

The Burden of Asthma in New Mexico
2006 Surveillance Report

Asthma Program
Environmental Health Epidemiology Bureau
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EXECUTIVE SUMMARY

Asthma is a chronic inflammatory disease of the airways characterized by wheezing, coughing, breathlessness and chest tightness. Asthma is a leading cause of missed days from school and can lead to missed days of work, visits to the hospital and emergency room, interrupted sleep, and limited physical activity. While asthma cannot be cured, it can be controlled through adequate disease management.

The New Mexico Department of Health's Asthma Program developed an asthma plan to address the burden of asthma in New Mexico. To reduce the burden of asthma the Asthma Program has developed goals in the following areas: 1) asthma surveillance, 2) provider education, 3) patient, family and community education, 4) access to care, and 5) environmental causes and triggers of asthma.

To assess the burden of asthma in New Mexico, the New Mexico Department of Health's Asthma Program has initiated several asthma surveillance activities using existing data sources and surveys, including asthma prevalence, mortality, hospitalizations and Native American health.

This report provides estimates of asthma prevalence in New Mexico. Measures of asthma severity, including asthma mortality, asthma hospitalizations and indicators of poorly controlled asthma from a survey are provided. The report also addresses the burden of asthma among the Native American population in New Mexico.

Key findings:

Prevalence of Asthma in New Mexico

- 14.7% of New Mexico adults 18 years of age and older, or about 209,600 adults, have been diagnosed with asthma during their lifetime.
- 9.2% of New Mexico adults (131,200) currently have asthma.
- New Mexico females have a higher prevalence of current asthma (9.2%) than New Mexico males (5.2%).
- Non-Hispanic White adults have a higher prevalence of current asthma (8.3%) than Hispanic adults (5.9%). The difference in current asthma prevalence between non-Hispanic Whites and Native Americans (5.5%) was not statistically significant.
- 11.3% of children 17 years of age and younger in New Mexico (56,900) have ever had asthma.
- 7.5% of children in New Mexico (37,800) currently have asthma.

Asthma Control Indicators

- In the 12 months prior to being surveyed in 2002 or 2003:
 - ◊ 54.6% of adults who currently have asthma had an asthma attack.
 - ◊ 15.5% of adults who currently have asthma had one or more visits to the emergency room or urgent care center because of their asthma.

Executive Summary

- ◇ 25.7% of adults who currently have asthma had an urgent visit to a doctor because of their asthma.
- ◇ 33.1% of adults with current asthma had one or more days of activity limitation because of their asthma.
- In the 30 days prior to being surveyed in 2002 or 2003:
 - ◇ 68.5% of adults with current asthma had symptoms of asthma.
 - ◇ 41.8% of adults with current asthma had one or more days of disturbed sleep.
- The asthma control indicators were similar between males and females and between non-Hispanic Whites and Hispanics.

Asthma Mortality

- The New Mexico asthma mortality rate decreased from 3.1 per 100,000 population in 1993 to 1.5 per 100,000 population in 2004.
- About 30 people died from asthma in New Mexico each year during the years 2000-2004.
- Populations in New Mexico with higher asthma mortality rates, an indicator of poorly controlled asthma, include females and people 65+ years of age.

Asthma Hospitalizations

- The asthma hospitalization rate in New Mexico fluctuated between 1995 and 2003. The hospitalization rate was 10.2/10,000 population in 2003.
- Populations in New Mexico with higher hospitalization rates, an indicator of poorly controlled asthma, include:
 - ◇ Females - have a higher asthma hospitalization rate than males.
 - ◇ African Americans - are hospitalized due to asthma at a rate twice that of non-Hispanic Whites and Hispanics.
 - ◇ Children aged 0-4 have the highest hospitalization rate, followed by adults 65 years of age and older.
 - ◇ Residents of the southeastern part of New Mexico are hospitalized for asthma at rates more than twice that of other regions of New Mexico.

INTRODUCTION

Asthma is a chronic inflammatory disease of the airways characterized by variable airflow obstruction, which is reversible either spontaneously or with treatment, and by airway hyperresponsiveness to a variety of stimuli. Symptoms of asthma include wheezing, coughing, breathlessness and chest tightness. The triggers of asthma are better understood than the cause(s) of asthma. Many factors can trigger an asthma attack, including allergens, infections, exercise, abrupt changes in the weather, or exposure to airway irritants, such as environmental tobacco smoke and other environmental pollutants. Uncontrolled asthma can affect quality of life. Asthma is a leading cause of missed days from school and can lead to missed days of work, visits to the hospital and emergency room, interrupted sleep, limited physical activity and the disruption of family and caregiver routines.

According to the National Health Interview Survey, United States asthma prevalence increased 74% between 1980 and 1996 (MMWR Vol. 51/SS-1). The reason for this increase, which was especially dramatic among children, is not understood. Asthma mortality increased gradually during 1980-1995 in the United States. Estimates from the 2002 National Health Interview Survey suggest that 30.8 million Americans have been diagnosed with asthma at some point in their lifetime and nearly 20 million currently have asthma.

The New Mexico Department of Health's Asthma Program and the New Mexico Asthma Coalition developed an asthma plan to address the burden of asthma in New Mexico. To reduce the burden of asthma the New Mexico Asthma Coalition developed the following goals: 1) assess the burden of asthma in New Mexico, 2) develop, promote and deliver statewide asthma education/training to all types of asthma health care professionals, 3) educate patients, families, schools and communities about asthma, 4) reduce the barriers to asthma care throughout the state, and 5) reduce environmental causes and triggers of asthma in New Mexico. A selection of activities the New Mexico Asthma Program is engaged in include:

Asthma Surveillance

- Monitored asthma prevalence with the Behavioral Risk Factor Surveillance System survey, elementary school asthma prevalence survey, Youth Tobacco Survey, and Youth Risk and Resiliency Survey.
- Monitored asthma control indicators.
- Monitored asthma deaths, hospitalizations and emergency department visits.
- Monitored asthma hospitalizations among the Native American population.

Provider Education

- Evaluated asthma curricula in schools in New Mexico that train health care professionals for alignment with National Asthma Education and Prevention Program guidelines and cultural sensitivity.
- Conducted a survey of Health Care Providers' preferred learning modality.

Patient, Family and Community Education

- Supported the American Lung Association to provide "Open Airways for Schools" trainings in elementary schools.

Introduction

- Worked to ensure passage of a bill and administrative code to allow students to carry and self-administer asthma medication.
- Provided Asthma and Allergy Foundation of America asthma training for childcare providers.
- Started work on the development of a school asthma manual.

Access to Care

- Provided funding for asthma educational materials at Children's Medical Services outreach clinics which provides services to underserved children in New Mexico.
- Investigated access to free and reduced cost asthma medications.
- Increased the number of certified asthma educators.

Environmental Causes and Triggers of Asthma

- Supported the *Tools for Schools* program to conduct Indoor Air Quality trainings in schools.
- Provided funding for building facilities managers' training in indoor air quality.
- Collaborated with the New Mexico Environmental Public Health Tracking Project to link asthma emergency department data and air quality data.

This report provides estimates of asthma prevalence in New Mexico. Measures of asthma severity, including asthma mortality, asthma hospitalizations and indicators of poorly controlled asthma from a survey are also provided.

ASTHMA PREVALENCE

The Behavioral Risk Factor Surveillance System (BRFSS) is a statewide random-digit dialing telephone survey administered by the Survey Unit within the Epidemiology and Response Division of the New Mexico Department of Health and supported in part by the Centers for Disease Control and Prevention. The system is designed to provide information on behaviors and risk factors for chronic and infectious diseases and other health conditions among non-institutionalized adults 18 years of age and older. Data are collected from a sample of about 6,000 adults each year, and then weighted to correct for demographic and sampling-related differences between those adults interviewed and the general population.

Two adult asthma prevalence questions were included in the BRFSS survey starting in 2000 to assess both lifetime asthma prevalence and current asthma prevalence:

1) *Did a doctor ever tell you that you have asthma?*

and for those answering “yes” to the first question:

2) *Do you still have asthma?*

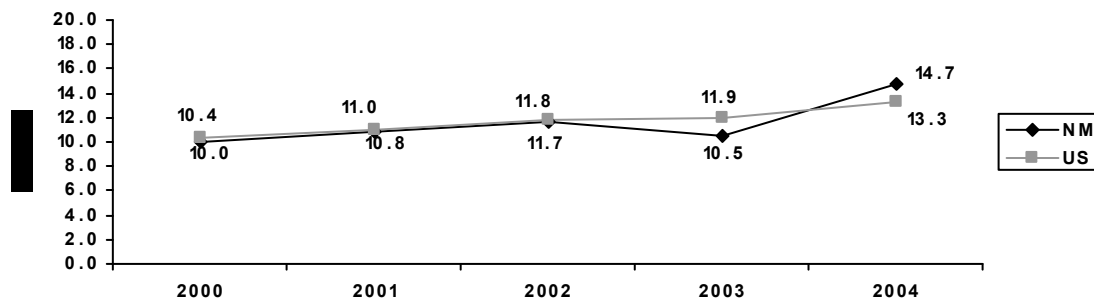
The first question was modified for the 2001 and subsequent BRFSS surveys to: *Have you ever been told by a doctor, nurse or other health professional that you had asthma?*

Estimates of current and lifetime prevalence were determined for each survey year from responses to these questions. The survey responses represent only self-reports of being diagnosed with asthma so the true prevalence may have been underestimated.

Data from the 2000 and 2001 BRFSS surveys were combined and data from the 2002 and 2003 surveys were combined to increase the sample size so comparisons can be made in asthma prevalence by age, sex race/ethnicity, income level, education attainment, urban/rural/frontier, Public Health Regions, and obesity status.

Data from the 2000, 2001, 2002, 2003 and 2004 surveys were combined so comparisons of current asthma prevalence can be made for the 33 counties in New Mexico.

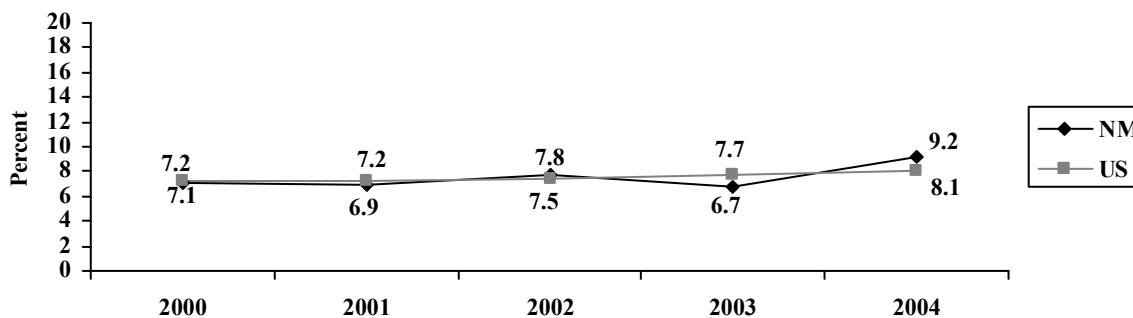
Figure 1. Lifetime Asthma Prevalence, NM and US Adults, 2000-2004



Source: New Mexico BRFSS 2000-2004

- Between 2000 and 2002, lifetime asthma prevalence in New Mexico was similar to lifetime asthma prevalence in the US.
- In 2003, lifetime asthma prevalence in New Mexico decreased, but the difference in lifetime asthma prevalence between 2002 and 2003 was not statistically significant.
- Lifetime asthma prevalence among New Mexico adults increased in 2004 and the difference in lifetime asthma prevalence between 2003 and 2004 was statistically significant.
- In 2004, 14.7% of New Mexico adults 18 years of age and older (209,600) have ever been diagnosed with asthma.

Figure 2. Current Asthma Prevalence, NM and US Adults, 2000-2004

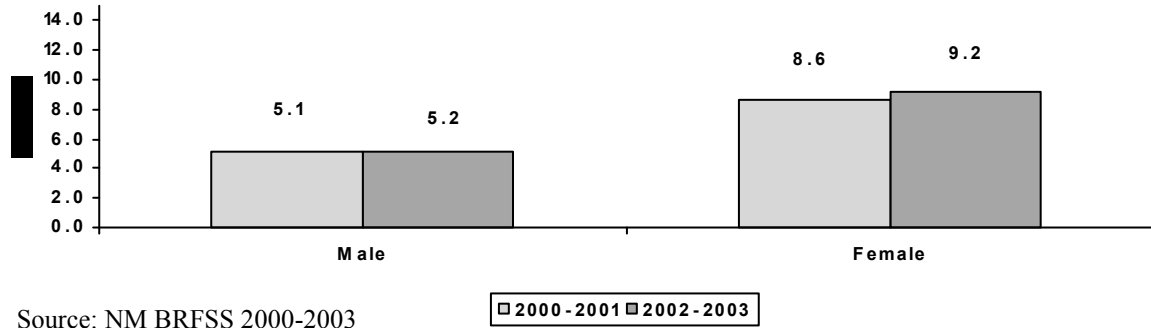


Source: NM BRFSS 2000-2004

- Between 2000 and 2002, current asthma prevalence in New Mexico was similar to current asthma prevalence in the US.
- In 2003, current asthma prevalence in New Mexico decreased, but the difference between current asthma prevalence in 2002 and 2003 was not statistically significant.
- Current asthma prevalence among New Mexico adults increased in 2004 and the difference in current asthma prevalence between 2003 and 2004 was statistically significant.
- In 2004, 9.2% of New Mexico adults (131,200) currently had asthma.

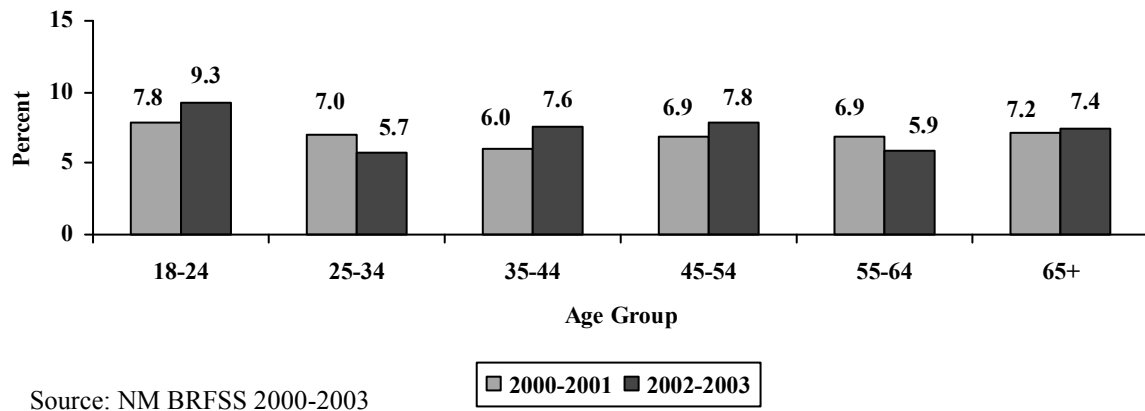
Adult Asthma Prevalence

Figure 3. Current Asthma Prevalence by Gender, NM Adults, 2000-2003



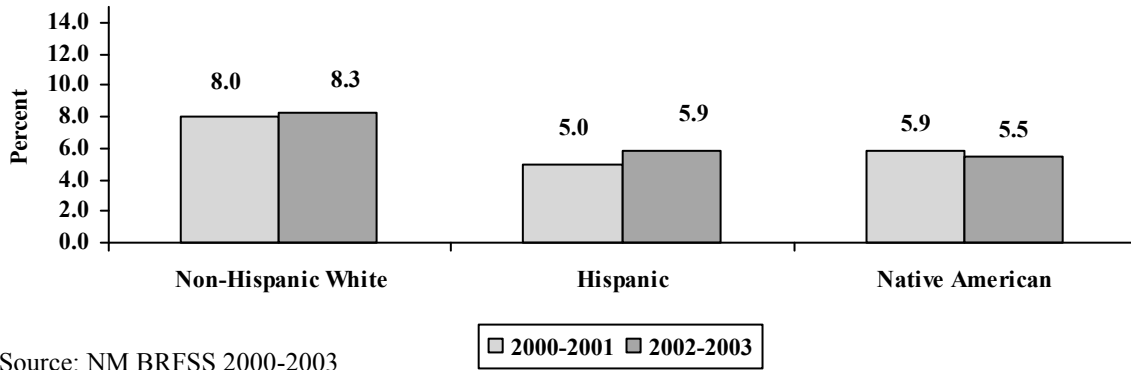
- Current asthma prevalence among females (9.2%, [95% CI, 8.3-10.2]) was significantly higher than asthma prevalence among males (5.2% [95% CI, 4.5-6.0]) .

Figure 4. Current Asthma Prevalence by Age Group, NM Adults, 2000-2003



- Current asthma prevalence was similar across age groups.

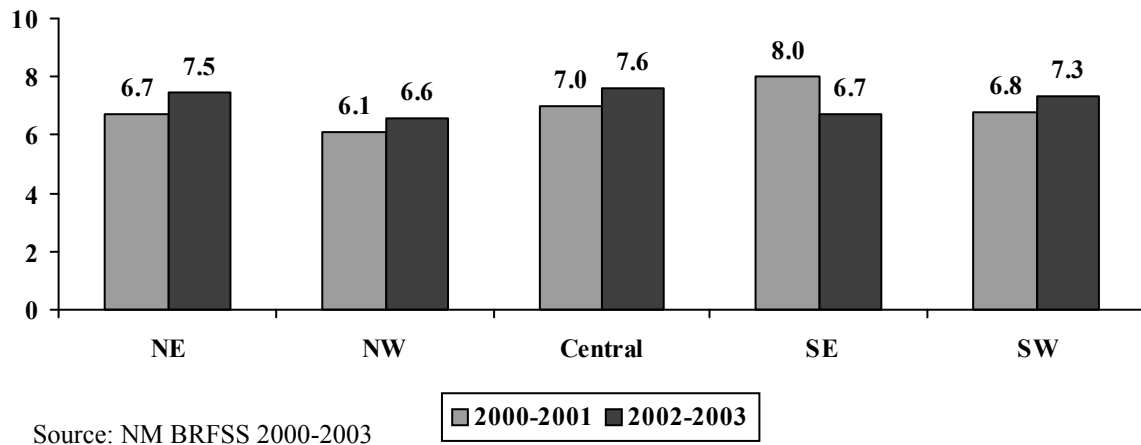
Figure 5. Current Asthma Prevalence by Race/Ethnicity, NM Adults, 2000-2003



Source: NM BRFSS 2000-2003

- Current asthma prevalence was significantly higher among non-Hispanic Whites (8.3% [95% CI, 7.4-9.2]) compared to Hispanics (5.9% [95% CI, 5.0-6.9]).
- The difference in asthma prevalence between non-Hispanic Whites and Native Americans was not statistically significant.

Figure 6. Current Asthma Prevalence by Public Health Region, NM Adults, 2000-2003



Source: NM BRFSS 2000-2003

- Current asthma prevalence was similar across the Public Health Regions.

Other findings from the 2000-2004 NM BRFSS surveys:

- Current asthma prevalence among adults was similar across educational attainment levels.
- Current asthma prevalence among adults was similar across household income levels.
- Current asthma prevalence among adults in the urban counties (Bernalillo, Dona Ana, Los Alamos and Santa Fe) was similar to asthma prevalence in rural and frontier counties.
- According to the 2004 BRFSS, current asthma prevalence among obese adults was significantly higher than the prevalence among normal weight and overweight adults
- The combined 2000 through 2004 survey showed that current adult asthma prevalence among residents of most counties in New Mexico was similar to the current asthma prevalence statewide. Current asthma prevalence in McKinley County was lower than the statewide estimate. Harding County did not have a large enough sample size to report a prevalence estimate.
- Significantly more males were diagnosed with asthma at age 10 years or younger (47.3% [CI, 41.4—53.4] than females (21.7% [CI, 17.9—26.1]).

See Appendix A, Tables 1, 2, and 3 for the detailed BRFSS data tables.

CHILDHOOD ASTHMA PREVALENCE

Behavioral Risk Factor Surveillance System Survey

In 2003 two child asthma prevalence questions were included in the New Mexico BRFSS survey:

- 1) *How many of these children (living in your household) have ever been diagnosed with asthma?*
and
- 2) *Does this child/how many of these children still have asthma?*

These questions were asked of the adult who responded to the BRFSS questionnaire.

Key Findings:

- 11.3% of children aged 17 years and younger in New Mexico, or about 56,900 children, have ever had asthma.
- 7.5% of children aged 17 years and younger in New Mexico, or about 37,800 children, currently have asthma.

Youth Tobacco Survey

The Tobacco Use Prevention & Control Program of the Chronic Disease Bureau of the New Mexico Department of Health administered the New Mexico Youth Tobacco Survey to middle school students from the fall of 2004 through late January 2005. Two asthma prevalence questions were included in the survey: one question to determine lifetime asthma prevalence and the other to determine the asthma attack rate:

- 1) *Has a doctor or nurse ever told you that you have asthma?*
and
- 2) *During the past 12 months, have you had an episode of asthma or an asthma attack?*

The estimated overall participation rate was 65.5%. Since the overall participation was more than 60%, the data was weighted, which allowed generalization to all New Mexico middle school students in grades 6-8.

Key Findings:

- 19.1% of middle school students have been told by a doctor or nurse that they have asthma.
- 7.3% of middle school students had an episode of asthma or an asthma attack during the past 12 months.
- 30.8% of middle school students who were told that they had asthma had an episode of asthma or an asthma attack during the past 12 months.

Asthma in Elementary Schools

In April 2004 the Asthma Program sent a survey on asthma prevalence among elementary school students to the school nurses of all public elementary schools in New Mexico. Out of 431 surveys sent to school nurses, 362 surveys were returned for a response rate of 84%. The purpose of the survey was to determine the prevalence of asthma in K-5 school students and determine if characteristics of the school environment affected asthma prevalence. These characteristics included school building characteristics (location, type of roof), presence of water, air quality, presence of allergens (cockroaches and rodents); pesticide usage; renovations and bus idling. See Appendix B for the Elementary School Survey.

The percent of students receiving free/reduced lunches per school district was used to determine the prevalence of asthma by socioeconomic status. Overall, 58.3% of students in New Mexico receive free or reduced lunches.

Some studies have shown that people living in urban areas have a higher risk of asthma. The Rural Urban Commuting Area System (RUCAS) was used to assign public elementary schools into urban and rural categories.

- Urban Core Areas – continuously built-up areas with populations of 50,000 or more.
- Suburban Areas – areas with high commuting relationships with Urban Core Areas, including Large Town, Small Town and Isolated Rural areas with high commuting levels to Urban Core Areas.
- Large Town Areas—towns with populations between 10,000 and 49,999 and surrounding rural areas with high commuting levels to these towns.
- Small Town and Isolated Rural Areas—towns with populations below 10,000 and surrounding rural areas with high commuting levels to these towns and other isolated rural areas.

Asthma prevalence between public elementary school students in each of the four categories was compared.

Key Findings:

- It is estimated that 7.2% of K-5 public school students in New Mexico have asthma.
- Asthma prevalence was similar between students in public elementary schools *with* any of the environmental conditions that may influence asthma symptoms and students in schools *without* any of the environmental conditions.
- K-5 students in public school districts where less than 58.3% of students received free or reduced lunches had a lower prevalence of asthma (6.5%) than students in school districts where more than 58.3% of students received free or reduced lunches (8.0%).
- Public elementary school students in the Large Town Areas had the highest asthma prevalence (9.2%). Asthma prevalence among public elementary school students in the Urban Core Areas, (6.2%), Suburban Core Areas (7.0%) and Small Town and Isolated Rural Areas (6.2%) was similar.

ASTHMA CONTROL INDICATORS

Indicators of how well asthma is controlled were obtained from responses by adults who currently have asthma to questions from the adult asthma history module from the 2002 and 2003 BRFSS surveys. Data from the 2002 and 2003 surveys were combined to increase the sample size to allow more stable estimates for subgroup comparisons. Over time it is expected that the asthma control indicators will improve through intervention activities.

Key Findings:

- **Asthma Attacks:** 54.6% of adults who currently have asthma had an asthma attack in the 12 months prior to being surveyed in 2002 or 2003.
- **Emergency room or urgent care visits:** 15.5% of adults who currently have asthma had one or more visits to an emergency room or urgent care center because of their asthma in the 12 months prior to being surveyed in 2002 or 2003.
- **Unscheduled visit to health care professional:** 25.7% of adults who currently have asthma had an urgent visit to a doctor because of their asthma in the 12 months prior to being surveyed in 2002 or 2003.
- **Activity limitation:** 33.1% of adults with current asthma had one or more days of activity limitation because of their asthma in the 12 months prior to being surveyed in 2002 or 2003.
- **Asthma symptoms:** 68.5% of adults with current asthma had symptoms of asthma in the 30 days prior to being surveyed in 2002 or 2003.
- **Disturbed sleep:** 41.8% of adults with current asthma had one or more days of disturbed sleep in the 30 days prior to being surveyed in 2002 or 2003.
- Differences in asthma control indicators between males and females and between non-Hispanic Whites and Hispanics were not statistically significant.
- 32.0% of adults with asthma at some point during their life were diagnosed with asthma at age 10 years or younger.
- 20.2% of adults with asthma at some point during their life were diagnosed with asthma at age 11 to 17 years.
- 47.9% of adults with asthma at some point during their life were diagnosed with asthma at age 18 years or older.

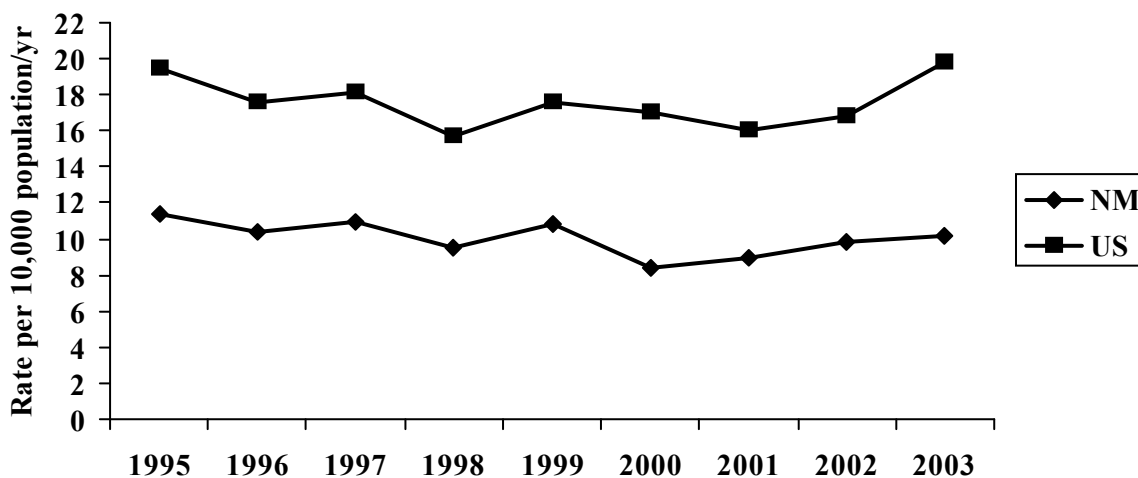
See Appendix A for Table 4. Percent of Adults with Asthma Control Indicators, New Mexico, 2002-2003.

ASTHMA HOSPITALIZATIONS

Hospitalizations due to asthma are an indicator both of the severity of the disease and barriers to regular asthma care. Asthma hospitalizations are costly, but are preventable when asthma is under control.

The New Mexico Health Policy Commission maintains the Hospital Inpatient Discharge Database (HIDD). HIDD includes inpatient discharge data from all non-federal, licensed general and specialty hospitals in New Mexico. An asthma hospitalization is defined as having a primary diagnosis of asthma (ICD-9 CM code 493—493.92). Only hospitalizations for New Mexico residents who were admitted to New Mexico hospitals are included in this report. Rates presented here are the number of asthma hospitalizations (rather than number of individuals who were hospitalized) per 10,000 population. Rates were adjusted to the 2000 U.S. standard population.

Figure 7. Asthma Hospital Discharge Rate for New Mexico Residents, 1995-2003

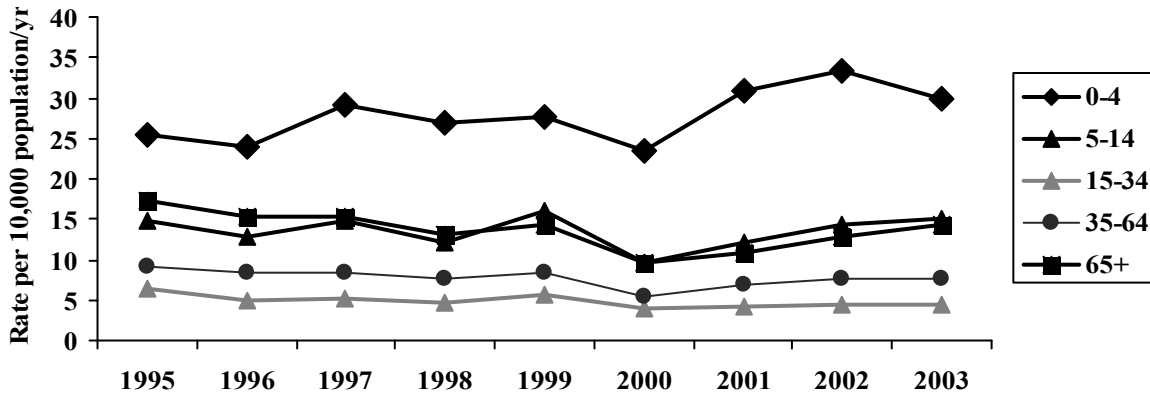


Source: NM Health Policy Commission

US: National Center for Health Statistics

- In 2003, the hospital discharge rate was 10.2 hospitalizations per 10,000 population.
- Between 1995 and 2003 asthma hospitalization rates remained relatively stable.
- The hospitalization rate in New Mexico was consistently lower than the US rate.
- Between 2001 and 2003 the percentage of all discharges from non-federal hospitals in New Mexico with asthma as primary diagnosis was about 1.0%.

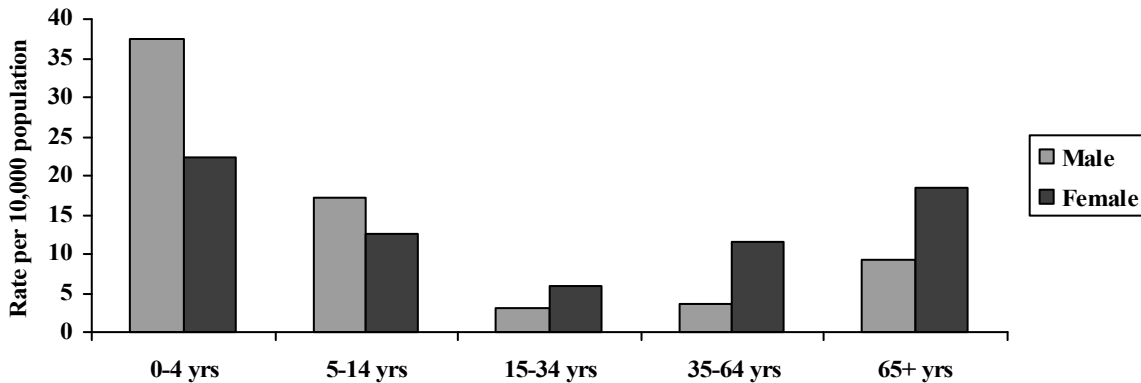
Figure 8. Asthma Hospital Discharge Rate by Age Group, New Mexico, 1995-2003



Source: New Mexico Health Policy Commission

- Asthma hospital discharge rates are consistently highest in children aged 0-4 years.

Figure 9. Asthma Hospital Discharge Rate by Age and Sex, New Mexico, 2003

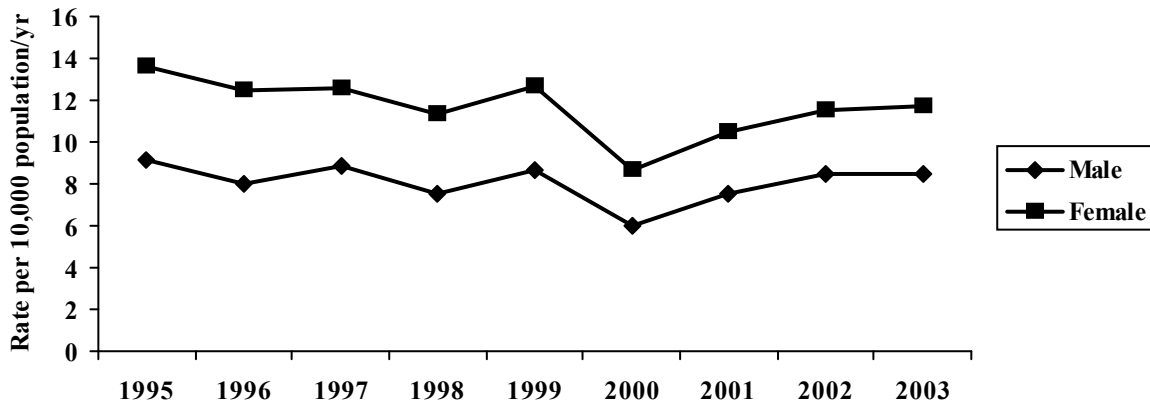


Source: New Mexico Health Policy Commission

- Asthma hospitalization rates are highest among children under the age of 5. The rate steadily decreases through middle age, and then starts to increase.
- Asthma hospitalization rates are higher for boys than girls until the teenage years at which point rates become higher for girls than boys.

Asthma Hospitalizations

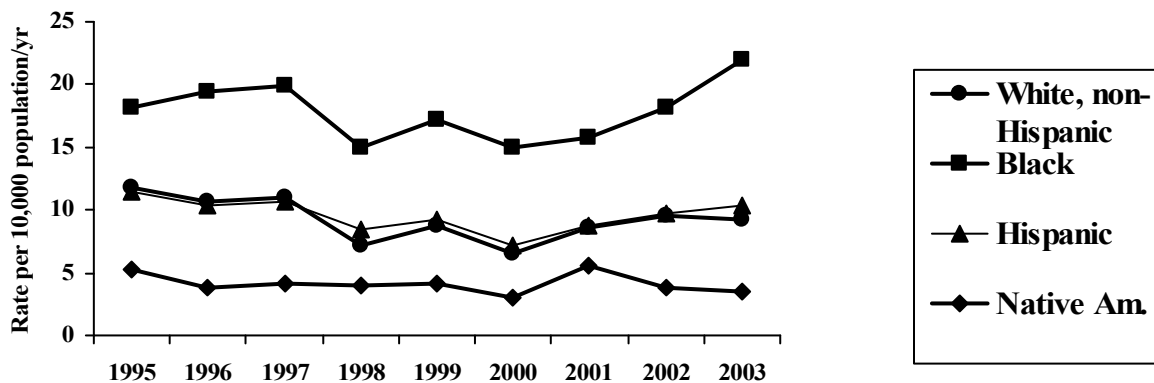
Figure 10. Asthma Hospital Discharge Rate by Sex, New Mexico, 1995-2003



Source: New Mexico Health Policy Commission

- Asthma hospitalizations are consistently higher in females than males.

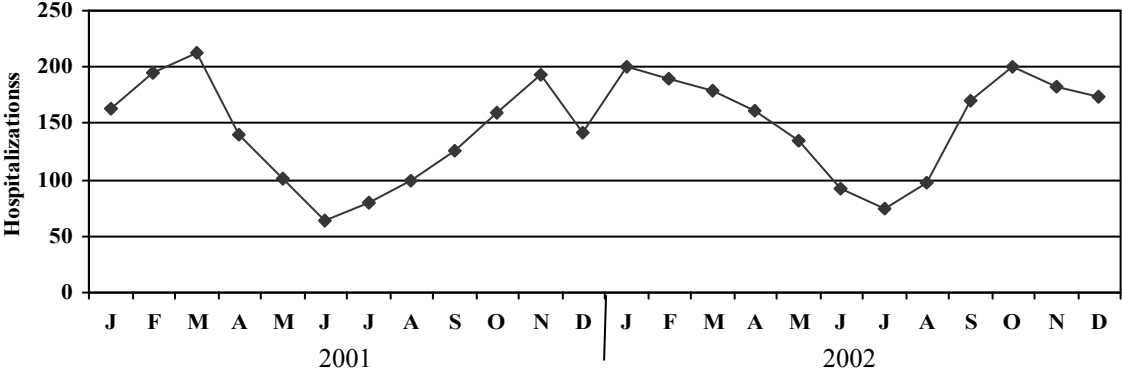
Figure 11. Asthma Hospital Discharge Rate by Race/Ethnicity, New Mexico, 1995-2003



Source: New Mexico Health Policy Commission

- Asthma hospital discharge rates are significantly higher in Blacks than that for non-Hispanic Whites and Hispanics.
- Based on HIDD, asthma hospital discharge rates are lower among Native Americans. This is due to the fact that Indian Health Service hospitalizations are not included in HIDD.

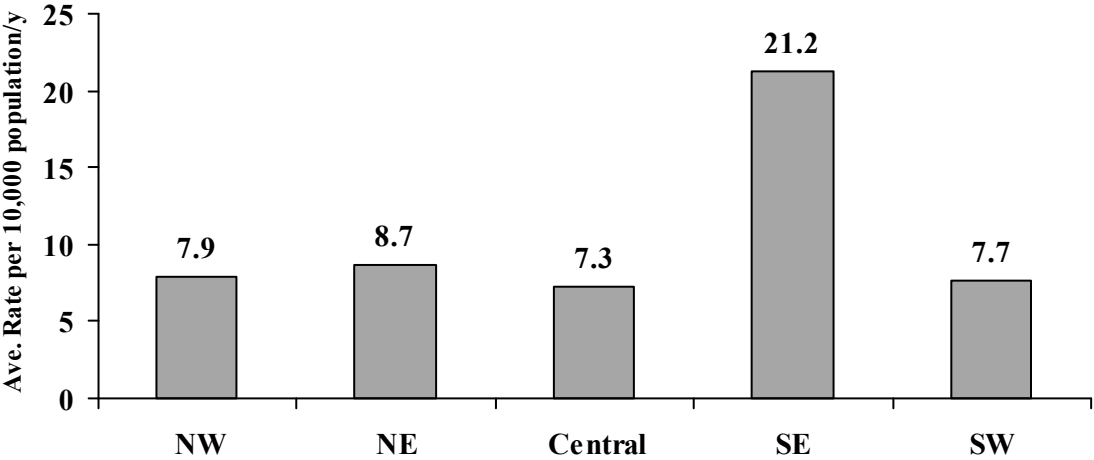
Figure 12. Asthma Hospitalizations by Month of Admission, New Mexico, 2001-2002



Source: NM Health Policy Commission

- In New Mexico, asthma hospitalizations followed seasonal patterns. The lowest number of hospitalizations occur in the summer months.

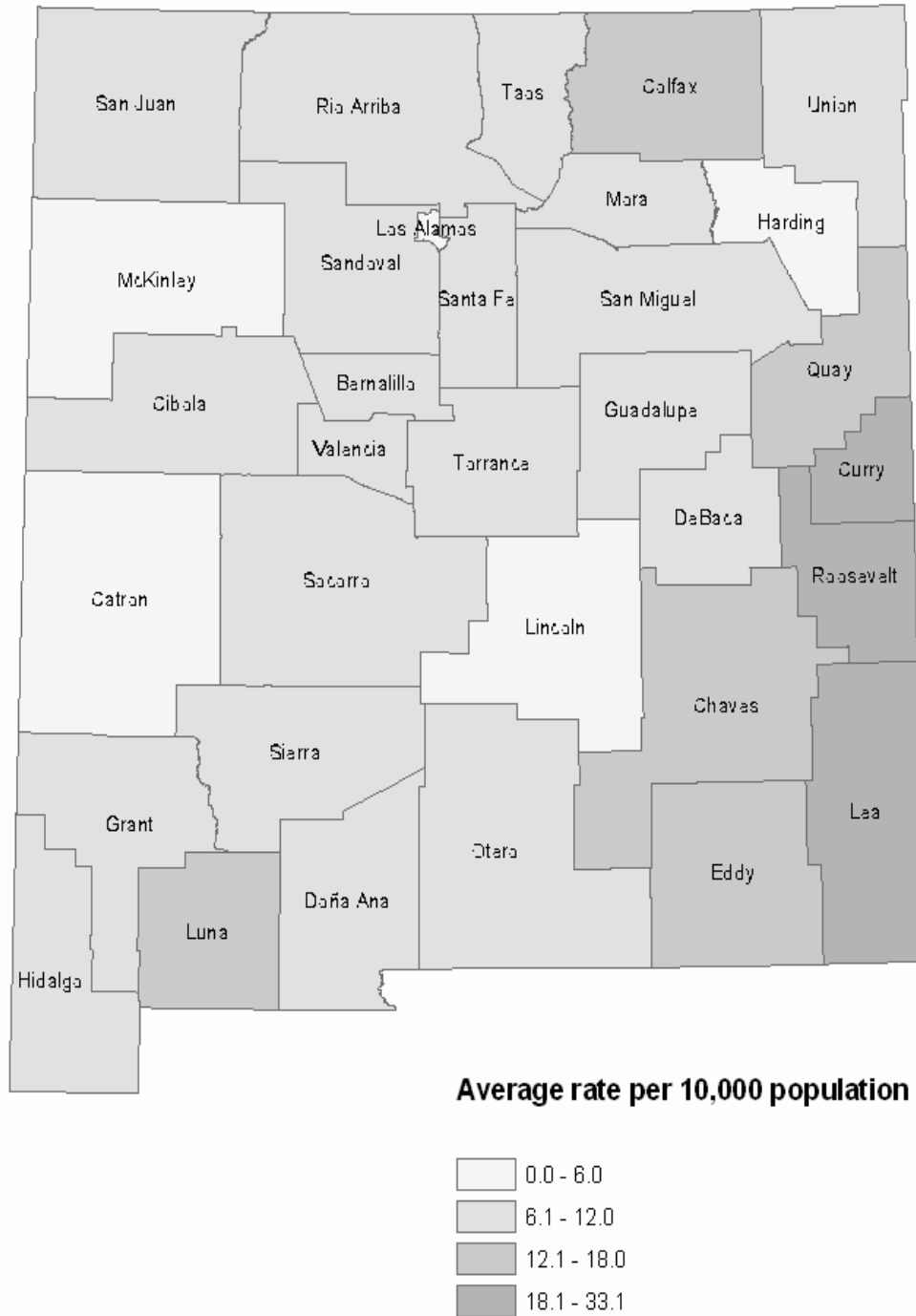
Figure 13. Asthma Hospital Discharge Rate by Public Health Regions, New Mexico, 1999-2003



Source: NM Health Policy Commission

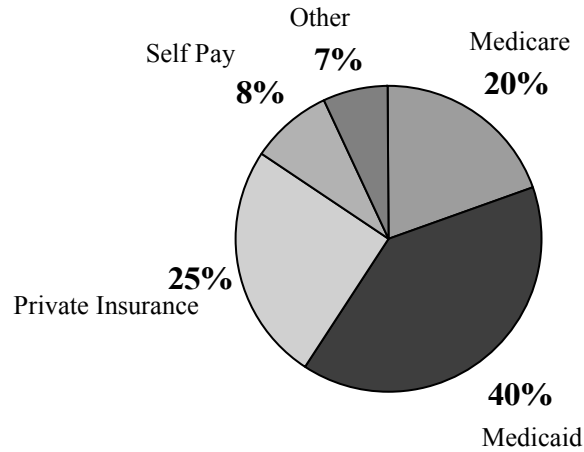
- The hospitalization rate in the Southeast Region is about 2 and one-half times as high as the other regions.
- Figure 14 on page 17 shows the average annual asthma hospital discharge rate by county.

Figure 14. Average Annual Asthma Hospital Discharge Rate by County, 1999-2003



Source: New Mexico Health Policy Commission

Figure 15: Distribution of Primary Payer for Asthma Hospitalizations, New Mexico, 2003



Source: NM Health Policy Commission

- The primary payers for the majority of asthma hospitalizations are Medicaid and Medicare.

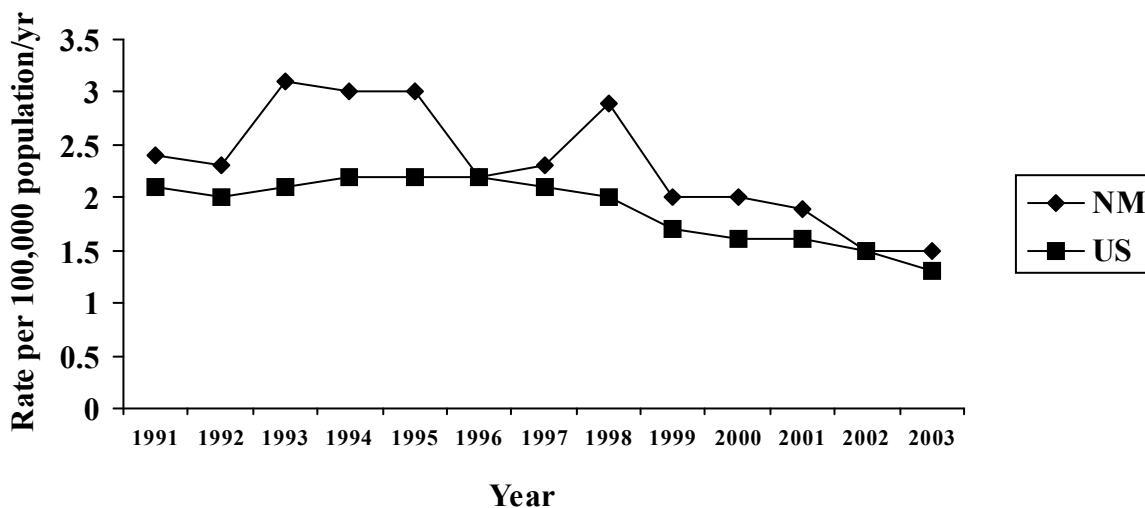
Other findings:

- The average length of stay for asthma hospitalizations between 1995-2003 was 3 days.
- About 57% of the hospitalizations in 2003 were admitted through the emergency department

ASTHMA MORTALITY

The New Mexico Bureau of Vital Records and Health Statistics maintains mortality records for deaths that occur both among New Mexico residents and among out-of state residents who died in New Mexico. The data presented here are for New Mexico residents only. Through 1998, asthma deaths were defined as having an underlying cause of death with an International Classification of Disease, 9th revision code (ICD-9) of 493. Since 1999, asthma deaths were defined as having an underlying cause of death with ICD-10 of J45 and J46. The mortality data after 1998 cannot be directly compared with the data from previous years due to the change in the coding system from ICD-9 to ICD-10.

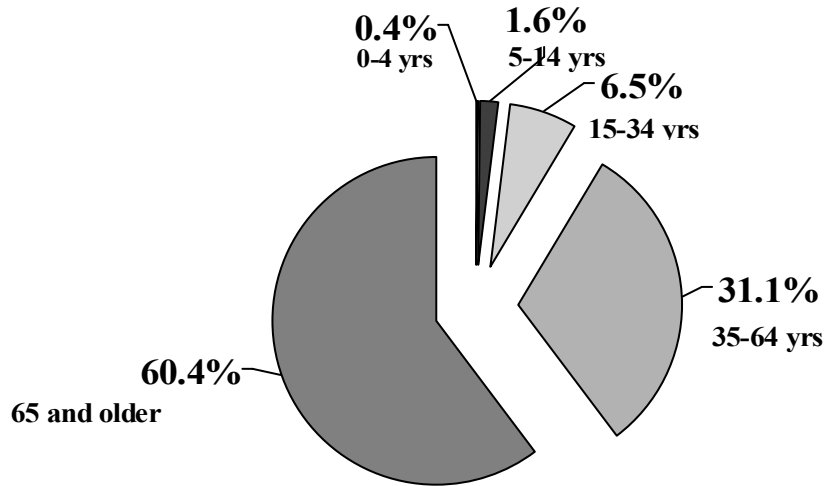
Figure 16. Annual Age-Adjusted Asthma Mortality Rates, New Mexico Residents, 1991-2003



Source: New Mexico Bureau of Vital Records and Health Statistics US: National Center for Health Statistics

- The New Mexico asthma death rate was consistently higher than the US rate between 1991-2003, except for 1996 and 2002. The death rate for asthma in New Mexico for 2004 was the same as for 2003 (1.5 per 100,000 population).
- The New Mexico asthma death rate fluctuated during the 1990s. The death rate is unstable due to the small number of asthma deaths each year in New Mexico. The death rate has declined since 2000.
- An average of 35 deaths occurred each year due to asthma in New Mexico between 1991 and 2004 with a rate of 2.0 per 100,000 residents/year.

Figure 17. Asthma Mortality by Age Group, New Mexico, 1991-2003



Source: New Mexico Bureau of Vital Records and Health Statistics

- Asthma deaths increased with age with the majority of deaths occurring among people 65 years of age and older.

Other findings:

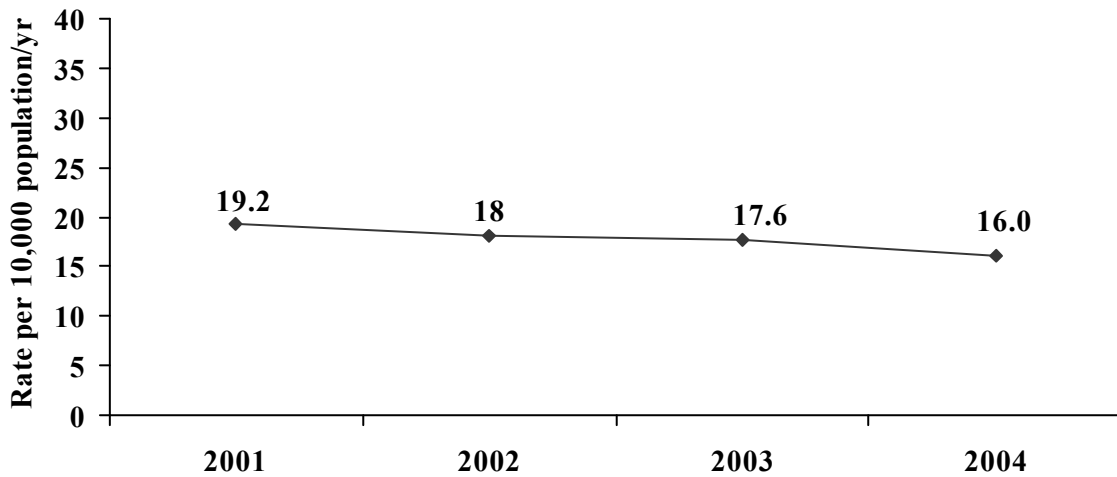
- The percentage of female asthma deaths (60%) was greater than the percentage of male asthma deaths (40%) during 2001-2004.

NAVAJO AREA INDIAN HEALTH SERVICE

The Navajo Area Indian Health Service (NAIHS) provides outpatient and inpatient health care to over 200,000 members of the Navajo Nation and members of other tribes. The Navajo Nation encompasses parts of Northern Arizona, Western New Mexico and Southern Utah with three satellite communities in central New Mexico. An asthma hospitalization is defined as having a primary diagnosis of asthma (ICD-9 CM code 493-493.92). The data provided here includes Native Americans who are residents of New Mexico.

Since not all Native Americans in New Mexico use Indian Health Service services, the Indian Health Service user population is used for calculating hospitalization rates. These rates are not representative of the total population of Native Americans who are New Mexico residents in the Navajo Area Indian Health Service service area.

Figure 18. Asthma Hospitalization Rate per 10,000 User Population, New Mexico Residents, Navajo Area Indian Health Service, Fiscal Years 2001-2004.



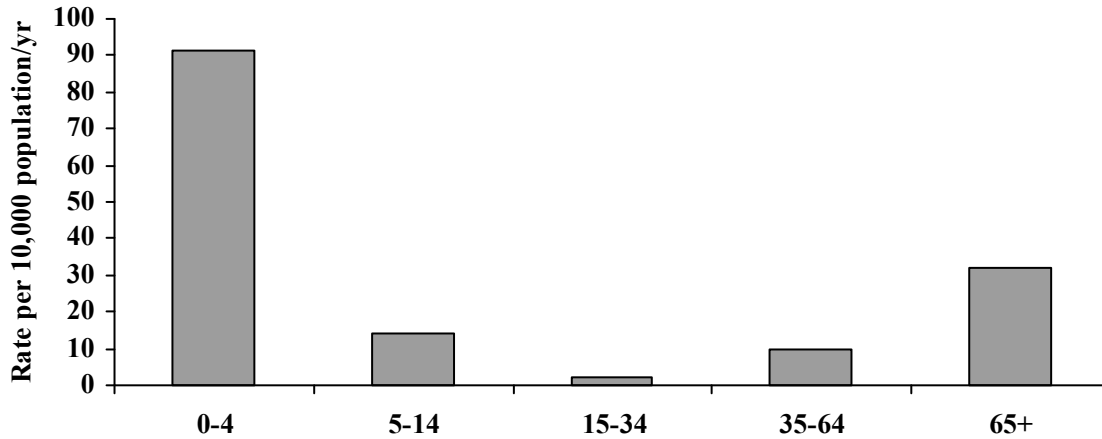
Source: Navajo Area Indian Health Service

- The average asthma hospitalization rate from 2001-2004 was 17.7 per 10,000 user population/year, New Mexico residents.

Other findings:

- Between 2001 and 2004 the percentage of all discharges of New Mexico residents from NAIHS facilities with asthma as primary diagnosis was about 2.5%.

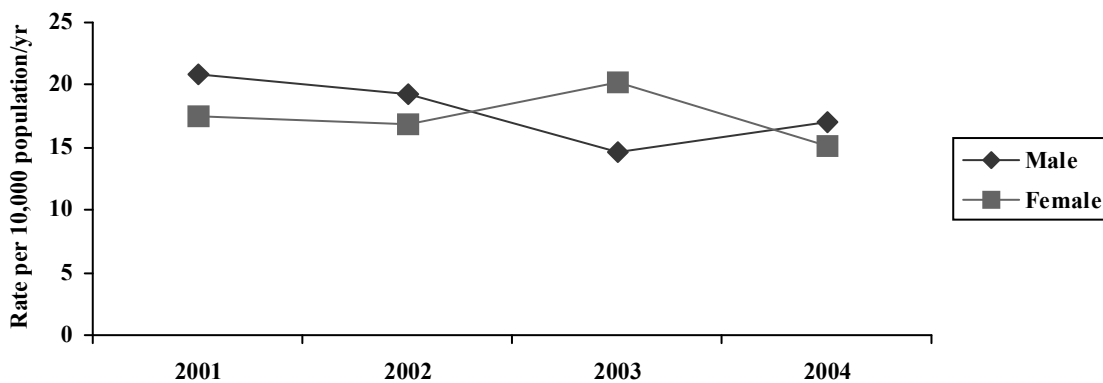
Figure 19. Average Annual Asthma Hospital Discharge Rate by Age Group, NM Residents, FY 2001-2004



Source: Navajo Indian Health Service

- Children aged 0-4 years had the highest average asthma hospitalization rate (91.5 asthma hospitalizations per 10,000) from 2001-2004
- The lowest asthma hospitalization rate for NAIHS user population is seen among 15-34 year olds.

Figure 20. Hospital Discharge Rate by Gender, NM Residents, FY 2001-2004



Source: Navajo Indian Health Service

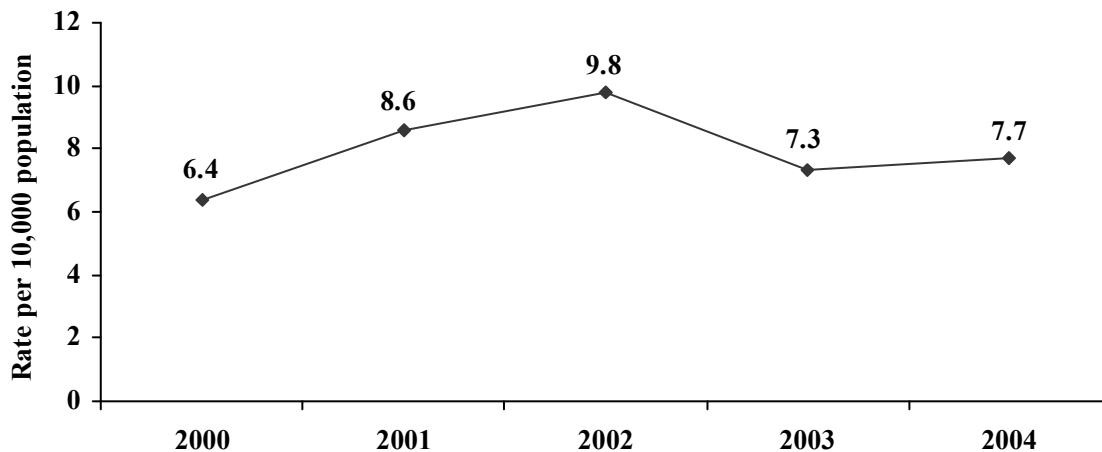
- Males from NAIHS user population had a higher asthma hospitalization rate than females, except for Fiscal Year 2003.

ALBUQUERQUE AREA INDIAN HEALTH SERVICE

The Albuquerque Area Indian Health Service provides outpatient and inpatient health care to a number of distinctly different tribal groups. In New Mexico the tribes served include the 19 Pueblos, the Jicarilla and Mescalero Apaches, and the Alamo, Canoncito and Ramah Chapters of the Navajo Nation. An asthma hospitalization is defined as having a primary diagnosis of asthma (ICD-9 CM code 493-493.92). The data here are provided for Native American residents of New Mexico who utilized health care facilities in the eight Service Units of the Albuquerque Area Indian Health Service.

Since not all Native Americans in New Mexico use Indian Health Service services, the Indian Health Service user population is used for calculating hospitalization rates. These rates are not representative of the total population of Native Americans who are New Mexico residents in the Albuquerque Area Indian Health Service service area.

Figure 21. Asthma Hospitalization Rate per 10,000 User Population, New Mexico Residents, Albuquerque Area Indian Health Service, FY 2000– 2004



Source: Albuquerque Area Indian Health Service

- The asthma hospitalization rate fluctuated between 2000 and 2004.

Other findings:

- Between 2000 and 2004 about 37% of the hospitalizations were for males and about 63% of the hospitalizations were for females.

GLOSSARY

Age-adjustment - A procedure for adjusting rates (rates of deaths, hospitalizations or other health outcomes) to minimize the effects of differences in age composition when comparing different populations.

Confidence Interval (CI) - Confidence that the true value of a variable (rate, proportion, etc.) is contained within the interval; e.g., 95% confidence interval: 95% certain that the true value is contained within the interval.

Mortality rate - Total number of deaths for a disease during a specified time period divided by the population at risk during the specified time period (usually one year).

Prevalence - The number of new and existing cases of the disease in a specified time period.

Prevalence rate - The number of new and existing cases of the disease in a specified time period divided by the population at risk in a specified time period.

Rate - A measure of the frequency of occurrence of an event such as a disease in a defined population. It is determined by dividing the number of events in a time period by the average population at risk in the specified time period.

Weighted percent - Adjustment of the results from a survey of a sample of a population to compensate for the differences in the distribution of the sample by gender and age group when compared to the general population.

Appendix A. Detailed BRFSS Data Tables

Table 1. Percent of Adults who Currently Have Asthma by Demographic Characteristics, New Mexico, 2000-2003

2000-2003 BRFSS	Current Asthma Prevalence			
	2000-2001		2002-2003	
	Percent	95% CI	Percent	95% CI
Demographic Characteristics				
TOTAL	6.9	(6.2-7.6)	7.3	(6.7-7.9)
GENDER				
Male	5.1	(4.3-6.1)	5.2	(4.5-6.0)
Female	8.6	(7.9-9.7)	9.2	(8.3-10.2)
AGE				
18-24	7.8	(5.7-10.6)	9.3	(7.0-12.2)
25-34	7.0	(5.6-8.8)	5.7	(4.6-7.0)
35-44	6.0	(4.8-7.5)	7.6	(6.4-9.1)
45-54	6.9	(5.4-8.8)	7.8	(6.7-9.2)
55-64	6.9	(5.4-8.8)	5.9	(4.8-7.3)
65+	7.2	(5.8-8.8)	7.4	(6.2-8.8)
RACE/ETHNICITY				
White, non-Hispanic	8.0	(7.0-9.1)	8.3	(7.4-9.2)
Hispanic	5.0	(4.2-6.0)	5.9	(5.0-6.9)
Native American	5.9	(3.4-9.5)	5.5	(3.2-9.2)
Other race or multi-racial	13.0	(8.6-19.2)	10.9	(7.8-14.9)
EDUCATION				
Less than High School Graduate	5.1	(3.9-6.6)	5.8	(4.6-7.3)
High School Graduate or G.E.D.	6.5	(5.4-7.7)	6.6	(5.5-7.8)
Some College	9.6	(8.1-11.4)	8.5	(7.2-10.0)
College Graduate	6.0	(4.9-7.3)	7.6	(6.7-8.7)
INCOME				
Less than \$15,000	7.8	(6.3-9.7)	7.2	(5.8-8.9)
\$15-24,999	6.5	(5.2-8.1)	7.7	(6.3-9.4)
\$25-49,999	7.9	(6.7-9.3)	7.8	(6.7-9.1)
\$50-74,999	5.8	(4.2-8.0)	5.9	(4.8-7.3)
\$75,000 or more	5.6	(4.0-7.9)	7.4	(5.9-9.3)
REGION^R				
NW - Region 1	6.7	(5.4-8.4)	7.5	(6.3-8.9)
NE - Region 2	6.1	(4.8-7.7)	6.6	(5.5-7.9)
Bernalillo - Region 3	7.0	5.7-8.6)	7.6	(6.3-9.1)
SE - Region 4	8.0	(6.5-9.9)	6.7	(5.4-8.1)
SW - Region 5	6.8	(5.5-8.4)	7.3	(6.2-8.6)
GEOGRAPHIC AREA				
Urban	6.8	(5.9-7.8)	7.4	(6.5-8.3)
Rural	7.2	(6.1-8.5)	6.9	(6.0-7.9)
Frontier	6.8	(5.2-8.9)	7.6	(6.2-9.3)
BMI CATEGORY				
<25, normal weight	6.2	(5.3-7.3)	6.8	(5.9-7.8)
25 - < 30, overweight	6.4	(5.3-7.6)	7.3	(6.3-8.4)
>= 30, obese	9.0	(7.4-11.0)	8.8	(7.5-10.3)

Source: NM BRFSS 2000-2003

Table 2: Percent of Adults Ever Diagnosed with Asthma by Demographic Characteristics, New Mexico, 2004

Ever Asthma 2004 NM BRFSS Demographic Characteristics	Total Number Who Responded to the Question	Have you ever been told by a doctor, nurse or other health professional that you had asthma?			
		Total Number Who Responded "Yes"	Weighted Percent (%) [§]	95% Confidence Interval	
				Lower	Upper
TOTAL	6,384	933	14.7	13.6	15.8
GENDER					
Male	2,492	320	12.7	11.2	14.3
Female	3,892	613	16.5	15.1	18.1
AGE					
18-24	423	76	18.6	14.6	23.5
25-34	833	107	12.3	10.0	15.1
35-44	1,128	161	13.6	11.5	16.1
45-54	1,325	204	15.6	13.4	18.2
55-64	1,115	173	15.2	12.8	17.8
65+	1,548	210	13.5	11.6	15.6
RACE/ETHNICITY					
White, non-Hispanic	3,703	590	16.5	15.0	18.0
Hispanic	2,146	268	12.5	10.8	14.4
Native American	257	24	8.3	5.3	12.8
Other race or multi-racial	237	46	19.8	13.6	28.0
EDUCATION					
Less than High School Graduate	845	114	11.3	9.0	14.1
High School Graduate or G.E.D.	1,749	240	13.9	12.0	16.1
Some College	1,706	247	15.6	13.3	18.1
College Graduate	2,066	330	16.1	14.3	18.1
INCOME					
Less than \$15,000	824	147	17.9	14.7	21.8
\$15-24,999	1,267	169	14.7	12.2	17.6
\$25-49,999	1,812	249	12.8	11.0	14.7
\$50-74,999	839	136	15.9	13.0	19.2
\$75,000 or more	935	140	15.6	13.0	18.7
REGION^o					
NW - Region 1	1,553	227	15.7	13.5	18.0
NE - Region 2	1,259	182	13.6	11.6	15.9
Bernalillo - Region 3	1,160	169	15.5	13.5	18.5
SE - Region 4	1,043	163	15.3	12.8	18.1
SW - Region 5	1,358	188	12.7	10.7	14.8
GEOGRAPHIC AREA					
Urban	3,229	476	15.1	13.6	16.7
Rural	2,244	321	13.8	12.2	15.5
Frontier	894	132	14.7	12.1	17.7
BMI CATEGORY					
<25, normal weight	2,576	329	13.9	12.1	15.8
25 - < 30, overweight	2,274	305	13.2	11.6	15.0
>= 30, obese	1,321	274	18.8	16.5	21.4

Source: NM BRFSS 2004

Table 3: Percent of Adults Who Currently Have Asthma by Demographic Characteristics, New Mexico, 2004

Current Asthma 2004 NM BRFSS Demographic Characteristics	Total Number Who Responded to the Question	Do you still have asthma?			
		Total Number Who Responded "Yes"	Weighted Percent (%)	95% Confidence Interval	
				Lower	Upper
TOTAL	6,357	606	9.3	8.4	10.2
GENDER					
Male	2,480	196	7.6	6.4	9.0
Female	3,877	410	10.9	9.7	12.2
AGE					
18-24	419	38	9.7	6.8	13.6
25-34	831	62	6.9	5.2	9.1
35-44	1,126	111	9.8	7.9	12.1
45-54	1,319	140	10.3	8.4	12.4
55-64	1,110	107	9.2	7.4	11.4
65+	1,540	146	9.7	8.1	11.7
RACE/ETHNICITY					
White, non-Hispanic	3,688	383	10.5	9.3	11.8
Hispanic	2,139	175	8.0	6.6	9.6
Native American	256	20	7.0	4.3	11.3
Other race or multi-racial	234	25	9.0	5.6	14.2
EDUCATION					
Less than High School Graduate	840	85	8.4	6.4	11.0
High School Graduate or G.E.D.	1,743	166	9.5	7.9	11.4
Some College	1,701	155	9.2	7.5	11.1
College Graduate	2,055	198	9.6	8.1	11.2
INCOME					
Less than \$15,000	816	101	9.4	7.4	11.7
\$15-24,999	1,265	117	9.9	7.9	12.3
\$25-49,999	1,806	172	8.9	7.4	10.6
\$50-74,999	833	78	9.9	7.4	13.0
\$75,000 or more	934	86	9.6	7.5	12.1
REGION^o					
NW - Region 1	1,553	147	9.8	8.1	11.8
NE - Region 2	1,259	107	7.7	6.3	9.5
Bernalillo - Region 3	1,160	118	10.3	8.4	12.5
SE - Region 4	1,043	113	9.6	7.8	11.8
SW - Region 5	1,358	119	8.0	6.4	9.9
GEOGRAPHIC AREA					
Urban	3,220	299	9.5	8.3	10.9
Rural	2,232	223	9.0	7.8	10.5
Frontier	888	82	8.8	6.8	11.3
BMI CATEGORY					
<25, normal weight	2,570	192	8.0	6.7	9.5
25 - < 30, overweight	2,263	200	8.6	7.3	10.2
>= 30, obese	1,312	196	12.7	10.9	14.9

Source: NM BRFSS 2004

Table 4. Percent of Adults Reporting Current Asthma by Asthma Control Indicators, New Mexico, 2002-2003

2002-2003 NM BRFS			
Asthma Control Indicator	Demographics	Percent	95% CI
Asthma Attack	TOTAL	54.6	(50.1-59.0)
	GENDER		
	Male	46.4	(39.0-53.9)
	Female	59.0	(53.4-64.4)
	RACE/ETHNICITY		
	White, non-Hispanic	54.7	(48.9-60.3)
Hispanic	50.9	(42.7-59.1)	
Emergency Room/Urgent Care Visit	TOTAL	15.5	(12.4-19.3)
	GENDER		
	Male	12.9	(8.8-18.7)
	Female	16.9	(12.9-21.9)
	RACE/ETHNICITY		
	White, non-Hispanic	11.9	(8.2-16.9)
Hispanic	21.0	(15.3-28.1)	
Unscheduled Visit to Doctor	TOTAL	25.8	(22.1-29.8)
	GENDER		
	Male	23.1	(17.6-29.6)
	Female	27.2	(22.5-32.5)
	RACE/ETHNICITY		
	White, non-Hispanic	23.6	(19.2-28.8)
Hispanic	27.0	(20.5-34.8)	
Activity Limitation	TOTAL	33.1	(28.9-37.6)
	GENDER		
	Male	26.5	(20.4-33.7)
	Female	36.6	(31.3-42.4)
	RACE/ETHNICITY		
	White, non-Hispanic	33.8	(28.4-39.7)
Hispanic	27.8	(21.2-35.5)	
Asthma Symptoms	TOTAL	67.1	(62.6-71.3)
	GENDER		
	Male	59.8	(52.2-67.0)
	Female	71.0	(65.3-76.1)
	RACE/ETHNICITY		
	White, non-Hispanic	69.76	(63.9-74.9)
Hispanic	64.20	(55.9-71.7)	
Disturbed Sleep	TOTAL	41.8	(36.6-47.3)
	GENDER		
	Male	41.0	(32.0-50.7)
	Female	42.2	(35.9-48.8)
	RACE/ETHNICITY		
	White, non-Hispanic	38.3	(31.8-45.3)
Hispanic	43.4	(33.8-53.4)	

Appendix B: Elementary School Survey

ASTHMA SURVEY OF ELEMENTARY SCHOOLS IN NEW MEXICO

School Nurses: It is critical that you fill in or check every item. If you need to request information from other school officials, please do. If you have questions about the survey, call Glenda Hubbard at (505) 476-3577. **Thank you** in advance for your time and efforts.

School Name _____ District _____

Number of students in K through 5 _____ Grades in the school _____

Is your school public or private? (Check one) Public Private

Number of K-5 students diagnosed with asthma _____ (*K-5 grade students only please)

Number of K-5 students for whom you have an inhaler or nebulizer in your office _____

In general, your information is based on which of these sources(s) of information. (Check as many as apply.)

- | | |
|---|--|
| <input type="checkbox"/> Emergency information | <input type="checkbox"/> Medication orders |
| <input type="checkbox"/> Parent Report | <input type="checkbox"/> Other (specify) _____ |
| <input type="checkbox"/> Cumulative health record | |

4. Does your school district allow students to carry prescription medications and self administer while on school property or engaged in school activities on other property? Yes No

In questions 5, 6, and 7 check the *single* best answer about your school building.

5. Location of school:

- | | |
|---------------------------------------|--|
| <input type="checkbox"/> Level ground | <input type="checkbox"/> Into side of hill |
| <input type="checkbox"/> Top of Hill | <input type="checkbox"/> Below a hill |

School Structure:

- | | |
|---------------------------------------|-------------------------------|
| <input type="checkbox"/> Pitched roof | <input type="checkbox"/> Both |
| <input type="checkbox"/> Flat roof | |

7. History of roof leaks in past 12 months: Never Once More than once

8. Are you aware of water leaks in the past 12 months, other than from the roof, such as from pipes, floors, walls, faulty air conditioners or radiators? Yes No

What do you feel are the major sources of outdoor air pollution that affect the air quality in the vicinity of the school? **Check as many as apply to your school**

- | | |
|--|--|
| <input type="checkbox"/> Motor vehicles | <input type="checkbox"/> Wind blown dust (e.g., vacant fields) |
| <input type="checkbox"/> Power Plants | <input type="checkbox"/> Wood burning stoves/fireplaces |
| <input type="checkbox"/> Oil and gas fields/refineries | <input type="checkbox"/> Construction activity |
| <input type="checkbox"/> Other industries | <input type="checkbox"/> Outdoor burning |
| <input type="checkbox"/> Agricultural operations | <input type="checkbox"/> Other (specify) _____ |

Do school buses idle adjacent to the school buildings for more than 3 minutes?

- Yes No Not sure

Please see other side for the continuation of this survey.

Appendices

11. Is there carpeting anywhere in your school that cannot be moved?

Yes No

If yes, check all categories that apply to your school:

- | | |
|--|--|
| <input type="checkbox"/> All classrooms | <input type="checkbox"/> Library or media center |
| <input type="checkbox"/> Some classrooms | <input type="checkbox"/> Auditorium |
| <input type="checkbox"/> No classrooms | <input type="checkbox"/> Administrative space |

12. Does your school have a rodent problem? Yes No Not sure

13. Does your school have a cockroach problem? Yes No Not sure

Use of Pesticides:

Does your school use pesticides (either insecticides or herbicides) on its playing fields?

Yes No Not sure

Have pesticides been used inside your school during the past two years?

Yes No Not sure

Are pesticides used inside your building on a regular schedule?

Yes No Not sure

15. Has your school been renovated or had new construction in the past 2 years?

Yes No Not sure

If yes, have the children been in school during the renovations or new construction?

Yes No Not sure

Has your school implemented the Environmental Protection Agency (EPA) "Tools for Schools" or a comparable program?

Yes No Not sure

If no, Would your school be interested in implementing the EPA "Tools for Schools" program?

Yes No

Does your school have a policy on:

Warm-blooded animals in school? Yes No Not sure

Use of fragrances, perfumes and air fresheners in school? Yes No Not sure

Is there anything else that could affect asthma in your school that you think we should know?

19. How long did it take you to complete this survey?

Please mail this form in the envelope provided by April 23, 2004

APPENDIX C

Number and Rate of Asthma Hospital Discharges by Age Group and Resident County, New Mexico, 1999-2003 Average												
Resident County	0 to 4 Years		5 to 14 Years		15 to 34 Years		35 to 64 Years		65+ Years		All Ages	
	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate
New Mexico	381.4	28.9	393.6	13.9	229.6	4.5	509.6	7.3	269.4	12.4	1,783.6	9.6
Bernalillo	67.8	17.2	70.6	9.0	65.0	4.0	141.4	6.4	65.6	10.0	410.4	7.3
Catron	0.0	0.0	0.0	0.0	0.0	0.0	1.0	5.9	0.8	11.1	1.8	3.7
Chaves	17.0	38.9	19.2	19.8	7.4	4.5	19.2	8.8	13.6	15.2	76.4	12.1
Cibola	6.0	28.8	4.2	9.6	3.0	4.3	6.6	6.9	4.6	16.0	24.4	9.2
Colfax	0.8	10.5	2.8	14.2	3.4	10.7	10.4	17.5	8.4	35.1	25.8	16.9
Curry	44.6	112.9	46.2	62.1	18.6	13.6	23.0	15.5	7.6	14.7	140.0	28.4
De Baca	0.6	57.2	0.4	14.2	0.2	4.3	0.6	7.5	0.2	3.6	2.0	10.6
Doña Ana	17.8	13.1	29.0	10.0	18.8	3.4	33.4	5.6	20.4	10.6	119.4	6.8
Eddy	20.2	55.5	14.8	18.2	8.6	6.7	22.4	11.5	11.8	15.8	77.6	14.7
Grant	2.6	12.7	5.6	12.9	4.6	6.3	12.6	10.6	6.2	11.8	31.6	10.0
Guadalupe	0.6	24.5	0.4	7.2	0.6	5.1	1.4	7.3	0.4	6.2	3.4	7.7
Harding	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hidalgo	1.0	23.7	0.2	2.0	0.4	3.0	3.2	15.3	2.2	24.8	7.0	11.8
Lea	58.4	139.0	76.6	85.9	18.2	11.4	28.6	14.5	12.4	18.4	194.2	33.1
Lincoln	0.8	8.2	2.0	8.0	1.0	2.6	3.2	3.8	3.2	8.4	10.2	4.9
Los Alamos	2.8	26.9	1.2	4.5	0.4	1.1	3.6	4.1	1.4	6.3	9.4	5.2
Luna	4.0	21.2	6.4	15.3	4.0	6.7	12.0	14.2	8.8	19.1	35.2	13.4
McKinley	9.6	14.0	3.0	1.9	2.2	1.0	9.2	3.7	9.0	17.1	33.0	5.1
Mora	0.6	20.4	0.8	11.0	0.6	4.6	1.0	4.7	0.4	5.1	3.4	6.7
Otero	12.6	27.4	10.0	9.8	5.2	3.0	11.8	5.2	9.0	11.8	48.6	7.7
Quay	2.0	36.8	1.6	11.8	2.2	10.3	5.4	13.5	1.2	6.2	12.4	13.0
Rio Arriba	9.4	31.6	6.2	9.6	2.4	2.2	19.8	12.2	5.0	10.9	42.8	10.3
Roosevelt	12.4	88.6	9.6	34.6	4.2	6.9	7.4	12.9	2.4	11.0	36.0	19.4
Sandoval	10.4	15.2	16.4	10.6	8.0	3.3	21.2	5.7	14.2	14.0	70.0	7.5
San Juan	41.8	43.7	21.8	10.5	14.4	4.2	25.8	6.2	12.4	11.6	116.2	9.6
San Miguel	1.8	9.7	4.2	9.3	3.2	3.9	9.8	8.3	10.6	29.5	29.6	10.0
Santa Fe	15.2	18.9	15.8	9.1	14.6	4.4	30.2	5.2	17.0	11.6	92.8	7.3
Sierra	1.2	21.7	0.6	3.9	0.2	0.9	4.4	8.6	3.6	9.7	10.0	6.8
Socorro	1.8	14.4	4.0	14.2	1.2	2.2	6.4	9.7	1.4	7.0	14.8	8.3
Taos	4.0	23.6	3.6	8.8	4.4	6.1	13.6	9.9	5.0	12.6	30.6	10.0
Torrance	3.0	26.3	2.4	8.1	2.4	5.6	2.8	4.0	2.4	13.8	13.0	7.8
Union	0.4	23.0	0.8	13.4	0.4	4.3	0.4	2.6	1.6	21.1	3.6	8.4
Valencia	10.6	21.6	13.2	11.7	9.8	5.5	17.8	6.9	6.6	9.3	58.0	8.5

Appendix D: Map of the Department of Health Public Health Regions

DOH PUBLIC HEALTH REGIONS

