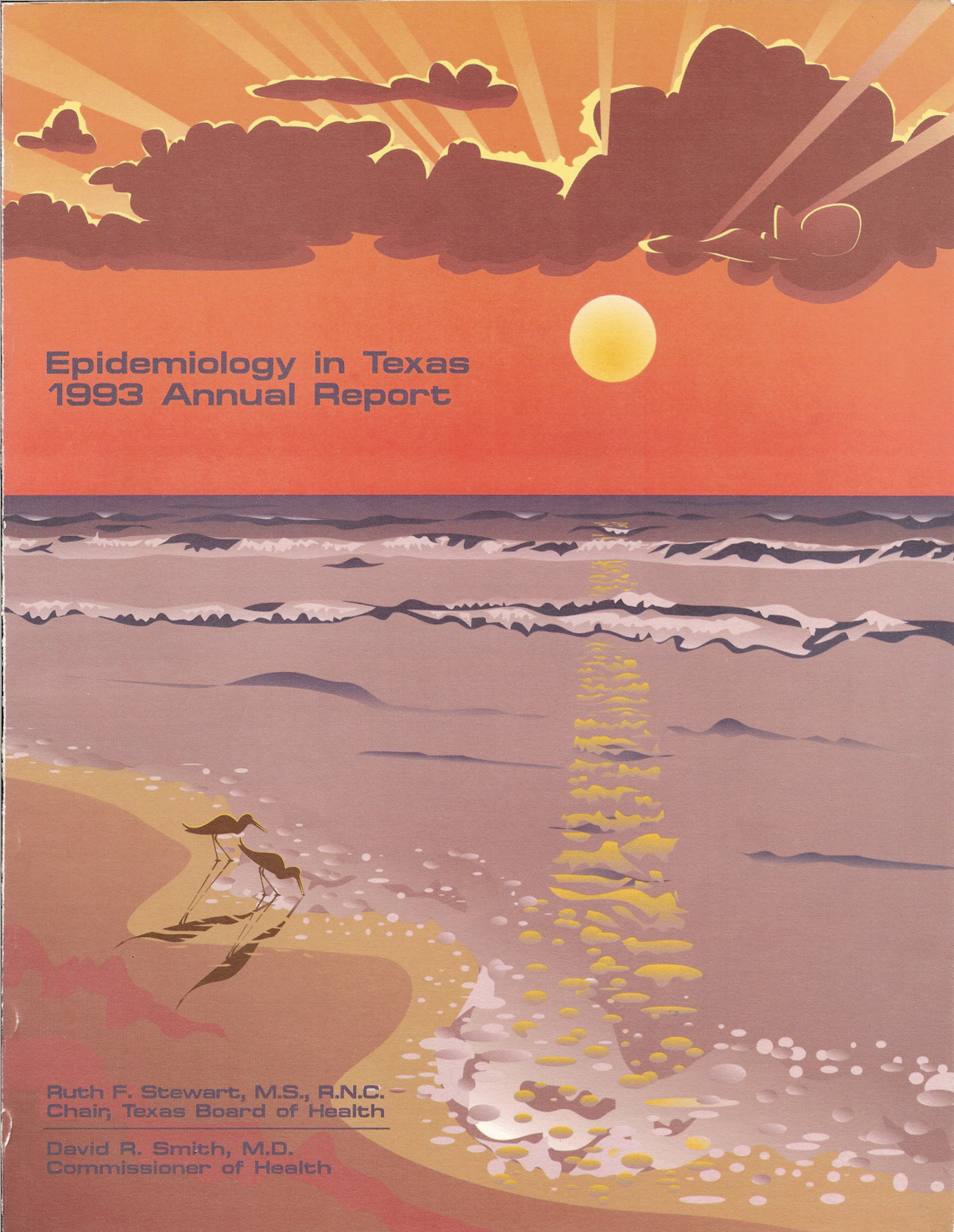

Epidemiology in Texas
1993 Annual Report

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Epidemiology in Texas
1993 Annual Report

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In the past, the responsibility for producing the *Epidemiology in Texas Annual Report* has fallen primarily on one person who usually had to suspend all other work activities for several months. Under the direction of a guidance team consisting of program and division directors, bureau chiefs, and the Associate Commissioner of Disease Control and Prevention - the **1993** Annual Report was produced by a project team of representatives from each contributing program.

This method of production has enabled the staff working on the project to continue their regular work responsibilities while producing the report, spread the responsibility and ownership of the project among several individuals, trained these individuals in the steps necessary to produce a major publication, and enabled the *1993 Annual Report* to be developed quickly while retaining its quality.

Along with the authors and other contributors to the *Epidemiology in Texas: 1993 Annual Report, I* would like to recognize the following project team members for their excellent **work:**

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Contents

Foreword

The mission of any state health agency is to promote and protect the health of the people of the state. In its report, The Future of Public Health, the National Academy of Sciences suggests that the substance of public health "rests on the scientific core of epidemiology." Identifying the patterns of diseases, harmful exposures, and injuries is a central function of public health epidemiology. These patterns often change rapidly and require constant vigilance.

Developing appropriate and aggressive methods to control human illness and injury is a difficult task that begins with understanding the causes. Combining the methods and concepts of epidemiology, toxicology, microbiology, human behavior, and physics allows robust investigations into the causes of a wide variety of health concerns. This report describes trends and selected investigations of human health concerns conducted by the Texas Department of Health in 1993.

As described in an Institute of Medicine report, Emerging Infections: Microbial Threats to Health in the United States, newly discovered infectious agents have joined ranks with old public health foes to challenge the nation's public health response. In 1993, this trend was evident in Texas as well. The newly discovered hantavirus pulmonary syndrome was identified in Texas, as were human illnesses caused by infection with E. coli 0157: H7. Animal rabies continues to spread, and a case of human rabies was identified in 1993. Surveillance trends for 1993 document the continued decline in illness caused by *Haemophilus influenzae* type b, a dramatic reduction in measles cases, and a slight decrease in new tuberculosis infections. Infection with the human immunodeficiency virus continues to have a devastating effect on public health.

The scope of epidemiologic activities beyond infectious diseases expanded in Texas in 1993. Surveillance and special studies of near drownings, traumatic spinal cord injuries and brain injuries, and firearm-related injuries helped define the scope and magnitude of injury as a leading cause of death and premature disability in Texas. Investigations of anencephaly expanded to include the entire state and a special focus on Hispanic origin, public hospitals, border counties, and urban prevalence. Human health concerns related to exposures to toxic substances in the workplace and environment continue to require solid scientific inquiry. An evaluation of adolescent exposure to an important public health problem, cigarettes, indicates that more work is needed to reduce access through vending machines.

The Texas Department of Health will continue to study the infectious diseases, harmful exposures in the workplace and environment, and injuries which threaten the health of the citizens of Texas. With the united efforts of private and public health providers; local, state, and federal agencies; and, of course, the people of Texas - the goal of healthy Texans in the year 2000 can be attained.

Preface

Disease Surveillance

Public health agencies use surveillance to target interventions; to set program priorities; and to plan, implement, and evaluate their programs. Epidemiologic surveillance includes systematic collection, analysis, interpretation, and dissemination of a variety of health data including demographic, environmental, laboratory, morbidity, and mortality data. Surveillance also includes obtaining and evaluating information on animal reservoirs and vectors, investigating epidemics and individual cases of diseases and/or conditions, and conducting special studies and surveys.

Disease surveillance in Texas has relied on a reporting system whereby physicians notify their local health authorities of infectious and other reportable diseases and conditions. These reports are forwarded to the Texas Department of Health. Surveillance data must be current and complete if actual occurrence and distribution of disease are to be understood. During 1993 several programs were responsible for coordinating the surveillance of infectious disease, chronic disease, occupational disease, injury, and environmentally related conditions in Texas. These programs included the Infectious Disease Epidemiology and Surveillance Division, the Zoonosis Control Division, the Noncommunicable Disease Epidemiology and Toxicology Division, the Injury Control Program, the Tuberculosis Elimination Division, the Immunization Division, the Bureau of HIV and STD Prevention, and the Bureau of Chronic Disease.

The Reporting System

The *Rules & Regulationsfor the Control of Communicable and Sexually Transmitted Diseases & Reporting of Occupational Diseases (TDH Stock No. 6-101)* require that all disease reports (with a few exceptions) include the patient's name, age, sex, race, ethnicity, city of residence, physician's name, date of onset, occurrence, and method of diagnosis. The exceptions are as follows. Influenza and flu-like illnesses are reported by number of cases. Chickenpox is reported by number of cases by age group. Each HIV infection in a person older than **13** is reported by a unique number made up of that individual's, sex, race, ethnicity, and county and zip code of residence. For specific diseases, additional epidemiologic data may be requested, and in outbreak situations, it may be necessary to identify susceptible individuals and to recommend specific control measures. Morbidity data on reportable diseases and conditions also are obtained through other means such as laboratory reports, completed case investigation forms, and death certificates that have been filed with the TDH Bureau of Vital Statistics. Statistical summaries of these data are published bimonthly in Disease Prevention News, a newsletter distributed statewide to health officials and other interested persons.

A current list of reportable conditions is included in the appendix. The appendix also includes phone numbers where professional staff, including epidemiologists, may be reached for consults. The phone numbers of the divisions are included with the reportable conditions list in the appendix. Reporting forms may be obtained by calling the various divisions to which reports are made.

Explanatory Notes

This report contains data for the 1993 reporting period, which extended from January 1, 1993 through December 31, 1993. Patients either had onset of disease during the 1993 calendar year or their cases were first reported in 1993. If the individual became ill or was hospitalized, diagnosed, or exposed in another location, the county of residence was counted for case morbidity. Individuals who resided outside Texas but who became ill and were hospitalized or diagnosed in Texas were not included in Texas morbidity or this report, with the exception of cases identified by the Hazardous Substances Emergency Events Surveillance program. Nonresident cases were referred through an interstate reciprocal notification system to the appropriate State Epidemiologist in the state where the individuals resided.

All incidence rates in this report are expressed as the number of reported cases of a disease per 100,000 population unless otherwise specified. Limitations inherent in population projections, as well as underreporting, affect rate comparisons for different population groups or time periods. Rates based on small frequencies should be interpreted with caution since sampling errors may be large. State and county population data used in computing incidence rates were provided by the TDH Bureau of State Health Data and Policy Analysis (BSHDPA). Case fatality rates (CFR) describe the number of persons who died from a specific disease or cause compared to the total number of reported cases of that particular disease or condition.

The Associateship of Disease Control and Prevention has adopted the race/ethnicity definitions provided by the U.S. Department of Commerce and published in the Centers for Disease Control and Prevention's Manual of Procedures for National Morbidity & Public Health Activities. The category which most closely reflects an individual's recognition in his or her community is used for purposes of reporting persons who are of mixed racial and/ or ethnic origins.

White: Persons having origins in any of the original people of Europe, North Africa, or the Middle East.

Hispanic: Persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin regardless of race.

African-American: Persons having origins in any of the black racial groups of Africa. (CDC uses the term "black.")

Asian or Pacific Islander: Persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands (including China, Japan, India, Korea, the Phillipines, and Samoa).

American Indian or Alaskan Native: Persons having origins in any of the original peoples of North America and who maintain cultural identification through tribal affiliation or community recognition.

Reports

Brucellosis

Thirty-four cases of human brucellosis with onset during 1993 were reported from Texas, up 25% from the 27 cases reported the previous year. Hispanics (97%) made up the overwhelming majority of cases; males outnumbered females 21 (62%) to 13. One infection occurred in a 30-year-old non-Hispanic white male.

Human brucellosis in Texas has evolved from an occupationally-associated disease of adult males to a foodborne illness, affecting both. sexes and all ages; it is confined almost exclusively to the Hispanic population. The principal source of exposure is consumption of contaminated dairy products (usually cheese) made in Mexico from unpasteurized goat milk. Proper pasteurization eliminates *Brucella* species from milk.

Compared with occupationally-acquired brucellosis, foodborne brucellosis has the potential to affect the young and the elderly disproportionately. Nine (26%) cases occurred among persons less than 15 years of age, the youngest of whom was four; four (12%) were in persons older than 65 years, the eldest of whom was 76. All of these individuals were Hispanic, and four (31%) were female.

Laboratory confirmation through *Brucella* sp. cultures was made for 27 (79%) cases. Seven were confirmed serologically. All 27 positive cultures were *Brucella melifensis,* the species associated with dairy products made from unpasteurized goat milk. Consumption of Mexican dairy products (almost exclusively goat cheese and milk consumed in both Mexico and Texas) was reported by 28 patients. The single non-Hispanic patient was one of two who reported "possibly/probably" consuming dairy products in Mexico. In four Hispanic patients, no obvious exposure history was available. However, two of these individuals had culture-confirmed *B. melifensis* infections, and one other (confirmed serologically) reported regular travel to Mexico.

Exposure to contaminated food items increases the potential for clusters of infections among family members. In 1993, 18 (53%) patients comprised six different clusters that included a husband and wife in Travis County; a husband, wife, niece and nephew in Cameron County; a brother, sister and cousin in Hidalgo County; and three groups in Dallas County consisting of a brother and sister, three brothers, and four males. All of these individuals were Hispanic and *B. melifensis* was isolated from at least one member of each group.

The infected couple from Travis County had onset of illness in March, but only the husband was diagnosed with brucellosis. The wife continued to have recurring episodes of "flu-like" symptoms until being diagnosed with brucellosis in March 1994. The Cameron County cluster included a fifth individual who was diagnosed and treated in Mexico. All three members of the Hidalgo County cluster were children aged 6, 8, and 8 years. The brother and sister residing in Dallas County reported additional family members ill in Mexico, while the three brothers (aged 4, 5, and 6 years) had a grandmother in Mexico who had made the cheese that may have been the source of their infections. The four males (ranging in age from 11 to 31 years) had eaten goat cheese brought to Dallas from Mexico.

Recognition of a single case of human brucellosis, especially involving patients of Hispanic heritage with a history of consuming dairy products of Mexican origin, should prompt suspicion and questions regarding the possibility of similar illness in others, especially family members.

Infectious Disease Epidemiology and Surveillance Division (512) 458-7328, 458-7676

Cancer Cluster Investigations

Introduction

On a weekly, sometimes even daily basis, the Texas Department of Health receives calls from individual citizens, physicians, environmental groups, and other state agencies - all with concerns about cancer. How much cancer is there in this area? Is there too much cancer in my neighborhood? Is industry X responsible for the cancer in my community? What causes the cancer? What can we do about it?

Many of the concerns and questions can be addressed simply by providing accurate information about cancer and attempting to correct misconceptions. Two of the leading misconceptions about cancer are that cancer is a rare disease and that everything (particularly environmental contamination or pollution) causes cancer.

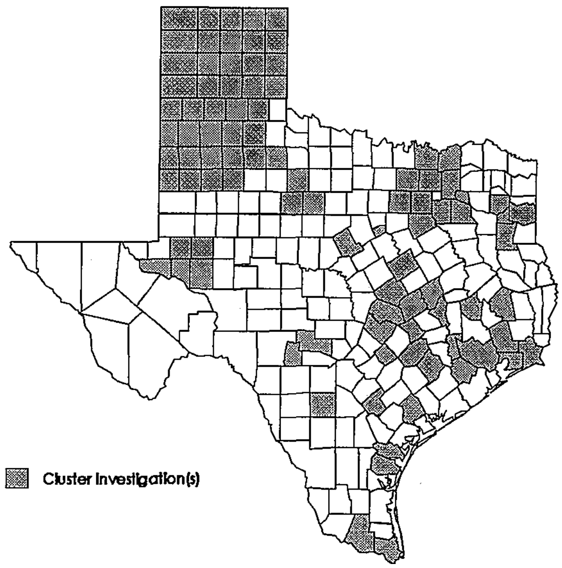
Cancer is, in fact, a very common disease, with one out of three people diagnosed with some type of cancer during their lifetimes. Cancer is also the second leading cause of death in Texas, with nearly 31,008 Texas residents dying of cancer in 1993. Although many risk factors have been identified for specific cancers, the causes of many cancers are still unknown. However, Doll and Peto, two leading epidemiologists in the field of cancer research, have estimated that 30% and 35% of all cancers may be due to tobacco use and diet, respectively. They have estimated that only 4-6% of all cancers may be due to pollution and/or occupational exposures.

Although many of the calls and questions can be answered through educational efforts, a substantial number of the inquiries result in a formal investigation to

- examine the occurrence of cancer (incidence or mortality) in a defined geographic area
- determine if there is an excess of cancer for that area

In 1993 the Health Studies Program in the Bureau of Epidemiology and the Cancer Registry Division conducted 55 cancer cluster investigations that addressed concerns of people living throughout the state (see Figure 1).

Figure 1. Cancer Cluster Investigations by County of Reported Cluster, 1993



Investigation Protocol

The protocol for the investigation of a reported excess of cancer employs a three-tier methodology. Tier 1 involves gathering from the person/ agency making the inquiry pertinent information that includes

- location of the alleged cluster
- cancer(s) of concern
- number of cases
- time period of concern
- environmental concerns

Information regarding general cancer facts and known risk factors for specific cancers are provided to the person or group making the inquiry. In many instances, the investigation is concluded at this point. If not, the investigation proceeds to Tier 2.

Tier 2 involves the analysis of cancer incidence or mortality data for the geographic area of concern. The Cancer Registry Division is the repository of cancer incidence and mortality data for the state. The data are analyzed at either the city or county level and are compared with state or national rates. If the number of cancer deaths or cases is not statistically elevated, the investigation is concluded, and a report of the findings is forwarded to the person/agency that initiated the inquiry. If the number of cases is statistically elevated, further study may be warranted. The majority of the investigations, however, are concluded in Tier 2.

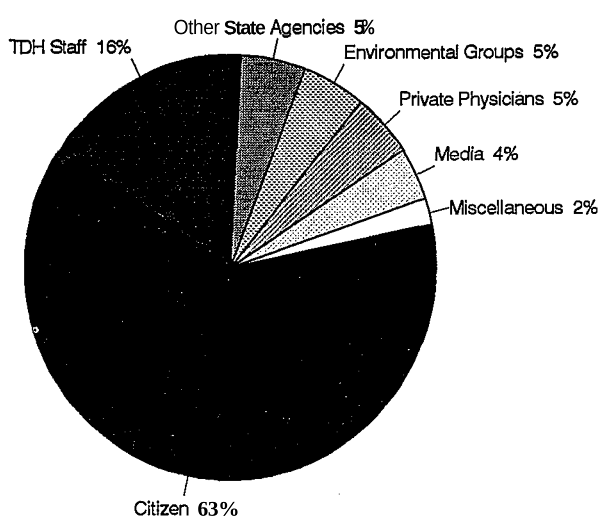
Additional studies conducted in Tier 3 may involve a variety of methodologies including

- review of death certificates or hospital records to gain additional information on specific cases
- administration of a questionnaire to individuals diagnosed with cancer to determine possible risk factors
- formal epidemiologic study of a specific population or community

Investigations

Fifty-five investigations were conducted in 1993 by the Cancer Registry Division and the Health Studies Program, Bureau of Epidemiology. The majority of the investigations (62%) were initiated by individual citizens. Sixteen percent of the investigations originated with inquiries from staff within TDH for internal projects or as parts of other investigations. Environmental groups, physicians, other state agencies, and the media accounted for the remainder of the investigations (see Figure 2). Of the investigations initiated by individual citizens, the majority (59%) were initiated by women and the remainder (41%) by men.

Figure 2. Origin of Initial Cluster Inquiry 1993



Cancer cluster investigations may cover any type of geographic division or area. Investigations typically involve the analysis of data for a single county or city, but may involve multiple counties or entire public health regions. Of the 55 investigations conducted in 1993, 28 (51%) were conducted at the city level; 24 (44%) at the county level, with three investigations involving multiple counties; and three (5%) were conducted at both the city and county level.

Two types of data are available for analysis in cancer cluster investigations: mortality data and incidence data. Mortality data were used in the vast majority (78%) of investigations in 1993 because mortality data are complete for the entire state. While many hospitals across the state are in compliance with state law that requires them to report new cases of cancer, many are not complete in their reporting of cases. For several regions of the state, cancer incidence data are not complete and cannot be used in the investigation of reported clusters.

The five leading causes of cancer mortality in Texas are lung cancer, breast cancer, prostate cancer, colon cancer, and pancreatic cancer. The five leading cancers of concern in the investigations conducted in 1993 were almost identical to the leading causes of cancer mortality statewide, with the exception of pancreatic cancer. The five cancers most often listed as cancers of concern in the cancer cluster inquiries were breast cancer, prostate cancer, colon cancer, leukemia, and lung cancer. Pancreatic cancer ranked eighth out of 24 specific cancer types examined in the 55 investigations conducted in 1993. Table 1 lists the top ten cancer sites of concern in the 1993 investigations.

For the majority of the 55 cancer cluster investigations conducted in 1993, multiple cancer sites were evaluated for both males and females. Overall, approximately 520 separate analyses were conducted for specific cancer site and gender combinations. Of the 520 analyses, only seven percent showed a statistically elevated excess number of cancers. Elevated cancer rates were detected more often in males than females. Lung cancer was the type of cancer most often reported at significantly elevated levels for both males and females followed by prostate and breast cancer.

For each of the investigations in which a significant elevation of either cancer incidence or mortality was found, further study was conducted. In many cases, the detailed review of individual case data revealed the presence of known risk factors for the cancer site of concern (e.g., smoking and lung cancer). For selected investigations, however, special surveillance projects were initiated.

Table 1. Top 10 Cancer Sites by Number of Investigations: Texas, 1993

Cancer Site	Number of Investigations	Cancer Site	Number of Investigations
Breast	32	Brain	17
Prostate	30	Stomach	16
Colon	28	Pancreas	16
Leukemia	26	Bladder	15
Lung	23	Non-Hodgkin's	12

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Cholera

Vibrio cholerae is the etiologic agent of cholera, a potentially severe diarrheal disease of humans. Two cases of V. *cholerae* O1 infection were reported to TDH in 1993. Customarily, epidemic cholera is associated with toxigenic V. *cholerae* that possess the somatic antigen group O1. Using physiologic properties, the bacterium may be classified as either of two biotypes, El Tor or Classical, and as one of two serotypes, Inaba or Ogawa. Nontoxigenic V. *cholerae* O1 and *V. chobrae* non-O1 also can cause diarrheal illness.

The two cases occurred in July. The first patient, a 35-year-old Hispanic shrimper, was a resident of Cameron County. He was hospitalized with diarrhea, weakness, and leg and stomach cramps. His stool culture was positive for nontoxigenic V. *cholerae* O1 serotype Ogawa biotype El Tor. He had a travel history to Matamoros, Mexico, three days prior to onset of illness. No source for his infection was found.

The second patient was a two-year-old Hispanic boy - a resident of Harris County who had just returned from Monterrey, Mexico. He was hospitalized in Houston the day after his return with diarrhea, nausea, and vomiting. His stool culture was positive for V. *cholerae* O1; serotyping and biotyping was not done. Except for his travel history to Mexico, no other likely source of infection was found.

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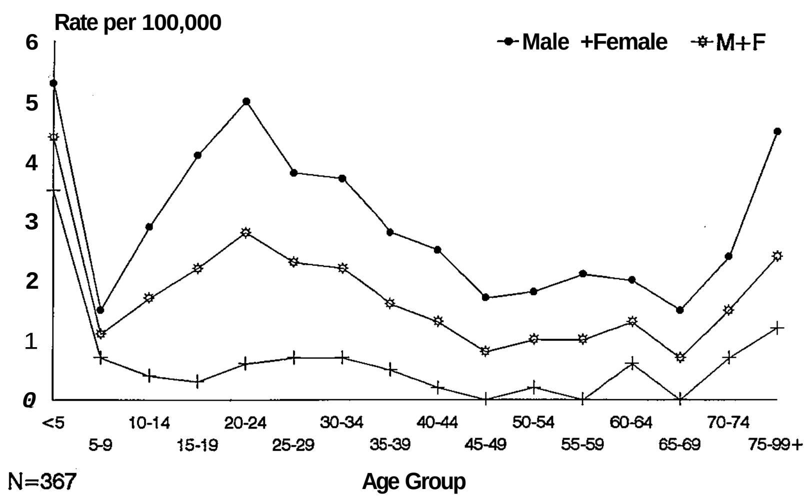
Drowning Mortality -- With Estimates of Near-Drowning

Drowning is classified into two major categories. The larger group, numbering 367 deaths in 1993, includes drownings not related to boats. These include drownings in bathtubs, swimming pools, and natural bodies of water. The smaller group, accounting for 46 deaths in 1993, involves boats. The following focuses only on the 367 residents that drowned in non-boating incidents.

Drowning is the sixth leading cause of unintentional injury death among Texans of all ages. Among those aged five through 44, drowning is the fifth leading cause of unintentional injury death; and among children less than five years of age, drowning is the second leading cause of unintentional injury death.

Figure 1 illustrates that males are much more likely to drown, at every age, than females. The highest drowning rates are among children less than five years of age.

Figure 1. Drownings (Non-Boating): Texas, 1993



The Texas counties with the most resident drownings in 1993 were Harris (57), Dallas (29), Bexar (28), Cameron (20), Tarrant (18), Travis (14), Fort Bend (11), and Hidalgo (11).

In addition to the devastation caused by drownings, many more individuals suffer extreme, permanent cognitive and/or motor disability resulting from a near-drowning incident. (Near-drowning is defined as survival for at least 24 hours following asphyxiation due to submersion in water). Families and friends share the tremendous, life-long emotional and financial burden of near-drownings. The health care system also shares the heavy financial burden. It is estimated that for every ten persons who drown, approximately 40-80 others survive a near-drowning. Among children, this relationship is more profound. For every ten children who drown, 176 others survive a near-drowning (for each child who drowns 36 are admitted to hospitals and 140 are treated in emergency rooms).

As of 1993, data on near-drownings in Texas are not collected on a state-wide basis. However, based on the number of Texans who drowned, it can be estimated that from 1,468 to 2,936 others survived a near-drowning incident in 1993.

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Escherichia coli O157:H7 Outbreak Investigation

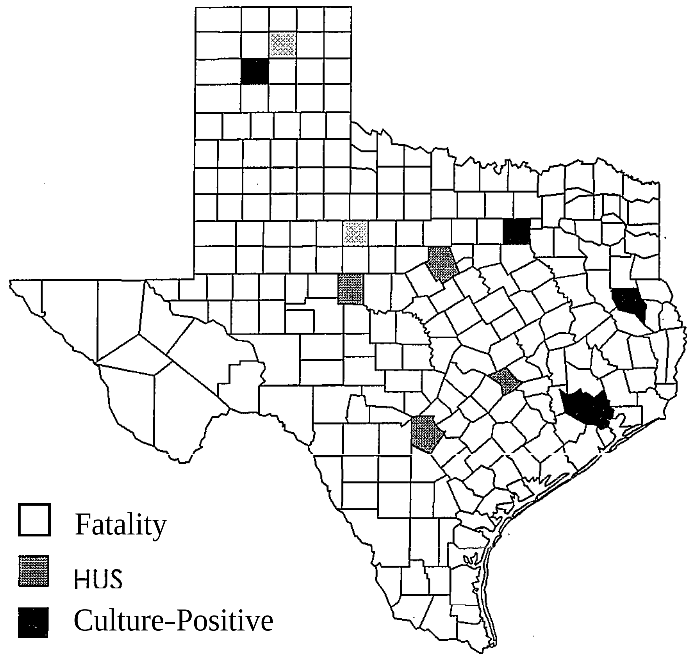
E. coli O157:H7 infection officially became a notifiable condition in Texas in February 1994. However, during October 1993, an alert infectious disease physician in a Fort Worth hospital recognized an unusual cluster of three cases of hemolytic uremic syndrome (HUS) in the pediatric intensive care unit during a two-week period. He reported this cluster to Texas Department of Health (TDH) regional personnel. Each of the patients was three years old; two were females, and one was male. Two had culture-confirmed *E. coli* O157:H7 infections. There was one fatality.

To determine whether this was a common source outbreak and to search for related cases, TDH issued a notice requesting immediate reports of all culture-confirmed cases of *E. coli* O157:H7 infections and all cases of HUS. As a result of this request, ten cases of either culture-confirmed *E. coli* O157:H7 infections or HUS were detected statewide (Figure 1). Of these ten cases, seven were due to HUS (two of which resulted in death). Test results for seven cases were culture-positive for E. *coli* O157:H7. Ages ranged from 21 months to 71 years. Six of the patients were female, four were male.

The TDH Infectious Disease Epidemiology and Surveillance Division initiated an epidemiologic investigation of all ten patients. The patients' families were interviewed to collect the following information:

- onset dates
- concurrent diarrheal illnesses within the family
- involvement with day care centers (either as an employee or an attendee)
- consumption of milk, ground beef, and fresh vegetables
- food sources
- exposure to livestock and/or dairy operations

Figure 1. E. coli 0 157:H7 Cases by County, October 1993



When available, ground meat samples were collected from the home and cultured for E. *coli* O157:H7. All samples were negative.

Most of the patients had multiple risk factors. Each had a history of eating ground beef in the seven-day period prior to onset of symptoms. Three patients either resided on or adjacent to a dairy or feedlot operation. Two drank water from a well on or adjacent to the cattle operation. One had direct exposure to calves from the dairy operation. Five of the families either had a home garden (two fertilized with manure) or ate vegetables from a home garden. Three of the patients attended three different day-care centers.

Genetic mapping of the bacterial isolates by pulsed field gel electrophoresis (PFGE) identified four separate serotypes. The isolates from the patients residing in Dallas and Potter Counties and in Erath and Harris Counties genetically matched.

TDH representatives visited the three day care centers. Fecal specimens were obtained from **all** attendees who met any of the following criteria:

- were assigned to the same room as an index case patient
- had diarrhea on the day the cultures were taken
- were in diapers

One asymptomatic case was identified in the first day care center; two others were identified in the second. No cases were identified in the third day **care** center. In each situation, PFGE performed on the positive cultures identified the same serotype as the matching index case.

Infectious Disease Epidemiology and Surveillance Division (512) 458-7328, 458-7676

Firearm-Related Injury Surveillance

In Texas, firearms continue to surpass motor vehicles as the leading cause of injury death. In 1992, there were 3,447 firearm-related deaths compared with 3,147 motor vehicle-related fatalities. Firearm-related injuries are the leading cause of mortality for Texans aged 1 to 44 years (69% of the state population). In 1991, 36% of all the deaths to Texans aged 15 to 19 years were related to gunfire.

The appalling toll of suffering, injury, and death caused by firearms underlines the need for more research in the area of firearm-related injuries. Greater understanding of the epidemiology of the mortality and morbidity associated with firearms is required to develop effective prevention strategies. Furthermore, interdisciplinary collaboration between public health and criminal justice researchers is needed to further our fundamental understanding of this issue.

The Texas Department of Health (TDH) Injury Control Program led a multidisciplinary effort to collect and analyze population-based epidemiologic data on firearm-related mortality and serious morbidity in one Texas community. Medical and financial information on firearm-related deaths and hospitalizations were collected and linked with police reports to obtain data on the circumstances of the gunfire. This report describes the process and resulting data.

Methods

A retrospective review was conducted of all firearm-related mortality and hospitalizations occurring in Travis County from January 1, 1991 through December 31, 1992. Travis County is located in Central Texas and has a population of 576,407.

Mortality information of Travis County residents was obtained from the TDH Bureau of Vital Statistics and the Travis County Medical Examiner's Office. Death records were included of Texas residents, in whom the underlying cause of death was a firearm-related injury (International Classification of Disease code E922.0-922.9, E955.0-955.4, E965.0-965.4, E970, or E985.0-985.4). Information abstracted from death certificates and medical examiner's files included victim's name, race, sex, age, date of death, county of residence, weapon type, caliber, intentionality, victim-offender relationship, and place of occurrence. In addition, years of potential life lost (YPLL) were calculated for those residents dying from a firearm-related injury. YPLL is a statistic used to measure premature mortality. It represents the sum of years of life lost annually by individuals who die before the age of 65.

Medical record information on all persons hospitalized for treatment of firearm injuries at Brackenridge Hospital in Austin from 1991 through 1992 were reviewed. Individuals treated for firearm-related injuries in the emergency room without being admitted were not studied. Brackenridge Hospital is the regional trauma center in Central Texas. A survey of other city hospitals determined that no other facility besides Brackenridge Hospital admitted patients for firearm-related injuries. Information abstracted from the medical record included patients's name, race, sex, age, date and time of admission, date of discharge, discharge status, county of residency, and anatomic location of the gunshot wounds. Hospital financial charge data (excluding physician fees) and payment source were also collected.

Information on firearm-related deaths and hospitalizations were then linked by victim/patient name with local law enforcement records. Upon linkage, code numbers were assigned and names destroyed. Reports from the Austin Police Department were reviewed to collect information on the circumstances surrounding the gunfire. This included date and time of the shooting, weapon type, victim-offender relationship, place of occurrence, intentionality, and other factors related to the shooting (e.g., robbery, gangs, drive-bys, drug trafficking, arguments).

All data collected were analyzed using Epi Info, Version 6. Population estimates were obtained from the TDH Bureau of State Health Data and Policy Analysis.

Results

Mortality. Death certificate review revealed that during the two year study period, 155 Travis County residents died as a result of firearm-related injuries (13.2 deaths per 100,000 population). In 1991, 76 deaths were associated with firearms; there were 79 such deaths in 1992. On average, six county residents died from gunfire each month. During the two-year study period, firearms accounted for 4,604 years of potential life lost.

Table 1 provides firearm-related mortality rates by age, gender, and race. Males were five times more likely to be killed by gunfire than were females. Those aged 15 to 19 years had the highest firearm-related death rate (25.7 deaths per 100,000 population). African-Americans had 2.2 times higher mortality rates than whites and twice the rate of Hispanics. African-American males, aged 15 to 19 years, had the highest firearm-related death rate of any group (145 deaths per 100,000 population).

Table 1. Firearm-Related Mortality Rates by Age, Gender, and Race: Travis County Residents, 1991-1992

Category	Rate per 100,000 Population
Gender	
Male	22.0
Female	4.4
Age (Years)	
10-14	2.8
15-19	25.7
20-24	15.5
25-29	18.1
30-34	16.6
35-39	12.4
40-44	20.7
45-49	18.1
50-54	18.2
55-59	2.7
60-64	12.2
65-69	13.8
70-74	4.4
75+	19.9
Race/Ethnicity	
African-American	25.7
Hispanic	12.4
White (non-Hispanic)	11.5

Figure 1. Firearm Related Mortality by Intentionality Travis County Residents, 1991-1992

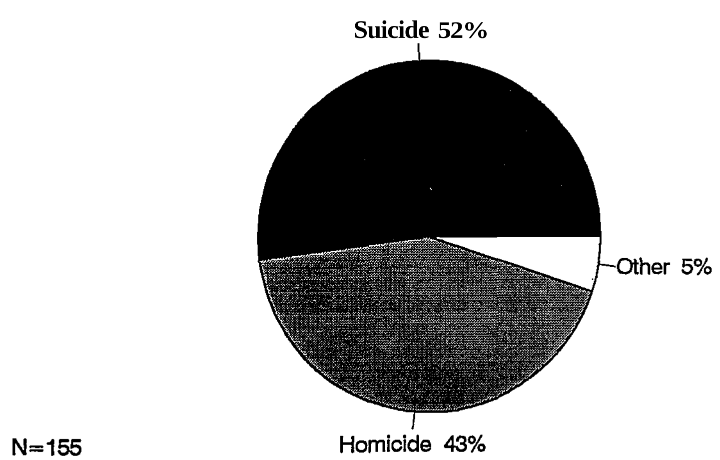


Figure 1 illustrates firearm-related mortality categorized by intent. Of the 155 firearm-related deaths, 81 (52%) were self-inflicted, 66 (43%) were homicides, **and** eight (5%) were other circumstances. The "other" circumstances were seven unintentional deaths and one death by legal intervention.

One hundred thirty-six (88%) of the 155 firearm-related deaths occurred in Travis County. Medical examiner files were found for 130 (96%) of these fatalities.

Medical examiner data were available for 75 (93%) of the 81 firearm-related suicides. Results included:

- 81% (61/75) occurred in the victim's own residence
- 55% (41/75) occurred on Monday, Wednesday, or Thursday
- 77% (49/64) involved handguns (most used calibers: .38, .22, and .357)

Medical examiner data was located for 53 (80%) of the 66 firearm-related homicides.

Results included:

- 52% (23/44) were shot in one concentrated area of East Austin
- 49% (26/53) occurred on Friday through Sunday
- 83% (33/40) involved handguns (most mentioned calibers: .22, .25, and .38)
- 94% (30/32) of the victims reportedly knew their assailants (e.g., acquaintances, spouses/lovers, other family members)

Serious Morbidity (Hospitalizations). Firearm-related injuries resulted in 268 hospitalizations at Brackenridge Hospital during the two year period. In 1991, 129 hospitalizations occurred and in 1992, 139. Of the 268 hospitalizations, 214 (80%) were among Travis County residents and 54 (20%) were residents of other counties. Analyses performed on the data pertaining to Travis County residents follow. Information on non-Travis County residents are not presented.

One hundred and seven Travis County residents were hospitalized for firearm-related injuries each year. Figure 2 illustrates the monthly distribution of firearm-related hospitalizations. November had the fewest admissions (11) and September the most (25). On average, nine residents were admitted each month.

Demographic information for the 214 Travis County residents hospitalized for firearm-related injuries is found in Table 2. One hundred and ten (52%) hospitalizations were among those residents aged 15-24 years.

One out of every eight individuals hospitalized (13%) was less then 17 years of age. One hundred eighty-six (87%) were males. Ninety-nine (46%) of the residents were African-Americans.

Travis County residents had a hospitalization rate of 18 admissions per 100,000 population. Males were 6.7 times more likely to be hospitalized than females. Those aged 15-19 years had the highest admission rates (64.9 per 100,000 population). African-Americans had a 3.4 higher admission rate than Hispanics and 11.5 higher rate than whites. The highest hospitalization rate occurred among African-American males, 15-19 years (472 per 100,000 population).

Figure 3 illustrates the day of the week of admission for the 214 hospitalizations. One hundred and nineteen (56%) were admitted on Friday, Saturday, or Sunday.

Figure 2. Hospitalizations by Month: Travis County Residents, 1991-1992

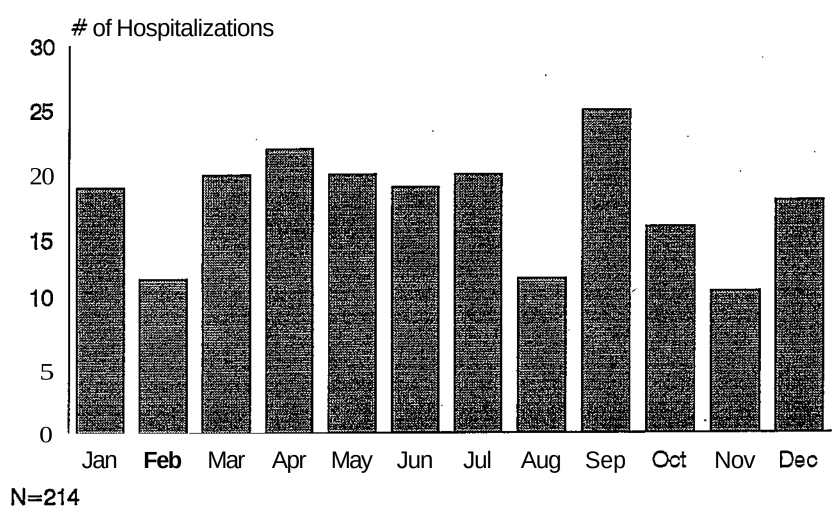


Figure 4 illustrates the length of hospital stay of 214 Travis County residents admitted for firearm-related injuries. Firearm-related injuries accounted for 1,230 hospitalization days. The mean length of hospital stay was six days (range 1-33 days). All of the 14 residents that stayed for less than one day died. Eighty-eight patients (41%) required care in the Intensive Care Unit (ICU). Firearm-related injuries accounted for 255 ICU days.

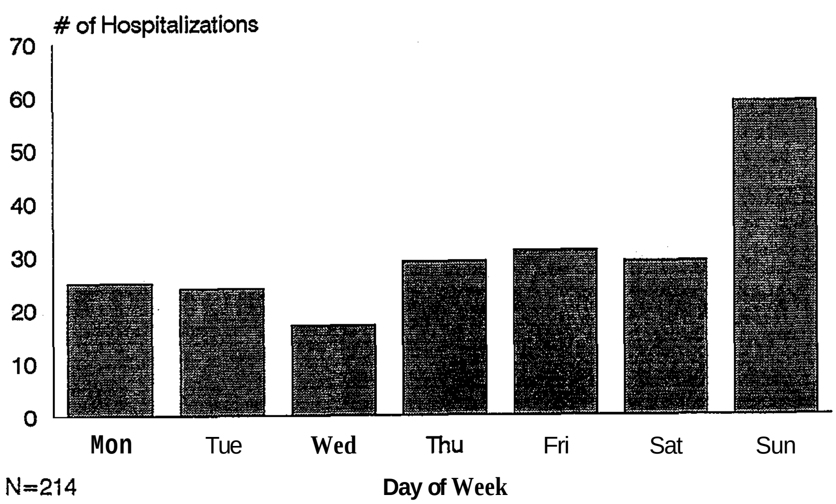
Of the 214 Travis County residents hospitalized, 189 (88%) recovered and were discharged. Twenty-five patients (12%) died.

Law Enforcement Data. Police reports were linked with 202 (75%) of the overall 268 hospitalizations for firearm-related injuries. Law enforcement information was found for 188 (88%) of the 214 Travis County residents hospitalized for gunshot wounds.

Table 2. Demographic Data for 214 Persons Hospitalized for Treatment of Firearm Injuries: Travis County Residents, 1991-1992

	Number	Percentage	Rate per 100,000 Population
Gender			
Male	186	87	31.7
Female	28	13	4.7
Age (Years)			
5-9	2	1	2.4
10-14	7	3	9.6
15-19	53	25	64.9
20-24	57	27	41.9
25-29	28	13	21.2
30-34	26	12	21.5
35-39	17	8	16.3
40-44	11	5	12.7
45-49	6	3	9.9
50-54	5	2	11.4
55+	2	1	5.4
Race/Ethnicity			
African-American	99	46	78.6
Hispanic	59	28	22.9
White (non-Hispanic)	54	25	6.8
Unknown	2	1	----

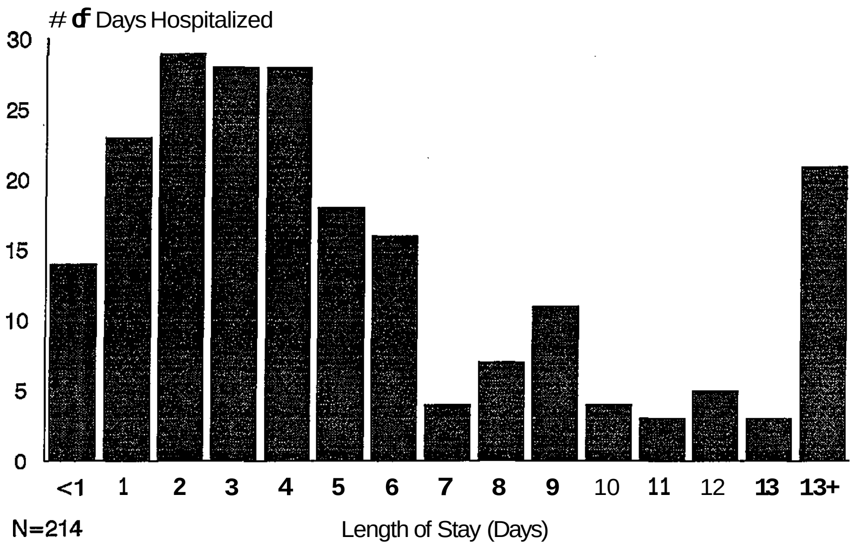
Figure 3. Hospitalizations by Day: Travis County Residents, *1991-1992*



As Figure 5 illustrates, the type of weapon used most frequently in Travis County shootings was a handgun. Of the 169 cases in which the weapon type was known, 147 (87%) involved a handgun. The four most prevalent caliber types for these handguns were: 9 millimeter, 22 caliber, 25 caliber, and 38 caliber.

The geographic occurrence of the shooting was documented on 187 of the 188 police reports. Ninety-nine victims (53%) were shot in one concentrated area of East Austin.

Figure 4. Length of Hospital Stay: Travis County Residents, 1991 - 1992



and two (86%) residents were shot by an acquaintance, spouse/lover, or other family member. In 17 (14%) of the assaults, the victims did not know their assailants.

Twenty (11%) police reports of the 188 hospitalized Travis County residents revealed that an additional 51 individuals also sustained gunshot wounds in those shootings but were not admitted to Brackenridge Hospital.

Medical Care Charges. Medical charges (excluding physician fees) for the 214 Travis County residents hospitalized for firearm-related injuries totalled $2,202,894. With charges per hospitalization ranging up to $65,933, the average was $10,294 and the median, $6,200. Eighty-two percent ($1,803,465) of these medical charges were uncompensated or paid for with public funds.

Injury Prevention and Control Program
(512) 458-7266

Figure 6 illustrates firearm-related injuries by intent. Of the 184 cases in which intentionality could be determined, 150 (82%) involved assaults, 17 (9%) were suicide attempts, 16 (9%) were unintentional discharges, and one (1%) was related to a legal intervention. (The total of these percentages is greater than 100% due to rounding)

Victim-offender relationship was known for 119 (79%) of the 150 assault-related shootings and is illustrated in Figure 7. One hundred

Figure 5. Type of Weapon: Travis County Residents, 1991 - 1992

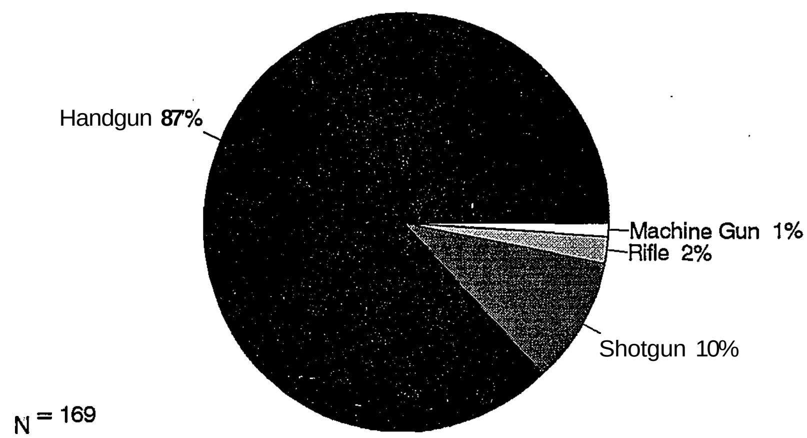


Figure 6. Gunshots by Intent: Travis County Residents, 1991 - 1992

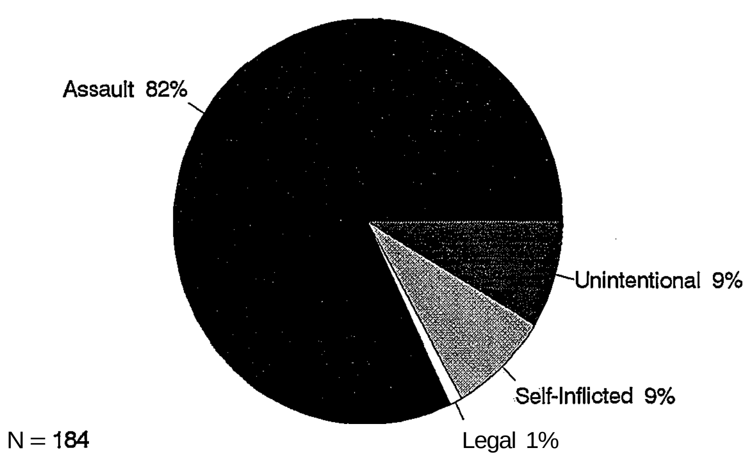
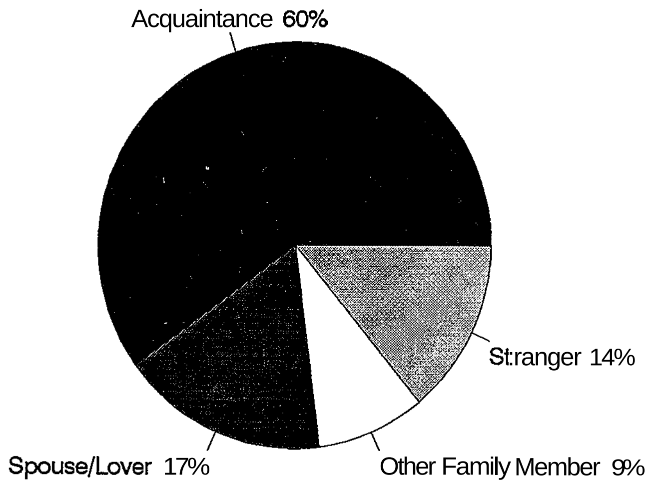


Figure 7. Victim/Offender Relationship: Travis County Residents, *1991 - 1992*



N = 119

Haemophilus influenzae type *b* Infections (Invasive)

In 1993, 51 invasive *Haemophilus influenzae* type b infections were reported to the Texas Department of Health. Although this number was slightly higher than the 42 cases reported in 1992, the number of invasive *H. influenzae* infections in children under five years of age continued to decline in 1993; only 15 cases were reported - a 48% reduction from the 29 cases reported in this age group in 1992. Even more remarkable was that only one death from any type of H. *influenzae* infection was reported in 1993, a 75-year-old man from whom H. *influenzae* type c was identified in a blood specimen.

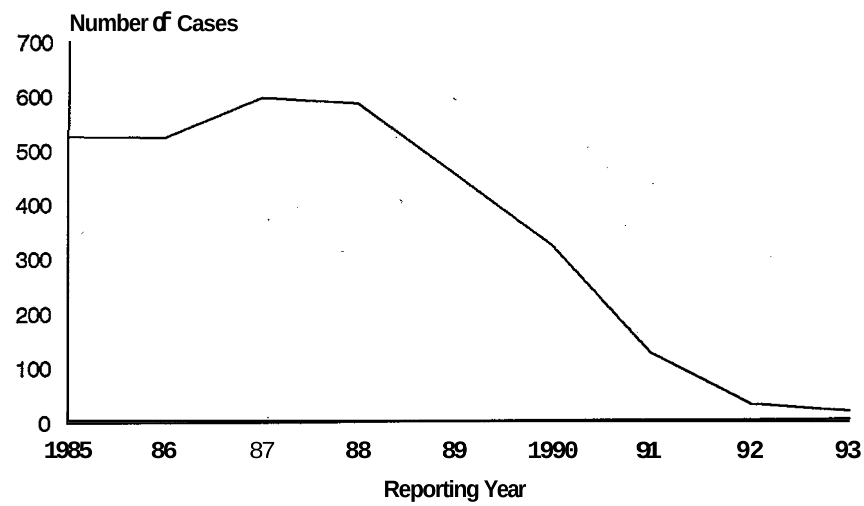
Widespread and increasing use of vaccines to protect infants and children from H. *influenzae* type b (Hib) infections has resulted in one of the greatest vaccine success stories in recent years. Prior to licensure of the first Hib vaccines in 1985, Texas experienced up to 600 cases of the disease in preschoolers each year. Since then, morbidity has declined dramatically as illustrated in Figure 1.

The clinical presentations of the invasive *H. influenzae* infection reported in children under five years of age included septicemia (9), meningitis (5), and cellulitis (1). Specific laboratory information rarely is provided with initial disease reports, and, in fact, lab results were reported on only four of the infections in children under five. Two cases of septicemia were confirmed as H. *influenzae* type b, and one case of meningitis was caused by *H. influenzae* type d. A non-typeable strain of H. *influenzae* was identified in the blood of a child with septicemia.

Only one possible vaccine failure was reported in 1993. An infant with Down's syndrome received three doses of the Hib vaccine at two, four, and seven months of age. Twenty-five days after the third dose was administered this child became ill; he was admitted to the hospital three days later. *H. influenzae* type b was identified in a blood specimen.

Immunization Division (512) 458-7284

Figure 1. Reported H. *influenzae* infections in Children <5 Years of Age: Texas, 1985-1993



Hantavirus Pulmonary Syndrome

In June 1993 a newly recognized hantavirus was identified as the etiology of an outbreak of severe respiratory illnesses occurring in the southwestern United States. Since this outbreak was recognized, sporadic cases have been identified throughout the United States, including Texas. The disease, called hantavirus pulmonary syndrome (HPS), is characterized by a prodrome consisting of fever, myalgia, and variable respiratory symptoms followed by the abrupt onset of acute respiratory distress. Among 17 case-patients studied in the southwest, hemoconcentration was noted on admission in 13 (76%) and thrombocytopenia in 12 (71%). In all case-patients reviewed, bilateral pulmonary infiltrates developed within two days of hospitalization. Postmortem examination routinely revealed serous pleural effusions and heavy edematous lungs. The hospital course was characterized by fever, hypoxia, and hypotension; recovery in survivors has been without sequelae. The mortality rate in the United States for 1993 was 43%.

One case of hantavirus pulmonary syndrome occurred in Texas in 1993. The patient was a 58-year-old white female from Angelina County. On June 9 she had an acute onset of fever, chills, myalgias, generalized edema, and progressive shortness of breath over a five-day period. Five days after onset of her illness, she was admitted to a local hospital with a diagnosis of bilateral interstitial pneumonia. On admission she had a temperature of 102.3°F, a respiratory rate of 26, a heart rate of 96, and a blood pressure of 142/80 mm/Hg. Her physical exam was unremarkable except for pedal edema and crepitation at the lung bases. Her chest x-ray revealed bilateral diffuse interstitial infiltrates which progressed during the patient's hospitalization to include foci of alveolar consolidation. An echocardiogram was normal. All bacterial, fungal, and mycobacterial stains and all sputum and blood cultures were sterile. Two days after admission, rare small petechiae were noted on the patient's flanks. A blood specimen for hantavirus antibody testing was submitted. The serum had an isolated Seoul IgM antibody titer of 1:1600 by ELISA with no detectable antibodies by fluorescence.

Despite broad spectrum antibiotic therapy and a nondiagnostic endobronchial biopsy, the patient had progressive unexplained respiratory failure or Adult Respiratory Disease Syndrome (ARDS), requiring intubation. She died nine days after admission to the hospital.

The Texas Department of Health (TDH) Zoonosis Control Rapid Response Team traps rodents in communities where a case of hantavirus has been identified. None of the rodents trapped at 60 different sites in Angelina County were positive for hantavirus infection.

The TDH Laboratory provides hantavirus antibody testing for individuals with unexplained ARDS. Sera from 83 patients were tested for hantavirus infection in 1993; only the one patient was identified.

Infectious Disease Epidemiology and Suweillance Division (512) 458-7328,458-7676

Hazardous Substances Emergency Events Surveillance in Texas

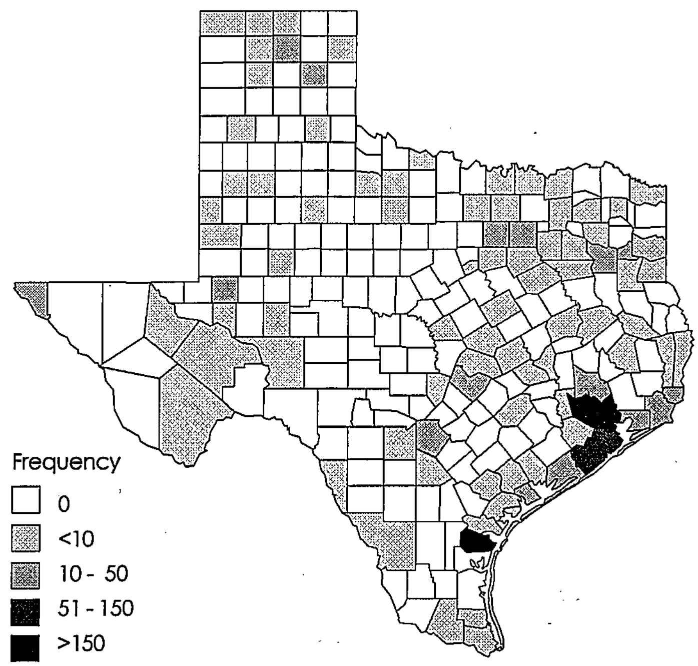
In October 1992 the Texas Department of Health (TDH) received a three-year Cooperative Agreement Award from the Agency for Toxic Substances and Disease Registry (ATSDR) to participate in the Hazardous Substances Emergency Event Surveillance (HSEES) program with eleven other states. TDH collected the first full year of HSEES data in 1993. These data included time, place, responsible party, chemicals spilled or released, and resulting health consequences including injuries, deaths, and evacuations. Population density estimates also were collected. to identify the number of individuals potentially at risk for each event.

The Hazardous Substances Emergency Events Surveillance Revised Protocol of June 1992 defines the criteria for inclusion of an event in this study as follows:

- The event is an uncontrolled or illegal release or threatened release of one or more hazardous substances; **and**
- The substances that are actually released include all hazardous substances except petroleum products; **and**
- The quantity of hazardous substances which are released, or are threatened to be released, need or would need to be removed, cleaned up, or neutralized according to federal, state, or local law; or
- There is only a threatened release of hazardous substances, but this threat leads to an action (e.g., an evacuation) that can potentially impact the health of employees, responders, or the general public. This action makes the event eligible for inclusion into the surveillance system even though the hazardous substances are not released.

The goal of this surveillance project is to reduce the morbidity and mortality resulting from hazardous substances emergencies. In support of the sole focus on emergency events, only

Figure 1. Frequency of Spill Occurrence by County: Texas HSEES, 1993



acute health effects were included in the data. This surveillance effort does not address long-term environmental or health effects.

In 1993 the Texas HSEES Project investigated 1,259 hazardous substances incidents which met the project case definition. These reported incihents occurred in 99 of the state's 254 counties; **83%** of the state's residents live in those counties. Figure 1 shows the geographic distribution of these spills. Seventy-nine counties had ten or fewer chemical spills, and many of these had only one or two spills. Sixteen counties had from 10 to 50 spills. Four counties had more than 50 reported chemical spills; these were Harris (367), Nueces (180), Galveston (122), and Brazoria (60). Table 1 presents a comparison of the ten counties with the highest absolute spill count and the highest rate of spills (i.e. spills per 100,000 population). Nueces, Galveston, Calhoun, and Hutchinson counties are included on both lists. Although rate of spills per 100,000 population is only a weak indicator of potential health consequences, the higher spill rates per 100,000 most likely will

Table 1. Comparison of the Ten Counties with Highest Chemical Spill Frequency - by Absolute Count and Spills Per 100,000 Population: Texas HSEES, *1993.*

By Count		By Spills/100,000	
1. Harris	367	1. Calhoun	247
2. Nueces	180	2. Hutchinson	183
3. Galveston	122	3. Kent	99
4. Brazoria	60	4. Nueces	62
5. Calhoun	47	5. Chambers	60
6. Hutchinson	47	6. Galveston	56
7. Jefferson	47	7. Dallam	55
8. Tarrant	36	8. Throckmorton	53
9. Dallas	34	9. Matagorda	51
10. El Paso	[illegible]	10. Gray	50

potential victims, emergency medical staff, fire fighters, HazMat team members, and for Local Emergency Planning Committees (LEPC's).

Of the 1,259 HSEES cases investigated, 65 events (5%) resulted in 715 injuries and five deaths. Trauma was a significant contributor in four of those five deaths. All fatalities were male. Industrial chemicals and fixed facilities generate the majority of the HSEES spill reports. However, incidents in agricultural settings accounted for three of the five deaths in the study (Table 3).

result in higher per capita costs for emergency services provided by hospitals, EMS, police, fire, and HazMat teams.

Excluding petroleum products, an estimated 65,000 chemicals in the marketplace are considered hazardous substances. The HSEES project implicated a much smaller list, consisting primarily of major chemical commodities produced in the United States (Table 2). Although the initial purpose of the 1993 Texas HSEES project was to monitor hazardous substances besides chemicals, over 99% of the events investigated involved hazardous chemicals. Less than one percent of the events were associated with radiological, medical, or biological materials.

The number of chemicals involved in each spill incident impacts the complexity of cleanup operations, increases the risks of exposures, and increases the range of capabilities required from first responders and their personal protective equipment. Data for 1993 indicate that 86% of HSEES events involved only one chemical and eight percent involved two chemicals. Ninety-nine percent of HSEES events involved four or fewer chemicals, and no events involved more than eight chemicals. This low frequency of multiple chemical events bodes well for

In 95% of the HSEES events resulting in injuries, an average of four people were injured in each incident. However, the remaining five percent of events resulted in injury of 98, 128, and 251 people. Even though these three events caused a large number of injuries, no deaths occurred.

Table 2. The Most Frequently Spilled or Released Chemicals: Texas HSEES, *1993*

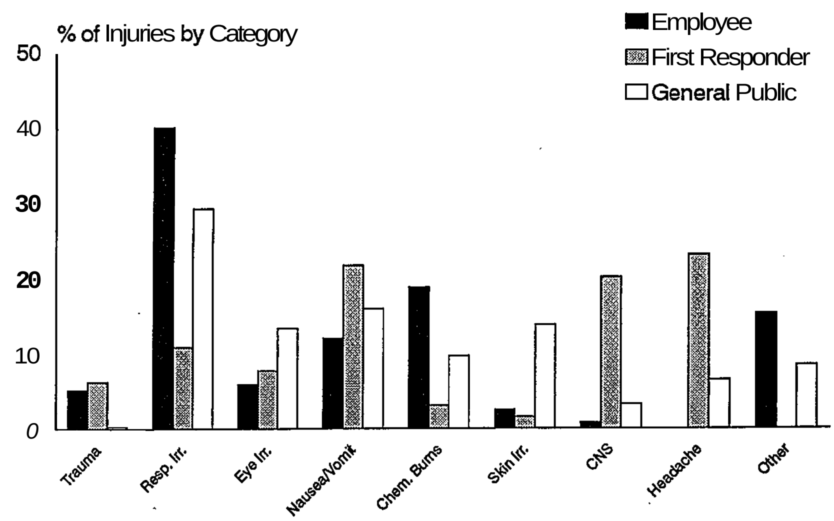
Rank	Chemical	Frequency*
1.	Benzene	6%
2.	Sulfuric Acid	5%
3.	Ammonia	4%
4.	Polychlorinated Biphenyls	4%
5.	1,3-Butadiene	3%
6.	Formaldehyde	3%
7.	Methanol	3%
8.	Sodium Hydroxide	3%
9.	Ethylene Glycol	3%
10.	Hexane	3%
11.	Sulfur Dioxide	3%
12.	1,2-Dichloroethane	2%
13.	Hydrogen Sulfide	2%
14.	Chlorine	1%

* Percent of Texas HSEES (1993) surveillance cases which included this chemical.

The HSEES project monitors injuries and deaths in three population groups: employees, first responders, and the general public. In 1993 four employees and one member of the general public died in HSEES events. There were numerous injuries in each group: employees

(105), first responders (27), and the general public (569). An additional fourteen injured people were not categorized. Not only were more members of the general public injured, but they also suffered a wider range of injuries than either employees or first responders. The frequency of various injuries varied greatly between the three groups. This variation was most likely due to the level of risk, as determined by event proximity, knowledge, personal protective equipment (PPE), and prior chemical experience (Figure 2). Noteworthy is the low incidence of respiratory irritation and chemical burns among first responders relative to that of employees and the general public. These lower rates for first responders may be attributed to better knowledge, training, and use of personal protective equipment. Since nearly all of the general public's 72 chemical burn victims were injured in one HSEES incident, this proportion of injuries caused by chemical burns is not likely to occur again.

Figure 2. Frequency of Key Injuries by Victim Category: Texas HSEES, 1993



The HSEES study tabulated eleven categories of injuries: trauma, respiratory irritation, eye irritation, nausea/vomiting, heat stress, chemical burns, thermal burns, skin irritation, dizziness/CNS, headache, and "other". Heat stress and thermal burns were rare; each were reported only once during the 1993 study. Two major spill events resulted in 56 "other" types of injuries. In the largest single event, 251

Table 3. Features and Characteristics Associated with Five Deaths: Texas HSEES, 1993.

Victim/Activity	Location	Actions	Outcome
40-year-old male Contract Welder	Industrial, Harris County, Chemical Tank Storage	Welded on tank of unknown contents; contained hydrogen sulfide (H_2S) a decomposition product of sodium sulfides.	Explosion and immediate death by trauma for welder. Severe chemical burns for co-worker.
17-year-old male Driver (with .135% blood alcohol level)	Agricultural, El Paso County, Feed Lot	Drove into liquified ammonia (NH_3) tanks.	Severe trauma and chemical burns. NH_3 leaks greatly delayed patient transport to medical facility. Died 2 days later. One responder injured. Ten people evacuated.
53-year-old male Employee	Industrial, Jefferson County, Petrochemical Refinery	While on cat-walk, overcome by leaking hydrogen sulfide (H_2S).	Chemical asphyxiation, immediate death.
47-year-old male Pilot, Crop Duster	Agricultural, Nueces County	Plane crashed while loaded with pesticide (Guthion).	Trauma, death at scene of accident.
46-year-old male Pilot, Crop Duster	Agricultural, Hall County, Cotton Gin	Plane loaded with Paraquat crashed during take-off.	Drove himself to hospital. 2° and 3° chemical and thermal burns over 70% of body and lungs. Severe vomiting. Died 8 days later.

people were injured in Mt. Pleasant, Texas, when they drank water contaminated with sodium hydroxide. Of all injuries incurred in this incident, 32 types were recorded as "other" and included sore throat, diarrhea, and GI pain. The second event involved illegal recycling and dumping of metallic mercury in Odessa, Texas, and resulted in 24 "other" types of injuries caused by mercury exposures.

Approximately seven percent of the 1993 Texas HSEES events resulted in 82 evacuations, requiring the displacement of 9,216 people from their jobs, homes, and schools. The median number of people evacuated during an event was 15, while the average number evacuated was 196. (A few evacuation incidents with over 1000 evacuees skewed the average to higher levels.) The time length of evacuations averaged 15 hours, with a median time of two hours and a maximum of 30 days.

Transportation events were eight percent of the total 1993 Texas HSEES events, but accounted for disproportionately higher levels of injury, death, and evacuations. Thirty-three percent of transportation event victims received injuries which resulted in death or required hospitalization, while only 3% of the victims from fixed facility events suffered injuries of equal severity. HSEES events occurring during chemical transportation were more than twice as likely to require evacuation as events occurring at fixed facilities (14% vs 5.7%). The median number of people evacuated from a transportation event was 75, while the median number of evacuees from a fixed facility event was 15. Chemical transportation has moved hazardous materials away from trained and skilled workers into the domain of the more vulnerable general public.

The goal of the Texas HSEES project is to reduce the morbidity and mortality resulting from hazardous substance emergencies. The project team disseminates results to parties whose interest and actions will contribute to those reductions. Organizations receiving the HSEES results have included state agencies for rule-making and possible legislation, responsible parties, LEPCs for planning, and numerous first responders. Texas HSEES presentations at the Department of Public Safety, Emergency Management Conference were well received by EMS, fire department, and HazMat staff. By directing education, community planning, funding, and enforcement efforts towards areas of higher health risks - the goals of reduced morbidity and mortality can be met.

The Texas HSEES project thanks the Texas Natural Resources Conservation Commission Emergency Response Team staff and regional operations stags for providing the project's primary notification for chemical/hazardous material spills and releases. Without their support and cooperation, the Texas HSEES project could not function.

Reference:

Hazardous Substances Emergency Events Surveillance Revised Protocol, June, 1993. Division of Public Health Studies, Agency for Toxic Substances and Disease Registry.

Non-Communicable Disease Epidemiology and Toxicology Division (512) 458-7222, 458-7269

Health Risk Assessment of Toxic Substances

The Health Risk Assessment and Toxicology Program (HRAT) is part of the Division of Noncommunicable Disease Epidemiology and Toxicology at the Texas Department of Health (TDH). In accordance with a cooperative agreement between TDH and the federal Agency for Toxic Substances and Disease Registry (ATSDR), the HRAT conducts public health assessments to determine the potential public health impact of hazardous waste sites and other environmental hazards in Texas. These sites include those listed on the U.S. Environmental Protection Agency (EPA) National Priorities List (NPL) of hazardous waste sites and those listed by the Texas Natural Resource Conservation Commission (TNRCC) on the State Superfund List. HRAT also evaluates environmental data to provide health-based consultations for citizens and other state agencies, and provides expert witness services for the Attorney General's Office when required.

A public health assessment (PHA) is the evaluation of data and information on hazardous substances in the environment to determine their past, present, and future impact on public health. Every PHA reviews site-specific information, evaluates public health implications, responds to community health concerns, and makes recommendations for follow-up health activities as well as actions to reduce any health threat posed by the site. HRAT staff may revisit a site to complete a site review and update (SRU) when new environmental data become available at sites for which PHAs previously have been conducted. When citizens or state agencies request information or pose specific questions about a particular chemical or site, the Program completes a Health Consultation. Documents submitted to ATSDR for publication undergo a rigorous review and revision process prior to final publication.

The following summary includes work performed by the Health Risk Assessment and Toxicology Program during the 1993 calendar year. Figure 1 indicates general locations for sites evaluated during the same time period.

Alamodome - San Antonio, Bexar County
Consulted with the Texas Natural Resource Conservation Commission (TNRCC) and the City of San Antonio regarding the public health significance of soil contaminated with lead and other wastes used as fill at this site.

Atochem - Bryan, Brazos County
Performed an initial public interest survey regarding a health study; major contaminant is arsenic. Analyses of the public interest survey for this site indicated that out of the 17% of the residents responding to the survey (115 of 668), 37% (42) indicated they would not be willing to participate in a health study. TDH determined that response to the survey was not sufficient to complete a public health study.

Aztec Mercury - Alvin, Brazoria County
Performed a health consultation regarding the Remedial Investigation Report for TNRCC, September 1, 1993.

Bestplate, Inc. - Dallas, Dallas County
Completed a health consultation for this site and forwarded it to the TNRCC for their review and comment, August 25, 1993. Contaminants of concern are nickel and chromium.

Brio NPL Site - Friendswood, Harris County
Performed a health consultation for the TDH, Shellfish Sanitation Division pertaining to volatile organic compounds detected in fish tissue. Provided county health departments with information allowing them to remove a ban on contact recreation for Clear Creek.

Corpus Christi Refineries - Corpus Christi, Nueces County
Began collecting citizen concerns and environmental data associated with these refineries, summer 1993. Participated in developing a public interest survey questionnaire to be sent to residents around this site; major contaminants are petroleum, hydrocarbons, and benzene.

Crystal City Airport NPL Site - Houston, Harris County
Submitted draft site review and update to ATSDR, February 1,1993.

Donna Reservoir - Hidalgo County
Found that fish sampled in the area contained excessive PCB concentrations. After completing an evaluation of contaminant concentrations related to health comparison values, TDH issued a fish consumption advisory that strongly discouraged consumption of any fish caught at the Donna reservoir, Arroyo Colorado, and all irrigation canals in Hidalgo County.

Fabsteel, Waskom - Harrison County
Responded to the Texas Office of the Attorney General regarding a scientific peer review of the health assessment for this site. A TDH employee served as an expert witness for the State during a subsequent court hearing. The amount awarded to the State for damages was $800,000.00.

Fort Bend County Municipal Landfill - Rosenberg, Fort Bend County
Investigated concerns associated with this municipal landfill.

French Limited NPL Site - Crosby, Harris County
Submitted revision for blue cover (final) publication to ATSDR January 8,1993. Contaminants of concern are vinyl chloride and polychlorinated biphenyls (PCBs).

Frisco (City of) - Collin County
Prepared interagency memorandum on September 7,1993 regarding a TNRCC proposed "health effects study" for lead contamination.

Geneva Industries NPL Site - Houston, Harris County
Submitted a revision to ATSDR for blue cover (final) publication, January 5,1993. No comments were received during the public comment period.

Gibraltar Chemical - Winona, Smith County
Investigated concerns associated with hazardous waste injection well (waste mixing and waste storage) at citizens' request; visited with concerned citizens in August 1993.

Highland Acid Pits NPL Site - Highlands, Harris County
Submitted SRU to ATSDR, April 20,1993. Submitted revised final SRU, August 6,1993.

Hi Yield - Commerce, Hunt County
Performed a PHA; major contaminant is arsenic. Commented on action levels for the pesticides found in sample results from waste piles associated with the Hi-Yield site for the TNRCC. Attended public meetings on April 22 and August 26,1993.

Houston Scrap - Houston, Harris County
Prepared a PHA for this site and forwarded it to the TNRCC for their review; major contaminants are lead and PCBs.

Milby Street Site - Houston, Harris County
Reviewed TNRCC's proposed Corrective Action Plan. Major contaminants are lead and total petroleum hydrocarbons.

Mount Carmel Complex (Branch Davidian) - Waco, McLennan County
Attended an interagency meeting with Texas Air Control Board, Texas Water Commission, Texas Attorney General's Office, and law enforcement officials to discuss possible options for restricting entry onto site by public, May 17,1993. Completed a public health consultation and TDH issued a Quarantine Order restricting entry.

Niagara Chemical - Harlingen, Cameron County
Reviewed TNRCC risk assessment for this site.

North Cavalcade Street NPL site - Houston, Harris County
Submitted a health consultation to address controls and respond to community health concerns, September 24,1993.

Odessa Chromium II NPL site - Odessa, Ector County
Prepared a health consultation to address use of contaminated groundwater in evaporative coolers and for irrigation of home gardens, September 14,1993.

Old Brazos Forge Facility - Brenham, Washington County
Performed health consultation for TNRCC regarding residential property in the vicinity of the Old Brazos Forge site; major contaminant is chromium in drinking water.

Pesses Chemical NPL Site - Fort Worth, Tarrant County
Submitted draft SRU to ATSDR, June 9,1993. Contaminants of concern were cadmium, lead, copper, and nickel contamination in soil.

Petro Chemical Systems NPL Site - Liberty County
Submitted revised health assessment to ATSDR for blue cover (final) publication, February 11, 1993.

Sheridan Disposal Services NPL Site - Hempstead, Waller County
Submitted draft SRU to ATSDR, June 21,1993. Contaminants include volatile organic compounds (VOCs) and polychlorinated biphenyls (PCBs). Responded to EPA comments on this SRU on December 14,1993.

Sikes Disposal Pits NPL Site - Crosby, Harris County
Submitted PHA action plan to assess lead in neighborhood water wells, September 30, 1993. HRAT staff conducted a follow-up action to collect drinking water samples for lead analysis from residential wells and associated home plumbing, December 21,1993. Samples were submitted to the TDH laboratory for analyses.

Sol Lynn NPL Site - Houston, Harris County
Submitted draft SRU to ATSDR, July 23,1993. Responded to EPA comments on November 3,1993.

South Cavalcade NPL site
This SRU was revised to include agency comments and forwarded to ATSDR on December 30, 1993.

Texarkana Wood Preserving Company NPL Site - Texarkana, Bowie County
Submitted draft SRU to ATSDR, August 24,1993.

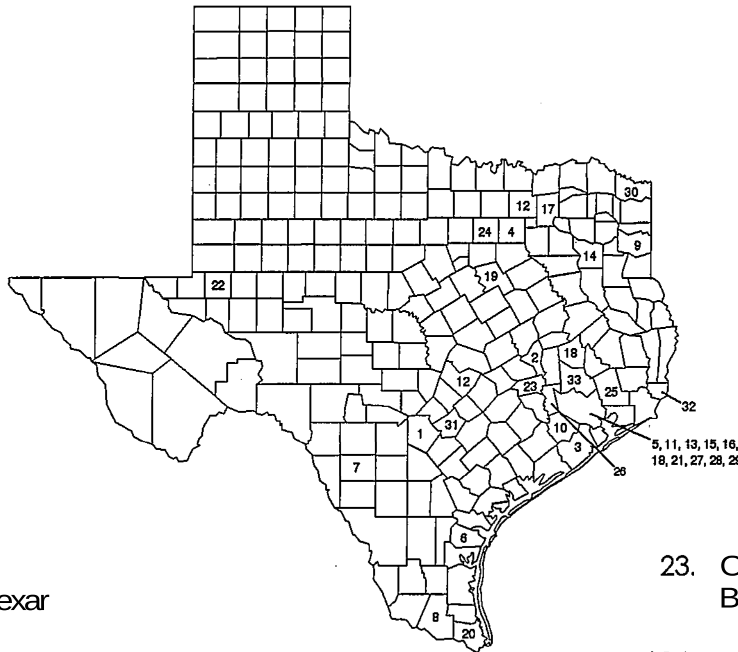
Thistle Creek - Cibolo, Guadalupe County
Completed a health consultation to address public health concerns regarding a local landfill in response to a citizen's request.

Triangle Chemical Company NPL Site - Bridge City, Orange County
Submitted draft SRU to ATSDR, September 24,1993. Chemicals of concern include VOCs.

United Creosoting NPL Site - Conroe, Montgomery County
Forwarded a blue cover (final) copy of this health assessment addendum to the local repository for records concerning this site.

Non-Communicable Disease Epidemiology and Toxicology Division (512) 458-7269,458-7222

Figure 1. Health Risk Assessment Activity Locations, 1993



1. Alamodome
San Antonio, Bexar

2. Atochem
Bryan, Brazos

3. Aztec Mercury
Alvin, Brazoria

4. Bestplate
Hutchins, Dallas

*5. Brio
Friendswood, Harris

6. Corpus Christi, Refineries
Corpus Christi, Nueces

*7. Crystal City Airport NPL
Crystal City, Zavala

8. Donna Reservoir
Hidalgo County

9. Fabsteel
Waskom, Harrison

10. Fort Bend Co. Landfill
Rosenberg, Fort Bend

*11. French Limited
Houston, Harris

12. Frisco (City of)
Frisco, Collin

*13. Geneva Industries
Houston, Harris

14. Gibraltar Chemical
Winona, Smith

*15. Highlands Acid Pits
Houston, Harris

16. Hi-Yield
Commerce, Hunt

17. Houston Scrap
Houston, Harris

18. Milby Street
Houston, Harris

19. Mount Carmel Complex
(Branch Davidian)
Waco, McLennan

20. Niagara Chemical
Harlingen, Cameron

*21. North Calvacade Street
Houston, Harris

*22. Odessa Chromium II
Odessa, Ector

23. Old Brazos Forge Facility
Brenham, Washington

*24. Pesses Chemical
Fort Worth, Tarrant

*25. Petro Chemical Systems
'Lubbock, Liberty

*26. Sheridan Disposal Services
Hempstead, Waller

*27. Sikes Disposal Services
Crosby, Harris

*28. Sol Lynn
Houston, Harris

*29. South Calvacade
Houston, Harris

*30. Texarkana Wood
Preserving Co.
Texarkana, Bowie

31. Thistle Creek
Cibolo, Guadalupe

*32. Triangle Chemical
Bridge City, Orange

*33. United Creosoting
Conroe, Montgomery

*National Priorities Listing Sites

Hepatitis, Viral

Viral hepatitis is a collective term used to denote any of several viral diseases whose target organ is the liver. The major viruses in this category are hepatitis A virus (HAV), hepatitis B virus (HBV), hepatitis C virus (HCV), hepatitis D virus (HDV, also referred to as Delta agent), and hepatitis E virus (HEV). Of these five viruses, HAV, HBV, and HCV account for the majority of the reported hepatitis in Texas. Hepatitis D is reported infrequently, with cases identified generally from our major metropolitan areas. Nationwide, indigenous cases of hepatitis E have yet to be reported, although epidemiologists in the local health departments along the Texas-Mexico border are aware of the possibility that sporadic cases of this enteric infection may occur in their communities.

Table 1. The Incidence and Demographics of Hepatitis A in Texas, 1992 and 1993.

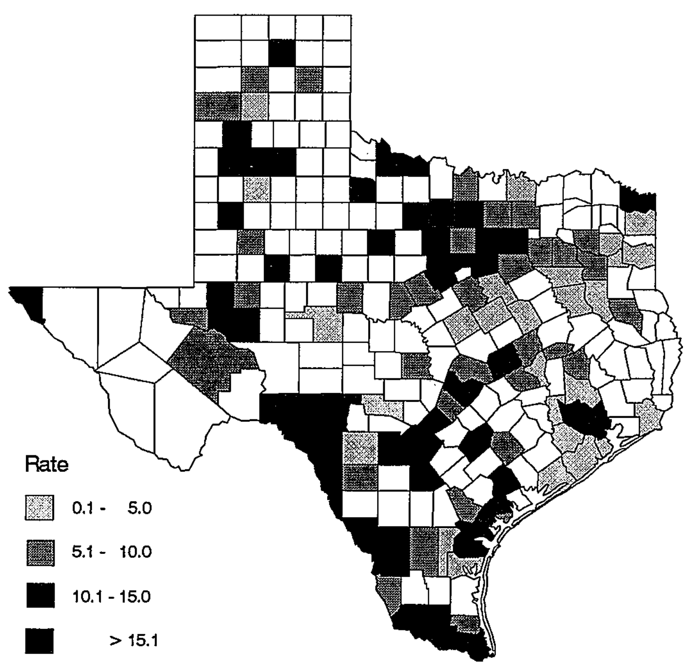
	1993	1992
Case Total	2798	1828
Counties Reporting	111	106
Incidence Rate		
(per 100,000 population)	15.6	10.4
By Race/Ethnicity:		
White	8.3	5.6
Hispanic	30.8	20.4
African-American	6.0	4.0
Male/Female Ratio	1:1	1:1
Deaths	1	3
Case/Fatality Ratio	0.04%	0.2%

In 1993, 4,722 cases of viral hepatitis were reported in Texas. This figure represents an increase of 23.2% from the previous year's total of 3,833 cases. As with previous years, the 1993 total includes cases reported for each of the four virus types present in this country (A through D) as well as those reported as "hepatitis non-A, non-B" (NANB) and "hepatitis, type unspecified." The latter denotes a category established to accommodate the reporting of cases identified primarily on a clinical basis. Accounting for 87.9% of the viral hepatitis cases reported in the state, hepatitis A and B remain the principle types of hepatitis. For every ten cases of viral hepatitis infection reported to TDH, six were hepatitis A. The numbers of cases and corresponding incidence rates for individual counties are provided in the Regional Statistical Summary Section.

Hepatitis A

Hepatitis A, one of the most frequently reported diseases in Texas, is an acute, self-limiting viral infection of the liver acquired via an enteric mode of transmission. Signs and symptoms, when present, may include vomiting, diarrhea, malaise, right upper quadrant discomfort, loss of appetite, dark urine, and jaundice. Immunity following HAV infection is usually complete, thereby preventing reinfections. The level of susceptibility to HAV infection within a population is greatest during childhood; the percentage of susceptible Persons drops with age. The number of susceptible persons is extremely difficult to gauge with

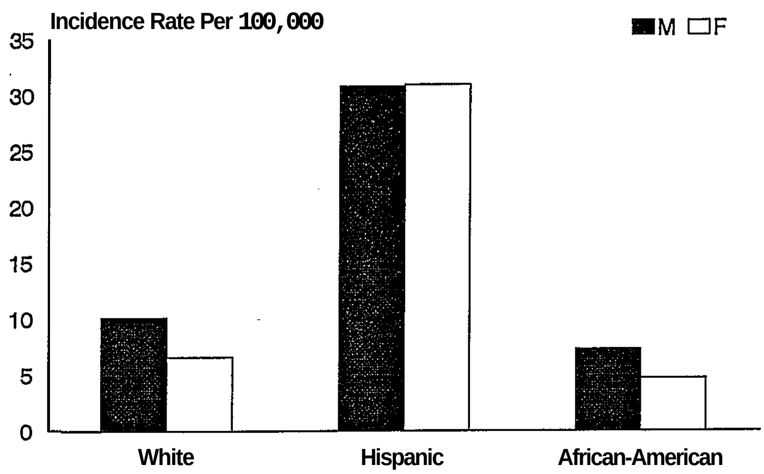
Figure 1. Incidence Rate per 100,000 of Hepatitis A: Texas, 1993



accuracy. The annual incidence rates for this disease and for the other types of viral hepatitis are considered crude rates in that the denominator represents the total population rather than the total population minus those persons who are immune (or chronic carriers, as with hepatitis B and hepatitis C).

The demographic patterns of disease incidence for hepatitis A have remained remarkably consistent over recent years (Figures 2 and 3). As in previous years, morbidity is concentrated disproportionately in the Hispanic population, and in 1993 accounted for slightly more than half (53.6%) of cases reported statewide. One in every three cases was reported among whites and only 4.4% of the cases were reported in African-Americans. Although males and females generally were affected equally, attack rates differed with respect to age groups and race/ethnicity. Among whites, 53.7% of cases were reported in persons between the ages of 20 and 40. In contrast, only 21.2% of the cases among Hispanics were adults in that same age range.

Figure 2. Reported Cases of Hepatitis A per 100,000 Population by Race/Ethnicity and Sex: Texas, 1993

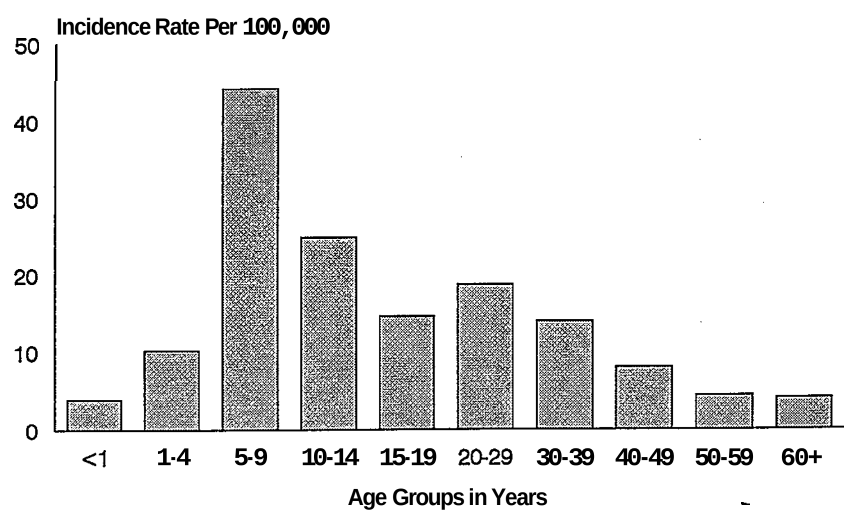


As in previous years, the group with the highest attack rate for hepatitis A was Hispanic children. Almost one-fifth (18.4%) of all cases were Hispanic children five to nine years of age, and 38.7% of the cases in Texas were diagnosed in a Hispanic person under the age of 20 years. This trend in hepatitis A morbidity suggests that Hispanics tend to acquire infection early in life. In comparison, the incidence

Since HAV is an enteric virus concentrated in stool, infection is acquired when a person ingests fecally-contaminated food or beverages or places fecally-contaminated objects (e.g., fingers, cigarettes) in the mouth. Person-to-person spread is relatively common in families and day-care centers. Good personal hygiene, with an emphasis on handwashing, is the key to prevention.

In 1993 there were 2,798 cases of hepatitis A reported from 111 counties, representing a 78.3% increase over the case total of 1,828 in 1992 (Table 1). Incidence rates by county are presented in Figure 1. Over 99% of hepatitis A cases reported were diagnosed serologically. There was only one death; the immediate cause of death was listed as fulminant hepatitis.

Figure 3. Reported Cases of Hepatitis A per 100,000 Population by Age Group: Texas, 1993



of disease in whites is often delayed until young adulthood. Differences in socioeconomic settings, association with groups of children, and quality of environmental health are all important factors in the spread of hepatitis A.

Of the three major types of viral hepatitis, hepatitis A is the one most associated with outbreaks. Spread of infection via fecally-contaminated food is a typical example of a "point source" outbreak. Where the transmission of foodborne hepatitis A in group settings is concerned, there are two possible outcomes. In the first situation, infected foodhandlers are diagnosed shortly after onset of symptoms, and prevention measures are implemented rapidly to curtail further spread of hepatitis A infection to coworkers and patrons. In 1993 this scenario occurred in a San Antonio restaurant that provided a high volume of service on a weekly basis. Serum samples from two foodhandlers, both contacts of another infected foodhandler one month prior, were serologically confirmed for acute hepatitis A. The San Antonio Metropolitan Health District arranged for patrons and restaurant workers to receive immune globulin (IG). Approximately 2,500 doses of IG were given at the restaurant's expense. Despite their efforts to minimize the impact of this potential outbreak, the restaurant lost about half of its business in the weeks that followed. However, the restaurant has since recovered from this incident.

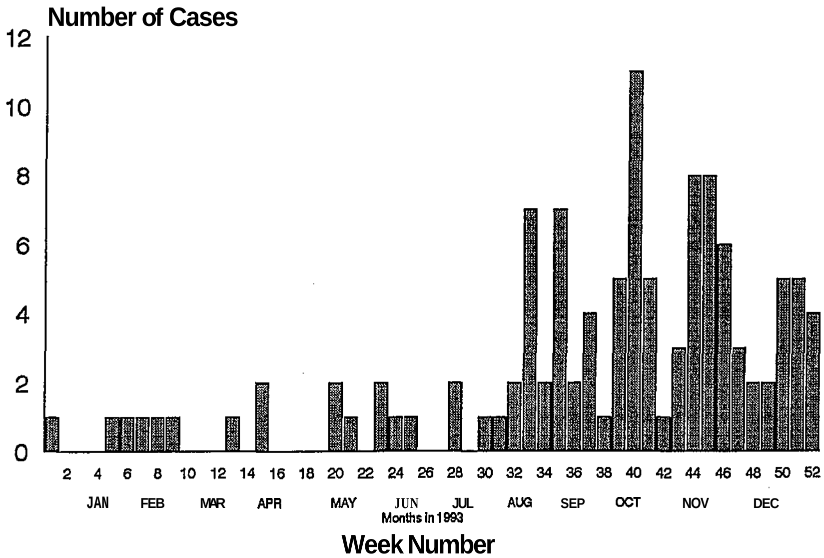
The second possible outcome occurs when infected foodhandlers do not get diagnosed or somehow fail to come to the attention of public health personnel in a timely manner, and an outbreak of hepatitis A develops in coworkers and patrons. A situation of this nature occurred in the fall of 1993 in central Bowie County. A foodhandler had onset of hepatitis A shortly before the Labor Day weekend and, despite having seen a physician about this illness, continued to work at two restaurants in the county. Within three weeks additional cases of hepatitis A were reported in which the individuals had eaten at one or the other establishment. To determine the prevalence of acute hepatitis A among foodhandlers in the area, the Bowie County Health Department conducted a serologic survey of 128 foodhandlers from various restaurants. Of these workers, 33 (25.8%) showed evidence of hepatitis A antibody, but only two (the index foodhandler and a foodhandler from another restaurant who had onset of symptoms during the outbreak) showed evidence of recent acute infection. By late October some 20 cases had been linked to this outbreak. Since the index case was not reported in a timely manner, this outbreak was able to spread to patrons/consumers, thus serving as a reminder that illness in foodhandlers should always be a matter of public health concern.

The community-wide outbreak, compared with the point-source clusters of hepatitis A infections, remains the most difficult to detect and control. Those factors which contribute to the difficulties encountered in managing this type of outbreak include the following

- insidious beginnings with asymptomatic or subclinical cases;
- person-to-person spread through several cycles or waves of infection;
- transmission among families, friends, neighbors, and especially extended families;
- high attack rates in children under the age of 15, with the majority of symptomatic; illness occurring in children ages five to nine; and
- asymptomatic, subclinical, or unreported cases that perpetuate the outbreak by shifting the course of the outbreak from a central focus (or foci) to the more diffuse person-to-person means of transmission.

The most notable community-wide outbreak in 1993 occurred in Nueces County (Figure 4). The outbreak probably started during the Fourth of July weekend; the first wave of cases was detected in August. At least four waves of cases occurred during 1993, as cases continued to be reported well into 1994. Since this outbreak occurred in the latter third of the year, its con-

Figure 4. Community-Wide Outbreak of Hepatitis A: Nueces County: Texas, 1993



tinuation may have been sustained by the group events, festivities, and food functions associated with the holidays. Of the cases that were identified in 1993, approximately 50% occurred in children under the age of 15; one of every five cases occurred in a child between the ages of 10 and 14 years. Transmission among family members accounted for at least 16% of the cases. There were 94 cases of hepatitis A reported in the 1993 portion of this community-wide outbreak. Compared with the county case total of 10 cases in 1992, this outbreak total represents an 840% increase in hepatitis A incidence for this area.

The number of cases and incidence rates by county are provided in the Regional Statistical Summaries Section of this report. In 1992 there was a sharp decrease in incidence rates in the border counties; in 1993 the incidence of hepatitis A rebounded to pre-1992 levels in almost every county. This fluctuation probably reflects a temporary decline in hepatitis A incidence due to intensive health education campaigns promoting the prevention of enteric disease. These campaigns were conducted in response to the threat of cholera in the area. Once the threat disappeared, the message about the importance of good personal hygiene and sound environmental health may have faded from the forefront of attention as well.

Hepatitis, Type Unspecified

The number of cases of "hepatitis, type unspecified reported in Texas continues to drop; the 157 cases reported in 1993 reflected a 17.8% decrease from the 191 cases reported in 1992 (Table 2). The unspecified category is used mostly to report cases of hepatitis that are diagnosed clinically, without specific hepatitis serology. In 1993, 97% of these cases were reported on the basis of a clinical diagnosis alone. Almost half were reported from Houston and the Dallas/Fort Worth Metroplex.

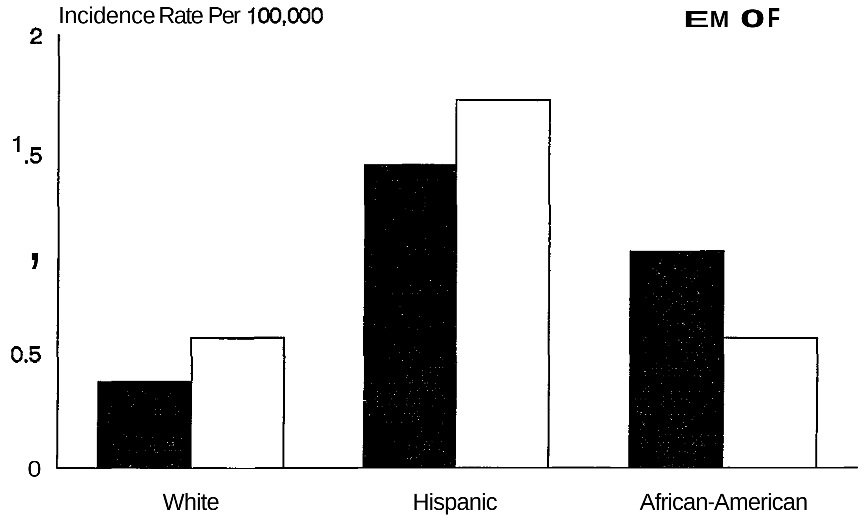
The incidence patterns of unspecified hepatitis resemble those of hepatitis A (Figures 5 and 6). As with hepatitis A, most cases occur in Hispanics, and attack rates are highest among the children. The incidence rate for Hispanics in 1993 was 1.6 cases per 100,000 population, a rate which is double that for African-Americans and three times the rate among whites. More than one third (37.6%) of the cases occurred in children less than 15 years of age (Figure 6). Of

Table 2. The Incidence and Demographics of Hepatitis, Type Unspecified: Texas, 1993 and 1992.

	1993	1992
Case Total	157	191
Counties Reporting	25	33
Incidence Rate		
(per 100,000 population)	0.9	1.1
By Race/Ethnicity:		
White	0.5	0.8
Hispanic	1.6	1.7
African-American	0.8	1.0
Male/Female Ratio	1:1.2	1.2:1
Deaths	4	3
Case/Fatality Ratio	2.5%	1.6%

those, Hispanic children sustained the highest attack rates. One of every four (26.1%) unspecified hepatitis cases was in a Hispanic child under the age of ten. In whites, illness tended to occur in young adults, ages 20 to 44. Again, this incidence pattern is strikingly similar to that of hepatitis A, in which disease occurs early in life for Hispanics, but at a more advanced age for non-Hispanics. The nearly equal distribution of cases between males and females is also typical of that for hepatitis A.

Figure 5. Reported Cases of Unspecified Hepatitis per 100,000 Population by Race/Ethnicity and Sex: Texas, 1993

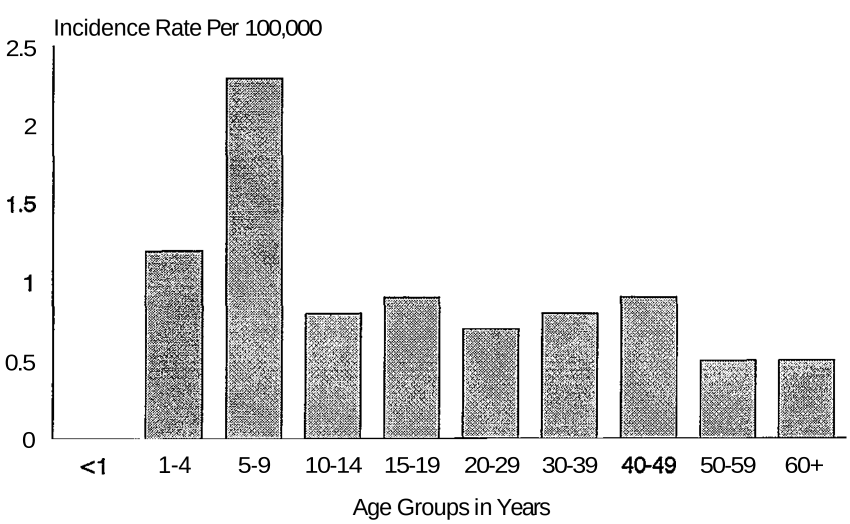


Four deaths due to fulminant hepatitis of undetermined origin were reported in this category. Three of the four were females, ranging in age from 36 to 67 years.

Hepatitis B

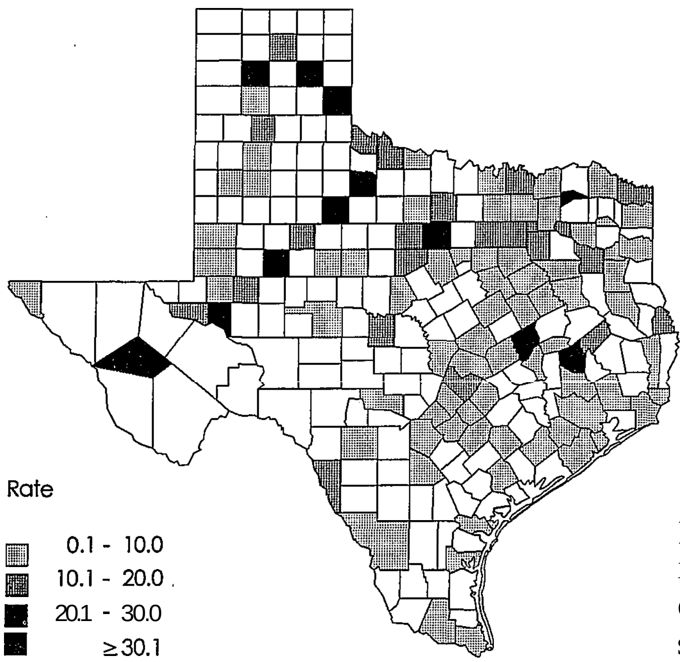
Hepatitis B, the second major type of viral hepatitis, is clinically indistinguishable from hepatitis A. Hepatitis B virus (HBV) is found in the blood and certain body substances (e.g., semen, vaginal secretions, saliva) of infected persons. Transmission of the virus requires percutaneous or mucosal contact with these infectious substances. Activities which facilitate HBV transmission include injection drug use with shared needles, sexual contact with multiple partners, person-to-person contact with an HBV-infected person, and occupational exposure to blood or certain body fluids. Use of hepatitis B vaccine is effective in preventing infection in both pre-exposure and post-exposure circumstances. Many people with newly acquired hepatitis B infections recover, but some remain chronically infected. This chronic carrier state often leads to more severe liver disease such as cirrhosis, chronic active hepatitis, or even liver cancer. Recent advances in the treatment of chronic hepatitis B have led to approval of alpha-interferon use for advanced liver disease. This form of therapy has been moderately successful in the treatment of chronic hepatitis B patients.

Figure 6. Reported Cases of Unspecified Hepatitis per 100,000 Population by Age Group: Texas, 1993



In 1993, 1,354 cases of hepatitis B were reported to TDH from 109 counties. There has been a decline in incidence levels over

Figure.7. Incidence Rate per 100,000 of Hepatitis B: Texas, 1993



the past few years. The 1993 case total represents an 11.4% decrease in the number of cases compared with the 1,528 cases reported in 1992 (Table 3). Figure 7 illustrates the incidence rates of hepatitis B by individual counties in Texas. More than 99% of the cases were reported on the basis of specific hepatitis B serology.

Since hepatitis B is a blood- and body fluid-borne infection spread primarily through the high-risk behaviors and practices of adults and adolescents, the distribution of cases by age, sex, and race/ethnicity is very different from that of hepatitis A (Figures 7 and 8). For all three race/ethnic groups, hepatitis B occurs more frequently in males than in females. Generally, there are approximately three cases among males for every two cases in females. African-Americans have the highest attack rates; the 1993 incidence rate of hepatitis B among African-Americans was more than twice that for either whites or Hispanics. In contrast to hepatitis A, where attack rates are highest among young children, hepatitis B occurs mainly in adolescents and adults. The age group with the highest attack rate in each of the major race/ethnic groups, adults 20 to 29 years of age, accounted for approximately 31.8% of the cases. Many cases also occurred among adults 30 to 39 years of age. Overall, seven of every ten hepatitis B cases in Texas were adults aged 20 to 49 years old. The six deaths reported for hepatitis B in 1993 were evenly distributed among males and females. The ages of the deceased were clustered into two groups: those in their sixties at the time of their death and those in their thirties. Fulminant hepatitis typically is listed as the immediate cause of death in acute hepatitis cases.

Hepatitis D

Hepatitis D virus (HDV) infections occur only in persons with active hepatitis B infections in either the acute or chronic phase. The prognosis for HDV infections depends on the status of the HBV infection. Persons acutely co-infected with both viruses, even when such condition is severe, recover more frequently than do those persons with acute HDV infection superimposed on a chronic HBV infection, a condition referred to as a superinfection. Although HDV infection is closely associated with hepatitis B infection, HDV clearly belongs to a virus group distinct from that of HBV.

Hepatitis D is underreported because most clinicians do not routinely order specific serologic tests when evaluating their hepatitis B

Table 3. The Incidence and Demographics of Hepatitis B: Texas, 1993 and 1992.

	1993	1992
Case Total	1354	1528
Counties Reporting	109	124
Incidence Rate		
(per 100,000 population)	7.5	8.7
By Race/Ethnicity:		
White	5.1	6.4
Hispanic	5.0	6.1
African-American	11.0	11.9
Male/Female Ratio	1.4:1	1.5:1
Deaths	6	20
Case/Fatality Ratio	0.4%	1.3%

patients. Hepatitis D, however, usually is suspected when the HBsAg-positive patient presents with unusually severe symptoms, very high transaminase levels in the liver function tests and a history of injection drug use and sharing of needles.

In 1993 only one case of hepatitis D was reported to TDH. The patient was an eight-year-old Hispanic girl from Odessa (Ector County). She survived her illness. Her onset of illness was in October 1993. Serologic test results for hepatitis B and hepatitis D indicated recent acute infection by both HBV and HDV. Intrafamilial transmission of bloodborne infection was probably the route of transmission since the more typical risk factors were missing from the patient's history.

Figure 8. Reported Cases of Hepatitis B per 100,000 Population by Race/Ethnicity and Sex: Texas, *1993*

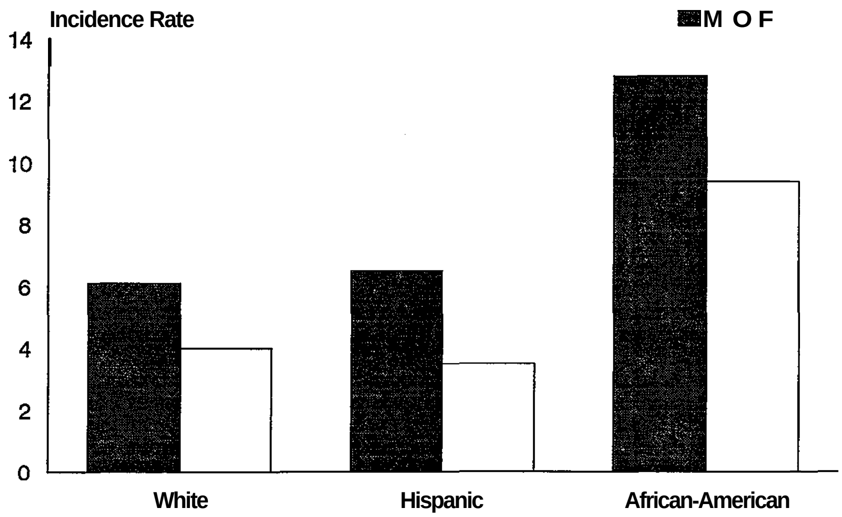
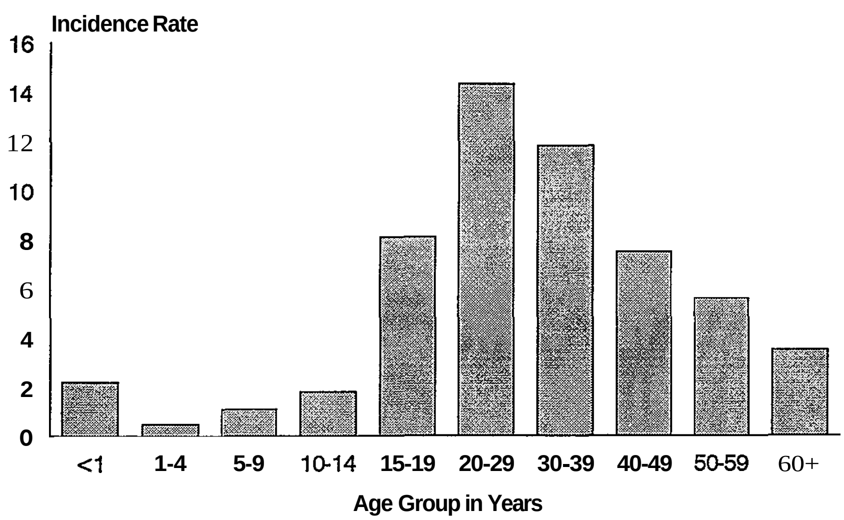


Figure *9.* Reported Cases of Hepatitis B per 100,000 Population by Age Group: Texas, *1993*



Hepatitis C

Hepatitis C is the second major form of bloodborne viral hepatitis. This disease has been the predominant form of transfusion-transmitted hepatitis since the mid-1970s. Symptoms are similar to, but less severe than, those of hepatitis A and B. Asymptomatic infections are common. Fifty to 70% of acute infections become chronic and 20% of chronically infected patients develop cirrhosis, a major cause of death in this country.

Currently, alpha-interferon is used to treat chronic liver disease due to HCV infection. A laboratory test specific for hepatitis C antibody became commercially available in 1990. Since then, increasing numbers of liver disease patients have been screened to evaluate their candidacy for this intensive and costly form of treatment.

The serologic diagnosis of acute hepatitis C is difficult because the available laboratory test is incapable of distinguishing acute disease from chronic or previous infections. This problem makes surveillance for acute hepatitis C labor-intensive and frustrating since communicable disease surveillance in Texas focuses on the incidence of acute infections. As many as 80% of reports of hepatitis C antibody-positive patients received by TDH in 1993 reflected non-reportable chronic conditions or past infections.

Table 4. The Incidence and Demographics of Hepatitis C: Texas, 1993 and 1992.	1993	1992
Case Total	384	255
Counties Reporting	68	44
Incidence Rate (per 100,000 population)	2.1	1.4
By Race/Ethnicity:		
White	1.9	1.4
Hispanic	2.0	0.9
African-American	2.1	2.4
Male/Female Ratio	1.7:1	1.8:1
Deaths	1	0
Case/Fatality Ratio	0.3%	0.0%

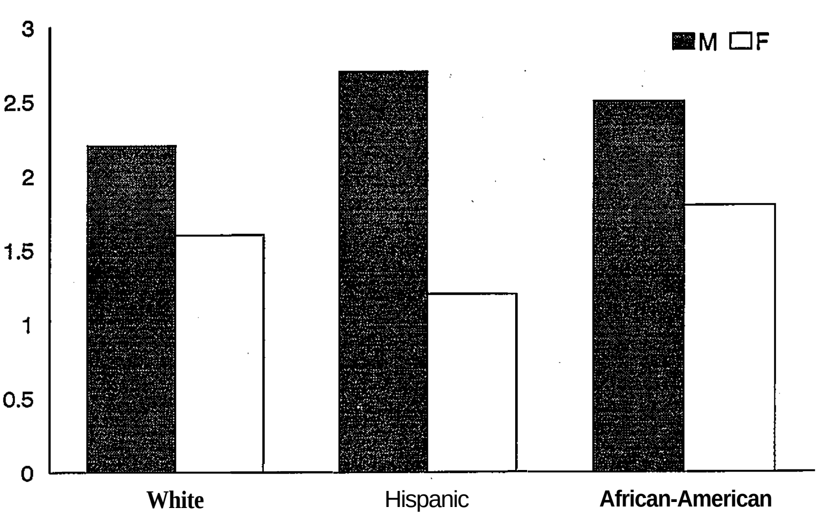
At present, liver function profiles and clinical information must be evaluated to ascertain if anti-HCV-positive patients have acute hepatitis C. Soon there will be more widespread distribution and use of newly developed laboratory tests which measure the presence of HCV RNA. RNA tests are useful in identifying patients with HCV activity that indicates ongoing infection. Although the HCV RNA tests do not distinguish between acute and chronic HCV infections, the information provided from these tests is important to the overall clinical management of the patient's condition. In addition, tests specific for the IgM class of antibodies will become available.

In 1993,384 cases of hepatitis C were reported from 68 Texas counties (Table 4). The 1993 case total reflects a 50.6% increase over the 1992 total. The number of cases probably will continue to increase as the ability to diagnose the acute condition improves. More than 99% of the cases were reported initially on the basis of specific serology. There was one death reported among the patients with acute illness, a 29-year-old woman from Central Texas.

Figures 9 and 10 show the distribution of cases by age, race/ethnicity, and sex for hepatitis C. Approximately half of the cases occurred among whites (53.3%). Three of every ten hepatitis C cases were among white males. Only 21 cases occurred among children and adolescents. The patients who were <1 year of age at the time of diagnosis were older than six months of age (so that maternal antibody would have cleared) or had a documented conversion from a seronegative to seropositive status. In each race/ethnic group, adults under the age of 45 accounted for eight of every ten cases. This rate suggests that blood and body fluid exposures via adult, high-risk behaviors such as injection drug use with shared needles, place this group at highest risk.

TDH received numerous reports via screening programs of persons who were positive for hepatitis C antibody. Invariably, these individuals were asymptomatic but were being tested because they had elevated liver function test results, or because testing was required prior to blood or plasma donation. These cases were not reported as acute because they did not

Figure 10. Reported Cases of Hepatitis C per 100,000 Population by Race/Ethnicity and Sex: Texas, 1993



meet case definition criteria. The Centers for Disease Control and Prevention (CDC) also does not accept reports from blood banks or plasma centers.

To illustrate the problems that local health departments encounter with hepatitis C surveillance, a medical chart review was undertaken of hepatitis C cases reported to TDH from the Austin/Travis County Health Department in 1993. Of 249 initial reports for hepatitis C, over 85% of these originated from the city hospital. Figure 11 depicts the clinical status of these patients. Only 17% of the patients had a clinical presentation consistent with acute hepatitis, and these cases were reported. Patients with chronic liver disease or related

Figure 11. Reported Cases of Hepatitis C per 100,000 Population, by Age Group: Texas, 1993

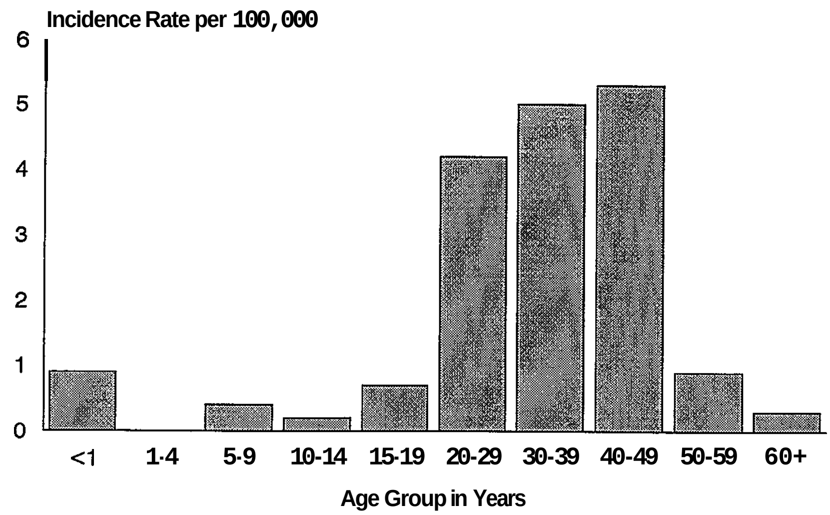
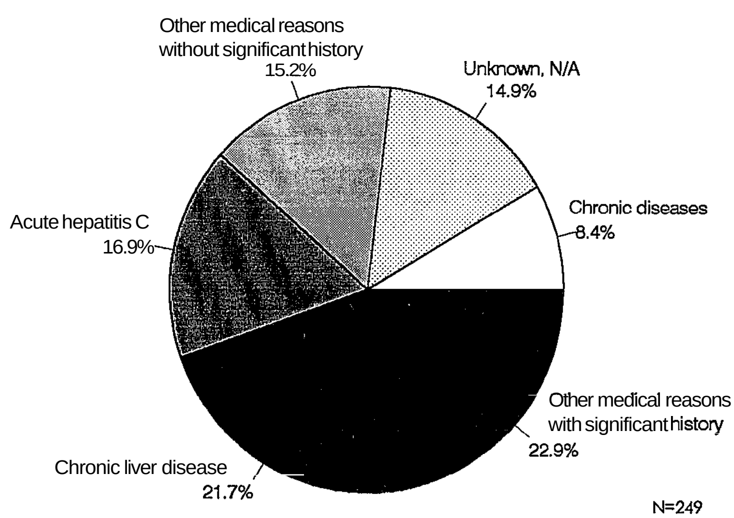


Figure 12. Clinical Status of Anti-HCV-Positive Patients: Travis County, 1993



disease conditions of the biliary and pancreatic systems accounted for 21.7% of the total. Many (38.1% of the total) were admitted to the hospital for other medical reasons; hepatitis serology was performed to follow up an elevated liver function test or prior to surgical or obstetrical procedures. Six of ten patients admitted for other medical reasons had significant risk factors for hepatitis C such as surgeries and/or transfusions prior to 1990, substance abuse, or injection drug use. Many of these patients had underlying diseases such as tuberculosis which exacerbated their liver problems. It was evident from the patients' medical history that high-risk behaviors associated with substance abuse and injection drug use contributed to progression to chronic hepatitis C in at least half of those patients admitted for other medical reasons. Medical records were not available for approximately 15% of the patients.

The purpose of these efforts was to document the magnitude of hepatitis C reports and to demonstrate the difficulty in distinguishing between incidence and prevalence. However, public hospitals serve a greater proportion of the general population that engages in high-risk behaviors than do private sector hospitals. A high proportion of hepatitis C antibody-positive patients in private sector hospitals would be identified through screening needed prior to medical or surgical procedures. Until there are more specific serologic tests for hepatitis C which would enable us to stage this liver disease with accuracy, attempts at sorting the acute cases from everything else will remain an incredible challenge.

Hepatitis, Non-A, Non-B (Non-C)

During the previous three years, there has been a dramatic decrease in the number of hepatitis non-A, non-B (NANB) cases reported in the U.S. This trend is the result of extensive use of serologic tests for hepatitis C along with tests for hepatitis A and B. Prior to mid-1990, all cases of hepatitis that, serologically, were neither hepatitis A or B, were reported as NANB. In 1993 most of these cases probably would be classified as hepatitis C, although a small number remain non-A, non-B, non-C. Based on recent studies of transfusion-transmitted hepatitis, medical epidemiologists hypothesize that one or more additional bloodborne viruses exist. As with other forms of hepatitis, asymptomatic infections are important in the epidemiology of NANB because they are an insidious source of infection within the community.

In 1993, 28 cases of NANB hepatitis were reported from four counties (Dallas, El Paso, Harris, and Potter), with 23 (82.1%) originating from Harris County. The current year's case total is similar to that for 1992 (26 cases). The statewide annual incidence rate for NANB was 0.2 cases/100,000 population. Seventeen cases involved women; 11 involved men. There were no cases reported among African-Americans. Whites accounted for 60.7% of the cases, and nine cases occurred in Hispanics. Approximately 93% of the cases were determined clinically.

Eighteen of the 28 cases occurred in adults between the ages of 20 and 44 years. The remaining ten cases were identified among children and adolescents. This age distribution pattern supports findings from the CDC's "Viral Hepatitis Surveillance Program." Identifying risk factors, such as injection drug use and personal contact with another NANB case, suggests that NANB hepatitis is caused by one or more blood and body fluid-borne viruses. No deaths were reported in the category of NANB hepatitis during 1993.

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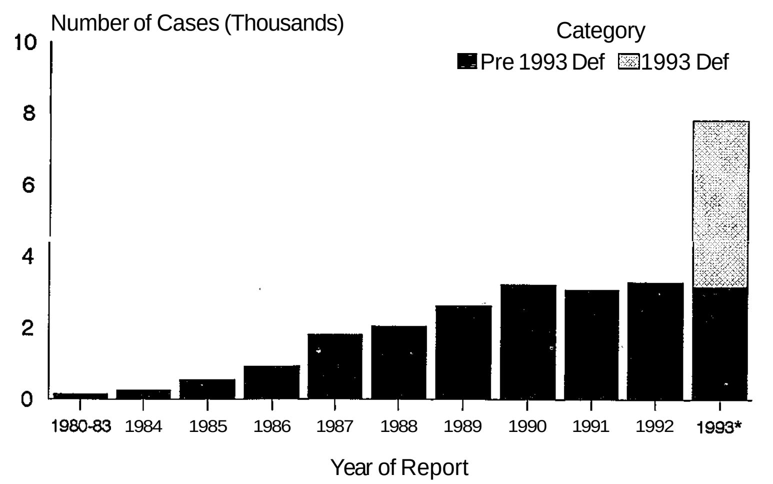
Acquired immunodeficiency syndrome (AIDS) is a specific group of diseases or conditions that result from severe immunosuppression caused by infection with the human immunodeficiency virus (HIV). This virus specifically infects and depletes a subgroup of T-lymphocytes called helper T-cells. Laboratory analysis identifies these cells by typing specific cell-surface markers on the lymphocyte. The nomenclature for these markers is CD (cluster designation) followed by a group number and a plus or minus sign. The abbreviation CD4+ indicates lymphocytes that are positive for the CD4 marker which is found on the helper T-cell. The decline of CD4+ T-cells has proven to be a reliable indicator of HIV disease progression.

New AIDS Case Definition

Texas ranked fourth in the United States in the number AIDS cases reported (7,785) in 1993. The most significant change in the total number of AIDS cases reported in 1493 was due to a change in the AIDS case surveillance definition. Over time this definition has been modified and expanded to reflect increased knowledge and improved technology related to the disease. The 1993 revised case definition for AIDS included all HIV-infected persons with CD4+ T-cells fewer than 200 per microliter of blood or less than 14% of total lymphocytes. Also added were HIV-infected persons diagnosed with pulmonary tuberculosis, recurrent pneumonia, or invasive cervical cancer. This change caused a marked increase in reported cases in Texas (Figure 1). The increase reflects mostly the reporting of cases involving persons with previously diagnosed HIV infection not meeting the pre-1993 definition; 4,642 (60%) of the 7,785 cases reported in 1993 were by the new definition. Some cases reported under the new definition may also have qualified under the more complex pre-1993 case definition. If a subsequent report meets earlier criteria, such cases are reclassified. Preliminary analysis indicated that relatively few cases (284) reported in 1993 have been reclassified to a pre-1993 case definition.

Figure 1. AIDS Cases by Year of Report, 1980-1993
25,571 Cumulative Cases Reported through December 31, 1993



Based on data as of September 6,1994
*Expanded AIDS Surveillance Definition Implemented

Trends

The long period of time from HIV infection to the development of AIDS precludes measuring trends in recent HIV infections based on AIDS cases. The AIDS cases diagnosed recently reflect HIV infections that may have occurred ten to twelve years ago. The time lag from diagnosis to case reporting of AIDS often spans years; of the cases reported in 1993, 40% were also diagnosed in 1993, but 60% were diagnosed in years prior to 1993.

Texas laws require the reporting of HIV infections, however, reporting has been inconsistent and sporadic. These laws will change in 1994 to include laboratories among the health-care providers who are required to report laboratory-confirmed positive HIV tests. This change may provide more complete data for interpreting recent trends. The overall AIDS case rate rose to 43 per 100,000 population in 1993.

Gender and Ethnicity

Because of the new AIDS case definition, comparing rates or the number of cases reported in 1993 to previous years would obscure trends. However, comparing the percent share of cases for different demographic groups and modes of exposure indicates that trends observed in recent years continue. Among demographic groups the percentage of cases reported for white males declined in 1993 to 51.5% from 58.9% in 1991. African-Americans had the largest increase in share of cases. In African-American males the percent share rose from 19.3% in 1991 to 22.6% in 1993. The percent share for African-American females rose from 2.7% in 1991 to 4.8% in 1993 (Table 1).

Reported cases of AIDS have increased among females in 1993 with the percent share of cases rising to 9.7% from 5.6% in 1991. One intent of the revised case definition was to adjust for possible bias that might cause underreporting of women with AIDS. However, in 1992, prior to the new definition, females comprised 9.0% of AIDS cases reported. This suggests that the new definition may not entirely account for the increased share of cases among women. There may have been an actual increase in cases among women, or possibly in 1992, the proposed changes to the definition may have altered surveillance activities in anticipation of the change to the new case definition.

The AIDS case rate for females in 1993 was 8.3 per 100,000 population. The rate was significantly higher in the African-American female population with a rate of 34.5 cases. Hispanic females had a case rate of 4.9, and white females a case rate of 4.8 per 100,000. The AIDS case rate for males per 100,000 population was 79.3 cases. The African-American male population had the highest rate, 175.6 cases, followed by white males at 74.3 cases and Hispanic males third at 50 AIDS cases per 100,000 population.

Modes of Exposure

The percent share of AIDS cases reported from male-to-male sex as the mode of exposure decreased due to more cases from other modes of exposure such as injecting drug use and heterosexual sex. Male-to-male sex as a mode of exposure constituted a 60% share of cases in 1993 compared with 67% in 1991. Heterosexual sex as a mode of exposure increased from a share of 3% in 1991 to 6% in 1993. Exposure by injecting drug use had the greatest increase from a share of 11% of AIDS cases in 1991 to 15% in 1993 (Table 2).

Table 1. AIDS Cases Reported in Texas by Sex and Race for *1991* and *1993*

	1991		*1993*	
Sex Race	**Number of Cases**	**Percentage of Total Cases**	**Number of Cases**	**Percentage of Total Cases**
Males				
White	1,796	58.9	4,012	51.5
African-American	590	19.3	1,756	22.6
Hispanic	481	15.8	1,227	15.8
Other/Unknown	14	.5	32	.4
Females				
White	68	2.2	268	3.4
African-American	82	2.7	373	4.8
Hispanic	18	.6	117	1.5
Other/Unknown	2	<.1	0	0
Total	3,051	100.0	7,785	100.0

Table 2. AIDS Cases Reported in Texas by Mode of Exposure for *1991* and *1993*

	1991		*1993*	
Mode of Exposure	**Number of Cases**	**Percentage of Total Cases**	**Number of Cases**	**Percentage of Total Cases**
Male-Male Sex	2,052	67.3	4,687	60.2
Injecting Drug Use (IDU)	341	11.2	1,185	15.2
Male-Male Sex and IDU	299	9.8	702	9.0
Hemophiliac	16	0.5	57	0.7
Heterosexual Contact	102	3.3	468	6.0
Transfusion	35	1.1	78	1.0
No Identified Risk*	164	5.4	571	7.3
Pediatric Cases	42	1.4	37	0.5
Total Cases	3,051	100.0	7,785	**100.0

* Reported mode of exposure for 1993 cases may be delayed.
** percent figures do not total 100 due to rounding.

Geographic Distribution

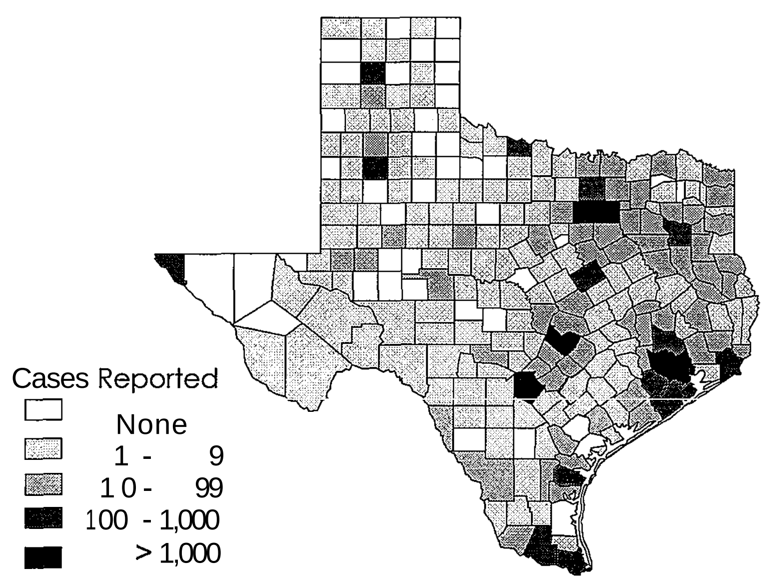
In 1993 the majority of AIDS cases in Texas were reported from urban areas. The largest number of cases was reported from Harris County (2,694), followed by Dallas County (1,742), Travis County (608), Bexar County (501), and Tarrant County (402). Among AIDS case rates by county, the highest was in Travis County with a rate of 101.5 cases per 100,000 population followed by Harris (91.1), Dallas (89.2), Bexar (40.2), Galveston (37.6), and Tarrant Counties (31.5). El Paso County, the fifth most populous county, ranks a distant sixth in both number of reported cases (120) and case rate (18.7 per 100,000). Only 41 of the 254 counties in Texas have not yet had a reported AIDS case since the epidemic began in the early 1980s. The disease continues to spread to less urban areas of the state (Figure 2). AIDS is no longer confined to specific groups or geographic regions. Public health strategies for prevention and channeling of resources must be tailored to meet the continuing changes in the epidemic.

AIDS Cases with NIR

A cumulative total of 1,218 AIDS cases were classified as No Identified Risk (NIR) at the end of 1993, which is 4.8% of the 25,571 cumulative AIDS cases reported through 1993. The cumulative NIR proportion has remained fairly level at 5%, with recently reported cases displaying a higher percentage. Of the 7,785 AIDS cases reported in 1993, 7.3% are classified as NIR. The higher percentage of NIRs among recently reported cases is attributed to the delay between case reporting and ascertainment of risk via investigation (Table 2).

NIR investigations are carried out in a variety of ways, depending on the individual circumstances of each case. Medical records, both at the diagnosing facility and at other medical facilities where the individual had been medi-

Figure 2. AIDS Cases Reported in *1993*



cally tended, are thoroughly reviewed. Ancillary record systems, such as sexually transmitted disease records, tuberculosis records, case management records, and death certificates also are reviewed for possible risk information. When no risk information can be obtained through record review, the primary care physician and/or associated health care personnel are contacted in order to determine if a mode of exposure is known to them. When circumstances and resources warrant, the individual may be interviewed by surveillance staff to determine risk of HIV exposure.

More than 650 NIR investigations were conducted during calendar year 1993, resulting in over 530 risk determinations. The majority of these reclassifications were through the review of medical records. Three of the reclassifications were via direct patient interview.

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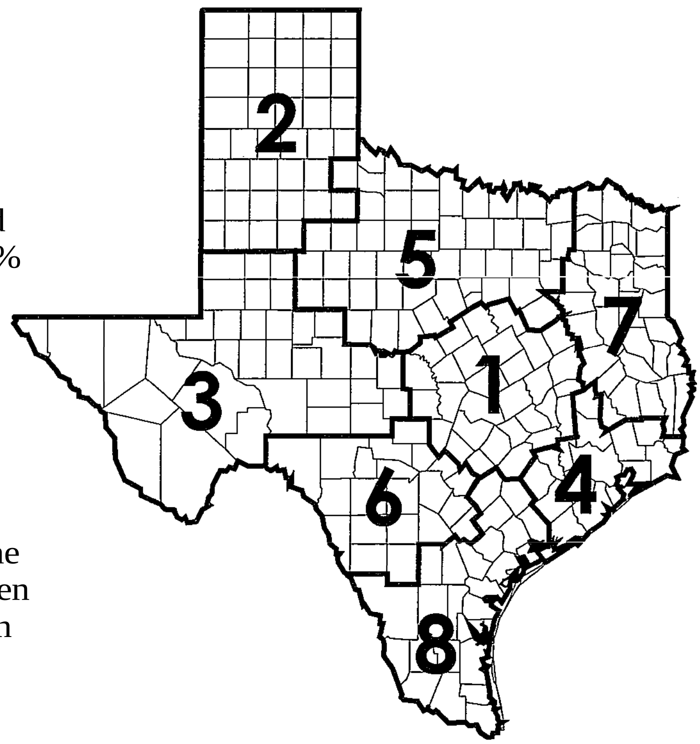
Immunization Levels: A Retrospective Study

In 1993 the Texas Department of Health (TDH) conducted a retrospective survey to assess the immunization status of public school kindergarten students at two years of age. Low immunization levels in this group have been reported in surveys conducted by the Centers for Disease Control and Prevention (CDC). According to these 1991 surveys, the proportion of children who were adequately immunized by age two was only 10% in Houston and 42% in El Paso.[1]

A retrospective survey design offers several advantages over other survey methodologies. Childhood immunization records are required for school entry, which guarantees a near 100% response rate. Records are available from all providers, and dose and date-specific information is provided in written form, eliminating reliance on parental recall. Retrospective surveys are generally easier to implement and incur a minimal investment in personnel time and dollars. A disadvantage of the retrospective survey, however, is that the data reflect the immunization rates of the two-year-old children three years prior to the survey date rather than the rates of the current two-year-old population. This survey was conducted during a period of transition in the state's public health region (PHR) boundaries. As a result of the reconfiguration, Texas is now divided into eleven regions rather than eight. The results of this survey are presented using the older eight-region configuration (Figure 1).

The CDC two-stage cluster survey method was used to select a sample of records in each of the eight PHRs and the city of Houston.[2] Thirty-five schools per PHR (stage one) and 25 kindergarten students per school (stage two) were randomly selected as survey subjects, with the exception of PHR 4. PHR 4 was divided into two components: 1. city of Houston and 2. PHR 4, excluding the city of Houston. The two-stage cluster survey method was used in both components, as in the other seven PHRs. Each region's immunization levels were weighted by the region's proportion of the state's kindergarten population to render overall state levels. In the case of PHR 4, both components' immunization levels were weighted by their proportions of the PHR 4 kindergarten population to arrive at a final immunization level for the region.

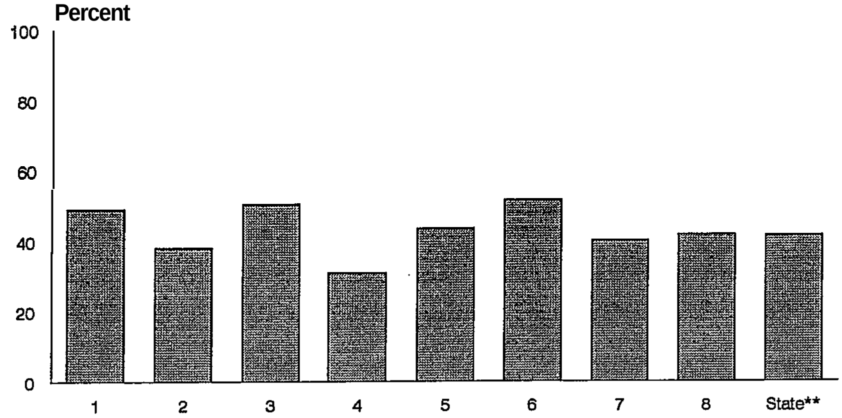
Figure 1. Regional Map Prior to March 1993



RETRO software, developed by CDC, was used to select campuses and students and to analyze data. Each region was provided a list of its selected campuses and a copy of the RETRO software. TDH region and/or local health department personnel visited each of these campuses and collected immunization histories on 25 randomly selected kindergarten students. Data were provided on diskette to the Immunization Division for analysis and reporting to CDC.

For the purposes of this survey, a child was considered adequately immunized at 24 months of age if he had received at least four doses of diphtheria and tetanus toxoids and pertussis vaccine (DTP), three doses of polio vaccine and

Figure 2. 1993 Texas Retrospective Immunization Survey: Percent of Kindergarten Students Adequately Immunized* by Age Two, by Public Health Region



*Survey was conducted during 1992-93 school year. Adequately immunized means having received 4 DTP, 3 doses of polio, and 1 MMR vaccinations. Students were two years old during 1989-90 school year.
**Weighted state level is based on 1992-93 school year kindergarten population.

one dose of measles, mumps, and rubella vaccine (MMR). Because hepatitis B vaccine (HBV) and *Haemophilus influenzae* type b conjugate vaccine (HibCV) are not required for school entry, immunization levels for these vaccines were not included in this survey.

Out of a 7,875 record sample, 7,762 records were actually reviewed, reflecting a 98.6% response rate. The percentage of kindergarten students in the eight PHRs who were adequately immunized by 24 months of age ranged from 31.0% in PHR 4 to 51.7% in PHR 6 (Figure 2). The weighted state level was 41.6%.

At the time this survey was conducted, the national goal was the adequate immunization of 90% of two-year-old children by the year 2000. The unprecedented resources made available through the President's Childhood Immunization Initiative have led to an acceleration of activities to reach individual coverage rates for each vaccine. By 1996, at least 90% of two-year-olds should be immunized with at least three doses of DTP (3 DTP) vaccine, three doses of oral poliomyelitis vaccine (3 OPV), one dose of MMR (1 MMR) vaccine, and at least three doses of HibCV. In addition, 70% of two-year-olds should have received three doses of HBV. The 1993 survey results indicated that the weighted state levels for 3 DTP, 3 polio vaccine doses, and 1 MMR were 76.2%, 72.1%, and 71.9%, respectively. Obviously, considerable effort will be required for Texas to achieve the 1996 goals.

References

1. CDC. MMWR, February 14, 1992:41(6). Retrospective assessment of vaccination coverage among school-aged children--selected U.S. cities, 1991, p. 104. CDC researchers for these surveys define "adequately immunized" as having received 4 DTP, 3 OPV, and 1 MMR vaccinations at the ages and intervals recommended by the Advisory Committee on Immunization Practices.

2. Zell, Elizabeth, and Eddins, Donald. Guidelines for retrospective school enterers' survey and clinic assessment, p. 62.

Immunization Division (512) 458-7284

Influenza and Flu-like illness

In this report relevant information from 1992 will be included in the discussion of disease trends in 1993.

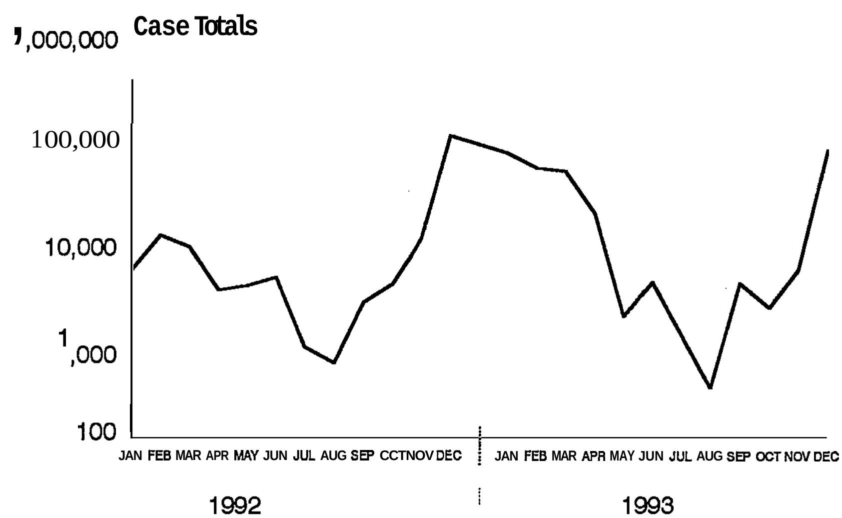
For reporting purposes, the disease category of "influenza and flu-like illness" encompasses a wide range of upper respiratory infections. Signs and symptoms include fever, cough, coryza, sore throat, malaise, myalgias, arthralgias, and headaches. Reports reflect case totals by week; patient identifiers and demographic information are not required.

Upper respiratory infections of viral etiology account for the majority of cases. Infections due to influenza viruses are most notable, especially during the winter months. Infectious agents such as parainfluenza viruses, adenoviruses, enteroviruses, respiratory syncytial virus, and *Mycoplasma* species also contribute to the morbidity in this category. Even primary infections due to members of the herpes virus family can result in an upper respiratory syndrome suggestive of a mild case of the "flu."

Many respiratory viruses follow seasonal patterns of incidence. The influenza season typically begins in late fall, continues throughout the winter, and tapers off in early spring. Other viruses, such as parainfluenza viruses or respiratory syncytial virus, circulate to a certain extent with influenza, especially at the beginning and end of the flu season. Slight increases in case totals noted during the months of May and June represent the expected circulation of parainfluenza virus type 3.

In 1993, 277,453 cases of influenza and flu-like illness were reported in Texas. This figure represents a 78.3% increase over the 155,568 cases reported for 1992. Two major factors contribute to the annual fluctuation of case totals: the timing of the beginning and end of each flu season and the dominant influenza virus strain(s) identified for any given season. The 1992-93 flu season began later than usual, with approximately two-thirds of the cases occurring during the first four months of 1993 (Figure 1). In contrast to the 1991-92 season, which came to an abrupt halt in early February 1992, the 1992-93 season extended into April as a result of the late emergence and co-circulation of a second and third strain of influenza virus. The 1993-94 flu season was somewhat unusual in that pre-seasonal virus activity was identified in Louisiana in late August, with no further reports in the Central Southern states (including Texas) until December when the season began in earnest.

Figure 1. Reported Cases of Flu and Flu-Like Illness: Monthly Totals, 1992-1993



Influenza and flu-like illnesses have been among the most underreported of all the notifiable diseases. Experts believe that up to 10% of the population becomes ill with influenza during any given season. In 1993 reports were received from only 76 of 254 counties. The 236,603 cases from Harris County accounted for 85.3% of the reported morbidity statewide. This case total is based upon the surveillance work conducted at the Influenza Research Center (IRC) at Baylor

College of Medicine in Houston. To estimate the number of cases that actually occur in the greater Houston community, medical epidemiologists at the Center multiply the number of influenza virus isolates recovered during active surveillance by 500; they report the estimated number of cases to TDH. The figure for Harris County also includes cases reported by the local health departments. This system of reporting is used in Harris County only. Because influenza statistics represent only a fraction of expected morbidity, 1993 was the last year for which case totals were collected. "Mluenza and flu-like illness" has been dropped from the list of reportable diseases in 1994. An ongoing statewide sentinel surveillance system for influenza virus will serve as the principle mechanism to document the progress and extent of flu seasons from 1994 onward.

Influenza Virus Surveillance

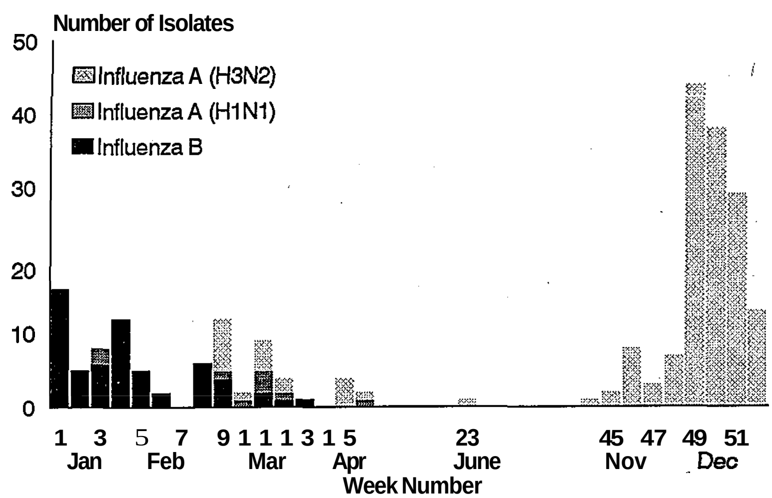
There are three types of influenza virus, influenza A, B, and C. Infections due to type A or B viruses, indistinguishable on the basis of signs and symptoms alone, account for significant levels of morbidity during the late fall and winter months in temperate climates. Influenza C infections, on the other hand, are usually subclinical and often go unrecognized.

Because of their unique genomic structure, influenza viruses exhibit significant variability over time. Small changes in the antigenic properties of key surface proteins of influenza A or B viruses result in new viral strains or variants. These changes, known as "antigenic drift," are the natural response of the virus to increasing levels of immunity in the host population. Mluenza A viruses also can exhibit dramatic changes in the antigenicity of the hemagglutinin and neuraminidase capsid proteins, resulting in the emergence of new virus subtypes. Such abrupt changes in the influenza A viruses are referred to as "antigenic shift."

Virus isolation, a lengthy and labor-intensive process, remains the definitive procedure for laboratory identification of influenza viruses. This procedure has been used successfully for several years as part of a surveillance network to characterize the epidemiology of each influenza season. Two centers conduct active laboratory-based influenza virus surveillance: TDH in Austin and the Influenza Research Center (IRC) at Baylor College of Medicine in Houston.

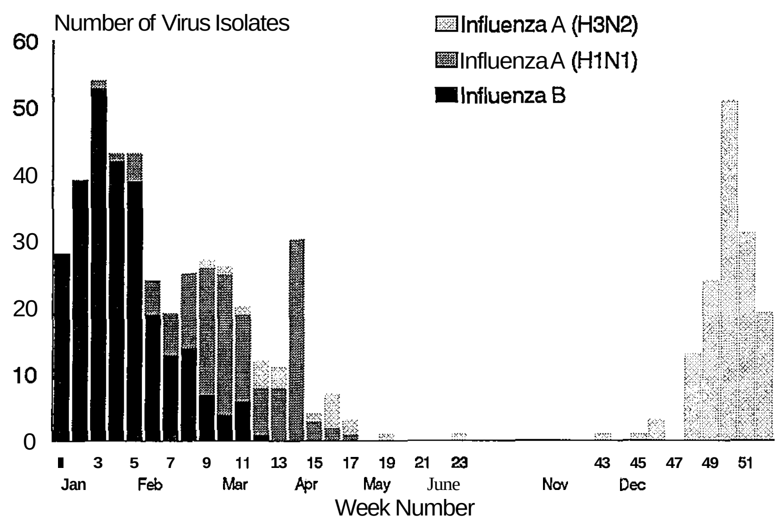
In Texas and elsewhere in the nation, influenza A and B viruses continue to alternate from one season to the next, with one or the other virus predominating. Figure 2, which shows the profile of influenza virus isolates recovered by the TDH system, depicts the final weeks of the 1992-93 influenza B season and the beginning of the 1993-94 influenza A (H3N2) season. Figure 3 shows the profile of influenza virus isolates recovered during 1993 by the IRC surveillance in Houston.

Figure 2. *Influenza* Virus Isolates Recovered by TDH-Based Statewide Surveillance by Week of Specimen Collection, 1993



Typically, there are regional variations in virus circulation patterns in a state the size of Texas. In an effort to compare differences in epidemic periods from one area of the state to the next, TDH surveillance activities have been expanded to include most major metropolitan areas in

Figure 3. Influenza Virus Isolates Recovered by the Influenza Research Center by Week of Specimen Collection: Harris County, 1993



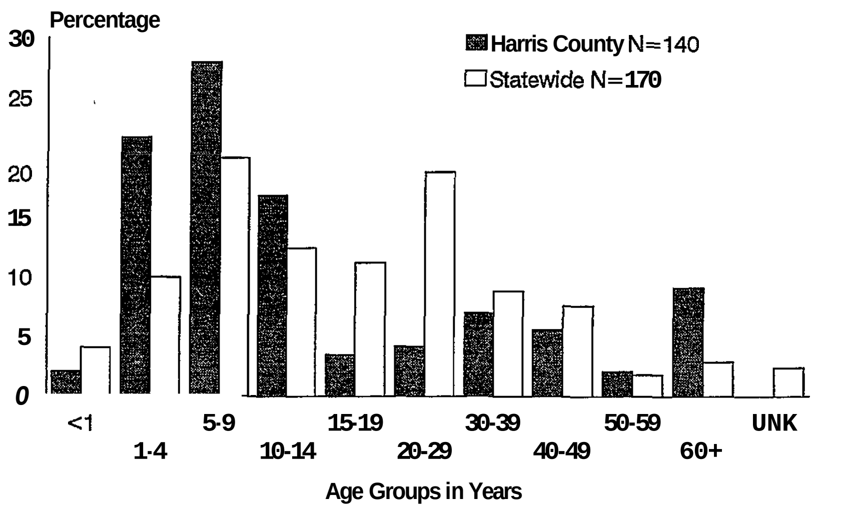
Texas. During 1993 the TDH network recovered a total of 239 isolates from the following counties: Bexar, Brazoria, Brazos, Briscoe, Dallas, Donley, Eastland, El Paso, Freestone, Galveston, Grayson, Hays, Jefferson, Lubbock, Navarro, Nueces, Potter, Randall, Titus, and Travis. In addition, paired sera from a patient residing in Cass County demonstrated a four-fold rise in titer to influenza A. During 1993 the Influenza Research Center (IRC) in Houston isolated virus from 560 specimens in Harris County. Compared with 1992, the 1993 figures represent increases of 285% for the TDH program and 294% for the IRC program. Although some of this increase can be attributed to the type(s) of influenza virus dominating a season, the course of a flu season, when the seasonal peak occurs, and the length of the season, much of this rise is due to a growing interest in submitting specimens for laboratory confirmation of influenza. During the calendar year 1993, the second half of the 1992-93 season continued well into April because of late-emerging viruses, and very intense influenza virus activity was detected in November and December, during the first half of the 1993-94 season.

A comparison of Figures 2 and 3 demonstrates regional differences in virus activity. For both the IRC and TDH surveillance programs, influenza B/Panama/45/90 dominated the season during January and February, 1993. Influenza A/Beijing/32/92 (H3N2) and influenza A/Taiwan-like (H1N1) co-circulated with influenza B/Panama toward the end of the 1992-93 season. The H1N1 viruses are identified as such because of their antigenic similarity to reference H1N1 viruses used for subtyping purposes. According to CDC, however, many H1N1 viruses recovered in Texas and elsewhere in the U.S. were determined to be closely related, if not identical, to influenza A/Texas/36/91. A transition in dominance from influenza B to influenza A occurred in March; all isolates recovered in April for both the IRC and TDH surveillance programs were influenza A viruses.

The geographic distribution of the late-emerging influenza A viruses was extremely focused. There was significant influenza A (H3N2) virus activity in El Paso and West Texas, consistent with CDC observations of such a focus in the Desert Southwest at the close of the 1992-93 season. This event was considered as a "herald wave" to indicate the most likely virus candidate expected to appear in the season which followed. In contrast, IRC-based surveillance detected a higher level of influenza A (H1N1) activity compared with the profile of viruses recovered elsewhere in the state.

The 1993-94 season in Texas started in early November with viruses detected in both Austin and Houston. Prior to this viral activity in Texas, there had been unusual pre-season activity in Louisiana, with at least three distinct clusters of culture-confirmed influenza A (H3N2) cases during August and September. Federal health officials expected the flu season to start in Texas and elsewhere in the country shortly thereafter, but no virus activity was detected until November when the influenza A/Beijing/32/92 (H3N2) virus emerged in full force. High levels of morbidity were evident early in December. Interestingly, this virus dominated the entire 1993-94 season, with no co-circulating viruses detected.

Figure 4. Age Distribution of Patients with Confirmed Influenza, A(H3N2): Harris Counfy and TDH Surveillance Compared, 1993



Historically, attack rates are highest among children during influenza B seasons. The expected age distribution was noted during the second half of the 1992-93 influenza B season, with children ages five to nine accounting for approximately 35%- 40% of the culture-confirmed cases. When influenza A seasons occur, especially those dominated by H3N2 viruses, the distribution of cases by age group is more diffuse. Figure 4 shows the age distribution of patients with culture-confirmed influenza A (H3N2) for both the statewide and Houston-based surveillance systems. In Houston two out of three patients were from 5 to 14 years old. Thirty percent of the virus isolates recovered in the TDH-based surveillance came from patients between the ages of 15 and 30 years; only 7.7% of the influenza **A** viruses recovered in Houston were from that age group. The elderly often experience substantial morbidity during influenza A (H3N2) seasons compared with that for influenza B seasons. During the influenza B season of 1992-93, no isolates were recovered from Houston patients age 60 or older. In contrast, 9.1% of the influenza A (H3N2) isolates from Houston in November and December came from this age group.

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Injury: Progress in Meeting Year 2000 Objectives

Death and disability from trauma continue to exact an enormous toll on Texas citizens. Those working in the area of trauma face the difficult challenge of finding solutions to one of society's most challenging problems. Fortunately, development of a guide for injury prevention efforts was begun in the mid-1980s. A set of measurable targets for injury mortality and morbidity were established as part of the Healthy People 2000 Objectives. These measurable targets provide not only a compass to help direct efforts but also a means to gauge progress.

Many of the rates and percentages presented in this report are derived from Texas Trauma Registry (TTR) data. Particularly useful were 1993 electronic patient data provided by five hospitals and 108 ambulance firms. These data are the basis for morbidity objectives in the prevention and treatment of injuries in Texas.

Texas deaths from injuries in 1993, as they relate to state and national objectives, are presented in Table 1. The state or national objectives for drownings, poisonings, homicides, and suicides have not been met yet.

Two historical graphs help contrast where efforts appear to be meeting with success or resistance. Figure 1 shows death rates from motor vehicle crashes (MVCs) for 1983 through 1993. The relatively smooth downward slope suggests success in controlling and reducing the death rate from MVCs. This success is further exemplified by Texas' 1.8 deaths per one hun-

Table 1. Year 2000 Objectives, Injury Mortality

	Texas Deaths 1993	Texas Death Rate 1993*	Year 2000 Objectives* Texas	National
Unintentional Injuries	6,136	31.6	none	29.3
Motor Vehicle-Related Crashes	3,179	17.6	17.3	16.8
		$\boxed{1.8**}$	1.6**	1.9**
Falls	746	$\boxed{2.6}$	3.3	2.3
Drownings	394	2.3	2.1	1.3
Poisonings	478	2.5	2.2	
Fires-Residential	237	$\boxed{1.2}$	1.2	1.2
Intentional Injuries	4,494	25.1	none	17.7
Homicides	2,227	12.8	none	7.2
Suicides	2,267	12.3	7.9	10.5

* Texas Year 2000 Objectives are crude death rates. All other death rates are per 100,000 population and are age adjusted to the 1940 U.S. population.

** Deaths per 100 million vehicle miles traveled.

☐ Texas or National Objective MET

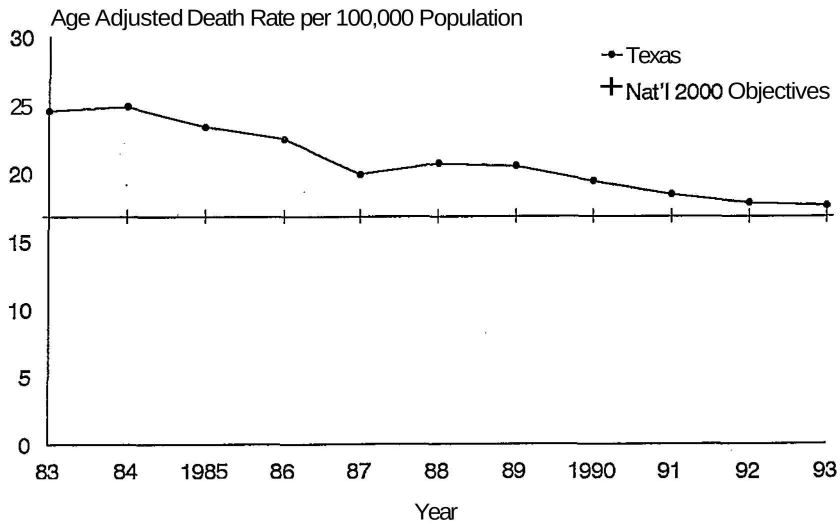
NOTES:
1. The "Unintentional Injuries" total includes subcategories that are not listed
2. Identify Codes:

A) Unintentional Injuries E800-E949
1) Motor Vehicle-Related Crashes E810-E825
2) Falls E880-E888
3) Drownings E830,E832,E910
4) Poisonings E850-E858,E860-E869
5) Fires-Residential E890-E899

B) Intentional Injuries E950-E969
1) Homicides E960-E969
2) Suicides E950-E959

SOURCES:
-Trauma Registry, Injury Prevention and Control Program.
-Mortality data were obtained using EPIGRAM software.

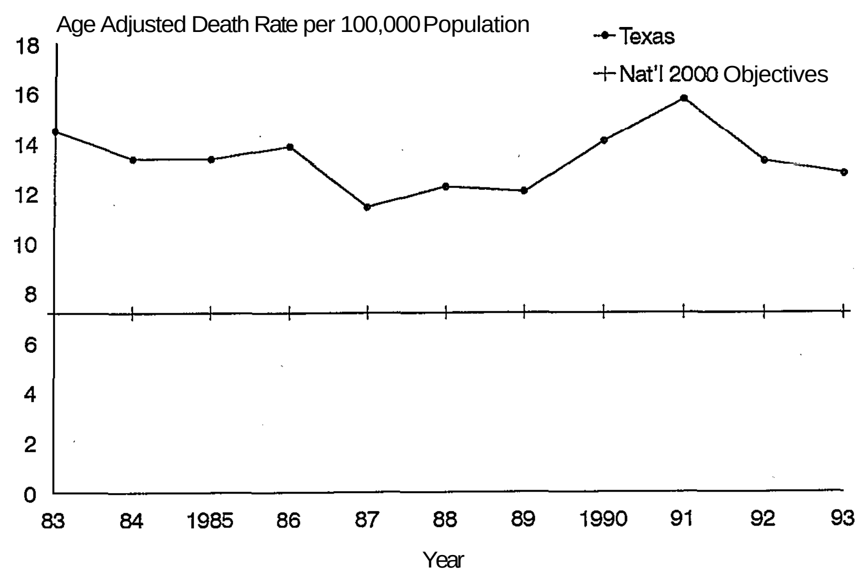
Figure 1. Mortality Rates for Motor Vehicle Crashes: Texas, 1983-1993



dred million vehicle miles traveled, which meets the National Year 2000 Objective (Table 1). Remarkable progress is being made in reducing deaths from motor vehicle crashes in Texas. However, the 3,179 deaths from MVCs in 1993 indicates considerable work remains.

In contrast, Figure 2 presents death rates from homicide. The slope of the graph fluctuates considerably and suggests that an effective combination of measures for preventing homicides has not yet been found. Most likely, a comprehensive approach like the one taken with motor vehicle crashes will be needed to reduce the homicide rate.

Figure 2. Death Rates from Homicide:. Texas, 1983-1993



The Healthy People 2000 Objectives also include measurable targets for injury morbidity - those who were injured and survived. The objectives include injury prevention in transportation vehicles - (Table 2). Occupant protection (seatbelt, shoulder harness, airbag, or child restraint use) for front seat occupants and motorcycle helmet use are legally required. Compliance with these two types of injury protection is correspondingly higher than that for bicycle helmet use, which is not legally required in Texas. These data on the use of occupant protection devices are based on limited reporting from Texas ambulance firms. The Texas sample consists of patients cared for by ambulance firm personnel. Such patients are sometimes considered greater risk takers than the general population.

Table 2. Year 2000 Objectives, Injury Morbidity: Vehicle Injury Prevention

	Texas Prehospital Sample 1993			National Year 2000 Objectives
	No	Yes	Percent Use	Percent Use
Occupant Protection	2,958	4,249	59%	85%
Motorcycle Helmet Use	87	110	56%	80%
Bicycle Helmet Use	146	4	3%	50%

Table 3. Year 2000 Objectives, Hospital Admissions

	National Year 2000 Objectives (per 100,000)
Unintentional Injuries	754
Hip Fractures (age 65+)	607
Head Injuries	106
Spinal Cord Injuries	5

Injuries resulting in hospital admissions are also included in the Healthy People 2000 Objectives. National Year 2000 objectives of four major categories are presented in Table 3. For each category, measurable targets are expressed as number of admissions per 100,000 population. There are not enough patient injury data currently being received from Texas hospitals (5) at this time to compute meaningful rates. Nevertheless, since these are the only data available at the present time, TTR is focusing future efforts on the four categories of injury listed in Table 3. Enlarging the number of sources for data regarding hospital admissions due to injury is a major TTR goal.

Reference

Healthy People 2000 - National Health Promotion and Disease Prevention Objectives. U.S. Department of Health and Human Services, 1990; DHHS Publication No. (PHS) 91-50212.

Injuy Prevention and Control Program
(512) 458-7266

Malaria

There were 48 reported cases of malaria in 1993, three more than in 1992. For the second consecutive year the number of reported cases was well below the preceding 10-year annual average of 72 reported cases. Forty-six cases were imported; two were congenital infections.

Of the imported cases, 27 (60%) were in males and 18 were in females. Neither sex nor country of exposure were reported for one imported case. Twenty-one (46%) patients were classified as African-Americans, although in many cases the patient was in fact a black African and not an American citizen. Thirteen patients were Asian, 10 were white, and two were Hispanic. Age was reported for 44 patients and ranged from 2-77 years, with a median of 22. Twelve (27%) were less than 10 years old, including nine African-Americans and three Asians.

Four species of Plasmodium *(P. falciparum,* P. *vivax, P.* ovale, and *P. malariae)* infect humans. Among imported cases, 20 were due to P. vivax, 15 to P. falciparum, two to P. *ovale,* and one to P. *malariae.* One was a mixed infection caused by *P.* vivax and P. malaria. The Plasmodium species was not known for nine individuals.

In recent years, India and Nigeria have been the source countries for the majority of the imported malaria cases in Texas; this observation held true in 1993. At least 55% (22) of patients with imported malaria had been in India (12) or Nigeria (10) prior to onset of illness. Four additional patients had been in Africa (3) or West Africa (1); thus they may have been in Nigeria. Three patients probably were infected in Honduras and two were infected in Ethiopia. Individual patients reportedly acquired their infections in the African countries of Angola, Guinea, Sierra Leone, Somalia and Zaire; the Asian countries of Afganistan, Nepal, and Thailand; and the South American countries of Colombia or Venezuela. No source country was reported for six patients.

Although malaria chemoprophylaxis is not 100% effective at preventing infection, appropriate chemoprophylaxis, along with use of insect repellents and other mosquito-avoidance techniques, is strongly recommended for persons living or traveling in malarious areas. Some information on chemoprophylaxis was available for 25 patients. Fourteen (56%) used no chemoprophylaxis. Of the 11 who reportedly used a chemoprophylactic drug, only two used a regimen recommended by CDC. Most of the inappropriate regimens involved the use of chloroquine phosphate in areas of Africa, Asia, and South America where chloroquine-resistant malaria occurs. Appropriate chemoprophylaxis failed in two patients. A Peace Corps Volunteer correctly used chloroquine in Honduras; her long-term exposure probably resulted in infection despite anti-malaria drugs. A traveler to Ethiopia used mefloquine, the recommended drug, but stayed longer than he originally anticipated and ran out of mefloquine before leaving.

Congenitally-acquired P. *vivax* infections were recognized in two one-month old infants born in Texas. The first occurred in a 32-day-old girl living in Houston, whose parents were from India. Although not reported at the time, the infant's mother was diagnosed and treated for malaria (treatment regimen not reported) during the fourth month of pregnancy. The mother's physician suggested that the pregnancy triggered the mother's illness, as there was no history of recent travel outside the US.

The second congenital infection was in a 43-day-old boy from El Paso, whose mother had come to Texas from Honduras. The mother was pregnant when she arrived in Texas. Malaria smears from the infant's mother and a twin brother were negative. The mother, despite the negative blood smear, was undoubtedly the source for her infant's infection. Low levels of parasiternia can occur in persons who have been infected for extended periods. In this situation, serologic tests may be an appropriate diagnostic tool. A Nigerian donor for Texas' two 1992 P. *falciparum* transfusion-acquired cases was smear-negative, although he had an elevated titer to *P. falciparum*. Serologic tests were not performed on the Honduran mother. The twin sibling was treated for malaria based on his brother's infection and some clincial symptomatology, but was not included in the official morbidity report which requires laboratory confirmation of infection.

Infectious Disease Epidemiology and Suweillance Division (512) 458-7328, 458-7676

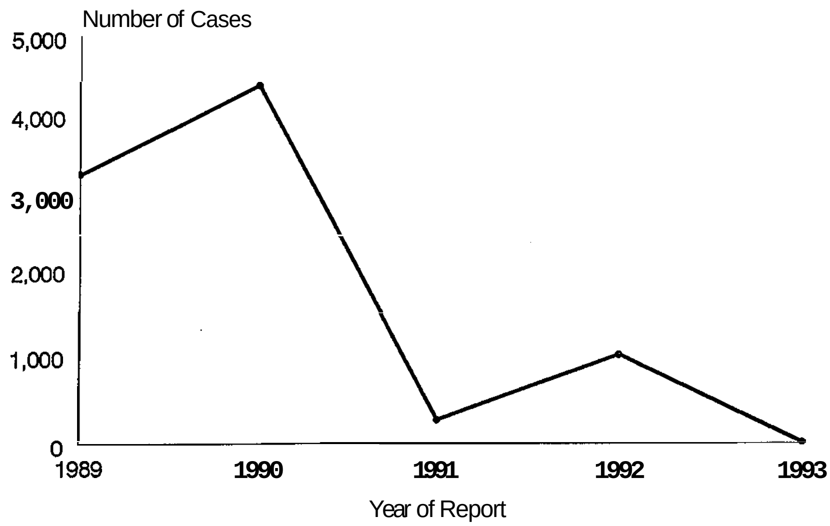
Measles

Measles is an acute viral infectious disease easily prevented by routine measles vaccination during childhood. The disease is characterized by a high fever followed by a rash that spreads from the face to the body. Other symptoms may include cough, coryza, conjunctivitis, and Koplik's spots. Complications from measles include otitis media, pneumonia, seizures, encephalitis, and death.

Ten cases of measles were reported in Texas in 1993, a marked decline from the 1,097 cases experienced in 1992 and the lowest recorded number of cases since measles morbidity began being monitored in 1920. All ten cases occurred in the first six months of 1993. Figure 1 illustrates measles incidence for the five-year period 1989 to 1993. No measles-associated deaths occurred in 1993. Nationwide, 515 cases of measles were reported from 29 states. Texas accounted for 2% of the nation's measles morbidity and ranked ninth among all states.

Hospitalizations and complications associated with measles continue to emphasize the severity of the disease. Forty percent (4) of the measles cases in Texas required hospitalization. Pneumonia, dehydration, and otitis media were the cited causes of measles-associated hospitalizations. One or more complications were noted for two cases.

Figure 1. Reported Cases of Measles: Texas, 1989-1993



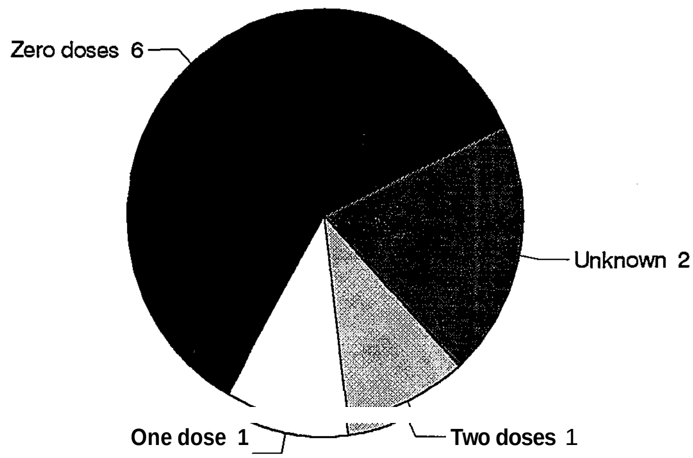
Two clusters of measles occurred in Texas in 1993 involving eight of the ten reported cases. A cluster of four measles cases occurred in Liberty County. All four cases occurred in relatives who received day-care in the same household. An additional epidemiologically linked patient from Galveston County was infected in this household as well. A cluster of two cases occurred in Harris County with an additional case in adjoining Fort Bend County. The source, a 33-year-old male, was infected with the measles virus while in the Philippines. The virus was spread to his 12-month-old son who, in turn, infected a 14-month-old child from Fort Bend County who attended the same day-care center. Two isolated cases occurred in Harris County and El Paso County.

Measles was confirmed in individuals ranging in age from 12 months to 33 years. Children under five years of age accounted for 80% (8) of all Texas measles cases for 1993. Of children 1-4 years of age, five were African-American, one was Hispanic, one was white, and one was classified as other. As in previous years, measles predominantly affected unvaccinated preschool children. Sixty percent (6) of measles cases occurred in children of preschool age who had not been immunized against measles. Only one patient was adequately vaccinated. The distribution of doses of measles vaccine received is shown in Figure 2. This situation illustrates the need to adequately vaccinate preschool-aged children to protect against measles.

Ongoing measles morbidity, both in Texas and the United States, brings to light the potential severity of all vaccine-preventable diseases and the necessity of adequately immunizing children in accordance with current age-appropriate recommendations. Enhanced immunization initiatives to improve immunization levels among preschool-age children have been implemented in Texas as well as throughout the United States. Through these immunization initiatives, as well as immediately identifying and reporting measles cases and implementing aggressive outbreak control measures, measles morbidity can be reduced in Texas.

Immunization Division (512) 458-7284

Figure 2. Doses of Measles Vaccine Received Prior to Illness Onset, Measles Cases: Texas, 1993



Doses of Measles Vaccine Received

Meningococcal Infection

Meningococcal diseases are invasive infections caused by the bacteria *Neisseria meningitidis*. The most common presentations are meningitis and/or meningococcemia, but other manifestations such as septic arthritis and pericarditis may also occur. While meningococcal infections also can be asymptomatic or cause only upper respiratory symptoms, only invasive disease is reportable in Texas. Meningococcal infections are confirmed in the laboratory by isolating the organism from a normally sterile body fluid, most often cerebrospinal fluid (CSF) or blood. One hundred and fifty-seven cases of invasive meningococcal infection were reported in Texas during 1993. The majority (71%) were reported as meningitis; the remaining were meningococcemia (44) and septic arthritis (1). Even though all cases were culture confirmed, serogrouping was available only for 33% of the reported cases. Twenty-eight were group C, 14 group B, nine group Y, and one group W135.

Since 1990 there has been a steady increase in the number of reported meningococcal infections. Reported cases increased by 41% in 1993. The 157 cases reported represented an incidence rate of 0.8 cases per 100,000 population. Fifty-three percent of the patients were males. The distribution of patients by race/ethnicity was 87.5% white, 18% Hispanic, and 11.8% African-American. The individuals ranged in age from one day to 88 years. Over 50% (86) of the cases occurred in children under the age of eight years and 31% (27) of the children were infants under one year of age. Infants under one year of age continue to experience the highest age specific incidence rate: 8.5 cases per 100,000 population.

The 19 patients who died from meningococcal infections during 1993 ranged in age from one day to 86 years. Thirty-six percent of the 19 deaths were in children eight years of age or younger.

One cluster of invasive meningococcal disease was reported in Texas in 1993. During February and March of 1993, five Grayson County residents developed illness. One of the five died. Three of the patients lived in Denison, and two lived in Sherman. All of the individuals were between the ages of 4 and 27 years. All had blood or CSF cultures positive for *N. meningitidis* serogroup C. The attack rate for Sherman and Denison residents between 2 and 29 years of age was approximately 24.5 per 100,000 population, well above the annual incidence rate of 1 case per 100,000 population in the United States. This cluster of infections was interesting because attendance by the patient or a household member at a bar was associated with an increased risk of disease. A community-wide meningococcal vaccination campaign was carried out for individuals ages 2-29 years by the Grayson County Health Department, and by June 1993 approximately 50% (11,000) of the targeted population was vaccinated.

One case of group C meningococcal infection occured in September 1993. This individual was a 45 year old male from Denison. No cases in the vaccine targeted population occurred in 1993.

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Neural Tube Defects in Texas: Recent Trends

Introduction

The term neural tube defect generally applies to anencephaly, encephalocele, and spina bifida. These congenital anomalies arise in the first three to four weeks of development. Anencephaly occurs when the neural tube is left open on the anterior end, at the level of the cranium; it is a uniformly fatal birth defect. Encephalocele, a smaller cranial defect through which the meninges and brain may herniate, may be compatible with life. Spina bifida, meningomyelocele, and meningocele are defects along the vertebral column; 80% of these lesions are "open". Spina bifida is the most common vertebral defect. Although most spina bifida lesions can be surgically repaired, neurologic sequelae are common.

The Centers for Disease Control and Prevention (CDC) estimates that 300,000-400,000 infants with anencephaly and spina bifida are born yearly worldwide. Neural tube defect (NTD) rates vary dramatically from country to country and are based on widely varied methods of surveillance.

Table 1. Variables used in Race/Ethnicity Computation

MRACE - (Mother's Race Code)

- (0) - Other
- (1) - White
- (2) - Black
- (3) - North American Indian
- (4) - Chinese
- (5) - Japanese
- (6) - Hawaiian
- (7) - Filipino
- (8) - Other Asian
- (9) - Not Classified
- (10) - Central or South American Indian

MSORG - (Mother's Hispanic Origin)

- (0) - Non-Hispanic
- (1) - Mexican
- (2) - Puerto Rican
- (3) - Cuban
- (4) - Central or South American Hispanic
- (5) - Other Hispanic
- (9) - Not Classified

RACE - (Computed Race/Ethnicity of Child's Mother)

- (1) - White
- (2) - Black
- (3) - Hispanic
- (4) - Other

WHITE: If (MRACE = 1) and (MSORG = 0 or 9) then race = 1

BLACK: If (MRACE = 2) then race = 2

HISPANIC: If (MRACE = 0, 1, 3, 9, or 10) and (MSORG = 1, 2, 3, 4, or 5) then race = 3

OTHER: If (MRACE = 0, 3, 9, or 10 and MSORG = 0 or 9) or (MRACE = 4, 5, 6, 7, or 8) then race = 4

Ethnicity data presented in the first section of this report are based on the following guidelines. For the mother, CDC definitions for white, Hispanic, African-American, and "other" were used. The ethnicity of the infant was determined using the computation described in Table 1. For the rest of the report, the same guidelines were used except that the Non-Hispanic grouping includes white, African-American, and "other."

Patterns of Anencephaly in Texas 1992

In 1993 Texas did not yet have a uniform system of birth defects surveillance. A high proportion of anencephalic births, however, can be identified through surveillance of live birth, fetal death, and death certificates. The results of several epidemiologic inquiries demonstrate the usefulness of this available information.

For 1992,112 anencephalic births were identified from Texas vital records, including 56 (50%)from fetal death certificates, 55 (49%) from live birth certificates, and one (1%) from a death certificate. The statewide prevalence of anencephaly in 1992 was 3.5 per 10,000 live births.

Figure *1.* Prevalence of Anencephalic Births by Public Health Region, *1992*

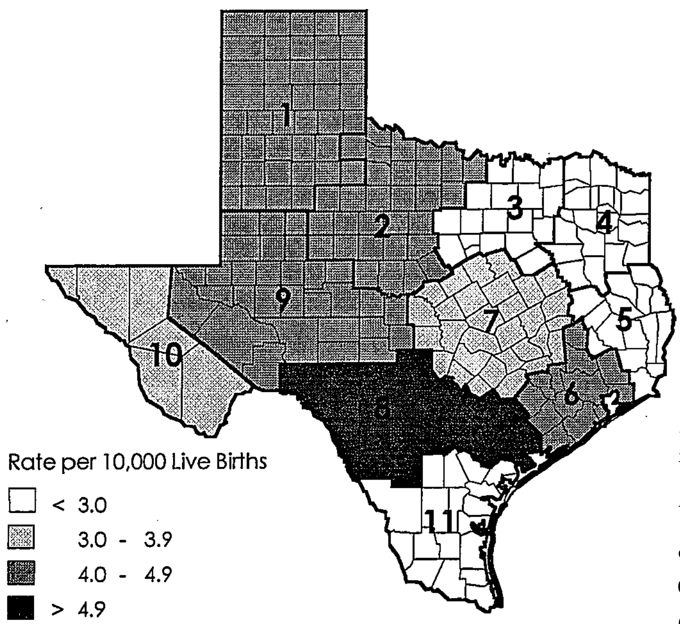


Figure 1 shows the prevalence of anencephalic births by the state's Public Health Regions (PHRs). The highest prevalence was found among births to residents in PHR 8 with 5.2 anencephalic births per 10,000 live births.

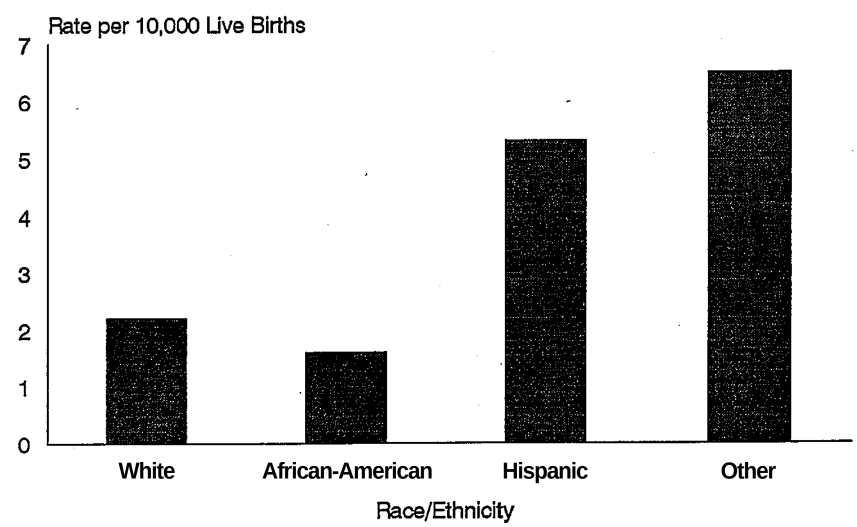
The prevalence of anencephaly varied by the gender of the child and the mother's ethnicity/race. The prevalence of anencephaly among female births was higher (4.2 per 10,000 live births) than among male births (2.8 per 10,000 live births). Figure 2 shows the variation of the prevalence of anencephaly by ethnicity/race. The highest prevalence of anencephaly was found among births classified as "other", although this rate was based on only five anencephalic births. For 1992 the prevalence of this defect among white Hispanic mothers was 2.4 times greater than that among white non-Hispanic mothers and 3.3 times greater than that among African-American mothers.

No relationship was noted between maternal age and prevalence of .anencephalyin 1992. Figure 3 shows the prevalence of anencephaly by mother's number of previous live births. A strong positive correlation was found between number of previous live births and prevalence of anencephaly (p = 0.001) among births to Texas residents.

Public Hospitals and the Urban Prevalence of Anencephaly *1991 -1993*

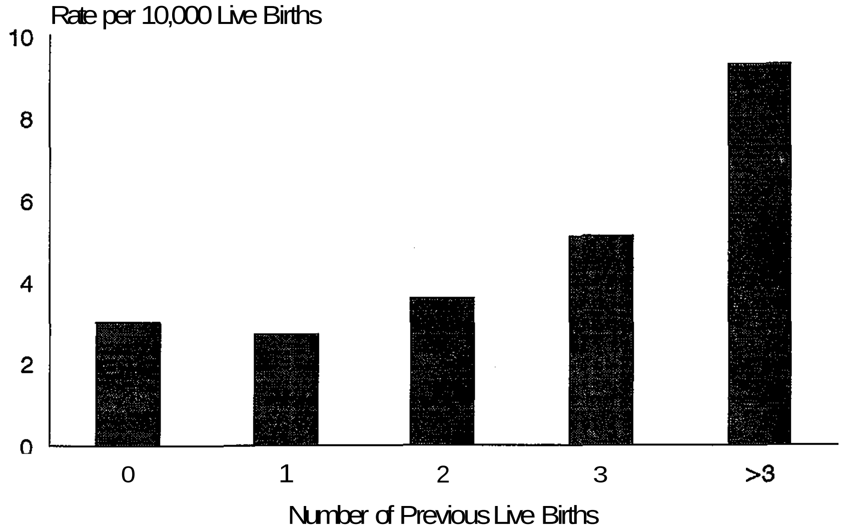
In 1993 the Birth Defects Act was passed by the Texas Legislature. The Department was provided funding and authority to establish a birth defects registry and conduct cluster investigations involving birth defects. Shortly thereafter, officials from a public hospital'in an urban county of Texas expressed concern about elevated rates of several birth defects 'in the public system and among Hispanics. One of these birth defects was anencephaly. To address this concern, the new Texas Birth Defects

Figure *2.* Prevalence of Anencephaly by Race/ Ethnicity of Births: Texas, *1992*



Monitoring Division conducted a study with the assistance of the Health Studies Program and the Bureau of Vital Statistics. For the six largest urban counties, the Division looked at all infant and fetal deaths (20+ weeks gestation) for which anencephaly was recorded as the underlying cause of death from 1991 through 1993. These six counties (Bexar, Dallas, El Paso, Harris, Tarrant, and Travis) recorded a total of 547,584 live births over the three-year period, which comprised 56% of all live births statewide. Cases were categorized by type of delivery hospital (public vs. private) and by Hispanic ethnicity. In this study, Hispanic ethnicity was determined by the mother's self-stated race/ethnicity on fetal death records and by the reported race/ethnicity on infant death records. Denominators used to calculate "prevalence at birth were the number of occurrent live births and fetal deaths in each category. The results of this study are shown in Table 2.

Figure 3. Prevalence of Anencephaly by Number of Previous Live Births



births was documented for the period 1986-1991, using a similar method of case ascertainment.

In the present study of the six urban counties, offspring with anencephaly were over two times more likely to be delivered in a public hospital than in a private hospital (prevalence

Table 2. Anencephaly Prevalence*, by Hispanic Origin and Hospital Type at Delivery: Six Largest Counties*", 1991 - 1993

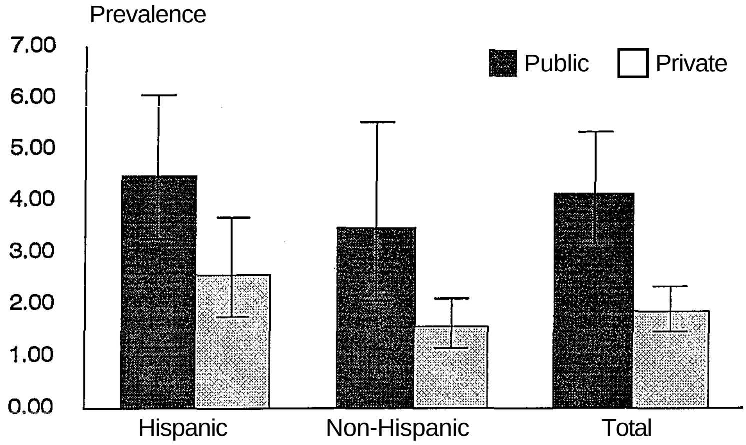
	Public			Private			Total		
	Cases	Prev	*95% CLs*	Cases	Prev	*95% CLs*	Cases	Prev	*95% CLs*
Hispanic	43	4.51	(3.26 , 6.07)	31	2.60	(1.77 , 3.69)	74	3.45	(2.71 , 4.33)
Non-Hispanic	18	3.50	(2.07 , 5.53)	45	1.58	(1.15 , 2.11)	63	1.87	(1.44 , 2.39)
Total	61	4.16	(3.18 , 5.34)	76	1.88	(1.48, 2.35)	137	2.49	(2.09 , 2.94)

* Occurrent cases per 10,000 occurrent live births + fetal deaths, with 95% confidence limits (95% CLs)
** Bexar, Dallas, El Paso, Harris, Tarrant, and Travis counties

For the three-year period, the overall prevalence of anencephaly in urban counties was 2.49 per 10,000 live births plus fetal deaths. The true prevalence may be somewhat higher, as some diagnosed cases may not have been recorded as a cause of death. This anencephaly prevalence is approximately 40% lower than that determined in a 1992 study of the 14 counties along the Texas-Mexico border. In that study, an anencephaly prevalence of 4.20 per 10,000 live

ratio=2.21, or 4.16/1.88; $p<0.05$) (Table 2, Figure 4). A statistically higher prevalence in public (vs. private) facilities was observed for both Hispanics and non-Hispanics. Using type of delivery hospital as a rough indicator of socio-economic status, this finding suggests that the birth prevalence of anencephaly in these areas is somewhat associated with income level. An association between low socioeconomic status and neural tube defects has been observed in other studies. This public-private difference in

Figure 4. Anencephaly Prevalence*, by Hispanic Origin and Hospital Type at Delivery: Six Largest Counties, 1991 - 1993**



* Occurrent cases per 10,000 occurrent live births + fetal deaths, with 95% confidence intervals
** Bexar, Dallas, El Paso, Harris, Tarrant, & Travis counties

anencephaly prevalence may reflect differences in the availability and utilization of prenatal diagnostic and pregnancy termination services, perhaps partly due to economic factors. However, not all public sector deliveries occur among low-income women. Furthermore, some private hospitals accept Medicaid patients. Prevalence also may be influenced by referral patterns. Therefore, the true prevalence difference between income levels, as reflected by having obtained services from public or private facilities, is difficult to determine from these data.

The prevalence of anencephaly among Hispanics in the urban counties was 84% higher than that among non-Hispanics (prevalence ratio=1.84, or 3.45/1.87; p<0.05) (Table 2). This ethnic difference was statistically significant in the private sector, but not in the public sector. The higher prevalence of anencephaly in Hispanics has been described in other studies.

Vital records are generally a poor primary data source for studies on birth defects because many defects are not manifested until after the infant has been released and the birth certificate has been submitted to the Bureau of Vital Statistics. However, death certificates are useful in providing information on anencephaly, because anencephaly, unlike most birth defects, is a universally fatal condition.

In the near future, the Texas Birth Defects Registry and the Texas Birth Defects Monitoring Division will be able to supplement these vital statistics data with a wealth of other data on birth defects from a variety of sources. The Division will begin piloting the registry in Public Health Regions 6 and 11 on January 1, 1995 (see Figure 1) and hopes to expand its registry statewide in late 1996.

Texas Neural Tube Defect Surveillance and Intervention Project

In April 1991 three anencephalic infants were delivered in Brownsville, Texas within a 36-hour period. This investigation revealed that Cameron County women who conceived during 1986 through 1989 had significantly lower NTD rates (14.7 cases per 10,000 live births) than those of women who conceived during 1990 and 1991 (27.1 cases per 10,000 live births). These data included cases that were spontaneously aborted at ≤20 weeks gestation as well as cases that were terminated at any gestational age. For women who conceived during 1990-91 the anencephaly rate was 19.7 cases per 10,000 live births. The anencephaly to spina bifida ratio (A:SB) during that period was 4:1. In contrast, for women who conceived during 1986-89 the anencephaly rate was 9.6 per 10,000 live births, and the A:SB ratio was 2:1. Based on these data, the high NTD rate during 1990 and 1991 clearly can be attributed to an anencephaly cluster.

In late summer of 1992, the Texas Department of Health (TDH) responded to a CDC request for proposal (RFP) to implement NTD surveillance and risk reduction activities in a high prevalence area. The RFP also requested a case-control study for NTD risk factors. TDH was awarded a cooperative agreement based on a proposal to carry out these activities in the 14 counties along the 1,000-mile Texas-Mexico border. The following paragraphs describe the TDH Neural Tube Defect Surveillance and Intervention Project (TNTDP). These activities require extensive travel by three teams stationed along the border.

Surveillance. The surveillance portion of the TNTDP involves prospective casefinding through the following data sources: the 21 hospitals of the 14-county Texas-Mexico border study area in which births occur, birthing centers, genetics clinics, ultrasound centers, abortion centers, prenatal clinics, and birth attendants. (Birth attendants include lay midwives, certified nurse midwives, and non-hospital physicians.) Every attempt is made to identify both prenatally diagnosed fetuses and out-of-hospital births and abortions.

The time period for the surveillance data reported here is from January 1 through December 31,1993. For this period, 67 NTD-affected pregnancies were identified among women

Table 3. Estimated NTB Rates per 10,000 Live Births by County, 1993

County	Type*	Live Births	Cases	Rates*"	95% CI
Cameron	R	7,641	11	14.4	[7.2-25.8]
	O	9,436	14	14.8	[8.1-24.9]
Hidalgo	R	12,639	19	15.0	[9.2-23.5]
	O	12,676	15	11.8	[6.6-19.5]
Starr	R	1,358	1	7.4	[0.2-41.0]
	O	949	2	21.1	[2.6-76.1]
Zapata	R	217	1	46.1	[1.2-256.8]
	O	5	0	--	--
Webb	R	4,745	11	23.2	[11.6-41.5]
	O	5,305	9	17.0	[7.8-32.2]
Maverick	R	1,164	2	17.2	[2.1-62.1]
	O	1,502	2	13.3	[1.6-48.1]
Kinney	R	45	0	--	--
	O	0	0	--	--
Val Verde	R	942	1	10.6	[0.3-59.1]
	O	982	1	10.2	[0.3-56.7]
Terrell	R	20	0	--	--
	O	0	0	--	--
Brewster	R	114	1	87.7	[2.2-488.7]
	O	246	1	40.7	[1.0-226.5]
Presidio	R	136	1	73.5	[1.9-409.7]
	O	25	0	--	--
Jeff Davis	R	19	0	--	--
	O	0	0	--	--
Hudspeth	R	70	0	--	--
	O	5	0	--	--
El Paso	R	15,956	14	8.8	[4.8-14.7]
	O	17,749	15	8.5	[4.7-13.9]
Total	R	45,066	62	13.8	[10.5-17.61
	O	48,880	59	12.1	[9.2-15.6]

* R = resident
O = occurrent
' per 10,000 Live Births; rates are based on time period of delivery or termination

Table 4. NTD Type, Resident Rates, and Anencephaly/Spina Bifida Ratio by County, 1993

County	Anencephaly Cases	Anencephaly (Rate)*	Spina bifida Cases	Spina bifida (Rate)*	Other Cases	Other (Rate)*	Total	NTDs (Rate)*	A:SB⁺ Ratio
Cameron	5	(6.5)	5	(6.5)	1	(1.3)	11	(14.4)	1.0 : 1
Hidalgo	6	(4.7)	10	(7.9)	3	(2.4)	19	(15.0)	0.6 : 1
Webb	7	(14.7)	4	(8.4)	0	(0.0)	11	(23.2)	1.8 : 1
El Paso	8	(5.0)	6	(3.8)	0	(0.0)	14	(8.8)	1.3 : 1
Other	2	(4.9)	4	(9.8)	1	(2.4)	7	(17.1)	0.5 : 1
Total	28	(6.2)	29	(6.4)	5	(1.1)	62	(13.8)	1.0 : 1

* Rates are cases per 10,000 live births (in 1993) and are equivalent to prevalence at birth; cf., Table 1 for 1993 live births

⁺ A:SB is the ratio of cases of anencephaly and other anomalies (all ICD-9 code 740), including craniorachischisis, to cases of spina bifida.

who delivered or terminated their pregnancy in the 14-county study area; 17 (25.4%) were terminated or spontaneously aborted at ≤20 weeks gestation, 14 (20.9%) delivered or terminated between 21 and 33 weeks, and 36 (53.7%) delivered or terminated at ≥34 weeks. A prenatal diagnosis was reported for 72% of the cases. Of the 67 NTD-affected pregnancies, 62 resident and 59 occurrent mothers met the case and residency requirements. **A** birth was counted as a resident birth when the birth or termination involved a mother who was a resident of one of the 14 study-area counties; an occurrent birth or termination was a NTD-affected outcome that occurred in one of the 14 study-area counties. This difference is important because of the considerable migration for birth from a county of residence to a different county which may or may not be within the study area. Active surveillance detects all births that occur. However, county-specific residence rates require the mother's residence; exposure is coupled to residence, not occurrence. The geographic distribution of these cases and county-specific rates with confidence intervals are illustrated in Table 3. Rates are equivalent to prevalence at birth.

In contrast to the high rate of anencephaly identified in Cameron County during 1990 and 1991 (i.e., 19.7 per 10,000 live births), the rate for 1993 was 6.5 per 10,000 live births. Four counties; Cameron, Hidalgo, Webb, and El Paso, accounted for 90% of the births. Together these counties had an anencephaly rate of 6.3 per 10,000 live births; aggregately, the 14 border counties had a rate of 6.2 per 10,000 live births. In 1993 the Cameron County spina bifida rate equaled the anencephaly rate at 6.5 per 10,000 live births. The four largest counties had a spina bifida rate of 6.1 per 10,000 live births, and the 14 border counties had a rate of 6.4 per 10,000 live births. For 1993 A:SB was 1.0:1 for Cameron County, the four largest counties, and the 14-county aggregate. County-specific rates are shown in Table 4.

Only three of the 62 patients in 1993 were non-Hispanic. Hispanic rates were only slightly higher than overall rates. The Hispanic anencephaly and spina bifida rates in Cameron County were both 7.1 per 10,000 live births, which is not significantly different from the overall rate of 6.5 per 10,000 live births. Similarly, the Hispanic A:SB ratio is 1.0:1 for both Cameron County and the four largest counties together, and 0.9:1 for the 14-county aggregate.

Analysis of the sex-specific birth prevalence by NTD type showed that 57% of all anencephaly cases were girls and 21% were boys. Gender was not identified for 21% of the infants (Table 5). The rate of anencephaly for girls was 7.2 per 10,000 female resident live births. The male anencephaly rate was 2.6 per 10,000 male resident live births. In contrast, boys and girls were more equally represented among spina bifida cases with 45% being male; 41% female; and 14% undetermined. The rate of spina bifida for female births was 5.4 per 10,000 female resident live births. The male spina bifida rate was 5.7 per 10,000 male resident live births.

Table 5. Sex-Specific Prevalence of Neural Tube Defects: All Counties by Type, *1993*
N=62 Resident Cases

	Male		Female		Undefined	Total	
Type of NTD	No.	(Rate)+	No.	(Rate)+	No.	No.	(Rate)
Anencephaly (all 740.0)§	6	(2.6)	16	(7.2)	6	28	(6.2)
Spina Bifida (all 741.0)	13	(5.7)	12	(5.4)	4	29	(6.4)
Encephalocele (all 742.0)	1	(0.4)	4	(1.8)	--	5	(1.1)
Total by Sex	20	(8.8)	32	(14.4)	10	62	(13.8)

+ per 10,000 male or female live births
§ total anencephaly, including other anomalies under the rubric of ICD-9 code 740, such as craniorachischisis

Folic-acid Intervention. The time period for the intervention data reported here is from January 1, 1993 through December 31, 1993. Those women whose first NTD-affected pregnancy was delivered or terminated during 1993 and who reside in the study area were interviewed and enrolled in the intervention program. They were provided preconception, pregnancy, and NTD risk-reduction education and counseling and given a low-dose, 0.4 mg folic acid/multivitamin supplement if they were contracepting. Women who were not contracepting were placed on a daily multivitamin regimen that provides 4 mg folic acid. Health histories were obtained and blood was drawn for serum folate, red blood cell folate, B_{12}, glucose, and a complete blood count prior to supplementation. Women who lived outside the study area and women with NTD-affected pregnancies before 1993 were educated but not given folic acid. Because no prenatal multivitamin with 4 mg of folic acid currently exists, a prenatal multivitamin with 1 mg of folic acid was packaged with three 1 mg folic acid tablets to provide 4 mg of folic acid per day to high-risk women who may have become pregnant.

Table 6. Enrollment in Folic Acid Intervention, *1993*
N=67 Identified cases; 52 Eligible cases

Status	Number	Percent	Status	Number	Percent
Consented and on folic acid	41	79	4.0 mg	10	24
			0.4 mg	28	68
			0.8-1.0	3	7
Consented and not on folic acid	4	8	Pregnant	2	50
			Pending	2	50
Eligible/not enrolled	7	13	Lost	1	14
			Refused	5	71
			Quit	1	14
Total eligible cases	52	100			
Total ineligible cases	15	100	Moved	12	80
			Tubal ligation	3	20

The three project teams began enrolling cases in the intervention study in September 1993. As of December 31, 1993, 67 NTD-affected pregnancies had been identified, of which 52 were eligible for the intervention study. Of these, five refused to enroll in the intervention study, one could not be located, two were not placed on folic acid because they were identified prenatally and were still pregnant, and two were pending enrollment. Of the 41 women who were placed on a folic-acid containing supplement, 10 (24%) took high dose folic acid (4.0 mg), 28 (68%) took low dose folic acid (0.4 mg), and three (7%) took physician-prescribed prenatal vitamins containing 0.8 to 1.0 mg folic acid (Table *6)*.

Assessment of the efficacy of periconceptional folic acid in the prevention of NTD recurrence must await several years of pregnancy outcomes due to the relatively small number of case mothers in this study.

Noncommunicable Disease Epidemiology and Toxicology Division (512) 458-7222

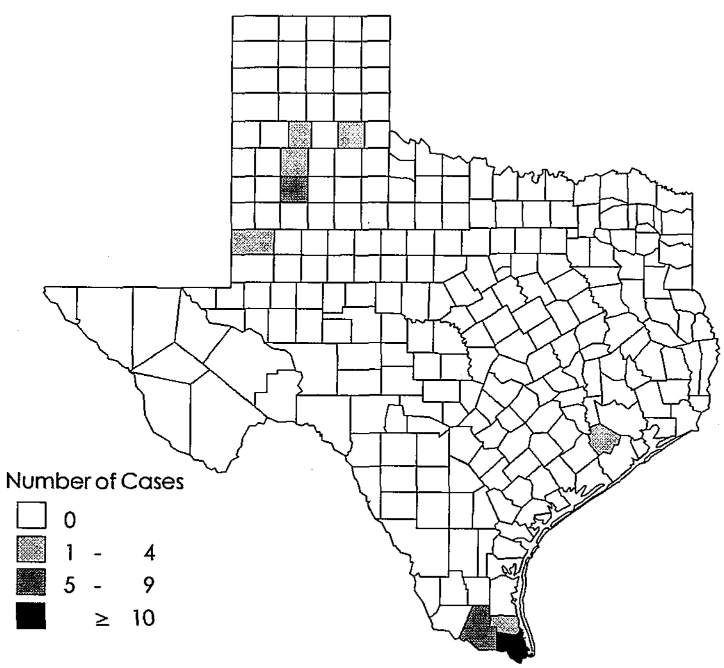
Texas Birth Defects Monitoring Division (512) 458-7232

Infectious Disease Epidemiology and Surveillance Division (512) 458-7328, (512) 458-7676

Occupational Disease Surveillance

The Texas Occupational Disease Reporting Act was passed by the 69th Legislature in 1985. This act required that physicians and laboratory directors report adult elevated blood lead levels (>40 g/dl), and diagnoses of suspected or confirmed asbestosis and silicosis. The act also gave the Texas Board of Health the authority to add other preventable occupational diseases to the list. Later that same year, the Board made acute occupational pesticide poisoning a reportable condition in Texas. Since 1987, the National Institute for Occupational Safety and Health (NIOSH) of the Centers for Disease Control and Prevention (CDC) has provided limited funding for occupational disease surveillance activity in Texas.

Figure 1. Acute Occupational Pesticide Poisoning in Texas, 1993



Acute Occupational Pesticide Poisoning

The Environmental and Occupational Epidemiology Program (EOEP) conducts active surveillance of acute occupational pesticide poisonings throughout the state. The active surveillance is conducted using a sentinel provider system which consists of individual physicians, clinics, and hospitals who consent to be contacted by EOEP staff on a regular basis.

Initially, the EOEP concentrated this active surveillance effort in three specific agricultural regions of Texas: the Winter Garden area in south central Texas, the Rio Grande Valley in far south Texas, and the Texas Panhandle. Other agricultural areas of Texas are now included in the active surveillance effort. Sixty-three health clinics, 30 hospital emergency rooms, and 26 physicians participated as sentinel providers in 1993. In addition to contacting sentinel providers, health care providers from all areas of the state report pesticide-related illness directly to EOEP.

In 1993, 15 incidents involving 36 workers with acute pesticide poisoning were reported to the Texas Department of Health (TDH); one worker died. The ages of the persons reported with pesticide illness ranged from 21 to 65 years of age. The majority (66%) were of Hispanic descent; all others were white, non-Hispanic. Twenty-six (72%) of the workers were male, and 10 (28%) were female. Reports of acute occupational pesticide poisoning in 1993 are presented geographically in Figure 1. For three incidents, the county where the exposure occurred could not be determined.

Non-agricultural settings accounted for most (21) of the reported illnesses, including a fire at a landscape company where nine people were exposed. Seven of the nine were volunteer fire fighters. A company employee and his one-year-old daughter (not counted in the occupational exposure total) were on the premises when the fire occurred. Eleven other workers were exposed in a separate incident involving a structural pest control application in a govern-

Table 1. Exposure in the Agricultural Setting, *1993*

Cases Reported	
1(F)	Exposure while mixing/loading pesticides
1(FW)	Exposure while moving bags of pesticides
3(1 F & 2 FW)	Exposure from drift during ground application
7(FW)	Exposure from drift during crop dusting
1(F/CD)	Exposure from plane crash while crop dusting
3(FW)	Exposure while working in recently treated fields

Farmer=(F) Crop Duster=(CD) Farm Worker=(FW)

ment office building. Sixteen workers who became ill due to pesticide exposure performed agriculture work: two were farmers, one was a farmer and crop duster, and 13 were farm workers. Table 1 shows where the exposure to pesticide occurred in the agricultural setting.

The fatality involved an aerial pesticide applicator who crashed while spraying cotton fields with paraquat. The pesticide spilled on the pilot when the airplane crashed. He died of paraquat poisoning eight days later.

Adult Elevated Blood Lead Levels

Physicians, laboratories, and other responsible parties are required to report to the TDH, all blood lead levels at or above 40 micrograms per deciliter of blood (mcg/dl) in persons 15 years of age or older. All reports are confirmed laboratory blood lead reports. For 1993, the EOEP received 800 reports of elevated blood lead levels for 273 individuals. Because the Occupational Safety and Health Administration (OSHA) requires that employees be tested at two-month intervals if their blood lead levels exceed 40 mcg/dl, multiple reports were received for many individuals.

Figure 2. Distribution of Individuals with Elevated Blood Lead Levels by Age Group: Texas, *1993*

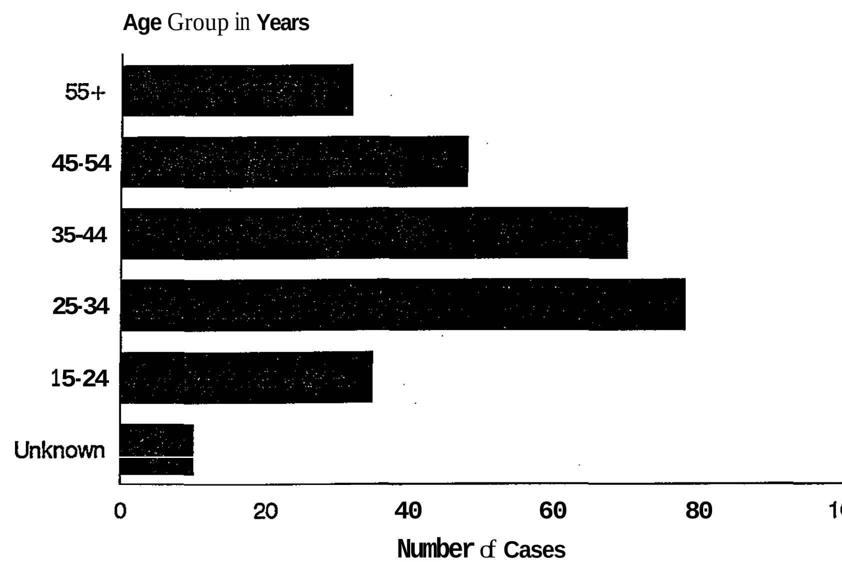


Table 2. Distribution of Individuals Reported with Elevated Blood Lead Level Test by Type of Industry: Texas, *1993*

N=273

198	Battery Manufacturing
36	Foundry, Smelting, and Refining
15	Unknown
12	Radiator Repair Shop
3	Construction
3	Scrap and Waste Metals
2	Battery Lead Oxide Manufacturing
2	Steel Works and Blast Furnace
1	Metals Reclamation
1	Vehicle Parts and Accessories Manufacturing

In 1993, 268 (98%) of the individuals with reported elevated blood lead levels were male and five (2%) were female. Based on follow-up for all reported cases, 142 (52%) of the individuals were Hispanic, 75 (27%) were non-Hispanic whites, and 29 (11%) were African-American. Identification for race and ethnicity could not be obtained for 27 (10%) of the workers reported. Figure 2 identifies the age grouping of reported workers with elevated blood lead levels. Table 2 shows, by type of industry, the number of individuals reported to have

Table 3. Reported Individuals with Elevated Blood Lead Levels by Type of Occupation, 1993

N=273

37	Machine Operators
31	Radiator Repairers
16	Supervisor, Production Operations
16	Furnace, Kiln, and Oven Operators, except food
19	Machine Feeders and Off-Bearers
19	Freight, Stock, and Material Handlers
24	Laborers, not Construction
21	Unknown or Pre-employment Blood Lead Tests
13	Welders and Cutters
10	Hand Painting, Coating, and Decorating Occupations
6	Assemblers
5	Electrical and Electronic Equipment Assemblers
5	Extruding and Forming Machine Operators
5	Miscellaneous Material Moving Equipment Operators
5	Mixing and Blending Machine Operators
4	Inspectors, Testers, and Graders
4	Janitors and Cleaners
4	Miscellaneous Electrical and Electronic Equipment Repairers
4	Industrial Truck and Tractor Equipment Operators
2	Cementing and Gluing Machine Operators
2	Stock Handlers and Baggers
2	Miscellaneous Plant and System Operators
2	Managers and Administrators
2	Handpackers and Packagers
1	Mechanical Engineer
1	Chemist
1	Security Guard, not public service
1	Supervisor of Mechanics and Repairers
1	Painting Contractor
1	Asbestos Removal Worker
1	Lathe and Turning Machine Set-up Operator
1	Machine Operator
1	Miscellaneous Metal, Plastic, Stone, and Glass Working Machine
1	Fabricating Machine Operator
1	Molding and Casting Machine Operator
1	Heat Treating Equipment Operator
1	Separating, Filtering, and Clarifying Machine Operator
1	Crushing and Grinding Machine Operator
1	Production Inspectors, Checkers, and Examiner

elevated blood lead levels. As in previous years, workers who were employed in battery manufacturing represent most of the cases (73%). Thirty-six workers (13%) worked in the Foundry-Smelting-Refining industry. Radiator repair shop workers comprised 4% or 12 of the workers reported. The remaining industries represented **27** (10%) of the workers. Table **3** shows, by occupation, the number of reported cases of elevated blood lead levels.

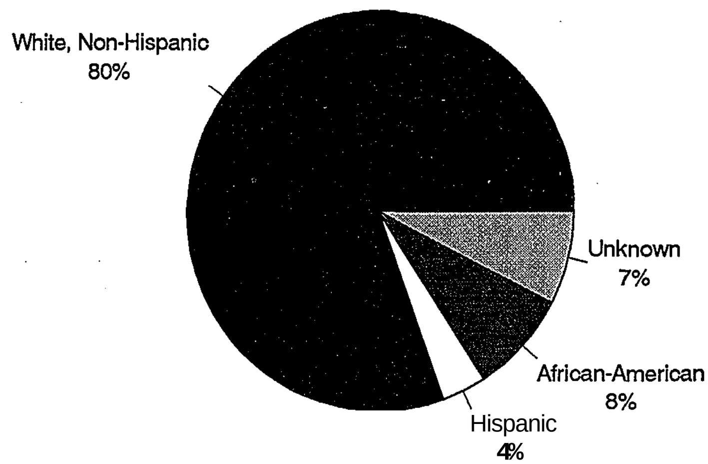
Reports of elevated blood lead levels are prioritized on the basis of blood lead level and presence of symptoms. If any of the following conditions **are** present, the work site is considered high priority and is inspected by local or state health department staff to **identify** the source of lead exposures on the job:

- An employee's blood lead level is greater than 60 **mcg/dl.**

- An employee's blood lead level averages 50 mcg/dl over a six-month period.
- The individual exhibits symptoms of lead poisoning.

Industrial hygiene inspections measure lead levels in the air and examine work practices to assess additional opportunities for worker exposure. Based on these inspections, interventions to reduce worker exposure are suggested (changing work practices, worker education, etc.) and assistance in implementing interventions is offered.

Figure 3. Distribution of Reported Asbestosis Cases by Race and Ethnicity: Texas, 1993



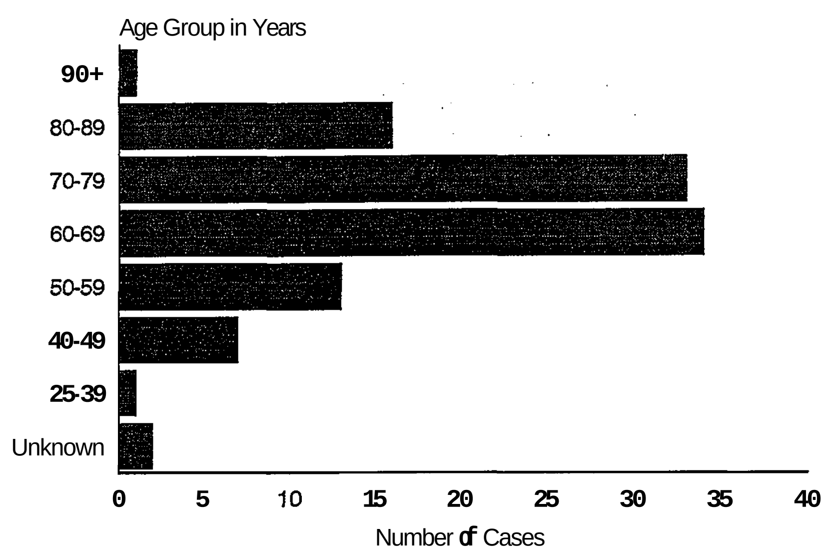
Asbestosis

Of the 107 cases of asbestosis reported to TDH during 1993, 47 (44%) were identified by reviewing death certificates filed with the TDH Bureau of Vital Statistics. Physicians reported 20 (19%) of the cases; 40 (37%) were identified during medical record review at a Veterans Administration hospital. The distribution of patients by race/ethnicity is shown in Figure 3 and by age group in Figure 4. The age at diagnosis ranged from 26 to 90 years. The medical record for the 26-year-old did not list job duties, but did note that he was in Korea in the military, had symptom onset during the 1950s, and was diagnosed with asbestosis in 1959. The oldest individual was a retired military officer; no additional employment information was available from his death certificate.

Varied occupations were identified among the individuals reported with asbestosis in 1993. Most of the occupational information was obtained from death certificates. The occupation shown on the death certificate, however, may not have contributed to the asbestos exposure, since the exposure may have occurred years earlier. Among the types of occupations listed were construction worker, electrician, plumber, pipefitter, engineer, machinist, fireman, laborer, insulator, boilermaker, rigger, sheet metal worker, and welder. Most medical records and physician reports do not include the occupation where the exposure most likely occurred.

In November 1993, a hospital medical record review to identify asbestosis cases was conducted at a Veterans Administration facility. Medical records were selected based on International Classification of Disease (ICD)-9 Code for asbestosis (501) listed on the discharge sum-

Figure 4. Distribution of Reported Asbestosis Cases by Age Group: Texas, 1993



mary. Sixty-seven medical records were reviewed; the diagnosis of asbestosis was identified in 40 of the 67 records. Although occupational information was listed in 12 medical records, none of these occupations were identified as the source of the asbestos exposure.

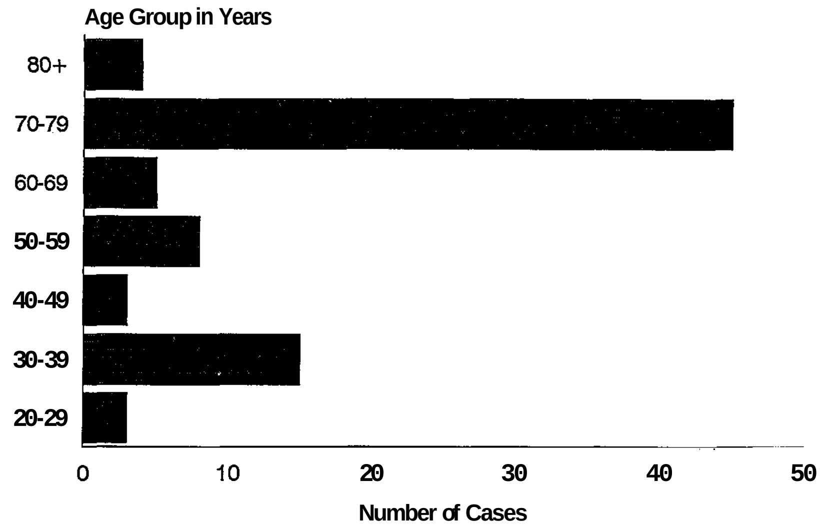
Silicosis

Forty-two cases of silicosis were reported in Texas during 1993. One individual was diagnosed with both silicosis and asbestosis. Three individuals were diagnosed with silicosis and tuberculosis. In past years most reports of silicosis in Texas were identified during reviews of death certificates. During 1993 nine of the 42 cases (21%) were identified from this review. Ten (24%) reports were obtained from medical record review of Veterans Administration facilities; 23 (55%) were reported by private physicians.

Table 4. Distribution of Reported Silicosis Cases by Occupation, *1993*

26	(62%)	Sandblaster
5	(12%)	Unknown Occupation
3	(7%)	Painter
2	(5%)	Maintenance Worker
1	(2%)	Asphalt Factory Worker
1	(2%)	Grinder/Chipper
1	(2%)	Foundry Supervisor
1	(2%)	Pipefitter
1	(2%)	Oil Field Roustabout
1	(2%)	Cloth Material Seamstress

Figure 5. Distribution of Reported Silicosis Cases in Texas by Age Group, *1993*



Occupational information was available for all except five of the individuals. Table 4 lists the types of occupations reported. The death certificate for the only report of a female worker reported indicated she worked as a cloth material seamstress.

Before 1993 the majority of workers with silicosis were white, non-Hispanic, or African-American. In 1993, 25 (60%) workers with silicosis were white, Hispanic; six (14%) were African-American; and 11 (26%) were white, non-Hispanic. Figure 5 shows the age distribution. During 1993 the youngest worker, a sandblaster, was diagnosed at age 24.

Non-Communicable Disease Epidemiology and Toxicology Division (512) 458-7222, 458-7269

Pertussis

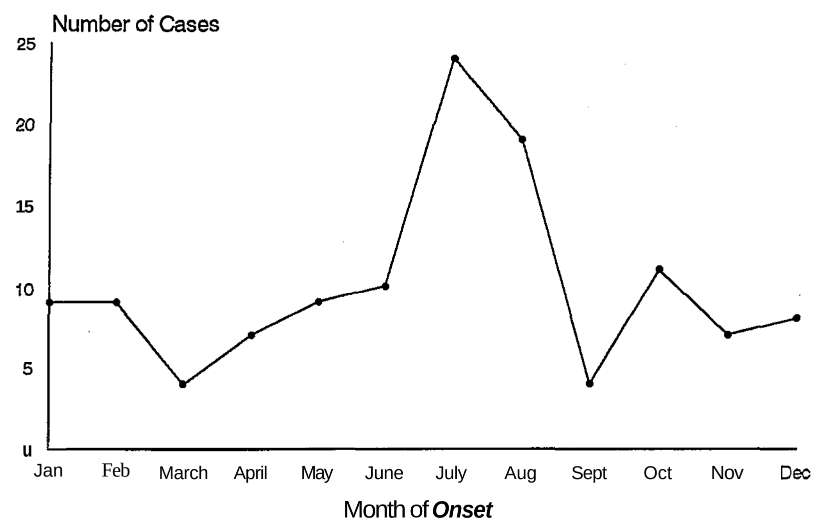
Pertussis is a highly contagious upper respiratory illness with symptoms that can linger 6 to 10 weeks. As the disease progresses, coughing comes in spasms interspersed with a characteristic "whoop" sound on inspiration of air. In infants less than six months of age, apnea is a common manifestation, and the whoop may be absent. Pertussis is a particularly severe disease in the first year of life, with young infants at the highest risk of pertussis-related complications. Complications of pertussis include convulsions, emphysema, bronchial conditions, otitis media, pneumonia, weight loss, and encephalopathy. According to the Centers for Disease Control and Prevention (CDC), from 1989 to 1991, 69% of all confirmed pertussis cases in infants in the United States were hospitalized.

In 1993, 121 pertussis cases were reported from 38 counties in Texas. The majority of cases occurred in Dallas, Harris, and Bexar counties, with 30%, 14%, and 8% of cases reported, respectively. There were no deaths from pertussis in Texas in 1993. Pertussis morbidity markedly increased in July and August, as illustrated in Figure 1. Nationwide 6,586 cases of pertussis were reported. Texas accounted for only 2% of the nation's pertussis morbidity and ranked 17th among all states.

Nearly 90% of all pertussis cases in Texas were under five years of age, with 63% of all cases occurring in children less than one year of age. Age-specific incidence rates for pertussis were 23.9 per 100,000 for children less than one year of age, 2.7 per 100,000 for children 1 to 4 years of age, and 0.4 per 100,000 for children 5 to 9 years of age. Of those children under one year of age, 75% were hospitalized. In comparison, 31% of cases 1 to 4 years of age were hospitalized, and four percent of cases 5 to 9 years of age were hospitalized. This attests to the severity of this disease in infants. Figure 2 depicts the age distribution of pertussis cases as well as hospitalizations due to pertussis.

Of the 121 cases of pertussis in 1993, detailed case information was available for 86. Of these 85% (73) experienced paroxysms of coughing, 65% (56) an inspiratory whoop, 59% (51) cyanosis, 59% (51) vomiting, 48% (41) apnea, 23% (20) pneumonia, and one percent (1) seizures.

Figure 1. Reported Cases of Pertussis: Texas, 1993

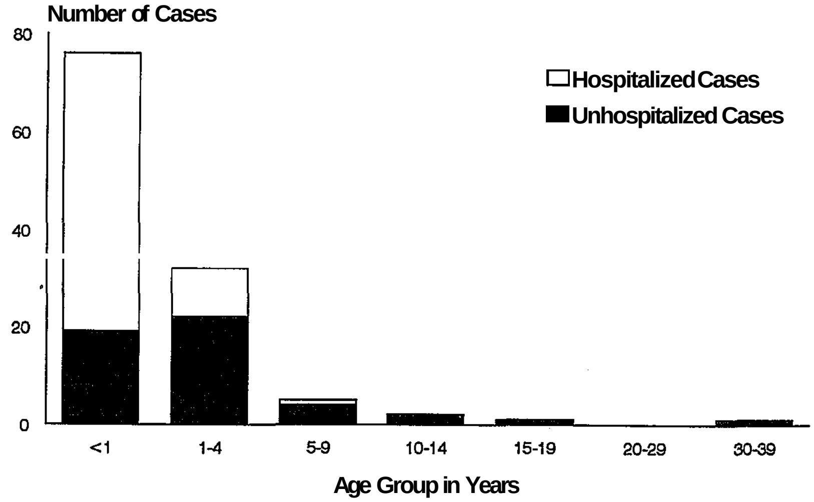


Fifty-three pertussis patients were of white and Asian descent, 43 of Hispanic descent, and 20 of African-American descent. While more cases of pertussis occurred in the white and Asian population, the incidence rate of pertussis was highest in the African-American population, with 9.6 cases reported per one million population for all ages. This was followed by Hispanics with a rate of 8.8 per million, and whites and Asians with a rate of 4.8 per million. The race/ethnicity of five cases was unknown.

In the current era of controversy concerning the safety and effectiveness of pertussis vaccine, it is increasingly important to understand pertussis epidemiology and the reasons for continuing pertussis vaccination. According to CDC, a primary series of pertussis vaccine provides 70%-90% protection against infection, particularly during the first several years following immunization. Given the serious nature of this disease, the overall benefit of pertussis vaccine is great when compared with the risks associated with the disease.

Immunization Division (512) 458-7284

Figure 2. Pertussis Cases and Hospitalization by Age Group: Texas, 1993



Age was Unknown for 4 of 21 Cases.

Plague

On May 3,1993, the Texas Department of Health (TDH) was notified of a possible human plague case. Automated bacteriologic test procedures at the hospital had identified a Yersinia species from a blood specimen collected April 25,1993. The organism was shipped to the TDH Laboratory, where it was confirmed as Yersinia *pestis*.

The patient was a 94-year-old white woman from Kent County. She experienced onset of fever and headache on April 24 and was taken to the emergency room by family members. She presented with fever, headache, body aches, and confusion. On admission her temperature was 103 F, blood pressure was 134/70 mm Hg, pulse was 96/minute, and respiratory rate was 22/minute. Her initial white blood cell count was 16,100 cell/mm^3 with 91% polymorphonuclear cells, 5% band forms and 4% lymphocytes. Her hemoglobin level was 13.2 g/dL, hematocrit was 39.3%, and platelet count was 81,000/mm^3. A chest x-ray was normal. Initial diagnoses included sepsis, dehydration, and possible pneumonia.

Initially, her treatment included ceftriaxone and rehydration. On the second day of hospitalization, the left side of her neck became tender and swollen. She complained of difficulty in swallowing. Ceftriaxone was discontinued, and she received ampicillin and sulbactam for ten days. The swelling decreased over the next five days. A CT scan of the neck did not identify an abscess or lymphadenopathy. On day four, the hospital laboratory reported the Yersinia species in her blood specimen. Upon subculture, the automated test system identified the organism as Yersinia *pestis* with a confidence level of 59%. Doxycycline was added to her treatment regimen. Additional testing by separate automated systems identified the bacteria as Yersinia *pestis* (by two systems) or Yersinia pseudotuberculosis (by one system).

The patient's illness gradually resolved, and she was discharged on May 4. Because no hospital staff members were exposed to blood or body fluids from the patient, no one received prophylactic therapy.

The patient was not able to provide a reliable exposure history. She resided in one of three homes located on a dead end street. One of the houses was vacant. There were several vacant lots and homes within 100 yards of the patient's home. Her next door neighbor, who cuts the grass at all three residences on the dead end street, had not noticed any dead animals on the three properties. The patient owned one cat. Sometime in April, fleas had been noticed on the neighbor's baby granddaughter when she had been placed on the patient's sofa. The patient had not travelled out of her home town for over three months.

An inspection of the patient's household ascertained no current rodent problem, although she had previously trapped two mice and a rat in her home. A desiccated mouse later was found in the home.

The most likely source of exposure for this patient was a flea bite at home since there was evidence of a problem with rodents and fleas at her residence prior to her illness. Additional surveillance indicated the presence of zoonotic plague in the county.

This patient represents the fourth human plague case with exposure in Texas since 1980. The other three cases occurred in 1982,1984, and 1988. The patients resided in Ector, Winkler and Pecos Counties; all were males between the ages of 23 and 41 years. There was one fatality.

The Zoonosis Control Division maintains year-round surveillance for plague in Texas wildlife. Blood specimens are collected from carnivores, primarily coyotes. Most carnivores are resistant to infection by *Y. pestis*, but they do seroconvert when exposed to the plague organism and therefore are indicators for plague activity. In 1993, 51 specimens, all from counties within Public Health Region 2, were seropositive. These came from coyotes (40), domestic cats (6), raccoons (2), as well as a skunk, a bobcat, and an opossum.

In March, a Taylor County rancher notified TDH that he had encountered numerous dead and dying fox squirrels (*Sciurus niger*) on his property. Upon investigation, it was found that the squirrels and their fleas were infected with *Y. pestis*. This outbreak represents the third recorded squirrel epizootic in the US and the first reported in Texas. Subsequently, as a result of publicity surrounding this die-off, one plague-infected squirrel was collected in Dallas County in May; another was collected in June.

Infectious Disease Epidemiology and *Surveillance* Division *(512) 458-7328,458-7676*

Rabies, Human Case

On November 4, 1993, a white 82-year-old man residing in Bowie County, Texas, was admitted to an Arkansas hospital. The previous day, he had begun having difficulty swallowing, speaking, and walking. According to family members, the man had become forgetful and confused during the four to five days prior to admission. He was on no regular medications, had no significant medical conditions, and had been able to work his own farm until he became ill.

On admission the patient could follow some commands and had no motor or sensory deficits, but was hallucinating and uncooperative. He complained to his family that someone was standing on his feet and that people were coming out of the television. Abnormal findings on physical examination included mild elevation of temperature (100.1°F), increased muscle tone in his upper and lower extremities, tremors, and decreased reflexes. His white blood cell count was normal except for a differential with 90% polysegmented neutrophils. Examination of cerebrospinal fluid revealed one lymphocyte/ mm^3, a glucose level of 60 mg/dL, and a protein level of 42 mg/dL. Computerized tomography (CT) of his brain revealed diffuse atrophy.

Although the admitting diagnosis was cerebrovascular accident, by the second day of hospitalization, tetanus or viral encephalopathies such as rabies were considered more likely. At this point, the patient's family reported that he had not traveled out of his immediate surroundings and had no known animal bites.

During his hospitalization the patient had to be pharmacologically paralyzed for paroxysmal muscle activity and required a heating blanket for hypothermia. He died on November 9 after ventilatory support was withdrawn because no brainstem reflexes could be demonstrated. His brain tissue was positive for rabies virus by fluorescent antibody testing. Additional testing using monoclonal antibodies and polymerase chain reaction (PCR) technology implicated a strain of rabies genetically related to the strain associated with the silver-haired bat.

Two possible routes of infection were identified during the course of an extensive on-site investigation. The living area of the patient's home was found to have openings accessible to bats from the outside. Additionally, upon further questioning, the family recalled that the patient had had a cow that died of an unknown disease three months prior to the onset of his illness.

Fifteen family members and close contacts in Texas received rabies prophylaxis; in Arkansas, 55 medical personnel received prophylaxis. The cost of prophylaxis for both the Texas and Arkansas contacts exceeded $50,000.

Infectious Disease Epidemiology and Surveillance Division (512) 458-7328, 458-7676

Rabies in Animals

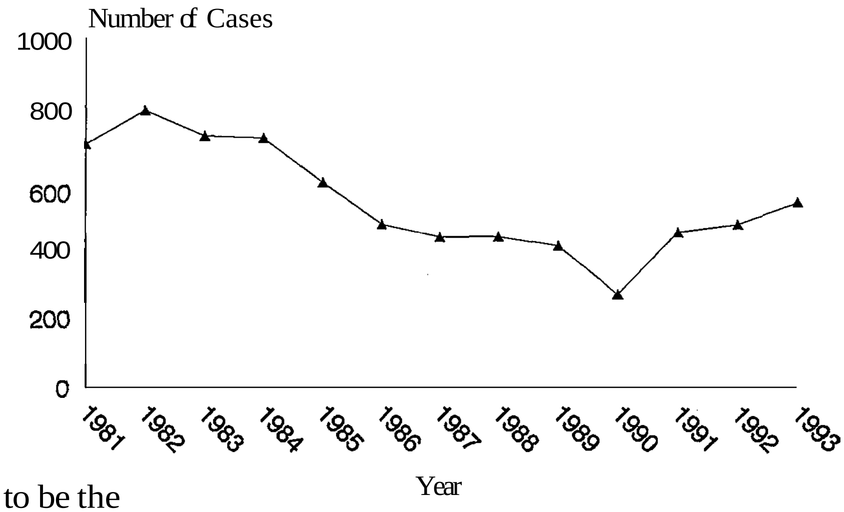
Rabies is a viral zoonosis affecting the central nervous system. The mode of transmission is by saliva containing rabies virus being introduced into an opening in the skin or through mucous membranes, usually via the bite of a rabid animal. Animals considered to be high-risk for transmitting the rabies virus include bats, coyotes, foxes, raccoons, and skunks.

In 1493,533 (5%) of 11,169 animal specimens tested by the Texas Department of Health were positive for rabies. This number of confirmed cases, a 12% increase over the 471 cases reported in 1992, is the highest yearly total for Texas since 1985 (Figure 1).

Rabies in wildlife accounted for 82% of the cases. Skunks and bats, responsible for 28% each of the total cases statewide, continued to be the primary reservoirs. During 1993, 151 skunks tested positive for rabies compared with 182 rabid skunks in 1992. Of all skunks tested for rabies, 25% were positive in 1993, and 29% were positive in 1992. During 1993, 150 bats were positive for rabies compared with 69 rabid bats in 1992. Of all bats tested for rabies, 18% were positive in 1993, and 13% were positive in 1992.

Rabies in domestic animals (18% of all animals tested positive for rabies) continues to be a concern because rabid domestic animals are more likely to come into contact with humans than are rabid wildlife. Tables 1 and 2 compare the numbers of domestic and wildlife rabies cases for the various animal species for 1992 and 1993. In 1992, the greatest number of animal rabies cases occurred in March and April. In 1993, September had the highest count due to the increase in rabid bats reported during that month.

Figure 1. Confirmed Cases of Animal Rabies: Texas, 1981-1993



Rabies in wild or domestic animals occurred in 110 Texas counties in 1993 (Figure 2). More rabies cases (49 bats) were reported from Travis County than any other county. In the last 2 months of 1993, an outbreak of fox rabies occurred in McCulloch County with a total of 7 cases.

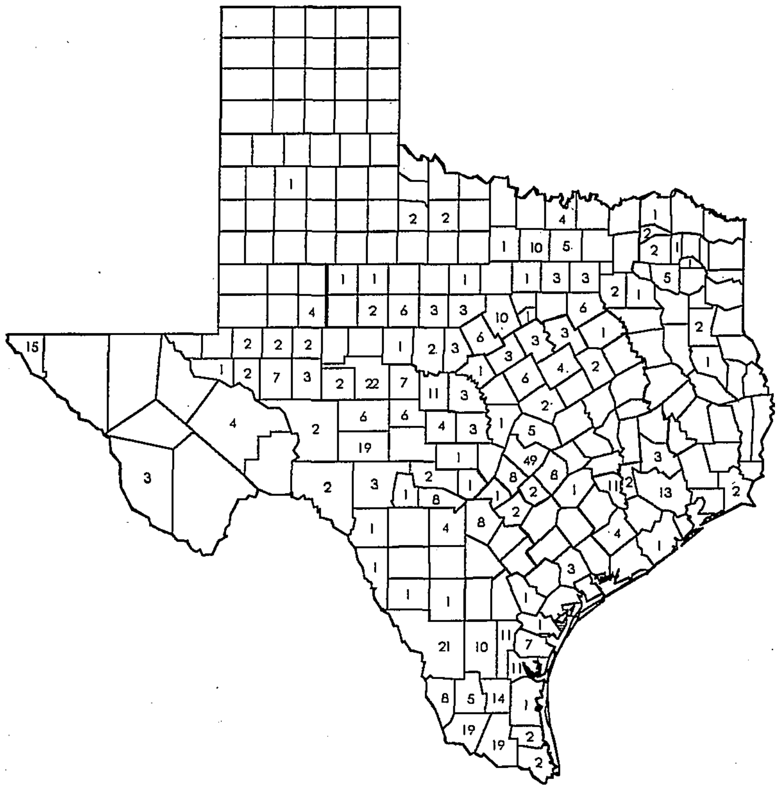
Table 1. Rabies in Domestic Animal Species: Texas, 1992 and 1993

Species	1992	1993
Dogs	56	54
Cats	16	21
Cows	11	11
Horses	6	6
Goats	7	1
Sheep	2	1
Donkeys	0	1
Total	98	95

Table 2. Rabies in Wild Animal Species: Texas, 1992 and 1993

Species	1992	1993
Skunks	182	151
Bats	69	150
Foxes	33	42
Coyotes	70	71
Raccoons	7	20
Other	12	4
Total	373	438

Figure 2. Oonfirmed Cases of Animal Rabies (all species) by County: Texas, 1993



The canine rabies epizootic, which began in 1988 in South Texas, continued through 1993; 69 coyotes and 42 dogs tested positive for rabies. Ninety-seven percent of all rabid coyotes reported and 96% of all rabid dogs reported were from the following 13 South Texas counties: Brooks, Duval, Hidalgo, Jim Hogg, Jim Wells, Kenedy, Kleberg, La Salle, Nueces, Starr, Webb, Willacy, and Zapata. A rabid raccoon with the canine strain of rabies virus was recorded in Cameron County in May 1993. The testing of a rabid coyote in La Salle County in November 1993 demonstrated the continual northward movement of the epizootic.

In response to this outbreak, the Oral Rabies Vaccination Project (ORVP) for coyotes in South Texas was initiated. The goal of the ORVP is to create a zone of vaccinated coyotes along the leading northern edge of the epizootic. This project targets wild animals because they are the primary reservoir for rabies. Immunization of coyotes will be accomplished by aerial distribution of a bait containing rabies vaccine over approximately a 15,200 square mile area.

Zoonosis Control Division (512) 458-7255

Rabies Postexposure Treatment in Humans

Human rabies is a fatal disease that is completely preventable. It is transmitted through exposure of mucous membranes or broken skin to the saliva of a rabid animal. If exposure occurs, the disease can be prevented by prompt administration of rabies immune globulin (RIG) and rabies vaccine (RV). In the United States, two types of RV are in use: human diploid cell vaccine (HDCV) and rabies vaccine, adsorbed (RVA). They are equally effective, and each is given in the same way.

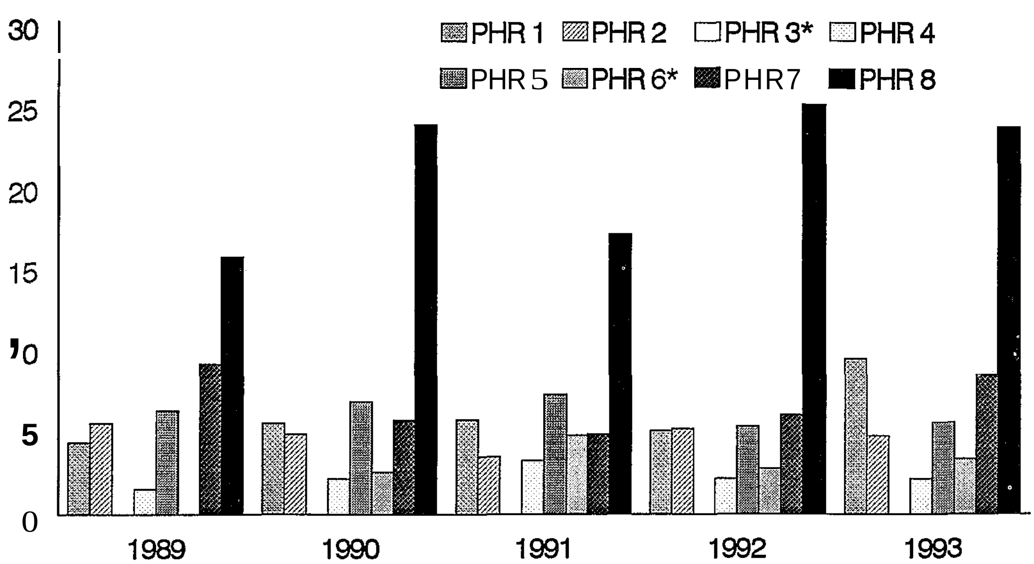
Postexposure prophylaxis (PEX) for rabies generally is given as a single dose of RIG and a series of five doses of RV. If a person has previously received PEX or been immunized against rabies because of occupational risk of exposure to the disease (veterinary or laboratory workers, animal control officers, spelunkers, etc.), the PEX regimen consists of only two doses of RV, without the RIG.

The number of exposures to rabid or potentially rabid animals in Texas is unknown. The Texas Department of Health (TDH) Zoonosis Control Division receives reports on human and animal exposures to proven rabid animals, but many other people are started on PEX due to suspected exposures. Treatment also may be started on PEX because the animal was not available for testing or the submitted specimen was unsuitable for testing. Even if the cat or dog involved in the incident is being quarantined for a 10-day period, treatment may be begun if other factors indicate a likelihood of rabies infection.

The number of exposures in Texas can be estimated through TDH data on the amount of rabies biologicals (RIG and RV) used in the state. Because it does not account for biologicals given through the private sector, however, this data provides an underestimate of total exposures. Since RIG is given only for PEX, and as a single dose, it is a better indicator of exposures than the number of RV doses administered. However, this data also underestimates the actual number of exposures because this total does not include previously immunized persons (for whom RIG is not indicated) who are exposed to rabies.

The rates of public health region use of RIG for 1989-1993 are shown in Figure 1. Comparisons between regions may be misleading because differences in medical practices and population demographics could result in differences in the proportion of all RIG provided by the state. However, comparisons within a region over a time period should reflect changes in the prevalence of animal rabies, as well as public and professional awareness and concern about rabies in that region. During the time frame shown in Figure 1, the major changes in animal rabies epidemiology have been an increase in

Figure 1. Persons Started on PEX/100,000 Population



* Data not available from PHR 3, and for 1989 in PHR 6

bat rabies in PHR 1 in 1993 and an epizootic of canine rabies in PHR 8 that started in 1988 and continues to the present. There is a corresponding rise in RIG use in PHR 1 in 1993. RIG use in PHR 8 remained high throughout the five-year period. The 4.4 fold higher use of RIG in this region over the average of the other regions undoubtedly is related to the canine rabies epizootic.

Table 1. Human Exposures to Proven Rabid Animals: Public Health Region 8, 1989-1993

Species	Total Positive	With Exposure*	Persons Exposed	%With Exposure**	#Per Exposure***	# Exposed/100,000 Population
Dog	174	105	575	60	5.48	35.33
Coyote	190	20	27	11	1.35	1.66
Bat	13	2	3	15	1.50	0.18
Cat	13	11	21	85	1.91	1.29
Livestock	7	2	18	29	9.00	1.11
Other	11	2	2	18	1.00	0.12
Total	408	142	646	35	4.55	39.69

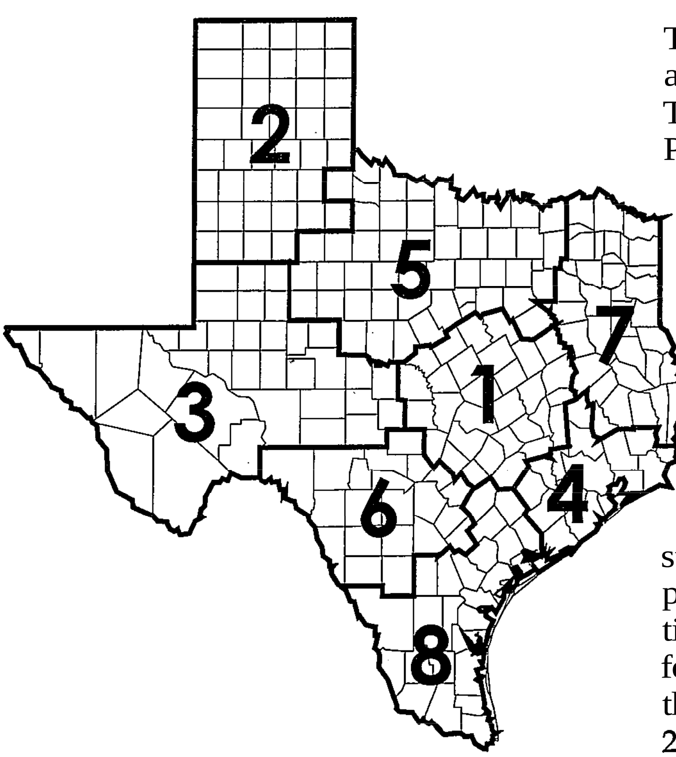
* Number of animals which exposed at least one human

** Percentage of rabies positive animals to which human exposure occurred.

*** Average number of humans exposed per exposure event. Excludes animals which exposed no humans.

In PHR 8 tests results for 408 animals were positive for rabies from 1989 through 1993. These animals were responsible for 646 human exposures (190 in 1989, 78 in 1990, 53 in 1991, 176 in 1992, and 149 in 1993) or an average of 1.6 exposures per animal. During the same period, the state provided PEX to 1,662 individuals in this region. Approximately one-third of PEX treatments were for exposure to known rabid animals, illustrating the magnitude of the difference between PEX treatments for exposure to known rabid animals and PEX for suspected exposure to rabies.

Figure 2. Regional Map Prior to March 1993



The likelihood of human exposure to a rabid animal varies with the species of the animal. Table 1 reflects the number of rabid animals in PHR 8 by species and human exposures from 1989-1993. Although there were not many exposures per cat, a high proportion (85%) of rabid cats involved at least one human exposure. Human exposure is much more likely to occur from a rabid dog than any other species, indicating the threat to public health that occurs when rabies becomes epizootic in domestic animals.

Note: A legislative mandate required that all state health and human services agencies compile and report data from a uniform configuration of 11 regions by March 1,1993. The data for this report, however, was compiled based on the previous eight-region configuration (Figure 2).

Zoonosis Control Division (512) 458-7255

St. Louis Encephalitis

St. Louis encephalitis (SLE) is an arboviral infection caused by a flavivirus. The natural cycle of the disease in the United States involves wild birds and mosquitoes in the genus Culex. In Texas the disease occurs in the coastal regions during the warmer months of the year. Although most human infections are inapparent or asymptomatic, symptoms in humans can range from a mild febrile illness to aseptic meningitis and severe encephalitis. Fever and headache are frequently the first and most persistent symptoms. Increased age is the most significant risk factor for developing neuroinvasive disease.

In 1993 seven cases of SLE were reported in Texas. The patients resided in Brazoria County (one), Denton County (one), Galveston (one), Harris County (one), and Nueces County (three). Ages ranged from 19 years through 84 years. Five were males. The patient from Galveston County had onset of illness in July. The other six cases experienced onset of illness in August. All seven cases were hospitalized. None died.

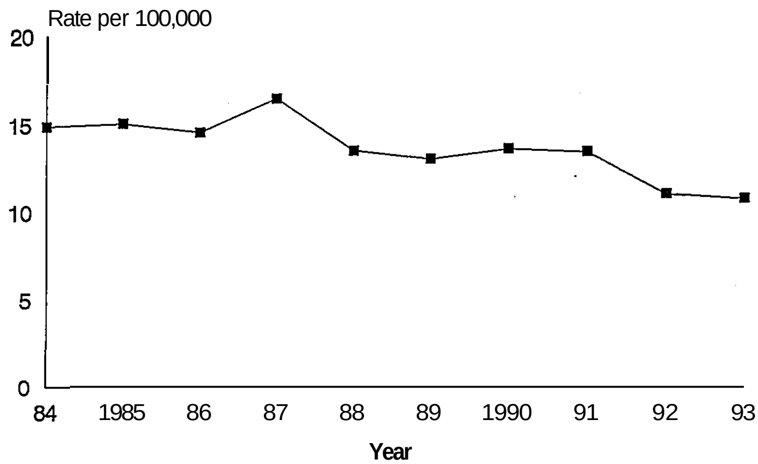
The Texas Gulf Coast is a recognized endemic area for St. Louis encephalitis. Six of the patients resided in this area. None had traveled outside of Texas in the two weeks prior to illness. The patient from Denton County had recently traveled to Smith County, Texas. Denton and Smith Counties are not considered endemic areas for human SLE, but SLE virus activity in avian and mosquito populations has been identified in areas outside the Gulf Coast. Virus was detected in 19 pools of mosquitoes in 1993: 12 from Nueces County, six from Jefferson County, and one from El Paso County. At the Texas Department of Health (TDH), antibody to the SLE virus was detected in sera from 53 chickens. Thirty-three reactive specimens were submitted from Dallas County, 17 from Lubbock, and three from Galveston.

Infectious Disease Epidemiology and Surveillance Division (512) 458-7328,458-7676

Salmonellosis

A total of 1,924 cases of salmonellosis were reported in Texas in 1993, the lowest number of cases since 1978. The annual statewide incidence rate was 10.7 cases per 100,000 population. Figure 1 illustrates the decline of salmonellosis rates since 1984. The geographic distribution of salmonellosis by county is shown in Figure 2. The actual numbers of cases in the individual counties and their corresponding incidence rates are provided in the Regional Statistical Summaries Section.

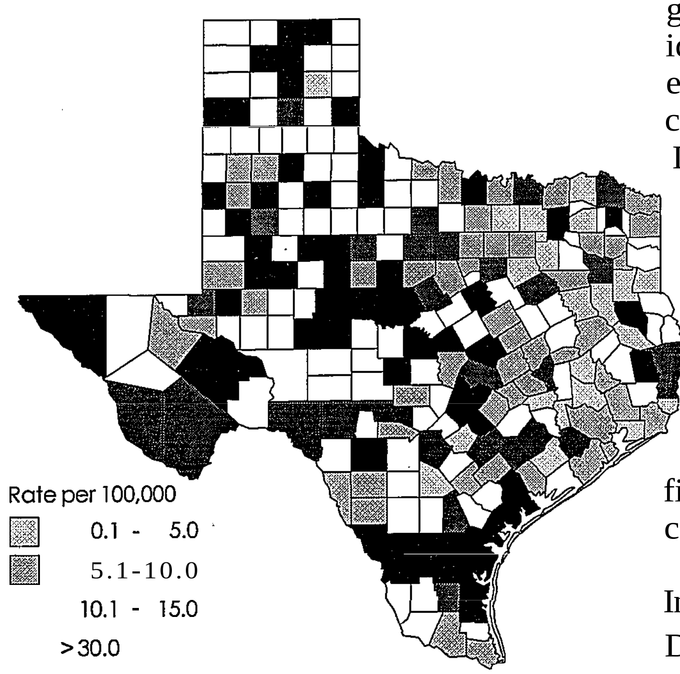
Figure 1. Salmonellosis Rates, 1984-1993



Children five years of age and under constituted 28.3% of all cases, and their incidence rate of 35.7 cases per 100,000 population was the highest rate for any age group. The incidence of salmonellosis was higher among Hispanics, (14.5 per 100,000) than among African-Americans (6.1) or whites (5.9). Incidence rates for all races decreased.

The serotype was identified and reported for 63.4% of the cases. Of the 1,220 cases for which this information was reported, 17.1% were Salmonella *typhimurium,* 8.4% were S. *newport,* and 7.2% were S. *enteritidis.*

Figure 2. Incidence of Salmonellosis by County - 1993



Three outbreaks of salmonellosis were reported to the Texas Department of Health Infectious Disease Epidemiology and Surveillance Division in 1993. Altogether these outbreaks accounted for 152 (7.9%) of the salmonellosis cases reported. S. enteritidis was identified as the etiologic agent in all three of these outbreaks. Most of the cases (145) were due to two outbreaks in El Paso county associated with the same fast-food Chinese restaurant. Both of these outbreaks were investigated by the local health department and a CDC Epidemic Intelligence Service (EIS) officer. Egg rolls were identified as the contaminated food item, with egg roll preparation implicated as the point of contamination. CDC and the United States Department of Agriculture (USDA) followed the eggs back to the source farm but were unable to culture S. enteritidis from any of the more than 200 environmental samples collected at that farm. The third outbreak occurred in Montague County and was associated with a barbecue restaurant.. This outbreak resulted in seven reported cases; while a particular food item was not identified, the owner/chef at the restaurant was culture-positive for S. enteritidis.

Infectious Disease Epidemiology and Surveillance Division *(512)* 458-7328,458-7676

Sexually Transmitted Diseases

Major changes in the trends of syphlis, chancroid, chlamydia, and gonorrhea were noted in 1993.

Syphilis

While reported cases of syphilis continue to decline, new trends are emerging in the profile of the population acquiring ths sexually transmitted disease (STD). The numbers of reported cases declined from 10,796 in 1992 to 9,904 in 1993. Reported syphilis cases hit a 40-year high in 1991 when 13,297 cases were reported. Although the number of syphilis cases are declining, a larger share of cases is being reported among women (Figure 1). Previously, the male/female ratio ranged as high as 5 to 1 and 3.5 to 1 males per female, reflecting the high prevalence of syphilis cases among gay men, especially in the 1970s and early 1980s.

The ratio began to decrease as gay men changed their behaviors, practicing safer sex. The syphilis epidemic of the late 1980s was concentrated in heterosexual men and women who used crack cocaine. During the last several years, the ratio of men to women with infectious syphilis (primary and secondary stages) has been approximately 1.5 to 1. In 1993 the male-to-female ratio was 1.12 to 1. If this trend continues, more women than men will have syphilis in the next several years.

The ratio is important for two reasons. First, an increasing percentage of women with syphilis could also lead to an increase in congenital syphilis cases. Second, the chancre of syphilis is known to facilitate the transmission of HIV by providing a portal of direct entry for the virus. The decline in the number of reported primary and secondary syphilis cases among females has been less notable than the decline among males (Figure 2). The disparity may be an early warning that the 1992 and 1993 increase in the female proportion of total AIDS cases is also likely to continue.

Controlling syphilis is becoming more difficult in some settings. In the last three years, five separate outbreaks of syphilis have been reported in rural Texas counties. Four of the five outbreaks involved the use of crack cocaine and the exchange of sex for drugs by addicted woman. Limited public health resources in rural areas must cover a wider area than urban locations, making the control of rural syphilis much more problematic. Sexually transmitted disease clinics may not be held regularly in rural areas and patients may wait weeks to see contract physicians. Efforts to interrupt transmission by partner notification are often conducted by public health workers who must cover 20 or more counties.

Figure 1. Infectious Syphilis in Texas: Proportion of Cases by Gender

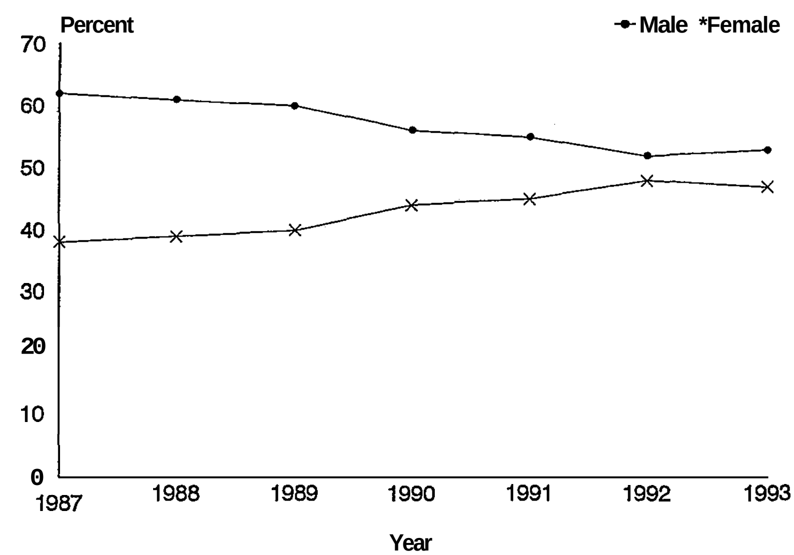
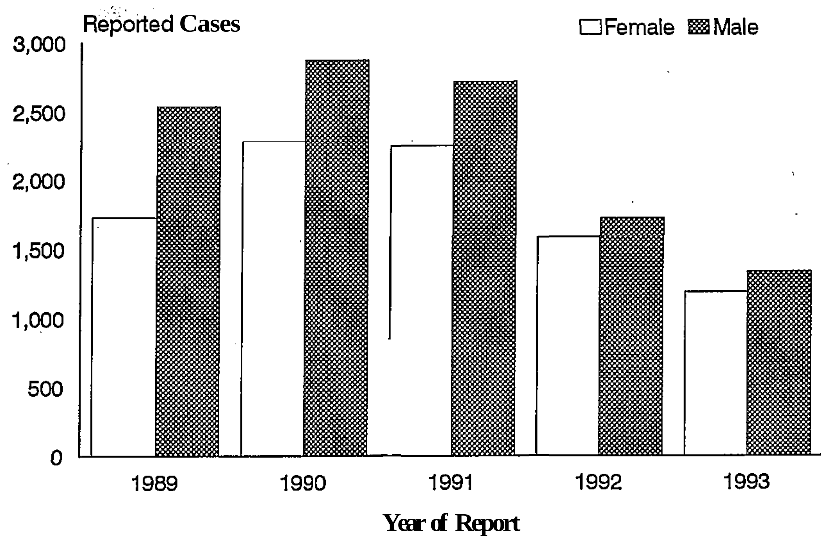


Figure 2. Primary and Secondary Syphilis in Texas by Gender



Chancroid

Chancroid is a genital ulcer disease caused by the bacteria *Haemophilus ducreyi*. It was considered rare in the continental United States until the late 1980s; now it appears to be endemic in Texas. Multiple studies in Africa have suggested chancroid's genital ulcers facilitate the transmission of HIV. In 1993,190 cases were reported; 319 were reported in 1992. In 1991, Texas had 1,045 cases, a third of all cases reported in the United States.

Chlamydia and Gonorrhea

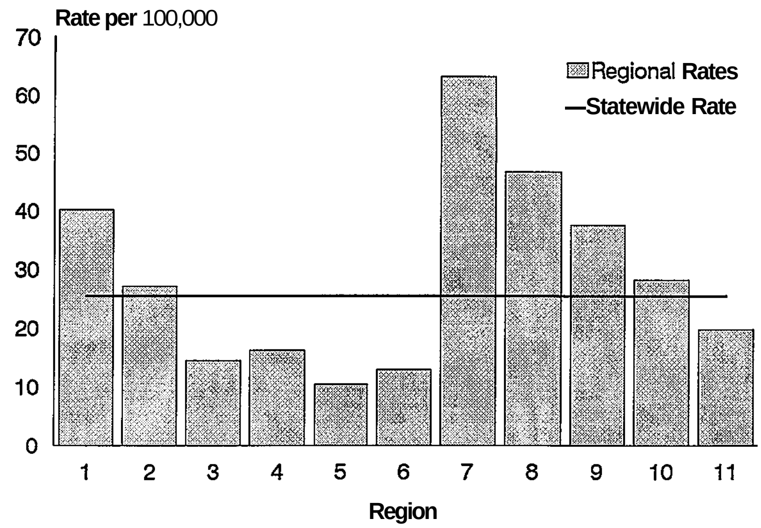
During 1993 chlamydia remained the most commonly reported sexually transmitted disease in Texas. While reported cases of gonorrhea declined from 35,517 in 1992 to 30,122 in 1993, chlamydia cases rose from 39,728 in 1992 to 43,874 in 1993. Nevertheless, several important factors make it likely that chlamydia in Texas is under-diagnosed. First, most of the chlamydia testing performed involves women attending family planning and prenatal clinics. The male partners of these women usually are not examined or tested. Only 14% of the chlamydia cases reported in 1993 were among men. Second, some large and medium-sized cities are not yet providing chlamydia testing in STD clinics and other public health facilities. The number of ,chlamydia cases is expected to increase as more men are tested and as the number of clinics able to provide testing and diagnose chlamydia increases.

Bureau of HIV and STD Prevention (512) 458-7463

Shigellosis

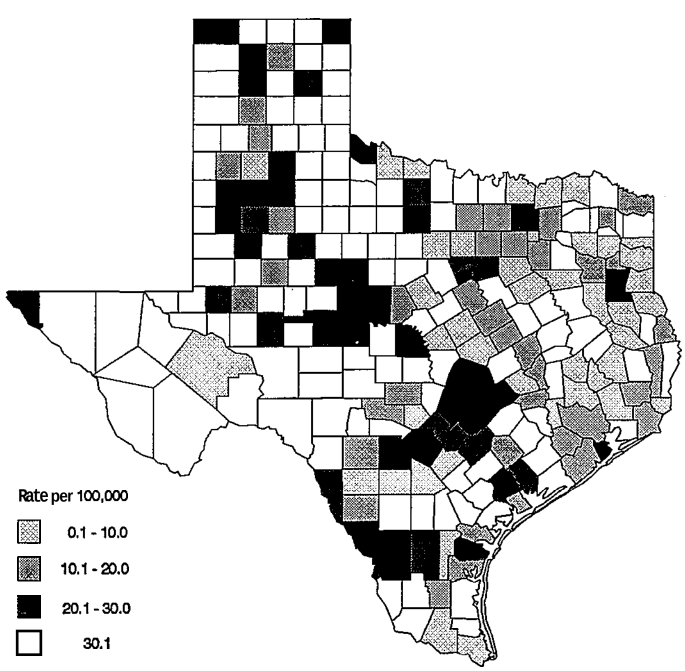
In 1993, 4,581 cases of shigellosis were reported in Texas, an increase of over 1,000 cases from 1992 and the highest number of cases ever recorded. The annual statewide incidence rate was 25.5 cases per 100,000 population, another all-time record. The distribution of shigellosis by region is illustrated in Figure 1. Figure 2 shows a map of the incidence rates by county. (See the charts in the Regional Statistical Summaries section for the actual numbers of cases in the individual counties and their corresponding incidence rates.)

Figure 1. Shigellosis Incidence Rate by Public Health Region, 1993



Children five years of age and under constituted 41.5% of all cases, and their incidence rate of 105.4 cases per 100,000 population was the highest rate for any age group. The incidence of shigellosis was higher among Hispanics (40.9 per 100,000) than among African-Americans (18.2) or whites (13.2). Incidence rates for all races increased.

Figure 2. Incidence Rate of Shigellosis by County, 1993



The bacterial serotype was identified and reported for 67% of the cases. Of the 3,057 cases for which this information was available, 91% were identified as Shigella sonnei. The other serotypes identifed were S. *flexneri* (7.5%), S. boydii (1.1%), and S. dysenferiae (0.4%).

Five outbreaks of shigellosis were reported to the Texas Department of Health (TDH) Infectious Disease Epidemiology and Surveillance Division in 1993. Altogether these outbreaks accounted for 492 (10.7%) of the shigellosis cases reported. Although the number of outbreaks and the percentage of cases related to outbreaks are slightly lower than the 1992 figures, it represents a three-fold increase from 1991. Most of the cases were due to a single, community-wide outbreak in Hays county (348 cases). Outbreaks, ranging in size from 16 - 85 cases, occurred in Caldwell, Harris, Medina, and Rusk Counties. S. sonnei was identified as the causative agent in all of the outbreaks.

Two deaths related to shigellosis were reported in 1993. Both deaths occurred in Hispanic females: a four-year-old from Victoria County, and a 37-year-old from

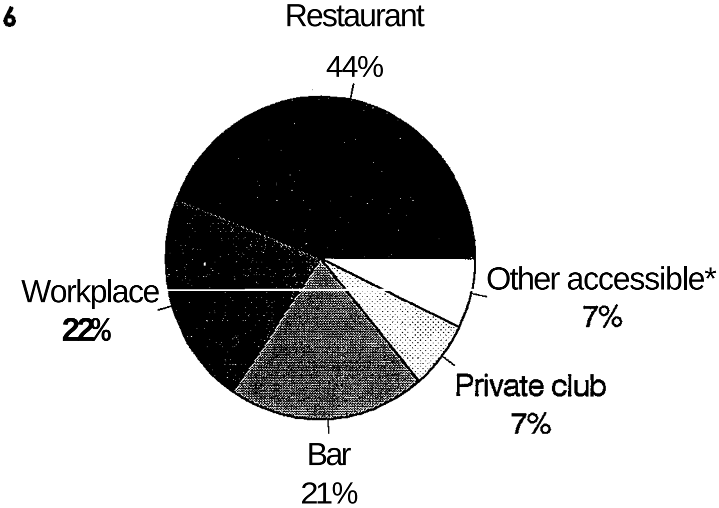
Victoria County, and a 37-year-old from Williamson County. Serotypes were not reported for either case.

Infectious Disease Epidemiology and Surveillance Division (512) 458-7328, 458-7676

Smoking: Access of Minors to Cigarette Vending Machines

The sale of tobacco products to persons younger than 18 years of age has been prohibited by law in Texas since September 1989.* This law requires cigarette vending machine owners to post signs on their machines stating the law and the consequence: that merchants convicted for selling tobacco products to underaged persons may be fined up to $500. A city ordinance passed in August 1991 in Arlington, Texas, required installation of electronic locking devices on all cigarette vending machines. These devices render the vending machine inoperable until the store owner electronically unlocks the machine on customer request. To determine the access of minors to cigarettes through vending machines, the Texas Department of Health (TDH) conducted a study in Arlington and five neighboring communities in October 1993. This report summarizes the study findings.

Figure 1. Type of Establishments with Cigarette Vending Machines in the Arlington, Texas Area



* Gas station, motel lobby, recreational facility, food store

In September 1993 TDH obtained a list of business establishments with cigarette vending machines owned by the largest cigarette vending company in the Arlington area. A total of 116 establishments were identified in the study area; 59 (51%) machines were in establishments considered easily accessible to minors (i.e., restaurants, gas stations, motel lobbies, food stores, and recreational facilities) (Figure 1). Four investigative teams collected data from 42 of the 59 sites. Each team consisted of one adult paired with one minor (aged 15-17 years). The minors made one attempt to purchase cigarettes at each of the 42 establishments. During each purchase attempt, the adult entered the establishment before the minor and asked the employee for street directions. The adult then observed while the minor entered and attempted to purchase cigarettes from the vending machine. Minors were instructed to answer, if asked, that the cigarettes were for themselves. Following the purchase attempt, the minor and the adult observer completed a questionnaire.

While attempting to purchase cigarettes from vending machines, no minors were challenged by business owners. Of 42 attempts, 41 were successful. Of the 41 sites where purchase attempts were successful, 24 (59%) were located within one-half mile of a school. Thirty-five purchase attempts (83%) occurred in restaurants; however, cigarettes were bought at every type of establishment where purchases were attempted. Warning signs prohibiting cigarette sales to minors were posted on vending machines in 32 (76%) establishments. Of 16 vending machines located in business establishments in the city of Arlington, only one was equipped with an electronic locking device as required by the Arlington ordinance. The single unsuccessful purchase attempt occurred at this electronically locked machine.

Texas **Health and Safety Code, Title 2, Sections 161.081-161.082.**

For the 42 vending machine sites where a purchase was attempted, questionnaire results were as follows:

- Did anyone object to minor entering establishment?
  100%= No
- Did anyone object to minor buying cigarettes?
  100%= No
- Was sign posted warning against sales to minors?
  24% = No
- Were other minors present inside establishment?
  46%= Yes
- Median distance from entrance to cigarette machine:
  3 yards
- Is machine visible by an adult at all times?
  43%= No
- Were other products vended in same room or hallway?
  21%= Yes
- Did machine have a working locking device?
  95%= No
- Did minor successfully purchase cigarettes?
  98%= Yes

The findings in this report indicate that, despite laws prohibiting cigarette sales to persons under 18 years of age, minors readily purchased cigarettes from vending machines in Arlington and five neighboring communities. The only failed purchase attempt in this study resulted from a vending machine equipped with a remote-controlled locking device. Unfortunately, compliance with legislation requiring these devices has been minimal[1]. The finding that only one of 16 vending machines in the city of Arlington was equipped with the device is similar to findings of other studies showing the ineffectiveness of ordinances requiring locking-devices.[1]

The findings in this report are subject to at least two limitations. First, data in this report were obtained for only one vending machine company in the Arlington area because the Texas Department of the Treasury does not require vending machine companies to specify the locations of their machines. Second, because of time constraints during the study, data were not collected for 17 establishments considered easily accessible to minors; however, sites included in the analysis probably do not differ from sites that were not included.

Approximately 82% of adult smokers report that they first tried a cigarette by age 18 years and 53% were daily smokers by that age.[2] The initiation rate for smoking increases rapidly after age 11 years.[3] A 1989 survey of 4,400 high school students in Texas found that 55% of 12-year-olds had already tried cigarette smoking.[4] Because vending machine sales are not monitored actively by adults, cigarette vending machines can be an important source for younger adolescents (i.e., aged 12-15 years), who are more likely than older adolescents (i.e., aged 16-18 years) to be refused an over-the-counter cigarette sale.[5] Studies indicate that younger adolescent smokers are more likely than older adolescent smokers to buy cigarettes from vending machines.[6,7]

Unregulated cigarette vending machines may facilitate initiation of smoking among younger adolescents; therefore, more effective regulation of these sales may be an important preventive measure. Prevention of adolescent smoking may be enhanced by the recently enacted Synar Amendment to the Alcohol, Drug Abuse, and Mental Health Administration (ADAMHA) Reorganization Act.* The Synar Amendment requires that states demonstrate effective prohibition of the sale of tobacco products (including cigarettes from vending machines) to persons younger than 18 of age as a condition of receiving full ADAMHA block grant funding. As a

*Public Law 102-321, 51926.

result of this study, the Arlington City Council approved an ordinance on January 4,1994, prohibiting cigarette vending machines in all business establishments that admit persons younger than 18 years old.

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Bureau of Chronic Disease Prevention and Control
(512) 458-7200

Tetanus

Seven cases of tetanus were reported in Texas in 1993. The patients ranged in age from 50 to 86 years of age; median age was 61 years. Only one death due to tetanus occurred in 1993, resulting in a case-fatality rate of only 14%. Tetanus is a serious neurologic disease which results in lengthy hospitalization, usually in intensive care units. Consequently, the economic impact can be staggering. The six tetanus survivors in 1993 required hospital stays ranging from 29 to 65 days; median hospital stay was 40 days.

Six of the patients acquired their tetanus infections as the result of injuries reported as lacerations (3), abrasions (2), and puncture (1). Two of the injuries were associated with lawn mower accidents, two patients fell and suffered lacerations, one was involved in an auto-pedestrian accident, and one stepped on a piece of wood. One case was associated with an infected chronic wound which led to the amputation of the patient's leg.

Precise immunization histories are difficult to obtain and verify in the course of a tetanus case investigation. Because of the serious nature of the disease, patients are often unable to communicate; they may require mechanical ventilation, or the severe muscle spasms of the jaw may leave them unable to speak. Furthermore, many elderly patients simply cannot remember whether they have been immunized in the past. In Texas two of the seven patients with tetanus in 1993 had never been immunized against the disease. Three reported some previous immunization, yet they could not recall the exact number of doses; these three did, however, report that it had been ten or more years since they had received the last dose of tetanus toxoid. Two of the patients had received only one dose of tetanus toxoid during their lifetimes, but both were immunized within the year preceding onset of symptoms. Included in the latter group was an 86-year-old woman who died five days after onset of symptoms.

Immunization Division (512) 458-7284

Tick-borne Diseases

Lyme Disease

Lyme disease, caused by the spirochete *Borrelia burgdorferi,* continues to be the most prevalent tick-borne disease in Texas, although the number of reported cases decreased by more than half between 1992 and 1993. Of the 131 possible cases in 1993, 48 (37%) met CDC's surveillance case definition: physician-diagnosed erythema migrans (EM) at least five cm in diameter or rheumatologic, cardiac or neurologic manifestations with a positive laboratory test. Twenty (42%) of the 48 patients were male; 28 (58%) were female. Ages ranged from 6 to 76 years, although most were 30 to 50 years old.

Twenty-five (52%) patients recalled a tick bite prior to onset of illness; two (4%) reported flea bites. Six patients were exposed outside of Texas. Eighteen (38%) of the 48 patients had physician-diagnosed EM; eight of these had multiple lesions. Onset of EM occurred most often in the warmer months of the year, and lesions usually were found on the torso or leg area of the body.

Cardiac abnormalities - including conduction defects, heart block, and ventricular dysfunctions - were reported for three patients.

Bell's palsy was reported for only two patients; one had a unilateral paralysis, the other, bilateral. Other neurologic manifestations were reported for 20 (42%) persons. These included sensory loss/neuropathies, chronic fatigue, encephalitis, meningitis, confusion/memory loss, vision impairment, limb weakness, and vertigo/dizziness.

Migratory joint pain was reported for 21 (44%) patients; 18 (38%) had swelling of the joints. The knees, ankles, wrists, elbow, fingers, and shoulders were most often affected.

Rocky Mountain Spotted Fever

Seven cases of Rocky Mountain spotted fever were confirmed in Texas in 1993, although two of the patients actually received their tick bites in Oklahoma. The other patients lived in Dallas, Galveston, Hunt, Smith, and Taylor counties. One case occurred each month from March through June and one in August. Two cases had onset in July. There were five males and two females. Three were children, ages three, 13, and 14, and four were adults between the ages of 31 and 41. Six patients were hospitalized. One case was serious enough that the patient became comatose and required amputation of both of his legs. There was one death.

Each patient experienced fever, myalgias, and a rash. Five patients had headache, nausea and/or vomiting, anorexia, and malaise. Other symptoms included lymphadenopathy (three), conjunctivitis (two), photophobia (one), jaundice (one), and diarrhea (one). In two cases, diagnoses of Rocky Mountain spotted fever were confirmed immunohistologically. *Rickettsia rickettsii,* the etiologic agent, was detected in tissue biopsies utilizing immunofluorescent or immunoperoxidase procedures. In addition, spotted fever group rickettsiae were detected in the liver of one of these patients using polymerase chain reaction (PCR) technology. The remaining cases were confirmed serologically using either enzyme immunoassay (EIA) or immunofluorescent antibody (IFA) techniques.

Tularemia

There were five cases of tularemia in 1993: four males and one female. Ages ranged from 10 to 56. Two of these cases followed tick bites; the others were associated with wild animals, including jack rabbits and wild hogs. In four cases, diagnoses were confirmed by serologic tests. The remaining case was confirmed by isolation of Francisella *tularensis* from an ulcerated lesion on the patient's finger.

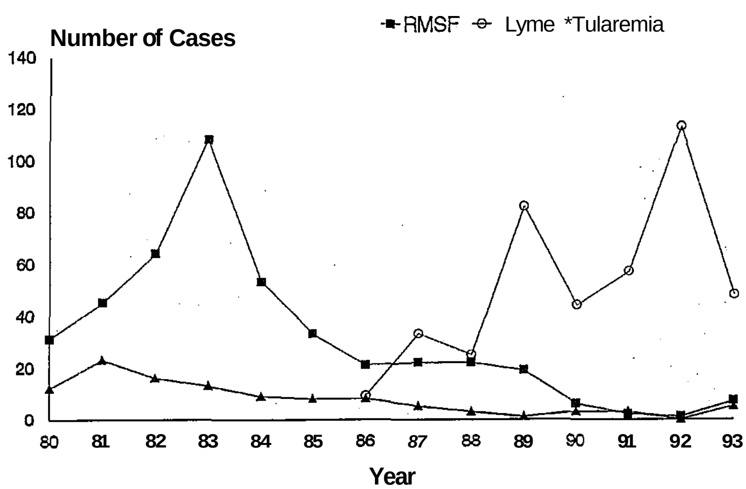
Human Ehrlichiosis

Only one case of human ehrlichiosis was detected in 1993. The patient, a 42-year-old male from Travis County, had onset of illness in June, three to four weeks after receiving numerous tick bites. Symptoms included malaise, fever, severe chills, headache, myalgias, arthralgias, and a maculopapular rash. His antibody titer to Ehrlichia *chaffeensis* was ≥1:512. Ten months later his titer dropped to <1:16.

Most cases of human ehrlichiosis in the United States have been caused by E. chafjceensis, a rickettsia1 organism with a tropism for leukocytes. The first case was reported from Arkansas in 1987. Since then, the disease has been reported from at least 27 states; usually these have been Southeastern or South Central states where the lone star tick, *Amblyomma americanum,* is present. Human ehrlichiosis is not yet a reportable disease, so the true prevalence of infection is unknown. More than 320 cases have been identified nationwide. In Texas 26 cases were detected between 1986 and 1993.

Clinically, human ehrlichiosis is similar to Rocky Mountain spotted fever. After an incubation period of seven to 21 days, the patient presents with an acute febrile illness. Symptoms may include fever, headache, anorexia, myalgia, chills, nausea, and vomiting. A rash is seen approximately 30% of the time. Leukopenia, thrombocytopenia, and elevated hepatic aminotransferase levels are relatively common. The mortality rate appears to be about one percent. Laboratory confirmation of human ehrlichiosis requires a fourfold increase or decrease in antibody titer between paired serum specimens.

Figure 1. Total Cases of Lyme Disease, Rocky Mountain Spotted Fever and Tularemia: Texas 1980-1993



Prevention

Lyme disease, Rocky Mountain spotted fever, human ehrlichiosis, tularemia, and most other tick-borne diseases can be prevented in the same manner: wear protective clothing, use effective repellents or acaricides, check for ticks regularly when in tick-infested areas, and keep pets free of ticks. Ticks that bite humans or their pets may be submitted to the Texas Department of Health (TDH) Laboratory for identification and analysis. In 1993, 9,949 ticks were submitted to TDH. When examined for spotted fever group rickettsia, 319 (3.2%) were infected, including A. *americanum, Dermacentor* variabilis (American dog tick), Rhipicephalus *sanguineus* (brown dog tick), and *Ixodes* scapularis (blacklegged tick). Also, 6,495 were tested to determine whether they were infected with *Borrelia* spirochetes; 17 (0.3%) of these, all A. *americanum,* were positive. Yearly totals of Lyme disease, Rocky Mountain spotted fever, and tularemia in Texas, 1980-1993, are graphically illustrated in Figure 1.

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Traumatic Brain Injuries in Texas

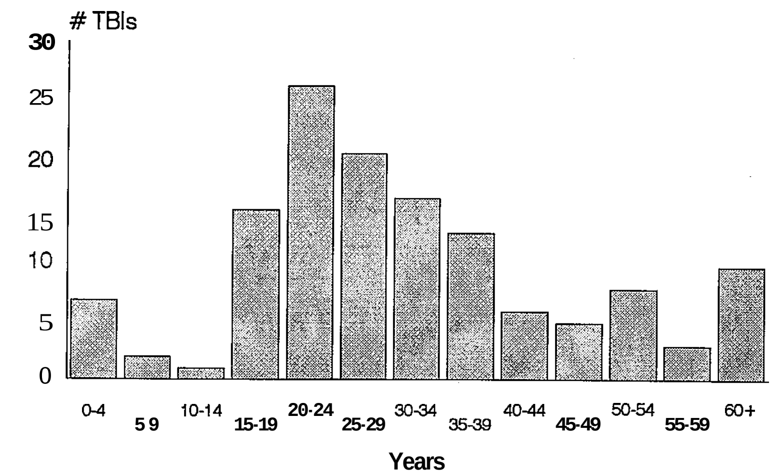
May-December *1993*

Traumatic brain injuries are the most common severe disabling injury in the United States. Approximately 500,000 new cases occur annually.

In the spring of 1993, the Texas Department of Health (TDH) Injury Prevention and Control Program began working with the Texas Head Injury Association, the Alliance of Head Injury Rehabilitation Facilities, and the Southwest Regional Brain Injury Rehabilitation and Prevention Center to design and implement a traumatic brain injury (TBI) registry to collect, analyze, and report data on the occurrence of TBIs in Texas. In May of that year, 28 rehabilitation facilities agreed to participate in the surveillance project. By December, that number increased to 45 sentinels and included: 39 rehabilitation facilities, five acute care hospitals, and the Louisiana Health Department.

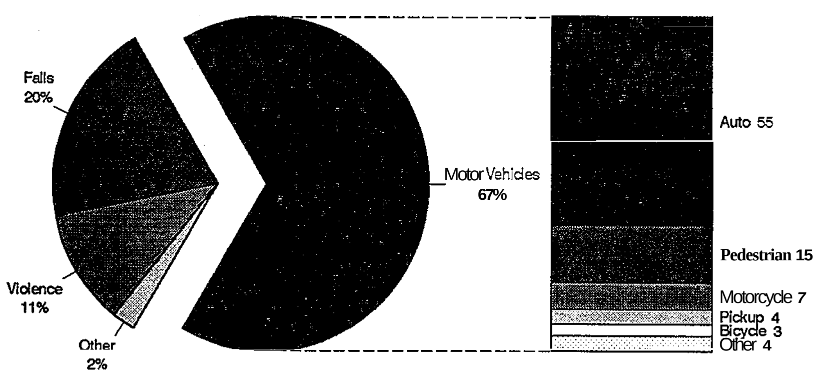
From May through December 1993,132 traumatic brain injuries were reported to the TDH Injury Prevention and Control Program. Cases were reported by 14 of our 45 sentinel facilities, including one hospital trauma unit, 12 rehabilitation facilities, and the Louisiana Health Department.

Figure *1.* Traumatic Brain Injuries by Age: Texas, May-December 1993*



N=132
*Voluntary reporting
Injury Prevention & Control Program, Texas Dept of Health (2/94)

Figure 2. Traumatic Brain Injuries by Etiology: Texas, May-December *1993"*



N=132
*Voluntary reporting

Of the 132 injured cases, 92 (70%) were male. The racial/ethnic distribution of the cases was: 77% (101) white, 17% (23) Hispanic, 5% (7) African-American, and <1% (1) other. Ethnicity was self-designated by the patient. Although the ages ranged from one to 93 years, 76% were under 40 years of age (average age 32 years). See Figure 1 for additional data regarding age.

Etiologically, 88 (67%) of the injuries were motor-vehicle related. These MVR injuries involved 55 individuals injured in automobiles, four in pickup trucks, seven on motorcycles, three on bicycles, four in miscellaneous vehicles, and 15 on foot. Information on seat-belt and helmet use was known for 49 cases. Nearly half (49%; 24/49) of these individuals were not using appropriate safety equipment. The etiologies of the 44 injuries that did not involve motor vehicles included: 26 (20%) due to falls, 15 (11%) due to violence [six gunshot wounds (GSWs), nine assaults other than GSWs], two (<2%) to sports/recreation, and one due to an unknown cause (Figure 2).

The type and severity of injury were reported for 129 and 114 cases, respectively. The vast majority (93%, 120/129) of the TBIs were "closed brain injuries." Seven (5%) were reported as "open brain injury, penetrating," and two (<2%) as "open brain injury, non-penetrating." Over half (54%, 61/114) of the cases sustained severe TBIs; 24 (21%) sustained moderate TBIs, and 29 (25%) sustained mild TBIs.

Intentionality was reported for 122 cases. Seventeen (14%) injuries were categorized as "intentional." Of these, three were self-inflicted.

Information about alcohol and drug involvement was reported for 100 (76%) and 95 (72%) of the cases, respectively. Thirty were alcohol-related; four were drug-related. The drug-related cases involved cannaboids (2), cocaine and benzodiazipine (1), and unspecified (1).

Information on whether the injury occurred on the job was reported for 116 (88%) individuals; 12 (10%) sustained work-related injuries. Nine injuries resulted from falls, two from motor-vehicle collisions, and one from an assault with a pipe by a co-worker.

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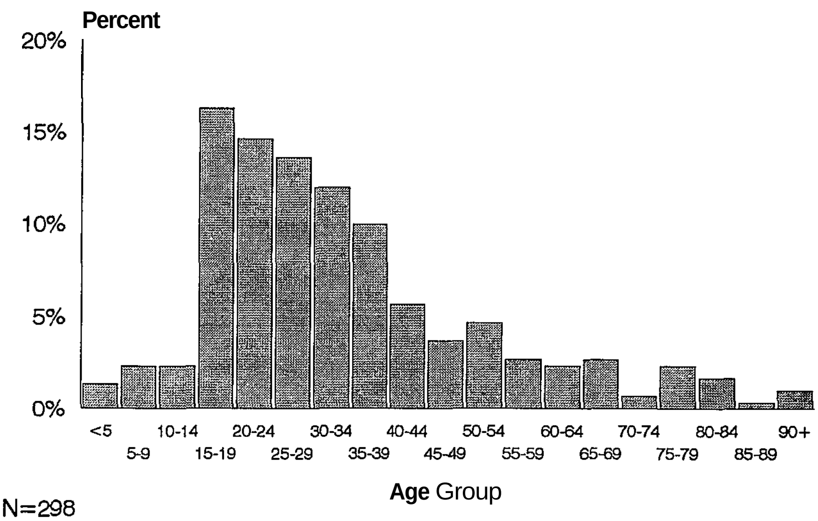
Traumatic Spinal Cord Injuries in Texas

In 1993, 298 Texans sustained traumatic spinal cord injuries (SCIs). SCIs were reported to the Injury Prevention and Control Program from approximately 60 hospitals and rehabilitation facilities under the voluntary SCI surveillance system. In addition, state health departments of Colorado, Louisiana, and Oklahoma contributed case reports of Texans injured or treated in these states. Hospitals and rehabilitation facilities were recruited from across the state and from each major population center.

Eight percent (25) died from their injuries during treatment in the hospital, while 29% (84) entered long-term rehabilitation programs. The ages of those injured ranged from less than one year to 93 years (mean of 34 years, median of 29 years, mode of 16 years). Fifty-one percent (151/298) of injuries were to people under 30 years of age (Figure 1). Nineteen percent (55) of the injured were 18 years of age and younger. Males accounted for 72% (215) of injured Texans. The racial/ethnic distribution of injuries is as follows: 54% (162) white, 28% (83) Hispanic, 15% (46) African American, 1% (4) Asian, and 1% (3) other/unknown.

Figure 1. Percent sf Spinal Cord Injuries by Age Group: Texas Residents, 1993



Motor-vehicle-related (MV) injuries accounted for 46% (136) of spinal cord injuries to Texans (Figure 2). Of these, 71% (96) of individuals were injured as automobile occupants, 11 as occupants in pickup truck cabs, three as passengers in pickup truck beds, 11 in motorcycle crashes, nine in pedestrian-vehicle crashes, two in bicyclist-vehicle crashes, and three in commercial vehicle incidents. Safety belts, child restraints, airbags, or helmets were **not used** in 52% of MV-related injuries, while use of restraints was not known or reported in an additional 20% of cases.

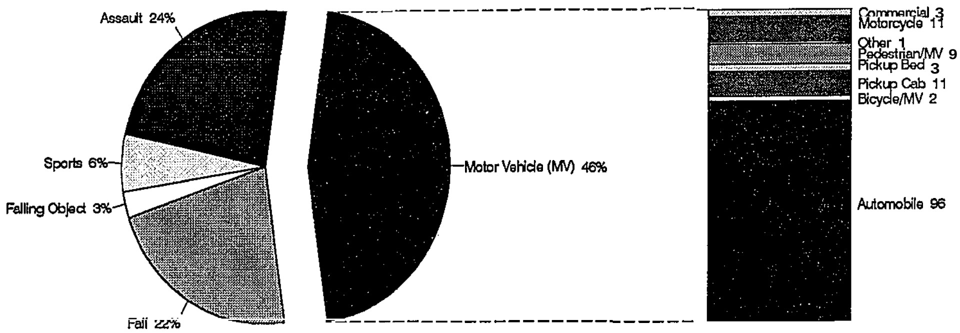
As Figure 2 illustrates, other mechanisms accounted for the remaining 54% (162) of injuries. Of these, 43% (71) were due to assault, 41% (66) due to falls, seven percent (12) due to diving, and five percent (8) due to falling objects. Gunshots accounted for 86% of assaults. Overall, gunshots accounted for over one in every five (22%) SCIs.

Intent of injury was known for 94% (279) of incidents. Twenty percent (57) of these were categorized as "intentional" (i.e., suicides and assaults) (Figure 3).

Twenty-four percent (73) of injuries were reported as alcohol or drug-related (i.e., alcohol or drugs was involved in the injury, but was not necessarily consumed by the victim). For an additional 15% of injuries, alcohol or drug-involvement was unknown/untested.

Information concerning job-related injuries was available for 93% (278) of cases. Of these, 12% (32) were job-related. Of these 32 25% (8) received injuries as the result of a fall, while 25% (8) were injured by falling objects.

Figure 2. Spinal Cord Injuries by Etiology: Texas Residents, *1993*



N=298

Information on type and extent of injury was available for 96% (285) of cases. Of these, 53% (152) resulted in paraplegia, and 47% (133) resulted in quadriplegia. The most severely injured persons (i.e., injuries to neck resulting in total loss of sensation and movement below the injury) accounted for 18% (53) of cases of known severity.

The average length of stay for acute-care hospital patients was 18 days (median of 10 days).

Since the beginning of the voluntary traumatic spinal cord injury surveillance effort in **January** 1991, 817 Texans have been reported to the TDH Injury Prevention and Control Program. Six percent (49) of these Texans died in the hospital during treatment, while another 25% (204) entered long-term rehabilitation programs. MV crashes accounted for 48% of SCIs, while gunshot wounds accounted for 20% of SCIs. Seventy-six percent of all SCIs occurred to males.

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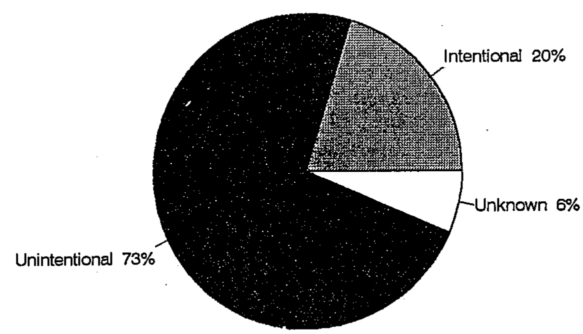
Figure 3. Intent of Action Resulting in Spinal Cord Injury: Texas Residents, 1993



N=298

Tuberculosis

The annual number of new tuberculosis (TB) cases in Texas declined between 1953 and 1984 from 3,252 to 1,762 cases. Since 1984 an upward trend in cases of TB has occurred. In 1993, 2,393 cases (13.3 cases per 100,000 population) of TB were reported to the Texas Department of Health (TDH), Tuberculosis Elimination Division. The 1993 total reflected a decrease of 4.6% from 1992. Texas cases accounted for 9.5% of the total United States cases.

Mycobacferium tuberculosis, the agent that causes TB, is an acid-fast bacillus that is an obligate aerobe. The most effective mode of transmission is airborne through the inhalation of droplet nuclei, which are aerosolized by sneezing, coughing or talking.

As shown in Table 1, racial and ethnic minorities accounted for the majority of the cases. Texas residents who were born in foreign countries accounted for 20% of the total cases. The population groups most at risk for M. tuberculosis are the following:

- foreign-born persons
- homeless persons
- users of intravenous or other street drugs
- persons who have medical conditions which increase TB susceptibility (e.g., HIV infection and diabetes)
- health care workers from areas where TB is prevalent
- current or former residents of institutions such as prisons or nursing homes

A shared characteristic of many high-risk groups is that the living conditions of its members often are crowded and generally conducive to the spread of airborne infections such as TB. In densely populated prisons, transmission risks are increased, especially in susceptible subjects. Immigration and HIV infection have been important factors in increasing the number of cases in Texas, but are by no means the only factors. Many of our new TB patients do not belong to specific high-risk groups, but probably were infected due to exposure to a high-risk group member who had TB.

Compared with 1992, there was a 18.9% decrease in 1993 in cases among children aged less than four years and a 34% decrease among children aged 5 to 14 years. The greatest increase in TB cases, however, occurred in young adults aged 15 to 19 years and adults aged 45 to 54 years, particularly among African-Americans. Of the 2,393 reported cases of TB in 1993, 163 occurred in children aged less than 15 years, which represents 6.8% of total cases reported. Overall, most children are at very low risk for tuberculosis infection and disease. However, children with prolonged exposure to adult members of the high-risk groups listed earlier also are at relatively high risk. Table 2 illustrates the distinct differences in incidence rates of TB by age group and race/ethnicity.

Figure 1. Reported TB Cases by Race/Ethnicity in Texas - 1993

Race/Ethnicity	Number of Cases	% of Total Cases	Case Rate (per 100,000)
White (non-Hispanic)*	842	35.2%	7.6
Hispanic	878	36.7%	18.0
African-American	673	28.1%	32.3

*Of 842 cases reported in white, non-Hispanics, 206 cases were reported as "other", which includes American Indians, Asians, Eskimos, Aleuts and Pacific Islanders. Cases of "other" were added to white, non-Hispanic because 1993 state population projections are not available to determine a separate case rate for "other". Asians comprise about 80% of the total state population listed as "other".

For centuries TB has been recognized as being more common among persons whose health is compromised in any way. Conditions which may promote the contraction of TB are malnutrition, hematological and reticuloendothelial malignancy, solid tumors, corticosteroid therapy, diabetes mellitus, end-stage renal disease and human immunodeficiency virus (HIV) infection. Among tuberculous-infected individuals, HIV immunosuppression is the greatest known single risk factor for developing TB. TB has re-emerged as a major public health threat in the United States, particularly in areas where HIV infection is prevalent. A person with M. tuberculosis infection and without HIV infection has a 10% lifetime risk of developing active TB whereas an HIV-infected person with M. tuberculosis infection has a 8% annual risk.

Figure 2. TB Cases by Age and Race/Ethnicity: Texas, 1993

Age in Years	Total Cases	White*	Hispanic	African-American
0-4	103	11	65	27
5-9	38	7	23	8
10-14	22	0	18	4
15-19	58	15	28	15
20-24	136	41	67	28
25-34	459	132	162	165
35-44	528	181	149	198
45-54	368	157	105	106
55-54	249	119	89	41
65+	432	179	172	81
Total	2,393	842	878	673

*White non-Hispanic includes American Indian, Alaskan native, Asian and Pacific islander populations.

The definition of a case of AIDS was revised in 1993 to include HIV-infected persons who have either pulmonary or extrapulmonary TB.

A recent collaborative work between the TB and HIV/AIDS surveillance programs of TDH has resulted in a more accurate count for TB patients coinfected with HIV/AIDS. Compared with 1988, the number of reported TB patients coinfected with HIV/AIDS has more than doubled.

The emergence of drug resistant TB is one of the greatest threats to TB control. In 1993 there were 169 new cases, or 7% of total cases, that were resistant to one or more drugs compared with 161 cases, or 6.4%, in 1992. As of December 31, 1993, there were 398 cases managed for drug resistance with 105 of these being followed for resistance to both isoniazid (INH) and rifampin (RIF). Resistance to both INH and RIF is known as multi-drug resistant TB (MDR-TB). The rising numbers of MDR-TB cases in 1993 are of particular concern. In 1993 there were 26 new cases of MDR-TB compared with 20 new cases of MDR-TB reported in 1992.

When patients do not complete adequate therapy, they are at high risk of developing secondary resistance or relapse. Directly observed therapy (DOT), in which a health-care worker or other person observes the patient taking the medicine, is the most reliable and effective way of administering anti-TB medications and assuring treatment completion. Ideally, every TB patient should receive every dose of anti-TB medication within a program of DOT. Health Department staff can provide DOT at a clinic, a patient's home or work, drug-treatment centers, correctional centers, community-based organizations, or any mutually agreed upon site. TDH recommends that DOT be considered for all patients because of the difficulty in predicting which patients will adhere to a prescribed treatment regimen. As of December 1993, approximately 30% of TB patients were receiving anti-TB medications by DOT. The TDH goal for DOT is 55% by December 1994.

Tuberculosis Elimination Division (512) 458-7447

Tuberculosis: DNA Fingerprinting

DNA fingerprinting is a relatively new technology that is useful for some epidemiologic investigations. There are different methods for performing DNA fingerprinting, but they all have the same basis: use of restriction enzymes that recognize specific nucleotide sequences and then cleave the chromosomes at these sites into smaller fragments that can be measured on an electrophoretic gel. The distribution of fragments on such a gel forms a pattern. An epidemiologic link between two different cases of a disease is established when the organisms from the two cases have identical (or very nearly identical) patterns of DNA fragment distribution.

The Texas Department of Health (TDH) laboratories can perform DNA fingerprinting on selected organisms. This method was used in 1993 to prove that an increase in shigellosis cases in San Marcos represented a community-wide outbreak rather than several unrelated clusters. This technique also may prove useful in differentiating sporadic cases of meningococcal meningitis from clusters of disease.

Tuberculosis (TB) is a disease for which DNA fingerprinting is especially useful. TB has such a long and variable incubation period that definite epidemiologic links between cases are extrememly difficult to establish. Now, with DNA fingerprinting, such links can be made. TDH has not yet used this tool in a TB cluster investigation, but has used it to link selected cases.

The Centers for Disease Control and Prevention (CDC) has funded regional labs to perform DNA fingerprinting on *Mycobacterium tuberculosis*. The lab for Texas is at the Little Rock VA Hospital in Arkansas. DNA fingerprint patterns will be archived and stored in such a way that it will be possible to compare cases seen in different locations and points in time. The capacity of the regional lab is limited, but TDH expects to be able to obtain DNA fingerprints on 250-300 cases per year. Initially, TDH will use DNA fingerprinting to determine the proportion of cases due to recent TB transmission in two settings: the Texas prison system and one large city. As this data is evaluated, other targets for DNA fingerprinting will be selected.

This technology also will be used for investigating TB clusters. Since a cluster may not be recognized early, all TB isolates will be frozen at TDH so that they can be DNA fingerprinted at a later date. This process will enable TDH staff to analyze better the kind of slowly developing outbreak that is so characteristic of TB.

DNA fingerprinting will advance knowledge in several other ways:

- Detection or confirmation of the route, mechanism, and location of TB transmission
- Detection of errors in laboratory results (whether originating in the lab or prior to specimen arrival at the lab)
- Clarification of the mechanisms of the development of drug-resistant TB organisms
- Differentiation between recurrent disease due to relapse and that due to new infection
- Differentiation between recently transmitted and remotely transmitted disease
- Improved understanding of the global spread of TB

Bureau of Communicable Disease Control (512) 458-7455

Tuberculosis Drug Resistance Study

In 1993, the Texas Department of Health, Bureau of Communicable Disease Control, conducted a study of drug resistant tuberculosis in Texas for 1986 through 1992. This study represents an attempt to assess the incidence of drug resistance for all tuberculosis (TB) patients reported in Texas during the 1986-1992 period.

During 1986-1992, a total of 14,620 TB cases were reported to the Texas Department of Health, Tuberculosis Elimination Division. The annual number ranged from 1,890 to 2,510 cases. The average annual incidence rate was 12.24 cases per 100,000 population. Counties with the largest average annual incidence rate were located along the Texas-Mexico border.

Annual incidence rates in females were lower compared with males in each race/ethnicity group. From 1986 through 1992, rates remained fairly constant for whites. Rates for African-American males, Hispanic males, and African-American females increased 31%, 50%, and 83% respectively.

Figure 1. INH Resistant Counties, 1986-1992

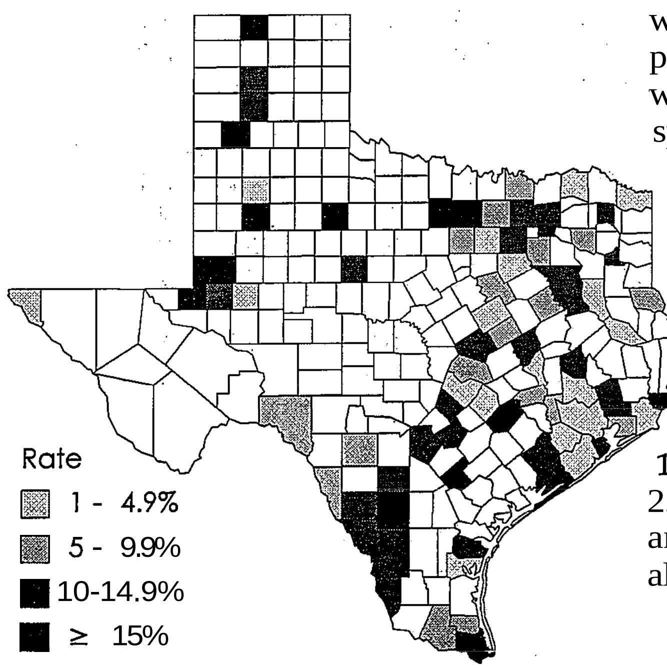


Table 1. Overall Resistance of Mycobacterium tuberculosis to First Line Antibiotics: Texas, *1986-1992

Antibiotics	Number	Percent
Streptomycin	615	5.3
Isoniazid	560	4.8
Rifampin	286	2.5
Ethionamide	153	1.3
Ethambutol	133	1.1
Pyrazinamide	50	0.3

*Alone or in combination with other antibiotics
Total of culture confirmed cases = 11,555

Table 2. Common Resistance Patterns of Mycobacterium tuberculosis to First Line Antibiotics: Texas, *1986-1992

Antibiotics	Number	Percent
STR alone	343	3.0
INH alone	206	1.8
INH + STR	113	1.0
ETH alone	64	0.5
RF alone	59	0.5
INH + RIF	49	0.4

*ETH (ethionamide), INH (isoniazid), RIF (rifampin), STR (streptomycin)
Texas total of culture confirmed cases = 11,555

Average age-specific rates were lower for whites in each age group compared with Hispanics or African-Americans. Rates increase with increasing age. In older age groups, age-specific rates are higher for African-Americans compared with Hispanics or whites except in persons aged 65 years or older.

Of the 14,620 reported cases, 11,555 (79%) cases were laboratory confirmed. Overall, 9.7% of patients had isolates resistant to one or more antituberculosis drugs, 4.8% had isolates resistant to at least isoniazid and 1.8% had resistance to isoniazid alone. Overall, 2.5% had isolates resistant to at least rifampin and 0.5% had isolates resistant to rifampin alone. See tables 1 and 2.

TB patients with resistance to isoniazid or rifampin resided throughout the state. Isoniazid and rifampin resistance were more common in counties along the Texas-Mexico border compared with non-border counties (Relative Risk = 1.87, p *e* 0.0001 and Relative Risk = 2.91, p < 0.001) respectively. See figures 1 and 2.

Isoniazid resistance was more common in Asians (Relative Risk = 2.41, p < 0.001) and Hispanics (Relative Risk = 1.50, p < 0.001) compared with whites. Rifampin resistance was more common in Hispanics (Relative Risk = 1.71, p < 0.001) compared with whites. See table 3.

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Figure 2. RIF Resistant Counties, *1986-1992*

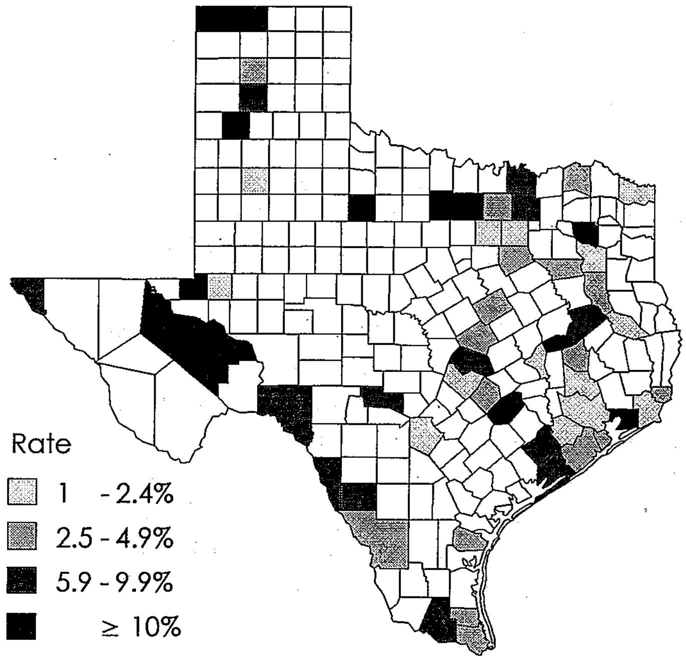


Table 3. Demographic Characteristics of Tuberculosis, Texas *1986-1992*

	Culture Confirmed	Pan Sensitive		INH Resistant		RIF Resistant	
	11,555	10,437	90.3	560	4.8	286	2.5
Sex	**Cases**	**Cases**	%	**Cases**	%	**Cases**	%
Male	8,106	7,311	90.2	378	4.7	199	2.4
Female	3,449	3,126	90.6	182	5.3	87	2.5
Race/Ethnicity							
White	3,415	3,139	91.9	138	4.0	66	1.9
Black	3,173	2,951	93.0	93	3.0	59	1.9
Hispanic	4,248	3,753	88.3	258	6.1	140	3.3
Asian	689	567	82.3	67	9.7	21	3.0
Age in Years							
0-19	455	404	88.8	27	5.9	14	3.1
20-39	4,140	3,673	88.7	251	6.1	118	2.8
40-59	3,624	3,288	90.7	157	4.3	88	2.4
60	3,330	3,069	92.2	125	3.8	66	2.0
Border Counties*	1,618	1,402	86.7	130	8.0	92	5.7
Non-Border Counties	9,937	9,035	90.9	430	4.3	194	1.9

*Texas-Mexico Border Counties (14 counties)

Tuberculosis Laboratory Reporting Study

The Texas Department of Health (TDH) requires that all laboratories notify the Tuberculosis Elimination Division within a seven-day period of patients with cultures positive for *Mycobacterium tuberculosis.* In 1993, 79% of all TB cases reported to TB Elimination Division were culture positive for M. *tuberculosis.*

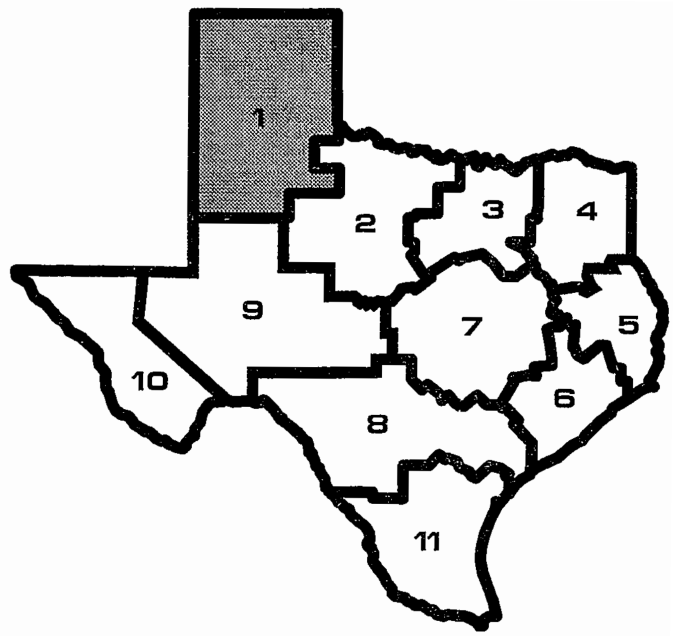
In 1993 the Bureau of Communicable Disease Control identified thirty-nine laboratories in Texas that culture and identify *M. tuberculosis.* A letter was sent to these laboratories requesting permission to visit and to obtain a list of all patients whose test results were culture-positive for *M. tuberculosis.* An on-site survey was conducted at 31 labs, and a list was obtained with the patients' name, date of birth, social security number and name of physician. The list of patients whose culture was positive for *M. tuberculosis* was matched with all tuberculosis cases reported in 1993. Only 28 cases which were culture positive were not reported. This number is 1.4% of the total culture positive cases.

Several problem areas in reporting were identified during the survey. Two facilities failed to report all of the patients with positive cultures for M. *tuberculosis.* Of those reporting positive cultures, some facilities did not report during a seven day period as is mandated by the state. In one instance the culture was reported as late as six months after the results were known at the laboratory. While some facilities report their positive culture results directly, others report cultures positive for M. *tuberculosis* through their infection control nurse. Once the results were reported to the local health departments, there sometimes were delays in reporting this information to the TDH Tuberculosis Elimination Division.

Tuberculosis Elimination Division (512) 458-7447

Regional Statistical Summaries

Public Health Region 1



REPORTED CASES OF GASTROINTESTINAL DISEASES AND RATES PER 100,000 POPULATION

PUBLIC HEALTH REGION 1 - 1993

		SALMONELLOSIS		SHIGELLOSIS		CAMPYLOBACTER		AMEBIASIS	
COUNTY	1993 POP.	CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE
ARMSTRONG	2,017	0	0.0	0	0.0	0	0.0	0	0.0
BAILEY	7,128	0	0.0	0	0.0	0	0.0	0	0.0
BRISCOE	1,960	0	0.0	0	0.0	0	0.0	0	0.0
CARSON	6,543	0	0.0	0	0.0	0	0.0	0	0.0
CASTRO	9,236	0	0.0	0	0.0	0	0.0	0	0.0
CHILDRESS	6,789	0	0.0	0	0.0	0	0.0	0	0.0
COCHRAN	4,530	1	22.1	0	0.0	0	0.0	0	0.0
COLLINGSWORTH	3,512	2	56.9	0	0.0	1	28.5	0	0.0
CROSBY	7,408	0	0.0	17	229.5	1	13.5	0	0.0
DALLAM	5,486	0	0.0	3	54.7	0	0.0	0	0.0
DEAF SMITH	19,459	3	15.4	0	0.0	0	0.0	0	0.0
DICKENS	2,529	2	79.1	0	0.0	0	0.0	0	0.0
DONLEY	3,607	0	0.0	0	0.0	0	0.0	0	0.0
FLOYD	8,585	1	11.6	3	34.9	0	0.0	0	0.0
GARZA	5,191	0	0.0	1	19.3	0	0.0	0	0.0
GRAY	24,194	1	4.1	6	24.8	0	0.0	0	0.0
HALE	34,556	2	5.8	3	8.7	1	2.9	0	0.0
HALL	3,812	0	0.0	0	0.0	0	0.0	0	0.0
HANSFORD	5,867	3	51.1	0	0.0	0	0.0	0	0.0
HARTLEY	3,627	0	0.0	0	0.0	0	0.0	0	0.0
HEMPHILL	3,709	0	0.0	0	0.0	0	0.0	0	0.0
HOCKLEY	24,348	2	8.2	9	37.0	1	4.1	0	0.0
HUTCHINSON	25,392	5	19.7	3	11.8	0	0.0	0	0.0
KING	365	0	0.0	0	0.0	0	0.0	0	0.0
LAMB	14,910	1	6.7	2	13.4	0	0.0	0	0.0
LIPSCOMB	3,123	0	0.0	1	32.0	0	0.0	0	0.0
LUBBOCK	224,207	61	27.2	170	75.8	17	7.6	0	0.0
LYNN	6,807	1	14.7	2	29.4	1	14.7	0	0.0
MOORE	18,225	3	16.5	13	71.3	0	0.0	0	0.0
MOTLEY	1,507	0	0.0	0	0.0	0	0.0	0	0.0
OCHILTREE	9,121	2	21.9	0	0.0	0	0.0	0	0.0
OLDHAM	2,269	0	0.0	0	0.0	1	44.1	0	0.0
PARMER	10,066	0	0.0	0	0.0	0	0.0	0	0.0
POTTER	100,165	38	37.9	44	43.9	14	14.0	0	0.0
RANDALL	95,751	14	14.6	18	18.8	4	4.2	0	0.0
ROBERTS	1,031	0	0.0	0	0.0	0	0.0	0	0.0
SHERMAN	2,881	0	0.0	0	0.0	0	0.0	0	0.0
SWISHER	8,708	0	0.0	1	11.5	0	0.0	0	0.0
TERRY	13,453	13	96.6	5	37.2	0	0.0	0	0.0
WHEELER	5,720	0	0.0	0	0.0	0	0.0	0	0.0
YOAKUM	9,010	0	0.0	0	0.0	0	0.0	0	0.0
REGIONAL TOTAL	746,858	155	20.8	301	40.3	41	5.5	0	0.0
TEXAS	17,958,512	1,924	10.7	4,581	25.5	849	4.7	86	0.5

REPORTED CASES OF HEPATITIS AND RATES PER 100,000 POPULATION

PUBLIC HEALTH REGION 1 - 1993

COUNTY	1993 POP.	HEPATITIS A CASES	HEPATITIS A RATE	HEPATITIS B CASES	HEPATITIS B RATE	HEPATITIS C CASES	HEPATITIS C RATE	HEPATITIS UNSPECIFIED CASES	HEPATITIS UNSPECIFIED RATE
ARMSTRONG	2,017	0	0.0	0	0.0	0	0.0	0	0.0
BAILEY	7,128	0	0.0	0	0.0	0	0.0	0	0.0
BRISCOE	1,960	0	0.0	0	0.0	0	0.0	0	0.0
CARSON	6,543	0	0.0	0	0.0	0	0.0	0	0.0
CASTRO	9,236	7	75.8	0	0.0	0	0.0	0	0.0
CHILDRESS	6,789	0	0.0	0	0.0	0	0.0	0	0.0
COCHRAN	4,530	0	0.0	0	0.0	0	0.0	0	0.0
COLLINGSWORTH	3,512	0	0.0	1	28.5	0	0.0	0	0.0
CROSBY	7,408	0	0.0	0	0.0	0	0.0	0	0.0
DALLAM	5,486	0	0.0	0	0.0	0	0.0	0	0.0
DEAF SMITH	19,459	1	5.1	0	0.0	0	0.0	0	0.0
DICKENS	2,529	0	0.0	0	0.0	0	0.0	0	0.0
DONLEY	3,607	0	0.0	0	0.0	0	0.0	0	0.0
FLOYD	8,585	1	11.6	0	0.0	0	0.0	0	0.0
GARZA	5,191	0	0.0	0	0.0	0	0.0	0	0.0
GRAY	24,194	2	8.3	8	33.1	1	4.1	0	0.0
HALE	34,556	16	46.3	1	2.9	2	5.8	0	0.0
HALL	3,812	0	0.0	0	0.0	0	0.0	0	0.0
HANSFORD	5,867	0	0.0	0	0.0	0	0.0	0	0.0
HARTLEY	3,627	0	0.0	0	0.0	0	0.0	0	0.0
HEMPHILL	3,709	0	0.0	0	0.0	0	0.0	0	0.0
HOCKLEY	24,348	0	0.0	2	8.2	0	0.0	0	0.0
HUTCHINSON	25,392	8	31.5	4	15.8	0	0.0	0	0.0
KING	365	0	0.0	0	0.0	0	0.0	0	0.0
LAMB	14,910	8	53.7	0	0.0	0	0.0	0	0.0
LIPSCOMB	3,123	0	0.0	0	0.0	0	0.0	0	0.0
LUBBOCK	224,207	6	2.7	6	2.7	3	1.3	0	0.0
LYNN	6,807	0	0.0	0	0.0	0	0.0	0	0.0
MOORE	18,225	0	0.0	0	0.0	0	0.0	0	0.0
MOTLEY	1,507	0	0.0	0	0.0	0	0.0	0	0.0
OCHILTREE	9,121	0	0.0	0	0.0	0	0.0	0	0.0
OLDHAM	2,269	0	0.0	0	0.0	0	0.0	0	0.0
PARMER	10,066	0	0.0	0	0.0	0	0.0	0	0.0
POTTER	100,165	9	9.0	22	22.0	9	9.0	0	0.0
RANDALL	95,751	4	4.2	7	7.3	0	0.0	0	0.0
ROBERTS	1,031	0	0.0	0	0.0	0	0.0	0	0.0
SHERMAN	2,881	0	0.0	0	0.0	0	0.0	0	0.0
SWISHER	8,708	0	0.0	1	11.5	0	0.0	0	0.0
TERRY	13,453	7	52.0	0	0.0	1	7.4	0	0.0
WHEELER	5,720	0	0.0	0	0.0	0	0.0	0	0.0
YOAKUM	9,010	0	0.0	0	0.0	0	0.0	0	0.0
REGIONAL TOTAL	746,858	69	9.2	52	7.0	16	2.1	0	0.0
TEXAS	117,958,512	2,798	15.6	1,354	7.5	384	2.1	157	0.9

REPORTED CASES OF OTHER SELECTED DISEASES AND RATES PER 100,000 POPULATION

PUBLIC HEALTH REGION 1 - 1993

		GONORRHEA		CHLAMYDIA		P&S SYPHILIS		TUBERCULOSIS	
COUNTY	1993 POP.	CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE
ARMSTRONG	2,017	0	0.0	2	99.2	0	0.0	0	0.0
BAILEY	7,128	5	70.1	19	266.6	0	0.0	1	14.0
BRISCOE	1,960	0	0.0	0	0.0	0	0.0	0	0.0
CARSON	6,543	0	0.0	5	76.4	0	0.0	1	15.3
CASTRO	9,236	3	32.5	10	108.3	1	10.8	1	10.8
CHILDRESS	6,789	11	162.0	23	338.8	0	0.0	0	0.0
COCHRAN	4,530	0	0.0	11	242.8	0	0.0	0	0.0
COLLINGSWORTH	3,512	1	28.5	8	227.8	0	0.0	0	0.0
CROSBY	7,408	3	40.5	18	243.0	0	0.0	0	0.0
DALLAM	5,486	3	54.7	12	218.7	1	18.2	1	18.2
DEAF SMITH	19,459	13	66.8	101	519.0	2	10.3	0	0.0
DICKENS	2,529	2	79.1	9	355.9	0	0.0	0	0.0
DONLEY	3,607	4	110.9	6	166.3	0	0.0	1	27.7
FLOYD	8,585	5	58.2	15	174.7	0	0.0	1	11.6
GARZA	5,191	5	96.3	15	289.0	0	0.0	0	0.0
GRAY	24,194	48	198.4	88	363.7	1	4.1	0	0.0
HALE	34,556	40	115.8	114	329.9	0	0.0	1	2.9
HALL	3,812	3	78.7	3	78.7	0	0.0	1	26.2
HANSFORD	5,867	0	0.0	1	17.0	0	0.0	0	0.0
HARTLEY	3,627	0	0.0	0	0.0	0	0.0	0	0.0
HEMPHILL	3,709	0	0.0	2	53.9	0	0.0	0	0.0
HOCKLEY	24,348	24	98.6	54	221.8	0	0.0	1	4.1
HUTCHINSON	25,392	12	47.3	44	173.3	2	7.9	0	0.0
KING	365	0	0.0	1	274.0	0	0.0	0	0.0
LAMB	14,910	11	73.8	37	248.2	0	0.0	0	0.0
LIPSCOMB	3,123	1	32.0	0	0.0	0	0.0	0	0.0
LUBBOCK	224,207	613	273.4	1419	632.9	4	1.8	11	4.9
LYNN	6,807	1	14.7	29	426.0	0	0.0	2	29.4
MOORE	18,225	0	0.0	27	148.1	0	0.0	1	5.5
MOTLEY	1,507	1	66.4	1	66.4	0	0.0	0	0.0
OCHILTREE	9,121	4	43.9	15	164.5	0	0.0	0	0.0
OLDHAM	2,269	0	0.0	1	44.1	0	0.0	0	0.0
PARMER	10,066	5	49.7	17	168.9	0	0.0	0	0.0
POTTER	100,165	335	334.4	787	785.7	2	2.0	8	8.0
RANDALL	95,751	36	37.6	180	188.0	0	0.0	4	4.2
ROBERTS	1,031	1	97.0	2	194.0	0	0.0	0	0.0
SHERMAN	2,881	0	0.0	4	138.8	0	0.0	0	0.0
SWISHER	8,708	2	23.0	20	229.7	0	0.0	1	11.5
TERRY	13,453	7	52.0	44	327.1	0	0.0	2	14.9
WHEELER	5,720	0	0.0	4	69.9	0	0.0	0	0.0
YOAKUM	9,010	1	11.1	12	133.2	0	0.0	1	11.1
REGIONAL TOTAL	746,858	1,200	160.7	3,160	423.1	12	1.6	39	5.2
TEXAS	17,958,512	30,122	167.7	43,874	244.3	2,530	14.1	2,393	13.3

REPORTED CASES OF VACCINE PREVENTABLE DISEASES AND RATES PER 100,000 POPULATION

PUBLIC HEALTH REGION 1 - 1993

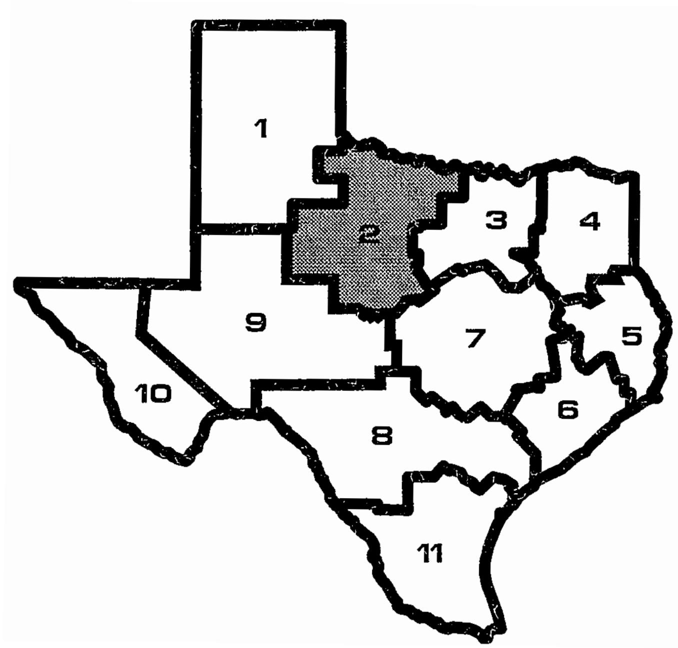
COUNN	1993 POP.	MEASLES CASES	MEASLES RATE	MUMPS CASES	MUMPS RATE	PERTUSSIS CASES	PERTUSSIS RATE	RUBELLA CASES	RUBELLA RATE
ARMSTRONG	2,017	0	0.0	0	0.0	0	0.0	0	0.0
BAILEY	7,128	0	0.0	0	0.0	0	0.0	0	0.0
BRISCOE	1,960	0	0.0	0	0.0	0	0.0	0	0.0
CARSON	6,543	0	0.0	0	0.0	0	0.0	0	0.0
CASTRO	9,236	0	0.0	0	0.0	0	0.0	0	0.0
CHILDRESS	6,789	0	0.0	0	0.0	0	0.0	0	0.0
COCHRAN	4,530	0	0.0	0	0.0	0	0.0	0	0.0
COLLINGSWORTH	3,512	0	0.0	0	0.0	0	0.0	0	0.0
CROSBY	7,408	0	0.0	1	13.5	0	0.0	0	0.0
DALLAM	5,486	0	0.0	0	0.0	0	0.0	0	0.0
DEAF SMITH	19,459	0	0.0	0	0.0	0	0.0	0	0.0
DICKENS	2,529	0	0.0	0	0.0	0	0.0	0	0.0
DONLEY	3,607	0	0.0	0	0.0	0	0.0	0	0.0
FLOYD	8,585	0	0.0	1	11.6	0	0.0	0	0.0
GARZA	5,191	0	0.0	0	0.0	0	0.0	0	0.0
GRAY	24,194	0	0.0	0	0.0	0	0.0	0	0.0
HALE	34,556	0	0.0	1	2.9	0	0.0	0	0.0
HALL	3,812	0	0.0	0	0.0	0	0.0	0	0.0
HANSFORD	5,867	0	0.0	0	0.0	0	0.0	0	0.0
HARTLEY	3,627	0	0.0	0	0.0	0	0.0	0	0.0
HEMPHILL	3,709	0	0.0	1	27.0	0	0.0	0	0.0
HOCKLEY	24,348	0	0.0	1	4.1	0	0.0	0	0.0
HUTCHINSON	25,392	0	0.0	0	0.0	0	0.0	0	0.0
KING	365	0	0.0	0	0.0	0	0.0	0	0.0
LAMB	14,910	0	0.0	0	0.0	0	0.0	0	0.0
LIPSCOMB	3,123	0	0.0	0	0.0	0	0.0	0	0.0
LUBBOCK	224,207	0	0.0	1	0.4	0	0.0	4	1.8
LYNN	6,807	0	0.0	0	0.0	0	0.0	1	14.7
MOORE	18,225	0	0.0	0	0.0	0	0.0	0	0.0
MOTLEY	1,507	0	0.0	0	0.0	0	0.0	0	0.0
OCHILTREE	9,121	0	0.0	0	0.0	0	0.0	0	0.0
OLDHAM	2,269	0	0.0	0	0.0	0	0.0	0	0.0
PARMER	10,066	0	0.0	2	19.9	0	0.0	0	0.0
POTTER	100,165	0	0.0	2	2.0	0	0.0	0	0.0
RANDALL	95,751	0	0.0	2	2.1	0	0.0	0	0.0
ROBERTS	1,031	0	0.0	0	0.0	0	0.0	0	0.0
SHERMAN	2,881	0	0.0	0	0.0	0	0.0	0	0.0
SWISHER	8,708	0	0.0	0	0.0	0	0.0	0	0.0
TERRY	13,453	0	0.0	1	7.4	0	0.0	0	0.0
WHEELER	5,720	0	0.0	0	0.0	0	0.0	0	0.0
YOAKUM	9,010	0	0.0	1	11.1	0	0.0	0	0.0
REGIONAL TOTAL	746,858	0	0.0	14	1.9	0	0.0	5	0.7
TEXAS	17,958,512	10	0.1	231	1.3	121	0.7	22	0.1

REPORTED CASES OF SELECTED VIRAL DISEASES AND RATES PER 100,000 POPULATION

PUBLIC HEALTH REGION 1 - 1993

		ASCEPTIC MENINGITIS		ENCEPHALITIS		INFLUENZA & FLU-LIKE ILLNESS		CHICKENPOX	
COUNTY	1993 POP.	CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE
ARMSTRONG	2,017	0	0.0	0	0.0	0	0.0	0	0.0
BAILEY	7,128	0	0.0	0	0.0	0	0.0	14	196.4
BRISCOE	1,960	0	0.0	0	0.0	0	0.0	0	0.0
CARSON	6,543	0	0.0	0	0.0	0	0.0	0	0.0
CASTRO	9,236	1	10.8	0	0.0	0	0.0	0	0.0
CHILDRESS	6,789	0	0.0	0	0.0	0	0.0	0	0.0
COCHRAN	4,530	0	0.0	0	0.0	0	0.0	0	0.0
COLLINGSWORTH	3,512	0	0.0	0	0.0	39	1,110.5	1	28.5
CROSBY	7,408	0	0.0	0	0.0	0	0.0	0	0.0
DALLAM	5,486	0	0.0	0	0.0	0	0.0	0	0.0
DEAF SMITH	19,459	3	15.4	0	0.0	0	0.0	0	0.0
DICKENS	2,529	0	0.0	0	0.0	0	0.0	0	0.0
DONLEY	3,607	0	0.0	0	0.0	0	0.0	0	0.0
FLOYD	8,585	1	11.6	0	0.0	0	0.0	0	0.0
GARZA	5,191	0	0.0	0	0.0	0	0.0	0	0.0
GRAY	24,194	1	4.1	0	0.0	0	0.0	0	0.0
HALE	34,556	0	0.0	0	0.0	810	2,344.0	197	570.1
HALL	3,812	0	0.0	0	0.0	0	0.0	0	0.0
HANSFORD	5,867	0	0.0	0	0.0	0	0.0	2	34.1
HARTLEY	3,627	0	0.0	0	0.0	0	0.0	0	0.0
HEMPHILL	3,709	0	0.0	0	0.0	0	0.0	0	0.0
HOCKLEY	24,348	0	0.0	0	0.0	0	0.0	4	16.4
HUTCHINSON	25,392	3	11.8	0	0.0	0	0.0	0	0.0
KING	365	0	0.0	0	0.0	0	0.0	0	0.0
LAMB	14,910	0	0.0	0	0.0	0	0.0	0	0.0
LIPSCOMB	3,123	0	0.0	0	0.0	0	0.0	0	0.0
LUBBOCK	224,207	34	15.2	0	0.0	104	46.4	73	32.6
LYNN	6,807	0	0.0	0	0.0	0	0.0	0	0.0
MOORE	18,225	3	16.5	0	0.0	0	0.0	0	0.0
MOTLEY	1,507	0	0.0	0	0.0	0	0.0	0	0.0
OCHILTREE	9,121	0	0.0	0	0.0	0	0.0	0	0.0
OLDHAM	2,269	0	0.0	0	0.0	0	0.0	0	0.0
PARMER	10,066	0	0.0	0	0.0	0	0.0	0	0.0
POTTER	100,165	46	45.9	0	0.0	5006	4,997.8	69	68.9
RANDALL	95,751	16	16.7	0	0.0	2849	2,975.4	66	68.9
ROBERTS	1,031	0	0.0	0	0.0	0	0.0	0	0.0
SHERMAN	2,881	0	0.0	0	0.0	0	0.0	0	0.0
SWISHER	8,708	0	0.0	0	0.0	0	0.0	0	0.0
TERRY	13,453	2	14.9	0	0.0	0	0.0	0	0.0
WHEELER	5,720	0	0.0	0	0.0	0	0.0	0	0.0
YOAKUM	9,010	0	0.0	0	0.0	0	0.0	3	33.3
REGIONAL TOTAL	746,858	110	14.7	0	0.0	8808	1,179.3	429	57.4
TEXAS	17,958,512	1,329	7.4	61	0.3	277,453	1,545.0	14,291	79.6

Public Health Region *2*



REPORTED CASES OF SELECTED GASTROINTESTINAL DISEASES AND RATES PER 100,000 POPULATION

PUBLIC HEALTH REGION 2 - 1993

COUNTY	1993 POP.	AMEBIASIS CASES	AMEBIASIS RATE	CAMPYLOBACTER CASES	CAMPYLOBACTER RATE	SALMONELLOSIS CASES	SALMONELLOSIS RATE	SHIGELLOSIS CASES	SHIGELLOSIS RATE
ARCHER	8,093	0	0.0	0	0.0	0	0.0	1	12.4
BAYLOR	4,295	0	0.0	0	0.0	0	0.0	0	0.0
BROWN	34,007	0	0.0	0	0.0	6	17.6	6	17.6
CALLAHAN	11,907	0	0.0	0	0.0	2	16.8	0	0.0
CLAY	10,020	0	0.0	0	0.0	1	10.0	0	0.0
COLEMAN	9,515	0	0.0	1	10.5	2	21.0	4	42.0
COMANCHE	13,294	0	0.0	0	0.0	2	15.0	1	7.5
COTTLE	2,223	0	0.0	0	0.0	0	0.0	0	0.0
EASTLAND	18,125	0	0.0	0	0.0	1	5.5	0	0.0
FISHER	4,475	0	0.0	0	0.0	3	67.0	0	0.0
FOARD	1,775	0	0.0	0	0.0	1	56.3	0	0.0
HARDEMAN	5,194	10	192.5	0	0.0	1	19.3	2	38.5
HASKELL	6,734	0	0.0	0	0.0	0	0.0	0	0.0
JACK	6,941	0	0.0	0	0.0	0	0.0	0	0.0
JONES	18,337	0	0.0	0	0.0	2	10.9	0	0.0
KENT	1,021	0	0.0	0	0.0	0	0.0	0	0.0
KNOX	4,787	0	0.0	0	0.0	1	20.9	0	0.0
MITCHELL	7,985	0	0.0	0	0.0	0	0.0	0	0.0
MONTAGUE	16,861	0	0.0	0	0.0	7	41.5	0	0.0
NOLAN	16,698	0	0.0	1	6.0	3	18.0	28	167.7
RUNNELS	11,288	0	0.0	1	8.9	3	26.6	5	44.3
SCURRY	18,736	0	0.0	0	0.0	3	16.0	4	21.3
SHACKELFORD	3,720	0	0.0	0	0.0	0	0.0	0	0.0
STEPHENS	8,870	0	0.0	0	0.0	1	11.3	0	0.0
STONEWALL	1,999	0	0.0	0	0.0	0	0.0	0	0.0
TAYLOR	123,138	140	113.7	6	4.9	10	8.1	57	46.3
THROCKMORTON	1,864	0	0.0	0	0.0	0	0.0	0	0.0
WICHITA	123,933	0	0.0	4	3.2	8	6.5	10	8.1
WILBARGER	15,159	0	0.0	0	0.0	0	0.0	1	6.6
YOUNG	17,820	0	0.0	1	5.6	2	11.2	25	140.3
REGIONAL TOTAL	528,664	15	2.8	14	2.6	59	11.2	144	27.2
TEXAS	17,958,512	86	0.5	849	4.7	1,924	10.7	4,581	25.5

REPORTED CASES OF HEPATITIS AND RATES PER 100,000 POPULATION

PUBLIC HEALTH REGION 2 - 1993

		HEPATITIS A		HEPATITIS B		HEPATITIS C		HEPATITIS UNSPECIFIED	
COUNTY	1993 POP.	CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE
ARCHER	8,093	0	0.0	0	0.0	0	0.0	0	0.0
BAYLOR	4,295	0	0.0	0	0.0	0	0.0	0	0.0
BROWN	34,007	2	5.9	2	5.9	0	0.0	0	0.0
CALLAHAN	11,907	0	0.0	0	0.0	0	0.0	0	0.0
CLAY	10,020	0	0.0	0	0.0	0	0.0	0	0.0
COLEMAN	9,515	0	0.0	0	0.0	0	0.0	0	0.0
COMANCHE	13,294	1	7.5	0	0.0	0	0.0	0	0.0
COTTLE	2,223	0	0.0	0	0.0	0	0.0	0	0.0
EASTLAND	18,125	0	0.0	1	5.5	0	0.0	0	0.0
FISHER	4,475	0	0.0	0	0.0	0	0.0	0	0.0
FOARD	1,775	0	0.0	0	0.0	0	0.0	0	0.0
HARDEMAN	5,194	0	0.0	1	19.3	0	0.0	0	0.0
HASKELL	6,734	0	0.0	0	0.0	0	0.0	0	0.0
JACK	6,941	1	14.4	1	14.4	0	0.0	0	0.0
JONES	18,337	0	0.0	0	0.0	0	0.0	0	0.0
KENT	1,021	0	0.0	0	0.0	0	0.0	0	0.0
KNOX	4,787	1	20.9	2	41.8	1	20.9	0	0.0
MITCHELL	7,985	0	0.0	0	0.0	0	0.0	0	0.0
MONTAGUE	16,861	2	11.9	0	0.0	1	5.9	0	0.0
NOLAN	16,698	3	18.0	1	6.0	0	0.0	0	0.0
RUNNELS	11,288	1	8.9	0	0.0	0	0.0	0	0.0
SCURRY	18,736	0	0.0	3	16.0	3	16.0	1	5.3
SHACKELFORD	3,720	2	53.8	0	0.0	0	0.0	1	26.9
STEPHENS	8,870	0	0.0	1	11.3	0	0.0	0	0.0
STONEWALL	1,999	0	0.0	1	50.0	0	0.0	0	0.0
TAYLOR	123,138	0	0.0	8	6.5	6	4.9	1	0.8
THROCKMORTON	1,864	0	0.0	0	0.0	0	0.0	0	0.0
WICHITA	123,933	39	31.5	6	4.8	11	8.9	0	0.0
WILBARGER	15,159	2	13.2	2	13.2	0	0.0	0	0.0
YOUNG	17,820	2	11.2	1	5.6	1	5.6	0	0.0
REGIONAL TOTAL	528,664	56	10.6	31	5.9	23	4.4	3	0.6
TEXAS	17,958,512	2,798	15.6	1,354	7.5	384	2.1	157	0.9

REPORTED CASES OF OTHER SELECTED DISEASES AND RATES PER 100,000 POPULATION

PUBLIC HEALTH REGION 2 - 1993

		GONORRHEA		CHLAMYDIA		P&S SYPHILIS		TUBERCULOSIS	
COUNTY	1993 POP.	CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE
ARCHER	8,093	0	0.0	7	86.5	0	0.0	1	12.4
BAYLOR	4,295	0	0.0	2	46.6	0	0.0	0	0.0
BROWN	34,007	31	91.2	70	205.8	0	0.0	1	2.9
CALLAHAN	11,907	10	84.0	12	100.8	0	0.0	0	0.0
CLAY	10,020	0	0.0	8	79.8	0	0.0	0	0.0
COLEMAN	9,515	1	10.5	6	63.1	0	0.0	0	0.0
COMANCHE	13,294	2	15.0	14	105.3	0	0.0	1	7.5
COTTLE	2,223	5	224.9	3	135.0	0	0.0	0	0.0
EASTLAND	18,125	3	16.6	10	55.2	1	5.5	2	11.0
FISHER	4,475	1	22.3	7	156.4	0	0.0	0	0.0
FOARD	1,775	0	0.0	0	0.0	0	0.0	0	0.0
HARDEMAN	5,194	1	19.3	5	96.3	0	0.0	0	0.0
HASKELL	6,734	5	74.3	6	89.1	0	0.0	0	0.0
JACK	6,941	1	14.4	4	57.6	0	0.0	0	0.0
JONES	18,337	8	43.6	36	196.3	0	0.0	0	0.0
KENT	1,021	0	0.0	0	0.0	0	0.0	0	0.0
KNOX	4,787	4	83.6	2	41.8	0	0.0	0	0.0
MITCHELL	7,985	1	12.5	11	137.8	0	0.0	0	0.0
MONTAGUE	16,861	4	23.7	10	59.3	0	0.0	0	0.0
NOLAN	16,698	25	149.7	98	586.9	0	0.0	0	0.0
RUNNELS	11,288	6	53.2	23	203.8	0	0.0	0	0.0
SCURRY	18,736	22	117.4	61	325.6	0	0.0	1	5.3
SHACKELFORD	3,720	0	0.0	5	134.4	0	0.0	0	0.0
STEPHENS	8,870	1	11.3	18	202.9	0	0.0	0	0.0
STONEWALL	1,999	0	0.0	1	50.0	0	0.0	0	0.0
TAYLOR	123,138	203	164.9	415	337.0	11	8.9	4	3.2
THROCKMORTON	1,864	0	0.0	1	53.6	0	0.0	0	0.0
WICHITA	123,933	172	138.8	447	360.7	21	16.9	12	9.7
WILBARGER	15,159	3	19.8	16	105.5	0	0.0	1	6.6
YOUNG	17,820	5	28.1	9	50.5	0	0.0	1	5.6
REGIONAL TOTAL	528,664	505	95.5	1,307	247.2	33	6.2	24	4.5
TEXAS	17,958,512	30,122	167.7	43,874	244.3	2,530	14.1	2393	13.3

REPORTED CASES OF VACCINE PREVENTABLE DISEASES AND RATES PER 100,000 POPULATION

PUBLIC HEALTH REGION 2 - 1993

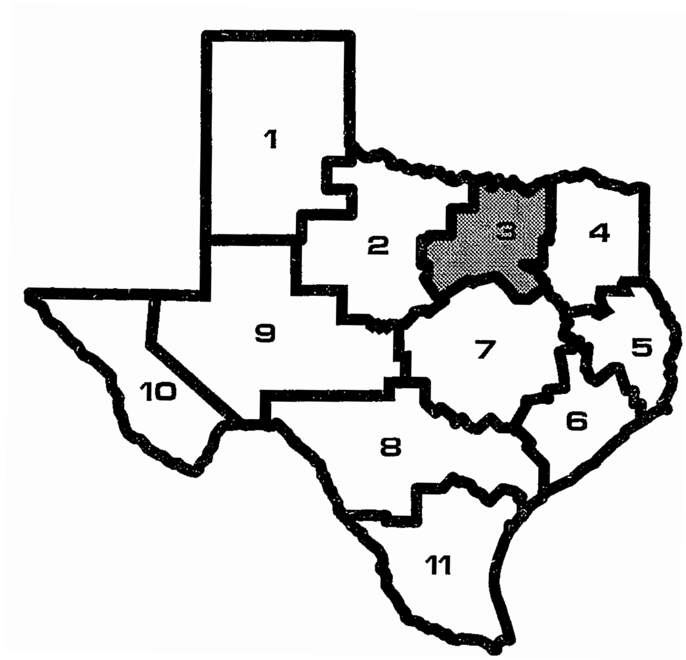
		MEASLES		MUMPS		PERTUSSIS		RUBELLA	
COUNTY	1993 POP.	CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE
ARCHER	8,093	0	0.0	0	0.0	0	0.0	0	0.0
BAYLOR	4,295	0	0.0	0	0.0	0	0.0	0	0.0
BROWN	34,007	0	0.0	0	0.0	0	0.0	0	0.0
CALLAHAN	11,907	0	0.0	0	0.0	0	0.0	0	0.0
CLAY	10,020	0	0.0	1	10.0	0	0.0	0	0.0
COLEMAN	9,515	0	0.0	0	0.0	0	0.0	0	0.0
COMANCHE	13,294	0	0.0	0	0.0	0	0.0	0	0.0
COTTLE	2,223	0	0.0	0	0.0	0	0.0	0	0.0
EASTLAND	18,125	0	0.0	0	0.0	0	0.0	0	0.0
FISHER	4,475	0	0.0	0	0.0	0	0.0	0	0.0
FOARD	1,775	0	0.0	0	0.0	0	0.0	0	0.0
HARDEMAN	5,194	0	0.0	0	0.0	1	19.3	0	0.0
HASKELL	6,734	0	0.0	0	0.0	0	0.0	0	0.0
JACK	6,941	0	0.0	0	0.0	0	0.0	0	0.0
JONES	18,337	0	0.0	6	32.7	0	0.0	0	0.0
KENT	1,021	0	0.0	0	0.0	0	0.0	0	0.0
KNOX	4,787	0	0.0	0	0.0	0	0.0	0	0.0
MITCHELL	7,985	0	0.0	0	0.0	0	0.0	0	0.0
MONTAGUE	16,861	0	0.0	1	5.9	0	0.0	1	5.9
NOLAN	16,698	0	0.0	0	0.0	0	0.0	0	0.0
RUNNELS	11,288	0	0.0	0	0.0	0	0.0	0	0.0
SCURRY	18,736	0	0.0	1	5.3	0	0.0	0	0.0
SHACKELFORD	3,720	0	0.0	0	0.0	0	0.0	0	0.0
STEPHENS	8,870	0	0.0	2	22.5	0	0.0	0	0.0
STONEWALL	1,999	0	0.0	0	0.0	0	0.0	0	0.0
TAYLOR	123,138	0	0.0	0	0.0	1	0.8	0	0.0
THROCKMORTON	1,864	0	0.0	0	0.0	0	0.0	0	0.0
WICHITA	123,933	0	0.0	0	0.0	0	0.0	0	0.0
WILBARGER	15,159	0	0.0	0	0.0	0	0.0	0	0.0
YOUNG	17,820	0	0.0	1	5.6	0	0.0	0	0.0
REGIONAL TOTAL	528,664	0	0.0	12	2.3	2	0.4	1	0.2
TEXAS	17,958,512	10	0.1	231	1.3	121	0.7	22	0.1

REPORTED CASES OF SELECTED VIRAL DISEASES AND RATES PER 100,000 POPULATION

PUBLIC HEALTH REGION 2 - 1993

		ASCEPTIC MENINGITIS		ENCEPHALITIS		INFLUENZA & FLU-LIKE ILLNESS		CHICKENPOX	
COUNTY	1993 POP.	CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE
ARCHER	8,093	0	0.0	0	0.0	0	0.0	0	0.0
BAYLOR	4,295	1	23.3	0	0.0	0	0.0	0	0.0
BROWN	34,007	0	0.0	0	0.0	7	20.6	0	0.0
CALLAHAN	11,907	3	25.2	0	0.0	0	0.0	0	0.0
CLAY	10,020	1	10.0	0	0.0	33	329.3	0	0.0
COLEMAN	9,515	1	10.5	0	0.0	0	0.0	0	0.0
COMANCHE	13,294	0	0.0	0	0.0	153	1,150.9	0	0.0
COTTLE	2,223	0	0.0	0	0.0	0	0.0	0	0.0
EASTLAND	18,125	0	0.0	0	0.0	0	0.0	0	0.0
FISHER	4,475	1	22.3	0	0.0	0	0.0	0	0.0
FOARD	1,775	0	0.0	0	0.0	0	0.0	0	0.0
HARDEMAN	5,194	0	0.0	0	0.0	0	0.0	0	0.0
HASKELL	6,734	1	14.9	0	0.0	0	0.0	1	14.9
JACK	6,941	0	0.0	0	0.0	0	0.0	0	0.0
JONES	18,337	3	16.4	0	0.0	22	120.0	0	0.0
KENT	1,021	0	0.0	0	0.0	0	0.0	0	0.0
KNOX	4,787	0	0.0	0	0.0	0	0.0	0	0.0
MITCHELL	7,985	1	12.5	0	0.0	0	0.0	0	0.0
MONTAGUE	16,861	1	5.9	1	5.9	0	0.0	0	0.0
NOLAN	16,698	1	6.0	0	0.0	0	0.0	0	0.0
RUNNELS	11,288	0	0.0	0	0.0	0	0.0	0	0.0
SCURRY	18,736	2	10.7	0	0.0	10	53.4	15	80.1
SHACKELFORD	3,720	0	0.0	0	0.0	0	0.0	0	0.0
STEPHENS	8,870	1	11.3	0	0.0	0	0.0	2	22.5
STONEWALL	1,999	0	0.0	0	0.0	0	0.0	0	0.0
TAYLOR	123,138	16	13.0	0	0.0	1,559	1,266.1	326	264.7
THROCKMORTON	1,864	0	0.0	0	0.0	0	0.0	0	0.0
WICHITA	123,933	57	46.0	1	0.8	270	217.9	28	22.6
WILBARGER	15,159	0	0.0	0	0.0	105	692.7	0	0.0
YOUNG	17,820	0	0.0	0	0.0	116	651.0	8	44.9
REGIONAL TOTAL	528,664	91	17.2	2	0.4	2,275	430.3	380	71.9
TEXAS	17,958,512	1,329	7.4	61	0.3	277,453	1,545.0	14,291	79.6

Public Health Region 3



REPORTED CASES OF SELECTED GASTROINTESTINAL DISEASES AND RATES PER 100,000 POPULATION

PUBLIC HEALTH REGION 3 - 1993

COUNTY	1993 POP.	AMEBIASIS CASES	AMEBIASIS RATE	CAMPYLOBACTER CASES	CAMPYLOBACTER RATE	SALMONELLOSIS CASES	SALMONELLOSIS RATE	SHIGELLOSIS CASES	SHIGELLOSIS RATE
COLLIN	307,302	0	0.0	4	1.3	15	4.9	27	8.8
COOKE	31,314	0	0.0	0	0.0	2	6.4	0	0.0
DALLAS	1,953,947	9	0.5	97	5.0	177	9.1	281	14.4
DENTON	312,077	0	0.0	2	0.6	15	4.8	41	13.1
ELLIS	94,951	2	2.1	6	6.3	6	6.3	9	9.5
ERATH	29,207	0	0.0	0	0.0	2	6.8	0	0.0
FANNIN	24,886	0	0.0	0	0.0	3	12.1	2	8.0
GRAYSON	95,985	0	0.0	1	1.0	8	8.3	9	9.4
HOOD	32,748	0	0.0	0	0.0	6	18.3	7	21.4
HUNT	67,618	0	0.0	0	0.0	9	13.3	7	10.4
JOHNSON	108,322	0	0.0	4	3.7	5	4.6	23	21.2
KAUFMAN	57,620	0	0.0	1	1.7	7	12.1	9	15.6
NAVARRO	41.009	0	0.0	4	9.8	2	4.9	1	2.4
PALA PINTO	25,641	0	0.0	0	0.0	3	11.7	2	7.8
PARKER	72,871	0	0.0	3	4.1	5	6.9	3	4.1
ROCKWALL	29,703	0	0.0	0	0.0	1	3.4	2	6.7
SOMERVELL	5,705	0	0.0	0	0.0	0	0.0	2	35.1
TARRANT	1,277,839	0	0.0	37	2.9	97	7.6	241	18.9
WISE	37,470	0	0.0	0	0.0	3	8.0	4	10.7
REGIONAL TOTAL	4,606,215	11	0.2	159	3.5	366	7.9	670	14.5
TEXAS TOTAL	17,958,512	86	0.5	849	4.7	1,924	10.7	4,581	25.6

REPORTED CASES OF HEPATITIS AND RATES PER 100,000 POPULATION

PUBLIC HEALTH REGION 3 - 1993

		HEPATITIS A		HEPATITIS B		HEPATITIS C		HEPATITIS UNSPECIFIED	
COUNTY	1993 POP.	CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE
COLLIN	307,302	18	5.9	27	8.8	2	0.7	2	0.7
COOKE	31,314	0	0.0	1	3.2	0	0.0	0	0.0
DALLAS	1,953,947	399	20.4	325	16.6	86	4.4	30	1.5
DENTON	312,077	21	6.7	6	1.9	3	1.0	0	0.0
ELLIS	94,951	7	7.4	5	5.3	0	0.0	1	1.1
ERATH	29,207	7	24.0	1	3.4	0	0.0	0	0.0
FANNIN	24,886	0	0.0	2	8.0	1	4.0	0	0.0
GRAYSON	95,985	3	3.1	11	11.5	9	9.4	0	0.0
HOOD	32,748	5	15.3	3	9.2	1	3.1	0	0.0
HUNT	67,618	0	0.0	3	4.4	2	3.0	0	0.0
JOHNSON	108,322	18	16.6	6	5.5	2	1.8	1	0.9
KAUFMAN	57,620	4	6.9	8	13.9	1	1.7	0	0.0
NAVARRO	41,009	0	0.0	1	2.4	0	0.0	0	0.0
PALA PINTO	25,641	7	27.3	7	27.3	2	7.8	0	0.0
PARKER	72.871	7	9.6	0	0.0	0	0.0	0	0.0
ROCKWALL	29,703	0	0.0	4	13.5	1	3.4	0	0.0
SOMERVELL	5,705	0	0.0	0	0.0	0	0.0	0	0.0
TARRANT	1,277,839	413	32.3	157	12.3	44	3.4	14	1.1
WISE	37,470	17	45.4	0	0.0	3	8.0	0	0.0

REGIONAL TOTAL	4,606215	926	20.1	567	12.3	157	3.4	48	1.0

TEXAS TOTAL	17,958,512	2.798	15.6	1,354	7.5	384	2.1	157	0.9

REPORTED CASES OF OTHER SELECTED DISEASES AND RATES PER 100,000 POPULATION

PUBLIC HEALTH REGION 3 - 1993

		GONORRHEA		CHLAMYDIA		P & S SYPHILIS		TUBERCULOSIS	
COUNTY	1993 POP.	CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE
COLLIN	307,302	152	49.5	352	114.5	8	2.6	9	2.9
COOKE	31,314	15	47.9	77	245.9	4	12.8	0	0.0
DALLAS	1,953,947	6820	349.0	4528	231.7	410	21.0	294	15.0
DENTON	312,077	138	44.2	412	132.0	6	1.9	4	1.3
ELLIS	94,951	125	131.6	146	153.8	14	14.7	9	9.5
ERATH	29,207	14	47.9	121	414.3	0	0.0	0	0.0
FANNIN	24,886	15	60.3	55	221.0	0	0.0	1	4.0
GRAYSON	95,985	135	140.6	191	199.0	34	35.4	3	3.1
HOOD	32,748	7	21.4	54	164.9	1	3.1	1	3.1
HUNT	67,618	112	165.6	49	72.5	6	8.9	5	7.4
JOHNSON	108,322	31	28.6	159	146.8	1	0.9	4	3.7
KAUFMAN	57,620	36	62.5	60	104.1	1	1.7	4	6.9
NAVARRO	41,009	235	573.0	167	407.2	10	24.4	0	0.0
PALA PINTO	25,641	3	11.7	26	101.4	1	3.9	1	3.9
PARKER	72,871	11	15.1	42	57.6	1	1.4	0	0.0
ROCKWALL	29,703	2	6.7	8	26.9	1	3.4	0	0.0
SOMERVELL	5,705	0	0.0	2	35.1	0	0.0	0	0.0
TARRANT	1,277,839	2722	213.0	1464	114.6	351	27.5	159	12.4
WISE	37,470	1	2.7	27	72.1	0	0.0	2	5.3
REGIONAL TOTAL	4,606,215	10,574	229.6	7,940	172.4	849	18.4	496	10.8
TEXAS TOTAL	17,958,512	30,122	167.7	43,874	244.3	2,530	55.1	2,393	13.3

REPORTED CASES OF VACCINE PREVENTABLE DISEASES AND RATES PER 100,000 POPULATION

PUBLIC HEALTH REGION 3 - 1993

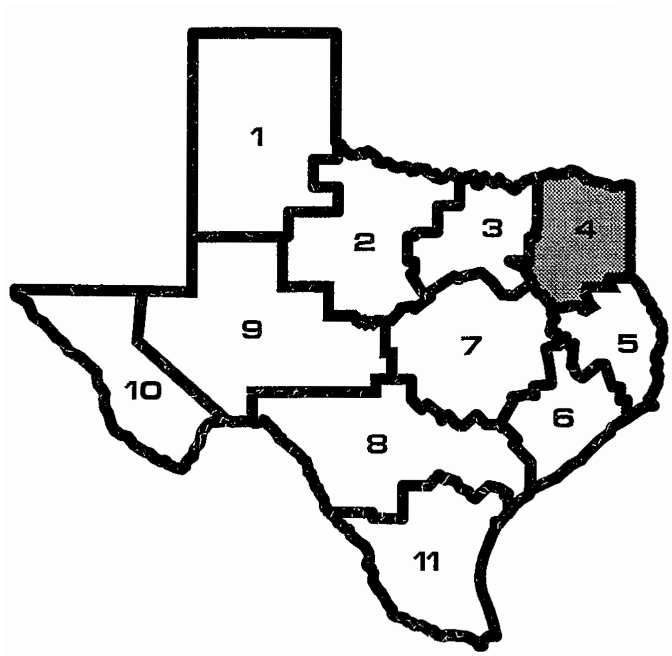
COUNTY	1993 POP.	MEASLES CASES	MEASLES RATE	MUMPS CASES	MUMPS RATE	PERTUSSIS CASES	PERTUSSIS RATE	RUBELLA CASES	RUBELLA RATE
COLLIN	307,302	0	0.0	1	0.3	1	0.3	0	0.0
COOKE	31,314	0	0.0	0	0.0	0	0.0	0	0.0
DALLAS	1,953,947	0	0.0	18	0.9	36	1.8	0	0.0
DENTON	312,077	0	0.0	2	0.6	4	1.3	0	0.0
ELLIS	94,951	0	0.0	0	0.0	1	1.1	0	0.0
ERATH	29,207	0	0.0	0	0.0	0	0.0	0	0.0
FANNIN	24,886	0	0.0	1	4.0	0	0.0	0	0.0
GRAYSON	95,985	0	0.0	0	0.0	0	0.0	0	0.0
HOOD	32,748	0	0.0	0	0.0	0	0.0	0	0.0
HUNT	67,618	0	0.0	1	1.5	0	0.0	0	0.0
JOHNSON	108,322	0	0.0	1	0.9	1	0.9	1	0.9
KAUFMAN	57,620	0	0.0	1	1.7	1	1.7	0	0.0
NAVARRO	41,009	0	0.0	0	0.0	1	2.4	0	0.0
PALA PINTO	25,641	0	0.0	1	3.9	0	0.0	0	0.0
PARKER	72,871	0	0.0	0	0.0	0	0.0	0	0.0
ROCKWALL	29,703	0	0.0	2	6.7	0	0.0	0	0.0
SOMERVELL	5,705	0	0.0	0	0.0	0	0.0	0	0.0
TARRANT	1,277,839	0	0.0	16	1.3	2	0.2	4	0.3
WISE	37,470	0	0.0	1	2.7	0	0.0	0	0.0
REGIONAL TOTAL	4,606,215	0	0.0	45	1.0	47	1.0	5	0.1
TEXAS TOTAL	17,958.512	10	0.1	231	1.3	121	0.7	22	0.1

REPORTED CASES OF SELECTED VIRAL DISEASES AND RATES PER 100,000 POPULATION

PUBLIC HEALTH REGION 3 - 1993

		ASCEPTIC MENINGITIS		ENCEPHALITIS		INFLUENZA & FLU-LIKE ILLNESS		CHICKENPOX	
COUNTY	1993 POP.	CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE
COLLIN	307,302	14	4.6	0	0.0	1,310	426.3	172	56.0
COOKE	31,314	0	0.0	0	0.0	0	0.0	0	0.0
DALLAS	1,953,947	174	8.9	5	0.3	0	0.0	43	2.2
DENTON	312,077	7	2.2	2	0.6	0	0.0	52	16.7
ELLIS	94,951	14	14.7	0	0.0	0	0.0	0	0.0
ERATH	29,207	0	0.0	0	0.0	0	0.0	0	0.0
FANNIN	24,886	0	0.0	0	0.0	1	4.0	0	0.0
GRAYSON	95,985	3	3.1	0	0.0	1,162	1,210.6	23	24.0
HOOD	32,748	1	3.1	0	0.0	0	0.0	0	0.0
HUNT	67,618	1	1.5	0	0.0	202	298.7	80	118.3
JOHNSON	108,322	8	7.4	0	0.0	0	0.0	1	0.9
KAUFMAN	57,620	4	6.9	1	1.7	0	0.0	1	1.7
NAVARRO	41,009	0	0.0	0	0.0	0	0.0	16	39.0
PALA PINTO	25,641	0	0.0	0	0.0	0	0.0	0	0.0
PARKER	72,871	0	0.0	0	0.0	0	0.0	0	0.0
ROCKWALL	29,703	0	0.0	0	0.0	0	0.0	0	0.0
SOMERVELL	5,705	0	0.0	0	0.0	0	0.0	0	0.0
TARRANT	1,277,839	140	11.0	5	0.4	165	12.9	387	30.3
WISE	37,470	1	2.7	0	0.0	0	0.0	0	0.0
REGIONAL TOTAL	4,606,215	367	8.0	13	0.3	2,879	62.5	775	16.8
TEXAS TOTAL	17,958,512	1,329	7.4	61	0.3	277,453	1,545.0	14,291	79.6

Public Health Region 4



REPORTED CASES OF SELECTED GASTROINTESTINAL DISEASES AND RATES PER 100,000 POPULATION

PUBLIC HEALTH REGION 4 - 1993

COUNTY	1993 POPULATION	AMEBIASIS CASES	AMEBIASIS RATE	CAMPYLOBACTER CASES	CAMPYLOBACTER RATE	SALMONELLOSIS CASES	SALMONELLOSIS RATE	SHIGELLOSIS CASES	SHIGELLOSIS RATE
ANDERSON	50,920	0	0.0	0	0.0	5	9.8	0	0.0
BOWIE	82,935	0	0.0	4	4.8	4	4.8	16	19.3
CAMP	10,170	0	0.0	0	0.0	0	0.0	0	0.0
CASS	29,901	0	'0.0	1	3.3	2	6.7	0	0.0
CHEROKEE	41,594	0	0.0	1	2.4	2	4.8	2	4.8
DELTA	4,845	0	0.0	0	0.0	0	0.0	0	0.0
FRANKLIN	7,895	0	0.0	0	0.0	0	0.0	0	0.0
GREGG	106,076	0	0.0	0	0.0	9	8.5	12	11.3
GARRISON	59,091	0	0.0	1	1.7	0	0.0	1	1.7
HENDERSON	63,631	0	0.0	0	0.0	4	6.3	2	3.1
HOPKINS	29,150	0	0.0	0	0.0	1	3.4	0	0.0
LAMAR	43,974	0	0.0	0	0.0	2	4.5	1	2.3
MARION	10,115	0	0.0	0	0.0	0	0.0	1	9.9
MORRIS	13,044	0	0.0	0	0.0	0	0.0	0	0.0
PANOLA	22,594	0	0.0	0	0.0	1	4.4	1	4.4
RAINS	7,146	0	0.0	0	0.0	0	0.0	0	0.0
RED RIVER	14,134	0	0.0	0	0.0	2	14.2	0	0.0
RUSK	44,215	0	0.0	0	0.0	1	2.3	92	208.1
SMITH	156,652	0	0.0	0	0.0	23	14.7	16	10.2
TITUS	24,472	0	0.0	0	0.0	11	44.9	3	12.3
UPSHUR	32,055	0	0.0	0	0.0	3	9.4	1	3.1
VAN ZANDT	39,574	0	0.0	1	2.5	0	0.0	0	0.0
WOOD	30,645	0	0.0	0	0.0	2	6.5	3	9.8
REGIONAL TOTAL	924,828	0	0.0	8	0.9	72	7.8	151	16.3
STATEWIDE TOTAL	17,958,512	86	0.5	849	4.7	1,924	10.7	4,581	25.5

REPORTED CASES OF HEPATITIS AND RATES PER 100,000 POPULATION

PUBLIC HEALTH REGION 4 - 1993

COUNTY	1993 POPULATION	HEPATITIS A CASES	HEPATITIS A RATE	HEPATITIS B CASES	HEPATITIS B RATE	HEPATITIS C CASES	HEPATITIS C RATE	HEPATITIS UNSPECIFIED CASES	HEPATITIS UNSPECIFIED RATE
ANDERSON	50,920	1	2.0	2	3.9	0	0.0	0	0.0
BOWIE	82,935	25	30.1	12	14.5	0	0.0	0	0.0
CAMP	10,170	0	0.0	1	9.8	0	0.0	0	0.0
CASS	29,901	1	3.3	2	6.7	0	0.0	0	0.0
CHEROKEE	41,594	1	2.4	0	0.0	0	0.0	0	0.0
DELTA	4,845	0	0.0	1	20.6	0	0.0	0	0.0
FRANKLIN	7,895	0	0.0	0	0.0	0	0.0	0	0.0
GREGG	106,076	3	2.8	6	5.7	2	1.9	0	0.0
GARRISON	59,091	1	1.7	1	1.7	0	0.0	0	0.0
HENDERSON	63,631	1	1.6	2	3.1	0	0.0	0	0.0
HOPKINS	29,150	0	0.0	0	0.0	0	0.0	0	0.0
LAMAR	43,974	0	0.0	0	0.0	0	0.0	0	0.0
MARION	10,115	0	0.0	0	0.0	0	0.0	0	0.0
MORRIS	13,044	0	0.0	0	0.0	0	0.0	0	0.0
PANOLA	22,594	1	4.4	0	0.0	0	0.0	0	0.0
RAINS	7,146	0	0.0	1	14.0	0	0.0	0	0.0
RED RIVER	14,134	0	0.0	1	7.1	0	0.0	0	0.0
RUSK	44,215	0	0.0	1	2.3	0	0.0	0	0.0
SMITH	156,652	15	9.6	21	13.4	1	0.6	0	0.0
TITUS	24,472	0	0.0	0	0.0	1	4.1	0	0.0
UPSHUR	32,055	1	3.1	0	0.0	0	0.0	0	0.0
VAN ZANDT	39,574	2	5.1	4	10.1	1	2.5	0	0.0
WOOD	30,645	3	9.8	3	9.8	0	0.0	0	0.0
REGIONAL TOTAL	924,828	55	5.9	58	6.3	5	0.5	0	0.0
STATEWIDE TOTAL	17,958,512	2,798	15.6	1,354	7.5	384	2.1	157	0.9

REPORTED CASES OF OTHER SELECTED DISEASES AND RATES PER 100,000 POPULATION

PUBLIC HEALTH REGION 4 - 1993

COUNTY	1993 POPULATION	GONORRHEA CASES	GONORRHEA RATE	CHLAMYDIA CASES	CHLAMYDIA RATE	P & S SYPHILIS CASES	P & S SYPHILIS RATE	TUBERCULOSIS CASES	TUBERCULOSIS RATE
ANDERSON	50,920	26	51.1	71	139.4	3	5.9	4	7.9
BOWIE	82,935	128	154.3	311	375.0	16	19.3	12	14.5
CAMP	10,170	6	59.0	4	39.3	3	29.5	2	19.7
CASS	29,901	32	107.0	38	127.1	2	6.7	1	3.3
CHEROKEE	41,594	36	86.6	43	103.4	8	19.2	5	12.0
DELTA	4,845	2	41.3	1	20.6	0	0.0	0	0.0
FRANKLIN	7,895	0	0.0	2	25.3	0	0.0	1	12.7
GREGG	106,076	60	56.6	189	178.2	20	18.9	9	8.5
GARRISON	59,091	180	304.6	124	209.8	8	13.5	5	8.5
HENDERSON	63,631	23	36.1	36	56.6	3	4.7	8	12.6
HOPKINS	29,150	21	72.0	47	161.2	2	6.9	1	3.4
LAMAR	43,974	85	193.3	68	154.6	3	6.8	3	6.8
MARION	10,115	13	128.5	17	168.1	3	29.7	1	9.9
MORRIS	13,044	7	53.7	32	245.3	4	30.7	0	0.0
PANOLA	22,594	19	84.1	36	159.3	5	22.1	2	8.9
RAINS	7,146	0	0.0	2	28.0	0	0.0	0	0.0
RED RIVER	14,134	18	127.4	19	134.4	0	0.0	1	7.1
RUSK	44,215	16	36.2	40	90.5	8	18.1	3	6.8
SMITH	156,652	576	367.7	567	361.9	18	11.5	20	12.8
TITUS	24,472	15	61.3	41	167.5	12	49.0	4	16.3
UPSHUR	32,055	12	37.4	16	49.9	0	0.0	6	18.7
VAN ZANDT	39,574	11	27.8	37	93.5	1	2.5	1	2.5
WOOD	30,645	13	42.4	22	71.8	0	0.0	4	13.1
REGIONAL TOTAL	924,828	1,299	140.5	1,763	190.6	119	12.9	93	10.1
STATEWIDE TOTAL	17,958,512	30,122	167.7	43,874	244.3	2,530	14.1	2393	13.3

REPORTED CASES OF SELECTED VACCINE PREVENTABLE DISEASES AND RATES PER 100,000 POPULATION

PUBLIC HEALTH REGION 4 - 1993

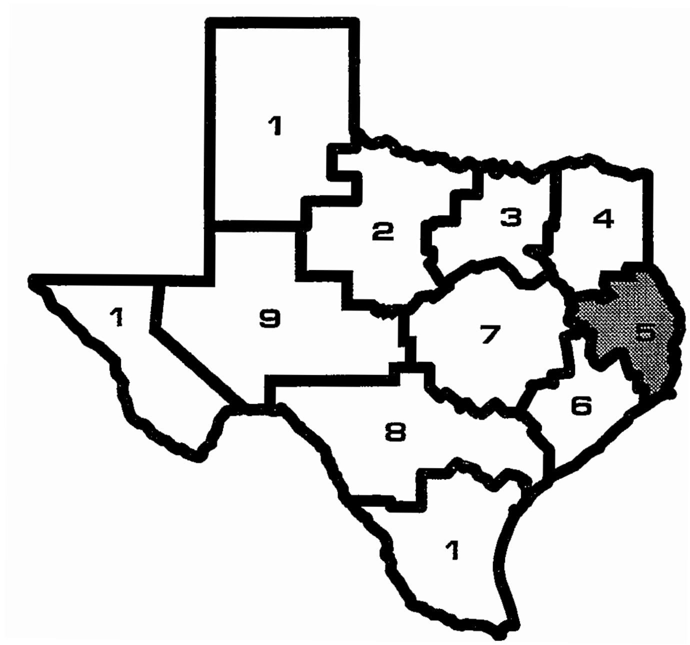
COUNTY	1993 POPULATION	MEASLES CASES	MEASLES RATE	MUMPS CASES	MUMPS RATE	PERTUSSIS CASES	PERTUSSIS RATE	RUBELLA CASES	RUBELLA RATE
ANDERSON	50,920	0	0.0	1	2.0	0	0.0	0	0.0
BOWIE	82,935	0	0.0	0	0.0	1	1.2	0	0.0
CAMP	10,170	0	0.0	0	0.0	0	0.0	0	0.0
CASS	29,901	0	0.0	0	0.0	1	3.3	0	0.0
CHEROKEE	41,594	0	0.0	0	0.0	0	0.0	0	0.0
DELTA	4,845	0	0.0	0	0.0	0	0.0	0	0.0
FRANKLIN	7,895	0	0.0	0	0.0	0	0.0	0	0.0
GREGG	106,076	0	0.0	0	0.0	2	1.9	0	0.0
GARRISON	59,091	0	0.0	0	0.0	0	0.0	0	0.0
HENDERSON	63,631	0	0.0	0	0.0	1	1.6	0	0.0
HOPKINS	29,150	0	0.0	0	0.0	0	0.0	0	0.0
LAMAR	43,974	0	0.0	0	0.0	0	0.0	0	0.0
MARION	10,115	0	0.0	1	9.9	0	0.0	0	0.0
MORRIS	13,044	0	0.0	0	0.0	0	0.0	0	0.0
PANOLA	22,594	0	0.0	0	0.0	0	0.0	0	0.0
RAINS	7,146	0	0.0	0	0.0	0	0.0	0	0.0
RED RIVER	14,134	0	0.0	0	0.0	0	0.0	0	0.0
RUSK	44.21 5	0	0.0	0	0.0	2	4.5	0	0.0
SMITH	156,652	0	0.0	0	0.0	2	1.3	0	0.0
TITUS	24,472	0	0.0	0	0.0	0	0.0	0	0.0
UPSHUR	32,055	0	0.0	0	0.0	1	3.1	0	0.0
VAN ZANDT	39,574	0	0.0	0	0.0	1	2.5	0	0.0
WOOD	30,645	0	0.0	0	0.0	0	0.0	0	0.0
REGIONAL TOTAL	924,828	0	0.0	2	0.2	11	1.2	0	0.0
STATEWIDE TOTAL	17,958,512	10	0.1	231	1.3	121	0.7	22	0.1

REPORTED CASES OF SELECTED VIRAL DISEASES AND RATES PER 100,000 POPULATION

PUBLIC HEALTH REGION 4 - 1993

COUNTY	1993 POPULATION	ASCEPTIC MENINGITIS CASES	ASCEPTIC MENINGITIS RATE	ENCEPHALITIS CASES	ENCEPHALITIS RATE	NFLUENZA & FLU-LIKE ILLNESS CASES	NFLUENZA & FLU-LIKE ILLNESS RATE	CHICKENPOX CASES	CHICKENPOX RATE
ANDERSON	50,920	1	2.0	0	0.0	11	21.6	1	2.0
BOWIE	82,935	19	22.9	0	0.0	0	0.0	38	45.8
CAMP	10,170	0	0.0	0	0.0	0	0.0	0	0.0
CASS	29,901	1	3.3	0	0.0	0	0.0	0	0.0
CHEROKEE	41,594	1	2.4	1	2.4	0	0.0	0	0.0
DELTA	4,845	0	0.0	0	0.0	8	165.1	5	103.2
FRANKLIN	7,895	0	0.0	0	0.0	0	0.0	0	0.0
GREGG	106,076	47	44.3	0	0.0	14	13.2	106	99.9
GARRISON	59,091	5	8.5	1	1.7	691	1,169.4	99	167.5
HENDERSON	63,631	3	4.7	0	0.0	38	59.7	9	14.1
HOPKINS	29,150	0	0.0	0	0.0	25	85.8	7	24.0
LAMAR	43,974	0	0.0	0	0.0	0	0.0	0	0.0
MARION	10,115	1	9.9	0	0.0	0	0.0	0	0.0
MORRIS	13,044	1	7.7	0	0.0	25	191.7	0	0.0
PANOLA	22,594	0	0.0	0	0.0	0	0.0	0	0.0
RAINS	7,146	0	0.0	0	0.0	0	0.0	0	0.0
RED RIVER	14,134	0	0.0	0	0.0	0	0.0	0	0.0
RUSK	44,215	0	0.0	0	0.0	16	36.2	2	4.5
SMITH	156,652	12	7.7	0	0.0	1,160	740.5	261	166.6
TITUS	24,472	1	4.1	0	0.0	0	0.0	1	4.1
UPSHUR	32,055	6	18.7	0	0.0	0	0.0	6	18.7
VAN ZANDT	39,574	6	15.2	0	0.0	25	63.2	2	5.1
WOOD	30,645	1	3.3	1	3.3	787	2,568.1	94	306.7
REGIONAL TOTAL	924,828	105	11.4	3	0.3	2,800	302.8	631	68.2
STATEWIDE TOTAL	17,958,512	1,329	7.4	61	0.3	277,453	1,545.0	14,291	79.6

Public Health Region 5



REPORTED CASES OF SELECTED GASTROINTESTINAL DISEASES AND RATES PER 100,000 POPULATION

PUBLIC HEALTH REGION 5 - 1993

		AMEBIASIS		CAMPYLOBACTER		SALMONELLOSIS		SHIGELLOSIS	
COUNTY	1993 POP.	CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE
ANGELINA	71,618	0	0.0	2	2.8	1	1.4	5	7.0
HARDIN	41,866	0	0.0	0	0.0	0	0.0	5	11.9
HOUSTON	21,518	0	0.0	1	4.6	2	9.3	0	0.0
JASPER	31,324	0	0.0	0	0.0	4	12.8	5	16.0
JEFFERSON	238,493	0	0.0	0	0.0	13	5.5	46	19.3
NACOGDOCHES	55,402	0	0.0	12	21.7	11	19.9	3	5.4
NEWTON	13,875	0	0.0	0	0.0	2	14.4	0	0.0
ORANGE	81,272	0	0.0	0	0.0	4	4.9	3	3.7
POLK	34,249	0	0.0	0	0.0	0	0.0	1	2.9
SABINE	9,818	0	0.0	0	0.0	0	0.0	1	10.2
SAN AUGUSTINE	7,980	0	0.0	0	0.0	0	0.0	0	0.0
SAN JACINTO	17,788	0	0.0	1	5.6	2	11.2	1	5.6
SHELBY	21,962	0	0.0	0	0.0	0	0.0	1	4.6
TRINITY	11,899	0	0.0	0	0.0	0	0.0	0	0.0
TYLER	17,884	0	0.0	0	0.0	4	22.4	0	0.0
REGIONAL TOTALS	678,941	0	0.0	16	2.4	43	6.3	71	10.5
STATEWIDE TOTALS	17,958,512	86	0.5	849	4.7	1,924	10.7	4,581	25.5

REPORTED CASES OF HEPATITIS AND RATES PER 100,000 POPULATION

PUBLIC HEALTH REGION 5 - 1993

		HEPATITIS A		HEPATITIS B		HEPATITIS C		HEPATITIS UNSPECIFIED	
COUNTY	1993 POP.	CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE
ANGELINA	71,618	0	0.0	0	0.0	1	1.4	0	0.0
HARDIN	41,866	0	0.0	0	0.0	0	0.0	0	0.0
HOUSTON	21,518	0	0.0	0	0.0	0	0.0	0	0.0
JASPER	31,324	0	0.0	1	3.2	0	0.0	0	0.0
JEFFERSON	238,493	4	1.7	14	5.9	4	1.7	0	0.0
NACOGDOCHES	55,402	3	5.4	2	3.6	2	3.6	0	0.0
NEWTON	13,875	0	0.0	0	0.0	0	0.0	0	0.0
ORANGE	81,272	0	0.0	1	1.2	1	1.2	0	0.0
POLK	34,249	0	0.0	0	0.0	1	2.9	0	0.0
SABINE	9,818	0	0.0	1	10.2	0	0.0	0	0.0
SAN AUGUSTINE	7,980	0	0.0	0	0.0	0	0.0	0	0.0
SAN JACINTO	17,788	0	0.0	0	0.0	0	0.0	0	0.0
SHELBY	21,962	0	0.0	0	0.0	0	0.0	0	0.0
TRINITY	11,899	0	0.0	2	16.8	0	0.0	0	0.0
TYLER	17,884	0	0.0	0	0.0	0	0.0	0	0.0
REGIONAL TOTALS	678,941	7	1.0	21	3.1	9	1.3	0	0.0
STATEWIDE TOTALS	17,958,512	2,798	15.6	1,354	7.5	384	2.1	157	0.9

REPORTED CASES OF OTHER SELECTED DISEASES AND RATES PER 100,000 POPULATION

PUBLIC HEALTH REGION 5 - 1993

COUNTY	1993 POP.	GONORRHEA CASES	GONORRHEA RATE	CHLAMYDIA CASES	CHLAMYDIA RATE	P & S SYPHILIS CASES	P & S SYPHILIS RATE	TUBERCULOSIS CASES	TUBERCULOSIS RATE
ANGELINA	71,618	199	277.9	325	453.8	15	20.9	8	11.2
HARDIN	41,866	29	69.3	17	40.6	3	7.2	1	2.4
HOUSTON	21,518	15	69.7	55	255.6	7	32.5	6	27.9
JASPER	31,324	62	197.9	91	290.5	5	16.0	2	6.4
JEFFERSON	238,493	242	101.5	137	57.4	264	110.7	26	10.9
NACOGDOCHES	55,402	61	110.1	161	290.6	12	21.7	3	5.4
NEWTON	13,875	15	108.1	21	151.4	0	0.0	0	0.0
ORANGE	81,272	4	4.9	11	13.5	22	27.1	5	6.2
POLK	34,249	14	40.9	73	213.1	1	2.9	5	14.6
SABINE	9,818	5	50.9	8	81.5	1	10.2	0	0.0
SAN AUGUSTINE	7,980	6	75.2	5	62.7	1	12.5	0	0.0
SAN JACINTO	17,788	3	16.9	10	56.2	4	22.5	3	16.9
SHELBY	21,962	18	82.0	31	141.2	3	13.7	5	22.8
TRINITY	11,899	7	58.8	4	33.6	1	8.4	0	0.0
TYLER	17,884	14	78.3	26	145.4	1	5.6	1	5.6
REGIONAL TOTALS	678,941	694	102.2	975	143.6	340	50.1	65	9.6
STATEWIDE TOTALS	17,958,512	30,122	167.7	43,874	244.3	2530	14.1	2,393	13.3

REPORTED CASES OF SELECTED VACCINE PREVENTABLE DISEASES AND RATES PER 100,000 POPULATION

PUBLIC HEALTH REGION 5 - 1993

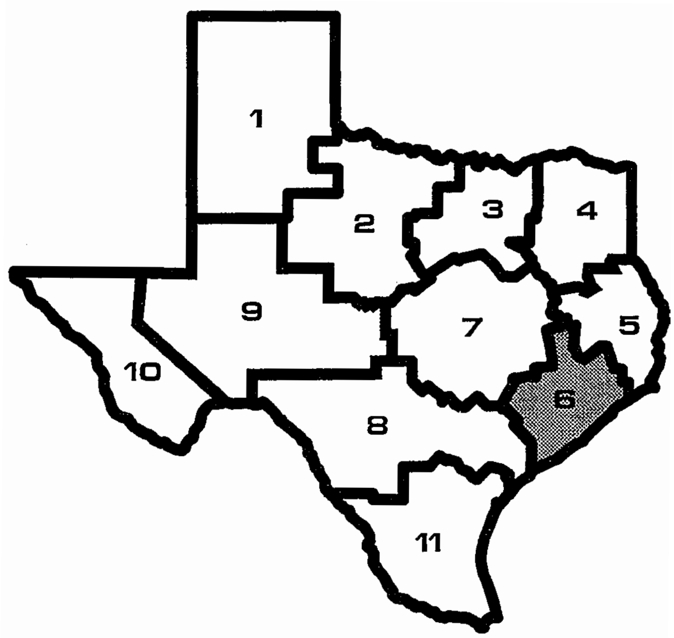
		MEASLES		MUMPS		PERTUSSIS		RUBELLA	
COUNTY	1993 POP.	CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE
ANGELINA	71,618	0	0.0	1	1.4	2	2.8	0	0.0
HARDIN	41,866	0	0.0	0	0.0	0	0.0	0	0.0
HOUSTON	21,518	0	0.0	0	0.0	0	0.0	0	0.0
JASPER	31,324	0	0.0	0	0.0	0	0.0	0	0.0
JEFFERSON	238,493	0	0.0	2	0.8	0	0.0	0	0.0
NACOGDOCHES	55,402	0	0.0	0	0.0	1	1.8	1	1.8
NEWTON	13,875	0	0.0	0	0.0	0	0.0	0	0.0
ORANGE	81,272	0	0.0	0	0.0	0	0.0	0	0.0
POLK	34,249	0	0.0	1	2.9	0	0.0	0	0.0
SABINE	9,818	0	0.0	0	0.0	0	0.0	0	0.0
SAN AUGUSTINE	7,980	0	0.0	0	0.0	0	0.0	0	0.0
SAN JACINTO	17,788	0	0.0	0	0.0	0	0.0	0	0.0
SHELBY	21,962	0	0.0	0	0.0	1	4.6	0	0.0
TRINITY	11,899	0	0.0	0	0.0	0	0.0	0	0.0
TYLER	17,884	0	0.0	1	5.6	0	0.0	0	0.0
REGIONAL TOTALS	678,941	0	0.0	5	0.7	4	0.6	1	0.1
STATEWIDE TOTALS	17,958,512	10	0.1	231	1.3	121	0.7	22	0.1

REPORTED CASES OF SELECTED VIRAL DISEASES AND RATES PER 100,000 POPULATION

PUBLIC HEALTH REGION 5 - 1993

COUNTY	1993 POP.	ASCEPTIC MENINGITIS CASES	ASCEPTIC MENINGITIS RATE	ENCEPHALITIS CASES	ENCEPHALITIS RATE	INFLUENZA & FLU-LIKE ILLNESS CASES	INFLUENZA & FLU-LIKE ILLNESS RATE	CHICKENPOX CASES	CHICKENPOX RATE
ANGELINA	71,618	1	1.4	0	0.0	3	4.2	0	0.0
HARDIN	41,866	1	2.4	0	0.0	0	0.0	12	28.7
HOUSTON	21,518	0	0.0	0	0.0	60	278.8	1	4.6
JASPER	31,324	0	0.0	0	0.0	217	692.8	43	137.3
JEFFERSON	238,493	3	1.3	0	0.0	446	187.0	421	176.5
NACOGDOCHES	55,402	1	1.8	0	0.0	38	68.6	8	14.4
NEWTON	13,875	1	7.2	0	0.0	0	0.0	0	0.0
ORANGE	81,272	0	0.0	0	0.0	0	0.0	45	55.4
POLK	34,249	0	0.0	0	0.0	0	0.0	0	0.0
SABINE	9,818	0	0.0	0	0.0	0	0.0	0	0.0
SAN AUGUSTINE	7,980	0	0.0	0	0.0	0	0.0	0	0.0
SAN JACINTO	17,788	0	0.0	0	0.0	0	0.0	0	0.0
SHELBY	21,962	0	0.0	0	0.0	0	0.0	0	0.0
TRINITY	11,899	0	0.0	0	0.0	11	92.4	7	58.8
TYLER	17,884	0	0.0	0	0.0	29	162.2	3	16.8
REGIONAL TOTALS	678,941	7	1.0	0	0.0	804	118.4	540	79.5
STATEWIDE TOTALS	117,958,512	1,329	7.4	61	0.3	1277,453	1,545.0	14,291	79.6

Public Health Region 6



REPORTED CASES OF SELECTED GASTROINTESTINAL DISEASES AND RATES PER 100,000 POPULATION

PUBLIC HEALTH REGION 6 - 1993

		AMEBIASIS		CAMPYLOBACTER		SALMONELLOSIS		SHIGELLOSIS	
COUNTY	1993 POP.	CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE
AUSTIN	20,141	0	0.0	0	0.0	0	0.0	0	0.0
BRAZORIA	201,851	1	0.5	4	2.0	18	8.9	38	18.8
CHAMBERS	20,379	0	0.0	0	0.0	1	4.9	0	0.0
COLORADO	18,333	0	0.0	0	0.0	2	10.9	0	0.0
FORT BEND	261,716	2	0.8	23	8.8	28	10.7	49	18.7
GALVESTON	223,486	0	0.0	30	13.4	22	9.8	88	39.4
HARRIS	2,957,057	11	0.4	137	4.6	205	6.9	352	11.9
LIBERTY	54,645	0	0.0	2	3.7	3	5.5	1	1.8
MATAGORDA	37,414	0	0.0	1	2.7	0	0.0	0	0.0
MONTGOMERY	199,044	0	0.0	5	2.5	7	3.5	5	2.5
WALKER	55,061	0	0.0	0	0.0	2	3.6	1	1.8
WALLER	24,463	0	0.0	2	8.2	1	4.1	2	8.2
WHARTON	40,250	0	0.0	0	0.0	2	5.0	0	0.0
REGIONAL TOTALS	14,115,833	14	0.3	204	5.0	291	7.1	536	13.0
STATEWIDE TOTALS	17,958,512	86	0.5	849	4.7	1,924	10.7	4,587	25.5

REPORTED CASES OF HEPATITIS AND RATES PER 100,000 POPULATION

PUBLIC HEALTH REGION 6 - 1993

		HEPATITIS A		HEPATITIS B		HEPATITIS C		HEPATITIS UNSPECIFIED	
COUNN	1993 POP.	CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE
AUSTIN	20,141	0	0.0	0	0.0	0	0.0	0	0.0
BRAZORIA	201,851	6	3.0	8	4.0	0	0.0	1	0.5
CHAMBERS	20,379	0	0.0	0	0.0	0	0.0	0	0.0
COLORADO	18,333	0	0.0	0	0.0	0	0.0	0	0.0
FORT BEND	261,716	3	1.1	9	3.4	3	1.1	0	0.0
GALVESTON	223,486	9	4.0	14	6.3	3	1.3	0	0.0
HARRIS	2,957,057	385	13.0	188	6.4	12	0.4	34	1.1
LIBERTY	54,645	0	0.0	1	1.8	1	1.8	0	0.0
MATAGORDA	37,414	1	2.7	0	0.0	2	5.3	0	0.0
MONTGOMERY	199,044	2	1.0	4	2.0	2	1.0	0	0.0
WALKER	55,061	4	7.3	35	63.6	0	0.0	0	0.0
WALLER	24,463	1	4.1	0	0.0	0	0.0	0	0.0
WHARTON	40,250	0	0.0	1	2.5	0	0.0	0	0.0
REGIONAL TOTALS	14,115,833	411	10.0	260	6.3	23	0.6	35	0.9
STATEWIDETOTALS	17,958,512	2,798	15.6	1,354	7.5	384	2.1	157	0.9

REPORTED CASES OF OTHER SELECTED DISEASES AND RATES PER 100,000 POPULATION

PUBLIC HEALTH REGION 6 - 1993

		GONORRHEA		CHLAMYDIA		P & S SYPHILIS		TUBERCULOSIS	
COUNTY	1993 POP.	CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE
AUSTIN	20,141	17	84.4	17	84.4	3	14.9	0	0.0
BRAZORIA	201,851	91	45.1	212	105.0	17	8.4	12	5.9
CHAMBERS	20,379	0	0.0	5	24.5	0	0.0	2	9.8
COLORADO	18,333	26	141.8	21	114.5	8	43.6	1	5.5
FORT BEND	261,716	64	24.5	155	59.2	6	2.3	28	10.7
GALVESTON	223,486	408	182.6	776	347.2	34	15.2	34	15.2
HARRIS	2,957,057	7,646	258.6	9,118	308.3	567	19.2	728	24.6
LIBERTY	54,645	10	18.3	44	80.5	4	7.3	11	20.1
MATAGORDA	37,414	10	26.7	56	149.7	0	0.0	7	18.7
MONTGOMERY	199,044	127	63.8	308	154.7	27	13.6	13	6.5
WALKER	55,061	78	141.7	161	292.4	60	109.0	5	9.1
WALLER	24,463	43	175.8	93	380.2	19	77.7	52	212.6
WHARTON	40,250	40	99.4	86	213.7	9	22.4	5	12.4
REGIONAL TOTALS	4,115,833	8,560	208.0	11.052	268.5	754	18.3	898	21.8
STATEWIDE TOTALS	17,958,512	30,122	167.7	43,874	244.3	2530	14.1	2,393	13.3

REPORTED CASES OF SELECTED VACCINE PREVENTABLE DISEASES AND RATES PER 100,000 POPULATION

PUBLIC HEALTH REGION 6 - 1993

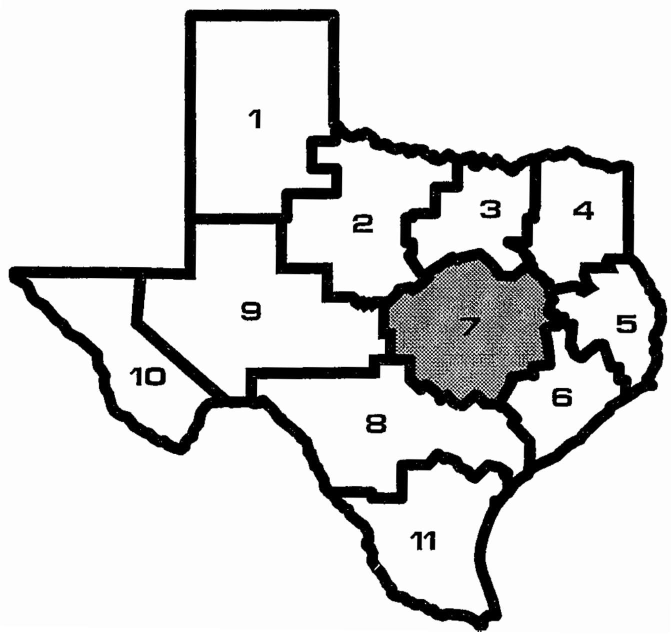
		MEASLES		MUMPS		PERTUSSIS		RUBELLA	
COUNTY	1993 POP.	CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE
AUSTIN	20,141	0	0.0	0	0.0	0	0.0	0	0.0
BRAZORIA	201,851	0	0.0	0	0.0	1	0.5	0	0.0
CHAMBERS	20,379	0	0.0	4	19.6	0	0.0	0	0.0
COLORADO	18,333	0	0.0	0	0.0	0	0.0	0	0.0
FORT BEND	261,716	1	0.4	3	1.1	0	0.0	0	0.0
GALVESTON	223,486	1	0.4	7	3.1	2	0.9	0	0.0
HARRIS	2,957,057	3	0.1	30	1.0	17	0.6	0	0.0
LIBERTY	54,645	4	7.3	1	1.8	0	0.0	0	0.0
MATAGORDA	37,414	0	0.0	0	0.0	0	0.0	0	0.0
MONTGOMERY	199,044	0	0.0	0	0.0	0	0.0	0	0.0
WALKER	55,061	0	0.0	0	0.0	0	0.0	0	0.0
WALLER	24,463	0	0.0	0	0.0	0	0.0	0	0.0
WHARTON	40,250	0	0.0	0	0.0	0	0.0	0	0.0
REGIONAL TOTALS	4,115,833	9	0.2	45	1.1	20	0.5	0	0.0
STATEWIDE TOTALS	17,958,512	10	0.1	231	1.3	121	0.7	22	0.1

REPORTED CASES OF SELECTED VIRAL DISEASES AND RATES PER 100,000 POPULATION

PUBLIC HEALTH REGION 6 - 1993

COUNTY	1993 POP.	ASCEPTIC MENINGITIS		ENCEPHALITIS		INFLUENZA & FLU-LIKE ILLNESS		CHICKENPOX	
		CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE
AUSTIN	20,141	0	0.0	1	5.0	0	0.0	0	0.0
BRAZORIA	201,851	4	2.0	1	0.5	3	1.5	29	14.4
CHAMBERS	20,379	0	0.0	0	0.0	0	0.0	62	304.2
COLORADO	18,333	0	0.0	0	0.0	0	0.0	0	0.0
FORT BEND	261,716	9	3.4	3	1.1	6	2.3	131	50.1
GALVESTON	223,486	16	7.2	3	1.3	263	117.7	232	103.8
HARRIS	2,957,057	171	5.8	11	0.4	236,603	8,001.3	3,492	118.1
LIBERTY	54,645	0	0.0	0	0.0	0	0.0	3	5.5
MATAGORDA	37,414	0	0.0	0	0.0	0	0.0	0	0.0
MONTGOMERY	199,044	3	1.5	1	0.5	0	0.0	65	32.7
WALKER	55,061	0	0.0	0	0.0	101	183.4	79	143.5
WALLER	24,463	0	0.0	0	0.0	0	0.0	10	40.9
WHARTON	40,250	1	2.5	0	0.0	2	5.0	1	2.5
REGIONAL TOTALS	4,115,833	204	5.0	20	0.5	236,978	5,757.7	4,104	99.7
STATEWIDE TOTALS	17,958,512	1,329	7.4	61	0.3	277,453	1,545.0	14,291	79.6

Public Health Region 7



REPORTED CASES OF SELECTED GASTROINTERITIS DISEASES AND RATES PER 100,000 POPULATION

PUBLIC HEALTH REGION 7 - 1993

		AMEBIASIS		CAMPYLOBACTER		SALMONELLOSIS		SHIGELLOSIS	
COUNTY	1993 POP.	CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE
BASTROP	42,714	0	0.0	2	4.7	4	9.4	16	37.5
BELL	197,714	0	0.0	1	0.5	52	26.3	19	9.6
BLANCO	6.389	0	0.0	1	15.7	0	0.0	0	0.0
BOSQUE	15,438	0	0.0	0	0.0	3	19.4	3	19.4
BRAZOS	124,101	0	0.0	6	4.8	15	12.1	14	11.3
BURLESON	14,174	1	7.1	0	0.0	1	7.1	1	7.1
BURNET	24,216	0	0.0	2	8.3	2	8.3	0	0.0
CALDWELL	28,545	0	0.0	2	7.0	5	17.5	28	98.1
CORYELL	66,951	0	0.0	1	1.5	0	0.0	1	1.5
FALLS	18,418	0	0.0	0	0.0	1	5.4	2	10.9
FAYETTE	20,211	0	0.0	0	0.0	0	0.0	0	0.0
FREESTONE	16.687	0	0.0	1	6.0	0	0.0	0	0.0
GRIMES	20,107	0	0.0	0	0.0	0	0.0	1	5.0
HAMILTON	7,577	0	0.0	0	0.0	0	0.0	0	0.0
HAYS	74,561	1	1.3	0	0.0	21	28.2	479	642.4
HILL	27,620	0	0.0	3	10.9	0	0.0	0	0.0
LAMPASAS	13,874	0	0.0	2	14.4	3	21.6	1	7.2
LEE	13,437	0	0.0	0	0.0	1	7.4	5	37.2
LEON	13,578	0	0.0	0	0.0	0	0.0	0	0.0
LIMESTONE	21,148	0	0.0	0	0.0	0	0.0	0	0.0
LLANO	11,936	0	0.0	0	0.0	0	0.0	0	0.0
MC LELLAN	190,229	1	0.5	11	5.8	12	6.3	29	15.2
MADISON	11,415	0	0.0	0	0.0	1	8.8	0	0.0
MILAM	23,010	0	0.0	0	0.0	2	8.7	0	0.0
MILLS	4,491	0	0.0	0	0.0	0	0.0	0	0.0
ROBERTSON	15,977	0	0.0	0	0.0	1	6.3	2	12.5
SAN SABA	5,943	0	0.0	0	0.0	1	16.8	2	33.7
TRAVIS	599,018	13	2.2	100	16.7	111	18.5	463	77.3
WASHINGTON	27,015	0	0.0	1	3.7	1	3.7	3	11.1
WILLIAMSON	161,673	1	0.6	17	10.5	24	14.8	79	48.9
REGIONAL TOTALS	1,820,160	17	0.9	150	8.2	261	14.3	1,148	63.1
STATEWIDE TOTALS	17,958,512	86	0.5	849	4.7	1,924	10.7	4,581	25.5

REPORTED CASES OF HEPATITIS AND RATES PER 100,000 POPULATION

PUBLIC HEALTH REGION 7 - 1993

COUNTY	1993 POP.	HEPATITIS A CASES	HEPATITIS A RATE	HEPATITIS B CASES	HEPATITIS B RATE	HEPATITIS C CASES	HEPATITIS C RATE	HEPATITIS UNSPECIFIED CASES	HEPATITIS UNSPECIFIED RATE
BASTROP	42,714	0	0.0	1	2.3	1	2.3	0	0.0
BELL	197,714	25	12.6	3	1.5	3	1.5	0	0.0
BLANCO	6,389	0	0.0	0	0.0	0	0.0	0	0.0
BOSQUE	15,438	1	6.5	0	0.0	0	0.0	0	0.0
BRAZOS	124,101	3	2.4	11	8.9	0	0.0	0	0.0
BURLESON	14,174	1	7.1	0	0.0	0	0.0	0	0.0
BURNET	24,216	0	0.0	1	4.1	1	4.1	2	8.3
CALDWELL	28,545	1	3.5	1	3.5	0	0.0	0	0.0
CORYELL	66,951	2	3.0	0	0.0	0	0.0	0	0.0
FALLS	18,418	0	0.0	0	0.0	1	5.4	0	0.0
FAYETTE	20.21 1	0	0.0	0	0.0	0	0.0	0	0.0
FREESTONE	16,687	0	0.0	1	6.0	0	0.0	0	0.0
GRIMES	20,107	0	0.0	0	0.0	0	0.0	0	0.0
HAMILTON	7,577	0	0.0	0	0.0	0	0.0	0	0.0
HAYS	74,561	4	5.4	6	8.0	7	9.4	0	0.0
HILL	27,620	1	3.6	2	7.2	1	3.6	0	0.0
LAMPASAS	13,874	0	0.0	0	0.0	0	0.0	0	0.0
LEE	13,437	0	0.0	0	0.0	0	0.0	0	0.0
LEON	13,578	0	0.0	0	0.0	0	0.0	0	0.0
LIMESTONE	21,148	1	4.7	1	4.7	0	0.0	0	0.0
LLANO	11,936	1	8.4	0	0.0	0	0.0	0	0.0
MC LELLAN	190,229	3	1.6	6	3.2	2	1.1	1	0.5
MADISON	11,415	1	8.8	1	8.8	0	0.0	0	0.0
MILAM	23,010	3	13.0	1	4.3	0	0.0	1	4.3
MILLS	4,491	0	0.0	0	0.0	0	0.0	0	0.0
ROBERTSON	15,977	1	6.3	4	25.0	0	0.0	0	0.0
SAN SABA	5,943	0	0.0	0	0.0	0	0.0	0	0.0
TRAVIS	599,018	95	15.9	67	11.2	38	6.3	14	2.3
WASHINGTON	27,015	0	0.0	0	0.0	0	0.0	1	3.7
WILLIAMSON	161,673	12	7.4	8	4.9	3	1.9	7	4.3
REGIONAL TOTALS	1,820,160	155	8.5	114	6.3	57	3.1	26	1.4
STATEWIDE TOTALS	17,958,512	2,798	15.6	1,354	7.5	384	2.1	157	0.9

REPORTED CASES OF OTHER SELECTED DISEASES AND RATES PER 100,000 POPULATION

PUBLIC HEALTH REGION 7 - 1993

		GONORRHEA		CHLAMYDIA		P & S SYPHILIS		TUBERCULOSIS	
COUNTY	1993 POP.	CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE
BASTROP	42,714	21	49.2	58	135.8	0	0.0	3	7.0
BELL	197,714	922	466.3	1,332	673.7	37	18.7	10	5.1
BLANCO	6,389	0	0.0	0	0.0	0	0.0	1	15.7
BOSQUE	15,438	0	0.0	16	103.6	0	0.0	0	0.0
BRAZOS	124,101	168	135.4	359	289.3	22	17.7	11	8.9
BURLESON	14,174	14	98.8	23	162.3	2	14.1	1	7.1
BURNET	24,216	10	41.3	46	190.0	1	4.1	2	8.3
CALDWELL	28,545	10	35.0	33	115.6	0	0.0	4	14.0
CORYELL	66,951	40	59.7	81	121.0	2	3.0	4	6.0
FALLS	18,418	77	418.1	71	385.5	1	5.4	2	10.9
FAYETTE	20,211	17	84.1	22	108.9	0	0.0	3	14.8
FREESTONE	16,687	12	71.9	24	143.8	1	6.0	0	0.0
GRIMES	20,107	36	179.0	61	303.4	9	44.8	0	0.0
HAMILTON	7,577	2	26.4	4	52.8	0	0.0	0	0.0
HAYS	74,561	62	83.2	278	372.8	3	4.0	1	1.3
HILL	27,620	18	65.2	38	137.6	1	3.6	1	3.6
LAMPASAS	13,874	11	79.3	41	295.5	0	0.0	1	7.2
LEE	13,437	17	126.5	21	156.3	1	7.4	1	7.4
LEON	13,578	8	58.9	14	103.1	1	7.4	0	0.0
LIMESTONE	21,148	42	198.6	55	260.1	4	18.9	5	23.6
LLANO	11,936	1	8.4	15	125.7	0	0.0	1	8.4
MC LELLAN	190,229	12	6.3	10	5.3	1	0.5	12	6.3
MADISON	11,415	843	7,385.0	712	6,237.4	13	113.9	1	8.8
MILAM	23,010	37	160.8	89	386.8	18	78.2	1	4.3
MILLS	4,491	0	0.0	2	44.5	0	0.0	0	0.0
ROBERTSON	15,977	39	244.1	37	231.6	12	75.1	2	12.5
SAN SABA	5,943	0	0.0	6	101.0	0	0.0	0	0.0
TRAVIS	599,018	1,269	211.8	2,059	343.7	100	16.7	104	17.4
WASHINGTON	27,015	36	133.3	27	99.9	16	59.2	1	3.7
WILLIAMSON	161,673	62	38.3	170	105.2	1	0.6	3	1.9
REGIONAL TOTALS	1,820,160	3,786	208.0	5,704	313.4	246	13.5	175	9.6
STATEWIDE TOTALS	17,958,512	30,122	167.7	43,874	244.3	2,530	14.1	2,393	13.3

REPORTED CASES OF SELECTED VACCINE PREVENTABLE DISEASES AND RATES PER 100,000 POPULATION

PUBLIC HEALTH REGION 7 - 1993

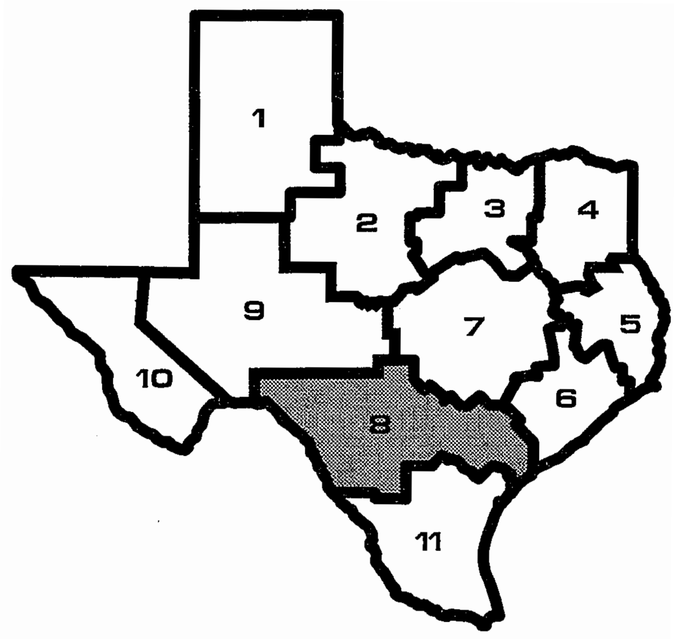
		MEASLES		MUMPS		PERTUSSIS		RUBELLA	
COUNTY	1993 POP.	CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE
BASTROP	42,714	0	0.0	1	2.3	1	2.3	0	0.0
BELL	197,714	0	0.0	4	2.0	0	0.0	0	0.0
BLANCO	6,389	0	0.0	1	15.7	0	0.0	0	0.0
BOSQUE	15,438	0	0.0	0	0.0	0	0.0	0	0.0
BRAZOS	124,101	0	0.0	0	0.0	4	3.2	0	0.0
BURLESON	14,174	0	0.0	0	0.0	0	0.0	0	0.0
BURNET	24,216	0	0.0	0	0.0	0	0.0	0	0.0
CALDWELL	28,545	0	0.0	0	0.0	0	0.0	0	0.0
CORYELL	66,951	0	0.0	0	0.0	0	0.0	0	0.0
FALLS	18.418	0	0.0	0	0.0	0	0.0	0	0.0
FAYETTE	20,211	0	0.0	0	0.0	0	0.0	0	0.0
FREESTONE	16,687	0	0.0	0	0.0	1	6.0	0	0.0
GRIMES	20,107	0	0.0	1	5.0	0	0.0	0	0.0
HAMILTON	7,577	0	0.0	0	0.0	0	0.0	0	0.0
HAYS	74,561	0	0.0	0	0.0	0	0.0	0	0.0
HILL	27,620	0	0.0	0	0.0	0	0.0	0	0.0
LAMPASAS	13,874	0	0.0	0	0.0	0	0.0	0	0.0
LEE	13,437	0	0.0	1	7.4	0	0.0	0	0.0
LEON	13,578	0	0.0	0	0.0	0	0.0	0	0.0
LIMESTONE	21,148	0	0.0	0	0.0	0	0.0	0	0.0
LLANO	11,936	0	0.0	1	8.4	0	0.0	0	0.0
MC LELLAN	190,229	0	0.0	0	0.0	0	0.0	0	0.0
MADISON	11,415	0	0.0	0	0.0	0	0.0	0	0.0
MILAM	23,010	0	0.0	0	0.0	0	0.0	0	0.0
MILLS	4,491	0	0.0	0	0.0	0	0.0	0	0.0
ROBERTSON	15,977	0	0.0	0	0.0	0	0.0	0	0.0
SAN SABA	5,943	0	0.0	0	0.0	0	0.0	0	0.0
TRAVIS	599,018	0	0.0	4	0.7	6	1.0	2	0.3
WASHINGTON	27.015	0	0.0	0	0.0	0	0.0	0	0.0
WILLIAMSON	161,673	0	0.0	1	0.6	1	0.6	0	0.0
REGIONAL TOTALS	1,820,160	0	0.0	14	0.8	13	0.7	2	0.1
STATEWIDE TOTALS	17,958,512	10	0.1	231	1.3	121	0.7	22	0.1

REPORTED CASES OF SELECTED VIRAL DISEASES AND RATES PER 100,000 POPULATION

PUBLIC HEALTH REGION 7 - 1993

COUNTY	1993 POP.	ASCEPTIC MENINGITIS CASES	ASCEPTIC MENINGITIS RATE	ENCEPHALITIS CASES	ENCEPHALITIS RATE	INFLUENZA & FLU-LIKE ILLNESS CASES	INFLUENZA & FLU-LIKE ILLNESS RATE	CHICKENPOX CASES	CHICKENPOX RATE
BASTROP	42,714	2	4.7	1	2.3	0	0.0	3	7.0
BELL	197,714	87	44.0	2	1.0	1147	580.1	464	234.7
BLANCO	6,389	1	15.7	0	0.0	0	0.0	0	0.0
BOSQUE	15,438	0	0.0	0	0.0	240	1,554.6	0	0.0
BRAZOS	124,101	8	6.4	0	0.0	1,719	1,385.2	182	146.7
BURLESON	14,174	0	0.0	0	0.0	0	0.0	0	0.0
BURNET	24,216	1	4.1	0	0.0	0	0.0	10	41.3
CALDWELL	28,545	1	3.5	1	3.5	0	0.0	0	0.0
CORYELL	66,951	0	0.0	0	0.0	0	0.0	0	0.0
FALLS	18,418	0	0.0	0	0.0	14	76.0	50	271.5
FAYETTE	20,211	1	4.9	0	0.0	0	0.0	0	0.0
FREESTONE	16,687	0	0.0	0	0.0	0	0.0	0	0.0
GRIMES	20,107	0	0.0	0	0.0	0	0.0	0	0.0
HAMILTON	7,577	0	0.0	0	0.0	0	0.0	0	0.0
HAYS	74,561	6	8.0	0	0.0	2	2.7	76	101.9
HILL	27,620	0	0.0	0	0.0	0	0.0	0	0.0
LAMPASAS	13,874	0	0.0	0	0.0	0	0.0	0	0.0
LEE	'13,437	1	7.4	0	0.0	0	0.0	0	0.0
LEON	13,578	0	0.0	0	0.0	0	0.0	0	0.0
LIMESTONE	21,148	0	0.0	0	0.0	335	1,584.1	0	0.0
LLANO	11,936	0	0.0	1	8.4	0	0.0	41	343.5
MC LELLAN	190,229	1	0.5	0	0.0	84	44.2	221	116.2
MADISON	11,415	0	0.0	0	0.0	0	0.0	0	0.0
MILAM	23,010	2	8.7	0	0.0	283	1,229.9	14	60.8
MILLS	4,491	0	0.0	0	0.0	0	0.0	0	0.0
ROBERTSON	15,977	0	0.0	0	0.0	0	0.0	0	0.0
SAN SABA	5,943	0	0.0	0	0.0	0	0.0	0	0.0
TRAVIS	599,018	111	18.5	6	1.0	379	63.3	1,086	181.3
WASHINGTON	27,015	0	0.0	0	0.0	0	0.0	0	0.0
WILLIAMSON	161,673	17	10.5	1	0.6	437	270.3	25	15.5
REGIONAL TOTALS	1,820,160	239	13.1	12	0.7	4,640	254.9	2,172	119.3
STATEWIDE TOTALS	17,958,512	1,329	7.4	61	0.3	277,453	1,545.0	14,291	79.6

Public Health Region 8



REPORTED CASES OF SELECTED GASTROINTESTINAL DISEASES AND RATES PER 100,000 POPULATION

PUBLIC HEALTH REGION 8 - 1993

		AMEBIASIS		CAMPYLOBACTER		SALMONELLOSIS		SHIGELLOSIS	
COUNTY	1993 POP.	CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE
ATASCOSA	32,559	0	0.0	1	3.1	1	3.1	3	9.2
BANDERA	11,618	0	0.0	0	0.0	1	8.6	0	0.0
BEXAR	1,247,969	3	0.2	107	8.6	128	10.3	646	51.8
CALHOUN	19,437	0	0.0	1	5.1	4	20.6	3	15.4
COMAL	58,451	0	0.0	4	6.8	10	17.1	16	27.4
DE WITT	18,888	1	5.3	0	0.0	1	5.3	2	10.6
DIMMITT	10,695	0	0.0	0	0.0	1	9.4	2	18.7
EDWARDS	2,340	0	0.0	0	0.0	0	0.0	0	0.0
FRIO	14,970	0	0.0	0	0.0	0	0.0	1	6.7
GILLESPIE	18,090	0	0.0	0	0.0	1	5.5	3	16.6
GOLIAD	6,214	0	0.0	0	0.0	0	0.0	0	0.0
GONZALES	17,508	0	0.0	0	0.0	2	11.4	4	22.8
GUADELUPE	70,800	0	0.0	3	4.2	2	2.8	20	28.2
JACKSON	13,101	0	0.0	0	0.0	1	7.6	3	22.9
KARNES	12,696	0	0.0	1	7.9	1	7.9	0	0.0
KENDALL	15,979	0	0.0	2	12.5	0	0.0	1	6.3
KERR	38,230	0	0.0	2	5.2	4	10.5	5	13.1
KINNEY	3,219	0	0.0	0	0.0	0	0.0	0	0.0
LA SALLE	6,055	0	0.0	0	0.0	0	0.0	0	0.0
LAVACA	18,491	0	0.0	1	5.4	2	10.8	2	10.8
MAVERICK	38,809	0	0.0	2	5.2	2	5.2	9	23.2
MEDINA	29,964	0	0.0	0	0.0	0	0.0	23	76.8
REAL	2,468	0	0.0	0	0.0	0	0.0	0	0.0
UVALDE	24,154	0	0.0	4	16.6	4	16.6	4	16.6
VAL VERDE	40,577	0	0.0	3	7.4	5	12.3	0	0.0
VICTORIA	76,340	0	0.0	6	7.9	31	40.6	134	175.5
WILSON	24,880	0	0.0	1	4.0	0	0.0	1	4.0
ZAVALA	12,650	0	0.0	0	0.0	1	7.9	1	7.9
REGIONAL TOTALS	1,889,145	4	0.2	138	7.3	202	10.7	883	46.7
STATEWIDE TOTALS	17,958,512	86	0.5	849	4.7	1,924	10.7	4,581	25.5

REPORTED CASES OF HEPATITIS AND RATES PER 100,000 POPULATION

PUBLIC HEALTH REGION 8 - 1993

		HEPATITIS A		HEPATITIS B		HEPATITIS C		HEPATITIS UNSPECIFIED	
COUNTY	1993 POP.	CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE
ATASCOSA	32,559	5	15.4	1	3.1	0	0.0	0	0.0
BANDERA	11,618	0	0.0	0	0.0	0	0.0	0	0.0
BEXAR	124,7969	344	27.6	101	8.1	25	2.0	0	0.0
CALHOUN	19,437	0	0.0	0	0.0	0	0.0	0	0.0
COMAL	58,451	12	20.5	2	3.4	6	10.3	0	0.0
DE WITT	18,888	0	0.0	0	0.0	0	0.0	0	0.0
DIMMITT	10,695	0	0.0	0	0.0	0	0.0	0	0.0
EDWARDS	2,340	1	42.7	0	0.0	0	0.0	0	0.0
FRIO	14,970	0	0.0	0	0.0	0	0.0	0	0.0
GILLESPIE	18,090	0	0.0	0	0.0	0	0.0	0	0.0
GOLIAD	6,214	0	0.0	0	0.0	0	0.0	0	0.0
GONZALES	17,508	9	51.4	1	5.7	0	0.0	0	0.0
GUADELUPE	70.800	0	0.0	6	8.5	4	5.6	0	0.0
JACKSON	13,101	0	0.0	0	0.0	0	0.0	0	0.0
KARNES	12,696	0	0.0	0	0.0	0	0.0	0	0.0
KENDALL	15,979	0	0.0	0	0.0	0	0.0	0	0.0
KERR	38,230	1	2.6	1	2.6	3	7.8	5	13.1
KINNEY	3,219	1	31.1	0	0.0	0	0.0	0	0.0
LA SALLE	6,055	0	0.0	0	0.0	0	0.0	0	0.0
LAVACA	18,491	1	5.4	1	5.4	0	0.0	0	0.0
MAVERICK	38,809	32	82.5	5	12.9	1	2.6	0	0.0
MEDINA	29,964	15	50.1	0	0.0	0	0.0	0	0.0
REAL	2,468	0	0.0	0	0.0	0	0.0	0	0.0
UVALDE	24,154	4	16.6	2	8.3	0	0.0	0	0.0
VAL VERDE	40,577	18	44.4	0	0.0	0	0.0	3	7.4
VICTORIA	76,340	14	18.3	1	1.3	4	5.2	0	0.0
WILSON	24,880	0	0.0	0	0.0	0	0.0	0	0.0
ZAVALA	12,650	1	7.9	0	0.0	0	0.0	0	0.0
REGIONAL TOTALS	1,889,145	458	24.2	121	6.4	43	2.3	8	0.4
STATEWIDE TOTALS	117,958,5121	2,798	15.6	1,354	7.5	384	2.1	157	0.9

REPORTED CASES OF OTHER SELECTED DISEASES AND RATES PER 100,000 POPULATION

PUBLIC HEALTH REGION 8 - 1993

COUNTY	1993 POP.	GONORRHEA CASES	GONORRHEA RATE	CHLAMYDIA CASES	CHLAMYDIA RATE	P & S SYPHILIS CASES	P & S SYPHILIS RATE	TUBERCULOSIS CASES	TUBERCULOSIS RATE
ATASCOSA	32,559	1	3.1	14	43.0	0	0.0	3	9.2
BANDERA	11,618	1	8.6	7	60.3	0	0.0	0	0.0
BEXAR	1,247,969	1,759	140.9	4,447	356.3	81	6.5	113	9.1
CALHOUN	19,437	7	36.0	17	87.5	1	5.1	3	15.4
COMAL	58,451	9	15.4	60	102.7	1	1.7	2	3.4
DE WITT	18,888	22	116.5	36	190.6	1	5.3	2	10.6
DIMMITT	10,695	2	18.7	17	159.0	0	0.0	2	18.7
EDWARDS	2,340	0	0.0	1	42.7	0	0.0	0	0.0
FRIO	14,970	5	33.4	48	320.6	0	0.0	0	0.0
GILLESPIE	18,090	4	22.1	21	116.1	0	0.0	0	0.0
GOLIAD	6,214	0	0.0	9	144.8	0	0.0	1	16.1
GONZALES	17,508	18	102.8	21	119.9	0	0.0	1	5.7
GUADELUPE	70,800	40	56.5	97	137.0	0	0.0	5	7.1
JACKSON	13,101	9	68.7	28	213.7	0	0.0	0	0.0
KARNES	12,696	2	15.8	46	362.3	0	0.0	0	0.0
KENDALL	15,979	1	6.3	16	100.1	0	0.0	3	18.8
KERR	38,230	27	70.6	80	209.3	0	0.0	4	10.5
KINNEY	3,219	0	0.0	1	31.1	0	0.0	0	0.0
LA SALLE	6,055	0	0.0	14	231.2	0	0.0	0	0.0
LAVACA	18,491	23	124.4	24	129.8	0	0.0	1	5.4
MAVERICK	38,809	1	2.6	21	54.1	1	2.6	20	51.5
MEDINA	29,964	6	20.0	53	176.9	0	0.0	0	0.0
REAL	2,468	0	0.0	0	0.0	0	0.0	0	0.0
UVALDE	24,154	13	53.8	131	542.4	0	0.0	2	8.3
VAL VERDE	40,577	19	46.8	218	537.3	0	0.0	10	24.6
VICTORIA	76,340	138	180.8	291	381.2	6	7.9	5	6.5
WILSON	24,880	4	16.1	46	184.9	2	8.0	0	0.0
ZAVALA	12,650	9	71.1	31	245.1	0	0.0	2	15.8
REGIONAL TOTALS	1,889,145	2,120	112.2	5,795	306.8	93	4.9	179	9.5
STATEWIDE TOTALS	17,958,512	30,122	167.7	43,874	244.3	2530	14.1	2,393	13.3

REPORTED CASES OF SELECTED VACCINE PREVENTABLE DISEASES AND RATES PER 100,000 POPULATION

PUBLIC HEALTH REGION 8 - 1993

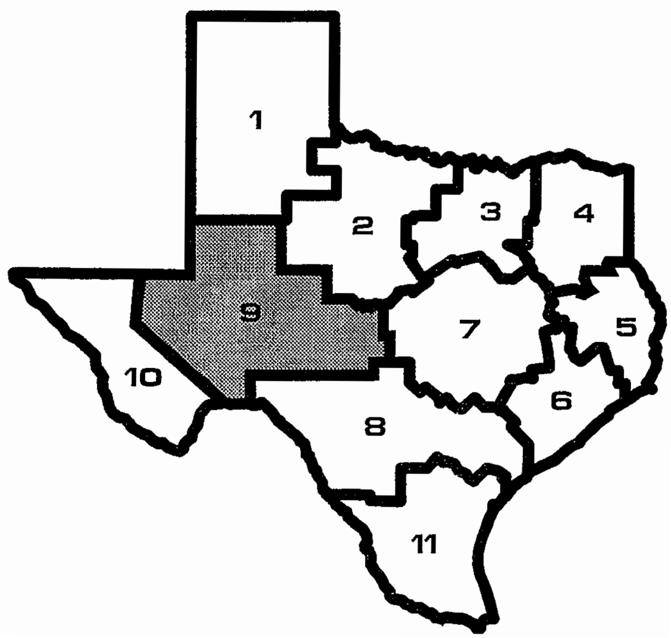
		MEASLES		MUMPS		PERTUSSIS		RUBELLA	
COUNTY	1993 POP.	CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE
ATASCOSA	32,559	0	0.0	1	3.1	0	0.0	0	0.0
BANDERA	11,618	0	0.0	0	0.0	1	8.6	0	0.0
BEXAR	1,247,969	0	0.0	7	0.6	10	0.8	1	0.1
CALHOUN	19,437	0	0.0	0	0.0	0	0.0	0	0.0
COMAL	58,451	0	0.0	1	1.7	0	0.0	0	0.0
DE WITT	18,888	0	0.0	0	0.0	0	0.0	0	0.0
DIMMITT	10,695	0	0.0	1	9.4	0	0.0	0	0.0
EDWARDS	2,340	0	0.0	0	0.0	0	0.0	0	0.0
FRIO	14,970	0	0.0	0	0.0	0	0.0	0	0.0
GILLESPIE	18,090	0	0.0	0	0.0	0	0.0	0	0.0
GOLIAD	6,214	0	0.0	0	0.0	0	0.0	0	0.0
GONZALES	17,508	0	0.0	0	0.0	0	0.0	0	0.0
GUADELUPE	70,800	0	0.0	0	0.0	1	1.4	1	1.4
JACKSON	13,101	0	0.0	1	7.6	0	0.0	0	0.0
KARNES	12,696	0	0.0	0	0.0	0	0.0	0	0.0
KENDALL	15,979	0	0.0	0	0.0	0	0.0	0	0.0
KERR	38,230	0	0.0	0	0.0	0	0.0	0	0.0
KINNEY	3,219	0	0.0	0	0.0	0	0.0	0	0.0
LA SALLE	6,055	0	0.0	0	0.0	0	0.0	0	0.0
LAVACA	18,491	0	0.0	0	0.0	0	0.0	0	0.0
MAVERICK	38,809	0	0.0	17	43.8	0	0.0	0	0.0
MEDINA	29,964	0	0.0	1	3.3	0	0.0	0	0.0
REAL	2,468	0	0.0	0	0.0	0	0.0	0	0.0
UVALDE	24,154	0	0.0	0	0.0	0	0.0	2	8.3
VAL VERDE	40,577	0	0.0	0	0.0	0	0.0	0	0.0
VICTORIA	76,340	0	0.0	4	5.2	1	1.3	0	0.0
WILSON	24,880	0	0.0	2	8.0	0	0.0	0	0.0
ZAVALA	12,650	0	0.0	0	0.0	0	0.0	0	0.0
REGIONAL TOTALS	1,889,145	0	0.0	1 3 5	1.9	13	0.7	4	0.2
STATEWIDE TOTALS	17,958,5121	10	0.1	231	1.3	121	0.7	22	0.1

REPORTED CASES OF SELECTED VIRAL DISEASES AND RATES PER 100,000 POPULATION

PUBLIC HEALTH REGION 8 - 1993

COUNTY	1993 POP.	ASCEPTIC MENINGITIS CASES	ASCEPTIC MENINGITIS RATE	ENCEPHALITIS CASES	ENCEPHALITIS RATE	INFLUENZA & FLU-LIKE ILLNESS CASES	INFLUENZA & FLU-LIKE ILLNESS RATE	CHICKENPOX CASES	CHICKENPOX RATE
ATASCOSA	32,559	1	3.1	0	0.0	6	18.4	1	3.1
BANDERA	11,618	1	8.6	0	0.0	1	8.6	38	327.1
BEXAR	1,247,969	100	8.0	3	0.2	1,261	101.0	439	35.2
CALHOUN	19,437	0	0.0	0	0.0	0	0.0	0	0.0
COMAL	58,451	2	3.4	0	0.0	674	1,153.1	194	331.9
DE WITT	18,888	0	0.0	0	0.0	0	0.0	7	37.1
DIMMITT	10,695	1	9.4	0	0.0	0	0.0	26	243.1
EDWARDS	2,340	0	0.0	0	0.0	0	0.0	0	0.0
FRIO	14,970	0	0.0	0	0.0	0	0.0	0	0.0
GILLESPIE	18,090	0	0.0	0	0.0	0	0.0	1	5.5
GOLIAD	6,214	0	0.0	0	0.0	0	0.0	0	0.0
GONZALES	17,508	0	0.0	0	0.0	0	0.0	0	0.0
GUADELUPE	70,800	5	7.1	0	0.0	164	231.6	20	28.2
JACKSON	13,101	0	0.0	0	0.0	0	0.0	0	0.0
KARNES	12,696	0	0.0	0	0.0	0	0.0	0	0.0
KENDALL	15,979	0	0.0	0	0.0	0	0.0	0	0.0
KERR	38,230	3	7.8	0	0.0	30	78.5	34	88.9
KINNEY	3,219	0	0.0	0	0.0	0	0.0	0	0.0
LA SALLE	6,055	0	0.0	0	0.0	0	0.0	2	33.0
LAVACA	18,491	0	0.0	0	0.0	0	0.0	4	21.6
MAVERICK	38,809	2	5.2	0	0.0	78	201.0	57	146.9
MEDINA	29,964	0	0.0	1	3.3	0	0.0	1	3.3
REAL	2,468	0	0.0	0	0.0	0	0.0	0	0.0
UVALDE	24,154	0	0.0	0	0.0	429	1,776.1	35	144.9
VAL VERDE	40,577	1	2.5	0	0.0	344	847.8	8	19.7
VICTORIA	76,340	1	1.3	0	0.0	839	1,099.0	278	364.2
WILSON	24,880	0	0.0	0	0.0	0	0.0	18	72.3
ZAVALA	12,650	0	0.0	0	0.0	0	0.0	67	529.6
REGIONAL TOTALS	1,889,145	117	6.2	4	0.2	3,826	202.5	1,230	65.1
STATEWIDE TOTALS	17,958,512	1,329	7.4	61	0.3	277,453	1,545.0	14,291	79.6

Public Health Region 9



REPORTED CASES OF SELECTED GASTROINTESTINAL DISEASES AND RATES PER *100,000* POPULATION

PUBLIC HEALTH REGION *9 - 1993*

		AMEBIASIS		CAMPYLOBACTER		SALMONELLOSIS		SHIGELLOSIS	
COUNTY	1993 POP.	CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE
ANDREWS	14,691	0	0.0	0	0.0	1	6.8	0	0.0
BORDEN	809	0	0.0	0	0.0	0	0.0	0	0.0
COKE	3,432	0	0.0	0	0.0	3	87.4	1	29.1
CONCHO	3,132	0	0.0	1	31.9	0	0.0	0	0.0
CRANE	4,806	0	0.0	0	0.0	0	0.0	0	0.0
CROCKET	4,160	0	0.0	0	0.0	0	0.0	5	120.2
DAWSON	15,368	0	0.0	0	0.0	4	26.0	31	201.7
ECTOR	122,030	1	0.8	0	0.0	34	27.9	0	0.0
GAINES	14,418	0	0.0	0	0.0	0	0.0	0	0.0
GLASSCOCK	1,516	0	0.0	0	0.0	0	0.0	5	329.8
HOWARD	32,198	0	0.0	0	0.0	8	24.8	0	0.0
IRION	1,678	0	0.0	2	119.2	I	59.6	0	0.0
KIMBLE	4,113	0	0.0	0	0.0	0	0.0	0	0.0
LOVING	109	0	0.0	0	0.0	0	0.0	0	0.0
MC CULLOCH	8,781	0	0.0	0	0.0	0	0.0	0	0.0
MARTIN	5,122	0	0.0	0	0.0	3	58.6	0	0.0
MASON	3,379	0	0.0	1	29.6	1	29.6	0	0.0
MENARD	2,288	0	0.0	0	0.0	0	0.0	0	0.0
MIDLAND	113,268	0	0.0	0	0.0	8	7.1	22	19.4
PECOS	15,602	0	0.0	0	0.0	5	32.0	1	6.4
REAGAN	4,702	0	0.0	0	0.0	0	0.0	I	21.3
REEVES	16,418	0	0.0	0	0.0	1	6.1	0	0.0
SCHLEICHER	3,058	0	0.0	0	0.0	0	0.0	0	0.0
STERLING	1,480	0	0.0	0	0.0	0	0.0	0	0.0
SUTTON	4,257	0	0.0	0	0.0	0	0.0	0	0.0
TERRELL	1,448	0	0.0	0	0.0	0	0.0	0	0.0
TOM GREEN	102,447	0	0.0	21	20.5	23	22.5	134	130.8
UPTON	4,572	0	0.0	0	0.0	0	0.0	0	0.0
WARD	13,206	0	0.0	0	0.0	1	7.6	0	0.0
WINKLER	8,738	0	0.0	0	0.0	I	11.4	0	0.0
REGIONAL TOTALS	533,219	1	0.2	25	4.7	94	17.6	200	37.5
STATEWIDE TOTALS	17,958,512	86	0.5	849	4.7	1,924	10.7	4,581	25.5

REPORTED CASES OF HEPATITIS AND RATES PER 100,000 POPULATION

PUBLIC HEALTH REGION 9 - 1993

		HEPATITIS A		HEPATITIS B		HEPATITIS C		HEPATITIS UNSPECIFIED	
COUNTY	1993 POP.	CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE
ANDREWS	14,691	0	0.0	1	6.8	0	0.0	0	0.0
BORDEN	809	0	0.0	0	0.0	0	0.0	0	0.0
COKE	3.432	0	0.0	0	0.0	0	0.0	0	0.0
CONCHO	3,132	0	0.0	0	0.0	0	0.0	0	0.0
CRANE	4,806	1	20.8	1	20.8	1	20.8	0	0.0
CROCKET	4,160	0	0.0	0	0.0	0	0.0	0	0.0
DAWSON	15,368	1	6.5	0	0.0	0	0.0	0	0.0
ECTOR	122,030	25	20.5	4	3.3	12	9.8	0	0.0
GAINES	14,418	0	0.0	1	6.9	0	0.0	0	0.0
GLASSCOCK	1,516	0	0.0	0	0.0	0	0.0	0	0.0
HOWARD	32,198	8	24.8	7	21.7	3	9.3	0	0.0
IRION	1,678	0	0.0	0	0.0	0	0.0	0	0.0
KIMBLE	4,113	0	0.0	0	0.0	0	0.0	0	0.0
LOVING	109	0	0.0	0	0.0	0	0.0	0	0.0
MC CULLOCH	8,781	0	0.0	1	11.4	0	0.0	0	0.0
MARTIN	5,122	0	0.0	0	0.0	0	0.0	0	0.0
MASON	3,379	0	0.0	0	0.0	0	0.0	0	0.0
MENARD	2,288	0	0.0	0	0.0	0	0.0	0	0.0
MIDLAND	113,268	7	6.2	13	11.5	6	5.3	1	0.9
PECOS	15,602	1	6.4	0	0.0	1	6.4	0	0.0
REAGAN	4,702	0	0.0	0	0.0	0	0.0	0	0.0
REEVES	16,418	0	0.0	0	0.0	0	0.0	0	0.0
SCHLEICHER	3,058	0	0.0	0	0.0	0	0.0	0	0.0
STERLING	1,480	0	0.0	0	0.0	0	0.0	0	0.0
SUTTON	4,257	0	0.0	0	0.0	0	0.0	0	0.0
TERRELL	1,448	0	0.0	0	0.0	0	0.0	0	0.0
TOM GREEN	102,447	3	2.9	3	2.9	0	0.0	0	0.0
UPTON	4,572	1	21.9	0	0.0	0	0.0	0	0.0
WARD	13,206	1	7.6	2	15.1	1	7.6	0	0.0
WINKLER	8,738	0	0.0	0	0.0	0	0.0	0	0.0
REGIONAL TOTALS	533,219	48	9.0	33	6.2	24	4.5	1	0.2
STATEWIDE TOTALS	17,958,512	2,798	15.6	1,354	7.5	384	2.1	157	0.9

REPORTED CASES OF OTHER SELECTED DISEASES AND RATES PER 100,000 POPULATION

PUBLIC HEALTH REGION 9 - 1993

		GONORRHEA		CHLAMYDIA		P & S SYPHILIS		TUBERCULOSIS	
COUNTY	1993 POP.	CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE
ANDREWS	14,691	9	61.3	14	95.3	1	6.8	1	6.8
BORDEN	809	0	0.0	0	0.0	0	0.0	0	0.0
COKE	3,432	0	0.0	4	116.6	0	0.0	0	0.0
CONCHO	3,132	0	0.0	0	0.0	0	0.0	0	0.0
CRANE	4,806	5	104.0	24	499.4	0	0.0	0	0.0
CROCKET	4,160	0	0.0	5	120.2	0	0.0	0	0.0
DAWSON	15,368	4	26.0	19	123.6	0	0.0	1	6.5
ECTOR	122,030	213	174.5	413	338.4	10	8.2	10	8.2
GAINES	14,418	3	20.8	32	221.9	1	6.9	0	0.0
GLASSCOCK	1,516	0	0.0	0	0.0	0	0.0	0	0.0
HOWARD	32,198	20	62.1	63	195.7	1	3.1	2	6.2
IRION	1,678	2	119.2	1	59.6	0	0.0	1	59.6
KIMBLE	4,113	0	0.0	1.	24.3	0	0.0	1	24.3
LOVING	109	1	917.4	0	0.0	0	0.0	0	0.0
MC CULLOCH	8,781	3	34.2	8	91.1	1	11.4	0	0.0
MARTIN	5,122	0	0.0	0	0.0	0	0.0	0	0.0
MASON	3,379	2	59.2	14	414.3	1	29.6	0	0.0
MENARD	2,288	0	0.0	0	0.0	0	0.0	0	0.0
MIDLAND	113,268	146	128.9	224	197.8	14	12.4	2	1.8
PECOS	15,602	2	12.8	33	211.5	7	44.9	4	25.6
REAGAN	4,702	0	0.0	1	21.3	0	0.0	0	0.0
REEVES	16,418	5	30.5	20	121.8	0	0.0	3	18.3
SCHLEICHER	3,058	0	0.0	0	0.0	0	0.0	0	0.0
STERLING	11,480	0	0.0	3	202.7	0	0.0	0	0.0
SUTTON	4,257	1	23.5	5	117.5	0	0.0	0	0.0
TERRELL	1,448	0	0.0	0	0.0	0	0.0	0	0.0
TOM GREEN	102,447	124	121.0	241	235.2	0	0.0	5	4.9
UPTON	4,572	1	21.9	2	43.7	0	0.0	0	0.0
WARD	13,206	4	30.3	20	151.4	0	0.0	1	7.6
WINKLER	8,738	1	11.4	14	160.2	1	11.4	1	11.4
REGIONAL TOTALS	533,219	546	102.4	1,161	217.7	37	6.9	32	6.0
STATEWIDE TOTALS	17,958,512	30,122	167.7	43,874	244.3	2530	14.1	2,393	13.3

REPORTED CASES OF SELECTED VACCINE PREVENTABLE DISEASES AND RATES PER 100,000 POPULATION

PUBLIC HEALTH REGION 9 - 1993

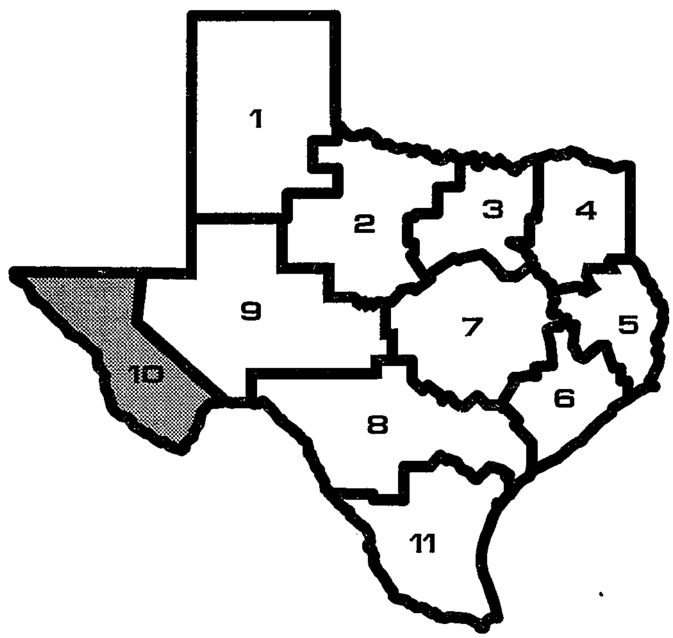
		MEASLES		MUMPS		PERTUSSIS		RUBELLA	
COUNTY	1993 POP.	CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE
ANDREWS	14,691	0	0.0	1	6.8	0	0.0	0	0.0
BORDEN	809	0	0.0	0	0.0	0	0.0	0	0.0
COKE	3,432	0	0.0	0	0.0	0	0.0	0	0.0
CONCHO	3,132	0	0.0	0	0.0	0	0.0	0	0.0
CRANE	4,806	0	0.0	0	0.0	0	0.0	0	0.0
CROCKET	4,160	0	0.0	0	0.0	0	0.0	0	0.0
DAWSON	15,368	0	0.0	0	0.0	0	0.0	0	0.0
ECTOR	122,030	0	0.0	1	0.8	1	0.8	0	0.0
GAINES	14,418	0	0.0	0	0.0	0	0.0	0	0.0
GLASSCOCK	1,516	0	0.0	0	0.0	0	0.0	0	0.0
HOWARD	32,198	0	0.0	0	0.0	0	0.0	0	0.0
IRION	1,678	0	0.0	0	0.0	0	0.0	0	0.0
KIMBLE	4,113	0	0.0	0	0.0	0	0.0	0	0.0
LOVING	109	0	0.0	0	0.0	0	0.0	0	0.0
MC CULLOCH	8,781	0	0.0	1	11.4	0	0.0	0	0.0
MARTIN	5,122	0	0.0	0	0.0	0	0.0	0	0.0
MASON	3,379	0	0.0	0	0.0	0	0.0	0	0.0
MENARD	2,288	0	0.0	0	0.0	0	0.0	0	0.0
MIDLAND	113,268	0	0.0	5	4.4	0	0.0	0	0.0
PECOS	15,602	0	0.0	0	0.0	0	0.0	0	0.0
REAGAN	4,702	0	0.0	1	21.3	0	0.0	0	0.0
REEVES	16,418	0	0.0	1	6.1	0	0.0	0	0.0
SCHLEICHER	3,058	0	0.0	0	0.0	0	0.0	0	0.0
STERLING	1,480	0	0.0	0	0.0	0	0.0	0	0.0
SUTTON	4,257	0	0.0	0	0.0	0	0.0	0	0.0
TERRELL	1,448	0	0.0	0	0.0	0	0.0	0	0.0
TOM GREEN	102,447	0	0.0	1	1.0	0	0.0	0	0.0
UPTON	4,572	0	0.0	0	0.0	0	0.0	0	0.0
WARD	13,206	0	0.0	0	0.0	0	0.0	0	0.0
WINKLER	8,738	0	0.0	0	0.0	0	0.0	0	0.0
REGIONAL TOTALS	533,219	0	0.0	11	2.1	1	0.2	0	0.0
STATEWIDE TOTALS	17,958,512	10	0.1	231	1.3	121	0.7	22	0.1

REPORTED CASES OF SELECTED VIRAL DISEASES AND RATES PER 100,000 POPULATION

PUBLIC HEALTH REGION 9 - 1993

		ASCEPTIC MENINGITIS		ENCEPHALITIS		INFLUENZA & FLU-LIKE ILLNESS		CHICKENPOX	
COUNTY	1993 POP.	CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE
ANDREWS	14,691	1	6.8	0	0.0	0	0.0	0	0.0
BORDEN	809	0	0.0	0	0.0	0	0.0	0	0.0
COKE	3,432	0	0.0	0	0.0	0	0.0	0	0.0
CONCHO	3,132	0	0.0	0	0.0	0	0.0	0	0.0
CRANE	4,806	0	0.0	0	0.0	0	0.0	0	0.0
CROCKET	4,160	0	0.0	0	0.0	0	0.0	0	0.0
DAWSON	15,368	0	0.0	0	0.0	0	0.0	0	0.0
ECTOR	122,030	2	1.6	0	0.0	1,589	1,302.1	149	122.1
GAINES	14,418	2	13.9	0	0.0	0	0.0	7	48.6
GLASSCOCK	1,516	0	0.0	0	0.0	0	0.0	0	0.0
HOWARD	32,198	0	0.0	0	0.0	0	0.0	0	0.0
IRION	1,678	0	0.0	0	0.0	0	0.0	0	0.0
KIMBLE	4,113	0	0.0	0	0.0	0	0.0	0	0.0
LOVING	109	0	0.0	0	0.0	0	0.0	0	0.0
MC CULLOCH	8,781	0	0.0	0	0.0	0	0.0	6	68.3
MARTIN	5,122	0	0.0	0	0.0	0	0.0	0	0.0
MASON	3,379	0	0.0	0	0.0	0	0.0	0	0.0
MENARD	2,288	0	0.0	0	0.0	0	0.0	0	0.0
MIDLAND	113,268	16	14.1	0	0.0	869	767.2	145	128.0
PECOS	15,602	0	0.0	0	0.0	0	0.0	1	6.4
REAGAN	4,702	0	0.0	0	0.0	0	0.0	0	0.0
REEVES	16,418	1	6.1	0	0.0	1	6.1	2	12.2
SCHLEICHER	3,058	0	0.0	0	0.0	40	1,308.0	0	0.0
STERLING	1,480	0	0.0	0	0.0	0	0.0	0	0.0
SUTTON	4,257	0	0.0	0	0.0	0	0.0	0	0.0
TERRELL	1,448	0	0.0	0	0.0	0	0.0	0	0.0
TOM GREEN	102,447	22	21.5	1	1.0	259	252.8	165	161.1
UPTON	4,572	0	0.0	0	0.0	0	0.0	0	0.0
WARD	13,206	0	'0.0	0	0.0	0	0.0	1	7.6
WINKLER	8,738	0	0.0	0	0.0	0	0.0	2	22.9
REGIONAL TOTALS	533,219	44	8.3	1	0.2	2,758	517.2	478	89.6
STATEWIDE TOTALS	17,958,512	1,329	7.4	61	0.3	1277,453	1,545.0	14,291	79.6

Public Health Region 10



PUBLIC HEALTH REGION 10 - 1993

REPORTED CASES OF SELECTED VIRAL DISEASES AND RATES PER 100,000 POPULATION

COUNTY	1993 POP.	ASCEPTIC MENINGITIS CASES	ASCEPTIC MENINGITIS RATE	ENCEPHALITIS CASES	ENCEPHALITIS RATE	INFLUENZA & FLU-LIKE ILLNESS CASES	INFLUENZA & FLU-LIKE ILLNESS RATE	CHICKENPOX CASES	CHICKENPOX RATE
BREWSTER	9606	0	0.0	0	0.0	2	20.8	2	20.8
CULBERSON	3636	0	0.0	0	0.0	0	0.0	0	0.0
EL PASO	641484	20	3.1	3	0.5	1872	291.8	1318	205.5
HUDSPETH	3065	0	0.0	0	0.0	0	0.0	0	0.0
JEFF DAVIS	2027	0	0.0	0	0.0	0	0.0	0	0.0
PRESIDIO	7233	0	0.0	0	0.0	0	0.0	0	0.0
REGIONAL TOTALS	669,044	20	3.0	3	0.4	1,874	280.1	1,320	197.3
STATEWIDE TOTALS	17,585,512	1329	7.6	61	0.3	277453	1,577.7	14291	81.3

REPORTED CASES OF HEPATITIS AND RATES PER 100,000, POPULATION

COUNTY	1993 POP.	HEPATITIS A CASES	HEPATITIS A RATE	HEPATITIS B CASES	HEPATITIS B RATE	HEPATITIS C CASES	HEPATITIS C RATE	HEPATITIS UNSPECIFIED CASES	HEPATITIS UNSPECIFIED RATE
BREWSTER	9606	0	0.0	0	0.0	0	0.0	0	0.0
CULBERSON	3636	0	0.0	0	0.0	0	0.0	0	0.0
EL PASO	641484	246	38.3	41	6.4	6	0.9	3	0.5
HUDSPETH	3065	0	0.0	0	0.0	0	0.0	0	0.0
JEFF DAVIS	2027	0	0.0	1	49.3	0	0.0	0	0.0
PRESIDIO	7233	0	0.0	0	0.0	0	0.0	0	0.0
REGIONAL TOTALS	669,044	246	36.8	42	6.3	6	0.9	3	0.4
STATEWIDE TOTALS	17,585,512	2798	15.9	1354	7.7	384	2.2	157	0.9

REPORTED CASES OF SELECTED GASTROINTESTINAL DISEASES AND RATES PER 100,000 POPULATION

COUNTY	1993 POP.	AMEBIASIS CASES	AMEBIASIS RATE	CAMPYLOBACTER CASES	CAMPYLOBACTER RATE	SALMONELLOSIS CASES	SALMONELLOSIS RATE	SHIGELLOSIS CASES	SHIGELLOSIS RATE
BREWSTER	9606	0	0.0	0	0.0	1	10.4	0	0.0
CULBERSON	3636	0	0.0	0	0.0	0	0.0	0	0.0
EL PASO	641484	5	0.8	62	9.7	188	29.3	189	29.5
HUDSPETH	3065	0	0.0	0	0.0	1	32.6	0	0.0
JEFF DAVIS	2027	0	0.0	0	0.0	0	0.0	0	0.0
PRESIDIO	7233	0	0.0	0	0.0	1	13.8	0	0.0
REGIONAL TOTALS	669,044	5	0.7	62	9.3	191	28.5	189	28.2
STATEWIDE TOTALS	17,585,512	86	0.5	849	4.8	1924	10.9	4581	26.0

PUBLIC HEALTH REGION 10 - 1993

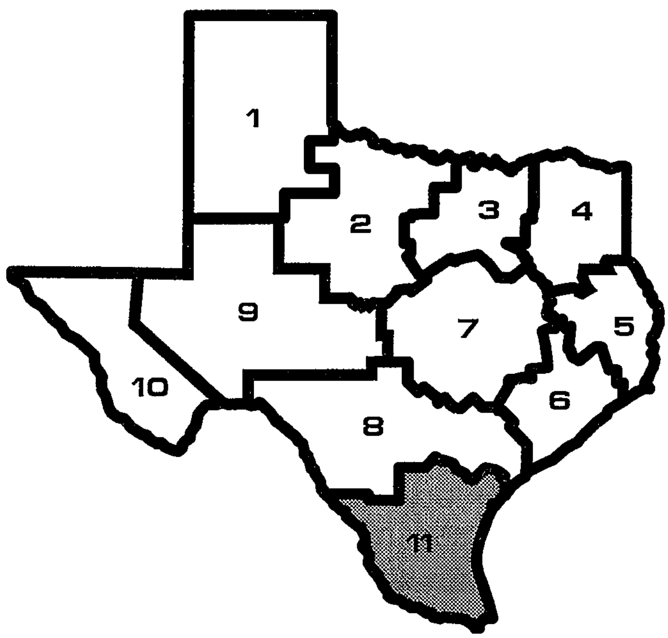
REPORTED CASES OF OTHER SELECTED DISEASES AND RATES PER 100,000 POPULATION

COUNTY	1993 POP.	GONORRHEA CASES	GONORRHEA RATE	CHLAMYDIA CASES	CHLAMYDIA RATE	P & S SYPHILIS CASES	P & S SYPHILIS RATE	TUBERCULOSIS CASES	TUBERCULOSIS RATE
BREWSTER	9606	6	62.5	32	333.1	0	0.0	0	0.0
CULBERSON	3636	0	0.0	3	82.5	0	0.0	0	0.0
EL PASO	641484	279	43.5	2123	331.0	222	34.6	76	11.8
HUDSPETH	3065	1	32.6	8	261.0	0	0.0	0	0.0
JEFF DAVIS	2027	0	0.0	1	49.3	0	0.0	0	0.0
PRESIDIO	7233	0	0.0	23	318.0	2	27.7	2	27.7
REGIONAL TOTALS	669,044	286	42.7	2,190	327.3	224	33.5	78	11.7
STATEWIDE TOTALS	17,585,512	30122	171.3	43874	249.5	9904	56.3	2393	13.6

REPORTED CASES OF SELECTED VACCINE PREVENTABLE DISEASES AND RATES PER 100,000 POPULATION

COUNTY	1993 POP.	MEASLES CASES	MEASLES RATE	MUMPS CASES	MUMPS RATE	PERTUSSIS CASES	PERTUSSIS RATE	RUBELLA CASES	RUBELLA RATE
BREWSTER	9606	0	0.0	1	10.4	0	0.0	0	0.0
CULBERSON	3636	0	0.0	0	0.0	0	0.0	0	0.0
EL PASO	641484	1	0.2	14	2.2	4	0.6	2	0.3
HUDSPETH	3065	0	0.0	0	0.0	0	0.0	0	0.0
JEFF DAVIS	2027	0	0.0	0	0.0	0	0.0	0	0.0
PRESIDIO	7233	0	0.0	0	0.0	0	0.0	0	0.0
REGIONAL TOTALS	669,044	1	0.1	15	2.2	4	0.6	2	0.3
STATEWIDE TOTALS	17,585,512	10	0.1	231	1.3	121	0.7	22	0.1

Public Health Region 11



REPORTED CASES OF SELECTED GASTROINTESTINAL DISEASES AND RATES PER 100,000 POPULATION

PUBLIC HEALTH REGION 11 - 1993

		AMEBIASIS		CAMPYLOBACTER		SALMONELLOSIS		SHIGELLOSIS	
COUNTY	1993 POP.	CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE
ARANSAS	18,525	0	0.0	0	0.0	3	16.2	0	0.0
BEE	27,779	0	0.0	0	0.0	0	0.0	0	0.0
BROOKS	8,461	0	0.0	0	0.0	1	11.8	1	11.8
CAMERON	280,658	15	5.3	4	1.4	18	6.4	27	9.6
DUVAL	13,310	0	0.0	0	0.0	3	22.5	3	22.5
HIDALGO	426,640	0	0.0	1	0.2	38	8.9	40	9.4
JIM HOGG	5,542	0	0.0	0	0.0	0	0.0	0	0.0
JIM WELLS	38,344	0	0.0	0	0.0	6	15.6	3	7.8
KENEDY	477	0	0.0	0	0.0	1	209.6	0	0.0
KLEBERG	31,830	0	0.0	1	3.1	5	15.7	6	18.9
LIVE OAK	9,716	0	0.0	0	0.0	1	10.3	0	0.0
MC MULLEN	837	0	0.0	0	0.0	0	0.0	0	0.0
NUECES	302,763	4	1.3	19	6.3	57	18.8	150	49.5
REFUGIO	8,092	0	0.0	0	0.0	4	49.4	0	0.0
SAN PATRICIO	61,585	0	0.0	0	0.0	19	30.9	10	16.2
STARR	46,530	0	0.0	0	0.0	0	0.0	0	0.0
WEBB	147,760	0	0.0	5	3.4	34	23.0	47	31.8
WILLACY	18,391	0	0.0	1	5.4	0	0.0	0	0.0
ZAPATA	10,323	0	0.0	1	9.7	0	0.0	1	9.7
REGIONAL TOTALS	1,457,563	19	1.3	32	2.2	190	13.0	288	19.8
STATEWIDE TOTALS	17,958,512	86	0.5	849	4.7	1924	10.7	4581	25.5

REPORTED CASES OF HEPATITIS AND RATES PER 100,000 POPULATION

PUBLIC HEALTH REGION 11 - 1993

		HEPATITIS A		HEPATITIS B		HEPATITIS C		HEPATITIS UNSPECIFIED	
COUNTY	1993 POP.	CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE
ARANSAS	18,525	1	5.4	1	5.4	0	0.0	0	0.0
BEE	27,779	2	7.2	0	0.0	0	0.0	0	0.0
BROOKS	8,461	0	0.0	0	0.0	0	0.0	0	0.0
CAMERON	280,658	50	17.8	14	5.0	1	0.4	26	9.3
DUVAL	13,310	1	7.5	0	0.0	0	0.0	0	0.0
HIDALGO	426,640	84	19.7	2	0.5	6	1.4	2	0.5
JIM HOGG	5,542	0	0.0	0	0.0	0	0.0	0	0.0
JIM WELLS	38,344	1	2.6	0	0.0	0	0.0	0	0.0
KENEDY	477	0	0.0	0	0.0	0	0.0	0	0.0
KLEBERG	31,830	1	3.1	1	3.1	1	3.1	1	3.1
LIVE OAK	9,716	0	0.0	0	0.0	0	0.0	0	0.0
MC MULLEN	837	0	0.0	0	0.0	0	0.0	0	0.0
NUECES	302,763	113	37.3	30	9.9	9	3.0	0	0.0
REFUGIO	8,092	1	12.4	0	0.0	0	0.0	0	0.0
SAN PATRICIO	61,585	10	16.2	6	9.7	1	1.6	0	0.0
STARR	46,530	13	27.9	0	0.0	0	0.0	0	0.0
WEBB	147,760	88	59.6	1	0.7	2	1.4	3	2.0
WILLACY	18,391	1	5.4	0	0.0	1	5.4	1	5.4
ZAPATA	10,323	1	9.7	0	0.0	0	0.0	0	0.0
REGIONAL TOTALS	1,459,556	367	25.1	55	3.8	21	1.4	33	2.3
STATEWIDE TOTALS	17,958,512	2,798	15.6	1,354	7.5	384	2.1	14,291	79.6

REPORTED CASES OF OTHER SELECTED DISEASES AND RATES PER 100,000 POPULATION

PUBLIC HEALTH REGION 11 - 1993

		GONORRHEA		CHLAMYDIA		P & S SYPHILIS		TUBERCULOSIS	
COUNTY	1993 POP.	CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE
ARANSAS	18,525	3	16.2	34	183.5	1	5.4	3	16.2
BEE	27,779	11	39.6	95	342.0	2	7.2	2	7.2
BROOKS	8,461	1	11.8	2	23.6	0	0.0	5	59.1
CAMERON	280,658	51	18.2	859	306.1	81	28.9	87	31.0
DUVAL	13,310	3	22.5	12	90.2	2	15.0	3	22.5
HIDALGO	426,640	78	18.3	1,010	236.7	96	22.5	96	22.5
JIM HOGG	5,542	0	0.0	1	18.0	0	0.0	0	0.0
JIM WELLS	38,344	3	7.8	47	122.6	1	2.6	10	26.1
KENEDY	477	0	0.0	0	0.0	0	0.0	0	0.0
KLEBERG	31,830	1	3.1	19	59.7	0	0.0	0	0.0
LIVE OAK	9,716	0	0.0	2	20.6	1	10.3	1	10.3
MC MULLEN	837	0	0.0	0	0.0	0	0.0	0	0.0
NUECES	302,763	362	119.6	538	177.7	49	16.2	37	12.2
REFUGIO	8,092	5	61.8	12	148.3	0	0.0	1	12.4
SAN PATRICIO	61,585	8	13.0	59	95.8	2	3.2	7	11.4
STARR	46,530	1	2.1	12	25.8	3	6.4	11	23.6
WEBB	147,760	19	12.9	88	59.6	15	10.2	39	26.4
WILLACY	18,391	6	32.6	37	201.2	3	16.3	4	21.7
ZAPATA	10,323	0	0.0	0	0.0	1	9.7	4	38.7
REGIONAL TOTALS	1,459,556	552	37.8	2,827	193.7	257	17.6	310	21.2
STATEWIDE TOTALS	17,958,512	30,122	167.7	43,874	244.3	9,904	55.1	2,393	13.3

REPORTED CASES OF SELECTED VACCINE PREVENTABLE DISEASES AND RATES PER 100,000 POPULATION

PUBLIC HEALTH REGION 11 - 1993

		MEASLES		MUMPS		PERTUSSIS		RUBELLA	
COUNTY	1993 POP.	CASES	RATE	CASES	RATE	CASES	RATE	CASES	RATE
ARANSAS	18,525	0	0.0	0	0.0	0	0.0	0	0.0
BEE	27,779	0	0.0	0	0.0	0	0.0	0	0.0
BROOKS	8,461	0	0.0	0	0.0	0	0.0	0	0.0
CAMERON	280,658	0	0.0	28	10.0	1	0.4	0	0.0
DUVAL	13,310	0	0.0	0	0.0	0	0.0	0	0.0
HIDALGO	426,640	0	0.0	0	0.0	3	0.7	0	0.0
JIM HOGG	5,542	0	0.0	0	0.0	0	0.0	0	0.0
JIM WELLS	38,344	0	0.0	0	0.0	0	0.0	0	0.0
KENEDY	477	0	0.0	0	0.0	0	0.0	0	0.0
KLEBERG	31,830	0	0.0	0	0.0	0	0.0	0	0.0
LIVE OAK	9,716	0	0.0	0	0.0	0	0.0	0	0.0
MC MULLEN	837	0	0.0	0	0.0	0	0.0	0	0.0
NUECES	302,763	0	0.0	0	0.0	0	0.0	0	0.0
REFUGIO	8,092	0	0.0	0	0.0	0	0.0	0	0.0
SAN PATRICIO	61,585	0	0.0	0	0.0	0	0.0	0	0.0
STARR	46,530	0	0.0	2	4.3	2	4.3	0	0.0
WEBB	147,760	0	0.0	3	2.0	0	0.0	2	1.4
WILLACY	18,391	0	0.0	0	0.0	0	0.0	0	0.0
ZAPATA	10,323	0	0.0	0	0.0	0	0.0	0	0.0
REGIONAL TOTALS	1,459,556	0	0.0	33	2.3	6	0.4	2	0.1
STATEWIDE TOTALS	17,958,512	10	0.1	231	1.3	121	0.7	22	0.1

REPORTED CASES OF SELECTED VIRAL DISEASES AND RATES PER 100,000 POPULATION

PUBLIC HEALTH REGION 11 - 1993

COUNTY	1993 POP.	ASCEPTIC MENINGITIS CASES	ASCEPTIC MENINGITIS RATE	ENCEPHALITIS CASES	ENCEPHALITIS RATE	INFLUENZA & FLU-LIKE ILLNESS CASES	INFLUENZA & FLU-LIKE ILLNESS RATE	CHICKENPOX CASES	CHICKENPOX RATE
ARANSAS	18,525	0	0.0	0	0.0	0	0.0	0	0.0
BEE	27,779	0	0.0	0	0.0	0	0.0	0	0.0
BROOKS	8,461	0	0.0	0	0.0	0	0.0	0	0.0
CAMERON	280,658	5	1.8	0	0.0	1,112	396.2	575	204.9
DUVAL	13,310	0	0.0	0	0.0	0	0.0	18	135.2
HIDALGO	426,640	6	1.4	0	0.0	0	0.0	45	10.5
JIM HOGG	5,542	0	0.0	0	0.0	0	0.0	0	0.0
JIM WELLS	38,344	0	0.0	0	0.0	0	0.0	0	0.0
KENEDY	477	0	0.0	0	0.0	0	0.0	0	0.0
KLEBERG	31,830	0	0.0	0	0.0	0	0.0	0	0.0
LIVE OAK	9,716	0	0.0	0	0.0	0	0.0	0	0.0
MC MULLEN	837	0	0.0	0	0.0	0	0.0	24	2,867.4
NUECES	302,763	13	4.3	3	1.0	8,583	2,834.9	1,403	463.4
REFUGIO	8,092	0	0.0	0	0.0	0	0.0	0	0.0
SAN PATRICIO	61,585	0	0.0	0	0.0	15	24.4	125	203.0
STARR	46,530	0	0.0	0	0.0	0	0.0	2	4.3
WEBB	147,760	1	0.7	0	0.0	98	66.3	1	0.7
WILLACY	18,391	0	0.0	0	0.0	0	0.0	33	179.4
ZAPATA	10,323	0	0.0	0	0.0	3	29.1	6	58.1
REGIONAL TOTALS	1,457,563	25	1.7	3	0.2	9,811	673.1	2,232	153.1
STATEWIDE TOTALS	17,958,512	1,329	7.4	61	0.3	277,453	1,545.0	14,291	79.6

Appendix A

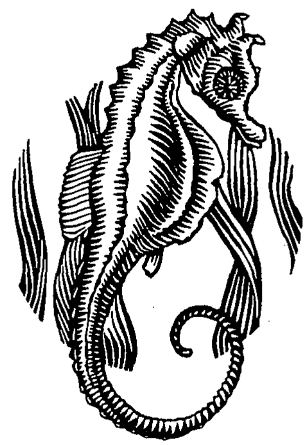


TABLE I

REPORTED CASES OF SELECTED DISEASES IN TEXAS
1983 - 1993

DISEASE	1993	1992	1991	1990	1989	1988	1987	1986	1985	1984	1983
AMEBIASIS	86	108	86	139	159	252	290	394	279	356	412
BOTULISM	2	1	4	7	4	4	4	5	4	9	3
BRUCELLOSIS	34	27	36	18	23	22	51	18	47	26	84
CAMPYLOBACTERIOSIS	849	996	810	739	625	745	780	803	666	198	-
CHICKENPOX	14291	20554	19409	26636	23722	20085	23228	23221	20758	16124	15031
CHOLERA	2	5	3	0	0	1	0	0	0	0	0
COCCIDIOIDOMYCOSIS	67	68	42	52	46	56	45	50	21	4	-
DENGUE	2	0	2	0	2	0	0	17	1	0	0
ENCEPHALITIS	61	89	121	74	60	74	118	191	144	114	163
GONORRHEA	30122	35517	43282	43231	45786	45639	51688	63376	66728	65802	76903
HANSEN'S DISEASE	31	52	38	37	25	35	31	29	28	31	35
H. INFLUENZAE INFECTIONS	51	42	152	625	797	843	747	647	554	524	394
HEPATITIS A	2798	1828	2663	2722	3211	2739	1886	2137	2565	2605	3030
HEPATITIS B	1354	1528	1958	1789	1853	1654	1487	1500	1513	1544	1234
HEPATITIS NANB	28	26	144	130	236	149	161	205	178	144	-
HEPATITIS UNSPECIFIED	157	191	260	287	530	576	599	854	1290	1695	2387
HISTOPLASMOSIS	69	79	66	142	106	133	71	77	44	10	-
INFLUENZA/FLU-LIKE ILLNESS	277453	155568	386911	314372	134604	109871	62192	83524	96164	176900	92160
LEGIONELLOSIS	22	24	23	25	50	20	38	41	29	27	-
LISTERIOSIS	28	26	52	32	40	45	42	28	-	-	-
LYME DISEASE	48	113	57	44	82	25	33	9	-	-	-
MALARIA	48	45	75	80	79	73	56	84	93	77	54
MEASLES	10	1097	294	4409	3313	286	452	398	450	642	37
MENINGITIS, ASEPTIC	1329	1242	1275	811	836	675	758	1383	989	645	1175
MENINGITIS, OTHER/BACTERIAL	262	380	337	345	371	385	354	533	423	301	-
MENINGOCOCCAL INFECTIONS	157	111	100	93	93	98	126	138	132	180	188
MUMPS	231	388	363	470	551	327	338	239	321	219	225
PERTUSSIS	121	161	143	158	366	158	111	112	379	60	95
RMSF	7	1	2	6	19	22	22	21	33	53	108
RUBELLA	22	10	16	99	64	30	5	78	52	75	117
SALMONELLOSIS	1924	1933	2317	2315	2277	2334	2803	2445	2442	2339	2838
SHIGELLOSIS	4581	3568	2178	3550	1654	2826	2087	2454	1718	1659	2206
SYPHILIS, PRIMARY/SECONDARY	9904	3316	4970	5165	4267	3124	3071	3967	4610	5136	6254
TETANUS	7	5	10	7	5	6	5	12	9	10	8
TUBERCULOSIS	2393	2510	2525	2242	1915	1901	1757	1890	1891	1762	1965
TULAREMIA	5	0	3	3	1	3	5	8	8	9	13
TYPHOID FEVER	15	23	31	28	20	3	36	28	32	30	72
TYPHUS FEVER, MURINE	12	18	22	36	30	30	34	52	25	37	46
VIBRIO INFECTIONS	17	15	25	25	17	27	20	-	-	-	-

TABLE II

REPORTED CASES OF SELECTED DISEASES IN TEXAS PER 100,000 POPULATION 1983 - 1993

DISEASE	1993	1992	1991	1990	1989	1988	1987	1986	1985	1984	1983
AMEBIASIS	.5	.6	.5	.8	.9	1.5	1.7	2.4	1.7	2.3	2.7
BOTULISM	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.0
BRUCELLOSIS	.2	.2	.2	.1	.1	.1	.3	.1	.3	.2	.6
CAMPYLOBACTERIOSIS	4.8	5.7	4.7	4.4	3.6	4.3	4.6	4.8	4.1	1.3	-
CHICKENPOX	81.3	116.7	112.5	156.8	135.8	116.3	162.3	138.6	128.7	102.7	98.0
CHOLERA	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
COCCIDIOIDOMYCOSIS	.4	.4	.2	.3	.3	.3	.3	.3	.1	.0	-
DENGUE	.0	.0	.0	.0	.0	.0	.0	.1	.0	.0	.0
ENCEPHALITIS	.3	.5	.7	.4	.3	.4	.7	1.1	.9	.7	1.0
GONORRHEA	171.3	201.6	250.8	254.5	262.1	264.3	303.6	378.3	413.7	419.1	501.1
HANSEN'S DISEASE	.2	.3	.2	.2	.1	.2	.2	.2	.2	.2	.2
H. INFLUENZAE INFECTIONS	.3	.2	.9	3.7	4.6	4.9	4.4	3.9	3.4	3.3	-
HEPATITIS A	15.9	10.4	15.4	16.0	18.4	15.9	11.1	12.8	15.9	16.6	19.7
HEPATITIS B	7.7	8.7	11.3	10.5	10.6	9.6	8.7	9.0	9.4	9.8	8.0
HEPATITIS NANB	.1	.1	.8	.8	1.4	.9	1.0	1.2	1.1	.9	-
HEPATITIS UNSPECIFIED	.9	1.1	1.5	1.7	3.0	3.3	3.5	5.1	8.0	10.8	15.6
HISTOPLASMOSIS	.3	.4	.4	.8	.6	.8	.4	.5	.3	.1	-
INFLUENZA/FLU-LIKE ILLNESS	1577.7	883.1	2241.7	1850.7	770.5	636.3	365.3	498.5	596.2	1126.7	600.6
LEGIONELLOSIS	.1	.1	.1	.1	.3	.1	.2	.2	.2	.2	-
LISTERIOSIS	.2	.1	.3	.2	.2	.3	.3	.2	-	-	-
LYME DISEASE	.3	.6	.3	.3	.5	1	.2	.1	-	-	-
MALARIA	.3	.3	.4								
MEASLES	.1	6.2	1.7	26.0	19.0	1.7	2.7	2.4	2.8	4.1	.2
MENINGITIS, ASEPTIC	7.6	7.1	7.4	4.8	4.8	3.9	4.5	8.3	6.1	4.1	7.7
MENINGITIS, OTHER/BACTERIAL	1.5	2.2	2.0	2.0	2.1	2.2	2.1	3.2	2.6	1.9	-
MENINGOCOCCAL INFECTIONS	.9	.6	.6	.5	.5	.6	.7	.8	.8	1.2	1.2
MUMPS	1.3	2.2	2.1	2.8	3.2	1.9	2.0	1.4	2.0	1.4	1.5
PERTUSSIS	.7	.9	.8	.9	2.1	.9	.7	.7	2.4	.4	.6
RMSF	.0	.0	.0	.0	.1	.1	.1	.1	.2	.3	.7
RUBELLA	.1	.1	.1	.6	.4	.2	.0	.5	.3	.5	.8
SALMONELLOSIS	10.9	11.0	13.4	13.6	13.0	13.5	16.5	14.6	15.1	14.9	18.5
SHIGELLOSIS	26.0	20.3	12.6	20.9	9.5	16.4	12.3	14.7	10.7	10.6	14.4
SYPHILIS, PRIMARY/SECONDARY	56.3	18.8	28.8	30.4	24.4	18.1	18.0	23.7	28.6	32.7	40.8
TETANUS	.0	.0	.1	.0	.0	.0	1	.1	.2	.1	-
TUBERCULOSIS	13.6	14.2	14.6	13.2	11.0	11.0	10.3	11.3	11.7	11.2	12.8
TULAREMIA	.0	.0	.0	.0	.0	.0	.0	.1	.1	.1	.1
TYPHOID FEVER	.1	.1	.2	.2	.1	.2	.2	.2	.2	.2	.5
TYPHUS FEVER, MURINE	.1	.1	.1	.2	.2	.2	.2	.3	-	-	-
VIBRIO INFECTIONS	.1	.1	1	.1	.1	.2	.1		-	-	-

1992 ESTIMATED TEXAS POPULATION = 17,958,512

TABLE III

REPORTED CASES OF SELECTED DISEASES BY MONTH OF ONSET
TEXAS, 1993

DISEASE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
AMEBIASIS	10	3	4	6	10	7	6	7	5	10	12	6
BOTULISM	0	0	0	0	0	0	1	1	0	0	0	0
BRUCELLOSIS	0	3	2	4	6	3	2	1	6	5	1	1
CAMPYLOBACTERIOSIS	68	57	60	72	95	113	88	76	51	56	71	39
CHOLERA	0	0	0	0	0	0	2	0	0	0	0	0
COCCIDIOIDOMYCOSIS	1	4	7	14	9	5	4	6	2	12	0	3
DENGUE	1	0	0	0	0	0	1	0	0	0	0	0
ENCEPHALITIS	9	5	4	5	6	1	8	12	5	1	4	1
GONORRHEA ¤	2256	2267	2523	2331	2150	2832	2699	3047	2717	2659	2445	2196
HANSEN'S DISEASE	0	4	2	6	2	6	3	1	6	0	1	0
H. INFLUENZAE INFECTIONS	4	6	4	3	6	7	5	1	3	3	4	5
HEPATITIS A	180	150	181	173	187	206	247	312	346	293	232	271
HEPATITIS B	111	120	135	125	103	109	134	107	124	108	91	75
HEPATITIS C	25	26	25	37	26	29	46	36	42	34	22	47
HEPATITIS NANB	3	2	3	2	3	2	1	4	2	3	2	1
HEPATITIS UNSPECIFIED	19	17	19	15	19	17	12	13	5	5	13	3
HISTOPLASMOSIS	7	11	6	5	4	5	7	3	2	4	10	5
LEGIONELLOSIS	0	2	3	2	1	3	0	2	5	4	0	0
LISTERIOSIS	2	0	0	1	3	1	1	5	4	4	5	2
LYME DISEASE	5	0	7	7	7	5	5	2	6	1	1	2
MALARIA	6	2	4	3	2	7	3	10	6	0	2	3
MEASLES	0	0	2	2	4	2	0	0	0	0	0	0
MENINGITIS, ASEPTIC	54	43	57	68	136	293	248	162	98	58	69	55
MENINGITIS, OTHER/BACTERIAL	26	24	40	16	16	15	13	19	27	22	23	31
MENINGOCOCCAL INFECTIONS	15	19	21	14	6	10	3	11	12	8	11	26
MUMPS	27	21	26	20	21	14	12	15	25	21	31	11
PERTUSSIS	9	9	4	7	9	10	24	21	4	11	7	8
RMSF	0	0	1	1	1	1	2	1	0	0	0	0
RUBELLA	6	2	2	0	2	2	1	0	1	4	1	1
SALMONELLOSIS	105	82	115	131	164	226	237	219	235	196	133	78
SHIGELLOSIS	265	339	403	413	474	470	438	535	357	404	308	175
SYPHILIS, PRIMARY/SECONDARY ¤	198	242	242	180	213	228	163	185	250	262	197	170
TETANUS	2	0	2	0	0	1	1	0	0	1	0	0
TUBERCULOSIS ¤	83	69	153	178	194	264	251	230	216	114	211	430
TULAREMIA	3	0	0	0	0	0	1	0	0	1	0	0
TYPHOID FEVER	1	0	0	1	0	4	3	2	2	0	1	1
TYPHUS FEVER, MURINE	0	2	0	1	2	4	0	0	0	0	1	1
VIBRIO INFECTIONS	0	1	1	2	2	2	1	5	2	1	0	0

¤ TOTALS ARE BY MONTH OF REPORT RATHER THAN MONTH OF ONSET

TABLE IV

REPORTED CASES OF SELECTED DISEASES BY AGE GROUP TEXAS, 1993

DISEASE	< 1	1-4	5-9	10-14	15-19	20-29	30-39	40-49	50-59	60 +	UNK
AMEBIASIS	2	9	5	1	1	14	25	13	7	8	1
BOTULISM	2	0	0	0	0	0	0	0	0	0	0
BRUCELLOSIS	0	1	7	1	4	6	6	2	1	6	0
CAMPYLOBACTERIOSIS	31	112	71	34	37	179	153	87	44	63	39
CHOLERA	0	1	0	0	0	0	1	0	0	0	0
COCCIDIOIDOMYCOSIS	0	0	0	2	2	5	10	13	10	22	2
DENGUE	0	0	0	0	0	1	1	0	0	0	0
ENCEPHALITIS	1	3	7	3	5	5	7	10	6	14	0
GONORRHEA	12	20	14	629	9,734	14,185	4,047	1,039	240	120	82
HANSEN'S DISEASE	0	0	0	0	3	4	5	5	4	10	0
H. INFLUENZAE INFECTIONS	3	7	6	3	0	3	5	6	2	16	0
HEPATITIS A	10	233	624	352	190	538	436	188	64	98	65
HEPATITIS B	4	9	15	27	105	410	369	176	84	86	70
HEPATITIS C	0	3	6	3	9	120	157	63	13	8	2
HEPATITIS NANB	0	1	2	4	3	3	9	6	0	0	0
HEPATITIS UNSPECIFIED	0	14	33	12	11	21	24	20	7	12	3
HISTOPLASMOSIS	0	0	0	0	0	7	29	17	6	7	2
LEGIONELLOSIS	0	1	0	0	1	2	3	2	4	7	2
LISTERIOSIS	0	1	1	0	2	3	3	4	2	10	2
LYME DISEASE	0	1	5	4	0	3	9	15	4	6	1
MALARIA	0	7	7	4	1	9	4	3	8	3	2
MEASLES	2	6	0	1	0	0	1	0	0	0	0
MENINGITIS, ASEPTIC	118	143	192	99	86	261	222	79	26	34	28
MENINGITIS, OTHER/BACTERIAL	16	45	25	15	13	21	45	24	16	39	1
MENINGOCOCCAL INFECTIONS	27	23	35	13	13	17	13	7	6	18	0
MUMPS	2	39	93	47	13	17	12	2	1	3	2
PERTUSSIS	22	49	27	8	3	7	1	0	0	0	4
RMSF	0	1	0	2	0	0	3	1	0	0	0
RUBELLA	0	1	7	4	3	4	0	3	0	0	0
SALMONELLOSIS	38	506	324	157	63	201	158	105	66	184	122
SHIGELLOSIS	280	1,457	1,342	307	137	476	347	120	43	74	189
SYPHILIS, PRIMARY/SECONDARY	0	0	0	22	325	989	787	269	96	41	1
TETANUS	0	0	0	0	0	0	0	0	3	4	0
TULAREMIA	0	0	0	1	0	0	0	3	1	0	0
TYPHOID FEVER	0	1	1	2	1	5	4	1	0	0	0
TYPHUS FEVER, MURINE	0	0	0	1	2	0	3	1	1	4	0
VIBRIO INFECTIONS	0	0	2	0	1	4	1	4	0	5	0
TUBERCULOSIS AGE GROUPS--->	0-4	5-9	10-14	15-19	20-24	25-34	35-44	45-54	55-64	65 +	UNK
TUBERCULOSIS	103	38	22	58	136	459	528	368	249	432	0

TABLE V

RATES PER 100,000 OF SELECTED DISEASES BY AGE GROUP
TEXAS, 1993

DISEASE	< 1	1-4	5-9	10-14	15-19	20-29	30-39	40-49	50-59	60 +	UNK
AMEBIASIS	0.6	0.7	0.4	0.1	0.1	0.5	0.8	0.6	0.5	0.3	-
BOTULISM	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
BRUCELLOSIS				0.1	0.3	0.2	0.2	0.1	0.1	0.2	-
CAMPYLOBACTEROSIS				2.4	2.9	6.2	4.9	3.7	2.9	2.6	-
CHOLERA	0.0	[illegible]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
COCCIDIODOMYCOSIS	0.0	0.0	0.0	0.1	0.2	0.2	0.3	0.6	0.7	0.9	-
DENGUE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
ENCEPHALITIS	0.3	0.2	0.5	0.2	0.4	0.2	0.2	0.4	0.4	0.6	
GONORRHEA	3.8	1.7	1.0	44.5	749.8	493.3	128.9	44.0	16.0	4.9	
HANSEN'S DISEASE	0.0	0.0	0.0	0.0	0.2	0.1	0.2	0.2	0.3	0.4	
H. INFLUENZAE INFECTIONS	0.9	0.6	0.4	0.2	0.0	0.1	0.2	0.3	0.1	0.7	
HEPATITIS A	3.1	19.4	44.3	24.9	14.6	18.7	13.9	8.0	4.3	4.0	
HEPATITIS B	1.3	0.7	1.1	1.9	8.1	14.3	11.8	7.5	5.6	3.5	-
HEPATITIS C	0.0	0.2	0.4	0.2	0.7	4.2	5.0	2.7	0.9	0.3	-
HEPATITIS NANB	0.0	0.1	0.1	0.3	0.2	0.1	0.3	0.3	0.0	0.0	-
HEPATITIS UNSPECIFIED	0.0	1.2	2.3	0.8	0.8	0.7	0.8	0.8	0.5	0.5	-
HISTOPLASMOSIS	0.0	0.0	0.0	0.0	0.0	0.2	0.9	0.7	0.4	0.3	-
LEGIONELLOSIS	0.0	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.3	0.3	-
LISTERIOSIS	0.0	0.1	0.1	0.0	0.2	0.1	0.1	0.2	0.1	0.4	-
LYME DISEASE	0.0	0.1	0.4	0.3	0.0	0.1	0.3	0.6	0.3	0.2	-
MALARIA	0.0	0.6	0.5	0.3	0.1	0.3	0.1	0.1	0.5	0.1	-
MEASLES	0.6	0.5	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	-
MENINGITIS, ASEPTIC	37.2	11.9	13.6	7.0	6.6	9.1	7.1	3.3	1.7	1.4	-
MENINGITIS, BACTERIAL/OTHER	5.0	3.7	1.8	1.1	1.0	0.7	1.4	1.0	1.1	1.6	-
MENINGOCOCCAL INFECTIONS	8.5	1.9	2.5	0.9	1.0	0.6	0.4	0.3	0.4	0.7	-
MUMPS	0.6	3.2	6.6	3.3	1.0	0.6	0.4	0.1	0.1	0.1	-
PERTUSSIS	6.9	4.1	1.9	0.6	0.2	0.2	0.0	0.0	0.0	0.0	-
RMSF	0.0	0.1	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	-
RUBELLA	0.0	0.1	0.5	0.3	0.2	0.1	0.0	0.1	0.0	0.0	-
SALMONELLOSIS	12.0	42.1	23.0	11.1	4.9	7.0	5.0	4.4	4.4	7.5	-
SHIGELLOSIS	88.9	121.2	95.3	21.7	10.6	16.6	11.1	5.1	2.9	3.0	-
SYPHILIS, PRIMARY/SECONDARY	0.0	0.0	0.0	1.6	25.0	34.4	25.1	11.4	6.4	1.7	
TETANUS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	
TULAREMIA	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.0	
TYPHOID FEVER	0.0	0.1	0.1	0.1	0.1	0.2	0.1	0.0	0.0	0.0	
TYPHUS FEVER, MURINE	0.0	0.0	0.0	0.1	0.2	0.0	0.1	0.0	0.1	0.2	
VIBRIO INFECTIONS	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.2	0.0	0.2	-

TABLE VI

REPORTED CASES OF SELECTED DISEASES BY PUBLIC HEALTH REGIONS TEXAS, 1993

DISEASE	1993 TOTAL	PHR 1	PHR 2	PHR 3	PHR 4	PHR 5	PHR 6	PHR 7	PHR 8	PHR 9	PHR 10	PHR 11
AMEBIASIS	86	0	15	11	0	0	14	17	4	1	5	19
BOTULISM	2	0	0	0	0	0	0	0	0	1	1	0
BRUCELLOSIS	34	0	0	12	0	0	3	3	0	0	2	14
CAMPYLOBACTERIOSIS	849	41	14	159	8	16	204	150	138	25	62	32
COCCIDIOIDOMYCOSIS	67	3	1	15	0	0	4	5	7	6	14	12
DENGUE	2	0	0	1	0	0	1	0	0	0	0	0
ENCEPHALITIS	61	0	2	13	3	0	20	12	4	1	3	3
GONORRHEA	30,122	1,200	506	10,574	1,298	694	8,560	3,786	2,120	546	286	552
HANSEN'S DISEASE	30	0	0	7	0	2	7	1	7	0	0	7
H. INFLUENZAE INFECTIONS	51	4	0	6	7	1	20	4	5	0	2	2
HEPATITIS A	2,798	69	56	926	55	7	411	155	458	48	246	367
HEPATITIS B	1,354	52	31	567	58	21	260	114	121	33	42	55
HEPATITIS C	384	16	23	157	5	9	23	57	43	24	6	21
HEPATITIS NANB	28	3	0	1	0	0	23	0	0	0	1	0
HEPATITIS UNSPECIFIED	157	0	3	48	0	0	35	26	8	1	3	33
HISTOPLASMOSIS	69	4	1	18	7	0	13	14	9	0	1	2
LEGIONELLOSIS	22	3	0	3	0	0	10	4	0	0	2	0
LISTERIOSIS	28	0	0	4	1	0	10	6	5	1	0	1
LYME DISEASE	48	2	7	14	4	1	6	9	2	0	1	2
MALARIA	48	0	1	13	1	1	25	5	0	0	1	1
MEASLES	10	0	0	0	0	0	9	0	0	0	1	0
MENINGITIS, ASEPTIC	1,329	110	91	367	105	7	204	239	117	44	20	25
MENINGITIS, OTHER/BACTERIAL	262	5	8	52	10	5	77	59	18	6	8	14
MENINGOCOCCAL INFECTIONS	157	4	3	56	14	7	39	19	4	6	2	3
MUMPS	231	14	12	45	2	5	45	14	35	11	15	33
PERTUSSIS	121	0	2	47	11	4	20	13	13	1	4	6
RMSF	7	1	1	2	2	0	1	0	0	0	0	0
RUBELLA	22	5	1	5	0	1	0	2	4	0	2	2
SALMONELLOSIS	1,924	155	59	366	72	43	291	261	202	94	191	190
SHIGELLOSIS	4,581	301	144	670	151	71	536	1,148	883	200	189	288
SYPHILIS, PRIMARY/SECONDARY	2,530	12	33	849	119	340	754	256	93	37	18	29
TETANUS	7	0	1	0	0	0	2	1	0	0	0	3
TUBERCULOSIS	2393	39	24	496	94	33	933	175	179	32	78	310
TULAREMIA	5	0	0	1	1	0	1	0	1	0	0	1
TYPHOID FEVER	15	1	0	4	0	0	5	1	2	1	1	0
TYPHUS, MURINE	12	0	1	0	0	0	0	0	0	0	0	11
VIBRIO INFECTIONS	17	0	1	0	0	0	10	3	1	0	0	2

TABLE VII

RATES OF SELECTED DISEASES PER 100,000 POPULATION BY PUBLIC HEALTH REGIONS TEXAS, 1993

DISEASE	1993 RATE	PHR 1	PHR 2	PHR 3	PHR 4	PHR 5	PHR 6	PHR 7	PHR 8	PHR 9	PHR 10	PHR 11
AMEBIASIS	0.5	0.0	2.8	0.2	0.0	0.0	0.3	0.9	0.2	0.2	0.7	1.3
BOTULISM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0
BRUCELLOSIS	0.2	0.0	0.0	0.3	0.0	0.0	0.1	0.2	0.0	0.0	0.3	1.0
CAMPYLOBACTERIOSIS	4.2	5.5	2.6	3.5	0.9	2.4	5.0	8.3	7.3	4.7	9.3	2.2
COCCIDIOIDOMYCOSIS	0.4	0.4	0.2	0.3	0.0	0.0	0.1	0.3	0.4	1.1	2.1	0.8
DENGUE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENCEPHALITIS	0.4	0.0	0.4	0.3	0.3	0.0	0.5	0.7	0.2	0.2	0.4	0.2
GONORRHEA	167.7	160.7	95.7	229.6	140.4	102.5	208.1	208.2	112.3	102.8	42.9	37.9
HANSEN'S DISEASE	0.2	0.0	0.0	0.2	0.0	0.3	0.2	0.1	0.4	0.0	0.0	0.5
H. INFLUENZAE INFECTIONS	0.3	0.5	0.0	0.1	0.8	0.1	0.5	0.2	0.3	0.0	0.3	0.1
HEPATITIS A	15.6	9.2	10.6	20.1	5.9	1.0	10.0	8.5	24.3	9.0	36.9	25.2
HEPATITIS B	7.5	7.0	5.9	12.3	6.3	3.1	6.3	6.3	6.4	6.2	6.3	3.8
HEPATITIS C	2.1	2.1	4.4	3.4	0.5	1.3	0.6	3.1	2.3	4.5	0.9	1.4
HEPATITIS NANB	0.2	0.4	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.1	0.0
HEPATITIS UNSPECIFIED	0.9	0.0	0.6	1.0	0.0	0.0	0.9	1.4	0.4	0.2	0.4	2.3
HISTOPLASMOSIS	0.4	0.5	0.2	0.4	0.8	0.0	0.3	0.8	0.5	0.0	0.1	0.1
LEGIONELLOSIS	0.1	0.4	0.0	0.1	0.0	0.0	0.2	0.2	0.0	0.0	0.3	0.0
LISTERIOSIS	0.2	0.0	0.0	0.1	0.1	0.0	0.2	0.3	0.3	0.2	0.0	0.1
LYME DISEASE	0.4	0.3	1.3	0.3	0.4	0.1	0.1	0.5	0.1	0.0	0.1	0.1
MALARIA	0.4	0.0	0.2	0.3	0.1	0.1	0.6	0.3	0.0	0.0	0.1	0.1
MEASLES	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.1	0.0
MENINGITIS, ASEPTIC	7.5	14.7	17.2	8.0	11.4	1.0	5.0	13.1	6.2	8.3	3.0	1.7
MENINGITIS, BACTERIAL/OTHER	1.5	0.7	1.5	1.1	1.1	0.7	1.9	3.2	1.0	1.1	1.2	1.0
MENINGOCOCCAL INFECTIONS	0.9	0.5	0.6	1.2	1.5	1.0	0.9	1.0	0.2	1.1	0.3	0.2
MUMPS	1.3	1.9	2.3	1.0	0.2	0.7	1.1	0.8	1.9	2.1	2.2	2.3
PERTUSSIS	0.7	0.0	0.4	1.0	1.2	0.6	0.5	0.7	0.7	0.2	0.6	0.4
RMSF	0.0	0.1	0.2	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RUBELLA	0.1	0.7	0.2	0.1	0.0	0.1	0.0	0.1	0.2	0.0	0.3	0.1
SALMONELLOSIS	10.7	20.8	11.2	7.9	7.8	6.4	7.1	14.4	10.7	17.7	28.6	13.0
SHIGELLOSIS	25.5	40.3	27.2	14.5	16.3	10.5	13.0	63.1	46.8	37.6	28.3	19.8
SYPHILIS, PRIMARY/SECONDARY	14.1	1.6	6.2	18.4	12.9	50.2	18.3	14.1	4.9	7.0	2.7	2.0
TETANUS	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2
TUBERCULOSIS	13.3	5.2	4.5	10.8	10.2	4.9	22.7	9.6	9.5	6.0	11.7	21.3
TULAREMIA	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.1
TYPHOID FEVER	0.1	0.1	0.0	0.1	0.0	0.0	0.1	0.1	0.1	0.2	0.1	0.0
TYPHUS, MURINE	0.1	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8
VIBRIO INFECTIONS	0.1	0.0	0.2	0.0	0.0	0.0	0.2	0.2	0.1	0.0	0.0	0.1

Appendix B

Reportable Conditions in Texas

Several Texas laws require specific information regarding reportable conditions to be provided to the Texas Department of Health. The Communicable Disease Prevention and Control Act (Health & Safety Code, Chapter 81) requires physicians, dentists, veterinarians, and chiropractors to report, after the first professional encounter, each patient examined who is suspected of having a reportable disease. Also required to report are certain individuals from hospitals, laboratories, and schools. Detailed rules on the reporting of notifiable diseases and conditions and the duties of local health authorities may be found in Article 97, Title 25, Texas Administrative Code.

Diseases reportable immediately by telephone to local health departments or Texas Department of Health by name, age, sex, **race/ethnicity,** DOB, address, telephone number, disease, date of onset, physician, and method of diagnosis.

TDH Infectious Disease Epidemiology
& Surveillance Division
(CALL TOLL-FREE 1-800-252-8239)

Botulism, foodborne
Cholera
Meningococcal infections, invasive[1]
Plague
Rabies in Man
Viral hemorrhagic fevers
Yellow Fever

TDH Immunization Division
(CALL TOLL-FREE 1-800-252-9152)

Diphtheria
Haemophilus influenzae infections, **invasive**[1]
Measles (rubeola)
Pertussis
Poliomyelitis, acute paralytic

Outbreaks, exotic diseases, and unusual group expressions of illness which may be of public health concern also should be reported immediately.

Diseases reportable to **local** health departments[2] by name, age, sex, **race/ethnicity,** DOB, address, telephone number, disease, date of **onset/occurrence,** physician, and method of diagnosis. Report these diseases on a weekly basis except for rubella and tuberculosis which should be reported within one working day.

Acquired immune deficiency syndrome (AIDS)[3]
Amebiasis
Anthrax
Asbestosis[4]
Botulism (infant)
Brucellosis
Campylobacteriosis
Chancroid[5]
Chlamydia trachomatis infection[5]
Dengue
Encephalitis (specify etiology)
Escherichia coli O157:H7 infection
Gonorrhea[5]
Hansen's Disease (leprosy)
Hantavirus infection
Hemolytic uremic syndrome (HUS)
Hepatitis, acute viral (specify type)[6]
Injuries (specify type)[7]
  Spinal cord injury
  Near drowning
Lead, adult elevated blood[4]
Legionellosis
Listeriosis
Lyme disease
Malaria
Meningitis (specify type)[8]
Mumps
Pesticide poisoning, acute occupational[4]
Relapsing fever
Rocky Mountain spotted fever
Rubella
Salmonellosis, including typhoid
Shigellosis
Silicosis[4]
Streptococcal disease, invasive Group A
Syphilis[5]
Tetanus
Trichinosis
Tuberculosis[9]
Tuberculosis infection in persons less than 15 years of age[9]
Typhus
Vibrio infections

By Number Only: Chickenpox

By *last* 4 ***digits** of social **security*** number; sex; **race/ethnicity;** DOB; city, county, and zip of patient's residence; and name, address, and telephone number of physician: HIV infection in persons 13 years of age and older.

By name; sex; **race/ethnicity;** DOB; city, county, and zip of patient's residence; and name, address, and telephone number of physician: HIV infection in persons less than 13 years of age.

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[1]Includes meningitis, septicemia, **cellulitis, epiglottitis, osteomyelitis, pericarditis,** and septic arthritis.
[2]The local or regional health department shall collect reports of diseases and transmit them at weekly intervals to the **TDH.**
[3]Reported by physician only once per case, following initial physician diagnosis.
[4]The Occupational Disease Reporting Act, (Health & Safety Code, Chapter 84) requires physicians and directors of laboratories to report these occupationally related diseases to the Texas Department of Health at 512/458-7269.
[5]Syphilis, gonorrhea, chancroid, and laboratory-confirmed *Chlamydia trachomatis* infections are reportable in accordance with Sections 97.132, 97.134, and 97.135 of TAC. Form STD-27, "Confidential Report of Sexually Transmitted Disease," shall be used to report these sexually transmitted diseases. Questions may be directed to 512/458-7463.
[6]Includes types: A; B; C; D (Delta); E; non-A, non-B; and unspecified.
[7]The Injury Prevention and Control Act (Health & Safety Code, Chapter 87) requires physicians, medical examiners, and Justices of the Peace to report the injuries to local health departments or *to* the Texas Department of Health 512/458-7266.
[8]Includes aseptic/viral, bacterial (specify etiology), fungal, and other.
[9]Report tuberculosis on Form TB-400, "Report of Case and Patient Services." Questions may be directed to 512/458-7448.

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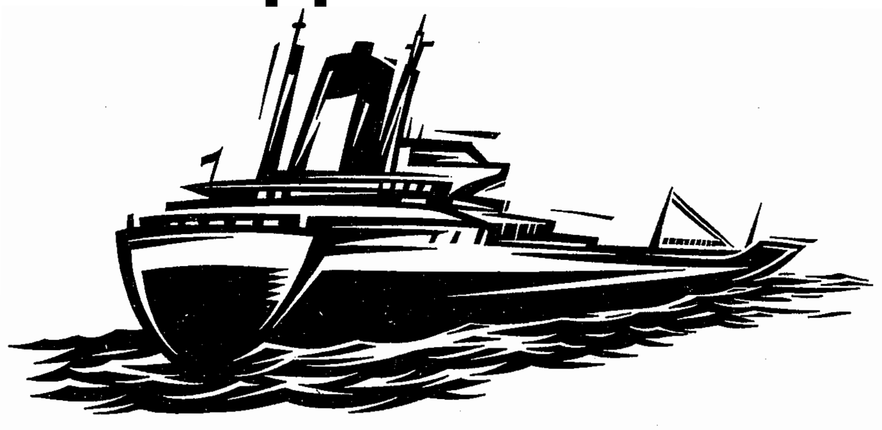
Appendix C



GLOSSARY

ANENCEPHALY. A severe birth defect caused by abnormal development of the brain during the first trimester; congenital absence of the cranial vault, with cerebral hemispheres completely missing or reduced to small masses attached to the base of the skull.

ASBESTOSIS. **A** pneumoconiosis produced by inhalation of asbestos fibers. A chronic disease with slow onset that usually requires several years of exposure depending on the intensity of exposure. Characterized clinically by diffuse interstitial pulmonary fibrosis, often accompanied by thickening and sometimes calcification of the pleura. Shortness of breath on exertion is the most common presenting symptom. A chronic dry cough is common, but the cough may be productive, especially among smokers. Finger clubbing may appear in advanced cases.

AVERAGE. The arithmetic mean. The measure of central location calculated by adding together all the individual values in a group of measurements and dividing by the number of values in the group.

CHRONIC CARRIER. A state of persistent infectivity and ongoing inflammation irrespective of the presence or absence of disease symptoms.

CLUSTER. An aggregation of cases of a disease or other health-related condition, particularly cancer and birth defects, which are closely grouped in time and place. The number of cases may or may not exceed the expected number; frequently the expected number is not known.

INCIDENCE RATE. (Sometimes referred to simply as **incidence.)** A measure of the frequency with which an event, such as a new case of illness, occurs in a population over a period of time. The numerator is the number of new cases occurring during a given time period; the denominator is the population at risk during the same time period.

MEAN, ARITHMETIC. See average.

MEDIAN. The measure of central location which divides a set of data into two equal parts; the middle of a set of data that has been put into rank order; a measure of central tendency that is the middle value in an orderly set of values. (For example: For the following set of incubation periods: 24, 25, 29, 30, 31 - the median is 29. Two observations are larger, and two are smaller.)

MORBIDITY. Any departure, subjective or objective, from a state of physiological or psychological well-being.

MORTALITY RATE. **A** measure of the frequency of occurrence of death in a defined population during a specified interval of time.

NEAR DROWNING. Survival for at least 24 hours following asphyxiation due to submersion in water.

PERIOD PREVALENCE. The amount of a particular disease present in a population over an extended period of time.

POINT PREVALENCE. The amount of a particular disease present in a population at a single point in time.

PREVALENCE RATE. (Sometimes simply referred to as **prevalence.**) The amount of a given disease or other condition in a given population at a designated time; the proportion of a population that is affected by a disease or condition at a given point in time; the numerator is the number of all cases present during a given time period, and the denominator is the population during the same time period.

RATE. An expression of the frequency with which an event occurs in a defined population. Usually defined as the number of cases per 100,000 population.

SENTINEL PROVIDER SYSTEM. A system used to gauge the occurrence of disease in an area. This active surveillance is conducted using a system consisting of individual physicians and clinic/hospital staff who consent to be contacted by the surveillance staff on a regular basis. When contacted, reports of various reportable diseases are solicited.

SILICOSIS. Refers to several lung fibroses that arise from inhaling crystalline forms of silica (silicon dioxide [SiO_2]). Silicosis reduces the ability of the lungs to work properly and way eventually cause death from heart failure or from destruction of lung tissue.

1. Nodular silicosis, also called "classic" or "pure" silicosis. Characterized by hyaline and nodular lung lesions that may aggregate into large fibrotic masses (conglomerate silicosis or progressive massive fibrosis [PMF]).

2. Acute silicosis. **A** rapidly developing disorder having features of alveolar proteinosis and fibrosing alveolitis.

3. Mixed dust fibrosis. A disorder showing fibrotic lesions (some of which may be typical "silicotic" nodules) and others irregular in shape (that arise from inhaling dusts of silica and other agents [eg, iron oxide, coal, welding fumes]).

4. Diatomaceous earth pneumoconiosis. A condition with fibrosing alveolitis and a prominent cellular reaction. Diagnosis is based on symptoms, exposure history, physical examination, chest x-rays, pulmonary function tests, and sometimes pathological examination of tissue. Symptoms include shortness of breath, coughing, tiredness, weakness, blue or gray skin color, loss of appetite, and chest pains.

TEXAS OCCUPATIONAL DISEASE REPORTING ACT. An act passed by the 69th Legislature in 1985. This act requires that physicians and laboratory directors report adult elevated blood lead levels and cases of suspected or confirmed asbestosis and silicosis. The act also gave the Texas Board of Health the authority to add other preventable occupational diseases to the list. Later that same year, the Board made acute occupational pesticide poisoning a reportable condition.

VIRUS ISOLATION. A laboratory process whereby an active virus is successfully recovered from a patient's specimen.

Associateship for Disease Control and Prevention

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