# EPIDEMIOLOGY OF SEXUALLY TRANSMITTED DISEASES

CHLAMYDIA, GONORRHEA, SYPHILIS: 1991 – 2000

HIV / AIDS: 1981 – 2000

CITY OF HOUSTON AND HARRIS COUNTY, TEXAS

Produced by:
Houston Department of Health and Human Services
Bureau of HIV/ STD Prevention
Published December 2000

Table of Contents

# EPIDEMIOLOGY OF
# SEXUALLY TRANSMITTED DISEASES
# AND
# HIV/AIDS
# HOUSTON, TEXAS – JULY, 2000

## BACKGROUND

The United States has the highest rates of curable sexually transmitted diseases (STDs) in the developed world. This burden of disease poses a tremendous health and economic consequence.[1]

The health consequences of STDs range from mild acute illness, to infertility, cancer of the cervix and liver, and the life threatening complications associated with HIV. Women are especially affected by STDs; they are more biologically susceptible to certain infections; are more likely to have asymptomatic infections and therefore fail to seek diagnosis and treatment; and untreated disease is more likely to have a profound effect on their reproductive health and the health of offspring that may become infected during pregnancy or delivery.

The economic consequences of STDs are staggering. The Institute of Medicine has estimated that the annual direct cost (costs associated with medical care) and indirect cost (costs associated with lost wages) of selected major STDs, including HIV, is $17 billion.

There is strong epidemiologic evidence that infection with other STDs increases the risk of infection with HIV; this has been confirmed through community-level intervention trials which showed that early treatment of symptomatic STDs decreased the incidence of HIV. Heterosexual HIV transmission is responsible for the most rapidly increasing subset of US AIDS cases; heterosexual HIV transmission is highest among African American and Hispanic women less than 25 years of age. This group of women also has the highest rates of most curable STDs.

The Advisory Committee for HIV and STD Prevention[2] recommends that early detection and treatment of treatable STDs should be a major component of comprehensive HIV prevention programs through expanded STD prevention projects sponsored by private and public partnering. The Institute of Medicine has recommended formation of an effective national system for STD prevention that addresses key areas, including:

1. Investigating ways to overcome the barriers to adoption of health by sexual behaviors;
2. Developing strong leadership, strengthening investment, and improving information systems for STD prevention;
3. Designing and implementing innovative STD-related services for adolescents and underserved populations; and

4. Ensuring access to high quality clinical services for STDs.

The Advisory Committee for HIV and STD Prevention recommends that STD detection and treatment programs designed to prevent HIV transmission should include the following:

1. Assess and ensure timely access to high-quality STD clinical care for persons seeking medical services for symptoms of STDs in private and public medical-care settings.
2. Screen for asymptomatic or unrecognized STD infections in medical-care settings according to current guidelines, and expand screening as needed based on prevalence of infections detected in pilot screening efforts.
3. Establish or expand STD screening in nonmedical settings where persons at high risk for HIV infections and curable STDs are encountered and can be treated efficiently, including jails and other correctional facilities, substance abuse treatment centers, and hospital emergency departments.
4. Provide cross-training to program and management staff, including HIV prevention community planning groups, on the role of STD detection and treatment in HIV prevention.

Because of the high prevalence of STDs in the United States, enhanced STD control may have a substantial impact on the health and economic burden of treatable STDs in this country. Also, because the incidence of heterosexually transmitted HIV is increasing most rapidly among the same population subgroups that have the highest rates of treatable STDs, implementing enhanced STD detection and treatment programs as part of our comprehensive HIV prevention efforts should result in lowering the HIV incidence.

In addition to the potential of reducing HIV incidence, other public health benefits from enhanced detection and treatment of treatable STDs and syphilis elimination include:

1. Improved birth outcomes and infant health;
2. Narrowing of racial disparities in health status; and
3. Strengthening public health infrastructures to detect and address other emerging and re-emerging infectious diseases.[9]

Sustainable STD and HIV prevention efforts must be developed in all communities, and should include enhanced surveillance and outbreak response, strengthened community involvement and organizational partnerships, and improved biomedical and behavioral interventions. Such treatment plans have been beneficial; one enhanced surveillance and treatment program reduced chlamydia rates by 67% over an 8 year period.[9] There is also strong evidence that chlamydia screening and treatment decreases the incidence of costly complications such as pelvic inflammatory disease.

In Houston, we need to enhance our ability to find and treat patients with treatable sexually transmitted diseases. New screening protocols directed toward these goals have been previously described.[10] These include:

1. Outreach with private sector providers to assess: screening practices, treatment plans, partner management, patient education, and reporting issues.
2. Education of providers on the importance and cost benefit of selective screening of high-risk individuals, including sexually active adolescents and young adults and women of reproductive age.
3. Assess and enhance emergency room surveillance of syphilis, chlamydia, and gonorrhea among individuals seeking attention for conditions resulting from high-risk behaviors, or who live in areas of high prevalence.
4. Assess and enhance diagnosis and treatment of genital ulcer diseases in emergency rooms and by private sector providers.
5. Expand screening in jails to include facilities not currently involved in routine screening – and to include treatable STDs not currently screened.
6. Facilitate identification, treatment, and reporting of all individuals with primary and secondary syphilis, perhaps through onsite rapid serologic tests for syphilis (RPR CARD Test) and treatment projects at non-STD clinic sites.
7. Link screening programs in the known areas of high prevalence with community-based organizations

Although rates for syphilis have been declining, rates for chlamydia and gonorrhea have not. The persistence of latent syphilis reflects that most cases were not detected during their infectious states and provides evidence that detection and treatment of syphilis should be enhanced. The Centers for Disease Control and Prevention has encouraged HIV prevention through early detection and treatment of other treatable sexually transmitted diseases by:[11]

1. Improving access to and quality of STD clinical services – for symptomatic individuals and their partners. These services should not be limited to public STD clinics, but should be available at any clinic setting where a symptomatic individual may seek medical attention: primary-care settings, hospital walk-in clinics, community health centers, family-planning clinics, adolescent medicine clinics, primary-care physicians' offices and HMOs, as well as correctional institutions.
2. Increasing screening of asymptomatic or unrecognized STD infections in traditional and non-traditional settings. Because most chlamydia, gonorrhea, and latent syphilis is asymptomatic, screening for these STDs should be available wherever health care is sought: family planning and prenatal clinics, primary care setting for routine annual visits or school health or sports-participation visits.
3. Expanding screening as needed based on prevalence of infections detected at other facilities, including non-medical settings where high-risk persons are encountered and could be treated efficiently. Many cases of chlamydia and gonorrhea have been identified through a short screening program at the Juvenile Detention Center and the Municipal Detention Center: these types of screening programs should be expanded. In addition, screening at schools and work sites might increase detection and treatment of these treatable STDs.
4. Implement presumptive treatment for STDs in situations where it seems unlikely that follow-up care will be possible. Sex partners for persons treated presumptively, or with identified and treated STDs may be implemented.
5. Provide cross-training to program and management staff, including HIV prevention community planning groups, on the role of STD detection and treatment in HIV prevention.

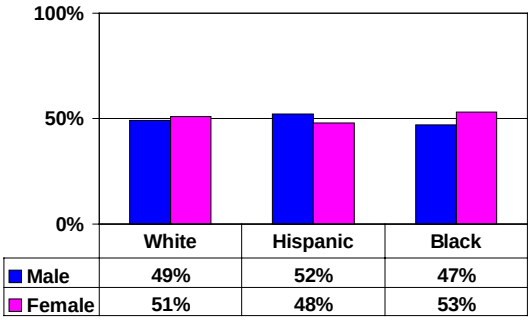
## SUMMARY

- Total population of Houston / Harris County from the 2000 census was 3,400,578

  The population is: 42% White
  33% Hispanic
  19% African American
  7% Other

- Although the total population was essentially 50% male, 50% female; there were discrepancies by race/ethnicity. Hispanic's have more males than females and Blacks have more females than males.

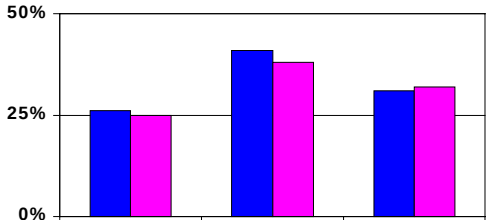
Gender Distribution by Race/Ethnicity



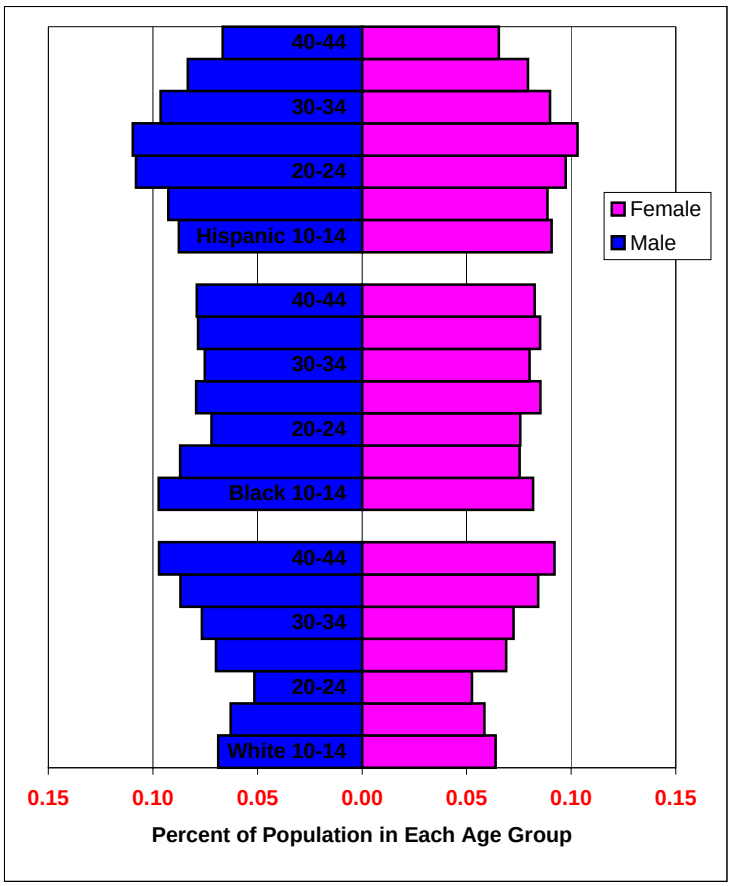

| | White | Hispanic | Black |
|---|---|---|---|
| Male | 49% | 52% | 47% |
| Female | 51% | 48% | 53% |

- Among the total population, 32% were between 15-34 year old or age; however, a significantly larger proportion of Hispanic males and females were in this age range than were Whites & Others and African Americans. Hispanics are a younger population (larger percent of the population is between 15 and 34).

Percent of Population Between 15 and 34 Years of Age




| | White | Hispanic | Black |
|---|---|---|---|
| Male | 26% | 41% | 31% |
| Female | 25% | 38% | 32% |




The distribution of the population among various age groups is substantially different among the race/ethnicity groups is Houston/Harris County. The White population is generally older with the majority of the population over 30. The Black population is rather evenly distributed and the Hispanic population is younger with those 20-30 representing the largest proportion of the population. These differences are important in the fight against sexually transmitted diseases because of the number of individuals in the age-categories where the risk is highest. Hispanic and Blacks have a larger percent of their population in the high-risk age groups.

Summary Rates for selected sexually transmitted diseases:

| Chlamydia prevalence: | Houston/Harris County | US Rates |
|---|---|---|
| • Crude rate | 357.1 per 100,000 | 257.5 per 100,000 |
| • Males | 115.8 per 100,000 | 102.8 per 100,000 |
| • Females | 595.5 per 100,000 | 404.0 per 100,000 |
| • Males 15-29 | 405.4 per 100,000 | 358.9 per 100,000 |
| • Females 15-29 | 3254.5 per 100,000 | 2447.0 per 100,000 |

| Gonorrhea prevalence | Houston/Harris County | US Rates |
|---|---|---|
| • Crude rate | 180.7 per 100,000 | |
| • Males | 196.1 per 100,000 | |
| • Females | 163.7 per 100,000 | |
| • Males 15-29 | 606.4 per 100,000 | |
| • Females 15-29 | 574.5 per 100,000 | |

- Syphilis prevalence
  - Crude rate 32.1 per 100,000
  - Males 33.5 per 100,000
  - Females 30.7 per 100,000

  Syphilis rates per 100,000 by sex and race/ethnicity

| | Males | Females |
|---|---|---|
| • White/Other | 7 | 7 |
| • Hispanic | 28 | 28 |
| • African American | 122 | 98 |

  - Males 15-29 (by race/ethnicity)
  - Females 15-29 (by race/ethnicity)

- Congenital Syphilis prevalence
  - Rates have decreased almost 50% since 1994.
  - Percent of congenital syphilis cases that are Hispanic has increased; almost half of all cases are Hispanic.

## 4. AIDS INFECTION: SUMMARY

All data presented in this profile of the HIV/AIDS epidemic in Houston/Harris County show consistency in trends in both numbers and proportions of people infected with the HIV virus.

Although the number of new AIDS cases each year is decreasing, the number of people living with HIV and AIDS is increasing. The total number of people needing services and the number needing prevention education has risen dramatically over the last several years.

At the same time the numbers of people living with HIV infection and AIDS is increasing, the demographic mix of those people has changed. Whether examining diagnosed AIDS cases, AIDS population rates, living AIDS cases only, or HIV test results, the data show an epidemic that is increasingly minority, increasingly female, and increasingly heterosexually transmitted.

There remains a large number of white males who have sex with men among the new AIDS cases each year. Seroprevalence rates in the STD clinic population show that 20 percent of clients who report male to male sexual contact are infected with HIV.

Pediatric AIDS is steadily decreasing in Harris County. Children who are exposed are disproportionately black.

The challenge for prevention and service oriented programs in the Houston area will be in maintaining the high quality of activities in the populations who were initially and remain affected by this epidemic, while increasing the focus on, and changing the methodologies to match, the developing epidemic in the minority female and heterosexual communities.

## INTRODUCTION

Houston is the largest city in Texas and the 4th largest in the United States. There are nearly two million City residents and about 4.5 million in the metropolitan region. The city is quite diverse with over 90 different languages spoken in the Houston metropolitan area. The population is young; 37 percent of Houstonians 24 years old or younger and 34 percent between the ages of 25 and 44 (U.S. Census 2000).

Harris County has the largest population of all Texas Counties and most of Harris County is also Houston. The 2000 Census places the population of Harris County at 3,400,578. From the 1990 Census there has been a 21% increase in the Harris County population.

Houston has the most affordable housing of the 10 most populated metropolitan areas; the housing costs are 39 percent below the average of 26 U.S. urban populations of more than 1.5 million, and it has the second lowest cost of living among major American cities.

Houston is also home to 18 Fortune 500 companies and more than 5,000 energy related firms; Houston is considered by many as the Energy Capital of the world. For three consecutive years, Houston has ranked first in the nation in new business growth, according to American Business Information. The most recent survey shows that more than 31,000 new local businesses were started in Houston.

Houston is known internationally as the home of one of the best medical communities in the world. The Texas Medical Center (TMC), the largest medical center in the world, is just 10 minutes from downtown Houston. TMC sits on 675 acres, and is home to 42 nonprofit and government institutions, including 13 teaching hospitals, two medical schools, four colleges of nursing, a dental college, a school of public health, a college of pharmacy and a college of optometry. Overall, 4.8 million patients visit these sites each year. In addition to TMC, Houstonians have access to quality health care throughout the City. The Harris County Hospital District provides access to health care for Harris County residents, regardless of their ability to pay. The district is made up of three hospitals, 12 community health centers, a dental center, an AIDS clinic and several school-based clinics. Among these are Ben Taub General Hospital, Lyndon B. Johnson Hospital and Quentin Mease Community Hospital.

The Houston Department of Health and Human Services (HDHHS) provides preventive health care for the residents of Houston, treatment for selected diseases and a wide range of environmental health services. Preventive health services are offered at health centers located throughout Houston. Many health centers offer evening and weekend hours. In addition, HDHHS operates seven multi-service centers containing agencies that offer a variety of programs and services to the people of Houston.

The Houston Department of Health and Human Services is responsible for surveillance of sexually transmitted diseases in the City of Houston and Harris County. This epidemiologic summary includes morbidity data and incidence rates for Houston/Harris County for gonorrhea, chlamydia, syphilis, and HIV/AIDS.

This epidemiologic profile is designed to:

1. Describe the epidemiology of chlamydia, gonorrhea, and syphilis in Houston/Harris County for the years 1991 through 1999.
2. Describe the epidemiology of HIV and AIDS in Houston/Harris County for the years 1998 and 1999.
3. Make recommendations for improved surveillance of STDs.

The profile contains tables and figures showing trends and distributions of disease by: gender; race/ethnicity; age; provider type (public, private, corrections facility); and for some infections, by zip code of residence.

Comparisons are made with national data reported by the Centers for Disease Control and Prevention[1] and with recommendations from Healthy People 2010.[3]

## RESEARCH DESIGN AND METHODS

In order to evaluate changes in STD morbidity over time, we developed a comprehensive epidemiologic summary of existing data, and addressed the following questions:

1. What is the magnitude of STD infections in Houston/Harris County?
2. What facilities are reporting STD cases?
3. What is the geographic distribution of cases?

***Chlamydia, gonorrhea, and syphilis data sources***

Data for chlamydia, gonorrhea and syphilis are from the sexually transmitted diseases surveillance system of the Houston Department of Health and Human Services Bureau of HIV/STD Prevention. Reports are made by physicians, hospitals, laboratories, clinics, and other medical provider organizations. Prevalence of chlamydia, gonorrhea, and syphilis at screening for clients screened through HDHHS maternity, family planning and STD clinics is examined using computerized data from the HDHHS Laboratory Information System and prevalence data from the Medical Microbiology Section of the Houston Department of Health and Human Services. For most rate calculation, the year-specific estimates of the Harris County population are used in the dominator. Prevalence of disease among those screened can be estimated for chlamydia and gonorrhea from laboratory records kept for HDHHS Clinics, otherwise, only the population prevalence of chlamydia or gonorrhea can be calculated because only positive cases are reported. For syphilis, prevalence of infection among those screened can be estimated from data gathered through a Syphilis Prevention project for the County Jail, at County Hospital delivery rooms, at one drug treatment center, and at HDHHS STD, family planning, and maternity clinics.

Since 1983, the HDHHS has collected data on the HIV/AIDS epidemic in Houston and the surrounding counties. Disease surveillance activities have collected data on AIDS cases since 1983, and on HIV infection cases since January 1, 1999. Serosurveillance projects have collected data on prevalence of HIV in specific at-risk populations, on incident cases of HIV infection and about the genetic variation of the virus and transmission of drug resistant strains of HIV. Traditionally, information on the reported AIDS cases has been used to identify the extent of the HIV/AIDS epidemic in the community for the planning of HIV prevention activities.

### *HIV/AIDS Data Sources*

Two large data sets are available for analysis of the HIV/AIDS epidemic in Houston:

1. the HIV/AIDS Reporting System (HARS) and
2. data from the serosurveillance studies conducted in the city.

While AIDS surveillance data primarily describes the epidemic of infections that occurred up to fifteen years ago, the information correlates closely with the HIV prevalence data from serosurveillance studies. The HIV/AIDS Reporting System provides data on reported HIV and AIDS cases. Evaluation studies have shown that information on AIDS is 85—90% complete in the Houston area. AIDS has been a reportable disease in Texas for sixteen years and active surveillance using many resources is conducted for AIDS cases. HIV infection reporting by name has only been in place in Texas since January 1999 and it is too soon to determine the completeness of reporting for this information.

The serosurveillance study data provides information from linked and unlinked studies conducted over several years among high-risk populations such as Injecting Drug Users, those using STD clinics, homeless youth, adolescents, women, and the incarcerated. Additional studies have been conducted among job corps entrants, military applicants, and childbearing women. These studies focus on specific populations and/or specific behaviors and demographic factors that may put individuals at increased risk of HIV infection. No general population based studies have been conducted.

Summary data form the HDHHS STD clinics of other sexually transmitted diseases reported in recent years can also show potential trends in the HIV/AIDS epidemic. STD data reflects information on people who are sexually active and who do not utilize adequate protection to prevent the spread of disease. The prevalence rate in these clinics point to a population at high risk and whose activities are conducive to HIV spread.

### *Calculation of Rates*

Harris County population figures were used to represent the HDHHS surveillance population in rate calculations. Intercensal estimated population projections for Harris County from the Texas State Data Center[7], Texas A & M University, will be used as reference for years 1991 through 1999 and 2000 Census data will be used for 1000 (Appendix). Rates for all STDs other than congenital syphilis are reported per 100,000 population. Congenital syphilis rates are reported per 1,000 live births in the Houston/Harris County HDHHS service area.

### *Presentation of Data*

This is a descriptive study only. Data are presented in tables and figures. There are some obvious limitations of the study. Primary among the limitations are the accuracy of the reported data, and the potential for under-reporting of reportable diseases, especially sexually transmitted diseases. Data from HDHHS clinics for chlamydia and gonorrhea are verified; however, data from other sites are not. Many case reports are missing age,

race/ethnicity, and zip code information. Data for syphilis is more complete since most cases are interviewed.

There is also the potential for duplicate reporting of chlamydia, gonorrhea and HIV cases, since identifiers are not always included and because both health care providers and laboratories may report the same case and because individuals may seek multiple testing. As much as possible, duplicate records have been eliminated.

All HIV/AIDS data do not carry equal weight. In some instances, such as population based reporting of disease, the information may be applied to the population as a whole. In other cases, individual study data may be limited and the data applies to only a specific group of people. Each study or systematic data collection is done for a specific purpose. To take a limited study and attempt to generalize from it to the whole population would be a misuse of data and the conclusions reached may be erroneous. The limitations of each data source and the limitation of it use will be included in discussions.

AIDS, unlike chlamydia and gonorrhea, has an extremely long incubation period, often exceeding ten years from infection to illness. AIDS cases reported in any given year may have been diagnosed in that year or any previous year. Cases diagnosed in a given year may be reported in that year or any subsequent year. Information about cases can be compared by year of report, which tells about reporting and surveillance practices, or compared by year of diagnosis, which gives information about trends in the epidemic. The long incubation period and difficult diagnosis often leads to a delay in reporting of AIDS cases. It may take as much as a year to receive reports from health care providers. Although this report will include data on cases diagnosed through December 1999, the data for 1999 may not yet be fully reported and should be considered preliminary and subject to later revision.

# RESULTS

## 1. CHLAMYDIA INFECTION

**The nature and epidemiology of *Chlamydia trachomatis* only infections**

*Chlamydia trachomatis* is the most common sexually transmitted disease. The estimated incidence of chlamydia in the US is over 4,000,000 new cases annually.[3] However, because current screening efforts are not consistent across the US and documentation of cases is incomplete, 607,602 cases were reported in 1998.[1] Using CDC reported rates for 1998, Texas ranked 8th among states in reported chlamydia rates[1] with 310.9 cases per 100,000 population; and Houston ranked 31st among selected cities of greater than 200,000 population with 366.1 cases per 100,000.[1] Rates reported for 1999 are 319.5 cases per 100,000 population. Year 2000 goals for chlamydia are 5% infection rates among females 15-19 years and 20-24 years. In 1998, Houston had rates of 3.4% among females 15-19 years of age and 2.7% among females 20-24 years of age; in 1999 these rates were 3.0% and 2.5% respectively. Rates as high as 28% were found among women screened at the Juvenile Detention Center in 1998.

The Institute of Medicine has estimated the total cost of chlamydia to be 2.0 billion dollars in direct and indirect costs.[3] Direct costs include health care expenditures and reflect the value of goods and services used to treat chlamydia; indirect costs refer to lost productivity associated with being infected with chlamydia.

It is difficult to interpret the rising US rates because of variable compliance with testing and reporting. Also, several different diagnostic tests with varying sensitivity and specificity are used to identify chlamydial infection.[4] Chlamydia positivity among 15 to 24 year-old women varies by population studied. The female to male ratio among cases 15 to 24 year old is 8:1, and probably reflects current screening practices which focus on women.[1] Approximately 70% of chlamydial infections in women are asymptomatic; and, if not adequately treated, 20% to 40% of infected women develop pelvic inflammatory disease (PID).[1]

There are estimates that Chlamydial urethral infection is present in 5% of males seeking general medical care, over 10% in asymptomatic soldiers undergoing routine physical examination, and up to 20% among heterosexual men seen in STD clinics.[5] Similarly for women, cervical infections are found in 5 percent of asymptomatic college students, 10% of women seen in family planning clinics, and over 20% of women seen in STD clinics. Approximately 50% of children exposed to *C. trachomatis* infections of the cervix during birth acquire the infection.

## 1. CHLAMYDIA: CRUDE RATES

**Table 1.1.** Crude rates for chlamydia in Houston/Harris County, Texas, 1991 – 1999.

| Chlamydia | N | Rate | % Change* |
|---|---|---|---|
| 1991 | 7,020 | 243.3 | |
| 1992 | 8,891 | 302.0 | 24% |
| 1993 | 8,273 | 275.5 | -9% |
| 1994 | 9,316 | 306.5 | 11% |
| 1995 | 8,102 | 264.0 | -14% |
| 1996 | 9,072 | 291.0 | 10% |
| 1997 | 10,698 | 338.2 | 16% |
| 1998 | 11,499 | 357.6 | 6% |
| 1999 | 10,443 | 319.5 | -11% |
| 2000 | 12,144 | 357.1 | 12% |

Rates per 100,000 persons per year based on intercensal estimates of Houston/ Harris County population (Appendix).

*Change in rate from the preceding year.

There was a gradual increase in chlamydia rates in Houston from 1995 through 2000; there was an 12% increase in the reported rate for 2000, following an 11% decrease in 1999. As expected, the decline probably reflected changes in screening practices rather than a true decline in the incidence of chlamydia. There was an increase in prevalence at screening observed in HDHHS Family Planning and Maternity Clinics between 1998 and 2000 (see Figure 1.6). Rates in Houston have remained consistently above reported rates in the US. There was an estimated 1% decline in reported chlamydia cases in the US between 1998 and 1999 (reported in Jan 1, 2000 MMWR).

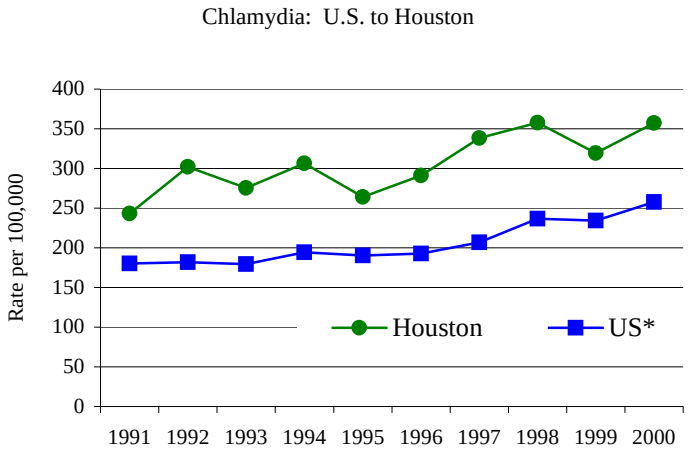



**Figure 1.1.** Comparison of chlamydia rates in the US to rates in Houston, 1991 through 2000. Rates are reported per 100,000 persons.

## 1. CHLAMYDIA: CRUDE RATES

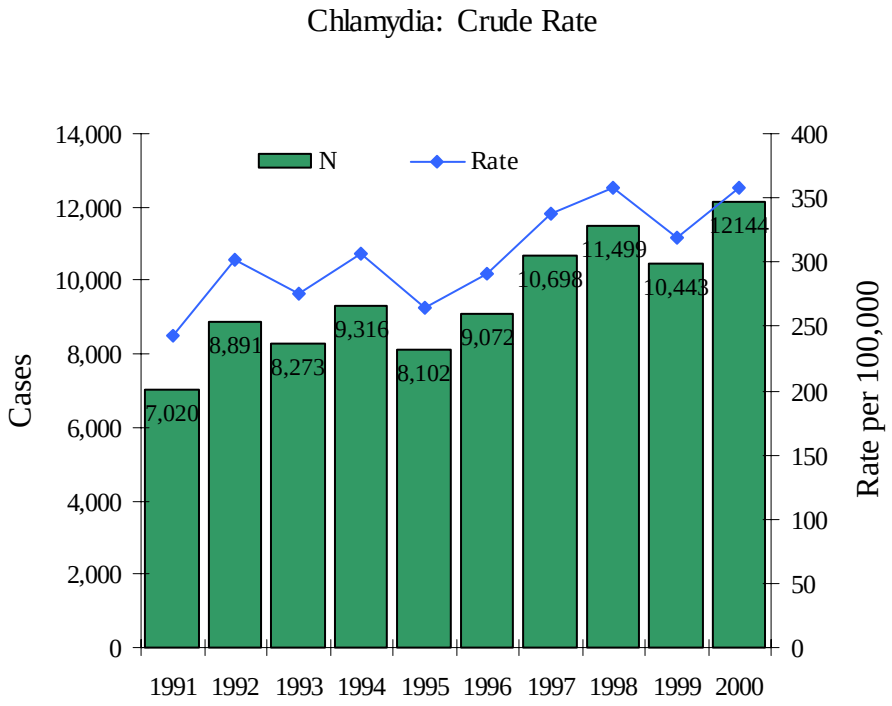



**Figure 1.2**. Chlamydia cases and rates per 100,000 persons per year. There was an 11% decrease in reported rates between 1998 and 1999 and a 12% increase between 1999 and 2000. Rates for 1991-1999 are based on intercensal estimates of Houston/Harris County population; rates for 2000 are based on the 2000 census (Appendix).

## 1. CHLAMYDIA: GENDER-SPECIFIC RATES

**Table 1.2.** Gender-specific rates for chlamydia by race/ethnicity in Houston/Harris County, Texas, 1991 – 1999.

| | | | Number of Cases | | | Missing Race/Ethnicity | |
|---|---|---|---|---|---|---|---|
| Male | Total | Rate | Black | Hispanic | White | No. | % |
| 1991 | 612 | 42.7 | 372 | 72 | 168 | 0 | 0 % |
| 1992 | 1,162 | 79.4 | 803 | 108 | 114 | 75 | 6 % |
| 1993 | 1,604 | 107.5 | 1,180 | 152 | 97 | 175 | 11 % |
| 1994 | 1,673 | 110.8 | 1,126 | 113 | 140 | 294 | 18 % |
| 1995 | 664 | 43.5 | 152 | 63 | 24 | 425 | 64 % |
| 1996 | 749 | 48.4 | 163 | 84 | 29 | 473 | 63 % |
| 1997 | 1,434 | 91.5 | 530 | 187 | 45 | 672 | 47 % |
| 1998 | 1,644 | 103.2 | 523 | 249 | 59 | 813 | 49 % |
| 1999 | 1,618 | 100.0 | 636 | 432 | 63 | 487 | 30 % |
| 2000 | 1,962 | 115.8 | 745 | 590 | 130 | 497 | 25 % |
| Female | | | | | | | |
| 1991 | 6,407 | 441.3 | 3,147 | 1,838 | 1,418 | 4 | 0 % |
| 1992 | 7,728 | 521.7 | 3,968 | 1,596 | 1,365 | 799 | 10 % |
| 1993 | 6,413 | 424.5 | 2,503 | 1,372 | 288 | 2,250 | 35 % |
| 1994 | 7,506 | 490.9 | 2,602 | 1,733 | 730 | 2,441 | 33 % |
| 1995 | 7,292 | 472.1 | 2,000 | 1,527 | 384 | 3,381 | 46 % |
| 1996 | 8,210 | 523.5 | 2,311 | 1,830 | 402 | 3,667 | 45 % |
| 1997 | 9,257 | 579.8 | 2,606 | 1,991 | 390 | 4,270 | 46 % |
| 1998 | 9,854 | 607.1 | 2,809 | 2,028 | 420 | 5,697 | 58 % |
| 1999 | 8,688 | 526.8 | 3,095 | 2,311 | 616 | 2,666 | 31 % |
| 2000 | 10,164 | 595.5 | 3,557 | 3285 | 711 | 2,611 | 26 % |

Rates per 100,000 persons per year based on intercensal estimates of Houston/Harris County population (Appendix).

Male and female rates steadily increased from 1995 through 2000; however, there was a rate decrease of 3% among males and a 13% decrease among females from 1998 to 2000. It is unclear if changes in surveillance practices are a likely explanation for the decreasing rates. Gender data is nearly complete; there were only 18 missing gender data in 1999. More than 80% of reported cases are female.

Race/ethnicity data is relatively incomplete. Nearly half the reported morbidity is missing race/ethnicity data for 1997 and 1998. In 2000, one-fourth are missing race/ethnicity data. It is impossible to evaluate prevalence of chlamydia by race/ethnicity with this large a proportion of the reported cases missing information.

## 1. CHLAMYDIA: GENDER-SPECIFIC RATES

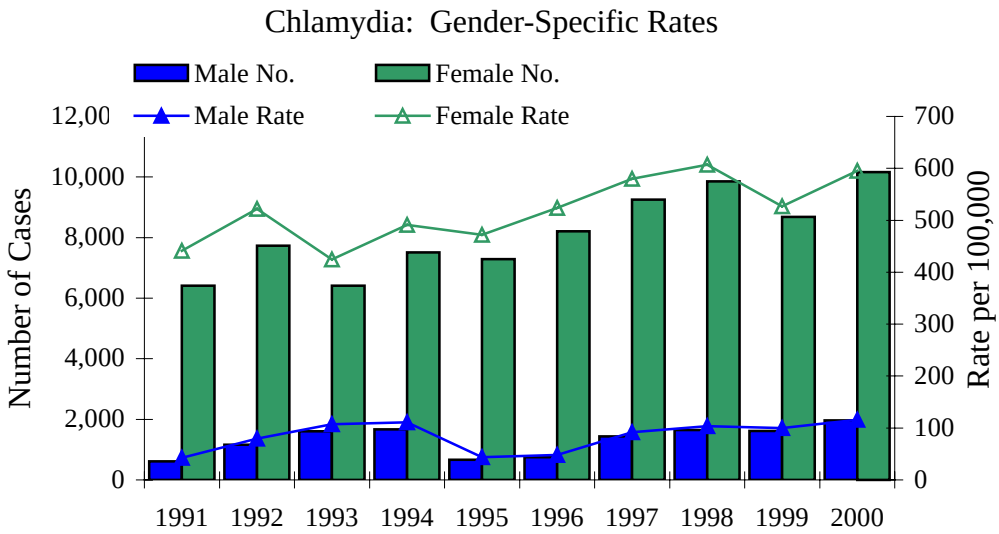



**Figure 1.3.** Chlamydia cases and rates by gender. Females make up more than 80% of the total cases reported. Rates are presented per 100,000 population (Appendix).

## 1. CHLAMYDIA: AGE-SPECIFIC RATES

**Table 1.3.** Age-specific chlamydia rates for chlamydia in Houston/Harris County, Texas 1991 – 2000.

| AGE | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|---|---|---|---|---|---|
| 15-19 | 1,455 | 1,710 | 1,553 | 1,680 | 1,438 | 1,460 | 1,645 | 1,798 | 1,709 | 1,782 |
| 20-24 | 1,113 | 1,340 | 1,197 | 1,372 | 1,174 | 1,174 | 1,479 | 1,533 | 1,433 | 1,651 |
| 25-29 | 308 | 436 | 375 | 487 | 457 | 479 | 505 | 554 | 528 | 589 |
| 30-34 | 118 | 183 | 143 | 188 | 157 | 171 | 209 | 229 | 199 | 235 |
| 35-39 | 49 | 90 | 64 | 86 | 68 | 73 | 105 | 112 | 89 | 104 |
| 40-44 | 22 | 33 | 37 | 33 | 23 | 27 | 48 | 57 | 36 | 48 |
| >44 | 6 | 12 | 8 | 10 | 9 | 9 | 13 | 15 | 10 | 14 |
| Percent missing age data | 0% | 0% | 5% | 4% | 6% | 13% | 7% | 6% | 3% | 5% |

Rates per 100,000 persons per year based on intercensal estimates of Houston/Harris County population (Appendix).

For all years, rates are highest in the 15-19 and 20-24 year age groups.

Rates have been substantially higher among women than men in the 15-19 age range. However, this does not mean that the actual burden of disease varies by gender; females may be more likely to be screened and diagnosed with chlamydia than males because of differences in surveillance efforts.

## 1. CHLAMYDIA: AGE-SPECIFIC RATES

Chlamydia: 2000 U.S. and Houston Rate by Age and Gender

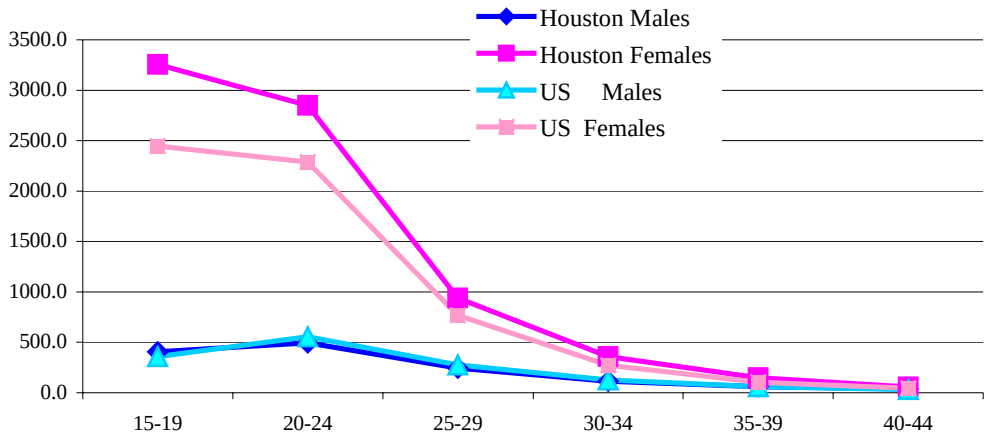



**Figure 1.4.** The 2000 Houston rates among females aged 15 – 29 years are higher than corresponding US rates; 2000 rates among Houston males are similar to US rates at all ages. Rates are presented per 100,000 persons; Houston rates are based on intercensal estimates of Houston/Harris County population 1991-1999 and the 2000 Census (Appendix).

## 1. CHLAMYDIA: DISTRIBUTION BY PROVIDER

**Table 1. 5.** Distribution of cases among provider types, 1997 – 1999.

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| HDHHS STD[1] | 1,502 | 1,507 | 1,607 | 1,430 |
| HDHHS FP[2] | 998 | 931 | 826 | 626 |
| HDHHS Maternity[3] | 739 | 618 | 391 | 546 |
| Teen Clinics[4] | 347 | 715 | 1,128 | 2,065 |
| Jail / Correctional[5] | 27 | 240 | 384 | 250 |

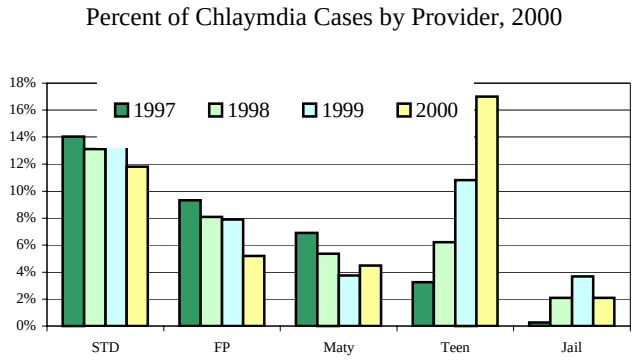
More than 60% of all chlamydia cases are identified through private physicians, health maintenance organizations, or through laboratory reporting with type-of-provider not documented.

The Baylor Teen Clinics and the Community Partners Teen Clinics reported almost 17% of all Chlamydia cases in 2000.

The screening program at the Juvenile Detention Center reported 2% of the 1999 chlamydia cases and 1.5% of the 2000 cases.

Taken together, HDHHS Clinics identify nearly one-third of all Chlamydia cases.

**Figure 1.5.** Percent of cases reported by public providers.




[1] HDHHS STD: Lyons, Medical Center, Northside, Riverside, West End, and La Nueva Casa de Amigos
[2] HDHHS Family Planning: La Nueva Casa de Amigos, Lyons, Magnolia, Northside, Riverside, Sunnyside and West End.
[3] HDHHS Maternity: La Nueva Casa de Amigos, Lyons, Magnolia, Northside, Riverside, Sunnyside, West End.
[4] Teen Clinics: Austin, Baylor, Ben Taub, Cavalcade, Lawn, LBJ, and Community Partners Clinics.
[5] Jail / Correctional: Harris County Juvenile Detention Center, Harris County Jail, Municipal Detention Center.

## 1. CHLAMYDIA: PREVALENCE

Prevalence at screening in Certain Clinical Settings

Prevalence varies depending on the population examined and whether testing is for screening or among symptomatic individuals or both (see Figure 1.6). Screening prevalence rates are available for several populations in Houston. During the summer of 1998, all juveniles entering the Juvenile Detention Center were screened for chlamydia. Also, women seeking care at HDHHS maternity clinics are routinely screened for STDs.

Juvenile Detention Center

Incarcerated youth are a high-risk population for sexually transmitted diseases, including chlamydia. During the summer of 1998, youths incarcerated at the Juvenile Detention Center were screened for chlamydia infection and interviewed for potential risk factors. Nearly 14% of all subjects (n=589; 76.4% male) were positive for chlamydia. Females were almost 3 times (95% CI 2.0 to 4.3) more likely to be infected than males (28.1% compared to 9.6%, respectively). Among females, Blacks and Hispanics compared to Whites had similar infection rates (29.0% compared to 27.3%); among males, Blacks and Hispanics had rates twice as high (95% CI 1.2 to 4.2) as Whites (13.5% compared to 6.6%). Self-reported drug use was not associated with increased risk of chlamydia infection, even after adjusting for sex and race/ethnicity ($p = 0.09$). Self- reported use of condoms as sometimes or never, compared to always, was not associated with increased risk of infection, and was not confounded by sex or race/ethnicity ($p = 0.62$). More than 80% of infected individuals (both male and female) were asymptomatic.

HDHHS Maternity and Family Planning Clinics

Using data complied through the HDHHS Laboratory, we can describe the prevalence of chlamydia among women seeking care at maternity and family planning clinics. Among women tested for chlamydia at HDHHS maternity clinics in 1998, 7.1% were found to be infected (727/10,238) and in 1999, 8.3% (828/9993) were infected ; among women tested for chlamydia at HDHHS family planning clinics in 1998, 4.2% were found to be infected (1,013/24,240); in 1999, 6.8% (1850/27272) were infected. If there were no changes in screening practices in the HDHHS Family Planning and Maternity Clinics, these rates do not suggest that the prevalence of chlamydia has declined in the past year.

HDHHS STD Clinics

Symptomatic males examined at HDHHS STD Clinics who are gram stain positive for gonorrhea symptomatic are given dual therapy for gonorrhea and chlamydia. Only asymptomatic males are routinely screened for chlamydia infection. Therefore, the

prevalence of chlamydia at screening in STD clinics for males, represents the prevalence of chlamydia in asymptomatic men.
Among males tested for chlamydia in HDHHS STD Clinics, in 1998, 7.2% (617/8,590) were infected, and in 1999, 8.3% (704/8471) were infected.

Among women tested in 1998, 8.6% (1,012/11,811) tested positive; in 1999, 8.3% (980/11,876) tested positive. These figures do not support an overall decline in the prevalence of chlamydia in Houston.

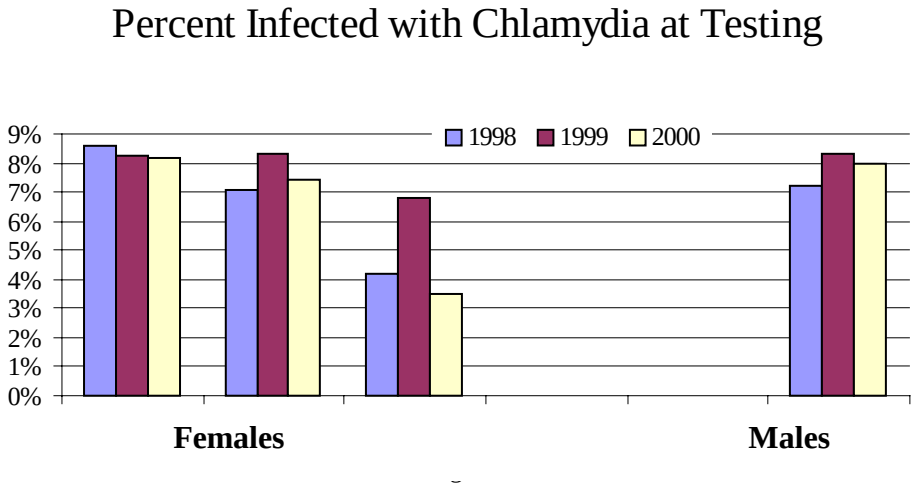



**Figure 1.6.** The percent of individuals found infected with chlamydia among all tested, comparing 1998 and 1999 prevalence.

## 1. CHLAMYDIA: GEOGRAPHIC DISTRIBUTION

Zip code information is missing for nearly 30% of reported chlamydia cases. Among those reported by public facilities (HDHHS and County facilities) zip code information is available for 97% of cases. Using information from HDHHS and County clinics only, we can identify areas of the city where chlamydia rates were highest in 2000. Fifty percent of infections identified through public facilities were located in 19 zip code areas. These are the same high-risk areas that have been identified in the past.

Listed below are the 19 zip code areas with the highest rates of chlamydia infection when examining those diagnosed through public only or from all health-care settings.

Distribution of Chlamydia cases among zip codes using cases identified through public clinics.

| ZIP Code | Total Cases | Cumulative Percent |
|---|---|---|
| 77026 | 179 | 4.13 |
| 77088 | 176 | 8.20 |
| 77033 | 147 | 11.59 |
| 77016 | 136 | 14.73 |
| 77004 | 135 | 17.85 |
| 77093 | 135 | 20.97 |
| 77091 | 126 | 23.87 |
| 77021 | 120 | 26.65 |
| 77060 | 107 | 29.12 |
| 77028 | 104 | 31.52 |
| 77009 | 102 | 33.87 |
| 77020 | 102 | 36.23 |
| 77022 | 94 | 38.40 |
| 77055 | 92 | 40.52 |
| 77087 | 91 | 42.62 |
| 77036 | 88 | 44.65 |
| 77092 | 84 | 46.59 |
| 77023 | 81 | 48.46 |
| 77076 | 80 | 50.31 |

**Figure 1.7** Total cases identified through public clinics, Houston/Harris County, 2000.

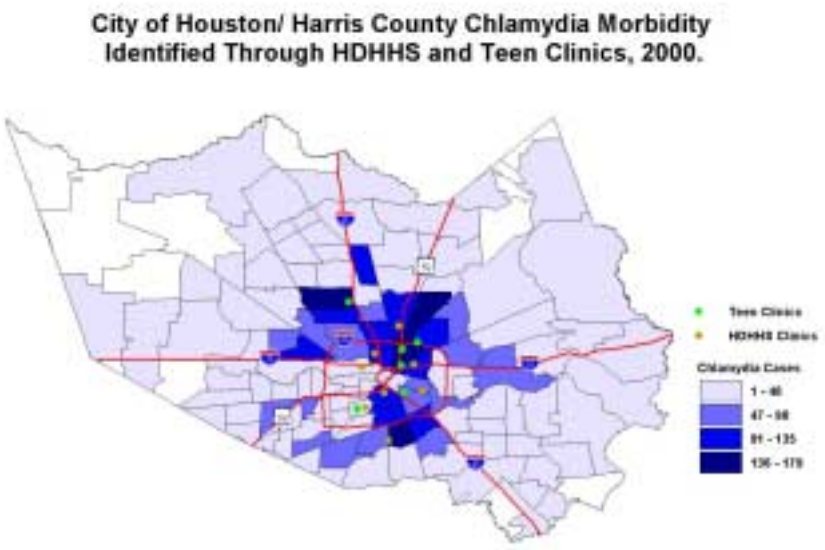
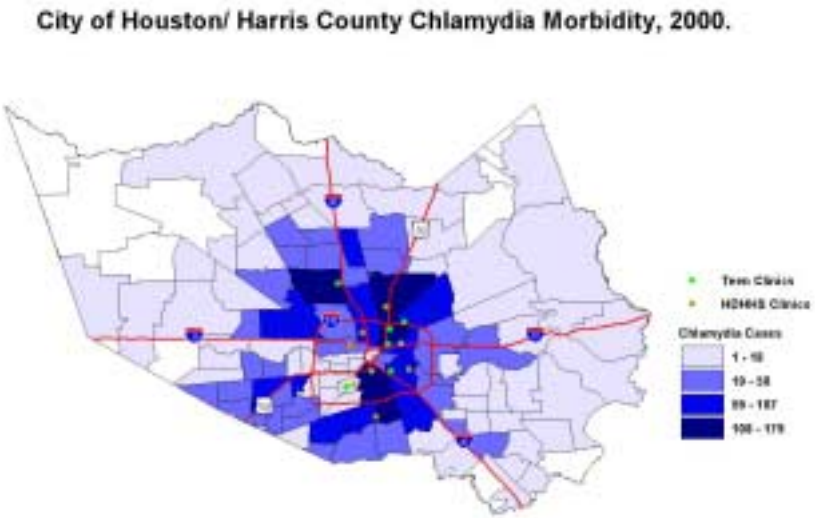



**Figure 1.8** Total cases from all providers, Houston/Harris County, 2000.



## 2. GONORRHEA INFECTION

### The nature and epidemiology of *Neisseria gonorrhoeae*

Gonorrhea, caused by *Neisseria gonorrhoeae,* is a common sexually transmitted disease. The estimated incidence of gonorrhea in the US is over 800,000 cases annually.[3] As with chlamydia, testing and reporting are not consistent. Many infections are without symptoms and remain undiagnosed and unreported. In the US, there were 358,995 cases reported to the CDC in 2000; Texas ranked 13th among states in reported gonorrhea rates with 164.2 cases per 100,000 population and Houston ranked 39st among cities of greater than 200,000 population, with 182.1 cases per 100,000 population.[1] Year 2010 goals for gonorrhea are for no more than 19 new cases or less per 100,000. Year 2000 goals were for rates of no more than 375 per 100,000 among adolescents 15-19 years old and no more than 175 per 100,000 among women 15-44 years old. Houston gonorrhea rates in 2000 were 177.4 per 100,000 or nearly at the Year 2000 goals. In 2000, rates among adolescents (aged 15-19) were 670 per 100,000, this is a 2% decrease over 1999 rates and almost twice the Year 2000 goal. However, the current rate is nearly 35 times the year 2010 goal. Rates among women 15-44 were 328 per 100,000, or nearly twice the Year 2000 goal.

The Institute of Medicine estimated that the annual total cost associated with gonorrhea infection was 1.0 billion dollars.[3] This includes both the direct cost of medical care and the contribution of lost productivity associated with being infected.

The national age-specific incidence rates tripled from 1963 to 1975, when over 1 million cases were reported. Prevalence rates for gonorrhea are related to age, gender, sexual preference, race, socioeconomic status, marital status, urban residence, and level of education.[6] Rates are highest among teenagers, non-whites, the poor and poorly educated, in large cities, and among unmarried persons. As with chlamydia, rates are highest in the 15-24 year range and the female to male ratio is 1.3:1. Black and Hispanic females aged 15-24 have gonorrhea rates that are 17.6 and 1.6 times same-aged White females, respectively.[1]

Gonorrhea is usually spread by carriers who have no symptoms or have ignored symptoms. Over 90 percent of men with gonococcal infection seek medical attention because of the development of urethral discharge. However, those who do not develop symptoms remain untreated and often serve as the main source of spread of infection to women. The infection can be passed to the newborn during birth and infect the conjunctivas, pharynx, respiratory tract, or anal canal.

## 2. GONORRHEA: CRUDE RATES

**Table 2.1.** Crude rates for gonorrhea in Houston/Harris County, Texas, 1991-2000

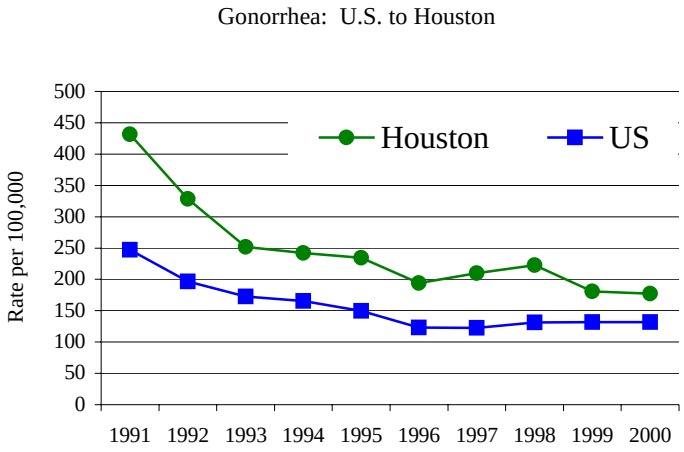
| Gonorrhea | N | Rate | % Change* |
|---|---|---|---|
| 1991 | 12,449 | 431.4 | |
| 1992 | 9,667 | 328.3 | -24% |
| 1993 | 7,565 | 251.8 | -23% |
| 1994 | 7,358 | 242.1 | -4% |
| 1995 | 7,191 | 234.3 | -3% |
| 1996 | 6,046 | 193.9 | -17% |
| 1997 | 6,633 | 209.7 | 8% |
| 1998 | 7,164 | 222.8 | 6% |
| 1999 | 5,905 | 180.7 | -19% |
| 2000 | 6,033 | 177.4 | -2% |

Rates per 100,000 persons per year based on intercensal estimates of Houston/Harris County population. (Appendix).

* Change in rate from the preceding year.

In Houston/Harris County and in the US, gonorrhea rates have decreased nearly 50% since 1991. Gonorrhea rates in Houston/Harris County in 2000 were 1.3 times greater than the US rate of 131.6 per 100,000. US rates are reported to have increased by 9% from 1997 through 1998; during that time period rates in Houston increased by 6%. However, Houston rates for 1999 are nearly 20% lower than the reported 1998 rates while U.S. rates in 1999 were nearly the same as 1998 rates.

**Figure 2.1.** Comparison of gonorrhea rates in the US to rates in Houston, 1991 through 2000. Rates are reported per 100,000 persons.



## 2. GONORRHEA: CRUDE RATES

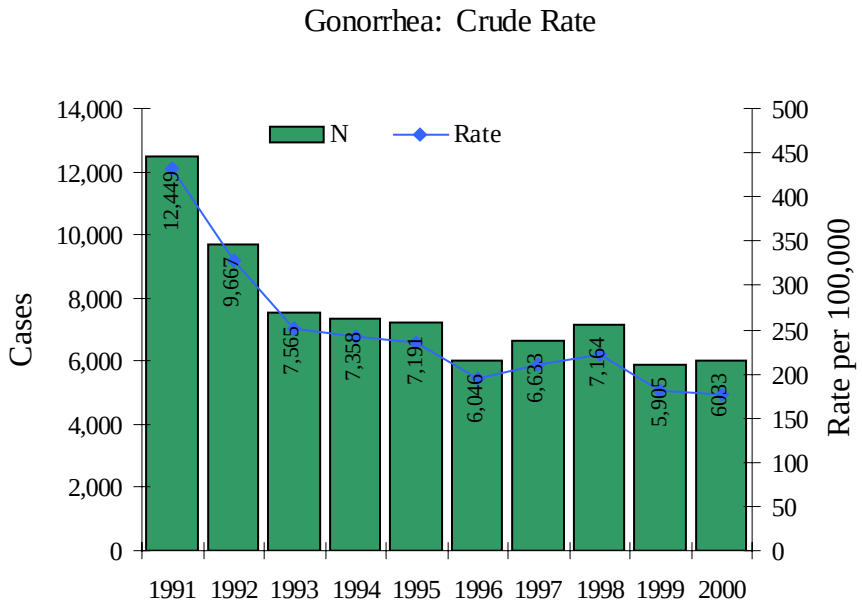



**Figure 2.2.** Gonorrhea cases and rates per 100,000 persons per year. There was nearly a 19% decrease in reported cases between 1998 and 2000. This is consistent with the slow decline since the early 1990s.

## 2. GONORRHEA: GENDER-SPECIFIC RATES

**Table 2.2.** Crude rates for gonorrhea in Houston/Harris County Texas, 1991-2000

| | | | Number of Cases | | | Missing | |
|---|---|---|---|---|---|---|---|
| Male | Total | Rate | Black | Hispanic | White | No. | % |
| 1991 | 7,452 | 519.9 | 6,562 | 357 | 532 | 1 | 0% |
| 1992 | 5,671 | 387.6 | 4,788 | 260 | 483 | 140 | 2% |
| 1993 | 4,778 | 320.1 | 4,085 | 191 | 160 | 342 | 7% |
| 1994 | 4,534 | 300.2 | 3,787 | 147 | 206 | 394 | 9% |
| 1995 | 4,232 | 277.6 | 3,333 | 138 | 153 | 608 | 14% |
| 1996 | 3,273 | 211.3 | 2,525 | 134 | 90 | 524 | 16% |
| 1997 | 3,570 | 227.9 | 2,637 | 162 | 93 | 678 | 19% |
| 1998 | 3,894 | 244.5 | 2,729 | 191 | 104 | 870 | 22% |
| 1999 | 3,174 | 196.1 | 2,349 | 212 | 129 | 484 | 15% |
| 2000 | 3,003 | 177.3 | 2,052 | 340 | 142 | 469 | 16% |
| Female | | | | | | | |
| 1991 | 4,994 | 344.0 | 3,975 | 448 | 569 | 2 | 0% |
| 1992 | 3,984 | 269.0 | 2,935 | 303 | 435 | 311 | 8% |
| 1993 | 2,694 | 178.3 | 1,738 | 248 | 155 | 553 | 21% |
| 1994 | 2,756 | 180.2 | 1,635 | 285 | 276 | 560 | 20% |
| 1995 | 2,873 | 186.0 | 1,324 | 210 | 185 | 1,154 | 40% |
| 1996 | 2,711 | 172.9 | 1,297 | 178 | 125 | 1,111 | 41% |
| 1997 | 3,061 | 191.7 | 1,505 | 194 | 131 | 1,231 | 40% |
| 1998 | 3,267 | 201.3 | 1,575 | 202 | 171 | 1,319 | 40% |
| 1999 | 2,684 | 162.7 | 1,585 | 301 | 173 | 625 | 23% |
| 2000 | 3,027 | 177.4 | 1,804 | 448 | 203 | 527 | 17% |

Rates per 100,000 persons per year based on intercensal estimates of Houston/Harris County population. (Appendix).

Gonorrhea rates have been relatively stable since 1996, however, it is unclear if the stability is due to screening activity or a stability in population infections.

In 2000, rates among males and females in Houston/Harris County were 1.3 times greater than US rates. *Healthy People 2010* target for gonorrhea prevalence is 19 cases / 100,000; current rates for males and females are 9 times that goal.

Gender data is relatively complete: fewer than 1% for each year are missing gender identification. The male to female ratio in 1991 was 1.5:1, in 2000 the male to female ratio was 1:1.

Race/ethnicity data are relatively incomplete: since 1995, race/ethnicity data has been missing for 40% of females and approximately 20% of males. It is impossible to evaluate whether the missing values are evenly distributed: therefore comparison of changes in rates by race/ethnicity are not appropriate.

## 2. GONORRHEA: GENDER-SPECIFIC RATES

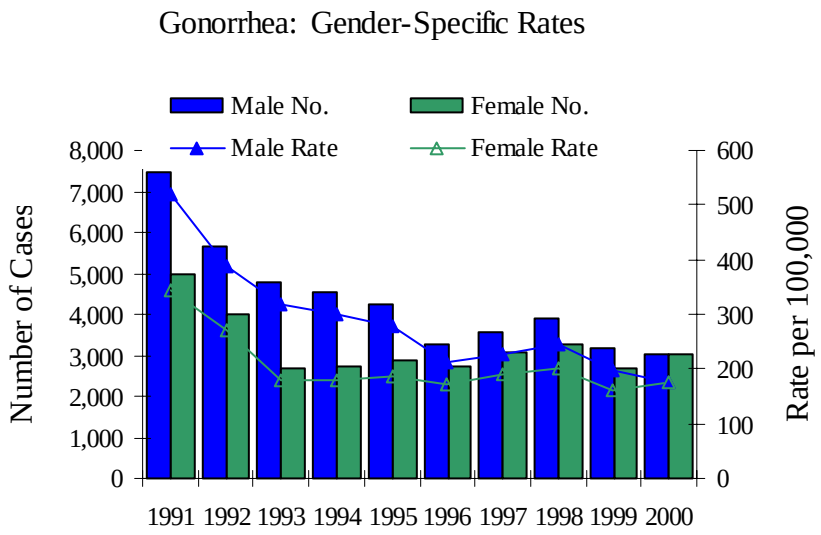



**Figure 2.3.** Gonorrhea cases and rates by gender. The rates among males and females were the same in 2000. The 2010 goal is for 19 cases per 100,000 population; current rates in Harris County are 10 time that goal. Rates are reported per 100,000 population based on intercensal estimates of Houston/Harris County population and the 2000 census (Appendix).

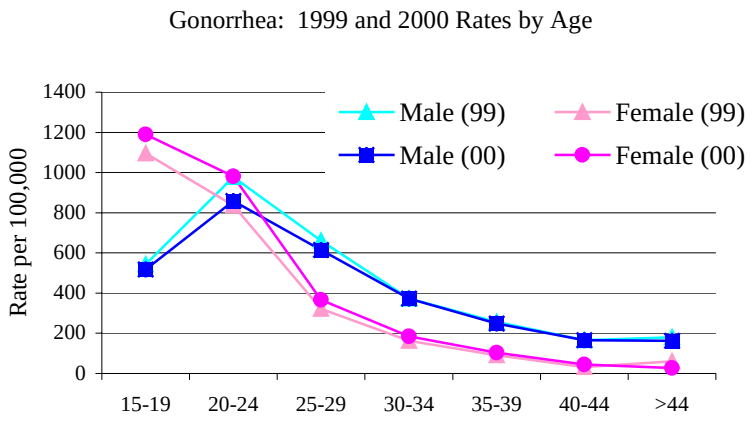
## 2. GONORRHEA: AGE-SPECIFIC RATES

Table 2.3. Age-specific gonorrhea rates for Houston/Harris County Texas from 1991 through 1999.

| AGE | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|---|---|---|---|---|---|
| 15-19 | 1,834 | 1,423 | 1,069 | 985 | 948 | 385 | 445 | 486 | 687 | 670 |
| 20-24 | 1,720 | 1,327 | 1,077 | 1,097 | 1,053 | 217 | 253 | 267 | 785 | 728 |
| 25-29 | 710 | 562 | 428 | 463 | 434 | 144 | 135 | 128 | 354 | 335 |
| 30-34 | 451 | 332 | 228 | 220 | 232 | 59 | 72 | 73 | 188 | 198 |
| 35-39 | 260 | 214 | 151 | 150 | 136 | 23 | 32 | 36 | 122 | 124 |
| 40-44 | 174 | 124 | 107 | 89 | 84 | 14 | 11 | 19 | 75 | 76 |
| >44 | 48 | 34 | 29 | 26 | 27 | 6 | 8 | 7 | 29 | 20 |
| Percent Missing data | 0 % | 0 % | 2 % | 2 % | 4 % | 9 % | 5 % | 5 % | 2% | 0.5% |

Rates per 100,000 persons per year based on intercensal estimates of Houston/Harris County population (1991-1999) and the 2000 Census. (Appendix).

**Figure 2.4**. Comparison of rates by age and gender, using the average of the 1991 - 1998 rates compared to the 1999 rates.




Although there was a decrease in the crude rates reported in 1999, the major difference in reported rates seems to be among young males. This is an area that deserves increased investigation in order to determine if the rates are dropping, or surveillance has changed.

Rates are highest in the 20-24 year age range form males, and in the 15-19 year age range for females. Females 15-19 were twice as likely to diagnosed with chlamydia than males in the same age range. By age 20-24, the rates were nearly equal. It is unclear what the impact of screening protocols may play in the discrepancy observed between gonorrhea rates in males and females.

## 2. GONORRHEA: DISTRIBUTION BY PROVIDER

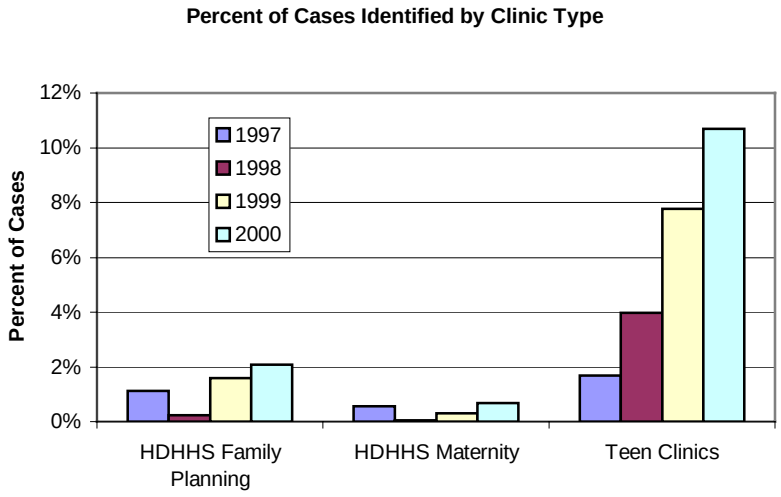
Distribution of cases among provider types, 1997 – 1999.

More than 60% of gonorrhea cases were found through HDHHS STD clinics; 2% through teen clinics, about 3% through other public facilities and the remaining nearly 30% of cases were through private physicians, Health Maintenance Organizations (HMOs), and laboratory reports.

**Table 2.4.** Distribution of gonorrhea cases by provider type, 1999.

| | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| HDHHS STD[6] | 3630 | 3653 | 3944 | 2562 |
| HDHHS FP[7] | 75 | 17 | 94 | 126 |
| HDHHS Maternity[8] | 37 | 4 | 18 | 41 |
| Teen Clinics[9] | 112 | 285 | 459 | 645 |
| County Clinics[10] | 57 | 69 | 35 | 3 |
| Jail / Correctional[11] | 23 | 65 | 66 | 62 |

**Figure 2.5**. Although HDHHS STD Clinics identify the majority of cases (almost 70%), HDHHS Family Planning and Maternity Clinics, the Juvenile Detention Center, County Clinics, and Teen Clinics identify almost 15% of all cases.




[6] City STD: Lyons, Medical Center, Northside, Riverside, West End, and La Nueva Casa de Amigo.
[7] City Family Planning: La Nueva Casa de Amigo, Lyons, Northside, Riverside, Sunnyside and West End.
[8] City Maternity: La Nueva Casa de Amigo, Lyons, Northside, Riverside, Sunnyside, West End.
[9] Teen Clinics: Austin, Baylor, Ben Taub, Cavalcade, Lawn, LBJ, Austin and Community Partners Clinics.
[10] County Clinics: Antoine, Baytown, La Porte.
[11] Jail / Correctional: Harris County Sheriff, Municipal Detention Center.

## 2. GONORRHEA: PREVALENCE

Prevalence in Certain Clinical Settings

Prevalence at screening varies depending on the population examined and whether testing is done for surveillance or among symptomatic individuals. Screening prevalence rates are available for several populations in Houston.

HDHHS STD Clinics

Among females tested for gonorrhea in HDHHS STD Clinics, in 1998, 4.8% tested positive, 6.2% in 1999, and 5.8% in 2000. In STD clinics, asymptomatic males are tested for gonorrhea with Gen-Probe; in 1998, 4.2%, 2.8% in 1999, and 2.0% in 2000.

HDHHS Maternity and Family Planning Clinics

Using data complied through the HDHHS Laboratory, we can describe the prevalence of gonorrhea among women seeking care at maternity and family planning clinics. Among women tested for gonorrhea at HDHHS maternity clinics in 1998 - 2000, 1.1%, 1%, and 0.6% respectively, were found to be infected. Among women tested for gonorrhea at HDHHS family planning clinics in less than 1% were infected in 1998 –2000.

**Gonorrhea: Prevalence at Selected Clinics**

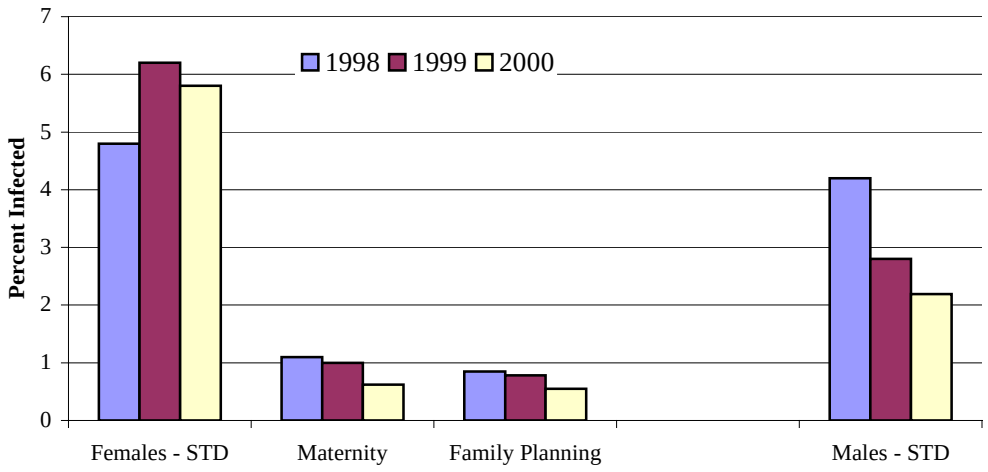



**Figure 2.6**, Percent of positive tests reported by selected clinics for 1999.

## GONORRHEA: GEOGRAPHIC DISTRIBUTION

Geographic Distribution

Although zip code information is missing for nearly 20% of cases in 1999, the distribution of missing information seemed to be similar among private and public providers. Using information from all identified gonorrhea cases, 50% of cases were found within 16 zip code areas. These areas with a high prevalence of gonorrhea infection are similar to those seen with high prevalence for chlamydia infection in 1999.

**Table 2.3.** Distribution of cases among zip code areas. The areas with the largest numbers of gonorrhea cases identified are similar to those at high risk of chlamydia.

| Zip code | Cases | Percent of Total Cases |
|---|---|---|
| 77088 | 61 | 6.57 |
| 77026 | 49 | 11.85 |
| 77091 | 44 | 16.59 |
| 77016 | 43 | 21.23 |
| 77033 | 36 | 25.11 |
| 77028 | 27 | 28.02 |
| 77060 | 25 | 30.71 |
| 77004 | 24 | 33.30 |
| 77092 | 21 | 35.56 |
| 77022 | 19 | 37.61 |
| 77021 | 18 | 39.55 |
| 77093 | 18 | 41.49 |
| 77045 | 16 | 43.21 |
| 77020 | 15 | 44.83 |
| 77051 | 15 | 46.44 |
| 77048 | 14 | 47.95 |
| 77078 | 14 | 49.46 |
| 77032 | 13 | 50.86 |

**Figure 2.7**

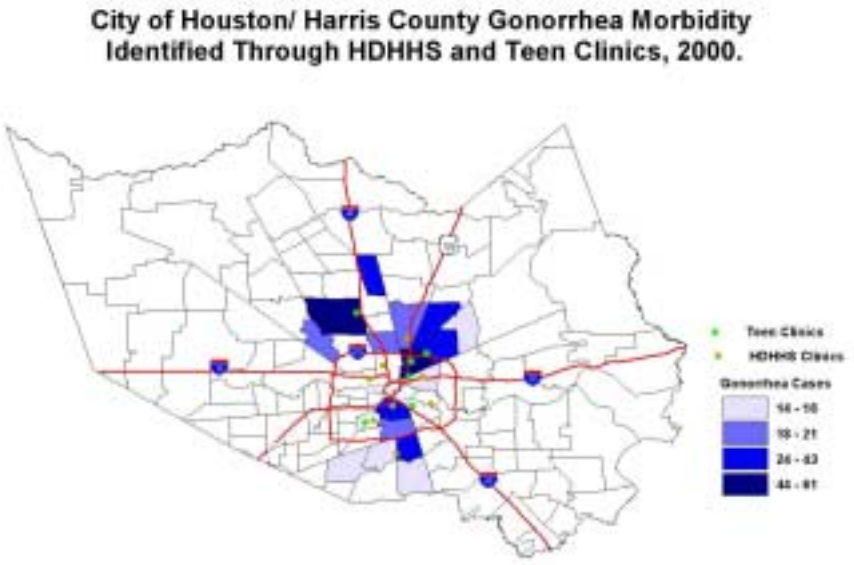
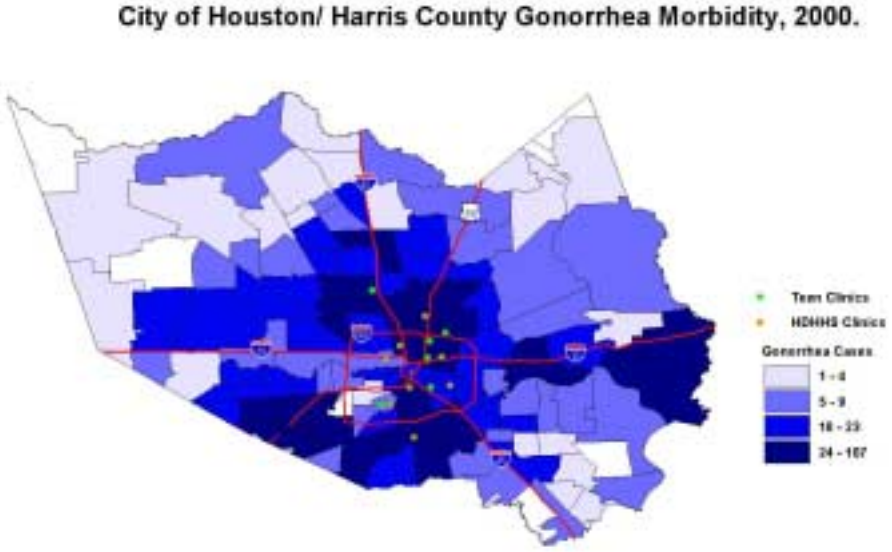



**Figure 2.8**



# 3. SYPHILIS INFECTION

**The nature and epidemiology of syphilis**

Syphilis is caused by the organism *Treponema pallidum*. Sexual transmission occurs as a result of direct exposure to the lesions of early, infectious syphilis. Syphilis has a complex and variable clinical course. Untreated infections may progress through several stages of disease.[1]

**Primary syphilis** is characterized by the presence of one or more chancres that may occur from 10 to 90 days after exposure, with an average of 21 days. **Secondary syphilis** occurs from 17 days to 6.5 months after the chancre appears (average 10 weeks) and is characterized by localized or diffuse mucocutaneous lesions, often with lymphadenopathy. The primary lesion may still be present. **Latent syphilis** occurs when the organisms persist in the body of the infected person without causing symptoms or signs. Latent syphilis is divided into early, late, and unknown categories based on duration of infection. Early latent syphilis is identified less than one year after the initial syphilis infection, and late latent syphilis has greater than one year's duration. Latent syphilis of unknown duration is diagnosed when the date of initial infection cannot be established as having occurred within the previous year and the patient's age and titer meet certain surveillance case definition criteria. **Tertiary syphilis** may occur after the latent infection, is characterized by chronic, inflammatory lesions that occur though out the body, but predominantly in skin, subcutaneous tissues, and bone. Tertiary syphilis may also produce cardiovascular and central nervous system disorders.

The incidence rates for syphilis infection increased in the United States over the decade of the 1980's, peaking in 1990. The increase occurred in both men and women; nationally, the male to female ratio of incidence rates is approximately 1:1.

Rates vary with age, race/ethnicity, socio-economic status, and among disease stages. In 1997, US rates for primary and secondary (P&S) syphilis were highest in the 20-29 year range for males and females and all race/ethnicity groups. For all ages, rates were highest among Non-Hispanic Blacks.[1] Texas ranked 14$^{th}$ among states in primary and secondary syphilis rates with 3.5 per 100,000 population; Houston ranked 24$^{th}$ among selected cities with greater than 200,000 population, with 5.8 cases per 100,000. The year 2000 objective for primary and secondary syphilis is 4.0 per 100,000 population; P&S rates reported in 1998 were 3.1/100,000. Houston is within the Year 2000 Objectives for primary and secondary syphilis.

**Congenital syphilis** may occur in infants born to mothers with syphilis, especially primary, secondary, or early latent disease. The Year 2000 Objective for congenital syphilis is 40 cases per 100,000 live births; in 1998, Houston reported 51 cases for a rate of 84.9 per 100,000; slightly more than twice the goal. US rates for congenital syphilis have declined since 1991; however, rates are still many time higher than most industrialized countries where congenital syphilis had been essentially eliminated.[1]

***Syphilis elimination projects***

The United States launched a national syphilis elimination campaign in late fall, 1999 (HDHHS, STD Prevention Letter, January 2000). The plan expects to address the race-related disparities in syphilis rates in the U.S and in other health status markers, such as AIDS, infant mortality, and coronary heart disease mortality. One of the main strategies in the syphilis elimination campaign is to develop and support communication between the multiple audiences participating in syphilis, HIV, and other STD prevention programs. The CDC outlined six activities that will be required of state and local health departments; assumed in each of these was the importance of active surveillance and timely reporting of syphilis cases.

## 3. SYPHILIS: CRUDE RATES

Except where noted, syphilis rates will include all stages except congenital. Congenital syphilis will be reported separately. Houston syphilis rates have declined more than 85% from 1991 through 2000. Rates for primary and secondary (P&S) syphilis have decreased 96% from 1991 through 1999.

In 2000, Houston rates for total syphilis were 2 times greater than US rates (24 compared to 11 per 100,000).

Houston rates for P&S syphilis in  were nearly the same as US rates (2.1 compared to 2.2 per 100,000). *Health People 2000* goals for P&S syphilis are 4 cases per 100,000 population.

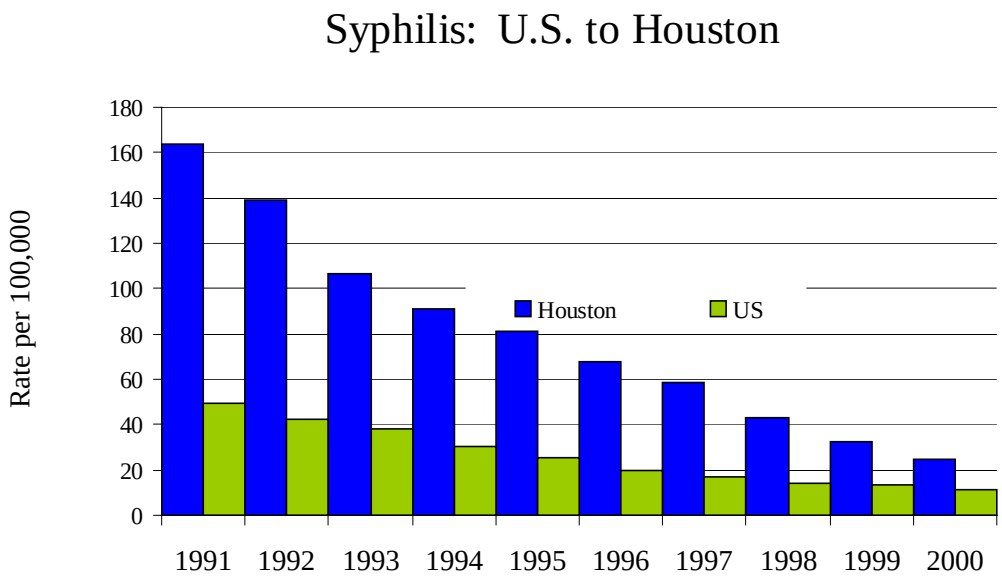



**Figure 3.1** Changes in total syphilis rates per 100,000 (excluding congenital) in Houston compared to the US  There has been an 85% decline in syphilis rates in Houston since 1991. Rates per 100,000 persons per year (Appendix).

## 3. SYPHILIS: CRUDE RATES

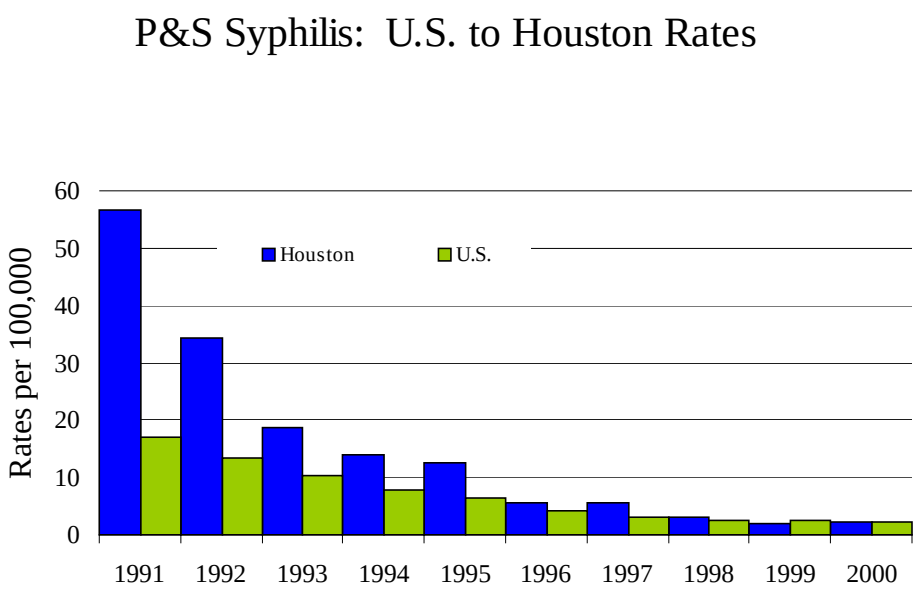



**Figure 3.2.** Comparison of Primary & Secondary syphilis rates between the US and Houston. *Health People 2000* goal for P&S syphilis is less than 4 case per 100,000. Houston has reached that goal. Rates per 100,000 persons per year (Appendix).

## SYPHILIS: CRUDE RATES BY STAGE OF DISEASE

**Table 3.1.** Number of cases and rates per 100,000 population per year for primary and secondary syphilis (P&S), early latent syphilis (EL), and late latent syphilis (LL)*. Houston/Harris County, Texas, 1991-1997.

| | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|---|---|---|---|---|---|
| Number of Cases | | | | | | | | | | |
| P&S | 1,638 | 1,011 | 558 | 428 | 389 | 178 | 174 | 99 | 68 | 71 |
| EL | 2,349 | 2,466 | 1,538 | 1,116 | 868 | 755 | 520 | 366 | 239 | 133 |
| LL | 739 | 610 | 1,114 | 1,214 | 1,226 | 1,188 | 1,160 | 894 | 721 | 620 |
| TOTAL | 4,726 | 4,087 | 3,210 | 2,758 | 2,483 | 2,121 | 1,854 | 1,379 | 1,050 | 824 |
| Rate per 100,000 population per year | | | | | | | | | | |
| P&S | 56.8 | 34.3 | 18.6 | 14.1 | 12.7 | 5.7 | 5.5 | 3.1 | 2.1 | 2.1 |
| EL | 81.4 | 83.8 | 51.2 | 36.7 | 28.3 | 24.2 | 16.4 | 11.4 | 7.3 | 3.9 |
| LL | 25.6 | 20.7 | 37.1 | 39.9 | 39.9 | 38.1 | 36.7 | 28.4 | 22.1 | 18.2 |
| TOTAL | 163.8 | 138.8 | 106.9 | 90.7 | 80.9 | 68.0 | 58.6 | 42.9 | 32.1 | 24.4 |

Rates per 100,000 persons per year based on intercensal estimates of Houston/Harris County population (Appendix).
* Syphilis of unknown duration was included with late latent syphilis.

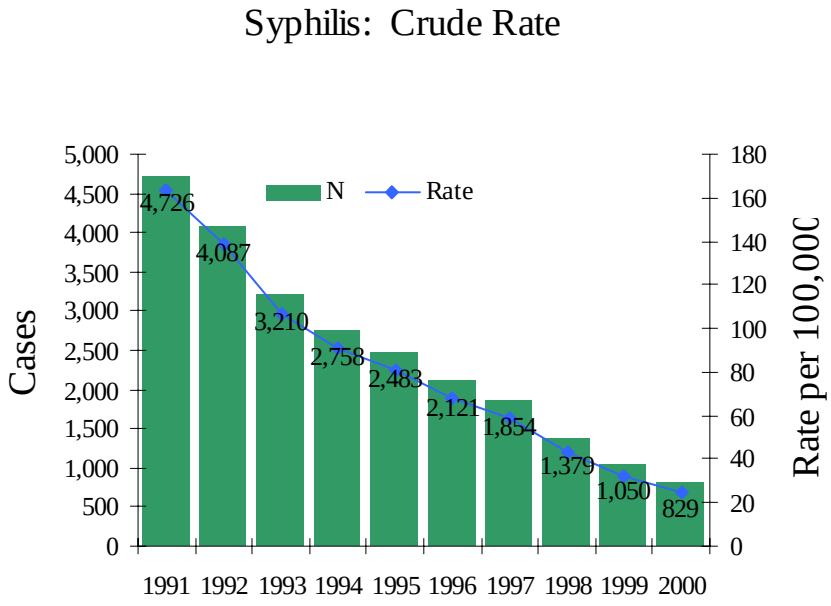



**Figure 3.3.** Crude number and rate of syphilis (excluding congenital) in Houston, 1991-2000. Rates per 100,000 persons per year (Appendix).

## SYPHILIS – CRUDE RATES BY STAGE OF DISEASE

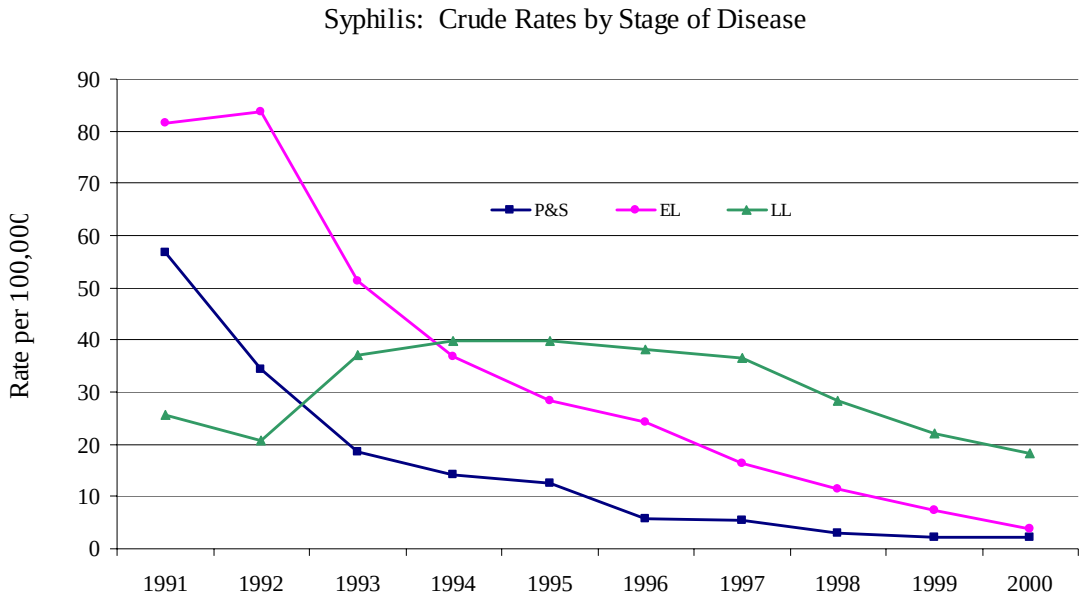
**Figure 3.4.** While rates for total syphilis have declined substantially since 1991, the rate of change has varied among the different stages of disease.

Primary and Secondary (P&S) syphilis declined 96% since the peak in 1991.

Early latent (EL) peaked in 1992 and has since declined 95%.

Late latent (including syphilis of unknown duration) did not peak until 1995, remained stable between 1995 and 1997, and declined 54% between 1997 and 1999.

Rates per 100,000 persons per year (Appendix).



## 3. SYPHILIS: GENDER-SPECIFIC RATES

**Table 3.2. Gender-specific numbers and rates for syphilis in Houston/Harris County, Texas, 1991 – 1999.**

| | Male | | Female | |
|---|---|---|---|---|
| | Total | Rate | Total | Rate |
| 1991 | 2,412 | 168.3 | 2,314 | 159.4 |
| 1992 | 1,961 | 134.0 | 2,126 | 143.5 |
| 1993 | 1,530 | 102.5 | 1,678 | 111.1 |
| 1994 | 1,340 | 88.7 | 1,418 | 92.7 |
| 1995 | 1,156 | 75.8 | 1,324 | 85.7 |
| 1996 | 1,015 | 65.5 | 1,104 | 70.4 |
| 1997 | 867 | 55.3 | 987 | 61.8 |
| 1998 | 713 | 44.8 | 666 | 41.0 |
| 1999 | 534 | 33.5 | 507 | 30.7 |
| 2000 | 463 | 27.3 | 366 | 21.4 |

Rates per 100,000 persons per year based on intercensal estimates of Houston/Harris County population (Appendix).

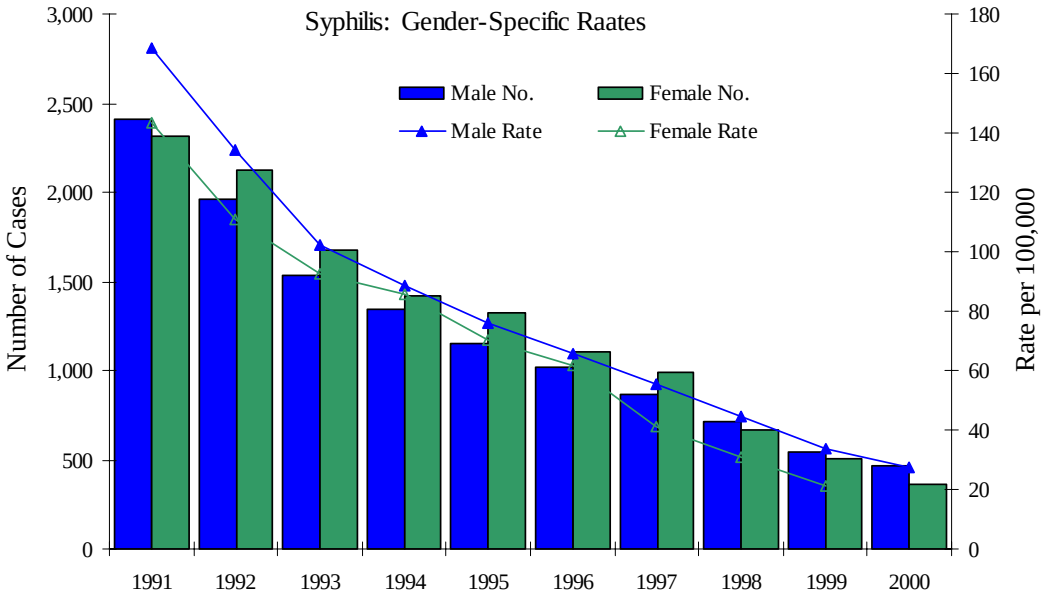



**Figure 3.5.** The ratio of male to female rates has been essentially 1:1 since 1991 in Houston, and in the US since 1991. Rates per 100,000 persons per year (Appendix).

## 3. SYPHILIS: GENDER-SPECIFIC RATES BY STAGE OF DISEASE

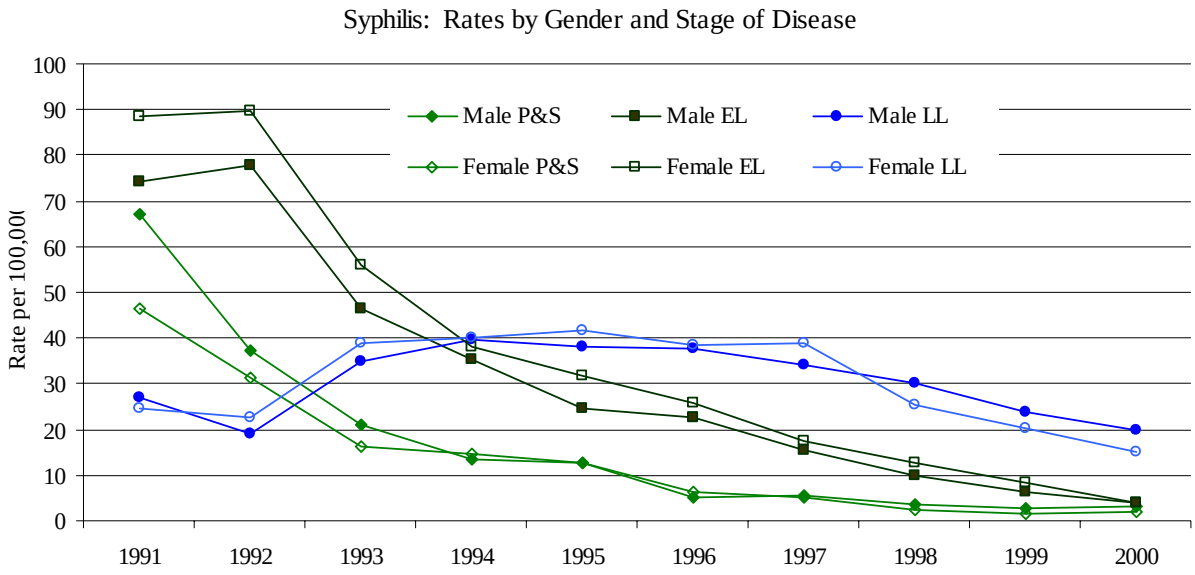



**Figure 3.6**. Since 1991, the ratio of male rates to female rates has remained constant at essentially 1:1 through all stages of disease. Rates per 100,000 persons per year (Appendix).

## 3. SYPHILIS: RACE/ETHNICITY-SPECIFIC RATES

**Table 3.3.** Number of cases per year by race/ethnicity and gender

| | Hispanic | | African American | | White | | % Missing |
|---|---|---|---|---|---|---|---|
| | Male | Female | Male | Female | Male | Female | |
| 1991 | 308 | 324 | 1991 | 1894 | 112 | 96 | 0.0% |
| 1992 | 178 | 190 | 1660 | 1779 | 122 | 157 | 0.0% |
| 1993 | 152 | 177 | 1250 | 1338 | 126 | 160 | 0.2% |
| 1994 | 157 | 131 | 1067 | 1142 | 113 | 144 | 0.1% |
| 1995 | 159 | 158 | 835 | 886 | 101 | 120 | 9.0% |
| 1996 | 212 | 217 | 721 | 779 | 75 | 79 | 1.8% |
| 1997 | 194 | 190 | 610 | 713 | 61 | 78 | 0.4% |
| 1998 | 200 | 161 | 431 | 418 | 65 | 55 | 3.5% |
| 1999 | 144 | 134 | 327 | 303 | 59 | 57 | 2.5% |
| 2000 | 141 | 113 | 263 | 226 | 56 | 26 | 0.5% |

Rates per 100,000 persons per year (Appendix).

| | Hispanic | | African American | | White | |
|---|---|---|---|---|---|---|
| | Male | Female | Male | Female | Male | Female |
| 1991 | 87 | 100 | 782 | 662 | 14 | 11 |
| 1992 | 48 | 56 | 641 | 612 | 15 | 18 |
| 1993 | 40 | 50 | 474 | 453 | 15 | 19 |
| 1994 | 40 | 36 | 400 | 382 | 13 | 17 |
| 1995 | 40 | 42 | 309 | 293 | 12 | 14 |
| 1996 | 51 | 56 | 264 | 254 | 9 | 9 |
| 1997 | 42 | 44 | 231 | 234 | 7 | 9 |
| 1998 | 40 | 36 | 158 | 134 | 8 | 6 |
| 1999 | 28 | 28 | 122 | 98 | 7 | 7 |
| 2000 | 25 | 22 | 93 | 70 | 6 | 3 |

## 3. SYPHILIS: RACE/ETHNICITY-SPECIFIC RATES

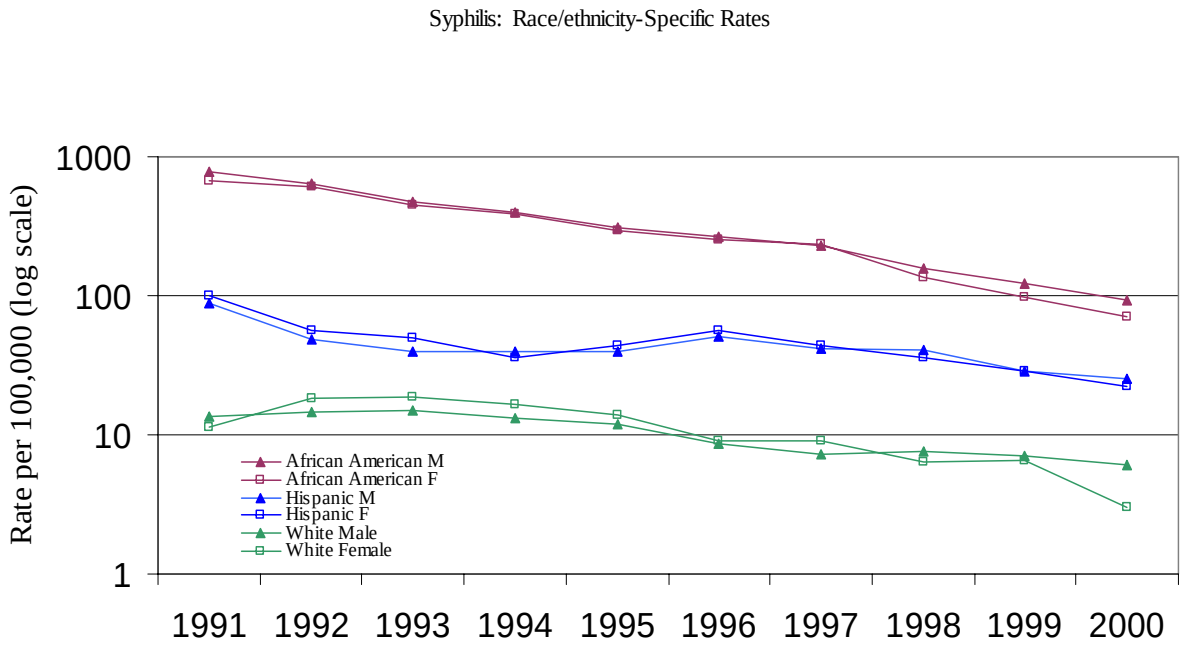



**Figure 3.7.** Race-ethnicity specific numbers of cases and rates for total syphilis (excluding congenital) in Houston/Harris County, Texas, 1991-2000.

There are very few syphilis cases missing race/ethnicity data. Rates are highest among African Americans; intermediate among Hispanics, and lowest among Whites and all other race/ethnicity groups.

Even with the differences in overall rates, all race/ethnicity groups have experienced similar declines.

The male to female ratio within race/ethnicity groups also remains essentially 1:1.

Rates per 100,000 persons per year based (Appendix).

## 3. SYPHILIS: AGE DISTRIBUTION

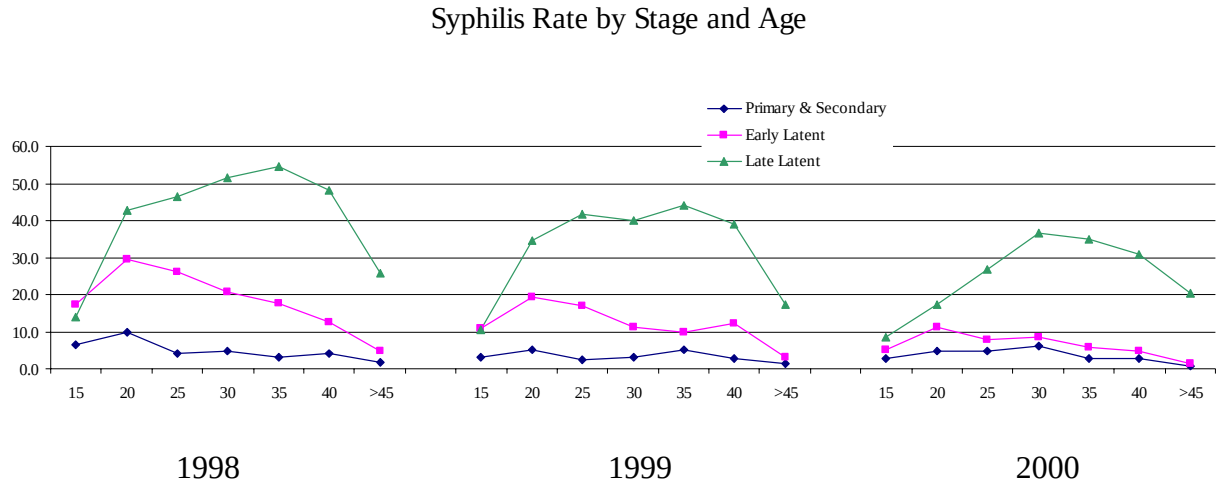



**Figure 3.8** Rates for primary and secondary and early latent syphilis have declined in each age category. Primary and secondary rates seem to be nearly constant across age groups. Early latent syphilis peaks in the early 20s.

The distribution of late latent syphilis is less clear. Rates have been similar from age 25 through age 40 until this year; in 2000, rates peaked at 30-34 and then declined. Rates of late latent syphilis are declining more slowly than for other stages of syphilis.

In 1991, highest rates among all age categories under age 45 were for early latent syphilis; however, in 1998, highest rates are for late latent syphilis. This indicates the magnitude of the cases missed during early stages and represents cases that occurred during the earlier epidemic that are just now coming to therapy.

Rates per 100,000 persons per year (Appendix).

## 3. SYPHILIS: CONGENITAL SYPHILIS

**Table 3.4** Harris County Congenital syphilis rates per 1,000 live births. 1999 live births are estimated, based on the average increase from 1994.

| Year | Total | Hispanic | Black | White | Rate per 1000 live births |
|---|---|---|---|---|---|
| 1994 | 85 | 6 | 62 | 16 | 1.5 |
| 1995 | 88 | 14 | 58 | 18 | 1.5 |
| 1996 | 122 | 31 | 74 | 18 | 2.1 |
| 1997 | 108 | 29 | 76 | 5 | 1.8 |
| 1998 | 51 | | | | 0.8 |
| 1999 | 47 | 20 | 26 | 1 | 0.8 |
| 2000 | 34 | 12 | 20 | 2 | 0.5 |

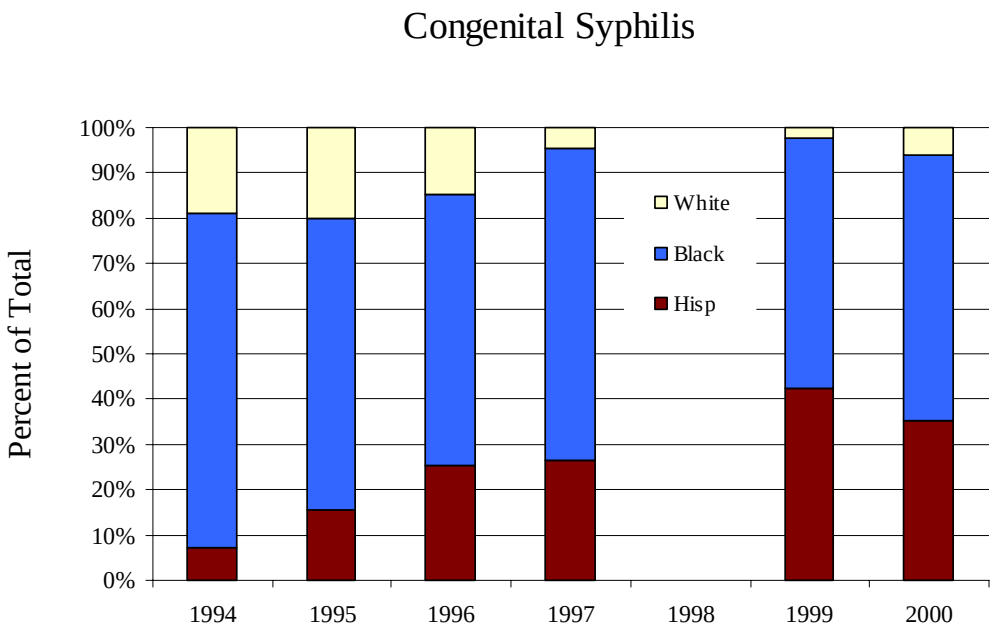



**Figure 3.9** Rates of Congenital Syphilis by race/ethnicity. Race/ethnicity data for 1998 is missing.

Until this year, the proportion of congenital cases that are Hispanic has been increasing since the peak of the epidemic in 1991, while the proportion that are Black or White have been declining. There was an increase in congenital syphilis among Whites in 2000.

## 3. SYPHILIS: DISTRIBUTION BY PROVIDER

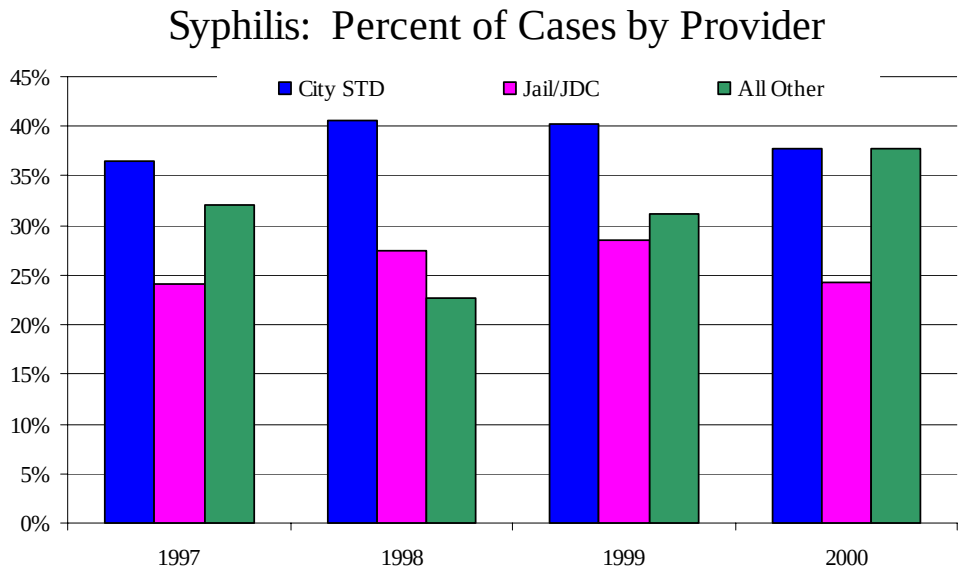



**Figure 3.10** Distribution of cases among provider types, 1997-2000. HDHHS STD clinics identified 40% of all cases during the last four years. Private facilities and all other providers identified almost 30% of cases. The Jail and other correctional facilities identified nearly 30%.

## 3. SYPHILIS: SEROPREVALENCE

**Table 3.6**. Prevalence of syphilis at screening from HDHHS STD, Family Planning, and Maternity Clinics and from the Harris County Jail.

| | 1996 | | 1997 | | 1998 | | 1999 | |
|---|---|---|---|---|---|---|---|---|
| | Reactive/ Total | % | Reactive/ Total | % | Reactive/ Total | % | Reactive/ Total | % |
| Ben Taub and LBJ Delivery | 109/ 4304 | 2.5% | 45/ 2437 | 1.8% | 109/ 4305 | 2.5% | 50/ 3482 | 1.4% |
| Harris County Jail | 455/ 6223 | 7.3% | 282/ 3873 | 7.3% | 455/ 6223 | 7.3% | 692/ 13442 | 5.1% |
| Drug Treatment Centers | 50/ 611 | 8.2% | 52/ 481 | 10.8% | 50/ 611 | 8.2% | 25/ 489 | 5.1% |

As part of a CDC funded project, the prevalence of syphilis at screening was examined during selected months at the Harris County Jail, one Drug Treatment Center, and Delivery Room screening at LBJ and Ben Taub delivery rooms.

Presented are numbers of cases with reactive serology – not numbers of cases with a new diagnosis of syphilis.

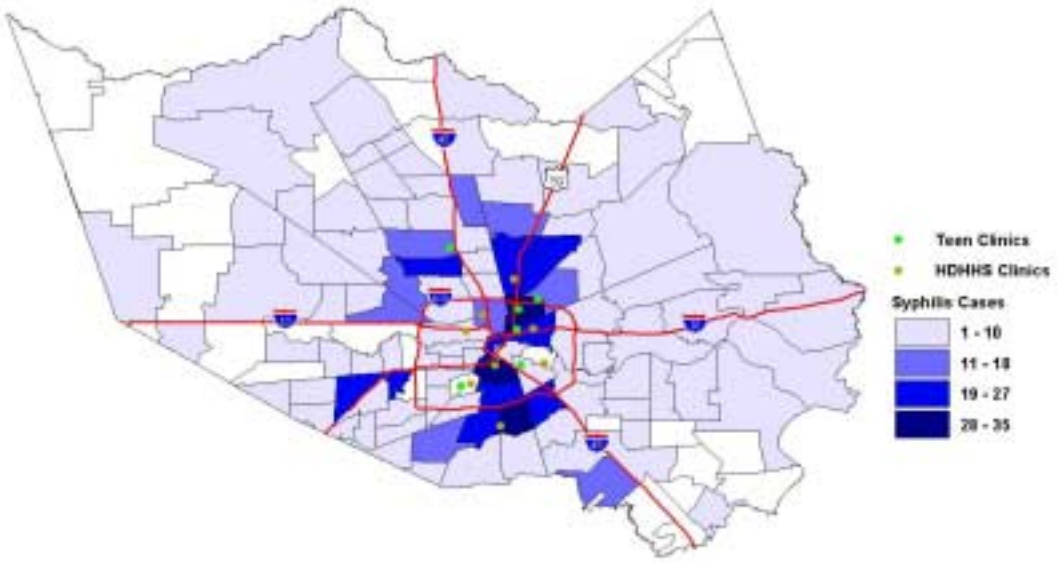
There was a dramatic drop in percent with reactive serology between 1998 and 1999.

## 3. SYPHILIS – GEOGRAPHIC DISTRIBUTION

**Table 3.5** More the 50% of syphilis cases were reported from the following 19 zip code areas.

| Zip Code | Cases | Percent of Total | Cumulative Percent |
|---|---|---|---|
| 77004 | 35 | 0.0412 | 0.0412 |
| 77026 | 33 | 0.0388 | 0.0824 |
| 77033 | 28 | 0.0329 | 0.1212 |
| 77036 | 27 | 0.0318 | 0.1541 |
| 77021 | 26 | 0.0306 | 0.1859 |
| 77002 | 23 | 0.0271 | 0.2165 |
| 77091 | 22 | 0.0259 | 0.2435 |
| 77051 | 22 | 0.0259 | 0.2694 |
| 77020 | 22 | 0.0259 | 0.2953 |
| 77093 | 21 | 0.0247 | 0.3212 |
| 77087 | 21 | 0.0247 | 0.3459 |
| 77081 | 20 | 0.0235 | 0.3706 |
| 77016 | 20 | 0.0235 | 0.3941 |
| 77009 | 17 | 0.0200 | 0.4176 |
| 77088 | 16 | 0.0188 | 0.4376 |
| 77060 | 16 | 0.0188 | 0.4565 |
| 77055 | 15 | 0.0176 | 0.4753 |
| 77028 | 15 | 0.0176 | 0.4929 |
| 77092 | 13 | 0.0153 | 0.5106 |

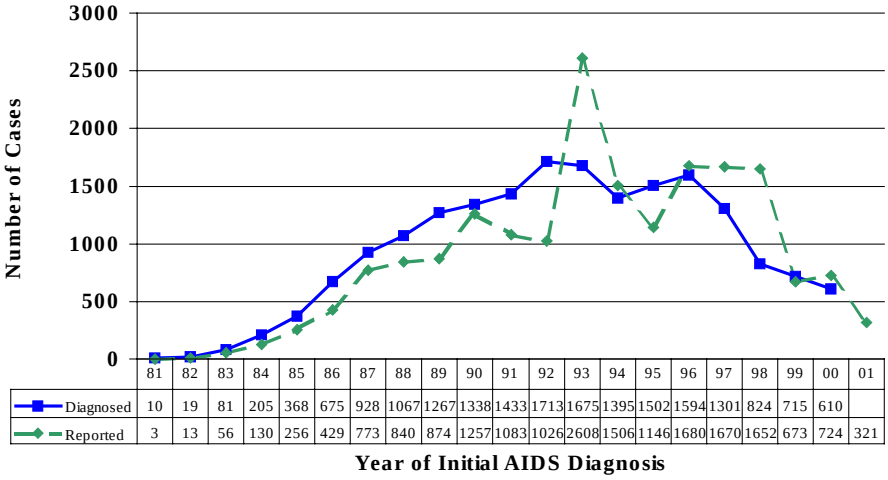
**City of Houston/ Harris County Syphilis Morbidity, 2000.**



# 4. AIDS/HIV INFECTION

AIDS, unlike syphilis and other sexually transmitted diseases, has a long incubation period, often exceeding ten years from infection to illness. Because AIDS cases may not be reported in the year in which they were diagnosed, information about cases may be compared by year of report, or by year of diagnosis. This report will include data on cases reported through June, 2001; data may not yet be fully reported and should be considered preliminary and subject to later revision.

**Figure 4.1 Houston/Harris Co. AIDS Cases By Date of Diagnosis & Date of Report**
Diagnosed 1981-2000




| | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 00 | 01 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Diagnosed | 10 | 19 | 81 | 205 | 368 | 675 | 928 | 1067 | 1267 | 1338 | 1433 | 1713 | 1675 | 1395 | 1502 | 1594 | 1301 | 824 | 715 | 610 | |
| Reported | 3 | 13 | 56 | 130 | 256 | 429 | 773 | 840 | 874 | 1257 | 1083 | 1026 | 2608 | 1506 | 1146 | 1680 | 1670 | 1652 | 673 | 724 | 321 |

*Houston HIV/AIDS Surveillance* *Reported Through 6/30/01*

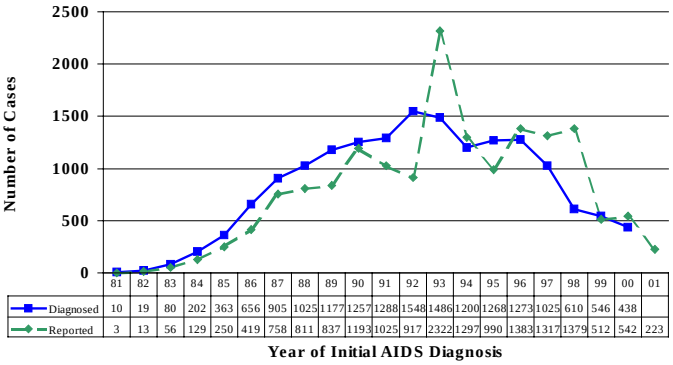
**Figure 4.1** The above chart compares the number of AIDS cases reported each year to the number of cases diagnosed each year in the Houston/Harris County area.

The reported AIDS cases spiked in 1993, corresponding to the changes in the surveillance definition of HIV and AIDS made by the Centers for Disease Control and Prevention. Four new conditions were added to the definition of an AIDS defining diagnosis, including the laboratory marker of a CD4 lymphocyte count less than 200. The surveillance definition change allowed the monitoring of less symptomatic HIV infection, prior to the occurrence of an AIDS defining opportunistic infection or malignancy. Because this change was in the surveillance methodology, it had a greater impact on the reported number of cases than on the number of cases diagnosed.

**Figure 4.2 and 4.3.** The number of AIDS cases diagnosed and reported has decreased steadily among males since the peak in 1992. AIDS cases reported among women did not peak until 1996. In 2000, there were 2.5 times more males diagnosed with AIDS than females.

**4.2 Houston/Harris Co. AIDS Cases By Date of Diagnosis & Date of Report - MALES**

Diagnosed 1981-2000



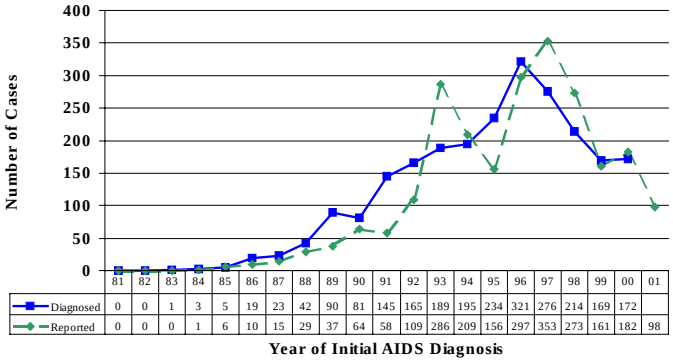

| | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 00 | 01 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Diagnosed | 10 | 19 | 80 | 202 | 363 | 656 | 905 | 1025 | 1177 | 1257 | 1288 | 1548 | 1486 | 1200 | 1268 | 1273 | 1025 | 610 | 546 | 438 | |
| Reported | 3 | 13 | 56 | 129 | 250 | 419 | 758 | 811 | 837 | 1193 | 1025 | 917 | 2322 | 1297 | 990 | 1383 | 1317 | 1379 | 512 | 542 | 223 |

Year of Initial AIDS Diagnosis

*Houston HIV/AIDS Surveillance* *Reported Through 6/30/01*

**4.3 Houston/Harris Co. AIDS Cases By Date of Diagnosis & Date of Report - FEMALE**

Diagnosed 1981-2000




| | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 00 | 01 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Diagnosed | 0 | 0 | 1 | 3 | 5 | 19 | 23 | 42 | 90 | 81 | 145 | 165 | 189 | 195 | 234 | 321 | 276 | 214 | 169 | 172 | |
| Reported | 0 | 0 | 0 | 1 | 6 | 10 | 15 | 29 | 37 | 64 | 58 | 109 | 286 | 209 | 156 | 297 | 353 | 273 | 161 | 182 | 98 |

Year of Initial AIDS Diagnosis

*Houston HIV/AIDS Surveillance* *Reported Through 6/30/01*

Data comparisons of race, age, and risk behavior, can be made using total numbers of cases, or proportional changes in the demographic and risk behavior mix of the population with AIDS. AIDS case data can also be compared across populations using strata-specific rates.

During the past three years, the widespread use of multiple drug regimens has slowed the progression of HIV infection to AIDS. The 10-year lag, often cited as the time for progression to AIDS, is no longer relevant. HIV infection is being identified earlier, and with more effective treatment, the transition to AIDS may be delayed indefinitely. Therefore, it is difficult to relate the time of diagnosis with AIDS to the actual time of infection. Comparing AIDS demographic data over time can indicate shifts and trends that are developing. However, the use of new medications which delay progression to AIDS results in fewer AIDS cases and a corresponding decrease in deaths from AIDS. Consequently, there is an expanding number of persons living with HIV infection and the potential for an increase in exposure to HIV infection by persons participating in risky behavior.

It is difficult to estimate the number of people with HIV infection in a community. No accurate data on the number of people participating in certain risk behaviors exists, and a general population seroprevalence study has not been conducted. Most studies have been limited to people known to be at risk, and to easily accessible populations.

The behaviors which place a person at risk of contracting HIV are well known and documented from recording the behaviors of over 600,000 people with AIDS nationally. HIV is transmitted by the exchange of infected body fluids, primarily blood, semen, and vaginal fluids. These exchanges take place during sexual relations and the sharing of needles and other equipment in injection drug use. Information regarding the trends in risk behaviors of the local HIV infected population can help to indicate the direction for prevention efforts.

Behaviors that may place individuals at increased risk of HIV and other STDs include: male to male sex; being a female partners of bisexual men; risky sexual behavior, including multiple partners and lack of condom use; injection drug use; and cocaine use.

Estimates for male gay sex can be found from the National Health and Social Life Survey. Of men surveyed, 7.3% in urban areas and 4.8% in suburban areas reported at least one same-sex experience since age 18. Among men who reported any same-gender sex, 81.6% reported bisexual activity.

There are few population estimates of specific risky sexual behaviors. Two national surveys, NHIS and BRFSS asked composite questions to which participants could indicate that they had done at least one of a list of risky behaviors, including: received clotting factor concentrates, had male to male sex since 1980, taken street drugs by needle, traded sex for money or drugs, or been the sex partner of anyone who could answer "yes" to any of these activities. Of those surveyed, 2.5% of males and 1.6% of females answered "yes" to this question.

Prevalence of injection drug use is difficult to estimate since there are few population based surveys addressing this exposure, and the truth is difficult to elicit. The National Institute on Drug Abuse estimates from the 1998 National Household Survey on Drug Abuse that there are 2.4 million heroin users (0.9% of the population), the majority of whom inject heroin. The 2000 Texas Survey of Substance Use Among Adults, found that 1.2% of the Texas population surveyed reported any lifetime use of heroin and 0.1% report heroin use in the past year. Adults 18-24 had higher prevalence of use (2.2%) than any other age category; males had higher rates than females (1.8% compared to 0.7%).

In 1997, the National Institute on Drug Abuse (NIDA) reported that an estimated 1.5 million Americans were current cocaine users. Augmenting this estimate with additional data sources, the number of chronic cocaine users in the U.S. is estimated at 3.6 million (or 1.3% of the population). Adults 18-25 have the highest rates of use; men have higher rates of use than women. By race/ethnicity: 1.4 percent of African Americans, 0.8% of Hispanics, and 0.6% of Whites are current cocaine users. NHANES III indicates that 13.2% of the population admits to having used cocaine or crack in their lifetime (17% of males and 10% of females). These estimates are similar to those reported by the Texas Commission on Alcohol and Drug Abuse which identify 11.7% of the surveyed population as having used cocaine in their lifetime and 1.1% in the past year (1.6% among males and 0.6% among females).

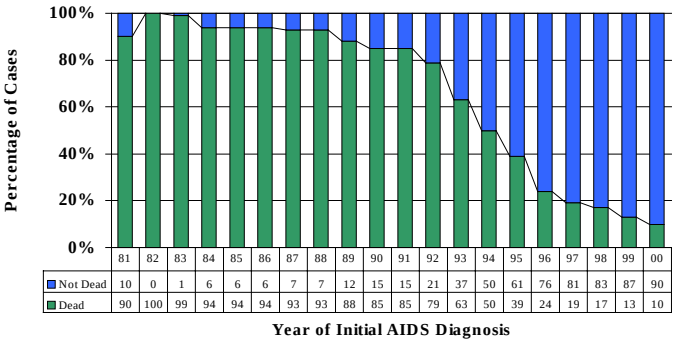
# 4. AIDS INFECTION: CRUDE MORTALITY

In evaluating the impact of the HIV/AIDS epidemic in Houston we will first examine data from the AIDS surveillance activities. Program evaluation and review has shown that AIDS case reporting in the HDHHS surveillance jurisdiction is 85 to 95 percent complete. The data collected on AIDS cases is based on the CDC reporting criteria and provides demographic, risk factor, and disease information for analysis. Data reported in this section is analyzed from the HIV/AIDS Reporting System (HARS).

As of June 30, 2001, 18,720 cases of AIDS diagnosed through December, 2000 and reported through June 20, 2001, have been reported in Houston/Harris County. Of the reported AIDS cases, 60% are known to have died; however, there is often a lag time from death to the report of death. Health care providers do not routinely report the deaths of AIDS patients to the health department. Death information can be gathered by a match of reported AIDS cases to the State of Texas death registry which is not complete until several months after death. Deaths occurring in other states may or may not be reported to the HDHHS Surveillance Program.

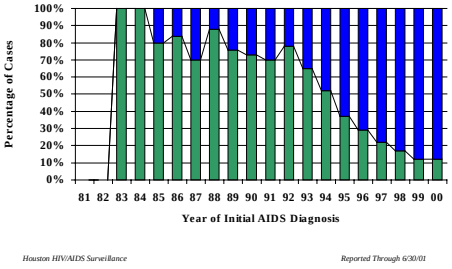
**Figure 4.4** The proportion of individuals who have died, presented by year of diagnosis. There has been a decrease in the proportion of AIDS cases who have died each succeeding diagnosis year, due to advances in therapy. In addition, since HIV infected individuals may never progress to the point of an AIDS diagnosis, the total number of people living with HIV infection is steadily increasing.

**Figure 4.4 Houston/Harris Co. AIDS Percents By Mortality Status**
Diagnosed 1981-2000

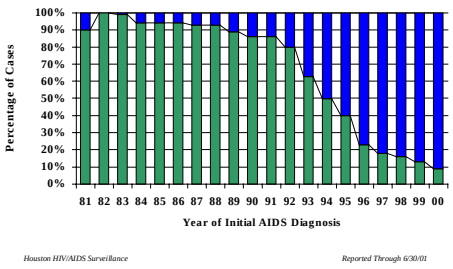



**Figures 4.5 and 4.6.** The proportion of individuals who have died presented by year of diagnosis has been similar for males and females during the last five years.

**4.6. Houston/Harris Co. AIDS Percents By Mortality Status**
**FEMALES** Diagnosed 1981-2000

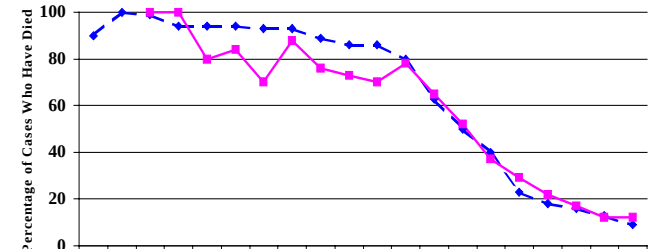



**4.5 Houston/Harris Co. AIDS Percents By Mortality Status**
**MALES** Diagnosed 1981-2000



# 4. AIDS INFECTION: MORTALITY BY GENDER & RACE/ETHNICITY

**Figure 4.7 Houston/Harris Co. AIDS**
**Percent Dead By Gender**
Diagnosed 1981-2000

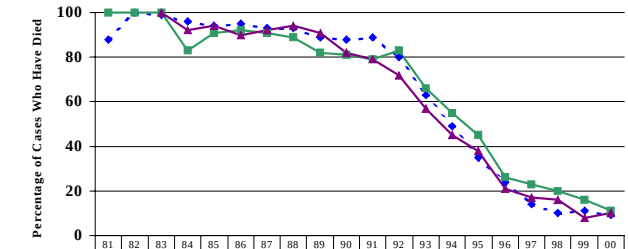



| | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Male | 90 | 100 | 99 | 94 | 94 | 94 | 93 | 93 | 89 | 86 | 86 | 80 | 63 | 50 | 40 | 23 | 18 | 16 | 13 | 9 |
| Female | | | 100 | 100 | 80 | 84 | 70 | 88 | 76 | 73 | 70 | 78 | 65 | 52 | 37 | 29 | 22 | 17 | 12 | 12 |

Year of Initial AIDS Diagnosis

**Figure 4.7** The percent of deaths by gender and year of diagnosis. Although the percent dying by gender has been similar since 1992, a larger proportion of females are living with AIDS than males. As of June 30, 2000, 63% of HIV infected males and 42% of HIV infected females have died.

**Figure 4.8 Houston/Harris Co. AIDS**
**Percent Dead By Race/Ethnicity**
Diagnosed 1981-2000




| | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NH-White | 88 | 100 | 99 | 96 | 94 | 95 | 93 | 93 | 89 | 88 | 89 | 80 | 63 | 49 | 35 | 24 | 14 | 10 | 11 | 9 |
| NH-Black | 100 | 100 | 100 | 83 | 91 | 92 | 91 | 89 | 82 | 81 | 79 | 83 | 66 | 55 | 45 | 26 | 23 | 20 | 16 | 11 |
| Hispanic | | | 100 | 92 | 94 | 90 | 92 | 94 | 91 | 82 | 79 | 72 | 57 | 45 | 38 | 21 | 17 | 16 | 8 | 10 |

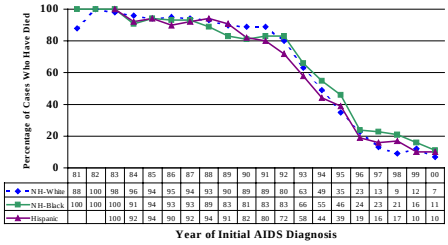
Year of Initial AIDS Diagnosis

*Houston HIV/AIDS Surveillance* *Reported Through 6/30/01*

**Figure 4.8** The percent of HIV infected individuals dying, by year of diagnosis, is similar across race/ethnicity groups. From the beginning of the epidemic to 2000, 68% of non-Hispanic White, 52% of non-Hispanic Black, and 51% of Hispanic HIV infected individuals have died.

**Figure 4.9 and 4.10** As of 6/30/01, the proportion of individuals who have died since infection are: among males, 69% of non-Hispanic Whites, 55% of non-Hispanic Blacks and 53% of Hispanics with HIV; among females 49% of non-Hispanic Whites, 41% of non-Hispanic Blacks, and 35% of Hispanics.

**4.9 Houston/Harris Co. AIDS**
**Percent Dead By Race/Ethnicity**
**MALE** Diagnosed 1981-2000

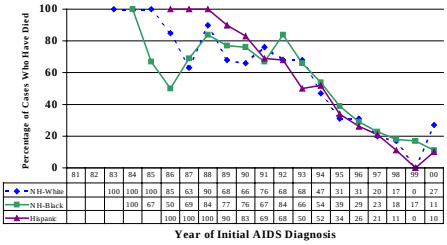



| | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NH-White | 88 | 100 | 98 | 96 | 94 | 95 | 94 | 93 | 90 | 89 | 89 | 80 | 63 | 49 | 35 | 23 | 13 | 9 | 12 | 7 |
| NH-Black | 100 | 100 | 100 | 91 | 94 | 93 | 93 | 89 | 83 | 81 | 83 | 83 | 66 | 55 | 46 | 24 | 23 | 21 | 16 | 11 |
| Hispanic | | | 100 | 92 | 94 | 90 | 92 | 94 | 91 | 82 | 80 | 72 | 58 | 44 | 39 | 19 | 16 | 17 | 10 | 10 |

Year of Initial AIDS Diagnosis

*Houston HIV/AIDS Surveillance* *Reported Through 6/30/01*

**4.10 Houston/Harris Co. AIDS**
**Percent Dead By Race/Ethnicity**
**FEMALE** Diagnosed 1981-2000

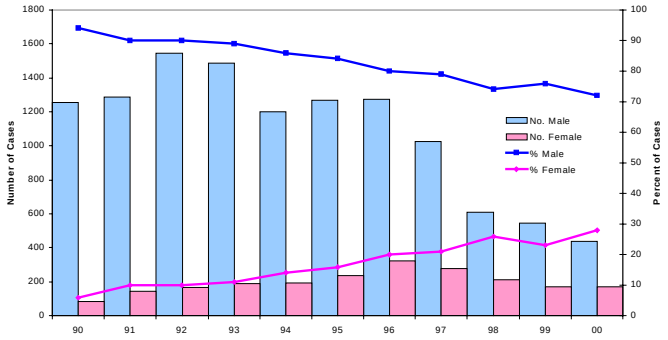



| | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NH-White | | | 100 | 100 | 100 | 85 | 63 | 90 | 68 | 66 | 76 | 68 | 68 | 47 | 31 | 31 | 20 | 17 | 0 | 27 |
| NH-Black | | | | 100 | 67 | 50 | 69 | 84 | 77 | 76 | 67 | 84 | 66 | 54 | 39 | 29 | 23 | 18 | 17 | 11 |
| Hispanic | | | | | | 100 | 100 | 100 | 90 | 83 | 69 | 68 | 50 | 52 | 34 | 26 | 21 | 11 | 0 | 10 |

Year of Initial AIDS Diagnosis

*Houston HIV/AIDS Surveillance* *Reported Through 6/30/01*

**Figure 4.11 Houston/Harris Co. AIDS Numbers of cases and Percent By Gender**
Diagnosed 1990-2000

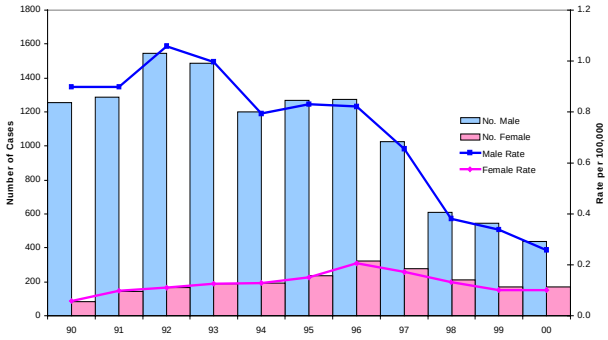



*Houston HIV/AIDS Surveillance* *Reported Through 6/30/01*

**Figure 4.11** Percent of AIDS cases by gender. The majority of AIDS cases are male. The proportion of AIDS cases that are female has increased each year. In 1990, 6% of AIDS cases were female; in 2000, 23% are female. However, for both males and females, the number of cases diagnosed each year has been decreasing, it is just that males have been decreasing at a faster rate than females.

**Figure 4.12** Number and rate per 1,000 persons of AIDS cases, by diagnosis year and gender. It is important to emphasize that the numbers of HIV infected individuals progressing to an AIDS diagnosis has decreased in the last 4 years, primarily due to new therapies. Therefore, the reduction in rate of AIDS cases is not directly related to a reduction in rates of HIV infection. Rates are based on intercensal estimates of Houston/Harris County population for 1991-1999 and on the Census for 1990 and 2000 (Appendix).

**Figure 4.12 Houston/Harris Co. AIDS Numbers of cases and Rates per 100,000 By Gender**
Diagnosed 1990-2000

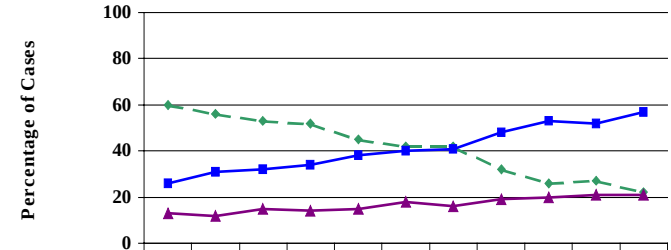



*Houston HIV/AIDS Surveillance* *Reported Through 6/30/01*

## 4. AIDS INFECTION: CUMULATIVE AIDS CASES BY RACE/ETHNICITY

As the epidemic has progressed, the percent of cases that are non-Hispanic White has declined, while the percent of cases that are non-Hispanic Black has increased correspondingly. The percent of cases that are Hispanic has increased.

**Figure 4.13 Houston/Harris Co. AIDS Percent By Race/Ethnicity**
Diagnosed 1990-2000




| | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 00 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| White, Not Hispanic | 60 | 56 | 53 | 52 | 45 | 42 | 42 | 32 | 26 | 27 | 22 |
| Black, Not Hispanic | 26 | 31 | 32 | 34 | 38 | 40 | 41 | 48 | 53 | 52 | 57 |
| Hispanic | 13 | 12 | 15 | 14 | 15 | 18 | 16 | 19 | 20 | 21 | 21 |

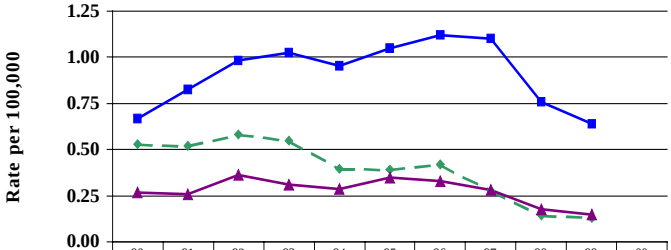
*Houston HIV/AIDS Surveillance* *Reported Through 6/30/01*

**Figure 4.13** Percent of AIDS cases by race/ethnicity. Although early in the epidemic, the majority of cases were among non-Hispanic Whites, since 1996, the majority are among non-Hispanic Blacks.

**Figure 4.14** Rate of AIDS per 1,000 population, based on intercensal estimates of Houston/Harris County population for 1991-1999 and the 1990 and 2000 census (Appendix). Since 1990, the rate of AIDS has fallen nearly 80% among Whites, almost 50% among Hispanics, and only 14% among Blacks. Since 1996, rates for AIDS have declined 50% among Blacks, 40% among Hispanics, and 26% among non-Hispanic Whites.

Part of the differences may represent when the epidemic peaked among the different race/ethnicity groups. Rates peaked among non-Hispanic Whites in 1992; rates peaked for Hispanics in 1995; rates did not peak for Blacks until 1997.

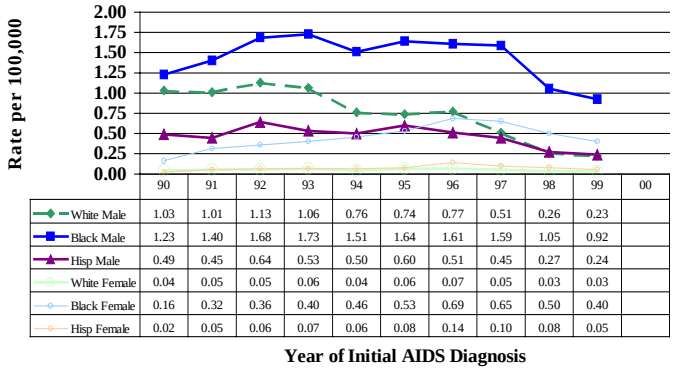
**Figure 4.14 Houston/Harris Co. AIDS Rates per 100,000 By Race/Ethnicity**
Diagnosed 1990-2000




| | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 00 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| White | 0.53 | 0.52 | 0.58 | 0.55 | 0.40 | 0.39 | 0.42 | 0.28 | 0.14 | 0.13 | |
| Black | 0.67 | 0.83 | 0.98 | 1.03 | 0.95 | 1.05 | 1.12 | 1.10 | 0.76 | 0.64 | |
| Hispanic | 0.26 | 0.26 | 0.36 | 0.31 | 0.29 | 0.35 | 0.33 | 0.28 | 0.18 | 0.15 | |

*Houston HIV/AIDS Surveillance* *Reported Through 6/30/01*

**Figure 4.15 Houston/Harris Co. AIDS Rates per 100,000 By Race/Ethnicity and Gender**
Diagnosed 1990-2000




| | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 00 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| White Male | 1.03 | 1.01 | 1.13 | 1.06 | 0.76 | 0.74 | 0.77 | 0.51 | 0.26 | 0.23 | |
| Black Male | 1.23 | 1.40 | 1.68 | 1.73 | 1.51 | 1.64 | 1.61 | 1.59 | 1.05 | 0.92 | |
| Hisp Male | 0.49 | 0.45 | 0.64 | 0.53 | 0.50 | 0.60 | 0.51 | 0.45 | 0.27 | 0.24 | |
| White Female | 0.04 | 0.05 | 0.05 | 0.06 | 0.04 | 0.06 | 0.07 | 0.05 | 0.03 | 0.03 | |
| Black Female | 0.16 | 0.32 | 0.36 | 0.40 | 0.46 | 0.53 | 0.69 | 0.65 | 0.50 | 0.40 | |
| Hisp Female | 0.02 | 0.05 | 0.06 | 0.07 | 0.06 | 0.08 | 0.14 | 0.10 | 0.08 | 0.05 | |

Year of Initial AIDS Diagnosis

*Houston HIV/AIDS Surveillance* *Reported Through 6/30/01*

**Figure 4.15** Non-Hispanic Black males have the highest rates in 2000. Rates for non-Hispanic Black females were steadily increasing from 1990 through 1996, and have since declined. However, non-Hispanic Black females have the second highest rates of AIDS.

These data show the disproportionate impact of HIV/AIDS on the minority community and in particular blacks. There was also a slight increase for Hispanic males and females through 1996, but an overall decrease in the rates for white males.

For all the population categories, a decrease in the rate of AIDS cases is expected as the impact of improved therapies delays or eliminates the progression to AIDS. Continued monitoring of rates will allow an analysis of which populations are benefiting the most (or least) from the treatment methodologies available. At this point in the epidemic, a case of AIDS represents a series of failures. First, a failure to prevent infection, then, a failure to effect good testing behavior in at risk individuals, then, a failure to refer HIV positive individuals into care, then a failure of the treatments offered or the patients compliance to therapy.

## 4. AIDS INFECTION: CUMULATIVE AIDS CASES BY RACE/ETHNICITY

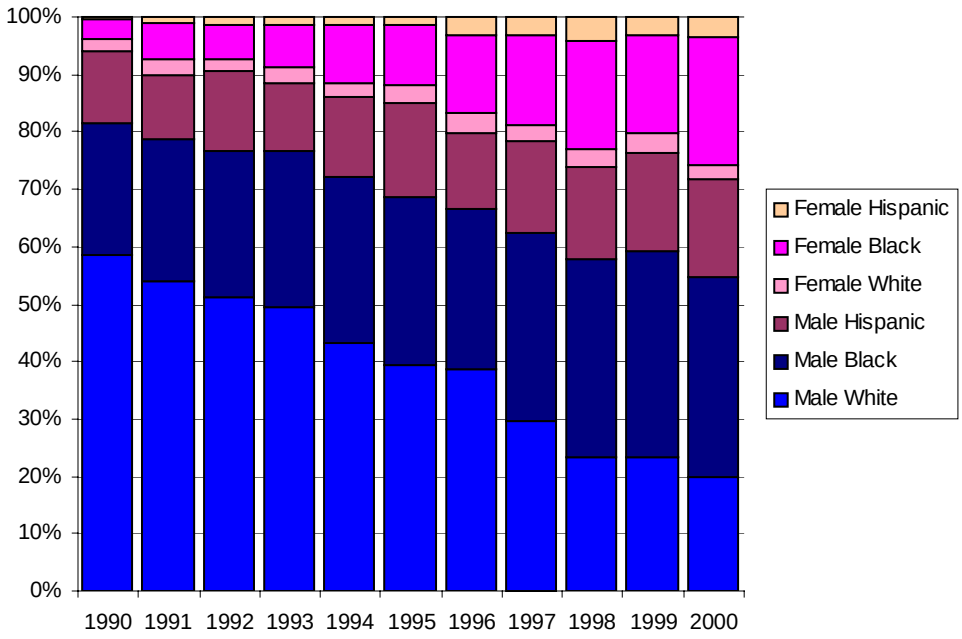
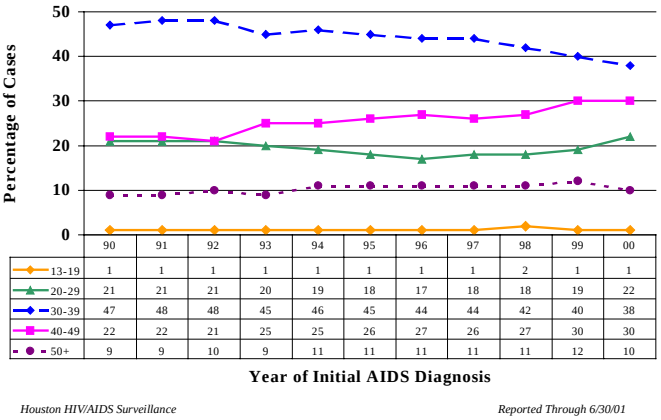



**Figure 4.16** Percent of cases by gender and race/ethnicity over time. The proportion of cases that are non-Hispanic White males has declined while the proportion that are non-Hispanic Black males has increased slightly. The proportion of cases that are Hispanic males have remained relatively constant.

Since 1988, the epidemic in females has been predominantly among black women. The proportion of AIDS cases who are black continues to increase. The proportion of diagnosed female AIDS cases who are Hispanic has also increased and the proportion of female AIDS cases who are non-Hispanic White has decreased correspondingly.

**4.17 Houston/Harris Co. AIDS Percents By Age Group** (13 and over)
Diagnosed 1990-2000




| | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 00 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 13-19 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 |
| 20-29 | 21 | 21 | 21 | 20 | 19 | 18 | 17 | 18 | 18 | 19 | 22 |
| 30-39 | 47 | 48 | 48 | 45 | 46 | 45 | 44 | 44 | 42 | 40 | 38 |
| 40-49 | 22 | 22 | 21 | 25 | 25 | 26 | 27 | 26 | 27 | 30 | 30 |
| 50+ | 9 | 9 | 10 | 9 | 11 | 11 | 11 | 11 | 11 | 12 | 10 |

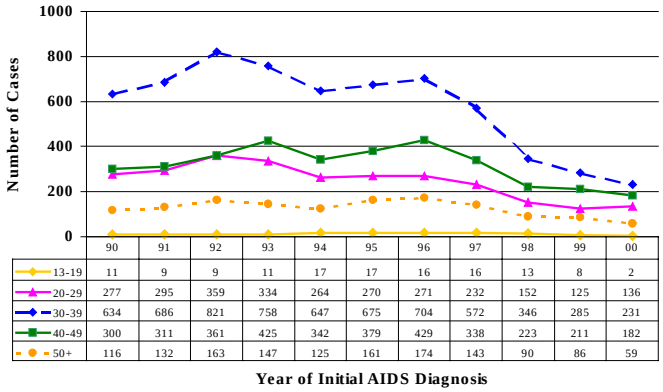
Year of Initial AIDS Diagnosis

*Houston HIV/AIDS Surveillance* *Reported Through 6/30/01*

**Figure 4.17** The proportion of AIDS cases among age groups for the diagnosis years 1990 through 2000. Over this period of time, nearly 50 % of the AIDS cases diagnosed were 30-39 years of age at diagnosis. Another 40 % are between the ages of 20-29 and 40-49. Therefore, 90 % of the AIDS cases diagnosed each year are between the ages of 20 and 49. This age distribution is different than seen for chlamydia and gonorrhea, where younger individuals are more likely to be infected, but illustrates the lag between HIV infection and AIDS diagnosis. The distribution has not varied over time except to show a slight aging of the newly diagnosed AIDS population that is expected due to the delaying of onset of AIDS by therapy. In 1990, 22% were diagnosed with AIDS in the 40-49 year range, and in 2000, 30% were diagnosed in this age range.

**Figure 4.18** Total number of cases, by age group, has decreased since 1990. The most pronounced decrease is in the 30-39 age group.

**4.18 Houston/Harris Co. AIDS Cases By Age Group**
Diagnosed 1981-1999




| | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 00 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 13-19 | 11 | 9 | 9 | 11 | 17 | 17 | 16 | 16 | 13 | 8 | 2 |
| 20-29 | 277 | 295 | 359 | 334 | 264 | 270 | 271 | 232 | 152 | 125 | 136 |
| 30-39 | 634 | 686 | 821 | 758 | 647 | 675 | 704 | 572 | 346 | 285 | 231 |
| 40-49 | 300 | 311 | 361 | 425 | 342 | 379 | 429 | 338 | 223 | 211 | 182 |
| 50+ | 116 | 132 | 163 | 147 | 125 | 161 | 174 | 143 | 90 | 86 | 59 |

Year of Initial AIDS Diagnosis

*Houston HIV/AIDS Surveillance* *Reported Through 6/30/01*

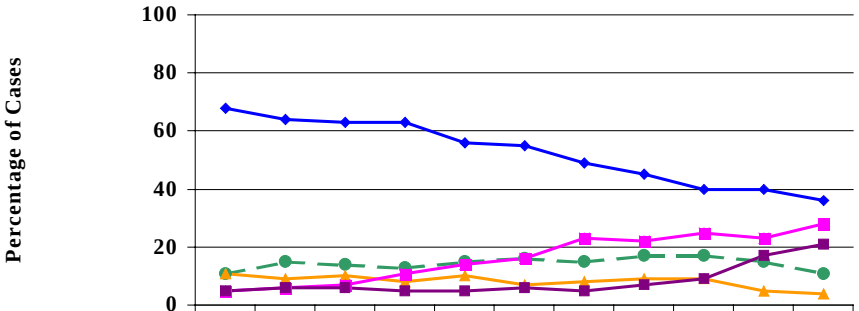
## 4. AIDS INFECTION: RISK FACTORS OF AIDS CASES

Risk factors for infection with HIV and the subsequent development of AIDS are collected with the basic surveillance information for AIDS cases. The Centers of Disease Control and Prevention has determined a hierarchy of risk factors intended to attribute the "riskiest" of behaviors participated in to each AIDS case. This rating of risk factors designates male to male sexual contact as the highest risk for infection followed by injection drug use and then heterosexual contract with a person who has HIV infection or who participates in one of the higher risk behaviors.

Those people with an AIDS diagnosis who cannot be interviewed, or who do not divulge their behaviors, or who do not know either the HIV status or the risk behavior of their heterosexual partners are assigned to a *No Reported Risk* category.

The increasing numbers of females with AIDS has led to an increase in the number of *No Reported Risk* cases because the heterosexual contact definition imposed by the CDC requires more knowledge of the behavior of the sex partner than is readily available. For a majority of the women diagnosed with AIDS who have *No Reported Risk*, the admitted risk is heterosexual sex but without the details regarding the partner that are necessary to meet the CDC definition of *Heterosexual Contact*.

**Figure 4.19 Houston/Harris Co. AIDS Percents By Mode of Transmission**
Diagnosed 1990-2000

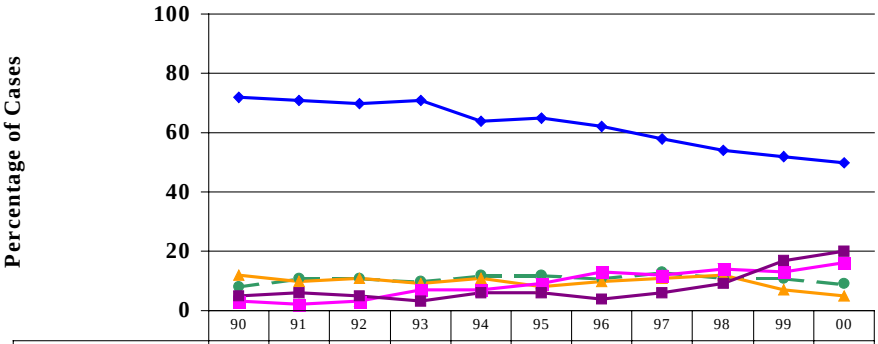



| | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 00 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Male to Male | 68 | 64 | 63 | 63 | 56 | 55 | 49 | 45 | 40 | 40 | 36 |
| Injection Drug Use | 11 | 15 | 14 | 13 | 15 | 16 | 15 | 17 | 17 | 15 | 11 |
| Male to Male +IDU | 11 | 9 | 10 | 8 | 10 | 7 | 8 | 9 | 9 | 5 | 4 |
| Heterosexual | 5 | 6 | 7 | 11 | 14 | 16 | 23 | 22 | 25 | 23 | 28 |
| Other/Unknown | 5 | 6 | 6 | 5 | 5 | 6 | 5 | 7 | 9 | 17 | 21 |

**Year of Initial AIDS Diagnosis**

*Houston HIV/AIDS Surveillance* *Reported Through 6/30/01*

**Figure 4.20 Male Houston/Harris Co. AIDS Percents By Mode of Transmission**
Diagnosed 1990-2000

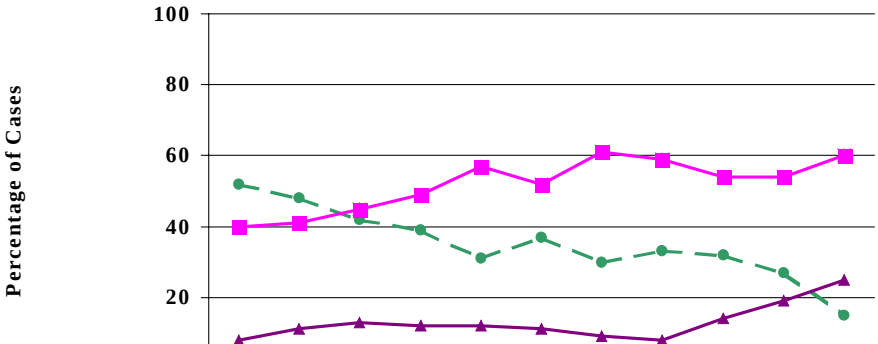



| | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 00 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Male to Male | 72 | 71 | 70 | 71 | 64 | 65 | 62 | 58 | 54 | 52 | 50 |
| Injection Drug Use | 8 | 11 | 11 | 10 | 12 | 12 | 11 | 13 | 11 | 11 | 9 |
| Male to Male +IDU | 12 | 10 | 11 | 9 | 11 | 8 | 10 | 11 | 12 | 7 | 5 |
| Heterosexual Contact | 3 | 2 | 3 | 7 | 7 | 9 | 13 | 12 | 14 | 13 | 16 |
| Other/Unknown | 5 | 6 | 5 | 3 | 6 | 6 | 4 | 6 | 9 | 17 | 20 |

Year of Initial AIDS Diagnosis

*Houston HIV/AIDS Surveillance* *Reported Through 6/30/01*

**Figure 4.21 Female Houston/Harris Co. AIDS Percents By Mode of Transmission**
Diagnosed 1990-2000




| | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 00 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Injection Drug Use | 52 | 48 | 42 | 39 | 31 | 37 | 30 | 33 | 32 | 27 | 15 |
| Heterosexual Contact | 40 | 41 | 45 | 49 | 57 | 52 | 61 | 59 | 54 | 54 | 60 |
| Other/Unknown | 8 | 11 | 13 | 12 | 12 | 11 | 9 | 8 | 14 | 19 | 25 |

Year of Initial AIDS Diagnosis

*Houston HIV/AIDS Surveillance* *Reported Through 6/30/01*

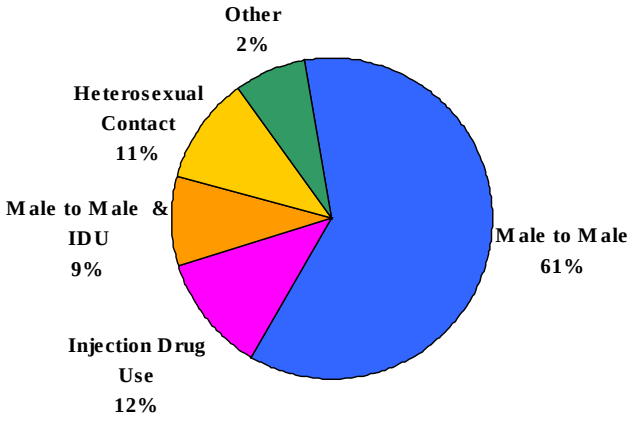
The preceding figures show the change over time for percent of AIDS cases by risk factors for males and females. For males with AIDS, the most common risk behavior remains male to male sexual contact, although as a proportion of all risk behaviors, this continues to decrease. For both males and females there has been an increase in the proportion of AIDS cases with heterosexual contact as the risk behavior as well as an increase in no reported risk cases. For women with AIDS, the proportion with injection drug use as a risk factor was about 50 percent in 1988; that proportion has now decreased to about 15 percent of the AIDS cases diagnosed in women.

For men with AIDS, injection drug use as a risk factor is reported by 11 to 13 percent of the AIDS cases diagnosed each year and there seems to be a downward trend. The combination category of both male to male sexual contact and injection drug use as risk behaviors for infection has decreased over time, presumably due to the decrease in proportions of AIDS cases attributed to male to male sexual contact.

Analysis of risk behavior information indicates that men who have sex with men remain the primary reservoir of infection even though the proportion of cases attributed to male to male sexual contact is decreasing. Injection drug use and heterosexual contact have shown increases in proportion over the past five years, but they remain a smaller proportion of all cases diagnosed.

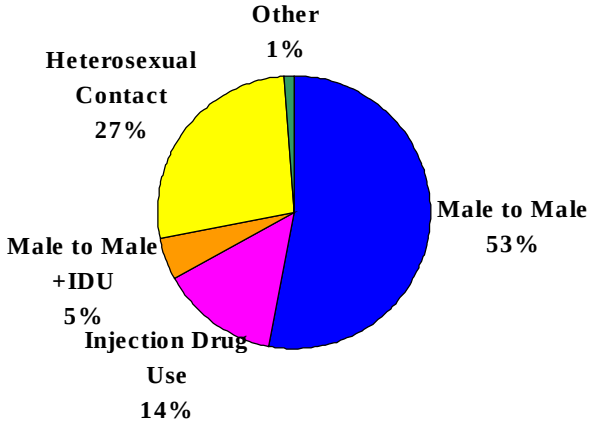
A previous effort of the HIV/AIDS Surveillance Program is to examine AIDS cases initially reported with no risk information to determine if risks identified later in their infection were significantly different from those AIDS cases who were initially reported with a confirmed risk behavior. Figure 4.22 and 4.23 below display charts indicating that there was no major difference in the proportion of risk behaviors reported for either group. In Figure 4.2, risk factors ascertained at diagnosis through 2000 are presented. In Figure 4.3, risk factors are more complete, because those individuals who first had no risk factors identified and were later classified (through 1999) are represented. The primary risk behaviors for infection were male to male sexual contact and injection drug use. For women, the primary risk behavior was heterosexual contact with a partner at risk for HIV infections.

**Figure 4.22 Houston/Harris Co. AIDS Risk Classification**
Diagnosed 1981-2000




*Houston HIV/AIDS Surveillance* *Reported Through 6/30/01*

**Figure 4.23 Houston/Harris Co. AIDS Cases Reclassified From "No Risk Reported" to a Risk Category**
Diagnosed 1981-1999



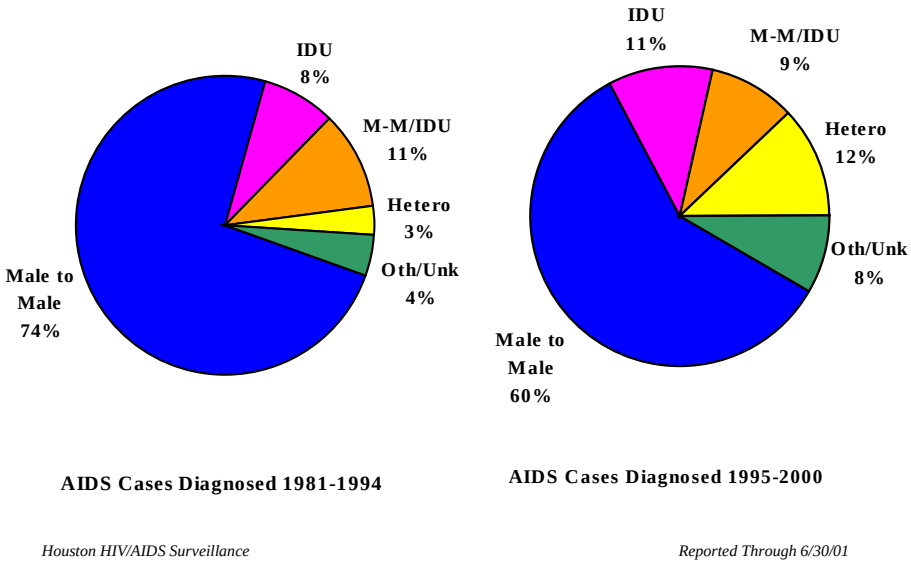

*Houston HIV/AIDS Surveillance* *Reported Through 6/30/01*

The proportion of risk behaviors determined for those cases initially reported with *no risk* are slightly different from those who were initially reported with a risk behavior, perhaps reflecting the difficulty of reporting a heterosexual risk. Initially reported risk has a smaller proportion of heterosexual contact cases and more male to male sexual contact cases. When the reclassified *No Risk Reported* cases are added back into the total dataset, the proportions of each risk category do not change significantly. Therefore, the analysis of behaviors can rely on reported risk. As more and more cases are reported with no risk, future studies will continue to attempt to document and further clarify risk behaviors and monitor the trends in risk behaviors associated with infection.

Given the information presented that the proportion of AIDS cases who are minorities and who are female is increasing over time, it is important to review the risk behaviors associated with infection across gender and racial groups, to determine appropriate directions for prevention interventions.

**Figure 4.24** Male Percents by Mode of Transmission. A comparison of the risk behaviors of male AIDS cases in the first 13 years of the epidemic to the last five years, shows a decrease in the percentage of cases attributed to male to male sexual contact and to the dual risk category of male to male sexual contact and injection drug use. There has been an increase in the proportion of male AIDS cases attributed to injection drug use and a larger increase in the proportion of male AIDS cases attributed to heterosexual contact – the result of a substantial decrease in the proportion attributed to male to male sex.

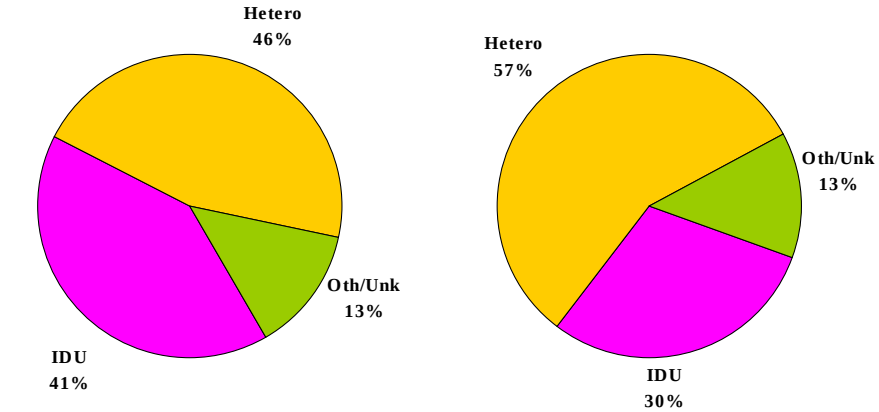
**Figure 4.24 Male Houston/Harris Co. AIDS Percents By Mode of Transmission**
Diagnosed 1981-2000




*Houston HIV/AIDS Surveillance* *Reported Through 6/30/01*

**Figure 4.25** Female Percents by Mode of Transmission. A comparison of the risk behaviors of female AIDS cases in the first 13 years of the epidemic to the last five years, shows a decrease in the percentage of cases attributed to injection drug use and a substantial increase in the proportion of female AIDS cases attributed to heterosexual contact.

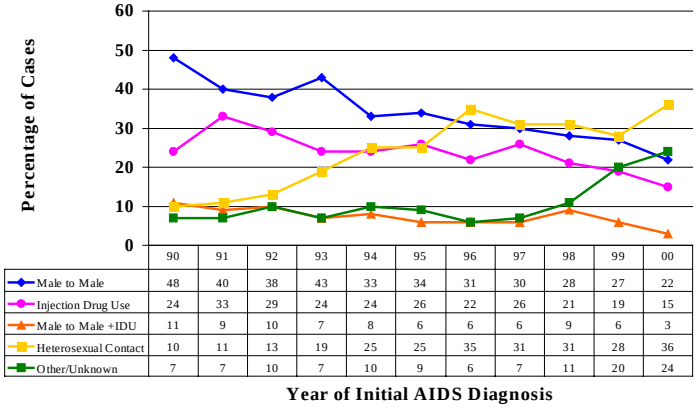
**Figure 4.25 Female Houston/Harris Co. AIDS Percents By Mode of Transmission**
Diagnosed 1981-2000




*Houston HIV/AIDS Surveillance* *Reported Through 6/30/01*

**Figure 4.26 Houston/Harris Co. AIDS Percents among Blacks, By Mode of Transmission**

Diagnosed 1990-2000



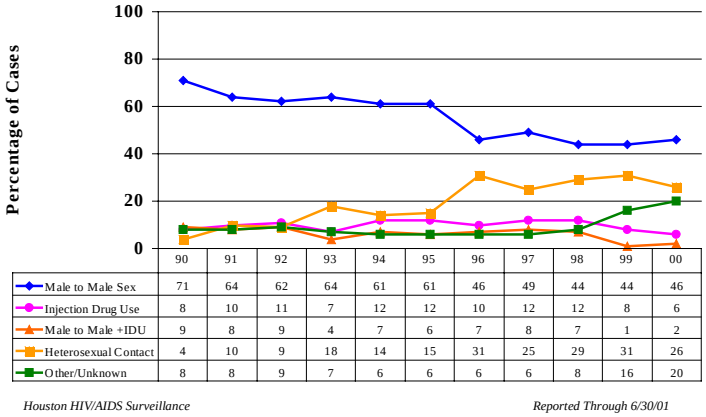

| | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 00 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Male to Male | 48 | 40 | 38 | 43 | 33 | 34 | 31 | 30 | 28 | 27 | 22 |
| Injection Drug Use | 24 | 33 | 29 | 24 | 24 | 26 | 22 | 26 | 21 | 19 | 15 |
| Male to Male +IDU | 11 | 9 | 10 | 7 | 8 | 6 | 6 | 6 | 9 | 6 | 3 |
| Heterosexual Contact | 10 | 11 | 13 | 19 | 25 | 25 | 35 | 31 | 31 | 28 | 36 |
| Other/Unknown | 7 | 7 | 10 | 7 | 10 | 9 | 6 | 7 | 11 | 20 | 24 |

*Houston HIV/AIDS Surveillance* *Reported Through 6/30/01*

A look at the trend of risk behaviors for black AIDS cases shows the same general trends as for all AIDS cases. There has been a decrease in the number of cases attributed to male to male sexual contact and increases in heterosexual contact as a proportion of risk behavior. However, there has also been an increase in the cases with undetermined transmission mode and these may represent un-declared male to male transmission. Among Hispanics, male to male sex as a risk factor has not been declining.

**Figure 4.27 Houston/Harris Co. AIDS Percents among Hispanics, By Mode of Transmission**

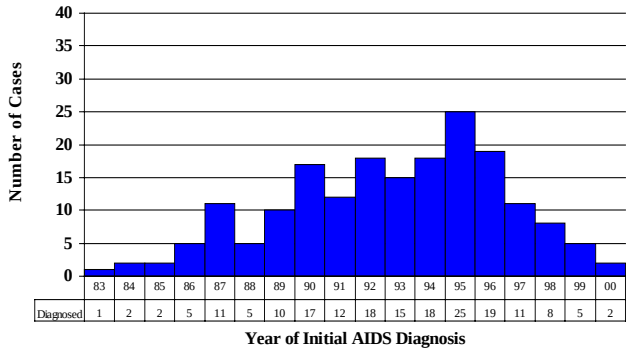
Diagnosed 1990-2000




| | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 00 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Male to Male Sex | 71 | 64 | 62 | 64 | 61 | 61 | 46 | 49 | 44 | 44 | 46 |
| Injection Drug Use | 8 | 10 | 11 | 7 | 12 | 12 | 10 | 12 | 12 | 8 | 6 |
| Male to Male +IDU | 9 | 8 | 9 | 4 | 7 | 6 | 7 | 8 | 7 | 1 | 2 |
| Heterosexual Contact | 4 | 10 | 9 | 18 | 14 | 15 | 31 | 25 | 29 | 31 | 26 |
| Other/Unknown | 8 | 8 | 9 | 7 | 6 | 6 | 6 | 6 | 8 | 16 | 20 |

*Houston HIV/AIDS Surveillance* *Reported Through 6/30/01*

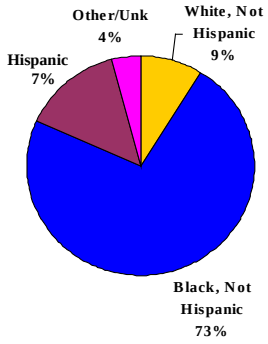
**4.28 Pediatric (<13 Years) AIDS Cases Houston/Harris County**
Diagnosed 1983-2000




*Houston HIV/AIDS Surveillance* *Reported Through 6/30/01*

**Figure 4.28** represents one of the true good news stories of the epidemic in that the numbers of AIDS case in children have decreased from the high of eighteen cases in one year to only four cases diagnosed in 1999. The decrease is a result of the combination of two interventions. The first is the implementation of zidovudine and/or other retroviral therapies therapy to pregnant HIV infected women both during pregnancy and delivery and to the child at birth and for six weeks to prevent perinatal transmission of HIV. The second is the improved therapeutic regimens for the infected children that has delayed the onset of severe morbidity including AIDS.

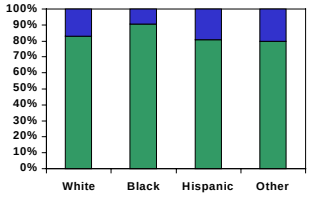
**4.29 Perinatally Exposed Children By Race/Ethnicity Houston/Harris County**
Born 1993-2000




*Houston HIV/AIDS Surveillance* *Reported Through 6/30/01*

**Figure 4.29** points out the disproportionate racial demographics of the children who were exposed to perinatal transmission of HIV, with 79 percent of these children being Black. This data is consistent with the AIDS epidemic seen among women with the predominant proportion of the females with AIDS being black.

**4.30 Percent of children exposed to parenteral HIV who have become infected by 6/30/01**




*Houston HIV/AIDS Surveillance* *Reported Through 6/30/01*

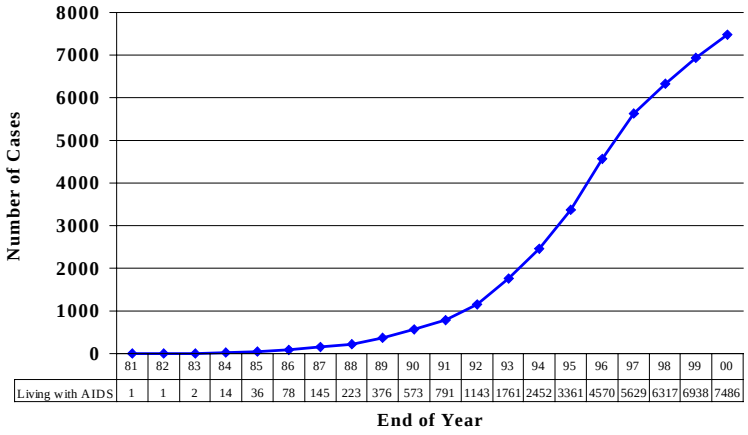
**Figure 4.30** Perhaps representing differences in access to care, of infants exposed to perenteral HIV,18% of Whites, 9% of Blacks, 20% of Hispanics, and 20% of all other race/ethnicity groups became infected with HIV.

## 4. AIDS INFECTION: LIVING AIDS CASES

An analysis of the number of living AIDS cases at the end of each year can show the increasing numbers of people dealing with HIV disease and the potential pool of infected individuals needing care and possibly spreading the infection. The following chart shows the number of living AIDS patients in the area at the end of each report year.

### 4.30 Living Houston/Harris Co. AIDS Cases

Living As Of The End Of Each Year (1981-2000)



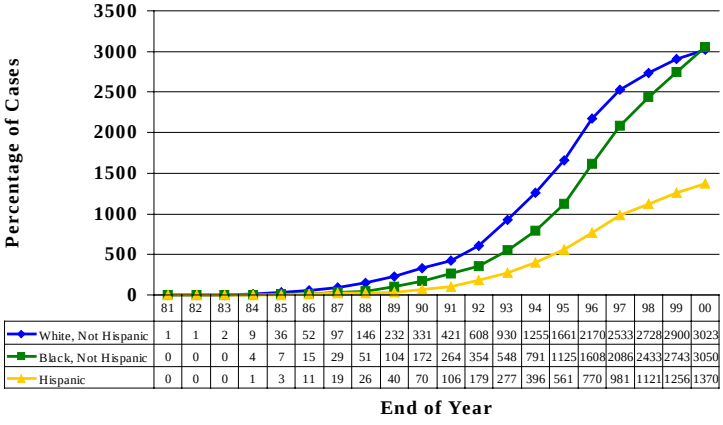

| | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Living with AIDS | 1 | 1 | 2 | 14 | 36 | 78 | 145 | 223 | 376 | 573 | 791 | 1143 | 1761 | 2452 | 3361 | 4570 | 5629 | 6317 | 6938 | 7486 |

*Houston HIV/AIDS Surveillance* *Reported Through 6/30/01*

Even with the decrease in new AIDS cases because of the therapeutic regimens, the number of people living with AIDS is increasing dramatically each year. There are now nearly equal numbers of Whites and Blacks living with AIDS and the number of Hispanics living with AIDS is increasing.

### 4.31 Living Houston/Harris Co. AIDS Cases By Race/Ethnicity

Percent Living As Of The End Of Each Year (1981-2000)



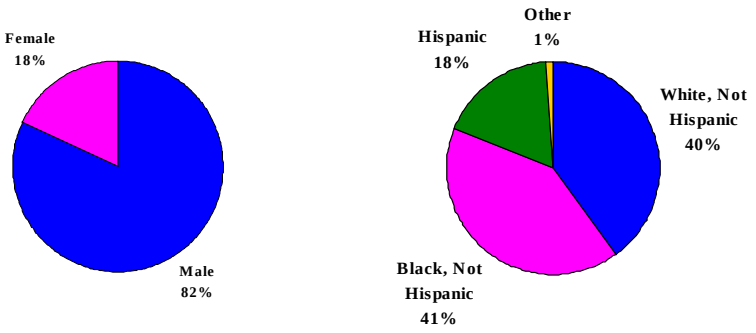

| | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| White, Not Hispanic | 1 | 1 | 2 | 9 | 36 | 52 | 97 | 146 | 232 | 331 | 421 | 608 | 930 | 1255 | 1661 | 2170 | 2533 | 2728 | 2900 | 3023 |
| Black, Not Hispanic | 0 | 0 | 0 | 4 | 7 | 15 | 29 | 51 | 104 | 172 | 264 | 354 | 548 | 791 | 1125 | 1608 | 2086 | 2433 | 2743 | 3050 |
| Hispanic | 0 | 0 | 0 | 1 | 3 | 11 | 19 | 26 | 40 | 70 | 106 | 179 | 277 | 396 | 561 | 770 | 981 | 1121 | 1256 | 1370 |

*Houston HIV/AIDS Surveillance* *Reported Through 6/30/01*

These changes in the demographics of people living with AIDS, illustrate why the minority AIDS cases represent an increasing proportion of all AIDS cases. Early in the epidemic, the majority of AIDS cases were white males, as the epidemic progressed, more minority became infected.

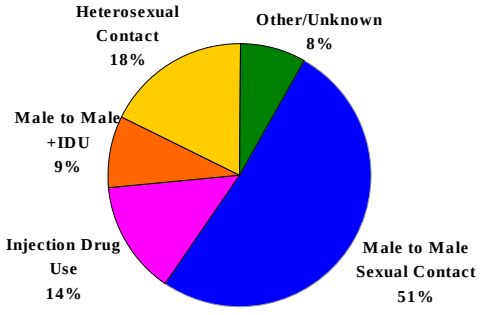
**Figure 4.32 and 4.33.** 82% of the persons living with AIDS are male; 43 % are white, 39 % black, and 17 % Hispanic. Half the people living with AIDS have male to male sexual contact as a risk factor for infection, 15 % have injection drug use and 9 % have the combination risk factor of male to male sexual contact and injection drug use. 17 % have a risk behavior associated with heterosexual contact and 7 % have no reported risk.

**Figure 4.32 Living AIDS Cases by sex, and by race/ethnicity**
**Houston/Harris County**
Diagnosed 1981-2000




*Houston HIV/AIDS Surveillance* *Reported Through 6/30/01*

**Figure 4.33 Living Houston/Harris Co. AIDS**
**Percents By Mode of Transmission**
Diagnosed 1981-2000

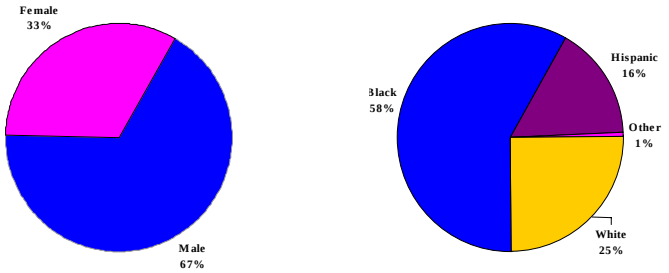



*Houston HIV/AIDS Surveillance* *Reported Through 6/30/01*

## 4. AIDS INFECTION: HIV INFECTIONS

As of January 1, 2000, HIV infection became reportable by name in the State of Texas for all people. The data collected to date is preliminary and will change over time. Reporting new HIV infections will become a useful tool in tracking the epidemic.

**Figure 4.34 Houston/Harris Co. HIV Infection Percents**
**By Gender and Race/ethnicity**
Diagnosed January 1999 through June 2000




*Houston HIV/AIDS Surveillance* *Reported Through 6/30/01*

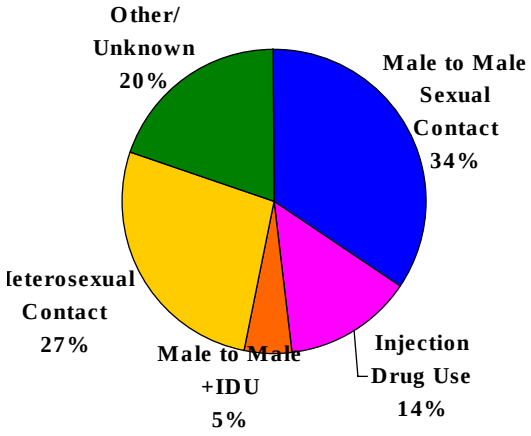
The demographic mix of the HIV infection reports in terms of gender also follow the same trend as has been recorded for AIDS cases and living AIDS cases in that the direction is for increasing proportions of women and corresponding decreases in the proportion of men.

The majority of those newly infected with HIV are males. Of new infections, 58 % were blacks, 16% were Hispanic, and 25% were non-Hispanic Whites.

This data may be assumed to represent the newest diagnosed infections, not necessarily the newest infections, and therefore the most current information as to who is becoming infected with HIV. The trend seen in cumulative AIDS cases and living AIDS cases is continued in this data with an increasing proportion of minorities and a decrease in the proportion of white cases.

**Figure 4.35 Houston/Harris Co. HIV Infection Percents By Mode of Transmission**

Diagnosed January 1999 through June 2000




*Houston HIV/AIDS Surveillance* *Reported Through 6/30/01*

Of the HIV infection reports collected since 1999, 34 % were attributed to male to male sexual contact, 14 % to injection drug use and 5 % to the combined category of male of male sexual contact and injection drug use.

The proportion of injection drug users is a little higher than in the AIDS case reports, but the male to male sexual contact reports follow the same pattern of a lower percentage of the cases. The other increases are in heterosexual contact cases and no risk reported cases. These two changes reflect the same changes as seen in the other AIDS data.

## 4. AIDS INFECTION: SEROSURVEILLANCE DATA

One of the factors involved in assigning "risk" to a particular behavior is the prevalence of HIV in the population engaging in the particular behavior. Of course, other factors such as frequency of the behavior, numbers of possible partners and specific exposure potential of a behavior must also be considered. HIV is spread primarily through the exchange of body fluids during sexual activity or through direct blood transmission as occurs during needle sharing while using injection drugs. If a certain population has absolutely no HIV infection, then no behavior within that group can promote transmission of HIV. In order to determine which behaviors in a particular community put people at most risk of becoming infected with HIV, and therefor which behaviors should be targeted for HIV prevention, the prevalence of HIV among that population must be determined.

Data about prevalence of HIV in specific population is collected by the serosurveillance program through seroprevalence studies that have been conducted among various populations and from the seroincidence study currently underway in two STD clinics.

Seroprevalence studies are conducted in populations that are grouped together for reasons other than their HIV infection status. Examples may be the population of people attending a specific clinic or visiting a certain community organization. In an unlinked seroprevalence study, blood specimens drawn for a purpose other than HIV testing are used to test the entire population at that site for HIV. The specimens are stripped of any identification prior to HIV testing, so the results do not give the HIV status of any individual, but rather the overall prevalence of the group. In linked seroprevalence studies, the individual knows that they are being tested and give permission to participate in a study. Usually a questionnaire about specific behaviors is administered to the individual to get a more complete picture of possible risk behaviors.

The seroprevalence surveys in STD clinics are useful for determining prevalence of HIV in a population who are having unprotected sex. The reason for seeking care at an STD clinic is usually due to a suspected STD or contact to someone with and STD. Risk behaviors are identified from client records and the following table shows the rates of HIV positivity for those male that were identified as having male to male sexual contact.

**Table 4.1** HIV Positive rates among men who have sex with men (MSM) 1991 through 1999 HIV Seroprevalence Survey, Houston, Texas.

| Survey Year | Number of Sites | Number HIV Positive / Number Tested | Percent Positive |
|---|---|---|---|
| 1991 | 4 | 234 / 577 | 40.5 |
| 1992 | 4 | 151 / 432 | 35.0 |
| 1993 | 4 | 151 / 487 | 31.0 |
| 1994 | 4 | 140 / 457 | 30.6 |
| 1995 | 4 | 114 / 453 | 25.2 |
| 1996 | 4 | 157 / 502 | 31.3 |
| 1997 | 4 | 125 / 574 | 21.8 |
| 1998 | 4 | 86 / 420 | 20.5 |
| 1999 | 4 | 57 / 443 | 12.9 |

In the above table, the mean percent infected combining the four clinics, as decreased over time. The highest rate was seen in the 1991 survey period. For the last two survey years the rates were 20 and 12 percent. This trend follows that seen in the AIDS case data with a decreasing proportion of the recent AIDS cases attributed to male to male sexual contact.

## 4. AIDS INFECTION: SEROSURVEILLANCE DATA ADOLESCENT MALES

During 1992 through 1999, blinded seroprevalence studies were conducted in various STD clinics in Houston. The following chart reflects the results of those studies through December 1999. This table focuses on adolescents (less than 20 years of age) receiving care at the STD clinics.

**Table 4.2** HIV Seroprevalence Survey in Adolescent Clinics. Houston, Texas. 1992-1999.

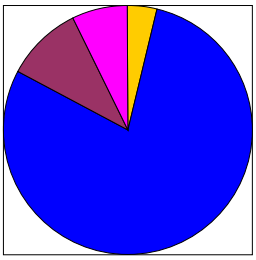
| | Tests | # Positive | % Positive |
|---|---|---|---|
| Total | 17,287 | 63 | 0.36 |
| Gender | | | |
| Male | 678 | 2 | 0.29 |
| Female | 16,477 | 61 | 0.37 |
| Ethnicity | | | |
| Black | 9,896 | 61 | 0.62 |
| White | 1,658 | 0 | 0.00 |
| Hispanic | 5,431 | 2 | 0.04 |
| Other | 171 | 0 | 0.00 |
| Risk Behavior | | | |
| Gay/Bisexual Male | 3 | 0 | 0.00 |
| Reported IDU | 17 | 0 | 0.00 |
| Hetero Partner at Risk | 31 | 2 | 6.45 |
| Blood Recipient | 28 | 0 | 0.00 |
| Sexual Contact | 16,593 | 57 | 0.34 |
| Unknown | 486 | 4 | 0.82 |

## 4. AIDS INFECTION: SURVEY OF CHILDBEARING WOMEN

The 1997 Survey of Childbearing Women in Texas included 93,992 women giving birth during the three month study period. TDH Region 6 tested 20,143 women with the following rates per 1000 live births in Harris County. The 1997 survey was smaller than in pervious years but showed an increase in HIV infection from 1995 (1.05 compared to 0.93)

**Table 4.3** Survey of Child Bearing Women,

| Race | Rate per 1,000 live births |
|---|---|
| White | 0.62 |
| Black | 12.61 |
| Hispanic | 1.60 |
| Other | 1.14 |
| All Races | 3.06 |



*Houston HIV/AIDS Surveillance* *Reported Through 6/30/99*

These rates correspond to the racial breakdown of pediatric AIDS cases reported in Houston. More than 60% of the pediatric AIDS cases are Black, 15% are White and 23% Hispanic.

As the table below indicates, Houston/Harris County continues to have the highest rate of HIV infection among child-bearing women in the state. The rate is increasing significantly in the black community and Houston has currently over twice the rate of other cities among this minority group. In Harris County, the HIV positive rate among women giving birth is twenty times higher for black women than for white women (12.61 vs 0.62) and eight times higher than for Hispanic women (12.61 vs 1.60).

**Table 4.4** 1997 Texas Survey of Childbearing Women Seroprevalence of HIV per 1000 live births, by Race/ethnicity and county.

| County | White | Black | Hispanic | Other | Total |
|---|---|---|---|---|---|
| Bexar | 0.00 | 3.64 | 0.36 | 0.93 | 0.52 |
| Dallas | 0.53 | 4.84 | 0.27 | 0.00 | 1.18 |
| El Paso | 0.00 | 0.00 | 0.36 | 0.00 | 0.28 |
| Harris | 0.62 | 12.61 | 1.60 | 1.14 | 3.06 |
| Tarrant | 0.00 | 0.00 | 0.00 | 2.90 | 0.34 |
| Travis | 0.00 | 0.00 | 0.92 | 0.00 | 0.31 |
| All Others | 0.16 | 4.72 | 0.13 | 0.45 | 0.55 |
| Statewide | 0.23 | 6.37 | 0.48 | 0.84 | 1.05 |

## 4. AIDS INFECTION: SUMMARY

All data presented in this profile of the HIV/AIDS epidemic in Houston/Harris County show consistency in trends in both numbers and proportions of people infected with the HIV virus.

Although the number of new AIDS cases each year is decreasing, the number of people living with HIV and AIDS is increasing. The total number of people needing services and case as will as the number needing prevention education has risen dramatically over the last several years.

At the same time as the numbers of people living with HIV infection and AIDS is increasing, the demographic mix of those people has changed. Whether examining diagnosed AIDS cases, or AIDS population rates, or living AIDS cases only, or HIV test results, the data show an epidemic that is increasingly minority, increasingly female, and increasingly heterosexually transmitted.

While the increases are clearly seen in the proportions of females, minorities, and heterosexuals, there remains a large number of white males and men who have sex with men in the new AIDS cases each year, and in those living with AIDS. Without a good number for the denominator, AIDS case rates are not possible for the at risk populations, but seroprevalence rates in the STD clinic population show a 20 percent infection rate in the clients who report male to male sexual contact as a risk behavior for HIV infection.

Pediatric AIDS has decreased considerably in Harris County, but the children who are exposed are disproportionately black, consistent with the observed trends. The Texas Department of Health's Survey of child-bearing women also shows a high and disproportionate number of black females giving birth who are HIV positive.

The challenge for prevention and service oriented programs in the Houston area will be in maintaining the high quality of activities in the populations who were initially and remain affected by this epidemic, while increasing the focus on, and changing the methodologies to match, the developing epidemic in the minority female and heterosexual communities.

## REFERENCE


1. Division of STD Prevention. *Sexually Transmitted Disease Surveillance* 19987. U.S. Department of Health and Human Services, Public Health Service. Atlanta: Centers for Disease Control and Prevention, September, 1999..
2. Department of Health and Human Services. *Healthy People 2000: Midcourse Review and 1995 Revisions.* U.S. Department of Health and Human Services, Public Health Service. U.S. Government Printing Office, Washington, D.C., September, 1990.
3. Institute of Medicine. *The Hidden Epidemic. Confronting Sexually Transmitted Diseases*. National Academy Press: Washington D.C., 1997.
4. Division of STD Prevention. *Surveillance 1997 Supplement. Chlamydia Prevalence Monitoring Project Annual Report – 1997.* U.S. Department of Health and Human Services, Public Health Service. Atlanta: Centers for Disease Control and Prevention, September, 1997.
5. King Holmes et. al, editors. Sexually Transmitted Diseases, Third Edition. McGraw-Hill: New York, 1999.
6. Fox KK, Whittington W, Levine WC, Moran JS, Zaidi AA, Nakashima AN. Gonorrhea in the United States, 1981-1996: demographic and geographic trends. Sexually Transmitted Diseases 1998;25(7):386-393.
7. Population Projections, 1.0 Scenario, Texas State Data Center, Texas Population Estimates and Projections Programs, Texas A&M University, March, 1997. Last Updated May 29, 1998. http://www.tdh.texas.gov/programs/shd&pa/popdata/menup.htm
8. Source: 1990 Census: Harris County Health Department, Houston-Galveston Area Council, US Census.
9. National syphilis plan aims for under 1,000 cases by 2005. STD Advisor 1999;2(2):37.
10. Risser JMH, Hwang L-Y, Risser WL, Hollins L, and Paffel J. The epidemiology of syphilis in the waning years of an epidemic: Houston, Texas, 1991-1997.
11. MMWR 1998;47:RR-12. HIV Prevention Through Early Detection and Treatment of Other Sexually Transmitted Diseases – United States. Recommendations of the Advisory Committee for HIV and STD Prevention.

1990 Census: Harris County, Texas.

| | All Races | | | White and Other* | | | Black** | | | Hispanic*** | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total | Male | Female | Total | Male | Female | Total | Male | Female | Total | Male | Female |
| Age | | | | | | | | | | | | |
| <1 | 51,656 | 26,432 | 25,224 | 24,373 | 12,572 | 11,801 | 11,047 | 5,659 | 5,388 | 16,236 | 8,201 | 8,035 |
| 1-14 | 634,647 | 323,902 | 310,745 | 312,206 | 159,661 | 152,545 | 132,516 | 67,073 | 65,443 | 189,925 | 97,168 | 92,757 |
| 15-19 | 207,364 | 106,351 | 101,013 | 102,605 | 52,193 | 50,412 | 45,497 | 22,882 | 22,615 | 59,262 | 31,276 | 27,986 |
| 20-24 | 225,122 | 113,503 | 111,619 | 111,814 | 55,101 | 56,713 | 45,094 | 21,076 | 24,018 | 68,214 | 37,326 | 30,888 |
| 25-29 | 280,565 | 141,845 | 138,720 | 154,833 | 77,541 | 77,292 | 51,448 | 23,546 | 27,902 | 74,284 | 40,758 | 33,526 |
| 30-34 | 292,717 | 148,183 | 144,534 | 174,930 | 88,980 | 85,950 | 52,334 | 24,011 | 28,323 | 65,453 | 35,192 | 30,261 |
| 35-39 | 253,993 | 128,006 | 125,987 | 158,588 | 80,704 | 77,884 | 45,441 | 20,800 | 24,641 | 49,964 | 26,502 | 23,462 |
| 40-44 | 211,906 | 105,661 | 106,245 | 141,117 | 70,850 | 70,267 | 34,699 | 15,999 | 18,700 | 36,090 | 18,812 | 17,278 |
| >44 | 660,229 | 306,260 | 353,969 | 462,657 | 216,691 | 245,966 | 111,496 | 48,389 | 63,107 | 86,076 | 41,180 | 44,896 |
| TOTAL | 2,818,199 | 1,400,143 | 1,418,056 | 1,643,123 | 814,293 | 828,830 | 529,572 | 249,435 | 280,137 | 645,504 | 336,415 | 309,089 |

* White includes all races except Black and all ethnic groups except Hispanic;

** Black does not include Black Hispanic;

*** Hispanic includes both Black and White who identified themselves as Hispanic.

## CENSUS DATA – 1991 PROJECTION

| 1991 Projected Census: Harris County, Texas. | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | All Races | | | White and Other* | | | Black** | | | Hispanic*** | | |
| | Total | Male | Female | Total | Male | Female | Total | Male | Female | Total | Male | Female |
| Age | | | | | | | | | | | | |
| <1 | 57,504 | 29,285 | 28,219 | 25,317 | 12,939 | 12,378 | 12,470 | 6,282 | 6,188 | 19,717 | 10,064 | 9,653 |
| 1-14 | 655,114 | 334,265 | 320,849 | 319,366 | 163,317 | 156,049 | 136,354 | 69,068 | 67,286 | 199,394 | 101,880 | 97,514 |
| 15-19 | 206,304 | 105,803 | 100,501 | 102,287 | 52,183 | 50,104 | 44,324 | 22,416 | 21,908 | 59,693 | 31,204 | 28,489 |
| 20-24 | 218,919 | 110,731 | 108,188 | 106,622 | 52,839 | 53,783 | 44,919 | 21,235 | 23,684 | 67,378 | 36,657 | 30,721 |
| 25-29 | 269,805 | 136,274 | 133,531 | 145,113 | 72,305 | 72,808 | 49,817 | 22,928 | 26,889 | 74,875 | 41,041 | 33,834 |
| 30-34 | 296,476 | 149,750 | 146,726 | 174,336 | 88,240 | 86,096 | 52,775 | 24,023 | 28,752 | 69,365 | 37,487 | 31,878 |
| 35-39 | 265,158 | 134,006 | 131,152 | 163,843 | 83,581 | 80,262 | 47,087 | 21,589 | 25,498 | 54,228 | 28,836 | 25,392 |
| 40-44 | 226,322 | 112,660 | 113,662 | 148,080 | 74,251 | 73,829 | 38,301 | 17,528 | 20,773 | 39,941 | 20,881 | 19,060 |
| >44 | 689,391 | 320,500 | 368,891 | 481,634 | 226,162 | 255,472 | 114,775 | 49,660 | 65,115 | 92,982 | 44,678 | 48,304 |
| TOTAL | 2,884,993 | 1,433,274 | 1,451,719 | 1,666,598 | 825,817 | 840,781 | 540,822 | 254,729 | 286,093 | 677,573 | 352,728 | 324,845 |

* White includes all races except Black and all ethnic groups except Hispanic;

** Black does not include Black Hispanic;

*** Hispanic includes both Black and White who identified themselves as Hispanic.

## CENSUS DATA – 1992 PROJECTION

1992 Projected Census: Harris County, Texas.

| | All Races | | | White and Other* | | | Black** | | | Hispanic*** | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total | Male | Female | Total | Male | Female | Total | Male | Female | Total | Male | Female |
| Age | | | | | | | | | | | | |
| <1 | 58,235 | 29,739 | 28,496 | 24,652 | 12,630 | 12,022 | 12,484 | 6,367 | 6,117 | 21,099 | 10,742 | 10,357 |
| 1-14 | 676,634 | 345,284 | 331,350 | 325,794 | 166,619 | 159,175 | 140,337 | 71,073 | 69,264 | 210,503 | 107,592 | 102,911 |
| 15-19 | 207,532 | 106,178 | 101,354 | 102,520 | 52,312 | 50,208 | 43,805 | 22,154 | 21,651 | 61,207 | 31,712 | 29,495 |
| 20-24 | 218,039 | 111,057 | 106,982 | 105,425 | 52,881 | 52,544 | 45,244 | 21,709 | 23,535 | 67,370 | 36,467 | 30,903 |
| 25-29 | 262,741 | 132,297 | 130,444 | 137,930 | 68,200 | 69,730 | 48,959 | 22,547 | 26,412 | 75,852 | 41,550 | 34,302 |
| 30-34 | 294,836 | 148,777 | 146,059 | 170,839 | 86,136 | 84,703 | 52,198 | 23,718 | 28,480 | 71,799 | 38,923 | 32,876 |
| 35-39 | 275,619 | 139,372 | 136,247 | 168,732 | 85,964 | 82,768 | 48,794 | 22,394 | 26,400 | 58,093 | 31,014 | 27,079 |
| 40-44 | 230,475 | 114,704 | 115,771 | 148,371 | 74,498 | 73,873 | 39,899 | 18,102 | 21,797 | 42,205 | 22,104 | 20,101 |
| >44 | 720,237 | 335,659 | 384,578 | 502,263 | 236,495 | 265,768 | 118,254 | 51,098 | 67,156 | 99,720 | 48,066 | 51,654 |
| TOTAL | 2,944,348 | 1,463,067 | 1,481,281 | 1,686,526 | 835,735 | 850,791 | 549,974 | 259,162 | 290,812 | 707,848 | 368,170 | 339,678 |

* White includes all races except Black and all ethnic groups except Hispanic;

** Black does not include Black Hispanic;

*** Hispanic includes both Black and White who identified themselves as Hispanic.

1993 Projected Census: Harris County, Texas.

| | All Races | | | White and Other* | | | Black** | | | Hispanic*** | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total | Male | Female | Total | Male | Female | Total | Male | Female | Total | Male | Female |
| Age | | | | | | | | | | | | |
| <1 | 58,304 | 29,745 | 28,559 | 23,977 | 12,308 | 11,669 | 12,392 | 6,299 | 6,093 | 21,935 | 11,138 | 10,797 |
| 1-14 | 697,496 | 356,098 | 341,398 | 331,077 | 169,407 | 161,670 | 144,021 | 73,016 | 71,005 | 222,398 | 113,675 | 108,723 |
| 15-19 | 209,609 | 107,131 | 102,478 | 102,954 | 52,592 | 50,362 | 43,616 | 22,068 | 21,548 | 63,039 | 32,471 | 30,568 |
| 20-24 | 220,121 | 112,542 | 107,579 | 106,533 | 53,868 | 52,665 | 45,933 | 22,325 | 23,608 | 67,655 | 36,349 | 31,306 |
| 25-29 | 251,500 | 126,494 | 125,006 | 128,547 | 63,196 | 65,351 | 47,325 | 21,864 | 25,461 | 75,628 | 41,434 | 34,194 |
| 30-34 | 293,120 | 147,680 | 145,440 | 166,618 | 83,643 | 82,975 | 51,908 | 23,475 | 28,433 | 74,594 | 40,562 | 34,032 |
| 35-39 | 284,025 | 143,581 | 140,444 | 172,320 | 87,711 | 84,609 | 50,093 | 22,976 | 27,117 | 61,612 | 32,894 | 28,718 |
| 40-44 | 237,882 | 118,519 | 119,363 | 151,010 | 75,896 | 75,114 | 41,666 | 18,857 | 22,809 | 45,206 | 23,766 | 21,440 |
| >44 | 751,110 | 350,824 | 400,286 | 522,437 | 246,639 | 275,798 | 121,993 | 52,575 | 69,418 | 106,680 | 51,610 | 55,070 |
| TOTAL | 3,003,167 | 1,492,614 | 1,510,553 | 1,705,473 | 845,260 | 860,213 | 558,947 | 263,455 | 295,492 | 738,747 | 383,899 | 354,848 |

* White includes all races except Black and all ethnic groups except Hispanic;

** Black does not include Black Hispanic;

*** Hispanic includes both Black and White who identified themselves as Hispanic.

## CENSUS DATA – 1994 PROJECTION

| 1994 Projected Census: Harris County, Texas. | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | All Races | | | White and Other* | | | Black** | | | Hispanic*** | | |
| | Total | Male | Female | Total | Male | Female | Total | Male | Female | Total | Male | Female |
| Age | | | | | | | | | | | | |
| <1 | 57,104 | 29,130 | 27,974 | 23,004 | 11,776 | 11,228 | 11,817 | 6,029 | 5,788 | 22,283 | 11,325 | 10,958 |
| 1-14 | 711,067 | 363,072 | 347,995 | 333,259 | 170,557 | 162,702 | 146,898 | 74,557 | 72,341 | 230,910 | 117,958 | 112,952 |
| 15-19 | 211,497 | 107,961 | 103,536 | 103,911 | 53,137 | 50,774 | 44,276 | 22,332 | 21,944 | 63,310 | 32,492 | 30,818 |
| 20-24 | 217,498 | 111,187 | 106,311 | 106,005 | 53,742 | 52,263 | 45,715 | 22,528 | 23,187 | 65,778 | 34,917 | 30,861 |
| 25-29 | 238,110 | 119,805 | 118,305 | 118,874 | 58,401 | 60,473 | 45,719 | 21,163 | 24,556 | 73,517 | 40,241 | 33,276 |
| 30-34 | 288,274 | 145,130 | 143,144 | 160,667 | 80,312 | 80,355 | 51,372 | 23,216 | 28,156 | 76,235 | 41,602 | 34,633 |
| 35-39 | 289,481 | 146,021 | 143,460 | 174,147 | 88,435 | 85,712 | 50,998 | 23,247 | 27,751 | 64,336 | 34,339 | 29,997 |
| 40-44 | 246,037 | 122,772 | 123,265 | 154,657 | 77,810 | 76,847 | 43,186 | 19,567 | 23,619 | 48,194 | 25,395 | 22,799 |
| >44 | 780,392 | 365,235 | 415,157 | 540,888 | 255,965 | 284,923 | 126,173 | 54,228 | 71,945 | 113,331 | 55,042 | 58,289 |
| TOTAL | 3,039,460 | 1,510,313 | 1,529,147 | 1,715,412 | 850,135 | 865,277 | 566,154 | 266,867 | 299,287 | 757,894 | 393,311 | 364,583 |

* White includes all races except Black and all ethnic groups except Hispanic;

** Black does not include Black Hispanic;

*** Hispanic includes both Black and White who identified themselves as Hispanic.

## CENSUS DATA – 1995 PROJECTION

| 1995 Projected Census: Harris County, Texas. | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | All Races | | | White and Other* | | | Black** | | | Hispanic*** | | |
| | Total | Male | Female | Total | Male | Female | Total | Male | Female | Total | Male | Female |
| Age | | | | | | | | | | | | |
| <1 | 56,425 | 28,807 | 27,618 | 22,253 | 11,391 | 10,862 | 11,163 | 5,703 | 5,460 | 23,009 | 11,713 | 11,296 |
| 1-14 | 718,903 | 366,904 | 351,999 | 332,611 | 170,152 | 162,459 | 148,630 | 75,446 | 73,184 | 237,662 | 121,306 | 116,356 |
| 15-19 | 215,512 | 109,921 | 105,591 | 106,031 | 54,280 | 51,751 | 45,501 | 22,922 | 22,579 | 63,980 | 32,719 | 31,261 |
| 20-24 | 213,546 | 109,348 | 104,198 | 104,950 | 53,432 | 51,518 | 45,200 | 22,636 | 22,564 | 63,396 | 33,280 | 30,116 |
| 25-29 | 226,793 | 114,039 | 112,754 | 111,226 | 54,710 | 56,516 | 44,575 | 20,679 | 23,896 | 70,992 | 38,650 | 32,342 |
| 30-34 | 279,481 | 140,531 | 138,950 | 153,144 | 76,251 | 76,893 | 50,351 | 22,811 | 27,540 | 75,986 | 41,469 | 34,517 |
| 35-39 | 293,134 | 147,432 | 145,702 | 174,453 | 88,133 | 86,320 | 51,533 | 23,317 | 28,216 | 67,148 | 35,982 | 31,166 |
| 40-44 | 254,317 | 127,422 | 126,895 | 158,493 | 80,198 | 78,295 | 44,657 | 20,223 | 24,434 | 51,167 | 27,001 | 24,166 |
| >44 | 811,248 | 380,348 | 430,900 | 559,805 | 265,355 | 294,450 | 130,927 | 56,194 | 74,733 | 120,516 | 58,799 | 61,717 |
| TOTAL | 3,069,359 | 1,524,752 | 1,544,607 | 1,722,966 | 853,902 | 869,064 | 572,537 | 269,931 | 302,606 | 773,856 | 400,919 | 372,937 |

* White includes all races except Black and all ethnic groups except Hispanic;

** Black does not include Black Hispanic;

*** Hispanic includes both Black and White who identified themselves as Hispanic.

## CENSUS DATA – 1996 PROJECTION

| 1996 Projected Census: Harris County, Texas. | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | All Races | | | White and Other* | | | Black** | | | Hispanic*** | | |
| | Total | Male | Female | Total | Male | Female | Total | Male | Female | Total | Male | Female |
| Age | | | | | | | | | | | | |
| <1 | 57,594 | 29,492 | 28,102 | 22,065 | 11,399 | 10,666 | 10,951 | 5,520 | 5,431 | 24,578 | 12,573 | 12,005 |
| 1-14 | 730,468 | 372,785 | 357,683 | 332,593 | 170,130 | 162,463 | 150,094 | 76,180 | 73,914 | 247,781 | 126,475 | 121,306 |
| 15-19 | 222,727 | 113,559 | 109,168 | 109,037 | 55,778 | 53,259 | 46,833 | 23,662 | 23,171 | 66,857 | 34,119 | 32,738 |
| 20-24 | 212,176 | 108,635 | 103,541 | 104,540 | 53,341 | 51,199 | 44,300 | 22,288 | 22,012 | 63,336 | 33,006 | 30,330 |
| 25-29 | 221,490 | 111,722 | 109,768 | 107,079 | 52,963 | 54,116 | 44,476 | 20,862 | 23,614 | 69,935 | 37,897 | 32,038 |
| 30-34 | 270,592 | 135,971 | 134,621 | 145,324 | 72,064 | 73,260 | 49,112 | 22,359 | 26,753 | 76,156 | 41,548 | 34,608 |
| 35-39 | 295,437 | 148,362 | 147,075 | 173,664 | 87,412 | 86,252 | 51,818 | 23,317 | 28,501 | 69,955 | 37,633 | 32,322 |
| 40-44 | 263,026 | 132,125 | 130,901 | 162,656 | 82,504 | 80,152 | 45,942 | 20,828 | 25,114 | 54,428 | 28,793 | 25,635 |
| >44 | 843,866 | 396,441 | 447,425 | 579,383 | 275,202 | 304,181 | 135,966 | 58,275 | 77,691 | 128,517 | 62,964 | 65,553 |
| TOTAL | 3,117,376 | 1,549,092 | 1,568,284 | 1,736,341 | 860,793 | 875,548 | 579,492 | 273,291 | 306,201 | 801,543 | 415,008 | 386,535 |

* White includes all races except Black and all ethnic groups except Hispanic;

** Black does not include Black Hispanic;

*** Hispanic includes both Black and White who identified themselves as Hispanic.

## CENSUS DATA – 1997 PROJECTION

| 1997 Projected Census: Harris County, Texas. | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | All Races | | | White and Other* | | | Black** | | | Hispanic*** | | |
| | Total | Male | Female | Total | Male | Female | Total | Male | Female | Total | Male | Female |
| Age | | | | | | | | | | | | |
| <1 | 58,003 | 29,544 | 28,459 | 22,975 | 11,697 | 11,278 | 11,577 | 5,894 | 5,683 | 23,451 | 11,953 | 11,498 |
| 1-14 | 717,826 | 365,457 | 352,369 | 318,569 | 161,964 | 156,605 | 148,395 | 75,485 | 72,910 | 250,862 | 128,008 | 122,854 |
| 15-19 | 231,372 | 117,626 | 113,746 | 112,846 | 57,310 | 55,536 | 44,869 | 22,578 | 22,291 | 73,657 | 37,738 | 35,919 |
| 20-24 | 224,806 | 113,690 | 111,116 | 107,986 | 53,960 | 54,026 | 40,040 | 19,065 | 20,975 | 76,780 | 40,665 | 36,115 |
| 25-29 | 274,403 | 137,253 | 137,150 | 137,436 | 67,321 | 70,115 | 45,070 | 19,738 | 25,332 | 91,897 | 50,194 | 41,703 |
| 30-34 | 292,327 | 147,761 | 144,566 | 145,082 | 71,832 | 73,250 | 46,316 | 20,046 | 26,270 | 100,929 | 55,883 | 45,046 |
| 35-39 | 284,982 | 142,708 | 142,274 | 154,049 | 77,409 | 76,640 | 49,303 | 21,705 | 27,598 | 81,630 | 43,594 | 38,036 |
| 40-44 | 257,524 | 127,740 | 129,784 | 150,716 | 75,273 | 75,443 | 46,354 | 20,875 | 25,479 | 60,454 | 31,592 | 28,862 |
| >44 | 822,099 | 384,933 | 437,166 | 546,933 | 259,085 | 287,848 | 136,448 | 58,638 | 77,810 | 138,718 | 67,210 | 71,508 |
| TOTAL | 3,163,342 | 1,566,712 | 1,596,630 | 1,696,592 | 835,851 | 860,741 | 568,372 | 264,024 | 304,348 | 898,378 | 466,837 | 431,541 |

* White includes all races except Black and all ethnic groups except Hispanic;

** Black does not include Black Hispanic;

*** Hispanic includes both Black and White who identified themselves as Hispanic.

# CENSUS DATA – 1998 PROJECTION

| 1998 Projected Census: Harris County, Texas. | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | All Races | | | White and Other* | | | Black** | | | Hispanic*** | | |
| | Total | Male | Female | Total | Male | Female | Total | Male | Female | Total | Male | Female |
| Age | | | | | | | | | | | | |
| <1 | 58,082 | 29,579 | 28,503 | 22,641 | 11,528 | 11,113 | 11,438 | 5,825 | 5,613 | 24,003 | 12,226 | 11,777 |
| 1-14 | 726,832 | 369,796 | 357,036 | 316,538 | 160,824 | 155,714 | 149,985 | 76,214 | 73,771 | 260,309 | 132,758 | 127,551 |
| 15-19 | 237,518 | 120,893 | 116,625 | 115,108 | 58,476 | 56,632 | 45,276 | 22,930 | 22,346 | 77,134 | 39,487 | 37,647 |
| 20-24 | 226,666 | 114,503 | 112,163 | 109,019 | 54,535 | 54,484 | 39,310 | 18,770 | 20,540 | 78,337 | 41,198 | 37,139 |
| 25-29 | 277,575 | 139,320 | 138,255 | 137,990 | 67,901 | 70,089 | 45,499 | 20,124 | 25,375 | 94,086 | 51,295 | 42,791 |
| 30-34 | 289,100 | 146,146 | 142,954 | 140,333 | 69,111 | 71,222 | 44,874 | 19,327 | 25,547 | 103,893 | 57,708 | 46,185 |
| 35-39 | 285,788 | 143,053 | 142,735 | 149,463 | 74,817 | 74,646 | 48,702 | 21,258 | 27,444 | 87,623 | 46,978 | 40,645 |
| 40-44 | 263,127 | 130,539 | 132,588 | 150,742 | 75,225 | 75,517 | 47,536 | 21,467 | 26,069 | 64,849 | 33,847 | 31,002 |
| >44 | 850,790 | 398,647 | 452,143 | 560,988 | 265,943 | 295,045 | 141,127 | 60,653 | 80,474 | 148,675 | 72,051 | 76,624 |
| TOTAL | 3,215,478 | 1,592,476 | 1,623,002 | 1,702,822 | 838,360 | 864,462 | 573,747 | 266,568 | 307,179 | 938,909 | 487,548 | 451,361 |

* White includes all races except Black and all ethnic groups except Hispanic;

** Black does not include Black Hispanic;

*** Hispanic includes both Black and White who identified themselves as Hispanic.

| 1999 Projected Census: Harris County, Texas. | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | All Races | | | White and Other* | | | Black** | | | Hispanic*** | | |
| | Total | Male | Female | Total | Male | Female | Total | Male | Female | Total | Male | Female |
| Age | | | | | | | | | | | | |
| <1 | 58.261 | 29.667 | 28,594 | 22,399 | 11,404 | 10,995 | 11,294 | 5,745 | 5,549 | 24,568 | 12,518 | 12,050 |
| 1-14 | 737.071 | 375.073 | 361,998 | 314,854 | 159,961 | 154,893 | 151,641 | 77,120 | 74,521 | 270,576 | 137,992 | 132584 |
| 15-19 | 240.892 | 122.701 | 118,191 | 116,022 | 58,906 | 57,116 | 45,021 | 22,850 | 22,171 | 79,849 | 40,945 | 38,904 |
| 20-24 | 232.027 | 117.037 | 114,990 | 111,705 | 55,942 | 55,763 | 39,710 | 18,902 | 20,808 | 80,612 | 42,193 | 38,419 |
| 25-29 | 278.580 | 140.066 | 138,514 | 137,500 | 67,803 | 69,697 | 44,968 | 20,038 | 24,930 | 96,112 | 52,225 | 43,887 |
| 30-34 | 286.417 | 144.818 | 141,599 | 136,796 | 67,178 | 69,618 | 43,673 | 18,729 | 24,944 | 105,948 | 58,911 | 47,037 |
| 35-39 | 287.516 | 144.210 | 143,306 | 145,129 | 72,448 | 72,681 | 48,048 | 20,824 | 27,224 | 94,339 | 50,938 | 43,401 |
| 40-44 | 267.530 | 132.519 | 135,011 | 150,238 | 74,939 | 75,299 | 48,223 | 21,634 | 26,589 | 69,069 | 35,946 | 33,123 |
| >44 | 879.805 | 412.701 | 467,104 | 574,780 | 272,692 | 302,088 | 145,713 | 62,556 | 83,157 | 159,312 | 77,453 | 81,859 |
| TOTAL | 3,268,099 | 1,618,792 | 1,649,307 | 1,709,423 | 841,273 | 868,150 | 578,291 | 268,398 | 309,893 | 980,385 | 509,121 | 471,264 |

* White includes all races except Black and all ethnic groups except Hispanic;

** Black does not include Black Hispanic;

*** Hispanic includes both Black and White who identified themselves as Hispanic.

| 2000 Census: Harris County, Texas. | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | All Races | | | White and Other* | | | Black** | | | Hispanic*** | | |
| | Total | Male | Female | Total | Male | Female | Total | Male | Female | Total | Male | Female |
| Age | | | | | | | | | | | | |
| <14 | 828,962 | 424,010 | 404,952 | 268,371 | 137,419 | 130,952 | 164,120 | 83,573 | 80,547 | 344,742 | 176,384 | 168,358 |
| 15-19 | 254,828 | 131,984 | 122,844 | 86,880 | 44,373 | 42,507 | 50,029 | 25,083 | 24,946 | 101,631 | 54,113 | 47,518 |
| 20-24 | 252,608 | 128,733 | 123,875 | 74,541 | 36,327 | 38,214 | 45,829 | 20,790 | 25,039 | 115,307 | 63,145 | 52,162 |
| 25-29 | 293,069 | 147,950 | 145,119 | 99,379 | 49,293 | 50,086 | 51,137 | 22,912 | 28,225 | 119,289 | 64,050 | 55,239 |
| 30-34 | 280,870 | 143,006 | 137,864 | 106,721 | 54,073 | 52,648 | 48,176 | 21,678 | 26,498 | 104,436 | 56,242 | 48,194 |
| 35-39 | 284,295 | 142,756 | 141,539 | 122,501 | 61,296 | 61,205 | 50,832 | 22,642 | 28,190 | 91,132 | 48,655 | 42,477 |
| 40-44 | 278,142 | 139,607 | 138,535 | 135,346 | 68,565 | 66,781 | 50,099 | 22,794 | 27,305 | 74,013 | 38,940 | 35,073 |
| >44 | 927,804 | 435,836 | 491,968 | 538,525 | 254,695 | 283,830 | 159,472 | 69,109 | 90,363 | 169,201 | 82,407 | 86,794 |
| TOTAL | 3,400,578 | 1,693,882 | 1,706,696 | 1,432,264 | 706,041 | 726,223 | 619,694 | 288,581 | 331,113 | 1,119,751 | 583,936 | 535,815 |

White includes white only from the 2000 census;

** Black does not include Black Hispanic;

*** Hispanic includes both Black and White who identified themselves as Hispanic.