EPIDEMIOLOGY OF SEXUALLY TRANSMITTED DISEASES

CHLAMYDIA, GONORRHEA, SYPHILIS: 1991 – 2000

HIV / AIDS: 1981 – 2000

CITY OF HOUSTON AND HARRIS COUNTY, TEXAS

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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.

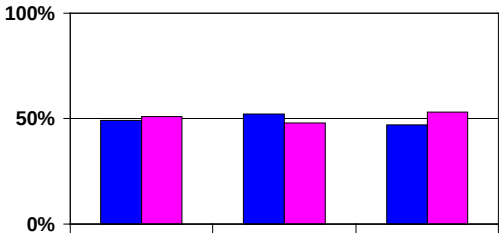
SUMMARY

- 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.

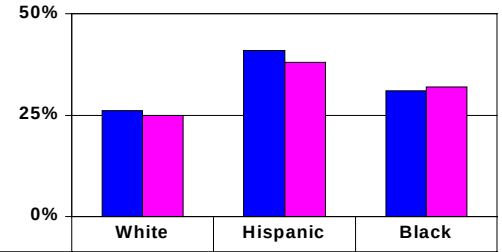
Gender Distribution by Race/Ethnicity



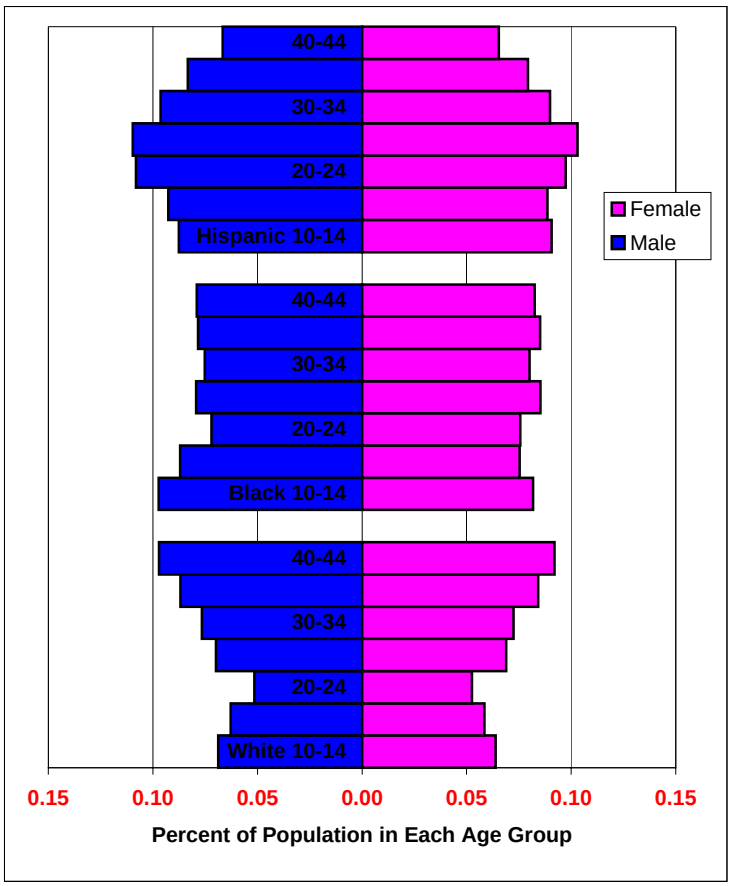
	White	Hispanic	Black
Male	49%	52%	47%
Female	51%	48%	53%

- 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).

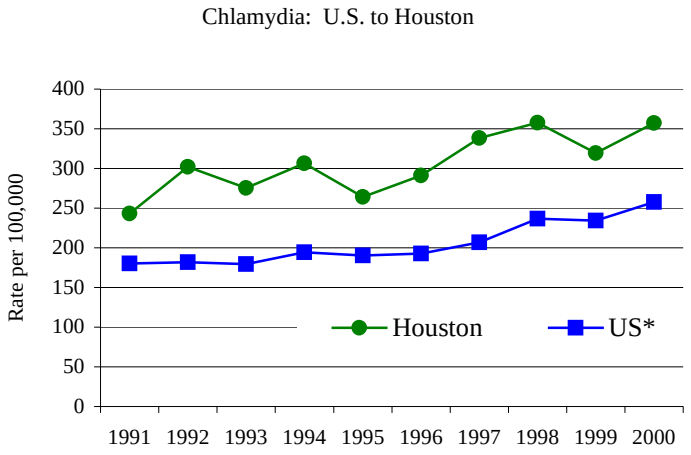


Figure 1.1. Comparison of chlamydia rates in the US to rates in Houston, 1991 through 2000. Rates are reported per 100,000 persons.

1. CHLAMYDIA: CRUDE RATES

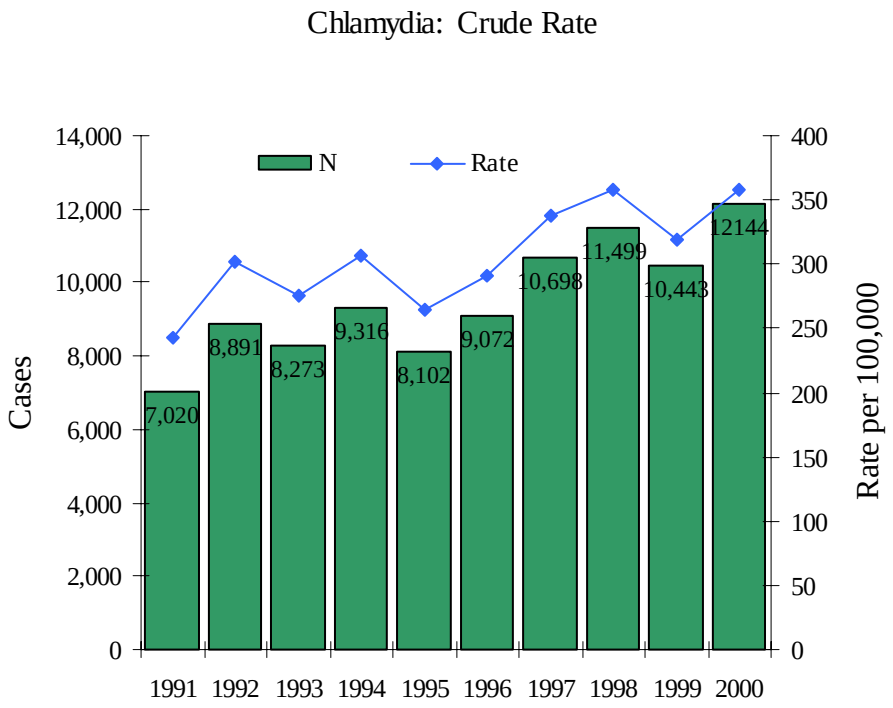


Figure 1.2. Chlamydia cases and rates per 100,000 persons per year. There was an 11% decrease in reported rates between 1998 and 1999 and a 12% increase between 1999 and 2000. Rates for 1991-1999 are based on intercensal estimates of Houston/Harris County population; rates for 2000 are based on the 2000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

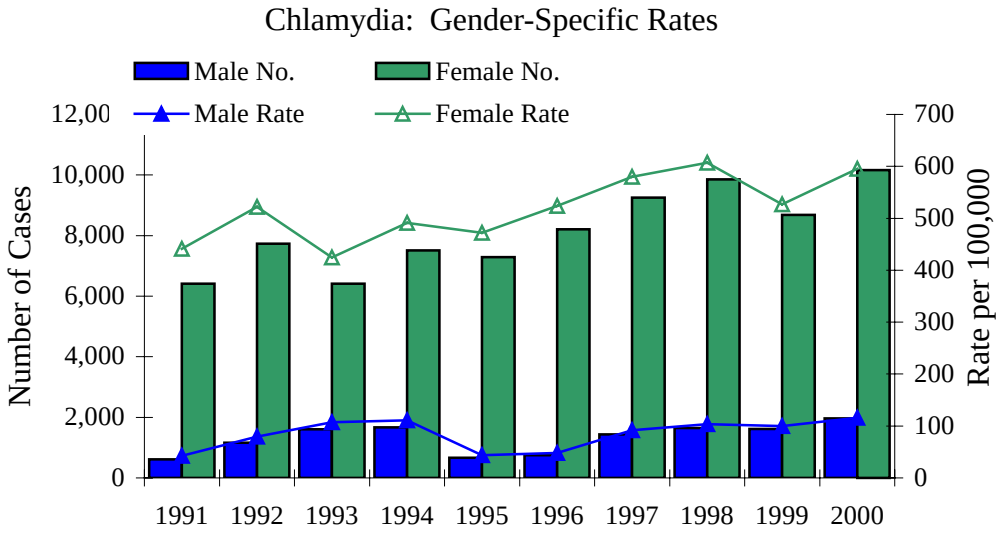


Figure 1.3. Chlamydia cases and rates by gender. Females make up more than 80% of the total cases reported. Rates are presented per 100,000 population (Appendix).

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

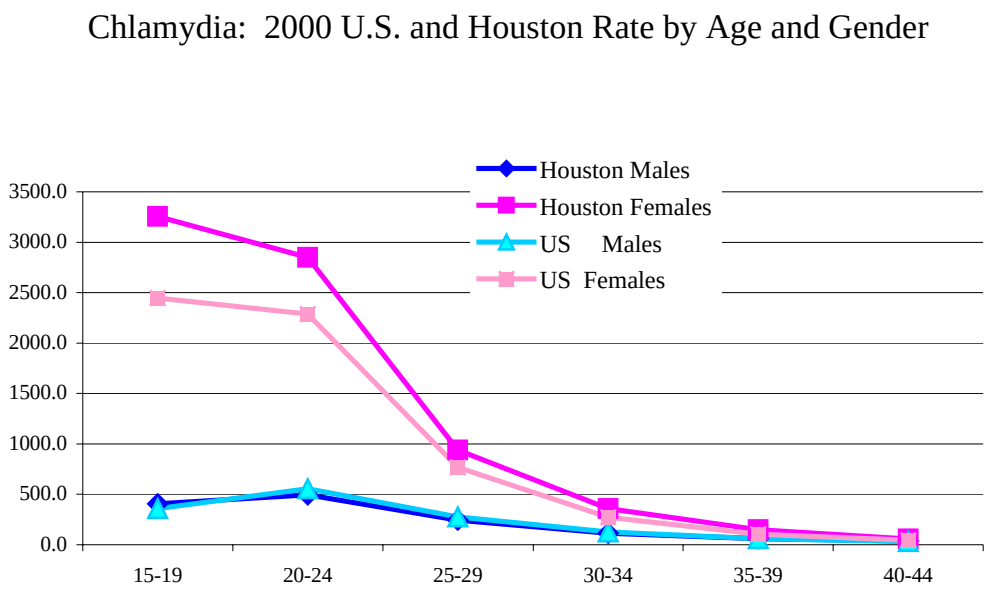


Figure 1.4. The 2000 Houston rates among females aged 15 – 29 years are higher than corresponding US rates; 2000 rates among Houston males are similar to US rates at all ages. Rates are presented per 100,000 persons; Houston rates are based on intercensal estimates of Houston/Harris County population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

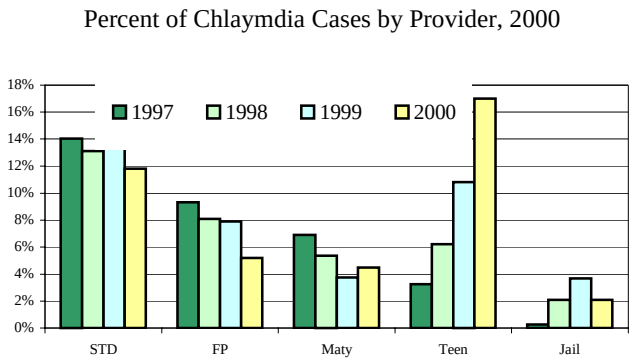
More than 60% of all chlamydia cases are identified through private physicians, health maintenance organizations, or through laboratory reporting with type-of-provider not documented.

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.

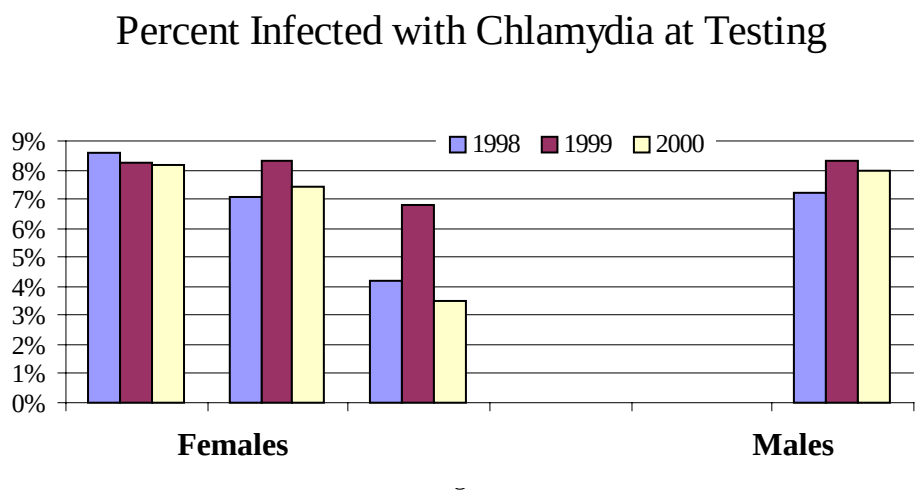


Figure 1.6. The percent of individuals found infected with chlamydia among all tested, comparing 1998 and 1999 prevalence.

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.

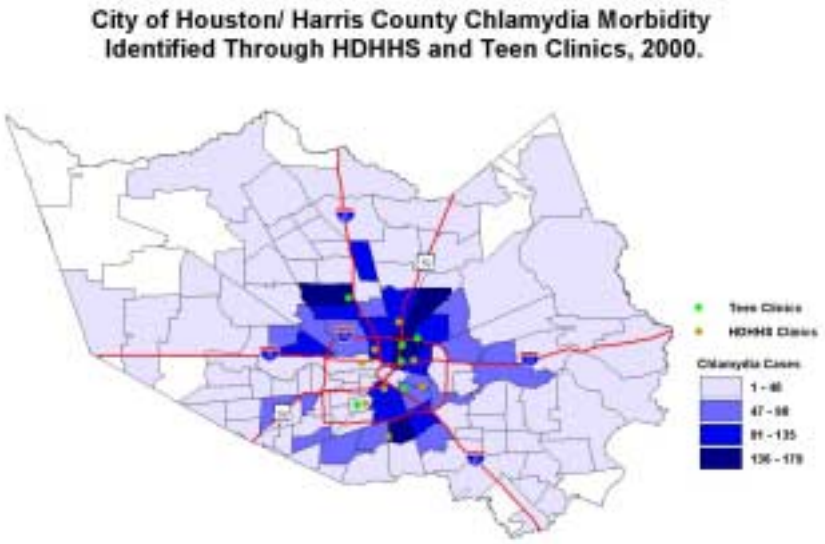
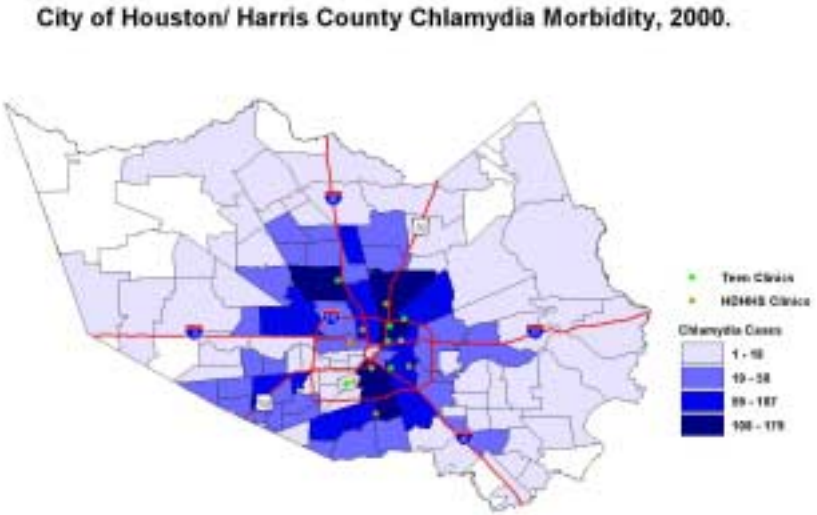


Figure 1.8 Total cases from all providers, Houston/Harris County, 2000.



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

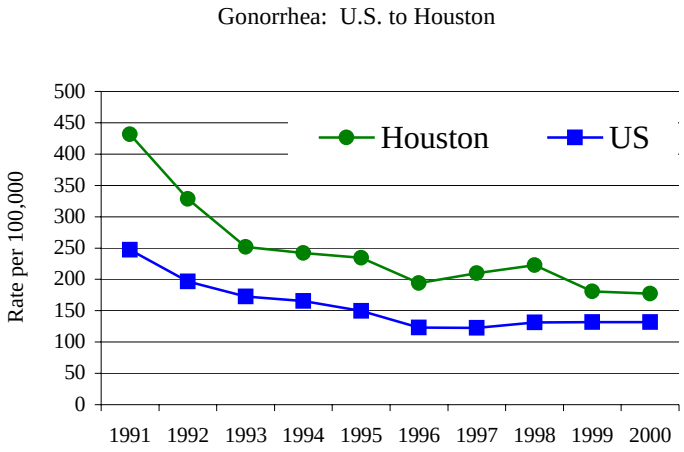
Gonorrhea	N	Rate	% Change*
1991	12,449	431.4	
1992	9,667	328.3	-24%
1993	7,565	251.8	-23%
1994	7,358	242.1	-4%
1995	7,191	234.3	-3%
1996	6,046	193.9	-17%
1997	6,633	209.7	8%
1998	7,164	222.8	6%
1999	5,905	180.7	-19%
2000	6,033	177.4	-2%

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

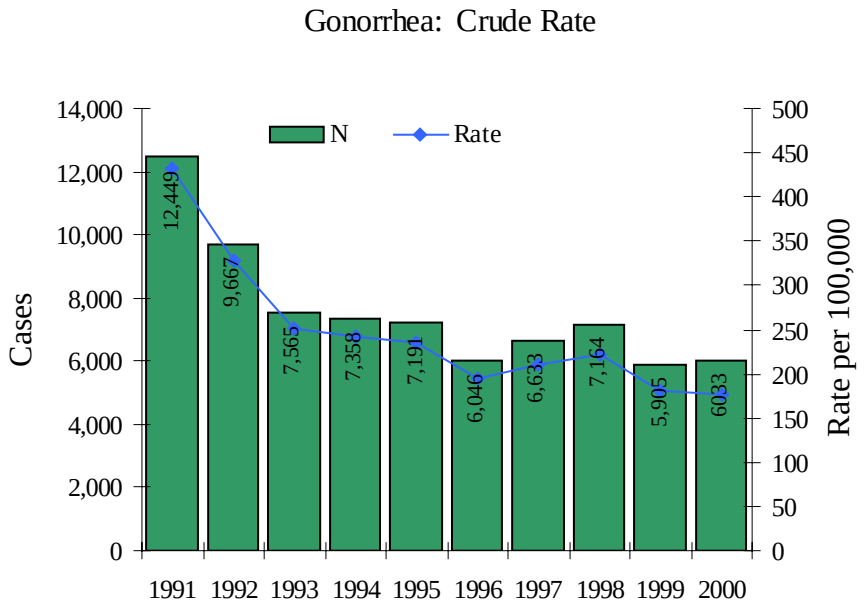


Figure 2.2. Gonorrhea cases and rates per 100,000 persons per year. There was nearly a 19% decrease in reported cases between 1998 and 2000. This is consistent with the slow decline since the early 1990s.

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

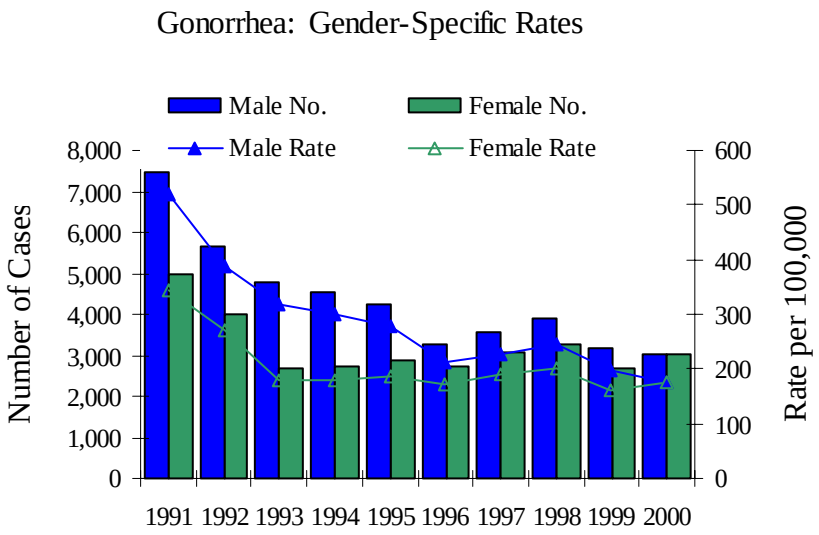


Figure 2.3. Gonorrhea cases and rates by gender. The rates among males and females were the same in 2000. The 2010 goal is for 19 cases per 100,000 population; current rates in Harris County are 10 time that goal. Rates are reported per 100,000 population based on intercensal estimates of Houston/Harris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

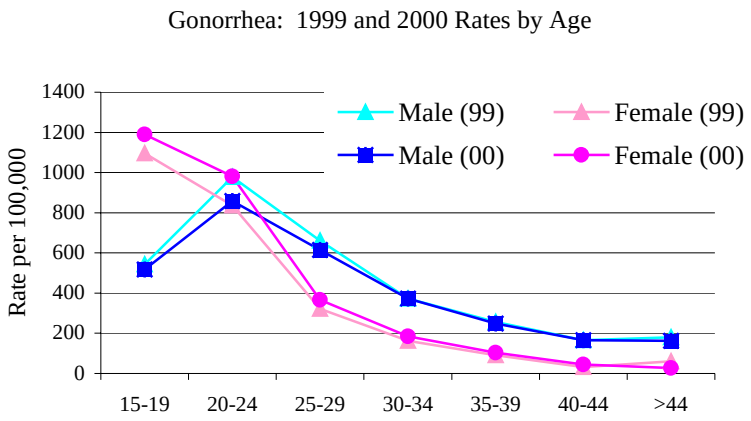


Figure 2.4. Comparison of rates by age and gender, using the average of the 1991 - 1998 rates compared to the 1999 rates. Although there was a decrease in the crude rates reported in 1999, the major difference in reported rates seems to be among young males. This is an area that deserves increased investigation 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

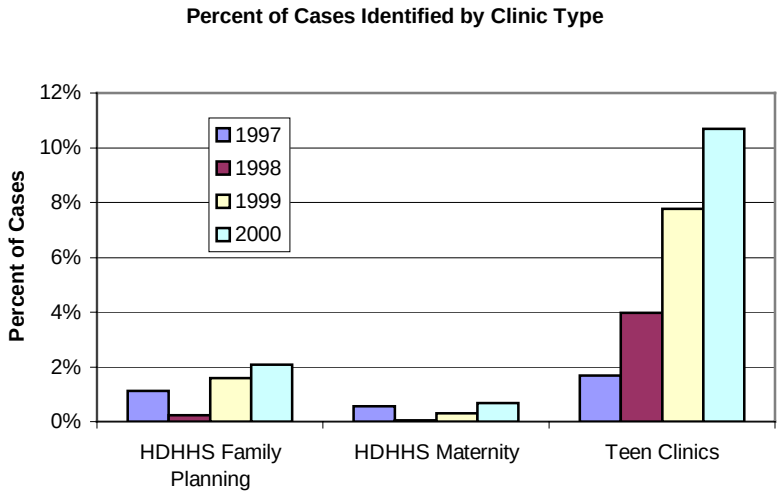
Distribution of cases among provider types, 1997 – 1999.

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

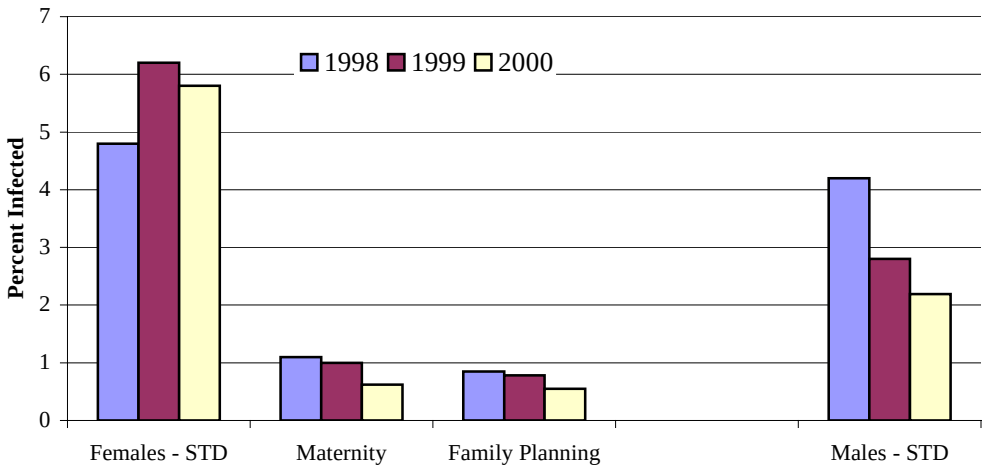


Figure 2.6, Percent of positive tests reported by selected clinics for 1999.

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

City of Houston/ Harris County Gonorrhea Morbidity
Identified Through HDHHS and Teen Clinics, 2000.

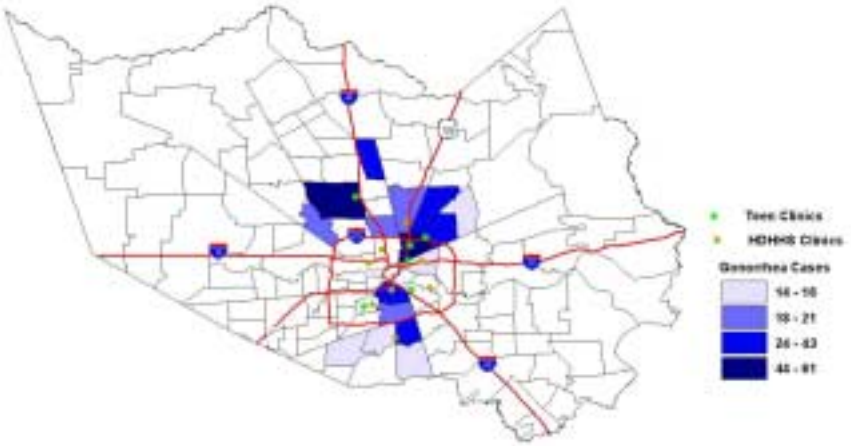
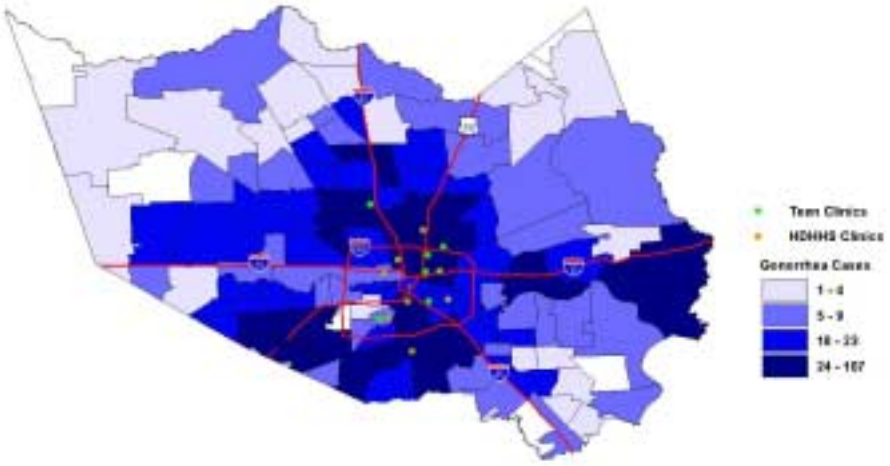


Figure 2.8

City of Houston/ Harris County Gonorrhea Morbidity, 2000.



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 14th among states in primary and secondary syphilis rates with 3.5 per 100,000 population; Houston ranked 24th 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.

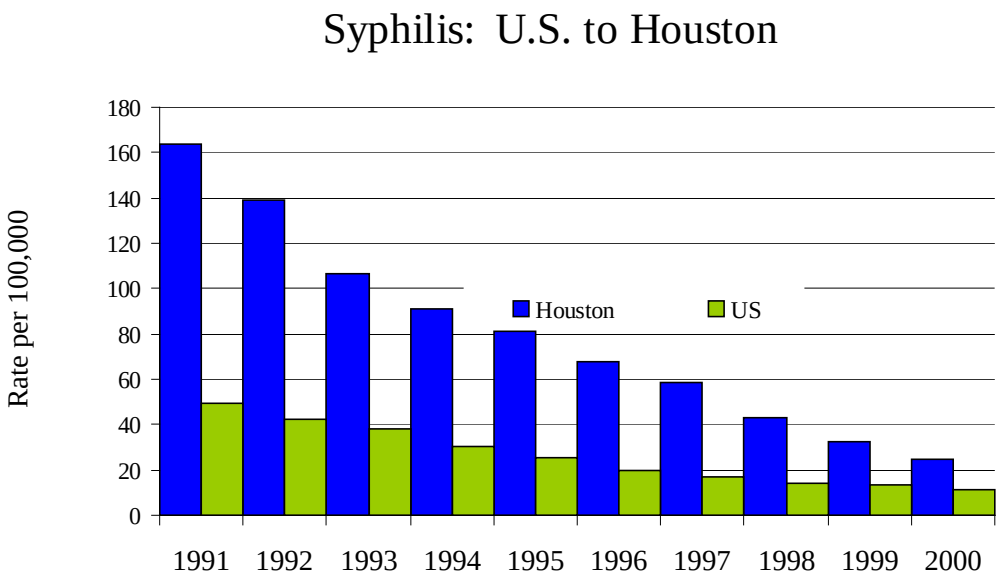


Figure 3.1 Changes in total syphilis rates per 100,000 (excluding congenital) in Houston compared to the US There has been an 85% decline in syphilis rates in Houston since 1991. Rates per 100,000 persons per year (Appendix).

3. SYPHILIS: CRUDE RATES

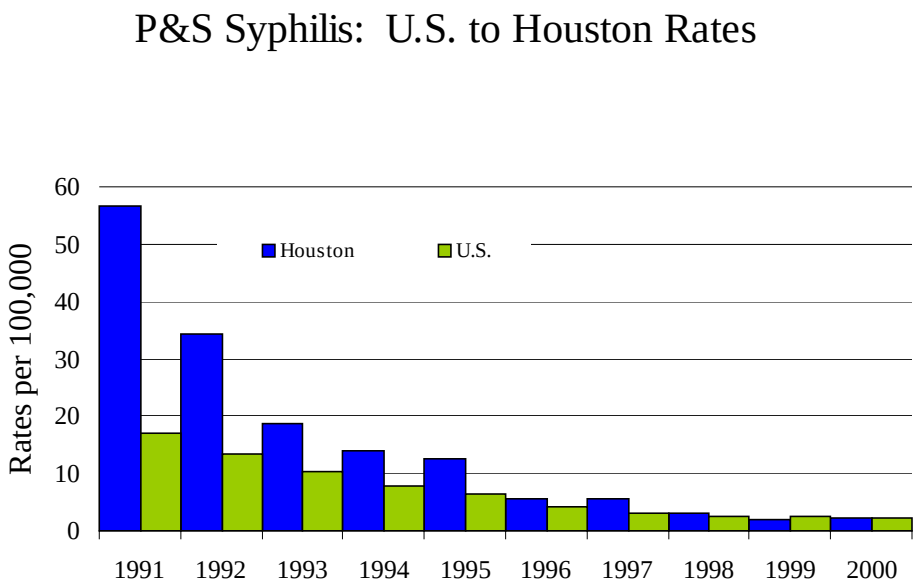


Figure 3.2. Comparison of Primary & Secondary syphilis rates between the US and Houston. *Health People 2000* goal for P&S syphilis is less than 4 case per 100,000. Houston has reached that goal. Rates per 100,000 persons per year (Appendix).

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.

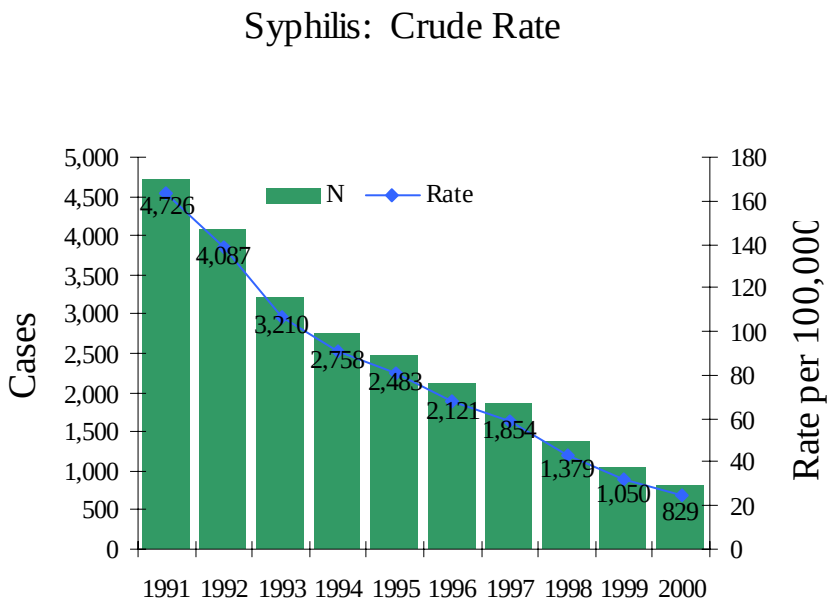


Figure 3.3. Crude number and rate of syphilis (excluding congenital) in Houston, 1991-2000. Rates per 100,000 persons per year (Appendix).

SYPHILIS – CRUDE RATES BY STAGE OF DISEASE

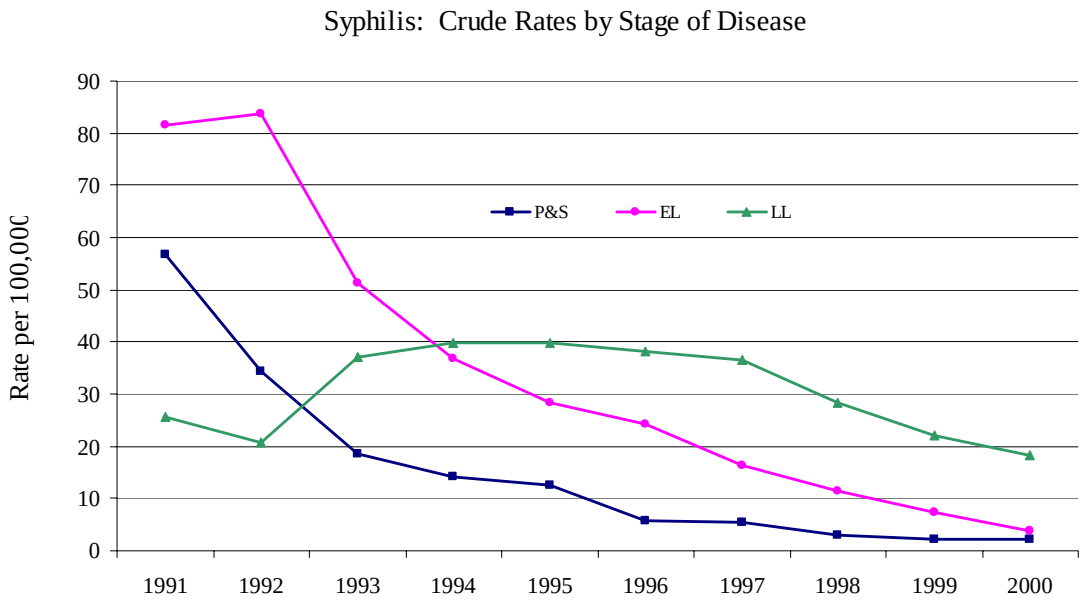
Figure 3.4. While rates for total syphilis have declined substantially since 1991, the rate of change has varied among the different stages of disease.

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).

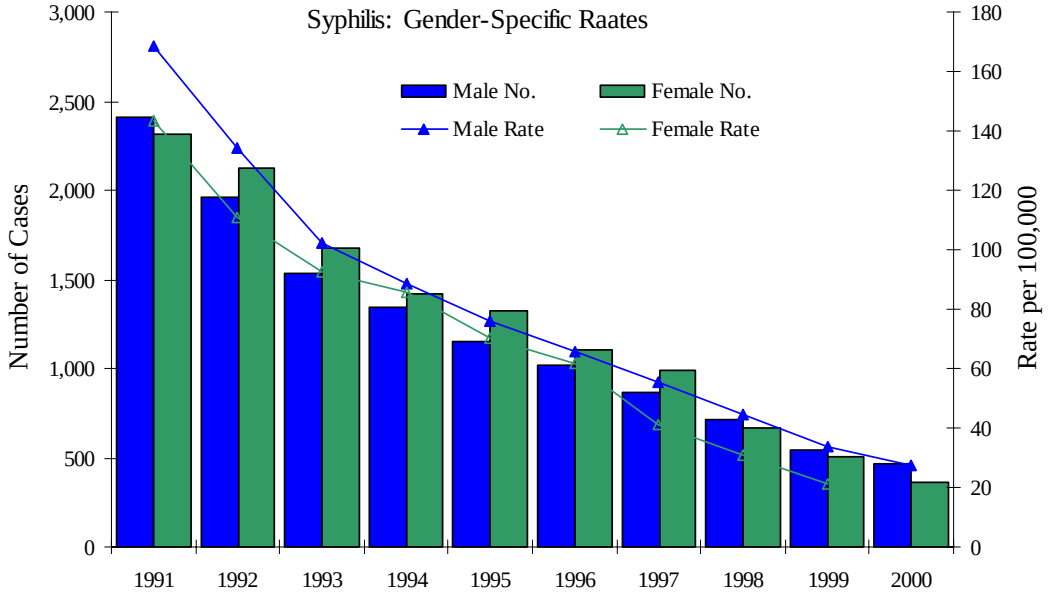


Figure 3.5. The ratio of male to female rates has been essentially 1:1 since 1991 in Houston, and in the US since 1991. Rates per 100,000 persons per year (Appendix).

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

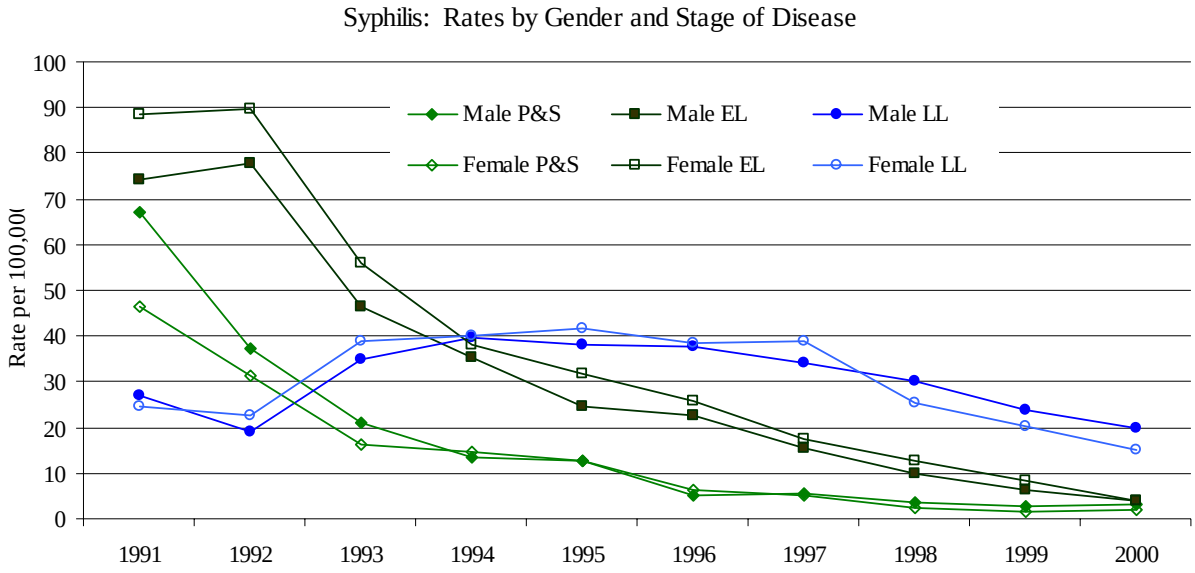


Figure 3.6. Since 1991, the ratio of male rates to female rates has remained constant at essentially 1:1 through all stages of disease. Rates per 100,000 persons per year (Appendix).

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

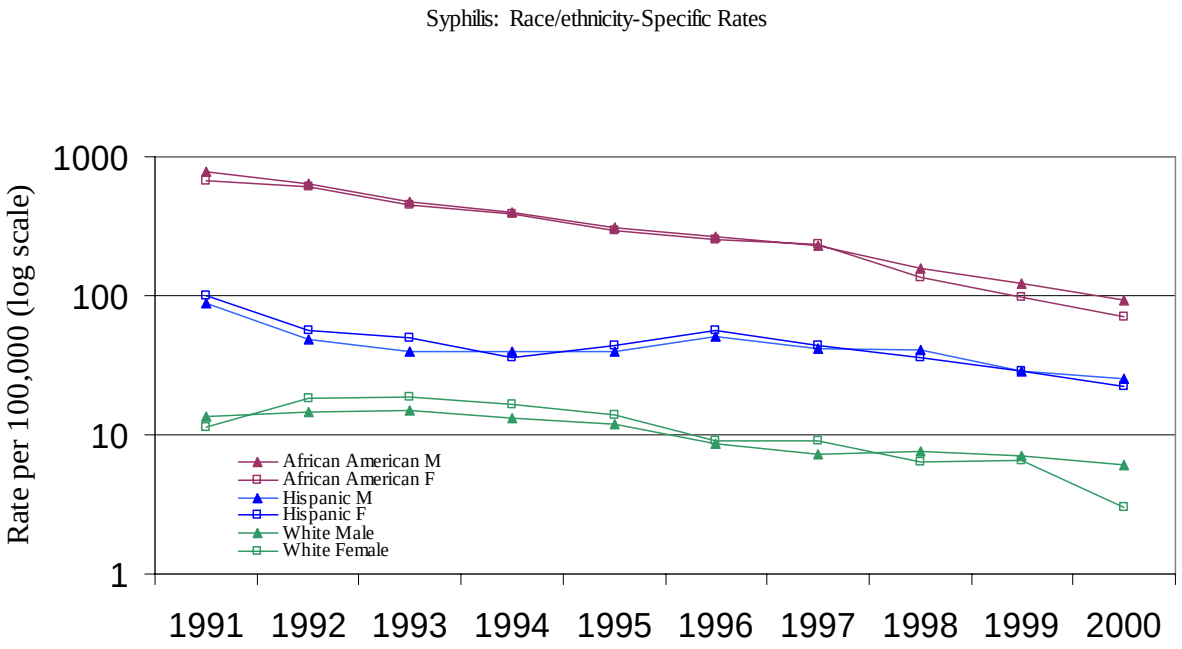


Figure 3.7. Race-ethnicity specific numbers of cases and rates for total syphilis (excluding congenital) in Houston/Harris County, Texas, 1991-2000.

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

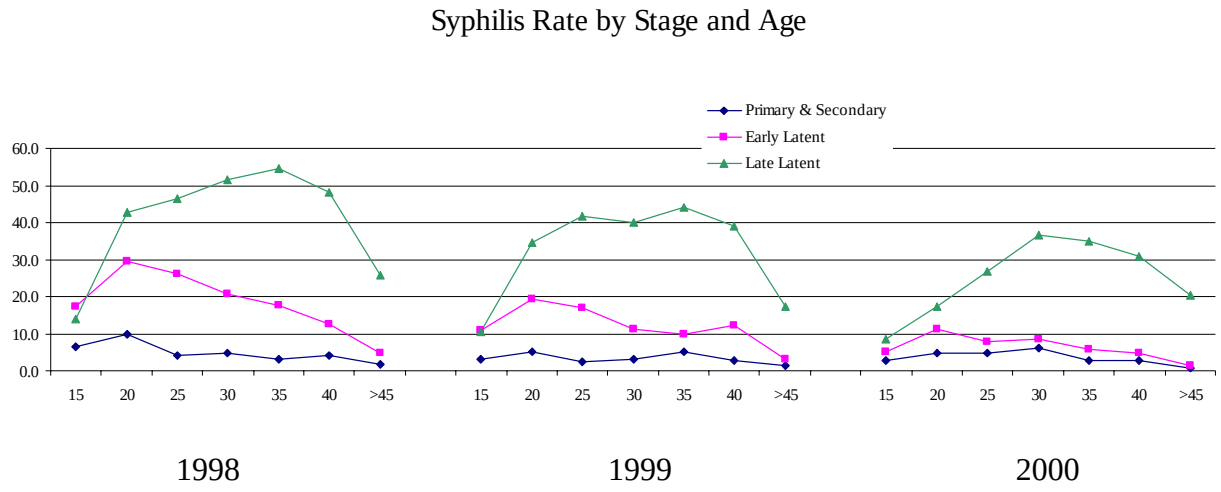


Figure 3.8 Rates for primary and secondary and early latent syphilis have declined in each age category. Primary and secondary rates seem to be nearly constant across age groups. Early latent syphilis peaks in the early 20s.

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).

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

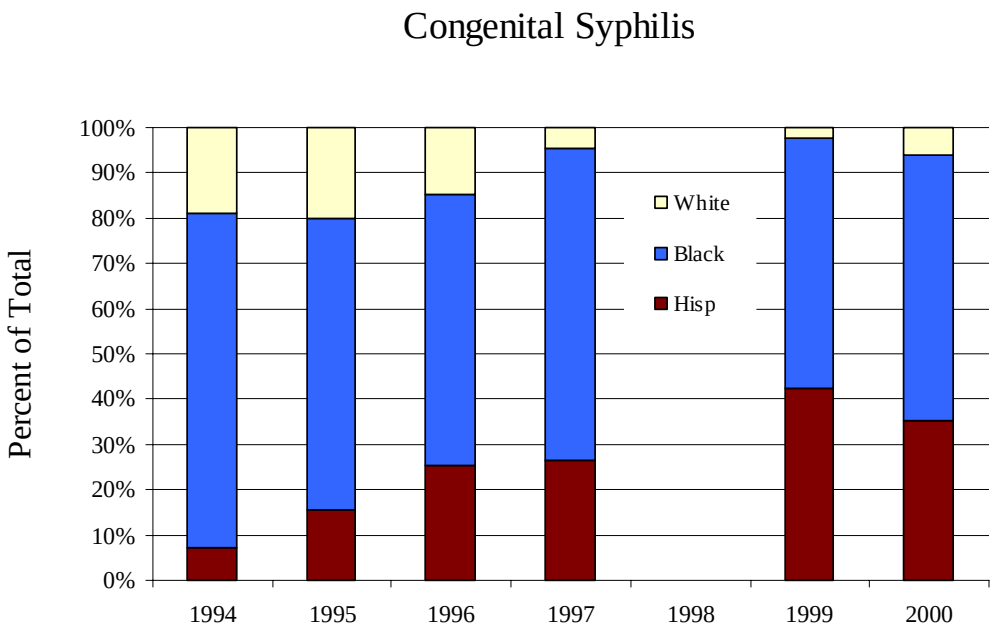


Figure 3.9 Rates of Congenital Syphilis by race/ethnicity. Race/ethnicity data for 1998 is missing.

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

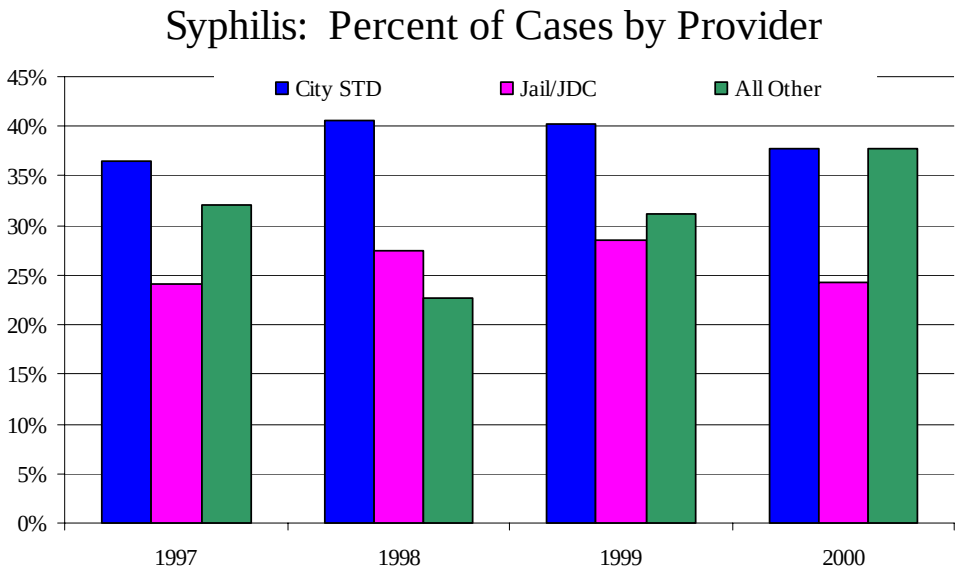


Figure 3.10 Distribution of cases among provider types, 1997-2000. HDHHS STD clinics identified 40% of all cases during the last four years. Private facilities and all other providers identified almost 30% of cases. The Jail and other correctional facilities identified nearly 30%.

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.

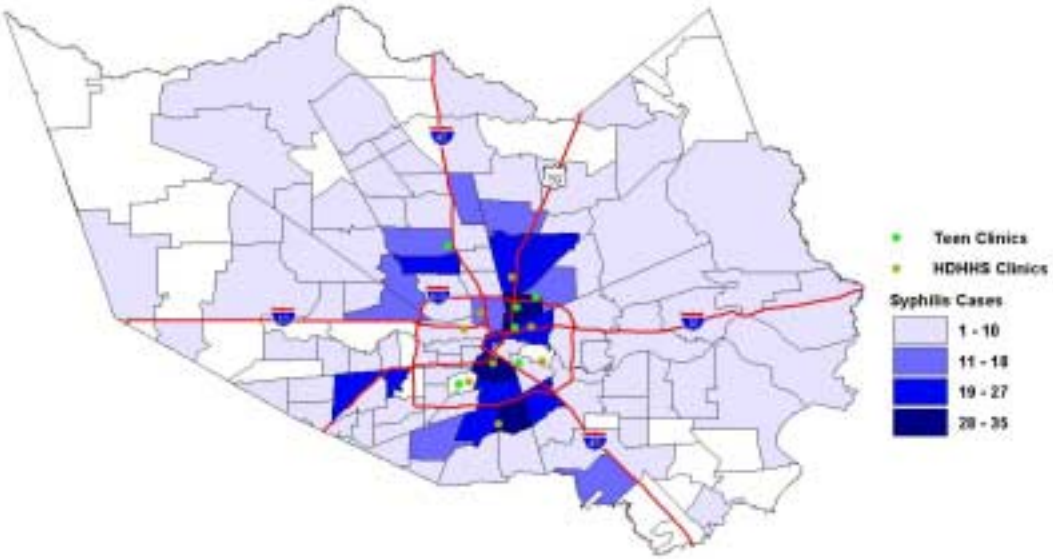
There was a dramatic drop in percent with reactive serology between 1998 and 1999.

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.

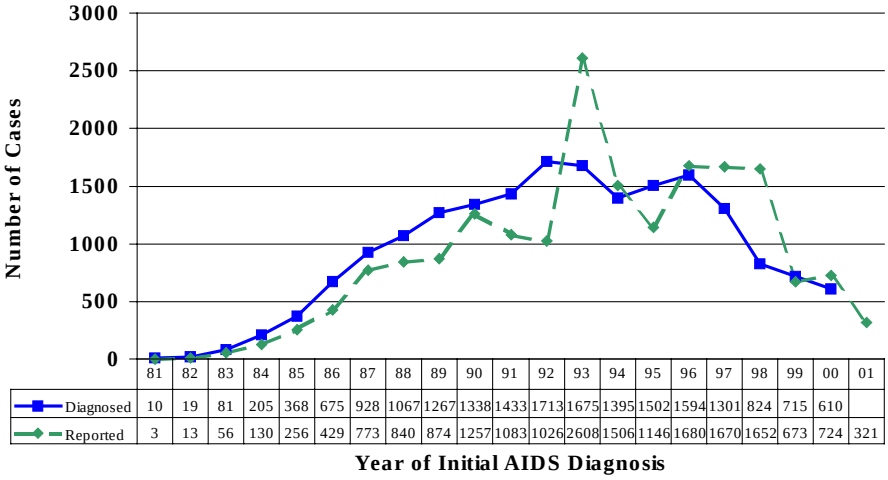


4. AIDS/HIV INFECTION

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*

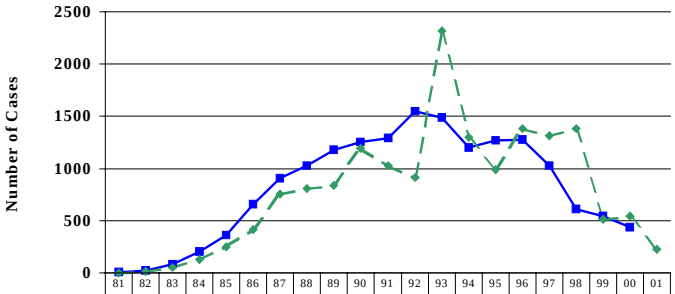
Figure 4.1 The above chart compares the number of AIDS cases reported each year to the number of cases diagnosed each year in the Houston/Harris County area.

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



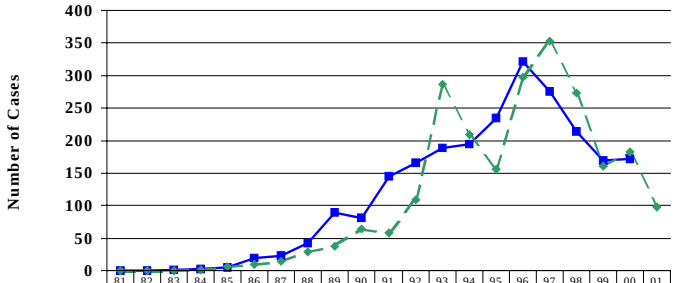
	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01
Diagnosed	10	19	80	202	363	656	905	1025	1177	1257	1288	1548	1486	1200	1268	1273	1025	610	546	438	
Reported	3	13	56	129	250	419	758	811	837	1193	1025	917	2322	1297	990	1383	1317	1379	512	542	223

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).

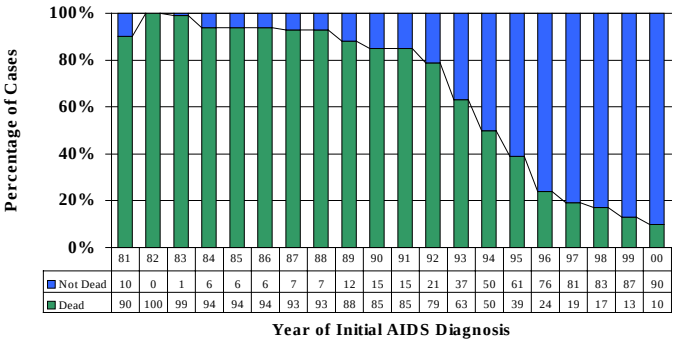
4. AIDS INFECTION: CRUDE MORTALITY

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.

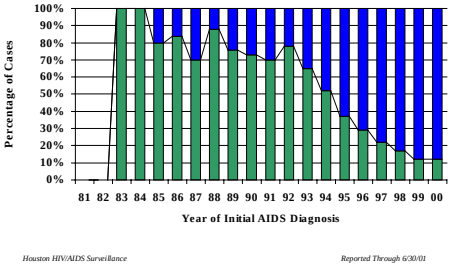
Figure 4.4 Houston/Harris Co. AIDS Percents By Mortality Status
Diagnosed 1981-2000



	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00
Not Dead	10	0	1	6	6	6	7	7	12	15	15	21	37	50	61	76	81	83	87	90
Dead	90	100	99	94	94	94	93	93	88	85	85	79	63	50	39	24	19	17	13	10

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

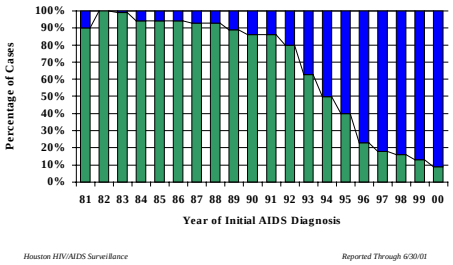
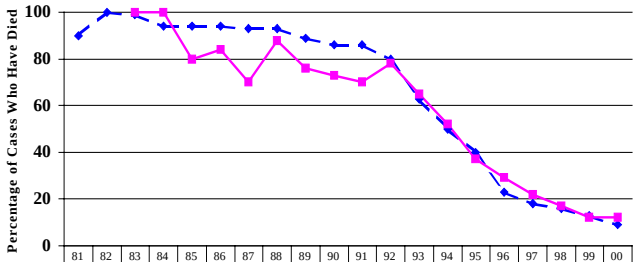


Figure 4.7 Houston/Harris Co. AIDS
Percent Dead By Gender
Diagnosed 1981-2000

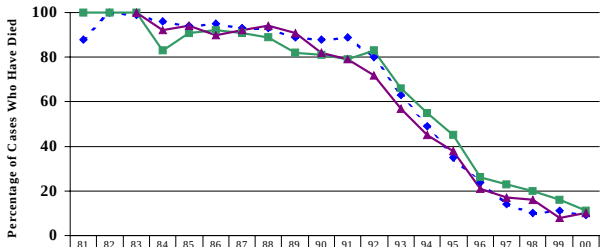


	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00
Male	90	100	99	94	94	94	93	93	89	86	86	80	63	50	40	23	18	16	13	9
Female			100	100	80	84	70	88	76	73	70	78	65	52	37	29	22	17	12	12

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

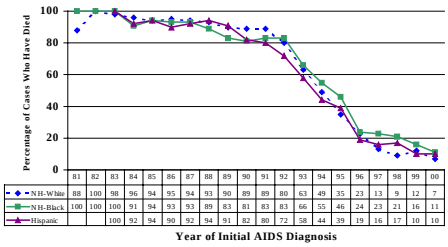
Year of Initial AIDS Diagnosis

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

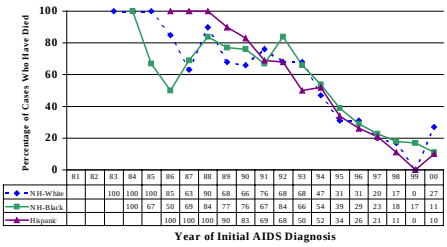


	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00
NH-White	88	100	98	96	94	95	94	93	90	89	89	80	63	49	35	23	13	9	12	7
NH-Black	100	100	100	91	94	93	93	89	83	81	83	83	66	55	46	24	23	21	16	11
Hispanic			100	92	94	90	92	94	91	82	80	72	58	44	39	19	16	17	10	10

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

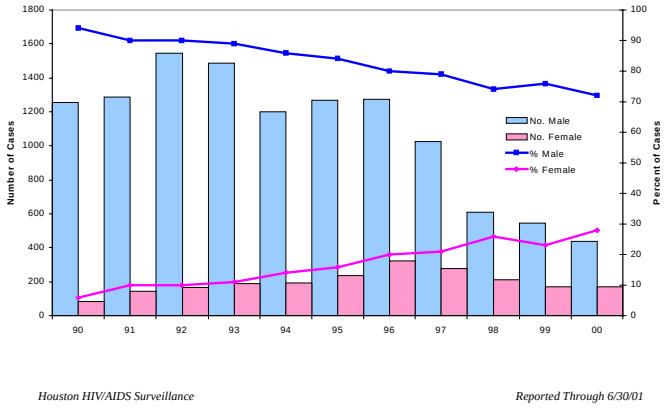
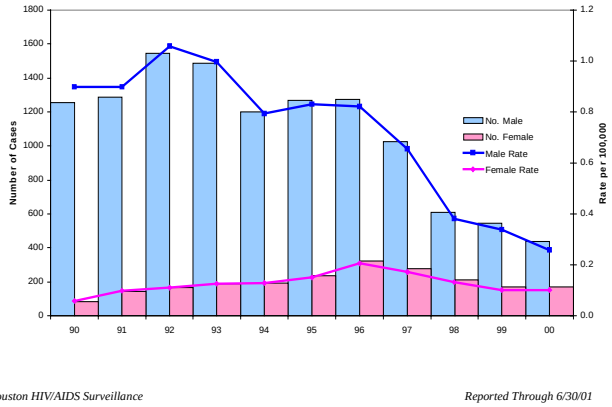


Figure 4.11 Percent of AIDS cases by gender. The majority of AIDS cases are male. The proportion of AIDS cases that are female has increased each year. In 1990, 6% of AIDS cases were female; in 2000, 23% are female. However, for both males and females, the number of cases diagnosed each year has been 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).

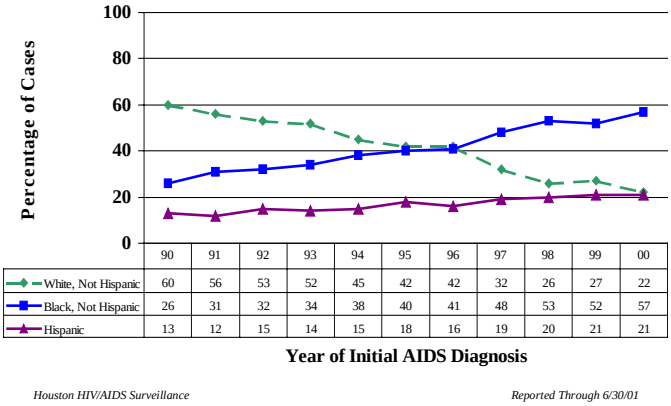
Figure 4.12 Houston/Harris Co. AIDS Numbers of cases and Rates per 100,000 By Gender
Diagnosed 1990-2000



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

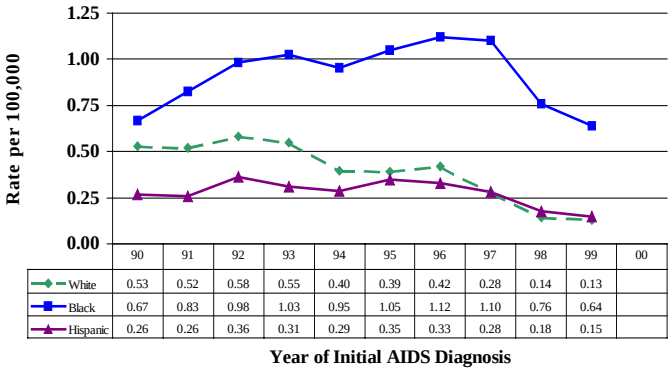
Houston HIV/AIDS Surveillance *Reported Through 6/30/01*

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.

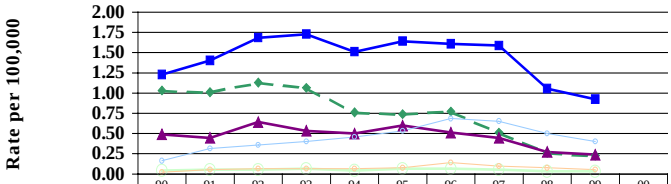
Figure 4.14 Houston/Harris Co. AIDS Rates per 100,000 By Race/Ethnicity
Diagnosed 1990-2000



	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.

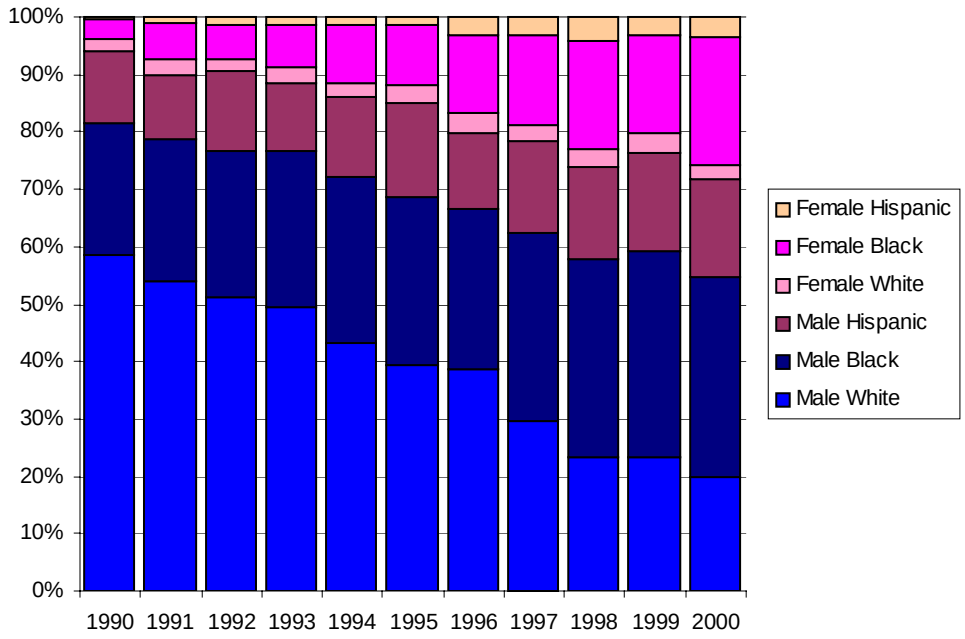
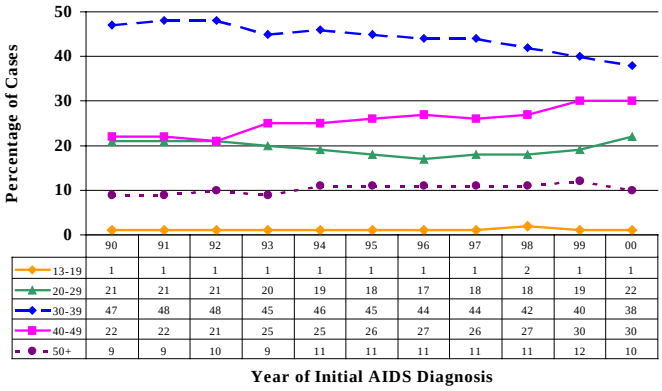


Figure 4.16 Percent of cases by gender and race/ethnicity over time. The proportion of cases that are non-Hispanic White males has declined while the proportion that are non-Hispanic Black males has increased slightly. The proportion of cases that are Hispanic males have remained relatively constant.

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

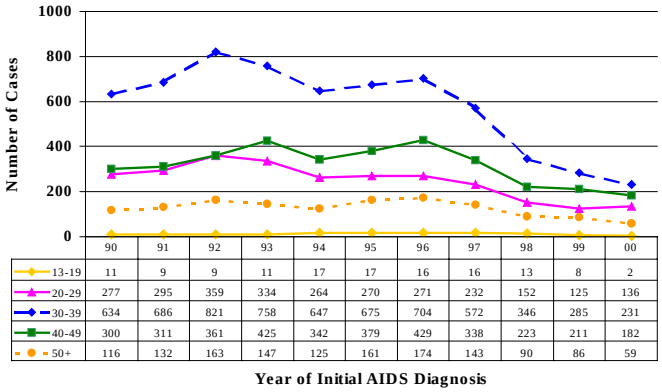
Year of Initial AIDS Diagnosis

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*

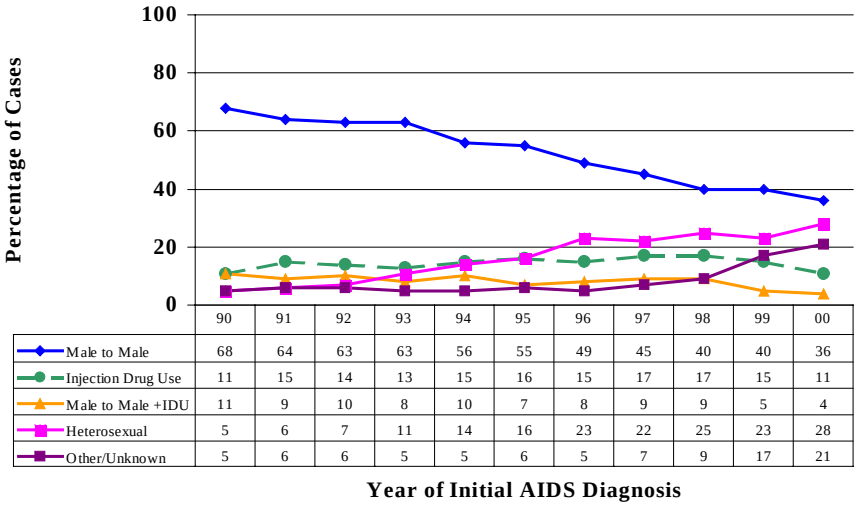
4. AIDS INFECTION: RISK FACTORS OF AIDS CASES

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

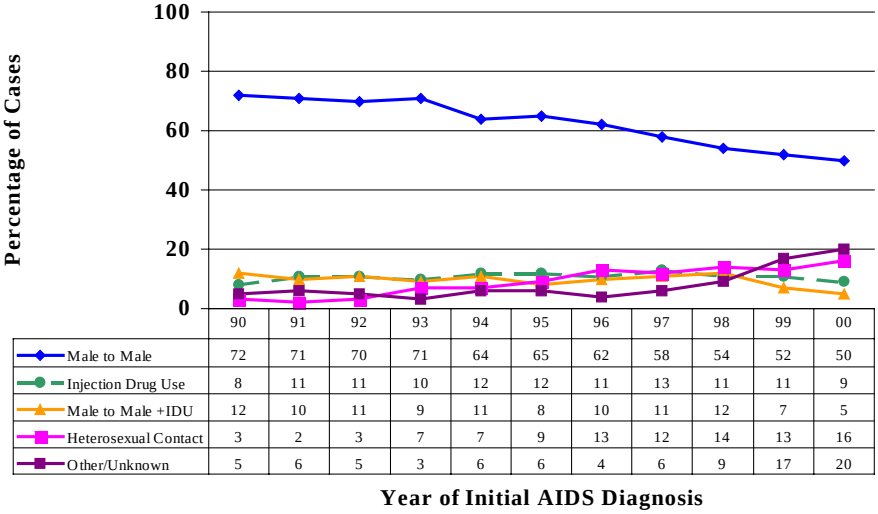


	90	91	92	93	94	95	96	97	98	99	00
Male to Male	68	64	63	63	56	55	49	45	40	40	36
Injection Drug Use	11	15	14	13	15	16	15	17	17	15	11
Male to Male +IDU	11	9	10	8	10	7	8	9	9	5	4
Heterosexual	5	6	7	11	14	16	23	22	25	23	28
Other/Unknown	5	6	6	5	5	6	5	7	9	17	21

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

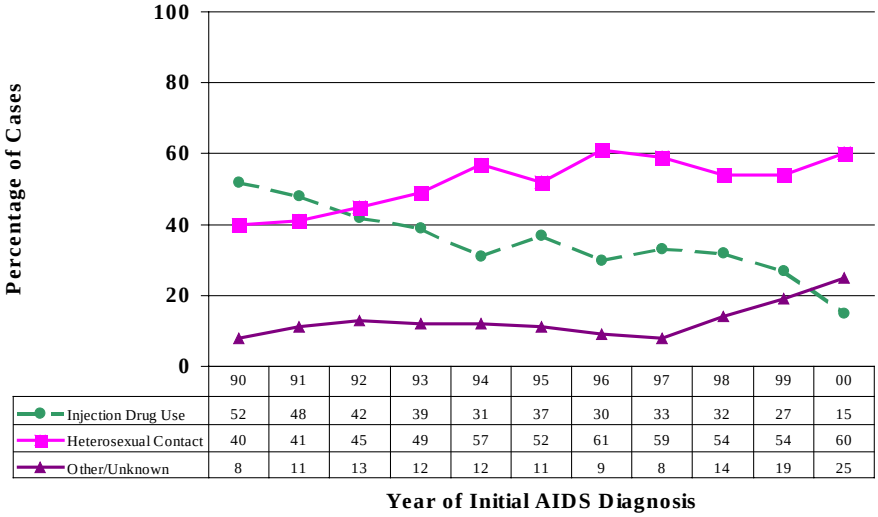


	90	91	92	93	94	95	96	97	98	99	00
Male to Male	72	71	70	71	64	65	62	58	54	52	50
Injection Drug Use	8	11	11	10	12	12	11	13	11	11	9
Male to Male +IDU	12	10	11	9	11	8	10	11	12	7	5
Heterosexual Contact	3	2	3	7	7	9	13	12	14	13	16
Other/Unknown	5	6	5	3	6	6	4	6	9	17	20

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

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

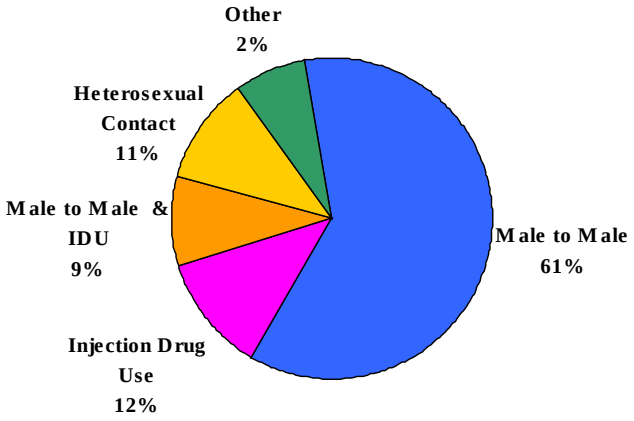
The preceding figures show the change over time for percent of AIDS cases by risk factors for males and females. For males with AIDS, the most common risk behavior remains male to male sexual contact, although as a proportion of all risk behaviors, this continues to decrease. For both males and females 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.

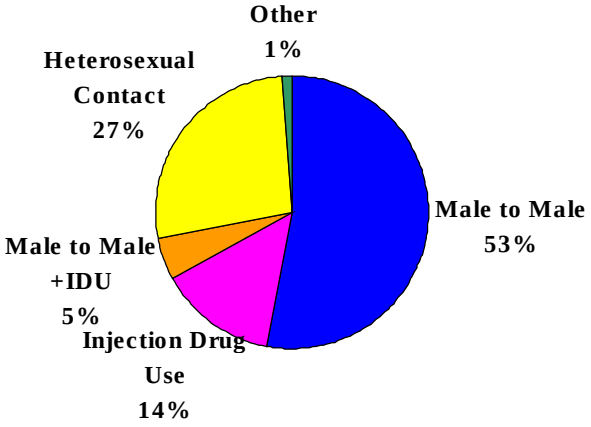
A previous effort of the HIV/AIDS Surveillance Program is to examine AIDS cases initially reported with no risk information to determine if risks identified later in their infection were significantly different from those AIDS cases who were initially reported with a confirmed risk behavior. Figure 4.22 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



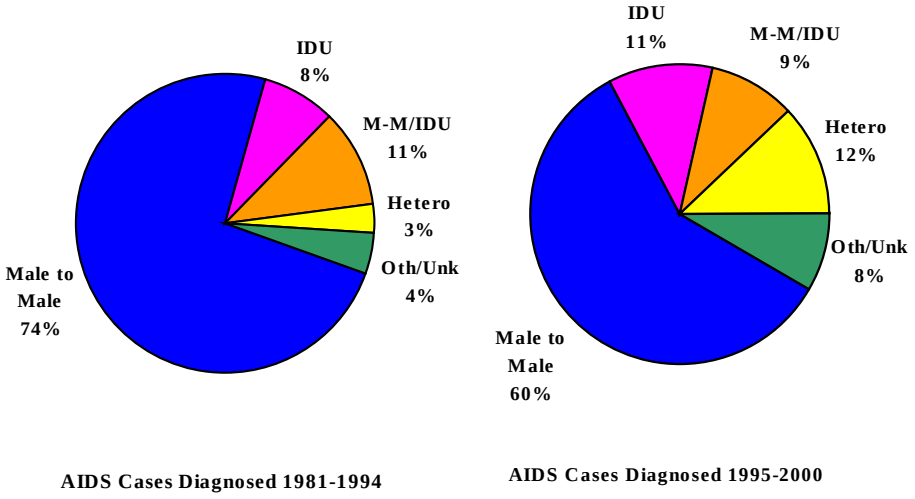
Houston HIV/AIDS Surveillance *Reported Through 6/30/01*

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.

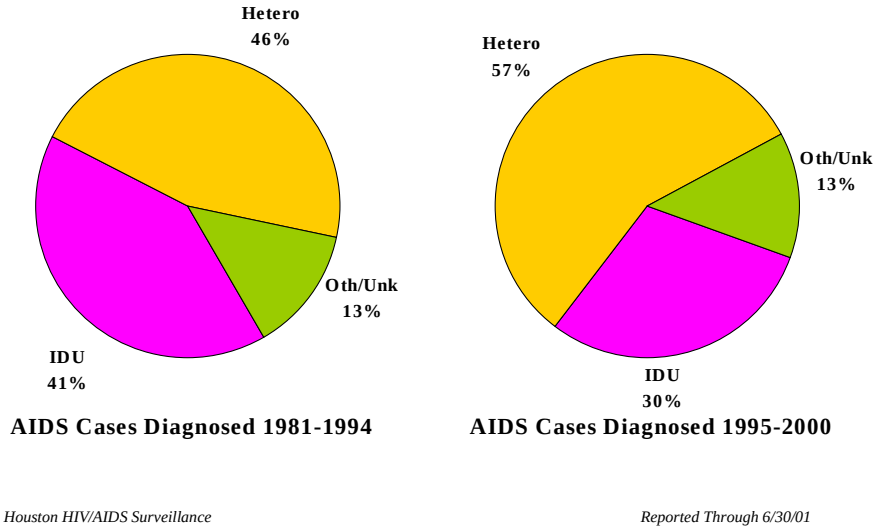
Figure 4.24 Male Houston/Harris Co. AIDS Percents
By Mode of Transmission
Diagnosed 1981-2000



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.

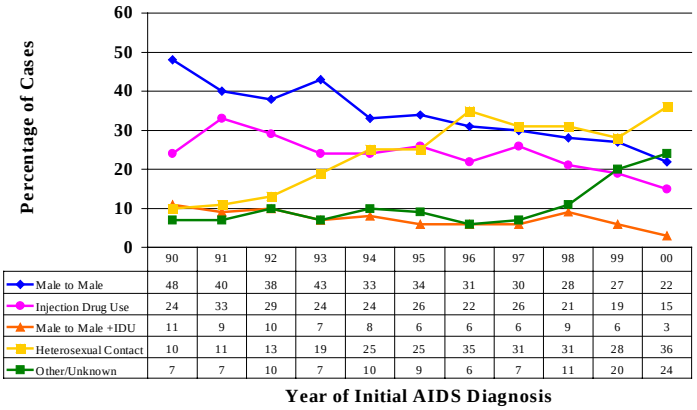
Figure 4.25 Female Houston/Harris Co. AIDS Percents
By Mode of Transmission
Diagnosed 1981-2000



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



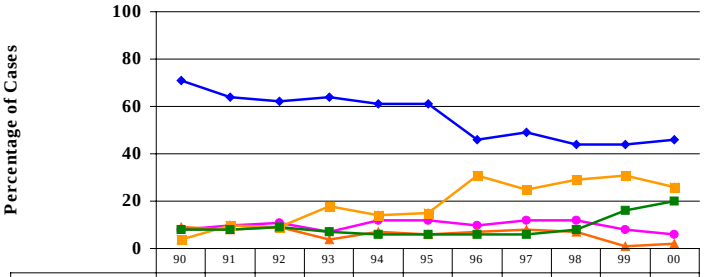
	90	91	92	93	94	95	96	97	98	99	00
Male to Male	48	40	38	43	33	34	31	30	28	27	22
Injection Drug Use	24	33	29	24	24	26	22	26	21	19	15
Male to Male +IDU	11	9	10	7	8	6	6	6	9	6	3
Heterosexual Contact	10	11	13	19	25	25	35	31	31	28	36
Other/Unknown	7	7	10	7	10	9	6	7	11	20	24

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

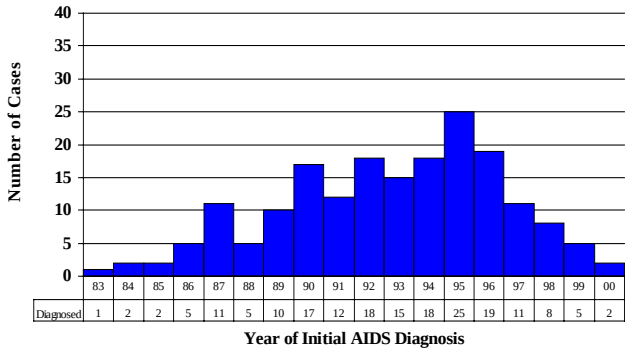
Diagnosed 1990-2000



	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*

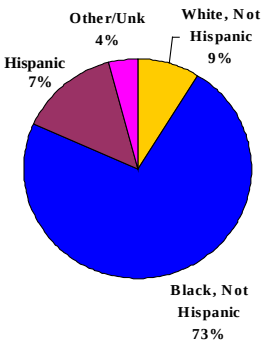
4.28 Pediatric (<13 Years) AIDS Cases
Houston/Harris County
Diagnosed 1983-2000



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

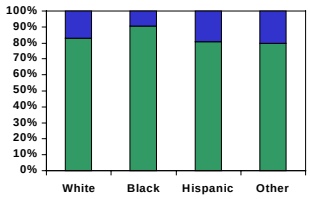


Houston HIV/AIDS Surveillance *Reported Through 6/30/01*

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.

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.

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

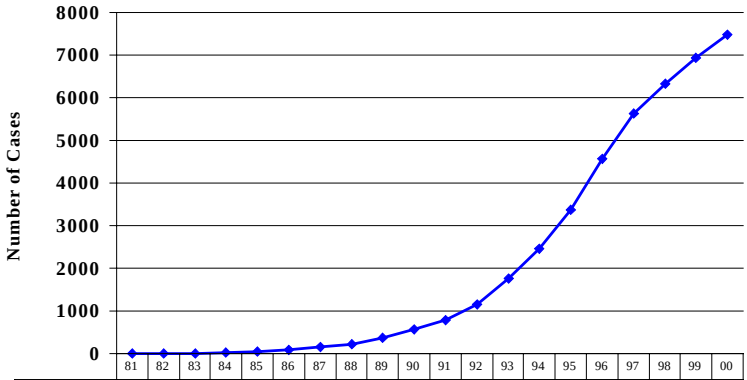


Houston HIV/AIDS Surveillance *Reported Through 6/30/01*

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

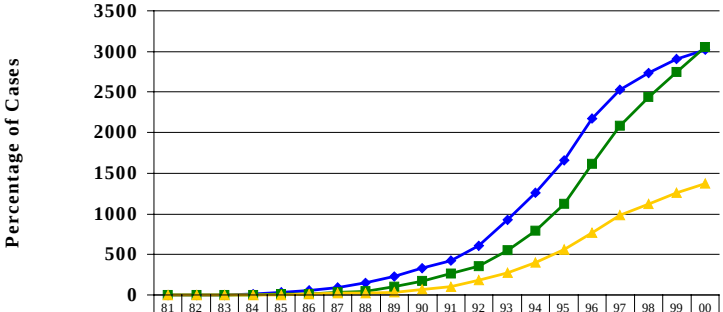
End of Year

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

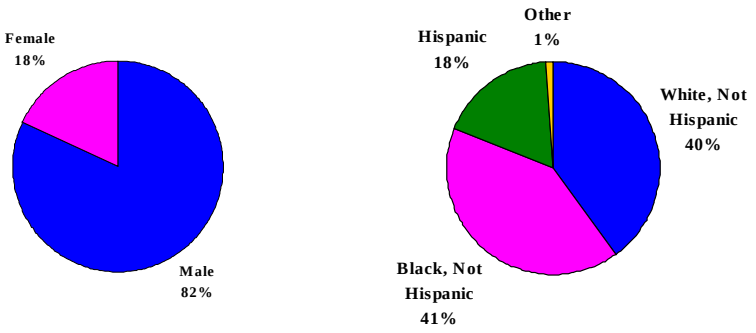
End of Year

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.

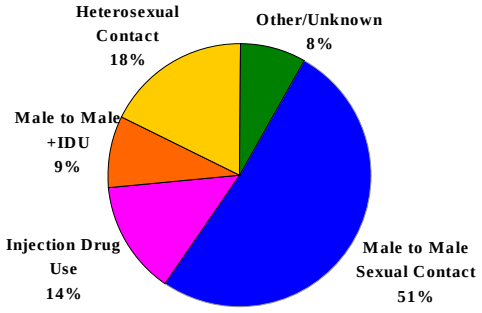
Figure 4.32 and 4.33. 82% of the persons living with AIDS are male; 43 % are white, 39 % black, and 17 % Hispanic. Half the people living with AIDS have male to male sexual contact as a risk factor for infection, 15 % have injection drug use and 9 % have the combination risk factor of male to male sexual 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

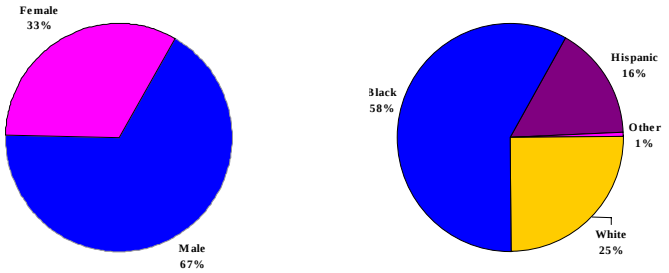


Houston HIV/AIDS Surveillance *Reported Through 6/30/01*

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



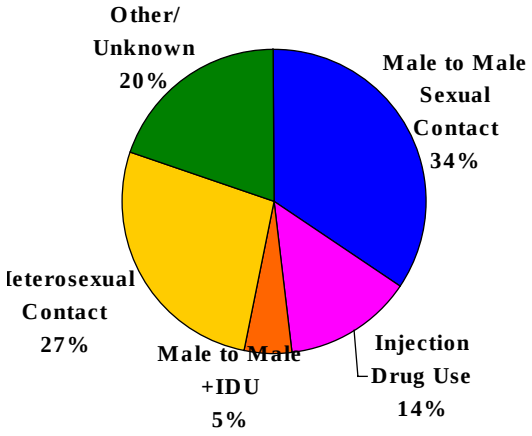
Houston HIV/AIDS Surveillance *Reported Through 6/30/01*

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.

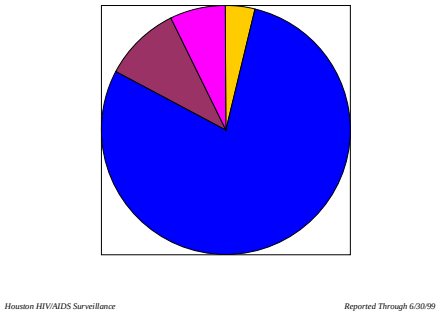
	Tests	# Positive	% Positive
Total	17,287	63	0.36
Gender			
Male	678	2	0.29
Female	16,477	61	0.37
Ethnicity			
Black	9,896	61	0.62
White	1,658	0	0.00
Hispanic	5,431	2	0.04
Other	171	0	0.00
Risk Behavior			
Gay/Bisexual Male	3	0	0.00
Reported IDU	17	0	0.00
Hetero Partner at Risk	31	2	6.45
Blood Recipient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



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.

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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.

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.

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.

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.

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.

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.

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.

CENSUS DATA – 1999 PROJECTION

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.