Epidemiologic Profile
for
HIV/STD Prevention & Care Planning

August 2006

Division of Public Health
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Note: References to regions in this document reflect unique HIV/STD Prevention & Care Branch regional designations. See the inside back cover for a region map.

North Carolina Epidemiologic Profile for HIV/STD Prevention & Care Planning

This document is for the 2006-2007 planning year and is based on data available through 2005

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EXECUTIVE SUMMARY

Recognizing North Carolina's diverse makeup is important to understanding the impact on the state of HIV/AIDS and other STDs because these diseases are disproportionately represented among minorities and the economically disadvantaged. According to census figures, North Carolina ranks as the 11th most populous state in the nation and has experienced rapid growth. It has the seventh largest non-white population in the nation. In 2004, the racial/ethnic makeup of the state was about 22 percent black or African American (non-Hispanic), 69 percent white (non-Hispanic), and 6 percent Hispanic, with the remaining proportion consisting of primarily American Indians and Asians/Pacific Islanders. Although American Indians comprise just over one percent of the state's population, this group represents the largest population of American Indians in the eastern part of the U.S. The state was ranked 37th in the nation for per capita income in 2005, with 14 percent of its population at or below the federal poverty level (2003-2004). North Carolina's foreign-born population increased from 4.4 percent in 2000 to 6.3 percent in 2004.

In 2005, 1,806 new individuals were reported with HIV disease (HIV/AIDS) in the state. Over recent years, North Carolina has averaged about 1,700 new reports annually, which is up from the number of cases reported in the late 1990s. Approximately, 30 percent of new individuals reported each year with HIV disease also represent new AIDS cases (i.e., HIV and AIDS were reported at the same time for the individual). This significant proportion of late diagnoses (i.e., AIDS) indicates the need for increased HIV testing within North Carolina. This supports recommendation to include voluntary HIV testing as part of routine medical examinations for all U.S. residents ages 13 to 64.

The overall HIV disease infection rate in 2005 was 21.1 cases per 100,000 persons. As seen with many other diseases, HIV is disproportionately distributed among the state's population. The 2005 rate of HIV infection for non-Hispanic blacks (61.4 per 100,000) was more than seven times greater than for whites (8.6 per 100,000). The rate of infection for Hispanics (24.1 per 100,000) was almost three times that for whites, and the rate for American Indians (20.6 per 100,000) was over two times that for whites. The highest rate of infection was found among black males (88.6 per 100,000). The largest disparity was found in comparing white and black females; the HIV infection rate for black females (37.3 per 100,000) was over 12 times higher than that for white non-Hispanic females (3.0 per 100,000). The ratio of male to female HIV disease reports has risen from 2.1 in 2001 to 2.6 in 2005. Much of the increase in HIV disease reports over the past few years was attributed to more male HIV disease cases being reported; the number of reports for females has remained fairly constant

Risk of HIV transmission is very different for males and females; therefore it is important to discuss risk separately for each. In 2005, 66 percent of new adult and adolescent HIV disease reports for males was attributed to men who have sex with men (MSM), 7 percent to injecting drug use (IDU), 2 percent to MSM who also inject drugs (MSM/IDU); and 24 percent was attributed to heterosexual contact. For adult and adolescent females, heterosexual contact accounted for about 83 percent of HIV disease reports in 2005, while injecting drug use accounted for about 12 percent.

The proportion of male reports with MSM as a risk factor has increased over the past few years for all racial/ethnic groups. In 2005, MSM (including MSM/IDU) accounted for 88 percent of white non-Hispanic males, 59 percent of black non-Hispanic males and 62 percent of other males. The state's partner counseling and referral services (PCRS) program showed an increasing proportion of interviewed men who indicated MSM risk during follow-up of both HIV and syphilis cases. In 2005, 48 percent of interviewed males with HIV or early syphilis indicated MSM risk. According to Counseling and Testing System (CTS) data, those reporting MSM risk have consistently had the highest percent of HIV positive test results. In 2004, about five percent of males reporting MSM risk who tested at traditional test sites (TTS) were positive for HIV and about four percent of those who tested at nontraditional test sites (NTS) were positive.

Injecting drug use risk (including MSM/IDU) accounted for about 9 percent of male adult/adolescent HIV disease reports in 2005 and accounted for about 12 percent of female reports. In 2004, persons who reported IDU risk (males and females) had the second-highest positivity rate among those who received HIV testing at CTS sites (about 1.7 percent at NTS and about 0.7 percent at TTS).

Heterosexual contact as a primary risk accounts for 39 percent of all (male and female) 2005 HIV disease reports. As mentioned earlier, it was the principal risk for female cases (83%), especially younger female cases (92% of likely female adolescent exposures). Heterosexual HIV reports for 2005 were higher among black males (31%) and other minority males (32%) than among white males (8%). Indications of heterosexual risk-taking behavior can be found in the high rates of infection for other sexually transmitted diseases. In 2004, North Carolina ranked 6th in the nation in the rate of new gonorrhea cases. The male-to-female ratio for gonorrhea has remained stable and near 1.0, indicating the predominance of heterosexual transmission. Additionally, over 97 percent of new female syphilis cases and 66 percent of new male syphilis cases, interviewed through PCRS between 2001 and 2005, reported heterosexual activity.

While trends among new HIV disease reports indicate prevention needs, trends among AIDS cases and estimates of persons living with HIV or AIDS can indicate service and care needs. As of December 31, 2005, an **estimated** 29,500 persons were living with HIV or AIDS in North Carolina, including those who may have been unaware of their infection. Of the persons who have been reported and were listed as living at that time, 68 percent were males and 32 percent were females. With respect to race/ethnicity, 70 percent were black non-Hispanic; 25 percent were white non-Hispanic. Most of the people living with HIV were older, with 56 percent aged 25-44 years and an additional 39 percent being 45 years of age or older.

In 2005, 1,089 new AIDS cases were reported in North Carolina, essentially the same as the previous year (1,091). New AIDS cases in the state have increased substantially in the last few years. From 2000 to 2004, the national AIDS case rate increased by four percent (14.3 per 100,000 to 14.9) while in North Carolina, the AIDS case rate increased by 60 percent (8.3 to 13.3). In 2004, North Carolina ranked 13th among states for the rate of new AIDS cases. In 2003, North Carolina ranked 6th in the proportion of blacks among living AIDS cases. The reasons for the reported increases in AIDS reports in North Carolina are varied and likely represent several factors including: limited access to medical care, changes in HIV treatment effectiveness over time, and enhanced surveillance efforts to capture accurate and timely reports.

Eight consortia, along with other agencies and the state, provide Ryan White Title II services to HIV-infected persons across North Carolina. According to summary reports provided by service agencies, about 7,097 Ryan White Title II clients received or accessed funded services in 2005. In 2005, about 4,025 individuals were enrolled in the AIDS Drug Assistance Program (ADAP). The demographics of Ryan White Title II clients and ADAP enrollees were similar to the observed demographics of all persons listed as living in North Carolina with HIV or AIDS at the end of 2005.

In addition to HIV and AIDS, 10 other sexually transmitted conditions and diseases are reportable to the N.C. Department of Health and Human Services (DHHS). Chlamydia is the most prevalent STD, with 31,183 cases reported in 2005. Consistently, over 80 percent of reported cases are among females because they are more likely than males to be screened for the disease. Reported cases and rates have increased among females of all ages from 2001-2005, largely due to the increasing number of women who are screened each year as part of the Infertility Prevention Project.

The number of reported gonorrhea cases declined 10 percent over the past five years to 15,075 cases in 2005. Severe racial disparities exist in gonorrhea rates, though they have narrowed as the number of reported cases has decreased. In 2001, rates among black males were 32 times the rates for white males. The disparity decreased to 22 times higher in 2005. Disparities among females have remained relatively steady, with black female gonorrhea rates 10-14 times higher than rates for white females during the five-year period.

Early syphilis rates dropped from 15.1 cases per 100,000 population in 1999 to a low of 4.7 in 2003. Male early syphilis rates began to rise in 2004 and again in 2005, while female rates continued to decline. The increase in male syphilis rates in 2004 and 2005 is largely associated with an outbreak in Mecklenburg County. The county reported 30 male cases in 2003, which grew to 102 in 2005. Wake County also saw an increase in male cases during this time period (27 cases in 2003 to 56 cases in 2005). Further investigation of the Mecklenburg reports revealed that many of the male cases were linked to MSM activity. Among females, early syphilis cases in nearly all counties continued to decline. The marked exception was Mecklenburg County where female cases rose from 12 in 2003 to 40 in 2005.

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INTRODUCTION

The North Carolina HIV/STD Epidemiologic Profile describes the HIV (human immunodeficiency virus) and STD (sexually transmitted disease) epidemics among various populations in North Carolina. As in previous versions, the majority of the data presented are drawn from surveillance systems maintained by the HIV/STD Prevention & Care Branch. We have also integrated other appropriate sources in the analysis and discussion.

This document is divided into three parts. Part one describes general population demographics and social characteristics, the HIV epidemic, and indicators of HIV transmission risk in North Carolina. Part two describes HIV/AIDS treatment and care in North Carolina. Part three describes the epidemics and impact of other bacterial STDs in North Carolina including syphilis, chlamydia and gonorrhea. Throughout the profile, the following questions are addressed:

1. What are the sociodemographic characteristics of the general population in North Carolina?
2. What is the scope of the HIV/AIDS and STD epidemics in North Carolina?
3. What are the indicators of risk for HIV/STD infection in North Carolina?
4. What are the patterns of utilization of HIV services of persons in North Carolina?

The HIV and STD epidemics in North Carolina are related in that many of the same populations at high risk for one disease may be at increased risk for others as well. Public health activities at the state level aimed at controlling these epidemics have long been integrated in order to make optimal use of limited resources. While AIDS cases reflect older HIV infections, examination of trends in AIDS cases can draw attention to other aspects of the epidemic. Treatment advances have delayed progression from HIV to AIDS and from AIDS to death. This pattern has been demonstrated to some extent in surveillance data. Thus, "from 1996 on, cases of AIDS and deaths will provide a valuable measure of the continuing impact of treatment, as well as describe populations for whom treatment is either not accessible or not effective"(CDC 1998) .

The Epidemiologic Profile reflects a broad spectrum of information about sexually transmitted diseases to support the integrated activities of the HIV/STD Prevention & Care Branch. It seeks to add information to existing knowledge concerning HIV and other STD incidence in North Carolina. Along with prevention activities, the HIV/STD Prevention & Care Branch facilitates several key HIV/AIDS care and services programs across the state. Profile information on HIV/AIDS care and services for patients should assist various community-based organizations in assessing the need to provide or expand services in their service area. Some information in the profile is displayed or organized by HIV/STD Prevention & Care Regions. These regional designations represent assignments as of 12/31/2005 (see map on inside back cover). HIV/STD data for these regions and some counties is also provided in the Regional/County supplement. This is made available as a separate document, but is intended to be used with this profile.

Through out this document, references to race and ethnicity may be different than those found in documents from other agencies. Unless otherwise noted, references to all racial groups data exclude Hispanics. Hispanics are counted as a separate group. Thus "white" refers to white non-

Hispanics, "blacks" refers to black non-Hispanics, etc. This allows Hispanics as a group to be compared to traditional racial groups. Also note that several appendices are included with this document. These appendices include Appendix A: Maps; Appendix B: Data sources; Appendix C: Special notes; and Appendix D: Statewide data tables. Although references to the appendices are noted throughout the profile, readers may find it beneficial to review them first, especially Appendix B and Appendix C. For example, Appendix B: Data sources contains valuable information about the strengths and limitations of the various data sources used throughout the document. Understanding the uniqueness of a data source is very helpful in determining the relevance of the trends that each displays. Appendix C: Special Notes has information on the definition and use of *HIV disease,* HIV surveillance reporting issues, HIV risk categories and rate calculation.

Readers will also note that Chapter 4: HIV Testing contains data through December 31, 2004 rather than 2005. This is because the N.C. HIV Counseling and Testing System (CTS) data underwent major structural changes in 2005 and the new data were unavailable at press time. Supplemental CTS reports will be available on the website as the CTS data analyses are completed (www.epi.state.nc.us/epi/hiv/).

PART I: CORE EPIDEMIOLOGY

What are the sociodemographic characteristics of the general population in North Carolina? (Chapter 1)

What is the scope of the HIV/AIDS epidemic in North Carolina? (Chapter 2)

What are the indicators of risk for HIV infection in North Carolina? (Chapters 3-5)

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CHAPTER 1: SOCIODEMOGRAPHIC CHARACTERISTICS OF THE GENERAL POPULATION IN NORTH CAROLINA

HIGHLIGHTS

- North Carolina is the 11th most populous state in the nation and among the fastest growing.
- North Carolina's population grew by 21.4 percent from 1990 to 2000.
- Among the nation's top 50 metropolitan population growth areas in 2000 were Raleigh/Durham/Chapel Hill, ranking 12th; Wilmington, ranking 14th; Charlotte/Gastonia/Rock Hill, ranking 26th; and Greenville, ranking 40th.
- Between 1995 and 2005 North Carolina's immigrant population increased threefold.
- North Carolina ranked 3rd in states with statistically significant growth in immigration population between March 2000 and 2004.
- North Carolina has the 7th largest non-white population in the nation.
- North Carolina has the 15th largest Hispanic/Latino population in the nation.
- The median age for North Carolinians in 2000 was 35.3 years.
- In 2000, 24 percent of North Carolinians were 18 years and younger, while 12 percent were 65 years and older.
- North Carolina was 37th in the nation in per capita income in 2005 ($30,553) at 88 percent of the national average ($34,586).
- Eighteen percent of North Carolina's children, 12 percent of adults and 13 percent of the state's elderly were at or below the federal poverty level between 2002 and 2003.
- During 2004, 17.7 percent of North Carolinians were eligible for Medicaid coverage, or an average of one out of eight people every month.

SOCIODEMOGRAPHIC CHARACTERISTICS OF NORTH CAROLINA

Knowing sociodemographic characteristics is paramount to fully understanding the health of a population. Sociodemographics can be used to identify certain population groups that may be at a greater risk for morbidity and mortality. They can also assist in identifying underlying factors that may contribute to a health condition. This chapter will discuss the relevant

sociodemographic characteristics of the population of North Carolina including age, race/ethnicity, gender and income.

Population

According to the 2000 federal census, the population of the United States was 281,421,906; this was a 13.2 percent increase from the 1990 population of 248,709,873. During the same period, North Carolina's population grew by 21.4 percent, from 6,628,637 to 8,049,313 making it the 11th most populous state. According to census records, only eight other states grew faster during the last decade (Arizona, Colorado, Florida, Georgia, Idaho, Nevada, Texas, and Utah). In 2004, the North Carolina State Demographer estimated the total population for the state to be 8,540,468 with county populations ranging from 4,174 (Tyrrell) to 768,789 (Mecklenburg). Population estimates for 2004 listed five counties with populations under 10,000 (Clay 9,618; Camden 8,525; Graham 8,074; Hyde 5,642; and Tyrrell 4,174). In addition, over half of North Carolina's population lived in only sixteen of the state's one hundred counties (Mecklenburg, Wake, Guilford, Forsyth, Cumberland, Durham, Buncombe, Gaston, New Hanover, Onslow, Davidson, Union, Catawba, Cabarrus, Pitt, and Johnston). Map 1 (Appendix A, pg. A-3) displays the population distribution among the counties in North Carolina for 2004.

According to the U.S. Census Bureau, between 2000 and 2004, North Carolina ranked 5th in the annual levels of net domestic in-migration, with an annual average of 39,137. During the same period, Wake county ranked 25th in the nation in annual numbers of net domestic in-migration for counties, with an annual average of 8,702. Net in-migration is the difference between the number of people who arrived from other states or counties and the number who left.

The U.S. Office of Management and Budget defines statistical population areas that represent the social and economic linkages and commuting patterns between urban cores and outlying integrated areas. Two of these categories, Metropolitan and Micropolitan Statistical Areas, are collectively called Core Based Statistical Areas (CBSAs). To be considered a Metropolitan Statistical Area, a CBSA must be associated with at least one urbanized area that has a population of at least 50,000 and comprises the central county or counties containing the core, plus adjacent outlying counties having a high degree of social and economic integration with the central county as measured through commuting. To be considered a Micropolitan Statistical Area, a CBSA must be associated with at least one urban cluster that has a population of at least 10,000 but less than 50,000. Metropolitan and Micropolitan Statistical areas do not equate to an urban-rural classification; all counties included in Metropolitan and Micropolitan Statistical Areas and many other counties contain both urban and rural territory and populations. North Carolina's Metropolitan and Micropolitan counties are displayed in Map 2 (Appendix A, pg. A-4).

Among the nation's Metropolitan Statistical Areas, the Triangle was the 6th fastest growing in the 1990s, increasing 39 percent to 1.2 million people. In 2004, 71 percent of North Carolinians lived in a metropolitan area and 29 percent lived in a non-metropolitan area; as compared with the national proportion of 83 percent metropolitan, 17 percent non-metropolitan as stated by the Urban Institute and Kaiser Family Foundation (2005). Four North Carolina areas were among the top 50 metropolitan population growth areas in the United States in 2000: Raleigh/Durham/Chapel Hill ranked 12th; Wilmington ranked 14th; Charlotte/Gastonia/Rock Hill ranked 26th; and Greenville ranked 40th. Three metropolitan areas ranked among the top 50 in the

country for numerical population growth: Charlotte/Gastonia/Rock Hill; Raleigh/Durham/Chapel Hill; and Greensboro/Winston-Salem/High Point.

North Carolina's immigrant population increased threefold between 1995 and 2000. This increase, according to the Center for Immigration Studies, placed North Carolina among the fastest-growing immigrant communities in the U.S. Also, the Urban Institute reported that the foreign-born population in new growth states grew by 145 percent between 1990 and 2000, with the highest growth levels occurring in North Carolina, Georgia, Nevada, and Arkansas (Capps 2002). Another report by the Center for Immigration Studies, based on U.S. Census Bureau's March Population Survey, ranked North Carolina 3rd in states with statistically significant growth in immigration population between March 2000 and 2004 (Camarota 2005). According to the U.S. Census Bureau's Annual American Community Survey, North Carolina's foreign-born population increased by 44 percent, from 373,000 in 2000 to 537,376 in 2004. Table 1.1 shows that in 2004, 26.2 percent of the foreign-born population were naturalized citizens while 73.8 percent were not citizens.

Table 1.1. North Carolina foreign-born population, 2004

	2004	
	Estimate	Percentage
Naturalized Citizen	140,949	26.2%
Not a Citizen	396,427	73.8%
Entered 2000 or Later	154,418	28.7%
Entered Before 2000	382,958	71.3%
Total	537,376	100%

Source: U.S. Census Bureau

In addition, 28.7 percent of immigrants entered the state in 2000 or later, while 71.3 percent entered before 2000. The regions of birth of the foreign-born population in North Carolina (2004) are displayed in Table 1.2. The majority (57.9 %) of immigrants came from Latin America, 21 percent from Asia, 12.7 percent from Europe, 5.7 percent from Africa, 2.4 percent from North America, and 0.3 percent from Oceania.

Table 1.2. North Carolina foreign-born population by region of birth, 2004

	2004	
	Estimate	Percentage
Latin America	311,056	57.9%
Asia	112,693	21.0%
Europe	68,514	12.7%
Africa	30,387	5.7%
Northern America	12,867	2.4%
Oceania	1,859	0.3%
Total	537,376	100%

Source: U.S. Census Bureau

Race/Ethnicity and Gender

Racial and ethnic differences of a population play an important role in interpreting gaps in access to healthcare among the different groups. Knowledge of these gaps can be used to identify strategies and policies to address the disparities. Gender also plays an important role in assessing the health of a community. There are gender differences in terms of vulnerability to illness, access to preventative and curative measures, burdens of ill-health, and quality of care. For example, average life expectancy differs between men and women. In North Carolina, there are noticeable variations in the demographic composition from region to region. North Carolina has the 7th largest non-white population (2,141,397) in the United States. In 2000, 11 counties had populations consisting of more than 50 percent non-white residents (Robeson: 66.7%; Bertie: 63.5%; Hertford: 62.2%; Warren: 60.8%; Northampton: 60.7%; Edgecombe: 59.7%; Hoke: 54.5%; Halifax: 57.1%; Vance: 51.4 %; Washington: 51.4%; and Anson: 50.2%). Maps 3-6 (Appendix A, pp.A-5 to A-8) display the racial and ethnic make-up of North Carolina's counties, as reported in the 2004 bridged-race estimates.

Table 1.3. North Carolina race/ethnicity proportions by gender, 2004

	Am. Indian / Alaska Nat.*	Asian/Pacific Islander*	Black*	White*	Hispanic	Total
Males	0.6%	0.9%	10.2%	33.9%	3.5%	49.1%
Females	0.6%	0.9%	11.6%	35.5%	2.3%	50.9%
Total	1.2%	1.8%	21.8%	69.4%	5.8%	100%

* non-Hispanic

Table 1.3 displays the percentages of males and females for the major race/ethnicity categories in North Carolina according to the bridged-race estimates for 2004 (please see Appendix C, pg. C-6 for more information about Census data and the bridged-race categories used to calculate rates). Note the ratio of Hispanic males to females for North Carolina (1.52:1) as compared to the male-to-female ratios for blacks (0.88:1) and whites (0.95:1). In 2000, North Carolina had the 15th largest Hispanic or Latino population in the nation. Map 5 (Appendix A, pg. A-7) displays the proportion of Hispanic population in 2004, by county. Within North Carolina, Duplin County

Table 1.4. North Carolina race/ethnicity proportions by gender and HIV/STD Prevention and Care Branch Regions, 2004

	Am. Indian / Alaska Nat.*		Asian/Pacific Islander*		Black*		White*		Hispanic	
	M%	F%	M%	F%	M%	F%	M%	F%	M%	F%
Region 1	0.6	0.6	0.5	0.5	2.6	2.5	43.1	46.1	2.0	1.4
Region 2	0.2	0.2	1.2	1.2	9.1	10.3	35.2	36.5	4.0	2.9
Region 3	0.2	0.2	0.7	0.7	8.5	9.9	35.5	37.7	3.6	2.7
Region 4	0.2	0.2	1.5	1.6	11.7	13.3	31.2	32.4	4.6	3.1
Region 5	3.9	4.1	0.6	0.9	14.5	15.8	26.9	27.0	3.5	2.8
Region 6	0.3	0.3	0.3	0.4	17.1	19.5	28.7	29.9	2.0	1.5
Region 7	0.5	0.5	0.4	0.6	9.6	10.4	36.5	35.7	3.5	2.3

* non-Hispanic

had the highest proportion of Hispanic residents (15%), followed by Lee County (11.7%), Sampson County (10.8%), and Montgomery County (10.4%).

Table 1.4 displays race/ethnicity by gender for 2004 by HIV/STD Prevention & Care Branch Regions. Note the larger proportion of white non-Hispanics in Region 1, American Indians in Region 5, and black non-Hispanics in Region 6. A state map showing the HIV/STD Prevention & Care Branch Regions is displayed on the inside back cover.

Age and Gender

Age also plays an important role in public health planning and in understanding the health of a community. It is a significant indicator of the prevalence of certain diseases. Age also relates to patterns of morbidity and mortality. The median age for persons living in North Carolina in 2000 was 35.3 years old, with 24.4 percent 18 years and younger, and 12 percent 65 years and older. Table 1.5 displays the percentage of the population in each age group, by gender. The trend in North Carolina follows the typical age trend of slightly more males under 12 years old and more females 40 and older.

Table 1.5. North Carolina age groups by gender, 2004

Age group (yrs.)	Pct. Males (N=4,198,851)	Pct. Females (N=4,342,370)	Pct. Total Population (N=8,541,221)
0-12	9.1%	8.7%	17.8%
13-19	4.9%	4.7%	9.6%
20-29	7.4%	6.8%	14.2%
30-39	7.5%	7.3%	14.8%
40-49	7.4%	7.6%	15.0%
≥ 50	12.9%	15.7%	28.6%
Total	49.2%	50.8%	100%

Table 1.6. North Carolina characteristics of age by gender, and HIV/STD Prevention and Care Branch Regions, 2004

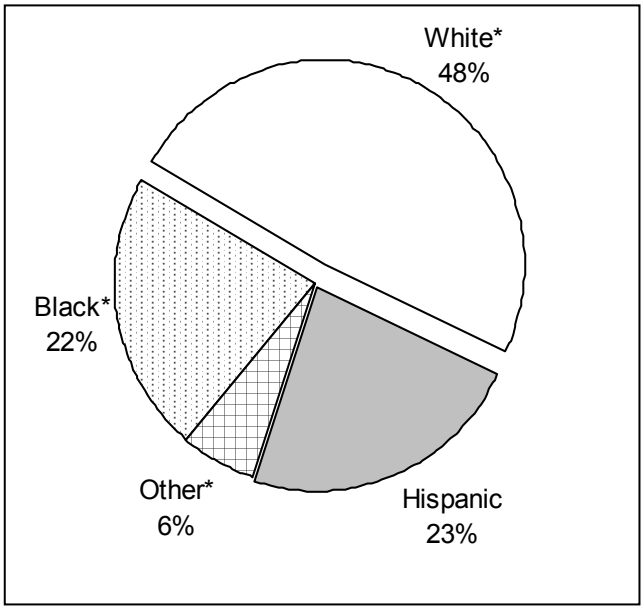
Age group (yrs.)	Gender	Region 1	Region 2	Region 3	Region 4	Region 5	Region 6	Region 7
0-12	Male	7.9%	9.5%	8.7%	9.3%	10.3%	9.0%	8.9%
	Female	7.5%	9.1%	8.4%	9.0%	9.8%	8.6%	8.5%
13-19	Male	4.7%	4.8%	4.8%	4.9%	5.5%	5.1%	5.2%
	Female	4.2%	4.6%	4.7%	4.8%	5.0%	4.9%	4.4%
20-29	Male	6.5%	6.9%	6.8%	7.8%	8.2%	7.2%	9.7%
	Female	6.0%	6.6%	6.6%	7.2%	7.0%	6.9%	7.1%
30-39	Male	6.7%	8.1%	7.3%	8.4%	7.2%	6.3%	6.7%
	Female	6.4%	7.9%	7.2%	8.1%	7.2%	6.4%	6.5%
40-49	Male	7.0%	7.7%	7.5%	7.7%	6.8%	7.2%	6.7%
	Female	7.3%	7.8%	7.7%	8.0%	7.2%	7.8%	7.1%
≥ 50	Male	16.1%	12.1%	13.6%	11.3%	11.5%	13.6%	13.4%
	Female	19.7%	14.6%	16.7%	13.6%	14.3%	17.1%	16.0%
Total	Male	48.8%	49.3%	48.6%	49.4%	49.5%	48.4%	50.5%
	Female	51.2%	50.7%	51.4%	50.6%	50.5%	51.6%	49.4%

Table 1.6 displays the proportion of males and females by age group for the HIV/STD Prevention & Care Branch Regions. Note the greatest proportion of children ages 0 to 12 years is in Region 5 and of adults ages 50 and older in Region 1. Region 7 has the highest proportion of 20-to-29-year-old males.

Poverty, Income, and Education

According to the U.S. Department of Commerce's Bureau of Economic Analysis, the (preliminary) per capita income for North Carolina in $30,553, or 88 percent of the national average of $34,586. This represents a 4.2 percent increase from 2004 ($29,322) and placed North Carolina 37th in the nation for personal per capita income and 5th in the Southeast. As of April 2006, a total of 189,826 North Carolinians were unemployed, or 4.3 percent of the N.C. civilian non-institutional population. This rate is down from the same time period of the preceding year, when 223,038 or 5.2 percent of North Carolinians were unemployed. According to the Bureau of Labor Statistics, the national unemployment rate was 4.7 percent in April of this year.

Figure 1.1. N.C. distribution of non-elderly uninsured by race/ethnicity, 2004



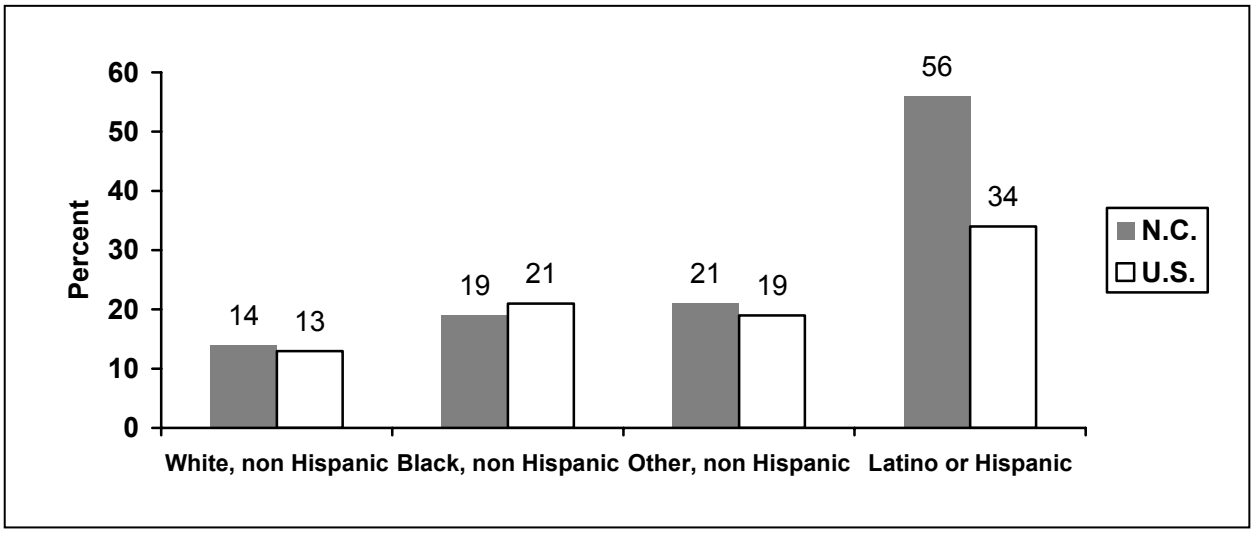
*non-Hispanic
Source: Urban Inst. & Kaiser Family Foundation

Between 1999-2000 and 2003-2004, the percentage of the non-elderly without health insurance in North Carolina increased almost 15 percent, from 15.6% to 17.9%. Due to this increase, there are now over 1.3 million non-elderly individuals in the state who are uninsured (N.C. Institute of Medicine Report). Overall, 62 percent of the state's uninsured population was low-income, with income less than 200 percent of the federal poverty level. According to the North Carolina Institute of Medicine, this was mostly due to the drop in employer-sponsored insurance (ESI) coverage. A greater percentage of people lost employer-sponsored coverage in North Carolina in the last four years than in the rest of the nation.

The North Carolina Institute of Medicine report indicated that most of the uninsured are white, but that racial and ethnic minorities have a higher chance of being uninsured. The racial distribution of uninsured persons in North Carolina is displayed in Figure 1.1.

Figure 1.2 displays the distribution of uninsured rates (expressed as the % within the groups) for North Carolina as compared to the United States. In 2003-2004, the uninsured rates in North Carolina were 56 percent for Latinos or Hispanic, 21 percent for other races, 19 percent for blacks, and 14 percent for whites. Latinos are more likely to be uninsured because they are frequently recent immigrants with low-wage jobs in industries that do not offer health insurance.

Figure 1.2. North Carolina uninsured rates for nonelderly by race and ethnicity (2003-2004) and United States (2004)



Source: Urban Inst. & Kaiser Family Foundation

According to the 2000 U.S. Census Bureau, 45.9 percent of N.C. families with female head of household (no husband present), with children under 5 years old, were below the federal poverty level. For individuals 18 years and older living in North Carolina, 11 percent were below the federal poverty level at some point during 1999. From 2003 to 2004, 14 percent of North Carolinians were at or below the federal poverty level. Table 1.7 displays the individual poverty rate by age for the state and the nation from 2003 to 2004. Table 1.8 displays the individual poverty rate by race/ethnicity for N.C. and the U.S. during 2003-2004. Map 7 (Appendix A, pg. A-9) displays the North Carolina per capita income for 2000.

Table 1.7. North Carolina and U.S. poverty rates by age, 2003-2004

Age in Years	N.C. (N)	N.C. (Pct.)	U.S. (N)	U.S. (Pct.)
Children 0-18	589,490	26%	18,039,980	23%
Adults 19-64	855,870	17%	27,797,390	16%
Elderly 65+	169,570	18%	4,644,040	13%

Source: Urban Institute and Kaiser Family Foundation

According to the 2004 American Community Survey, of North Carolinians 25 years and older, 81.0 percent were high school graduates or higher and 24.6 percent had a bachelor's degree or higher. The state's dropout rate declined from 2004 to 2005. During the 2004-05 school year, 3.2 percent of the students in seventh through twelfth grades dropped out of school. The high school dropout rate (grades 9-12) for the year was 4.7 percent. The state total and percent included charter school dropouts (N.C. Public Schools Statistical Profile 2006).

Table 1.8. North Carolina and U.S. income and poverty rate, 2003-2004

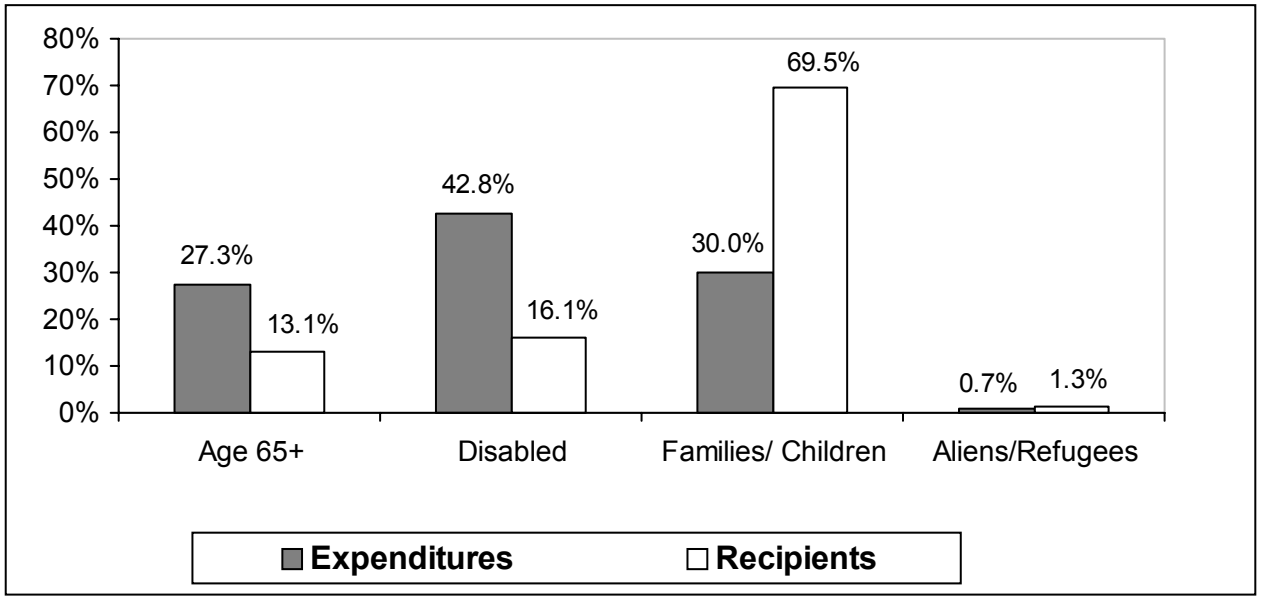
Race/Ethnicity	Individual Poverty Rate (% of each group at or below the federal poverty level)	
	N.C. (Pct.)	U.S. (Pct.)
White*	13%	12%
Black*	31%	33%
Hispanic	37%	29%
Other	26%	18%

* non-Hispanic Source: Urban Institute and Kaiser Family Foundation

Public Aid

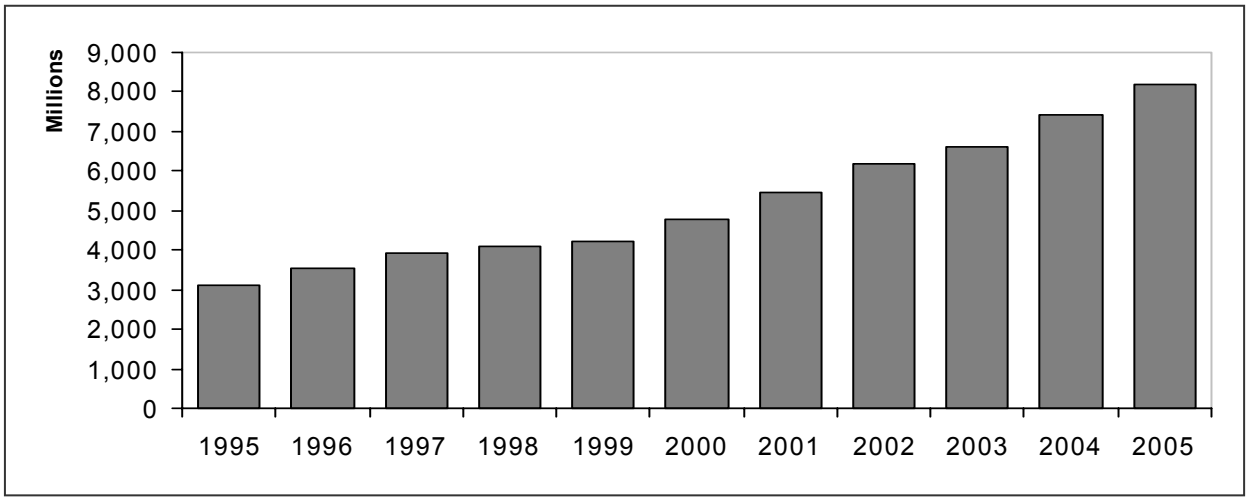
The grand total of Medicaid and Medicaid-related expenditures in North Carolina for SFY 2005 was approximately $8.2 billion for approximately 1.5 million Medicaid recipients (an average $5,154 per recipient). During 2005, a total of 1,585,238 North Carolinians, or 18 percent of the total N.C. population, was eligible for Medicaid coverage at some point during the year (DHHS 2006). The Elderly and Disabled accounted for about 29 percent of the Medicaid recipients; however, their expenditures amounted to $5.7 billion or 70 percent of the total service expenditures (Figure 1.3). Families and Children recipients represented 70 percent of all recipients; however they accounted for $2.4 billion or only 30 percent of total service expenditures.

Figure 1.3. N.C. Medicaid service expenditures & recipients, SFY 2005



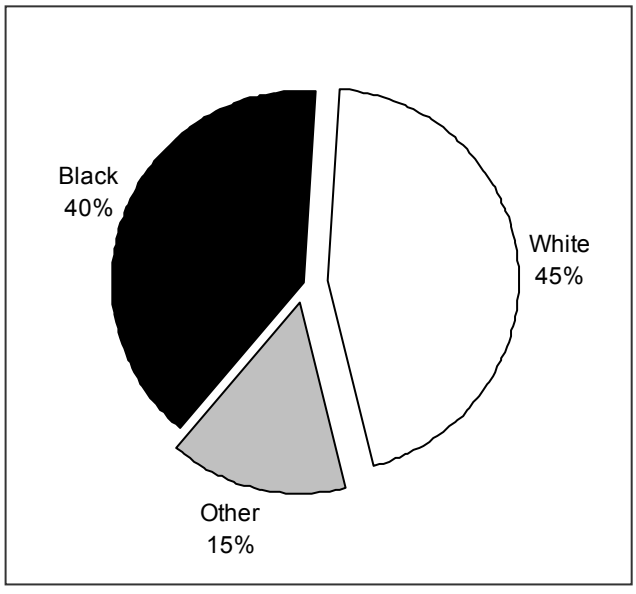
Source: Medicaid Program Overview 2006

Figure 1.4. History of Medicaid expenditures SFY 1995-2005 - Fund 1310



Source: Medicaid in North Carolina Annual Report 2006

Figure 1.5. N.C. Medicaid recipients by race SFY 2005



Source: Medicaid in N. C. Annual Report 2006

Aliens and Refugees represented 1.3 percent of all recipients and accounted for 55 million, or about one percent of total service expenditures. Of all Medicaid services provided, the Prescription Drug service category was the most expensive at roughly $1.6 billion, or 20.2 percent of total expenditures. Figure 1.4 displays the Medicaid expenditures in North Carolina from 1995 to 2005. It should be noted that the expenditures in this figure are only for Medicaid Program Services paid through the Division of Medical Assistance Program (Fund 1310).

Figure 1.5 displays the percentage of North Carolinians by race, who received Medicaid in 2003 (DHHS 2006). Map 8 (Appendix A, pg. A-10) displays the percent of Medicaid eligibles by county for 2006.

HEALTH INDICATORS

There are a variety of ways to measure the health of different populations. These measurements include physical activity, being overweight/obese, tobacco use, substance abuse, sexual behavior, mental health, injury and violence, environmental quality, immunization, and access to health care. For the purpose of this report, we will focus on just a few. According to the Centers for Disease Control (CDC), North Carolina ranked 6th in 2004 for reported gonorrhea, with a rate of 180.7 cases per 100,000. Also at that time, North Carolina ranked 15th for primary and secondary syphilis cases, with a rate of 2.3 cases per 100,000. This ranking may change in 2005, as the number of reported primary and secondary cases in North Carolina increased substantially in 2005. See Chapter 8 for more details on bacterial Sexually Transmitted Diseases in North Carolina.

Another useful health indicator is the infant death rate. The 2003 infant death rate for North Carolina was 8.2 per 1,000 live births, as compared to the national average of 6.8 per 1,000 live births. The 2004 infant death rate for North Carolina was 8.8 per 1,000 live births. Birth rates for young women can be an indirect marker for sexual activity. Although teen pregnancy rates continue to decline in North Carolina, the state still had the 15th highest teen birth rate in 2003. The teen birth rate (women ages 15-19 years) for North Carolina in 2004 was 46.6 per 1,000, down from 49 per 1,000 in 2003. The national teen birth rates in 2003 and 2004 were 41.6 and 41.2 per 1,000 young women respectively. The North Carolina teen birth rate still remains high, most markedly among Hispanic teens in the state. Table 1.9 displays the teen birth rate, low birth weight percentage and the infant death rate for North Carolina, for race/ethnicity categories (note that data was not uniformly available for each year and for all race/ethnicity groupings). Also note that the teen birth rate for Hispanic women in the state increased from 164.3 per 1,000 in 2002 to 169.1 per 1,000 in 2003.

Table 1.9. N.C. and U.S. teen birth rate, low birth weight and infant death rate, by race/ethnicity

Race/Ethnicity	Teen Birth Rate, per 1,000 births (2003)		Percentage of Low Birth Weight** Infants (2003)		Infant Death Rate, per 1,000 births (2000-2002)	
	N.C.	U.S.	N.C.	U.S.	N.C.	U.S.
White*	33.3	27.4	7.6%	7.0%	6.3	5.7
Black*	64.4	64.7	14.2%	13.6%	15.0	13.5
Hispanic	169.1	82.3	6.2%	6.7%	5.6	5.5

*non-Hispanic **Low birth weight is birth weight of less than 2,500 grams (5 lb.8oz.)

Source: Urban Institute and Kaiser Family Foundation

CHAPTER 2: SCOPE OF THE HIV/AIDS EPIDEMIC IN NORTH CAROLINA

HIGHLIGHTS

- In 2005, 1,806 new individuals were reported with an HIV diagnosis (HIV disease). In the last five years, N.C. has averaged approximately 1,700 new reports each year.
- North Carolina's overall rate of HIV infection in 2005 was 21.1 per 100,000.
- The cumulative number of individuals reported with HIV disease through December 31, 2005 was 28,485 persons.
- An estimated 29,500 persons were living with HIV or AIDS in North Carolina (including persons who may have been unaware of their infection) as of December 31, 2005.
- In 2005, the rate of HIV infection for non-Hispanic blacks (61.4 per 100,000) was more than seven times greater than for non-Hispanic whites (8.6 per 100,000). The rate of infection for Hispanics (24.1 per 100,000) was almost three times greater than for whites, and the rate of infection for American Indians (20.6 per 100,000) was over two times that for whites.
- The highest rate of HIV infection in 2005 was among black non-Hispanic males, at 88.6 per 100,000. This was more than six times the rate for white non-Hispanic males (14.4 per 100,000).
- The largest disparity in 2005 observed was for black non-Hispanic females, with a rate of HIV infection (37.3 per 100,000) that was over 12 times higher than that of white non-Hispanic females (3.0 per 100,000).
- Adults aged 30 to 39 years and 40 to 49 accounted for the greatest proportion of new HIV reports in 2005 (30% each).
- For 2005 adult/adolescent HIV disease reports, men who have sex with men (MSM) was indicated in 48 percent of reports; heterosexual transmission risk was indicated in 40 percent of reports; and injecting drug use (IDU) was indicated in 8 percent of reports.
- In 2005, MSM and MSM/IDU accounted for 68 percent of new HIV disease reports among adult/adolescent males. This represents an increase for males compared to earlier years.
- In 2005 HIV disease reports for adult/adolescent females, heterosexual contact accounted for about 83 percent of reports and injecting drug use accounted for 12 percent.
- Nationally, in 2003, North Carolina reported the 2nd highest number of AIDS cases from non-metropolitan areas.

- Approximately, 30 percent of new individuals reported each year with HIV disease also represent new AIDS cases (i.e., HIV and AIDS were reported at the same time for the individual).

- Since the early 1990s, about 25 percent of North Carolina's HIV disease reports have consistently come from rural, or non-metropolitan, areas.

- In 2005, Hertford County had the highest county HIV infection rate (based on a 3-year average for 2003-2005) of 66.4 per 100,000 population. This was more than three times the state's 3-year average rate of 21.6 per 100,000 population. Edgecombe County ranked second with an HIV rate of 51.7, followed by Mecklenburg County (48.8), Durham County (39.1), and Hyde County (36.2).

- In 2004, HIV/AIDS was listed as the 7th leading cause of death for N.C. adults 25-44 years old.

- In 2004, HIV/AIDS was listed as the 10th leading cause of death for N.C. blacks overall. The crude HIV death rate for blacks is approximately 12 times higher than for whites (17.1 vs. 1.4 per 100,000).

OVERALL HIV/AIDS TRENDS

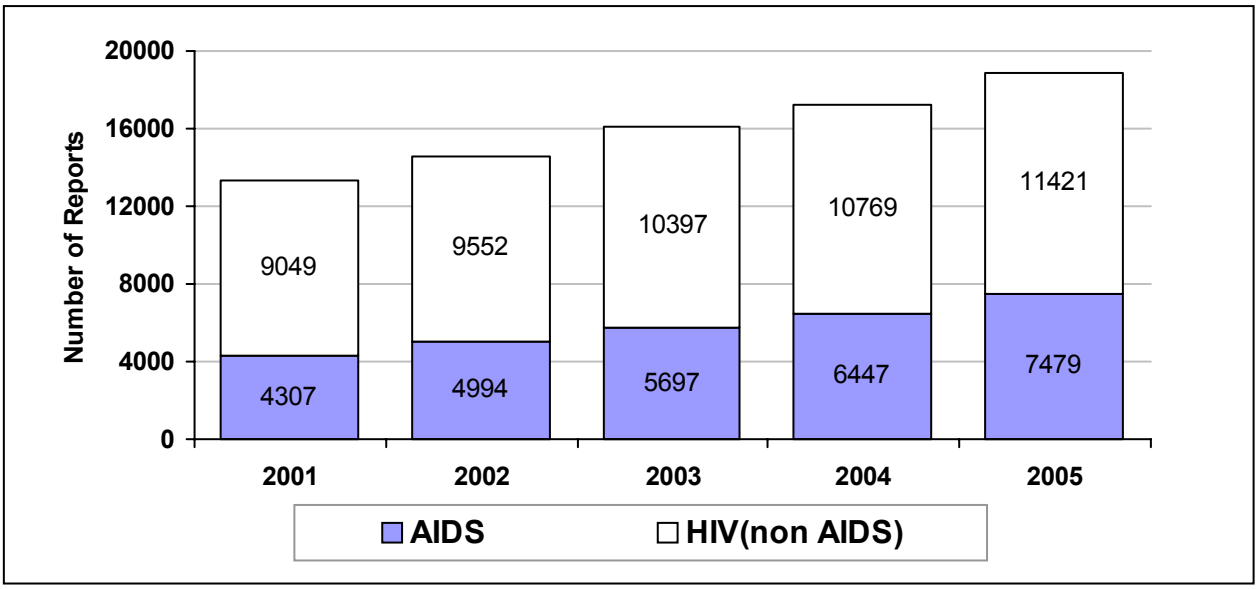
Special note: Unless otherwise noted, references to all racial groups in surveillance data exclude Hispanics. Hispanics are counted as a separate group. Thus "white" refers to white non-Hispanics, "blacks" refers to black non-Hispanics, etc. HIV disease includes not only persons diagnosed with HIV, but also persons diagnosed with HIV and AIDS at the same time. Thus, HIV disease includes all new individuals reported as infected by the date of their first report. More information about this designation of HIV disease can be found in Appendix C (pg. C-3)**.**

HIV Prevalence

The cumulative number of HIV disease cases reported through December 31, 2005 was 28,485, of whom 9,585 have either died or have an unknown vital status. Therefore, the total number of persons living with HIV disease and reported to the HIV/STD Prevention & Care Branch is 18,900. Figure 2.1 displays the cumulative number of persons living with HIV or AIDS each year from 2001 to 2005. Readers may note that "living totals" for earlier years have been revised. HIV disease reports are periodically updated with vital status data available from the State Center for Health Statistics.

The number of persons living with HIV stated above represents only persons who know that they are HIV-positive (i.e., have been diagnosed) and who have been reported to the N. C. public health surveillance system. Thus, this total underrepresents true HIV prevalence. The total must be adjusted to account for persons who have been diagnosed and not reported and for those who do not know that they are infected. Recent studies indicate that N.C. HIV surveillance currently captures 70 – 90 percent of new HIV diagnoses (Appendix B, pg. B-3). One method for

Figure 2.1. Persons living with HIV in North Carolina, 2001-2005



estimating persons who have HIV but are not aware of it is based upon the CDC estimate that two-thirds to three-fourths of the persons living with HIV and AIDS have been tested and know their status. Applying these two statistics to our current surveillance total of 18,900 persons living in North Carolina with HIV/AIDS would increase the prevalence estimate to about 29,500 persons.

HIV/AIDS Demographics

Table 2.1. North Carolina HIV/AIDS cases living as of 12/31/2005 by selected demographics

	Males			Females			Total		
	No.	Pct.	Rate**	No.	Pct.	Rate**	No.	Pct.	Rate**
	12,946	68.5%	308.3	5,954	31.5%	137.1	18,900	100.0%	221.3
Race/Ethnicity									
White*	3,718	28.8%	128.5	985	16.5%	32.8	4,703	24.9%	79.7
Black*	8,492	65.7%	970.5	4,714	79.2%	478.5	13,206	69.9%	710.0
AI/AN*	120	0.9%	229.8	59	1.0%	108.3	179	0.9%	167.7
Asian/PI*	58	0.4%	75.5	28	0.5%	35.0	86	0.5%	54.8
Hispanic	541	4.2%	179.6	167	2.8%	77.2	708	3.7%	136.8
Current Age									
00-12	34	0.3%	4.4	40	0.7%	5.4	74	0.4%	4.9
13-19	93	0.7%	22.1	79	1.3%	19.8	172	0.9%	21.0
20-29	1,189	9.2%	188.2	752	12.6%	130.2	1,941	10.3%	160.5
30-39	3,396	26.3%	532.3	1,942	32.6%	311.0	5,338	28.3%	422.9
40-49	5,188	40.1%	823.7	2,083	35.0%	318.8	7,271	38.5%	566.7
50+	3,026	23.4%	275.3	1,056	17.7%	78.6	4,082	21.6%	167.1

*non Hispanic; AI/AN=American Indian/Alaska Native, PI=Pacific Islander ** per 100,000

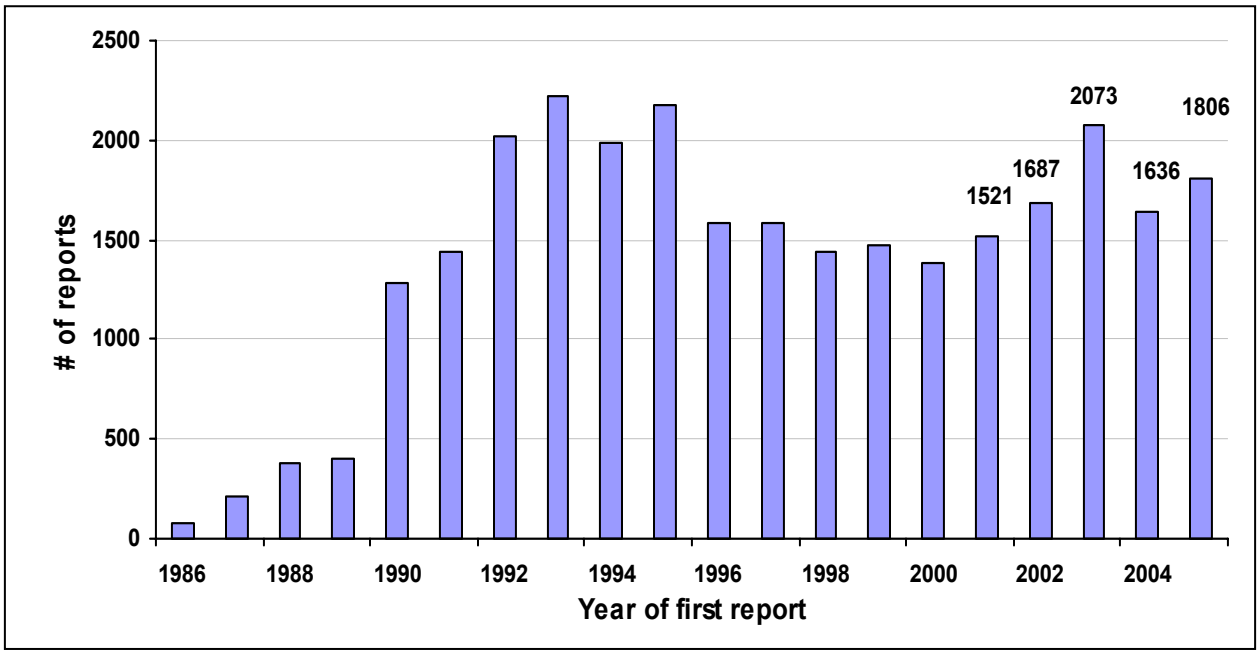
Table 2.1 displays demographics of HIV disease reports for persons living with HIV/AIDS as of December 31, 2005. As expected, there is a larger representation of older persons among the persons living with HIV/AIDS, as many persons live several years with a diagnosis. In addition, there is a greater percentage of male (69%) and black or African American (70%) living cases. In turn, there was a prevalence rate of 308.3 per 100,000 and 710.0 per 100,000 for males and for black or African American living cases, respectively. The overall prevalence rate of HIV infection as of December 31, 2005 was 221.3 per 100,000.

HIV Incidence

Although HIV surveillance reports do not reflect the true incidence of all new infections because not everyone infected is tested and reported, it is important to follow surveillance reporting trends to estimate whether incidence is increasing or decreasing. In 2005, 1,806 new individuals were reported with an HIV diagnosis (HIV disease).

Figure 2.2 shows all HIV disease cases reported, by year of first report for the individual. The addition of state-required HIV infection reporting in 1990 accounts for the dramatic increase in reports beginning at that time. The number of cases reported was highest from 1992 through 1995, representing a time when HIV incidence was likely at its peak. It is important to note that some of this spike in reporting was also probably a result of better reporting from providers due to enhanced awareness about HIV/AIDS issues. This likely occurred because of the implementation of required HIV infection reporting, changes in the AIDS case definition and/or as a result of enhanced active surveillance activities by staff. Thus, part of this 1992-to-1995 spike was likely a reflection of prevalent cases being reported. An interesting correlation to note is that 1992 was the peak year for HIV seropositivity among women who gave birth in North Carolina (data from the Survey of Childbearing Women) and was also the peak year for syphilis cases reported in North Carolina. It should also be noted that the peak of reports in 2003 was

Figure 2.2. HIV disease reports over time



likely the result of newly implemented surveillance activities that added some older prevalent cases to the system.

Although the number of new HIV disease reports per year has moderated since 1996, yearly report totals have increased over the last few years to around 1,700 new reports per year. Reporting by type of initial case (HIV or AIDS) has been fairly consistent since the mid-1990s. Roughly just under 30 percent of new individuals reported each year with HIV disease also represent new AIDS cases (i.e., HIV and AIDS were reported at the same time for the individual). This significant proportion of late diagnoses (i.e., AIDS) indicates the need for increased HIV testing within North Carolina. In addition, this supports the recommendation to include voluntary HIV testing as part of routine medical examinations for all U.S. residents ages 13 to 64 (Kaiser, 2006).

HIV/AIDS BY RACE/ETHNICITY AND GENDER

Table 2.2 indicates that the highest rate of HIV infection among racial/ethnic grouping by gender in 2005 is among black males (88.6 per 100,000), at more than six times that for white males (14.4 per 100,000). The second highest rate of HIV infection is for black females (37.3 per 100,000), which is over 12 times higher than the rate for white females (3.0 per 100,000). This disparity between white and black women represents the largest disparity noted within gender for race/ethnicity. Disparities also exist for Hispanics as compared to whites; the rate for Hispanic men (32.2 per 100,000) is more than twice that for white men and the rate for Hispanic women (12.9 per 100,000) is over four times that for white women. Rates for other race/ethnic groups are based on numbers too small for meaningful comparisons but are displayed in Table B (Appendix D, pg. D-4).

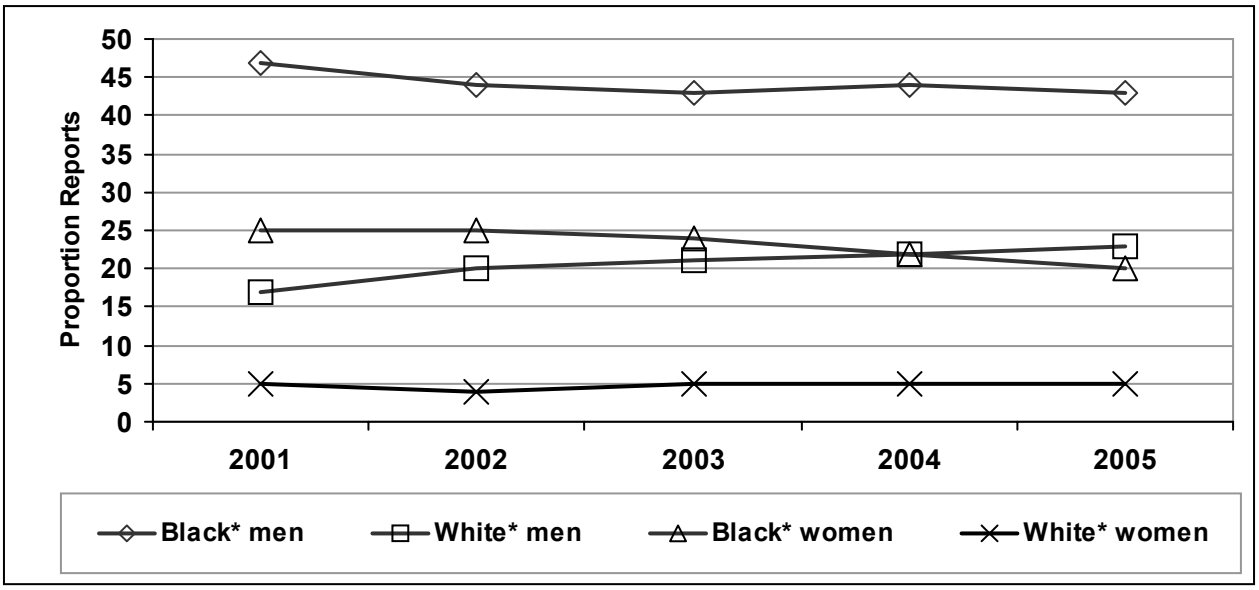
Table 2.2. North Carolina HIV disease by race/ethnicity and gender, 2005

	Male			Female			Total		
Race/ethnicity	No.	Pct.	Rate**	No.	Pct.	Rate**	No.	Pct.	Rate**
White*	416	31.8%	14.4	90	18.1%	3.0	506	28.0%	8.6
Black*	775	59.3%	88.6	367	73.7%	37.3	1,142	63.2%	61.4
AI/AN*	12	0.9%	23.0	10	2.0%	18.4	22	1.2%	20.6
Asian/PI*	6	0.5%	7.8	3	0.6%	3.8	9	0.5%	5.7
Hispanic	97	7.4%	32.2	28	5.6%	12.9	125	6.9%	24.2
Unknown	2	0.2%	--	0	0.0%	--	2	0.1%	--
Total	1,308	100%	31.2	498	100%	11.5	1,806	100%	21.1

*non Hispanic; AI/AN=American Indian/Alaska Native, PI=Pacific Islander ** per 100,000

Table A (pg. D-3) displays the gender distribution of HIV disease reports from 2001 through 2005. The gender distribution of reports is about two and one-half male reports for each female report (i.e., 2.6 male reports: 1 female report). This disparity has been widening over the past five years. In 2001, the ratio was about two male reports for each female report (i.e., 2.1 male reports: 1 female report). Table B (pg. D-4) also displays the race/ethnicity of reports stratified by gender from 2001 through 2005. Notable trends include the increase in proportion of reports for white males (17% of reports in 2001 to 23% of reports in 2005) and for Hispanics overall (4% of reports in 2001 to 7% in 2005). Figure 2.3 displays the proportions of HIV disease

Figure 2.3. HIV/AIDS by race/ethnicity and gender over time, 2001-2005



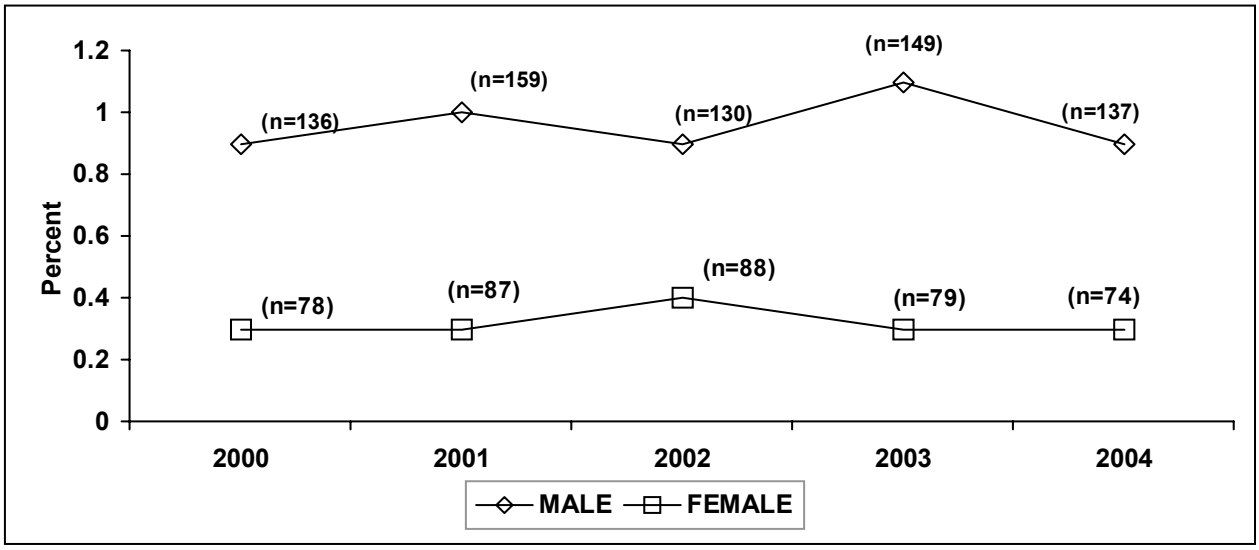
* non-Hispanic

reports from 2001 through 2005 attributed to black and white males and to black and white females.

In addition to routine surveillance data, comparisons or trends can be isolated among persons tested at HIV counseling and testing system (CTS) sites. The North Carolina Division of Public Health collects information from clients seeking HIV testing at any of the 169 publicly funded HIV CTS sites across the state. Information on client demographics, risk behaviors, and testing history is collected, but no personal identifying information is included. The risk information provided can be used to classify clients according to a risk hierarchy similar to the one that is used to classify reported cases; however, the self-reported risk may not be accurate. Because clients who use CTS services are self-selected, they do not represent a random sample of the state's population. Also, because no personal identifying information is collected, it is impossible to know how many times an individual client is represented in the data set. However, clients are asked if they have ever been tested for HIV before. Those who say they have been tested before could be in the data set one, two, three, or more times in a single year, depending on their testing frequency. Those who report that they have not been tested before the current test therefore comprise a group with each person represented only once; this is the most stable group from which to make estimates. Changes were implemented for CTS data collection in 2005 that will improve the ability to identify multiple tests for persons over time. (For a detailed description of CTS, please see Appendix B on pg. B-9 and HIV testing discussion in Chapter 4).

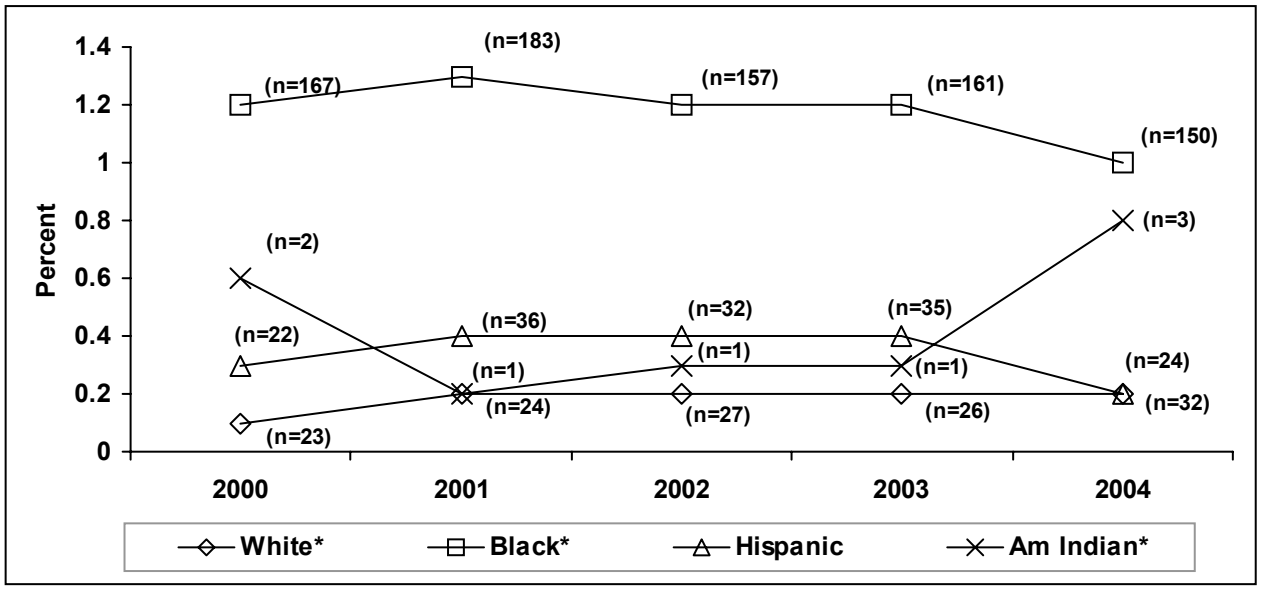
Although the CTS data is limited to persons who test at public clinics, it is very useful because information is available for persons who test HIV negative as well as persons who test HIV positive, so positivity rates can be calculated. Percent positivity among persons testing for the first time at HIV counseling and testing (CTS) sites in North Carolina is displayed in Figures 2.4 and 2.5. The relative rankings of positivity for males and females is similar to those seen in

Figure 2.4. Percent HIV positivity among persons tested (CTS) for the first time by gender, 2000-2004



routine surveillance data, but relative ranking of positivity among racial/ethnic groups in 2004 is somewhat different. The positivity among whites and Hispanics tested at CTS sites is about even, and the positivity among blacks appears to be decreasing. The increase in positivity among American Indians may not be meaningful as it is based on very few cases. The differences observed in positivity among the groups may be due to changes in the testing outreach and subsequent changes in the testing population.

Figure 2.5. Percent HIV positivity among persons tested (CTS) for the first time by race/ethnicity, 2000-2004



* non-Hispanic

HIV/AIDS BY AGE GROUP

Most HIV disease reports are for adults and adolescents, as less than one percent of new reports represent infants or children younger than 13 (Table A, pg. D-3). In 2005, adults aged 30 to 39 years and 40 to 49 years accounted for the greatest proportion of reports (see Table 2.3). Together, these two groups accounted for 60 percent of all reports. HIV is reported among an older population when compared to other sexually transmitted diseases like gonorrhea and chlamydia. However, the age distribution of HIV cases is similar to that of syphilis reports (Chapter 8).

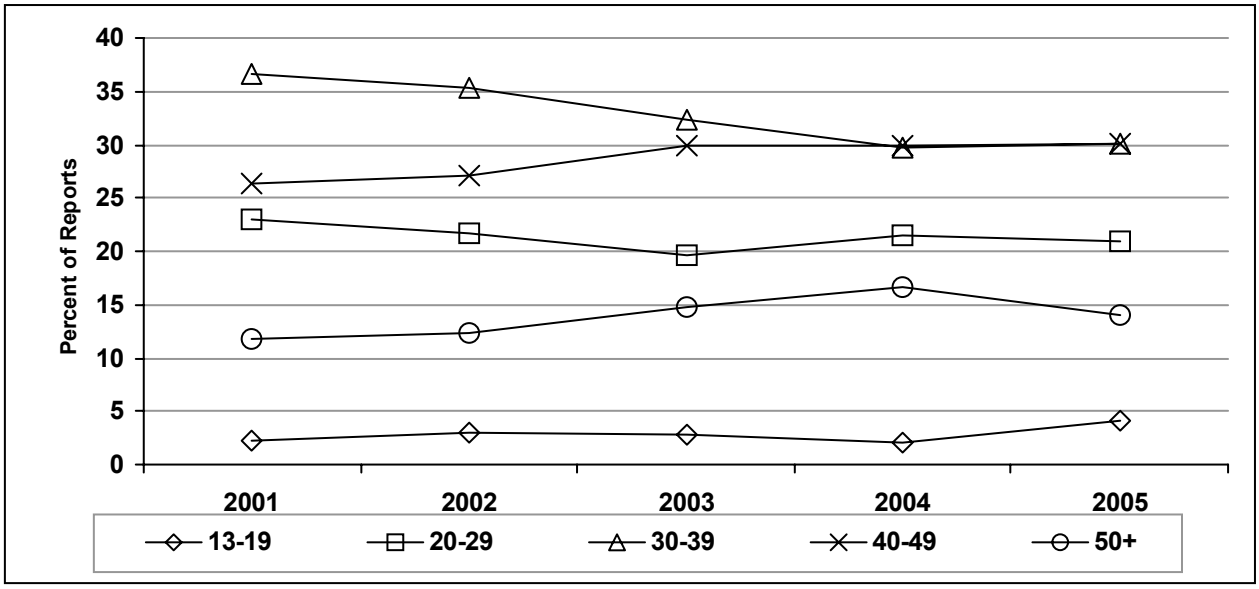
Table 2.3. North Carolina HIV disease by age group and gender, 2005

	Males			Females			Total		
Age (yrs.)	No.	Pct.	Rat**e	No.	Pct.	Rate**	No.	Pct.	Rate**
0-12	6	0.5%	0.8	2	0.4%	0.3	8	0.4%	0.5
13-19	51	3.9%	12.1	25	5.0%	6.3	76	4.2%	9.3
20-29	263	20.1%	41.6	117	23.5%	20.3	380	21.0%	31.4
30-39	387	29.6%	60.7	157	31.5%	25.1	544	30.1%	43.1
40-49	405	31.0%	64.3	138	27.7%	21.1	543	30.1%	42.3
50 & over	196	15.0%	17.8	59	11.8%	4.4	255	14.1%	10.4
Total	1,308	100.0%	31.2	498	100.0%	11.5	1,806	100.0%	21.1

** per 100,000

Figure 2.6 displays trends for age groups from 2001 to 2005 by their proportion of overall reports. Note that proportions have changed over time for some groups: the proportions have increased for 13-19 year olds, while those aged 30-39 years have made up a smaller proportion of new reports over time. Figure 2.7 displays the percent positivity for persons tested for the first time at CTS sites from 2000 to 2004. Positivity is highest for those aged 50 years and older. For

Figure 2.6. HIV/AIDS by age group, 2001-2005



40- to 49- year-olds, the percent positivity decreased in 2004. Positivity has remained fairly constant for other persons in recent years. Readers are reminded that CTS data only represent the testing population at public clinics and may not be generalizable to larger populations.

ADULT/ADOLESCENT HIV/AIDS BY EXPOSURE CATEGORIES

As part of HIV surveillance activities, a great deal of importance is placed on determining the key HIV risk factors associated with each case. This is achieved by interviewing the patient, the sex and/or drug-using partners, and the treating physician. Ultimately, each case is assigned to a primary risk category based on a hierarchy of disease transmission developed by the CDC and others. Table 2.4 displays the reported mode of transmission for adult/adolescent HIV disease cases for 2005. Three principal risk categories are evident: men who have sex with men (MSM), injection drug use (IDU), and heterosexual contact. Note that the proportion of cases for which there is no identified risk (NIR) is substantial, and is higher among females than among males when proportions are compared for each gender separately. A portion of these NIR cases are classified as such not because of missing or incomplete information, but because reported risks do not meet one of the CDC-defined risk classifications. Consequently, inferring trends from exposure category or risk data should be done with extreme caution. Some NIR cases have been reevaluated and reassigned to a "presumed heterosexual" risk category based on information from follow-up interviews with newly diagnosed individuals, such as the exchange of sex for drugs or money, previous diagnoses with other STDs, multiple sexual partners, etc. Even with this reassignment of presumed heterosexual risk for some NIR reports, a substantial proportion of NIR reports remain, and it is somewhat difficult to follow changes in the proportions among the risk groups. To simplify the discussion and better describe the overall changes, the remaining NIR cases have been assigned a risk based on the proportionate representation of the various risk groups within the surveillance data (see Table 2.5). More explanation of this general risk reassignment of NIR cases can be found in Appendix C (pg. C-5). In addition, the redistributed risk assignment of NIR cases for all living cases can found in Table G (pg. D-9). Further discussions of risk or exposure categories in this profile will be based on the fully redistributed risk of all HIV/AIDS cases.

Table 2.4. Adult/adolescent HIV disease by exposure category, NIR* included, 2005

Exposure	Males		Females		Total	
Category	No.	Pct.	No.	Pct.	No.	Pct.
MSM	619	48%	--	--	619	34%
IDU	60	5%	35	7%	95	5%
MSM/IDU	23	2%	--	--	23	1%
Blood Products/ Hemophilia/other	9	1%	14	3%	23	1%
Heterosexual	95	7%	135	27%	230	13%
NIR* (presumed heterosexual)	116	9%	103	21%	219	12%
NIR*	379	29%	209	42%	588	33%
Total	**1,301**	**100%**	**496**	**100%**	**1,797**	**100%**

*no indicated risk

For 2005 adult/adolescent HIV disease reports, heterosexual transmission risk represents about 40 percent of all reports; MSM and MSM/IDU (men who have sex with men and inject drugs) represent about 50 percent of all reports; and IDU represents about 10 percent (including MSM/IDU). This gives a very broad look at how the HIV epidemic is spread among risk groups. It is difficult to apply this broad information to effective prevention strategies because risk is very different for males and females. Thus, it is necessary to discuss risk for each gender separately.

Table 2.5. Adult/adolescent HIV disease by exposure category, NIR* redistributed, 2005

Exposure	Males		Females		Total	
Category	No.	Pct.	No.	Pct.	No.	Pct.
MSM	861	66%	--	--	861	48%
IDU	87	7%	59	12%	146	8%
MSM/IDU	32	2%	--	--	32	2%
Blood Products/ Hemophilia/other	13	1%	25	5%	38	2%
Heterosexual	309	24%	413	83%	722	40%
Total†	**1,301**	**100%**	**496**	**100%**	**1,797**	**100%**

*no indicated risk

†Totals represent actual case totals and may not equal the sum of cases listed in cells above due to redistribution of NIR cases

Figures 2.8 and 2.9 display risk for each gender. For males, MSM and MSM/IDU together account for about 68 percent of HIV disease reports; heterosexual contact cases account for about 24 percent of reports; and IDU account for about 7 percent. For females, heterosexual contact accounts for about 83 percent of reports and IDU about 12 percent. Tables E and F (pp. D-7 to D-8) display the risk categories for the sexes for reports from 2001 to 2005. For males, the proportion of MSM reports has risen in recent years, from about 49 percent in 2001 to 66 percent in 2005. This is consistent with the recent overall increase in male reports observed

Figure 2.8. Adult/adolescent female HIV disease reports, 2005

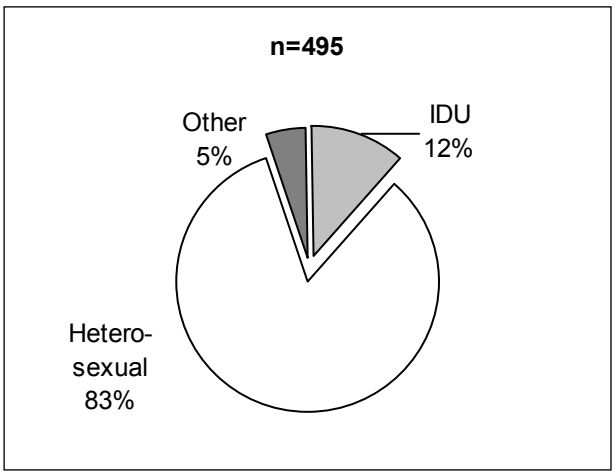
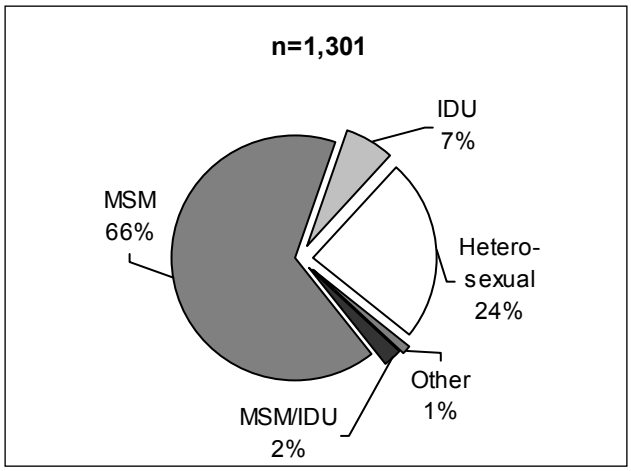
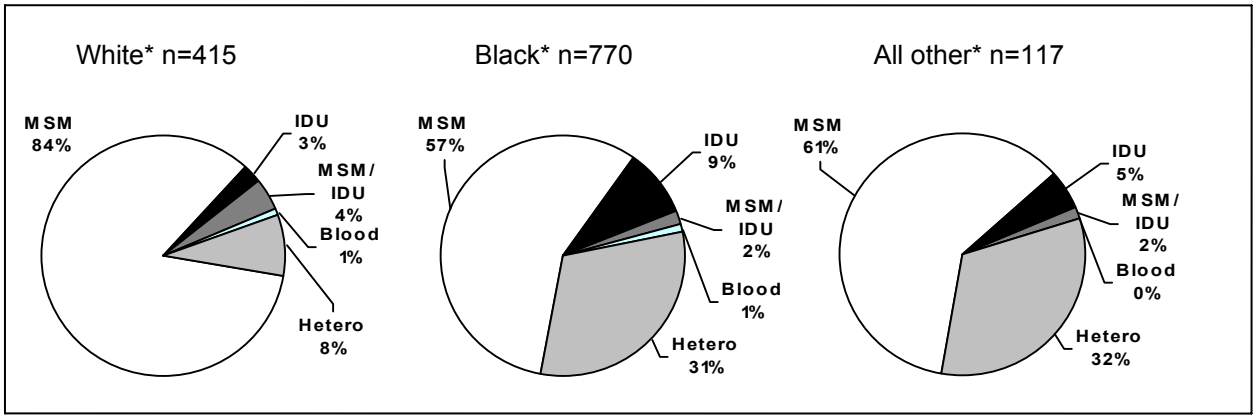


Figure 2.9. Adult/adolescent male HIV disease reports, 2005



when comparing gender. The proportion of IDU reports (2001-2005) for males has continued to decline (10% to 7%), while reports for females do not show a discernable trend. For females, the proportion of heterosexual contact reports has remained fairly constant.

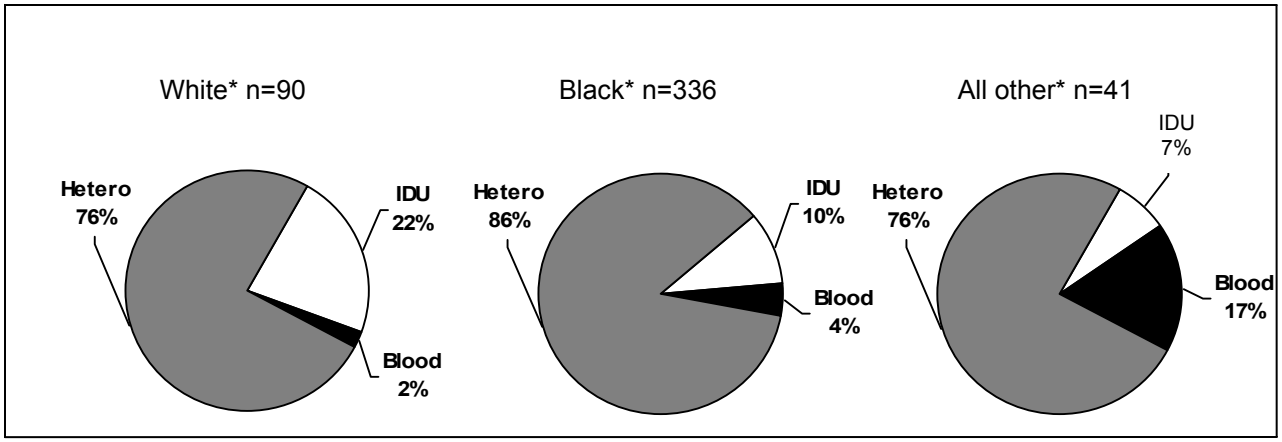
Figure 2.10 Male HIV disease reports*



*Pediatric reports have been excluded

Just as HIV is distributed differently among racial/ethnic groups, it is also distributed differently with respect to risk categories for racial/ethnic groups. Figures 2.10 and 2.11 display the 2005 HIV risk information (exposure categories) by racial/ethnic groups for each gender, with the respective proportions calculated separately for each group. Note that for white males, MSM represented 84 percent of reports, heterosexual risk about 8 percent of reports, and IDU risk about 7 percent of reports. For black males, MSM represented about 57 percent of reports, heterosexual risk about 31 percent of reports, and IDU risk about 9 percent of reports. The risk breakdown for other races/ethnicities (Hispanics, American Indians, and Asian/Pacific Islanders) are grouped together because of low case numbers. Within this aggregated group, MSM risk was reported for 60 percent of male reports, heterosexual risk for 32 percent of reports, and IDU risk for five percent of reports. Although some of this observed difference may be due to underreporting of MSM activity among minority males, some is attributed to the difference in

Figure 2.11 Female HIV disease reports*



*Pediatric reports have been excluded

prevalence of the disease for each racial/ethnic group. Unlike the differences observed for males among the racial/ethnic groups, there is much similarity among the female racial/ethnic groups for reported risk.

GEOGRAPHIC DISTRIBUTION OF HIV/AIDS

According to the U.S. Centers for Disease Control and Prevention (CDC), nationally most HIV and AIDS reports are from large metropolitan areas (greater than 500,000 population) in all regions of the country. The South, as a region, has the greatest proportion of reports from small metropolitan areas (50,000-500,000 population) and non-metropolitan areas (less than 50,000). North Carolina's HIV epidemic, like that of other states in the South, is more rural in nature than the national epidemic. Nationally, North Carolina ranked 2nd among all states in the number of AIDS reports (271) from non-metropolitan areas in 2003; more than 25 percent of North Carolina's AIDS reports were from non-metropolitan areas at that time. North Carolina was also among four states (including Florida, Pennsylvania and New York) that reported the most HIV infection (not AIDS) cases from non-metropolitan areas at that time. It is important to note that HIV was not consistently reported in all states; thus the region/state HIV (not AIDS) comparisons are only for those states that reported HIV.

There is growing concern about the disproportionate increase of HIV and AIDS in the South as compared to other regions of the nation. According to *the Southern States Manifesto—HIV/AIDS & STDs in the South: A Call to Action!*, the South's unique makeup of factors such as poor health infrastructure, lack of affordable housing, racial disparity, high rates of bacterial STDs, lack of health insurance, and depressed socioeconomic factors may be contributing to the epidemic's regional rise (Southern State AIDS Directors workgroup, 2003). See Chapter 6 for more information about AIDS in the South.

The distribution of HIV disease is uneven across North Carolina, as can be seen in Maps 9 and 10 (Appendix A, pp. A-11 to A-12). Cases are assigned to the county of residence at first diagnosis. This distribution can be partly explained by the population distribution in Map 1 (Appendix A, pg. A-3), as the epidemic tends to be concentrated in urban areas although it reaches rural areas as well. It should be noted that persons in long-term institutions are considered residents of the institution. Therefore, HIV disease cases first diagnosed in an institution, such as federal or state prison, are included in the HIV disease counts of the county in which it is located. Some North Carolina counties have substantial institutionalized populations. As mentioned above, North Carolina's epidemic has a significant rural component. Since the early 1990s, roughly 25 percent of North Carolina's HIV disease reports have consistently come from rural or non-metropolitan counties. This trend seems fairly steady and reflects the demographics of the state (see Map 2, Appendix A, pg. A-4). Tables J-K (pp. D- 12-14) give individual county totals of HIV disease and AIDS cases reported, cases listed as living at the end of 2005, and a ranking of case rates (per 100,000) based on a three-year average. [Rate was calculated using the average of rates for the three previous years, ending in 2005. Hertford County ranked number one with the highest 3-year average rate (per 100,000 population) of HIV in 2005 (66.4), followed by Edgecombe County (51.7), Mecklenburg County (48.8), Durham County (39.1), and Hyde County (36.2).] Readers are cautioned to view rates carefully, as rates based on small numbers (generally less than 20) are considered unreliable.

HIV/AIDS-RELATED DEATHS

Unlike chronic diseases with high death rates, such as cancer or cardiovascular diseases, HIV/AIDS death rates are concentrated among the young and middle-aged. According to the North Carolina State Center for Health Statistics, 406 HIV/AIDS deaths were reported in 2004. Although HIV/AIDS did not rank among the top 10 causes of death for all ages, it was listed as 8th for ages 15 to 24 years and 7th for ages 25 to 44 years (Table 2.6); these rankings were the same as in 2003. HIV/AIDS was also listed as the 10th leading cause of death among blacks of all ages (down from 8th in 2003). Table 2.7 displays HIV/AIDS deaths by race for each gender from vital records data maintained by the State Center for Health Statistics. The crude death rate per 100,000 is about 12 times higher for blacks than for whites.

Table 2.6. Leading causes of death for North Carolina residents, 2004

15-24 years			25-44 years		
Rank	Cause	No.	Rank	Cause	No.
1	Motor vehicle injuries	430	1	Cancer	577
2	All other unintentional injuries	163	2	All other unintentional injuries	564
3	Assault (homicide)	141	3	Motor vehicle injuries	539
4	Intentional self-harm (suicide)	128	4	Diseases of heart	533
5	Cancer	41	5	Suicide	427
6	Diseases of heart	30	6	Assault (homicide)	281
7	Congenital malformations	16	7	HIV Disease	189
8	HIV disease	8	8	Cerebrovascular diseases	118
9	Cerebrovascular diseases	6	9	Chronic liver dis./ cirrhosis	91
	Diabetes mellitus	6	10	Diabetes mellitus	86
	All other causes	132		All other causes	865
Total deaths-- All Causes		1101	Total Deaths -- All Causes		4270

Table 2.7. N.C HIV/ADS-related deaths by race/ethnicity and gender, 2004

	Males			Females			Total		
Race/ ethnicity	No.	Pct.	Rate**	No.	Pct.	Rate**	No.	Pct.	Rate**
White*	61	15%	2.1	13	3%	0.4	74	18%	1.3
Black*	209	51%	23.9	111	27%	11.3	320	79%	17.2
Other	10	2%	n/a	2	<1%	n/a	12	3%	n/a
Total	280	69%	6.7	126	31%	2.9	406	100%	4.8

*non-Hispanic ** per 100,000

ADOLESCENT ACQUIRED HIV/AIDS

Tables H and I (pp. D-10 to D-11) and Figures 2.12 and 2.13 below display the percentage of new HIV disease reports by risk and demographic categories for each gender for individuals aged 13 to 24 years at time of report. Because there can be significant delay between infection and subsequent testing and reporting, it is felt that the age group 13 to 24 years better describes infections that likely occurred during adolescence. In 2005, while just four percent of reports were found among teenagers aged 13 to 19, the percentage increased to 13 percent of all cases when 20- to 24- year olds were included.

Figure 2.13. Female HIV disease rpts. (13-24 yrs) that likely represent adolescent exposures, 2005

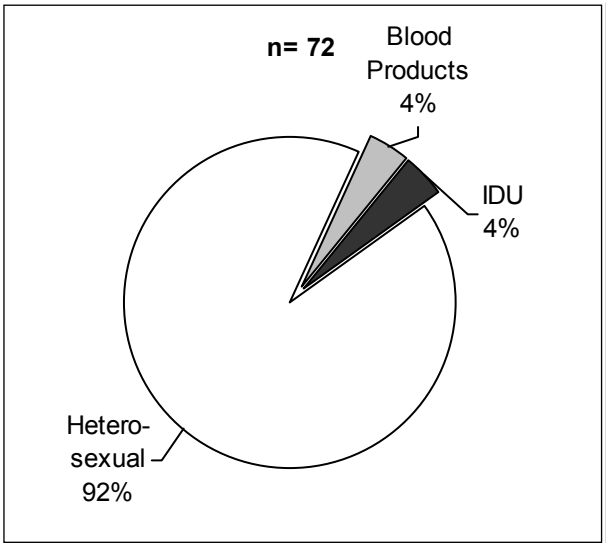
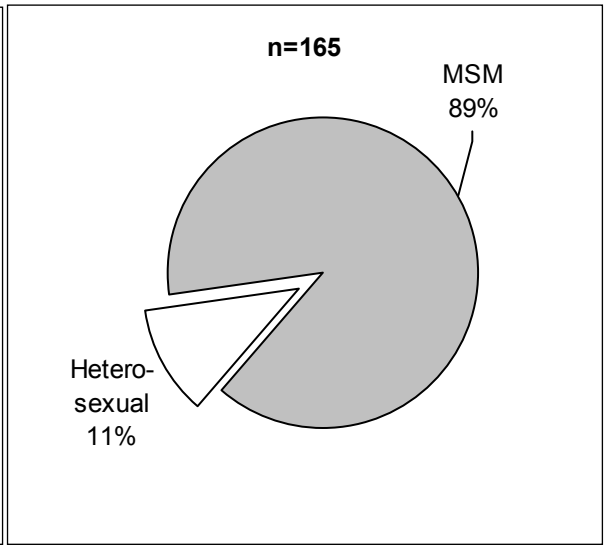


Figure 2.12. Male HIV disease rpts. (13-24 yrs) that likely represent adolescent exposures, 2005



The exposure or risk categories for male adolescents and for female adolescents are very different. This difference is even more pronounced than for older adults. For adolescent females, the proportion of HIV disease reports attributed to heterosexual contact in 2005 accounted for almost 92 percent of the cases. For adolescent males, the proportion of HIV disease reports attributed to MSM risk accounted for 89 percent of the 2005 reports, up from the 75 percent of reports in 2001.

PERINATAL HIV/AIDS

Perinatal transmission of HIV is of particular interest in North Carolina because it is generally preventable if appropriate drugs are administered to the mother during pregnancy and delivery. For this reason, special emphasis is placed on follow-up for known HIV-infected mothers. Table 2.8 displays the proportion of HIV-infected women who are of child-bearing age (15-44 years old). This group of women represents the bulk of female reports, but note that the proportion has decreased in recent years. Readers should keep in mind that the delays in testing and diagnosis can significantly affect the assessment of the true number of females in this category.

The demographics for women of childbearing age, which are displayed in Table 2.9, closely resemble the demographics for all HIV-infected females. Table 2.10 displays the number of likely perinatal HIV transmissions that have occurred from 1995 to 2005 by year of birth. These represent pediatric reports that indicate likely perinatal transmission based on exposure categories found in routine HIV surveillance data. These cases were HIV reports for children whose mother had HIV or an HIV risk, and thus represent likely perinatal transmission.

Table 2.8. Female HIV disease by special age groups, 2001-2005

	2001		2002		2003		2004		2005	
Age Group	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
0-14 yrs	2	0%	4	1%	6	1%	4	1%	4	1%
15-44 yrs	386	80%	408	78%	490	76%	319	68%	375	75%
45 + yrs	95	20%	113	22%	152	23%	148	31%	119	24%
Total	483	100%	525	100%	648	100%	471	100%	498	100%

Table 2.9. Women of child-bearing age (15-44 yrs) by race/ethnicity, 2001-2005

	2001		2002		2003		2004		2005	
Race/ ethnicity	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
White*	68	18%	57	14%	85	17%	51	16%	68	18%
Black*	297	77%	320	78%	369	75%	239	75%	270	72%
Other*	8	2%	8	2%	10	2%	5	2%	11	3%
Hispanic	13	3%	23	6%	26	5%	24	8%	26	7%
Total	386	100%	408	100%	490	100%	319	100%	375	100%

* non- Hispanic

Table 2.10. N.C. HIV disease reports that were likely perinatal transmissions, 1995-2005

Yr Birth	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Reports	15	11	3	6	5	5	6	2	2	2	1

HIV DISEASE AMONG FOREIGN-BORN RESIDENTS

Table 2.11 displays the number of HIV reports that were identified among foreign-born persons in North Carolina. Substantial increases in the number of reports for this group have been noted over the last four years. In 2005, these HIV reports represented approximately five percent (n=97) of all reports (1,806).

In the last ten years (1996-2005), for foreign-born blacks, the principal countries of origin were South Africa, Zambia, Kenya and Haiti (Table 2.12). For HIV-infected Hispanics, the principal country of origin was by far Mexico, followed by Honduras, El Salvador and Guatemala. This information is important to keep in mind as outreach and prevention initiatives are planned, because messages and information may need to be tailored for or designed to include North Carolina's foreign-born population. See Chapter 1 for more information on foreign-born population.in North Carolina.

Table 2.11. HIV disease among foreign-born residents, 1995-2005

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Reports	12	21	24	21	25	28	18	76	91	82	97

Table 2.12. HIV disease among foreign-born residents, 1996-2005

Race/ethnicity	No.	Pct	Principal countries represented
White, non Hispanic	10	2%	El Salvador, Guatemala, Haiti, Honduras, Kenya, Mexico, South Africa, Zambia
Black, non Hispanic	148	31%	
Asian, Pacific Islander	21	4%	
Hispanic	276	57%	
Unknown	28	6%	
Total	483	100%	

CHAPTER 3: INDICATORS OF RISK FOR HIV/AIDS INFECTION IN NORTH CAROLINA

HIGHLIGHTS

Men who have sex with men (MSM)

- MSM activity continues to account for a substantial proportion of all HIV disease reports even as HIV has spread to other risk groups. In 2005, MSM and MSM/IDU activity accounted for 50 percent of reported HIV cases.

- MSM and MSM/IDU activity accounted for 68 percent of HIV disease risk for all males reported in 2005. This represents a 28 percent increase from 2001 to 2005.

- MSM activity accounted for 89 percent of HIV disease risk among adolescent males (age 13-24 years) reported in 2005. This represents a 19 percent increase from 2001 to 2005.

- MSM activity accounted for 88 percent of HIV disease risk among white, non-Hispanic males reported in 2005, 59 percent of black, non-Hispanic reports and 62 percent of reports among males of other race/ethnicity groups.

- MSM activity accounted for 48 percent of male syphilis cases interviewed in 2005 through Partner Counseling and Referral Services (PCRS). This represents an increase of 380 percent from 2001 to 2005 (10%-48%).

Injecting Drug Use (IDU)

- Injecting drug use accounted for ten percent of all HIV disease reports in 2005 (including MSM/IDU).

- Injecting drug use was reported most often by a relatively older, non-white population of HIV disease cases interviewed through Partner Counseling and Referral Services (2001-2005); 71 percent were 40 years or older and 73 percent were non-white.

- Among all persons reporting IDU interviewed in 2005 through Partner Counseling and Referral Services, 47 percent used crack cocaine, 28 percent used cocaine, 8 percent used heroin and 5 percent used narcotics.

- Among persons reporting IDU interviewed through Partner Counseling and Referral Services in 2005, 53 percent of females had exchanged sex for drugs or money and 30 percent of males had exchanged sex for drugs or money.

Heterosexual Sex

- Heterosexual sex accounted for 40 percent of all HIV disease reports in 2005.

- HIV transmission through heterosexual sex was attributed to 24 percent of all male reports in 2005; 11 percent of new reports for young men (age 13-24). Heterosexual HIV reports were higher among minority males than among white, non-Hispanic males (32% vs. 8%).

- Heterosexual sex was the only risk identified for 83 percent of all reported female HIV disease cases in 2005; 92 percent among younger women (age 13-24 years). Female reports have remained fairly stable across all race/ethnicity groups (2001-2005).

- Twenty-five percent of all persons with syphilis interviewed in 2005 through Partner Counseling and Referral Services had used crack cocaine; 27 percent reported a sex partner who used crack cocaine.

- Forty-three percent of females with syphilis interviewed through Partner Counseling and Referral Services (2001-2005) had been previously diagnosed with a sexually transmitted disease (STD); 38 percent of males had been previously diagnosed with a STD.

- Thirty percent of females with HIV disease and interviewed through Partner Counseling and Referral Services (2001-2005) had been previously diagnosed with a sexually transmitted disease (STD); 29 percent of males had been previously diagnosed with a STD.

INTRODUCTION TO RISK

HIV is transmitted by sexual contact with an infected person, by sharing needles and/or syringes with someone who is infected or, less commonly, through transfusions of infected blood products. Babies born to HIV-infected mothers may become infected before or during birth or through breast-feeding. There is currently no scientific evidence that HIV might be transmitted in any other way (such as through air, water, or insects).

Sexual contact and the injection of addictive drugs are intimate and strongly driven behaviors most closely linked with the epidemiology of HIV/AIDS. Individual behavior occurs in a complex sociocultural context with many determinants, including racial/ethnic culture and social networks, social pressures and behavioral norms, gender roles and differentials in power, access to health care and preventative care, poverty, and discrimination (Auerbach et al. 1994). Populations at risk for HIV infection are oftentimes vulnerable to psychological factors, such as depression and mental illness, a history of childhood abuse, abuse due to homophobia and internalized homophobia, and drug and alcohol abuse. The at-risk populations of interest in this discussion include men who have sex with men, injection drug users and their sexual partners, and heterosexually active women and men. Within these populations, the greatest needs exist among the socioeconomically disadvantaged, especially in communities of color and among youth in high-risk situations (Becker et al. 1998). Poverty, the drug trade, and high-risk sexual behavior are all interrelated; and the political and economic forces that perpetuate these conditions will need to change before lasting impact on those who face the greatest risk will be achieved (Becker et. al 1998).

Relative risk for HIV infection among various exposure or risk categories is extremely difficult to ascertain because rate information is unavailable for most groups. In order to calculate rates, we must first have an estimate of the number of persons in the uninfected population. Part of the difficulty in estimating these populations is that some risk behaviors are highly stigmatized, and surveys that attempt to estimate risk behaviors can be biased and not generalizable to local populations. Since we do not have reliable population estimates for most of the groups defined

by risk behaviors in North Carolina, we attempt to glean information about these groups through surveillance data. Readers should keep in mind that surveillance data is based on a mutually exclusive hierarchical assignment of risk. More detailed descriptions of surveillance data and the assignment of risk or exposure categories can be found in Appendix B [pg. B-3] and Appendix C [pg. C-5]. Changes in overall surveillance proportions can isolate trends for groups if the populations are stable, but these simple proportions don't measure relative risk among the groups. ***It is important to keep in mind that the relative risk of infection among these groups may vary greatly depending on the size of the uninfected population for that group.*** Groups that represent the smallest population may represent the greatest relative risk. To better ascertain HIV exposure risk, the discussion that follows will rely heavily on direct and indirect measures of risk found in other data sources for each risk group: MSM, IDU, and heterosexuals.

MEN WHO HAVE SEX WITH MEN (MSM)

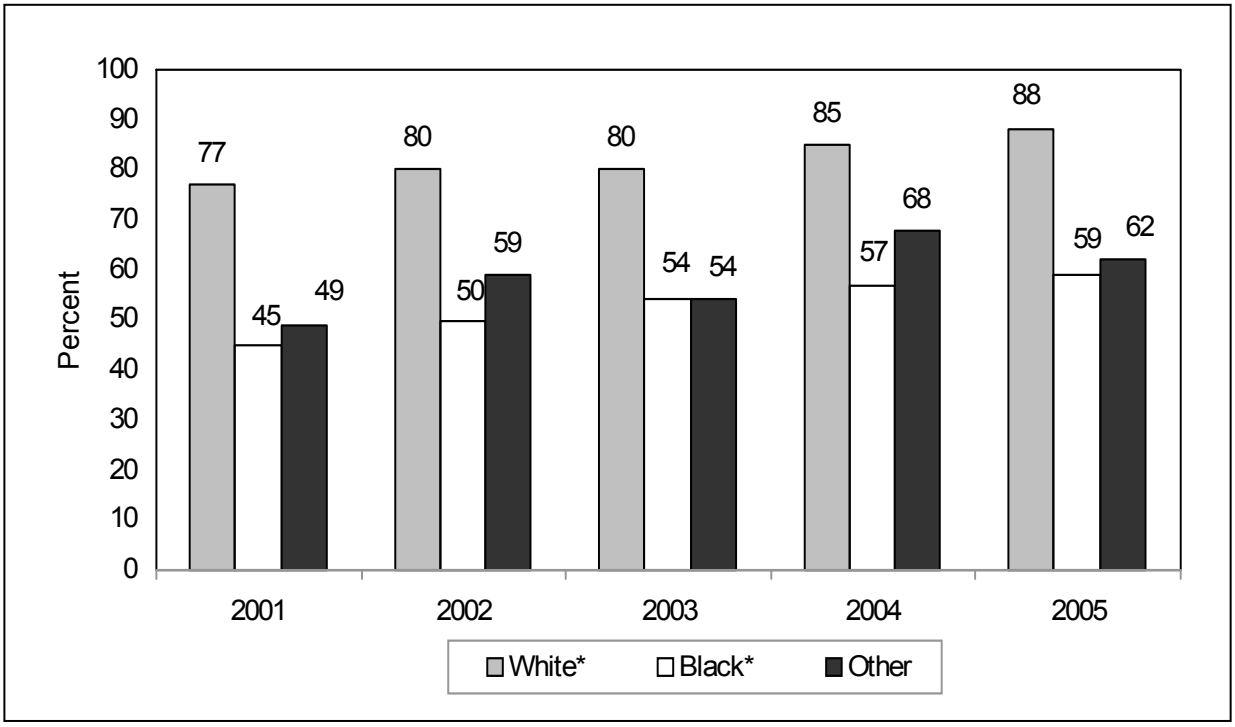
HIV/AIDS has taken a tremendous toll on men who have sex with men (MSM). Though MSM account for about five to seven percent of men in the United States (Binson et al., 1995), MSM account for approximately two-thirds of all men and over half (51%) of all people living with AIDS in the U.S. (CDC, July 2005). Sexual risk factors account for most HIV infections in MSM. Not using a condom during anal sex with someone other than a primary partner of known negative HIV status continues to be a significant health risk of MSM (Mansergh et al. 2002). Sexually transmitted diseases, such as gonorrhea and syphilis, increase the risk of HIV infection (Flemming and Wasserheit, 1999). High STD rates in North Carolina are markers for high-risk sexual practices and are cause for concern. Psychosocial problems such as depression, childhood sexual abuse, using more than one drug, and partner violence have been shown to increase high risk sexual behavior, and MSM with more than one of these problems may be at greater risk for HIV infection (CDC July 2005).

DIRECT MEASURES OF MSM RISK

North Carolina HIV Disease Surveillance Data

The consistent and significant representation of MSM and MSM/IDU risk in HIV morbidity data suggests that efforts to minimize risk among men who have sex with other men should continue, especially among younger men. In the early part of the HIV epidemic in North Carolina (1983-1989), MSM cases accounted for almost 65 percent of all morbidity. Men who have sex with other men have continued to account for a substantial proportion of all reports, even as HIV has spread to other risk groups. Reports for MSM (including MSM/IDU) accounted for half of all 2005 HIV disease reports and 68 percent of all male HIV disease reports in 2005 (Table D, pg. D-6). Though white MSM accounted for a larger portion of male reports in the early part of the epidemic, black MSM have accounted for a larger proportion of male reports since the early 1990s and have continued to do so through 2005. The proportion of male cases with associated MSM risk is much greater among white males (88%) than black males (59%) or other non-white males (62%) (Figure 3.1). HIV reports with MSM risk have increased 31 percent as a proportion of black male reports from 2001 to 2005 (45% to 59%), MSM risk has increased 14 percent among white males (77% to 88%), and MSM risk has increased 26 percent (49% to 62%) among males of other race/ethnicity categories (Table F, pg. D-8).

Figure 3.1. HIV disease reports among men who have sex with men, 2001-2005**



**MSM includes MSM/IDU *non Hispanic

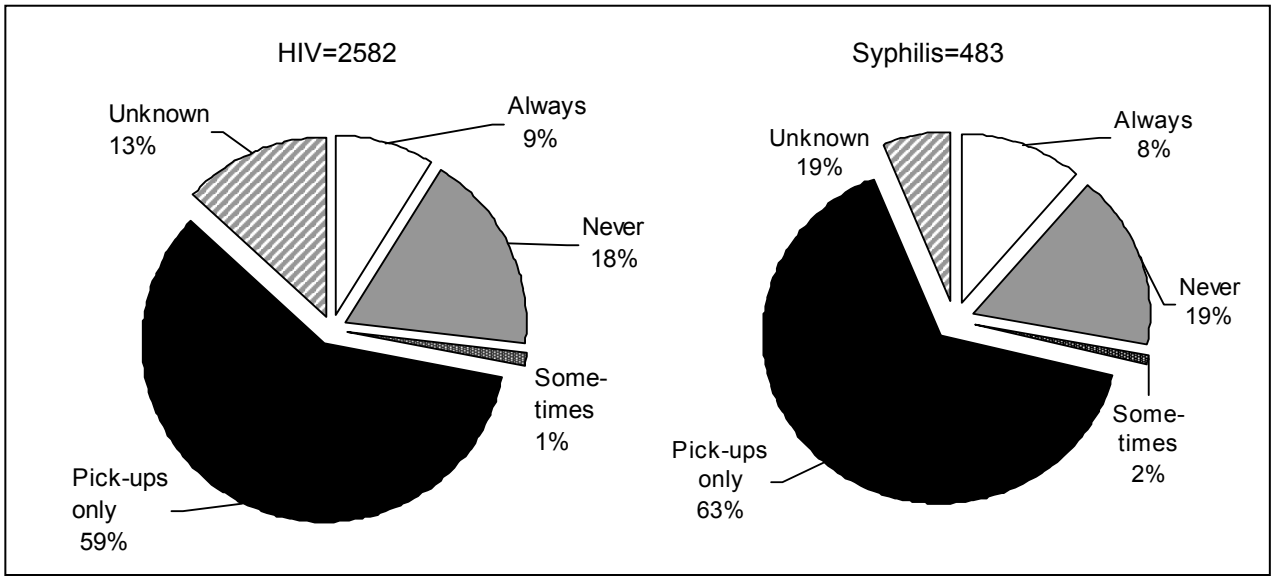
Young MSM

Eighty-nine percent of all reported HIV disease cases among males aged 13-24 years were due to male-male sexual contact, a 19 percent increase over the past five years (Table H, pg. D-10). Adolescence and young adulthood are often characterized by experimentation and exploration of sexuality and drug using, especially among young MSM who struggle with societal and individual problems that influence risk-taking. Many young MSM feel isolated or rejected by family, school and the religious community, and oftentimes motivations of companionship and intimacy take priority over protecting one's health. Societal problems such as homophobia, racism and poverty also place young MSM at risk and discourage young MSM from accessing prevention services. Comprehensive health programs that educate young MSM about HIV risk should address sexuality in the context of young men's lives, taking into account sexual identity (gay, bisexual or MSM who identify as neither).

Partner Counseling and Referral Services Data (PCRS)

Disease Intervention Specialists (DIS) attempt to interview all persons newly diagnosed with HIV and syphilis in North Carolina in order to inform them of their disease status, assist with partner notification, and educate them about the control measures they must take in order to avoid infecting others. DIS work in the Field Services Unit of the HIV/STD Prevention & Care Branch. DIS also collect risk information about patients and contacts that includes sex and drug use behaviors, condom use, number of sexual partners, types of drug use, testing history and history of STDs. Approximately 98 percent of reported syphilis cases and 90 percent of newly reported HIV cases are interviewed regarding risk behaviors and sex partners. This data is

Figure 3.2. Condom use practices by men who have sex with men*, 2001-2005



*Interviewed through Partner Counseling and Referral Services with HIV and/or early syphilis infection

referred to as the PCRS data. More information about the Field Services and the PCRS data source can be found in Appendix B (pg. B-9).

In the following description of persons interviewed with syphilis, "syphilis" refers to early syphilis, which includes primary, secondary and early latent stages. Among all males interviewed in 2005, MSM activity was identified in 48 percent of early syphilis reports and 48 percent of HIV reports (Table 3.1). MSM activity has increased 12 percent as a proportion of new male HIV disease cases interviewed through PCRS and 380 percent (10% to 48%) as a proportion of male syphilis cases interviewed (2001-2005).

Table 3.1. Men who have sex with men as a percent of all males interviewed*, 2001-2005

Disease	2001		2002		2003		2004		2005	
	n	Pct.	n	Pct.	n	Pct.	n	Pct.	n	Pct.
HIV	446	43%	512	43%	567	44%	538	48%	519	48%
Syphilis	50	10%	60	17%	71	29%	131	40%	171	48%

*Interviewed through Partner Counseling and Referral Services with HIV and/or early syphilis infection

Condom use practices

Patients interviewed through PCRS concerning HIV and syphilis infection are asked condom usage questions. Condom use is described by five categories: always, never, sometimes, pick-ups only, and unknown. Proportionately, the HIV and syphilis interviewees indicated similar practices (Figure 3.2). Of MSM with HIV interviewed from 2001 to 2005, 9 percent indicated that they "always" used a condom, 18 percent indicated they "never" used a condom, 1 percent indicated they "sometimes" used a condom, and 59 percent indicated they used condoms with "pick-ups only." Among the MSM with early syphilis, 8 percent indicated "always", 19 percent

indicated "never," 2 percent indicated "sometimes", and 63 percent indicated they used condoms with "pick-ups only."

Condom effectiveness

The National Institutes of Health concluded in July of 2001, when used *correctly and consistently*, use of male latex condoms effectively reduces transmission of HIV/AIDS in women and men, and gonorrhea in men, and prevents pregnancy (NIH 2001). "These are three excellent reasons for actively promoting the use of male latex condoms. The data clearly show that condoms prevent HIV/AIDS, which is the most deadly STD, and gonorrhea, the most easily transmitted infection. Also, the lack of research data on some STDs does not mean condoms are ineffective against these diseases" says Willard Cates, Jr., MD, MPH, president of Family Health International (Network 2002). Meta analysis of several studies showed an 87 percent decrease in risk of HIV transmission among consistent condom users. Moreover, three of the best designed studies showed that HIV infection rates were less than one percent per year among consistent condom users. Studies also show a 49-100 percent reduction in risk of gonorrhea among men reporting condom use as compared to non-users (NIH 2001).

Multiple sex partners

Among MSM interviewed from 2001 to 2005, 12 percent of those with HIV indicated having had more than one sexual partner in the past 90 days; 12 percent of those with HIV indicated they had a new sex partner within the past 90 days. Thirty-one percent of MSM interviewed with HIV indicated they had female sexual partners as well as male. Among MSM interviewed with syphilis from 2001 to 2005, 31 percent indicated having multiple sexual partners in the past 90 days; 29 percent had a new sex partners in the past 90 days (Table 3.2). Nineteen percent of MSM with syphilis also indicated having had sex with a woman. These proportions indicate substantial risk activity for each group, and for their sexual partners.

Table 3.2. Sex partners among men who have sex with men*, 2001-2005

Partners	MSM with HIV (n= 2,582)		MSM with Syphilis (n= 483)	
	n	Pct.	n	Pct.
>1 partner, 90 days	317	12%	151	31%
>1 partner, one year	976	38%	299	62%
New partner, 90 days	310	12%	142	29%
Sex with men and women	789	31%	92	19%

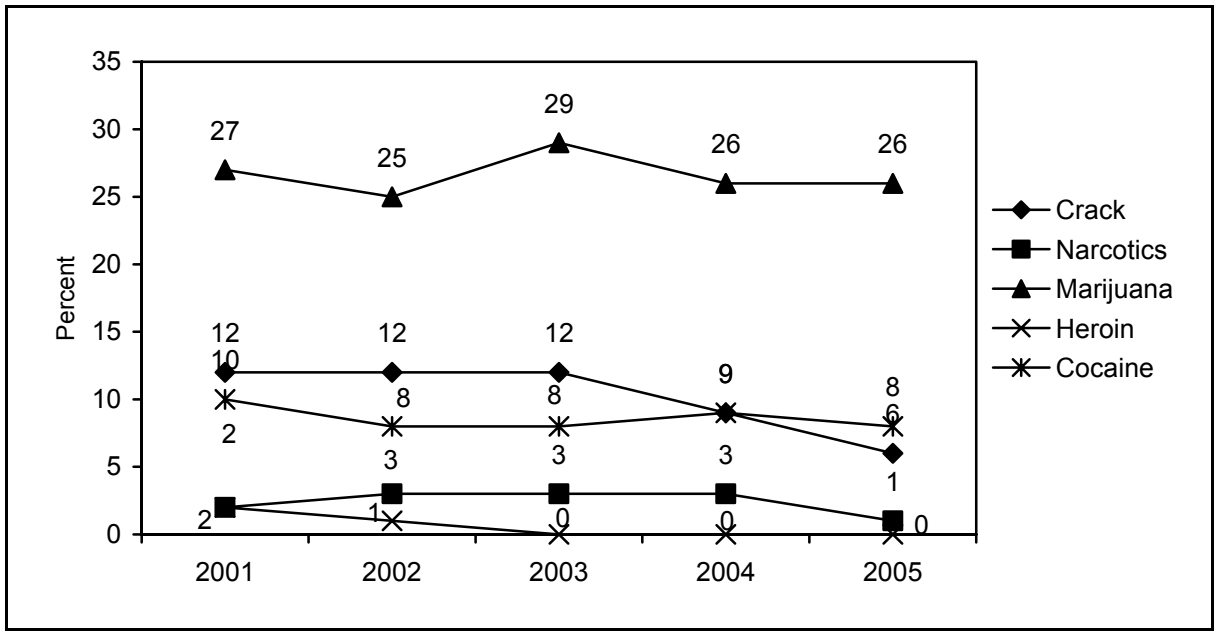
*Interviewed through Partner Counseling and Referral Services with HIV and/or early syphilis infection

Drug use among MSM

People with a history of substance abuse are more likely to engage in high-risk sexual activities (Leigh 1993). Crack cocaine use has been shown to be strongly associated with the transmission of HIV, especially among men who have unprotected anal sex with men (Edlin 1994). For non-injecting substance abusers, HIV infection is not caused by drug use, but by unsafe sexual behavior within certain sexual networks. Sexual networks of substance abusers might include people who have used needles, have traded sex for money or drugs, have been victims of trauma,

or have been incarcerated. All of these populations may have higher rates of HIV infection, making transmission more likely. Syphilis epidemics in parts of the rural South and the epidemic use of crack cocaine are leading cofactors in both the rural and urban HIV epidemics in the United States (Forney & Halloway 1990).

Figure 3.3. Types of drugs used by men who have sex with men*, 2001-2005



*Interviewed through Partner Counseling and Referral Services with HIV and/or early syphilis infection

Information regarding drug use is collected during the interview of newly infected persons. The most common drugs used among MSM interviewed by DIS were marijuana (26%), crack-cocaine (6%), and cocaine (8%) (Figure 3.3). Evidence of the use of "club drugs" such as MDMA (ecstasy), Rohypnol, GHB, and ketamine were not specified among MSM interviewed in North Carolina from 2001-2005, nor was methamphetamine. PCRS data has limitations and DIS may differ in the way they record drug information (for more information about the Field Services and the PCRS data source can be found in Appendix B pg. B-9).

INDIRECT MEASURES OF MSM RISK

Hepatitis and Syphilis Surveillance Data

Communicable diseases, such as hepatitis and syphilis, which can be spread through sexual activity, can indirectly measure MSM risk behavior through monitoring changes in male-to-female ratios. Diseases spread primarily through heterosexual sexual contact should produce a male-to-female ratio close to one. The male-to-female ratio of early syphilis cases has risen from 1.15 in 2001 to 2.35 in 2005 (Table 3.3), indicating increased MSM-acquired syphilis over the past five years. As with the other bacterial STDs, essentially all female cases of syphilis can be assumed to be the result of heterosexual transmission. Increases in the male-to-female ratio indicate possible increases in MSM activity. Ratios can be affected by other risks, such as screening practices or increased transmission via commercial sex workers with multiple male sex partners; thus it is an imperfect measure of MSM risk.

Table 3.3. Reported primary, secondary & early latent syphilis cases by gender, 2001-2005

Gender	2001	2002	2003	2004	2005
Male	503	342	236	306	343
Female	438	274	160	147	146
M/F ratio	1.15	1.25	1.48	2.08	2.35

Table 3.4. displays hepatitis data for 2001 to 2005. Hepatitis A is primarily spread person-to-person through fecal-oral transmission. Many outbreaks can be traced to food-borne transmission, but some can be linked to sexual contact. The increase in the male-to-female ratio among hepatitis A cases in 2002 prompted a review of surveillance data by the Epidemiology Section of the Division of Public Health. The review suggested a likely increase in MSM activities among cases in 2002, as it showed a 4.5-fold increase in the number of men self-reporting recent sexual contact with men compared to the average over the 1997 to 2001 time period (NCDHHS GCDC 2002). The hepatitis A male-to-female ratio has stabilized in recent years and was one- to- one for 2005. Note the male-to-female ratios for hepatitis B have been fairly stable; Hepatitis C is generally associated with IDU activity.

Table 3.4. Male: Female ratios for Hepatitis A, B (chronic and acute) and C, 2001-2005

Disease	2001	2002	2003	2004	2005
Hepatitis A	2.1 (164/78)	3.3 (160/48)	1.9 (81/43)	1.1 (54/51)	1.0 (42/42)
Hepatitis B acute	1.7 (139/82)	1.7 (145/87)	2.0 (109/54)	1.9 (119/63)	2.6 (121/46)
Hepatitis B chronic	1.5 (388/255)	1.3 (500/379)	1.3 (568/448)	1.4 (610/436)	1.4 (490/348)
Hepatitis C	1.8 (14/8)	1.1 (15/14)	0.1 (1/12)	0.5 (8/4)	0.6 (8/13))

INJECTING DRUG USE (IDU)

The Centers for Disease Control and Prevention (CDC) estimates that 36 percent of the more than one million people currently living with HIV in the United States can be attributed to risk factors related to injecting drug use (CDC, IDU Fact Sheet, 2002). This estimate includes mother-to-child HIV transmission and transmission through sexual contact with an injecting drug user. Racial and ethnic minority populations in the United States are disproportionately affected by IDU-associated HIV/AIDS. "IDU-associated AIDS accounts for a larger proportion of cases among adolescent and adult women than among men. Since the epidemic began, 57 percent of all AIDS cases among women have been attributed to injection drug use or sex with partners who inject drugs, compared with 31 percent of cases among men" (CDC, IDU Fact Sheet, 2002).

DIRECT MEASURES OF IDU RISK

North Carolina HIV Disease Surveillance Data

While almost 46 percent of all HIV surveillance reports were attributed to IDU and MSM/IDU in the early 1990s, this proportion has declined to about 10 percent of all cases in 2005 (Table D,

pg. D-6). Among males reported with HIV disease in 2005, IDU risk (including MSM/IDU) represented about 9 percent of all new reports; among females, IDU risk represented 12 percent of all new reports (Tables D, pg. D-6). Identified injection drug use as a risk in HIV infection among men has declined 36 percent as a proportion over the last five years (14% to 9%). IDU among females has remained fairly stable at around 12 percent of new female HIV disease cases.

Partner Counseling and Referral Services Data (PCRS)

Persons newly diagnosed with HIV or syphilis are asked about drug use in two general categories: intravenous drug use (IDU) and non-intravenous drug use. In 2005, IDU risk was reported by six percent (n=86) of interviewed HIV cases. Eight percent of females interviewed between 2001 and 2005 with HIV (n=192) reported an IDU sex partner; three percent of men reported an IDU sex partner (n=156). Among HIV cases, IDU risk has slightly decreased from 2001 to 2005 (see Table 3.5).

Table 3.5. Injection drug users and a percent of all persons interviewed*, 2001-2005

Disease	2001		2002		2003		2004		2005	
	n	Pct.	n	Pct.	n	Pct.	n	Pct.	n	Pct.
HIV	135	9%	154	9%	124	7%	116	7%	86	6%
Syphilis	26	3%	11	2%	15	4%	8	2%	14	2%

*Interviewed through Partner Counseling and Referral Services with HIV and/or early syphilis infection

Among HIV-positive persons interviewed from 2001 to 2005 reporting IDU activity, there were 465 male cases versus 150 female cases. Injection drug use risk varies by age for HIV cases and syphilis cases. The majority of HIV cases attributed to injecting drug use are among non-white males ages 40 and older. People diagnosed with syphilis who also report injecting drugs are split evenly between men and women, younger and older than 40 years; the majority (68%) of injection drug users with syphilis were non-white (Table 3.6). IDU is prominent among American Indians with syphilis when compared to other race/ethnicity groups, though blacks comprise the majority of IDU in both syphilis and HIV disease cases interviewed through PCRS.

Table 3.6. Selected demographics of injection drug users*, 2001-2005

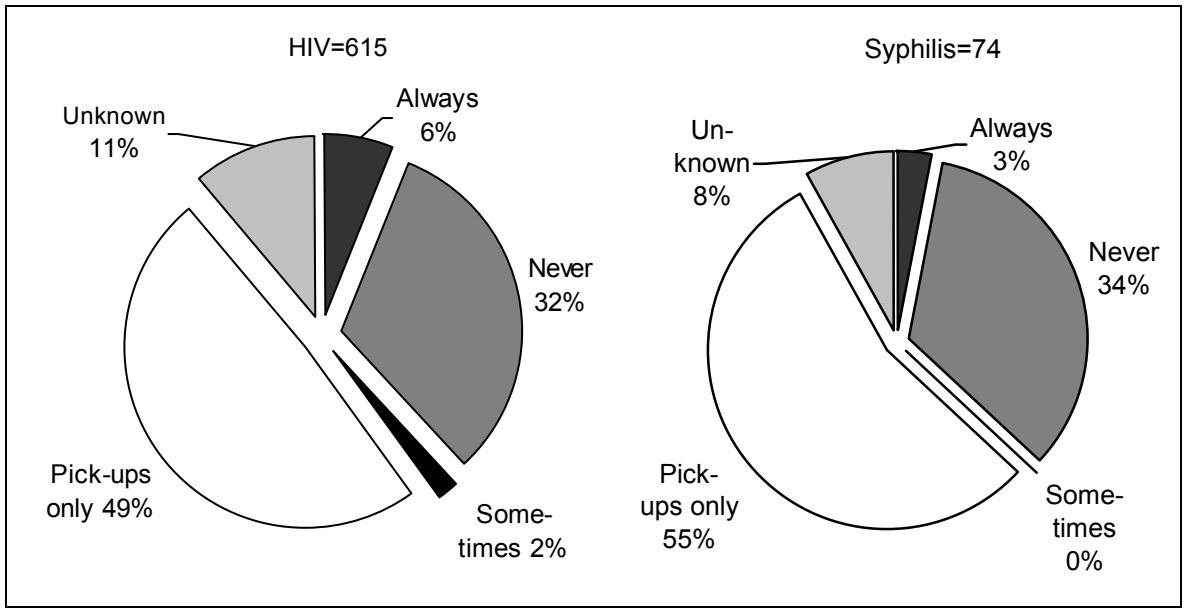
Selected demographics	IDU with HIV (n= 615)		IDU with Syphilis (n= 74)	
	n	Pct.	n	Pct.
Male	465	76%	40	54%
Non-white	451	73%	50	68%
Age 40 and over	439	71%	35	47%

*Interviewed through Partner Counseling and Referral Services with HIV and/or early syphilis infection

Condom Use Practices

Condom use data are available for 615 HIV cases with identified IDU and 74 syphilis cases with identified IDU risk between 2001 and 2005. Condoms are used less frequently among those interviewed with syphilis than among interviewed HIV cases (Figure 3.4). Fewer syphilis cases reporting IDU risk said that they "always" use condoms compared to HIV cases with IDU risk. There was also a larger proportion of "never" using condoms among those with syphilis (please see the earlier discussion of condom effectiveness).

Figure 3.4. Condom use practices by injection drug users*, 2001-2005

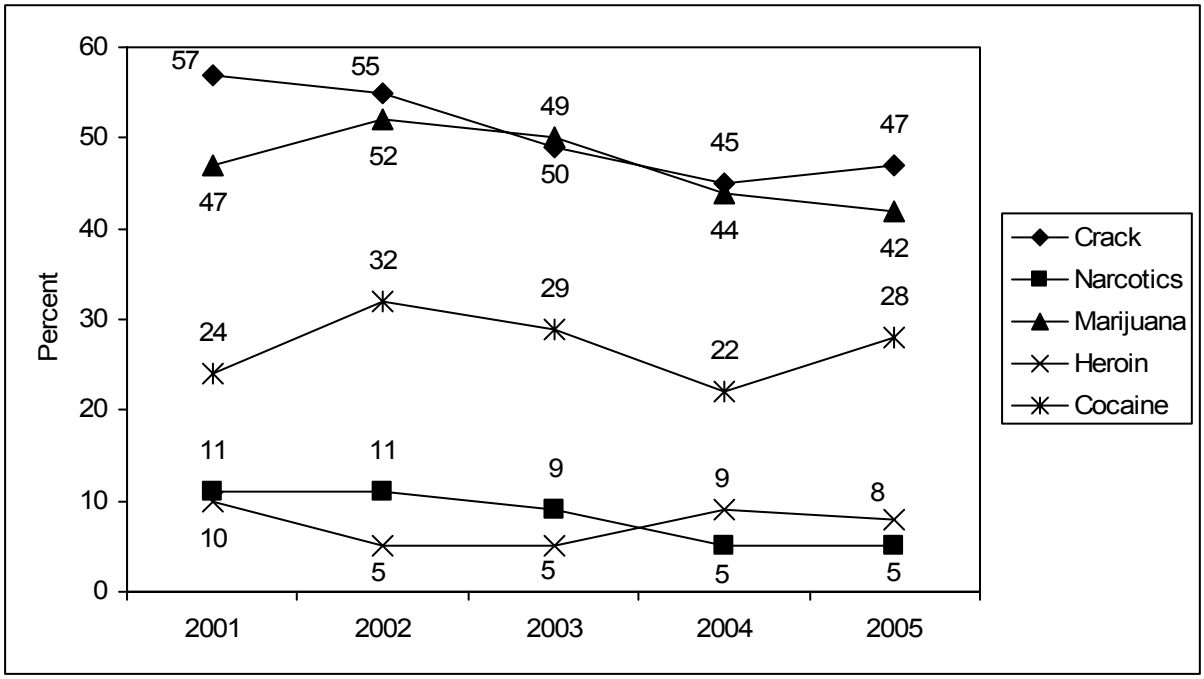


*Interviewed through Partner Counseling and Referral Services with HIV and/or early syphilis infection

Drug use among IDU

For injecting substance abusers, HIV infection is not only caused by injecting drugs, but by unsafe sexual behavior within certain sexual networks. Sexual networks of substance abusers might include people who have used needles, have traded sex for money or drugs, have been victims of trauma, or have been incarcerated. All of these populations may have higher rates of HIV infection, making transmission more likely. Information regarding drug use is collected during the interview of newly infected persons. Among all persons reporting IDU interviewed through PCRS in 2005, almost half (47%) used crack cocaine, 28 percent used cocaine, 8 percent used heroin and 5 percent used narcotics (Figure 3.5). PCRS data has limitations and DIS may differ in the way they record drug information (for more information about the Field Services and the PCRS data source can be found in Appendix B (pg B-9).

Figure 3.5. Types of drugs used by injection drug users*, 2001-2005



*Interviewed through Partner Counseling and Referral Services with HIV and/or early syphilis infection

Multiple Sex Partners and Exchange Partners

Among those interviewed through PCRS who identified as injection drug users, the risk of having multiple sex partners in the last year was reported more among those with syphilis (73%) than those with HIV diagnoses (23%) (Table 3.7). The proportion of multiple sex partners in the past 90 days was also much greater among persons with syphilis (47%) than with a new HIV diagnosis (9%). Thirty-one percent of IDUs with syphilis had a new partner in the past 90 days, versus only seven percent of IDUs with HIV.

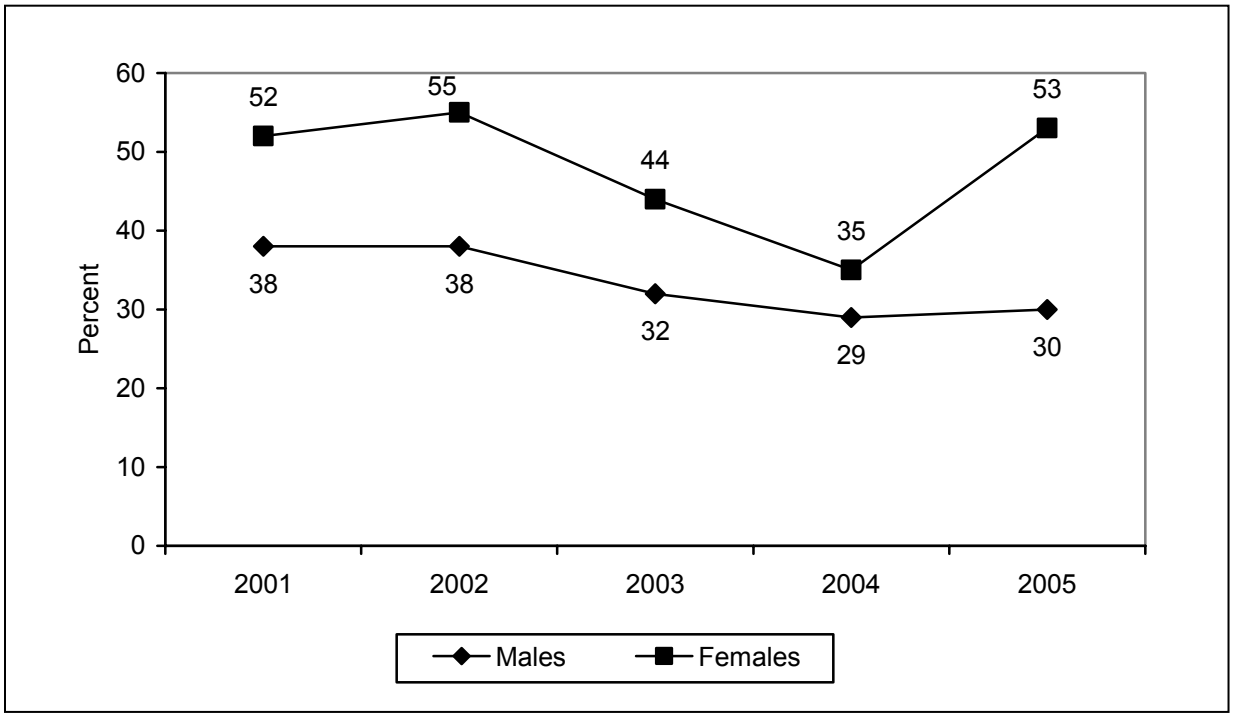
Table 3.7. Sex partners among injection drug users*, 2001-2005

Partners	IDU with HIV (n= 615)		IDU with Syphilis (n= 74)	
	n	Pct.	n	Pct.
>1 partner, 90 days	53	9%	35	47%
>1 partner, one year	142	23%	54	73%
New partner, 90 days	40	7%	23	31%

*Interviewed through Partner Counseling and Referral Services with HIV and/or early syphilis infection

Exchanging sex for drugs or money is a fairly common risk factor identified among interviewed IDU. Fifty-three percent of females with HIV disease or syphilis who reported injecting drugs also reported exchanging sex for drugs or money; 30 percent of male injection drug users also reported exchanging sex for drugs or money (Figure 3.6).

Figure 3.6. Injection drug users* exchanging sex for drugs or money, 2001-2005



*Interviewed through Partner Counseling and Referral Services with HIV and/or early syphilis infection

INDIRECT MEASURES OF IDU RISK

Drug use and drug dependence are widespread in the United States, and numerous studies have documented that drug users are at increased risk for HIV, not only by sharing dirty needles and works, but also through sexual behaviors which place their partners at risk. "To minimize the risk of HIV transmission, IDUs must have access to interventions that can help them protect their health. They must be advised to always use sterile injection equipment; warned never to reuse needles, syringes, and other injection equipment; and told that using syringes that have been cleaned with bleach or other disinfectants is not as safe as using new, sterile syringes" (CDC, IDU Fact Sheet, 2002).

National Survey on Drug Use and Health (NSDUH)

The National Survey on Drug Use and Health (formerly known as National Household Survey on Drug Abuse) is conducted by the Substance Abuse and Mental Health Services Administrations (SAMHSA) and makes estimates of drug abuse among the national population, states and some metropolitan areas (see pg. B-10 for more information). The survey of illicit drug use includes marijuana, cocaine, heroin, hallucinogens, inhalants, and non-medical use of prescription-type pain relievers, tranquilizers, stimulants and sedatives, and is not unique to injecting drug use. Comparison of illicit drug use by age is part of the NSDUH survey. Responses are available for three age groups: 12 to 17 years of age, 18 to 25 years of age, and 26 years of age and older.

In 2002 and 2003, an annual average of 354,000 (0.2 %) persons aged 12 or older had used a needle to inject heroin, cocaine, methamphetamines or other stimulants during the past year. An estimated 168,000 persons injected heroin during the past year; 168,000 persons injected cocaine; 119,000 injected methamphetamines; and 78,000 injected other stimulants. Combined data from the 2002 and 2003 NSDUH indicated that young adults aged 18 to 25 (0.3 %) were the most likely to have injected drugs during the past year and they were significantly more likely to do so than youths aged 12 to 17 (0.1 %) or persons aged 50 or older (0.02 %). Males (0.2 %) were twice as likely as females (0.1%) to have injected drugs during the past year. There were no differences in past year injection drug use by race/ethnicity. Past year injection drug use rates were similar among geographic regions and among metropolitan and non-metropolitan county types (SAMHSA, 2005). SAMHSA estimates that as many as 2.4 million Americans may be injecting drug users. NSDUH reported than one-half (51.4 %) of past years injection drug users reused a needle that they had used before the last time they injected drugs. Approximately 13.1 percent used a needle that they knew or suspected someone else had used before them, and 18.1 percent used a needle that someone else used after them. An estimated 64.4 percent of past year injection drug users did not clean the needle with bleach before the last time they had used one to inject drugs.

The National Survey on Drug Use and Health found significant decreases in illicit drug use among youths (ages 12-17) in North Carolina from 2002-2003 to 2003-2004 in terms of percentage who used an illicit drug in the past month (13.6 to 11.1%). North Carolina had a significant decrease in cocaine use among youths aged 12 to 17 and/or young adults aged 18 to 25 in the past year. North Carolina was, however, among the states in the highest group (1.85 to 2.49%) for any illicit drug dependence or abuse in the past year among persons aged 26 or older. The 18-25 year olds reported the highest proportion of illicit drug use, 17.78 percent in 2003-2004; this represents a 13 percent decrease from the 2002-2003 NSDUH (SAMHSA Office of Applied Studies and NSDUH 2003 and 2004).

HETEROSEXUAL RISK

DIRECT MEASURES OF HETEROSEXUAL RISK

North Carolina HIV Disease surveillance data

North Carolina continues to experience an HIV epidemic in which a substantial proportion of the cases are among persons for whom heterosexual sex is their only risk. Heterosexual transmission of HIV represented 40 percent of all new HIV disease reports in 2005, a decline of 22 percent since 2001 (Table D, pg. D-6). The number of male HIV reports for 2005 is more than double the number of female HIV reports (1,308 male reports vs. 498 female reports). Heterosexual risk reports consistently represent over 80% of the female cases, whereas they represent less than one-quarter of the male reports. Black females are slightly more likely to be classified with heterosexual risk as compared to white females or females of other race/ethnicities (86% vs. 75% in 2005) (Table E, pg. D-7). Gender differences in the pattern of HIV transmission for young people, age 13-24 years, is more pronounced. Only 11 percent of new HIV cases in young men were attributed to heterosexual sex, indicating young males are at particularly high risk of acquiring HIV through sex with other males (Table H, pg. D-10). Ninety-two percent of new cases in young women were attributed to heterosexual sex, indicating particularly high risk of heterosexually acquired HIV infection.

Partner Counseling and Referral Services Data (PCRS)

Between 2001 and 2005, 82 percent of interviewed females infected with HIV and 97 percent of females with syphilis reported heterosexual activity. Because some males are exclusively MSM, a smaller proportion of males reported heterosexual activity and the proportions differed by disease. Of males interviewed with HIV between 2001 and 2005, only 34 percent reported heterosexual sex as the only mode of HIV transmission (Figure 3.7). On average, 66 percent of males interviewed with syphilis between 2001 and 2005 report heterosexual sex. The percent of male syphilis cases attributed to heterosexual sex decreased 47 percent, however, from 83 percent in 2001 to 44 percent in 2005.

Figure 3.7. Persons* with HIV disease reporting heterosexual risk, 2001-2005

*Interviewed through Partner Counseling and Referral Services with HIV and/or early syphilis infection

Multiple Sex Partners

One-third of interviewed heterosexuals with HIV interviewed between 2001 and 2005 reported multiple sexual partners in the past year; over half of the interviewed heterosexual syphilis cases reported multiple partners in the past year (Table 3.8). Thirty-one percent of people with syphilis interviewed between 2001-2005 had more than one sex partner in the past 90 days, and 25 percent had a new partner in the past 90 days.

Table 3.8. Sex partners among heterosexuals*, 2001-2005

Partners	Heterosexual with HIV (n= 4,044)		Heterosexual with Syphilis (n= 2,194)	
	n	Pct.	n	Pct.
>1 partner, 90 days	344	9%	671	31%
>1 partner, one year	1,072	27%	1,206	55%
New partner, 90 days	257	6%	548	25%

*Interviewed through Partner Counseling and Referral Services with HIV and/or early syphilis infection

Exchange Sex and Crack Use

The exchange of sex for drugs or money (SDM) is commonly reported among high-risk heterosexuals. Proportions of persons exchanging sex for drugs or money are higher among men and women diagnosed with syphilis (2001-2005) than with HIV. Thirty-one percent of women diagnosed with syphilis and interviewed in 2005 reported exchanging sex for drugs or money; 29 percent of men interviewed reported SDM. Only eight percent of women diagnosed with HIV and interviewed in 2005 reported SDM, whereas 23 percent of interviewed males reported the activity (Figure 3.8).

Crack cocaine and other noninjection drugs contribute to the spread of both the HIV and syphilis epidemics when users trade sex for drugs or money, or when they engage in risky sexual behaviors that they might not engage in when sober. One CDC study of young adults in inner-city neighborhoods found that crack smokers were three times more likely to be infected with HIV than non-smokers (CDC, Drugs and HIV Fact Sheet, 2002). There is an association between crack cocaine use and both HIV and syphilis infections in North Carolina. According to 2005 PCRS interview data, 25 percent of people with syphilis reported crack cocaine use and 27 percent reported a sex partner who uses crack (Figure 3.9). Of the persons interviewed with HIV, 16 percent used crack cocaine, and 14 percent of their partners used crack.

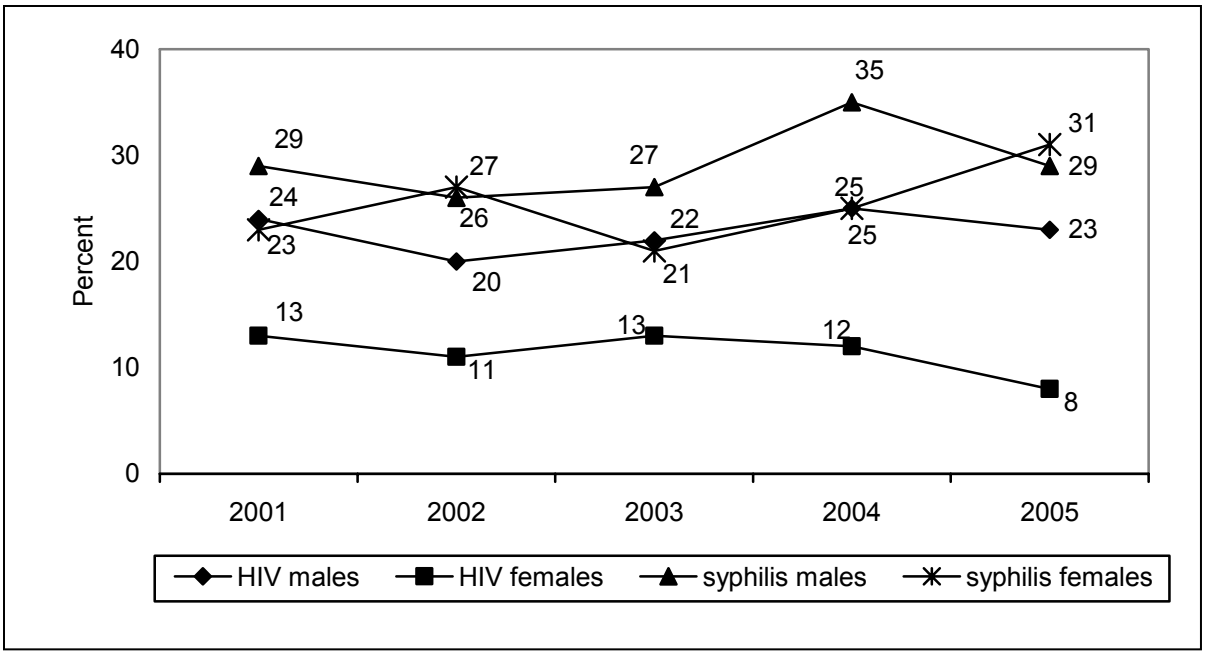
Condom Use Practices

Interviewed heterosexuals diagnosed with HIV or syphilis diagnosis were least likely to use condoms, in comparison with interviewed MSM and IDU. Thirty-four percent of those HIV positive persons indicated that they "never" use condoms and 46 percent using condoms with "pick-ups only." Thirty-seven percent of those interviewed with syphilis indicated that they "never" use condoms; 51 percent reported only using condoms with "pick-ups" (Figure 3.10).

History of Sexually Transmitted Infection

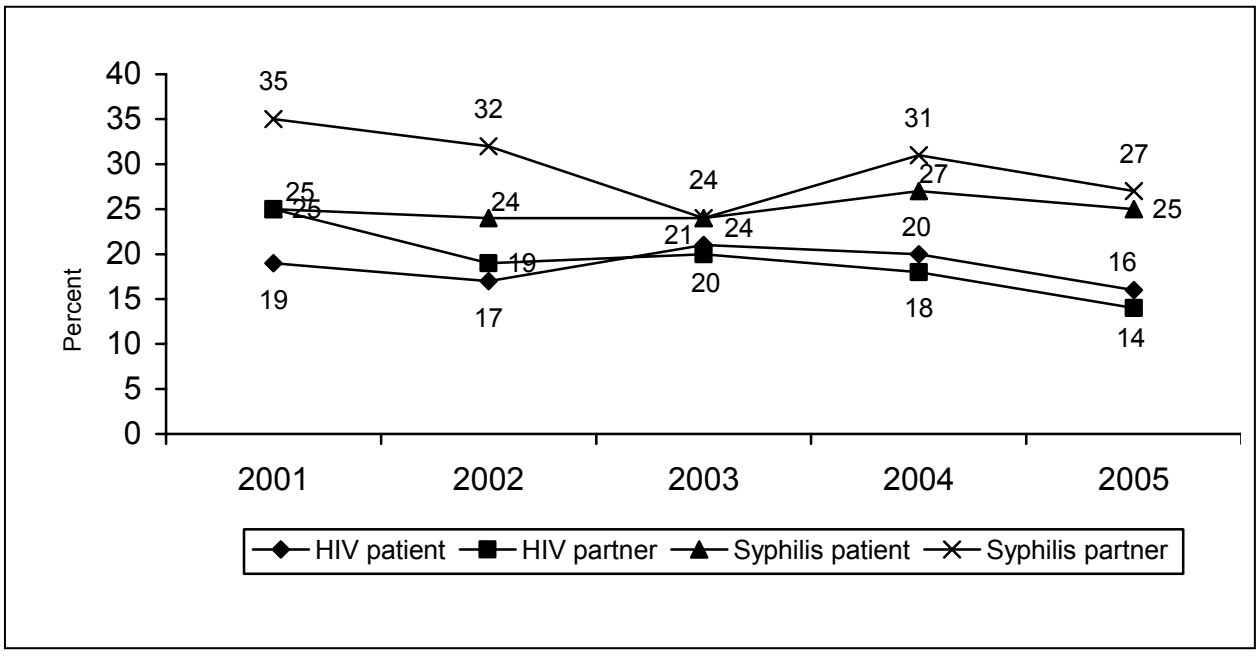
Having a history of sexually transmitted infections is a common risk factor among heterosexuals with HIV. Thirty percent of interviewed males and females with HIV infection (2001-2005) indicated that they had previously been infected with a sexually transmitted disease. Among men diagnosed with early syphilis, 38 percent had previously experienced a STD and 43 percent of women diagnosed with early syphilis had a previous STD (Figure 3.11).

Figure 3.8. Heterosexuals* exchanging sex for drugs or money, 2001-2005



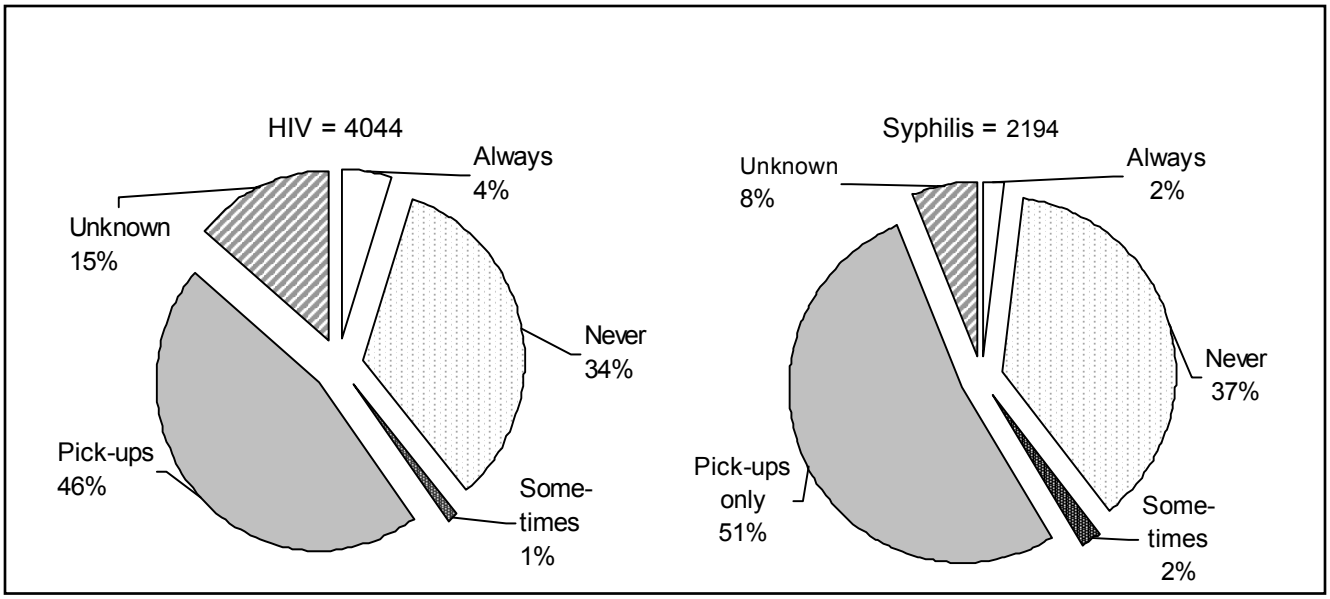
*Interviewed through Partner Counseling and Referral Services with HIV and/or early syphilis infection

Figure 3.9. Crack cocaine use by heterosexuals and/or sex partners*, 2001-2005



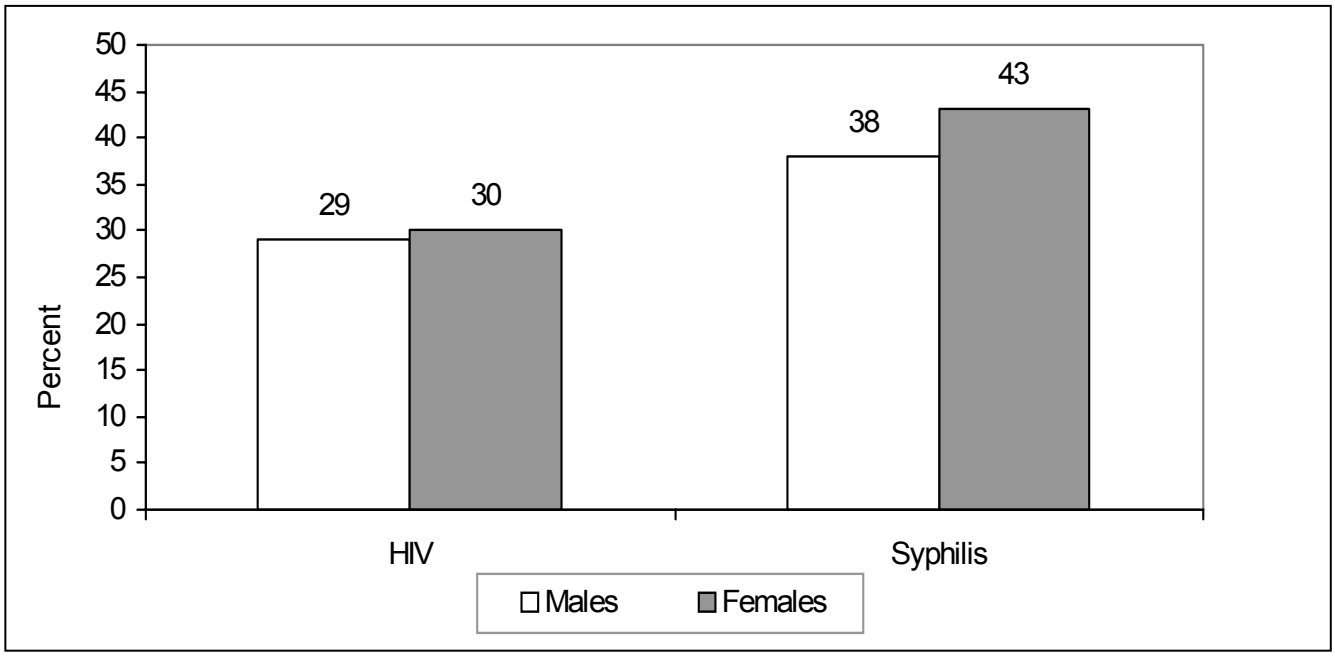
*Interviewed through Partner Counseling and Referral Services with HIV and/or early syphilis infection

Figure 3.10. Condom use practices by heterosexuals*, 2001-2005



*Interviewed through Partner Counseling & Referral Services with HIV and/or early syphilis infection

Figure 3.11. Heterosexuals* with previous sexually transmitted diseases, 2001-2005



*Interviewed through Partner Counseling and Referral Services with HIV and/or early syphilis infection

INDIRECT MEASURES OF HETEROSEXUAL RISK

Behavioral Risk Factor Surveillance System (BRFSS)

The Behavioral Risk Factor Surveillance System (BRFSS) is a collaborative project between the Centers for Disease Control and Prevention (CDC) and U.S. states and territories. Interviewers conduct monthly telephone surveys in order to collect various information on health behaviors from adults age 18 and older. (For a more detailed description and strengths and limitations, please see Appendix B on pg. B-5). The survey is designed to include core sections (data collected by all areas), CDC-designed optional modules, and state-added questions. In North Carolina the survey is conducted by the State Center for Health Statistics (NC SCHS, BRFSS, 2006). In 2001 and 2004, some sexual behavior questions were added to the survey in N.C. and used in those years only.

Sexual Partners and Condom Use

Adults age 18 to 54 were asked how many different people they had sexual intercourse with over the past 12 months. In 2001, 7.6 percent of males and 1.7 percent of females reported that they had three or more sexual partners over the past 12 months; in 2004, 7.2 percent of males and 2.0 percent of females reported three or more sexual partners over the past 12 months. The gender of the sexual partners was not specified, so it is not possible to know exactly what proportion of the respondents were referring to heterosexual partners, but it is likely to be large.

In 2004, the question "How many new sex partners did you have during the past twelve months?" was asked, and 11 percent of 18-24 year olds responded that they had three or more new sex partners within that time period. Only 20 percent of respondents reported that they had used a condom during their last sexual intercourse in 2001, and 22.4 percent responded that they had used a condom during their last sexual intercourse in 2004. A higher proportion of 18-24 year olds responded that they had used condoms during their last sexual intercourse in 2004 than in 2001 (53.2% versus 45.2%). In 2001 and 2004, approximately 50 percent agreed that a properly used condom would be very effective in preventing an individual from getting infected with HIV. Another 40 percent thought condoms would be somewhat effective (2001, 2004). Among those who had used a condom during their last intercourse in 2001 and in 2004, approximately 36 percent did so specifically to prevent pregnancy and another 50 percent to prevent both pregnancy and disease. Note: condom use is most certainly effective in preventing HIV infection (please read previous description of condom effectiveness). However, condom use data should be interpreted with caution. Those who report condom use are often a mixture of those at the very lowest risk (because they consistently use the condoms and are protected) and those at the very highest risk (using condoms due to their high-risk behavior and possibly inconsistent condom use).

History of STDs

The 2004 BRFSS Sexual Behavior Module asked the question "In the past five years, have you been treated for a sexually transmitted or venereal disease?" Four percent of the total 6,079 respondents answered "yes"; 9.8 percent of blacks responded "yes", as compared to 2.8 percent of whites and 2.2 percent of Hispanics. Of those respondents age 18-24 years, 11.4 responded

"yes"; 4.8 percent of 25-34 year olds, 2 percent of 35-44 year olds and 1 percent of 45-54 year olds responded that they had been treated for a STD in the past five years. Fifty-five percent of those responding that they had been treated for a STD were treated at a health department STD clinic.

The standard risk question in the BRFSS survey asked in 2002, 2003, 2004 and 2005 was "Please tell me if any of the situations apply to you: You have used intravenous drugs in the past year; You have been treated for a sexually transmitted or venereal disease in the past year; You have given or received money or drugs in exchange for sex in the past year; You had anal sex without a condom in the past year." The total responding yes to this question has remained very stable at approximately 3.5 percent for all four years. The 18-24 age group responding "yes" average was 9.2 percent from 2002-2005.

Abortion Data

Unwanted pregnancies may be used as a proxy for heterosexual populations at risk for HIV. An indirect way of measuring possible high-risk, unprotected sex is to use the number of reported abortions in the state. Abortion providers voluntarily report abortion data to the State Center for Health Statistics. Non-whites comprise only 29.1 percent of the state population (2000 Census), but approximately half of the abortions are performed on non-white women. This proportion has decreased slightly in the past three years, from 53.3 percent in 2001 to 48.5 percent in 2004. Eighty two percent of North Carolina residents receiving abortions in 2004 were women age 20 and older (Table 3.9). With respect to HIV/STD risk, this represents approximately 29,000 women and their sexual partners who engage in unprotected sex per year who may be at risk for HIV infection.

Table 3.9. Women receiving abortions in North Carolina, 2000-2004

Selected Demographics	2000	2001	2002	2003	2004
	n= 26,944	n= 27,096	n= 25,883	n= 26,708	n= 29,337
Age 20 and over	79.0%	79.8%	80.0%	81.5%	81.9%
Non-white	52.1%	53.3%	51.9%	50.4%	48.5%
Unmarried	72.1%	64.6%	71.3%	73.1%	73.4%

Source: NC State Center for Health Statistics

SPECIAL POPULATIONS

Heterosexual HIV Transmission among African American Women

African Americans, both adults and adolescents, are especially hard hit by HIV/AIDS. In 2005, black women accounted for 20 percent of all new HIV disease reports in North Carolina, 74 percent of reports in females. The 2005 rate among black females is 37.3 per 100,000 population, over twelve times the rate among white females (3.0 per 100,000), and two and a half times the rate among Hispanic females (12.9 per 100,000) (Table B, pg. D-4). Eighty- six percent of those 367 new cases among black females were attributed to heterosexual sex (Table E, pg. D-7). Several studies have attempted to explain the racial disparity of HIV infection among heterosexual women in North Carolina. "Contextual factors, such as poverty, discrimination, epidemiology of illicit drug use in the community, ratio of men to women,

incarceration rates, and racial segregation, influence sexual behavior and sexual networks directly and indirectly through a variety of mechanisms. Disparities in these contextual features likely contribute substantially to the persistence of marked racial disparities in rates of STDs" (Adimora and Schoenbach 2005).

Sexual networks are the group of people who are directly and indirectly linked through sexual contact. The pattern of these linkages dramatically influences transmission of HIV. Concurrent sexual partnerships (sexual relationships that overlap in time) influence the speed and number of individuals infected. Data analyzed from the 1995 National Survey of Family Growth (NSFG) indicate that the prevalence of concurrent sexual partnerships is greater among black women than white women (21% in the preceding five years versus 11%, respectively) (Adimora et al. 2003). Data from a study of heterosexual transmission of HIV infection among black persons in North Carolina showed an even higher prevalence of concurrent partnerships among black men (53% in the preceding five years) than among black women (31% in the preceding five years) than that in the NSFG (Adimora et al. 2003). Adimora and Schoenbach (2005) attribute the higher concurrency to lower marriage rates, low male-to-female sex ratio, and younger age at first sexual intercourse among black women. The scarcity of black men can profoundly influence partner selection and places black women at a disadvantage in negotiating and maintaining mutually monogamous relationships. Researchers suggest efforts at controlling HIV infection will continue to "miss the forest for the trees" if public health researchers cannot shift the prevention efforts emphasis on individual risk factors and determinants to the multidisciplinary investigation of macro-level forces (such as sexual network dynamics, concurrency, incarceration, drugs, racial segregation and low sex ratios in black populations) (Adimora & Schoenbach 2005).

Most recently, the CDC, in collaboration with the North Carolina Division of Public Health, conducted an epidemiologic investigation of HIV sexual risk behaviors among HIV-positive and HIV-negative sexually active black women in North Carolina. Analysis of data collected through patient and control interviews revealed that although the majority of women participants had had an STD, been pregnant or been tested for HIV, most felt they were unlikely or very unlikely to contract HIV (CDC 2005). HIV-positive women were significantly more likely than the controls to be unemployed, have 20 or more sexual partners, use crack/cocaine; and receive money, shelter, or drugs in exchange for sex. Women who discussed sexual and behavioral history with their male partners were less likely to be HIV positive.

Pregnant Women and HIV

Pregnant women with HIV pose a special challenge to public health and continue to need our attention if we are to eliminate perinatally-transmitted HIV in North Carolina. Testing pregnant women for syphilis, gonorrhea and chlamydia is required by the North Carolina Administrative Code, and testing for HIV is expected to be incorporated as a part of routine prenatal care unless the woman specifically declines HIV testing. From 1994 to 2002, there were 60 infants reported with HIV disease that represent likely perinatal transmissions, indicating that their mothers either lacked access to treatments that could have prevented the transmission of HIV to their infants or, that these women were not seeking health or prenatal care at all, and are thus outside the realm of the public health care system entirely. Of those 60 HIV-positive infants, 82 percent of the mothers were black, 10 percent were white, and 8 percent were Hispanic.

The North Carolina Enhanced Perinatal Project systematically collected retrospective data on HIV-infected pregnant mothers and perinatally-exposed and HIV-infected children from 1999 to 2001. These data address the prevention of perinatal transmission by evaluating prenatal care, HIV counseling and testing during pregnancy, the use of antiretroviral medications, and other treatment issues for pregnant HIV-positive women and HIV-exposed neonates. Of the 410 perinatal HIV exposures identified from 1999 to 2001, 12 (3%) children were confirmed HIV positive; 341 (83%) had seroreverted and were HIV negative; 24 (6%) had indeterminate HIV test results; and 33 (8%) were missing current HIV status information. Over half (58%) of the women with HIV who gave birth from 1999 to 2001 were 20 to 24 years of age, and 73 percent were black.

Early HIV-positive diagnosis is essential in the effective use of antiretroviral intervention on behalf of HIV-exposed infants. Fifty-eight percent of mothers were informed of their HIV status before they became pregnant and nearly all mothers (95%) had been diagnosed prior to delivery (NCSCHS, PRAMS, 2006). Seventy-nine percent of HIV-positive mothers had received antiretroviral therapy during pregnancy or during labor and delivery. Among mothers whose mode of HIV exposure has been identified, 82 percent had contracted HIV infection through heterosexual activity; approximately one in seven had contracted HIV through injecting drug use. A substantial portion of HIV-positive mothers (21%) used illegal drugs during their pregnancies.

According to the 2003 North Carolina Pregnancy Risk Assessment Monitoring System Survey Results (PRAMS), 88.8 percent of pregnant women had a doctor, nurse or other health care worker talk to them about getting a blood test for HIV, and 83.2 percent of women had a blood test for HIV at some time during their most recent pregnancy or delivery. Of the women who did not have an HIV test during their most recent pregnancy, 28 percent reported they were not offered the test, 40 percent did not think they were at risk for HIV, 38 percent had already been tested and did not think they needed to be tested again, less than one percent stated they were afraid to get the result, and seven percent did not specify what their reasons were for not having an HIV test. Overall, 18.4 percent of mothers reported a barrier to obtaining prenatal care. African American, or black, mothers (28.4%) and Hispanic mothers (20.5%) were significantly more likely to report a barrier than white mothers (15.3%). The most common reasons that kept mothers from getting prenatal care as early as they wanted were “I couldn’t get an appointment earlier in my pregnancy” (31.3%), “I didn’t know I was pregnant” (31%), and “I didn’t have enough money or insurance to pay for my visits” (25%). These findings also serve to highlight the need for pregnant women to receive appropriate prenatal care, including testing for sexually transmitted disease and HIV during pregnancy.

Transgender and HIV

Genetic, physical and hormonal gender complexities occur in an estimated one person in every 60 persons; with an estimated one in 12,000 persons being male-to-female transgender, and one in every 30,000 being a female-to-male transgender (Mackay 2000). Twenty-three of the 7,097 people receiving AIDS care services in 2005 in North Carolina considered themselves transgender. Male-to-female (MTF) transgenders are born biologically male; however, they identify as female or transsexual. MTF transgenders are exceedingly vulnerable to HIV infection due in part to the comparatively high number that go into prostitution (Nemoto et al. 2004). A number of studies report significantly higher prevalence rates of HIV infection among

transgender sex workers as compared to non-transgender male and female sex workers (Elifson et al. 1993; Gattari et al. 1991). Common risk factors found among transgender sex workers include multiple sex partners, frequent receptive anal sex, irregular condom use, and injecting drug use. Financial burdens for survival and desperate economic needs, which stem from discrimination against transgenders, societal transphobia and high costs of gender-related treatments, contributes to prostitution and unsafe sex practices with both customers and primary partners. Scarcity of men who engage in personal relationships with MTF transgenders, transphobia experiences and myths that exist in the MTF transgender community that sex work is a rite of passage are also contributing factors (Nemoto et al. 2004).

Incarceration and HIV

Nationally, almost one-third of black men ages 20-29 are in jail, in prison, on probation or parole. In 2002, 10.4 percent of black men 25-29 years of age were in prison (New York Times 28 July, 2003). The U.S. Department of Justice, Bureau of Justice Statistics, estimates 12 percent of black males, 3.7 percent of Hispanic males, and 1.7 percent of white males in their late twenties were in prison or jail (Harrison 2006). As of January 31, 2006 North Carolina had 37,349 prison inmates, of which 58.2 percent were black, 35.1 percent were white, 0.3 percent were Native American, 3.6 percent were Asian, and 0.8 percent were some other race (NC DOC Office of Research and Planning 2006).

The prevalence of HIV among prison inmates is estimated to be 8-10 times higher than the unincarcerated U.S. population (Freudenberg 2001). At year end 2003, 2.8 percent of all female state prison inmates were HIV positive, compared to 1.9 percent of males (Maruschak 2005). Information about persons with HIV in N.C. correctional facilities is limited. According to state surveillance data from HARS (HIV/AIDS reporting systems), 538 persons (5%) were diagnosed and reported with HIV in correctional facilities in North Carolina in the past five years (Table 3.10).

Table 3.10. HIV Disease reports from correctional facilities in North Carolina, 2001-2005

Reporting facility	2001		2002		2003		2004		2005	
	n	Pct.	n	Pct.	n	Pct.	n	Pct.	n	Pct.
Correctional facility	121	8%	117	7%	119	6%	86	5%	95	5%
All other facility types	1,400	92%	1,570	93%	1,954	94%	1,550	95%	1,711	95%
Total	1,521	100%	1,687	100%	2,073	100%	1,636	100%	1,806	100%

High incarceration rates increase risk behaviors associated with HIV by skewing the male-to-female ratio, worsening economic conditions by reducing the employment prospects of individuals, which increases the likelihood of poverty and the instability of long-term partnerships (Adimora and Schoenbach 2005). "HIV is an opportunistic disease that thrives on disruptions of social networks," according to David Wohl, M.D., assistant professor of medicine at the University of North Carolina-Chapel Hill."You can hardly get more socially disruptive than removing double-digit percentages of men from communities for extended periods of time (New York Times August 6, 2004)." According to a UNC School of Medicine study presented at the 10th Conference on Retroviruses and Opportunistic Infections, the impact our nation's

prison system has on the HIV epidemic is not that unsafe sex is rampant in prison, rather the unsafe sex that occurs immediately after prisoners are released back into society (Wohl et al. 2003). Wohl's study focused on a group of 80 HIV-positive inmates in North Carolina prisons. Interviews after release revealed that about half of the former prisoners in the study reported having sex, with 26 percent of them admitting to already having sex without condoms with their main sex partners. Sixty- four percent of the HIV positive releasees said that their main partner was HIV-negative or of unknown HIV status. Wohl reported that only three prisoners had sex while they were in prison, and 81 percent of the releasees (n=80) were heterosexual. "There are communities that are just blighted by incarceration--and they happen to also be communities that are blighted by HIV. We don't think it's an accident." This study highlights the need to concentrate prevention efforts in the communities in which HIV and incarceration are prevalent.

Youth and HIV

Substantial morbidity and social problems among youth are the result of unsafe sex practices resulting in unwanted pregnancies and STDs, including HIV infection. Nearly half of all new sexually transmitted disease in North Carolina occur in youth 15-24 years old. In 2005, the rate of HIV disease among young black males ages 13-24 years is fourteen times higher than among white males ages 13-24 (70.6 versus 4.9 per 100,000). The rate at which young, black females (ages 13-24) were reported with HIV disease was 11 times higher than for white females (27.8 versus 2.5 per 100,000). The mode of transmission for young males was 89 percent MSM, 11 percent heterosexual in 2005; the mode of transmission for young females was 92 percent heterosexual and 4 percent IDU (Table H, pg D-10).

Youth Risk Behavior Survey (YRBS)

The Youth Risk Behavior Surveillance System (YRBSS) monitors six categories of priority health-risk behaviors among youth and young adults, including sexual behaviors that contribute to unintended pregnancy and sexually transmitted diseases. North Carolina high school students participated in the 2005 Youth Risk Behavior Survey (YRBS) that assessed sexual behavior, in addition to other health-related topics.

In 2005, the percentage of North Carolina's adolescents practicing risky sexual behavior was greater than the national average (CDC, YRBS, 2005). In North Carolina, 50.8 percent of high school students had ever had sex; nationally, 46.8 percent of high school students had ever had sex. Similarly, in North Carolina 37.2 percent had not used a condom at last sexual intercourse and 2.4 percent had ever injected an illegal drug; nationally 37.2 percent had not used a condom at last sexual intercourse and 2.1 percent had ever injected an illegal drug (Table 3.11).

Table 3.11. 2003 and 2005 YRBS Comparison between North Carolina and the Nation

YRBS Questions	North Carolina			National	
	High School		Juvenile Detention Ctr.	High School	
	2003	2005	2002	2003	2005
Ever had sexual intercourse?	52.5	50.8	97.2	46.7	46.8
Had sexual intercourse with four or more sex partners?	17.1	17.2	72.9	14.4	14.3
Had first sexual intercourse before age 13 years?	10.0	8.1	61.9	7.4	6.2
Ever injected illegal drugs?	2.4	2.4	14.4	3.2	2.1

Youth in Detention Centers

The street youth population comprises youth who have dropped out of school, are unemployed, involved in the juvenile justice system, runaway or homeless, a member of a gang, undocumented, or involved in drug dealing and street prostitution. These youth are believed to be on the streets for multiple reasons, including poverty, rejection by parents or guardians, violence in the home, or drug or alcohol use by family members. Street youth have been recognized as a segment of the adolescent population that is at particularly high risk for HIV infection due in part to peer-group affiliation and group norms; high rates of alcohol and substance abuse; exchange of sex for food, shelter, clothes, money, drugs or money to buy drugs; and inconsistent condom use (Kipke et al. and CDC 2002).

In 2002, North Carolina YRBS surveyed youth housed in juvenile detention centers and found many youth at high risk for HIV transmission. For example, 97.2 percent of youth interviewed in detention centers had experienced sexual intercourse, 61.9 percent before the age of 13 years old; 72.9 percent had four or more sexual partners; and 14.4 percent had injected illegal drugs (Table 3.11). The North Carolina survey of youth in detention centers also showed that 11.5 percent of youths surveyed identified as gay, lesbian or bisexual; 65.1 percent had been tested at least once for HIV and 75.4 percent had been taught about AIDS and HIV in the facility in which they were then detained (NC YRBS 2002).

CHAPTER 4: HIV TESTING

HIGHLIGHTS

- The number of HIV tests performed at publicly-funded CTS sites has increased in recent years to 119,094 tests in 2004.
- The proportion of people tested through CTS who report that they have never been tested for HIV before has been on a steady decline (from 38.1% in 2000 to 36.2% in 2004).
- The overall positivity for clients tested in CTS sites has declined from 0.50 percent in 2000 to 0.46 percent in 2004.
- The vast majority of CTS testing is performed at traditional sites, but those tested at NTS sites are more likely to test positive for HIV.
- More males are tested in NTS sites and more females are tested in traditional sites due to the availability of prenatal, OB, and family planning services at traditional sites in local health departments.
- The positivity rates for non-Hispanic blacks tested in NTS sites is approximately two to three times that for non-Hispanic whites; in traditional sites the disparity is four-fold. Hispanics and non-Hispanic Native Americans tested in traditional sites also have consistently higher positivity rates than whites.
- A greater proportion of those tested at NTS sites are at highest risk for HIV. High-risk clients (MSM, IDU, MSM/IDU, and those reporting exchanging sex for drugs or money) comprised approximately 20 percent of the clients tested in NTS during 2004, compared to just five percent of the traditional venue clients.
- For most risk groups (IDU, high-risk heterosexuals, heterosexual only), clients tested at NTS sites are more likely to test positive. Testing of men who have sex with men represents a higher proportion of tests in NTS sites, but the positivity rate is greater in traditional sites.

**** IMPORTANT NOTE: Due to changes in data collection methods, CTS screening data for 2005 are currently unavailable for analysis. This chapter will describe screening through the end of 2004. An updated chapter for 2005 will be posted on our web page when the 2005 data become available.**

HIV COUNSELING, TESTING AND REFERRAL (CTS)

Testing for HIV infection is provided at no charge to clients in all local health departments and a number of community-based organizations (CBOs) in North Carolina. The testing program is known as CTS (Counseling and Testing System), in reference to the data management system

used for the collection and analysis of the data. All clients tested through the program receive pre-test HIV-prevention education and counseling. As part of this pre-test counseling process, each person tested is asked a series of questions regarding possible HIV risks, reasons for getting tested, and testing history. This data is collected and sent with the blood sample to the North Carolina State Laboratory for Public Health in Raleigh for analysis. The data contains no identifying information, so it is not possible to assess which individuals are represented more than one time, only that some report having been tested previously. For more information on the data, please see the discussion in Appendix B, page B-9.

While the CTS data does not provide a true monitoring of seroprevalence, it is a useful tool to evaluate voluntary testing for HIV in the public sector. The raw number of tests, number of positives and positivity rate for the most recent five years for publicly funded HIV testing in North Carolina is presented in Table 4.1. While the number of tests processed by the State Laboratory of Public Health has increased for the last three years, the raw positivity rate (calculated as proportion of positive tests) has declined from 0.74 percent in 2001 to 0.60 percent in 2004. For county-level data, please see Appendix D, Table M, pg. D-19.

Table 4.1. HIV testing in publicly funded sites in N.C., 2000-2004

Year of Test	Tests*	Positives	Positivity (%)**
2000	105,862	739	0.70
2001	109,178	803	0.74
2002	105,743	754	0.71
2003	107,842	743	0.69
2004	119,094	716	0.60

*Total tests performed, regardless of result. Readers should be aware that some clients are tested multiple times for various reasons (see Table 4.2). **Positivity calculated with inconclusive or missing test results removed from denominator

HIV TESTING HISTORY

When describing the demographics or risk factors reported by persons who sought HIV testing through the CTS program, it may be appropriate to consider all tests performed, regardless of prior testing history. However, in order to provide a meaningful analysis of testing and positivity trends, previous test status is taken into account by removing positive results for patients who report a previous positive test. Positivity rates are also calculated with inconclusive or missing test results removed from the denominator. Earlier parts of the *Profile* address the use of the CTS data in the evaluation of HIV incidence. ***Please take care to note when previous tests are included or excluded from the analysis.***

The proportion of people who report that they have never been tested for HIV before has been on a steady decline (Table 4.2). The resulting increase in proportion of repeat tests has been among those reporting having had a previous negative test. Note that in 2004 there were 198 people who reported a previous positive test result. Of these, 32 (16%) tested negative on the current test which may suggest either client recall errors or unclear pretest counseling questions about previous test status.

Table 4.2. HIV counseling and testing by previous test result, 2000-2004

Previous Test Result	Year of Test									
	2000		2001		2002		2003		2004	
	Test	Pct.	Test	Pct.	Test	Pct.	Test	Pct.	Test	Pct.
No Previous Test	40,319	38.1%	41,219	37.8%	38,318	36.2%	38,475	35.7%	43,053	36.2%
Negative	63,735	60.2%	65,829	60.3%	65,508	62.0%	67,256	62.4%	73,927	62.1%
Positive	252	0.2%	275	0.3%	246	0.2%	190	0.2%	198	0.2%
Inconclusive	91	0.1%	85	0.1%	89	0.1%	105	0.1%	113	0.1%
Unknown/ Missing	1,465	1.4%	1,770	1.6%	1,582	1.5%	1816	1.7%	1803	1.5%
Total	105,862	100%	109,178	100%	105,743	100%	107,842	100%	119,094	100%

Individuals who have had a previous positive HIV test are sometimes tested again for a variety of reasons, such as switching to a new health care provider who needs record of HIV status before prescribing treatment. Of the 716 positive tests recorded through the CTS program in 2004, 164 (23%) reported that they had previously tested positive. Table 4.3 presents the corrected overall positivity in which these previous positive results were removed from consideration. The denominator used in the positivity calculation in this table does include other previous tests (for example, persons reporting previous negative tests). All subsequent discussions of testing and positivity rates in this section are based on these corrected values, with previous positive tests removed from consideration.

Table 4.3. Corrected CTS positivity*, 2000-2004 (previous positives removed)

Year of Test	Positives	Positivity (%)
2000	530	0.50
2001	584	0.54
2002	554	0.53
2003	580	0.54
2004	552	0.46

*Positivity calculated with inconclusive or missing test results removed from denominator

NONTRADITIONAL TEST SITES (NTS)

The North Carolina Commission for Health Services' ruling to discontinue anonymous testing for HIV in May 1997 raised concern that, by removing the anonymous test option, testing among persons at high risk for HIV infection would be reduced. Before the option for anonymous testing was removed, the HIV/STD Prevention & Care Branch implemented procedures to make HIV testing available in nontraditional settings. Some nontraditional HIV test sites (NTS) operate as stand-alone test sites that deliver HIV testing in non-routine settings and times through a community-based organization (CBO). Others are physically located in a local health department but operate outside normal working hours. The sites other than NTS (predominantly

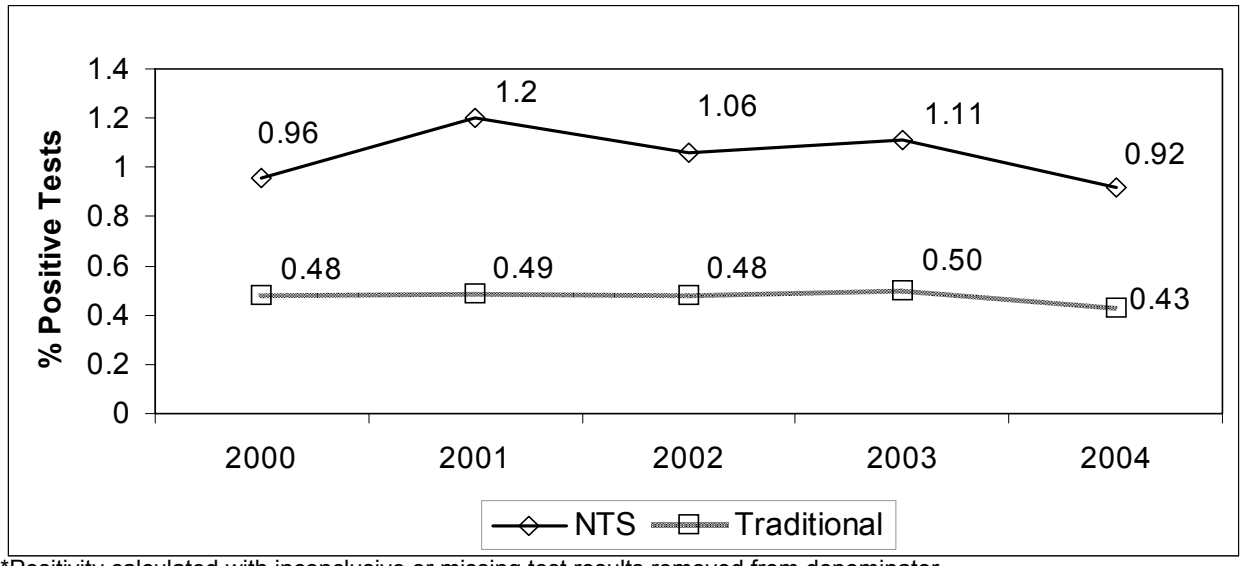
local health departments and some CBOs) have been designated as "traditional" test sites in this publication.

Table 4.4. Number of tests performed and number positive by venue, 2000-2004 (previous positives removed)

Testing Venue	Year of Test									
	2000		2001		2002		2003		2004	
	Tests	Pos.	Tests	Pos.	Tests	Pos.	Tests	Pos.	Tests	Pos
NTS	4,893	47	6,764	81	7,661	81	7,986	88	9,228	85
Traditional	100,758	483	102,195	503	97,879	473	99,688	492	109,700	467

The number of HIV tests conducted at public (CTS) sites has increased every year since 1999 and positivity has remained less than one percent since 1994. High-risk clients (MSM, MSM/IDU, IDU, persons who exchange sex for drugs or money, persons who have sex while using non-injecting drugs and persons who are sex partners of persons at risk or persons infected with HIV) continue to seek testing through publicly funded test sites. The vast majority of tests are performed at traditional sites (Table 4.4). However, a greater *proportion* of those tested in nontraditional test sites test positive than in traditional sites. For 2004, the NTS positivity rate was 0.96 percent, compared to 0.48 percent for all other public site testing (Figure 4.1). Since its inception, NTS positivity has been at least twice that of traditional test sites.

Figure 4.1. Positivity* (%) by Venue, 2000-2004 (Previous Positives Removed)



*Positivity calculated with inconclusive or missing test results removed from denominator

HIV TESTING AND POSITIVITY TRENDS

Overall, repeat test behavior has been similar in the two venue types for 2000-2004 (about 60% of clients were previously tested with negative results). Among the clients who were tested and found to be positive, approximately half had a previous negative test. In NTS sites, repeat testers have a higher positivity rate than first-time testers (1.08% vs. 0.74% in 2004). In traditional sites the positivity rates are lower and the trend is the opposite; in 2004 first-time testers had a positivity rate of 0.50%, compared to 0.42% among the repeaters.

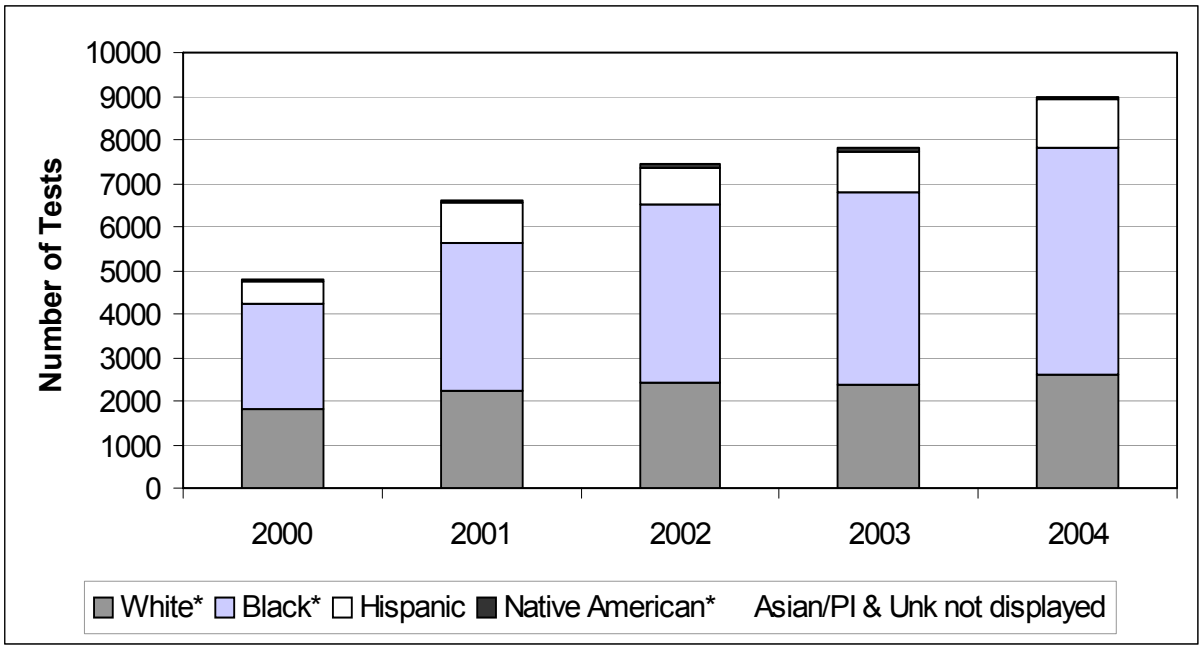
Table 4.5. HIV CTS tests by gender, 2000-2004 (previous positives removed)

	Year of test									
NTS Venue	2000		2001		2002		2003		2004	
Gender	Tests	Pct.	Tests	Pct.	Tests	Pct.	Tests	Pct.	Tests	Pct.
Male	2,907	59.4	4,351	64.3	4,588	59.9	4,864	60.9	5,314	57.6
Female	1,922	39.3	2,327	34.4	2,915	38.1	2,998	37.6	3,766	40.8
Missing	64	1.3	86	1.3	158	2.1	124	1.6	148	1.6
Total	4,893	100.0	6,764	100.0	7,661	100.0	7986	100.0	9,228	100.0
Traditional Venue	2000		2001		2002		2003		2004	
Gender	Tests	Pct.	Tests	Pct.	Tests	Pct.	Tests	Pct.	Tests	Pct.
Male	31,254	31.0	32,075	31.4	30,852	31.5	31,332	31.4	33,997	30.1
Female	68,719	68.2	68,895	67.4	65,896	67.3	67,140	67.4	74,230	67.7
Missing	786	0.8	1,225	1.2	1,131	1.2	1,216	1.2	1,473	1.3
Total	100,759	100.0	102,195	100.0	97,879	100.0	99,688	100.0	109,700	100.0

These trends illustrate the foundation of the NTS testing sites which were set up under the assumption that the clientele at the NTS sites might be very different than those tested in traditional sites. One of the most striking differences is the number of males tested compared to the number of females tested. For the past five years, more males than females were tested in NTS sites (57.6% in 2004, Table 4.5). The opposite is true for traditional test sites where far more females are tested (67.7% in 2004). This is likely due to the fact that HIV screening is recommended for pregnant women and that NTS sites do not have prenatal/OB or family planning services, which are found in many of the traditional testing sites at local health departments.

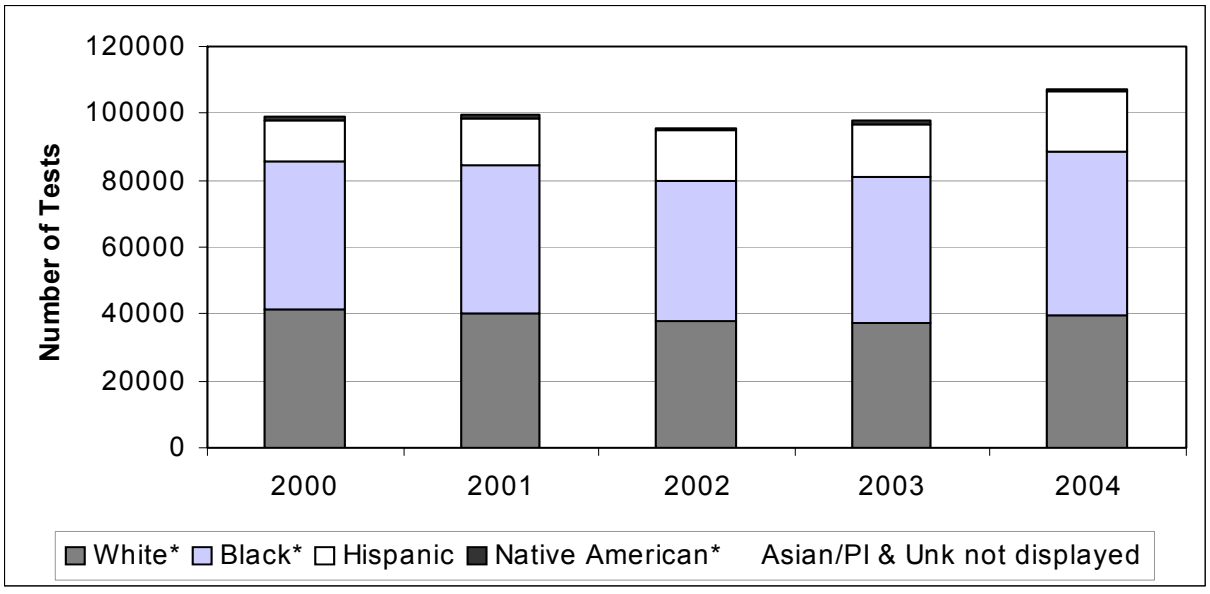
During the first years of NTS availability, approximately the same proportion of clients seen in traditional and NTS sites were white. In recent years the proportion of tests for black clients has steadily increased in NTS sites (from 49% in 2000 to 56% in 2004), but remained constant at 43-44 percent in traditional sites (Figures 4.2 and 4.3). Among Hispanics, the trend has been the opposite; testing proportions have remained relatively unchanged (around 12%) in NTS sites but have increased from 12.3 percent in 2000 to 16.4 percent in 2004 in traditional test sites.

Figure 4.2. NTS Sites – CTS Tests Performed by Race/Ethnicity 2000-2004



* non-Hispanic

Figure 4.3. Traditional Test Sites – CTS Tests Performed by Race/Ethnicity 2000-2004



* non-Hispanic

The total number of tests performed and the percent positive by race/ethnicity are presented in Table 4.6. The positivity for blacks tested in NTS sites is approximately two to three times that for whites, while the differential between these two groups is four-fold in traditional sites. The number of Hispanics and Native Americans tested at NTS sites is small, making the trends there difficult to interpret, but in traditional sites both groups have consistently higher positivity rates than whites.

Table 4.6. Number of tests performed and positivity* by race/ethnicity, 2000-2004 (previous positives removed)

	Year of Test									
NTS Venue	2000		2001		2002		2003		2004	
Race/Ethnicity	Tests	Pct. Pos	Tests	Pct. Pos	Tests	Pct. Pos	Tests	Pct. Pos	Tests	Pct. Pos
White	1,817	0.61	2,233	0.58	2,409	0.79	2,347	0.89	2,611	0.61
Black	2,404	1.33	3,383	1.83	4,079	1.40	4,398	1.32	5,197	1.17
Hispanic	508	0.79	950	0.53	853	0.23	965	0.73	1,088	0.74
Asian/PI	26	0	31	0	38	0	41	0	71	0
Native American	32	0	47	0	108	0	50	0	54	0
Other/unknown	90	0	109	0.93	160	1.90	150	1.3	181	0
Total	4,877	0.96	6,753	1.20	7,647	1.06	7,951	1.11	9,202	0.92

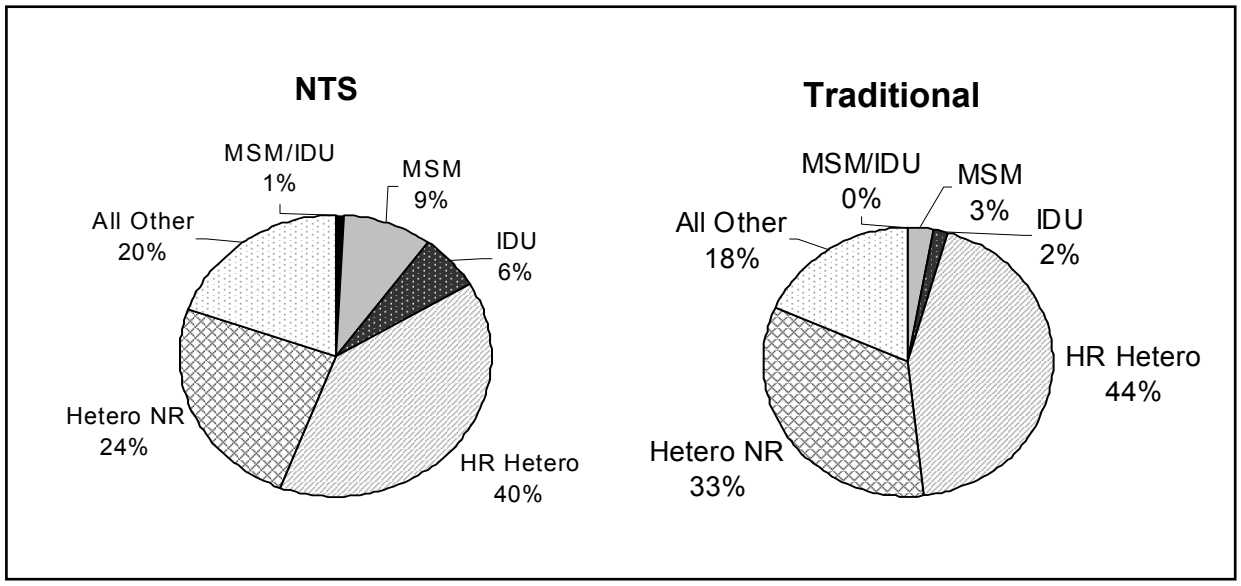
Traditional Venue	2000		2001		2002		2003		2004	
Race/Ethnicity	Tests	Pct. Pos	Tests	Pct. Pos	Tests	Pct. Pos	Tests	Pct. Pos	Tests	Pct. Pos
White	41,485	0.20	40,104	0.18	37,655	0.19	37,069	0.21	39,621	0.20
Black	43,816	0.83	44,059	0.86	42,305	0.82	43,517	0.80	48,673	0.70
Hispanic	12,385	0.23	14,214	0.28	14,639	0.30	15,399	0.32	17,955	0.17
Asian/PI	723	0	726	0.14	731	0	660	0.45	837	0.12
Native American	1,019	0.49	1,271	0.31	1,043	0.38	980	0.41	1,059	0.47
Other/unknown	1,189	0.50	1,730	0.40	1,405	0.43	1,334	0.52	1,435	0.63
Total	100,617	0.48	102,104	0.49	97,778	0.48	98,959	0.50	109,580	0.43

*Positivity calculated with inconclusive or missing test results removed from denominator

The major difference noted between clients seen in NTS and other sites is the proportion of tests comprising high-risk clients. Clients undergoing testing at all CTS sites are interviewed regarding their HIV risk as a part of pre-test counseling. Although an individual may report several different behavioral risks, each test is assigned a “mode of transmission” category according to the reported behavior that carries the highest risk of HIV transmission. For example, if a person reports both injection drug use (IDU) and heterosexual sex, the person will fall into the IDU category. The same is true if a male client reported having sex with other men (MSM) and women; they would fall under MSM. There is an additional category for persons reporting both MSM and IDU. The category ‘heterosexual sex with a high-risk partner’ includes those who

report heterosexual sex with known HIV positives or partners at risk for HIV, exchanging sex for drugs or money, having sex while using non-injecting drugs, multiple sexual partners, or recent STD diagnoses. Other risks include blood exposures such as transfusions and accidental needle sticks.

Figure 4.4. CTS Testing by Mode of Transmission, 2004 (previous positives removed)



Men who have sex with men (MSM), injecting drug users (IDU) and clients reporting both MSM and IDU risks made up approximately 16 percent of the clients tested in NTS during 2004, compared to less than five percent of the traditional venue clients during the same time (Figure 4.4). This is consistent with testing proportions in previous years. High-risk heterosexual activity made up 40 percent of the NTS clients and 43 percent of the traditional venue clients. Traditional venues also consistently report more clients with heterosexual risk only (no other risk); they were 33 percent of traditional testing clients and 24 percent of NTS clients in 2004.

Within the high-risk heterosexual category, some key differences exist between NTS and traditional sites. For 2000-2004, 19-20 percent of traditional test site clients reported STD history, compared to only 14-15 percent in NTS. Conversely, 3-4 percent in NTS sites report exchanging sex for drugs or money compared, to less than one percent in other sites.

Repeat testing is slightly more common in NTS settings for MSM (73-80% compared to 66-70%). Conversely, traditional sites have slightly higher proportions of repeat tests for IDUs, high-risk heterosexuals, and heterosexuals with no other risk reported.

While MSM testing represents a higher proportion of tests in NTS sites, the positivity rate is greater in traditional sites than NTS sites (Table 4.7). The positivity rates for IDU clients are only slightly higher in NTS sites, although IDU testing proportions are about two times greater in NTS sites than traditional sites. The vast majority of heterosexual only and high-risk heterosexual clients tested are seen in traditional settings, but those using NTS sites are consistently more likely to test positive.

Table 4.7. HIV CTS tests performed and positivity* by mode of transmission , 2000-2004 (previous positives removed)

	Year of Test									
NTS Venue	2000		2001		2002		2003		2004	
Mode of Transmission	Tests	Pct. Pos	Tests	Pct. Pos	Tests	Pct. Pos	Tests	Pct. Pos	Tests	Pct. Pos
MSM IDU	38	0	44	2.27	56	3.57	73	5.48	69	0
MSM	503	2.58	645	2.33	730	2.6	913	3.83	849	4.00
IDU	389	1.29	533	1.69	569	1.05	498	1.20	590	1.69
High-Risk Heterosexual	2,307	1.08	3,348	1.14	3,374	0.98	3,239	0.83	3,645	0.63
Heterosexual, No Other Risk	1,019	0.29	1,442	1.18	1,816	0.55	2,053	0.63	2,252	0.53
Other/Missing	621	0.16	741	0.13	1,102	1.00	1,175	0.26	1,797	0.33
Total	4,877	0.96	6,753	1.20	7,647	1.06	7,951	1.11	9,202	0.92

Traditional Venue	2000		2001		2002		2003		2004	
Mode of Transmission	Tests	Pct. Pos	Tests	Pct. Pos	Tests	Pct. Pos	Tests	Pct. Pos	Tests	Pct. Pos
MSM IDU	155	2.58	120	3.33	94	2.13	112	0	94	3.19
MSM	2,252	4.44	2,586	4.64	2,696	4.78	2,790	5.02	3,075	4.62
IDU	2,697	1.41	1,965	0.87	1,870	0.86	1,909	0.94	1,766	0.68
High-Risk Heterosexual	47,268	0.47	48,083	0.47	45,845	0.46	44,405	0.50	48,136	0.38
Heterosexual, No Other Risk	32,346	0.24	33,701	0.27	32,088	0.21	32,908	0.24	36,454	0.18
Other/Missing	15,899	0.26	15,649	0.29	15,185	0.30	16,835	0.21	20,055	0.30
Total	100,617	0.48	102,104	0.49	97,778	0.48	98,959	0.50	109,580	0.43

*Positivity calculated with inconclusive or missing test results removed from denominator

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CHAPTER 5: SPECIAL STUDIES

CONTENTS

RECENT INFECTIONS

Historically, HIV surveillance in the general population has involved monitoring the number of new reports (new diagnoses) of individuals who are infected with HIV infection. True incidence (i.e., the number of newly acquired infections within the population in a given time period) is very difficult to determine in HIV patients because a person can be infected for months or years before developing symptoms and seeking testing or a diagnosis. If newly acquired or recent HIV infections can be identified, public health officials will be able to monitor the epidemic more effectively, make better decisions concerning the allocation of resources, and plan and implement programs, particularly prevention programs. Serologic studies that identify true recent or new infections (as opposed to newly identified individuals who are infected) have only recently become available.

The Centers for Disease Control and Prevention (CDC) is responsible for maintaining a national surveillance system that provides data on the HIV/AIDS epidemic that can be used for national, state, and local public health HIV/AIDS prevention program planning and evaluation. Clinical and laboratory testing information data items have been incorporated into HIV/AIDS surveillance based on their utility on a population basis in characterizing the HIV epidemic or triggering particular public health action. Two programs that are aimed at identifying or estimating new or recent infections have been initiated in North Carolina: Screening and Tracing Active Transmission (STAT) and HIV Incidence Surveillance. Each uses a different testing methodology, and together the respective information can help better estimate overall HIV incidence. These two programs are discussed below.

STAT Program

The Screening and Tracing Active Transmission (STAT) program is an initiative to improve HIV prevention and care by enabling the State Laboratory for Public Health to detect individuals who likely are newly infected with HIV and to provide this information to disease intervention specialists (DIS) with the Field Service Unit of the HIV/STD Prevention and Care Branch. Recently infected individuals will be able to receive counseling and treatment earlier with the goal of preventing inadvertent exposure to partners. These individuals are considered to have an **acute (or primary)** HIV infection (before they begin to produce antibodies to the virus) compared to those with **established** infection (i.e., detectable antibody levels). In North Carolina, the STAT concept was implemented as a cooperative arrangement between the HIV/STD Prevention and Care Branch, the State Laboratory for Public Health and the University of North Carolina in Chapel Hill. It began in May 2002 as a two-month pilot program through the research laboratory of Dr. Chris Pilcher at the University of North Carolina at Chapel Hill School of Medicine. For the pilot, aliquots of serum with no detectable levels of HIV antibody by EIA and Western Blot testing (i.e., seronegative) were sent from the State Laboratory for Public Health to Dr. Pilcher's laboratory for further testing. These sera were tested for the presence of the HIV virus (not the antibody) using the polymerase chain reaction (PCR) to detect viral RNA. Due to the large number of specimens which are seronegative (more than 100,000 per year) and for the purposes of cost containment, the serum aliquots were pooled such that up to 100 sera were tested together. If a pool of 100 sera tested positive, the researchers worked backwards in the dilution scheme to identify which individual specimen(s) contained viral

Table 5.1. Demographics for STAT, STARHS, and all laboratory positives, Nov 2002 - Oct 2003

Category	Acute (STAT) (n = 23)	Recent (STARHS) (n = 107)	All Antibody Positives (n = 583)
Sex	Pct.	Pct.	Pct.
Male	65%	64%	65%
Female	35%	36%	34%
Age			
> 24 years old	70%	69%	78%
≤ 24 years old	30%	29%	21%
Race/ethnicity			
Black*	70%	60%	70%
White*	22%	27%	18%
Hispanic	4%	13%	9%
American Indian*	4%	0%	0.6%
Risk Category			
Heterosexual	4.3%	17%	17%
STD diagnosis	30%	10%	12%
Sex partner at risk	9%	21%	24%
None acknowledged	0%	5%	3%
Non-injected drugs	9%	2%	3%
MSM	30%	35%	29%
Heterosexual & IDU	4%	5%	4%
Victim of Sexual Assault	4%	1%	0%

* non Hispanic

nucleic acid. Following the demonstration of feasibility through the pilot program, STAT was implemented as a routine program at the North Carolina Public Health Laboratory in November of 2002.

Within 72 hours after receiving the report, Disease Intervention Specialists (DIS) contact individuals who test positive via STAT for the HIV virus. The DIS perform an initial interview and counsel the individual to have a repeat HIV-antibody test within two weeks (and, if necessary, at 4 and 12 weeks). Partners (both sexual and needle sharing) of these individuals are also notified and offered testing. The results from the pilot and ongoing testing activity showed a distribution of positive acute tests that reflects what is seen with EIA/Western Blot testing. In a one-year period (November 1, 2002 to October 31, 2003), 109,250 individuals were tested. Of these, 583 had antibody-positive established infections. An additional 23 individuals were antibody negative but tested positive for the virus using PCR (i.e., were acute infections). The majority of these 23 acutely infected individuals were male (65%), black (70%) and were over 24 years old (70%). The most common risk categories were persons also positive for another STD (30%) and men who have sex with men (also 30%, see Table 5.1). Roughly four percent (23 out of a total of 606) of the HIV-1 infected patients were EIA antibody negative and would not have been detected until possibly much later without the use of the STAT procedure (Pilcher et al. 2005). Acute testing began in November 2003 at the State Health Laboratory on all

seronegative specimens and it was responsible for helping recognize an HIV outbreak among young adults attending college or linked to students attending college. Since that date, over 190,000 EIA antibody negative specimens have been tested and 43 acute cases identified from them. Again, the majority of these acute cases were male (81%), black (67%) and over 24 years old (67%), very similar to proportions reported by Dr. Pilcher. This information is being incorporated into routine HIV surveillance data for the general population for use by public health officials in better developing and implementing treatment and prevention programs.

The result from the pilot STAT program was combined with the results from Serologic Testing Algorithm for Recent HIV Seroconversion (STARHS) testing (discussed below) conducted on laboratory samples submitted to the State Laboratory for a similar 12-month period by Dr. Chris Pilcher. He estimated an overall incidence in the study population of 2.2 HIV infections per 1,000 person years (Pilcher et al. 2005).

HIV Incidence Surveillance Program

North Carolina is one of 33 cities and states in the U.S. that are participating in the HIV Incidence Surveillance Program. This program uses the Serologic Testing Algorithm for Recent HIV Seroconversion (STARHS) method for determining the proportion of individuals who test positive for HIV for the first time who may have been recently infected by HIV. Sera, which have tested positive for HIV antibodies by EIA and have been confirmed as positive by Western blot, are tested by a second, less sensitive enzyme immunoassay (LS-EIA). In the context of a reactive, standard HIV EIA, recent HIV seroconversion is likely if the LS-EIA is nonreactive because HIV antibody levels have not reached their peak. STARHS can determine with reasonable probability the number of HIV infections recently acquired within the testing population. The LS-EIA must be applied to the diagnostic HIV-positive specimen because the assay is sensitive to the length of time that the infection has been present (because of changes in antibody concentration). The time from when a specimen would first be reactive by a sensitive HIV EIA to when the specimen would first be reactive by the LS-EIA, if tested, is defined as the STARHS window period. Although the mean STARHS window period may vary slightly by HIV subtype, the mean window period for calculating population-based incidence estimates is 153 days. The LS-EIA for STARHS is performed only on HIV-positive sera. Thus, STARHS is time-sensitive, and the LS HIV EIA must be applied to the diagnostic HIV-positive specimen. N.C. began routinely collecting STARHS data in the summer of 2005, and to date 416 serum specimens have been tested.

When STARHS is fully implemented in North Carolina, the positive serum samples (by Western Blot) from both the N.C. State Laboratory of Public Health and commercial laboratories which conduct testing for N.C. will be sent to the CDC STARHS laboratory. HIV incidence surveillance coordinators will be informed regularly by their laboratory designees of all stored specimens at the public health laboratory. Serum specimens will be held in the state public health laboratory until the coordinator, using routine HIV/AIDS surveillance reporting procedures, determines whether the specimen represents the person's first reported positive-HIV test result. If a person has been previously reported to the HIV/AIDS reporting system (HARS), then that person's serum specimen is ineligible for STARHS and will be handled according to routine laboratory protocols for HIV-positive serum specimens. For persons not previously reported to HIV/AIDS Reporting System (HARS), surveillance staff will review STARHS

eligibility. Persons with a positive HIV test result will be considered eligible for STARHS if they meet the following requirements:

- They have not been reported previously in HARS.
- The serum specimen held in the laboratory represents their first confirmatory positive HIV test result from a confidential test.

So that incidence estimates can be accurately derived, information on prior HIV testing and antiretroviral drug use is being collected on all eligible individuals reported as potentially having a newly diagnosed HIV infection. Some of this information has been collected routinely in HARS and the Counseling and Testing System (CTS); however, not all of the required elements for STARHS have been collected uniformly. Therefore, a standard set of questions and corresponding data elements yielding information specific for STARHS have been developed. For those reporting sites that participate in CTS, these standard questions and data elements are being incorporated into the new CTS data system. For those sites that do not participate in CTS, a paper copy of the standard set of questions based on the requisite elements will be made available to those conducting post-testing counseling. In North Carolina, testing history information is being collected when the individual returns to receive test results and/or HIV counseling. Obtaining the HIV testing history when individuals return for the HIV test result takes advantage of their ability to recall information about testing behaviors. Local surveillance personnel use their best judgment in each instance regarding when to approach individuals for their testing history. However, should more time be required to gather the information because of logistical or other reasons, a reasonable time frame for gathering that information is one to three months after the diagnosis of HIV. Standard procedures will be followed in contacting individuals to prevent them from becoming lost to follow-up. Some data, such as the date of the previous negative HIV test(s), test location, and result, may be available from laboratories or other data systems if the patient cannot be interviewed. The data management system for the HIV incidence surveillance program will allow for collection of information for each data element from multiple sources. The various sources will be identified in the database.

Because of the variability in antibody development in individuals, the predictive value of an individual's STARHS result is low. CDC data only reliably support using STARHS for estimating incidence at the population level. The FDA has labeled the LS-EIA kit and methodology being used, the BED HIV-1 Capture EIA, "For surveillance use. Not for diagnostic or clinical use." The BED HIV-1 Capture EIA is not FDA-approved as a diagnostic test and the results are only reliable as part of the population-based incidence estimate. Consequently, STARHS results cannot be returned to individuals or to providers.
Local health department personnel and Disease Intervention Specialists are being trained to use HIV testing history questionnaires when conducting follow-up counseling for HIV-positive patients. Very early preliminary data from Dr. Chris Pilcher's laboratory suggests that the distribution of recent positives mirror that seen in both acute and standard testing (Table 5.1). Thus far, of the 416 serum specimens tested by the BED assay, 108 are indicative of recent infection. This represents 26% of the newly reported cases of HIV infection. HIV incidence surveillance is being integrated into routine laboratory HIV diagnostic testing and reporting procedures. It is designed to have no effect on individual patient care and minimal effect on current HIV surveillance activities. The State Laboratory for Public Health performs routine diagnostic confirmatory HIV testing by Western blot and will report as usual to the North Carolina HIV/AIDS Prevention and Care Branch. The laboratory will then either store the

remnant HIV-positive serum specimens or send them to the Wadsworth Diagnostic HIV Testing Laboratory in Albany, New York for STARHS testing. Commercial laboratories are being recruited to send their positive specimens to the N.Y. laboratory. To date, ARUP, Mayo and Specialty Labs are shipping specimens to the N.Y. laboratory on a regular schedule. N.C. HIV Incidence program monitors the results from these laboratories and forwards the accession numbers of the specimens to be tested to the N.Y. laboratory. STARHS results may be returned to county health departments in a standardized reporting format but not to the individual. STARHS results are identified by the regional STARHS laboratory accession number and linked to the unique identification numbers used to label the original specimen.

RAPID TEST PROGRAM

Standard ELISA/Western Blot antibody testing for HIV is generally performed offsite at a licensed laboratory and can take several days to complete. Rapid HIV testing, on the other hand, is a screening tool that can be performed at the site of patient contact, and the results are available in about 20 minutes. However, positive results from the rapid tests are considered preliminary and the positive results must be confirmed. Rapid testing is recommended during outreach or screenings in high morbidity areas and/or high-risk areas, in cases of accidental exposure to blood or bodily fluids, and to determine the HIV status of a pregnant woman presenting to labor and delivery with an unknown HIV status. The N.C. Rapid Test Program is designed to increase the number of high-risk persons tested for HIV (deemed likely to not return for results from standard antibody testing) and allow preliminary test results to be given.

Currently, North Carolina's rapid antibody test program uses an OraQuick® test. It is an FDA-approved HIV-1 antibody test that provides results with 99.6 percent accuracy in as little as 20 minutes. Using less than a drop of blood, the OraQuick® device can quickly and reliably detect antibodies of HIV-1. It requires only fingerstick or venipuncture whole blood, and may be considered for use outside of traditional laboratory or clinical settings.

By the end of 2005, there were 11 rapid testing sites that received test kits from the state program. There are currently testing sites in each region of the state. Rapid tests are primarily used in Non-Traditional Testing Sites (NTS); however, they are also used in local health department clinics, medical facilities, and student health clinics. The kits were distributed to the test site based on the testing site's patient population.

Table 5.2 shows the number of tests administered, the number of positive tests, and the corresponding positivity rate. A total of 15 positives were identified with rapid tests in 2005. Each of the positive screening results was confirmed. The Rapid Testing Project's HIV prevalence rate was 0.7 percent for the total group that was tested using the rapid test method in 2005. The Rapid Test Program is an ongoing program that continues to test and identify positives. Data for 2006 will be available in the next profile.

Table 5.2. Test Site and number of kits received, 2005

Site*	Kits Administered	# Positive Tests	Positivity Rate (per 100)
CBO (New Hanover County)	18	0	0.00
LHD (Craven County)	23	1	4.35
LHD (Cumberland County)	29	4	13.79
Univ. Med. Facility (Durham County)	873	0	0.00
LHD (Durham County)	36	3	8.33
LHD (Guilford County)	27	0	0.00
LHD (Nash County)	4	0	0.00
CBO (Wake County)	35	1	2.86
CBO (Harnett County)	444	4	0.90
Univ. Student Health (Orange County)	346	2	0.58
CBO (Buncombe County)	306	0	0.00
Total	2141	15	0.70

*CBO= Community-Base Organization, LHD= Local Health Department

HIV RESISTANCE AND GENOTYPING

HIV genetic sequence data based on the *pol* gene has now been incorporated into HIV/AIDS surveillance to evaluate the distribution of HIV-1 subtypes and mutations associated with HIV drug resistance (HIVDR) among individuals newly diagnosed with HIV and the subset of recently infected persons.

In the late 1990s, several new nucleoside reverse transcriptase inhibitors (NRTI), non-nucleoside reverse transcriptase inhibitors (NNRTI), and protease inhibitors (PI) were approved for treating HIV infection in the United States. These newer drugs, combined with the NRTIs already available, provide clinicians with a variety of choices for initiating and changing antiretroviral treatment for patients infected with HIV-1. A panel, representing international expertise in antiretroviral research and HIV patient care convened by the International AIDS Society-USA and a Public Health Service interagency work group with expert consultation, have continually updated recommendations for prophylaxis or therapy that, for specific purposes, include all of the antiretroviral drugs currently approved by the FDA and in use in the U.S., and for HIV drug resistance testing.

The therapeutic purposes of antiretroviral drugs include prophylaxis after known occupational exposure (post-exposure prophylaxis), vertical transmission prophylaxis, treatment of primary infection (four to seven weeks after infection), initial treatment from early (little or no immunological damage) to late infection (substantial immunological damage), and changes in treatment regimens depending on virological and immunological response. Clinical trials are being performed to evaluate pre-exposure prophylaxis with antiretroviral drugs. Studies have

demonstrated that HIV drug resistance results (both genotype and phenotype) can be used to predict clinical outcome and to guide drug treatment choices.

CDC is currently working with state and local health departments to integrate HIV resistance testing into routine HIV core surveillance similar to the way tuberculosis molecular surveillance was incorporated into tuberculosis surveillance. Like other public health surveillance activities, CDC's human subject protection process determined that the implementation of variant, atypical, and resistant HIV surveillance (VARHS) is not research.

HIV drug resistance testing is performed utilizing standard tests that are widely used clinically. These tests are not experimental and do not require informed consent. The use of a remnant diagnostic specimen for drug resistance testing is routinely performed without informed consent for tuberculosis, urinary tract infections, and sexually transmitted diseases, and drug resistance results are collected as part of public health surveillance for these and other conditions (CDC VARHS Guidance 2005, Lewis, et al 2003). Like drug resistance testing in other infectious disease surveillance systems, testing diagnostic specimens for HIV drug resistance and HIV-1 subtype surveillance does not require informed consent.

Genotyping results and information from the HIV surveillance case report will be used to make population-based estimates of the prevalence of HIV drug resistance and HIV-1 subtypes among individuals newly diagnosed with HIV. Prevalence estimates will also be made for relevant demographic groups and HIV exposure categories. In areas performing variant, atypical and resistant HIV surveillance (VARHS) and HIV incidence surveillance (STARHS), evaluation of recent HIV infection using a testing history and STARHS will be collected as part of HIV surveillance for most newly diagnosed individuals. HIV incidence results in combination with the sequencing result, testing history data, and clinical information about disease progression at diagnosis will be used for population-based HIV estimates of the incidence of transmitted HIV drug resistance and HIV-1 subtypes. HIV sequence information may also be used to track the spread and clustering of atypical HIV strains of interest nationally.

For newly diagnosed individuals whose specimens are amplified and genotyped successfully, an individual hard copy report of results will be made available by the health department to a provider designated by the individual.

Variant, atypical, and resistant HIV surveillance (VARHS) evaluates the prevalence of HIV drug resistance and HIV-1 subtypes among individuals newly diagnosed with HIV in public health settings and other clinical and diagnostic settings collaborating with the state, county, or large city departments of health. Ideally, specimens from all individuals newly diagnosed with HIV in the state, county, or large city should be included. Aliquots of remnant sera are being set aside for HIV drug resistance testing from each blood specimen drawn for HIV diagnosis from eligible persons tested at the N.C. State Laboratory of Public Health, if sufficient volume is available. Specimens are then shipped to the Stanford University Virology Laboratory for genotyping. For individuals meeting VARHS criteria, HIV genetic sequencing (genotyping) will be performed on the reverse transcriptase and protease regions of the HIV *pol* gene to detect the presence of mutations associated with HIV drug resistance. HIV-1 subtype will also be identified based on the *pol* gene sequence. To provide further information on specimens with mutations associated with resistance, additional HIV drug resistance testing, including determination of phenotypic

susceptibility to all commonly used anti-HIV drugs, will be evaluated in a subset of specimens identified by CDC if resources are available.

Resistance testing on serum specimens in North Carolina began in November 2005. To date a total of 219 specimens have been genotyped and the resistance patterns have been reported to HIV/STD Prevention and Care Branch. Of these 219 specimens, 171 (78%) are susceptible to all drugs tested, no specimens were resistant to protease inhibitors (PI, 0%), 29 (13%) are resistant to either Nucleoside Analogue Reverse Transcriptase Inhibitors (NRTI) or Non-Nucleoside Analogue Reverse Transcriptase Inhibitors (NNRTI), and 3 specimens showed resistance to both PI and RTI. Sixteen of the specimens (8.7%) could not be amplified.

MEDICAL MONITORING PROJECT

HIV/AIDS surveillance programs function in all states and territories to collect a core set of information on the persons diagnosed with, living with, and dying from HIV infection and AIDS. Supplemental surveillance projects have historically provided complementary information about clinical outcomes of HIV infection and behaviors of HIV-infected persons with respect to care seeking, utilization of care, and ongoing risk behaviors (Padgett 2005).

The Adult/Adolescent Spectrum of HIV Disease (ASD) project was implemented in 1990 as a supplemental surveillance system to collect information on treatment and clinical outcomes of people with HIV infection who were in care. ASD was a facility-based, observational medical records abstraction project conducted in 11 U.S. cities, and included over 60,000 people. ASD data have been used to examine trends in the incidence of AIDS-defining opportunistic illnesses, determine if eligible patients were receiving prophylactic and antiretroviral medications and to inform treatment and prevention guidelines.

The need for data on risk and health-care seeking behavior among HIV-infected persons led to the implementation of the Supplement to HIV/AIDS Surveillance (SHAS) project in 1990. SHAS surveyed persons newly reported as having HIV or AIDS in 19 areas on care-seeking, HIV testing, access to health care and related services, and ongoing risk behaviors. Analyses examining reasons for late HIV testing, quality of life, drug use, and sexual behaviors have been used to inform local planning processes and tracking of behavioral trends among persons with HIV infection who were in care.

In the past decade, both ASD and SHAS have provided much needed information that has been used to understand the HIV epidemic. However, in recent years, the utility of these surveillance projects has become progressively limited due to several factors. First, early in the epidemic, HIV/AIDS cases were concentrated in large urban areas, primarily on the East and West coasts. Currently, a much larger number of cities and states are heavily impacted by the HIV/AIDS epidemic limiting the utility of data collected from the limited number of geographic areas included in the ASD and SHAS projects. Second, the lack of linked medical record and interview data has limited the ability of these surveillance systems to make estimates of key indicators, such as quality of HIV-related ambulatory care and the severity of need for HIV-related care and services. Third, the generalizability of results from ASD and SHAS to the rest of the adult HIV-infected community was limited because they were composed of convenience samples.

To address some of these concerns, the Survey of HIV Disease and Care (SHDC) was piloted in several geographic areas during 1999. SHDC was a cross-sectional, population-based medical record abstraction project which used two-stage sampling to obtain a probability sample of HIV-infected patients in care in the U.S. SHDC-Plus, which was conducted in three areas during 2003-2004, modified SHDC by conducting an interview on a subset of persons for whom medical record abstraction had occurred. Both of these projects were conducted in limited geographic areas. The Morbidity Monitoring Project (MMP) arose out of the need for a nationally representative, population-based surveillance system to assess clinical outcomes, behaviors and the quality of HIV care without the limitations described above.

The primary objectives of MMP are to obtain data from a national probability sample of HIV-infected persons receiving care in the U.S in order to:

- describe the clinical and virologic status of these patients
- describe HIV care and support services being received and the quality of such services
- describe the prevalence and occurrence of co-morbidities related to HIV disease
- determine prevalence of ongoing risk behaviors and access to and use of prevention services among persons living with HIV
- identify met and unmet needs for HIV care and prevention services in order to inform community and care planning groups, health care providers and other stakeholders

The primary purpose of this protocol is to provide a consistent methodology for state and local health departments to use in collecting data on behaviors and clinical outcomes from a probability sample of adults receiving care for HIV infection or AIDS in their jurisdictions. The methodology involves selection of patients currently receiving care using a three-stage sampling design, in-person interview of eligible patients, and abstraction of their HIV-related medical records.

Collection of data from interviews with HIV-infected patients will provide information on the current levels of behaviors that may contribute to increased HIV transmission: patients' access to, use of, and barriers to HIV-related secondary prevention services; utilization of HIV-related medical services; and adherence to drug regimens. In combination with data collected from the abstraction of medical records, MMP will also provide information on clinical conditions that occur in HIV-infected persons as a result of their disease or the medications they take as well as the HIV care and support services being received by these patients and the quality of these services. Ultimately, this surveillance project will produce data about met and unmet needs for HIV care and prevention services that can be used to evaluate these services and to direct future resources for HIV-infected patients.

The proposed study design will allow for national, state or local level estimates of certain characteristics and behaviors that will be generalizable to the entire population of HIV-infected adults in care for HIV in the United States. Local HIV/AIDS surveillance programs have been in existence for over 20 years and have a history of successfully collaborating with medical providers and patients in their jurisdictions on projects involving both patient interview and

medical record abstraction. Surveillance programs will need to build on these successes to ensure the high participation rates required for this project.

North Carolina has completed the first two stages of the three-stage sampling procedure and patient selection for participation in the project will begin in September 2006. Patients will be contacted and interviewed through December 2006.

NORTH CAROLINA MSM RAPID BEHAVIORAL ASSESSMENT

Background

Little is known about the HIV risk behaviors among men who have sex with men (MSM) living in North Carolina, making it difficult for the health department and local community based organizations to design appropriate prevention activities. In attempts to meet the specific needs of these men, we often rely on research findings based on MSM living in large metropolitan areas that may not be representative of local populations. To address the deficiency of HIV behavioral risk information from low and moderate HIV morbidity areas, the Behavioral and Clinical Surveillance Branch (BCSB) of the Centers for Disease Control and Prevention offered North Carolina the opportunity and the technical assistance to collect local behavioral risk information from MSM during the 21st Annual North Carolina PrideFest Day Festival and Parade on September 25, 2005 at Duke University's East Campus in Durham, N.C. The Rapid Behavioral Assessment (RBA) attempts to ascertain the prevalence of HIV risk behavior among MSM in North Carolina, the level of substance use and its association with HIV risk behavior, the pattern of HIV testing and the exposure to and use of HIV prevention services. The HIV/STD Prevention and Care Branch will use these data to evaluate local HIV prevention programs for MSM and to better target HIV prevention activities accordingly.

Methods

The North Carolina HIV/STD Prevention & Care Branch collaborated with volunteers from community-based organizations (CBOs) and the local health department. Prior to the event, CDC staff conducted training for the volunteers on interviewing techniques and the operation of the handheld computers that were used to collect data. Men who resided in North Carolina who were at least 18 years old at the time of interview were systematically sampled at the 2005 N.C. Pride Festival and recruited for participation. The objectives of the survey were fully explained to the 309 men who enrolled and informed consent was obtained orally. Men who agreed to participate were asked about HIV risk and prevention behaviors using a standard questionnaire, and responses were directly entered in the handheld computer. Information collected included demographics, sexual behavior (number of partners, types of sex acts, and condom use), drug use (injection and non-injection), number and results of HIV tests, and exposure to and use of prevention services. No personal identifiers were collected. The surveys lasted approximately ten minutes and were conducted in a private area to ensure participant confidentiality.

Results

Partners

Of the men in attendance for the 21st Annual North Carolina PrideFest Day Festival, 309 consented to participate in the survey and of those, 95% were North Carolina residents. Two hundred ninety (94%) were considered MSM based on sexual behavior or sexual identity questions; 90% identified as gay. One hundred and six (37%) reported having unprotected anal sex with a man in the past 12 months (Table 5.3). The median number of male anal sex partners in the past 12 months was 2.0 (range: 0-150 sex partners) (Table 5.4). Of those reporting anal sex during last sex with a man, 50% considered their partner to be a "main partner," or someone

Table 5.3. Selected characteristics of men surveyed

	Total surveyed		Men who had unprotected anal sex with a man in the past 12 months	
	Frequency (n)	Percent	Frequency (n)	Percent
Age Group (yrs)				
18-29	132	45.5%	49	37.1%
30-39	71	24.5%	29	40.8%
40-49	60	20.7%	19	31.7%
≥50	27	9.3%	9	33.3%
Race/Ethnicity				
White, non-Hispanic	194	66.9%	75	38.7%
Black, non-Hispanic	43	14.8%	9	20.9%
Hispanic	19	6.6%	10	52.6%
Other*	34	11.7%	12	35.3%
Education				
<12 yrs	10	3.4%	4	40.0%
≥12 yrs	280	96.6%	102	36.4%
Sexual self-identity				
Homosexual/Gay	263	90.7%	101	38.4%
Bisexual	26	9.0%	5	19.2%
Other	1	0.3%	0	0.0%
HIV status at interview				
Negative	235	81.0%	89	37.9%
Positive	25	8.6%	10	40.0%
Result pending	5	1.7%	3	60.0%
Never tested	21	7.2%	4	19.0%
Missing	4	1.4%	0	0.0%
Total	290	100%	106	47.7%

to whom they were committed to above all others; 37% considered their last sex partner a "casual partner," or someone to whom they were not committed. Of the 76 men who reported having unprotected anal sex during last sex with a man, 22% were with discordant partners (i.e., the partners were of different HIV status than the men surveyed) or partners of unknown HIV status (Table 5.5). Twenty-nine percent of MSM surveyed did not discuss HIV status with all new male sex partners in the past 12 months, 28% had no new partners within that same time period, and 33% reported they discussed HIV status with all new male sex partners (Table 5.6). Of the men who had new sex partners in the past 12 months (n=181), 22% met their partners at a bar or club, 24% met over the Internet, 4% met in a park or other public cruising area, 4.5% met in an adult bookstore or theater, 4% met at a bathhouse or sex club, 2% met at a private sex party, 2% met on a phone chat line, and 2% met at a circuit party.

Table 5.4. Number of male sex partners in the previous year

Sex Partners	Frequency (n)	Percent	Cumulative Frequency	Cumulative Percent
0	26	8.97	26	8.97
1	87	30.00	113	38.97
2	47	16.21	160	55.17
3	33	11.38	193	66.55
4	17	5.86	210	72.41
5-9	43	14.83	253	87.24
10-19	20	6.90	273	94.14
20 or more	16	5.52	289	99.66
Missing	1	0.34	290	100.00

Table 5.5. Concordance of HIV status of last male sex partner

	Frequency (n)	Percent	Cumulative Frequency	Cumulative Percent
Concordant	181	62.41	181	62.41
Discordant	17	5.86	198	68.28
Unknown	59	20.34	257	88.62
Missing	7	2.41	264	91.03
No Male Partners	26	8.97	290	100.00

Table 5.6. Discussed HIV status with all new male sex partners in the past year

Discuss Status	Frequency (n)	Percent	Cumulative Frequency	Cumulative Percent
Never	47	16.21	47	16.21
< Half the Time	12	4.14	59	20.35
Half the Time	12	4.14	71	24.49
> Half the Time	14	4.83	85	29.32
Always	96	33.10	181	62.42
Missing	1	0.34	182	62.76
No New Male Partners	82	28.28	264	91.03
No Male Partners	26	8.97	290	100.00

Substance Use

During the past 12 months, 18% of MSM surveyed (n=290) reported they used non-injection drugs other than marijuana, 4% used crystal meth, 4% admitted to ever injecting drugs. None of the respondents admitted to injecting drugs or sharing needles in the past year. During the past 12 months, 72% never used drugs before or during sex, and 32% never used alcohol before or during sex (Table 5.7). Of the 8% who admitted to using drugs before or during last sex with a man, 3% admitted to having unprotected anal sex. Of the 18% who admitted to using alcohol before or during last sex with a man, 5.5% had unprotected anal sex.

Table 5.7. Use of drugs before or during sex in the past 12 months

Drug Use	Frequency (n)	Percent	Cumulative Frequency	Cumulative Percent
Never	210	72.41	210	72.41
Rarely/Occasionally	26	8.97	236	81.38
About Half the Time	13	4.48	249	85.86
Most of the Time	7	2.41	256	88.28
Always	6	2.07	262	90.34
Do Not Know	1	0.34	263	90.69
Missing	1	0.34	264	91.03
No Male Partners	26	8.97	290	100.00

Table 5.8. Number of months since last HIV test (excluding HIV+ persons)

Months	Frequency (n)	Percent	Cumulative Frequency	Cumulative Percent
0-3	72	24.83	72	24.83
4-6	51	17.59	123	42.41
7-12	41	14.14	164	56.55
13-24	30	10.34	194	66.90
25-60	27	9.31	221	76.21
61 or more	16	5.52	237	81.72
Refused	1	0.34	238	82.07
Do Not Know	1	0.34	239	82.41
Missing	2	0.69	241	83.10
Not Applicable	49	16.90	290	100.00

Testing Patterns

Seven percent of all MSM surveyed had not been tested for HIV and 25% of the MSM previously tested for HIV had not been tested within the past 12 months (Table 5.8). The main reason given for not getting tested was “has not engaged in any risk behavior.” Less than one percent gave other reasons for not being tested, including: being afraid of finding out if they had HIV, not having the time or transportation, and inconvenient testing locations or hours. Sexually transmitted diseases, such as gonorrhea and syphilis, increase the risk of HIV infection. High STD rates are markers for high-risk sexual practices and are cause for concern. Twelve percent

of men surveyed had been diagnosed with a sexually transmitted disease in the 12 months prior, and of the 129 men who received a syphilis test in the past 12 months, 20 (15.5%) were diagnosed with syphilis (Table 5.9).

Table 5.9. Men diagnosed with a STD in the past year

STD DX	Frequency (n)	Percent	Cumulative Frequency	Cumulative Percent
Syphilis	20	6.90	20	6.90
Other STD	15	5.17	35	12.07
No STD	251	86.55	286	98.62
Missing	4	1.38	290	100.00

Exposure to Prevention Messages and Services

In the year prior to the survey, 71% of men surveyed received free condoms, 87% saw HIV prevention posters or signs, 83% saw prevention ads in newspapers or magazines, 76% saw ads on TV or on the radio, 73% read HIV prevention literature or brochures. Forty-one percent had a counselor or outreach worker talk to them about ways to protect themselves from getting HIV, and 22% participated in sessions involving a small group discussion about ways to protect themselves and their partners from getting HIV. Five to nine percent of the surveyed MSM were aware of local men's health initiatives ("d-UP" and "Know 1 Thing") (Table 5.10).

Table 5.10. Exposure to local Men's Health Initiative

Seen Logo	Frequency (n)	Percent
D-Up!	26	8.97
Know 1 Thing	15	5.17
Missing	4	1.38

Conclusions

Although the majority of men surveyed had recently been exposed to prevention messages and services, additional emphasis on routine HIV testing for sexually active MSM and interventions that promote interpersonal skills and encourage open discussion and disclosure of HIV status are needed. Recent outbreaks of syphilis and other sexually transmitted infections among MSM indicate a resurgence of unprotected sex in this population. To stop HIV transmission, the health department, other health care providers, and community-based organizations must continue to provide effective HIV prevention messages and activities to those who demonstrate HIV risk behaviors. Among MSM surveyed, the Internet and bars or clubs were the most popular places to meet partners, and these venues provide appropriate places for HIV prevention education and intervention.

Special Acknowledgement

Without the enthusiasm and participation of the RBA volunteers from various community-based organizations and health departments across the state, this endeavor would not have been

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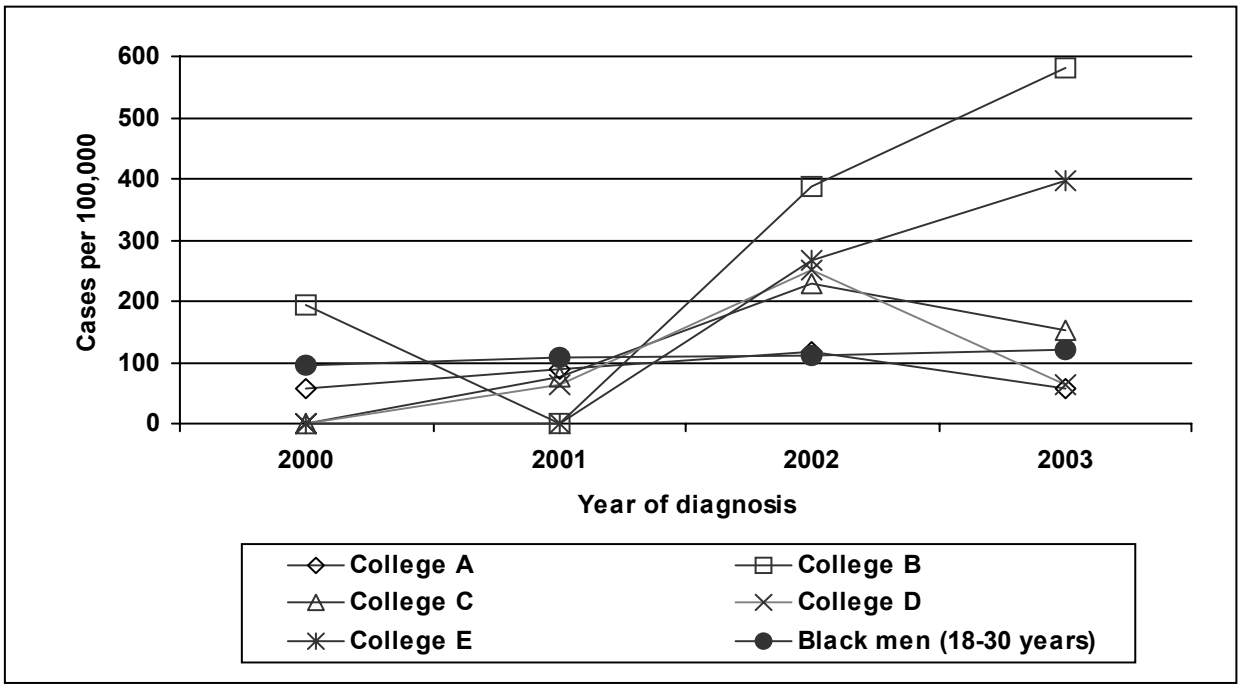
HIV AMONG YOUNG ADULTS ATTENDING COLLEGE

Over the past few years, North Carolina identified a previously unrecognized HIV outbreak among young adults attending college or linked to students attending college. The outbreak was found as a result of the state's STAT (Screening Tracing Active Transmission) HIV testing program. The STAT program uses specialized laboratory testing and procedures to identify recently-infected individuals who might be missed using standard testing alone. In early 2002, two newly-positive HIV male college students were identified by the STAT project, triggering a retrospective review of state HIV case reports in the Triangle (Wake, Durham, and Orange counties). The review revealed 25 new cases of HIV infection in males attending college in the Triangle between January 1, 2001 and March 1, 2003. A sexual partner network investigation linked several colleges together. These 25 cases represented a dramatic increase in new HIV cases for males attending college as compared to similar new cases reported in 2000. Many steps were taken as a result of the outbreak. Local health department personnel, all of the campuses involved in the outbreak, and local community-based organizations were notified of the outbreak findings, and counseling and testing activities were expanded. In addition, a Centers for Disease Control and Prevention (CDC) Epi-Aid team comprised of HIV-prevention experts, in collaboration with University of North Carolina researchers and N.C. Division of Public Health staff, conducted a behavioral study of young black MSM in the state. The study found: a) high-risk behaviors were occurring in both HIV-positive and HIV-negative young MSM; b) college students were less likely to identify themselves as gay and/or disclose sexual orientation; and c) venues for meeting sex partners were not limited to college campuses. The investigators

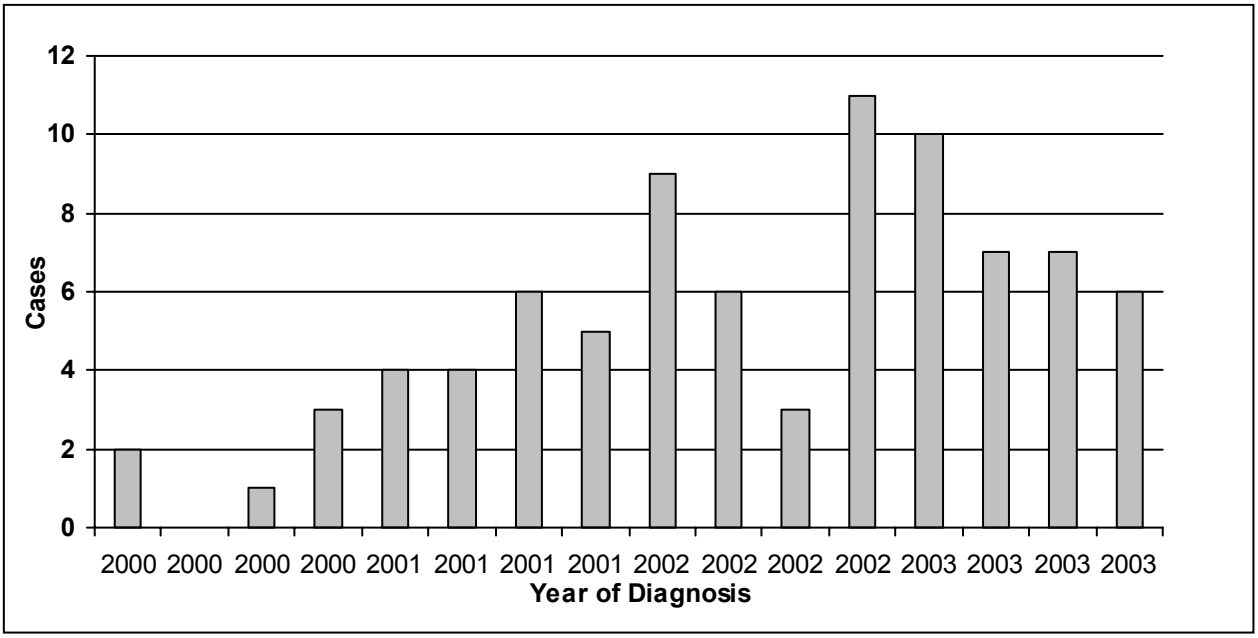
Figure 5.1. New infection rates among black men, age 18-30, at 5 N.C. colleges/universities (2000-2003)



concluded that North Carolina is experiencing a dramatic increase in HIV infections among young black men (CDC, MMWR, 2004). The epicenter of the outbreak is the college population. A calculation of the rate of new HIV reports for males at five schools indicated alarming increases (Figure 5.1).

An expansion of the review (January 2000 to December 2003) identified a total of 84 new cases of HIV-infected males who were attending 37 colleges throughout the state (Figure 5.2). Of these, 73 (88%) were black, and the vast majority of cases (92%) were either men who have sex with men (MSM) or men who have sex with men and women (MSM/W). These HIV-infected college males were compared to newly diagnosed males who were not enrolled in college. An examination of potential sexual partners and social/sexual network links was performed using disease intervention specialist (DIS) interview records and counseling and testing (CTS) data about cases. The study revealed that college students with newly diagnosed HIV infection were more likely than non-college students to be black (odds ratio 3.70, 95% CI=1.86-7.54), to report meeting sex partners at bars or dance clubs (odds ratio 3.01, 95% CI=1.77-5.10) or on the Internet/chat lines (odds ratio 4.95, 95% CI=2.53-9.64), or to report use of ecstasy or club drugs (odds ratio 4.51, 95% CI=1.15-15.40). The initial outbreak demonstrated the need to increase student awareness about HIV and the need for specialized interventions to target young African American or black bisexuals and MSM (Hightow et. al 2005).

Figure 5.2. Newly-diagnosed cases of HIV among college males (n=84) by quarter, N.C. 2000-2003



THE N.C. MEN'S HEALTH INITIATIVE

CDC and NCDHHS responded to this public health crisis by funding a demonstration project entitled The N.C. Men's Health Initiative (MHI); targeting African American men aged 18-30 (Bost 2006). The intervention, based on Jeffrey Kelly's popular opinion leader model (POL), serves to identify, train, and enlist key opinion leaders to help change social norms in the

community by delivering effective risk reduction conversations among peers and acquaintances. MHI was implemented in four areas of North Carolina by community-based organizations engaged in HIV prevention.

Preliminary data suggests that with adaptation, POL holds much promise in meeting the needs of African American or black MSMs aged 18-30. As a result of this initiative, 308 popular opinion leaders were trained in the community venues, with 822 documented conversations. In addition, 108 popular opinion leaders were trained on the campus of North Carolina Central University, with 1,562 documented conversations. Data from over 1,500 behavioral surveys conducted as part of the MHI will yield additional information. The CDC will provide the results of the behavioral survey findings in August 2006.

Survey findings, process data, and opinions captured from focus groups will serve as a point of reference for planning future interventions for African American MSMs. The process of moving from identifying a problem to finding a culturally appropriate solution remains at the forefront of work to eliminate health disparities.

MEN WHO HAVE SEX WITH MEN AND WOMEN

Another outcome of the collaborative effort to address HIV among college students was a study from the North Carolina Institute for Public Health, University of North Carolina at Chapel Hill and the North Carolina Division of Public Health, entitled *Men Who Have Sex with Men and Women: A Unique Risk Group for Transmission on North Carolina College Campuses*. It was conducted to better understand the role that men who have sex with men and women (MSM/W) play in the spread of HIV among young adults in the state. Specifically, the following factors were examined: the prevalence of MSM/W among newly diagnosed HIV-infected men, the social and behavioral characteristics of MSM/W as compared to MSM and MSW, and the sexual networks associated with HIV-infected college students among these groups.

North Carolina HIV/AIDS surveillance records for 18-30 year old men, who were newly diagnosed with HIV infection from January 1, 2000 to December 31, 2004, were reviewed. It was determined that compared to MSM, MSM/W were: more likely to be enrolled in college, to report >10 sexual partners in the year before diagnosis, or to have sex partners who were also MSM/W. In addition, the newly infected MSM/W were more likely to be young and black, and were significantly different than both MSM and MSW in demographics and risk-taking behavior. Sexual network analysis found a closely interconnected pattern of interactions among HIV-infected college students with MSM/W occupying a central position within the network (Hightow et. al 2006).

HIV KNOWLEDGE, ATTITUDES AND RISK AMONG NATIVE AMERICANS IN NORTH CAROLINA – NAIM SURVEY

Background

Native Americans in North Carolina are disproportionately affected by HIV and STDs. Since 1998, Native American HIV rates have been one and a half to two times higher than white rates while gonorrhea rates have been around five times higher. Syphilis rates among Native Americans have been consistently much higher than white rates, particularly during an outbreak

in Columbus and Robeson counties in 2001 (see Figures 8.4 and 8.5). Although the HIV rates, are not as dramatically elevated as the other STDs, the syphilis rates in particular indicate that the community is at high risk for HIV. The HIV/STD Prevention and Care Branch (the Branch) sought to better understand the Native American population in North Carolina in order to improve the effectiveness of HIV prevention programs.

The Branch partnered with the Native American Interfaith Ministry (NAIM), the North Carolina Commission on Indian Affairs (NCCIA), the University of North Carolina at Pembroke, and tribal leaders across the state to conduct a survey of Native American HIV knowledge, attitudes, and risk behaviors. The survey also contained questions regarding religion and spirituality, sources of health information and services, and access to health care. The self-administered survey was developed and tested using focus groups. Then from May to December 2003, the survey was conducted by staff from NAIM, UNC Pembroke, and tribal leaders. Participants were recruited at 20 different sites including powwows, colleges and universities, churches, bars, and community health screenings.

Demographics

There were 1,009 total respondents. Of these, 99 percent were Native American (972 self-identified as Native American race while 27 listed another race but identified as a member of one of the tribes). Nearly two-thirds of the respondents were female (65%), two listed their gender as "Transgender," and two were missing gender. The majority of the respondents identified as members of the Lumbee tribe (56.2%), followed by the Waccamaw Siouan (8.8%), Triangle Native American Association (8%), and Coharie (7.7%). Respondents ranged from age 7 to 80 and the mean age (32) and interquartile range (20-42) was the same for both males and females.

Attitudes

Most respondents felt that the average person should be concerned about HIV (75.2%) and that everyone should be tested (76.9%).

There were several questions pertaining to the power of knowledge and education in preventing HIV. The overwhelming response (over 78%) felt that knowledge was useful in preventing HIV, and 71 percent reported reading and listening to HIV information. Similar proportions felt empowered to prevent HIV themselves (72.1% and 80.3%).

The majority of respondents showed sympathy for those with HIV/AIDS. A high proportion agreed that people with HIV deserve family and community support (80.3%) and said that they have sympathy for infected persons (72.4%). A slightly lower proportion, but still a majority (55.1%), felt that government money should be spent on research.

Attitudes reflecting fear and discrimination were in the minority but still show cause for concern. Almost 40 percent reported that they avoided contact with HIV patients, 19.5 percent felt that children with HIV should not attend school, 36.17 percent approved of separate facilities (e.g., bathrooms) for HIV patients, and 21.3 percent felt that persons with HIV should not be allowed to work. A large proportion (38.6%) "would be embarrassed" if someone in their family had HIV, but the number agreeing with the most highly prejudiced questions was much smaller: HIV

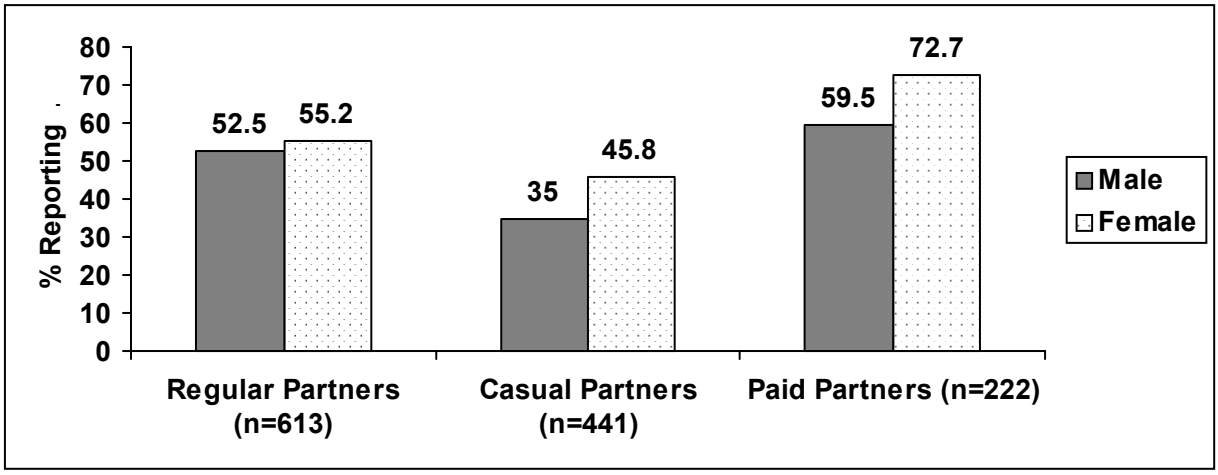
as a punishment to homosexuals (19.3%) and that only unfit mothers have children with HIV (10.5%).

The attitude questions were examined separately by gender, and in nearly all cases males and females responded similarly (within several percentage points). The only exception to this was that males were slightly more likely than females to believe that persons with HIV should not be allowed to work (26.7% vs. 18.6%).

Sexual Risk

There were 679 respondents who reported any sexual partners during the previous year (66% of female respondents and 70% of male respondents). The following discussion of sexual risk is restricted to these 679 sexually-active people.

Figure 5.3. Percent of Native Americans reporting NEVER using condoms, by partner type



Over 30 percent of both males and females reported any paid sex in the previous year. Twenty percent of the men and sixteen percent of the women reported anal sex in the previous year. Participants were asked about condom use with regular, casual, and paid sex partners. Those reporting paid sex partners were MOST likely to report never using condoms with those partners, (Figure 5.3). Persons reporting sex with paid partners did perceive themselves to be at greater risk for HIV than persons reporting sex with casual or regular partners but the proportion was still low (12.1% of males and 9.2% of females with paid partners felt at risk for HIV, compared to 7.8% and 5.4% with regular partners).

A small but potentially important minority of respondents reported that they could not buy condoms themselves (12.1%) or use them correctly (11.2%). A smaller number felt that they could not talk to partners about condoms (8.5%) or safe sex (8.1%).

Injection Drug Use Risk

There were 72 people (40 male, 32 female) who reported any injection drug use (IDU) in the previous year. Seventy percent of these IDUs did not perceive themselves to be at risk for HIV

even though 70 percent also reported needle sharing in the previous year. They also exhibited low self-efficacy with respect to IDU risks. Nearly a third of male IDUs (32.5%) and a fourth of females (25%) reported that they could not refuse to shoot up with a friend. More males (37.5%) and fewer females (15.6%) reported that they could not refuse to use a needle after a friend had used it.

HIV/AIDS Knowledge

The survey included 25 true-false knowledge questions. These questions were coded against the correct answers to assess the overall HIV knowledge level of the respondents (as a percentage of questions answered correctly). Overall, respondents scored quite well, with females doing slightly better than males. For males, the average score was 72.7 (IQR 60-84) and for females the average was 74.8 (IQR 68-84).

Those scoring in the bottom 25 percent of respondents were similar to the high scorers with respect to gender, tribal affiliation, and self-perception of HIV risk. However, certain high risk groups (IDU, anal sex, paid sex, any sex) and those in the youngest age groups were more likely to score in the lowest quartile (Table 5.11).

Table 5.11. Native American HIV knowledge and risk: odds of scoring in the lowest quartile among risk groups

	n Reporting	OR (odds ratio)	95% CI (confidence interval)
Any IDU last year	72	6.9	4.2 – 11.5
Anal sex last year	122	3.5	2.3 – 5.2
Paid sex last year	222	3.0	2.2 – 4.2
Age <20 years	220	2.9	2.1 – 4.1
Any sex last year	679	1.8	1.3 – 2.4
Age <30 years	541	1.6	1.2 – 2.1

Performance on individual questions ranged from 88.6 percent responding correctly to a low of 37.8 percent responding correctly. Most of the basic questions with respect to HIV transmission and prevention received high scores. Well over 80 percent of respondents knew that HIV could be transmitted via needles, sex, and pregnancy and that non-homosexuals are at risk. Most of the questions on which performance was poorest involved HIV statistics, biology, and treatment. Several questions posed some cause for concern, however. Over 21 percent of respondents still believe that HIV can be transmitted by sharing meals or linens or by other casual contact and only 58.3 percent believe that the blood supply is safe.

Spirituality

The survey included separate questions on religion and spirituality and one question referring to belief in God. The vast majority of the participants reported that they do currently believe in God (86.1%), with females being slightly more likely than males and those age 25-34 being slightly less likely than those older and younger. Very few respondents reported that religion and spirituality were “not important,” and males were more likely than females (about 18% compared to about 9% for females). The relationship with age was similar to the belief in God

question with the youngest (under 25) and oldest (age 35 and older) more likely to say that religion and spirituality were important.

Age was also consistently associated with finding strength in religion and spirituality and in using those beliefs to guide daily activities, with the oldest group most likely to agree (about 70%) and the youngest group least likely to agree (55-60%).

Participants reporting any sexual activity in the previous year were more likely than those not sexually active to report current belief in God (90.7% vs. 76.4%) and, by a smaller margin, more likely to feel that religion and spirituality are important (about 89% compared to about 85%). The association with risk-taking is most striking among those reporting any IDU activity in the previous year. Although 72.2 percent (52 of 72) report that they currently believe in God, 41.7 percent report that religion and spirituality are not at all important.

Sources of HIV/STD information

Participants were asked where they received information about HIV and STDs (Table 5.12.). The most frequently cited sources were friends, TV, and relatives while surprisingly small numbers of people reported receiving information from print media, radio, and the Internet.

Table 5.12. Sources of HIV/STD information among Native Americans in N.C.

Source	Pct. Reporting (n=1,009)
Friends	56.3%
TV	49.7%
Relatives	48.1%
Health Department	44.9%
Print Media	25.1%
Radio	17.9%
Internet	9.8%

Respondents 35 and over were more likely to report TV or health department as their information sources, while those under 25 were most likely to report the Internet. Most surprising was the association with any IDU activity. Injection drug users reported that they got most of their information from friends and relatives. They were half as likely to get information from the health department (23.6% vs. 46.5%). Very few reported getting information from radio, TV or print media and none of the 72 IDUs used the Internet to get health information.

HIV/STD services

County health departments were the most frequently reported source for HIV/STD testing services (51.5%). Personal physicians (42.7%), local clinics (41.6%), and hospitals (33.2%) were also common. A very low number reported seeking these services at tribal agencies (2.9%).

Sources of testing did not differ much by gender; even the county health department was cited as a source of testing almost equally among males and females. Age differences were seen with the higher age groups most likely to receive services at the health department, personal MD, and at

HIV/STD agencies. Injection drug users were less likely than non-IDUs to report services at the local health department (37.5% vs. 52.6%) or at a personal physician (27.8% vs. 43.9%).

Barriers to seeking HIV/STD services

Financial concerns were the most commonly cited barriers to seeking HIV/STD health care services (ability to pay 64.7%, lack of insurance 53.2%). Only 37.1 percent reported that transportation would be a barrier to seeking care. Even smaller numbers reported concerns about the sensitivity of providers (21.3%) or confidentiality (17.9%).

Again, responses were primarily similar across gender groups, with females surprisingly more likely to list insurance as a problem (55.6% compared to 48.1% for males). The older age groups were most likely to list transportation as a problem (about 42% compared to 29% among those under 25) and they were also more likely to list insurance as a major problem (68.9% in oldest group vs. 37.6% in the youngest). Surprisingly, the IDU group was less likely to list any barriers at all, especially providers, ability to pay, and insurance.

Lessons Learned

The results of this survey provide valuable information for planning HIV prevention activities for Native Americans in North Carolina.

The current HIV/AIDS knowledge level is relatively good but there are some clear areas for improvement. The respondents overwhelmingly expressed confidence in the effect of knowledge and education on HIV prevention, indicating that an educational campaign might be well received. Attitudes toward persons with HIV were generally sympathetic, but there were some fearful attitudes reflected in the responses. However, they could likely be remedied with improved HIV knowledge. For example, fewer people might be against HIV-positive children attending public schools if they better understood transmission.

Despite relatively good knowledge levels, as a whole, the respondents had an alarmingly low self-perception of HIV risk. This is despite a community history of syphilis epidemics in the recent past and was true even among those who engaged in high-risk activities such as paid sex and injection drug use. This low perception of risk is also reflected by the high numbers who report never using condoms, even with paid or casual partners. Making risk personal will have to be an integral part of HIV prevention campaigns for this group.

The number of people reporting transportation and cultural sensitivity of providers as barriers to accessing HIV/STD services was lower than expected. The most commonly reported barriers were financial in nature. This concern can likely be addressed by getting the word out to the community that many HIV/STD services can be obtained free at county health departments.

The survey results highlight Native American injection drug users as a group at extremely high risk and who will require special attention. As a group, these IDUs had lower knowledge levels and showed poor self efficacy with respect to protecting themselves against HIV through needle use. Very few perceive themselves to be at risk for HIV even though most share needles. They are also less likely to receive services or information from the health department and more likely to report problems with insurance and transportation.

It will be important to recognize the importance of spirituality to Native Americans in designing educational programs. Likewise, programs should be designed to access people through information sources they currently use. For example, a lay health educator model might work well since so many reported turning to friends and relatives for HIV/STD information. Very few reported using Internet and radio.

PART TWO: HIV/AIDS TREATMENT & CARE IN NORTH CAROLINA

What is the Impact of AIDS in North Carolina? (Chapter 6)

What are Ryan White HIV/AIDS CARE Act and Service Considerations? (Chapter 7)

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CHAPTER 6: THE IMPACT OF AIDS IN NORTH CAROLINA

HIGHLIGHTS

- As of December 31, 2005, the cumulative total of AIDS cases reported in the state was 14,785.
- 1,089 new AIDS cases were reported in North Carolina in 2005, or 12.7 cases per 100,000 persons. This represents a minute decrease from the previous year with 1,091 cases reported.
- The AIDS case rate in 2005 was nearly 10 times higher for blacks than whites. This disparity is higher than observed for HIV disease.
- N.C. was 10th among states reporting the highest number of AIDS cases in 2004.
- In 2004, North Carolina was ranked 13th among all states for reported AIDS cases per 100,000 population.
- From 2000 to 2004, N.C. AIDS case rates increased by 60.2 percent (8.3 to 13.3 per 100,000), while AIDS case rates for the nation only increased 4.2 percent (14.3 to 14.9 per 100,000).
- In comparing cases diagnosed in 2000 and 2002, most categories remained fairly stable or showed an increase in proportion of cases surviving longer than 36 months.
- From 2000 to 2002, the proportion of cases that survived more than 36 months increased most notably for those aged 35-44 and for injecting drug users (IDU).

AIDS

This section focuses on information that pertains specifically to AIDS in North Carolina. AIDS cases represent HIV-infected individuals who have reached a later, more serious, stage of disease and who meet the case definition for an AIDS diagnosis. This case definition includes confirmation of HIV infection along with CD4+ T-lymphocyte counts of less than 200 cells/μL or HIV infection with the presence of one of 23 clinical conditions indicating an impaired immune system. The date of AIDS report represents the date that an individual is reported as an AIDS case. Individuals are usually first reported with an HIV diagnosis and then later with an AIDS diagnosis. However, some individuals are reported with both an HIV diagnosis and an AIDS diagnosis at the same time.

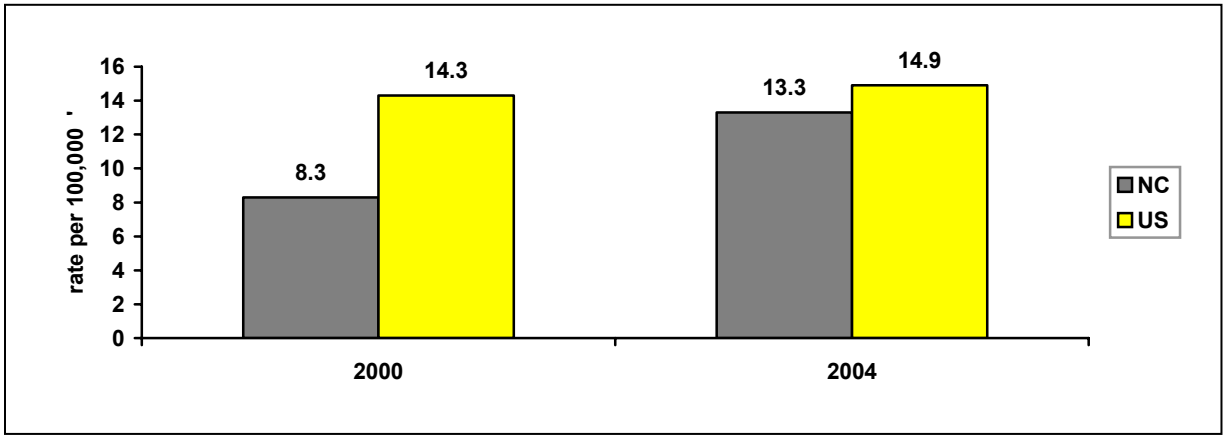
Monitoring changes in AIDS cases helps provide a valuable measure of the continuing impact of treatment as well as describing those who may not have access to care. Increases in reports may indicate that more individuals are not receiving effective treatments or that current treatments are

not as effective as they were earlier. Close attention should be paid to the demographic changes in AIDS cases, especially by agencies that provide care services for clients.

As of December 31, 2005, a total of 14,785 cases of AIDS (Table P, pp. D-23 to D-24) had been reported in the state since 1983 with North Carolina as residence at the time of diagnosis. In 2005, 1,089 new AIDS cases were reported in North Carolina with a rate of 12.7 per 100,000 population (Table O, pg. D-22). The number of cases reported is essentially the same as the previous year with 1,091 cases reported. Compared to 2001 (802), the 2005 AIDS reports (1,089) represented a 36 percent increase in new reports for this five-year period. The reasons for the reported increases in AIDS reports are varied and likely represent several factors. These factors include variations in access to medical care, changes in HIV treatment effectiveness over time, the expected progression of disease for the high number of individuals infected in the mid-1990s, and enhanced surveillance efforts to capture report information. It is important to remember that reporting delays can cause changes in the report totals for recent years. In North Carolina, diagnosed cases are sometimes not reported to the HIV/STD Prevention & Care Branch in a timely manner.

Comparing North Carolina to the nation is limited to earlier years because national surveillance data is released later than in-state data. According to the CDC, the national AIDS case rate (includes 50 states and the District of Columbia) in 2000 was 14.3 per 100,000 persons (CDC, HIV/AIDS Surveillance Report, 2002). This rate increased to 14.9 in 2004, which represented a four percent increase in new reports (Figure 6.1). During the same time period, North Carolina's AIDS case rate increased from 8.3 per 100,000 in 2000 to 13.3 in 2004, which represented a 60.2 percent increase. In addition, North Carolina was ranked 13th among other states in 2004 for reported AIDS cases per 100,000 population (CDC, HIV/AIDS Surveillance Report, 2004). As mentioned above, enhanced surveillance efforts may be responsible for some of the apparent increase in reports in North Carolina. Please note that the aforementioned rates are calculated by the CDC and may differ slightly from N.C. surveillance rates.

Figure 6.1. AIDS case rate for N.C. and U.S*., 2000 and 2004



* includes 50 states and the District of Columbia

There is growing concern about the impact of HIV/AIDS in the South (AL, AR, DE, DC, FL, GA, KY, LA, MD, MS, NC, OK, SC, TN, TX, VA, and WV). Although the South as a region comprised only 36 percent of the population, it accounted for 40 percent of the estimated AIDS prevalence and 46 percent of the AIDS incidence in 2003. In 2004, five of the top ten states reporting the highest number of AIDS cases were in the South (CDC, HIV/AIDS Surveillance Report, 2004). The impact of AIDS on blacks as group is particularly substantial. In the South, 55 percent of the estimated AIDS prevalence was found among blacks in 2003. At that time, almost 68 percent of persons living with AIDS in North Carolina were black. This ranked North Carolina sixth among states in its proportion of blacks represented in persons living with AIDS (Kates 2005).

Tables N and O (pp. D-21 and D-22) display the AIDS report cases and rates for the last five years. Changes in rates may indicate changes in anticipated care need for certain groups. In 2005, black males represented 47 percent of AIDS cases, black females represented 24 percent of cases, and white males represented 19 percent of cases. The case rate for AIDS among blacks was almost ten times higher than for whites. This disparity between blacks and whites is higher for AIDS cases than for HIV disease cases.

TREATMENT

As mentioned earlier, the introduction of new, more effective AIDS treatments such as antiretroviral therapy (ART) has made a tremendous impact on delaying the progression of HIV to AIDS. This was evident in national surveillance data as AIDS incidence and deaths dropped for the first time in 1996. North Carolina surveillance data also suggest that these treatments are having an impact.

Figure 6.2 shows the average number of years between a report with HIV and a report with AIDS in surveillance data. The increase in the time between reports indicates that these new treatments are likely slowing the progression from HIV to AIDS. It should be noted that the rate of increase has slowed since 2000. This, like the increase in AIDS reports, could indicate changes in treatment effectiveness or delivery of AIDS care. It will be important to monitor these trends closely in the near future.

Figure 6.2. Average number of years between first reported HIV diagnosis and first reported AIDS diagnosis in North Carolina, 1993-2005

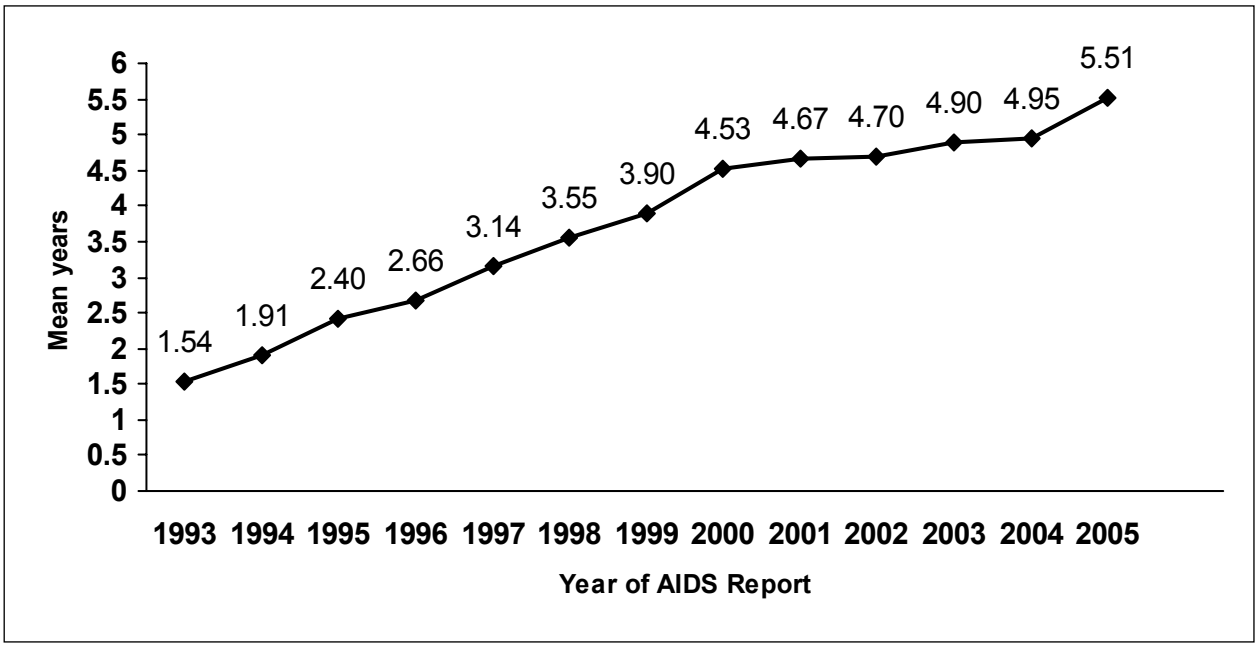


Table 6.1 displays the survival of AIDS cases after diagnosis for two years, 2000 and 2002. According to the CDC, the national survival of AIDS cases in 2000 was 90 percent for greater than 12 months, 86 percent for greater than 24 months, and 83 percent for greater than 36 months (CDC, HIV/AIDS Surveillance Report, 2004). This compares to 93 percent, 89 percent, and 84 percent (respectively) for North Carolina cases diagnosed in the same year. This accounts for approximately a four percent decrease for each category of survival. For cases diagnosed in 2000, smaller proportions of cases survived more than 36 months for blacks, persons aged 45-54 years, and injecting drug users. In comparing cases diagnosed in 2000 and 2002, most categories of persons remained fairly stable or showed an increase in proportion of cases surviving longer than 36 months; except persons aged 45 years and older. The largest gains observed were for persons aged 35-44 years and IDU.

Table 6.1. Months survival after an AIDS diagnosis, by year of diagnosis in North Carolina, 2000 and 2002

	Survival in Months 2000 AIDS				Survival in Months 2002 AIDS			
	No.	**> 12**	**>24**	**>36**	**No.**	**> 12**	**>24**	**>36**
Total *	649	92.8%	88.5%	84.3%	1053	90.0%	86.5%	84.8%
Race/Ethnicity								
White**	146	90.5%	89.1%	87.0%	256	91.8%	89.5%	88.7%
Black**	467	93.6%	88.2%	83.3%	737	89.0%	85.2%	83.2%
Other	36	91.7%	88.9%	86.1%	58	94.8%	89.6%	87.9%
*non-Hispanic								
Gender								
Male	480	92.8%	89.0%	85.2%	762	90.3%	86.8%	85.4%
Female	169	92.9%	87.0%	81.7%	291	89.0%	85.6%	83.2%
Age (dx)								
15-24 Years	56	94.8%	90.1%	84.9%	93	91.4%	87.1%	86.0%
25-34 Years	192	91.3%	87.0%	83.5%	313	92.0%	87.5%	85.6%
35-44 Years	255	93.1%	87.2%	82.2%	387	91.8%	89.2%	87.6%
45-54 Years	101	86.0%	83.7%	81.4%	191	86.9%	84.3%	82.2%
>55 Years	43	94.8%	90.1%	84.9%	66	77.3%	71.2%	69.7%
Mode of Exposure (Males)								
MSM	165	95.1%	93.3%	90.3%	292	93.5%	90.1%	90.1%
IDU	76	84.1%	80.2%	76.3%	76	89.5%	85.6%	80.3%
MSM/IDU	19	94.8%	89.5%	84.2%	25	96.0%	96.0%	96.0%
Heterosexual	100	100.0%	94.0%	87.0%	155	92.9%	87.7%	85.8%
All Other***	120	88.4%	84.2%	82.5%	214	84.1%	81.3%	79.4%
Mode of Exposure (Females)								
IDU	30	83.3%	80.0%	76.7%	31	83.9%	83.9%	83.9%
Heterosexual	79	96.2%	88.6%	83.5%	158	88.6%	84.8%	82.9%
All Other***	60	93.4%	88.4%	81.7%	102	91.1%	87.2%	83.3%

* excludes persons whose date of death is before, or in the same month as, data of diagnosis.
non-Hispanic * includes all other risk categories including NIR (no risk reported)

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CHAPTER 7: RYAN WHITE HIV/AIDS CARE ACT AND OTHER SERVICE CONSIDERATIONS

HIGHLIGHTS

- 7,097 clients received or accessed Ryan White Title II funded services in 2005.
- The majority of services for Ryan White Title II clients involved case management and client advocacy.
- During calendar year 2005, approximately 4,025 individuals were enrolled in North Carolina's ADAP (AIDS Drug Assistance Program).
- The demographics of Ryan White Title II clients and ADAP enrollees are generally similar to the observed demographics of all persons listed as living in North Carolina with HIV or AIDS at the end of 2005.
- In fiscal year 2005-2006, about 2,346 clients and families received HOPWA (Housing Opportunities for Persons with AIDS) services.

RYAN WHITE

This section focuses on information that pertains to Health Resources and Services Administration (HRSA) HIV/AIDS care planning and programs. Specifically, this section characterizes some patterns in the use of HIV care services by a number of populations in North Carolina. Some of the information provided is based on surveys of HRSA-funded programs in the state.

In 1990, Congress enacted the Ryan White Comprehensive AIDS Resources Emergency (CARE) Act to provide funding for states and territories, eligible metropolitan areas (EMAs), and direct grants to individual providers to offer primary medical care and support services for persons living with HIV disease who lack health insurance and financial resources for their care. Congress reauthorized the Ryan White CARE Act in 1996 and in 2000 to support Titles I-IV, Special Projects of National Significance (SPNS), the HIV/AIDS Education Training Centers and the Dental Reimbursement Program, all of which are part of the CARE Act. The program is now up for reauthorization in 2005. Title program support varies from state to state depending on program requirements and mandates, distribution of HIV/AIDS cases and other factors.

Title II funding

Title II funding is state/territory-based and is designed to improve the quality, availability, and organization of health care and support services for individuals and families living with, or affected by, HIV disease in each state or territory. The state administers the Title II program and provides funding for services to care eight consortia and other local service providers.

Descriptions of the clients and services provided through consortia and all other funded providers are collected through a HRSA-sponsored computer software program called CAREWare. At its core, CAREWare collects and stores data for completion of the annual CARE Act Data Report (CADR). Moreover, CAREWare is a tool used to move programs beyond mere data reporting and into information management and quality improvement (QI). Using the various components of CAREWare allows programs to monitor a number of clinical and psychosocial indicators in a way that satisfies both Continuous Quality Improvement (CQI) initiatives and CADR requirements. Calendar year (CY) 2005 marks the third full year in which data was collected and submitted via the CAREWare computer software program. Table 7.1 summarizes the CAREWare service information for Title II clients during 2005. The majority of visits involved case management (n=21,240) and client advocacy (n=16,782). The complete data includes service information as well as clinical information. The baseline data provided for CY 2005 will be used to evaluate the Quality Improvement/Quality Assurance initiative that began in January 2004 and continues through the present.

Table 7.1. Services provided to Ryan White Title II clients, 2005 (CAREWare)

SERVICES	No. Clients	% Clients Receiving Service (n=7,097*)	No. of Services Provided (n=70,080*)
Ambulatory/outpatient medical services	4,130	58.2%	12,860
Oral health services	472	6.7%	1,321
Case management services	2,491	35.1%	21,240
Client advocacy	3,371	47.5%	16,782
Day or respite care for adults	2	>0.1%	17
Emergency financial assistance	1,685	23.7%	4,180
Food bank/home-delivered meals	1,129	15.9%	4,108
Health education/risk reduction	465	6.6%	859
Home health: para-professional care	3	>0.1%	41
Legal services	223	3.1%	377
Mental health services	147	2.1%	862
Nutritional counseling	22	0.3%	26
Permanency planning	22	0.3%	28
Psychosocial support services	164	2.3%	586
Referral Clinical Research	26	0.4%	33
Referral for health care/supportive services	456	6.4%	680
Substance abuse services: outpatient	35	0.5%	216
Transportation services	1,175	16.6%	4,415
Treatment adherence counseling	238	3.4%	635
Other services	661	9.3%	804

*persons may receive more than one service

In CY 2005, a total of 7,097 unduplicated clients received services funded through Ryan White Title II awards in North Carolina. During 2005, the distribution of Title II CARE Act clients by race/ethnicity, gender and age was similar to the distribution of these characteristics among persons known to be living with HIV/AIDS in North Carolina at the end of 2005 (Table 7.2).

Table 7.2. N.C. living HIV/AIDS cases, Ryan White Title II and ADAP clients, 2005

	Ryan White Title II clients	ADAP enrollees CY 2005	Persons living with HIV/AIDS (12/31/2005)
	(n=7,097)	(n=4,025)	(n=18,900)
Gender			
Male	63.5%	71.6%	68.5%
Female	36.1%	28.5%	31.5%
Transgender	<1%	0.0%	-
Race/ethnicity			
White*	23.5%	30.2%	24.9%
Black*	66.9%	59.6%	69.9%
Am Indian/ Al Native*	1.1%	1.1%	<1%
Asian/PI*	<1%	<1%	<1%
Hispanic	5.1%	7.4%	3.7%
Unknown	3.2%	1.2%	<1%
Age Group			
<2	<1%	0.0%	0.0%
2-12	<1%	<1%	<1%
13-24	3.7%	3.2%	4.2%
25-44	55.0%	56.5%	56.2%
45-64	39.4%	38.5%	37.0%
65 and over	1.4%	1.8%	2.1%
Unknown	0.0%	0.0%	<1%

* includes Hispanics for Title II groupings; represents non-Hispanics for the others

State estimates of the number of people reported with HIV/AIDS and listed as living by county of residence and sorted by consortia are found in Table L (pp. D-16 to D-18). This estimation of reported people living with HIV can be used to approximate care needs or anticipated care needs within the consortia.

Measuring "Unmet Need"

As part of its cooperative funding agreements, the Health Resources and Administration (HRSA) requires that each state estimate its "unmet need" for HIV-infected people. HRSA has defined "unmet need" as an estimate of persons who know they are HIV positive, but are not accessing health care or considered "in care." "Health care" for this purpose is defined as 1) receipt of a CD4 or an HIV viral load test within a 12-month period, or 2) receipt of antiretroviral drugs for

HIV within a 12-month period. Note that all other testing, including routine diagnostic tests such as EIA/WB screening, is not considered as part of the definition of "in care."

Unfortunately, no single source of data exists that contains this level of information for all HIV-infected people in North Carolina. Public health surveillance data, which is very comprehensive, contains information about initial diagnosis of HIV and AIDS, but has very limited information about ongoing health care. Additionally, agencies and programs that serve HIV-infected clients generally maintain only information about clients that they serve. Because some providers receive public funding to provide care, some outside documentation is available; however, private providers generally do not report such information to outside (or centralized) agencies, so estimating "unmet need" is problematic.

An updated estimation of "unmet need" in North Carolina is currently in progress. The current estimation includes data extracted from a variety of data sources for the 12-month period of 1/1/2004 through 12/31/2004. These data sources include Medicaid, ADAP (AIDS drug assistance program), CAREWare and (larger) providers across the state. Information from the aforementioned sources will be reviewed to estimate the number of persons (living on 01/01/2004) within the North Carolina HIV/AIDS reporting system (HARS) who are "in care." The complete results of this assessment will soon be available.

AIDS DRUG ASSISTANCE PROGRAM (ADAP)

Since 1987, Congress has appropriated funds to assist states in providing AIDS patients antiretroviral therapy (ART) approved by the Federal Drug Administration (FDA). With the initial passage of the Ryan White CARE Act in 1990, the assistance programs for ART were incorporated into Title II and became commonly known as ADAP. ADAP now provides FDA-approved HIV-related prescription drugs to underinsured and uninsured persons living with HIV/AIDS. For many people with HIV, access to ADAP serves as a gateway to a broad array of health care and supportive services as well as other sources of coverage, including Medicaid, Medicare and private insurance.

North Carolina's HIV Medications Program (or ADAP) uses a combination of state and federal funds to provide low-income residents with assistance in purchasing medications to fight HIV/AIDS and the opportunistic infections that often accompany the disease. In order for someone to be eligible for ADAP in North Carolina, the individual must have a net family income that is at or below 125 percent of the federal poverty level, not have third-party coverage (e.g., private insurance or Medicaid), and meet other program criteria. During CY2005, just over 4,000 individuals were enrolled in N.C. ADAP. Table 7.2 displays the demographics on enrollees at that time. ADAP enrollees represent a population that is generally similar demographically to the total number of persons who were living with HIV or AIDS during CY 2005.

North Carolina's ADAP Program had a waiting list for part of CY2005. People in the state benefited greatly from the Special Presidential ADAP (SPAI) Initiative announced in June 2004. Under this Initiative, a total of $20 million was made available to 10 states that had waiting lists in June 2004. North Carolina, with 800 individuals on the waiting list as of that date, received the largest share of the benefit. People were enrolled in and began to receive services under this

Initiative in October 2004. As of May 2005, North Carolina had enrolled its allotment of 800 into the program. That number was maintained for most of the remainder of CY 2005. The major concern was that although the initial announcement of the initiative described it as a two-year operation, no funding was identified for the second year. Year-one funds lasted through December 2005, when the Special Initiative came to an end. Fortunately, because of the availability of some "one-time funding," all of the NC SPAI clients were able to be transferred to/absorbed by the state ADAP program as of January 2006.

As part of an effort to make existing resources go farther, the N.C. ADAP Program decided to change its basic operation from a "reimbursement" model to a "direct purchase/central pharmacy" model program. The transition of the N.C. ADAP Program to the "direct purchase/central pharmacy" model occurred on July 1, 2005. The program intends to use whatever savings are obtained to increase the number of individuals served. While the exact amount that the program will save from this transition is not yet available, preliminary analyses suggest that the savings will be in the range of 8 to 14 percent. The number of additional clients who will be able to be enrolled in and served by the program is extremely dependent on a variety of variables, including the medication regimens that clients are actually using, the actual utilization of the medications and the program by enrolled clients, the availability of new medications, the price of all covered medications, etc. It should be noted, however, that while the anticipated result of such a change to a direct purchase model should be the ability to serve some additional clients, it is not currently anticipated that the savings obtained by this change by themselves will allow the program to permanently eliminate the existence of waiting lists and/or to enable the program to significantly increase the financial eligibility criterion. The actual amount of savings will likely not be known until the revised program is actually in place and running for at least a year, and a full year's worth of data are available for analysis.

One other activity has contributed to the resources available to ADAP and to the ability to serve additional clients. The program has recovered more than $2 million in payments that had been made over the past several years on behalf of clients who were, in fact, Medicaid- eligible at the time of service.

All of these factors facilitated the ability to transition the SPAI clients into the State ADAP Program and have allowed it to remain open to new clients through the first half of CY 2006. However, all of these factors, with the exception of the change in the operational model of the program, contributed "one-time only" funds/services. Therefore, the program will closely monitor utilization and expenses over the course of the next months to determine what course must be followed in order to continue to optimally serve low-income North Carolinians living with HIV disease.

HOUSING OPPORTUNITIES FOR PERSONS WITH AIDS (HOPWA)

Since 1992, the federal government has allocated more than $2.3 billion for the HOPWA program to support community efforts to create and operate HIV/AIDS housing and provide related services. Eligible Metropolitan Statistical Areas (EMSA) and states receive direct allocations of HOPWA funding when 1,500 cumulative cases of AIDS are diagnosed in a U. S. Department of Housing and Urban Development (HUD)-determined geographic region. For FY

2005, HUD awarded formula HOPWA grants to 122 jurisdictions, including 83 cities, on behalf of their EMSAs, and 39 states for areas outside of any EMSA in that state.

The purpose of the HOPWA Program is to devise long-term comprehensive strategies for meeting the housing needs of persons and their families who are living with acquired immunodeficiency syndrome (AIDS) or related diseases. The AIDS Care Unit of the HIV/STD Prevention & Care Branch administers HOPWA on a statewide level. Originally, HOPWA funds were used solely for emergency rent, mortgage and utility payments. Currently, the program provides funds to family care homes, adult day care/day health service centers, HIV care consortia, housing authorities and other nonprofit agencies that provide housing and related services to persons living with HIV/AIDS. In order for someone to be eligible for HOPWA, the individual must be HIV-positive and have an individual or family income that does not exceed 50 percent of the median income for the state of North Carolina and the county of residence.

In fiscal year (FY) 2005-2006, approximately 2,346 clients and families received HOPWA services. The services provided include, but are not limited to, short-term rent, mortgage and utility payments, tenant-based rental assistance, and supportive services (i.e., nutrition, transportation).

The HOPWA program continues to collaborate with the Consolidated Plan Partners, Department of Community Assistance (CDBG Program), Office of Economic Opportunity (ESG Program) and the North Carolina Housing Finance Agency (HOME Investment Program), to assess the housing and community development needs and priorities of low- to- moderate-income individuals throughout the state.

PART THREE: SEXUALLY TRANSMITTED DISEASES OTHER THAN HIV/AIDS IN NORTH CAROLINA

What is the impact of sexually transmitted diseases other than HIV/AIDS in North Carolina? (Chapter 8)

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CHAPTER 8: STDS OTHER THAN HIV/AIDS IN N. C.

HIGHLIGHTS

- Early syphilis rates dropped from 15.1 cases per 100,000 population in 1999 to a low of 4.7 in 2003. Male early syphilis rates began to rise in 2004 and again in 2005, while female rates continued to decline.

- The increase in male syphilis rates in 2004 and 2005 is largely associated with an outbreak in Mecklenburg County. The county reported 13 percent (n=30) of the total PSEL male cases for the state in 2003; that grew to 30 percent (n=102) in 2005. Wake County also saw an increase in male cases during this time period (n=27 cases in 2003 to n=56 cases in 2005). Further investigation of the Mecklenburg reports revealed that many of the male cases were linked to MSM activity.

- Among females, early syphilis cases in nearly all counties continued to decline. The marked exception was Mecklenburg County, where female cases rose from 12 in 2003 to 40 in 2005.

- Seven counties (Cumberland, Durham, Forsyth, Guilford, Mecklenburg, Robeson and Wake) accounted for 70.0 percent of early syphilis reports (primary, secondary, early latent) and ranked as the top seven counties in number of syphilis reports for 2005.

- Racial disparities in syphilis rates among males have declined from 1999 to 2003 because minority rates are dropping faster than white male rates. In 2004 and 2005 the number of white male cases increased, further narrowing the disparity. In 2005 black male rates were four times higher than whites and Hispanic rates were two times higher.

- Gonorrhea rates decreased 19 percent among males and 8 percent among females from 2001 to 2005. Large decreases among non-Hispanic black males and females account for the major part of the decline.

- Severe racial disparities in gonorrhea incidence rates are on the decline among males. In 2001, rates among black males were 32 times the rates for white males. The disparity decreased to 22 times higher in 2005. Disparities among females have remained relatively steady, with black female gonorrhea rates 10-14 times higher than rates for white females during the five-year period.

- Chlamydia reported cases and rates have increased among females of all ages from 2001 to 2005. This is largely due to the increasing number of women who are screened for chlamydia each year as part of the Infertility Prevention Project.

- Racial disparities in female chlamydia reports have remained stable over the past five years (2001-2005), with a rate seven to eight times more among black females than among whites and a rate three to five times more among American Indian/Alaska Native and Hispanic females than among whites.

- Chlamydia prevalence among women tested in publicly funded clinics has declined 29 percent, from 6.7 percent prevalence in 2001 to 5.7 percent prevalence in 2003. This reflects changing screening protocols that have added older women, who are at lower risk for chlamydial infection than younger women.

REPORTABLE STDS IN NORTH CAROLINA

In addition to HIV and AIDS, 18 other sexually transmitted conditions are reportable to the North Carolina Department of Health and Human Services (N.C. DHHS). Cases of syphilis (eight possible stages), gonorrhea (genito-urinary/non-PID or opthalmia neonatorum), chancroid, and granuloma inguinale must be reported to the local health department within 24 hours of diagnosis. Lab-confirmed chlamydia, lymphogranuloma venereum (LGV), nongonococcal urethritis (NGU – usually assumed to be non-lab confirmed chlamydia; in females this is referred to as mucopurulent cervicitis or MPC), and pelvic inflammatory disease (PID – due to any cause, usually gonorrhea or chlamydia, females only) must be reported within seven days. Hepatitis A and B can be transmitted through sexual contact, but the HIV/STD Prevention & Care Branch does not provide surveillance for those reports. Acute cases are reportable within 24 hours to the local health department, and statewide surveillance is directed by the General Communicable Disease Control Branch at N.C. DHHS.

Table 8.1. North Carolina reportable sexually transmitted diseases, 2005

	Sex			
	Male	Female	Unknown	Total
Chlamydia (lab-confirmed)	5,481	25,702	0	31,183
Gonorrhea	7,529	7,546	0	15,075
Syphilis				
Primary Syphilis	81	15	0	96
Secondary Syphilis	135	43	0	178
Early Latent Syphilis	127	88	0	215
Late Syphilis	80	71	0	151
Late Latent Syphilis	34	25	0	59
Late Syphilis w. symptoms	0	0	0	0
Neurosyphilis	0	2	0	2
Congenital Syphilis	5	5	1	11
Syndromic Diagnoses				
Nongonococcal Urethritis (NGU)	5,318	n/a	0	5,318
Mucopurulent Cervicitis (MPC)	n/a	24	0	24
Pelvic Inflammatory Disease (PID)	n/a	382	0	382
Other STDs				
Chancroid	5	0	0	5
Granuloma Inguinale	1	3	0	4
Lymphogranuloma Venereum (LGV)	3	0	0	3
Opthalmia Neonatorum (gonorrhea)	0	0	0	0

Table 8.1 describes all STD cases reported to the HIV/STD Prevention & Care Branch in 2005. The remainder of this report will focus on the three most commonly reported conditions: lab-confirmed chlamydial infection, gonorrhea and syphilis. Although NGU and MPC are reported in relatively high numbers, they will not be discussed in detail because they are difficult to interpret. Each is a diagnosis of exclusion, with given physical characteristics and the documented absence of Neisseria gonorrhoeae. Though they can be caused by several different organisms, most cases of NGU and MPC are assumed to be Chlamydia trachomatis, but since they are not laboratory confirmed it would not be accurate to group these diagnoses with the chlamydia cases. Similarly, PID is a syndromic diagnosis with multiple possible causes, the most common being gonorrhea and chlamydia. In 2005, there were 382 cases of PID reported to N.C. DHHS. Since an estimated 10 percent of female chlamydia infections will eventually lead to PID (Westrom, 1999), this represents a drastic underreporting of PID cases. Other reportable STDs are almost non-existent in the state of North Carolina. In 2005 there were five cases of chancroid reported (1 in 2004, 2 in 2003), four cases of granuloma inguinale (none in the previous two years), and three cases of lymphogranuloma venereum (3 in 2004, 2 in 2003). There have been no reported cases of opthalmia neonatorum (opthalmic infection with N. gonorrhoeae in infants) for the past five years (2001-2005).

Hepatitis

Hepatitis A virus (HAV) is spread from person to person by the fecal-oral route. Many outbreaks are due to food or waterborne transmission, but others can be traced to sexual contact. Increases in the male-to-female ratio of cases may indicate sexual transmission among men who have sex with men (MSM). Hepatitis B (HBV) is a bloodborne virus, spread from person to person through sharing injection equipment, accidental needle sticks, and sexual activity. Transmission via donated blood products is also possible but rare, due to careful screening of the blood supply. As with hepatitis A, changes in the male-to-female ratio may indicate MSM transmission. However, it should be noted that a greater percentage of injection drug users may also be male, making this interpretation less clear than that for HAV. Both HAV and HBV infection can be prevented through vaccination.

Hepatitis C (HCV) is also a bloodborne infection but, unlike HBV, there is no available vaccine. It also differs from HBV in that transmission is most commonly associated with sharing needles, syringes or other injection equipment, or sharing other personal items that may have blood on them (e.g., razors, toothbrushes). The efficiency of sexual transmission of HCV appears to be low compared to HBV (Lemon 1999). Nonetheless, approximately 15 percent of reported chronic HCV cases in the U.S. may be associated with sexual transmission (Alter 1998).

Table 8.2 shows Hepatitis A, B, and C cases and male-to-female ratios for 2001-2005. The ratio for HAV has declined steadily since 2002 and for 2005 there were an equal number of male and female cases. The ratio for acute HBV has been gradually increasing which may indicate some male-to-male sexual transmission. The trends for chronic HBV and for HCV have been more stable.

Table 8.2. Hepatitis A , B, and C — male : female ratios and cases, 2001-2005

	2001	2002	2003	2004	2005
Hepatitis A	2.1 (164/78)	3.3 (160/48)	1.9 (81/43)	1.1 (54/51)	1.0 (42/42)
Hepatitis B acute	1.7 (139/82)	1.7 (145/87)	2.0 (109/54)	1.9 (119/63)	2.6 (121/46)
Hepatitis B chronic	1.5 (388/255)	1.3 (500/379)	1.3 (568/448)	1.4 (433/314)	1.4 (490/348)
Hepatitis C	1.8 (14/8)	1.1 (15/14)	0.1 (1/12)	0.5 (4/8)	0.6 (8/13)

NON-REPORTABLE STDS IN NORTH CAROLINA

It is worth noting that there are a number of important sources of sexually transmitted illnesses that are not reportable in the state of North Carolina.

Human papillomavirus (HPV)

There are approximately 30 strains of human papillomavirus (HPV) that can be sexually transmitted. Most strains produce no symptoms in infected individuals, but there are a few strains associated with genital warts and others associated with the development of cervical cancer in females. Because most infected people are asymptomatic, extensive screening would be required to diagnose most infections. Screening is costly and most infected people have no serious health outcomes associated with HPV infection. Therefore, the available screening efforts focus on the detection of cervical cancer rather than HPV infection. On average, over 300 cases of cervical cancer are reported in North Carolina each year (N.C. SCHS 2005). Infection with HPV is not reportable, but the CDC estimates that at least 50 percent of sexually active adults will acquire HPV at some point during their lives (approximately 6.2 million new infections per year in the U.S. (CDC, HPV Fact Sheet, 2006).

In June of 2006 a new vaccine for HPV was licensed by the Food and Drug Administration (FDA). This vaccine contains four HPV strains, two that cause 90 percent of genital warts (types 6 and 11), and two that cause 70 percent of cervical cancer (types 16 and 18). The vaccine will be targeted for use in females age 9-26 years. A second vaccine containing only the cervical cancer strains is currently in the final stages of testing (CDC, HPV Fact Sheet, 2006).

Genital Herpes

Most cases of genital herpes are caused by type 2 herpes virus (HSV-2), though some are also caused by type 1 virus (HSV-1) which also causes oral cold sores. Symptoms are worst immediately following infection; subsequent outbreaks decrease in severity. The most severe consequence of genital herpes is transmission to newborns during birth, a rare event. The CDC estimates that 45 million adolescents and adults in the U.S. have had genital herpes infection (CDC, HSV Fact Sheet, 2004). Herpes is not reportable for a number of reasons. Historically, there have not been good diagnostic tests available. Also, many incident cases are likely to be

missed and reporting therefore would largely represent prevalent cases of unknown duration. This may change in the future, given that testing procedures have improved and new evidence indicates that HSV-2 infection may increase susceptibility to HIV infection.

Trichmoniasis

Trichmoniasis is an STD caused by infection with the parasite *Trichomonas vaginalis*. Most males and some females are asymptomatic. Identified cases (primarily females) can be treated with antibiotics. The CDC estimates approximately 7.4 million new infections per year in the U.S. (CDC, Trichmoniasis Fact Sheet, 2004). Like herpes, diagnostic testing issues and underestimation of the seriousness of the disease kept *T. vaginalis* infection off the reportable disease lists.

Bacterial vaginosis (BV)

Bacterial vaginosis (BV) is the most common vaginal infection in women of childbearing age. It can be caused by a number of different bacteria. The role of sexual transmission is not well understood and no single causal organism has been isolated. Women can be treated for the infection but there is no evidence that treatment of partners prevents it. However, women who have not had sexual intercourse rarely have BV. Most of the time, BV causes minor discomfort but no major complications. However, some studies have found associations between BV and increased risk of PID, complications of pregnancy, susceptibility to other STDs, and transmissibility of HIV (CDC, BV Fact Sheet, 2004). The condition is not reportable largely because it is syndromically diagnosed and it is unclear how reporting will aid in case reduction.

CHLAMYDIA

Chlamydia disease

Chlamydia is the most frequently reported bacterial STD, and it is easily treated with antibiotics. When symptoms occur, they include discharge and painful urination. However, approximately three-quarters of infected females and half of infected males have no symptoms at all (CDC 2006, Chlamydia Fact Sheet). Nevertheless, the infection can cause severe damage to the female reproductive tract, including infertility and PID. For this reason, the CDC and the N.C. HIV/STD Prevention & Care Branch currently recommend that all sexually active females age 24 years and under, as well as all pregnant women, be screened for asymptomatic chlamydia. There are no comparable screening programs for young men.

Chlamydia reporting

North Carolina law states that all cases of chlamydial infection must be reported to the local health department within seven days. Laboratory confirmation of chlamydia cases takes place at a number of private labs; most public clinics send their samples to the State Laboratory of Public Health. Results are returned to the provider, who reports them to the local health department. Infected patients are treated and encouraged to bring their partners in for treatment but there is no formal partner notification procedure. Morbidity reports are forwarded to HIV/STD Prevention and Care Branch at the State Division of Public Health where information on patient

demographics and disease diagnosis is compiled for analysis. Chlamydia cases for males are severely underreported and are of little use in estimating prevalence or incidence of disease. The data for females is better, although cases are still underreported and may be biased toward public clinics which are more likely to both screen and report cases found. Case information is collected in aggregate so it is possible for accidental duplicates to occur.

Chlamydia trend analysis

Gender

The vast majority (consistently over 80%) of reported chlamydia cases are among females due to screening bias. Male cases are often detected when a female partner tests positive through screening and refers the male for testing and treatment. The number of male cases reported increases as the number of female cases increases but the proportions of each remain relatively consistent. In 2005, 18 percent of the 31,183 cases reported were among males.

Age

Chlamydia is predominantly found in younger age groups. For males, the highest rates are consistently found in the 20 to 29 age group, followed by 13 to 19. For females the trend is reversed, with 13 to 19 year olds having the highest rates, followed by 20 to 29 year olds (Table Q, pg. D-25). Reported cases and rates have been on the rise for all age groups, most likely reflecting more screening. Rates among 20-29 year old females rose by over 35 percent from 2000-2004, compared to a 25 percent rise for age 13-19 years. This difference is most likely due to changing standards for screening. Prior to January 1, 2002, chlamydia screening of all asymptomatic women age 19 years and under receiving care at publicly funded clinics was recommended. On that date the age was raised to 22 and then on July 1, 2002 it was raised again to women aged 24 years and under. Correspondingly, both the number of women screened and the number of cases identified has increased in the 20 to 29 age group.

Race/Ethnicity

Chlamydia case reports reflect severe racial disparities that have remained relatively consistent over the past five years. The rates among black, non-Hispanic males are 9-10 times the rates for whites, and the rates for Hispanics are 3-4 times the rates for whites (Table R, pg.D-26). The data for females, which are slightly more reliable, is nearly as severe, with black chlamydia rates seven to eight 7-8 times higher than white rates, and American Indian/Alaska Native and Hispanic rates each three to five times higher. It is very likely that these disparities are due, at least in part, to screening and reporting bias.

Chlamydia prevalence data

Most county health departments in North Carolina do not have adequate laboratory facilities to process chlamydia tests, so they use the State Laboratory of Public Health in Raleigh (State Lab). Information is collected on both positive and negative tests for estimating prevalence and for program evaluation. This data is subject to a certain degree of bias because it reflects testing that occurred only in publicly funded clinics and does not include most tests from the five counties

with the largest health departments (Durham, Forsyth, Guilford, Mecklenburg and Wake). In 2004, most of the women tested came to the clinics for family planning, prenatal or other regular services and met the age criteria for screening. Around a fifth of the women tested came to the clinics for a medical problem (which could include STDs) or to request testing. Almost 70 percent of the women screened were in the recommended age group of age 24 years and under. This is consistent with data from prior years.

In May of 2004, the State Lab changed to a more sensitive test for all chlamydia testing. This has had a major impact because the new test is detecting cases of chlamydia that the older, less sensitive test was missing. So, the overall positivity went up in 2004 after five years of consistent decline (from 6.7% in 2001 down to 5.7% in 2003, Table 8.3). In order to better assess the changes in positivity, Table 8.4 shows data separated by test type. This illustrates that the downward trend did indeed continue into 2004. When the new test was introduced mid-2004, the positivity spiked from 5.4 percent under the old enzyme immunoassay (EIA) test to 8.8 percent under the new nucleic acid amplification test (NAAT). Positivity then dropped again in 2005 using NAAT testing. Because the NAAT test has not been used for even two full years, the remainder of this discussion describes trends in the EIA testing from 2000 to 2004.

Table 8.3. Women tested for chlamydia in publicly funded clinics, 2001-2005

	2001	2002	2003	2004*	2005*
Women tested (n)	97,930	99,026	102,225	103,708	108,871
Positive (n)	6,433	5,991	5,764	7,292	8,335
Missing Result (n)	1,418	1,038	1,061	1,517	42
Positivity (%)**	6.7	6.1	5.7	7.1	7.7

* Testing technology changed in May, 2004 ** Positivity excludes missing test results

Table 8.4. Women tested for chlamydia in publicly funded clinics, by test type 2001-2005

	2001	2002	2003	2004	2004	2005
Test Type	EIA	EIA	EIA	EIA	NAAT	NAAT
Women tested (n)	97,930	99,026	102,225	35,726	67,982	108,871
Positive (n)	6,433	5,991	5,764	1,891	5,401	8,335
Missing Result (n)	1,418	1,038	1,061	373	1,144	42
Positivity (%)**	6.7	6.1	5.7	5.4	8.8	7.7

** Positivity excludes missing test results

Age

The decline in positivity has occurred in nearly all age and racial groups. Each year, positivity remains highest among the 10 to 14 age group (10.5% in 2000 vs. 10.9% in 2004), then 15 to 19 (10.3% in 2000 vs. 8.5% in 2004), then 20 to 24 (7.3% in 2000 vs. 4.9% in 2003), and continues to drop with each older age group.

Race/Ethnicity

Racial disparities exist in the screening data but are not as severe as those posed in the data for reported cases. From 2000 to 2004, the annual positivity rates for white and black females have declined steadily to 3.0 percent for whites and 8.2 percent for blacks in 2003. Despite these declines, the positivity rate for black females is consistently 2.6-2.7 times higher than the white positivity rate. To some extent this may be due to the fact that more black women use the publicly funded sites. As an example, in the census year of 2000, 70.6 percent of the females in North Carolina were white but only 53.4 percent of those screened for chlamydia at these public clinics were white, while 36.5 percent of tested patients were black even though they represented only 22.6 percent of the state female population. A more thorough study would be needed to determine if there could also be a genuine difference in prevalence among these different racial groups.

NGU and MPC

Nongonococcal urethritis (NGU) in males and mucopurulent cervicitis (MPC) in females are both clinical diagnoses of exclusion. Although the CDC does have a specific case definition for MPC, in North Carolina it is not listed as a reportable disease. Rather, female NGU cases are recoded and listed as MPC in Table 8.1. The NGU case definition requires a certain set of physical symptoms to be present along with documented absence of infection with *N. gonorrhoeae*. This leaves the most likely cause of such infections as *C. trachomatis*. This diagnosis is often made locally without having to send samples to an outside lab for *C. trachomatis* testing. Antibiotics appropriate for chlamydial infection are most often used to treat the patient. However, there are other possible causes for NGU and MPC, making it inappropriate to group them with laboratory-confirmed cases of *C. trachomatis*.

There were 5,318 male cases of NGU reported in 2005 (Table 8.1). It is likely that a large number of these are actually unconfirmed chlamydia cases. In fact, the age and race distributions of male chlamydia and NGU cases are virtually identical. There were only 24 MPC cases reported, which reflects the widespread use of chlamydia testing in females.

GONORRHEA

Gonorrhea disease

Gonorrhea is the second-most commonly reported STD, behind chlamydia. Nearly all infected males experience symptoms, including discharge and burning on urination (Hook 1999). Many women also experience symptoms, though they may be mild. Like chlamydia, untreated gonorrhea can cause severe damage to the female reproductive tract, including PID and infertility.

Gonorrhea reporting

North Carolina law states that all cases of gonorrhea must be reported to the local health department within 24 hours. Laboratory confirmation of cases generally takes place at the local level and is reported directly to the local health department. Infected patients are treated and

encouraged to bring their partners in for treatment, but there is no formal partner notification procedure. As with chlamydia, morbidity reports are forwarded to HIV/STD Prevention and Care Branch at the State Division of Public Health, where information on patient demographics and disease diagnosis is compiled for analysis.

Gonorrhea is often symptomatic in males and slightly less so in females. Females entering publicly-funded prenatal care, family planning, and STD clinics are screened for asymptomatic gonorrhea. Males are screened at STD clinics only. Since males are more likely to have symptoms that would bring them to the STD clinic, the gender bias in gonorrhea reporting is not as severe as that for chlamydia reporting. Required laboratory reporting may also reduce some private vs. public provider bias in reporting.

Public clinics and local health departments are more likely to screen for asymptomatic infection and may do a better job of reporting gonorrhea cases than private doctors. This may contribute to racial bias in the data because larger proportions of public patients than private clinic patients are minorities. Case information is collected in aggregate, so it is possible for accidental duplicates to occur.

Gonorrhea trend analysis

For most age, race, and gender groups, gonorrhea reports are stable or declining (Table S, pg. D-27 and Table T, pg. D-28). Among males, rates dropped 19 percent from 2001 to 2005; females experienced a smaller decline of 8 percent. Decreasing rates among non-Hispanic black males and females accounted for the largest decreases. Rates among white males and females were comparatively low in 2001 and did not change greatly over the five-year period. Because gonorrhea reporting is of reasonable quality, it is safe to assume that, at least in part, this represents a true decline in incidence.

Gender

Overall rates for males are consistently a bit higher than the rates for females, and the male-to-female case ratio has remained stable at 1.1 to 1.0 for the last five years. In general, this would indicate a lack of large amounts of MSM transmission. However, examination of male and female trends by race indicates divergent trends. Among blacks and Hispanics, there are more male than female cases. For blacks, the ratio has remained stable at around 1.2 male cases for every female case. Among Hispanics, the ratio has seen a steady decline from 2.1 in 2001 down to 1.6 in 2005. This reflects the fact that during this period male cases have declined and female cases have increased. The trend is exactly opposite for whites and American Indians, where there are consistently more female than male cases. For whites, the female-to-male ratio has been around 1.6 for the past five years; for American Indians it has varied more, from 1.5 to 2.8.

Under the assumption that most people choose sex partners of their same race/ethnicity, this may indicate some MSM transmission of gonorrhea among black and Hispanic males. Conversely, the assumption about partner selection may be incorrect or the trend may simply reflect some aspect of case detection, reporting, or the disproportion of males to females within the population. Detailed surveillance of rectal gonorrhea would assist in understanding this type of trend.

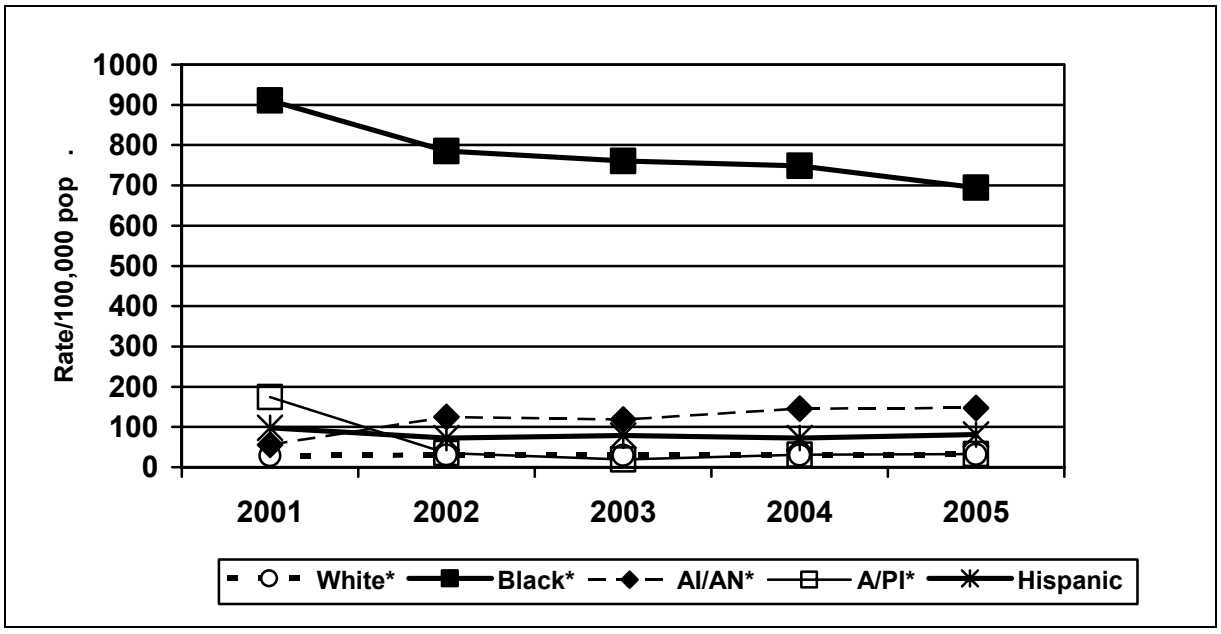
Age

Gonorrhea is predominantly found in younger age groups, and the relative rates mirror the chlamydia trends with respect to age. For males, the highest rates are consistently found in the 20 to 29 age group, followed by 13 to 19; for females the trend is reversed, with 13 to 19 year olds having the highest rates, followed by 20 to 29 year olds (Table S, pg. D-27).

Race/Ethnicity

Gonorrhea case reports reflect severe racial disparities. The differences are most dramatic among males, where gonorrhea rates among blacks are more than 20 times higher than whites, rates for American Indians (AI/AN) are about four times higher, and for Hispanics two to four times higher than whites (Figure 8.1). Among females, the trends are similar but less severe (note the scale on the two charts), with black rates 10-14 times higher than whites and American Indian rates 3-6 times higher (Figure 8.2). Notably, the gonorrhea rates for Hispanic females are only slightly higher than white rates (Table S, pg. D-27). Rates for Asian/Pacific Islanders (A/PI) are lowest of all for most years. Among both males and females, the black/white disparities have steadily declined due to falling rates among blacks while the rates among whites have remained stable.

Figure 8.1. Gonorrhea rates by race/ethnicity – Males, 2001-2005



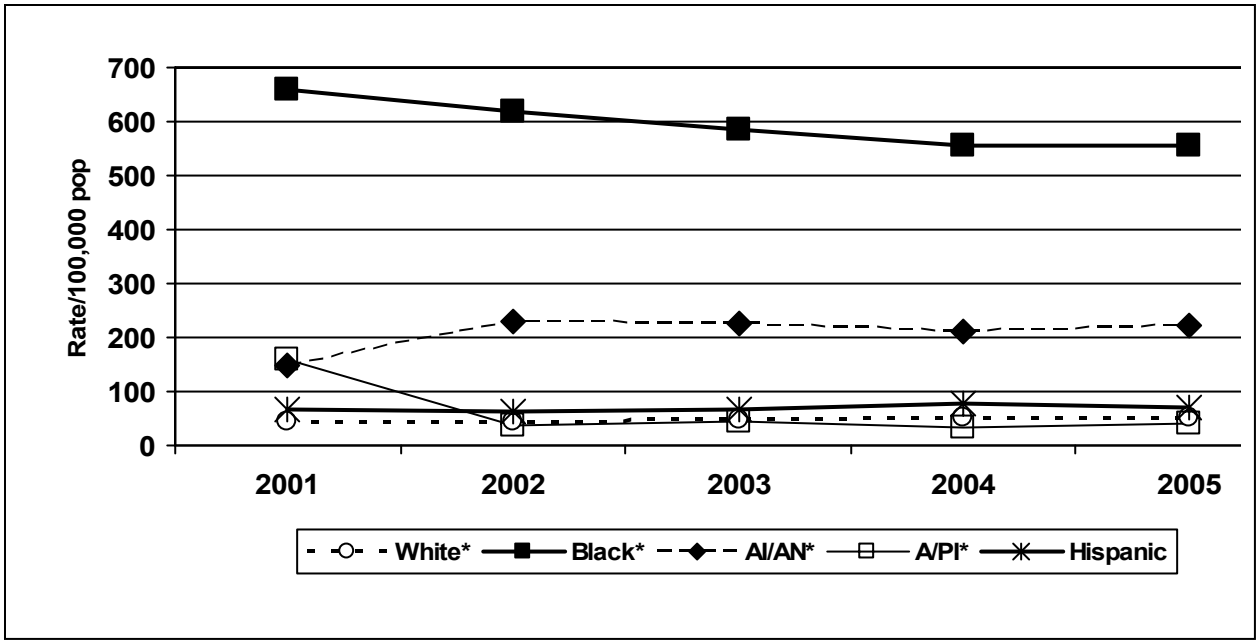
*non-Hispanic; AI/AN=American Indian/Alaska Native; A/PI=Asian/Pacific Islander

Gonococcal Isolate Surveillance Project – GISP

GISP is a collaborative project between selected STD clinics, five regional laboratories, and the CDC. The project was established in 1986 to monitor trends in antimicrobial susceptibilities of strains of *N. gonorrhoeae* in the United States in order to establish a rational basis for the

selection of gonococcal therapies. *N. gonorrhoeae* isolates are collected from the first 25 men with urethral gonorrhea attending STD clinics each month in 30 cities in the United States. The men are asked a number of behavioral questions, and the samples are tested for resistance to a variety of antibiotics. The project includes one site in North Carolina. From 1998-2001 the North Carolina site was located at Fort Bragg. Partway through 2002, the participating clinic was changed to Greensboro. The samples are collected from men who were going to have a gonorrhea test anyway, so the project does not artificially inflate gonorrhea reports from the site. During 2004, 127 men were tested at the Greensboro site. Over 90 percent were black, just under 40 percent were age 20-24, and about 5 percent reported having sex with other men. About 50 percent reported ever having a previous episode of gonorrhea, half in the previous 12 months. Resistance to penicillin and/or tetracycline was detected in 15.7 percent of the samples (CDC, GISP Report, 2006).

Figure 8.2. Gonorrhea rates by race/ethnicity – Females, 2001-2005



*non-Hispanic; AI/AN=American Indian/Alaska Native; A/PI=Asian/Pacific Islander

SYPHILIS

Syphilis disease

Syphilis is a complex disease with a natural history encompassing a number of different stages. When a syphilis case is identified, the stage must be determined and reported because the different stages have different implications for continued spread of the disease. Patients in the primary or secondary stages are the most likely to have noticeable symptoms and may present for treatment. They are also of the greatest concern for sexual transmission because they are the most infectious. Cases in the asymptomatic early latent stage may also be infectious to their sexual partners, although less so than primary or secondary cases. Such cases are generally found through screening or partner notification, since the patient does not have symptoms. Primary,

secondary and early latent stages all occur within the first year of infection and can be transmitted to sexual partners. Hence, they are often grouped together when discussing infectious syphilis and called 'early syphilis.' If a case progresses past the early latent stage, the person will move into late syphilis. There are several different ways to report late syphilis cases but, again, they may be grouped if the important distinction is that the cases were infected more than a year prior to diagnosis. Some patients with late syphilis will develop symptoms, while others will be detected through screening or partner notification. Patients of either sex are not likely to be infectious to their sexual partners beyond the early latent stage, but finding them is still important in terms of morbidity and care. In addition, females can pass the infection to their infants well past the early latent stage (congenital syphilis).

Syphilis reporting

North Carolina law states that all cases of syphilis must be reported to the local health department within 24 hours. However, syphilis testing and case diagnosis can take several weeks. Each individual with a reactive syphilis test must be investigated thoroughly to determine (a) if the person is genuinely infected and, if so, (b) if the infection is new or failed treatment of an old infection, and, if new, (c) the stage of the disease. This investigation, conducted by local or regional health department personnel, can take days or weeks, and in some cases the patient is treated for a probable infection before the investigation is complete. Contact tracing and partner notification are also initiated for probable syphilis cases and often partner information can aid in diagnosing the stage of the infection. Laboratories are required to report certain positive test results to the State Health Department within 24 hours, speeding up this process by initiating investigations earlier. When a new case is diagnosed, a morbidity report is forwarded to the HIV/STD Prevention & Care Branch at the state Division of Public Health, where information on patient names, demographics, and disease diagnoses are compiled for analysis.

Thorough contact tracing and partner notification activities greatly reduce bias in reporting by locating and reporting partners with asymptomatic infections that may not have been found otherwise. Due to the severity and comparative rarity of syphilis compared to other sexually transmitted diseases, it is believed that syphilis reporting, even from private providers, is quite good. Data on primary and secondary syphilis cases is particularly good because diagnosis of these stages of syphilis requires documentation of specific physical symptoms. Because syphilis cases are reported to the Division of Public Health by name, accidental duplicates in the database are unlikely.

Many latent cases of syphilis are asymptomatic and hence are found only through screening. This may bias latent syphilis case reporting toward groups that receive syphilis screening (pregnant women, jail inmates, others). It is also slightly more difficult to distinguish between the various latent stages of syphilis (early latent, late latent, latent of unknown duration) than primary and secondary, so the stage may be misdiagnosed in some cases.

Syphilis Elimination Effort (SEE)

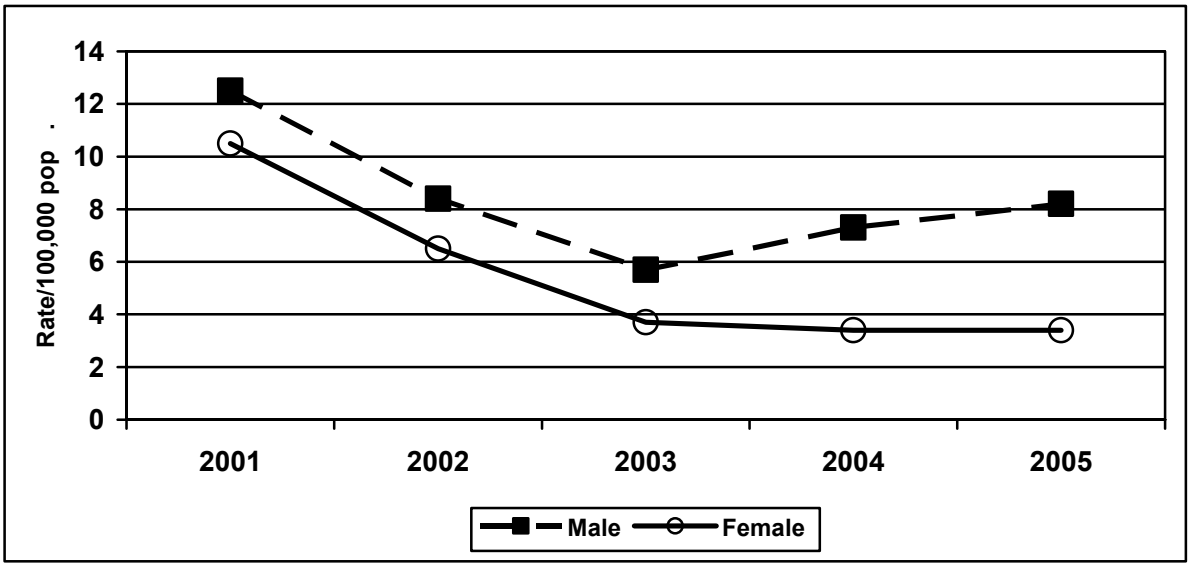
The CDC examined 1998 data and determined that over 50 percent of all U.S. primary and secondary (P&S) syphilis cases were reported from just 28 counties. This concentration of disease and the fact that rates were at all-time lows provided an opportunity for the possible elimination of U.S. syphilis transmission. In 1999, CDC announced the beginning of the Syphilis Elimination Project (SEP), now called SEE, which provides funding to the 28 high-morbidity areas (HMAs) for enhancements in surveillance, outbreak response, clinical and laboratory services, health promotion and community involvement.

Nearly all of the 28 counties mentioned above include major cities and in most cases, a state has just one SEE county. North Carolina is the only state with more than two counties (we have five: Forsyth, Guilford, Mecklenburg, Robeson, and Wake). The State of North Carolina receives extra funding to prevent syphilis in these counties. The HIV/STD Prevention & Care Branch in the Division of Public Health coordinates many of the SEE activities and has several CDC assignees designated to the project. The team determined that a sixth county (Durham) should be included in the SEE work because syphilis is a significant problem there, even though it did not make the CDC list of 28.

Syphilis trend analysis

In the years immediately following the implementation of Syphilis Elimination, syphilis rates declined steadily for a number of years. Early syphilis rates dropped from 15.1 cases per 100,000 population in 1999 to a low of 4.7 in 2003. Late syphilis rates also declined during this period but more slowly. This decline is likely due, at least in part, to the work of Syphilis Elimination. The six SEE counties accounted for 66.7 percent of the total early syphilis morbidity for the state in 2005 and all were ranked in the top ten counties by number of cases reported (Table W, pg. D-31).

Figure 8.3 PSEL syphilis rates by gender, 2001-2005



Gender

Male early syphilis rates began to rise in 2004 and again in 2005, while female rates continued to decline (Figure 8.3). These increases are highly localized with the largest number of new male cases reported from Mecklenburg County. There were 30 male PSEL cases reported from Mecklenburg in 2003, growing to 54 in 2004 and 102 in 2005. In 2003, less than 13 percent of the total PSEL male cases for the state were reported from Mecklenburg. In 2005, the county reported nearly 30 percent of the male cases in the state. Wake County also saw an increase in male cases during this time period (n=27 cases in 2003 to n=56 cases in 2005). Further investigation of the Mecklenburg reports revealed that many of the male cases were linked to MSM activity. Prevention efforts targeting men who have sex with men have been enhanced to address the outbreak. Among females, early syphilis cases in nearly all counties continued to decline. The marked exception was Mecklenburg County, where female cases rose from 12 in 2003 to 28 in 2004 and 40 in 2005.

Age

Syphilis cases in North Carolina are generally found in a much older population than that affected by gonorrhea and chlamydia. For the past five years (2001-2005), the highest rates of early syphilis (primary, secondary, and early latent syphilis) have been primarily found in the 30 to 39 and 20 to 29 age groups (Table U, pg. D-29) for both males and females. The trend remains essentially the same when P&S syphilis and early latent syphilis are examined separately. Late syphilis cases also predominate in this age group.

Race/Ethnicity

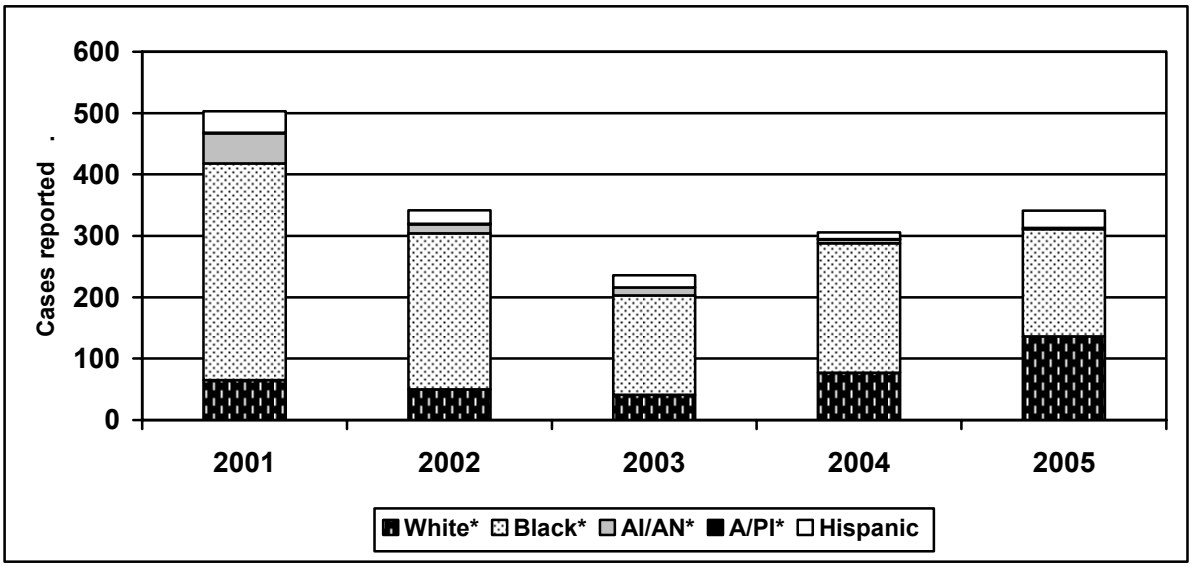
Syphilis disproportionately affects minority communities. Syphilis rates for blacks, American Indians/Alaska natives, and Hispanics are many times higher than for corresponding white groups (Table V, pg. D-30). Syphilis reporting is generally very good, so it is unlikely that this is due to reporting or testing bias. Rather, a complex combination of health care access, poverty, racism, and the composition of sexual networks produces these differences in syphilis rates.

Figure 8.4 shows the early syphilis (PSEL) cases for males and Figure 8.5 shows the corresponding cases for females. The disparity for black and Hispanic men narrowed significantly from 2001 to 2003 because the cases for black, Hispanic, and American Indian males were dropping faster than the rates for white males. Then in 2004 and 2005, the number of early syphilis cases reported among white males began to increase. Among females, the number of reported cases declined steadily from 2001 to 2004 among all racial groups. In 2005, the number of cases reported among white females rose slightly, further narrowing the racial disparity.

<u>Congenital Syphilis</u>

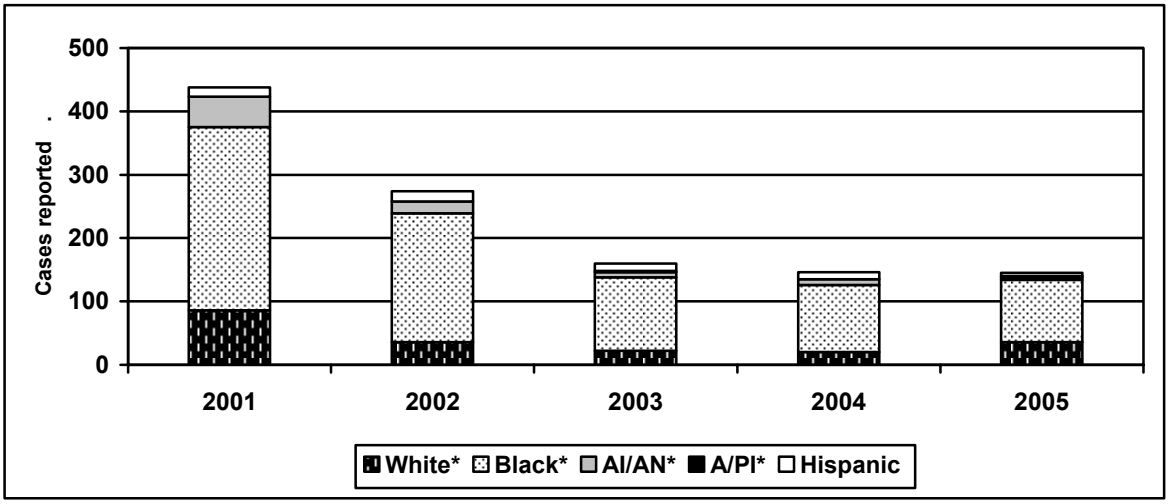
Untreated syphilis in pregnant women can lead to infection of the infant and serious complications, including premature birth and infant death. Women with early syphilis are the most likely to infect their infants in utero, but women with late latent syphilis can also have

Figure 8.4 PSEL syphilis cases – Males, 2001-2005 (by race/ethnicity)



*non-Hispanic; AI/AN=American Indian/Alaska Native; A/PI=Asian/Pacific Islander

Figure 8.5 PSEL syphilis cases – Females, 2001-2005 (by race/ethnicity)



*non-Hispanic; AI/AN=American Indian/Alaska Native; A/PI=Asian/Pacific Islander

congenitally infected children (Radolf 1999). Infants can also be infected during delivery. Under current CDC case definitions, infants whose mothers receive treatment for syphilis less than 30 days prior to delivery will still be classified as congenital syphilis cases, regardless of symptoms.

Despite declining adult early syphilis rates, North Carolina continues to suffer from cases of congenital syphilis. In both 2004 and 2005, eleven infants were born to mothers who had active or inadequately treated cases of syphilis. This is down from previous years (21 infants in 2003, 15 in 2002, and 19 in 2001) but remains unacceptably high. Six of the eleven women in 2004 did not have any prenatal care (PNC) at all prior to delivery and an additional three had less than five total PNC visits. Readers should note that some reports display congenital syphilis cases by year of report rather than year of birth.

North Carolina law states that medical providers are supposed to test all pregnant women for syphilis between 28-30 weeks gestation and again at delivery for women at high risk for syphilis. Women who do not receive adequate PNC services often miss these opportunities for screening. According to the N. C. Pregnancy Risk Assessment Monitoring System (PRAMS) survey for 2003, 18.4 percent of N.C. mothers reported a barrier to receiving prenatal care services (NCSCHS, PRAMS Fact Sheet, 2005). Younger mothers and those of black or Hispanic race/ethnicity were most likely to report barriers. The HIV/STD Prevention & Care Branch is currently partnering with the Women & Children's Health Section to refer at-risk women into prenatal care services.

Syphilis Screening in Jails

As part of the Syphilis Elimination Effort, syphilis screening was initiated in the seven county jails in the six SEE counties. Inmates are given counseling on syphilis and other STDs and blood is collected for screening by a nurse or trained phlebotomist. Data collection began in 2002 and analysis shows that the screening is effective in identifying new cases. From 2002 to 2004 the program screened 20,552 inmates (17.5% female). There were 742 seropositives which yielded 121 new cases of syphilis. Screening female inmates seems to be of particular value because they are more likely to be seropositive (8.11% compared to 2.65% for males) and more likely to be new cases (0.97% compared to 0.51% for males).

This study also found that detainees over age 30 were more likely to be new syphilis cases than younger ones (Males: OR=3.7, 95% CI 2.2-6.3, Females: OR=2.4, 95% CI 1.0-5.5). Among men, Hispanic ethnicity (OR=2.6, 95% CI 1.5-4.3) and a history of previous STDs (OR=2.4, 95% CI 1.4-4.1) were also associated with new infections. Among female inmates, multiple sex partners (OR=2.2, 95% CI 1.0-4.6) and crack cocaine use (OR=2.4, 95% CI 1.1-5.2) were associated with new syphilis infections (Sampson, 2005).

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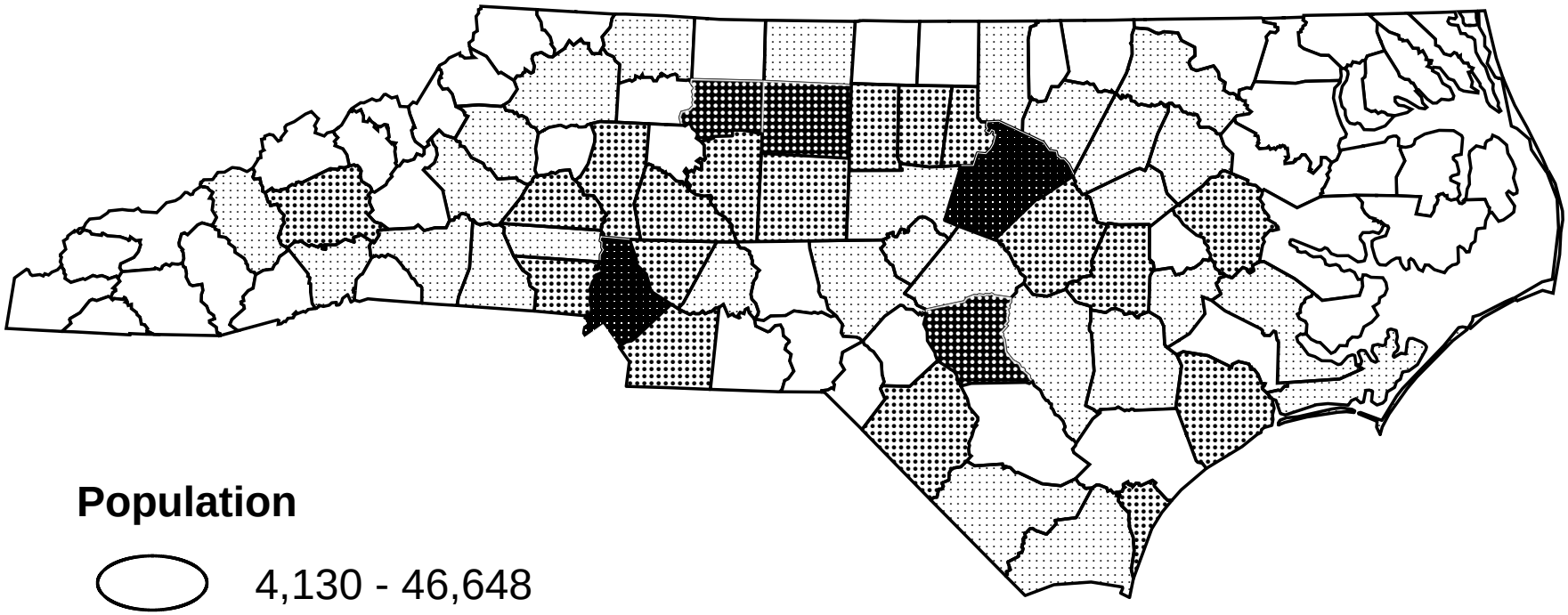
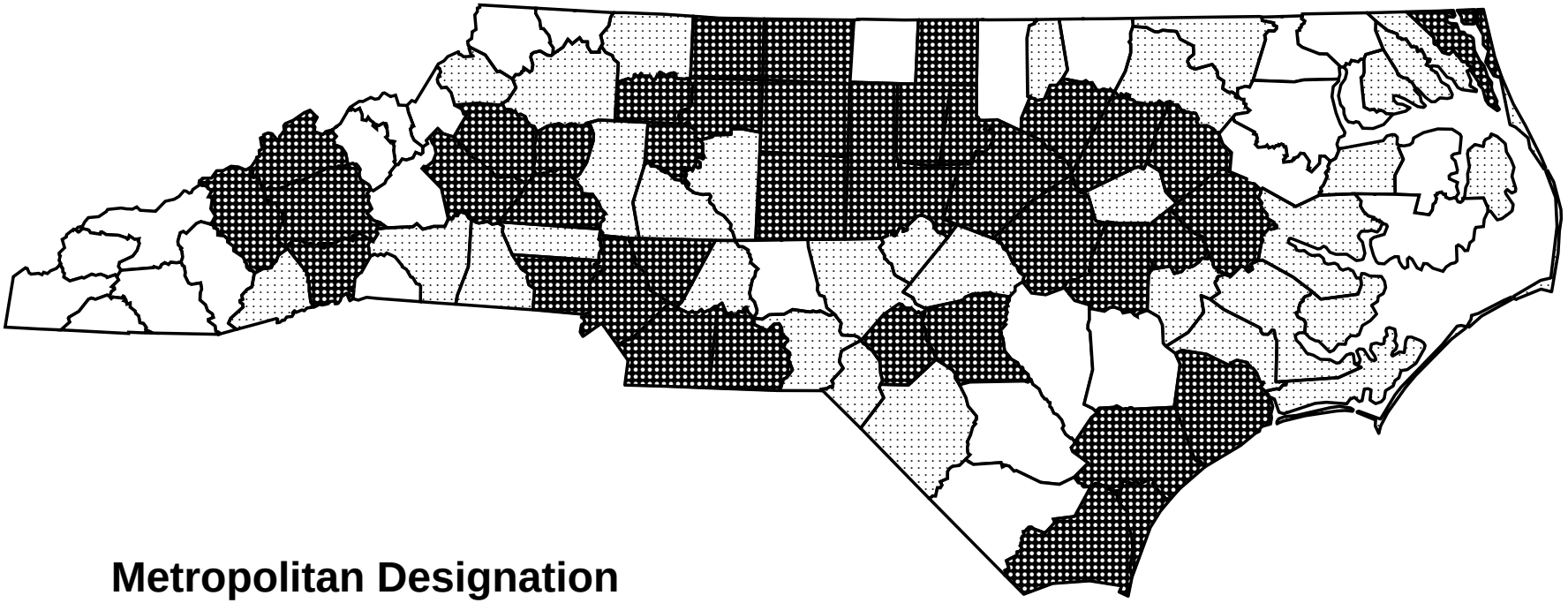
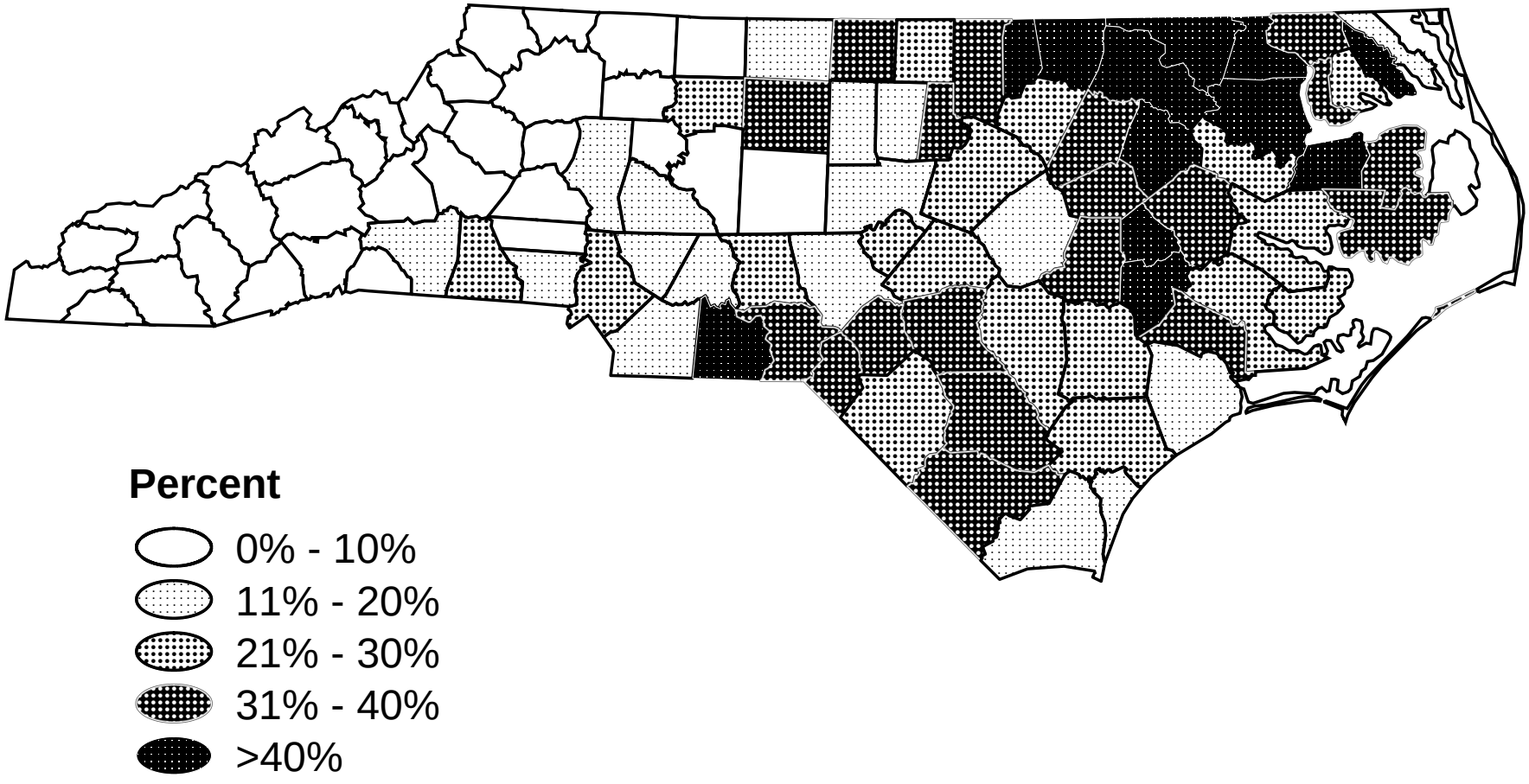
Map 1. North Carolina County Populations, 2004



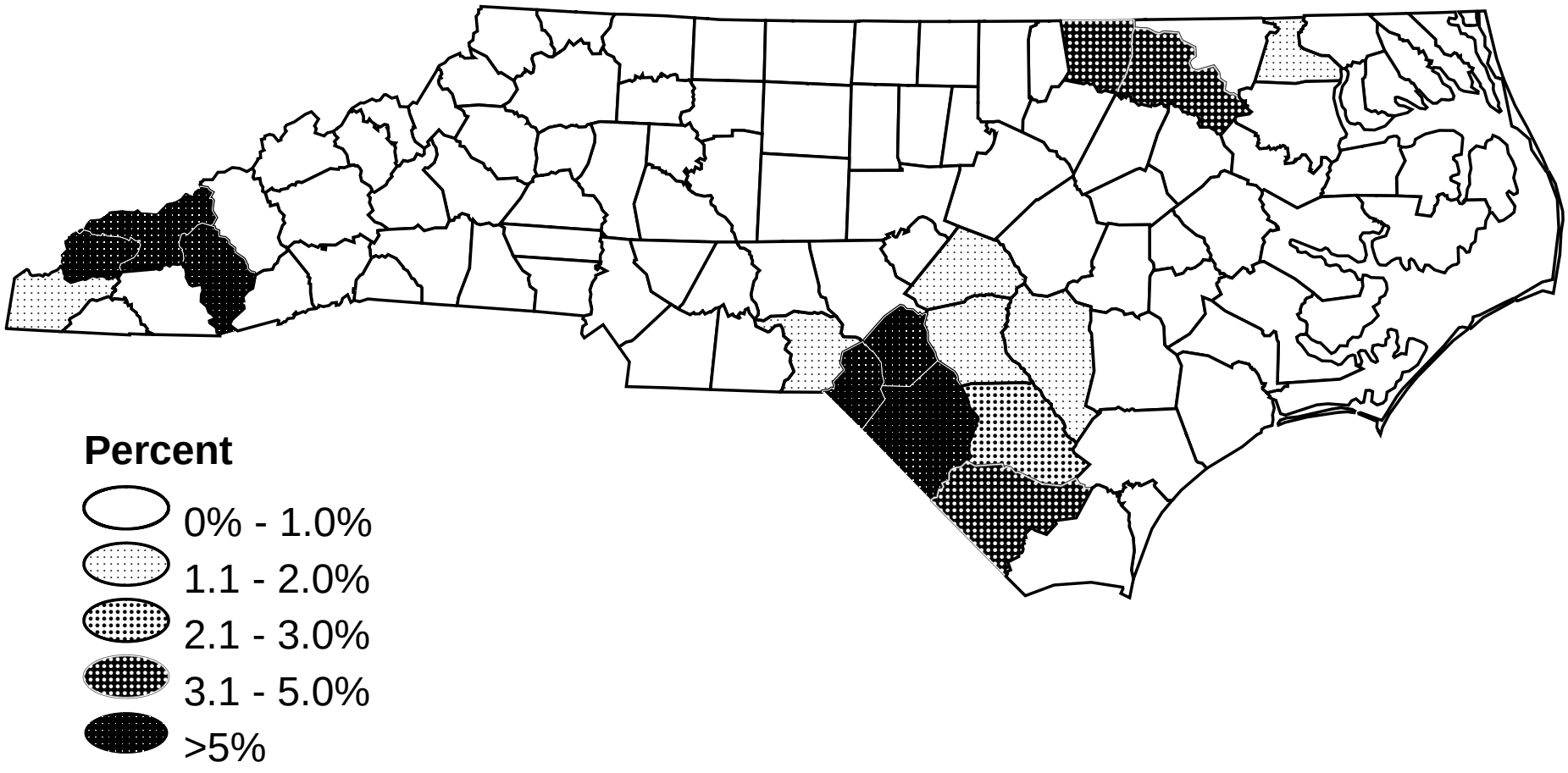
Map 2. North Carolina Metropolitan/Micropolitan Designations



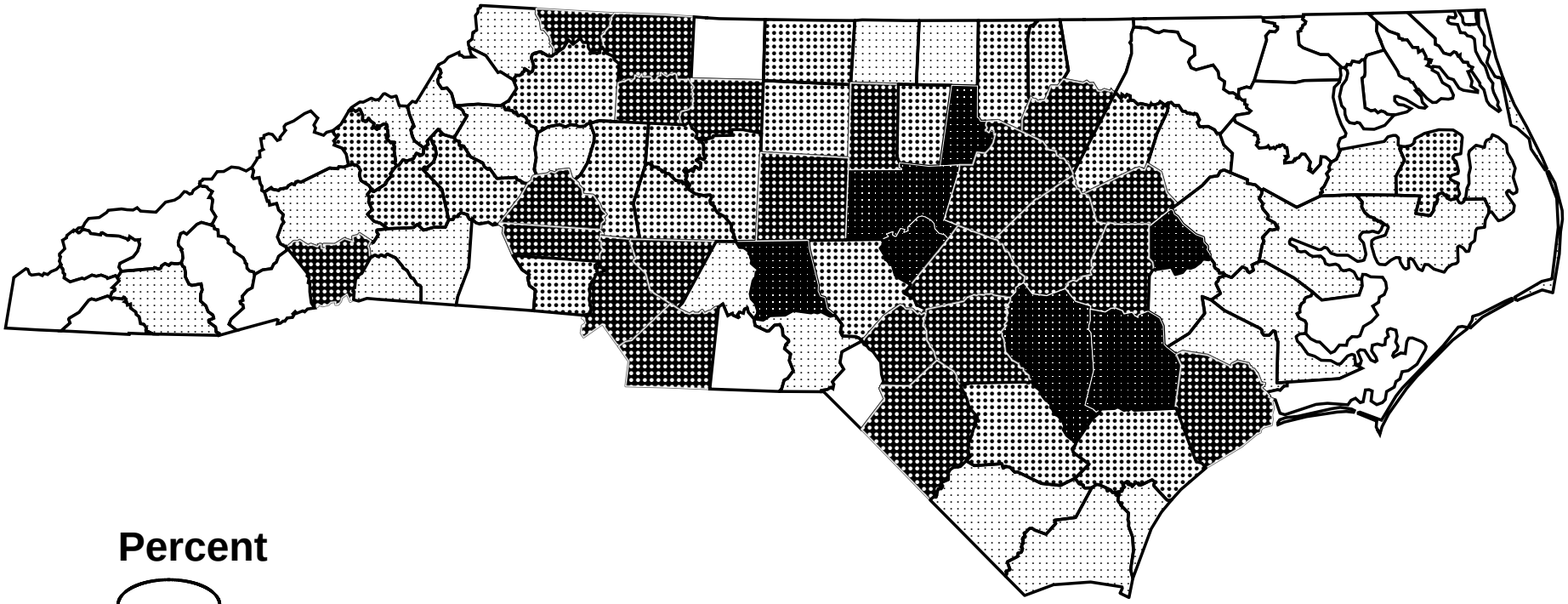
Map 3. North Carolina African American or Black Population, 2004



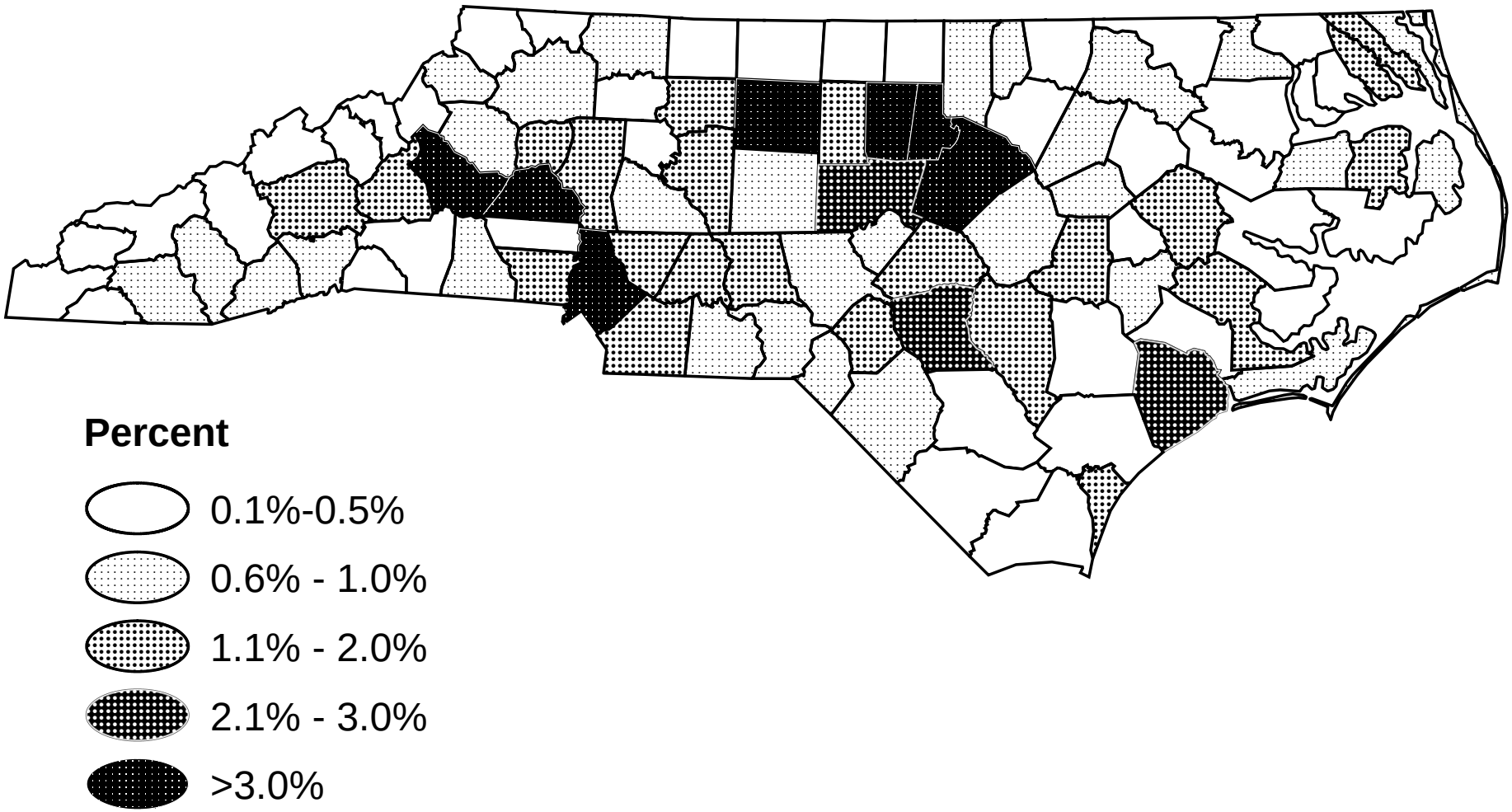
Map 4. North Carolina American Indian/Alaskan Native Population, 2004



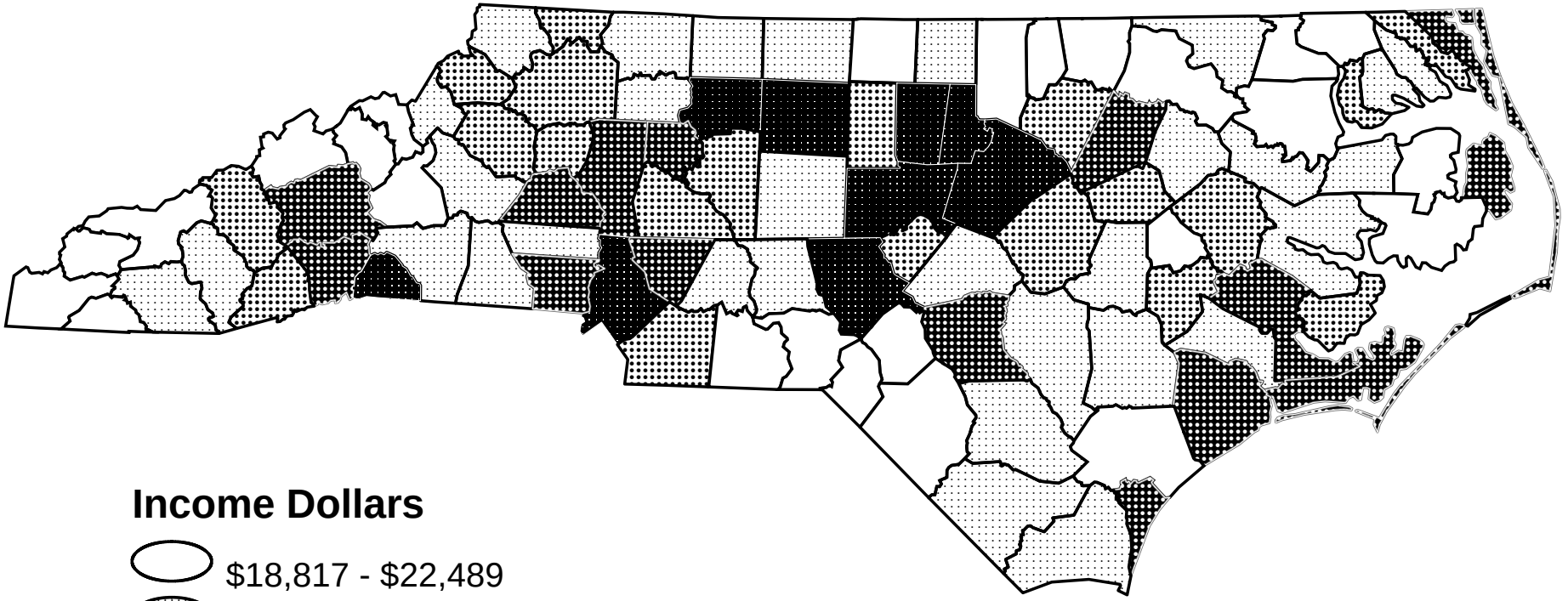
Map 5. North Carolina Hispanic or Latino Population, 2004



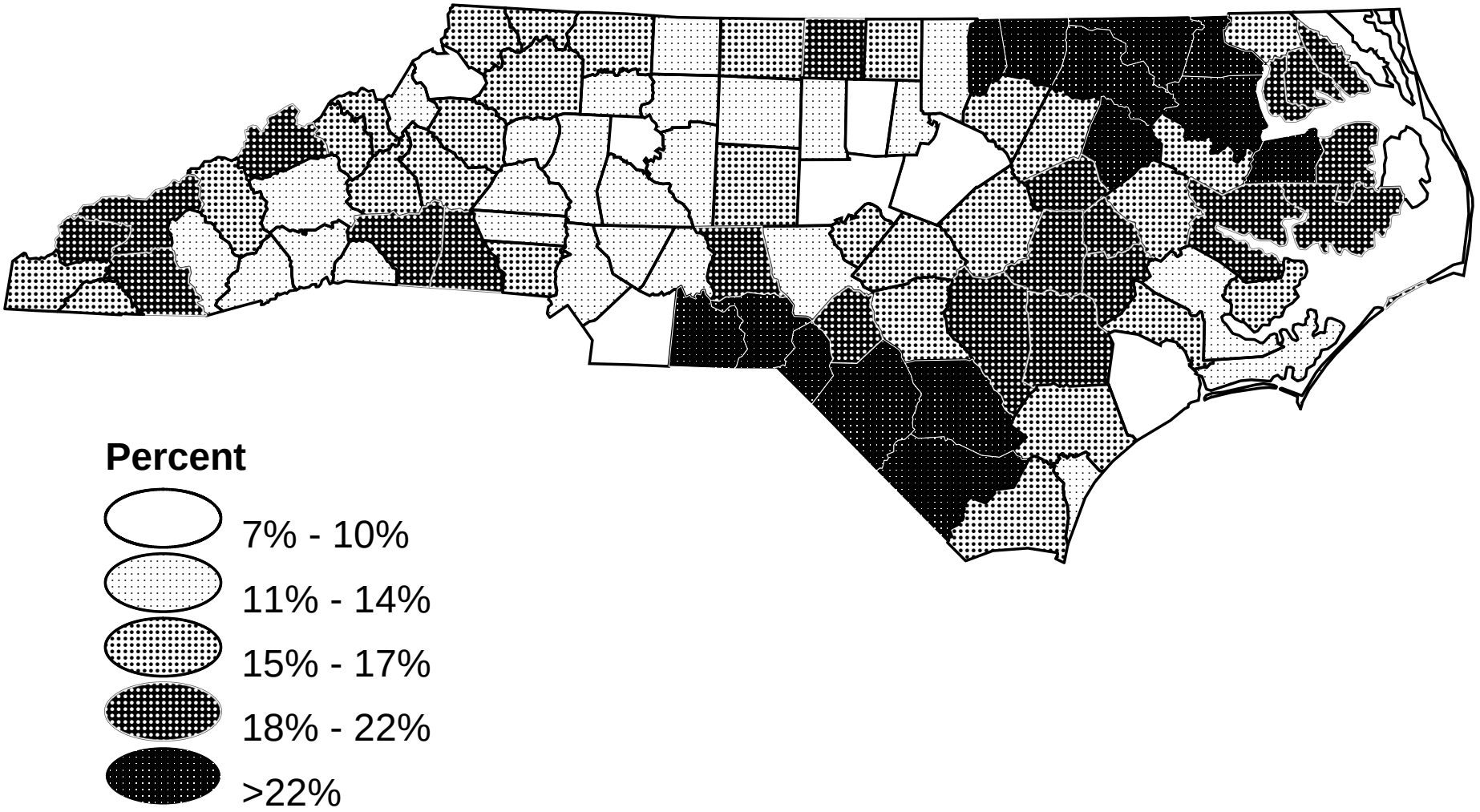
Map 6. North Carolina Asian/Pacific Islander Population, 2004



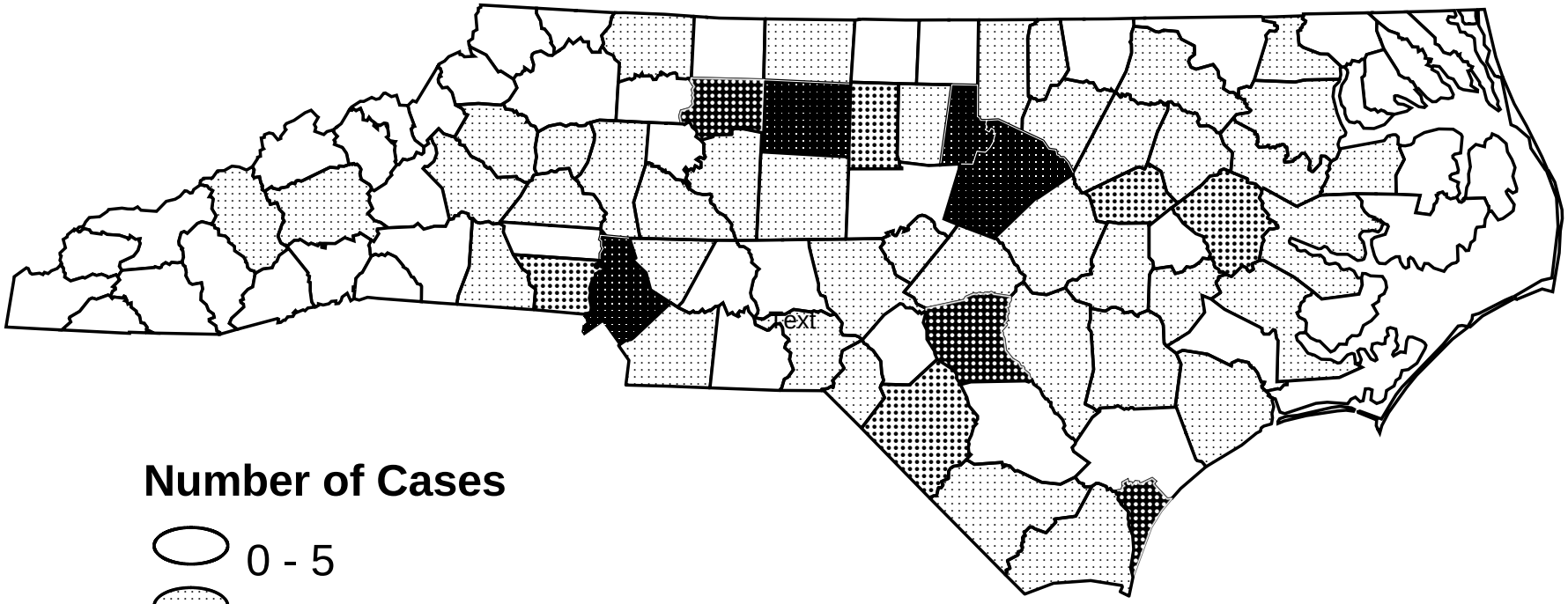
Map 7. North Carolina Per Capita Income, 2004



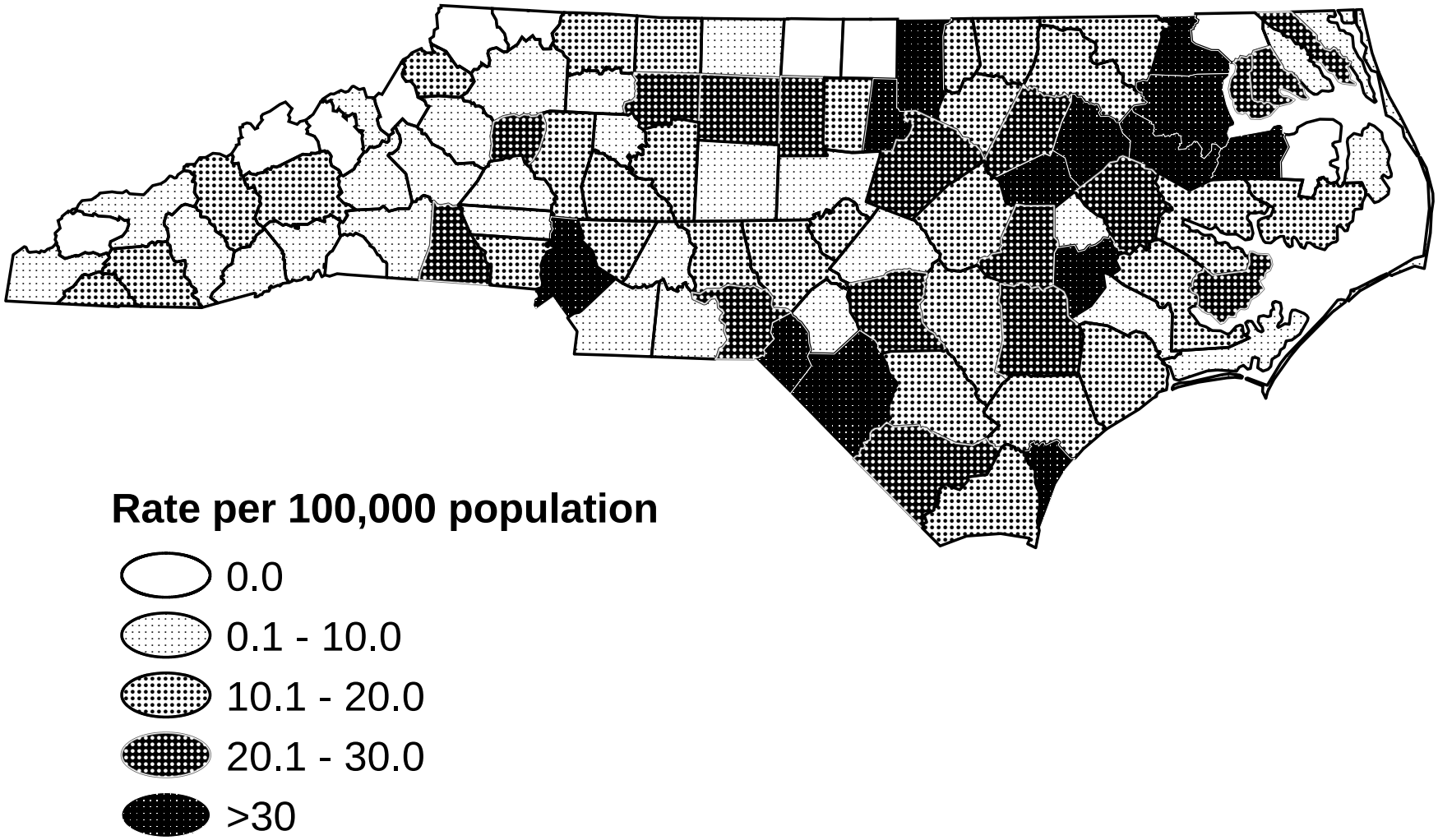
Map 8. North Carolina Medicaid Eligibles, 2006



Map 9. North Carolina HIV Disease Cases, 2005



Map 10. North Carolina HIV Disease Rates, 2005



APPENDIX B: DATA SOURCES

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CORE HIV/AIDS SURVEILLANCE

▪HIV/AIDS SURVEILLANCE

Overview: Diagnosis of AIDS became reportable in North Carolina in 1984 and diagnosis of HIV infection (name-based) was made reportable in 1990. By state law, morbidity reports of HIV and AIDS from health providers are submitted to local health departments on confidential case report forms and communicable disease report cards. Surveillance reports include demographic and clinical information for the patient, as well as mode of exposure and vital status. These surveillance reports are forwarded to the state's HIV/STD Prevention & Care Branch, which maintains the data from the 100 counties in the electronic HARS (HIV/AIDS Reporting System) surveillance system. In addition to provider diagnoses of HIV and AIDS, laboratories that provide diagnostic services must also report HIV-positive results directly to the state.

Population: All persons who meet the CDC surveillance case definition for HIV infection or AIDS and who are reported to the North Carolina Division of Public Health.

Strengths: Morbidity surveillance data represent the most complete and comprehensive single source of information available about HIV infection and AIDS in the state. AIDS reporting is likely more complete than HIV reporting because of state-mandated laboratory reporting, which identifies AIDS cases that may not have been reported earlier as HIV cases.

Limitations: The data can only provide estimates of HIV infection because not all persons who are infected are tested and reported. Further, surveillance data alone may not provide reliable information about newly acquired infections because there may be significant delay between infection and testing. A third limitation is that reporting may not be complete (i.e., some providers may not report cases). A comparison of 2002-2003 surveillance data to outside sources of information (i.e., Medicaid, ADAP, CAREWare) indicated that completeness varies from at least 75 percent to at least 90 percent depending on the source. This estimate of completeness is used to adjust estimates of prevalence.

▪ENHANCED PERINATAL SURVEILLANCE

Overview: In 1999, the CDC received $10 million from the U.S. Congress to fund perinatal HIV elimination efforts. These funds were distributed to various state and local health departments to fund prevention efforts, Enhanced Perinatal Surveillance, and professional education/training. North Carolina is funded as an Enhanced Perinatal Surveillance site.

Enhanced Perinatal Surveillance is a collection of information on HIV positive women and their perinatally exposed infants for babies born 1999-2003. For each mother-baby pair, demographic as well as clinical information is obtained from medical records, prenatal records, mother's HIV clinic records, labor and delivery records, the child's birth

record, and the child's HIV clinic records. Enhanced Perinatal Surveillance also collects information on illicit drug use during pregnancy, antiretroviral use, reason for discontinuing antiretrovirals, mother's disease status, and type of delivery. Exposed children are followed until adequate laboratory information is available to classify them as infected or uninfected. Lab information for HIV-exposed infants in North Carolina is obtained from a central laboratory which processes most of the blood work for HIV-exposed infants.

Population: HIV-exposed children and their mothers in North Carolina.

Strengths: Previous comparisons of the number of tests performed by this laboratory and the number of exposed infants derived from the Survey of Childbearing Women (SCBW) data indicated a greater than 90 percent capture by this laboratory. Data collected by the Enhanced Perinatal Surveillance Project could be used to characterize recent trends in perinatal HIV/AIDS transmission and to identify maternal risk factors.

Limitations: Because some women may not know that they are HIV-positive, perinatal data may underestimate the number of HIV-exposed infants that are born each year. Women with little or no prenatal care may also not be recorded.

▪NATIONAL HIV/AIDS SURVEILLANCE DATA (CDC)

Overview: The Centers for Disease Control and Prevention (CDC) compiles de-identified HIV and AIDS case-report information from each of the 50 states and U.S. territories. This information (in aggregate form) is published annually, usually in the early fall, as the "HIV/AIDS Surveillance Report"; there are other publications as well. The surveillance report contains tabular and graphic information about U.S. AIDS and HIV case reports, including data by state, metropolitan statistical area, mode of exposure to HIV, sex, race/ethnicity, age group, vital status, and case definition category. General references to CDC information in this publication are usually from CDC surveillance reports. These reports and other publications are available at **http://www.cdc.gov/hiv/surveillance.htm.**

Population: All persons who meet the CDC surveillance case definition for HIV infection or AIDS and who are reported to their respective state or territory health departments and then to the CDC.

Strengths: Morbidity surveillance data represent the most complete and comprehensive single source of information available about HIV infection and AIDS in the country. AIDS reporting is considered the most complete, as it is mandated in all 50 states and U.S. territories.

Limitations: The same limitations listed under *HIV/AIDS surveillance (NC)* also apply. Additionally, HIV reporting is not complete in the U.S. as some states have just recently mandated HIV case reporting. Also, not all HIV state data is included in national summaries due to varying data quality. Thus, making a state-to-state or state-to-national comparison is usually limited to AIDS case data.

BEHAVIORAL SURVEYS

▪BRFSS – BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM

Overview: BRFSS is a collaborative project of the Centers for Disease Control and Prevention (CDC) and U.S. states and territories. The BRFSS, administered and supported by CDC's Behavioral Surveillance Branch, is an ongoing data collection program designed to measure behavioral risk factors in the adult population 18 years of age or older living in households. The BRFSS was initiated in 1984, with 15 states collecting surveillance data on risk behaviors through monthly telephone interviews. The number of states participating in the survey increased so that by 2001, 50 states, the District of Columbia, Puerto Rico, Guam, and the Virgin Islands were participating in the BRFSS.

The survey is designed to include core sections (data collected by all participants), CDC-designed optional modules, and state-added questions. In 1999, North Carolina added its own questions to collect information on sexual assault and continued them through the 2005 survey. The proportion of adults reporting sexual assault within the last 12 months may represent a population at risk for HIV or STD infection as a result of these sexual exposures. Data reported here can be found on the website for the State Center for Health Statistics at http://www.schs.state.nc.us/SCHS/about/programs/brfss/index.htm.

Population: Adults (age 18 and over) who are members of households with telephones (n = 5,316 for 2005).

Strengths: The survey is well designed to attain a representative sample of North Carolina adults.

Limitations: The survey is generalizable only to North Carolinians with telephones. For the purpose of estimating populations at risk for HIV or STD infection, there are limitations to using the sexual assault data. The type of sexual assault is not described and information on condom use is not provided. Therefore not all reports may actually represent possible HIV/STD exposures. Likewise, the information on sexual partners does not indicate the gender of the partners or whether or not condoms were used. The condom-use questions should be interpreted with caution due to the inherent problem that those who report condom use are often a mixture of those at the very lowest risk (because they consistently use the condoms and are protected) and those at the very highest risk (using condoms due to their high-risk behavior and possibly inconsistent condom use).

▪YRBS – YOUTH RISK BEHAVIOR SURVEILLANCE

Overview: Youth Risk Behavior Surveillance System includes a national school-based survey conducted by CDC and state and local school-based surveys conducted by state and local education and health agencies. YRBS monitors six categories of priority health-risk behaviors among youth and young adults, including behaviors that contribute to unintentional injuries and violence; tobacco use; alcohol and other drug use; sexual

behaviors that contribute to unintended pregnancy and sexually transmitted diseases (STDs), including HIV; unhealthy dietary behaviors; and physical inactivity.

Population: Youth and young adults in grades 9─12 (n=13,917 for 2005)

Strengths: The survey is well designed to attain a representative sample of the nation's youth.

Limitations: YRBS only surveys youth who attend school and, therefore, are not representative of all persons in this age group. Nationally approximately 5% of persons aged 16-17 are not enrolled in a high school program. The questionnaire does not include questions about homosexual or bisexual behavior.

STD SURVEILLANCE

▪CHLAMYDIA CASE REPORTING

Overview: North Carolina law states that all cases of chlamydial infection must be reported to the local health department within 7 days. Laboratory confirmation of chlamydia cases takes place at a number of private labs; most public clinics send their samples to the State Laboratory of Public Health. Results are returned to the provider, who reports them to the local health department. Infected patients are treated and encouraged to bring their partners in for treatment, but there is no formal partner notification procedure. When a new case is diagnosed, the provider sends a morbidity report to the HIV/STD Prevention & Care Branch at the State Division of Public Health where information on patient demographics and disease diagnosis is compiled for analysis.

Population: All persons who meet the CDC surveillance case definition for chlamydial infection and who are reported to the North Carolina Division of Public Health.

Strengths: Well-established screening programs for young women attending public clinics do provide relatively good data about the prevalence of disease in this subpopulation.

Limitations: Chlamydia is often asymptomatic in both males and females. It is also a major cause of pelvic inflammatory disease (PID) in females and, for this reason, the N.C. Division of Public Health recommends that all sexually active young women should be screened for chlamydia during any pelvic exam. Please note that this screening recommendation once included only women age 22 and under; however, after July 2002 it included women age 24 and under. It is also recommended that all pregnant women should be tested for chlamydia as part of standard prenatal care. There are no comparable screening programs for young men. For this reason, chlamydia case reports are always highly biased with respect to gender. Public clinics and health departments may do a

better job of conducting such screening programs and reporting cases, causing the reported cases to be biased toward young women attending public clinics.

▪GONORRHEA CASE REPORTING

Overview: North Carolina law states that all cases of gonorrhea must be reported to the local health department within 24 hours. Laboratory confirmation of cases generally takes place at the local level and is reported directly to the local health department. Infected patients are treated and encouraged to bring their partners in for treatment, but there is no formal partner notification procedure. When a new case is diagnosed, a morbidity report is sent in to the HIV/STD Prevention & Care Branch at the state Division of Public Health, where information on patient demographics and disease diagnosis is compiled for analysis.

Population: All persons who meet the CDC surveillance case definition for gonorrhea infection and who are reported to the North Carolina Division of Public Health.

Strengths: Gonorrhea is often symptomatic in males and slightly less so in females. Females entering publicly-funded prenatal care, family planning, and STD clinics are screened for asymptomatic gonorrhea. Males are screened at STD clinics only. Since males are more likely to have symptoms that would bring them to the STD clinic, the gender bias in gonorrhea reporting is not as severe as that for chlamydia reporting. Required laboratory reporting may also reduce some private vs. public provider bias in reporting.

Limitations: Public clinics and local health departments are more likely to screen for asymptomatic infection and may do a better job of reporting gonorrhea cases than private doctors. This may contribute to racial bias in the data because larger proportions of public patients are minorities compared to private clinic patients. Case information is collected in aggregate, so it is possible for accidental duplicates to occur.

▪SYPHILIS CASE REPORTING

Overview: North Carolina law states that all cases of syphilis must be reported to the local health department within 24 hours. However, syphilis testing and case diagnosis require multiple stages and can take several weeks. Each individual with a reactive syphilis test must be investigated thoroughly to determine (a) if the person is genuinely infected and, if so, (b) if the infection is new or failed treatment of an old infection, and, if new, (c) the stage of the disease. This investigation, conducted by local or regional health department personnel, can take days or weeks. In some cases, the patient is treated for a probable infection before the investigation is complete. Contact tracing and partner notification are also initiated for all probable syphilis cases because often partner information can aid in diagnosing the stage of the infection. Laboratories are required to report certain positive test results to local health departments within 24 hours, speeding up this process by initiating investigations earlier. When a new case is diagnosed, a morbidity report is sent in to the HIV/STD Prevention & Care Branch at the state

Division of Public Health where information on patient names, demographics, and disease diagnoses are compiled for analysis.

Population: All persons who meet the CDC surveillance case definition for syphilis infection and who are reported to the North Carolina Division of Public Health.

Strengths: Thorough contact tracing and partner notification activities greatly reduce bias in reporting by locating and reporting partners with asymptomatic infections that may not have been found otherwise. Due to the severity and comparative rarity of syphilis compared to other STDs, it is believed that syphilis reporting, even from private providers, is quite good. Data on primary and secondary syphilis cases is particularly good because diagnosis of these stages of syphilis requires documentation of specific physical symptoms. Because syphilis cases are reported to the Division of Public Health by name, accidental duplicates in the database are unlikely.

Limitations: Many latent cases of syphilis are asymptomatic and hence are found only through screening. This may bias latent syphilis case reporting toward groups that receive syphilis screening (pregnant women, jail inmates, others). It is also slightly more difficult to distinguish between the various latent stages of syphilis (early latent, late latent, latent of unknown duration) than primary and secondary, so the stage may be misdiagnosed in some cases.

SUPPLEMENTAL HIV/STD SURVEILLANCE

▪GISP – GONOCOCCAL ISOLATE SURVEILLANCE PROJECT

Overview: GISP is a collaborative project between selected STD clinics, five regional laboratories, and the CDC. It was established in 1986 to monitor trends in antimicrobial susceptibilities of strains of N. gonorrhoeae in the United States in order to establish a rational basis for the selection of gonococcal therapies. N. gonorrhoeae isolates are collected from the first 25 men with urethral gonorrhea attending STD clinics each month in 30 cities in the United States. The men are asked a number of behavioral questions and the samples are tested for resistance to a variety of antibiotics. The project includes one site in North Carolina. From 1998-2001 the North Carolina site was located at Fort Bragg. Partway through 2002, the participating clinic was changed to Greensboro.

Population: Ongoing sample of up to 25 men per month from the STD clinic in Greensboro, N.C. (n=127 in 2004).

Strengths: Random sampling design allows for good estimates of target population. The samples are collected from men who were going to have a gonorrhea test anyway, so the project does not artificially inflate gonorrhea reports from the site.

Limitations: The survey covers a relatively small sample of men from one specific clinic. Behavioral survey results likely can not be generalized to other populations in the state.

▪PCRS - PARTNER COUNSELING & REFERRAL SERVICES

Overview: The HIV/STD Prevention & Care Branch's Field Services Unit has responsibility for conducting patient interviews of persons newly diagnosed with HIV or syphilis. The interviews are conducted to counsel patients on prevention of subsequent risk, to assist with referrals for treatment and services, and to help with partner notification. Information is collected on clinical status and treatment, patient demographics, and detailed mode of exposure risk. The information is maintained in local STD-MIS. Information is limited to interviewed patients. It is estimated that 98 percent of syphilis cases and 90 percent HIV cases are interviewed.

Population: Persons interviewed by Field Services staff as part of HIV or syphilis case follow-up or partner notification

Strengths: A high proportion of new cases are interviewed, so it is likely that the data accurately represent the infected population as a whole.

Limitations: Does not represent all newly infected individuals, as not every person infected is tested and reported. The level of risk information available varies from case to case, so there are limitations in comparing risk among the cases.

HIV COUNSELING & TESTING DATA

▪CTS - COUNSELING AND TESTING SYSTEM

Overview: The North Carolina Division of Public Health provides funds for HIV counseling and testing (CTS) at 169 sites across the state. These include 155 traditional test sites in local health departments, university health centers, and CBOs and 14 nontraditional test sites (NTS). NTS sites were added to the program in response to community concerns in order to remove barriers to HIV testing when anonymous testing was removed in North Carolina in 1997. NTS sites, most often located in CBOs and sometimes through extended health department hours, have a goal of reaching different populations than those served by traditional testing sites. The CTS collects information on counseling and testing services delivered, client demographics, insurance, risk factors, and reasons for testing. No personal identifying information is collected.

Population: All clients who receive confidential HIV testing services at a publicly funded counseling and testing site in North Carolina. (In 2004, 119,094 tests were performed in publicly funded sites.)

Strengths: CTS covers all publicly funded clinics in the state and is the only population-level source of information on negative HIV tests. Data on test results is particularly good in North Carolina because the State Laboratory receives the data sheet with each specimen and enters results directly into the database. In other states, results must be sent back to the original HIV counselor before the data sheet is sent in, which can lead to errors and underreporting.

Limitations: CTS covers only publicly funded clinics and therefore does not reflect all the HIV tests done in the state. In fact, only about 35 percent of new HIV cases reported to the state come from the CTS. Estimation of statewide seroprevalence is not possible because clients are either self-selected for HIV testing or agree to testing after presentation to a counselor at a CTS site. Data are collected without names, making it difficult to check for duplicates in the database. Although clients are asked whether or not they have been tested before, the validity of these responses and other self-reported data is questionable.

SUBSTANCE ABUSE DATA

▪NSDUH – NATIONAL SURVEY ON DRUG USE AND HEALTH

Overview: This annual survey has been conducted by the Federal Government since 1971 to provide information on trends in illicit drug use among the general U.S. population. The survey is administered by SAMHSA (the Substance Abuse and Mental Health Services Administration). Non-institutionalized persons over age 12 are interviewed using CAPI (Computer Assisted Personal Interview) technology, in which survey responses are recorded directly into the computer. A trained interviewer is present to assist with the computer but does not know the responses given. The survey is designed to be large enough to provide estimates for each of the 50 states and the District of Columbia. Youth and young adults are over-sampled.

Population: Non-institutionalized U.S. population age 12 and older. The NSDUH surveys approximately 67,500 people annually in all 50 states. The survey includes persons living in households, dormitories, shelters, civilians on military bases, and other group quarters. The survey excludes persons institutionalized in jails, prisons, and hospitals; active military personnel; and homeless persons who do not use shelters.

Strengths: This is a large survey specifically designed to provide state-level estimates for all 50 states. The use of CAPI technology reduces bias by decreasing the chance that subjects will provide socially desirable responses to please the interviewer.

Limitations: Many of the excluded populations are also those populations at risk for HIV infection.

VITAL STATISTICS DATA

▪BIRTH AND DEATH DATA

Overview: All births, deaths, fetal deaths, marriages, and divorces that occur in North Carolina are reported to the state. The process involves a statewide system of hospitals, funeral directors, registers of deeds, local health department staff, and others who register vital events. Statewide vital events are registered and maintained by the Vital Records Unit of the Division of Public Health. Vital Records staff code information according to specific guidelines in order to produce statistical data that subsequently are used to characterize specific areas such as infant mortality and communicable disease. Reporting of deaths is nearly 100 percent complete. Death information includes the cause and underlying causes of death, but some causes of deaths, including HIV/AIDS, may be under reported.

Population: All births and deaths reported to the North Carolina DHHS.

Strengths: Reporting of deaths is nearly 100 percent complete.

Limitations: Some causes of death, including those associated with HIV/AIDS, may be under-reported.

▪ABORTION DATA

Overview: Beginning in 1978, abortion providers in the state of North Carolina began voluntarily reporting abortion data to the State Center for Health Statistics. Reports include demographics and basic medical information on the mothers, but no identifying information. Many sites report 100 percent of the procedures they perform. For those sites unable to report 100 percent, data are extrapolated from the cases they do report. Abortions provided for North Carolina residents are also reported by providers in other states, the largest number coming from those states directly bordering North Carolina.

The information reported here can be found at the State Center for Health Statistics website in the publication “Reported Pregnancies 2004”at http://www.schs.state.nc.us/SCHS/data/pregnancies/2004/

Population: Abortions performed on North Carolina state residents (n=29,337 for 2004)

Strengths: Because no patient-identifying information is reported, providers do not need to worry about confidentiality and therefore may be more inclined to report all of their cases accurately.

Limitations: Data are reported voluntarily and sometimes at less than 100 percent. Therefore, it is safe to assume that the numbers reported are an underestimate of the true number of abortions. There are limitations to using this data for the purpose of estimating a heterosexual population at risk for HIV and other STDs. The data does not include information on the number of sexual partners, condom use, or other risk factors.

▪PRAMS – PREGNANCY RISK ASSESSMENT MONITORING SYSTEM

Overview:
PRAMS, the Pregnancy Risk Assessment Monitoring System, is a surveillance project of the Centers for Disease Control and Prevention (CDC) and state health departments. PRAMS collects state-specific, population-based data on maternal attitudes and experiences before, during, and shortly after pregnancy.
PRAMS was initiated in 1987 because infant mortality rates were no longer declining as rapidly as they had in prior years. In addition, the incidence of low birth weight infants had changed little in the previous 20 years. Research has indicated that maternal behaviors during pregnancy may influence infant birth weight and mortality rates. The goal of the PRAMS project is to improve the health of mothers and infants by reducing adverse outcomes such as low birth weight, infant mortality and morbidity, and maternal morbidity. PRAMS provides state-specific
data for planning and assessing health programs and for describing maternal experiences that may contribute to maternal and infant health.

N.C. data comes directly from the 2003 tables recently published at the State Center at: http://www.schs.state.nc.us/SCHS/prams/2003/#5

Population: Mothers who had given birth to a live infant in North Carolina during 2003 (n=1475).

Strengths: This is a well-designed survey with questions specifically designed to estimate the proportion of pregnancies that were mistimed or unwanted. All pregnancies represent unprotected heterosexual sex. However, not all such sexual activities are among high-risk partners. Mistimed or unwanted pregnancies are a reasonable proxy for unprotected, heterosexual sex that was not intended to produce a pregnancy, which may represent a population at risk for HIV and other STDs.

Limitations: There are limitations to using this data for the purpose of estimating a heterosexual population at risk for HIV and other STDs. The data does not include information on the number of sexual partners, condom use, or other risk factors.

POPULATION DATA

▪U.S. CENSUS BUREAU

Overview: For the purpose of allocating congressional seats, the U.S. Census Bureau completes an official enumeration of the national population every 10 years. The most recent census (used for denominator data in this report) was conducted in April, 2000. Questionnaires were sent to all U.S. households, most often by mail but in some cases in person by Census personnel. One in six households was sampled to receive the Census 'Long Form' which has social, economic, and housing questions in addition to seven basic questions including gender, age, race and ethnicity of all household members. The remaining five to six of households receive the 'Short Form' with just the seven basic questions. Making questionnaires available in different languages, advertising campaigns, and canvassing door-to-door are employed to increase the census count. The final response rate for the entire U.S. population was 67 percent. Tables and information can be obtained from the Census Bureau's Web site (www.census.gov), the N.C. Lookup web site (http://census.osbm.state.nc.us/lookup/), NC LINC (http://linc.state.nc.us) and from the N.C. State Data Center (http://sdc.state.nc.us/).

Population: U.S. population as of April, 2000**.**

Strengths: Denominator data on gender, age, race and ethnicity data are highly reliable because the Census attempts to collect this information on every person in the U.S. The 2000 census marked the first time that the mail-in response rate had improved over the previous census.

Limitations: Because the response rate is not 100 percent, the data from the non-responders will have to be estimated using data from those who did respond. Certain groups may be more likely not to respond and, therefore, may be under represented in the final counts. Such groups include those who speak and read languages other than English, those with unstable or no housing, and illegal immigrants who may avoid contact with Census personnel.

▪N.C. STATE DATA CENTER DEMOGRAPHICS UNIT

Overview: The North Carolina State Data Center is a network of state and local agencies that provide information and data about the state and its component geographic areas. Besides maintaining all the decennial and economic census products, the State Data Center receives many other data products from various federal, state, and private agencies. The State Demographics unit is primarily responsible for producing population estimates and projections. County and state population projections, available by age, race (white/other) and sex, are used for long-range planning. To produce these estimates and projections, the unit develops and enhances complex mathematical computer models and collects and reviews a variety of data from federal, state, and local government sources. It annually surveys North Carolina municipalities for annexation data, municipalities and counties for selected institutional data, and military bases for barracks population data.

As a member of the Federal State Cooperative Program for Population Estimates (FSCPE), the unit collects and examines data for the Census Bureau and reviews Census Bureau estimates and methods. Data are available at http://demog.state.nc.us/.

Population: North Carolina State population, all years.

Strengths: Population growth estimates are calculated for age, gender and racial groups based on a wide variety of data sources.

Limitations: Projections for racial groups are made available only for whites and non-whites. Projections become less and less reliable the farther they are away from the last census year; denominator data early in the decade is generally more accurate than data towards the end of the decade.

▪KAISER FAMILY FOUNDATION: STATE HEALTH FACTS ONLINE

Overview: The Henry J. Kaiser Family Foundation (KFF) is an independent philanthropy focusing on the major health care issues facing the nation. The KFF provides information and analysis on a broad range of policy issues, emphasizing those that most affect low-income and vulnerable populations. Data presented on State Health Facts Online are a selection of key health and health policy issues collected from a variety of public and private sources, including original Kaiser Family Foundation reports, data from public websites, and information purchased from private organizations. Information is available at http://www.statehealthfacts.kff.org/.

Population: Various.

Strengths: Data are synthesized from a number of different sources and made available in easy-to-use format.

Limitations: Specifics on each data source are sometimes difficult to obtain.

RYAN WHITE CARE ACT DATA

Overview: In 1990, Congress enacted the Ryan White CARE Act to provide funding for states, territories and eligible metropolitan areas (EMAs) to offer primary medical care and support services for persons livings with HIV disease who lack health insurance and financial resources for their care. Congress reauthorized the Ryan White CARE Act in 1996 and in 2000 to support Titles I-IV, Special Projects of National Significance (SPNS), the HIV/AIDS Education Training Centers and the Dental Reimbursement Program, all of which are part of the CARE Act. Title program support varies from state to state depending on program requirements and mandates. Data are available about services provided.

Population: All persons who received Ryan White Care Act funded services.

Strengths: One of the few aggregate sources of care and service information for HIV-infected persons and persons affected by HIV (i.e., family members) that covers the entire state.

Limitations: Current information is based on the summation of annual CARE Act Data Reports (CADR) that each consortium or provider receiving funding is required to complete. Because persons can be served by more than one provider or service organization, there is duplication within the summary data. Currently only Title II funded agencies are required to report services provided to the state; others (Titles III, IV, etc.) report directly to HRSA. Thus, the care and service information is incomplete at the state level. In order to better monitor access to Ryan White services and assist projects with required reporting, a computer software program, CAREWare, was provided (2003) to each consortium by HRSA. At its core, CAREWare collects and stores data for completion of the annual CARE Act Data Report (CADR). Moreover, CAREWare is a tool used to move programs beyond mere data reporting and into information management and continuous quality improvement (CQI). Using the various components of CAREWare allows programs to monitor a number of clinical and psychosocial indicators in a way that satisfies both CQI initiatives as well as CADR requirements.

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APPENDIX C: SPECIAL NOTES

HIV DISEASE

2004-2005 HIV/AIDS SURVEILLANCE REPORTING ISSUES

HIV RISK CATEGORIES AND DISTRIBUTION

RATE CALCULATION AND DENOMINATOR DETERMINATION

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HIV DISEASE

"HIV disease" is a term that includes all persons infected with HIV regardless of their stage of disease. Infected persons are counted by the date on which this infection was first diagnosed and reported. Most persons are first diagnosed with just an HIV infection and are reported again later with AIDS. However, some persons are diagnosed with HIV and AIDS at the same time. All of these persons are counted in the description of the HIV epidemic by that date of first report and referred to as "HIV disease" cases. Using the "HIV disease" definition to describe the epidemic over time in North Carolina enables the most comprehensive look at the epidemic because all infected individuals are counted. AIDS cases, on the other hand, include only HIV disease cases that also have an AIDS diagnosis; they are counted by the date of report for an AIDS diagnosis. As a general rule, AIDS case descriptions are used to define treatment and care needs, while HIV disease is used to describe the epidemic.

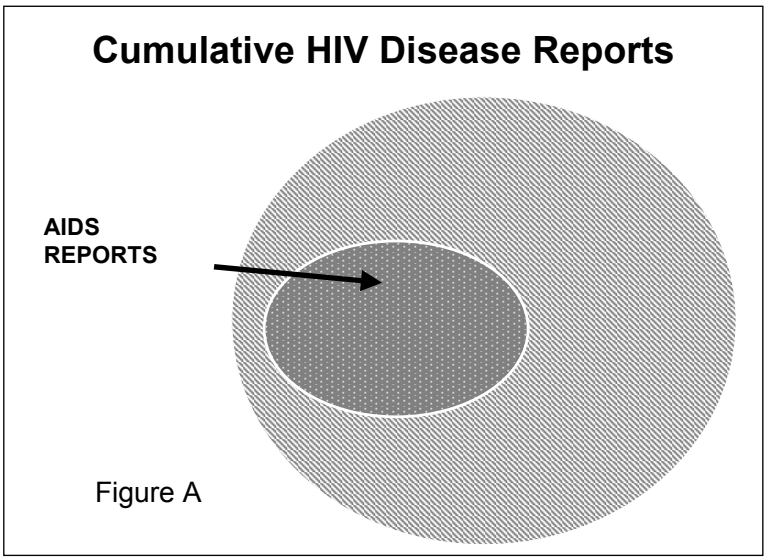

Figure A

Thus, for our discussion in this profile, "HIV disease" references all reports by date of *first report for the individual*. For most "HIV disease" reports, this new report date is determined from the date of an HIV infection report, but for some reports it is based on the date of report for an AIDS diagnosis because the infected individual was never reported with an HIV infection without an AIDS-defining condition present. The first report for that person was an AIDS diagnosis and represented a new incident case of an HIV-infected individual at that time. "HIV disease" also includes early surveillance reports of individuals when AIDS surveillance was the only reporting of infected individuals (all reports before 1990); these reports reference the AIDS report date. The reference of age for "HIV disease" is based upon the age at the diagnosis of first report.

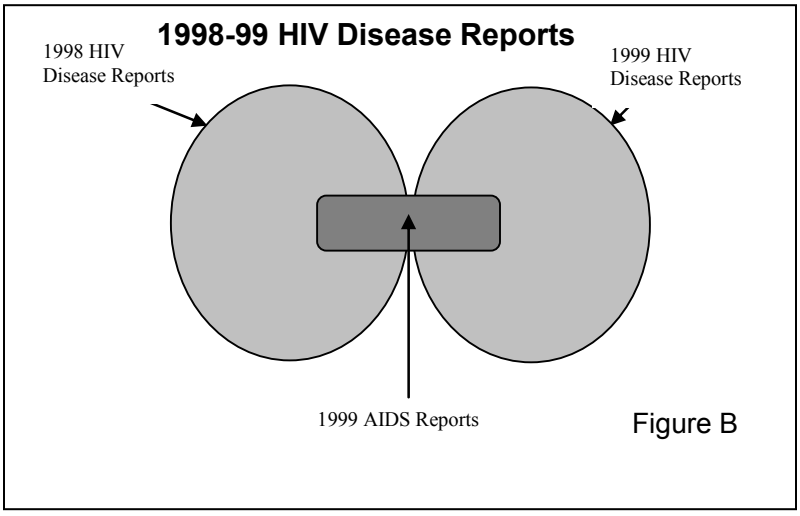

Figure B

The discussion of AIDS cases is essentially a subset of HIV disease reports, since by definition all AIDS reports are included, but the report date is different for each. See Figures A and B for a visual representation of HIV disease and AIDS reports categories. For AIDS reports, the date of report is based upon when the person was reported *with an AIDS diagnosis* (usually a later date than date of first report). The reference of age will also be different, based on the age when the AIDS diagnosis was made. AIDS cases are presented in the same way as they have been presented in earlier surveillance publications. Some AIDS information may be presented by the date of diagnosis rather than by the date of report. When this occurs, it will be labeled as such.

2003 - 2005 HIV/AIDS SURVEILLANCE REPORTING ISSUES

Readers will note that the numbers of HIV disease reports for 2003 and 2005 were higher than the number of reports for 2002 and for 2004. These spikes of HIV disease reports were generally the result of previously unreported prevalent HIV disease cases that were identified through ongoing enhanced surveillance activities. Beginning in October 2002, separate diagnostic HIV laboratory results were matched with morbidity reports from providers, and cases were updated as appropriate. If laboratory results could not be linked to an existing or previous morbidity report, contact was made with the provider and a morbidity report was solicited. Prevalent cases that had not been reported when initially diagnosed were added to the surveillance system, resulting in an increase in reports for HIV. When the reports are resorted by date of first diagnosis, the number of new HIV disease cases diagnosed appears to have stabilized to approximately 1,700 per year over recent years.

Readers will also note that earlier annual HIV/AIDS surveillance totals, especially AIDS totals, are less than previously reported. This is the result of a CDC-initiated Interstate Duplication Evaluation Project (IDEP) that was completed in 2004. National and state HIV/AIDS surveillance systems count cases based on the patient's residency at the first diagnosis with HIV or AIDS. Because surveillance data are a snapshot of the number of persons living with HIV/AIDS in a particular state at a particular point in time, they may reflect when a person entered the state health care system with a diagnosis rather than when the person was originally diagnosed. The result of this reporting attribute over time has been the inter-state duplication or multiple counting for some persons. Through IDEP, each state consulted with all 50 states to determine the proper assignment of residency for suspect cases. This project was completed and each state's official surveillance registry adjusted to eliminate duplicative reports. Some older North Carolina HIV and AIDS morbidity reports have been dropped from our surveillance totals. Overall, the adjustment in cases for North Carolina was about average as compared to other states; we reassigned about five percent of our cases to other states with evidence of an earlier initial diagnosis.

HIV RISK CATEGORIES AND DISTRIBUTION

The assignment to individual cases of HIV risk or mode of transmission is hierarchical. This hierarchy was developed by the CDC and others based on information about the epidemic during early investigations. All possible risk information is collected for each case and a single risk is assigned for the case. This does not mean that the HIV transmission is known to have occurred via the risk assigned for a single case, but implies a likely mode of transmission based on the hierarchical risk. It is important for readers to understand that this assigned risk or mode of transmission is not absolute. Additionally, some problems with the risk assignment have been noted. First, the hierarchy was developed using methodologies formed early in the epidemic and may under- or over-represent certain groups because the epidemic has evolved since the early years. Second, not all cases are reported with adequate information to assign risk. In this *Profile*, we have attempted to deal with both of these issues.

Many HIV disease cases are classified as non-identified risk (NIR) cases not because of missing or incomplete information, but because reported risks do not meet one of the CDC-defined (hierarchical) risk classifications. In North Carolina, this occurs frequently with female cases (and some male cases) whose only known exposure is through heterosexual contact. The CDC hierarchical definition for "heterosexual contact" requires that the index cases know their partners' HIV status or risk for HIV. Without knowing their partners' HIV status, these cases are categorized as NIR cases. We have reevaluated and reassigned some of these cases to a "presumed heterosexual" risk category, based on information from field services follow-up interviews with newly diagnosed individuals such as the exchange of sex for drugs or money, previous diagnoses with other STDs, or multiple sexual partners. Including these reassigned NIR cases as likely heterosexual transmission cases gives a more accurate picture of HIV disease in the state.

Even with this reassignment of cases to "presumed heterosexual contact" we have a group of cases with insufficient information to assign risk. These remaining NIR cases do not appear to differ substantially from the overall risk profile of all HIV disease cases. To simplify the discussion and better describe the overall changes over time, these remaining NIR cases have been assigned to a risk category based on the proportionate representation of the various risk groups within the surveillance data. This reassignment is done separately for males and females because risk differs for each sex. Further, this risk reassignment for each sex is done separately by each race/ethnicity group (if the group represents a sufficient number of cases).

> For example, if 20 of 100 male cases do not have risk information (NIR), proportions are calculated for the remaining HIV disease cases and the proportions are applied to those with unknown risk. Of the 80 male cases with risk, 60 percent (48/80) were MSM, 5 percent (4/80) were IDU, 2.5 percent (2/80) were MSM/IDU, and 32.5 percent (26/80) were heterosexual contact. These fractions are then applied to the 20 NIR cases. For MSM, (20)(.60)=12. Thus, 12 of the 20 NIR cases are reassigned to MSM. For heterosexual contact,

(20)(.325)=6.5 or 7 (rounded). Thus, 7 of 20 NIR cases are assigned to heterosexual contact. This process is complete for each risk group. This example is fairly simple and only an illustration of how the risk is reassigned for NIR cases. Actual reassignment takes into account the differences of racial/ethnic distributions for each risk group as well.

RATE CALCULATION AND DENOMINATOR DETERMINATION

Rates are presented throughout the *Profile* for several categories of race/ethnicity, age groups and gender. Rates are also presented for counties and regions across the state. Rates are expressed as cases per 100,000 population. Unless noted, all rate denominators were derived for the referenced year using bridged-race category estimates for North Carolina available from the National Center for Health Statistics. Estimates for 2005 were not available at press time; thus rates for 2005 were calculated using 2004 estimates. The bridged-race estimates of the resident population are based on Census 2000 counts. These estimates result from bridging the 31 race categories used in Census 2000, as specified in the 1997 Office of Management and Budget (OMB) standards for the collection of data on race and ethnicity, to the four race categories specified under the 1977 standards. More information about bridged-race categories is available at their website, http://www.cdc.gov/nchs/about/major/dvs/popbridge/popbridge.htm.

In general, rates should be viewed with caution. This is especially true of rates that are based on small numbers of cases (generally fewer than 20), because these rates have large standard errors and confidence intervals that can be wider than the rates themselves. Thus, it is important to keep in mind that rates based on small numbers of cases should be considered unreliable. For a more complete discussion of rates based on small numbers, please see the North Carolina Center for Statistics' publication, Statistical Primer No.12 : "Problems with Rates Based on Small Numbers" by Paul Buescher. This publication is available at the website, http://www.schs.state.nc.us/SCHS/. In order to better describe county rates for HIV disease, the county rankings for HIV disease, pages 161 and 162, are based on three-year averages. This helps improve the reliability of rates for counties with small numbers of cases and provides a better comparison.

APPENDIX D: TABLES

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Table A: North Carolina HIV Disease† Cases Gender and Age, 2001-2005

Age		2001 Cases	2001 Pct	2001 Rate*	2002 Cases	2002 Pct	2002 Rate*	2003 Cases	2003 Pct	2003 Rate*	2004 Cases	2004 Pct	2004 Rate*	2005 Cases	2005 Pct	2005 Rate*
Male	**0-12 Years**	1	0%	0.1	4	0%	0.5	4	0%	0.5	0	0%	0.0	6	0%	0.8
	13-19 Years	12	1%	3.1	32	2%	8.0	25	1%	6.1	21	1%	5.0	51	3%	12.1
	20-29 Years	230	15%	37.4	240	14%	38.7	256	12%	40.9	257	16%	40.7	263	15%	41.6
	30-39 Years	364	24%	56.9	417	25%	65.0	474	23%	74.0	352	22%	55.2	387	21%	60.7
	40-49 Years	304	20%	50.5	329	20%	53.7	437	21%	70.4	346	21%	54.9	405	22%	64.3
	50 and over	127	8%	12.5	140	8%	13.5	229	11%	21.4	189	12%	17.2	196	11%	17.8
	Unknown	0	0%	---	0	0%	---	0	0%	---	0	0%	---	0	0%	---
	Total	**1,038**	**68%**	**25.8**	**1,162**	**69%**	**28.5**	**1,425**	**69%**	**34.4**	**1,165**	**71%**	**27.7**	**1,308**	**72%**	**31.2**
Female	**0-12 Years**	0	0%	0.0	4	0%	0.5	5	0%	0.7	4	0%	0.5	2	0%	0.3
	13-19 Years	21	1%	5.7	18	1%	4.8	33	2%	8.5	13	1%	3.3	25	1%	6.3
	20-29 Years	118	8%	20.7	126	7%	22.1	151	7%	26.3	94	6%	16.3	117	6%	20.3
	30-39 Years	194	13%	30.6	180	11%	28.4	198	10%	31.5	134	8%	21.5	157	9%	25.1
	40-49 Years	97	6%	15.5	129	8%	20.3	185	9%	28.7	144	9%	22.0	138	8%	21.1
	50 and over	53	3%	4.2	68	4%	5.3	76	4%	5.8	82	5%	6.1	59	3%	4.4
	Unknown	0	0%	---	0	0%	---	0	0%	---	0	0%	---	0	0%	---
	Total	**483**	**32%**	**11.6**	**525**	**31%**	**12.4**	**648**	**31%**	**15.1**	**471**	**29%**	**10.8**	**498**	**28%**	**11.5**
Total	**0-12 Years**	1	0%	0.1	8	0%	0.5	9	0%	0.6	4	0%	0.3	8	0%	0.5
	13-19 Years	33	2%	4.3	50	3%	6.5	58	3%	7.3	34	2%	4.2	76	4%	9.3
	20-29 Years	348	23%	29.4	366	22%	30.7	407	20%	33.9	351	21%	29.0	380	21%	31.4
	30-39 Years	558	37%	43.8	597	35%	46.8	672	32%	53.0	486	30%	38.5	544	30%	43.1
	40-49 Years	401	26%	32.6	458	27%	36.7	622	30%	49.2	490	30%	38.2	543	30%	42.3
	50 and over	180	12%	7.9	208	12%	9.0	305	15%	12.8	271	17%	11.1	255	14%	10.4
	Unknown	0	0%	---	0	0%	---	0	0%	---	0	0%	---	0	0%	---
	Total	**1,521**	**100%**	**18.6**	**1,687**	**100%**	**20.3**	**2,073**	**100%**	**24.6**	**1,636**	**100%**	**19.2**	**1,806**	**100%**	**21.1**

*per 100,000 population †HIV Disease includes all newly reported HIV infected individuals by the date of first report (HIV or AIDS)

Table B: North Carolina HIV Disease† Cases
Gender and Race/Ethnicity, 2001-2005

Race/Ethnicity		2001 Cases	2001 Pct	2001 Rate*	2002 Cases	2002 Pct	2002 Rate*	2003 Cases	2003 Pct	2003 Rate*	2004 Cases	2004 Pct	2004 Rate*	2005 Cases	2005 Pct	2005 Rate*
Male	**White****	260	17%	9.2	332	20%	11.7	438	21%	15.3	361	22%	12.5	416	23%	14.4
	Black**	710	47%	84.6	748	44%	87.8	879	42%	101.7	720	44%	82.3	775	43%	88.6
	Am.In/AN**	10	1%	20.0	10	1%	19.8	11	1%	21.4	14	1%	26.8	12	1%	23.0
	Asian,PI**	6	0%	9.2	8	0%	11.6	12	1%	16.5	3	0%	3.9	6	0%	7.8
	Hispanic	52	3%	21.1	62	4%	23.4	80	4%	28.3	66	4%	21.9	97	5%	32.2
	Unknown	0	0%	---	2	0%	---	5	0%	---	1	0%	---	2	0%	---
	Total	**1,038**	**68%**	**25.8**	**1,162**	**69%**	**28.5**	**1,425**	**69%**	**34.4**	**1,165**	**71%**	**27.7**	**1,308**	**72%**	**31.2**
Female	**White****	79	5%	2.7	70	4%	2.4	106	5%	3.6	76	5%	2.5	90	5%	3.0
	Black**	381	25%	40.3	416	25%	43.4	495	24%	51.0	357	22%	36.2	367	20%	37.3
	Am.In/AN**	6	0%	11.5	5	0%	9.5	5	0%	9.3	4	0%	7.3	10	1%	18.3
	Asian,PI**	4	0%	5.8	4	0%	5.5	7	0%	9.2	1	0%	1.2	3	0%	3.7
	Hispanic	13	1%	7.7	30	2%	16.2	35	2%	17.4	33	2%	15.2	28	2%	12.9
	Unknown	0	0%	---	0	0%	---	0	0%	---	0	0%	---	0	0%	---
	Total	**483**	**32%**	**11.6**	**525**	**31%**	**12.4**	**648**	**31%**	**15.1**	**471**	**29%**	**10.8**	**498**	**28%**	**11.5**
Total	**White****	339	22%	5.9	402	24%	6.9	544	26%	9.3	437	27%	7.4	506	28%	8.6
	Black**	1,091	72%	61.1	1,164	69%	64.3	1,374	66%	74.9	1,077	66%	57.9	1,142	63%	61.4
	Am.In/AN**	16	1%	15.7	15	1%	14.5	16	1%	15.2	18	1%	16.9	22	1%	20.6
	Asian,PI**	10	1%	7.4	12	1%	8.5	19	1%	12.8	4	0%	2.6	9	0%	5.7
	Hispanic	65	4%	15.6	92	5%	20.4	115	6%	23.8	99	6%	19.1	125	7%	24.1
	Unknown	0	0%	---	2	0%	---	5	0%	---	1	0%	---	2	0%	---
	Total	**1,521**	**100%**	**18.6**	**1,687**	**100%**	**20.3**	**2,073**	**100%**	**24.6**	**1,636**	**100%**	**19.2**	**1,806**	**100%**	**21.1**

*per 100,000 population **non Hispanic; Am. In/AN= American Indian/Alaskan Native; Asian, PI= Asian/Pacific Islander
†HIV Disease includes all newly reported HIV infected individuals by the date of first report (HIV or AIDS)

Table C: North Carolina HIV Disease† Cases
Mode of Transmission by Gender, 2001-2005

Mode of Exposure		2001		2002		2003		2004		2005	
		Cases	Pct	Cases	Pct	Cases	Pct	Cases	Pct	Cases	Pct
Male	**MSM***	387	25%	501	30%	613	30%	534	33%	619	34%
	IDU*	76	5%	95	6%	87	4%	65	4%	60	3%
	MSM/IDU	34	2%	22	1%	31	1%	23	1%	23	1%
	Blood products*	9	1%	17	1%	24	1%	10	1%	9	0%
	Heterosexual-CDC	164	11%	112	7%	138	7%	88	5%	95	5%
	Pediatric	1	0%	4	0%	4	0%	1	0%	7	0%
	Heterosexual-NIR*	116	8%	125	7%	143	7%	108	7%	116	6%
	NIR*	251	17%	286	17%	385	19%	336	21%	379	21%
	Total	**1,038**	**68%**	**1,162**	**69%**	**1,425**	**69%**	**1,165**	**71%**	**1,308**	**72%**
Female	**IDU***	42	3%	29	2%	46	2%	35	2%	35	2%
	Blood products*	21	1%	13	1%	22	1%	11	1%	14	1%
	Heterosexual-CDC	189	12%	195	12%	197	10%	132	8%	135	7%
	Pediatric	---	---	4	0%	5	0%	3	0%	2	0%
	Heterosexual-NIR*	84	6%	99	6%	130	6%	101	6%	103	6%
	NIR*	147	10%	185	11%	248	12%	189	12%	209	12%
	Total	**483**	**32%**	**525**	**31%**	**648**	**31%**	**471**	**29%**	**498**	**28%**
Total	**MSM***	387	25%	501	30%	613	30%	534	33%	619	34%
	IDU*	118	8%	124	7%	133	6%	100	6%	95	5%
	MSM/IDU	34	2%	22	1%	31	1%	23	1%	23	1%
	Blood products*	30	2%	30	2%	46	2%	21	1%	23	1%
	Heterosexual-CDC	353	23%	307	18%	335	16%	220	13%	230	13%
	Pediatric	1	0%	8	0%	9	0%	4	0%	9	0%
	Heterosexual-NIR*	200	13%	224	13%	273	13%	209	13%	219	12%
	NIR*	398	26%	471	28%	633	31%	525	32%	588	33%
	Total	**1,521**	**100%**	**1,687**	**100%**	**2,073**	**100%**	**1,636**	**100%**	**1,806**	**100%**

*MSM= men who have sex with men; IDU= intravenous drug use; "Blood products" includes adult hemophilia; "Heterosexual-NIR" includes reports initially classified as "NIR" with additional risk information consistent with heterosexual transmission; NIR= no identified risk reported

†HIV Disease includes all newly reported HIV infected individuals by the date of first report (HIV or AIDS)

Table D: North Carolina HIV† Disease Cases
Mode of Transmission by Gender (NIRs* Redistributed), 2001-2005

Mode of Exposure		2001		2002		2003		2004		2005	
		Cases	Pct	Cases	Pct	Cases	Pct	Cases	Pct	Cases	Pct
Male	MSM*	506	49%	659	57%	836	59%	746	64%	861	66%
	IDU*	101	10%	128	11%	120	8%	91	8%	87	7%
	MSM/IDU	45	4%	30	3%	42	3%	31	3%	32	2%
	Blood products*	12	1%	23	2%	32	2%	15	1%	13	1%
	Heterosexual-All	374	36%	320	27%	390	27%	280	24%	309	24%
	Pediatric	1	0%	4	0%	4	0%	1	0%	7	1%
	Total††	**1,038**	**100%**	**1,162**	**100%**	**1,425**	**100%**	**1,165**	**100%**	**1,308**	**100%**
Female	IDU*	62	13%	45	9%	75	12%	58	12%	59	12%
	Blood products*	31	6%	20	4%	36	6%	19	4%	25	5%
	Heterosexual-All	392	81%	456	87%	534	82%	392	83%	413	83%
	Pediatric	0	0%	4	1%	5	1%	3	1%	2	0%
	Total††	**483**	**100%**	**525**	**100%**	**648**	**100%**	**471**	**100%**	**498**	**100%**
Total	MSM*	506	33%	659	39%	836	40%	746	46%	861	48%
	IDU*	163	11%	173	10%	195	9%	149	9%	146	8%
	MSM/IDU*	45	3%	30	2%	42	2%	31	2%	32	2%
	Blood products*	43	3%	43	3%	68	3%	34	2%	38	2%
	Heterosexual-All	766	50%	776	46%	924	45%	672	41%	722	40%
	Pediatric	1	0%	8	0%	9	0%	4	0%	9	0%
	Total††	**1,521**	**100%**	**1,687**	**100%**	**2,073**	**100%**	**1,636**	**100%**	**1,806**	**100%**

*MSM= men who have sex with men; IDU= intravenous drug use; "Blood products" includes adult hemophilia
†HIV Disease includes all newly reported HIV infected individuals by the date of first report (HIV or AIDS)
††Totals represent actual case totals and may not equal the sum of cases listed in cells above due to redistribution of NIR cases **(See Appendix C pg.C-5)**

Table E: North Carolina Female HIV Disease† Cases
Mode of Transmission by Race/Ethnicity (NIRs* Redistributed), 2001-2005

Mode of Exposure		2001		2002		2003		2004		2005	
		Cases	Pct	Cases	Pct	Cases	Pct	Cases	Pct	Cases	Pct
White, NH*	IDU*	20	25%	10	14%	27	25%	13	17%	20	22%
	Blood products*	5	6%	4	6%	5	5%	2	3%	2	2%
	Heterosexual-All	55	69%	56	80%	75	70%	60	79%	68	75%
	Pediatric	0	0%	0	0%	0	0%	1	1%	1	1%
	Total††	**79**	**100%**	**70**	**100%**	**106**	**100%**	**76**	**100%**	**90**	**100%**
Black, NH*	IDU*	37	10%	33	8%	42	9%	39	11%	36	10%
	Blood products*	24	6%	14	3%	31	6%	14	4%	16	4%
	Heterosexual-All	321	84%	366	88%	419	85%	303	85%	314	86%
	Pediatric	0	0%	3	1%	4	1%	2	1%	1	0%
	Total††	**381**	**100%**	**416**	**100%**	**495**	**100%**	**357**	**100%**	**367**	**100%**
All Other	IDU*	5	22%	2	5%	6	13%	6	16%	3	7%
	Blood products*	2	9%	2	5%	0	0%	3	8%	7	17%
	Heterosexual-All	16	70%	34	87%	40	85%	29	76%	31	76%
	Pediatric	0	0%	1	3%	1	2%	0	0%	0	0%
	Total††	**23**	**100%**	**39**	**100%**	**47**	**100%**	**38**	**100%**	**41**	**100%**
Total	IDU*	62	13%	45	9%	75	12%	58	12%	59	12%
	Blood products*	31	6%	20	4%	36	6%	19	4%	25	5%
	Heterosexual-All	392	81%	456	87%	534	82%	392	83%	413	83%
	Pediatric	0	0%	4	1%	5	1%	3	1%	2	0%
	Total††	**483**	**100%**	**525**	**100%**	**648**	**100%**	**471**	**100%**	**498**	**100%**

*NH = Non Hispanic; IDU= intravenous drug use; "Blood products" includes adult hemophilia
†HIV Disease includes all newly reported HIV infected individuals by the date of first report (HIV or AIDS)
††Totals represent actual case totals and may not equal the sum of cases listed in cells above due to redistribution of NIR cases **(See Appendix C pg.C-5)**

Table F: North Carolina Male HIV Disease† Cases
Mode of Transmission by Race/Ethnicity (NIRs* Redistributed), 2001-2005

Mode of Exposure		2001		2002		2003		2004		2005	
		Cases	Pct	Cases	Pct	Cases	Pct	Cases	Pct	Cases	Pct
White, NH	**MSM***	184	71%	257	77%	331	76%	293	81%	349	84%
	IDU*	16	6%	25	8%	22	5%	25	7%	11	3%
	MSM/IDU*	15	6%	9	3%	18	4%	13	4%	18	4%
	Blood products*	4	2%	8	2%	9	2%	3	1%	3	1%
	Heterosexual-All	41	16%	34	10%	58	13%	25	7%	34	8%
	Pediatric	0	0%	0	0%	0	0%	1	0%	1	0%
	Total††	**260**	**100%**	**332**	**100%**	**438**	**100%**	**361**	**100%**	**416**	**100%**
Black, NH	**MSM***	289	41%	354	47%	454	52%	397	55%	441	57%
	IDU*	78	11%	96	13%	85	10%	63	9%	70	9%
	MSM/IDU*	30	4%	21	3%	18	2%	17	2%	12	2%
	Blood products*	8	1%	11	1%	22	3%	12	2%	10	1%
	Heterosexual-All	305	43%	264	35%	298	34%	231	32%	237	31%
	Pediatric	1	0%	3	0%	3	0%	0	0%	5	1%
	Total††	**710**	**100%**	**748**	**100%**	**879**	**100%**	**720**	**100%**	**775**	**100%**
All Other	**MSM***	33	49%	48	59%	51	48%	56	67%	71	60%
	IDU*	7	10%	7	9%	13	12%	3	4%	6	5%
	MSM/IDU*	0	0%	0	0%	6	6%	1	1%	2	2%
	Blood products*	0	0%	4	5%	1	1%	0	0%	0	0%
	Heterosexual-All	28	41%	22	27%	34	32%	24	29%	38	32%
	Pediatric	0	0%	1	1%	2	2%	0	0%	1	1%
	Total††	**68**	**100%**	**82**	**100%**	**108**	**100%**	**84**	**100%**	**117**	**100%**
Total	**MSM***	506	49%	659	57%	836	59%	746	64%	861	66%
	IDU*	101	10%	128	11%	120	8%	91	8%	87	7%
	MSM/IDU*	45	4%	30	3%	42	3%	31	3%	32	2%
	Blood products*	12	1%	23	2%	32	2%	15	1%	13	1%
	Heterosexual-All	374	36%	320	27%	390	27%	280	24%	309	24%
	Pediatric	1	0%	4	0%	4	0%	1	0%	7	1%
	Total††	**1,038**	**100%**	**1,162**	**100%**	**1,425**	**100%**	**1,165**	**100%**	**1,308**	**100%**

*NH=non Hispanic; MSM= men who have sex with men; IDU= intravenous drug use; "Blood products" includes adult hemophilia

†HIV Disease includes all newly reported HIV infected individuals by the date of first report (HIV or AIDS)

††Totals represent actual case totals and may not equal the sum of cases listed in cells above due to redistribution of NIR cases **(See Appendix C pg.C-5)**

Table G: North Carolina HIV Disease† Cases Living as of 12/31/2005 Mode of Transmission by Gender, (NIRs Redistributed)

Mode of Exposure		2005	
		Cases	Pct
Male	**MSM***	6871	53%
	IDU*	2030	16%
	MSM/IDU	767	6%
	Blood products*	233	2%
	Heterosexual-All	2954	23%
	Pediatric	90	1%
	Total††	**12,946**	**100%**
Female	**IDU***	1152	19%
	Blood products*	268	5%
	Heterosexual-All	4450	75%
	Pediatric	82	1%
	Total††	**5,954**	**100%**
Total	**MSM***	6871	36%
	IDU*	3182	17%
	MSM/IDU	767	4%
	Blood products*	501	3%
	Heterosexual-All	7404	39%
	Pediatric	172	1%
	Total††	**18,900**	**100%**

*MSM= men who have sex with men; IDU= intravenous drug use; "Blood products" include adult hemophilia;
†HIV Disease includes all newly reported HIV infected individuals by the date of first report (HIV or AIDS)
††Totals represent actual case totals and may not equal the sum of cases listed in cells above due to redistribution of NIR cases**(See Appendix C pg.C-5)**

Table H: North Carolina HIV Disease† Cases Age 13-24 Years Mode of Transmission by Gender (NIRs* Redistributed), 2001-2005

Mode of Exposure		2001		2002		2003		2004		2005	
		Cases	Pct	Cases	Pct	Cases	Pct	Cases	Pct	Cases	Pct
Male	MSM*	84	75%	116	84%	122	81%	130	87%	146	89%
	IDU*	1	1%	0	0%	1	1%	0	0%	0	0%
	MSM/IDU	0	0%	3	2%	1	1%	4	3%	0	0%
	Blood products*	0	0%	1	1%	0	0%	0	0%	0	0%
	Heterosexual-All	27	24%	18	13%	26	17%	16	11%	19	11%
	Pediatric	0	0%	0	0%	0	0%	0	0%	0	0%
	Total††	**112**	**100%**	**138**	**100%**	**150**	**100%**	**150**	**100%**	**165**	**100%**
Female	IDU*	2	2%	3	4%	7	7%	3	5%	3	4%
	Blood products*	0	0%	0	0%	1	1%	0	0%	3	4%
	Heterosexual-All	74	98%	73	96%	87	92%	58	95%	66	92%
	Pediatric	0	0%	0	0%	0	0%	0	0%	0	0%
	Total††	**76**	**100%**	**76**	**100%**	**95**	**100%**	**61**	**100%**	**72**	**100%**
Total	MSM*	84	45%	116	54%	122	50%	130	62%	146	62%
	IDU*	3	1%	3	1%	8	3%	3	1%	3	1%
	MSM/IDU*	0	0%	3	1%	1	.5%	4	2%	0	0%
	Blood products*	0	0%	1	1%	1	.5%	0	0%	3	1%
	Heterosexual-All	101	54%	91	43%	113	46%	74	35%	85	36%
	Pediatric	0	0%	0	0%	0	0%	0	0%	0	0%
	Total††	**188**	**100%**	**214**	**100%**	**245**	**100%**	**211**	**100%**	**237**	**100%**

*MSM= men who have sex with men; IDU= intravenous drug use; "Blood products" includes adult hemophilia;
†HIV Disease includes all newly reported HIV infected individuals by the date of first report (HIV or AIDS)
††Totals represent actual case totals and may not equal the sum of cases listed in cells above due to redistribution of NIR cases **(See Appendix C pg.C-5)**

Table I: North Carolina HIV Disease† Cases Age 13-24 Years Gender and Race/Ethnicity, 2001-2005

Race/Ethnicity		2001	2001	2001	2002	2002	2002	2003	2003	2003	2004	2004	2004	2005	2005	2005
		Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*
Male	**White****	22	12%	4.9	30	14%	6.6	27	11%	5.9	22	10%	4.7	23	10%	4.9
	Black**	84	45%	49.4	97	45%	55.5	109	44%	60.7	116	55%	63.5	129	54%	70.6
	All Other***	6	3%	6.6	11	5%	12.2	14	6%	15.7	12	6%	13.4	13	5%	14.5
	Total	112	60%	15.9	138	64%	19.2	150	61%	20.6	150	71%	20.3	165	70%	22.4
Female	**White****	11	6%	2.6	14	7%	3.3	15	6%	3.5	9	4%	2.1	11	5%	2.5
	Black**	57	30%	33.1	53	25%	30.1	68	28%	37.8	47	22%	25.7	51	22%	27.8
	All Other***	8	4%	12.8	9	4%	14.1	12	5%	18.4	5	2%	7.5	10	4%	14.9
	Total	76	40%	11.6	76	36%	11.5	95	39%	14.1	61	29%	8.9	72	30%	10.5
Total	**White****	33	18%	3.8	44	21%	5.0	42	17%	4.7	31	15%	3.4	34	14%	3.8
	Black**	141	75%	41.2	150	70%	42.8	177	72%	49.2	163	77%	44.5	180	76%	49.2
	All Other***	14	7%	9.1	20	9%	13.0	26	11%	16.9	17	8%	10.9	23	10%	14.7
	Total	188	100%	13.8	214	100%	15.5	245	100%	17.4	211	100%	14.8	237	100%	16.7

*per 100,000 population **non Hispanic; ***All Other includes Hispanic, American Indian/Alaskan Native, Asian/Pacific Islander
†HIV Disease includes all newly reported HIV infected individuals by the date of first report (HIV or AIDS)

Table J: HIV Disease† Cumulative Cases by County of Residence, 1983-2005

COUNTY	83-89	90-94	95-00	2001	2002	2003	2004	2005	CUMULATIVE
ALAMANCE	11	96	111	16	18	27	21	29	329
ALEXANDER	1	11	6	0	5	1	3	7	34
ANSON	1	43	40	5	4	4	3	1	101
ASHE	0	0	4	0	0	0	1	0	5
AVERY	2	2	4	0	1	0	0	0	9
BEAUFORT	9	52	52	14	5	6	5	9	152
BERTIE	3	20	44	11	6	2	9	7	102
BLADEN	5	26	30	6	4	13	5	4	93
BRUNSWICK	5	43	40	15	8	20	16	9	156
BUNCOMBE	16	227	244	21	28	25	22	22	605
BURKE	5	28	31	3	4	6	1	8	86
CABARRUS	11	76	79	5	18	19	7	18	233
CALDWELL	3	31	20	3	3	5	2	7	74
CAMDEN	0	3	8	1	3	1	0	2	18
CARTERET	7	33	20	0	2	8	6	1	77
CASWELL	0	9	10	1	2	5	1	0	28
CATAWBA	9	62	81	6	19	22	10	10	219
CHATHAM	5	26	24	5	3	6	6	3	78
CHEROKEE	1	5	5	1	1	1	0	2	16
CHOWAN	2	14	15	0	2	2	1	3	39
CLAY	0	1	0	1	1	0	1	1	5
CLEVELAND	10	86	87	11	9	15	21	25	264
COLUMBUS	10	60	79	17	8	24	8	16	222
CRAVEN	13	117	81	20	22	26	12	16	307
CUMBERLAND	61	458	434	56	60	97	73	75	1,314
CURRITUCK	0	7	7	0	2	2	1	1	20
DARE	5	13	14	0	2	3	7	1	45
DAVIDSON	14	71	95	6	16	17	16	20	255
DAVIE	1	15	16	3	2	0	1	3	41
DUPLIN	9	55	63	10	13	22	18	14	204
DURHAM	76	656	560	105	120	93	76	111	1,797
EDGECOMBE	9	106	110	14	22	43	25	17	346
FORSYTH	71	346	588	75	93	140	94	94	1,501
FRANKLIN	6	34	34	12	6	8	5	7	112
GASTON	18	276	230	27	34	40	20	32	677
GATES	0	2	2	2	1	2	0	0	9
GRAHAM	0	0	2	1	0	0	1	0	4
GRANVILLE	8	61	68	13	10	23	12	21	216
GREENE	2	21	47	4	4	2	3	2	85
GUILFORD	70	575	872	116	148	114	119	118	2,132
HALIFAX	12	91	99	13	6	10	7	10	248
HARNETT	10	64	64	11	12	13	14	9	197
HAYWOOD	5	19	22	1	4	0	2	9	62
HENDERSON	3	37	53	4	7	3	3	4	114
HERTFORD	8	29	33	6	10	17	19	11	133
HOKE	2	26	53	15	2	8	1	3	110
HYDE	0	1	4	0	0	3	2	1	11
IREDELL	9	51	46	8	17	13	9	14	167
JACKSON	1	4	11	0	0	0	1	2	19
JOHNSTON	16	106	116	29	27	23	12	24	353

†HIV Disease includes all newly reported HIV infected individuals by the date of first report (HIV or AIDS)

Table J (continued): HIV Disease† Cumulative Cases by County of Residence, 1983-2005

COUNTY	83-89	90-94	95-00	2001	2002	2003	2004	2005	CUMULATIVE
JONES	0	7	8	0	5	1	2	1	24
LEE	2	42	67	9	11	9	12	6	158
LENOIR	6	129	145	20	17	24	12	25	378
LINCOLN	3	17	26	3	5	8	5	3	70
MACON	0	10	11	1	0	1	3	4	30
MADISON	0	4	9	2	0	1	1	0	17
MARTIN	2	27	33	10	7	11	5	8	103
MCDOWELL	4	8	16	1	2	1	1	2	35
MECKLENBURG	178	1,674	1,489	251	307	441	351	327	5,018
MITCHELL	1	3	6	0	1	1	0	1	13
MONTGOMERY	1	14	26	1	0	1	6	4	53
MOORE	7	46	50	13	19	12	7	14	168
NASH	13	114	124	22	17	19	13	25	347
NEW HANOVER	29	225	228	61	48	57	50	62	760
NORTHAMPTON	5	31	29	7	2	6	3	3	86
ONSLOW	20	67	88	14	19	19	15	17	259
ORANGE	27	100	94	12	11	16	16	15	291
PAMLICO	3	10	7	1	1	4	0	3	29
PASQUOTANK	4	26	40	1	6	10	7	3	97
PENDER	5	34	22	5	4	7	5	5	87
PERQUIMANS	1	5	16	3	4	2	0	3	34
PERSON	1	24	30	5	7	6	7	0	80
PITT	22	217	241	34	50	36	25	37	662
POLK	1	7	14	1	1	3	1	0	28
RANDOLPH	9	32	53	9	16	19	9	8	155
RICHMOND	2	56	60	3	2	10	5	10	148
ROBESON	9	140	153	26	18	32	33	40	451
ROCKINGHAM	5	52	67	8	11	4	13	8	168
ROWAN	13	113	95	15	12	18	23	25	314
RUTHERFORD	3	27	37	7	2	1	5	3	85
SAMPSON	6	71	71	15	9	9	5	12	198
SCOTLAND	4	51	67	0	4	6	13	11	156
STANLY	1	31	36	6	6	1	8	1	90
STOKES	1	6	8	4	1	2	3	5	30
SURRY	3	13	22	8	5	4	6	11	72
SWAIN	3	8	7	1	1	4	0	1	25
TRANSYLVANIA	2	13	12	2	2	5	0	2	38
TYRRELL	0	4	2	1	0	0	0	0	7
UNION	9	57	63	11	11	14	8	7	180
VANCE	5	72	79	16	9	23	15	7	226
WAKE	150	832	820	149	166	225	185	208	2,735
WARREN	0	12	13	7	4	6	3	2	47
WASHINGTON	2	27	31	2	3	4	2	7	78
WATAUGA	3	4	3	0	0	5	0	5	20
WAYNE	25	132	143	22	36	23	22	23	426
WILKES	2	9	11	1	2	2	5	3	35
WILSON	19	149	161	33	26	21	17	30	456
YADKIN	3	3	13	0	1	4	3	3	30
YANCEY	1	2	7	1	0	1	1	0	13
UNKNOWN	3	5	31	4	2	0	3	3	51
NC TOTAL	**1,163**	**8,957**	**9,642**	**1,521**	**1,687**	**2,073**	**1,636**	**1,806**	**28,485**

†HIV Disease includes all newly reported HIV infected individuals by the date of first report (HIV or AIDS)

Table K: HIV Disease† Cases by County Rank Order (Three-Year Average Rate*), 2003-2005

COUNTY	2003	2004	2005	2003	2004	2005	AVG	RANK
HERTFORD	17	19	11	71.9	80.7	46.7	66.4	1
EDGECOMBE	43	25	17	78.3	45.7	31.1	51.7	2
MECKLENBURG	441	351	327	58.6	45.5	42.4	48.8	3
DURHAM	93	76	111	39.4	31.7	46.3	39.1	4
HYDE	3	2	1	54.1	36.2	18.1	36.2	5
GRANVILLE	23	12	21	43.7	22.7	39.7	35.4	6
DUPLIN	22	18	14	43.0	34.8	27.0	34.9	7
LENOIR	24	12	25	41.0	20.5	42.8	34.8	8
VANCE	23	15	7	52.6	34.3	16.0	34.3	9
FORSYTH	140	94	94	44.1	29.3	29.3	34.2	10
NEW HANOVER	57	50	62	33.8	28.8	35.7	32.8	11
WASHINGTON	4	2	7	29.8	15.0	52.5	32.4	12
MARTIN	11	5	8	43.9	20.2	32.3	32.1	13
BERTIE	2	9	7	10.3	46.1	35.8	30.7	14
WILSON	21	17	30	27.9	22.3	39.4	29.9	15
COLUMBUS	24	8	16	44.0	14.6	29.2	29.3	16
WAKE	225	185	208	32.2	25.7	28.9	28.9	17
ROBESON	32	33	40	25.4	26.1	31.6	27.7	18
SCOTLAND	6	13	11	16.7	35.9	30.4	27.6	19
GUILFORD	114	119	118	26.2	27.1	26.9	26.8	20
CUMBERLAND	97	73	75	31.6	23.7	24.3	26.5	21
PITT	36	25	37	26.0	17.8	26.3	23.4	22
BLADEN	13	5	4	39.8	15.1	12.1	22.4	23
NORTH CAROLINA	**2073**	**1636**	**1806**	**24.6**	**19.2**	**21.1**	**21.6**	
NASH	19	13	25	21.2	14.3	27.6	21.0	24
CLEVELAND	15	21	25	15.3	21.4	25.4	20.7	25
WAYNE	23	22	23	20.3	19.3	20.1	19.9	26
CRAVEN	26	12	16	28.4	13.1	17.5	19.7	27
ALAMANCE	27	21	29	19.8	15.2	20.9	18.6	28
WARREN	6	3	2	30.3	15.1	10.1	18.5	29
NORTHAMPTON	6	3	3	27.6	13.9	13.9	18.5	29
PASQUOTANK	10	7	3	27.7	19.0	8.2	18.3	30
LEE	9	12	6	18.3	24.4	12.2	18.3	30
PAMLICO	4	0	3	31.2	0.0	23.4	18.2	31
BRUNSWICK	20	16	9	24.5	18.9	10.6	18.0	32
RICHMOND	10	5	10	21.4	10.7	21.4	17.9	33
ROWAN	18	23	25	13.4	17.1	18.6	16.4	34
HALIFAX	10	7	10	17.7	12.5	17.8	16.0	35
GASTON	40	20	32	20.7	10.3	16.5	15.8	36
BEAUFORT	6	5	9	13.2	10.9	19.7	14.6	37
PERQUIMANS	2	0	3	17.2	0.0	25.5	14.2	38
JOHNSTON	23	12	24	16.8	8.5	16.9	14.1	39
SAMPSON	9	5	12	14.5	8.0	19.2	13.9	40
CHOWAN	2	1	3	13.9	6.9	20.7	13.8	41
MOORE	12	7	14	15.2	8.7	17.5	13.8	41
ORANGE	16	16	15	13.6	13.6	12.8	13.3	42
MONTGOMERY	1	6	4	3.7	21.8	14.5	13.3	42
JONES	1	2	1	9.8	19.2	9.6	12.9	43
PENDER	7	5	5	16.0	11.1	11.1	12.7	44
SWAIN	4	0	1	30.5	0.0	7.6	12.7	44
FRANKLIN	8	5	7	15.3	9.3	13.1	12.6	45

†HIV Disease includes all newly reported HIV infected individuals by the date of first report (HIV or AIDS)
*three-year average of rates per 100,000 population

Table K (continued): HIV Disease† Cases by County Rank Order (Three-Year Average Rate*), 2003-2005

COUNTY	2003	2004	2005	2003	2004	2005	AVG	RANK
CAMDEN	1	0	2	12.7	0.0	23.7	12.1	46
HARNETT	13	14	9	13.1	13.8	8.9	11.9	47
PERSON	6	7	0	16.3	18.9	0.0	11.7	48
GREENE	2	3	2	10.0	14.8	9.9	11.6	49
DAVIDSON	17	16	20	11.2	10.4	13.0	11.5	50
ONSLOW	19	15	17	12.5	9.7	11.0	11.1	51
DARE	3	7	1	9.1	20.9	3.0	11.0	52
BUNCOMBE	25	22	22	11.7	10.2	10.2	10.7	53
ANSON	4	3	1	15.9	11.9	4.0	10.6	54
ALEXANDER	1	3	7	2.9	8.6	20.1	10.5	55
HOKE	8	1	3	21.4	2.5	7.6	10.5	55
CABARRUS	19	7	18	13.3	4.8	12.3	10.1	56
SURRY	4	6	11	5.5	8.3	15.2	9.7	57
CATAWBA	22	10	10	14.9	6.7	6.7	9.4	58
ROCKINGHAM	4	13	8	4.3	14.1	8.6	9.0	59
YADKIN	4	3	3	10.7	8.0	8.0	8.9	60
CHATHAM	6	6	3	10.8	10.5	5.3	8.9	60
RANDOLPH	19	9	8	14.1	6.6	5.9	8.9	60
IREDELL	13	9	14	9.7	6.6	10.2	8.8	61
MACON	1	3	4	3.2	9.6	12.7	8.5	62
CASWELL	5	1	0	21.1	4.2	0.0	8.4	63
CARTERET	8	6	1	13.1	9.7	1.6	8.1	64
TRANSYLVANIA	5	0	2	17.0	0.0	6.8	7.9	65
LINCOLN	8	5	3	11.9	7.4	4.4	7.9	65
WATAUGA	5	0	5	11.7	0.0	11.8	7.8	66
STOKES	2	3	5	4.4	6.6	11.0	7.4	67
POLK	3	1	0	15.9	5.3	0.0	7.1	68
CLAY	0	1	1	0.0	10.6	10.6	7.0	69
HAYWOOD	0	2	9	0.0	3.6	16.0	6.5	70
UNION	14	8	7	9.6	5.2	4.6	6.5	70
CURRITUCK	2	1	1	9.6	4.5	4.5	6.2	71
GATES	2	0	0	18.6	0.0	0.0	6.2	71
CALDWELL	5	2	7	6.3	2.5	8.9	5.9	72
STANLY	1	8	1	1.7	13.6	1.7	5.7	73
BURKE	6	1	8	6.7	1.1	8.9	5.6	74
WILKES	2	5	3	3.0	7.5	4.5	5.0	75
RUTHERFORD	1	5	3	1.6	7.9	4.7	4.7	76
MITCHELL	1	0	1	6.3	0.0	6.3	4.2	77
GRAHAM	0	1	0	0.0	12.4	0.0	4.1	78
CHEROKEE	1	0	2	4.0	0.0	7.9	4.0	79
YANCEY	1	1	0	5.5	5.5	0.0	3.7	80
HENDERSON	3	3	4	3.2	3.1	4.2	3.5	81
DAVIE	0	1	3	0.0	2.6	7.9	3.5	81
MADISON	1	1	0	5.0	5.0	0.0	3.3	82
MCDOWELL	1	1	2	2.3	2.3	4.6	3.1	83
JACKSON	0	1	2	0.0	2.9	5.7	2.9	84
ASHE	0	1	0	0.0	4.0	0.0	1.3	85
ALLEGHANY	0	0	0	0.0	0.0	0.0	0.0	86
AVERY	0	0	0	0.0	0.0	0.0	0.0	86
TYRRELL	0	0	0	0.0	0.0	0.0	0.0	86

†HIV Disease includes all newly reported HIV infected individuals by the date of first report (HIV or AIDS)
*three-year average of rates per 100,000 population

Table L: North Carolina HIV Disease† Cases Living as of 12/31/05, by County of Residence and Consortia

NC Consortia	County of Residence	Report Category		TOTAL
		HIV (NON AIDS)	AIDS	
COASTAL	BRUNSWICK	63	45	108
	COLUMBUS	85	64	149
	DUPLIN	62	79	141
	NEW HANOVER	317	230	547
	ONSLOW	100	82	182
	PENDER	23	33	56
	TOTAL	**650**	**533**	**1,183**
DOGWOOD	BLADEN	30	26	56
	CUMBERLAND	575	290	865
	HARNETT	73	69	142
	HOKE	37	44	81
	MOORE	82	39	121
	RICHMOND	64	24	88
	ROBESON	170	164	334
	SAMPSON	75	46	121
	SCOTLAND	69	38	107
	TOTAL	**1,175**	**740**	**1,915**
EASTERN TRIAD	ALAMANCE	144	81	225
	CASWELL	13	6	19
	GUILFORD	920	471	1,391
	MONTGOMERY	20	20	40
	RANDOLPH	68	37	105
	ROCKINGHAM	78	36	114
	TOTAL	**1,243**	**651**	**1,894**
E. C. HIV/AIDS Partnership	BEAUFORT	47	43	90
	BERTIE	24	42	66
	CAMDEN	2	10	12
	CARTERET	23	21	44
	CHOWAN	17	11	28
	CRAVEN	120	88	208
	CURRITUCK	7	6	13
	DARE	16	14	30
	EDGECOMBE	130	122	252
	GATES	4	3	7

†HIV Disease includes all newly reported HIV infected individuals by the date of first report (HIV or AIDS)

Table L (continued): North Carolina HIV Disease† Cases Living as of 12/31/05, by County of Residence and Consortia

NC Consortia	County of Residence	Report Category		TOTAL
		HIV (NON AIDS)	AIDS	
E. C. HIV/AIDS Partnership	GREENE	24	37	61
	HALIFAX	75	68	143
	HERTFORD	49	42	91
	HYDE	3	7	10
	JONES	11	5	16
	LENOIR	135	112	247
	MARTIN	38	36	74
	NASH	119	100	219
	NORTHAMPTON	17	31	48
	PAMLICO	9	8	17
	PASQUOTANK	37	32	69
	PERQUIMANS	16	12	28
	PITT	227	208	435
	TYRRELL	3	1	4
	WASHINGTON	24	24	48
	WAYNE	142	111	253
	WILSON	154	136	290
	TOTAL	**1,473**	**1,330**	**2,803**
NORTHWEST	ALEXANDER	18	9	27
	ALLEGHANY	0	0	0
	ASHE	2	3	5
	BURKE	30	31	61
	CALDWELL	29	18	47
	CATAWBA	70	63	133
	DAVIDSON	107	63	170
	DAVIE	15	12	27
	FORSYTH	671	340	1,011
	STOKES	15	9	24
	SURRY	34	17	51
	WATAUGA	4	8	12
	WILKES	12	11	23
	YADKIN	12	11	23
	TOTAL	**1,019**	**595**	**1,614**
PIEDMONT	CHATHAM	37	15	52
	DURHAM	716	398	1,114
	FRANKLIN	39	35	74
	GRANVILLE	103	55	158
	JOHNSTON	140	103	243

†HIV Disease includes all newly reported HIV infected individuals by the date of first report (HIV or AIDS)

Table L (continued): North Carolina HIV Disease† Cases Living as of 12/31/05, by County of Residence and Consortia

NC Consortia	County of Residence	Report Category		TOTAL
		HIV (NON AIDS)	AIDS	
PIEDMONT (continued)	LEE	90	34	124
	ORANGE	131	55	186
	PERSON	38	16	54
	VANCE	82	64	146
	WAKE	1023	908	1931
	WARREN	16	14	30
	TOTAL	**2,415**	**1,697**	**4,112**
REGIONAL	ANSON	24	42	66
	CABARRUS	100	55	155
	CLEVELAND	106	59	165
	GASTON	262	143	405
	IREDELL	54	43	97
	LINCOLN	29	22	51
	MECKLENBURG	2,238	1,054	3,292
	ROWAN	124	87	211
	STANLY	46	14	60
	UNION	73	41	114
	TOTAL	**3,056**	**1,560**	**4,616**
WNCHAC	AVERY	4	2	6
	BUNCOMBE	200	200	400
	CHEROKEE	6	2	8
	CLAY	2	1	3
	GRAHAM	2	1	3
	HAYWOOD	14	28	42
	HENDERSON	26	45	71
	JACKSON	4	11	15
	MACON	8	12	20
	MADISON	7	6	13
	MCDOWELL	9	18	27
	MITCHELL	6	4	10
	POLK	6	11	17
	RUTHERFORD	23	31	54
	SWAIN	4	12	16
	TRANSYLVANIA	14	9	23
	YANCEY	4	5	9
	TOTAL	**339**	**398**	**737**
MISSING		**21**	**5**	**26**
TOTAL		**11,391**	**7,509**	**18,900**

†HIV Disease includes all newly reported HIV infected individuals by the date of first report (HIV or AIDS)

Table M: North Carolina HIV Testing at CTS Sites

County of Test	2002 Tests	2002 Positives	2003 Tests	2003 Positives	2004 Tests	2004 Positives
ALAMANCE	1,464	5	1,505	4	1,671	3
ALEXANDER	166	1	179	1	204	2
ALLEGHANY	50	0	60	0	67	0
ANSON	570	3	543	2	567	2
ASHE	119	0	87	0	100	0
AVERY	182	0	204	0	162	1
BEAUFORT	677	1	565	2	672	2
BERTIE	319	0	304	1	389	1
BLADEN	566	2	498	4	510	2
BRUNSWICK	578	3	634	5	788	2
BUNCOMBE	4,031	11	3,787	11	4,054	14
BURKE	676	1	696	1	700	0
CABARRUS	1,793	3	1,848	8	2,019	2
CALDWELL	1,334	3	1,244	0	1,166	1
CAMDEN	42	1	26	0	46	0
CARTERET	370	2	507	1	649	2
CASWELL	302	2	257	0	358	0
CATAWBA	2,447	6	2,151	5	2,468	5
CHATHAM	683	1	652	3	807	2
CHEROKEE	147	1	160	0	167	0
CHOWAN	133	1	152	1	165	1
CLAY	30	0	28	0	43	0
CLEVELAND	1,305	5	1,292	2	1,268	12
COLUMBUS	1,063	8	1,165	10	970	3
CRAVEN	601	7	607	7	964	5
CUMBERLAND	3,516	44	3,173	36	3,575	55
CURRITUCK	172	1	209	1	238	1
DARE	542	3	627	2	536	4
DAVIDSON	897	0	872	2	996	4
DAVIE	391	0	370	0	496	0
DUPLIN	656	3	615	4	618	4
DURHAM	4,133	46	3,771	43	4,817	39
EDGECOMBE	1,827	12	2,085	21	2,102	10
FORSYTH	3,172	30	3,651	40	4,101	26
FRANKLIN	530	0	711	1	831	4
GASTON	4,946	17	5,388	25	5,566	19
GATES	87	0	222	1	214	0
GRAHAM	17	0	24	0	40	0
GRANVILLE	549	2	588	6	604	3
GREENE	338	3	268	0	326	1
GUILFORD	9,065	94	9,322	81	9,425	86
HALIFAX	617	0	579	1	573	2
HARNETT	431	2	499	5	732	3
HAYWOOD	406	1	466	0	607	0
HENDERSON	927	3	1,183	0	1,337	4
HERTFORD	154	1	178	2	297	2
HOKE	434	0	390	4	493	3
HYDE	33	0	54	0	56	1
IREDELL	1,166	6	1,162	2	1,395	1
JACKSON	390	0	415	0	373	0
JOHNSTON	999	8	890	7	1,161	5

Table M (continued): North Carolina HIV Testing at CTS Sites

County of Test	2002 Tests	2002 positives	2003 Tests	2003 Positives	2004 Tests	2004 Positives
JONES	78	0	65	0	54	0
LEE	670	5	826	7	720	5
LENOIR	1,175	6	1,070	6	1,072	1
LINCOLN	242	1	289	0	362	1
MACON	206	0	195	0	236	0
MADISON	124	0	116	0	69	0
MARTIN	308	3	282	4	370	2
MCDOWELL	537	0	500	0	553	0
MECKLENBURG	7,606	140	7,613	142	9,140	142
MITCHELL	99	1	92	1	98	0
MONTGOMERY	345	2	432	1	403	1
MOORE	682	6	483	0	576	1
NASH	1,420	5	1,365	4	1,416	4
NEW HANOVER	2,666	15	2,457	23	2,786	19
NORTHAMPTON	435	0	459	1	407	0
ONSLOW	1,706	8	1,791	8	2,140	11
ORANGE	1,445	4	1,464	5	1,620	3
PAMLICO	36	0	25	0	38	0
PASQUOTANK	409	2	410	2	458	0
PENDER	263	0	274	1	356	1
PERQUIMANS	152	2	129	1	120	0
PERSON	305	0	438	0	424	2
PITT	4,034	30	3,763	13	3,939	10
POLK	124	0	131	0	108	0
RANDOLPH	502	4	407	3	429	1
RICHMOND	488	2	463	3	377	1
ROBESON	1,792	12	1,749	13	2,144	18
ROCKINGHAM	828	0	935	2	1,095	4
ROWAN	554	0	872	5	943	7
RUTHERFORD	736	1	786	1	807	1
SAMPSON	1,259	10	1,183	3	1,474	14
SCOTLAND	982	5	1,037	6	964	4
STANLY	602	4	596	1	652	1
STOKES	256	0	181	0	156	1
SURRY	391	1	407	2	470	1
SWAIN	28	0	46	0	25	0
TRANSYLVANIA	248	0	233	2	269	0
TYRRELL	78	0	79	0	100	0
UNION	840	2	866	4	904	1
VANCE	319	2	393	5	468	2
WAKE	8,723	101	10,304	94	11,646	100
WARREN	167	0	205	2	291	0
WASHINGTON	281	0	206	0	191	0
WATAUGA	442	0	369	2	390	2
WAYNE	2,588	18	2,533	14	2,684	10
WILKES	325	2	294	1	318	0
WILSON	1,703	15	1,723	8	1,821	5
YADKIN	361	1	279	1	309	1
YANCEY	102	0	116	0	164	0
MISSING/UNK	38	1	48	0	55	0
TOTAL	**105,743**	**754**	**107,842**	**743**	**119,094**	**716**

Table N: North Carolina AIDS Demographic Rates
Gender and Age, 2001-2005

Age		2001	2001	2001	2002	2002	2002	2003	2003	2003	2004	2004	2004	2005	2005	2005
		Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*
Male	**0-12 Years**	0	0%	0.0	1	0%	0.1	1	0%	0.1	0	0%	0.0	1	0%	0.1
	13-19 Years	2	0%	0.5	1	0%	0.3	1	0%	0.2	2	0%	0.5	7	1%	1.7
	20-29 Years	65	8%	10.6	81	8%	13.1	64	6%	10.2	77	7%	12.2	91	8%	14.4
	30-39 Years	221	28%	34.5	258	26%	40.2	266	25%	41.5	269	25%	42.2	239	22%	37.5
	40-49 Years	218	27%	36.2	246	25%	40.2	282	27%	45.5	282	26%	44.8	274	25%	43.5
	50 and over	75	9%	7.4	110	11%	10.6	142	14%	13.3	138	13%	12.6	163	15%	14.8
	Unknown	0	0%	---	0	0%	---	0	0%	---	0	0%	---	0	0%	---
	Total	**581**	**72%**	**14.5**	**697**	**70%**	**17.1**	**756**	**72%**	**18.3**	**768**	**70%**	**18.3**	**775**	**71%**	**18.5**
Female	**0-12 Years**	0	0%	0.0	1	0%	0.1	0	0%	0.0	1	0%	0.1	0	0%	0.0
	13-19 Years	4	0%	1.1	2	0%	0.5	1	0%	0.3	2	0%	0.5	2	0%	0.5
	20-29 Years	43	5%	7.6	39	4%	6.8	50	5%	8.7	44	4%	7.6	48	4%	8.3
	30-39 Years	88	11%	13.9	122	12%	19.3	107	10%	17.0	108	10%	17.3	97	9%	15.5
	40-49 Years	61	8%	9.7	87	9%	13.7	94	9%	14.6	102	9%	15.6	112	10%	17.1
	50 and over	25	3%	2.0	42	4%	3.3	40	4%	3.1	66	6%	4.9	55	5%	4.1
	Unknown	0	0%	---	0	0%	---	0	0%	---	0	0%	---	0	0%	---
	Total	**221**	**28%**	**5.3**	**293**	**30%**	**6.9**	**292**	**28%**	**6.8**	**323**	**30%**	**7.4**	**314**	**29%**	**7.2**
Total	**0-12 Years**	0	0%	0.0	2	0%	0.1	1	0%	0.1	1	0%	0.1	1	0%	0.1
	13-19 Years	6	1%	0.8	3	0%	0.4	2	0%	0.3	4	0%	0.5	9	1%	1.1
	20-29 Years	108	13%	9.1	120	12%	10.1	114	11%	9.5	121	11%	10.0	139	13%	11.5
	30-39 Years	309	39%	24.3	380	38%	29.8	373	36%	29.4	377	35%	29.9	336	31%	26.6
	40-49 Years	279	35%	22.7	333	34%	26.7	376	36%	29.7	384	35%	29.9	386	35%	30.1
	50 and over	100	12%	4.4	152	15%	6.5	182	17%	7.7	204	19%	8.4	218	20%	8.9
	Unknown	0	0%	---	0	0%	---	0	0%	---	0	0%	---	0	0%	---
	Total	**802**	**100%**	**9.8**	**990**	**100%**	**11.9**	**1,048**	**100%**	**12.4**	**1,091**	**100%**	**12.8**	**1,089**	**100%**	**12.7**

*per 100,000 population

Table O: North Carolina AIDS Demographic Rates
Gender and Race/Ethnicity, 2001-2005

Race/Ethnicity		2001	2001	2001	2002	2002	2002	2003	2003	2003	2004	2004	2004	2005	2005	2005
		Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*
Male	**White****	138	17%	4.9	190	19%	6.7	224	21%	7.8	220	20%	7.6	207	19%	7.2
	Black**	414	52%	49.3	467	47%	54.8	474	45%	54.9	514	47%	58.7	516	47%	59.0
	Am.In/AN**	6	1%	12.0	7	1%	13.8	8	1%	15.6	13	1%	24.9	9	1%	17.2
	Asian,PI**	1	0%	1.5	3	0%	4.4	2	0%	2.7	2	0%	2.6	2	0%	2.6
	Hispanic	22	3%	8.9	28	3%	10.6	42	4%	14.9	19	2%	6.3	39	4%	12.9
	Unknown	0	0%	---	2	0%	---	6	1%	---	0	0%	---	2	0%	---
	Total	**581**	**72%**	**14.5**	**697**	**70%**	**17.1**	**756**	**72%**	**18.3**	**768**	**70%**	**18.3**	**775**	**71%**	**18.5**
Female	**White****	36	4%	1.2	38	4%	1.3	42	4%	1.4	53	5%	1.8	43	4%	1.4
	Black**	177	22%	18.7	244	25%	25.4	234	22%	24.1	252	23%	25.6	256	24%	26.0
	Am.In/AN**	4	0%	7.7	5	1%	9.5	2	0%	3.7	3	0%	5.5	4	0%	7.3
	Asian,PI**	0	0%	0.0	0	0%	0.0	2	0%	2.6	1	0%	1.2	1	0%	1.2
	Hispanic	4	0%	2.4	6	1%	3.2	12	1%	6.0	13	1%	6.0	10	1%	4.6
	Unknown	0	0%	---	0	0%	---	0	0%	---	1	0%	---	0	0%	---
	Total	**221**	**28%**	**5.3**	**293**	**30%**	**6.9**	**292**	**28%**	**6.8**	**323**	**30%**	**7.4**	**314**	**29%**	**7.2**
Total	**White****	174	22%	3.0	228	23%	3.9	266	25%	4.5	273	25%	4.6	250	23%	4.2
	Black**	591	74%	33.1	711	72%	39.3	708	68%	38.6	766	70%	41.2	772	71%	41.5
	Am.In/AN**	10	1%	9.8	12	1%	11.6	10	1%	9.5	16	1%	15.0	13	1%	12.2
	Asian,PI**	1	0%	0.7	3	0%	2.1	4	0%	2.7	3	0%	1.9	3	0%	1.9
	Hispanic	26	3%	6.2	34	3%	7.5	54	5%	11.2	32	3%	6.2	49	4%	9.5
	Unknown	0	0%	---	2	0%	---	6	1%	---	1	0%	---	2	0%	---
	Total	**802**	**100%**	**9.8**	**990**	**100%**	**11.9**	**1,048**	**100%**	**12.4**	**1,091**	**100%**	**12.8**	**1,089**	**100%**	**12.7**

*per 100,000 population **non Hispanic; Am. In/AN= American Indian/Alaskan Native; Asian, PI= Asian/Pacific Islander

Table P: AIDS Cumulative Cases * by County of Residence, 1983-2005

COUNTY	83-89	90-94	95-00	2001	2002	2003	2004	2005	CUMULATIVE
ALAMANCE	11	49	39	6	5	13	21	16	160
ALEXANDER	1	5	2	0	2	0	2	3	15
ALLEGHANY	0	0	0	0	0	0	0	0	0
ANSON	1	15	26	3	5	1	6	6	63
ASHE	0	0	3	0	0	0	0	0	3
AVERY	2	1	2	0	0	0	0	0	5
BEAUFORT	7	34	26	8	4	5	6	7	97
BERTIE	3	14	31	4	6	3	5	6	72
BLADEN	5	14	12	3	4	7	8	2	55
BRUNSWICK	5	24	22	8	3	8	6	6	82
BUNCOMBE	16	117	161	23	17	17	19	12	382
BURKE	5	19	14	1	2	3	4	8	56
CABARRUS	11	31	40	4	9	10	3	6	114
CALDWELL	3	9	10	3	2	3	2	4	36
CAMDEN	0	1	5	1	3	1	0	2	13
CARTERET	7	20	11	1	0	6	4	1	50
CASWELL	0	7	5	0	0	0	0	0	12
CATAWBA	9	37	40	4	11	12	14	6	133
CHATHAM	5	8	12	0	1	2	3	2	33
CHEROKEE	1	3	3	0	1	1	0	0	9
CHOWAN	1	8	6	0	3	0	0	2	20
CLAY	0	0	0	1	0	0	1	0	2
CLEVELAND	10	24	24	6	13	6	16	19	118
COLUMBUS	10	23	38	10	6	15	12	7	121
CRAVEN	13	48	45	9	18	13	7	16	169
CUMBERLAND	61	170	166	31	43	51	60	33	615
CURRITUCK	0	3	7	0	0	1	0	1	12
DARE	5	7	8	0	2	1	4	1	28
DAVIDSON	14	45	39	4	8	11	4	9	134
DAVIE	1	5	11	1	1	0	1	0	20
DUPLIN	9	30	49	4	8	15	14	11	140
DURHAM	76	355	227	36	75	39	56	52	916
EDGECOMBE	9	49	64	11	23	18	22	20	216
FORSYTH	71	201	250	31	43	54	40	42	732
FRANKLIN	6	15	13	5	3	6	3	7	58
GASTON	18	92	127	15	16	24	18	32	342
GATES	0	0	3	1	1	0	0	0	5
GRAHAM	0	0	1	0	0	0	1	0	2
GRANVILLE	8	27	24	6	6	7	7	11	96
GREENE	2	7	35	5	2	1	4	3	59
GUILFORD	70	353	374	57	55	60	40	49	1,058
HALIFAX	11	41	54	8	4	12	8	8	146
HARNETT	10	33	32	8	7	10	11	12	123
HAYWOOD	5	12	12	2	5	0	3	5	44
HENDERSON	3	20	38	5	5	4	2	3	80
HERTFORD	8	12	25	3	3	6	13	1	71
HOKE	2	8	33	7	6	6	5	6	73
HYDE	0	1	4	0	0	1	3	0	9
IREDELL	9	24	30	2	4	8	6	10	93
JACKSON	1	4	7	0	0	0	2	1	15
JOHNSTON	16	44	47	7	18	18	14	16	180

*by county and year of AIDS report

Table P (continued): AIDS Cumulative Cases *by County of Residence, 1983-2005

COUNTY	83-89	90-94	95-00	2001	2002	2003	2004	2005	CUMULATIVE
JONES	0	2	5	0	0	1	2	0	10
LEE	2	17	17	3	4	5	5	2	55
LENOIR	6	48	99	17	11	5	14	16	216
LINCOLN	3	9	8	1	5	2	4	3	35
MACON	0	7	5	2	1	1	3	2	21
MADISON	0	2	6	0	0	0	1	0	9
MARTIN	2	8	19	6	6	5	4	9	59
MCDOWELL	4	2	15	2	2	1	0	3	29
MECKLENBURG	173	479	609	97	147	189	201	188	2,083
MITCHELL	1	2	1	2	1	0	0	1	8
MONTGOMERY	1	5	15	2	0	1	3	6	33
MOORE	7	18	18	7	6	8	4	6	74
NASH	13	62	65	12	8	10	12	18	200
NEW HANOVER	28	89	112	45	38	37	26	27	402
NORTHAMPTON	5	19	21	6	2	4	4	5	66
ONSLOW	20	41	34	12	12	11	10	10	150
ORANGE	27	45	31	8	2	1	8	5	127
PAMLICO	3	5	4	0	1	3	1	2	19
PASQUOTANK	4	12	18	1	4	6	8	2	55
PENDER	5	21	14	6	2	6	1	5	60
PERQUIMANS	1	2	8	0	0	1	1	4	17
PERSON	1	11	7	2	6	4	2	0	33
PITT	22	120	146	19	29	24	18	26	404
POLK	1	6	10	0	0	3	0	0	20
RANDOLPH	9	22	18	1	4	5	13	7	79
RICHMOND	2	22	20	0	2	4	3	8	61
ROBESON	9	53	78	27	21	21	27	29	265
ROCKINGHAM	5	25	33	4	7	2	3	1	80
ROWAN	13	61	57	8	8	6	13	14	180
RUTHERFORD	3	19	24	3	2	1	2	6	60
SAMPSON	6	23	31	11	8	3	6	5	93
SCOTLAND	4	27	22	2	7	4	5	5	76
STANLY	1	10	10	4	1	1	2	2	31
STOKES	1	3	8	2	0	1	0	0	15
SURRY	3	6	11	3	6	1	1	2	33
SWAIN	3	6	7	1	1	2	1	1	22
TRANSYLVANIA	2	10	4	0	2	2	0	1	21
TYRRELL	0	2	1	0	0	0	0	0	3
UNION	9	16	38	4	6	7	7	6	93
VANCE	5	32	42	10	11	13	9	6	128
WAKE	150	339	504	86	105	129	138	142	1,593
WARREN	0	5	6	3	3	4	4	1	26
WASHINGTON	2	16	19	2	3	3	0	3	48
WATAUGA	3	3	3	0	0	3	0	3	15
WAYNE	25	70	87	14	24	11	12	17	260
WILKES	2	5	9	2	0	2	1	1	22
WILSON	19	56	72	18	27	12	28	25	257
YADKIN	3	0	10	0	1	3	2	0	19
YANCEY	1	2	3	1	0	0	2	0	9
UNKNOWN	3	6	10	3	1	1	0	0	24
NC TOTAL	**1,153**	**3,940**	**4,671**	**803**	**990**	**1,048**	**1,091**	**1,089**	**14,785**

*by county and year of AIDS report

Table Q: North Carolina Chlamydia Cases
Gender and Age, 2001-2005

Age		2001	2001	2001	2002	2002	2002	2003	2003	2003	2004	2004	2004	2005	2005	2005
		Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*
Male	**0-12 Years**	14	0%	1.8	35	0%	4.6	22	0%	2.8	20	0%	2.6	15	0%	1.9
	13-19 Years	742	3%	189.2	887	4%	222.2	907	3%	221.4	1,058	4%	251.6	1,174	4%	279.2
	20-29 Years	2,136	10%	347.7	2,666	11%	429.8	2,582	10%	412.3	3,050	11%	482.8	3,252	10%	514.8
	30-39 Years	451	2%	70.5	557	2%	86.8	590	2%	92.2	670	2%	105.0	739	2%	115.8
	40-49 Years	106	0%	17.6	162	1%	26.5	181	1%	29.2	203	1%	32.2	228	1%	36.2
	50 and over	38	0%	3.7	41	0%	3.9	61	0%	5.7	62	0%	5.6	73	0%	6.6
	Unknown	1	0%	---	0	0%	---	0	0%	---	1	0%	---	0	0%	---
	Total	**3,488**	**16%**	**86.8**	**4,348**	**18%**	**106.6**	**4,343**	**17%**	**104.9**	**5,064**	**17%**	**120.6**	**5,481**	**18%**	**130.5**
Female	**0-12 Years**	50	0%	6.9	139	1%	19.0	73	0%	9.9	44	0%	5.9	52	0%	7.0
	13-19 Years	8,025	36%	2168.5	8,915	36%	2371.2	9,403	36%	2427.9	10,195	35%	2558.8	10,833	35%	2718.9
	20-29 Years	9,328	42%	1639.8	9,934	40%	1739.9	10,608	41%	1850.8	11,777	41%	2039.4	12,868	41%	2228.3
	30-39 Years	1,080	5%	170.2	1,179	5%	186.0	1,391	5%	221.2	1,613	6%	258.3	1,636	5%	262.0
	40-49 Years	165	1%	26.3	181	1%	28.5	207	1%	32.1	255	1%	39.0	255	1%	39.0
	50 and over	36	0%	2.9	40	0%	3.1	39	0%	3.0	51	0%	3.8	58	0%	4.3
	Unknown	5	0%	---	0	0%	---	0	0%	---	0	0%	---	0	0%	---
	Total	**18,689**	**84%**	**447.3**	**20,388**	**82%**	**481.8**	**21,721**	**83%**	**507.1**	**23,935**	**83%**	**551.2**	**25,702**	**82%**	**591.9**
Total	**0-12 Years**	64	0%	4.3	174	1%	11.6	95	0%	6.3	64	0%	4.2	67	0%	4.4
	13-19 Years	8,767	40%	1150.1	9,802	40%	1264.5	10,310	40%	1293.6	11,253	39%	1374.1	12,007	39%	1466.1
	20-29 Years	11,464	52%	969.0	12,602	51%	1057.9	13,191	51%	1099.7	14,827	51%	1226.2	16,120	52%	1333.1
	30-39 Years	1,531	7%	120.2	1,736	7%	136.1	1,981	8%	156.1	2,283	8%	180.9	2,375	8%	188.1
	40-49 Years	271	1%	22.1	343	1%	27.5	388	1%	30.7	458	2%	35.7	483	2%	37.6
	50 and over	74	0%	3.3	81	0%	3.5	100	0%	4.2	113	0%	4.6	131	0%	5.4
	Unknown	6	0%	---	0	0%	---	0	0%	---	1	0%	---	0	0%	---
	Total	**22,177**	**100%**	**270.5**	**24,738**	**100%**	**297.6**	**26,065**	**100%**	**309.5**	**28,999**	**100%**	**339.5**	**31,183**	**100%**	**365.1**

*per 100,000 population

Table R: North Carolina Chlamydia Cases
Gender and Race/Ethnicity, 2001-2005

Race/Ethnicity		2001 Cases	2001 Pct	2001 Rate*	2002 Cases	2002 Pct	2002 Rate*	2003 Cases	2003 Pct	2003 Rate*	2004 Cases	2004 Pct	2004 Rate*	2005 Cases	2005 Pct	2005 Rate*
Male	**White****	802	4%	28.5	1,036	4%	36.4	1,062	4%	37.0	1,184	4%	40.9	1,186	4%	41.0
	Black**	2,340	11%	278.8	2,875	12%	337.3	2,869	11%	332.1	3,343	12%	382.1	3,642	12%	416.2
	Am.In/AN**	23	0%	46.0	41	0%	81.1	23	0%	44.8	37	0%	70.8	41	0%	78.5
	Asian,PI**	26	0%	39.8	38	0%	55.2	20	0%	27.5	30	0%	39.1	42	0%	54.7
	Hispanic	282	1%	114.2	350	1%	132.1	354	1%	125.3	403	1%	133.8	413	1%	137.1
	Unknown	15	0%	---	8	0%	---	15	0%	---	67	0%	---	157	1%	---
	Total	**3,488**	**16%**	**86.8**	**4,348**	**18%**	**106.6**	**4,343**	**17%**	**104.9**	**5,064**	**17%**	**120.6**	**5,481**	**18%**	**130.5**
Female	**White****	4,831	22%	164.3	5,385	22%	181.8	5,695	22%	191.0	6,357	22%	211.5	6,754	22%	224.7
	Black**	12,087	55%	1277.4	13,209	53%	1377.5	14,020	54%	1443.4	15,114	52%	1534.3	15,695	50%	1593.3
	Am.In/AN**	226	1%	432.9	314	1%	593.9	332	1%	619.4	356	1%	653.2	424	1%	778.0
	Asian,PI**	188	1%	272.6	167	1%	230.5	153	1%	200.8	177	1%	221.0	203	1%	253.5
	Hispanic	1,285	6%	756.8	1,274	5%	686.9	1,473	6%	734.1	1,735	6%	801.6	1,900	6%	877.9
	Unknown	72	0%	---	39	0%	---	48	0%	---	196	1%	---	726	2%	---
	Total	**18,689**	**84%**	**447.3**	**20,388**	**82%**	**481.8**	**21,721**	**83%**	**507.1**	**23,935**	**83%**	**551.2**	**25,702**	**82%**	**591.9**
Total	**White****	5,633	25%	97.8	6,421	26%	110.6	6,757	26%	115.5	7,541	26%	127.8	7,940	25%	134.6
	Black**	14,427	65%	808.0	16,085	65%	888.1	16,890	65%	920.3	18,457	64%	992.3	19,337	62%	1039.6
	Am.In/AN**	249	1%	243.7	355	1%	343.2	355	1%	338.2	393	1%	368.2	465	1%	435.7
	Asian,PI**	214	1%	159.3	205	1%	145.1	173	1%	116.1	207	1%	132.0	245	1%	156.2
	Hispanic	1,567	7%	376.1	1,625	7%	360.8	1,827	7%	378.1	2,138	7%	413.0	2,313	7%	446.9
	Unknown	87	0%	---	47	0%	---	63	0%	---	263	1%	---	883	3%	---
	Total	**22,177**	**100%**	**270.5**	**24,738**	**100%**	**297.6**	**26,065**	**100%**	**309.5**	**28,999**	**100%**	**339.5**	**31,183**	**100%**	**365.1**

*per 100,000 population **non Hispanic; Am. In/AN= American Indian/Alaskan Native; Asian, PI= Asian/Pacific Islander

Table S: North Carolina Gonorrhea Cases
Gender and Age, 2001-2005

Age		2001	2001	2001	2002	2002	2002	2003	2003	2003	2004	2004	2004	2005	2005	2005
		Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*
Male	**0-12 Years**	11	0%	1.5	34	0%	4.4	22	0%	2.8	6	0%	0.8	7	0%	0.9
	13-19 Years	1,558	9%	397.2	1,324	9%	331.7	1,236	8%	301.7	1,232	8%	293.0	1,137	8%	270.4
	20-29 Years	4,637	28%	754.9	4,091	27%	659.6	3,991	26%	637.2	4,076	27%	645.2	3,679	24%	582.4
	30-39 Years	1,627	10%	254.3	1,526	10%	237.9	1,485	10%	232.0	1,463	10%	229.3	1,480	10%	232.0
	40-49 Years	752	4%	125.0	612	4%	100.0	715	5%	115.2	717	5%	113.8	859	6%	136.4
	50 and over	268	2%	26.4	248	2%	23.8	270	2%	25.3	317	2%	28.8	367	2%	33.4
	Unknown	4	0%	---	0	0%	---	0	0%	---	0	0%	---	0	0%	---
	Total	**8,857**	**53%**	**220.3**	**7,835**	**51%**	**192.0**	**7,719**	**51%**	**186.5**	**7,811**	**51%**	**186.0**	**7,529**	**50%**	**179.3**
Female	**0-12 Years**	25	0%	3.5	36	0%	4.9	25	0%	3.4	16	0%	2.1	13	0%	1.7
	13-19 Years	3,101	19%	837.9	2,886	19%	767.6	2,760	18%	712.6	2,756	18%	691.7	2,707	18%	679.4
	20-29 Years	3,707	22%	651.7	3,608	24%	631.9	3,596	24%	627.4	3,622	24%	627.2	3,768	25%	652.5
	30-39 Years	790	5%	124.5	779	5%	122.9	765	5%	121.7	747	5%	119.6	775	5%	124.1
	40-49 Years	209	1%	33.3	168	1%	26.4	204	1%	31.7	210	1%	32.1	247	2%	37.8
	50 and over	38	0%	3.0	37	0%	2.9	16	0%	1.2	36	0%	2.7	36	0%	2.7
	Unknown	5	0%	---	0	0%	---	0	0%	---	0	0%	---	0	0%	---
	Total	**7,875**	**47%**	**188.5**	**7,514**	**49%**	**177.6**	**7,366**	**49%**	**172.0**	**7,387**	**49%**	**170.1**	**7,546**	**50%**	**173.8**
Total	**0-12 Years**	36	0%	2.4	70	0%	4.7	47	0%	3.1	22	0%	1.4	20	0%	1.3
	13-19 Years	4,659	28%	611.2	4,210	27%	543.1	3,996	26%	501.4	3,988	26%	487.0	3,844	25%	469.4
	20-29 Years	8,345	50%	705.3	7,702	50%	646.6	7,587	50%	632.5	7,698	51%	636.6	7,447	49%	615.9
	30-39 Years	2,417	14%	189.7	2,306	15%	180.8	2,250	15%	177.3	2,210	15%	175.1	2,255	15%	178.6
	40-49 Years	961	6%	78.2	780	5%	62.5	919	6%	72.7	927	6%	72.2	1,106	7%	86.2
	50 and over	306	2%	13.5	285	2%	12.3	286	2%	12.0	353	2%	14.5	403	3%	16.5
	Unknown	9	0%	---	0	0%	---	0	0%	---	0	0%	---	0	0%	---
	Total	**16,733**	**100%**	**204.1**	**15,353**	**100%**	**184.7**	**15,085**	**100%**	**179.1**	**15,198**	**100%**	**177.9**	**15,075**	**100%**	**176.5**

*per 100,000 population

Table T: North Carolina Gonorrhea Cases
Gender and Race/Ethnicity, 2001-2005

Race/Ethnicity		2001 Cases	2001 Pct	2001 Rate*	2002 Cases	2002 Pct	2002 Rate*	2003 Cases	2003 Pct	2003 Rate*	2004 Cases	2004 Pct	2004 Rate*	2005 Cases	2005 Pct	2005 Rate*
Male	**White****	811	5%	28.8	851	6%	29.9	844	6%	29.4	866	6%	29.9	913	6%	31.6
	Black**	7,642	46%	910.6	6,695	44%	785.6	6,569	44%	760.4	6,554	43%	749.0	6,079	40%	694.7
	Am.In/AN**	28	0%	56.0	63	0%	124.6	61	0%	118.7	76	1%	145.5	77	1%	147.4
	Asian,PI**	114	1%	174.4	24	0%	34.9	14	0%	19.2	24	0%	31.3	25	0%	32.6
	Hispanic	241	1%	97.6	191	1%	72.1	223	1%	78.9	219	1%	72.7	244	2%	81.0
	Unknown	21	0%	---	11	0%	---	8	0%	---	72	0%	---	191	1%	---
	Total	**8,857**	**53%**	**220.3**	**7,835**	**51%**	**192.0**	**7,719**	**51%**	**186.5**	**7,811**	**51%**	**186.0**	**7,529**	**50%**	**179.3**
Female	**White****	1,335	8%	45.4	1,292	8%	43.6	1,390	9%	46.6	1,542	10%	51.3	1,557	10%	51.8
	Black**	6,226	37%	658.0	5,944	39%	619.9	5,673	38%	584.1	5,481	36%	556.4	5,468	36%	555.1
	Am.In/AN**	77	0%	147.5	122	1%	230.8	121	1%	225.7	115	1%	211.0	121	1%	222.0
	Asian,PI**	109	1%	158.0	28	0%	38.7	35	0%	45.9	27	0%	33.7	34	0%	42.5
	Hispanic	115	1%	67.7	115	1%	62.0	137	1%	68.3	167	1%	77.2	154	1%	71.2
	Unknown	13	0%	---	13	0%	---	10	0%	---	55	0%	---	212	1%	---
	Total	**7,875**	**47%**	**188.5**	**7,514**	**49%**	**177.6**	**7,366**	**49%**	**172.0**	**7,387**	**49%**	**170.1**	**7,546**	**50%**	**173.8**
Total	**White****	2,146	13%	37.3	2,144	14%	36.9	2,234	15%	38.2	2,408	16%	40.8	2,470	16%	41.9
	Black**	13,869	83%	776.8	12,642	82%	698.0	12,242	81%	667.1	12,035	79%	647.0	11,547	77%	620.8
	Am.In/AN**	105	1%	102.7	185	1%	178.9	182	1%	173.4	191	1%	179.0	198	1%	185.5
	Asian,PI**	223	1%	166.0	52	0%	36.8	49	0%	32.9	51	0%	32.5	59	0%	37.6
	Hispanic	356	2%	85.4	306	2%	67.9	360	2%	74.5	386	3%	74.6	398	3%	76.9
	Unknown	34	0%	---	24	0%	---	18	0%	---	127	1%	---	403	3%	---
	Total	**16,733**	**100%**	**204.1**	**15,353**	**100%**	**184.7**	**15,085**	**100%**	**179.1**	**15,198**	**100%**	**177.9**	**15,075**	**100%**	**176.5**

*per 100,000 population **non Hispanic; Am. In/AN= American Indian/Alaskan Native; Asian, PI= Asian/Pacific Islander

Table U: North Carolina Early Syphilis Reports (Primary, Secondary, Early Latent) Gender and Age, 2001-2005

Age		2001	2001	2001	2002	2002	2002	2003	2003	2003	2004	2004	2004	2005	2005	2005
		Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*
Male	**0-12 Years**	0	0%	0.0	1	0%	0.1	0	0%	0.0	0	0%	0.0	1	0%	0.1
	13-19 Years	16	2%	4.1	14	2%	3.5	9	2%	2.2	9	2%	2.1	13	3%	3.1
	20-29 Years	128	14%	20.8	93	15%	15.0	73	18%	11.7	88	19%	13.9	99	20%	15.7
	30-39 Years	166	18%	25.9	98	16%	15.3	67	17%	10.5	95	21%	14.9	98	20%	15.4
	40-49 Years	122	13%	20.3	91	15%	14.9	57	14%	9.2	69	15%	11.0	97	20%	15.4
	50 and over	71	8%	7.0	45	7%	4.3	30	8%	2.8	45	10%	4.1	35	7%	3.2
	Unknown	0	0%	---	0	0%	---	0	0%	---	0	0%	---	0	0%	---
	Total	**503**	**53%**	**12.5**	**342**	**56%**	**8.4**	**236**	**60%**	**5.7**	**306**	**68%**	**7.3**	**343**	**70%**	**8.2**
Female	**0-12 Years**	0	0%	0.0	0	0%	0.0	0	0%	0.0	0	0%	0.0	0	0%	0.0
	13-19 Years	45	5%	12.2	34	6%	9.0	14	4%	3.6	12	3%	3.0	16	3%	4.0
	20-29 Years	137	15%	24.1	80	13%	14.0	52	13%	9.1	44	10%	7.6	41	8%	7.1
	30-39 Years	166	18%	26.2	94	15%	14.8	56	14%	8.9	50	11%	8.0	41	8%	6.6
	40-49 Years	66	7%	10.5	54	9%	8.5	32	8%	5.0	33	7%	5.1	36	7%	5.5
	50 and over	24	3%	1.9	12	2%	0.9	6	2%	0.5	8	2%	0.6	12	2%	0.9
	Unknown	0	0%	---	0	0%	---	0	0%	---	0	0%	---	0	0%	---
	Total	**438**	**47%**	**10.5**	**274**	**44%**	**6.5**	**160**	**40%**	**3.7**	**147**	**32%**	**3.4**	**146**	**30%**	**3.4**
Total	**0-12 Years**	0	0%	0.0	1	0%	0.1	0	0%	0.0	0	0%	0.0	1	0%	0.1
	13-19 Years	61	6%	8.0	48	8%	6.2	23	6%	2.9	21	5%	2.6	29	6%	3.5
	20-29 Years	265	28%	22.4	173	28%	14.5	125	32%	10.4	132	29%	10.9	140	29%	11.6
	30-39 Years	332	35%	26.1	192	31%	15.1	123	31%	9.7	145	32%	11.5	139	28%	11.0
	40-49 Years	188	20%	15.3	145	24%	11.6	89	22%	7.0	102	23%	7.9	133	27%	10.4
	50 and over	95	10%	4.2	57	9%	2.5	36	9%	1.5	53	12%	2.2	47	10%	1.9
	Unknown	0	0%	---	0	0%	---	0	0%	---	0	0%	---	0	0%	---
	Total	**941**	**100%**	**11.5**	**616**	**100%**	**7.4**	**396**	**100%**	**4.7**	**453**	**100%**	**5.3**	**489**	**100%**	**5.7**

*per 100,000 population

Table V: North Carolina Early Syphilis Cases (Primary, Secondary, Early Latent) Gender and Race/Ethnicity, 2001-2005

Race/Ethnicity		2001 Cases	2001 Pct	2001 Rate*	2002 Cases	2002 Pct	2002 Rate*	2003 Cases	2003 Pct	2003 Rate*	2004 Cases	2004 Pct	2004 Rate*	2005 Cases	2005 Pct	2005 Rate*
Male	**White****	65	7%	2.3	50	8%	1.8	41	10%	1.4	77	17%	2.7	136	28%	4.7
	Black**	353	38%	42.1	254	41%	29.8	162	41%	18.8	211	47%	24.1	175	36%	20.0
	Am.In/AN**	49	5%	98.0	15	2%	29.7	13	3%	25.3	6	1%	11.5	0	0%	0.0
	Asian,PI**	1	0%	1.5	1	0%	1.5	0	0%	0.0	1	0%	1.3	2	0%	2.6
	Hispanic	35	4%	14.2	22	4%	8.3	20	5%	7.1	11	2%	3.7	28	6%	9.3
	Unknown	0	0%	---	0	0%	---	0	0%	---	0	0%	---	2	0%	---
	Total	**503**	**53%**	**12.5**	**342**	**56%**	**8.4**	**236**	**60%**	**5.7**	**306**	**68%**	**7.3**	**343**	**70%**	**8.2**
Female	**White****	86	9%	2.9	36	6%	1.2	22	6%	0.7	20	4%	0.7	36	7%	1.2
	Black**	289	31%	30.5	203	33%	21.2	116	29%	11.9	106	23%	10.8	98	20%	9.9
	Am.In/AN**	48	5%	91.9	19	3%	35.9	8	2%	14.9	9	2%	16.5	4	1%	7.3
	Asian,PI**	0	0%	0.0	0	0%	0.0	2	1%	2.6	0	0%	0.0	2	0%	2.5
	Hispanic	15	2%	8.8	16	3%	8.6	12	3%	6.0	11	2%	5.1	5	1%	2.3
	Unknown	0	0%	---	0	0%	---	0	0%	---	1	0%	---	1	0%	---
	Total	**438**	**47%**	**10.5**	**274**	**44%**	**6.5**	**160**	**40%**	**3.7**	**147**	**32%**	**3.4**	**146**	**30%**	**3.4**
Total	**White****	151	16%	2.6	86	14%	1.5	63	16%	1.1	97	21%	1.6	172	35%	2.9
	Black**	642	68%	36.0	457	74%	25.2	278	70%	15.1	317	70%	17.0	273	56%	14.7
	Am.In/AN**	97	10%	94.9	34	6%	32.9	21	5%	20.0	15	3%	14.1	4	1%	3.7
	Asian,PI**	1	0%	0.7	1	0%	0.7	2	1%	1.3	1	0%	0.6	4	1%	2.6
	Hispanic	50	5%	12.0	38	6%	8.4	32	8%	6.6	22	5%	4.3	33	7%	6.4
	Unknown	0	0%	---	0	0%	---	0	0%	---	1	0%	---	3	1%	---
	Total	**941**	**100%**	**11.5**	**616**	**100%**	**7.4**	**396**	**100%**	**4.7**	**453**	**100%**	**5.3**	**489**	**100%**	**5.7**

*per 100,000 population **non Hispanic; Am. In/AN= American Indian/Alaskan Native; Asian, PI= Asian/Pacific Islander

Table W: North Carolina Early Syphilis Cases (Primary, Secondary, Early Latent) County Rank, 2001-2005

		Cases				
Rank*	County	2001	2002	2003	2004	2005
1	MECKLENBURG	99	68	42	82	142
2	GUILFORD	118	63	80	91	68
3	WAKE	51	43	37	44	65
4	ROBESON	144	67	32	51	20
5	CUMBERLAND	53	22	14	23	18
6	FORSYTH	35	18	10	6	16
7	DURHAM	37	57	40	32	15
8	RANDOLPH	3	7	7	2	11
9	JOHNSTON	16	8	4	4	9
10	NEW HANOVER	28	9	4	6	8
11	BUNCOMBE	4	1	2	4	6
12	GASTON	15	4	3	1	6
13	WILSON	16	15	10	21	5
14	LENOIR	3	4	1	5	5
15	CABARRUS	8	1	5	3	5
16	WAYNE	13	11	3	3	5
17	CLEVELAND	4	3	1	0	5
18	ALAMANCE	9	12	14	3	4
19	UNION	5	0	1	3	4
20	ROWAN	9	2	0	3	4
21	VANCE	7	8	11	1	4
22	CHATHAM	3	6	1	1	4
23	BLADEN	1	3	1	5	3
24	NASH	14	7	7	2	3
25	COLUMBUS	54	30	5	0	3
26	HALIFAX	0	4	4	0	3
27	STOKES	1	0	2	0	3
28	LEE	4	3	1	0	3
29	BURKE	2	0	0	0	3
30	ROCKINGHAM	22	6	4	3	2
31	CATAWBA	2	1	3	2	2
32	DAVIDSON	3	6	1	2	2
33	PITT	2	3	1	2	2
34	SAMPSON	3	6	4	1	2
35	BRUNSWICK	18	8	0	1	2
36	SCOTLAND	1	4	0	1	2
37	ALEXANDER	1	0	0	1	2
37	YADKIN	1	0	0	1	2
38	GRANVILLE	4	2	1	0	2
39	MCDOWELL	2	0	0	0	2
40	MOORE	17	36	4	5	1

* Rank based on number of cases reported in 2005. If cases are equal, then rank based on previous year.

Table W: North Carolina Early Syphilis Cases (Primary, Secondary, Early Latent) County Rank, 2001-2005

		Cases				
Rank*	County	2001	2002	2003	2004	2005
41	WARREN	2	0	2	4	1
42	SURRY	0	0	1	2	1
43	RUTHERFORD	0	0	0	2	1
44	FRANKLIN	4	2	1	1	1
45	IREDELL	3	1	1	1	1
46	HARNETT	6	1	0	1	1
47	WILKES	0	0	0	1	1
48	MONTGOMERY	4	11	2	0	1
49	GREENE	0	2	1	0	1
50	WASHINGTON	4	2	0	0	1
51	STANLY	3	1	0	0	1
52	JONES	1	1	0	0	1
53	CHEROKEE	0	0	0	0	1
53	DAVIE	0	0	0	0	1
53	HAYWOOD	0	0	0	0	1
53	MACON	0	0	0	0	1
54	EDGECOMBE	6	2	2	7	0
55	RICHMOND	11	4	0	3	0
56	DUPLIN	1	1	0	2	0
57	MARTIN	1	0	0	2	0
57	TRANSYLVANIA	1	0	0	2	0
58	CALDWELL	0	1	5	1	0
59	PASQUOTANK	6	1	3	1	0
60	ORANGE	20	13	2	1	0
61	CASWELL	5	4	2	1	0
62	PERSON	3	1	1	1	0
63	BEAUFORT	1	0	1	1	0
63	LINCOLN	1	0	1	1	0
64	CARTERET	3	2	0	1	0
65	GATES	0	0	0	1	0
65	WATAUGA	0	0	0	1	0
66	HOKE	9	7	5	0	0
67	ONSLOW	1	1	2	0	0
68	CRAVEN	2	1	1	0	0
69	NORTHAMPTON	1	1	1	0	0
70	CAMDEN	0	0	1	0	0
70	JACKSON	0	0	1	0	0
71	BERTIE	2	4	0	0	0
72	PENDER	4	3	0	0	0
73	HERTFORD	0	1	0	0	0
74	CHOWAN	2	0	0	0	0

* Rank based on number of cases reported in 2005. If cases are equal, then rank based on previous year.

Table W: North Carolina Early Syphilis Cases (Primary, Secondary, Early Latent) County Rank, 2001-2005

		Cases				
Rank*	County	2001	2002	2003	2004	2005
75	ANSON	1	0	0	0	0
75	DARE	1	0	0	0	0
76	ALLEGHANY	0	0	0	0	0
76	ASHE	0	0	0	0	0
76	AVERY	0	0	0	0	0
76	CLAY	0	0	0	0	0
76	CURRITUCK	0	0	0	0	0
76	GRAHAM	0	0	0	0	0
76	HENDERSON	0	0	0	0	0
76	HYDE	0	0	0	0	0
76	MADISON	0	0	0	0	0
76	MITCHELL	0	0	0	0	0
76	PAMLICO	0	0	0	0	0
76	PERQUIMANS	0	0	0	0	0
76	POLK	0	0	0	0	0
76	SWAIN	0	0	0	0	0
76	TYRRELL	0	0	0	0	0
76	YANCEY	0	0	0	0	0
	UNKNOWN	0	0	0	0	0
	TOTAL	941	616	396	453	489

* Rank based on number of cases reported in 2005. If cases are equal, then rank based on previous year.

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GLOSSARY

Acute HIV Testing	See STAT
ADAP	AIDS Drug Assistance Program - funding program through Title II of the Ryan White Care Act to provide for medications for the treatment of HIV disease. Program funds may also be used to purchase health insurance for eligible clients, and to pay for services that enhance access, adherence, and monitoring of drug treatments.
AIDS	Acquired Immune Deficiency Syndrome - late stage of HIV infection characterized by breakdown of the immune system. Individuals with documented HIV infection will be reported as AIDS cases if they meet certain immunologic criteria (CD4 T-lymphocyte count <200 or <14%) or if the patient becomes ill with one of 26 AIDS-defining conditions.
ART	Anti-Retroviral Therapy - indicates that a patient is on any antiretroviral drug or drugs for HIV infection.
average	see Mean
BRFSS	Behavioral Risk Factor Surveillance System - a collaborative project of the Centers for Disease Control and Prevention (CDC), and U.S. states and territories. Monthly telephone surveys collect a variety of information on health behaviors from adults age 18 and older.
BV	Bacterial Vaginosis - A common vaginal infection of women of childbearing age. Cause and transmission of the disease are poorly understood. It is not a reportable condition in North Carolina.
CADR	Care Act Data Report - aggregate service-level report (to HRSA) required of all Ryan White Title programs to track program services, populations, and expenditures.
CAPI	Computer-Assisted Personal Interviewing - computer programming used for telephone or in-person interviews in which the computer guides the interviewer to the correct questions by incorporating skip patterns and subject-specific questions. The interviewer enters the responses directly into the system, which then creates a database.
CAREWare	Computer software tool designed by HRSA to produce the CADR report for Ryan White programs. See HRSA, CADR.
CBO	Community-Based Organization

CD4 T-lymphocyte	Type of white blood cell that coordinates a number of important immunologic functions. These cells are the primary targets of HIV. Severe declines in the number of these cells indicate progression of an immunologic disease. When the count of these cells reaches <200/uL or 14%, the HIV-infected patient is classified as having progressed to AIDS.
CDC	U.S. Centers for Disease Control and Prevention - agency under the U.S. Department of Health and Human Services. Located in Atlanta, GA. Mission: to promote health and quality of life by preventing and controlling disease, injury, and disability.
chancroid	A sexually transmitted disease characterized by painful genital ulceration and inflammatory inguinal adenopathy, caused by infection with *Haemophilus ducreyi*. Chancroid is a reportable disease in North Carolina.
chlamydia	Chlamydial infection (infection with *Chlamydia trachomatis* bacteria). To meet the surveillance case definition, all reported cases must be confirmed by laboratory diagnosis: either isolation of *C. trachomatis* by culture or by detection of antigen or nucleic acid. Chlamydial infection is a reportable disease in North Carolina.
congenital	Of or relating to a condition that is present at birth (example: congenital syphilis).
Ct	Infection with *Chlamydia trachomatis*. See chlamydia.
CTS	Counseling and Testing System - a national CDC program administered in North Carolina by the Division of Public Health to provide HIV counseling and testing services at 149 local health departments and CBOs across the state. All patients are asked a series of questions on reasons for testing and risk behaviors. All samples are sent to the State Laboratory of Public Health for testing and data entry. State results are aggregated with national data. See NTS, TTS.
CY	Calendar Year (January 1 to December 31)
denominator	The divisor in a fraction. (In the fraction 3/4, 4 is the denominator). With respect to disease rates and proportions, it is generally the number of people in the population at-risk for having the disease (a smaller number, found in the numerator, actually will have the disease).
DIS	Disease Intervention Specialists (or change verb tense in next sentence to match) - state or local government employees who interview reported STD cases (primarily HIV and syphilis). DIS are trained to locate and counsel infected patients and their partners, draw blood for testing, and collect interview data on risk behaviors and partners.

early latent syphilis	Also 'EL'. Third stage of syphilis infection lasting from the end of secondary syphilis through one year after initial infection. The patient is free of symptoms but remains infectious to sexual partners during this phase. Early latent refers only to cases for whom likely transmission within the past year can be documented. Patients at this stage are often identified through screening or contact tracing of known cases. If left untreated, the disease will progress to late latent syphilis.
early syphilis	Primary, secondary, and early latent syphilis cases (also PSEL). These stages represent all of the phases during which the infection can be transmitted sexually, although infectiousness drops off considerably during the early latent phase. Often reported separately from later stages of syphilis because these stages represent infections acquired less than one year prior to diagnosis and are targeted by public health interventions.
EIA	See ELISA
EL	see Early Latent Syphilis
ELISA	Enzyme-linked immunoassay - initial screening test for HIV infection. Highly sensitive. If this test is positive, the sample will then be tested with the more specific confirmatory test the Western Blot. If this test is negative, the result is returned as negative. Alternative name: EIA.
EMA/EMSA	Eligible Metropolitan (Statistical) Area—The geographic area, based on population and cumulative AIDS cases, eligible to receive Title I Ryan White CARE Act and HOPWA program funds.
epidemiology	The study of the distribution and determinants of health related events in specified populations, and the application of this study to the control of health problems. (Source: J. Last, 'A Dictionary of Epidemiology', 1995)
FDA	Food and Drug Administration
FFY	Federal Fiscal Year - October 1 through September 30
GC	Infection with *Neisseria gonorrhoeae*. See gonorrhea.
Genital Herpes	A common sexually transmitted disease resulting from infection with HSV types 1 or 2 (see HSV) and characterized by painful genital ulcers. Genital herpes is not a reportable disease in North Carolina. See HSV.
Genotyping	The determination of the genetic sequence of an organism or a portion of the genome.

GISP	Gonoccoccal Isolate Surveillance Project - collaborative project between selected STD clinics, five regional laboratories, and the CDC. Established in 1986 to monitor trends in antimicrobial susceptibilities of strains of *Neisseria gonorrhoeae* in the United States in order to establish a rational basis for the selection of gonococcal therapies. The project includes one site in North Carolina, currently located at Greensboro (formerly Fort Bragg).
gonorrhea	Infection with *Neisseria gonorrhoeae*. To meet the surveillance case definition, laboratory diagnosis may occur by demonstrating the presence of gram-negative diplococci in a clinical sample or by detection of *N. gonorrhoeae* antigen or nucleic acid. Gonorrhea is a reportable disease in North Carolina.
Granuloma inguinale	A sexually transmitted disease characterized by ulceration of the skin and lymphatics of the genital and perianal area. Granuloma inguinale is a reportable disease in North Carolina.
HAART	Highly Active Anti-Retroviral Therapy - indicates that a patient is on a specific combination of 3 or more anti-retroviral drugs for HIV infection.
HARS	HIV/AIDS Reporting System - the computer data system developed by the CDC that houses information on HIV-infected persons at the N.C. HIV/STD Prevention & Care Branch.
HAV	Hepatitis A Virus - A vaccine-preventable viral infection transmitted by the fecal/oral route. HAV infection is a reportable condition in North Carolina.
HBV	Hepatitis B Virus - A vaccine-preventable viral infection transmitted by sex, blood products, or shared injection equipment. HBV infection is a reportable condition in North Carolina.
HCV	Hepatitis C Virus - A viral infection transmitted by sex, blood products, or shared injection equipment. There is currently no vaccine available. Acute HCV infection is a reportable condition in North Carolina.
HIV	Human Immunodeficiency Virus - the virus that causes AIDS. To meet the case definition, infection must be confirmed by specific HIV antibody tests (screening test followed by confirmatory test) or virologic tests. In children under 18 months of age, antibody tests may not be accurate so confirmation by virologic tests is required.

HIV Test	See ELISA, Western Blot
HOPWA	Housing Opportunities for Person with AIDS- A program from the U.S. department of Housing and Urban Development (HUD) that provides long-term comprehensive strategies for meeting the housing needs of persons and their families living with AIDS or a related disease.
HPV	Human Papillomavirus - a group of viruses including over 100 different strains, 30 of which are sexually transmitted. Many strains cause no symptoms at all while others are associated with genital warts and others with cervical cancer in women. HPV infection is not a reportable condition in North Carolina.
HRSA	Health Resources & Services Administration - agency of the U.S. Department of Health and Human Services. Mission: to assure the availability of quality health care to low-income, uninsured, isolated, vulnerable and special needs populations and to meet their unique health care needs. HRSA administers the Ryan White Care Act programs.
HSV	Herpes Simplex Virus (Type 1 = HSV-1 and Type 2 = HSV-2). See genital herpes.
IDU	Injecting drug user. Alternative name IVDU - Intravenous drug user.
incidence	Measurement of the number of new cases of disease that develop in a specific population of individuals at risk over a specific period of time (often a year). With respect to HIV, the closest we can come to this is reporting of newly diagnosed cases which may or may not represent newly infected individuals. Incidence measures are most often used to assess the success of prevention efforts and the progress of epidemics. See HIV Disease.
IVDU	Intravenous drug user. Alternative name: IDU - injecting drug user.
KFF	Kaiser Family Foundation (www.kff.org)
late syphilis	Syphilis infections that have progressed beyond one year past the initial infection. Patients in late syphilis are not considered to be infectious to sexual partners, but women can pass the infection to their newborns well into the late stages. For the purposes of this report, 'late syphilis' includes late latent syphilis (asymptomatic, infection probably > 1 year prior), latent of unknown duration (asymptomatic, unable to document likely infection in last year), late with symptoms, and neurosyphilis.

LGV	Lymphogranuloma venereum - a sexually transmitted disease caused by infection with specific serovars of *Chlamydia trachomatis* that are distinct from the serovars that cause reportable chlamydial infections. LGV is a reportable disease in North Carolina.
MA	Metropolitan area - geographical designation defined by OMB for use Federal statistical activities. See OMB.
mean	Mathematical average. Example: the mean of 3 numbers is the sum of the three numbers divided by three: (a+b+c)/3.
Medicaid	A federally-aided, state-operated and administered program authorized by Title XIX of the Social Security Act which provides medical benefits for qualifying low-income persons in need of health and medical care. Subject to broad federal guidelines, states determine the benefits covered, program eligibility, rates of payment for providers, and methods of administering the program. (definition source: kff.org)
Medicare	A federal program that provides basic health care and limited long-term care for retirees and certain disabled individuals without regard to income level. Beneficiaries must pay premiums, deductibles, and coinsurance to receive hospital insurance (Part A) and supplementary medical insurance (Part B). Qualified low-income individuals, called Dual Eligibles, may receive assistance through Medicaid to pay for cost-sharing. (definition source: kff.org)
morbidity	The extent of illness, injury, or disability in a defined population. It is usually expressed in general or specific rates of incidence or prevalence. (source of definition: kff.org)
mortality	Death. The mortality rate (death rate) expresses the number of deaths in a unit of population within a prescribed time and may be expressed as crude death rates (e.g., total deaths in relation to total population during a year) or as death rates specific for diseases and, sometimes, for age, sex, or other attributes. (source of definition: kff.org)
MMP	Medical Monitoring Project. The MMP is a nationally representative, population-based surveillance system designed to assess clinical outcomes, behaviors and the quality of HIV care. Information is collected through a lengthy interview process from patients who have been randomly selected to participate in the project. Twenty six states and cities are involved in data collection for the MMP.

MPC	Mucopurulent Cervicitis - a clinical diagnosis of exclusion involving cervical inflammation that is not the result of infection with *Neisseria gonorrhoeae* or *Trichomonas vaginalis*. MPC is not a reportable condition in North Carolina.
MSM	Men who have sex with men.
MSM/IDU	Men who have sex with men and also report injecting drug use.
n	Number - used to designate the number of people or number of cases.
NAAT	Nucleic Acid Amplification Testing. See STAT.
NAIM	Native American Interfaith Ministry
NCCIA	North Carolina Commission on Indian Affairs
neurosyphilis	Devastating stage of syphilis affecting some untreated patients. Outcomes include shooting pains in the extremities, blindness, deafness, paralysis, and death.
NGU	Nongonococcal urethritis - a clinical diagnosis of exclusion involving evidence of urethral infection or discharge and the documented absence of *N. gonorrhoeae* infection. The syndrome may result from infection with a number of agents, though most cases are likely to be caused by *C. trachomatis*. NGU is a reportable condition in North Carolina.
NHSDA	National Household Survey of Drug Abuse - National survey of drug use behavior collected by in-person interviews. Conducted by SAMHSA. The 2001 survey interviewed 68,929 people.
NIR	No identified risk reported
NIDA	National Institute on Drug Abuse - one of the National Institutes of Health (NIH), under the U.S. Department of Health and Human Services. Mission: to lead the nation in bringing the power of science to bear on drug abuse and addiction.
NTS	Nontraditional Test Sites - part of the N.C. CTS HIV testing program. NTS sites were added to the CTS program in 1997 as a response to the end of anonymous testing with the goal of making HIV testing available in nontraditional settings. As of 2002, there are 13 NTS sites at CBOs and extended hours at local health departments. See CTS.

numerator	The dividend in a fraction. (In the fraction 3/4, 3 is the numerator). With respect to disease rates and proportions, it is generally the number of people with the disease.
OMB	Office of Management & Budget - agency within the Executive Office of the President of the United States. Mission: to assist the President in overseeing the preparation of the federal budget and to supervise its administration in Executive Branch agencies. See MA.
opthalmia neonatorum	*N. gonorrhoeae* infection of the eyes of an infant during birth when mother has gonorrhea. Opthalmia neonatorum is a reportable condition in North Carolina.
P & S	Primary and secondary syphilis cases. These earliest stages of syphilis are the most highly infectious and also represent cases acquired within the last year. They are often reported separately from other stages of syphilis because they most accurately represent disease incidence and have the greatest impact on continued spread of the disease.
PCP	*Pneumocystis carinii* pneumonia. One of the 26 AIDS-defining opportunistic infections.
PCRS	Partner Counseling & Referral Services conducted by the HIV/STD Prevention & Care Branch's Field Services Unit for persons newly diagnosed with HIV or syphilis. Data collected are maintained in local STD-MIS. See Appendix A: Data Sources.
percentage	A type of proportion in which the denominator is set at 100. For example, if 2 people out of an at-risk population of 50 have a disease, the proportion can be converted to a percentage by setting the denominator at 100: 2/50 = 4/100 = 4%. Any proportion can be converted to a percentage.
perinatal	Of, relating to, or being the period around childbirth, especially the five months before and one month after birth.
PID	Pelvic inflammatory disease - a clinical syndrome in which microorganisms infect the fallopian tubes or other areas of the female upper reproductive tract. The condition can have serious consequences including infertility and ectopic pregnancy. The most common causes of PID are gonorrhea and chlamydia. PID is a reportable condition in North Carolina.
positivity	Percent of a screened population that test positive.

PRAMS	Pregnancy Risk and Monitoring System – an ongoing random survey of women who delivered a live infant in North Carolina. Conducted by the North Carolina State Center for Health Statistics.
presumed heterosexual	Refers to a "risk" or "mode of transmission" category for HIV and AIDS cases. This category is made up of NIR cases that have been determined to represent likely heterosexual transmissions, based on additional risk information collected during field services interviews. See "Appendix B: Special Notes" for more information.
prevalence	Measurement of the number of total cases of disease that exist in a specific population of individuals at risk at a specific instant in time (note that an 'instant in time' can be a single day or even a whole year). With respect to HIV, this is generally presented as the number of persons living with HIV. Prevalence measures are most often used to assess the need for care and support services for infected persons.
primary syphilis	Earliest stage of syphilis, characterized by the presence of one or more painless ulcers and lasting 10-90 days. At this stage the patient is highly infectious to sexual partners. If untreated, the infection will proceed to secondary syphilis.
proportion	A type of ratio in which the numerator is included in the denominator. For example, in an at-risk population of 50, if 3 people have a disease, this can be expressed as the proportion 3/50.
PSEL	Primary, secondary, and early latent syphilis cases. See early syphilis.
rate	A proportion that specifies a time component. For example, the number of new cases of disease that developed over a certain period of time divided by the eligible at-risk population for that time period. Note: many diseases are rare enough that if they were expressed as percentages, the numbers would be very small and confusing. For this reason, the denominators for disease rates are often converted to 100,000 so that the numerators can be expressed in terms of whole numbers. Example: 20 cases out of 333,333 at-risk population per year = 20/333,333 = .006/100 = .006%. This is difficult to think about because it involves both decimals and percentages. Converted to a denominator of 100,000, this becomes .006/100 or 6/100,000 per year.
ratio	The value obtained by dividing one quantity by another. Rates and proportions are types of ratios.

Ryan White CARE Act	The Ryan White Comprehensive AIDS Resources Emergency (CARE) Act of 1990 (Public Law 101-381) provides funding to cities, states, and other public or private nonprofit entities to develop, organize, coordinate and operate systems for the delivery of health care and support services to medically underserved individuals and families affected by HIV disease. The CARE Act was reauthorized in 1996 and 2000. (source of definition: kff.org)
Ryan White CARE Act: Title II	Federal grants to all 50 states, the District of Columbia, Puerto Rico, Guam, the U.S. Virgin Islands, and eligible U.S. Pacific Territories and Associated Jurisdictions to provide health care and support services for people living with HIV/AIDS. Title II funds may be used for a variety of services, including home and community-based services, continuation of health insurance coverage, and direct health and support services. Also see ADAP. (source of definition: kff.org)
SAMHSA	Substance Abuse and Mental Health Services Administration - agency within the U.S. Department of Health and Human Services. Mission: to strengthen the nation's health care capacity to provide prevention, diagnosis, and treatment services for substance abuse and mental illnesses.
SCBW	The Survey of Childbearing Women - conducted from 1988 through 1995 in collaboration with CDC, the National Institute of Child Health and Human Development, and state and territorial health departments. Residual dried blood specimens that are routinely collected on filter paper from newborn infants for metabolic screening programs were tested for HIV antibody after the removal of all personal identifiers. The survey measured the prevalence of HIV infection among women who gave birth to live infants in participating states and territories of the United States.
SDC	State Data Center - a consortium of state and local agencies established in cooperation with the U.S. Bureau of the Census to provide the public with data about North Carolina and its component geographic areas.
secondary syphilis	Second stage of syphilis, characterized by a rash that does not itch, swollen glands, fatigue, and other symptoms. Patients at this stage are highly infectious to sexual partners. Symptoms generally appear about 4-10 weeks after the appearance of primary syphilis lesions. If left untreated, the disease will progress to early latent syphilis after 3-12 weeks.
sensitivity	Refers to the ability of a screening test to detect disease if disease is truly present. A highly sensitive test is likely to have very few false negatives but probably will have some false positives. This is why positives found with a highly sensitive test will often be tested again using a highly specific test (see specificity). Example = ELISA test for HIV.

SEP	Syphilis Elimination Project - CDC-funded project that provides funding to the 28 U.S. counties that accounted for over 50% of all U.S. syphilis cases in 1997 for enhancements in surveillance, outbreak response, clinical and laboratory services, health promotion and community involvement. North Carolina has the distinction of being the only state with more than two counties in the list; we have five. SEP efforts in North Carolina have been expanded, bringing the total of SEP counties to six: Durham, Forsyth, Guilford, Mecklenburg, Robeson, and Wake.
SFY	State Fiscal Year. In North Carolina: July 1 through June 30.
specificity	Refers to the ability of a screening test to test negative if the patient is truly uninfected. A highly specific test will have very few false positives but may have some false negatives. Generally, a highly specific test is only used on positives found using a highly sensitive screening test first (see sensitivity). Example = Western Blot test for HIV.
STARHS	Serologic Testing Algorithm for Recent HIV Seroconversion (STARHS) method for determining the proportion of individuals who test positive for HIV for the first time that may have been recently infected by HIV. Sera, which have tested positive for HIV antibodies by EIA and have been confirmed as positive by Western blot, are tested by a second, less sensitive enzyme immunoassay (LS-EIA). In the context of a reactive, standard HIV EIA, recent HIV seroconversion is likely if the LS-EIA is nonreactive because HIV antibody levels have not reached their peak. STARHS can determine with reasonable probability the number of HIV infections recently acquired within the testing population.
STAT	Screening and Tracing Active Transmission - A new HIV screening protocol applied to HIV tests performed at the State Laboratory for Public Health. Specimens that test negative on the traditional Elisa antibody test are pooled and tested for viral RNA. Reactive pools are then deconstructed to allow identification of the specimen(s) containing HIV-1 RNA. This method allows for the detection of infection within the first several weeks after transmission has occurred (acute infection) and before the body has had time to mount an antibody response. The screening is linked to a comprehensive program of immediate referral for clinical evaluation, treatment and partner notification.
STD	Sexually Transmitted Disease.
STD-MIS	Sexually Transmitted Disease - Management Information System, the computer data system developed by the CDC that houses information on patients infected with HIV, syphilis, and other STDs at the N.C. HIV/STD Prevention & Care Branch.

surveillance (public health)	The ongoing, systematic collection, analysis, and interpretation of health data essential to the planning, implementation, and evaluation of public health practice, closely integrated with timely dissemination of these data to those who need to know. Source: CDC
syphilis	Infection with *Treponema pallidum*. See: primary syphilis, secondary syphilis, early latent syphilis, early syphilis, latent syphilis.
Syphilis Elimination Project	see SEP
TB	Tuberculosis (infection with *Mycobacterium tuberculosis*).
Trichomoniasis	A common sexually transmitted disease resulting from infection with the parasite *Trichomonas vaginalis*. Trichomoniasis is not a reportable disease in North Carolina.
TTS	Traditional Test Sites - part of the N.C. CTS HIV testing program. The 135 TTS sites include local health departments and some CBOs. See CTS.
VARHS	Variant, atypical, and resistant HIV surveillance (VARHS) evaluates the prevalence of HIV drug resistance and HIV-1 subtypes among individuals newly diagnosed with HIV through a process of gene amplification and genotyping (genetic sequencing).
Western Blot	WB - Confirmatory test for HIV. This test is highly specific, so it is used only as a confirmatory test on all samples positive for the screening test, the ELISA. If both the ELISA and WB are positive, the patient is considered to be HIV-infected.
WIC	Women, Infants & Children - a Federal grant program to provide nutritional assistance to low-income pregnant and postpartum women, infants, and children up to age 5.

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North Carolina HIV/STD Prevention & Care Branch Regions