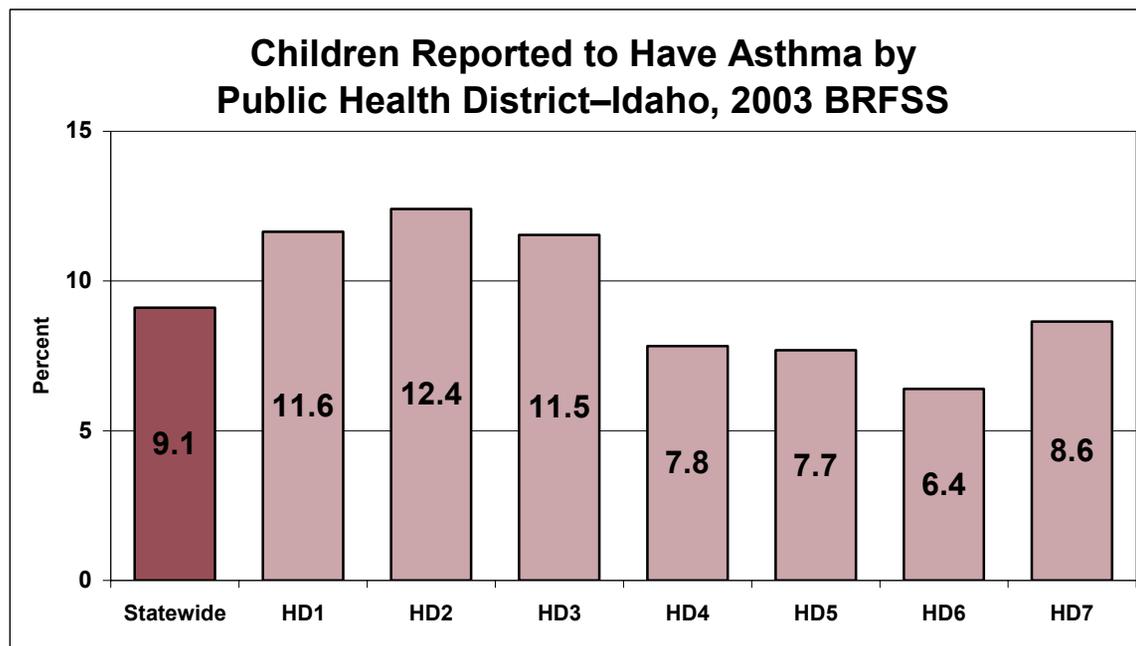
## Childhood Asthma

The Idaho BRFSS and Medicaid BRFSS are ongoing, annual surveillance instruments designed to provide state-specific estimates regarding risk factor data for adults age 18 and older. In an effort to more clearly understand asthma in the childhood population in Idaho, a Childhood Asthma module was included in the Idaho BRFSS beginning in 2003. The questions still do not directly determine the prevalence of asthma among children, and are only asked of respondents who indicate they have children age 17 or younger in their household. The two module questions are listed below:

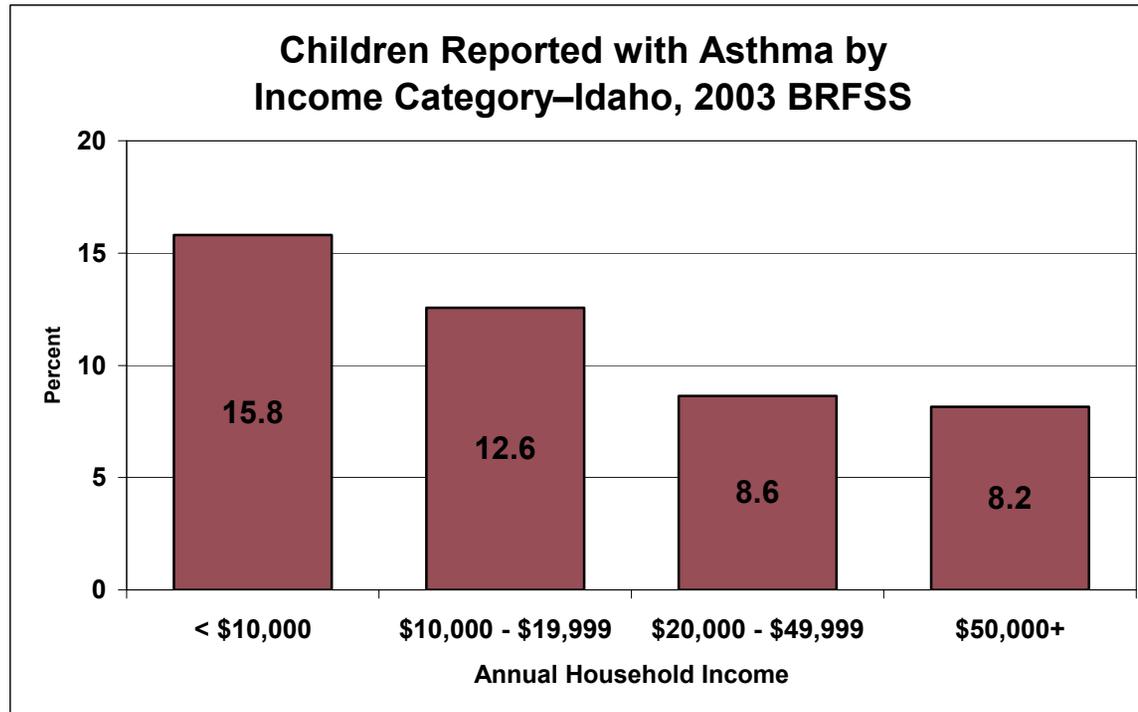
1. Earlier you said there were [ ] children age 17 or younger living in your household. How many of these children have ever been diagnosed with asthma?
2. Does this child/How many of these children still have asthma?

The CDC's Air Pollution and Respiratory Health Branch of the National Center for Environmental Health developed a weighting factor that would allow the use of the BRFSS Childhood Asthma module to estimate the prevalence of asthma among children in each state that utilizes the module. The 2003 BRFSS data represents the first time Idaho has used this methodology to estimate child prevalence.

- In 2003, 9.1% (34,000) of Idaho children age 17 and younger were reported to have asthma.
- Among adults with asthma, nearly one in five (18.2%) reported at least one child in the household with asthma, compared with 8.5% of adults without asthma.
- 10.2% of children who lived with an adult smoker were reported with asthma, compared with 8.8% of children who did not live with a smoker.
- Although the prevalence of asthma varied between Idaho's seven public health districts, ranging from a high of 11.6% in Health District 1 to a low of 6.4% in Health District 6, no statistically significant geographic differences were detected.



- The percent of Idaho children reported with asthma varied substantially with the annual household income. In 2003, 8.2% of children living in households with an annual income of \$50,000 or more had asthma, compared with 15.8% of children living in households with an annual income of less than \$10,000.

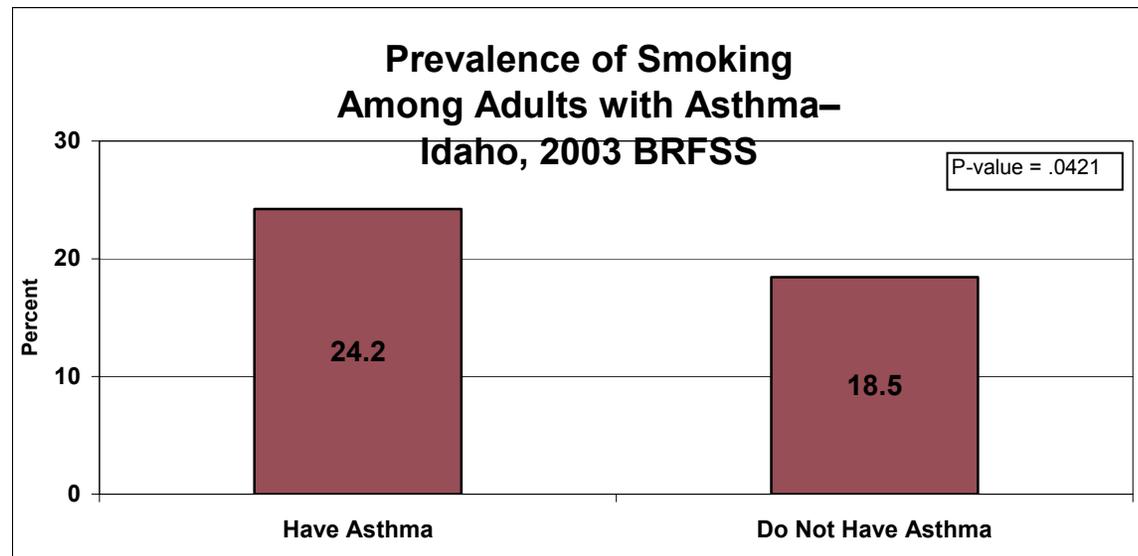


## Risk Factors

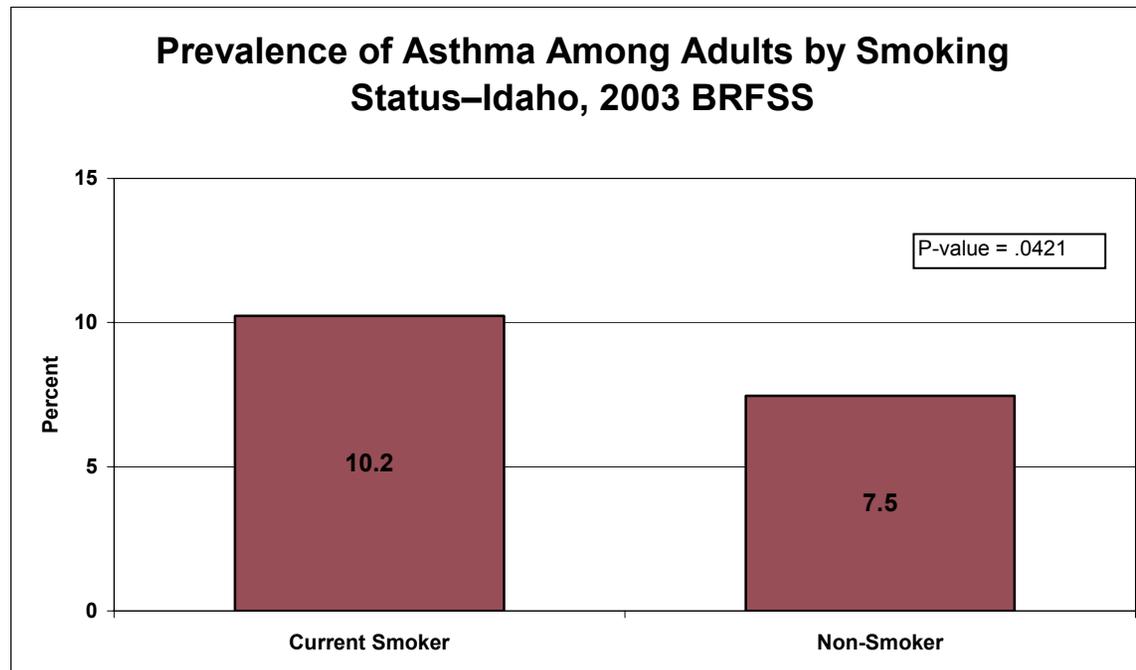
### Smoking

Both primary and secondary exposure to tobacco smoke has been shown to cause exacerbations in asthma symptoms for both children and adults. Additionally, tobacco smoke is associated with the onset of asthma in children.

- Among adults currently reporting asthma, 24.2% currently smoke, while 18.5% of adults without asthma currently smoke.



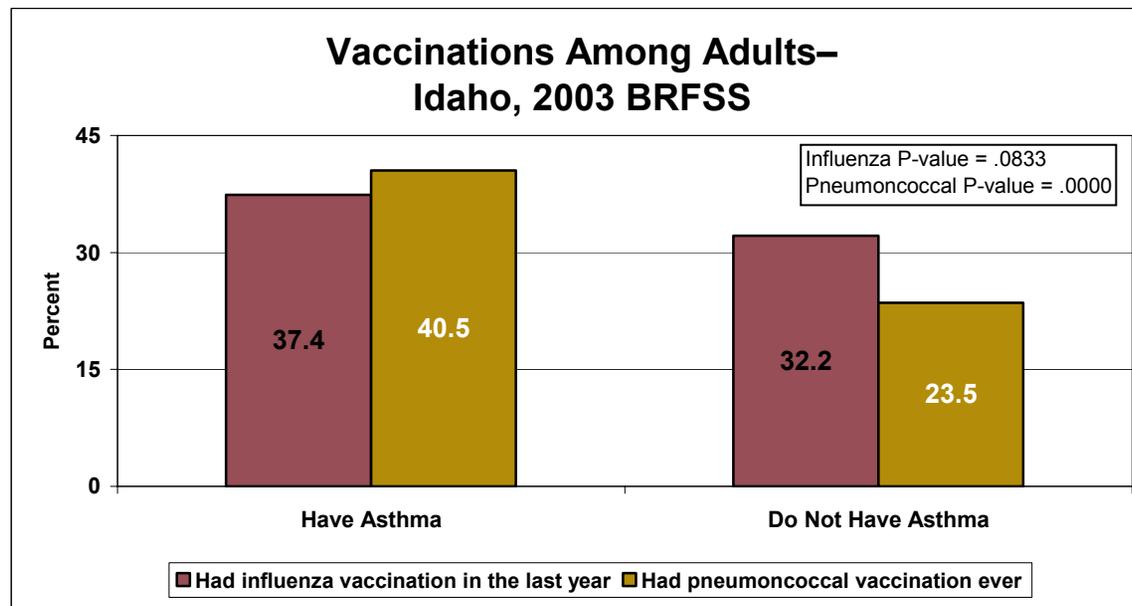
- Asthma was significantly more prevalent among Idaho adults who smoked (10.2%) than among those who did not smoke (7.5%).



## Prevention of Other Serious Respiratory Infections

Influenza and pneumococcal infections can be debilitating and even deadly for people with asthma. All individuals with a chronic disease, including asthma, are encouraged to get influenza and pneumococcal vaccinations as directed by their physicians.

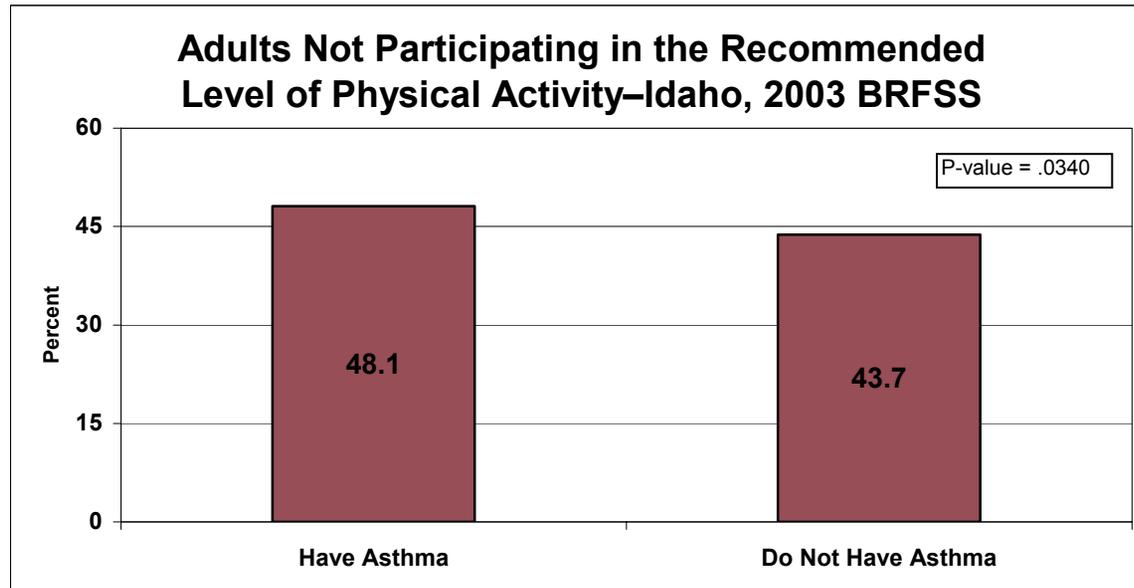
- Among adults currently reporting asthma, 37.4% received an influenza vaccination in the last year, compared with 32.2% of adults without asthma.
- Adults currently reporting asthma (40.5%) were 1.7 times more likely to have ever received a pneumococcal vaccination than adults without asthma (23.5%).



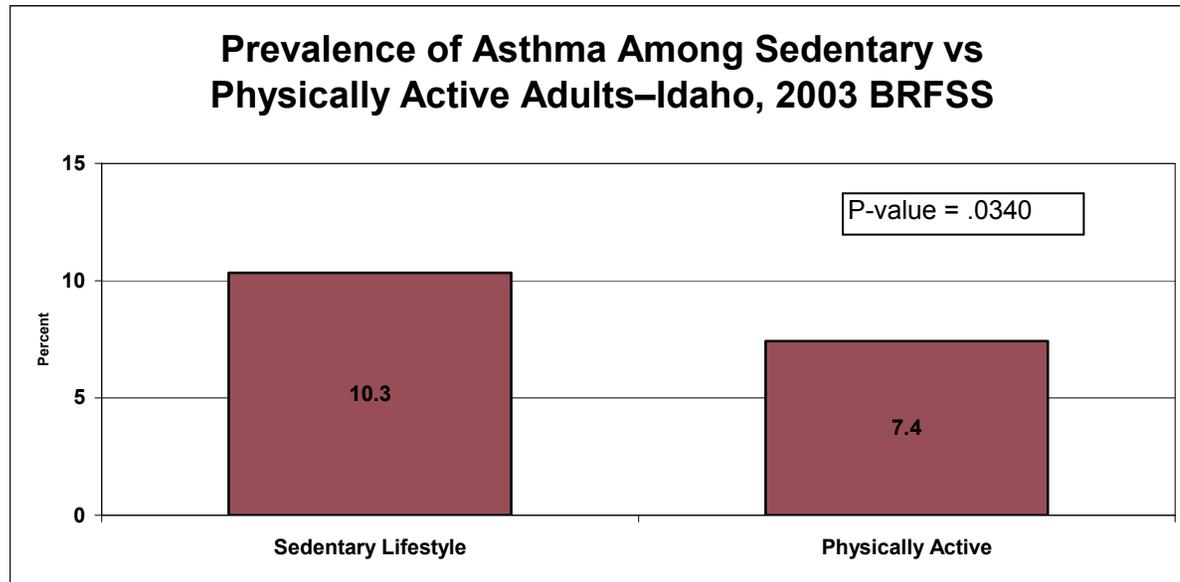
## Physical Activity

The CDC recommends, as a best practice, that all adults age 18 and older engage in at least 30 minutes of moderate physical activity five or more days per week.

- Among adults currently reporting asthma, 23.8% indicated they participated in no leisure time physical activity, compared with 17.9% of Idaho adults without asthma.
- Overall, 48.1% of adults currently reporting asthma did not meet CDC recommended minimum guidelines for moderate physical activity (20 minutes per day, at least three days per week), compared with 43.7% of adults without asthma.



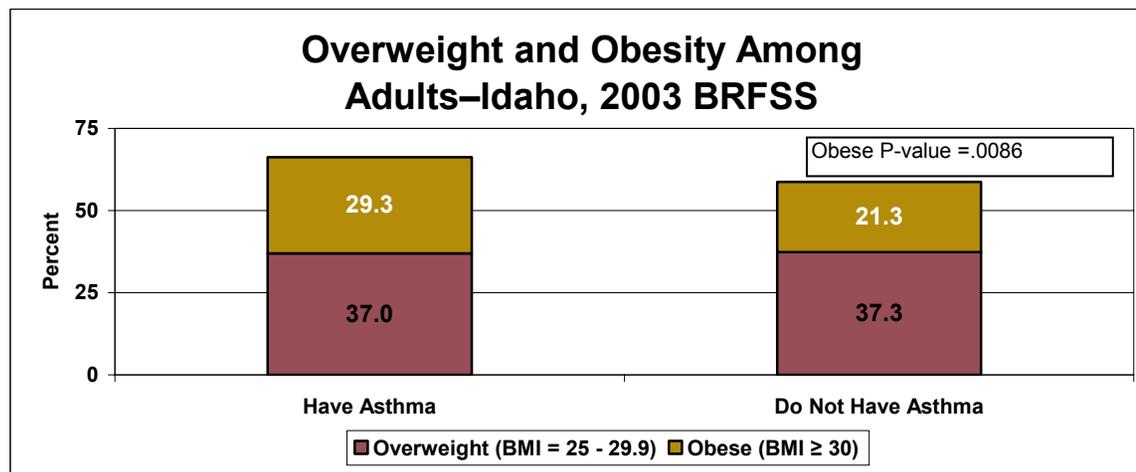
- Asthma was significantly more prevalent among Idaho adults who had no leisure time physical activity (10.3%) than among those who were physically active (7.4%).



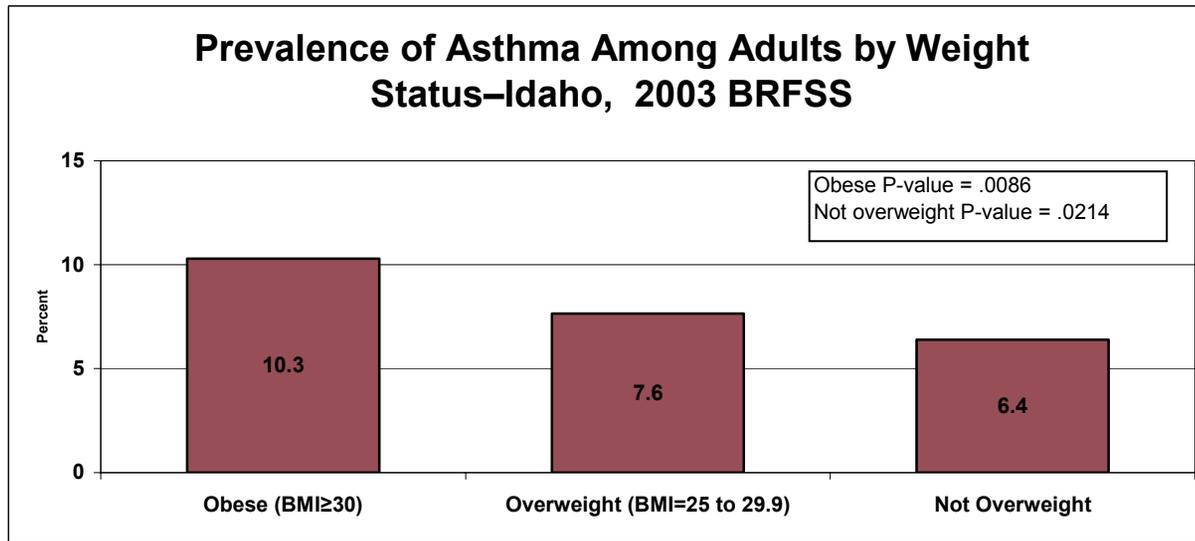
### Overweight and Obesity

While it is not clear whether asthma is more likely to cause obesity or obesity to cause asthma, it is certain that asthma, obesity, and low physical activity levels are interrelated.

- The percent of Idaho adults who were overweight (defined as having a body mass index (BMI) between 25 and 29.9) was virtually identical among those who have asthma (37.0%) and those who did not (37.3%).
- However, adults with asthma were more likely to be obese, defined as having a body mass index of 30 or greater. Nearly three in ten (29.3%) adults with asthma were obese compared to 21.3 percent of adults without asthma.



- The prevalence of asthma was significantly higher among Idaho adults who were obese (those who had a BMI > 30) compared to those who were not overweight. Similarly, the prevalence of asthma among those who were not overweight (BMI less than 25) was significantly different from those who had a BMI greater than or equal to 25. The prevalence of asthma among Idaho adults with a BMI of 25 to 29.9 did not differ significantly from those whose BMI was less than 25, indicating that being obese may be causally related to having asthma.



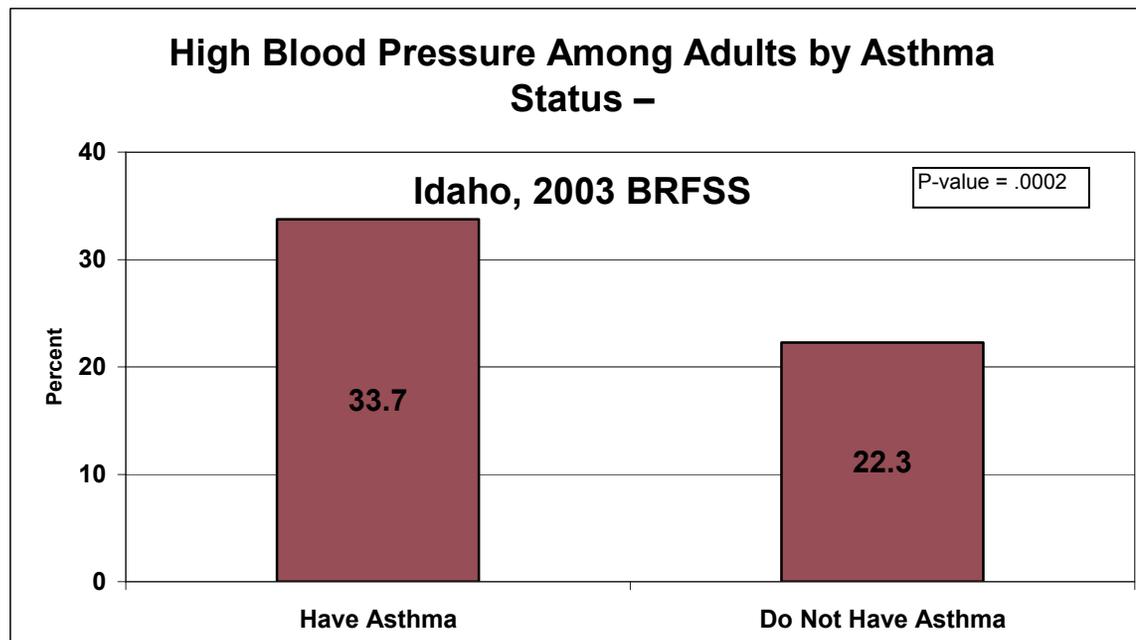
## Co-Morbid Chronic Conditions

Nationally, over 66% of people with asthma have one or more co-morbid chronic conditions. The presence of co-morbid conditions complicates treatment and spending increases with the number of chronic conditions. People with multiple chronic conditions in addition to asthma utilize more healthcare resources.

- Overall, adults currently reporting asthma were 1.4 times more likely to have another chronic disease than adults without asthma (63.3% versus 46.8% respectively, p-value=.0000).

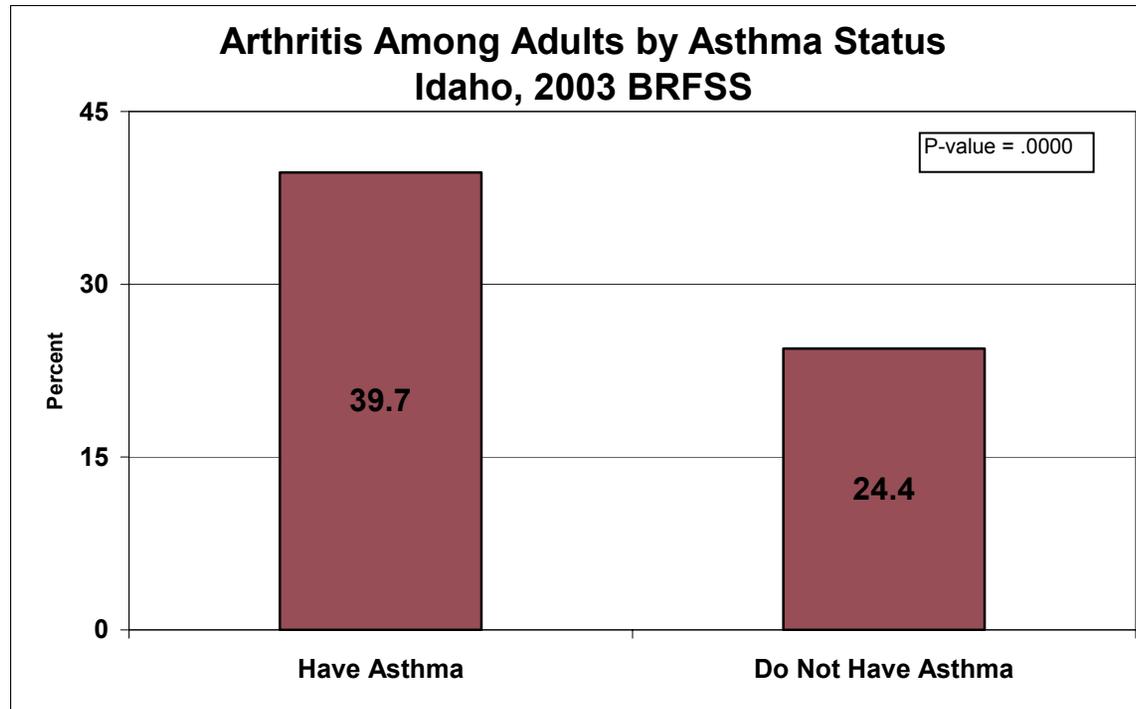
### High Blood Pressure

- Adults currently reporting asthma were 1.5 times more likely to have high blood pressure than adults without asthma (33.7% versus 22.3% respectively).



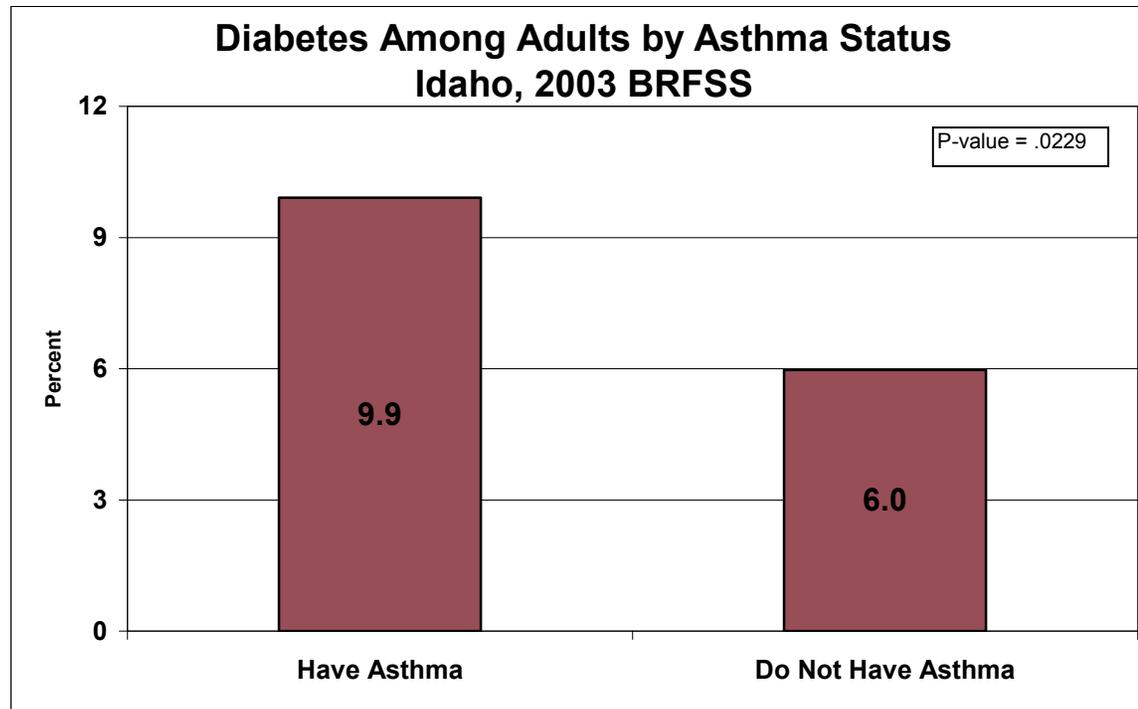
## Arthritis

- Adults currently reporting asthma were 1.6 times more likely to have arthritis than adults without asthma (39.7% versus 24.4% respectively).



## Diabetes

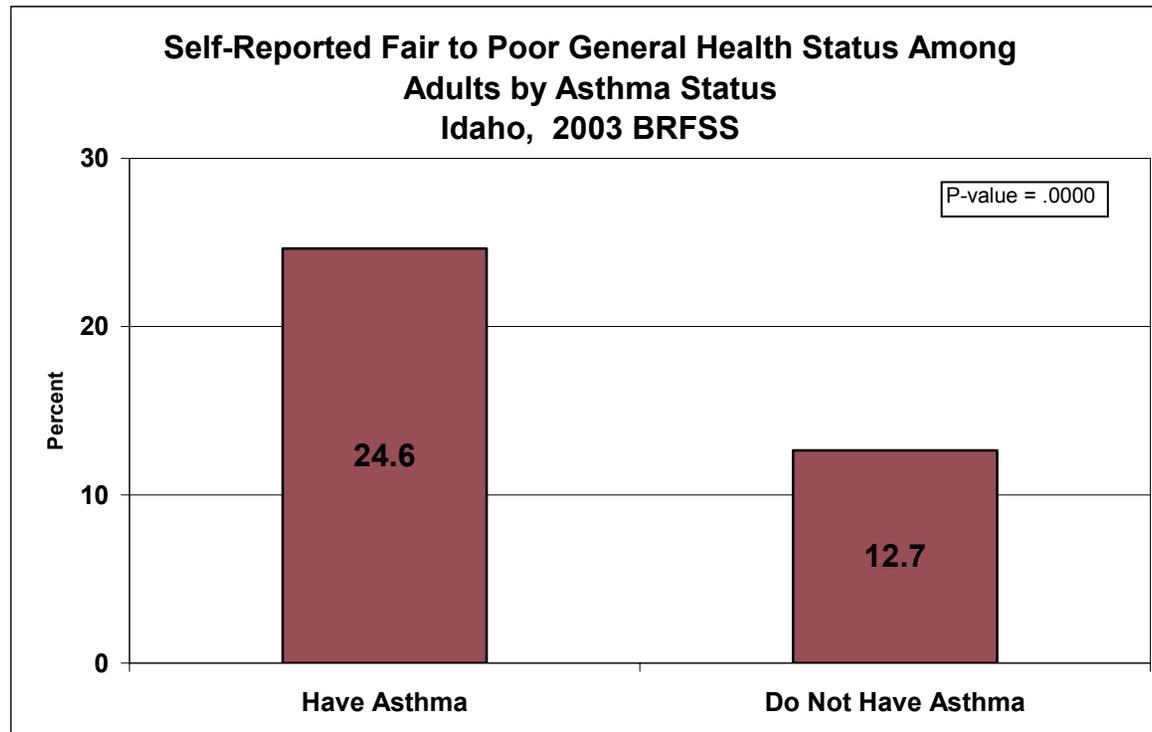
- Adults currently reporting asthma were 1.7 times more likely to have diabetes than adults without asthma (9.9% versus 6.0% respectively).



## Asthma Severity

People with poorly controlled asthma suffer from asthma exacerbations which result in the need for emergency department (ED) visits and hospitalizations. Asthma also has a profound impact on overall health and quality of life.

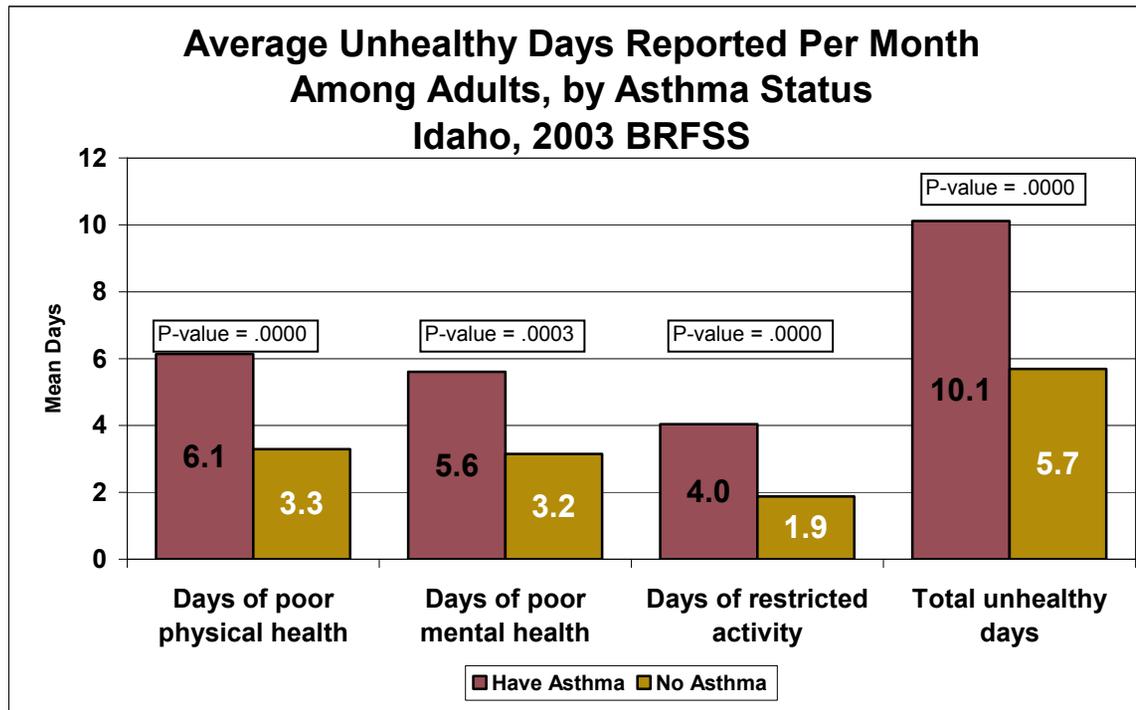
- In 2003, over 10,000 adults with asthma (13.6%) visited the ED in the last year because of their asthma.
- Males with asthma (18.1%) were more likely than females with asthma (11.2%) to have visited the ED in the past year.
- Among adults with asthma who had an ED visit in the last year, 40.6% reported their general health status as fair to poor.
- Among adults with asthma who had visited the ED in the last year, 14.1% reported that they had no health care coverage.
- More than one in four (28.1%) adults with asthma saw their doctor for worsening asthma symptoms in the last year.
- Over 44,000 adults (59.8%) with asthma had an asthma attack in the last year.
- More than one in every five (21.0%) adults with asthma reported activity limitations in the last year because of their asthma.
- Nearly 35,000 adults with asthma (45.7%) reported that asthma caused them to have difficulty sleeping.
- Among adults with asthma, 24.6% reported fair to poor general health status, compared with 12.7% of adults without asthma.



## Quality of Life

Chronic diseases have profound effects on the quality of life of those who have these diseases. Adults who currently have asthma consistently report lower quality of life indicators than adults who do not have asthma.

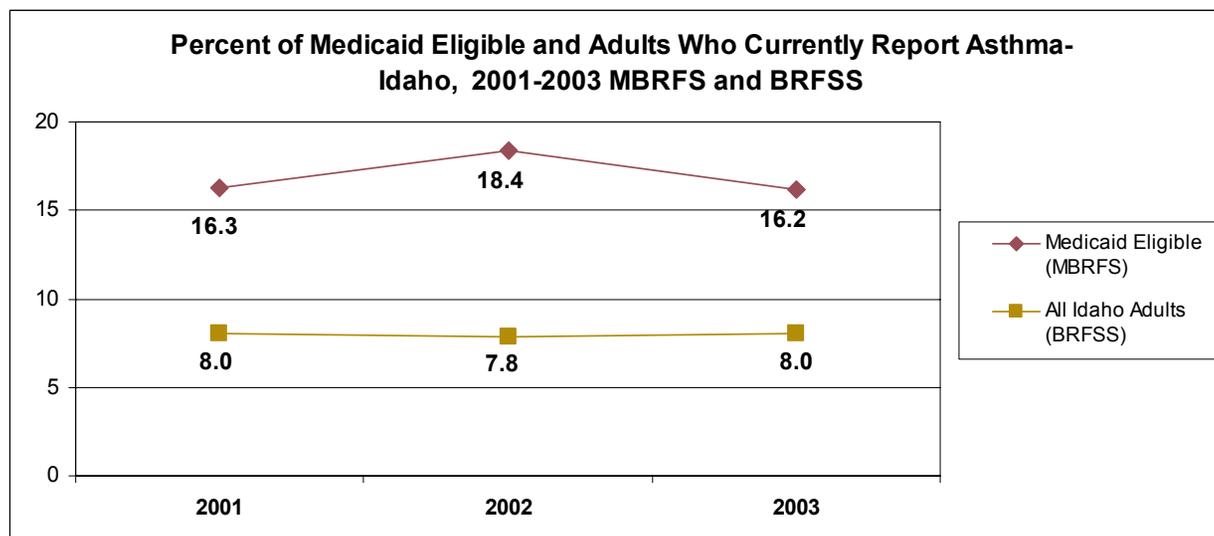
- Adults with asthma report a higher number of poor physical health days (6.1) per month than those without asthma (3.3).
- Adults with asthma reported a higher average of poor mental health days per month (5.6) than those without asthma (3.2).
- Adults with asthma averaged more days of restricted activity (4.0) per month than those without asthma (1.9).
- Overall, adults with asthma reported more average unhealthy days per month (10.1) than those without asthma (5.7).



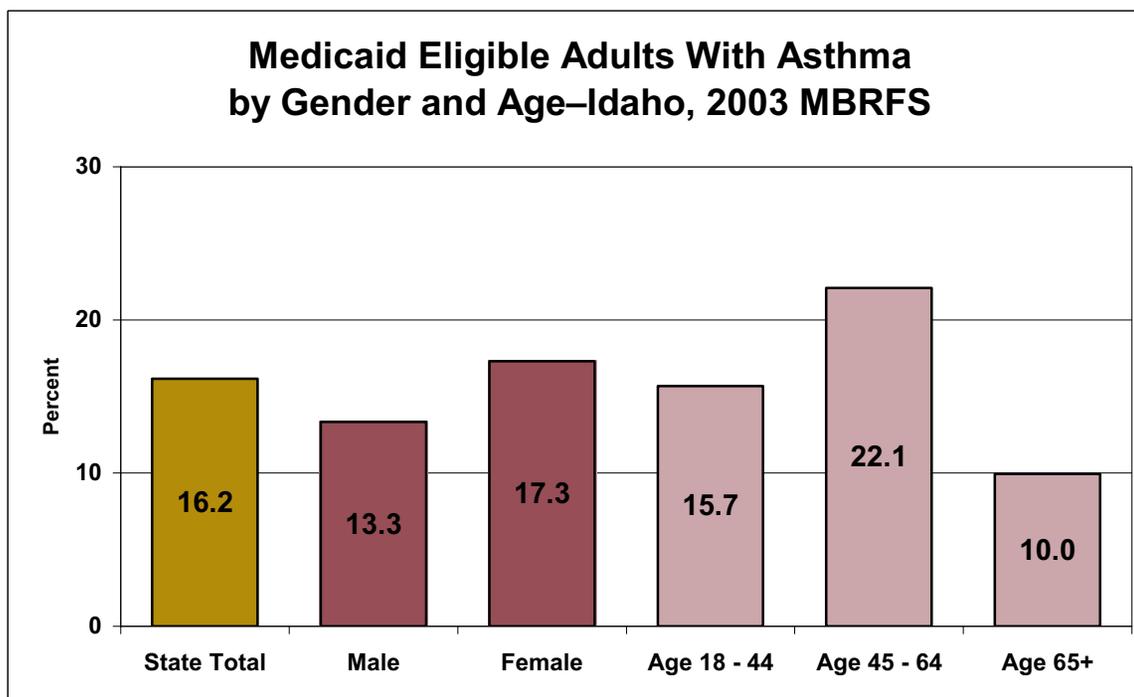
- Idaho adults with asthma were 1.9 times more likely to report fair to poor general health status than those without asthma (24.6% versus 12.7% respectively, p-value=.0000).

## Asthma Among the Idaho Medicaid Population

- The prevalence of asthma among Idaho Medicaid-eligible adults has fluctuated slightly in recent years, but overall has remained at approximately 16%.<sup>8</sup>
- Medicaid-eligible adults report current asthma (16.3%) more than twice that of the general Idaho population (8%).

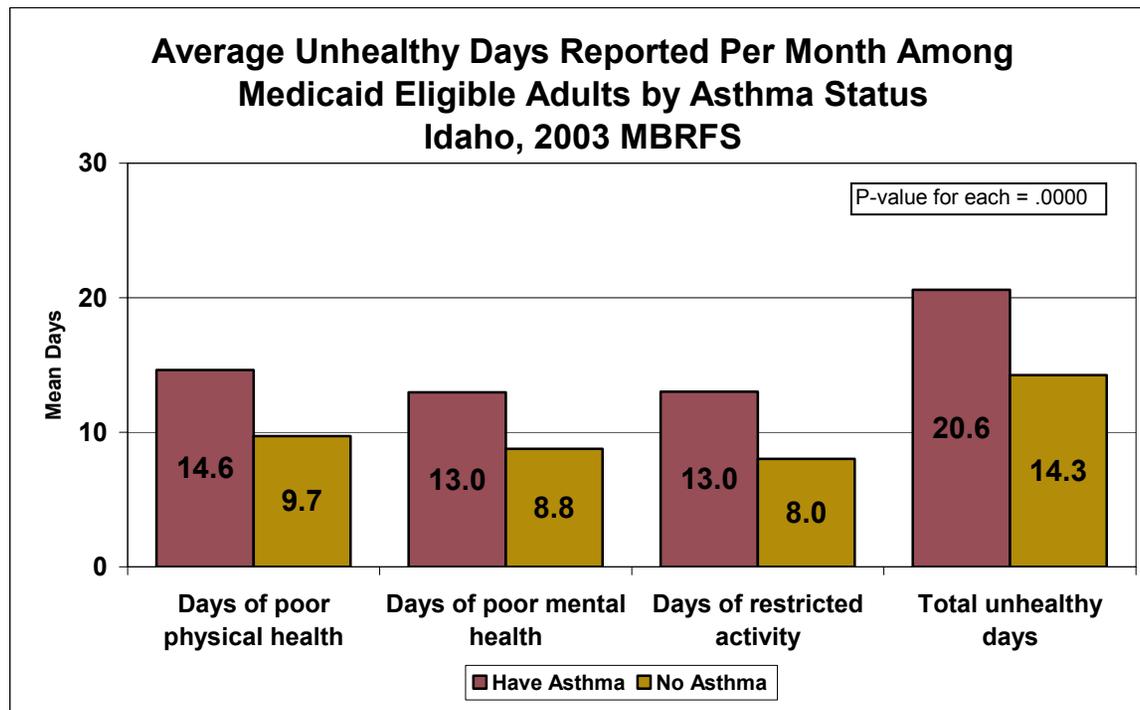


- More than one in three (36.5%) Medicaid eligible adults with asthma reported asthma-related activity limitation in the last year.
- More than half (54.8%) of Medicaid eligible adults with asthma went to their doctor for worsening asthma symptoms in the last year.
- Nearly one in four (23.0%) Medicaid eligible adults with asthma had an ED visit in the last year for worsening asthma symptoms.
- Among Medicaid eligible adults who had an ED visit, 68.0% had more than one visit for asthma associated problems in the last year.



## Quality of Life - Medicaid Eligibles

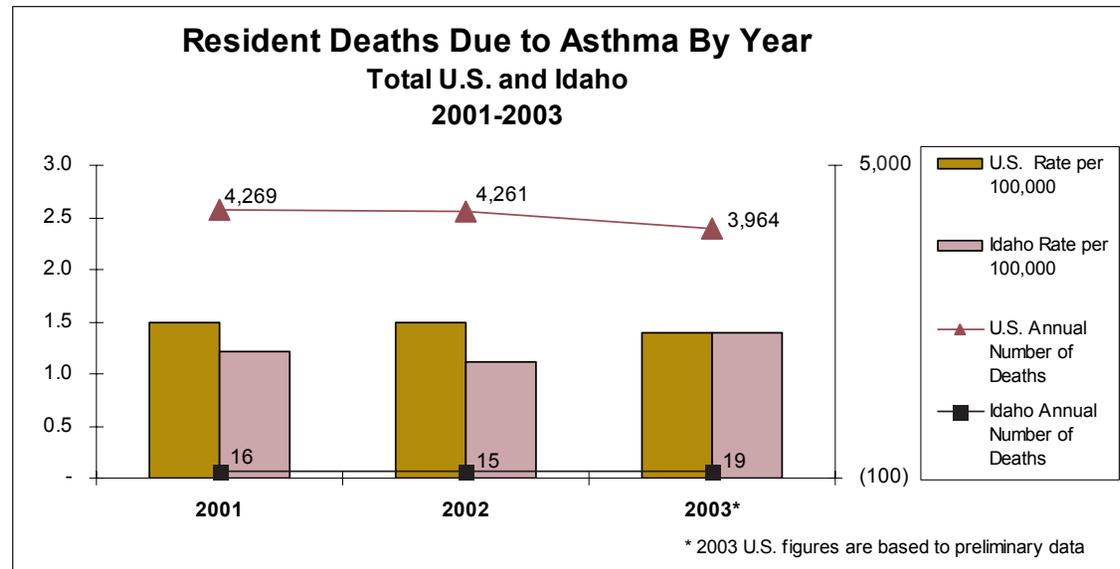
- Medicaid-eligible adults with asthma report a higher number of poor physical health days (14.6) per month than those without asthma (9.7).
- Medicaid-eligible adults with asthma reported a higher average of poor mental health days per month (13.0) than those without asthma (8.8).
- Medicaid-eligible adults with asthma averaged more days of restricted activity (13.0) per month than those without asthma (8.0).
- Overall, Medicaid-eligible adults with asthma reported more average unhealthy days per month (20.6) than those without asthma (14.3).



- Idaho Medicaid eligible adults with asthma were 1.6 times more likely to report fair to poor general health status than those without asthma (60.2% versus 37.2% respectively, p-value=.0000).

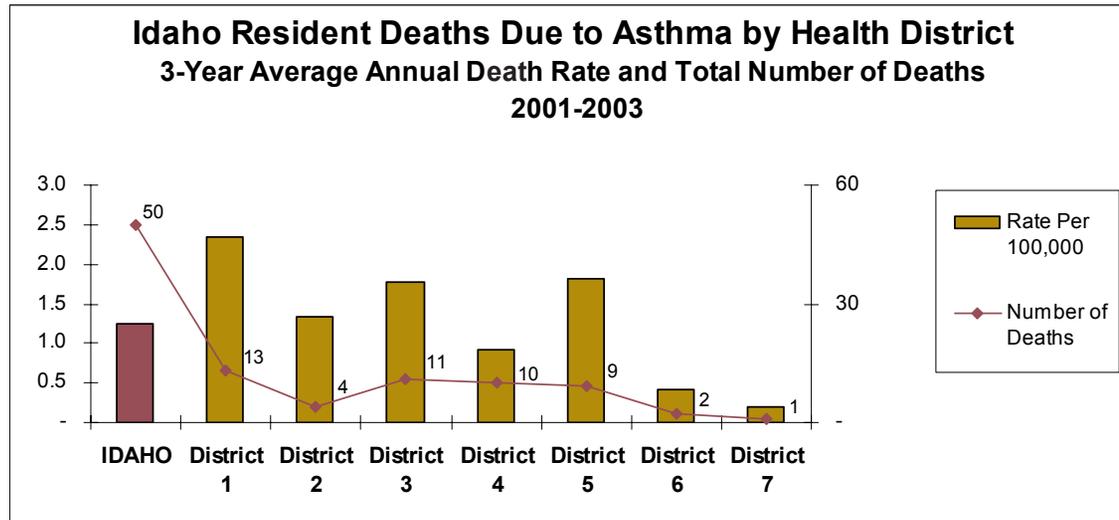
## Mortality Data

- Idaho's asthma mortality rate remained fairly steady between 2001 (1.2 deaths per 100,000 population) and 2003 (1.4 per 100,000).
- Statewide asthma mortality rates were similar to those of the total U.S. Idaho's mortality rates did fall slightly below the U.S. rates in 2001 and 2002.



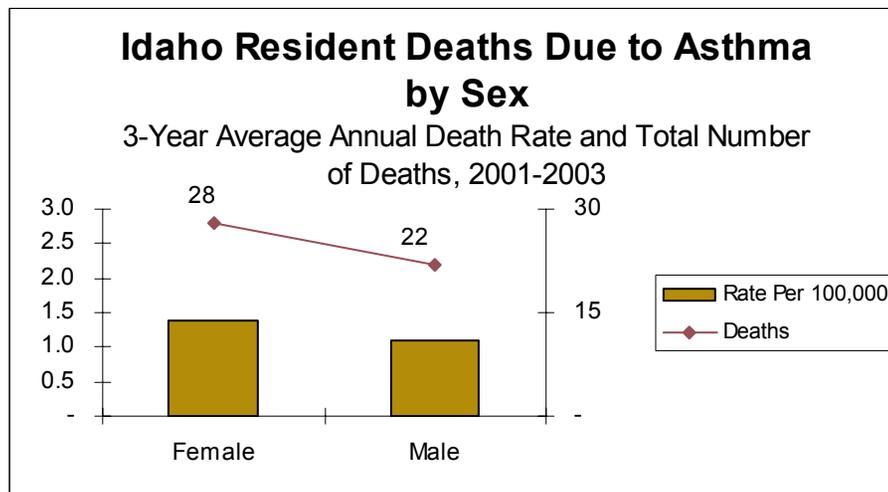
Source: Idaho Vital Statistics  
Rates based on population in corresponding year

- The 3-year average asthma mortality rate was highest in Health District 1 (2.4 deaths per 100,000 population) and lowest in Districts 6 and 7. Please note that these rates are based on very small numbers of asthma deaths over the 3-year period.



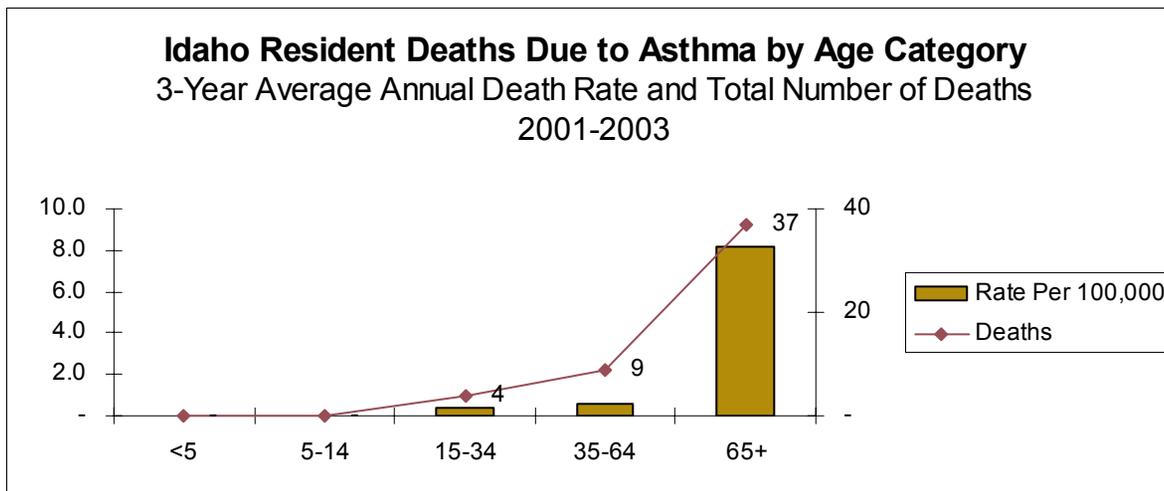
Source: Idaho Vital Statistics  
 Rates based on 2002 population estimates (mid-year of 2001-2003)

- Females had a slightly higher rate of asthma mortality than males (1.4 deaths per 100,000 females compared with 1.1 deaths per 100,000 males) between 2001 and 2003.



Source: Idaho Vital Statistics  
Rates based on 2002 population estimates (mid-year of 2001-2003)

- The majority of asthma deaths between 2001 and 2003 were among those aged 65 or older. The asthma mortality rate for this oldest age category was 8.2 per 100,000 population.



Source: Idaho Vital Statistics  
Rates based on 2002 population estimates (mid-year of 2001-2003)

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## Summary of Findings

Gathering data on asthma prevalence, risk factors, and severity in Idaho residents is complex. Challenges associated with describing asthma in Idaho range from inconsistencies in diagnosis, a lack of reporting requirements, and a lack of hospital discharge data. Information was collected and analyzed for this summary from a variety of available resources to estimate the prevalence of asthma-related illness in adults, the estimated impact of asthma on children, and to understand risk factors thought to contribute to or exacerbate asthma-related illness. These resources included 2003 Behavioral Risk Factor Surveillance System (BRFSS) data, 2003 Medicaid Behavioral Risk Factor Survey (MBRFS) data, and 2003 mortality data from the Idaho Department of Health and Welfare Bureau of Health Policy and Vital Statistics. Information on adults reporting asthma-related illness in Idaho has been available since 1998 from BRFSS surveys although questions have varied from year to year on the survey.

### Demographics

Approximately 8% (75,000) of Idaho adults reported that they currently had asthma in 2003. This prevalence appeared virtually unchanged since 1999, when examining past Idaho BRFSS surveillance data. The burden of illness was found to be greater in the female population. Females were almost twice as likely to report asthma as males in 2003 (10.4% of adult females vs. 5.5% of males). There was some variation among the percentage of respondents reporting current asthma between age groups. The greatest percentage of asthma reports came from the 55 to 64 year age group (10.3%) while the least affected adult age group was reported in the 25 to 34 year age range (5.5%).

Information on children with asthma-related illness was more difficult to obtain. For this summary, the impact of asthma on Idaho children was approximated by examining BRFSS child asthma module questions focusing on children with symptoms of asthma in the home of adult respondents. According to survey results, 14.1% of Idaho households had at least one child with asthma but this varied slightly across health districts. Nineteen percent (19.4%) of households responded with one or more child with asthma in Health District 2, in northern Idaho, while only 11.5% of households in Health District 4, in south central Idaho, reported one or more children with asthma in the home. There appeared to be a household or familial association with asthma for children. In Idaho, nearly one in four adults (24.8%) ever diagnosed with asthma themselves had at least one child with asthma. This is almost twice the number of adults without asthma (13.2%) reporting at least one child with asthma.

### Socioeconomic Relevance

Factors related to socioeconomic status appeared to correlate with adult asthma prevalence in Idaho. Seventeen percent (17%) of households with income < \$10,000 reported one or more adults with current asthma. In contrast 10.1% or less of households reporting < \$10,000 annual income had one or more adults with asthma. The trigger for asthma associated with socioeconomic status has not been determined, but there is clearly a reduction in reported instances of adults with asthma in Idaho as household income increased above \$10,000 and even fewer households reporting asthma when household income exceeded \$20,000 a year.

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Medicaid is a program that pays for medical assistance for certain individuals and families with low incomes and resources. Medicaid BRFSS data, which, by definition, collects data from those eligible for Medicaid benefits, suggests that twice the burden of asthma is seen in that population (approximately 16% of respondents currently reported asthma in 2003) when compared to the standard BRFSS cohort for 2003. Both genders were impacted to a larger degree in the MBRFS population than the standard BRFSS survey population as well (17.3% for females, which is 1.6 times greater than the BRFSS data for women and 13.3% for males, which is 2.4 times greater than the BRFSS data for men).

## Practices and Risk Factors

Certain practices and risk factors, known from national studies to be problematic for adults with asthma, also appeared to have deleterious effects in Idaho residents reporting a diagnosis of asthma. These practices and risk factors included a sedentary lifestyle, obesity, and smoking.

- **Sedentary lifestyle:** In general, a moderately active lifestyle, as defined by CDC as engaging in physical activity 20 minutes a day, at least three days a week, was difficult to achieve by a large percentage of the total Idaho population, regardless of being diagnosed with asthma (48.1%) or not (43.7%). However, a sedentary lifestyle with a self-reported complete lack of leisure time physical activity was reported 1.3 times more often by adults reporting asthma (23.8%) than those not reporting asthma (17.9%).
- **Obesity:** The body mass index (BMI) is a formula which takes into consideration the ratio of weight to height. There was virtually no difference in asthma status for adults considered overweight; those with a BMI of 25 to 29.9. However, for persons with a BMI over 30 there was a noticeable difference between adults in Idaho with asthma and those without. Eight percent more adults with asthma reported obesity than those without asthma. In fact, 29.3% or almost 1/3 of those with asthma, were categorized as obese, while 21.3% of those without asthma were considered obese.
- **Smoking:** Smoking was practiced overall by approximately 18.9 % of Idaho residents in 2003 with very little gender variation (19.5 % Males, 18.4% females). Interestingly, more adults in Idaho currently reporting asthma reported smoking (24.2%) than asthma-free adults (18.5%).

The data suggests that it is possible that smoking and a sedentary lifestyle, which might lead to obesity, may impact the occurrence of asthma in some individuals.

## Environmental Risk Factors

Numerous national studies have demonstrated the deleterious health effects of airborne particulate matter (PM10). Winter inversions, agricultural practices such as summer field-burning, and terrain variations allowing wild-fire and wood smoke accumulation in populated areas exist in Idaho. All are hypothesized, yet unproven, to play a role in local asthma exacerbation. There were minor regional differences noted in adult asthma prevalence in Idaho in 2003; however, the regional differences were not statistically significant. Linkage of health and environmental data would be important to the elucidation of asthma risk factors in the future, as the data and resources become available.

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## Quality of Life Issues

Individuals reported approximately twice the number of poor physical (6.1 days) and mental health (5.6 days) days each month in 2003 when reporting asthma, when compared to 3.3 and 3.2 days respectively in those not reporting asthma. In fact, 2003 BRFSS data demonstrated almost twice the total unhealthy days per month in those reporting asthma (10.1 days), which took into account days of poor physical health, days of poor mental health, and days of restricted activity, versus 5.7 days reported by those not diagnosed with asthma. These values virtually doubled for respondents of the Medicaid BRFS with an undesirable 20.6 days a month of total unhealthy days in those with asthma and 14.3 total unhealthy days per month in those without asthma.

## Co-morbid Chronic Illness

Individuals in Idaho were 1.5 times more likely to have high blood pressure, 1.6 times more likely to have arthritis, and 1.7 times more likely to have diabetes if they reported having asthma, when compared to those without asthma. There is not a direct known correlation between asthma and these conditions; however, similar risk factors such as a lack of physical activity and obesity have been implicated in all conditions.

## Severity Evaluation

Many factors are thought to exacerbate asthma including stimuli from environmental insults and lifestyle choices (e.g., smoking, lack of physical activity). Poorly controlled asthma may also occur because of inconsistencies in medical management. Because Idaho does not currently collect emergency department or hospitalization data directly from hospitals, gathering population-based data on severity of illness could only be approximated for this document from data gathered through BRFSS questions related to emergency department utilization, self-reported severity of illness, and vital statistics. Survey data indicated that approximately 1 in 4 Idaho adults with asthma (28.1%) saw their healthcare provider in 2003 for worsening symptoms; the amount almost doubled in the Medicaid-eligible population (54.8%): 13.6 % of BRFSS respondents and 23% of MBRFS respondents with asthma were impacted severely enough to require an emergency department visit at least once in 2003. Vital statistics recorded nineteen deaths attributed to asthma in 2003. A three-year average of 17 deaths per year due to asthma has been reported between 2001 and 2003.

## Protection Strategies - Prevention of Other Serious Respiratory Infections

Individuals with asthma are considered at high risk for severe outcomes from such vaccine-preventable respiratory infections as pneumococcal pneumonia and influenza. Individuals with asthma were almost twice as likely (40.5%) to have gotten the pneumococcal vaccination in their lifetime than those without asthma (23.5%). However, there was little difference in the likelihood that they would seek out the annual influenza vaccination (37.4% vs 32.2%) despite the deadly potential for influenza in those with asthma. A 37% vaccination rate for any group is considered low.

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## Recommendations and Next Steps Based on Idaho Surveillance Data

Surveillance data evaluated for this summary indicated that asthma-related symptoms were more prevalent in females and generally increased as age increased. The asthma burden in Idaho appeared to increase as socio-economic levels decreased, was potentially household- or genetically-linked in children, and was more likely to be associated with smoking, obesity, and a sedentary lifestyle. Asthma also seemed correlated to more self-reported unhealthful days, particularly in those qualifying for Medicaid assistance.

Healthy People 2010 objectives for asthma reduction focus on mechanisms to reduce severity of asthma-associated illness, developing strategies to improve the overall health of those with asthma by encouraging healthier lifestyles, enhancing patient education regarding the disease and available resources, and improving asthma surveillance.

In light of the data presented here, the IAPCP will focus on the following:

- **Smoking cessation promotion:** Reducing smoking practices has been proven in national studies to reduce the onset and severity of asthma-related illness. The promotion of smoking cessation and continuous campaigns elucidating the risks associated with second-hand smoke should be beneficial for both adults and children. Smoking cessation programs are currently available in all health districts and their promotion will continue. Other resources available include <http://www.quitnet.com/> and the Idaho Project Filter which is a prevention and control campaign targeting 18-24 year olds.
- **Advancing healthcare provider and patient education:** Potential activities include educating public health officials, physicians, and other healthcare providers on current asthma diagnosis and treatment information. Also, improving the availability of links to educational and community resources for patients will provide tools for improved asthma management.
- **Improving overall health and quality of life:** Mechanisms will be developed by the IAPCP to promote healthier lifestyles in those with asthma. Efforts should occur to stimulate regular physical activity, reduce sedentary lifestyles, and reduce BMI scores, particularly in those with asthma. It is theorized that an improvement in physical activity and a reduction in obesity could improve the overall health of those individuals with asthma and should have coincidental benefits for other co-morbid conditions. Engaging in healthful activities to reduce these risk factors has the potential to ultimately reduce poor physical and mental health days and improve overall well being. High risk individuals should continually be encouraged to receive influenza vaccinations annually and pneumococcal vaccines in their lifetime. Even in the face of vaccine shortages, individuals with asthma, of any age, are considered high risk for suffering from complications associated with influenza. Vaccination usage varies by age; however, individuals with asthma are in a vaccination priority group and should speak with their health care providers regarding influenza vaccination annually.
- **Reducing gender and age group differences:** Further research is needed to elucidate the reasons for the disparity between genders and age groups and to explore appropriate prevention strategies.

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- Environmental assessments: Health effects of poor air quality on those with asthma should be explored in Idaho, despite the fact that survey data could not demonstrate a significant difference in regional occurrences of asthma. The current hypothesis is that local practices such as field burning, the use of wood-burning stoves and naturally occurring phenomena such as wild fires and inversions play a role in seasonal, local asthma rate elevations not discernable from this type of survey. Indoor and outdoor air quality and agricultural practices will be evaluated in association with seasonal and event data from the Idaho Department of Environmental Quality (IDEQ) and compared to health data, as emergency room data becomes available, to determine if a correlation in fact exists between events affecting air quality and asthma severity.
  - Socioeconomic risk factors: A disparity is seen with socioeconomic status. An increase in asthma-related illness is seen with household incomes less than \$10,000 per year; however the factors that might explain this trend are unclear at this time. There is a clear disparity between the burden of asthma in Medicaid recipients when compared to the general population; therefore, socioeconomic factors must be examined in a systematic fashion in the future to formulate an effective intervention strategy.

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## Data Sources, Limitations and Methodology

This report utilizes data from the 2003 Idaho Behavioral Risk Factor Surveillance System (BRFSS) and the 2003 Idaho Medicaid Behavioral Risk Factor Survey (MBRFS). These surveys are administered by the Bureau of Health Policy and Vital Statistics, Division of Health, Idaho Department of Health and Welfare. The BRFSS is designed to provide state-specific estimates of the prevalence of certain diseases and conditions and associated risk factors and behaviors in Idaho adults. Some BRFSS questions also inquire about certain diseases and childhood risk factors in children living in the respondent's household. The MBRFS uses essentially the same questions as the BRFSS each year but is administered specifically to a sample of the Medicaid-eligible population (see below). Included in this report is also an examination of death certificate data where asthma was listed as an underlying cause of death. Idaho death certificate data is provided by the Bureau of Health Policy and Vital Statistics, Idaho Department of Health and Welfare.

### Methodology

Medicaid BRFS data were weighted by age and sex to be representative of the adult Idaho Medicaid population using the November 2003 Medicaid enrollment file. Missing values as a result of non-response were excluded from analysis. Any difference determined to be statistically or significantly different through statistical testing was designated as such and will be preceded by the words "significantly" or "statistically." P-values shown in the accompanying charts and graphs which are less than 0.05 indicate a statistically significant difference.

Sampling: Idaho used disproportionate stratified sampling for 2003 BRFSS surveys. The sample was stratified by Idaho's seven public health districts. Approximately 700 Idahoans were interviewed in each health district, resulting in a total sample size of approximately 4,900. The sample was disproportionately stratified within the health districts by telephone blocks. Telephone numbers were grouped into clusters of 100s. For example, in the number 979-99xx, xx represents the values 00 to 99. This is known as a 100 level block. These 100 level blocks have certain characteristics, one of which is the number of listed residential numbers that can be found in the block of telephone numbers. When a block has at least one residential number, it is likely that many of the numbers in that block will be residential. A 100 level block that has at least one known residential number is called a 1+ block.

In order to be representative, the Idaho BRFSS uses 1+ blocks and 0 blocks (meaning that no residential numbers are known to be in the block). Telephone blocks were sampled disproportionately: 1+ telephone blocks were sampled at a rate four times that of the 0 blocks. Interviews were conducted by telephone. The interviewers used computer-assisted telephone interviewing (CATI) software to record responses.

The methods used to conduct the Idaho Medicaid BRFS are similar to those used in the BRFSS. In September, October, and November of 2003, simple random samples were drawn without replacement from the population of Idaho Medicaid eligible adults who resided in Idaho and had telephones. The definition of Medicaid eligible is any adult person who has enrolled in Medicaid, whether they used Medicaid to pay their health care costs or not. Medicaid-eligible population files were updated monthly, and a new, non-duplicative sample was drawn each month. The total adult Idaho Medicaid-eligible population was 39,785 in September, 40,101 in October, and 40,363 in November.

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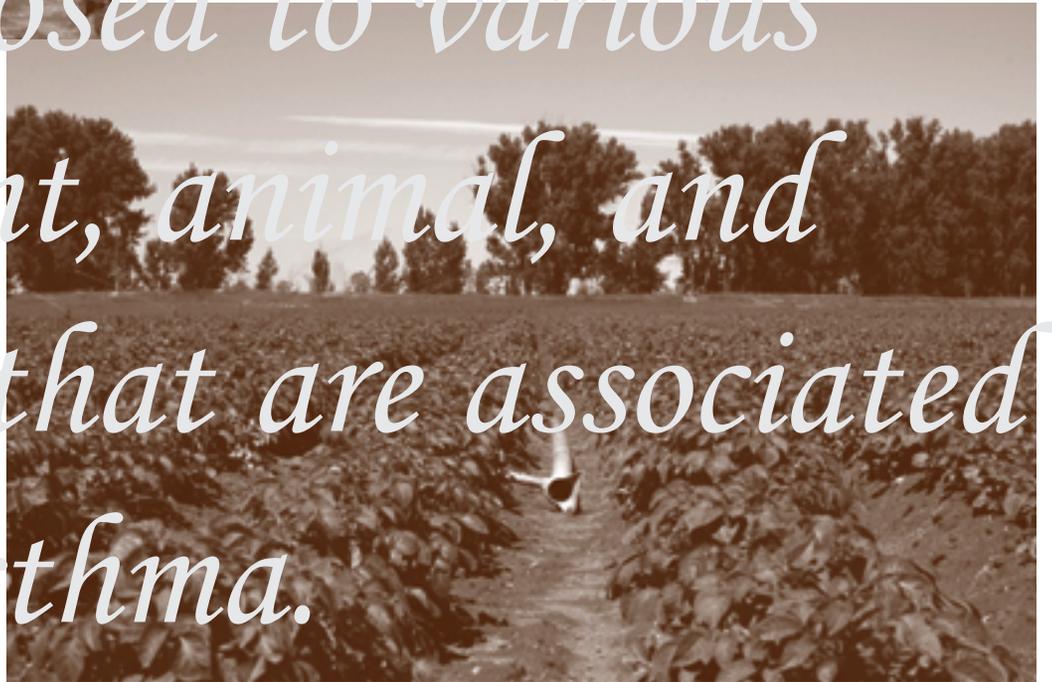
The sampling frame of Medicaid-eligible adults included only those residing in Idaho and had a telephone number listed in the record; 37,725 persons in September, 38,028 persons in October, and 38,276 in November. A total of 3,600 persons were randomly selected from the sampling frame to be interviewed. In order to reach respondents, calls were made during the day, evening, and on weekends. A total of 1,712 Medicaid adults were interviewed, yielding an overall response rate of 47.6 percent.

*Weighting:* The data were weighted to account for differences in the probability of selection. For example, some households have more than one telephone line and are more likely to be called. The weighting corrects for this difference in probability of selection. Post-stratification weighting, based on 2003 population estimates of 1.37 million residents (as reported in the 2003 inter-censal estimates<sup>1</sup>), was used to more closely represent population characteristics and to develop estimates of the numbers of people with various risk factors.

*Tobacco smoke, whether directly inhaled or inhaled as secondhand smoke, has shown to worsen asthma. Children have little control over their indoor environments, thus they are at an increased risk for asthma attacks triggered by secondhand smoke.*



*Among the occupational groups with the highest risk of asthma, one finds farmers and agricultural workers. Farmers and agricultural workers are exposed to various allergens of plant, animal, and chemical origin that are associated with allergic asthma.*



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## Sources and Notes

- 1 Idaho Behavioral Risk Factor Surveillance System (BRFSS), 1998 Survey Data, Bureau of Health Policy and Vital Statistics, Idaho Department of Health and Welfare, 1999.
- 2 U.S. Department of Health and Human Services. Healthy People 2010. 2nd ed. With Understanding and Improving Health and Objectives for Improving Health. 2 vols. Washington, DC: U.S. Government Printing Office, November 2000.
- 3 U.S. Census Bureau, <http://www.census.gov>.
- 4 U.S. Census Bureau, 2003 estimates: Internet release, August 18, 2004.
- 5 Idaho Behavioral Risk Factor Surveillance System (BRFSS), 2003 Survey Data, Bureau of Health Policy and Vital Statistics, Idaho Department of Health and Welfare, 2004.
- 6 Idaho Behavioral Risk Factor Surveillance System (BRFSS), 1999-2003 Survey Data, Bureau of Health Policy and Vital Statistics, Idaho Department of Health and Welfare.
- 7 Idaho cost estimates of asthma are calculated using 1998 national cost estimates from the Asthma and Allergy Foundation, applied to 2003 population estimates. The estimates are found on the internet at <http://www.aafa.org/templ/display.cfm?id=2&sub=29>.
- 8 Idaho Medicaid Behavioral Risk Factor Survey (MBRFS), 2003 Survey Data, Bureau of Health Policy and Vital Statistics, Idaho Department of Health and Welfare, 2004.

## Appendix

### Idaho BRFSS Asthma Core, Child Asthma Module and State-Added Questions

#### Core Section 9:

##### Asthma

9.1 Have you ever been told by a doctor, nurse or other health professional that you had asthma?

- 1 Yes
- 2 No **[Go to next section]**
- 7 Don't know / Not sure **[Go to next section]**
- 9 Refused **[Go to next section]**

9.2 Do you still have asthma?

- 1 Yes
- 2 No
- 7 Don't know / Not sure
- 9 Refused

#### Module 7:

##### Childhood Asthma

1. Earlier you said there were **[fill in number from core Q14.6]** children age 17 or younger living in your household. How many of these children have ever been diagnosed with asthma?

- – Number of children
- 8 8 None **[Go to next module]**
- 7 7 Don't know / Not sure **[Go to next module]**
- 9 9 Refused **[Go to next module]**

2. **[Fill in (Does this child/How many of these children) from Q1]** still have asthma?

**If only one child from Q1 and response is "Yes" to Q2 code '01'. If response is "No" code '88'.**

- – Number of children
- 8 8 None
- 7 7 Don't know / Not sure
- 9 9 Refused

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## State-Added Asthma Questions

If "Yes" to core Q9.2 [Do you still have asthma?], continue, else go to S20.

**S14.** During the past 12 months, have you had an episode of asthma or an asthma attack?

- 1 Yes
- 2 No
- 7 Don't know / Not sure
- 9 Refused

**S15.** During the past 12 months, how many times did you visit an emergency room or urgent care center because of your asthma?

- — Number of visits [87 = 87 or more]
- 8 8 None
- 9 8 Don't know / Not sure
- 9 9 Refused

**S16.** [If one or more visits to Q3, fill in (Besides those emergency room visits)] During the past 12 months, how many times did you see a doctor, nurse or other health professional for urgent treatment of worsening asthma symptoms?

- — Number of visits [87 = 87 or more]
- 8 8 None
- 9 8 Don't know / Not sure
- 9 9 Refused

**S17.** During the past 12 months, how many times did you see a doctor, nurse or other health professional for a routine checkup for your asthma?

- — Number of visits [87 = 87 or more]
- 8 8 None
- 9 8 Don't know / Not sure
- 9 9 Refused

**S18.** During the past 12 months, how many days were you unable to work or carry out your usual activities because of your asthma?

			Number of days
8	8	8	None
7	7	7	Don't know / Not sure
9	9	9	Refused

**S19.** During the past 30 days, how many days did symptoms of asthma make it difficult for you to stay asleep?

**Please read:**

Would you say?

8	None
1	One or two
2	Three to four
3	Five
4	Six to ten

**Or**

5	More than ten
---	---------------

**Do not read:**

7	Don't know / Not sure
9	Refused