
# Epidemiologic Profile
## for
# HIV/STD Prevention & Care Planning

## July 2007
**(revised September 2007)**

Division of Public Health
N.C. Department of Health & Human Services

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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 2007-2008 planning year and is based on data available through 2006



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# Department of Health & Human Services
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# Table of Contents

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# EXECUTIVE SUMMARY

Recognizing North Carolina's diverse makeup is important to understanding the impact on the state by 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 2005, 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 36th in the nation for per capita income in 2006, with 24 percent of its child population (0-18 years) and 16 percent of the remaining population at or below the federal poverty level (2004-2005). North Carolina was ranked 6th among states with statistically significant growth in the immigrant population between March 2000 and 2005.

In 2006, 2,022 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 the CDC's recommendation to include voluntary HIV testing as part of routine medical examinations for all U.S. residents ages 13 to 64. In late 2006 North Carolina began a ***Get Real, Get Tested*** campaign to encourage HIV education and testing through a two-pronged approach: the educational segment is designed to reach citizens statewide, while the testing segment targets select high-morbidity communities. The overall campaign is sponsored by WRAZ/FOX 50, Duke Medicine, UNC Health Care, and the HIV/STD Prevention and Care Branch. As of June 2007, four testing events have been held in Fayetteville, Raleigh-Durham, Greensboro-High Point and Rocky Mount.

The overall HIV disease infection rate in 2006 was 23.3 cases per 100,000 people. As seen with many other diseases, HIV is disproportionately distributed among the state's population. The 2006 rate of HIV infection for non-Hispanic blacks (71.0 per 100,000) was more than eight times greater than for whites (8.1 per 100,000) and the rate of infection for Hispanics (29.8 per 100,000) was almost four times that for whites. The rate for American Indians (11.2 per 100,000) was just slightly higher than for whites. The highest rate of infection was found among black males (103.3 per 100,000). The largest disparity was found in comparing white and black females; the HIV infection rate for black females (42.2 per 100,000) was almost 17 times higher than that for white non-Hispanic females (2.5 per 100,000). The ratio of male to female HIV disease reports has risen from 2.2 in 2002 to 2.7 in 2006. 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 2006, 69 percent of new adult and adolescent HIV disease

reports for males was attributed to men who have sex with men (MSM), 4 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 86 percent of HIV disease reports in 2006, while injecting drug use accounted for about 11 percent.

The proportion of male reports with MSM as a risk factor has increased over the past few years for all races/ethnicities. In 2006, MSM (including MSM/IDU) accounted for 89 percent of white non-Hispanic males, 65 percent of black non-Hispanic males and 61 percent of other males. The state's partner counseling and referral services (PCRS) program showed an increasing proportion of men who indicated MSM risk during follow-up of both HIV and syphilis cases. In 2006, 55 percent of interviewed males with early syphilis indicated MSM risk and 49 percent of those with HIV. 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 6 percent of male adult/adolescent HIV disease reports in 2006 and accounted for about 11 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). Prevention activities aimed at reducing injecting drug use transmission remain very important to comprehensive HIV prevention strategies. There is substantial evidence that needle exchange programs are effective in preventing HIV risk behavior and HIV seroconversion among injecting drug users.

Heterosexual contact as a primary risk accounts for 40 percent of all (male and female) 2006 adult/adolescent HIV disease reports. As mentioned earlier, it was the principal risk for female cases (86%), especially younger female cases (97% of likely female adolescent exposures). Heterosexual HIV reports for 2006 were higher among minority males (30%) 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. 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 53 percent of new male syphilis cases, interviewed through PCRS between 2002 and 2006, reported heterosexual activity.

While trends among new HIV disease reports indicate prevention needs, trends among AIDS cases and estimates of people living with HIV or AIDS can indicate service and care needs. As of December 31, 2006, an **estimated** 31,000 people were living with HIV or AIDS in North Carolina, including those who may have been unaware of their infection. Of the people who have been reported and were listed as living at that time, 69 percent were males and 31 percent were females. With respect to race/ethnicity, 70 percent were black non-Hispanic; 25 percent were white non-Hispanic.

In 2006, 1,029 new AIDS cases were reported in North Carolina, down slightly from the previous year (1,077). In 2005, the South had the greatest number of new AIDS diagnoses, people living with AIDS (est.) and AIDS deaths. Also in 2005, North Carolina ranked 11$^{th}$ among states for the number of new AIDS cases reported and 12$^{th}$ in the number of living AIDS

cases. The proportion of blacks among people living with AIDS in North Carolina is high; ranking it sixth among states.

The state administers funding for several HIV-care or -service based programs. Currently 16 primary care providers, along with eight consortia, other agencies and the state provide Ryan White Part B (formerly Title II) services to HIV-infected persons across North Carolina. According to summary reports provided by service agencies, about 7,097 Ryan White Part B clients received or accessed funded services in 2005. In 2006, approximately 5,400 individuals were enrolled in the AIDS Drug Assistance Program (ADAP). The demographics of Ryan White Part B clients and ADAP enrollees were similar to the observed demographics of all persons listed as living in North Carolina with HIV or AIDS. North Carolina calculates an estimate of people who are in care (receiving testing to monitor the disease or receiving treatment) with the remainder considered to be not in care or an unmet need. In calendar year 2005, it was estimated that 65 percent of the North Carolina population living with HIV disease (status aware) was in care.

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 33,609 cases reported in 2006. 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 2002-2006, 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 increased 15 percent from 2005 to 2006 (15,068 and 17,310 cases respectively). There was a slight increase observed in the positivity (gonorrhea) from 2.09 percent in 2005 to 2.19 percent for 2006 for samples submitted to the State Laboratory of Public Health for analysis. Severe racial disparities exist in gonorrhea rates, though they have narrowed in recent years. Among males, the rate for blacks in 2006 is more than 23 times that for whites (non Hispanic). Disparities among females are less, with black female gonorrhea rates just over 10 times higher than rates for white females.

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 females rates in 2006. The early syphilis rate for males was 10.2 per 100,000 in 2006 and the rate for females was 4.0. The increase in early syphilis rates began with an outbreak in Mecklenburg County in 2004. Many of these cases were linked to MSM activity. An increase in rate was later observed in other counties as well as in females. Six counties (Mecklenburg, Guilford, Wake, Forsyth, Durham, and Cumberland) had more than 25 cases each in 2006 and together accounted for almost 70 percent of early syphilis reports (primary, secondary, early latent) in North Carolina. According to the CDC, North Carolina's 2003 primary and secondary syphilis rate of 1.8 cases per 100,000 was well below the national rate of 2.5. At that time, North Carolina ranked 19$^{th}$ among the states (including the District of Columbia). In 2004 North Carolina's ranking increased to 15$^{th}$. By 2005 the North Carolina primary and secondary syphilis rate (3.2 cases per 100,000) surpassed the national rate of 3.0 and its ranking increased to 12$^{th}$.

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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 for North Carolinians?

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 adds 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 12/31/2006 (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.

# PART I: CORE EPIDEMIOLOGY

**What are the sociodemographic characteristics of the general population of 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

- According to the 2000 Census, 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 2000 North Carolina's immigrant population increased threefold.
- North Carolina ranked 6th in states with statistically significant growth in immigration population between March 2000 and 2005.
- In 2000, North Carolina had the 7th largest non-white 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 36th in the nation in per capita income in 2006 ($32,234) at 89 percent of the national average ($36,276).
- According to the U.S. Census Bureau, between 2000 and 2004, North Carolina ranked 5th in the annual levels of net domestic in-migration.
- Twenty-four percent of North Carolina's children (0-18 years), 16 percent of adults (19-64 years) and 16 percent of the state's elderly (65+ years) were at or below the federal poverty level between 2004 and 2005.
- During 2006, 18.5 percent of the total N.C. population was eligible for Medicaid coverage at some point during the year.

## 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). According to the state demographer, the 2005 North Carolina State population estimate is 8,682,066 with county populations ranging from 4,203 (Tyrrell) to 796,232 (Mecklenburg). Population estimates for 2005 listed five counties with populations under 10,000 (Clay 9,876; Camden 9,008; Graham 8,119; Hyde 5,587; and Tyrrell 4,203). Over half of North Carolina's population lived in only 16 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 2005.

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 (OMB) 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. As of December 2006, the following have been designated Metropolitan Statistical Areas in North Carolina: Asheville, Burlington, Charlotte-Gastonia-Concord NC-SC(part), Durham, Fayetteville, Goldsboro, Greensboro-High Point, Greenville, Hickory-Lenoir-Morganton, Jacksonville, Raleigh-Cary, Rocky Mount, Wilmington, and Winston-Salem.

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. Albemarle, Lumberton and Wilson are a few of the many North Carolina Micropolitan Statistical Areas.

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).

A new classification of statistical areas has been designated by the OMB, combined statistical areas (CSAs), which includes various combinations of adjacent metropolitan and micropolitan statistical areas. The areas that are combined retain their own designations as metropolitan or micropolitan statistical areas but are also included in the larger combined area. As of December 2006, there are 126 such CSAs defined by the OMB. For example, a combined statistical area in North Carolina includes Greensboro, Winston-Salem, and High Point. A complete listing of all micropolitan, metropolitan and combined statistical areas can be obtained at the following website: http://www.census.gov/population/www/estimates/metrodef.html.

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 6$^{th}$ among states with statistically significant growth in the immigrant population between March 2000 and 2005 (Camarota, 2006). According to the U.S. Census Bureau's Annual American Community Survey, North Carolina's foreign-born population increased by 50 percent, from 373,000 in 2000 to 560,753 in 2005. Table 1.1 shows that in 2005, 27.1 percent of the foreign-born populations were naturalized citizens while 72.9 percent were not citizens. The regions of birth of the foreign-born population in North Carolina (2005) are displayed in Table 1.2. The majority (58.4%) of immigrants came from Latin America, 20 percent from Asia, 11.9 percent from Europe, 6.4 percent from Africa, 3.0 percent from North America, and 0.3 percent from Oceania.

**Table 1.1. North Carolina foreign-born population, 2005**

| | 2005 | |
|---|---|---|
| | Estimate | Percentage |
| Naturalized Citizen | 152,244 | 27.1% |
| Not a Citizen | 408,509 | 72.9% |
| Total | 560,753 | 100.0% |

Source: U.S. Census Bureau, 2005 American Community Survey

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

**Table 1.2. North Carolina foreign-born population by region of birth, 2005**

| | 2005 | |
|---|---|---|
| | Estimate | Percentage |
| Latin America | 327,515 | 58.4% |
| Asia | 112,374 | 20.0% |
| Europe | 66,960 | 11.9% |
| Africa | 35,628 | 6.4% |
| Northern America | 16,847 | 3.0% |
| Oceania | 1,429 | 0.3% |
| Total | 560,753 | 100.0% |

Source: U.S. Census Bureau, 2005 American Community Survey

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 2005 bridged-race estimates.

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 2005 (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 (1.4:1) as compared to the male-to-female ratios for blacks (0.89:1) and whites (0.96:1). Over the years, there has been a steady increase in the N.C. Hispanic population. Map 5 (Appendix A, pg. A-7) displays the proportion of Hispanic population in 2005, by county. Within North Carolina, Duplin County had the highest proportion of Hispanic residents (19%), followed by Sampson County (15%), Lee County (14%), and Montgomery County (14%). 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 people 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 1.4 displays the proportion of males and females by age group for North Carolina and the HIV/STD Prevention & Care Branch Regions. The trend in North Carolina follows the typical age trend of slightly more males under 12 years old and more females 40 and older. 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.

**Table 1.3. North Carolina race/ethnicity proportions by gender and HIV/STD Prevention and Care Branch Regions, 2005**

| | | R1 | R2 | R3 | R4 | R5 | R6 | R7 | N.C. |
|---|---|---|---|---|---|---|---|---|---|
| | Race/Ethn. | Pct. | Pct. | Pct. | Pct. | Pct. | Pct. | Pct. | Pct. |
| Male | White* | 43.1 | 34.6 | 35.3 | 31.1 | 26.8 | 28.7 | 36.7 | 33.7 |
| | Black* | 2.6 | 9.2 | 8.6 | 11.7 | 14.5 | 17.1 | 9.4 | 10.2 |
| | AI/AN* | 0.6 | 0.2 | 0.2 | 0.2 | 4.0 | 0.3 | 0.5 | 0.6 |
| | Asian, PI* | 0.5 | 1.2 | 0.8 | 1.7 | 0.7 | 0.3 | 0.5 | 0.9 |
| | Hispanic | 2.1 | 4.2 | 3.8 | 4.8 | 3.6 | 2.1 | 3.6 | 3.7 |
| | Total | 48.8 | 49.3 | 48.7 | 49.4 | 49.5 | 48.4 | 50.6 | 49.2 |
| Female | White* | 46.1 | 35.8 | 37.5 | 32.2 | 26.8 | 29.8 | 35.8 | 35.0 |
| | Black* | 2.5 | 10.4 | 10.0 | 13.3 | 15.7 | 19.5 | 10.2 | 11.5 |
| | AI/AN* | 0.6 | 0.2 | 0.2 | 0.2 | 4.2 | 0.3 | 0.5 | 0.6 |
| | Asian, PI* | 0.5 | 1.2 | 0.8 | 1.7 | 0.9 | 0.4 | 0.6 | 1.0 |
| | Hispanic | 1.5 | 3.1 | 2.9 | 3.3 | 2.9 | 1.6 | 2.4 | 2.7 |
| | Total | 51.2 | 50.7 | 51.3 | 50.6 | 50.5 | 51.6 | 49.4 | 50.8 |
| Total | White* | 89.1 | 70.4 | 72.8 | 63.3 | 53.7 | 58.5 | 72.5 | 68.8 |
| | Black* | 5.1 | 19.6 | 18.6 | 24.9 | 30.2 | 36.6 | 19.6 | 21.8 |
| | AI/AN* | 1.2 | 0.3 | 0.4 | 0.4 | 8.1 | 0.5 | 0.9 | 1.2 |
| | Asian, PI* | 1.0 | 2.4 | 1.5 | 3.3 | 1.5 | 0.7 | 1.0 | 1.9 |
| | Hispanic | 3.6 | 7.2 | 6.7 | 8.1 | 6.5 | 3.7 | 6.0 | 6.4 |
| | Total | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

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

**Table 1.4. North Carolina HIV/STD Prevention and Care Branch Regions by age and gender, 2005**

| | | R1 | R2 | R3 | R4 | R5 | R6 | R7 | N.C. |
|---|---|---|---|---|---|---|---|---|---|
| Age group | Gender | Pct. | Pct. | Pct. | Pct. | Pct. | Pct. | Pct. | Pct. |
| 0-12 | Male | 7.8 | 9.5 | 8.7 | 9.3 | 10.2 | 8.9 | 8.8 | 9.0 |
| | Female | 7.4 | 9.0 | 8.3 | 8.9 | 9.7 | 8.5 | 8.5 | 8.7 |
| 13-19 | Male | 4.7 | 4.8 | 4.8 | 4.9 | 5.5 | 5.1 | 5.2 | 4.9 |
| | Female | 4.2 | 4.6 | 4.8 | 4.7 | 5.0 | 4.9 | 4.4 | 4.7 |
| 20-29 | Male | 6.5 | 6.9 | 6.7 | 7.9 | 8.1 | 7.2 | 9.8 | 7.4 |
| | Female | 6.0 | 6.5 | 6.6 | 7.4 | 6.9 | 6.8 | 6.9 | 6.7 |
| 30-39 | Male | 6.7 | 8.1 | 7.2 | 8.2 | 7.2 | 6.3 | 6.6 | 7.4 |
| | Female | 6.4 | 7.8 | 7.1 | 7.9 | 7.1 | 6.3 | 6.4 | 7.2 |
| 40-49 | Male | 7.0 | 7.8 | 7.5 | 7.7 | 6.8 | 7.2 | 6.6 | 7.4 |
| | Female | 7.3 | 7.9 | 7.7 | 7.9 | 7.2 | 7.7 | 7.0 | 7.6 |
| ≥50 | Male | 16.3 | 12.3 | 13.9 | 11.5 | 11.7 | 13.8 | 13.6 | 13.1 |
| | Female | 19.9 | 14.8 | 17.0 | 13.8 | 14.6 | 17.4 | 16.2 | 15.9 |
| Total | Male | 48.8 | 49.3 | 48.7 | 49.4 | 49.5 | 48.4 | 50.6 | 49.2 |
| | Female | 51.2 | 50.7 | 51.3 | 50.6 | 50.5 | 51.6 | 49.4 | 50.8 |

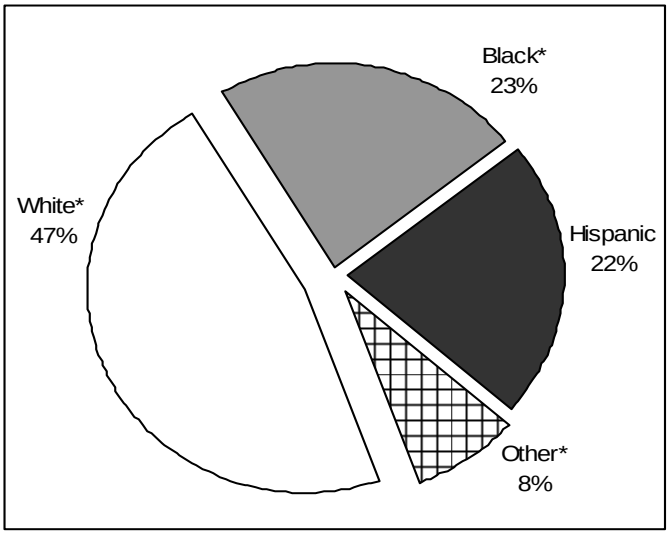
Poverty, Income, and Education

According to the U.S. Department of Commerce's Bureau of Economic Analysis, the 2006 (preliminary) per capita income for North Carolina is $32,234, or 89 percent of the national average of $36,276. This represents a 3.8 percent increase from 2005 ($31,041) and placed North Carolina 36th in the nation for personal per capita income and 4th in the Southeast. As of February 2007, a total of 201,397 North Carolinians were unemployed, or 4.5 percent of the N.C. civilian labor force (seasonally adjusted). This rate is down from the same time period of the preceding year, when 207,006 or 4.7 percent of North Carolina's civilian labor force were unemployed. According to the Bureau of Labor Statistics, the national unemployment rate was 4.5 percent in February of 2007.

The percentage of the non-elderly without health insurance in North Carolina has been increasing over the years. In North Carolina (2004-2005) 18 percent of the non-elderly population was uninsured, mirroring the U.S. (2005) percentage of uninsured (18%). In 2004, more than 1.3 million non-elderly individuals were uninsured (N.C. Institute of Medicine Report). According to the North Carolina Institute of Medicine, this increase 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 primary reason people lack health insurance is cost. Sixty percent of the state's uninsured population was low-income, with income less than 200 percent of the federal poverty level.

The North Carolina Institute of Medicine report also 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 people 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 2004-2005, the uninsured rates in North Carolina were 50 percent for Latinos or Hispanic, 26 percent for other races, 18 percent for blacks, and 13 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.

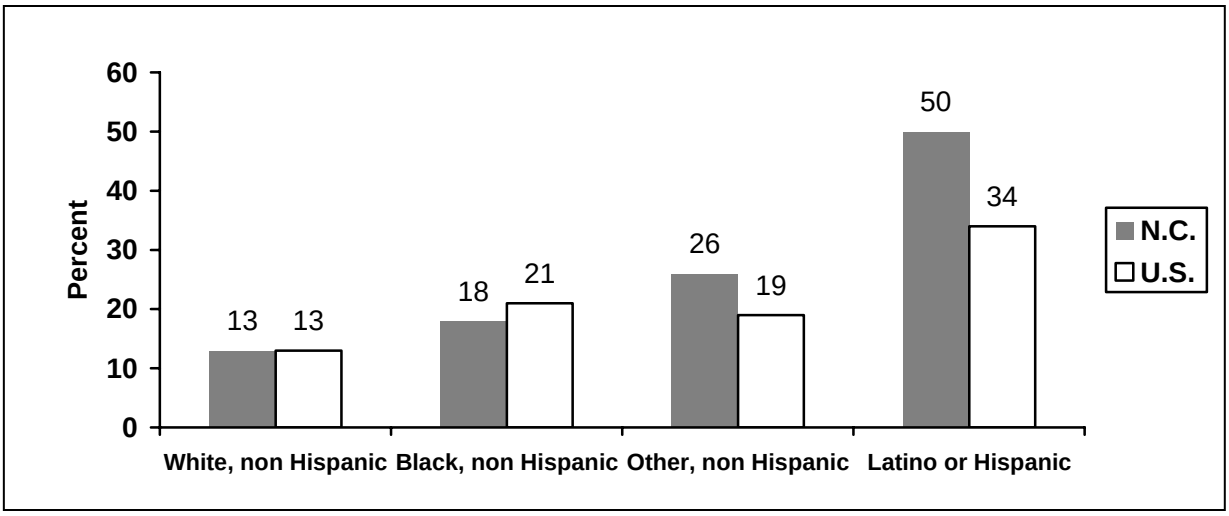
**Figure 1.1. NC distribution of non-elderly uninsured by race/ethnicity, 2004-2005**




*non-Hispanic

Source: Urban Inst. & Kaiser Family Foundation

**Figure 1.2. North Carolina (2004-2005) and U.S. (2005) uninsured rates for non-elderly by race and ethnicity**




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 2004 to 2005, 18 percent of North Carolinians were below the federal poverty level (FPL); with an overall total of 38 percent of the population considered low income (199% or below FPL). Table 1.5 displays the individual poverty rate by age for the state and the nation. Table 1.6 displays the individual poverty rate by race/ethnicity for N.C. (2004-2005) and the U.S (2005). Map 7 (Appendix A, pg. A-9) displays the North Carolina per capita income for 2005.

**Table 1.5. North Carolina (2004-2005) and U.S. (2005) poverty rates by age**

| Age in Years | N.C. (Pct.) | U.S. (Pct.) |
|---|---|---|
| Children 0-18 | 24% | 23% |
| Adults 19-64 | 16% | 16% |
| Elderly 65+ | 16% | 13% |

Source: Urban Institute and Kaiser Family Foundation

**Table 1.6. North Carolina (2004-2005) and U.S. (2005) poverty rates by race/ethnicity**

| Race/Ethnicity | Individual Poverty Rate (% of each group at or below the federal poverty level) | |
|---|---|---|
| | N.C. (Pct.) | U.S. (Pct.) |
| White* | 12% | 12% |
| Black* | 33% | 33% |
| Hispanic | 29% | 29% |
| Other | 24% | 20% |

* non-Hispanic

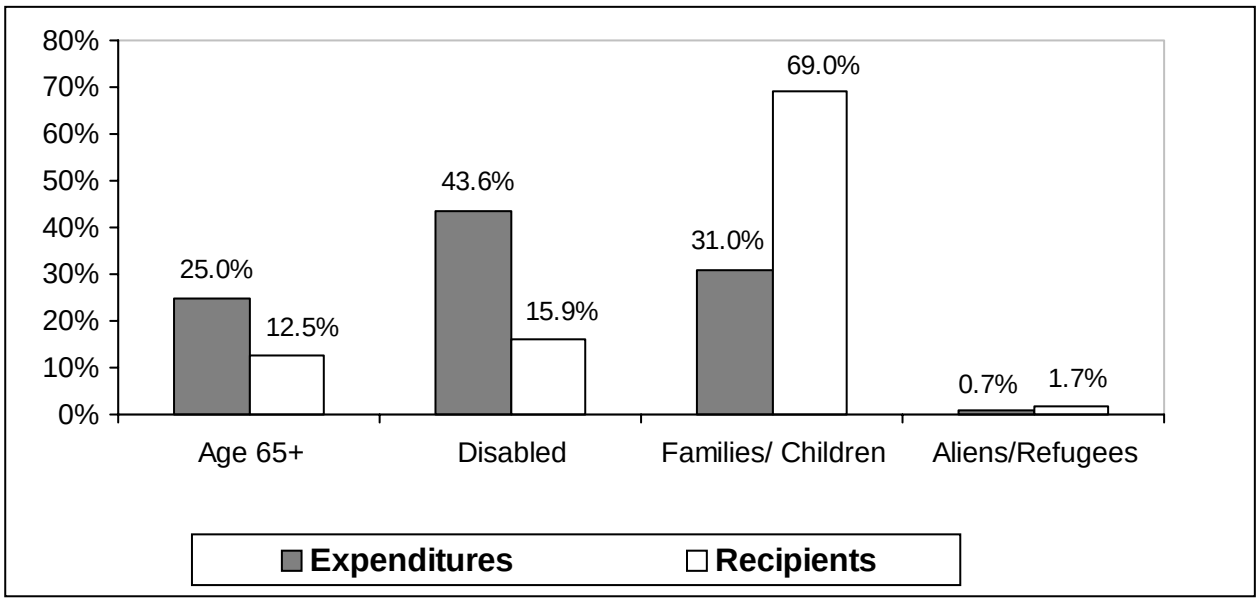
Source: Urban Institute and Kaiser Family Foundation

According to the 2005 American Community Survey, of North Carolinians 25 years and older, 82.2 percent were high school graduates or higher and 25.1 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).

Public Aid

The grand total of Medicaid and Medicaid-related expenditures in North Carolina for State Fiscal Year (SFY) 2006 was approximately $8.6 billion for approximately 1.7 million Medicaid recipients (an average $5,129 per recipient). The number of Medicaid recipients increased by 2.5 percent from 2005. During 2006, a total of 1,602,645 North Carolinians, or 18.5 percent of the total N.C. population, was eligible for Medicaid coverage at some point during the year (DHHS, 2007).

**Figure 1.3. N.C. Medicaid service expenditures & recipients, SFY 2006**



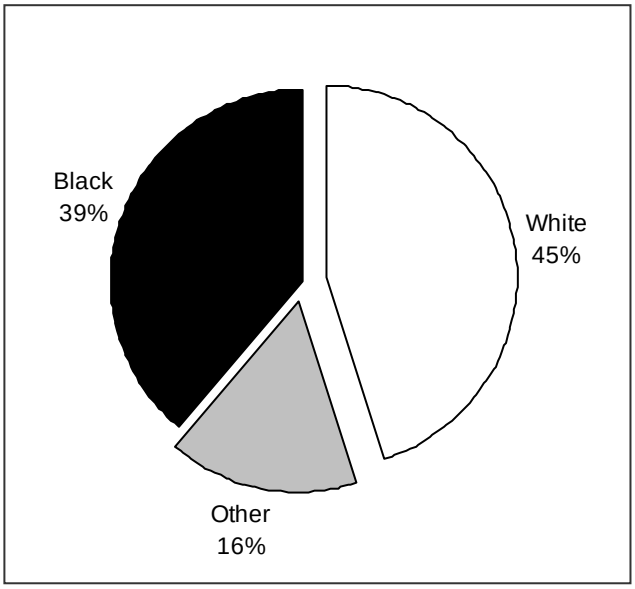

Source: Medicaid in N. C. Annual Report 2007

The Elderly and Disabled accounted for about 28.4 percent of the Medicaid recipients; however, their expenditures amounted to $5.8 billion or 69 percent of the total service expenditures (Figure 1.3). Families and Children recipients comprised 69 percent of all recipients; conversely they accounted for $2.6 billion or only 31 percent of total service expenditures. Aliens and Refugees represented 1.7 percent of all recipients and accounted for about 60 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 $1.4 billion, or 16 percent of total expenditures. Figure 1.4 displays the percentage of North Carolinians by race, who received Medicaid in 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, body weight, 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.

**Figure 1.4. N.C. Medicaid recipients by race*, SFY 2006**




* Hispanics not counted as a separate group
Source: Medicaid in N. C. Annual Report 2007

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 2004 (Kaiser, 2006). According to the National Vital Statistics Reports (2006), the teen birth rate (women ages 15-19 years) for North Carolina in 2004 was 48.8 per 1,000. There has been a thirty percent decrease in North Carolina's teen birth rate as compared to the 1991 teen birth rate of 70.0 (per 1,000). The national teen birth rates in 1991 and 2004 were 61.8 and 41.1 per 1,000 young women respectively. The North Carolina teen birth rate still remains high, most markedly among Hispanic teens in the state. Table 1.7 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).

Another useful health indicator is the infant mortality rate. The 2003 infant mortality rate for North Carolina was 8.2 per 1,000 live births, as compared to the national average of 6.9 per 1,000 live births. From 2001-2003 North Carolina had the 10th highest infant mortality rate in the United States. According to the N.C Center for Health Statistics, the 2004 and 2005 infant mortality rate for North Carolina was 8.8 per 1,000 live births.

**Table 1.7. 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 (2004) | | Infant death rate, per 1,000 births (2001-2003) | |
|---|---|---|---|---|---|---|
| | N.C. | U.S. | N.C. | U.S. | N.C. | U.S. |
| White* | 33.3 | 27.4 | 7.7 | 7.2 | 6.15 | 5.74 |
| Black* | 64.4 | 64.7 | 14.2 | 13.7 | 15.13 | 13.55 |
| Hispanic | 169.1 | 82.3 | 6.4 | 6.8 | 6.07 | 5.57 |

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

Source: Urban Institute and Kaiser Family Foundation

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

## HIGHLIGHTS

- In 2006, 2,022 new individuals were reported with an HIV diagnosis (HIV disease).
- North Carolina's overall rate of HIV infection in 2006 was 23.3 per 100,000.
- The cumulative number of individuals reported with HIV disease through December 31, 2006 was 30,468 people.
- An estimated 31,000 people were living with HIV or AIDS in North Carolina (including individuals who may have been unaware of their infection) as of December 31, 2006.
- In 2006, the rate of HIV infection for non-Hispanic blacks (71.0 per 100,000) was more than eight times greater than for non-Hispanic whites (8.1 per 100,000). The rate of infection for Hispanics (29.8 per 100,000) was almost four times greater than for whites.
- The highest rate of HIV infection in 2006 was among black non-Hispanic males, at 103.3 per 100,000. This was more than seven times the rate for white non-Hispanic males (13.9 per 100,000).
- The largest disparity in 2006 observed was for black non-Hispanic females, with a rate of HIV infection (42.2 per 100,000) that was almost 17 times higher than that of white non-Hispanic females (2.5 per 100,000).
- Adults aged 30 to 39 years and 40 to 49 years accounted for the greatest proportion of new HIV reports in 2006.
- For 2006 adult/adolescent HIV disease reports, men who have sex with men (MSM) was the principal risk category indicated in 51 percent of reports; heterosexual transmission risk was indicated in 40 percent of reports; and injecting drug use (IDU) was indicated in 6 percent of reports.
- In 2006, MSM and MSM/IDU accounted for 71 percent of new HIV disease reports among adult/adolescent males. This represents a notable increase MSM reports over the last five years (71 percent in 2006 compared to 59 percent in 2002).
- In 2006 HIV disease reports for adult/adolescent females, heterosexual contact accounted for about 86 percent of reports and injecting drug use accounted for 11 percent.
- Nationally, in 2003, North Carolina reported the 2$^{nd}$ 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 2006, Hertford County (which houses a large federal prison facility) had the highest county HIV infection rate (based on a 3-year average for 2004-2006) of 162.7 per 100,000 population. Mecklenburg County ranked second with an HIV rate of 45.2, followed by Edgecombe County (42.4), Durham County (39.8), and Lenoir County (36.2). The N.C. 3-year average rate was 21.6 per 100,000 population.

- In 2005, HIV/AIDS was listed as the 7$^{th}$ leading cause of death for N.C. adults 25-44 years old.

- In 2005, HIV/AIDS was listed as the 10$^{th}$ leading cause of death for N.C. blacks overall. The crude HIV death rate for blacks is approximately 12 times higher than for whites (17.0 vs. 1.4 per 100,000).

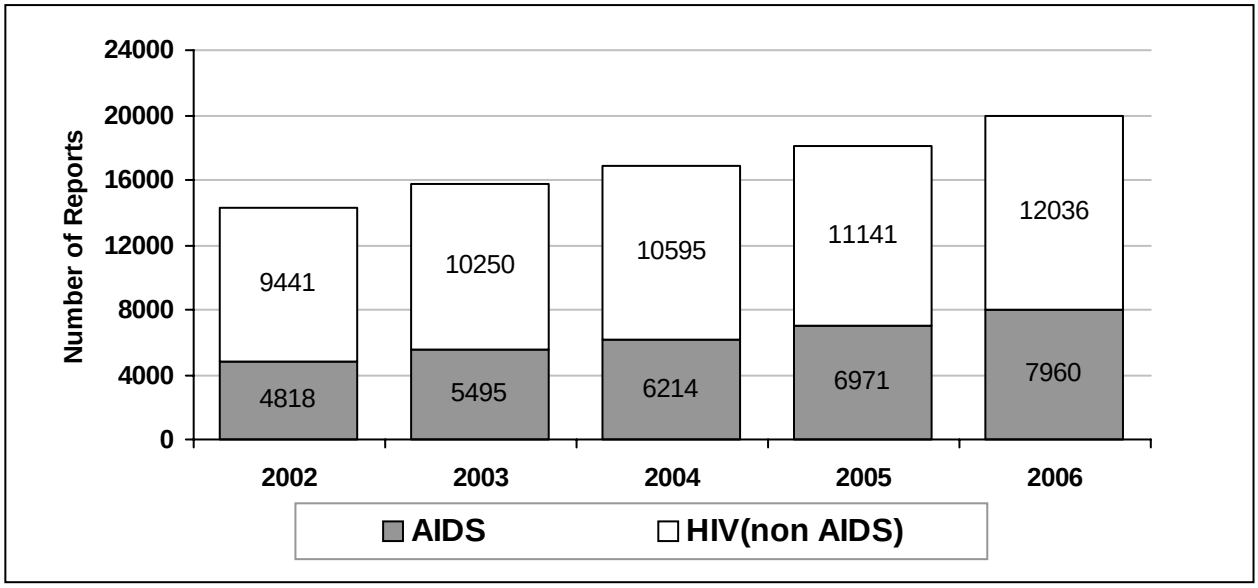
## OVERALL HIV/AIDS TRENDS

Special note: Unless otherwise noted, references to all racial groups in surveillance data are presented in a race/ethnic designation. 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 those diagnosed with HIV, but also people 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, 2006 was 30,468, of whom 10,163 have either died or have an unknown vital status. The total number of people living with HIV disease and reported to the HIV/STD Prevention & Care Branch was 19,996. Figure 2.1 displays the cumulative number of people living with HIV or AIDS each year from 2002 to 2006. 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.

**Figure 2.1. People living with HIV in North Carolina, 2002-2006**




The number of people living with HIV stated above represents only individuals who know that they are HIV-positive (i.e., have been diagnosed) and who have been reported to the North Carolina public health surveillance system. Thus, this total underrepresents true HIV prevalence. The total must be adjusted to account for people 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 estimating people who have HIV but are not aware of it is based upon the CDC estimate that two-thirds to three-fourths of the people living with HIV and AIDS have been tested and know their status. Applying these two statistics to our current surveillance total of 19,996 people living in North Carolina with HIV/AIDS would increase the prevalence estimate to about 31,000 people.

HIV/AIDS Prevalence Demographics

Table 2.1 displays demographics of HIV disease reports for people living with HIV/AIDS as of December 31, 2006. As expected, there is a larger representation of older individuals among the people living with HIV/AIDS, as many people 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 321.1 per 100,000 and 735.4 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, 2006 was 230.3 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 2006, 2,022 new individuals were reported with an HIV diagnosis (HIV disease).

**Table 2.1 North Carolina HIV/AIDS cases living as of 12/31/2006 by selected demographics**

| | Males | | | Females | | | Total | | |
|---|---|---|---|---|---|---|---|---|---|
| | No. | Pct. | Rate** | No. | Pct. | Rate** | No. | Pct. | Rate** |
| | 13,718 | 69% | 321.1 | 6,278 | 31% | 142.3 | 19,996 | 100 | 230.3 |
| Race/Ethnicity | | | | | | | | | |
| White* | 3,910 | 29% | 133.5 | 1,020 | 16% | 33.6 | 4,930 | 25% | 82.6 |
| Black* | 8,936 | 65% | 1004.8 | 4,960 | 79% | 495.9 | 13,896 | 70% | 735.4 |
| AI/AN* | 126 | <1% | 241.2 | 58 | <1% | 106.3 | 184 | <1% | 172.3 |
| Asian PI* | 69 | <1% | 85.6 | 31 | <1% | 37.1 | 100 | <1% | 60.9 |
| Hispanic | 661 | 5% | 206.8 | 207 | 3% | 88.7 | 868 | 4% | 156.9 |
| Current Age | | | | | | | | | |
| 0-12 | 26 | <1% | 3.3 | 37 | <1% | 4.9 | 63 | <1% | 4.1 |
| 13-19 | 107 | <1% | 25.0 | 83 | 1% | 20.4 | 190 | 1% | 22.8 |
| 20-29 | 1,373 | 10% | 214.0 | 725 | 12% | 124.1 | 2,098 | 11% | 171.2 |
| 30-39 | 3,349 | 25% | 523.1 | 1,917 | 31% | 306.9 | 5,266 | 26% | 416.3 |
| 40-49 | 5,412 | 40% | 846.0 | 2,246 | 36% | 339.0 | 7,658 | 38% | 588.0 |
| 50+ | 3,430 | 25% | 301.6 | 1,268 | 20% | 91.7 | 4,698 | 24% | 186.5 |

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

**Figure 2.2. HIV disease reports over time, 1987-2006**

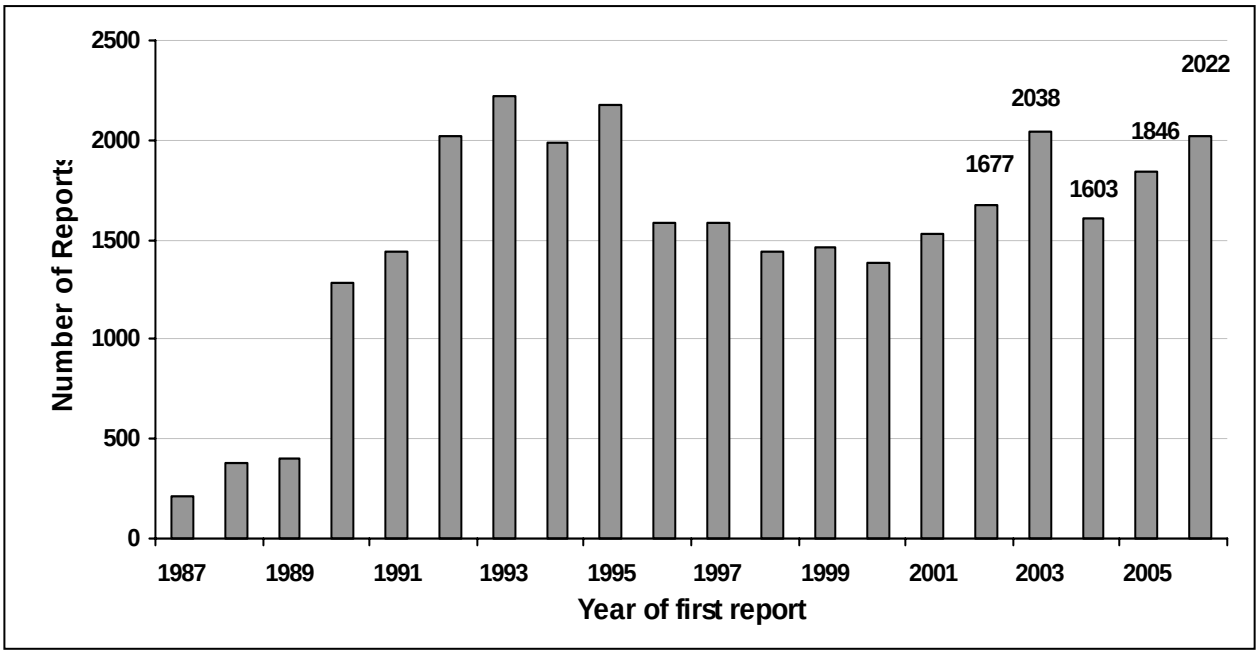



Figure 2.2 shows all HIV disease cases reported, by year of first report for the individual. The addition of state-required HIV infection reporting in 1990 accounts for the dramatic increase in reports beginning at that time. The number of cases reported was highest from 1992 through 1995, representing 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 and 2006 were 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 approximately 1,700 new reports per year. Reporting by type of initial case (HIV or AIDS) has been fairly consistent since the mid-1990s. Roughly 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., HIV with 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 2006 is among black males (103.3 per 100,000), at more than seven times that for white males (13.9 per 100,000). The second highest rate of HIV infection is for black females (42.2 per 100,000), which is almost 17 times higher than the rate for white females (2.5 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 (39.7 per 100,000) is more than twice that for white men and the rate for Hispanic women (16.3 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, 2006**

| | Male | | | Female | | | Total | | |
|---|---|---|---|---|---|---|---|---|---|
| Race/ethnicity | No. | Pct. | Rate** | No. | Pct. | Rate** | No. | Pct. | Rate** |
| White* | 406 | 27% | 13.9 | 77 | 14% | 2.5 | 483 | 24% | 8.1 |
| Black* | 919 | 62% | 103.3 | 422 | 78% | 42.2 | 1,341 | 66% | 71.0 |
| AI/AN* | 12 | <1% | 23.0 | 0 | 0% | -- | 12 | <1% | 11.2 |
| Asian/PI* | 14 | <1% | 17.4 | 4 | <1% | 4.8 | 18 | <1% | 11.0 |
| Hispanic | 127 | 9% | 39.7 | 38 | 7% | 16.3 | 165 | 8% | 29.8 |
| Unknown | 2 | <1% | -- | 1 | <1% | -- | 3 | <1% | -- |
| Total | 1,480 | 100% | 34.6 | 542 | 100% | 12.3 | 2,022 | 100% | 23.3 |

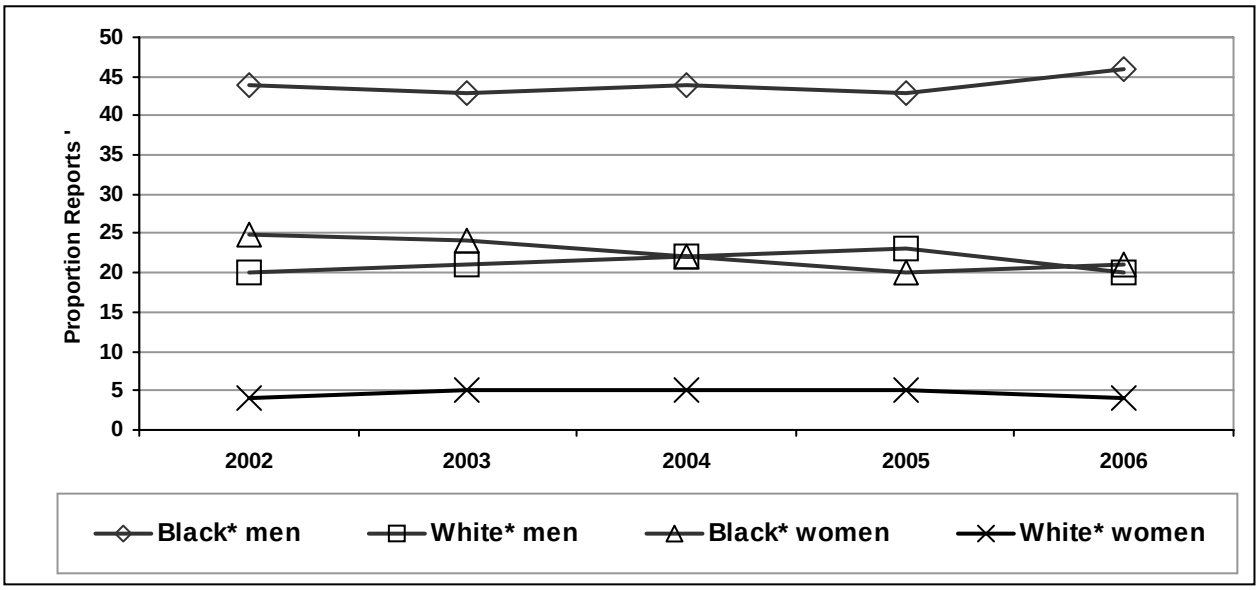
*non Hispanic; AI/AN=American Indian/Alaska Native, PI=Pacific Islander ** per 100,000

Table A (pg. D-3) displays the gender distribution of HIV disease reports from 2002 through 2006. The gender distribution of reports is about two and one-half male reports for each female report (i.e., 2.7 male reports: 1 female report). This disparity has been widening over the past five years. In 2002, the ratio was about two male reports for each female report (i.e., 2.2 male

reports: 1 female report). Concurrently, there has been a corresponding increase in the number of MSM reports. In 2002, MSM and MSM/IDU comprised 59 percent of all new male adult/adolescent reports; however, in 2006 this number has risen to 71 percent (Table D, pg. D-6).

Table B (pg. D-4) also displays the race/ethnicity of reports stratified by gender from 2002 through 2006. A notable trend is the increase in proportion of reports for Hispanics overall (5% of reports in 2002 to 8% in 2006). Figure 2.3 displays the proportions of HIV disease reports from 2002 through 2006 attributed to black and white males and to black and white females. As shown, black males make up the greatest proportion of all reports.

**Figure 2.3. HIV/AIDS by race/ethnicity and gender over time, 2002-2006**




* 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 2006, 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 about 57 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).

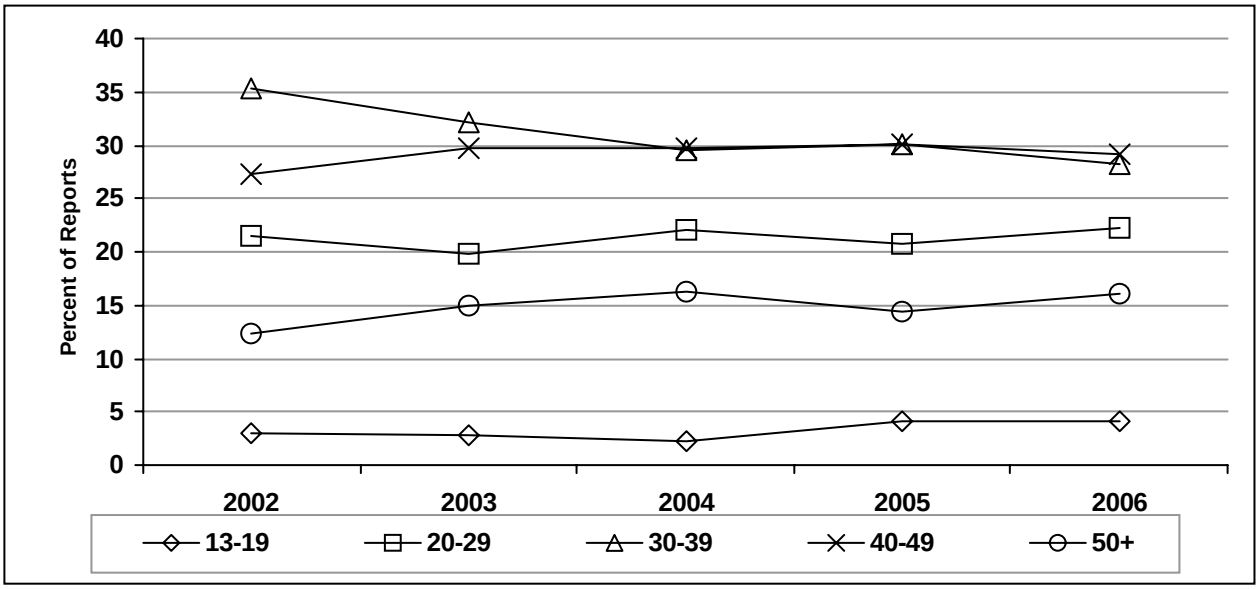
Figure 2.4 displays trends for age groups from 2002 to 2006 by their proportion of overall reports. Note that proportions have changed over time for some groups: the proportions have increased for those 50 and older, while those aged 30-39 and 20-29 years have made up a smaller proportion of new reports over time.

**Table 2.3. North Carolina HIV disease by age group and gender, 2006**

| | Males | | | Females | | | Total | | |
|---|---|---|---|---|---|---|---|---|---|
| Age (yrs.) | No. | Pct. | Rate** | No. | Pct. | Rate** | No. | Pct. | Rate** |
| 0-12 | 1 | <1% | 0.1 | 6 | 1% | 0.8 | 7 | <1% | 0.5 |
| 13-19 | 55 | 4% | 12.8 | 27 | 5% | 6.6 | 82 | 4% | 9.8 |
| 20-29 | 355 | 24% | 55.3 | 94 | 17% | 16.1 | 449 | 22% | 36.6 |
| 30-39 | 417 | 28% | 65.1 | 153 | 28% | 24.5 | 570 | 28% | 45.1 |
| 40-49 | 423 | 29% | 66.1 | 165 | 30% | 24.9 | 588 | 29% | 45.2 |
| 50 & over | 229 | 16% | 20.1 | 97 | 18% | 7.0 | 326 | 16% | 12.9 |
| Total | 1,480 | 100% | 34.6 | 542 | 100% | 12.3 | 2,022 | 100% | 23.3 |

** per 100,000

**Figure 2.4. HIV/AIDS by age group, 2002-2006**




## 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 2006. 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 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, 2006**

| Exposure | Males | | Females | | Total | |
|---|---|---|---|---|---|---|
| category | No. | Pct. | No. | Pct. | No. | Pct. |
| MSM | 686 | 46.4 | 0 | 0 | 686 | 34.0 |
| IDU | 42 | 2.8 | 27 | 5.0 | 69 | 3.4 |
| MSM/IDU | 20 | 1.4 | 0 | 0 | 20 | 1.0 |
| Blood Products | 8 | 0.5 | 6 | 1.1 | 14 | 0.7 |
| Heterosexual | 88 | 5.9 | 101 | 18.8 | 189 | 9.4 |
| NIR* (presumed heterosexual) | 137 | 9.3 | 108 | 20.1 | 245 | 12.2 |
| NIR* | 498 | 33.7 | 294 | 54.9 | 792 | 39.3 |
| Total | 1,479 | 100 | 536 | 100 | 2,015 | 100 |

*no indicated risk

**Table 2.5. Adult/adolescent HIV disease by exposure category, NIR* redistributed, 2006**

| Exposure | Males | | Females | | Total | |
|---|---|---|---|---|---|---|
| category | No. | Pct. | No. | Pct. | No. | Pct. |
| MSM | 1019 | 69% | -- | -- | 1019 | 51% |
| IDU | 66 | 4% | 59 | 11% | 125 | 6% |
| MSM/IDU | 28 | 2% | -- | -- | 28 | 1% |
| Blood Products/ Hemophilia/other | 13 | 1% | 14 | 3% | 27 | 1% |
| Heterosexual | 353 | 24% | 463 | 86% | 816 | 40% |
| Total | 1479 | 100% | 536 | 100% | 2015 | 100% |

*no indicated risk

For 2006 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 52 percent of all reports; and IDU represents about 7 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.

Figures 2.5 and 2.6 display adult/adolescent risk for each gender. For males, MSM and MSM/IDU together account for about 71 percent of HIV disease reports; heterosexual contact

cases account for about 24 percent of reports; and IDU account for about 4 percent. For females, heterosexual contact accounts for about 86 percent of reports and IDU about 11 percent. Tables E and F (pp. D-7 to D-8) display the risk categories for the sexes for reports from 2002 to 2006. For males, the proportion of MSM reports has risen in recent years, from about 56 percent in 2002 to 69 percent in 2006. This is consistent with the recent overall increase in male reports observed when comparing gender. The proportion of IDU reports (2002-2006) for males has continued to decline (11% to 4%), while reports for females do not show a discernable trend. For females, the proportion of heterosexual contact reports has remained fairly constant.

**Figure 2.5. Adult/adolescent female HIV disease reports, 2006**

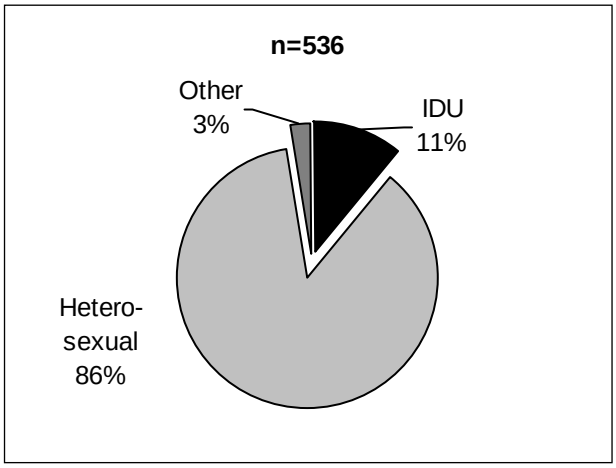
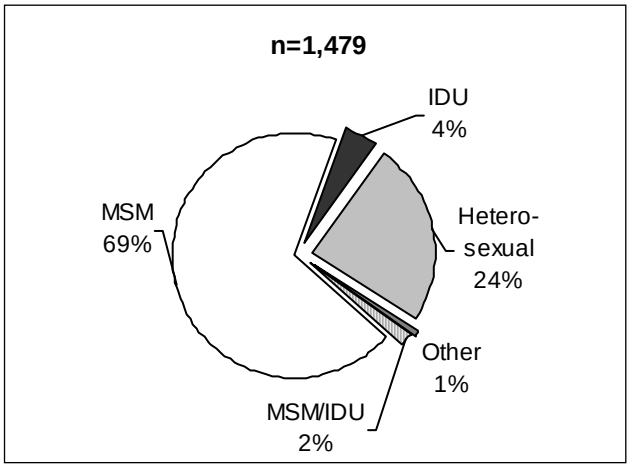
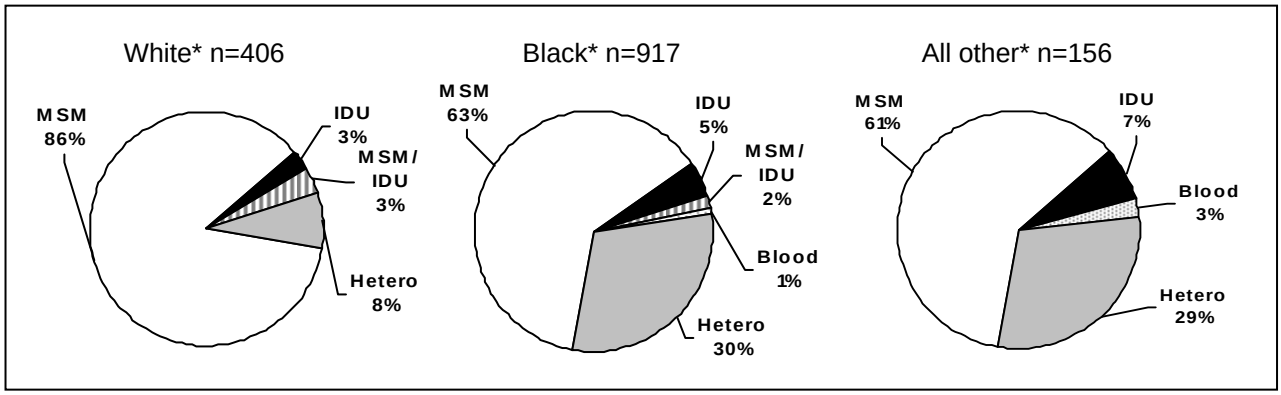



**Figure 2.6. Adult/adolescent male HIV disease reports, 2006**



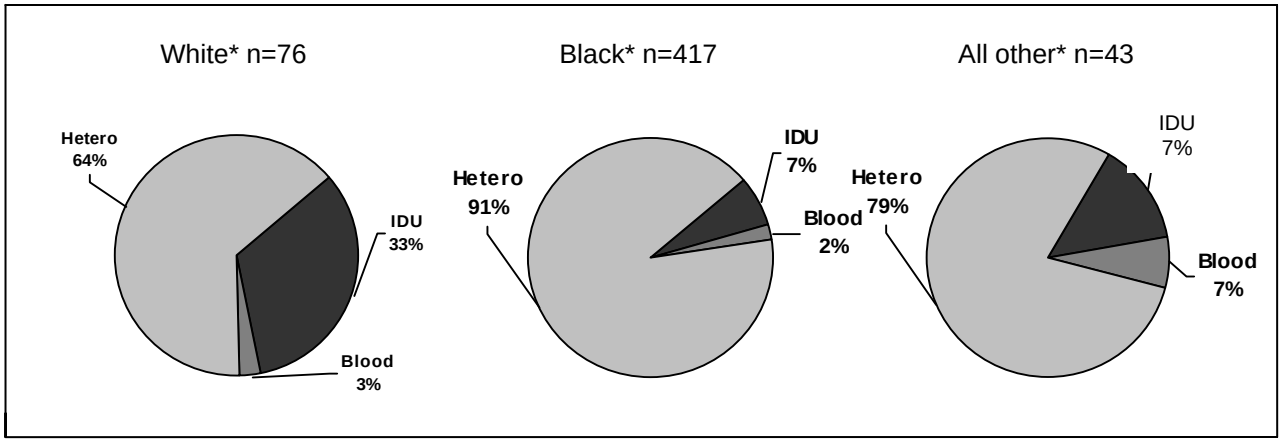

Just as HIV is distributed differently among racial/ethnic groups, it is also distributed differently with respect to risk categories for racial/ethnic groups. Figures 2.7 and 2.8 display the 2006 adult/adolescent HIV risk information (exposure categories) by racial/ethnic groups for each gender, with the respective proportions calculated separately for each group. Note that for white males, MSM represented 86 percent of reports, heterosexual risk about 8 percent of reports, and IDU risk about 3 percent of reports. For black males, MSM represented about 63 percent of reports, heterosexual risk about 30 percent of reports, and IDU risk about 5 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 61 percent of male reports, heterosexual risk for 29 percent of reports, and IDU risk for seven 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 prevalence of the disease for each racial/ethnic group. Unlike the differences observed for males among the racial/ethnic groups, there is similarity among the female racial/ethnic groups for reported risk. However, one-third of white female reports represented IDU risk.

**Figure 2.7 Male HIV disease reports, 2006***




*Pediatric reports have been excluded

**Figure 2.8 Female HIV disease reports, 2006***




*Pediatric reports have been excluded

## 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. At the 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 people 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 2006, 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 2006.] Hertford County (which houses a large federal prison facility) ranked number one with the highest three-year average rate (per 100,000 population) of HIV in 2006 (162.7), followed by Mecklenburg County (45.2), Edgecombe County (42.4), Durham County (39.8), and Lenoir 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, 414 HIV/AIDS deaths were reported in 2005. Although HIV/AIDS did not rank among the top 10 causes of death for all ages, it was listed as 7$^{th}$ for ages 25 to 44 years (Table 2.6); this ranking was the same as in 2004. HIV/AIDS was also listed as the 10$^{th}$ leading cause of death among blacks of all ages); this ranking was the also same as in 2004. 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.

## ADOLESCENT ACQUIRED HIV/AIDS

Tables H and I (pp. D-10 to D-11) and Figures 2.9 and 2.10 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 2006, while just 4 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.

**Table 2.6 Leading causes of death for North Carolina residents 25-44 years, 2005**

| Rank | Cause | Number | Pct. |
|---|---|---|---|
| 1 | Unintentional injuries | 626 | 15.2 |
| 2 | Cancer | 544 | 13.2 |
| 3 | Motor vehicle injuries | 513 | 12.4 |
| 4 | Diseases of heart | 502 | 12.2 |
| 5 | Intentional self-harm (suicide) | 346 | 8.4 |
| 6 | Assault (homicide) | 288 | 7.0 |
| **7** | **HIV disease** | **207** | **5.0** |
| 8 | Cerebrovascular diseases | 128 | 3.1 |
| 9 | Diabetes mellitus | 83 | 2.0 |
| 10 | Chronic liver disease and cirrhosis | 63 | 1.5 |
| | All other causes | 822 | 20.0 |
| Total Deaths -- All Causes | | 4122 | 100 |

Source: N.C. State Center for Health Statistics

**Table 2.7. N.C HIV/AIDS-related deaths by race/ethnicity and gender, 2005**

| Race/ ethnicity | Males | | | Females | | | Total | | |
|---|---|---|---|---|---|---|---|---|---|
| | No. | Pct. | Rate** | No. | Pct. | Rate** | No. | Pct. | Rate** |
| White* | 72 | 17% | 2.5 | 12 | 3% | 0.4 | 84 | 20% | 1.4 |
| Black* | 204 | 49% | 22.9 | 118 | 29% | 11.8 | 322 | 78% | 17.0 |
| Other | 7 | 2% | 1.5 | 1 | 0% | 0.3 | 8 | 2% | 1.0 |
| Total | 283 | 68% | 6.6 | 131 | 32% | 3.0 | 414 | 100% | 4.8 |

*non-Hispanic ** per 100,000 Source: N.C. State Center for Health Statistics

**Figure 2.9. Male HIV disease rpts. (13-24 yrs) that likely represent adolescent exposures, 2006**

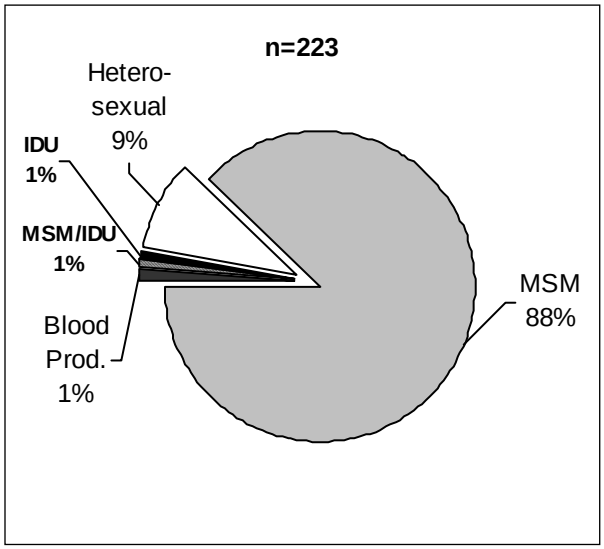
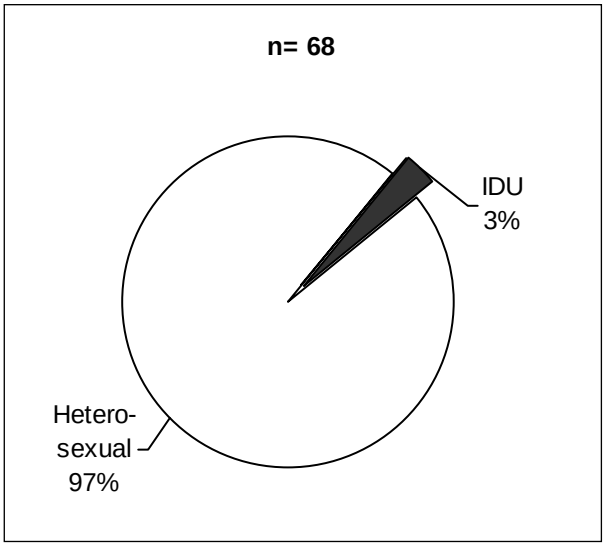



**Figure 2.10. Female HIV disease rpts. (13-24 yrs) that likely represent adolescent exposures, 2006**



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 2006 accounted for almost 97 percent of the cases. For adolescent males, the proportion of HIV disease reports attributed to MSM risk accounted for 88 percent of the 2006 reports, up from the 84 percent of reports in 2002.

## 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) among all women. 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.

**Table 2.8. Female HIV disease by special age groups, 2002-2006**

| | 2002 | | 2003 | | 2004 | | 2005 | | 2006 | |
|---|---|---|---|---|---|---|---|---|---|---|
| Age group | No. | Pct. | No. | Pct. | No. | Pct. | No. | Pct. | No. | Pct. |
| 0-14 yrs | 4 | 1% | 6 | 1% | 4 | 1% | 5 | 1% | 8 | 1% |
| 15-44 yrs | 406 | 78% | 479 | 75% | 313 | 68% | 376 | 74% | 361 | 67% |
| 45 + yrs | 113 | 22% | 153 | 24% | 142 | 31% | 128 | 25% | 173 | 32% |
| Total | 523 | 100% | 638 | 100% | 459 | 100% | 509 | 100% | 542 | 100% |

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 1997 to 2006 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. Please see chapter 3: Indicators of Risk for HIV/AIDS Infection in North Carolina for further discussion regarding perinatal transmission.

**Table 2.9. Women of child-bearing age (15-44 yrs) by race/ethnicity, 2002-2006**

| | 2002 | | 2003 | | 2004 | | 2005 | | 2006 | |
|---|---|---|---|---|---|---|---|---|---|---|
| Race/ ethnicity | No. | Pct. | No. | Pct. | No. | Pct. | No. | Pct. | No. | Pct. |
| White* | 57 | 14% | 82 | 17% | 50 | 16% | 66 | 18% | 50 | 14% |
| Black* | 319 | 79% | 362 | 76% | 234 | 75% | 272 | 72% | 277 | 77% |
| Other* | 8 | 2% | 9 | 2% | 5 | 2% | 11 | 3% | 3 | 1% |
| Hispanic | 22 | 5% | 26 | 5% | 24 | 8% | 27 | 7% | 31 | 9% |
| Total | 406 | 100% | 479 | 100% | 313 | 100% | 376 | 100% | 361 | 100% |

* non-Hispanic

**Table 2.10. NC HIV disease reports that were likely perinatal transmissions, 1997-2006**

| Year of birth | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
|---|---|---|---|---|---|---|---|---|---|---|
| Reports | 3 | 7 | 5 | 5 | 6 | 3 | 2 | 2 | 1 | 2 |

## HIV DISEASE AMONG FOREIGN-BORN RESIDENTS

Table 2.11 displays the number of HIV reports that were identified among foreign-born people in North Carolina. Substantial increases in the number of reports for this group have been noted over the last four years. In 2006, these HIV reports represented approximately six percent (n=124) of all reports (2,022). In the last ten years (1997-2006), for foreign-born blacks, the principal countries of origin were South Africa, Zambia, Kenya, Haiti and Nigeria (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 must 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, 1997-2006**

| | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
|---|---|---|---|---|---|---|---|---|---|---|
| Reports | 24 | 21 | 24 | 29 | 20 | 76 | 91 | 83 | 101 | 124 |

**Table 2.12. HIV disease among foreign-born residents, 1997-2006**

| Race/ethnicity | No. | Pct |
|---|---|---|
| White, non-Hispanic | 13 | 2 |
| Black, non-Hispanic | 184 | 31 |
| Asian/Pacific Islander | 26 | 4 |
| Hispanic | 342 | 58 |
| Unknown | 28 | 5 |
| Total | 593 | 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. Of all adult/adolescent men reported and living with HIV/AIDS in North Carolina (N=13,627), 60 percent have MSM or MSM/IDU (injecting drug use) risk.

- In 2006, MSM activity accounted for 52 percent of all new adult/adolescent HIV reports (including MSM/IDU). This represents a 27 percent increase in overall MSM reports from 2002 to 2006 (41%-52%)

- MSM activity accounted for 89 percent of HIV disease risk among adolescent males (age 13-24 years) reported in 2006.

- MSM activity accounted for 89 percent of HIV disease risk among white, non-Hispanic males reported in 2006 (including MSM/IDU), and MSM reports among white men have increased 11 percent from 2002 to 2006 (80%-89%). MSM activity accounted for 65 percent of black, non-Hispanic reports in 2006 (including MSM/IDU); MSM reports among black men have increased 33 percent from 2002 to 2006 (49%-65%). MSM activity accounted for 61 percent of reports among males of other race/ethnicity groups.

- MSM activity accounted for 55 percent of male syphilis cases interviewed in 2006 through Partner Counseling and Referral Services (PCRS). This represents an increase of 224 percent from 2002 to 2006 (17%-55%).

- Of MSM interviewed from 2002-2006 with HIV disease, 28 percent indicated they had female as well as male sex partners; of MSM interviewed with syphilis, 17 percent indicated they had female as well as male sex partners.

- Of the 360 MSM interviewed at N.C. Pride events (North Carolina's Annual Gay, Lesbian, Bisexual, and Transgendered Festival) in 2006 through the Rapid Behavioral Assessment survey, 180 (50%) reported having unprotected anal intercourse (UAI) and 55 (15%) reported having UAI with multiple partners. The median number of male sex partners was 2.0 (range: 1-200).

### Injecting Drug Use (IDU)

- Injecting drug use accounted for seven percent of all HIV disease reports in 2006 (including MSM/IDU). Overall, IDU risk has decreased 40 percent over the past five years as a proportion of new reports (12%-7%).
- From 2002-2006, an average of 189 cases of IDU or IDU associated HIV infection were reported each year (120 males, 69 females).

- Among people with HIV disease interviewed through Partner Counseling and Referral Services Data (PCRS), 74 percent reporting IDU were male, 75 percent were 40 years or older and 73 percent were non-white.

- Among all people reporting IDU interviewed in 2006 through Partner Counseling and Referral Services, 60 percent used crack cocaine, 33 percent used cocaine, 7 percent used heroin, 11 percent used narcotics and 23 percent used methamphetamine.

- Among all people reporting IDU interviewed in 2006 through Partner Counseling and Referral Services, 52 percent of females and 25 percent of males had exchanged sex for drugs or money.

**Heterosexual Sex**

- Heterosexual sex accounted for 40 percent of all adult/adolescent HIV disease reports in 2006 and the proportion of reports attributed to heterosexual sex have decreased 15 percent in the past five years (47%-40%).

- Heterosexual sex was the only risk identified for 24 percent of all reported male HIV disease cases in 2006; 9 percent among younger men (age 13-24 years). HIV transmission through heterosexual sex represents 30 percent of 2006 HIV disease reports among minority males whereas it represented only 8 percent of new cases among white, non-Hispanic males.

- Heterosexual sex was the only risk identified for 86 percent of all reported adult/adolescent female HIV disease cases in 2006; 97 percent of new reports among younger women (age 13-24 years). Ninety-one percent of new adult/adolescent HIV reports among black women, 64 percent among white women, and 80 percent among women of other race/ethnicity groups, were attributed to heterosexual sex.

- Twenty-three percent of all people interviewed through PCRS in 2006 who reported only heterosexual sex as a risk factor had used crack cocaine; 25 percent reported a sex partner who used crack cocaine.

- Forty-five percent of females with syphilis interviewed through PCRS had been previously diagnosed with an STD. Thirty nine percent of males interviewed with syphilis had been previously diagnosed with an STD (2002-2006). Twenty-seven percent of females with HIV disease and interviewed through PCRS had been previously diagnosed with an STD and 28 percent of males interviewed with HIV disease had been previously diagnosed with an STD (2002-2006).

- Among people reporting only heterosexual sex interviewed through PCRS in 2006, 31 percent of females with syphilis and 21 percent of males had exchanged sex for drugs or money; twelve percent of females with HIV disease and 22 percent of males reported exchange sex.

## 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. 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).

## MEN WHO HAVE SEX WITH MEN (MSM)

HIV/AIDS has taken a tremendous toll on men who have sex with men (MSM). Sexual risk factors account for most HIV infections among 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. 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). In North Carolina, MSM (including MSM/IDU) account for 60 percent of all men and 42 percent of all people living with HIV Disease (Table G, pg. D-9). 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 new

reports, even as HIV has spread to other risk groups. Reports for MSM (including MSM/IDU) accounted for over half of all 2006 HIV disease reports and 71 percent of all male HIV disease reports in 2006 (Table D, pg. D-6). Though white MSM accounted for a larger proportion of adult/adolescent male HIV disease reports in the early part of the epidemic, white, non Hispanic males accounted for only 25 percent (362/1479) of new male reports in 2006; black MSM accounted for 40 percent (590/1479) and other minority males accounted for 6 (95/1479) percent of all of male reports in 2006 (Table F, pg. D-8). Though black MSM accounted for a greater proportion of 2006 reports overall, the proportion of white male HIV cases with associated MSM risk is much greater (89%) than the proportion of black male HIV cases with MSM risk (65%) or other non-white males (61%) with MSM risk. Black male HIV reports with MSM risk have increased 33 percent from 2002 to 2006 (49% to 65%): white male HIV reports with MSM risk have increased 11 percent (80% to 89%) and HIV reports among males of other race/ethnicity categories have not changed significantly over the past five years (60% to 61%) (Table F, pg. D-8).

*Young MSM*

In 2006, 68 percent of all reported HIV disease cases among young people aged 13-24 years were due to male-male sexual contact (Table H, pg. D-10). This represents a 24 percent increase from 2002-2006 (55% to 68%). MSM and MSM/IDU risk account for 89 percent of HIV reports among males aged 13-24 in 2006. 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 people 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, HIV 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 referred to as the PCRS data. More information about the Field Services and the PCRS data source can be found in Appendix B (pg. B9).

In the following description of people interviewed with syphilis, "syphilis" refers to early syphilis, which includes primary, secondary and early latent stages. Among all males interviewed in 2006, MSM activity was identified in 55 percent of early syphilis cases and 49 percent of HIV cases (Table 3.1). MSM activity has increased 11 percent (44% to 49%) as a

proportion of new male HIV disease cases interviewed through PCRS and 224 percent (17% to 55%) as a proportion of male syphilis cases interviewed (2002-2006).

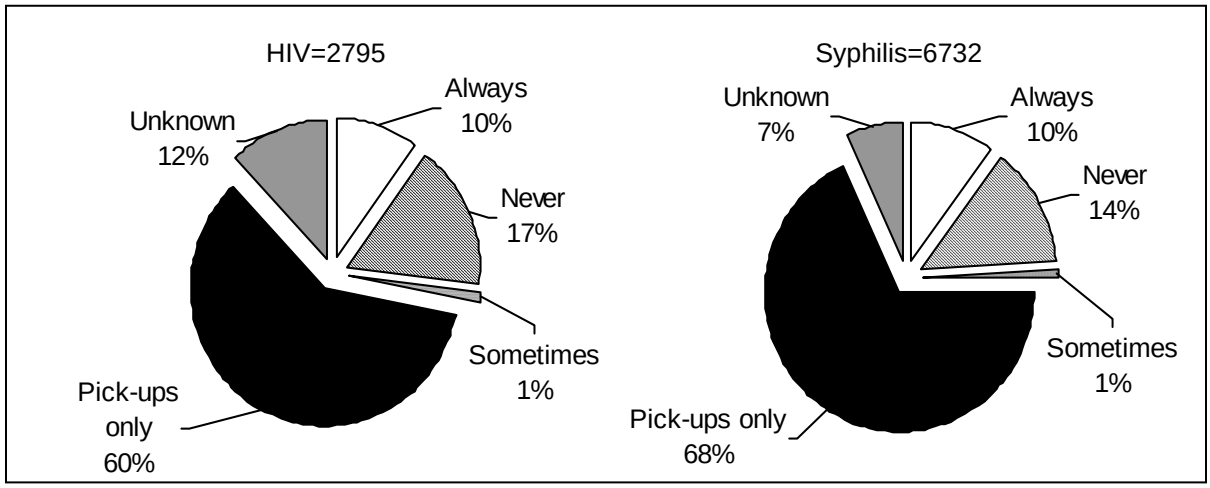
**Table 3.1. Males interviewed with HIV or syphilis who indicated MSM activity, 2002-2006**

| | 2002 | | 2003 | | 2004 | | 2005 | | 2006 | |
|---|---|---|---|---|---|---|---|---|---|---|
| Disease | n | Pct. | n | Pct. | n | Pct. | n | Pct. | n | Pct. |
| HIV | 510 | 44% | 575 | 44% | 551 | 48% | 591 | 48% | 568 | 49% |
| Syphilis | 58 | 17% | 72 | 29% | 132 | 41% | 187 | 49% | 224 | 55% |

*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 3.1). Of MSM with HIV interviewed from 2002 to 2006, 10 percent indicated that they always used a condom, 17 percent indicated they never used a condom, 1 percent indicated they sometimes used a condom, and 60 percent indicated they used condoms with pick-ups only. Among the MSM with early syphilis, 10 percent indicated always, 14 percent indicated never, 1 percent indicated sometimes, and 68 percent indicated they used condoms with pick-ups only.

**Figure 3.1. Condom use among MSM* interviewed with HIV or syphilis, 2002-2006**




***Men who have sex with men includes MSM/IDU interviewed through PCRS**

*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 with HIV interviewed from 2002 to 2006, 12 percent indicated having had more than one sexual partner in the past 90 days; 39 percent indicated having had multiple partners in the past year and; 12 percent indicated they had a new sex partner within the past 90 days. Twenty-eight percent of MSM interviewed with HIV from 2002-2006 indicated they had female as well as male sexual partners. Among MSM interviewed with syphilis from 2002 to 2006, 28 percent indicated having multiple sexual partners in the past 90 days; 28 percent had a new sex partners in the past 90 days and; 57 percent indicated they had multiple sexual partners in the past year (Table 3.2). Seventeen percent of MSM with syphilis also indicated they had female as well as male sexual partners. These proportions indicate substantial risk activity.

**Table 3.2. Sex partners among MSM interviewed with HIV or syphilis, 2002-2006**

| | MSM with HIV (n= 2795) | | MSM with Syphilis (n= 673) | |
|---|---|---|---|---|
| Partners | n | Pct. | n | Pct. |
| >1 partner, 90 days | 339 | 12% | 187 | 28% |
| >1 partner, one year | 1077 | 39% | 382 | 57% |
| New partner, 90 days | 345 | 12% | 186 | 28% |
| Sex with men and women | 774 | 28% | 114 | 17% |

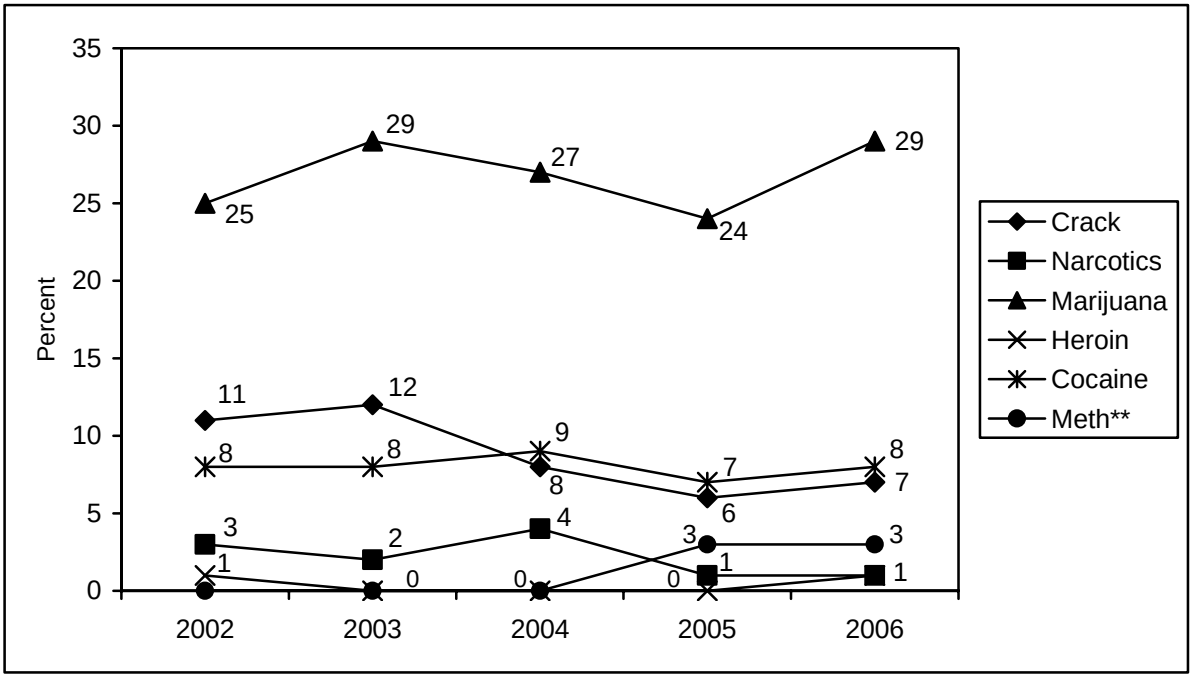
*Drug use among MSM*

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). 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 et al. 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 within these networks more likely.

Information regarding drug use is collected during the interview of newly infected people. The most common drugs used among MSM interviewed by DIS in 2006 were marijuana (29%), cocaine (8%), crack-cocaine (7%), meth (3%), heroin (1%) and narcotics (1%) (Figure 3.2). The question of methamphetamine use was recently added to the specific questions DIS ask interviewees in 2005 so trends in meth use can not be identified at this point, but 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 2002-2006. PCRS data has limitations and DIS may differ in the way they record drug information (more information about the Field Services and the PCRS data source can be found in Appendix B pg. B9).

**Figure 3.2. Drug use among MSM* interviewed with HIV or syphilis, 2002-2006**




*Men who have sex with men includes MSM/IDU interviewed through PCRS
**Meth use added as specific question in 2005

NC Rapid Behavioral Assessment

Men attending 2006 Pride events in NC were systematically sampled and recruited for participation in an anonymous 10 minute survey. Eligible men (age 18 or older and born male) were asked about demographics, sexual behavior, drug and alcohol use, HIV testing, STD diagnoses, receipt of prevention services, attitudes about circumcision, and being "out". Four hundred seventy-three (473) men consented to participate in the survey. Of the 360 men who had at least one male sex partner during the preceding 12 months; 180 (50%) reported having unprotected anal intercourse (UAI) and 55 (15%) reported having UAI with multiple partners. The median number of male sex partners in the past 12 months was 2.0 (Range: 1-200). Thirty seven percent met their partners at a bar or club and 35 percent met over the Internet. Seven percent of men surveyed had not been tested for HIV; 8 percent of men surveyed had been diagnosed with a sexually transmitted disease in the 12 months prior; 35 percent with syphilis. In the year prior to the survey, 76 percent of men surveyed received free condoms, 44 percent received information about ways to protect themselves from getting HIV. During the past 12 months, 29 percent of men reported using non-injection drugs; 9 percent used drugs before sex at least half of the time; 25 percent drank alcohol before or during sex at least half of the time. The most common non-injection drugs used were marijuana (76%), cocaine (14%), poppers (14%), pain relievers (10%), downers (7%), crack (6%), and crystal meth (5%). Less than one percent reported injecting drugs in the past year.

## 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. 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. The male-to-female ratio of early syphilis cases has risen from 1.25 in 2002 to 2.48 in 2006 (Table 3.3), indicating increased MSM-acquired syphilis over the past five years. Table 3.4. displays hepatitis data for 2002 to 2006. 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 1.2 for 2006. Note the male-to-female ratios for acute hepatitis B (HBV); have increased in recent years, while chronic HBV male to female ratios have been fairly stable. HBV is spread through having sex with an infected person without using a condom, by sharing drugs, needles, or “works” when “shooting” drugs, through needle sticks or sharps exposures on the job, or from an infected mother to her baby during birth.

**Table 3.3. Reported primary, secondary & early latent syphilis cases by gender, 2002-2006**

| Gender | 2002 | 2003 | 2004 | 2005 | 2006 |
|---|---|---|---|---|---|
| Male | 342 | 236 | 306 | 343 | 436 |
| Female | 274 | 160 | 147 | 146 | 176 |
| M/F ratio | 1.25 | 1.48 | 2.08 | 2.35 | 2.48 |

**Table 3.4. Male: Female ratios for Hepatitis A, B (chronic and acute) and C, 2002-2006**

| Disease | 2002 | 2003 | 2004 | 2005 | 2006 |
|---|---|---|---|---|---|
| Hepatitis A | 3.3 (160/48) | 1.8 (81/45) | 1.1 (54/51) | 1.0 (42/42) | 1.2 (57/47) |
| Hepatitis B acute | 1.7 (145/87) | 2.0 (109/54) | 1.9 (119/63) | 2.6 (121/46) | 2.7 (116/43) |
| Hepatitis B chronic | 1.3 (500/379) | 1.3 (567/448) | 1.4 (433/314) | 1.4 (490/348) | 1.3 (464/355) |
| Hepatitis C | 1.1 (15/14) | 0.1 (1/12) | 0.5 (4/8) | 0.6 (8/13) | 0.6 (7/11) |

## INJECTING DRUG USE (IDU)

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).

### Needle Exchange Programs

There is substantial evidence that needle exchange programs are effective in preventing HIV risk behavior and HIV seroconversion among IDUs (Gibson et al., 2001). Though there is not a single statistic or a single study that is commonly used to illustrate the reduction in HIV or hepatitis seroconversion among injecting drug users, the National Institute of Health (1997) issued a consensus statement that "Studies show reductions in risk behaviors as high as 80 percent in injecting drug users, with estimates of a 30 percent or greater reduction of HIV." Experts in the field have concluded that 1) needle exchange programs slow the spread of HIV related to injecting drugs and; 2) needle exchange programs do not increase drug use.

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 seven percent in 2006 (Table D, pg. D-6). Among adult/adolescent males reported with HIV disease in 2006, IDU risk (including MSM/IDU) represented seven percent of all new reports. Among adult/adolescent females, IDU risk represented 11 percent of all new reports. Identified injection drug use as a risk in HIV infection among adult/adolescent men has declined 57 percent as a proportion over the last five years (14% to 6%); IDU among adult/adolescent females has increased in that same time period, with the most notable increases among white, non Hispanic women (11% to 33%).

When considering other IDU risk factors, including sex partners of injection drug users and perinatal cases where the mothers were injection drug users or where the mothers had sex

partners who were injection drug users, an average of 189 people (120 males and 69 females) are reported with IDU or IDU-associated HIV in N.C. each year (2002-2006).

Partner Counseling and Referral Services Data (PCRS)

People 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 2006, IDU risk was reported by five percent of interviewed HIV cases. Seven percent of females interviewed in 2006 with HIV reported an IDU sex partner; two percent of men reported an IDU sex partner Among HIV cases interviewed through PCRS, IDU risk has slightly decreased from 2002 to 2006 (9%-5%).

Among HIV-positive people interviewed from 2002 to 2006 reporting IDU activity, there were 425 male cases versus 149 female cases. Of HIV cases interviewed through PCRS from 2002-2006, the majority reporting IDU risk are non-white (73%), male (74%), and ages 40 and older (75%).

*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 people. Among all people reporting IDU interviewed through PCRS in 2006 more than half (60%) used crack cocaine, 53 percent used marijuana. 33 percent used cocaine, 23 percent used methamphetamine, 7 percent used heroin, and 11 percent used narcotics (Figure 3.3). 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#).

*Exchange Partners*

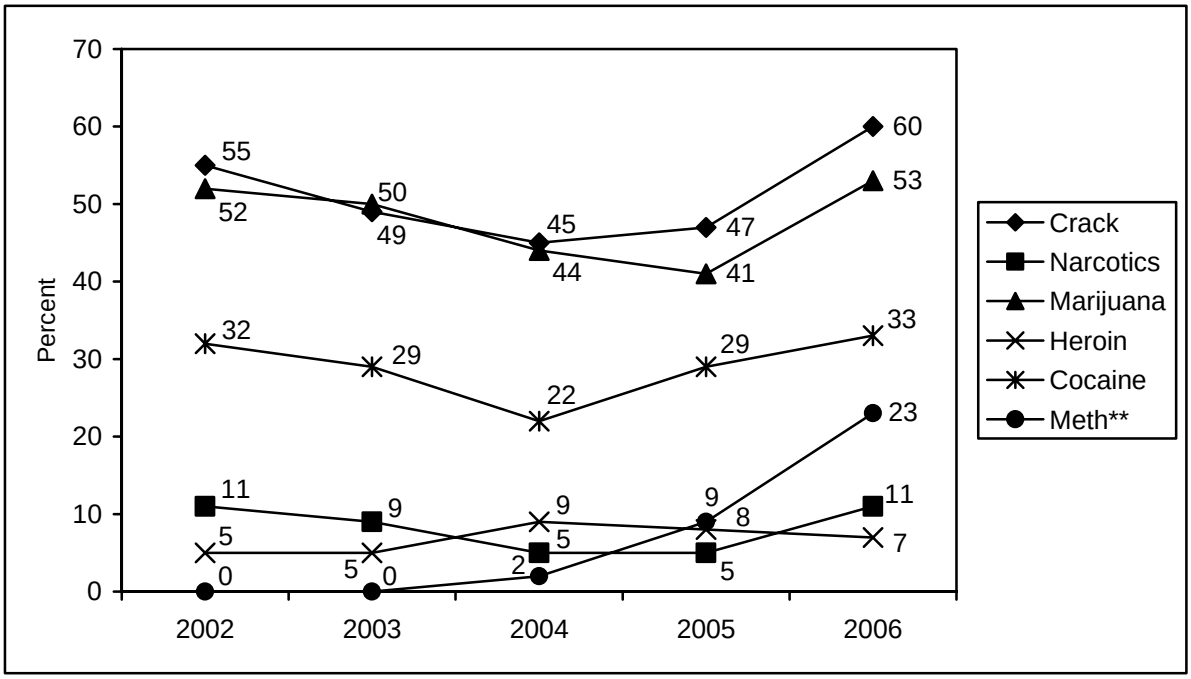
Exchanging sex for drugs or money is a fairly common risk factor identified among interviewed IDU. Forty-six percent of females with HIV disease or syphilis who reported injecting drugs also reported exchanging sex for drugs or money; thirty-two percent of male injection drug users also reported exchanging sex for drugs or money.

## INDIRECT MEASURES OF IDU RISK

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 estimates drug abuse among the national population, states and some metropolitan areas (see pg. B11 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.

**Figure 3.3. Drug use among IDUs* interviewed with HIV or syphilis, 2002-2006**




*Injecting drug users include MSM/IDU interviewed through PCRS
**Meth use added as specific question in 2005

# HETEROSEXUAL RISK

## DIRECT MEASURES OF HETEROSEXUAL RISK

North Carolina HIV Disease surveillance data

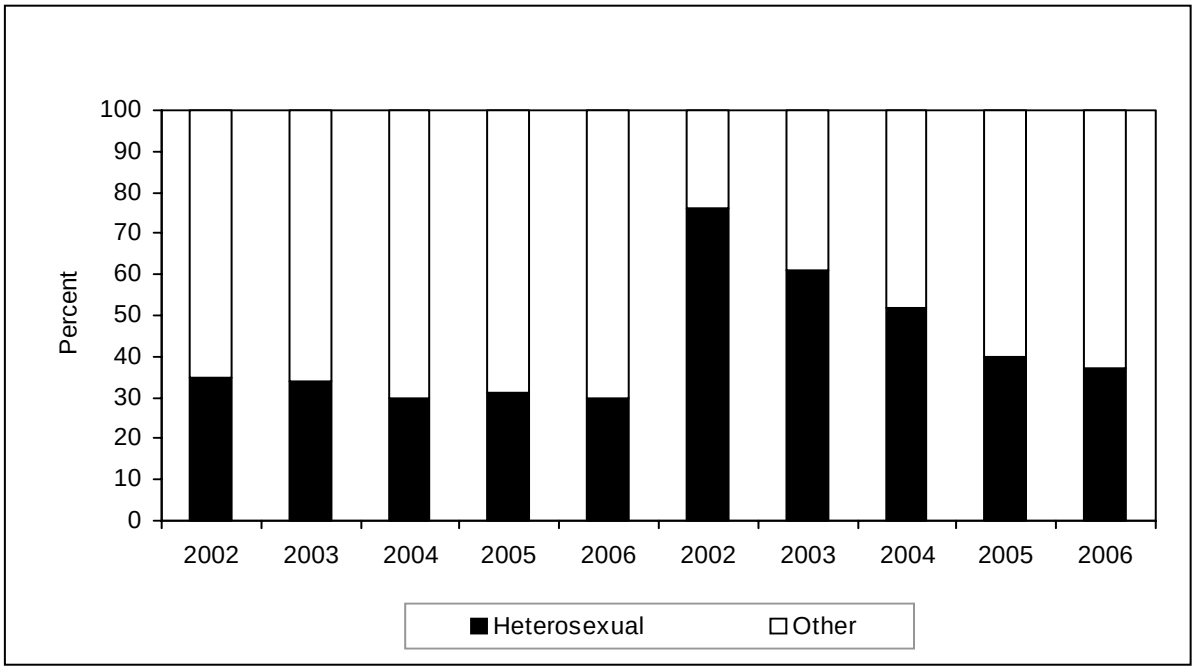
North Carolina continues to experience an HIV epidemic in which a substantial proportion of the cases are among people for whom heterosexual sex is their only risk. Heterosexual transmission of HIV represented 40 percent of all new adult/adolescent HIV disease reports in 2006, a decline of 15 percent since 2002 (Table D, pg. D-6). Heterosexual risk reports consistently represent over 86 percent of the adult/adolescent female cases, whereas they represent less than one-quarter of the male reports. Black females and females of other racial/ethnic minorities (91% and 79%, respectively) are more likely to be classified with heterosexual risk as compared to white females (64%) (Table E, pg. D-7). Likewise, black males and males of other racial/ethnic minorities (30% and 29%, respectively) are far more likely to be classified with heterosexual risk as compared to white males (8%) (Table F, pg. D-8). Gender differences in the pattern of HIV transmission for young people, age 13-24 years, is vastly different. Of 2006 HIV reports among young men (ages 13-24) 9 percent were attributed to heterosexual sex, whereas 97 percent of 2006 reports among young women were attributed to heterosexual sex (Table H, pg. D-10).

Partner Counseling and Referral Services Data (PCRS)

From 2002 and 2006, 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 from 2002 and 2006, only 32 percent reported

heterosexual sex as the only mode of HIV transmission (Figure 3.4). On average, 53 percent of males interviewed with syphilis from 2002 and 2006 report heterosexual sex. The percent of male syphilis cases attributed to heterosexual sex decreased 53 percent, however, from 78 percent in 2002 to 37 percent in 2006.

**Figure 3.4. Males* with HIV disease or syphilis reporting heterosexual risk, 2002-2006**




***Interviewed through PCRS**

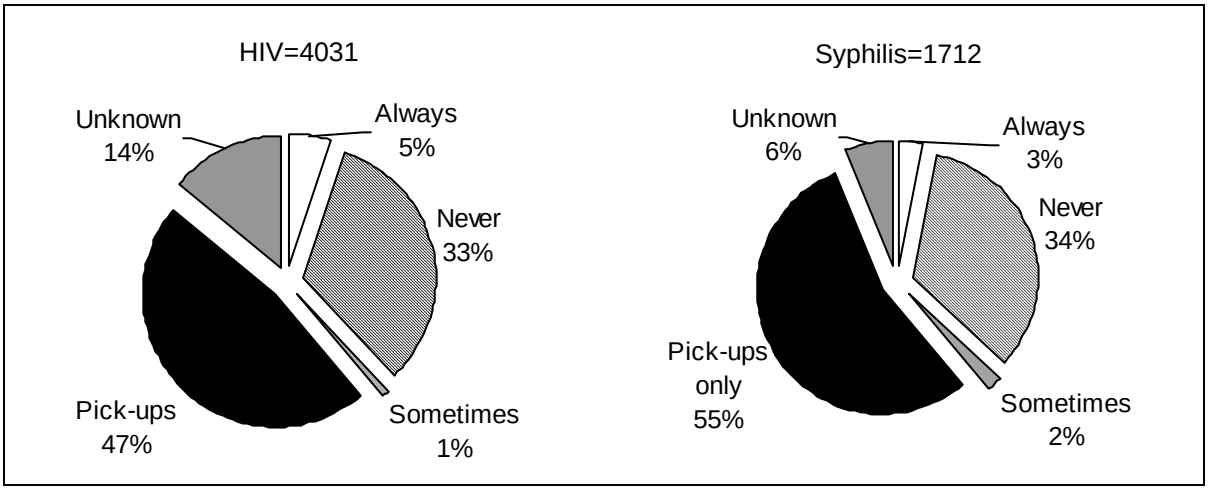
*Condom Use Practices*

Interviewed heterosexuals diagnosed with HIV or syphilis diagnosis were least likely to use condoms, in comparison with interviewed MSM and IDU. Thirty-three percent of those HIV positive people indicated that they never use condoms and 47 percent using condoms with pick-ups only. Thirty-four percent of those interviewed with syphilis indicated that they never use condoms; 55 percent reported only using condoms with pick-ups (Figure 3.5).

*Multiple Sex Partners*

One-fourth of heterosexuals with HIV interviewed from 2002 and 2006 reported multiple sexual partners in the past year; over half of the interviewed heterosexual syphilis cases reported multiple partners in the past year (Table 3.5). Twenty-eight percent of people with syphilis interviewed from 2002-2006 had more than one sex partner in the past 90 days, and 24 percent had a new partner in the past 90 days.

**Figure 3.5. Condom use among heterosexuals* with HIV or syphilis, 2002-2006**




***Heterosexuals interviewed through PCRS with HIV disease or syphilis**

**Table 3.5. Sex partners among heterosexuals interviewed with HIV or Syphilis, 2002-2006**

| | Heterosexual with HIV (n= 4031) | | Heterosexual with Syphilis (n= 1712) | |
|---|---|---|---|---|
| Partners | n | Pct. | n | Pct. |
| >1 partner, 90 days | 302 | 7% | 477 | 28% |
| >1 partner, one year | 1027 | 25% | 907 | 53% |
| New partner, 90 days | 244 | 6% | 415 | 24% |

*Drug Use and Exchange Sex among Heterosexuals*

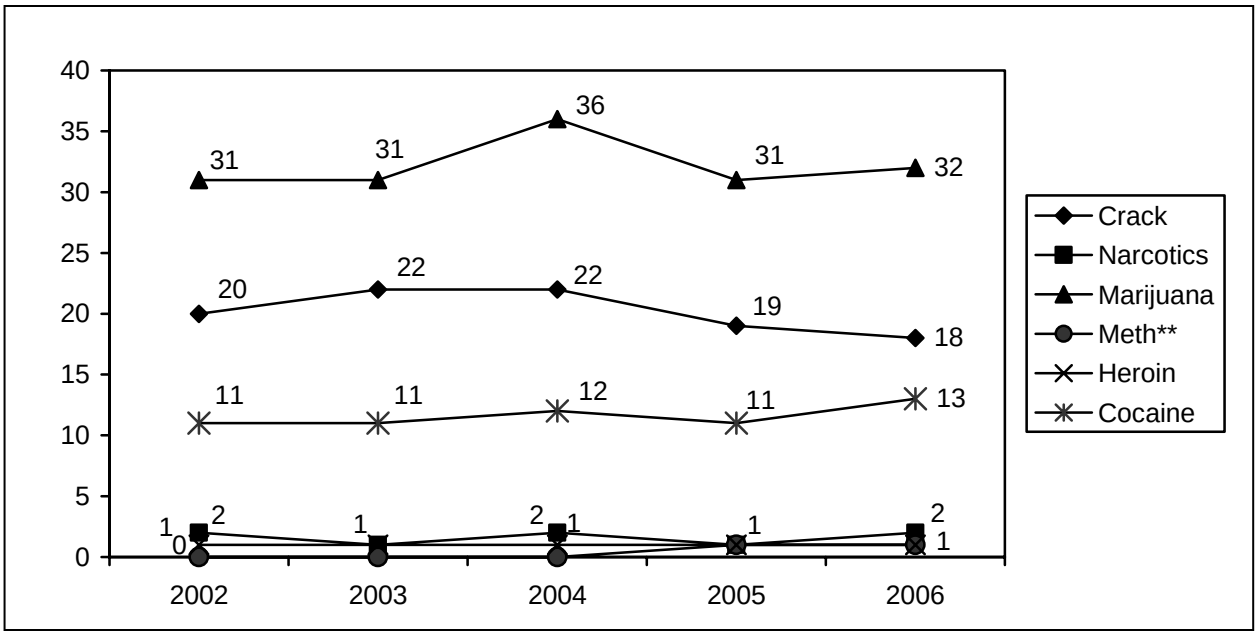
The most common drug used among heterosexuals interviewed from 2002-2006 was Marijuana (32%); followed by crack cocaine (18%) and cocaine (13%). Heroin, methamphetamine and narcotics were used by less than 2 percent of interviewees (Figure 3.6).

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 2006 PCRS interview data, 23 percent of people with syphilis reported crack cocaine use and 25 percent reported a sex partner who uses crack. Of the people interviewed with HIV, 17 percent used crack cocaine and 16 percent of people with HIV interviewed in 2006 reported a sex partner who used crack.

The exchange of sex for drugs or money (SDM) is commonly reported among high-risk heterosexuals. Proportions of people exchanging sex for drugs or money are higher among women diagnosed with syphilis than with HIV. Thirty-one percent of women diagnosed with syphilis and interviewed in 2006 reported exchanging sex for drugs or money; whereas only 12

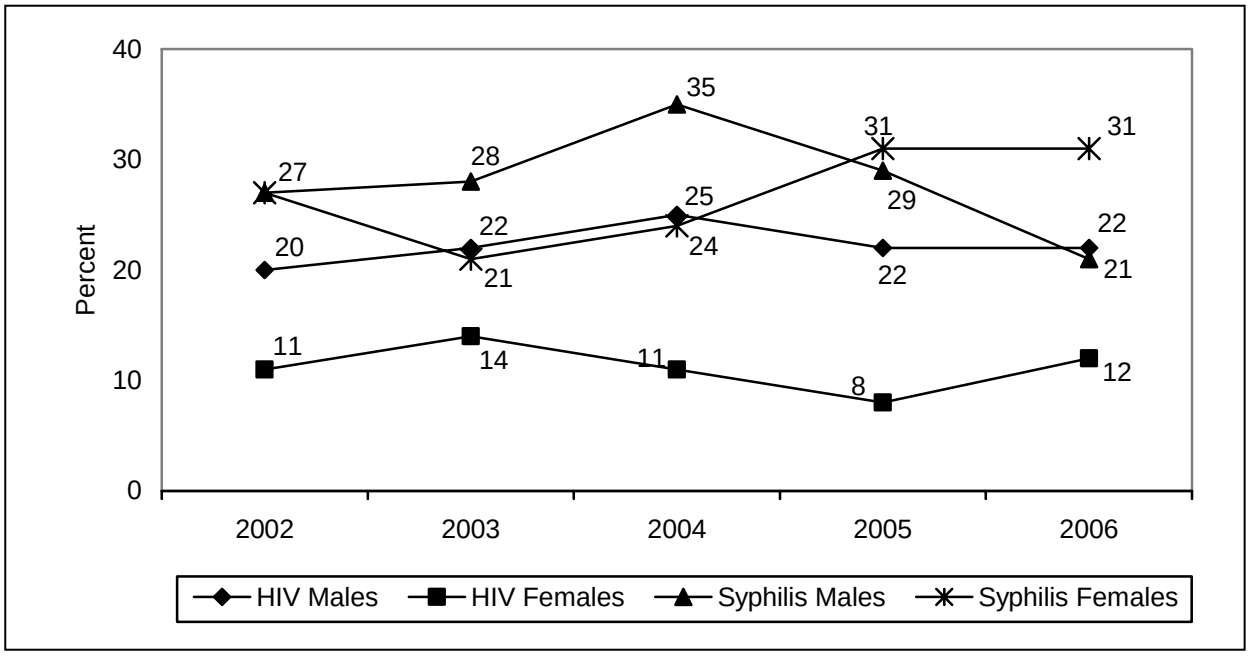
percent of women diagnosed with HIV and interviewed in 2006 reported SDM. Twenty- two percent of men diagnosed with HIV and interviewed in 2006 reported SDM and 21 percent of interviewed males with syphilis reported the activity (Figure 3.7).

**Figure 3.6. Drug use among heterosexuals* interviewed with HIV or syphilis, 2002-2006**




*Heterosexuals interviewed through PCRS with HIV disease or syphilis
**Meth use added as specific question in 2005

**Figure 3.7. Heterosexuals* engaging in sex for drugs or money, 2002-2006**

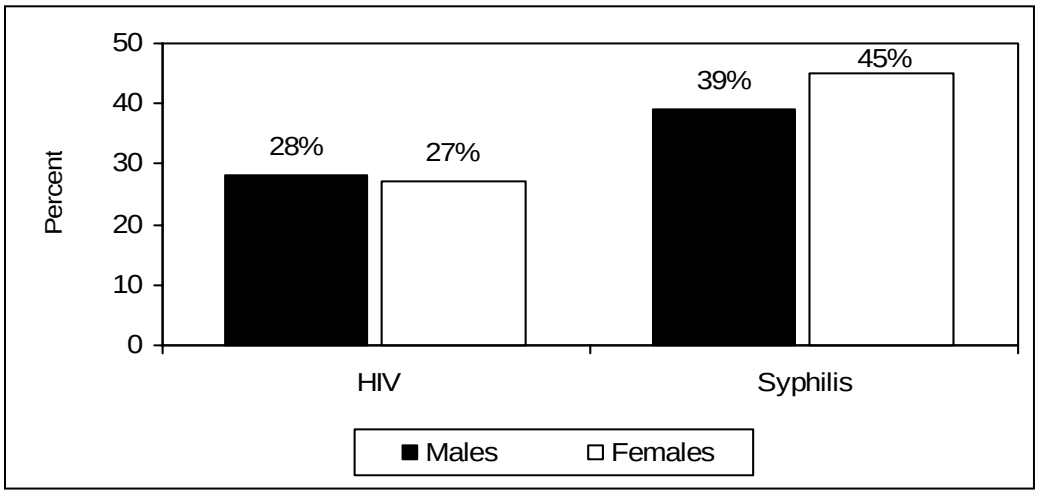



***Heterosexuals interviewed through PCRS with HIV disease or syphilis**

*History of Sexually Transmitted Infection*

Having a history of sexually transmitted infections is a common risk factor among heterosexuals with HIV. Twenty eight percent of interviewed males and 27 percent of interviewed females with HIV infection (2002-2006) indicated that they had previously been infected with a sexually transmitted disease. Among men diagnosed with early syphilis, 39 percent had previously experienced a STD and 45 percent of women diagnosed with early syphilis had a previous STD (Figure 3.8).

**Figure 3.8. Heterosexuals* with previous history of STDs, 2002-2006**




***Heterosexuals interviewed through PCRS with HIV disease or syphililS**

## 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 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. In 2001, 2004, and 2006 some sexual behavior questions were added to the survey in N.C. and used in those years only.

*Sexual Partners and Condom Use*

In 2006, adults age 18 to 54 were asked how many different people they had sexual intercourse with over the past 12 months; 8.1 percent of males and 1.5 percent of females reported three or more sexual partners over the past 12 months (NC SCHS, BRFSS, 2006). Twenty-nine percent of unmarried respondents had three or more sexual partners in the past 12 months. In 2006, the question “How many new sex partners did you have during the past twelve months?” was asked; 8.1 percent responded that they had three or more new sex partners within that time period; 18.5

percent of unmarried respondents had three or more new sex partners in the past twelve months. The gender of the sexual partners was not specified.

Only 20 percent of respondents reported that they had used a condom during their last sexual intercourse in 2001, 22.4 percent in 2004, and 26.4 percent in 2006. Of unmarried respondents asked about condom use in 2006: 37.8 percent of divorced/separated or widowed respondents used a condom, 67.8 percent of never married respondents, and 31.6 percent of unmarried couples used condoms during the last time they had sex. 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). Among those who had used a condom during their last intercourse in 2006, 53.1 percent did so to prevent disease or to prevent both pregnancy and disease. In 2006, approximately 45 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. Note: condom use is most certainly effective in preventing HIV infection (please read previous description of condom effectiveness).

*History of STDs*

The 2006 BRFSS Sexual Behavior Module asked the question “In the past five years, have you been treated for a sexually transmitted or venereal disease?” Three percent of the total 2,682 respondents answered “yes”; 6.3 percent of blacks responded “yes”, as compared to 1.9 percent of whites and 3.8 percent of other minorities. Of those respondents aged 18-24 years, 4.7 responded “yes”; 4.5 percent of 25-34 year olds, 1.0 percent of 35-44 year olds and 1.3 percent of 45-54 year olds responded that they had been treated for a STD in the past five years. Forty seven 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 average 18-24 age group responding “yes” was 9.2 percent from 2002-2005. Another core BRFSS risk question asked each year is “Have you ever been tested for HIV? Do not count tests you may have had as part of a blood donation”. According to the 2005 BRFSS Survey, 43.7 percent of respondents had been tested for HIV, with 45.8 percent tested at a private doctors office, 16 percent in a hospital, 24 percent tested at a clinic and 3.4 percent tested at home.

## SPECIAL POPULATIONS

Heterosexual HIV Transmission among African American Women

African Americans, both adults and adolescents, are especially hard hit by HIV/AIDS. In 2006, black women accounted for 21 percent of all new HIV disease reports in North Carolina, 78

percent of reports in females. The 2006 rate among black females is 42.2 per 100,000 population, almost 17 times the rate among white females (2.5 per 100,000), and two and a half times the rate among Hispanic females (16.3 per 100,000) (Table B, pg. D-4). Ninety-one percent of the 417 new cases among adult/adolescent 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 blacks 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.

HIV disease and early syphilis among Hispanics in North Carolina

Of the reported HIV disease cases among Hispanic men from 2002-2006 (n=436), 38.5 percent were among men reporting sex with other men (including MSM/IDU), 3.4 percent reported injection drug use and, 22.2 percent were among men reporting only heterosexual sex (Table 3.6). Of the Hispanic men diagnosed with HIV disease and interviewed through Partner

Counseling and Referral Services in North Carolina from 2002-2006 (n=451), 18 percent reported having exchange sex (sex in exchange for drugs or money), 30 percent had multiple sex partners in the past 12 months, and 13 percent had a previous history of sexually transmitted disease. Of Hispanic males diagnosed with early syphilis (primary, secondary and early latent) and interviewed through Partner Counseling and Referral Services in North Carolina from 2002-2006 (n=108), 31 percent reported having exchange sex, 52 percent had multiple sex partners in the past 12 months and, 21 percent had a previous history of sexually transmitted disease.

**Table 3.6. HIV Disease reports among Hispanic males by mode of transmission, 2002-2006**

| Exposure Category | Year of report | | | | | Total | |
|---|---|---|---|---|---|---|---|
| | 2002 | 2003 | 2004 | 2005 | 2006 | Cases | Pct. |
| MSM | 26 | 23 | 32 | 36 | 46 | 163 | 37.4% |
| IDU | 2 | 6 | 3 | 1 | 3 | 15 | 3.4% |
| MSM/IDU | 1 | 3 | 0 | 1 | 0 | 5 | 1.1% |
| Heterosexual | 14 | 20 | 15 | 26 | 22 | 97 | 22.2% |
| Blood products | 3 | 1 | 0 | 0 | 1 | 5 | 1.1% |
| NIR* | 16 | 24 | 15 | 34 | 58 | 147 | 33.7% |
| Pediatric | 1 | 2 | 0 | 1 | 0 | 4 | 0.9% |
| Total | 63 | 79 | 65 | 99 | 130 | 436 | 100% |

*No indicated risk

Of the reported cases among Hispanic females from 2002-2006 (n=163), 44.2 percent were among females reporting only heterosexual sex as a risk factor and, 4.3 percent reported injection drug use (Table 3.7). Of the Hispanic females diagnosed with HIV disease and interviewed through Partner Counseling and Referral Services in North Carolina from 2002-2006 (n=163), 4 percent reported having exchanged sex (sex in exchange for drugs or money), 11 percent had multiple sex partners in the past 12 months and, 7 percent had a previous history of sexually transmitted disease. Of Hispanic females diagnosed with early syphilis (primary, secondary and early latent), and interviewed through Partner Counseling and Referral Services in North Carolina from 2002-2006 (n=52), 8 percent reported having exchanged sex, 27 percent had multiple sex partners in the past 12 months and, 17 percent had a previous history of sexually transmitted disease.

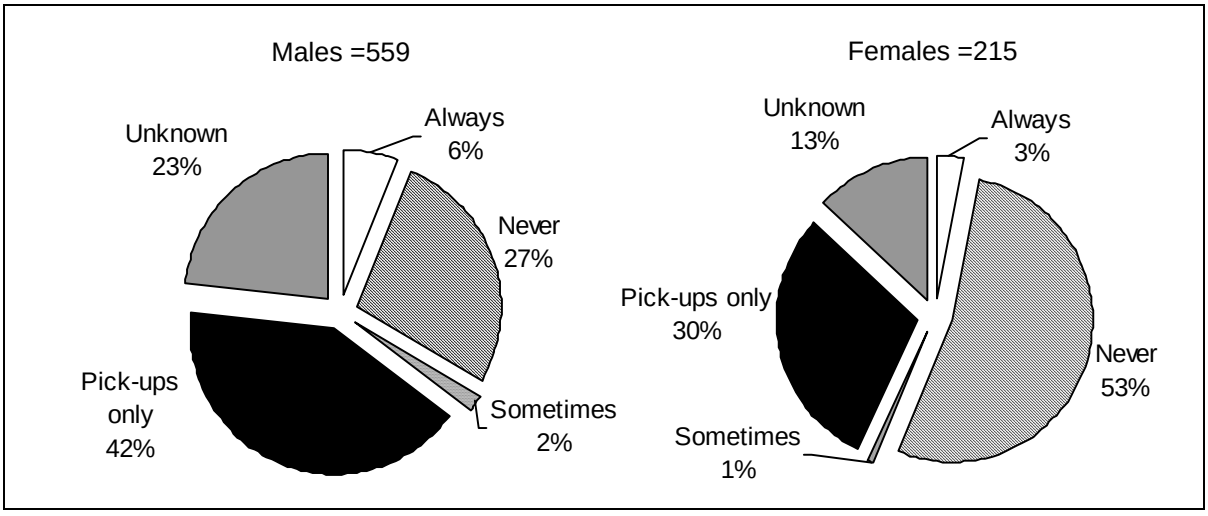
The low prevalence of condom use (Figure 3.9) among high risk Hispanics interviewed through Partner Contact and Referral Services indicates substantial risk activity and underscores the need for campaigns that reinforce the acceptability of condom use as a social norm and provide latex condoms free of charge. Because Hispanics in North Carolina are a heterogeneous group, such campaigns should target specific subgroups, including different national origins and levels of acculturation.

**Table 3.7. HIV Disease reports among Hispanic females by mode of transmission, 2002-2006**

| Exposure Category | Year of report | | | | | Total | |
|---|---|---|---|---|---|---|---|
| | 2002 | 2003 | 2004 | 2005 | 2006 | Cases | Pct. |
| IDU | 1 | 2 | 3 | 0 | 1 | 7 | 4.3% |
| Blood Products | 0 | 0 | 2 | 2 | 1 | 5 | 3.1% |
| Heterosexual | 13 | 15 | 20 | 14 | 10 | 72 | 44.2% |
| NIR* | 14 | 17 | 7 | 11 | 28 | 77 | 47.2% |
| Pediatric | 1 | 1 | 0 | 0 | 0 | 2 | 1.2% |
| Total | 29 | 35 | 32 | 27 | 40 | 163 | 100% |

*No indicated risk

**Figure 3.9. Condom use among Hispanics* with HIV or syphilis, 2002-2006**




***Hispanics interviewed through PCRS with HIV disease or**

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. Over the past ten years (1997 to 2006), there were 36 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 36 HIV-positive infants, 72 percent of the mothers were black, 8 percent were white, and 19 percent were Hispanic.

*The North Carolina Enhanced Perinatal Project*

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.

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. 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.

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.

*North Carolina Pregnancy Risk Assessment Monitoring System Survey (PRAMS)*

According to the 2004 North Carolina Pregnancy Risk Assessment Monitoring System Survey Results (NCSCHS, PRAMS, 2004), 85 percent of pregnant women had a doctor, nurse or other health care worker talk to them about getting a blood test for HIV, and 79.5 percent of women had a blood test for HIV at some time during their most recent pregnancy or delivery. Overall, 17.4 percent of mothers reported a barrier to obtaining prenatal care. African American, or black, mothers (26.1%) and Hispanic mothers (26.4%) were significantly more likely to report a barrier than white mothers (14.3%). 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” (11.8%), and “I didn’t have enough money or insurance to pay for my visits” (11.7%). 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 in every 60 people; with an estimated one in 12,000 people 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. The U.S. Department of Justice, Bureau of Justice Statistics, estimates 12 percent of black males in their late twenties (25-29), 3.7 percent of Hispanic males, and 1.7 percent of white males of the same age group 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 American Indian, 3.6 percent were Asian, and 0.8 percent were another 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 people with HIV in N.C. correctional facilities is limited. According to state surveillance data from HARS (HIV/AIDS reporting systems), 636 people (7%) were diagnosed and reported with HIV in correctional facilities in North Carolina from 2002-2006 (Table 3.8).

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,” Wohl noted. This study highlights the need to concentrate prevention efforts in the communities in which HIV and incarceration are prevalent.

**Table 3.8. HIV Disease reports from correctional facilities in North Carolina, 2002-2006**

| | 2002 | | 2003 | | 2004 | | 2005 | | 2006 | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | n | Pct. | n | Pct. | n | Pct. | n | Pct. | n | Pct. | n | Pct |
| Gender | | | | | | | | | | | | |
| Male | 116 | 89.9% | 99 | 79.2% | 77 | 84.6% | 85 | 83.3% | 177 | 93.7% | 554 | 87.1% |
| Female | 13 | 10.1% | 26 | 20.8% | 14 | 15.4% | 17 | 16.7% | 12 | 6.3% | 82 | 12.9% |
| Age | | | | | | | | | | | | |
| 13-19 | 3 | 2.3% | 4 | 3.2% | - | - | - | - | - | - | 7 | 1.1% |
| 20-29 | 25 | 19.4% | 17 | 13.6% | 19 | 20.9% | 25 | 24.5% | 25 | 13.2% | 111 | 17.5% |
| 30-39 | 48 | 37.2% | 55 | 44.0% | 28 | 30.8% | 38 | 37.3% | 53 | 28.0% | 222 | 34.9% |
| 40-49 | 48 | 37.2% | 39 | 31.2% | 27 | 29.7% | 33 | 32.4% | 75 | 39.7% | 222 | 34.9% |
| 50+ | 5 | 3.9% | 10 | 8.0% | 17 | 18.7% | 6 | 5.9% | 36 | 19.0% | 74 | 11.6% |
| Race/Ethnicity | | | | | | | | | | | | |
| White* | 16 | 12.4% | 20 | 16.0% | 9 | 9.9% | 12 | 11.8% | 23 | 12.2% | 80 | 12.6% |
| Black* | 108 | 83.7% | 102 | 81.6% | 76 | 83.5% | 80 | 78.4% | 153 | 81.0% | 519 | 81.6% |
| Hispanic | 4 | 3.1% | 2 | 1.6% | 5 | 5.5% | 7 | 6.9% | 8 | 4.2% | 26 | 4.1% |
| Other* | 1 | 0.8% | 1 | 0.8% | 1 | 1.1% | 3 | 3.0% | 5 | 2.7% | 11 | 1.8% |
| Mode | | | | | | | | | | | | |
| MSM | 24 | 18.6% | 26 | 20.8% | 16 | 17.6% | 12 | 11.8% | 21 | 11.1% | 99 | 15.6% |
| IDU | 24 | 18.6% | 27 | 21.6% | 26 | 28.6% | 16 | 15.7% | 18 | 9.5% | 111 | 17.5% |
| MSM/ IDU | 5 | 3.9% | 4 | 3.2% | 2 | 2.2% | - | - | 4 | 2.1% | 15 | 2.4% |
| Blood Prod. | 2 | 1.6% | 2 | 1.6% | 3 | 3.3% | 2 | 2.0% | 2 | 1.1% | 11 | 1.7% |
| Hetero. | 37 | 28.7% | 33 | 26.4% | 30 | 33.0% | 32 | 31.4% | 29 | 15.3% | 161 | 25.3% |
| NIR | 37 | 28.7% | 33 | 26.4% | 14 | 15.4% | 40 | 39.2% | 115 | 60.8% | 239 | 37.6% |
| Total | 129 | 100% | 125 | 100% | 91 | 100% | 102 | 100% | 189 | 100.0% | 636 | 100% |

*non-Hispanic

Youth and HIV

Adolescents (age 13 to 19) are at increased risk, both behaviorally and biologically, for HIV infection; over half of all adolescents infected with HIV are likely untested and unaware of their status (Rotheram-Borus and Futterman 2000). 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.

*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 and 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 3.9).

**Table 3.9. YRBS Comparison between North Carolina and the US, 2003 and 2005**

| YRBS Questions | North Carolina | | | US | |
|---|---|---|---|---|---|
| | High School | | Juvenile Detention Ctr. | High School | |
| | 2003 | 2005 | 2002 | 2003 | 2005 |
| | Pct. | Pct. | Pct. | Pct. | Pct. |
| 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 segment of the adolescent population is at particularly high risk for infection due to peer-group affiliation and group norms, high rates of alcohol and substance abuse, exchange of sex for food, shelter, clothes, money, or drugs, and inconsistent condom use (Kipke et al. 2002). This population comprises youth who have dropped out of school, are unemployed, are involved in the juvenile justice system, have runaway or are homeless, belong to a gang, are undocumented, or are involved in drug dealing and/or street prostitution. These youth are believed to be on the streets because of poverty, rejection by parents or guardians, violence in the home, or drug and/or alcohol use by family members.

In 2002, the North Carolina Department of Public Instruction (NCDPI) surveyed youth housed in juvenile detention centers as part of a Youth Risk Behavior Survey special project, and found many at high risk for HIV transmission. For example, ninety-seven percent of those interviewed in detention centers had experienced sexual intercourse (sixty-two percent before the age of thirteen), seventy-three percent had had four or more sexual partners, and fourteen percent had

injected illegal drugs (Table 3.9). 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 & RELATED PROGRAMS

## HIGHLIGHTS

- From November 2002 through December 2006, 80 people have been identified with Acute HIV infections (antibody negative but tested positive for the virus using PCR). These people were diagnosed very early in their HIV infections by this procedure, allowing better case management and earlier partner notifications thus lessening the likelihood of additional transmissions.

- From July 2005 through December 2006, 760 serum specimens were tested by the BED assay, 211 or 28 percent of these specimens were indicative of recent infection using the Serologic Testing Algorithm for Recent HIV Seroconversion (STARHS) algorithm.

- As expected the majority of STARHS cases were distributed among the younger age categories (13-19 years and 20-29 years). This contrasts the morbidity reports with 30-39 years and 40-49 years represented as the majority of cases. This highlights the fact that many people delay getting tested for HIV once infected. Other STARHS demographics were very similar to overall morbidity patterns.

- In 2006, 3,729 rapid HIV tests were performed which aided in the identification of 42 new cases yielding a 1.12% overall rate of positivity. This program offers clinics more testing options for difficult to reach clients.

- The number of HIV tests performed at publicly-funded CTS sites has increased in recent years from about 132,000 in 2005 to about 147,000 tests in 2006.

- 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 American Indians 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 5 percent of the traditional venue clients.

Different types of HIV tests are used to diagnosis initial disease and monitor patient progress. The information presented in this chapter will focus on selected state-sponsored HIV-testing programs. Described in this chapter are programs that are designed to: identify or estimate new or recent HIV infections; increase the number of high-risk individuals being tested for HIV; and facilitate in describing and evaluating voluntary testing for HIV in the public sector.

Collectively, these programs enhance the current surveillance activities and allow for the collection of more comprehensive HIV-related data.

## TESTING RECOMMENDATIONS

The Centers for Disease Control and Prevention (CDC) revised its HIV testing recommendation in 2006. These new recommendations, which replaced the CDC's 1993 recommendations, advise routine HIV screening of adults, adolescents and pregnant women in health care settings. They also recommend reducing barriers to HIV testing (CDC MMWR, Recommendations for HIV Testing, 2006). North Carolina is currently revising its HIV testing rules and regulations to better comply with the new recommendations. Health care providers across the state will be notified once the rules have been finalized and approved. As North Carolina continues to encourage routine testing, the number HIV/STD reports are expected to increase.

### *Get Real, Get Tested* Campaign

*Get Real, Get Tested* is a new North Carolina campaign focusing on HIV education and testing, with the overall goal of increasing the number of people who are aware of their HIV status. The educational segment of the initiative is designed to reach citizens statewide via television and Internet public service announcements, while the testing segment targets select high-morbidity communities throughout the state. WRAZ/FOX 50, Duke Medicine, UNC Health Care, and the State of North Carolina's HIV STD Prevention and Care Branch sponsor the campaign.

As of June 2007, *Get Real, Get Tested* targeted testing took place in Fayetteville, Raleigh-Durham, Greensboro-High Point and Rocky Mount. As a part of these four testing events, HIV and syphilis testing was administered in various locations within these respective areas. A total of 1,121 people were tested during the *Get Real, Get Tested* events; and of those 19 individuals who tested positive for HIV-1 antibody were identified and referred into care. Additional *Get Real, Get Tested* events are slated for the future.

## 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 disease. 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 can 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 CDC maintains 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 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 at Chapel Hill. It began in May 2002 as a two-month pilot program through the research laboratory of Dr. Chris Pilcher at the UNC-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 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 people also positive for another STD (30%) and men who have sex with men (also 30%). 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).

Since the State Health Laboratory began testing seronegative specimens in November 2002, there have been 80 people identified with Acute HIV infection. Cumulatively, 78 percent of the 80 identified people through the STAT project are males (see Table 4.1). Five of the STAT cases were for pregnant females. Over the past four years, the proportion of males has steadily

increased from 68 percent in 2003, to 77 percent in 2004, 81 percent in 2005, and 87 percent in 2006. STAT cases tend to be identified in people in their 20's. Approximately, 48 percent of the overall acute cases were amongst people aged 20-29 years old. A little more than half of the cases diagnosed in their 20's were among people aged 20-24 years old. Cumulative race data reflects findings noted in core HIV/AIDS surveillance and STARHS data. However, in 2006 it is noted that cases were equally distributed among blacks and whites with both groups representing 47 percent of the 15 cases. The distribution in 2006 can possibly be attributed to the use of social networks to identify partners to acute cases and small sample size. Data will need to be monitored to determine if this is a trend or artifact of reporting. Information derived from this project 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.

**Table 4.1. Demographics for Cases Identified through STAT: Jan. 2003 – Dec. 2006**

| Year | 2003 (N=22) | | 2004 (N=22) | | 2005 (N=21) | | 2006 (N=15) | | Cumulative Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| Gender | n | Pct. | n | Pct. | n | Pct. | n | Pct. | n | Pct. |
| Male | 15 | 68.2% | 17 | 77.3% | 17 | 81.0% | 13 | 86.7% | 62 | 77.5% |
| Female | 7 | 31.8% | 5 | 22.7% | 4 | 19.0% | 2 | 13.3% | 18 | 22.5% |
| Age group | | | | | | | | | | |
| 13-19 | 1 | 4.5% | 3 | 13.6% | 1 | 4.8% | 1 | 6.7% | 6 | 7.5% |
| 20-29 | 7 | 31.8% | 11 | 50.0% | 11 | 52.4% | 9 | 60.0% | 38 | 47.5% |
| 30-39 | 7 | 31.8% | 4 | 18.2% | 7 | 33.3% | 2 | 13.3% | 20 | 25.0% |
| 40-49 | 7 | 31.8% | 1 | 4.5% | 2 | 9.5% | 2 | 13.3% | 12 | 15.0% |
| Over 49 | 0 | 0.0% | 3 | 13.6% | 0 | 0.0% | 1 | 6.7% | 4 | 5.0% |
| Race | | | | | | | | | | |
| Black* | 15 | 68.2% | 16 | 72.7% | 14 | 66.7% | 7 | 46.7% | 52 | 65.0% |
| White* | 5 | 22.7% | 4 | 18.2% | 5 | 23.8% | 7 | 46.7% | 21 | 26.3% |
| Hispanic | 1 | 4.5% | 2 | 9.1% | 2 | 9.5% | 1 | 6.7% | 6 | 7.5% |
| American Indian/Alaska Native* | 1 | 4.5% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 1 | 1.3% |
| Other/unknown | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% |

*non Hispanic

In addition to the STAT program, branch field staff work with providers in the community to identify any new HIV acute (primary infection) cases that were tested through private laboratories. These patients may receive rapid and enhanced field interventions including HIV testing services through the State Laboratory for sex and needle sharing partners. The field staff also seek to identify any newly diagnosed people that had a recently documented HIV-negative antibody test. These cases are collectively referred to as community acute/recent cases. In 2006, 43 of cases were identified as community recent/acute based on up and additional information collected during field follow. Two community recent cases have been identified for pregnant females. These cases and the associated social networks are being studied to enhance field intervention efforts.

HIV Incidence Surveillance Program

North Carolina is one of 33 cities and states 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). The LS-EIA is 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 760 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 in New York. The HIV incidence surveillance coordinator 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 people not previously reported to the HIV/AIDS Reporting System (HARS), surveillance staff will review STARHS eligibility. People 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. 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 are 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.

HIV incidence surveillance is 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.

In order to account for cases diagnosed through private facilities, commercial laboratories are being recruited to send their positive specimens to the New York laboratory. The following private and commercial laboratories; ARUP, Quest Diagnostics, UNC Hospitals and Duke University Medical Center are shipping HIV diagnostic specimens to the New York laboratory on a regular schedule. The N.C. HIV Incidence program monitors the results from these laboratories and forwards the accession numbers of the specimens to be tested to the New York laboratory. STARHS results are identified by the regional STARHS laboratory accession number and linked to the unique identification numbers used to label the original specimen.

From July 2005 through December 2006, 760 serum specimens were tested by the BED assay, 211 or 28 percent of these specimens are indicative of recent infection using the STARHS algorithm.

Since data from 2005 is limited to six months, comparison will focus on 2006 for this discussion. Table 4.2 compares the 144 cases identified as recent infections by STARHS in calendar year (CY) 2006 to the 2022 HIV cases reported in CY 2006. By gender, males accounted for a slightly higher percentage (76%) of cases tested for STARHS compared to (73%) the overall HIV cases reported in calendar year 2006. Cases identified as recent with STARHS tended to be younger than the overall number of HIV cases reported in 2006. STARHS cases had 13 percent of the 144 cases distributed among the age group 13-19 and 45 percent among the 20-29 year old

category. This is dramatically different from the age group distribution of the overall HIV cases reported during the same time period with 4 percent among 13-19 and 22 percent among 20-29 year olds. This highlights the fact that many people delay getting tested for HIV once infected. When comparing race/ethnicity, STARHS had slightly increased percentage of Blacks represented (76%) compared to (66%) of the overall HIV cases reported during 2006. Additional analysis of STARHS data is expected in 2007 with the release of project specific analysis algorithms from the CDC.

**Table 4.2 Demographics of Cases Identified as Recent from STARHS Testing Compared to NC HIV Disease Cases 2006**

| | STARHS 2006 (n=144) | HIV/AIDS Surveillance 2006 (n=2,022) |
|---|---|---|
| Gender | | |
| Male | 76% | 73% |
| Female | 24% | 27% |
| Age group | | |
| 13-19 | 13% | 4% |
| 20-29 | 45% | 22% |
| 30-39 | 21% | 28% |
| 40-49 | 13% | 29% |
| Over 49 | 8% | 16% |
| Race | | |
| Black* | 72% | 66% |
| White* | 22% | 24% |
| Hispanic | 5% | 8% |
| American Indian/Alaskan Native* | 0% | 1% |
| Asian/Pacific Islander* | 1% | 1% |

*non-Hispanic

## RAPID TEST PROGRAM

The rapid HIV antibody screening test program began in spring 2005. It is designed to increase the number of high-risk individuals being tested for HIV and to disclose preliminary test results to individuals who potentially would not return for a traditional blood test result. Rapid HIV antibody tests have provided new opportunities for improving access to testing in both clinical and non-clinical settings and have increased the number of people who are aware of their HIV status.

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 Rapid HIV 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; to determine the HIV status of a pregnant woman presenting to labor and delivery with an unknown HIV status; and with clients

with behavioral characteristic that put them at a greater risk for contracting HIV. Since rapid HIV tests are used for the purpose of screening for HIV, a preliminary positive test result must be confirmed using a standard ELISA (Enzyme Linked Immunosorbant Assay) and Western Blot test regimen.

The rapid test used in North Carolina provides test results using oral fluid or whole blood or plasma specimens (via fingerstick or venipuncture). The testing can be conducted in 20 minutes; therefore, making it possible to provide HIV education, preliminary HIV test results and linkage to care (if the test is preliminary positive) in the same day.

At the end of 2006, rapid tests were supplied to 15 testing sites statewide. Each participating testing site was responsible for designing their testing program which could range from clinical testing to outreach testing. The testing programs included activities such as testing in the county jails, universities/colleges, drug treatment facilities, community health centers and local health department clinics Table 4.3 provides the total number of tests performed and positives identified by testing locations.

**Table 4.3. Rapid Test Program Results, 2006**

| Testing Location | Test Performed | Number Positive | Positivity (%) |
|---|---|---|---|
| Local Health Departments (Clinical) | 112 | 16 | 14.29 |
| Community Health Centers (NTS) | 1590 | 14 | 0.88 |
| University/Colleges (NTS) | 1162 | 6 | 0.52 |
| Drug Treatment Facilities (Clinical & NTS) | 439 | 3 | 0.68 |
| Local Health Departments (NTS) | 125 | 2 | 1.60 |
| HIV/STD P & C Branch Outreach (NTS) | 101 | 1 | 0.99 |
| Community-based Organizations (NTS) | 200 | 0 | 0.00 |
| Total | 3729 | 42 | 1.12 |

In 2006, rapid HIV tests aided in the identification of 42 new cases yielding a 1.12 percent overall rate of positivity.

- Local health department clinical settings identified 16 new cases with a positivity rate of 14.29 percent. Testing activities in local health department clinical settings are mainly limited to testing in STD and Adult Health clinics. Rapid testing is not routinely used in the local health departments; however rapid tests can be used for testing of partners of HIV positive people and individuals with other specific high risk behaviors.
- Participating local health departments with NTS programs opted to use rapid HIV tests for their outreach activities which include testing at universities, churches, bars and community outreach events. NTS activities at local health departments yielded a 1.6 percent positivity rate.
- Community Health Centers conducted testing in migrant worker camps, four jails, several bars, and community outreach events with a positivity rate of 0.88 percent.
- Testing activities at universities and colleges included outreach activities conducted by students with the supervision of a medical provider; resulting in a 0.52 percent positivity rate in these settings.

- Drug treatment facilities and substance abuse agencies conducted testing via a combination of on-site testing in methadone clinics and on a mobile van. The positivity rate was 0.68 percent in these sites.
- In late 2006, the HIV/STD Prevention and Care Branch launched the Get Real Get Tested Initiative to encourage people to get tested. Rapid Tests were used in static and mobile locations. The positivity rate was 0.99 percent at the start of the campaign.

There has been an increase in the number of positives identified in 2006 compared to the number identified in 2005. This is due to an increase in participation and outreach activities.

## HIV COUNSELING, TESTING AND REFERRAL (CTS)

**** IMPORTANT NOTE: Due to changes in data collection methods, CTS screening data for 2005-2006 are currently unavailable for analysis. This chapter will describe screening through the end of 2004. An updated chapter will be posted on our web page when the data become available. The number of HIV test performed at publicly funded CTS sites has increased in recent years. In 2006, approximately 140,000 tests were performed.**

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 4.4. 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 4.4. 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 individuals 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 4.5.). The resulting increase in proportion of repeat tests has been among those reporting 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 4.5. 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 4.6. 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, people 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 4.6. 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 people 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.

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, people who exchange sex for drugs or money, people who have sex while using non-injecting drugs and people who are sex partners of people at risk or people infected with HIV) continue to seek testing through publicly funded test sites. The vast majority of tests are performed at traditional sites (Table 4.7.). 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.

**Table 4.7. 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 |

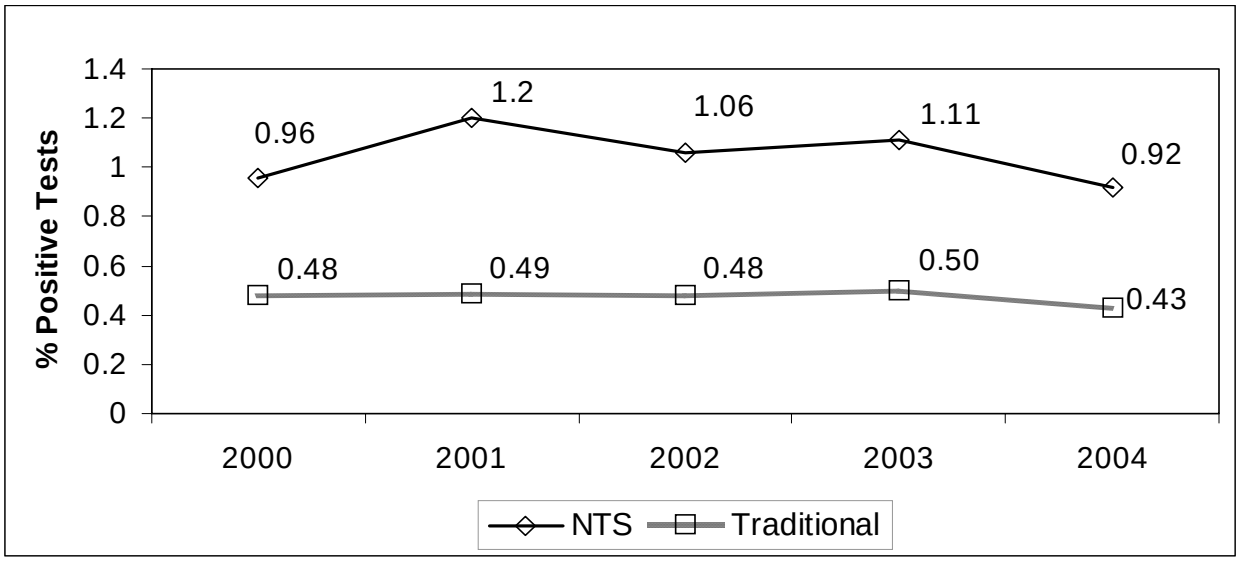
*Positivity calculated with inconclusive or missing test results removed from denominator

## 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.

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



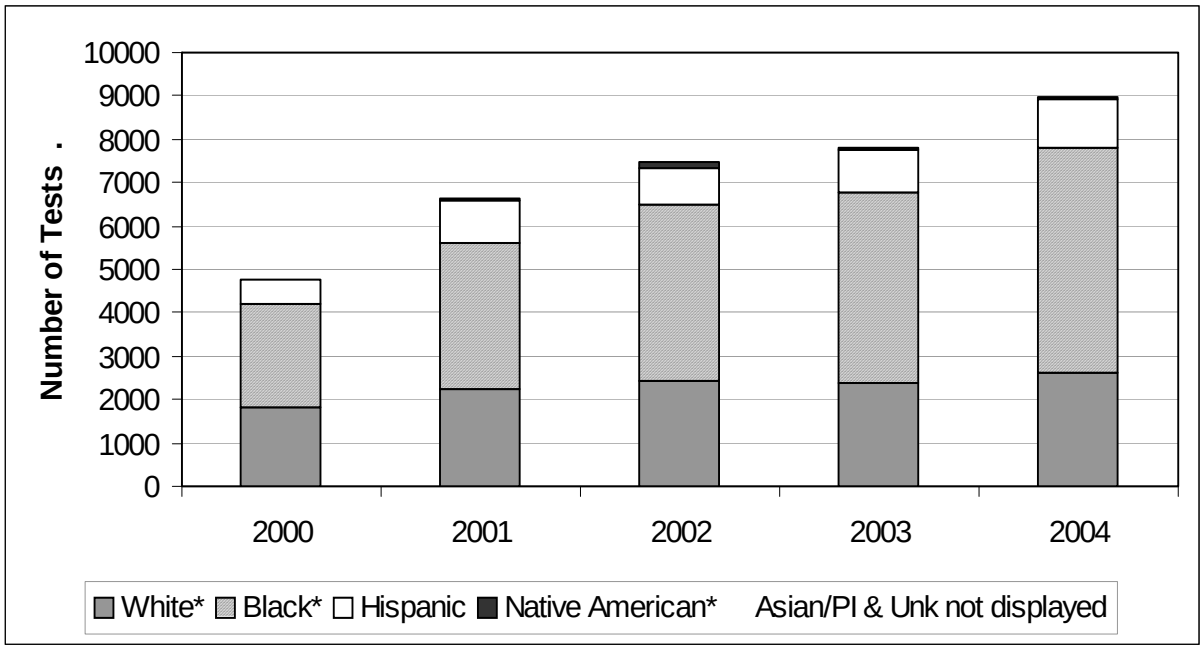

These trends illustrate the foundation of the NTS testing sites which were set up under the assumption that the clientele at the NTS sites might be very different than those tested in traditional sites. One of the most striking differences is the number of males tested compared to the number of females tested. For the past five years, more males than females were tested in NTS sites (57.6% in 2004, Table 4.8.). 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.

**Table 4.8. 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 |

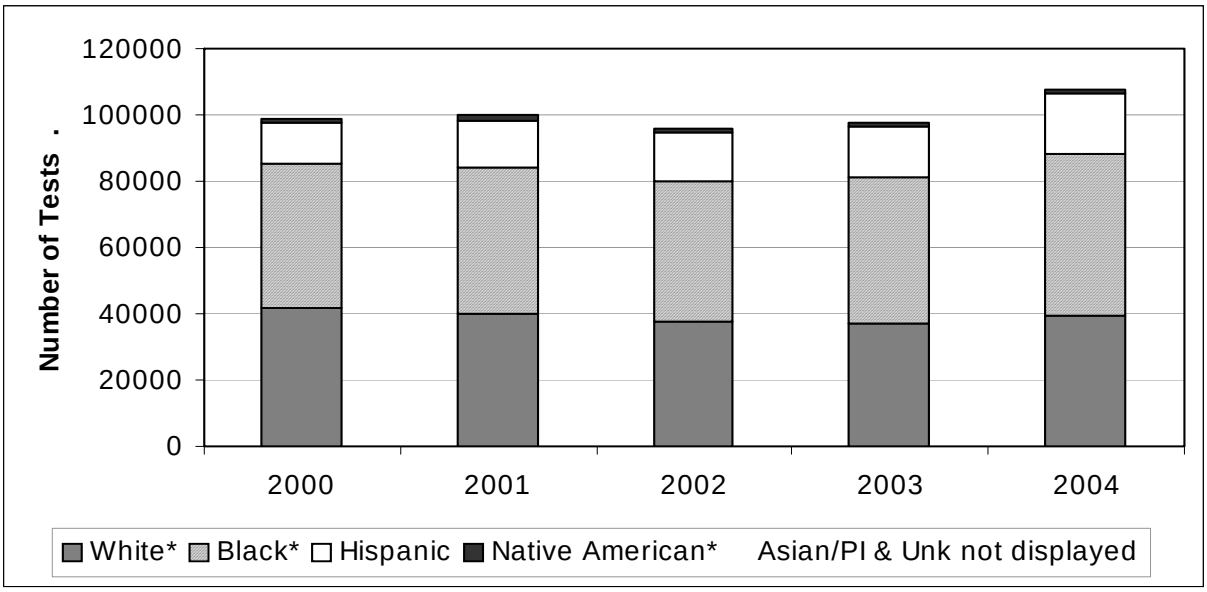
During the first years of NTS availability, approximately the same proportion of clients seen in traditional and NTS sites were white. In recent years the proportion of tests for black clients has steadily increased in NTS sites (from 49% in 2000 to 56% in 2004), but remained constant at 43-44 percent 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 4.9. 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 4.9. Number of tests performed and positivity* by race/ethnicity, 2000-2004 (previous positives removed)**

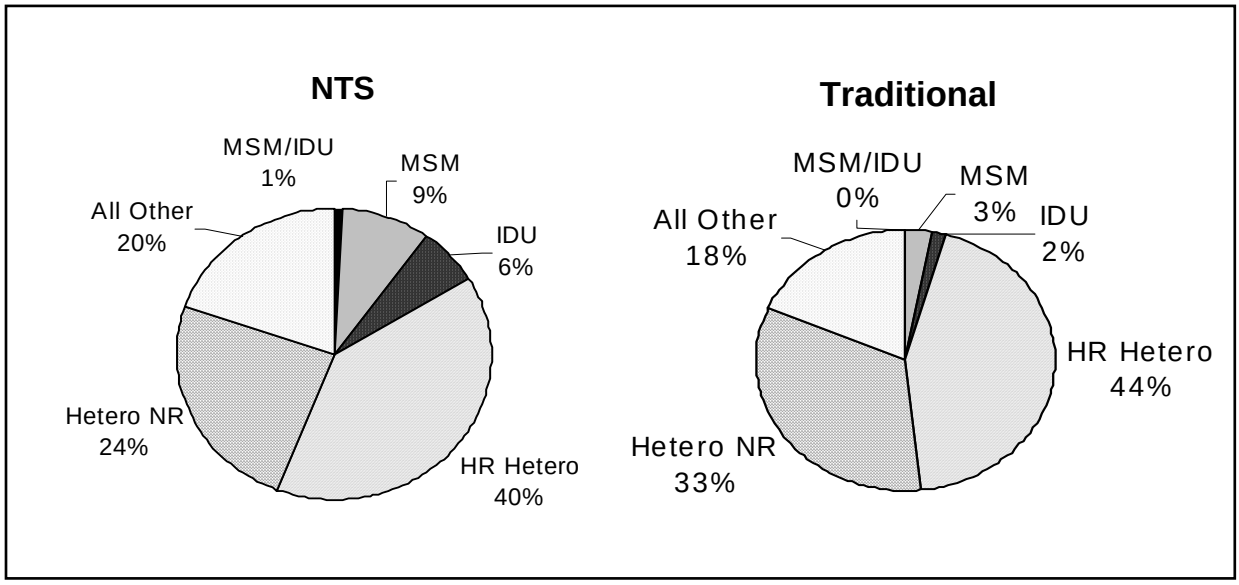
| | Year of Test | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| NTS Venue | 2000 | | 2001 | | 2002 | | 2003 | | 2004 | |
| Race/Ethnicity | Tests | Pct. Pos | Tests | Pct. Pos | Tests | Pct. Pos | Tests | Pct. Pos | Tests | Pct. Pos |
| White | 1,817 | 0.61 | 2,233 | 0.58 | 2,409 | 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 individuals 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.

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.

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




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 4.10.). 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 4.10. 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

# CHAPTER 5: SPECIAL STUDIES

## CONTENTS



## HIV RESISTANCE AND GENOTYPING

HIV genetic sequence data are 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 people.

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, continually updates 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 United States (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.

The 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 is incorporated into tuberculosis surveillance. Like other public health surveillance activities, the 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 using 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.

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 individuals 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 HIV RNA to detect the presence of mutations associated with HIV drug resistance. HIV-1 subtype will also be identified based on the RNA 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. From November 2005 to December 2006 a total of 478 specimens was shipped to the Virology Laboratory at Stanford University. Four hundred and twenty nine of the 478 specimens were successfully genotyped and the resistance patterns were reported to the HIV/STD Prevention and Care Branch. Of the 429 analyzed specimens, 81 (18.9 %) were resistant to at least one of the antiretroviral drugs tested. The resistant specimens compared to the total number of specimens successfully genotyped (429) revealed that 20 (4.7%) were resistant to Nucleoside Analogue Reverse Transcriptase Inhibitors (NRTI), 42 (9.8 %) were resistant to Non-Nucleoside Analogue Reverse Transcriptase Inhibitors (NNRTI), 5 (1.2%) were resistant to Protease Inhibitors (PI), and 14 (3.3%) had resistance genotypes to more than one class of antiretroviral drugs.

At the 2007 Conference on Retroviruses and Opportunistic Infections (CROI) held in February, the CDC reported on resistance data from 11 states. These data represented 3130 specimens collected and tested for resistance between March 2003 and October 2006. The data presented by

CDC showed 10.4 percent (327) total specimens had drug resistance mutations. Resistance to NRTIs was found in 3.6 percent (111) of these specimens, resistance to NNRTIs was found in 6.9 percent (217) of the specimens and PI resistance was found in 2.4 percent (75) of the people tested. Multiple drug resistance was found in 1.9 percent (60) of the specimens tested. Data from North Carolina for November 2005 through December 2006 had a slightly higher antiviral drug resistance rates than those cited by the CDC for data collected from March 2003 through October 2006 (data from 11 states). However, the differences may not prove to be meaningful. As more data become available more valid comparisons can be made and reported.

The drug resistance data being collected in the VARHS project will provide HIV drug resistance data to assist local HIV treatment program planning and evaluation.

## MEDICAL MONITORING PROJECT

HIV/AIDS surveillance programs function in all states and territories to collect a core set of information on people 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 people with respect to care seeking, utilization of care, and ongoing risk behaviors.

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 people led to the implementation of the Supplement to HIV/AIDS Surveillance (SHAS) project in 1990. SHAS surveyed individuals newly reported as having HIV or AIDS in 19 geographic 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 people with HIV infection in care.

In the past decade, both ASD and SHAS have provided much needed information that has been used to understand the HIV epidemic. 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 in 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 people 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 objective of MMP is to obtain data from a national probability sample of HIV-infected people receiving care in the U.S. in order to:

- Describe the clinical and virologic status of these patients,
- Describe HIV care and support services 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 people 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 the MMP 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 people as a result of their disease or the medications they take as well as the HIV care and support services 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 which 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 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. All health care providers who treat HIV patients were identified and contacted. To obtain the list of providers who treat HIV patients, all N.C. facilities that report HIV cases to the N.C. Division of Public Health were contacted and asked about treatment. From an initial list of 880 reporting facilities, a total of 270 facilities who treat patients with HIV by prescribing anti-retrovirals or monitoring patient health through CD4 counts and viral loads were identified. The general location and type of these 270 providers are summarized in Table 5.1. The majority of the HIV care providers are located in the Piedmont region of the state. All providers were asked for an estimated patient load (EPL) for the calendar year 2005. This represented the total number of HIV patients that were treated at each facility. The EPL for calendar year 2005 ranged from zero patients to a maximum of 1,581 patients. A coded list of these providers was submitted to CDC and forty-three providers were randomly chosen to participate in this project. The forty-three providers have been asked to participate by providing a list of all HIV patients seen at their facility between January 1, and April 30, 2007. A coded patient list (no names included) will be sent to the CDC and 400 patients will be selected for participation in the project. Patients will be recruited beginning July 2007. Patients will be contacted, interviewed and have their medical records abstracted through April 2008.

**Table 5.1. Health Care Providers who Treat HIV Patients in North Carolina**

| | VA Hospitals | | Clinics | | ID/Specialty Clinics | | Hospitals | | Total Providers | |
|---|---|---|---|---|---|---|---|---|---|---|
| Region[1] | n | Pct. | n | Pct. | n | Pct. | n | Pct. | n | Pct. |
| Mountains | 1 | 25% | 15 | 8.6% | 1 | 12.5% | 17 | 20.5% | 34 | 12.6% |
| Piedmont | 3 | 75% | 106 | 60.9% | 6 | 75% | 42 | 50.6% | 157 | 58.2% |
| Coastal Plain | 0 | 0% | 53 | 30.5% | 1 | 12.5% | 24 | 28.9% | 79 | 29.2% |
| Total | 4 | 100% | 174 | 100% | 8 | 100% | 83 | 100% | 270 | 100% |

[1]The regions listed are geophysical regions. The Mountain region is defined as those counties west of I-77 excluding Catawba, Lincoln, Cleveland and Gaston Counties which were included in the Piedmont region. The Coastal Plain region is defined as those counties east of I-95. The Piedmont is the region lying between the Mountain and Coastal Plain regions.

## THE N.C. MEN'S HEALTH INITIATIVE

The CDC and N.C. DHHS funded a demonstration project entitled The N.C. Men's Health Initiative (MHI); targeting African American men aged 18-30. 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. The Mens's Health Initiative is associated with the *d-UP!* (Defend Yourself) logo.

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.

As a part of the intervention, cross-sectional surveys (pre/post intervention) were conducted in nightclubs throughout North Carolina (Jones et al., 2006). Survey participants included black men, ages 18-30 who reported having sex with another male in the past year. Initially, 32.4

percent of those surveyed reported unprotected receptive anal intercourse (URAI), 29.3 percent reported unprotected insertive anal intercourse and 42.0 percent reported engaging in any unprotected anal intercourse (UAI). It was observed that after the implementation of the initiative there was a decrease in the aforementioned behaviors.

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.

## 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 (CBOs) 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 2nd Annual Charlotte Black Gay Pride and the 22nd Annual North Carolina Pride Fest Day Festival and Parade at Duke University's East Campus in Durham. 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 CBOs and local health departments. 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 least 18 years old at the time of interview were systematically sampled at the 2006 Charlotte Black Gay Pride and the NC Pride Festival in Durham and recruited for participation. Men were enrolled at in the survey and its objectives were fully explained to them and informed oral consent was obtained.. Men who agreed to participate (n=473) 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 Pride festivals in NC, 473 consented to participate in the survey and of those, 89 percent were North Carolina residents. Four hundred thirty-nine (93%) were considered MSM based on sexual behavior or sexual identity questions; 87 percent identified as gay. Three hundred sixty reported having anal sex with a man in the past 12 months and of those men with at least one sex partner, 55 (15%) reported having unprotected anal intercourse (UAI) with more than one partner in the past 12 months (Table 5.2). Among sexually active MSM (n=360), the median number of male anal sex partners in the past 12 months was 2.0 (Range: 1-200 sex partners).

Of the 360 men who reported having sex with a man in the past 12 months, 127 (35%) were with concordant partners (i.e., the partners were of same HIV status as the men surveyed), 11 (3%) were discordant partners (one was HIV-positive, one was HIV-negative), and 222 (62%) were with partners of unknown HIV status (Table 5.3). Of the men who had sex partners in the past 12 months, 37 percent met their partners at a bar or club, 35 percent met over the Internet, 2 percent met in a park or other public cruising area, 3 percent met on a phone chat line, 2 percent met at a private sex party and 43 percent met their partners somewhere else.

Of the 55 men who engaged in unprotected anal sex with more than one partner in the preceding 12 months, 75 percent were ages 18-34, 44 percent were white non Hispanic, 69 percent had greater than a high school education, 70 percent had private health insurance, 89 percent considered themselves gay, and 18 percent were HIV positive (Table 5.2). Thirteen percent of the men with multiple (unprotected) sex partners had never been tested for HIV. Sixty-one percent of men who engaged in UAI with multiple partners met over the internet, 37 percent in bars or clubs.

Substance Use

Of MSM surveyed (n=439), 29 percent reported they had used non injection drugs that were not prescribed to them during the past 12 months: 5.4 percent used crystal meth, 4 percent used Ecstasy, 6.3 percent used crack, 14.1 percent used cocaine, 7 percent used downers, 10.2 percent used pain medication, 76 percent used Marijuana, and 14 percent used poppers. Drugs used to a lesser extent were LSD (2.34%), Examine (3%), GHB (2.3%), and Heroin (0.8%). Four of the respondents reported injecting drugs in the past year, only one reported sharing needles. During the past 12 months, 72 percent never used drugs before or during sex (Table 5.4), 39 percent never used alcohol before or during sex.

Recreational drug and alcohol use was greater among those MSM with multiple unprotected sex partners. Forty percent used drugs that were not prescribed for them and 62 percent drank alcohol at least half of the time before sex (34 percent drank most of the time or always before sex).

**Table 5.2. Number and percent of men surveyed by selected characteristics, 2006**

| Characteristic | Total men surveyed | | Men who had UAI* > one partner in the past 12 months | |
|---|---|---|---|---|
| | No. | Pct. | No. | Pct. |
| Age Group (yrs) | | | | |
| 18-24 | 110 | 25.1% | 15 | 27.3% |
| 25-34 | 123 | 28.0% | 26 | 47.3% |
| 35-44 | 112 | 25.5% | 5 | 9.1% |
| 45-54 | 73 | 16.6% | 7 | 12.7% |
| ≥55 | 21 | 4.8% | 2 | 3.6% |
| Race/Ethnicity | | | | |
| White, non-Hispanic | 243 | 55.4% | 24 | 43.6% |
| Black, non-Hispanic | 103 | 23.5% | 21 | 38.2% |
| Hispanic | 31 | 7.1% | 2 | 3.6% |
| Multi Racial | 40 | 9.1% | 6 | 10.9% |
| Other** | 22 | 5.0% | 2 | 3.6% |
| Education | | | | |
| Missing | 7 | 1.6% | - | - |
| < High School | 10 | 2.3% | 1 | 1.8% |
| HS/GED | 75 | 17.1% | 16 | 29.1% |
| >High School | 347 | 79.0% | 38 | 69.1% |
| Sexual self-identity | | | | |
| Homosexual/Gay | 383 | 87.2% | 49 | 89.1% |
| Bisexual | 47 | 10.7% | 6 | 10.9% |
| Other | 9 | 2.1% | - | - |
| HIV status at interview | | | | |
| Negative | 337 | 76.8% | 36 | 66.7% |
| Positive | 51 | 11.6% | 10 | 18.5% |
| Result pending | 11 | 2.5% | 1 | 1.9% |
| Never tested | 40 | 9.1% | 7 | 13.0% |
| Number of male partners | | | | |
| 0 | 71 | 16.2% | - | - |
| 1 | 159 | 36.2% | - | - |
| 2-5 | 146 | 33.3% | 24 | 43.6% |
| 6-10 | 31 | 7.1% | 18 | 32.7% |
| >10 | 24 | 5.5% | 12 | 21.8% |
| Didn't know | 8 | 1.8% | 1 | 1.8% |
| Sex with female | 28 | 6.4% | 6 | 10.9% |
| IDU | 4 | 0.9% | 1 | 1.8% |
| Non-IDU | 129 | 29.4% | 22 | 40.0% |
| Previous STDs | 37 | 8.4% | 12 | 21.8% |
| Total | 439 | 100% | 55 | 100% |

*Unprotected Anal Intercourse **Asian/Pacific Islander, American Indian/Alaska Native

**Table 5.3. Concordance of HIV status of last male sex partner, 2006**

| Partner Type | Frequency (n) | Pct. | Cumulative Frequency | Cumulative Pct. |
|---|---|---|---|---|
| Concordant | 127 | 35.3% | 127 | 35.3% |
| Discordant | 11 | 3.1% | 138 | 38.3% |
| Unknown | 222 | 61.7% | 360* | 100.0% |

*Men reporting any male sex partners in past 12 months (n=360)

**Table 5.4. Use of drugs before or during sex in the past 12 months, 2006**

| Drug Use | Frequency (n) | Pct. | Cumulative Frequency | Cumulative Pct. |
|---|---|---|---|---|
| Always | 1 | 0.8% | 1 | 0.8% |
| Most of the time | 3 | 2.3% | 4 | 3.1% |
| Half of the time | 7 | 5.4% | 11 | 8.5% |
| Rarely | 25 | 19.4% | 36 | 27.9% |
| Never | 93 | 72.1% | 129* | 100.0% |

*Men reporting any recreational drug use in past 12 months (n=129)

Testing Patterns

Nine percent of all MSM surveyed had not been tested for HIV (Table 5.2). The main reason (53%) given for not getting tested was "has not engaged in any risk behavior." Nineteen percent "didn't have time" as their main reason for not getting tested, 9 percent were "afraid to find out", 5 percent didn't know where to test and another 6 percent "didn't have money for insurance" for HIV testing. 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. Nine percent of sexually active men surveyed had been diagnosed with a sexually transmitted disease in the 12 months prior and of the 145 men who received a syphilis test in the past 12 months, 12 (8.3%) were diagnosed with syphilis (Table 5.5).

**Table 5.5. Men diagnosed with a STD in the past year, 2006**

| STD DX | Frequency (n) | Pct. | Cumulative Frequency | Cumulative Pct. |
|---|---|---|---|---|
| No | 327 | 90.8% | 327 | 90.8% |
| Syphilis | 12 | 3.3% | 339 | 94.2% |
| Yes-other STD | 21 | 5.8% | 360* | 100.0% |

*Men reporting any male sex partners in past 12 months (n=360)

Circumcision

A recent clinical trial in South Africa demonstrated that circumcision reduced the risk of HIV acquisition by 61 percent among heterosexual men. The 2006 MSM RBA included survey questions to determine the prevalence of circumcision, willingness to be circumcised and perceived benefits of and concerns about adult circumcision among MSM attending Pride events in NC. Of the 439 MSM respondents, 360 (82%) were circumcised. Only 16 percent of MSM respondents were uncircumcised, and 24 percent of uncircumcised MSM reported they would be

willing to be circumcised if it were scientifically proven to reduce risk of HIV infection. If circumcision is shown to be an effective intervention to reduce risk of HIV infection among MSM in the U.S., data on perceived benefits of and concerns about circumcision should be used to develop circumcision education programs.

Exposure to Prevention Messages and Services

In the year prior to the survey, 76 percent of men surveyed received free condoms; 30 percent from Community Based Organizations, 26 percent from the Heath Departments, 41 percent from clubs or bars. Forty four percent had a counselor or outreach worker talk to them about ways to protect themselves from getting HIV and 12 percent had been referred for STD testing. Twenty four percent were aware of local men's health initiative "d-UP!" this is up from just 9 percent during the 2005 MSM RBA. Of the men who were aware of the "d-UP!" campaign, 92 percent knew the "d-UP!" logo symbolizes "safe sex."

## 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, health departments, 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 the highest risk 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

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# PART II: 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, 2006, the cumulative total of AIDS cases reported in the state was 15,746.
- 1,029 new AIDS cases were reported in North Carolina in 2006, or 11.9 cases per 100,000 population.
- The North Carolina AIDS case rate in 2006 for blacks (36.6/100,000) was almost ten times higher than for whites (3.8/100,000). This disparity is higher than observed for HIV disease.
- In 2005, the South had the greatest number of new AIDS diagnoses, estimated number of people living with AIDS and AIDS deaths.
- N.C. was 11$^{th}$ among states reporting the highest number of AIDS cases in 2005.
- In 2005, North Carolina ranked sixth in the proportion (68.7%) of blacks among people living with AIDS.
- In comparing cases diagnosed in 2001 and 2003, most categories remained fairly stable or showed an increase in proportion of cases surviving longer than 36 months.

## 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.

AIDS case reporting is helpful in comparing North Carolina to the nation; as all states have data that is acceptable for state to state comparisons. However, it should be noted that using AIDS data to describe the epidemic is problematic because the data represents older cases of infection. In addition, trends in AIDS data have fluctuated due to treatment changes.

There is growing concern about the impact of HIV/AIDS in the South (AL, AR, DE, DC, FL, GA, KY, LA, MD, MS, N.C., OK, SC, TN, TX, VA, and WV). In 2005, of the top ten states reporting the most new AIDS cases, five (FL, TX, GA, MD, and LA) were in the South. Seven of the ten states (DC, MD, FL GA, LA, DE, and SC) reporting the highest new AIDS case rate (per 100,000) were in the South (Kaiser, 2006). Overall, in 2005 the South had the greatest number of new AIDS diagnoses, estimated number of people living with AIDS and AIDS deaths (Kaiser, 2006).

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 (United States and dependent areas) in 2005 was 14.0 per 100,000 population (CDC, HIV/AIDS Surveillance Report, 2006). During the same time period, North Carolina's AIDS case rate was reported by the CDC as 10.9 per 100,000 population; thus, ranking it 19th (among all states) in the rate of new AIDS cases reported. In addition, North Carolina was ranked 11$^{th}$ among other states in the number of new AIDS cases reported with 945 cases (CDC, HIV/AIDS Surveillance Report, 2006). According to the CDC the number of N.C. AIDS cases decreased from 2004 to 2005 (1,118 and 945 respectively). In 2005 N.C. ranked 12th among all states in the number of living AIDS cases (CDC, HIV/AIDS Surveillance Report, 2006). Please note that the aforementioned counts and rates are calculated by the CDC and may differ slightly from N.C. surveillance counts and rates.

The impact of AIDS on blacks as a group is particularly substantial. Blacks have the highest AIDS case rates of any racial/ethnic group. According to the CDC, the U.S. rate for new black AIDS (adult/adolescent) cases reported in 2005 was 68.6/100,000. The corresponding rate for North Carolina for adult/adolescent blacks was 43.8/100,000 (Kaiser, 2006). However, North Carolina's black population is not evenly spread over the state and rates for blacks can vary considerably. According to state data, N.C. had 10 counties with high rates reported in 2005 (new black adult/adolescent AIDS cases): Cleveland (93.6/100,000); Lenoir (84.9); Wilson (84.4); Wake (83.1); Craven (80.8); Gaston (77.0); Edgecombe (76.9); Mecklenburg (75.0); Robeson (74.5); and New Hanover (69.2). In 2005, North Carolina ranked 11$^{th}$ among all states in the number of living black AIDS cases (5,626 people) and sixth in the proportion (68.7%) of blacks among people living with AIDS (Kaiser, 2006).

As of December 31, 2006, a total of 15,746 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 2006, 1,029 new AIDS cases were reported in North Carolina with a rate of 11.9 per 100,000 population (Table O, pg. D-22). This represents a slight decrease from the previous year with 1,077 cases reported. Compared to 2002 (979), the 2006 AIDS reports (1,029) represented a five percent increase in new reports for this five-year period.

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 the anticipated care needs for certain groups. In 2006, black males represented 46 percent of AIDS all cases, black females represented 21 percent of cases, and white males represented 18 percent of all cases. The 2006 AIDS case rate among blacks (36.6/100,000) was almost ten times higher than for whites (3.8/100,000). This disparity between blacks and whites is higher for AIDS cases than for HIV disease cases.

## LATE AIDS DIAGNOSES

Approximately 30 percent of new individuals reported each year with HIV disease represent a concurrent diagnosis (i.e., HIV and AIDS were diagnosed 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. Concurrent diagnoses likely represent late testers, who may have missed opportunities for effective antiretroviral therapy and as a result of the later stage of the disease are more ill. The HIV/STD Prevention and Care Branch is actively pursuing new policies and guidelines aimed at making HIV testing routine within the state, which will reduce the number concurrent AIDS diagnoses. In addition, the Branch has enacted specific initiatives addressing early HIV testing (See Chapter 4, HIV Testing and Related Programs for more information).

## TREATMENT

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 6.1 shows the average number of years between first reported HIV diagnosis and first reported AIDS diagnosis. 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 in recent years. This 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 6.1. Average number of years between first reported HIV diagnosis and first reported AIDS diagnosis, 1993-2006**

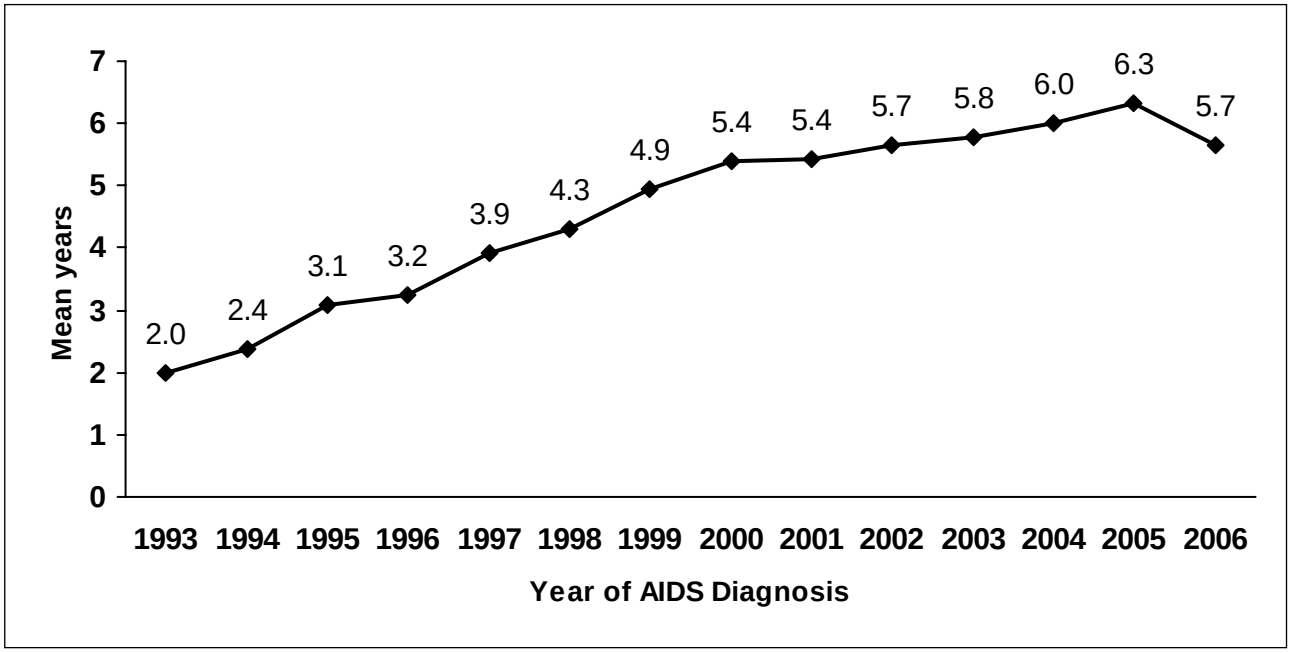

Table 6.1 displays the survival of AIDS cases after diagnosis for years, 2001 and 2003. According to the CDC, the national survival of AIDS cases in 2001 was 91 percent for greater than 12 months, 87 percent for greater than 24 months, and 84 percent for greater than 36 months (CDC, HIV/AIDS Surveillance Report, 2006). This compares to 88.4 percent, 83.9 percent, and 79.6 percent (respectively) for North Carolina cases diagnosed in the same year. This accounts for approximately a five percent decrease for each category of survival. In comparing cases diagnosed in 2001 and 2003, most categories remained fairly stable or showed an increase in proportion of cases surviving longer than 36 months; except individuals aged 55 years and older.

**Table 6.1. Percentage of people surviving more then 12, 24, and 36 months after an AIDS diagnosis, by year of diagnosis and selected characteristics– North Carolina**

| | Survival in Months 2001 AIDS | | | | Survival in Months 2003 AIDS | | | |
|---|---|---|---|---|---|---|---|---|
| | No. | > 12 | >24 | >36 | No. | > 12 | >24 | >36 |
| Total * | 800 | 88.4 | 83.9 | 79.6 | 1153 | 88.4 | 84.1 | 82.0 |
| Race/Ethnicity | | | | | | | | |
| White** | 162 | 84.6 | 79.7 | 77.8 | 266 | 87.6 | 84.2 | 80.8 |
| Black** | 588 | 89.1 | 84.5 | 79.4 | 821 | 88.7 | 83.8 | 82.1 |
| Other | 49 | 91.8 | 89.8 | 87.8 | 64 | 89.1 | 87.5 | 85.9 |
| Gender | | | | | | | | |
| Male | 560 | 88.6 | 84.1 | 80.0 | 810 | 89.3 | 85.5 | 83.0 |
| Female | 240 | 88.0 | 83.4 | 78.8 | 343 | 86.6 | 81.1 | 79.9 |
| Age (dx) | | | | | | | | |
| 13-24 years | 70 | 89.9 | 88.5 | 87.1 | 118 | 94.0 | 92.3 | 91.5 |
| 25-44 years | 535 | 90.4 | 85.3 | 81.5 | 743 | 90.3 | 86.3 | 84.7 |
| 45-54 years | 153 | 81.6 | 79.0 | 72.5 | 209 | 84.7 | 79.4 | 75.6 |
| >55 years | 49 | 83.7 | 75.5 | 69.4 | 81 | 72.8 | 64.2 | 60.5 |
| Mode of exposure (Males) | | | | | | | | |
| MSM | 164 | 90.3 | 86.0 | 82.3 | 330 | 92.1 | 89.7 | 87.0 |
| IDU | 69 | 88.4 | 82.6 | 79.7 | 77 | 97.4 | 84.4 | 80.5 |
| MSM/IDU | 33 | 87.9 | 87.9 | 81.8 | 30 | 90.0 | 83.3 | 83.3 |
| Heterosexual | 178 | 90.5 | 85.4 | 79.8 | 165 | 88.4 | 86.6 | 83.0 |
| All other*** | 116 | 83.6 | 79.3 | 76.7 | 208 | 82.2 | 78.4 | 77.4 |
| Mode of exposure (Females) | | | | | | | | |
| IDU | 30 | 96.6 | 86.6 | 83.3 | 40 | 80.0 | 72.5 | 70.0 |
| Heterosexual | 140 | 90.7 | 87.1 | 81.4 | 184 | 88.0 | 81.5 | 80.4 |
| All other*** | 70 | 78.6 | 74.3 | 71.4 | 119 | 86.6 | 83.2 | 82.4 |

* excludes individuals 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)

# 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.
- In calendar year 2004, it was estimated that 62 percent of the North Carolina population living with HIV disease (status aware) was in care. In calendar year 2005, the in care population estimate increased slightly to 65 percent.
- During calendar year 2006, approximately 5,400 individuals were enrolled in North Carolina's ADAP (AIDS Drug Assistance Program).
- 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 North Carolinians. Some of the information provided is based on surveys of HRSA-funded programs in the state.

Congress enacted the Ryan White Comprehensive AIDS Resources Emergency (CARE) Act in 1990 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 people living with HIV disease who lack health insurance and financial resources for 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, distribution of HIV/AIDS cases and other factors.

The Ryan White Modernization Act of 2006 made significant changes to the HIV/AIDS care system in the United States, and has had a major impact on such services in North Carolina. While the Parts (formerly Titles) of the Act remain essentially the same as the old Act, the new legislation places additional emphasis on the role of the state as a coordinator of care services (and information), and as a facilitator to ensure better integration of services among providers. As a result of new definitions adopted for Part A (formerly Title I), North Carolina now has its first direct-funded locality (Mecklenburg County and the four other counties in that metropolitan area).

Two changes in the Part B (formerly Title II) program – Assistance to States and Territories – include:

- A requirement that at least 75 percent of all service dollars be spent on defined "core" services, with a decided emphasis on medical care; this means that only a maximum of 25 percent of service dollars can be spent on "support" services, which have been a key component of North Carolina's RW spending in previous years
- Any expenditure by HIV care consortia is now defined as a "support" service, no matter what the expenditure is for; this will likely result in the diminution of the role of consortia in the RW care system.

In addition, although the majority of allowable services remain the same in the new legislation, certain notable changes have occurred. A primary example of this is the elimination of benefits advocacy as an allowable service. Benefits advocacy has been a highly utilized service in North Carolina, but can no longer be supported with Ryan White funds.

Part B (formerly 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 Part B program and provides funding for care services to eight HIV care 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. CAREWare collects and stores data for completion of the annual CARE Act Data Report (CADR). CAREWare is also a tool used to move programs beyond 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 was the third full year in which data was collected and submitted via CAREWare. 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 AIDS Care Unit is in the process of redesigning the state's HIV Quality Management Program in order to render it more useful for the State and its subgrantees. Data collected through CAREWare will be utilized as a major source of the information required for quality management purposes.

In CY 2005, a total of 7,097 unduplicated clients received services funded through Ryan White Title II awards in North Carolina (Table 7.1). 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 people known to be living with HIV/AIDS in North Carolina.

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.

**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 |

* may receive more than one service

Measuring "Unmet Need"

The Health Resources and Administration (HRSA), as part of its cooperative funding agreements, requires that each state estimate its unmet need for HIV-infected people. HRSA has defined unmet need as an estimate of individuals who are aware of their HIV positive status, but are not accessing HIV primary health care; therefore, designated as not "in care". "In 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.

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 regarding initial diagnosis of HIV and AIDS, but has very limited information about ongoing health care. Agencies and programs that serve HIV-infected clients generally maintain only information about clients that they serve. Since 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 was determined for 2004 and 2005. The most recent estimations included data extracted from a variety of data sources for each 12-month period (1/1/2004-12/31/2004 and 1/1/2005-12/31/2005). These data sources include Medicaid, ADAP (AIDS Drug Assistance Program), CAREWare and larger providers across the state. Information from the aforementioned sources was reviewed to estimate the number of individuals (living on 01/01/2004 and 01/01/2005) within the North Carolina HIV/AIDS reporting system (HARS) who were in care.

In calendar year 2004, it was estimated that 62 percent of the North Carolina population living with HIV disease (status aware) was in care. In calendar year 2005, the in care population estimate increased slightly to 65 percent. The remaining 38 percent and 35 percent (in 2004 and 2005 respectively) of the population living with HIV disease were estimated to be not in care; thus, representing those with unmet need (Table 7.2). As the disease progresses, people are more likely to seek out care. Therefore, as expected, there was a greater proportion of people living with HIV (non-AIDS) with unmet need than people living with AIDS. In 2004, the estimated number of people living with HIV (non-AIDS) with unmet need was (44%), as compared to (28%) people living with AIDS. Similarly, in 2005 the estimated number of people living with HIV (non-AIDS) with unmet need was (42%), as compared to (25%) people living with AIDS.

**Table 7.2. North Carolina Unmet Need Estimate, 2004-2005**

| | 2004 | 2005 |
|---|---|---|
| In Care estimate | | |
| Number of PLWA* w/ met need | 72% | 75% |
| Number of PLWH** (non-AIDS) w/ met need | 56% | 58% |
| Total HIV Disease w/ met need | 62% | 65% |
| Unmet need estimate | | |
| Number of PLWA* w/ unmet need | 28% | 25% |
| Number of PLWH** (non-AIDS) w/ unmet need | 44% | 42% |
| Total HIV Disease w/ unmet need | 38% | 35% |

*PLWA=People Living with AIDS **PLWH=People Living with HIV

Table 7.3 displays the demographic distribution of (estimated) people living with HIV/AIDS in 2005 and the corresponding distribution of people with unmet need. Overall, the unmet need distribution resembles the overall distribution of the HIV/AIDS aware population. However, there are slightly more males in the unmet need population. The percentage of unmet need in each subgroup (i.e. individuals with unmet need in relation to the specific HIV/AIDS aware population segment) is presented in Table 7.4. Note that of the Hispanic population living with HIV (non-AIDS) and AIDS, the estimated number of people determined not to be in care was 53 percent and 37 percent respectively; which was substantially larger as compared to others within the race/ethnicity grouping. The unmet need report in its entirety (including the estimation methodology) can be found in Special Notes (pg. C-7).

**Table 7.3. Selected Demographics of Estimated (Living) HIV Aware Population and Unmet Need Population, North Carolina CY 2005**

| | HIV +/ aware Population | Unmet Need Population |
|---|---|---|
| HIV (non-AIDS) | n=12,403 | n=5,175 |
| Gender | | |
| Male | 67% | 71% |
| Female | 33% | 29% |
| Race/Ethnicity | | |
| White* | 27% | 26% |
| Black* | 68% | 69% |
| Hispanic | 3% | 4% |
| Other** | 1% | 1% |
| AIDS | n=7,245 | n=1,795 |
| Gender | | |
| Male | 76% | 81% |
| Female | 24% | 19% |
| Race/Ethnicity | | |
| White* | 29% | 32% |
| Black* | 66% | 61% |
| Hispanic | 4% | 6% |
| Other** | 2% | 2% |
| HIV Disease | n=19,648 | n=6,970 |
| Gender | | |
| Male | 70% | 73% |
| Female | 30% | 27% |
| Race/Ethnicity | | |
| White* | 28% | 28% |
| Black* | 67% | 67% |
| Hispanic | 3% | 4% |
| Other** | 2% | 1% |

*non-Hispanic **Includes unknown

**Table 7.4. Percent of Unmet Need in Selected Subgroups, CY 2005**

| | HIV (non-AIDS) | | AIDS | | HIV Disease | |
|---|---|---|---|---|---|---|
| | Met | Unmet | Met | Unmet | Met | Unmet |
| Gender | | | | | | |
| Male | 56 | 44 | 74 | 26 | 63 | 37 |
| Female | 63 | 37 | 81 | 19 | 68 | 32 |
| Race/Ethnicity | | | | | | |
| White* | 60 | 40 | 72 | 28 | 65 | 35 |
| Black* | 58 | 42 | 77 | 23 | 65 | 35 |
| Hispanic | 47 | 53 | 63 | 37 | 53 | 47 |
| Other** | 61 | 39 | 75 | 25 | 66 | 34 |
| Total | 58 | 42 | 75 | 25 | 65 | 35 |

*non-Hispanic **Includes unknown

## AIDS DRUG ASSISTANCE PROGRAM (ADAP)

Since 1987, Congress has appropriated funds to assist states in providing AIDS patients with selected health and medical care services, including pharmaceutical therapy as approved by the Food and Drug Administration (FDA). With the initial passage of the Ryan White CARE Act in 1990, the assistance programs for medications were incorporated into Title II and eventually became known as the AIDS Drug Assistance Program, or ADAP. ADAPs in every state now provide FDA-approved HIV-related and occasionally a much broader array of, prescription drugs to underinsured and uninsured individuals 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 obtaining HIV-related 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 gross family income that is at or below 200 percent of the federal poverty level (this eligibility level became effective on November 1, 2006), not have third-party coverage (e.g., private insurance or Medicaid), and meet other program criteria. During CY 2006, about 5,400 individuals were enrolled in NC's ADAP at some point during the year. Table 7.5 displays the demographics of enrollees during the year. ADAP enrollees represent a population that is generally similar demographically to all people who were living with HIV or AIDS during CY 2006.

As noted above, a significant change occurred effective November 1, 2006 when the financial eligibility of the NC ADAP Program was increased to a gross family income of less than/equal to 200 percent of the federal poverty level. The ADAP Program and the HIV community in North Carolina had been struggling to raise the financial eligibility level of the program for a number of years. At the previous level, i.e., 125 percent of the Federal Poverty Level, NC's ADAP Program had the unenviable distinction of having the lowest financial eligibility in the nation. With savings that approximated 10 percent of the program's budget as a result of the 2005 conversion of the program from a rebate/reimbursement model to a direct purchase/central pharmacy model, and with the anticipation of additional funding coming to North Carolina as a result of the reauthorization of the Ryan White Program, the N.C. General Assembly gave the Department of Health and Human Service permission to increase the financial eligibility of the program up to 250 percent of the Federal Poverty Level. No additional state funds were appropriated, so the permission to increase the eligibility was truly based on these savings and anticipated additional federal funds. As a result, the program determined that the most appropriate course of action would be to increase the eligibility level to 200 percent now, and reserve the option to increase it further based on the program's additional enrollment and utilization experience over the next several months. Projections suggested that between 600 and 800 new clients would enroll in the N.C. ADAP Program with the increase to 200 percent FPL; the actual number over the six months that the increase has been in effect is actually somewhat lower than that.

It is certainly the program's hope – and intent – to increase the financial eligibility to the highest level supportable with the available funds. It is anticipated that the program will monitor the utilization and expenditure of funds very closely and that a decision on any further changes to the financial eligibility of the N.C. ADAP Program will be made based on that analysis. Given an increase in federal Ryan White – ADAP funds awarded to N.C. in April 2007, the possibility

of further raising the financial eligibility and/or adding some medications to the program's formulary are both possibilities being considered.

Also of note was the fact that for the first time in many years, North Carolina's ADAP Program was able to operate for the entire 2006 calendar year without a waiting list. People in the state benefited greatly from the conversion of the ADAP Program from a reimbursement/rebate model to a direct purchase/central pharmacy model program; a transition which took place on July 1, 2005. The program has used savings obtained as a result of this conversion to increase the number of individuals served. The exact number of additional clients that were enrolled in and served by the program as a result of these savings is difficult to determine, since the primary determining factor, the cost per client, is extremely dependent on a variety of complex 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. The program is considering the possibility of some further increase in the financial eligibility level and/or adding some additional, non-HIV specific medications to the program's formulary, if combined savings and additional funding permit.

## 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 individuals 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 people 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.

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# PART III: 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. However, male early syphilis rates began to rise in 2004 and rates for females began to rise in 2006. The overall early syphilis rate in 2006 was 7.0 cases per 100,000.

- The increase in early syphilis rates began with an outbreak in Mecklenburg County in 2004. Many of these cases were linked to MSM activity. An increase in rate was later observed in other counties as well as in females.

- Among females, the most dramatic increase in early syphilis cases was observed in Mecklenburg County. Female cases of early syphilis in Mecklenburg County rose from 12 (which represented 7.5% of female cases) in 2003 to 64 (36% of female cases) in 2006.

- Six counties (Mecklenburg, Guilford, Wake, Forsyth, Durham, and Cumberland) had more than 25 cases each in 2006 and together accounted for almost 70 percent of early syphilis reports (primary, secondary, early latent) in North Carolina.

- Although gonorrhea rates increased by 15 percent from 2005 to 2006 (173.5 per 100,000 to 199.3 per 100,000), the 2006 rate for some groups remained below their rate observed in 2002. The 2006 gonorrhea rate for 13 to 19 years olds was 530.3 per 100,000 which was below the rate observed in 2002 of 543.1 per 100,000. The gonorrhea rate for American Indians (147.0 per 100,000) in 2006 was 19 percent below the rate in 2002 (181.0 per 100,000).

- Gonorrhea case reports reflect severe racial disparities. The differences were most dramatic among males, where 2006 gonorrhea rates among blacks were more than 23 times higher than whites, rates for American Indians were over three times higher, and rates for Hispanics were more than two times higher. Among females, the trends were similar but less severe; with 2006 gonorrhea rates for blacks 10 times higher than for whites and rates for American Indian rates almost three times higher.
- Reported chlamydia cases and rates have been on the rise for all age groups, most likely reflecting increased screening. Rates among 20 to 29 year old females rose by over 35 percent from 2002-2006, compared to a 17 percent rise for age 13 to 19 years.

- Racial disparities in female chlamydia reports have remained stable over the past five years (2002-2006), with a rate six to seven times more among black females than among whites; and a rate two to four times more among American Indian/Alaska Native and Hispanic females than among whites.

## 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 NC DHHS.

Table 8.1 describes all STD cases reported to the HIV/STD Prevention & Care Branch in 2006. 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

**Table 8.1. North Carolina reportable sexually transmitted diseases, 2006**

| | Sex | | | |
|---|---|---|---|---|
| | Male | Female | Unknown | Total |
| Chlamydia (lab-confirmed) | 6,312 | 27,297 | 0 | 33,609 |
| Gonorrhea | 8,594 | 8,716 | 0 | 17,310 |
| Syphilis | | | | |
| Primary Syphilis | 66 | 8 | 0 | 74 |
| Secondary Syphilis | 176 | 59 | 0 | 235 |
| Early Latent Syphilis | 194 | 109 | 0 | 303 |
| Late Syphilis | 62 | 27 | 0 | 89 |
| Late Latent Syphilis | 123 | 118 | 0 | 241 |
| Late Syphilis w. symptoms | 0 | 0 | 0 | 0 |
| Neurosyphilis | 9 | 4 | 0 | 13 |
| Congenital Syphilis | 3 | 5 | 0 | 8 |
| Syndromic Diagnoses | | | | |
| Nongonococcal Urethritis (NGU) | 5,769 | n/a | 0 | 5,769 |
| Mucopurulent Cervicitis (MPC) | n/a | 3 | 0 | 3 |
| Pelvic Inflammatory Disease (PID) | n/a | 411 | 0 | 411 |
| Other STDs | | | | |
| Chancroid | 2 | 3 | 0 | 5 |
| Granuloma Inguinale | 1 | 2 | 0 | 3 |
| Lymphogranuloma Venereum (LGV) | 0 | 0 | 0 | 0 |
| Opthalmia Neonatorum (gonorrhea) | 0 | 0 | 0 | 0 |

chlamydia cases. Similarly, PID is a syndromic diagnosis with multiple possible causes, the most common being gonorrhea and chlamydia. In 2006, there were 411 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 2006 there were five cases of chancroid reported (5 in 2005, 1 in 2004), three cases of granuloma inguinale (4 in 2005, none in 2004), and no cases of lymphogranuloma venereum (3 in 2005, 3 in 2004). There have been no reported cases of opthalmia neonatorum (opthalmic infection with N. gonorrhoeae in infants) for the past five years (2002-2006).

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, there no vaccine is available. 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, et al 1998).

Table 8.2 shows Hepatitis A, B, and C cases and male-to-female ratios for 2002-2006. The ratio for HAV has declined since 2002, but there was a slight increase noted for 2006 compared to 2005. There were 10 more male cases in 2006 than 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.

## 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 (NC 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).

**Table 8.2. Hepatitis A , B, and C — male : female ratios and cases, 2002-2006**

| | 2002 | 2003 | 2004 | 2005 | 2006 |
|---|---|---|---|---|---|
| Hepatitis A | 3.3 (160/48) | 1.9 (81/43) | 1.1 (54/51) | 1.0 (42/42) | 1.2 (57/47) |
| Hepatitis B acute | 1.7 (145/87) | 2.0 (109/54) | 1.9 (119/63) | 2.6 (121/46) | 2.7 (116/43) |
| Hepatitis B chronic | 1.3 (500/379) | 1.3 (567/448) | 1.4 (433/314) | 1.4 (490/348) | 1.3 (464/355) |
| Hepatitis C | 1.1 (15/14) | 0.1 (1/12) | 0.5 (4/8) | 0.6 (8/13) | 0.6 (7/11) |

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 initial 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. Approximately three-quarters of infected females and half of infected males have no symptoms at all (CDC 2006, Chlamydia Fact Sheet). 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 screen and report cases. 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 2006, 19 percent of the 33,609 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 to 29 year old females rose by over 35 percent from 2002-2006, compared to a 17 percent rise for age 13 to 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 three to four 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 six to seven times higher than white rates, and American Indian/Alaska Native and Hispanic rates each two to four 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) that do their own testing. In 2006, 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. About 66 percent of the women screened in 2006 were in the recommended 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 years of consistent decline (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 has dropped since to 7.5 in 2006 using NAAT testing. Because the NAAT test has only been used for a little more that two years, fully illustrating trends among demographic groups is very limited. Thus, 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, 2002-2006**

| | 2002 | 2003 | 2004* | 2005* | 2006* |
|---|---|---|---|---|---|
| Women tested (n) | 99,026 | 102,225 | 103,708 | 108,871 | 11,217 |
| Positive (n) | 5,991 | 5,764 | 7,292 | 8,335 | 8,254 |
| Missing Result (n) | 1,038 | 1,061 | 1,517 | 429 | 777 |
| Positivity (%)** | 6.1 | 5.7 | 7.1 | 7.7 | 7.5 |

* 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 2002-2006**

| | 2002 | 2003 | 2004 | 2004 | 2005 | 2006 |
|---|---|---|---|---|---|---|
| Test Type | EIA | EIA | EIA | NAAT | NAAT | NAAT |
| Women tested (n) | 99,026 | 102,225 | 35,726 | 67,982 | 108,871 | 11,217 |
| Positive (n) | 5,991 | 5,764 | 1,891 | 5,401 | 8,335 | 8,254 |
| Missing Result (n) | 1,038 | 1,061 | 373 | 1,144 | 429 | 777 |
| Positivity (%)** | 6.1 | 5.7 | 5.4 | 8.8 | 7.7 | 7.5 |

** 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. 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. There are other possible causes for NGU and MPC, making it inappropriate to group them with laboratory-confirmed cases of *C. trachomatis*.

There were 5,769 male cases of NGU reported in 2006 (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 three 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 gonorrhea cases takes place at a number of private labs with most public clinics sending their samples to the State Laboratory of Public Health. In mid-2004, the State Laboratory of Public Health began performing nucleic acid amplification test (NAAT) testing for gonorrhea for all samples submitted for chlamydia testing. 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. As with chlamydia, morbidity reports of gonorrhea 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.

Gonorrhea trend analysis

Overall reports for gonorrhea were up for 2006 compared to 2005 after several years of decline. This increase was observed for most age, race, and gender groups with the exceptions being males in the 40 to 49 years old age group and American Indians both male and female. (Table S, pg. D-27 and Table T, pg. D-28). Although the rate of gonorrhea cases increased by almost 15 percent from 2005 to 2006, the rate for some groups remained below their rate observed in 2002. The groups with lower rates in 2006 than 2002 included males and females aged 13-19 years. While rates for blacks in 2006 remained slightly below their rate in 2002, the rates for American Indians were almost 19 percent below their rate in 2002. It should be noted that true increases (or decreases) may be masked by changes in screening practices (affected by concomitant testing for chlamydia and broader use of urine-based testing), use of diagnostic tests with differing test performance, and changes in reporting practices. The gonorrhea positivity for samples submitted to the State Laboratory of Public Health has increased slightly from 2.09 percent in 2005 to 2.19 percent in 2006.

*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 substantial 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 1.3 male cases for every female case. Among Hispanics, the ratio has remained fairly stable from 2002 to 2006; the ratio was 1.1 in 2006. The trend is exactly opposite for whites and American Indians, where there are consistently more female than male cases. For whites and for American Indians, the female-to-male ratio has varied during the past five years (2002-2006) from about 1.5 to 1.8.

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; until recently, the trend for females was reversed, with 13

to 19 year olds having the highest rates, followed by 20 to 29 year olds. In 2006, the female rate for 20 to 29 year olds exceeded the rate for 13 to 19 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 23 times higher than whites, rates for American Indians (AI/AN) are three or more times higher, and for Hispanics more than two 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 3-5 times higher (Figure 8.2). Notably, the gonorrhea rates for Hispanic females are only slightly higher than white rates (Table T, pg. D-28). 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.

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.

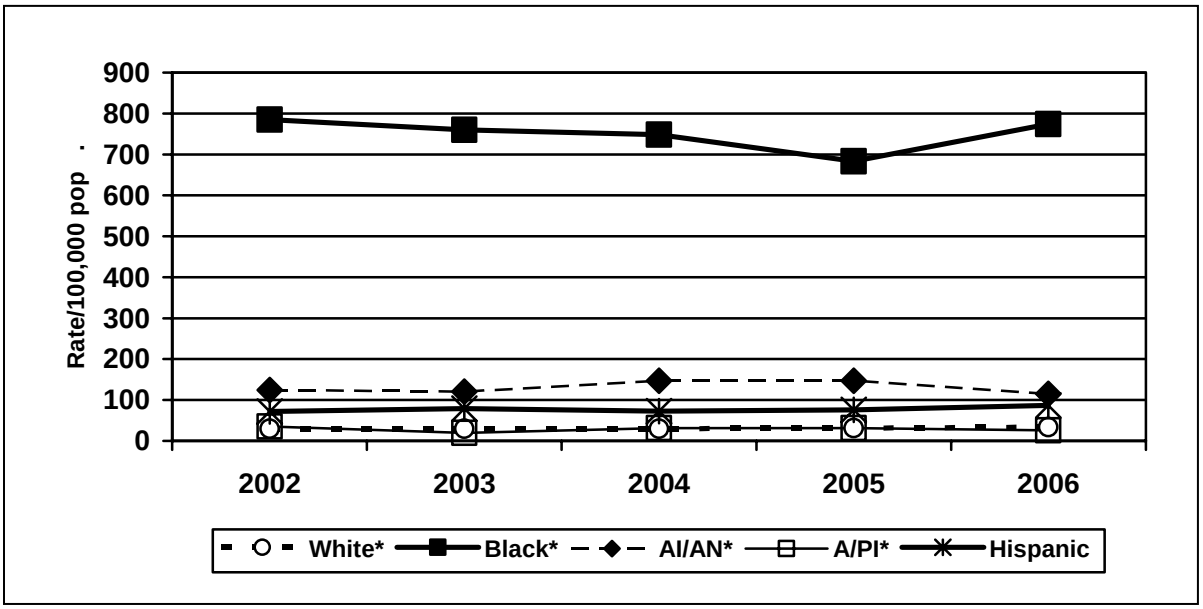
During 2005, 177 men were tested at the Greensboro site. Over 90 percent were black, just over 30 percent were age 20-24, and about 10 percent (twice the 2005 percent) reported having sex with other men. About 65 percent reported ever having a previous episode of gonorrhea and about 20 percent in the previous 12 months. Resistance to penicillin and/or tetracycline was detected in 16.4 percent of the samples (CDC, GISP Report, 2007).

## SYPHILIS

Syphilis disease

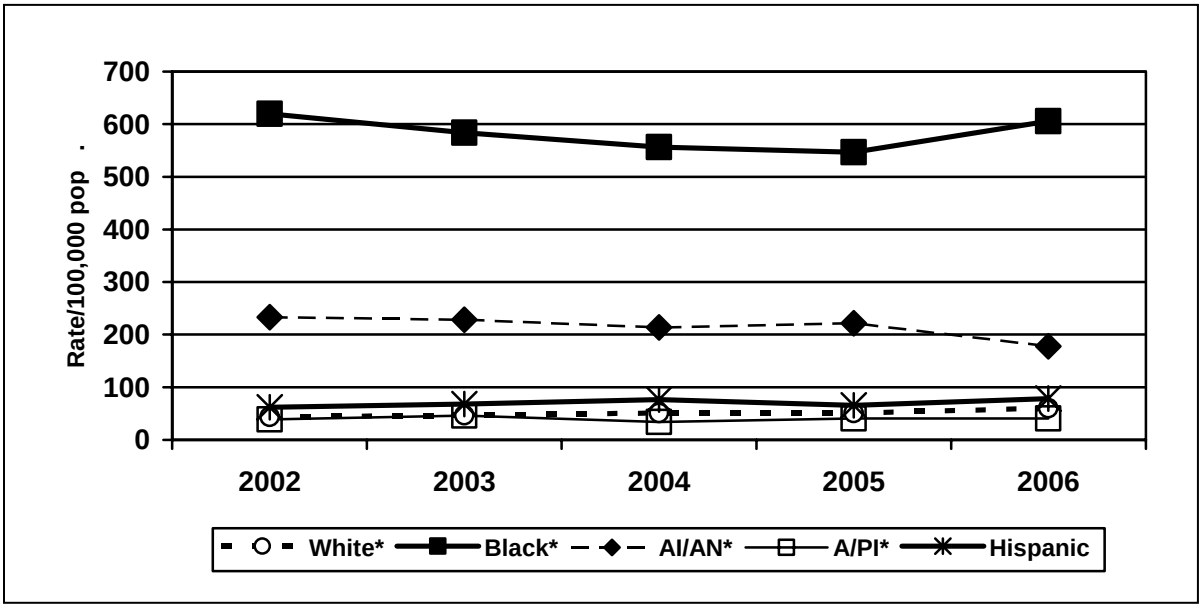
Syphilis is a complex disease with a natural history encompassing a number of different stages. When a syphilis case is identified, the stage must be determined and reported because the different stages have different implications for continued spread of the disease. Patients in the primary or secondary 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

**Figure 8.1. Gonorrhea rates by race/ethnicity – Males, 2002-2006**




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

**Figure 8.2. Gonorrhea rates by race/ethnicity – Females, 2002-2006**




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

transmitted to sexual partners. Hence, they are often grouped together when discussing infectious syphilis and called 'early syphilis' or PSEL. 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 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. However, since 2003 early syphilis rates in North Carolina have risen to 7.0 cases per 100,000 population. The six SEE counties accounted for 65.7 percent of the total early syphilis morbidity for the state in 2006 and all but Robeson County were ranked in the top ten counties by number of cases reported (Table W, pg. D-31).

For a national comparison, data is limited to following primary and secondary syphilis reports. According to the CDC, North Carolina's 2003 primary and secondary syphilis rate of 1.8 cases per 100,000 was well below the national rate of 2.5. At that time, North Carolina ranked 19$^{th}$ among the states (including the District of Columbia). In 2004 North Carolina's ranking increased to 15$^{th}$. By 2005 the North Carolina primary and secondary syphilis rate (3.2 per 100,000) surpassed the national rate of 3.0 and its ranking increased to 12$^{th}$.

*Gender*

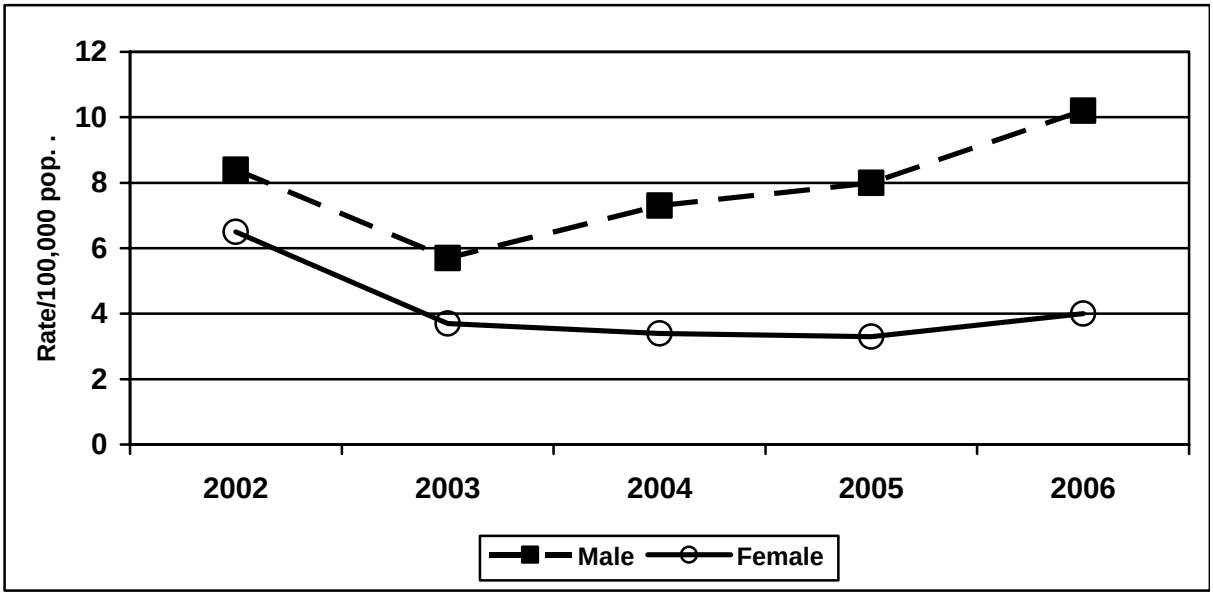
Male early syphilis rates began to rise in 2004 and continued to rise through 2006. The initial increase in male cases was highly localized with the largest number of new male reports from Mecklenburg County. There were 30 male early syphilis cases reported from Mecklenburg in 2003, growing to 54 in 2004, to 102 in 2005 and to 130 in 2006. In 2003, less than 13 percent of the total early syphilis male cases for the state were reported from Mecklenburg, but by 2005, the county reported nearly 30 percent of the male cases in the state. Further investigation of the Mecklenburg reports revealed that many of the male cases were linked to MSM activity. This increase in male reports has since spread beyond Mecklenburg County with increases noted in many other counties. Prevention efforts targeting men who have sex with men have been enhanced to address the outbreak. Female early syphilis cases and rates of the state continued to decline until 2005 but showed an increase in 2006 (Figure 8.3). The trend for females varies by county with increases noted for more counties particularly in 2005 and 2006. Noteworthy is Mecklenburg County, where female cases rose from 12 in 2003 to 64 in 2006. While female early syphilis cases in Mecklenburg County accounted for only 7.5 percent of female cases in the state in 2003, they accounted for over 36 percent of female cases in 2006.

*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 (2002-2006), 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.

**Figure 8.3. PSEL syphilis rates by gender, 2002-2006**




*Race/Ethnicity*

Syphilis disproportionately affects minority communities. Syphilis rates for blacks 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. A complex combination of health care access, poverty, racism, and the composition of sexual networks produces these differences in syphilis rates.

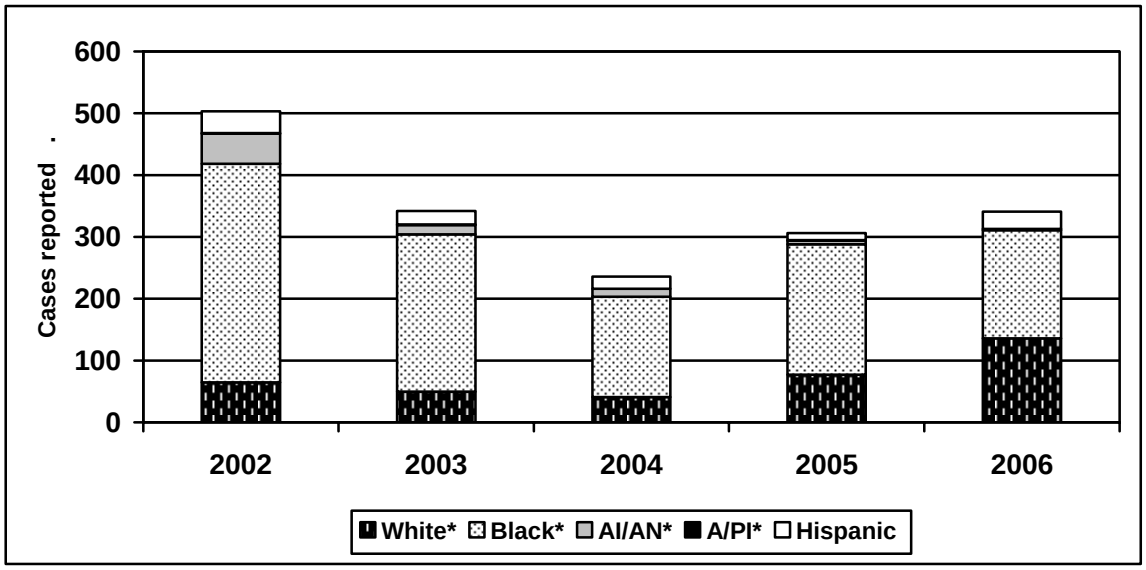
Figure 8.4 shows the early syphilis (PSEL) cases for males and Figure 8.5 shows the corresponding cases for females. The disparity for black and Hispanic men narrowed significantly from earlier years to 2003 because the cases for black, Hispanic, and American Indian males were dropping faster than the rates for white males. Then in 2004 and 2005, the number of early syphilis cases reported among white males began to increase. This decreased the disparity even further. However, in 2006, white male cases decreased while at the same time reported cases of black males increased reversing the trend. Among females, the number of reported cases declined from 2002 to 2004 among all racial groups. In 2005, the number of cases reported among white females rose slightly, further narrowing the racial disparity. However in 2006, there were increases in reports of early syphilis for black and Hispanic females, reflecting the trend observed in males. It should be noted that cases for American Indians have decreased from 2002 to 2006 for both males and females. In 2006, no male cases of early syphilis were reported for American Indians and only one case was reported for females.

<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

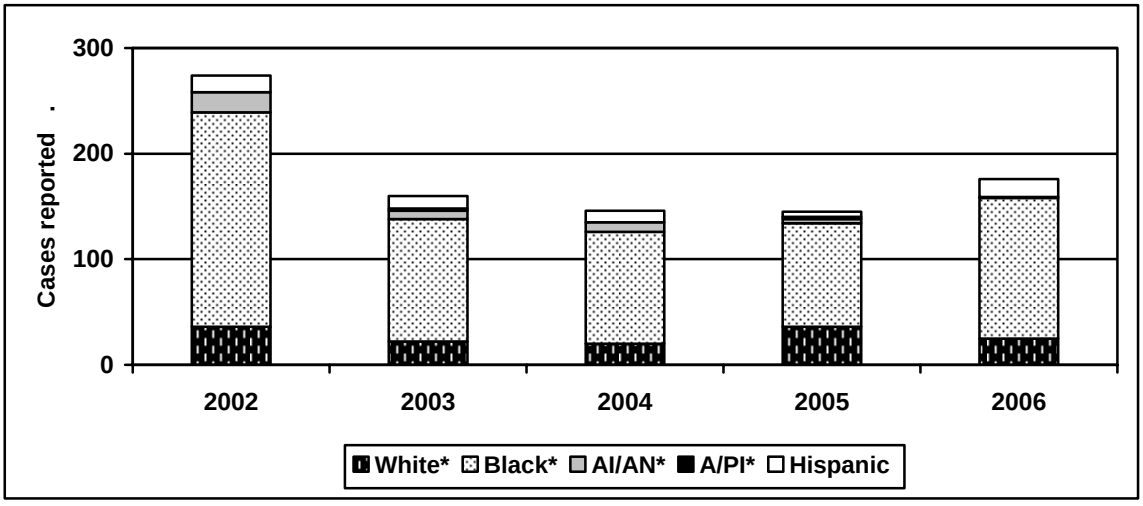
most likely to infect their infants in utero, but women with late latent syphilis can also have congenitally infected children (Radolf, et al 1999). Infants can also be infected during delivery. Under current CDC case definitions, infants whose mothers receive treatment for syphilis less than 30 days prior to delivery will still be classified as congenital syphilis cases, regardless of symptoms.

**Figure 8.4. PSEL syphilis cases – Males, 2002-2006 (by race/ethnicity)**




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

**Figure 8.5. PSEL syphilis cases – Females, 2002-2006 (by race/ethnicity)**




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

Despite declining adult early syphilis rates, North Carolina continues to suffer from cases of congenital syphilis. As of May 31, 2007, five infants were known born in 2006 to mothers who had active or inadequately treated cases of syphilis. Because of the delay in reporting and confirming congenital syphilis diagnoses, this number may be incomplete. In 2005, 13 infants were born to mothers who had active or inadequately treated cases of syphilis. This was up

slightly from previous year (11 infants in 2004) but down from earlier years (21 infants in 2003 and 16 in 2002). The number of congenital syphilis cases 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 2004, 17.4 percent of N.C. mothers reported a barrier to receiving prenatal care services (NCSCHS, PRAMS, 2007). 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, et al 2005).

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# APPENDIX A: MAPS

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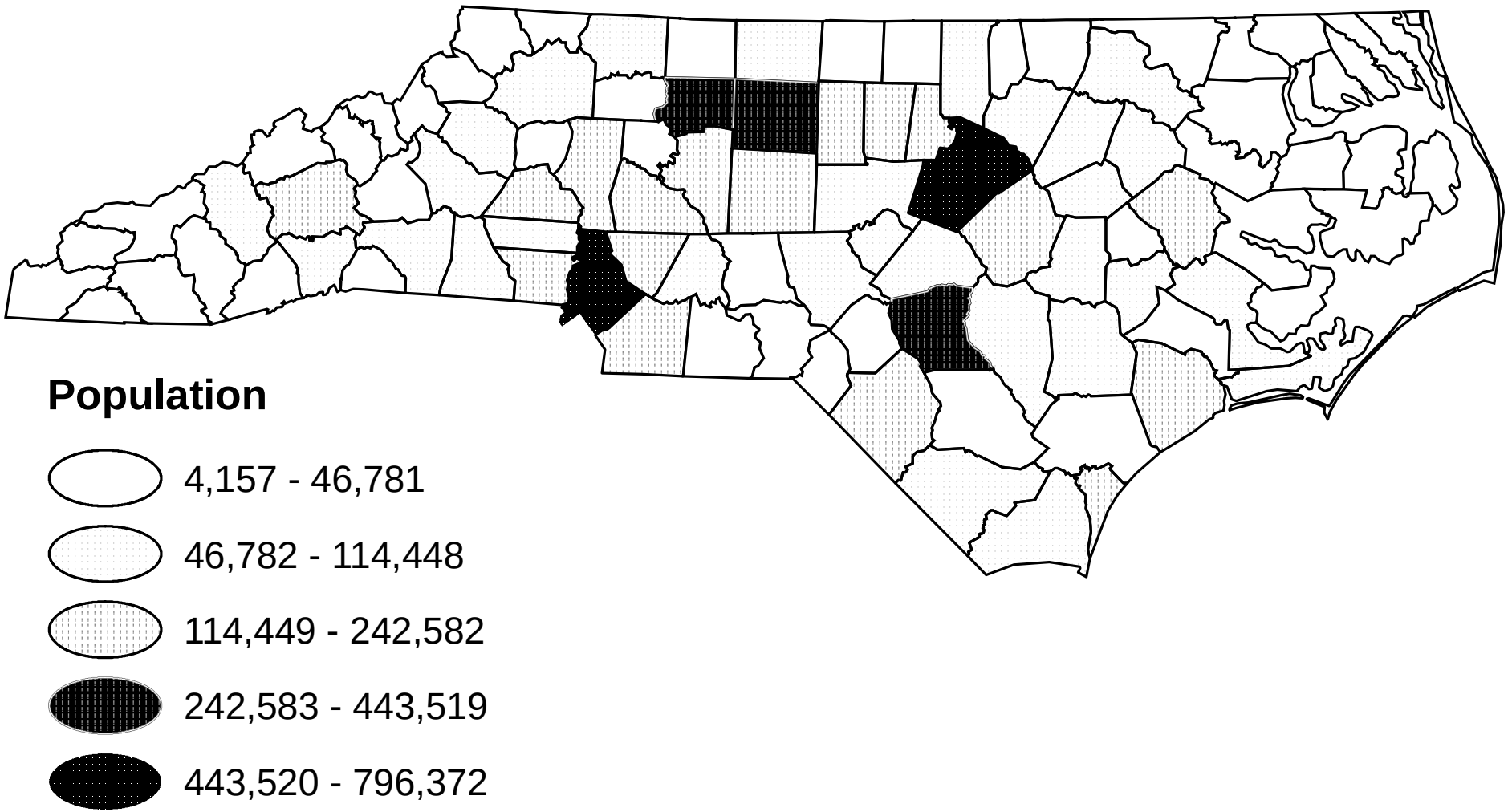
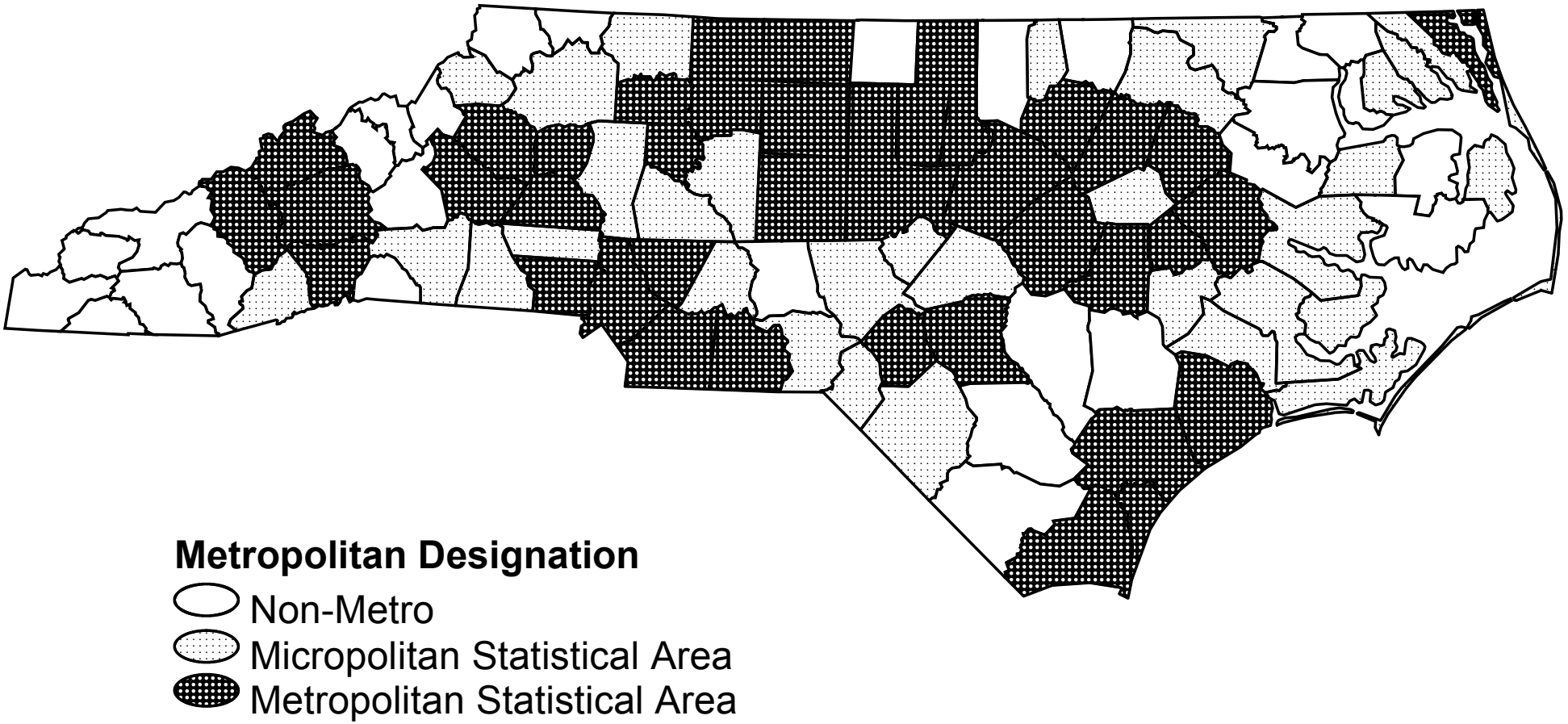
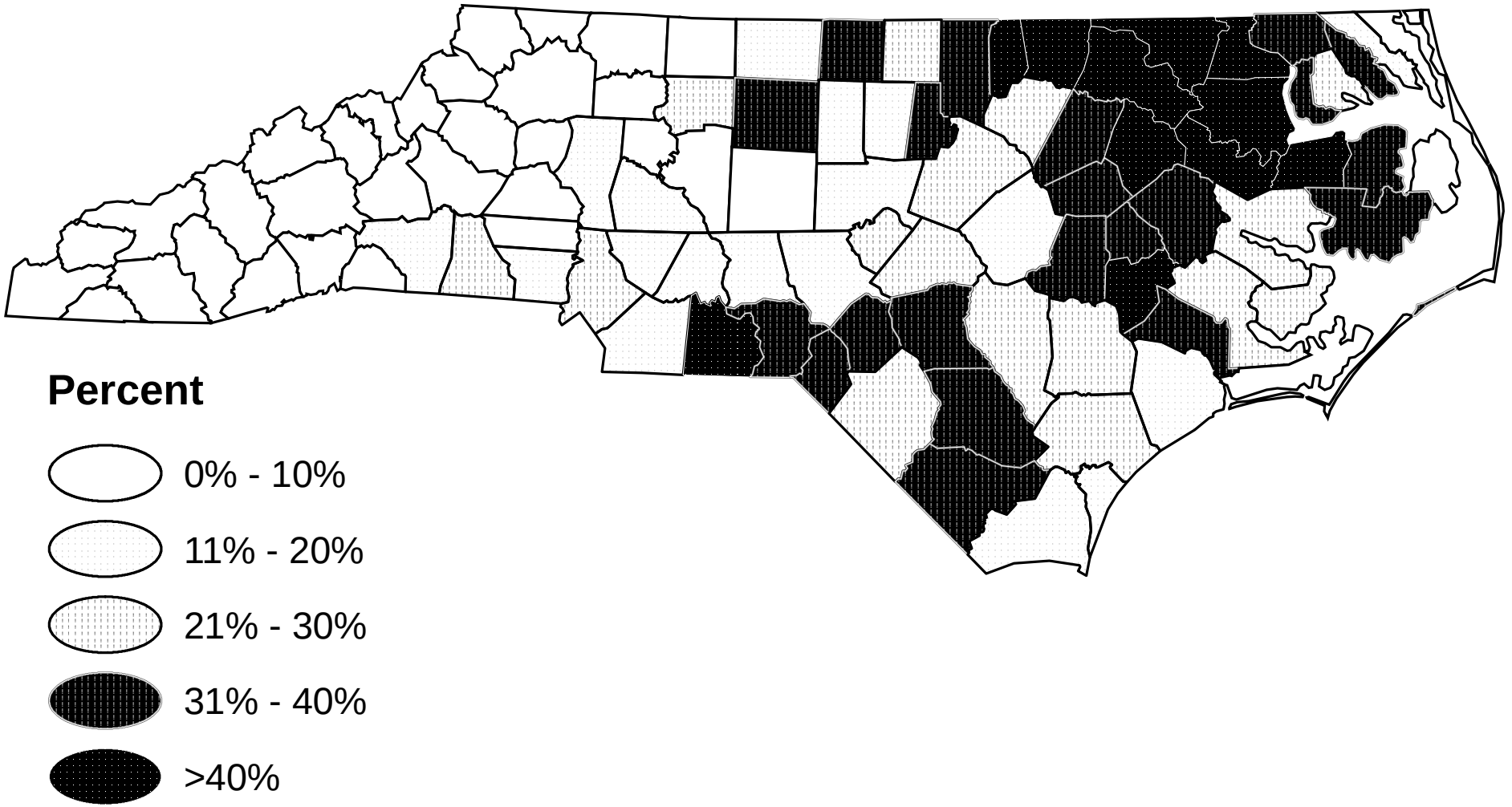
# Map 1. North Carolina County Populations, 2005



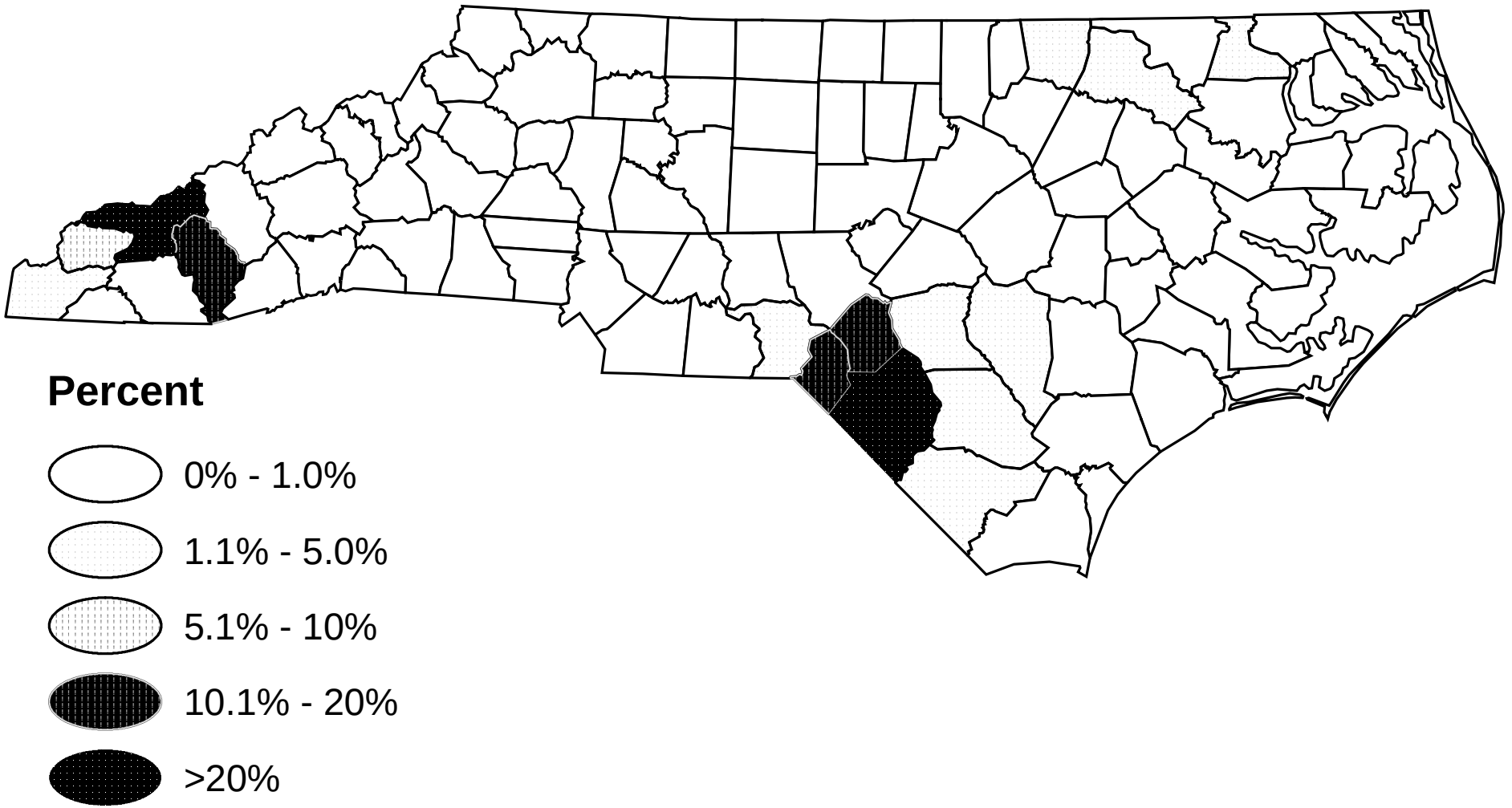
# Map 2. North Carolina Metropolitan Designations



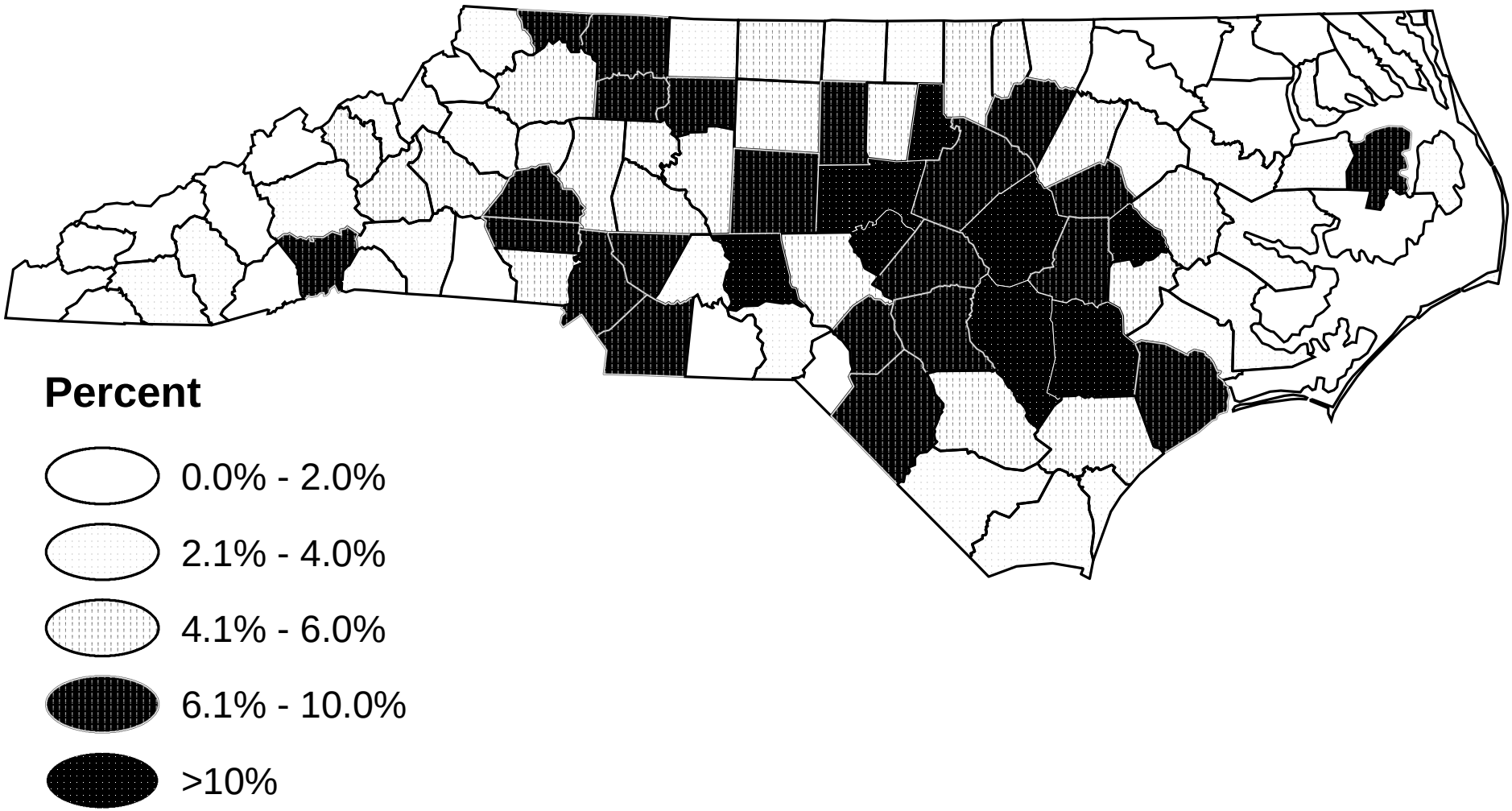
# Map 3. North Carolina African American or Black Population, 2005



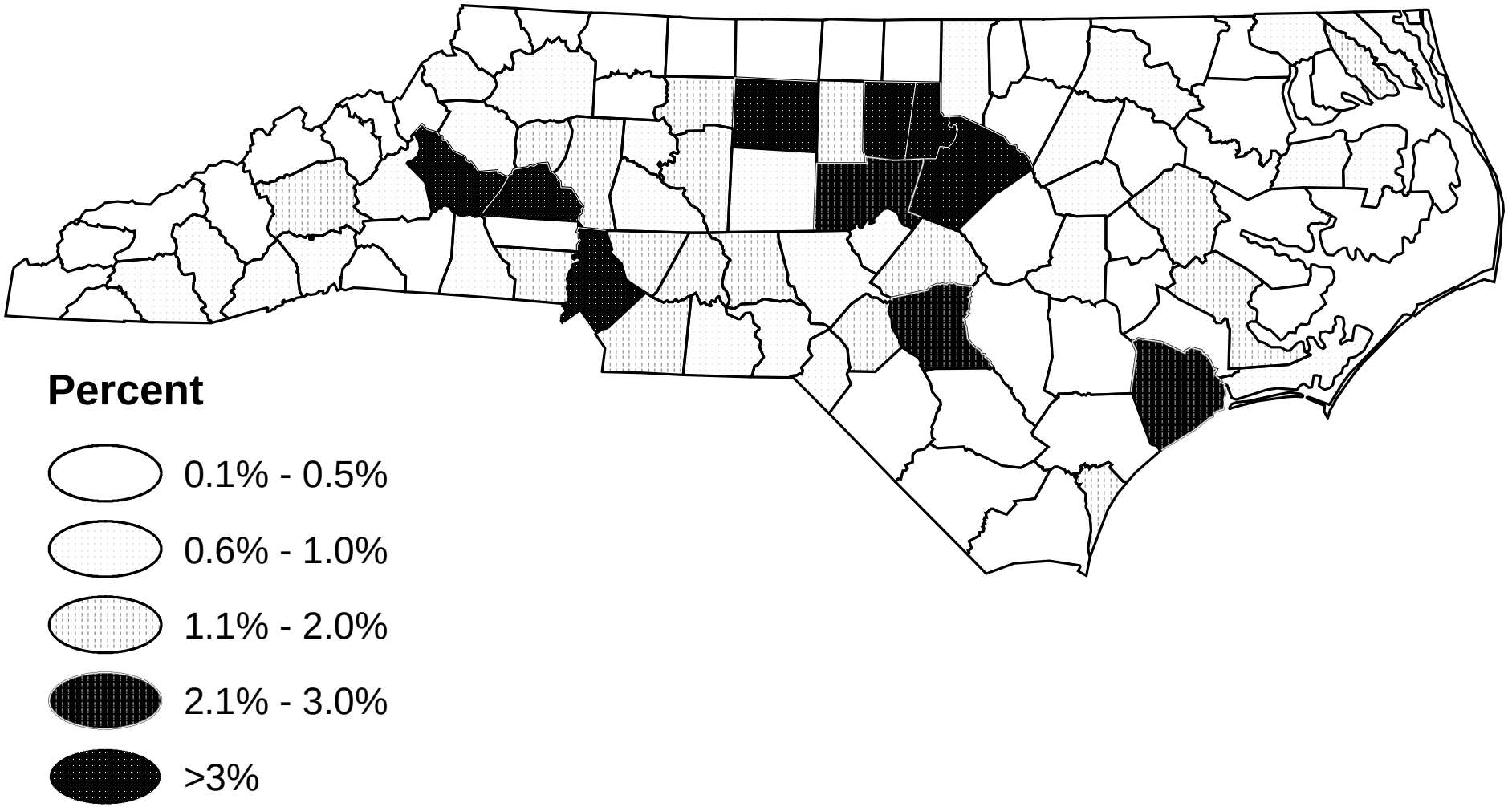
# Map 4. North Carolina American Indian/Alaska Native Population, 2005



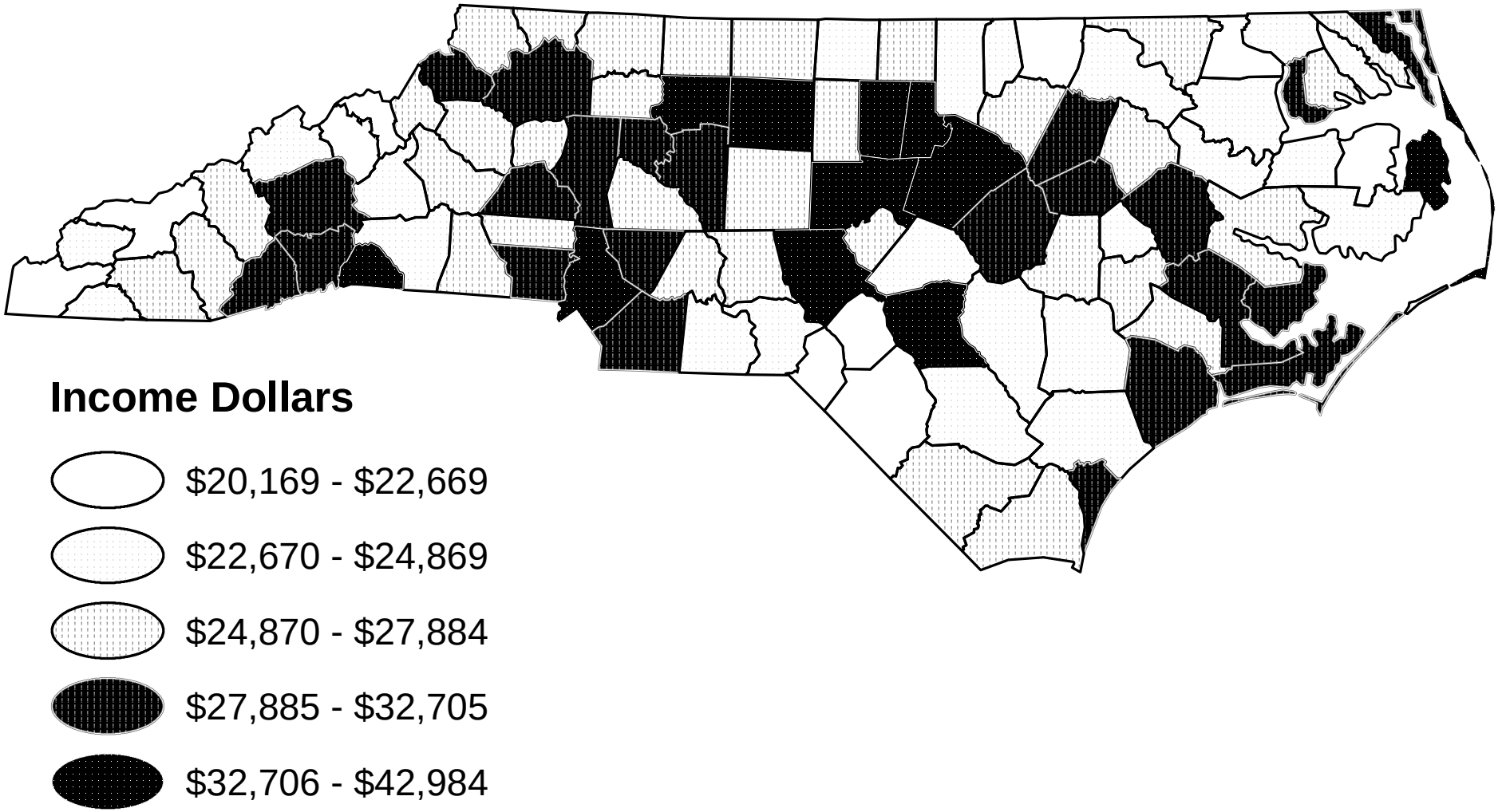
# Map 5. North Carolina Hispanic or Latino Population, 2005



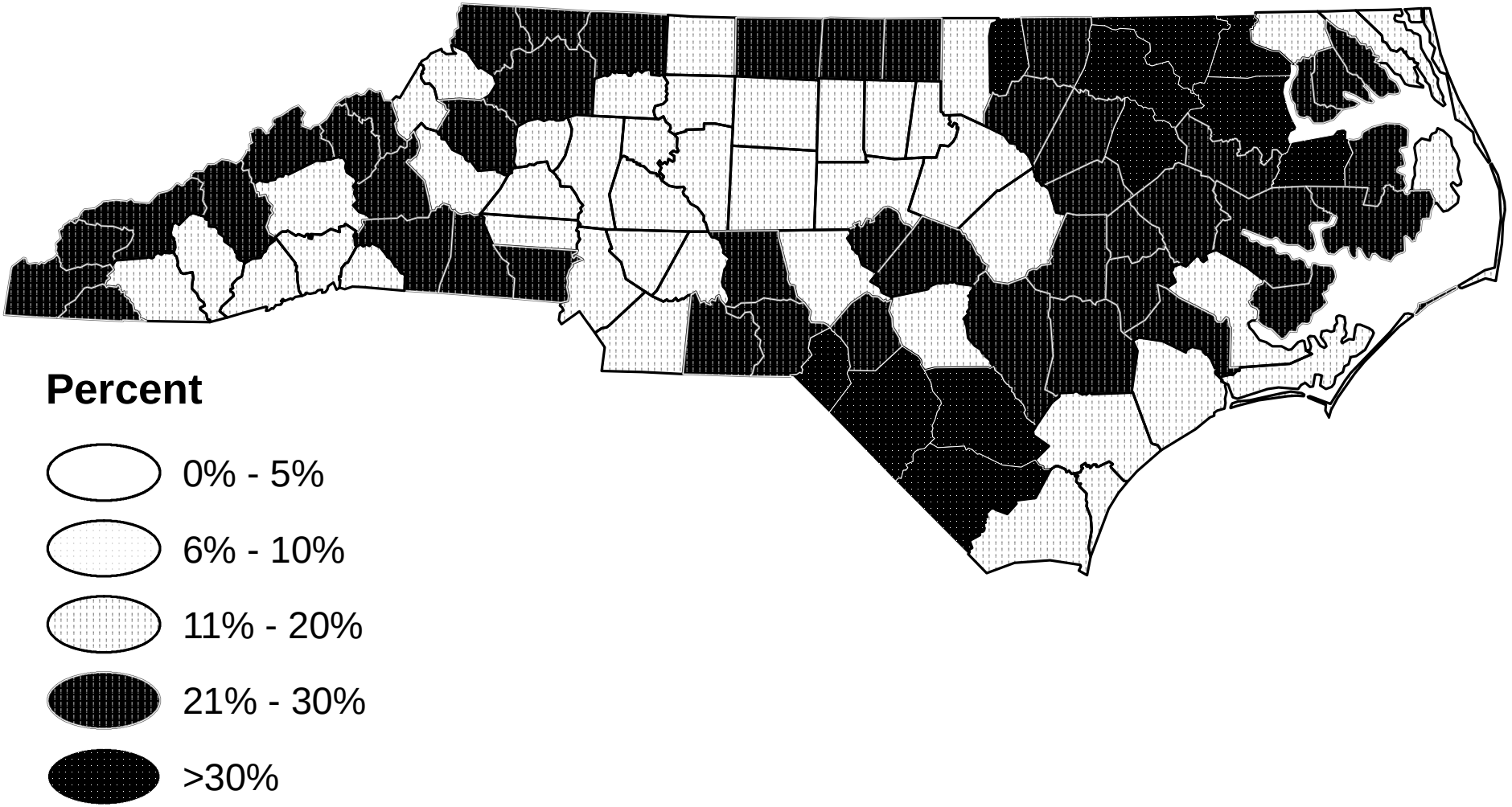
# Map 6. North Carolina Asian/Pacific Islander Population, 2005



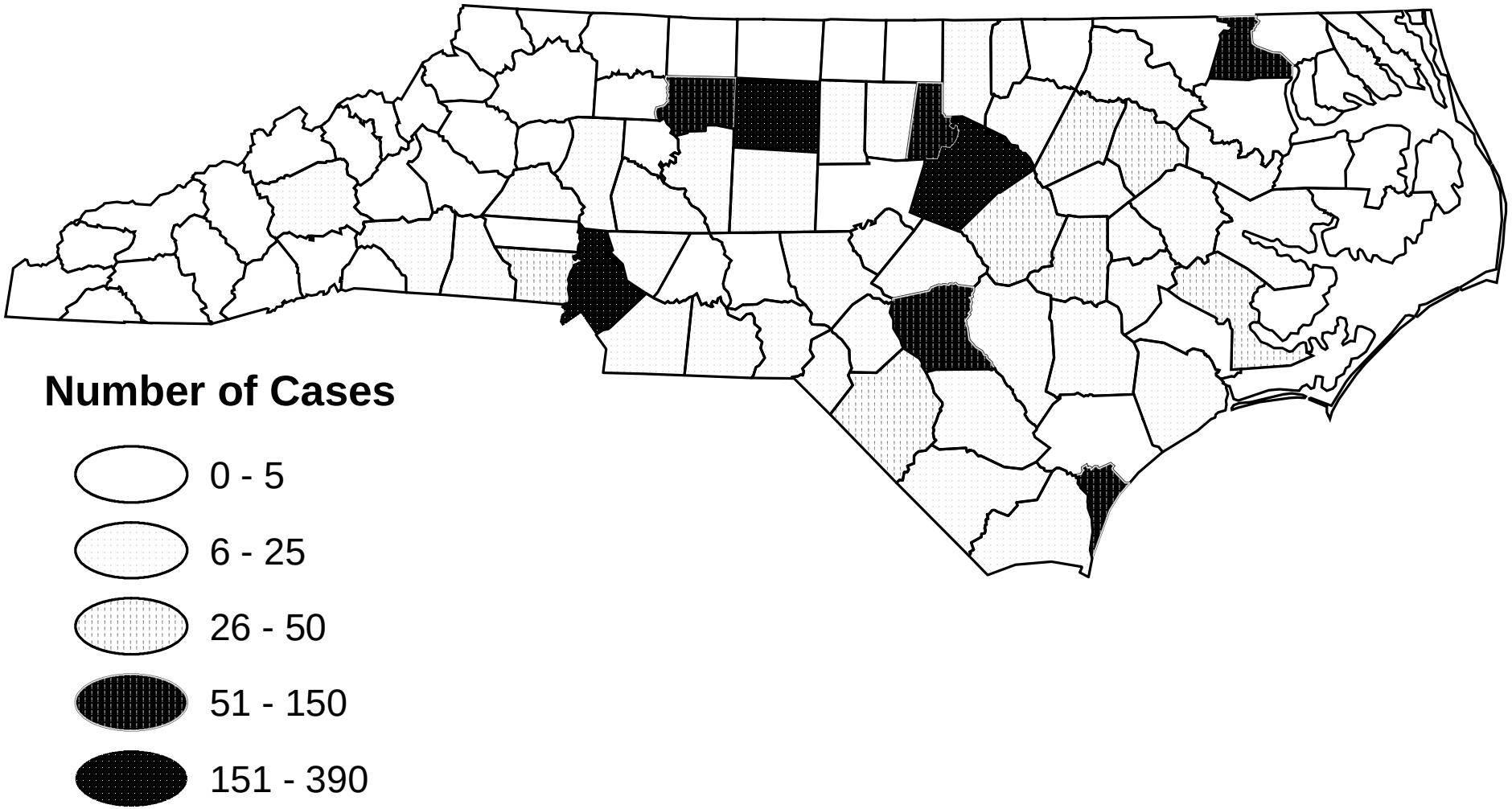
# Map 7. North Carolina Per Capita Income, 2005



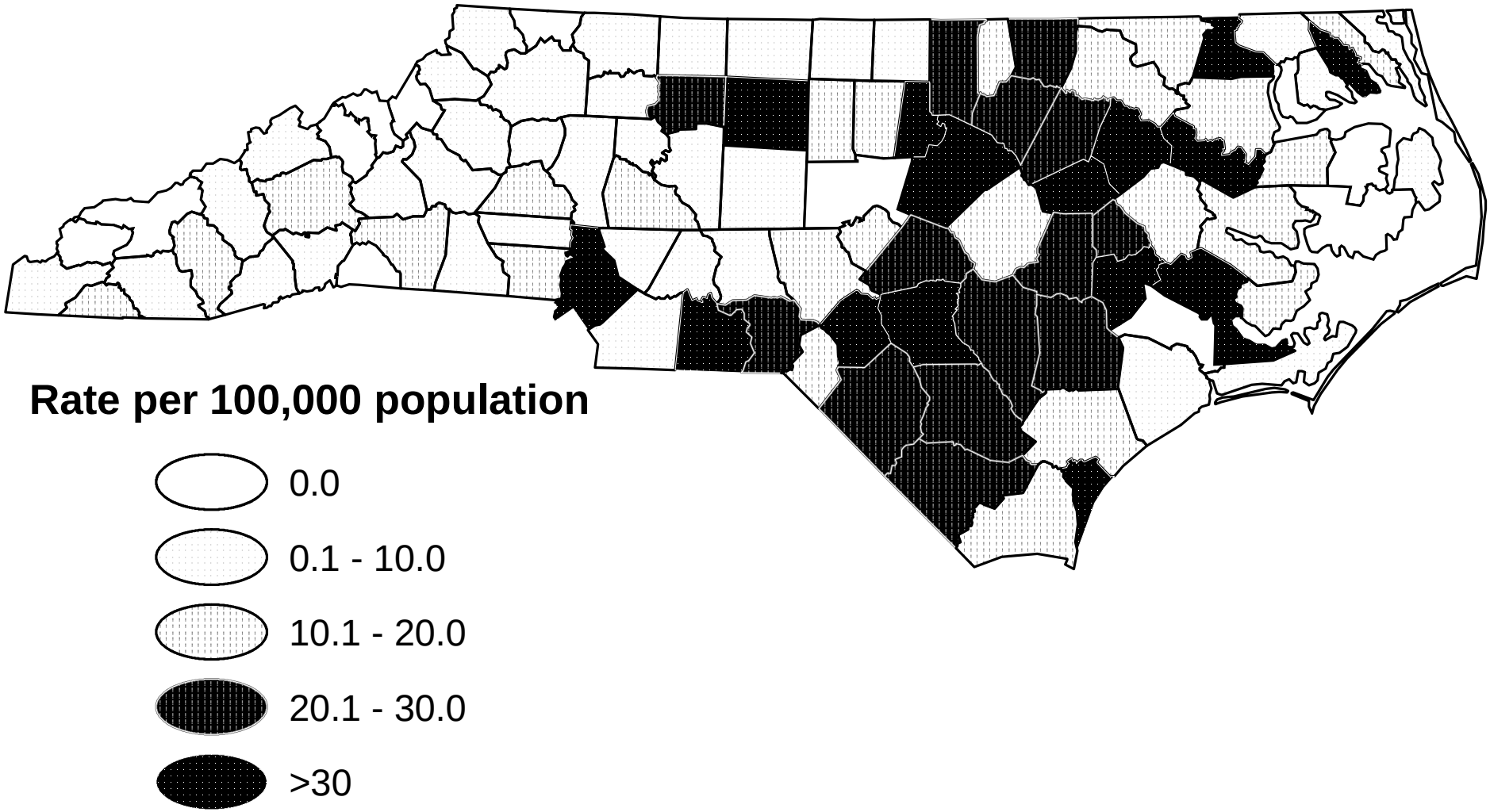
# Map 8. North Carolina Medicaid Eligibles, 2006



# Map 9. North Carolina HIV Disease Cases, 2006



# Map 10. North Carolina HIV Disease Rates, 2006



# 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 people 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. 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 that 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 is published in aggregate form 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 people 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. HIV reporting is not complete in the U.S. as some states have just recently mandated HIV case reporting. 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. Today, all 50 states, the District of Columbia, Puerto Rico, Guam, and the Virgin Islands participate 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, 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. The information on sexual partners also 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, 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 people 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.

### NORTH CAROLINA RBA – RAPID BEHAVIORAL ASSESSMENTS

**Overview:**
Rapid Behavioral Assessment (RBA) is a method for collecting much needed information about sexual, drug-use, and HIV testing behaviors from people at high risk for HIV infection in areas with low-to-moderate HIV prevalence.

**Population:** Men who have sex with men (MSM) attending Gay Pride events in North Carolina

**Strengths:** This is a well-designed survey with questions specific to race, ethnicity, age, locale of residence, gender, country of birth, level of education, insurance type, sexual orientation, number of male sex partners in past 12 months, type of anal sex (insertive/receptive), unprotected anal sex, type of partners (steady/exchange/casual), venues where they meet partners, knowledge of partner's HIV status, use of recreational drugs/alcohol before or during sex, injection drug use, needle sharing, types of drugs used, HIV testing history, reasons for not getting a HIV test, STD diagnosis in past 12 months, receipt of preventative services, condoms, literature, referrals for HIV/STD testing and participation in prevention services, attitudes about circumcision and being "out."

**Limitations:** Because this survey is a convenience sample of people attending Gay Pride events, respondents may not be representative of the broader MSM population living in the state. In particular, MSM living in rural areas may have been underrepresented because the Pride events occurred in Durham and Charlotte. The survey is conducted by an interviewer, and some of the questions address sensitive sexual and drug-use behaviors; so, respondents may have been unwilling to admit to risky or illegal behaviors.

## STD SURVEILLANCE

### CHLAMYDIA CASE REPORTING

**Overview:** North Carolina law requires that all cases of chlamydial infection 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. 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 people 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 requires that all cases of gonorrhea 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 people 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 requires that all cases of syphilis 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 people 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=177 in 2005).

**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 85-90 percent HIV cases are interviewed.

**Population:** People interviewed by Field Services staff as part of HIV (n=8,590) or syphilis (n=2,586) case follow-up or partner notification from 2002-2006.

**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 2006, approximately140,000 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 people 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 people institutionalized in jails, prisons, and hospitals; active military personnel; and the homeless 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 at: http://www.schs.state.nc.us/SCHS/data/pregnancies/2005/

**Population:** Abortions performed on North Carolina state residents (n=27,674 for 2005)

**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.

NC data comes directly from the most recently published tables available from 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. Many of the pregnancies likely 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 people 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. Title program support varies from state to state depending on program requirements and mandates. Data are available about services provided.

**Population:** All people 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 people 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. CAREWare collects and stores data for completion of the annual CARE Act Data Report (CADR). 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.

# APPENDIX C: SPECIAL NOTES

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# HIV DISEASE

HIV disease is a term that includes all people infected with HIV regardless of their stage of disease. Infected individuals are counted by the date on which this infection was first diagnosed and reported. Most people are first diagnosed with just an HIV infection and are reported again later with AIDS. However, some people are diagnosed with HIV and AIDS at the same time. All of these people 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.

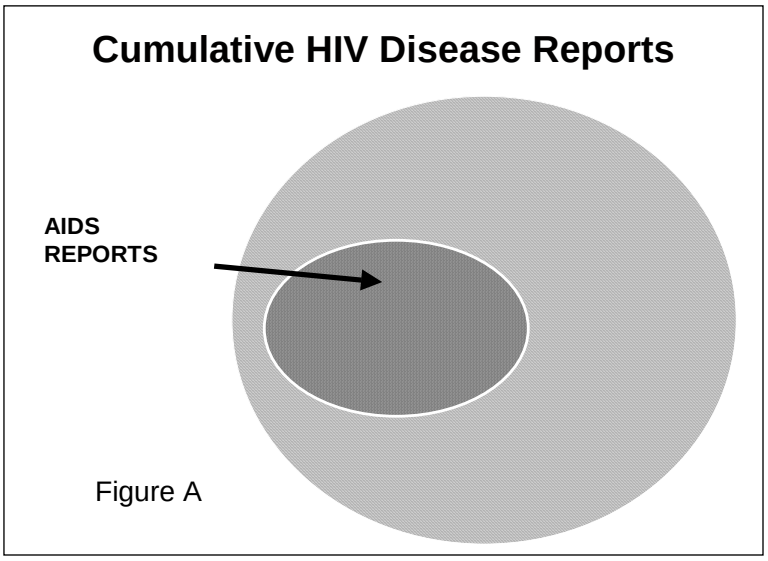

Figure A

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. 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

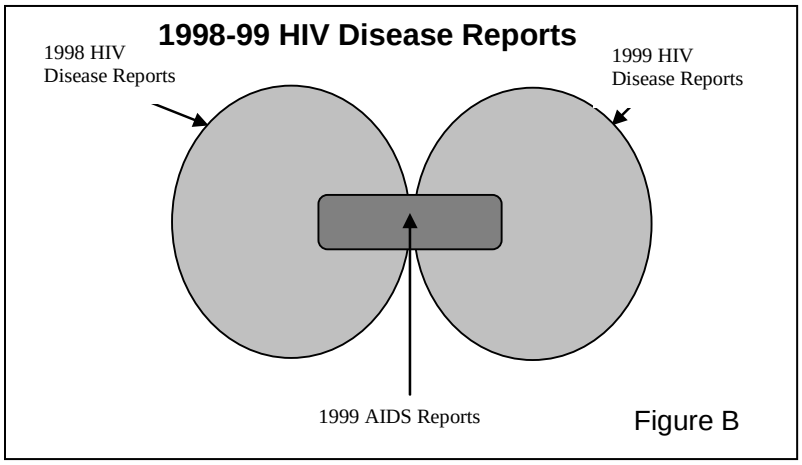

Figure B

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.

# HIV/AIDS SURVEILLANCE REPORTING ISSUES

Readers will note that the numbers of HIV disease reports for 2003 and 2005 through 2006 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. This initiative to better report all HIV diagnoses was enhanced again in 2006. 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 people 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 has been the inter-state duplication or multiple counting for some persons. Through IDEP,states consulted with each other 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. Some problems with the risk assignment have also 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 2006 were not available at press time; thus rates for 2006 were calculated using 2005 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.

# North Carolina Unmet Need Estimate and Narrative

### Background

The Health Resources and Administration (HRSA) requires that each state estimate its unmet need for HIV-infected persons. HRSA has defined unmet need as an estimate of the people who are aware of their HIV positive status, but are not accessing HIV primary health care; therefore, designated as not in care. In care 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.

The Epidemiology and Special Studies (ESS) Unit of the HIV/STD Prevention and Care Branch maintains the state's public health surveillance system for all morbidity and laboratory reports for HIV/AIDS and in collaboration with the Branch's AIDS Care Unit conducts the state's unmet need estimate.

The ESS Unit operates under very strict security and confidentiality guidelines. All the morbidity data and most laboratory test results are stored in a central surveillance database using the HARS (HIV/AIDS reporting system) CDC-supported software platform. Physical and electronic access to confidential data files, servers, and ESS computer stations is restricted. The state's HIV/AIDS surveillance system was evaluated for representativeness or completeness in 2004. The HARS is estimated to represent 75-80 percent of all HIV-diagnosed persons in N.C. Cases within the surveillance system are updated as to vital status (living or dead) by matching cases to death certificates annually.

### HIV Population Data

HARS contains all HIV or AIDS cases reported to the state; therefore, it was used to identify people eligible for care (i.e. initial estimated living cases). Only individuals whose current residency was listed as North Carolina or unknown (by default classified as North Carolina) were

included. This data was then compared to national social security death files (to identify individuals who may have died outside of N.C.) and those who died before April 1, 2005 were excluded. The final living HIV/AIDS population includes the HARS living cases (through December 31, 2005) and an adjustment based on estimates from the Department of Veterans Affairs (VA) website.

## Care Data Description

North Carolina does not mandate universal reporting of all laboratory tests associated with HIV care or maintain information on drug therapies for all people with HIV. Therefore, along with HARS data, a variety of statewide data sources were evaluated to better assess unmet need. Publicly-funded data sources included Medicaid, AIDS Drug Assistance Program (ADAP) data, and CAREWare data. In addition, data obtained from the Department of Veterans Affairs website were used.

## Matching Procedure

Initially, individuals meeting the definition of in care were identified based on the available laboratory information collected within HARS. Next, cases within HARS were linked to ancillary datasets via deterministic matching. The combination of these two processes resulted in an initial 'total met' dataset. The results of a probabilistic match (performed with the same datasets) were compared to the results of the aforementioned deterministic match as a way to validate the deterministic procedure's effectiveness in capturing individuals in care.

## Results

*Adjustments*

In the 2004 estimation, a private payer adjustment was used to estimate the number of in car' individuals that may have been captured if care information was available from all North Carolina providers. The results of this 2004 estimate were applied to 2005 data to calculate a 2005 private payer adjustment. Care information related to individuals in correctional facilities was not captured in the provider (2004) or government (2005) databases used; therefore a correctional adjustment was administered. As a result of HARS analysis, it was determined that only a small number of VA cases were actually being captured in HARS. Therefore, an adjustment was made based on information obtained from the VA website. Collectively, these adjustments accounted for approximately a 14 percent increase in the in care estimation (HIV disease).

*Findings*

As shown in Table 1, the estimated number of people living in North Carolina with HIV Disease (status aware) as of 12/31/2005 was 19,648. Of these, 12,678 or 65% were estimated to be in care during calendar year 2005. The remaining 6,970 or 35% were estimated to be not in care, thus represent those with unmet need. The estimated number of people living with HIV (non-AIDS) with unmet need was 5,175 (42%), as compared to 1,795 (25%) persons living with AIDS. Table 2 displays the distribution of met and unmet need by selected demographics.

**Limitations**

Medicaid, CAREWare and ADAP (publicly funded databases) were used; however, a Medicare dataset was not available. In addition, care data was not obtained from individual providers for the calendar year 2005. Therefore, the private payer estimation from the previous year (CY 2004) had to be employed in the 2005 estimations. Data from only eight individual providers were available for the 2004 private payer estimation. However, even with the private payer adjustment, the number added to in care was seemingly low. Linking provider of diagnosis from HARS with the provider of care (for living individuals) is problematic.

Analysis of HARS HIV disease reports diagnosed by Veterans Affair facilities demonstrated that reports are mostly for those with AIDS; therefore, we can deduce (based on the VA HIV estimates) that VA reports of people living with HIV (non-AIDS) are substantially underreported in HARS. Therefore, VA HIV estimates were added to better describe the living population.

Since the estimation was based primarily on unduplicated linked databases, which presented several of the aforementioned limitations, it can be concluded that the number of all HIV-infected people who are in care is most likely underestimated.

**Table 1: North Carolina Unmet Need Estimate CY 2005**

| INPUT | VALUE | DATA SOURCE |
|---|---|---|
| **Population Sizes** | | |
| A. Number of people living with AIDS (PLWA), CY2005 | 7245 | HARS through December 31, 2005 plus Veterans Administration adjustments. |
| B. Number of people living with HIV (PLWH), CY2005 | 12403 | HARS through December 31, 2005 plus Veterans Administration adjustments. |
| **Care Patterns** | | |
| C. Number of PLWA with met need in 12-month period | 5450 (75%) | Linked and unduplicated databases (CY 2005): HARS, Medicaid, ADAP, and CAREWare. Private payer, Correctional Facility and Veterans Administration adjustments. |
| D. Number of PLWH (non-AIDS) with met need in 12-month period | 7228 (58%) | Linked and unduplicated databases (CY 2005): HARS, Medicaid, ADAP, and CAREWare. Private payer, Correctional Facility and Veterans Administration adjustments. |
| **RESULTS** | **VALUE** | **CALCULATION** |
| E. Number of PLWA not in care | 1795 (25%) | A-C (E/A) |
| F. Number of PLWH not in care | 5175 (42%) | B-D (F/B) |
| G. Total HIV Disease not in care | 6970 (35%) | E+F (G/(A+B)) |

**Table 2: Distribution of Selected Demographics, North Carolina CY 2005**

| | HIV +/ aware Pop. | # With Met Need | # With Unmet Need | %of Unmet Need Pop. | % Unmet Need in Category | %of Total HIV +/aware Pop. |
|---|---|---|---|---|---|---|
| **HIV (non-AIDS)** | | | | | | |
| TOTAL | 12403 | 7228 | 5175 | 100 | 42 | 100 |
| | | | | | | |
| Gender | | | | | | |
| Male | 8313 | 4646 | 3667 | 71 | 44 | 67 |
| Female | 4090 | 2582 | 1508 | 29 | 37 | 33 |
| Race/Ethnicity | | | | | | |
| White* | 3382 | 2039 | 1342 | 26 | 40 | 27 |
| Black* | 8450 | 4896 | 3554 | 69 | 42 | 68 |
| Hispanic | 390 | 182 | 208 | 4 | 53 | 3 |
| Other** | 181 | 110 | 71 | 1 | 39 | 1 |
| **AIDS** | | | | | | |
| TOTAL | 7245 | 5450 | 1795 | 100 | 25 | 100 |
| | | | | | | |
| Gender | | | | | | |
| Male | 5472 | 4023 | 1449 | 81 | 26 | 76 |
| Female | 1773 | 1427 | 346 | 19 | 19 | 24 |
| Race/Ethnicity | | | | | | |
| White* | 2072 | 1493 | 579 | 32 | 28 | 29 |
| Black* | 4784 | 3698 | 1086 | 61 | 23 | 66 |
| Hispanic | 270 | 170 | 100 | 6 | 37 | 4 |
| Other** | 119 | 89 | 30 | 2 | 25 | 2 |
| **HIV DISEASE** | | | | | | |
| TOTAL | 19648 | 12678 | 6970 | 100 | 35 | 100 |
| | | | | | | |
| Gender | | | | | | |
| Male | 13786 | 8669 | 5117 | 73 | 37 | 70 |
| Female | 5862 | 4009 | 1853 | 27 | 32 | 30 |
| Race/Ethnicity | | | | | | |
| White* | 5454 | 3533 | 1921 | 28 | 35 | 28 |
| Black* | 13234 | 8594 | 4640 | 67 | 35 | 67 |
| Hispanic | 660 | 352 | 308 | 4 | 47 | 3 |
| Other** | 300 | 199 | 101 | 1 | 34 | 2 |

*non-Hispanic **Includes unknown

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# APPENDIX D: TABLES

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# Table A: North Carolina HIV Disease† Reports
## Gender and Age, 2002-2006

| Age | | 2002 Cases | 2002 Pct | 2002 Rate* | 2003 Cases | 2003 Pct | 2003 Rate* | 2004 Cases | 2004 Pct | 2004 Rate* | 2005 Cases | 2005 Pct | 2005 Rate* | 2006 Cases | 2006 Pct | 2006 Rate* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Male** | **0-12 Years** | 4 | 0% | 0.5 | 4 | 0% | 0.5 | 0 | 0% | 0.0 | 6 | 0% | 0.8 | 1 | 0% | 0.1 |
| | **13-19 Years** | 31 | 2% | 7.8 | 25 | 1% | 6.1 | 22 | 1% | 5.2 | 52 | 3% | 12.1 | 55 | 3% | 12.8 |
| | **20-29 Years** | 235 | 14% | 37.9 | 253 | 12% | 40.4 | 257 | 16% | 40.7 | 267 | 14% | 41.6 | 355 | 18% | 55.3 |
| | **30-39 Years** | 416 | 25% | 64.8 | 463 | 23% | 72.3 | 344 | 21% | 53.9 | 401 | 22% | 62.6 | 417 | 21% | 65.1 |
| | **40-49 Years** | 329 | 20% | 53.7 | 426 | 21% | 68.6 | 339 | 21% | 53.8 | 410 | 22% | 64.1 | 423 | 21% | 66.1 |
| | **50 and over** | 139 | 8% | 13.4 | 229 | 11% | 21.4 | 182 | 11% | 16.5 | 201 | 11% | 17.7 | 229 | 11% | 20.1 |
| | **Unknown** | 0 | 0% | --- | 0 | 0% | --- | 0 | 0% | --- | 0 | 0% | --- | 0 | 0% | --- |
| | **Total** | **1,154** | **69%** | **28.3** | **1,400** | **69%** | **33.8** | **1,144** | **71%** | **27.2** | **1,337** | **72%** | **31.3** | **1,480** | **73%** | **34.6** |
| **Female** | **0-12 Years** | 4 | 0% | 0.5 | 5 | 0% | 0.7 | 4 | 0% | 0.5 | 2 | 0% | 0.3 | 6 | 0% | 0.8 |
| | **13-19 Years** | 18 | 1% | 4.8 | 33 | 2% | 8.5 | 13 | 1% | 3.3 | 26 | 1% | 6.4 | 27 | 1% | 6.6 |
| | **20-29 Years** | 126 | 8% | 22.1 | 150 | 7% | 26.2 | 95 | 6% | 16.5 | 116 | 6% | 19.9 | 94 | 5% | 16.1 |
| | **30-39 Years** | 178 | 11% | 28.1 | 192 | 9% | 30.5 | 129 | 8% | 20.7 | 155 | 8% | 24.8 | 153 | 8% | 24.5 |
| | **40-49 Years** | 129 | 8% | 20.3 | 181 | 9% | 28.1 | 139 | 9% | 21.3 | 145 | 8% | 21.9 | 165 | 8% | 24.9 |
| | **50 and over** | 68 | 4% | 5.3 | 77 | 4% | 5.9 | 79 | 5% | 5.9 | 65 | 4% | 4.7 | 97 | 5% | 7.0 |
| | **Unknown** | 0 | 0% | --- | 0 | 0% | --- | 0 | 0% | --- | 0 | 0% | --- | 0 | 0% | --- |
| | **Total** | **523** | **31%** | **12.4** | **638** | **31%** | **14.9** | **459** | **29%** | **10.6** | **509** | **28%** | **11.5** | **542** | **27%** | **12.3** |
| **Total** | **0-12 Years** | 8 | 0% | 0.5 | 9 | 0% | 0.6 | 4 | 0% | 0.3 | 8 | 0% | 0.5 | 7 | 0% | 0.5 |
| | **13-19 Years** | 49 | 3% | 6.3 | 58 | 3% | 7.3 | 35 | 2% | 4.3 | 78 | 4% | 9.3 | 82 | 4% | 9.8 |
| | **20-29 Years** | 361 | 22% | 30.3 | 403 | 20% | 33.6 | 352 | 22% | 29.1 | 383 | 21% | 31.3 | 449 | 22% | 36.6 |
| | **30-39 Years** | 594 | 35% | 46.6 | 655 | 32% | 51.6 | 473 | 30% | 37.5 | 556 | 30% | 44.0 | 570 | 28% | 45.1 |
| | **40-49 Years** | 458 | 27% | 36.7 | 607 | 30% | 48.0 | 478 | 30% | 37.3 | 555 | 30% | 42.6 | 588 | 29% | 45.2 |
| | **50 and over** | 207 | 12% | 8.9 | 306 | 15% | 12.9 | 261 | 16% | 10.7 | 266 | 14% | 10.6 | 326 | 16% | 12.9 |
| | **Unknown** | 0 | 0% | --- | 0 | 0% | --- | 0 | 0% | --- | 0 | 0% | --- | 0 | 0% | --- |
| | **Total** | **1,677** | **100%** | **20.2** | **2,038** | **100%** | **24.2** | **1,603** | **100%** | **18.8** | **1,846** | **100%** | **21.3** | **2,022** | **100%** | **23.3** |

*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† Reports
# Gender and Race/Ethnicity, 2002-2006

| Race/Ethnicity | | 2002 Cases | 2002 Pct | 2002 Rate* | 2003 Cases | 2003 Pct | 2003 Rate* | 2004 Cases | 2004 Pct | 2004 Rate* | 2005 Cases | 2005 Pct | 2005 Rate* | 2006 Cases | 2006 Pct | 2006 Rate* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Male** | **White**** | 329 | 20% | 11.6 | 428 | 21% | 14.9 | 355 | 22% | 12.3 | 423 | 23% | 14.4 | 406 | 20% | 13.9 |
| | **Black**** | 743 | 44% | 87.1 | 865 | 42% | 100.1 | 705 | 44% | 80.5 | 793 | 43% | 89.2 | 919 | 45% | 103.3 |
| | **Am.In/AN**** | 10 | 1% | 20.1 | 11 | 1% | 21.7 | 14 | 1% | 27.2 | 13 | 1% | 24.9 | 12 | 1% | 23.0 |
| | **Asian,PI**** | 8 | 0% | 11.7 | 12 | 1% | 16.5 | 4 | 0% | 5.2 | 7 | 0% | 8.7 | 14 | 1% | 17.4 |
| | **Hispanic** | 63 | 4% | 23.7 | 79 | 4% | 27.9 | 65 | 4% | 21.6 | 100 | 5% | 31.3 | 127 | 6% | 39.7 |
| | **Unknown** | 1 | 0% | --- | 5 | 0% | --- | 1 | 0% | --- | 1 | 0% | --- | 2 | 0% | --- |
| | **Total** | **1,154** | **69%** | **28.3** | **1,400** | **69%** | **33.8** | **1,144** | **71%** | **27.2** | **1,337** | **72%** | **31.3** | **1,480** | **73%** | **34.6** |
| **Female** | **White**** | 70 | 4% | 2.4 | 103 | 5% | 3.5 | 75 | 5% | 2.5 | 90 | 5% | 3.0 | 77 | 4% | 2.5 |
| | **Black**** | 415 | 25% | 43.3 | 489 | 24% | 50.3 | 347 | 22% | 35.2 | 378 | 20% | 37.8 | 422 | 21% | 42.2 |
| | **Am.In/AN**** | 5 | 0% | 9.6 | 5 | 0% | 9.4 | 4 | 0% | 7.4 | 9 | 0% | 16.5 | 0 | 0% | 0.0 |
| | **Asian,PI**** | 4 | 0% | 5.5 | 6 | 0% | 7.9 | 1 | 0% | 1.3 | 3 | 0% | 3.6 | 4 | 0% | 4.8 |
| | **Hispanic** | 29 | 2% | 15.6 | 35 | 2% | 17.4 | 32 | 2% | 14.7 | 29 | 2% | 12.4 | 38 | 2% | 16.3 |
| | **Unknown** | 0 | 0% | --- | 0 | 0% | --- | 0 | 0% | --- | 0 | 0% | --- | 1 | 0% | --- |
| | **Total** | **523** | **31%** | **12.4** | **638** | **31%** | **14.9** | **459** | **29%** | **10.6** | **509** | **28%** | **11.5** | **542** | **27%** | **12.3** |
| **Total** | **White**** | 399 | 24% | 6.9 | 531 | 26% | 9.1 | 430 | 27% | 7.3 | 513 | 28% | 8.6 | 483 | 24% | 8.1 |
| | **Black**** | 1,158 | 69% | 63.9 | 1,354 | 66% | 73.8 | 1,052 | 66% | 56.5 | 1,171 | 63% | 62.0 | 1,341 | 66% | 71.0 |
| | **Am.In/AN**** | 15 | 1% | 14.7 | 16 | 1% | 15.4 | 18 | 1% | 17.1 | 22 | 1% | 20.6 | 12 | 1% | 11.2 |
| | **Asian,PI**** | 12 | 1% | 8.5 | 18 | 1% | 12.1 | 5 | 0% | 3.2 | 10 | 1% | 6.1 | 18 | 1% | 11.0 |
| | **Hispanic** | 92 | 5% | 20.4 | 114 | 6% | 23.5 | 97 | 6% | 18.7 | 129 | 7% | 23.3 | 165 | 8% | 29.8 |
| | **Unknown** | 1 | 0% | --- | 5 | 0% | --- | 1 | 0% | --- | 1 | 0% | --- | 3 | 0% | --- |
| | **Total** | **1,677** | **100%** | **20.2** | **2,038** | **100%** | **24.2** | **1,603** | **100%** | **18.8** | **1,846** | **100%** | **21.3** | **2,022** | **100%** | **23.3** |

*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† Reports
# Mode of Transmission by Gender, 2002-2006

| Mode of Exposure | | 2002 | | 2003 | | 2004 | | 2005 | | 2006 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Cases | Pct | Cases | Pct | Cases | Pct | Cases | Pct | Cases | Pct |
| **Male** | **MSM*** | 520 | 31% | 614 | 30% | 558 | 35% | 656 | 36% | 686 | 34% |
| | **IDU*** | 100 | 6% | 93 | 5% | 73 | 5% | 62 | 3% | 42 | 2% |
| | **MSM/IDU** | 24 | 1% | 32 | 2% | 25 | 2% | 22 | 1% | 20 | 1% |
| | **Blood products*** | 17 | 1% | 24 | 1% | 10 | 1% | 9 | 0% | 8 | 0% |
| | **Heterosexual-CDC** | 113 | 7% | 137 | 7% | 122 | 8% | 107 | 6% | 88 | 4% |
| | **Pediatric** | 4 | 0% | 4 | 0% | 1 | 0% | 7 | 0% | 1 | 0% |
| | **Heterosexual-NIR*** | 151 | 9% | 164 | 8% | 115 | 7% | 145 | 8% | 137 | 7% |
| | **NIR*** | 225 | 13% | 332 | 16% | 240 | 15% | 329 | 18% | 498 | 25% |
| | **Total** | **1154** | **69%** | **1400** | **69%** | **1144** | **71%** | **1337** | **72%** | **1480** | **73%** |
| **Female** | **IDU*** | 30 | 2% | 46 | 2% | 41 | 3% | 35 | 2% | 27 | 1% |
| | **Blood products*** | 13 | 1% | 22 | 1% | 11 | 1% | 13 | 1% | 6 | 0% |
| | **Heterosexual-CDC** | 195 | 12% | 198 | 10% | 190 | 12% | 144 | 8% | 101 | 5% |
| | **Pediatric** | 4 | 0% | 5 | 0% | 3 | 0% | 2 | 0% | 6 | 0% |
| | **Heterosexual-NIR*** | 117 | 7% | 164 | 8% | 81 | 5% | 118 | 6% | 108 | 5% |
| | **NIR*** | 164 | 10% | 203 | 10% | 133 | 8% | 197 | 11% | 294 | 15% |
| | **Total** | **523** | **31%** | **638** | **31%** | **459** | **29%** | **509** | **28%** | **542** | **27%** |
| **Total** | **MSM*** | 520 | 31% | 614 | 30% | 558 | 35% | 656 | 36% | 686 | 34% |
| | **IDU*** | 130 | 8% | 139 | 7% | 114 | 7% | 97 | 5% | 69 | 3% |
| | **MSM/IDU** | 24 | 1% | 32 | 2% | 25 | 2% | 22 | 1% | 20 | 1% |
| | **Blood products*** | 30 | 2% | 46 | 2% | 21 | 1% | 22 | 1% | 14 | 1% |
| | **Heterosexual-CDC** | 308 | 18% | 335 | 16% | 312 | 19% | 251 | 14% | 189 | 9% |
| | **Pediatric** | 8 | 0% | 9 | 0% | 4 | 0% | 9 | 0% | 7 | 0% |
| | **Heterosexual-NIR*** | 389 | 23% | 535 | 26% | 373 | 23% | 526 | 28% | 792 | 39% |
| | **NIR*** | 389 | 23% | 535 | 26% | 373 | 23% | 526 | 28% | 792 | 39% |
| | **Total** | **1,677** | **100%** | **2,038** | **100%** | **1,603** | **100%** | **1846** | **100%** | **2,022** | **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 Adult/Adolescent HIV† Disease Reports
## Mode of Transmission by Gender (NIRs Redistributed), 2002-2006

| Mode of Exposure | | 2002 | | 2003 | | 2004 | | 2005 | | 2006 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Cases | Pct | Cases | Pct | Cases | Pct | Cases | Pct | Cases | Pct |
| **Male** | **MSM*** | 643 | 56% | 804 | 57% | 707 | 62% | 862 | 65% | 1019 | 69% |
| | **IDU*** | 125 | 11% | 123 | 9% | 92 | 8% | 83 | 6% | 66 | 4% |
| | **MSM/IDU** | 29 | 3% | 43 | 3% | 31 | 3% | 28 | 2% | 28 | 2% |
| | **Blood products*** | 21 | 2% | 31 | 2% | 13 | 1% | 12 | 1% | 13 | 1% |
| | **Heterosexual-All** | 331 | 29% | 395 | 28% | 300 | 26% | 343 | 26% | 353 | 24% |
| | **Total††** | **1149** | **100%** | **1396** | **100%** | **1143** | **100%** | **1328** | **100%** | **1479** | **100%** |
| **Female** | **IDU*** | 43 | 8% | 68 | 11% | 57 | 13% | 57 | 11% | 59 | 11% |
| | **Blood products*** | 19 | 4% | 32 | 5% | 15 | 3% | 21 | 4% | 14 | 3% |
| | **Heterosexual-All** | 457 | 88% | 534 | 84% | 382 | 84% | 430 | 85% | 463 | 86% |
| | **Total††** | 519 | 100% | 634 | 100% | 454 | 100% | 508 | 100% | 536 | 100% |
| **Total** | **MSM*** | 643 | 39% | 804 | 40% | 707 | 44% | 862 | 47% | 1019 | 51% |
| | **IDU*** | 168 | 10% | 191 | 9% | 149 | 9% | 140 | 8% | 125 | 6% |
| | **MSM/IDU*** | 29 | 2% | 43 | 2% | 31 | 2% | 28 | 2% | 28 | 1% |
| | **Blood products*** | 40 | 2% | 63 | 3% | 28 | 2% | 33 | 2% | 27 | 1% |
| | **Heterosexual-All** | 788 | 47% | 929 | 46% | 682 | 43% | 773 | 42% | 816 | 40% |
| | **Total††** | **1,668** | **100%** | **2,030** | **100%** | **1,597** | **100%** | **1,836** | **100%** | **2,015** | **100%** |

*MSM= men who have sex with men; IDU= intravenous drug use; "Blood products" includes adult hemophilia,
**NIR = No identified risk reported**

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

††Totals may not correspond to cases listed above due to redistribution of NIR cases **(Appendix C pg. C-5)**

## Table E: North Carolina Adult/Adolescent Female HIV Disease† Reports
## Mode of Transmission by Race/Ethnicity (NIRs* Redistributed), 2002-2006

| Mode of Exposure | | 2002 | | 2003 | | 2004 | | 2005 | | 2006 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Cases | Pct | Cases | Pct | Cases | Pct | Cases | Pct | Cases | Pct |
| White, NH* | IDU* | 8 | 11% | 25 | 24% | 18 | 25% | 19 | 21% | 25 | 33% |
| | Blood products* | 4 | 6% | 4 | 4% | 1 | 1% | 1 | 1% | 2 | 3% |
| | Heterosexual-All | 58 | 83% | 74 | 72% | 54 | 74% | 69 | 78% | 49 | 64% |
| | **Total††** | **70** | **100%** | **103** | **100%** | **73** | **100%** | **89** | **100%** | **76** | **100%** |
| Black, NH* | IDU* | 33 | 8% | 38 | 8% | 33 | 10% | 36 | 10% | 28 | 7% |
| | Blood products* | 13 | 3% | 28 | 6% | 12 | 3% | 14 | 4% | 9 | 2% |
| | Heterosexual-All | 366 | 89% | 420 | 86% | 300 | 87% | 328 | 87% | 380 | 91% |
| | **Total††** | **412** | **100%** | **486** | **100%** | **345** | **100%** | **378** | **100%** | **417** | **100%** |
| All Other | IDU* | 2 | 5% | 5 | 11% | 6 | 17% | 2 | 5% | 6 | 14% |
| | Blood products* | 2 | 5% | 0 | 0% | 2 | 6% | 6 | 15% | 3 | 7% |
| | Heterosexual-All | 33 | 89% | 40 | 89% | 28 | 78% | 33 | 80% | 34 | 79% |
| | **Total††** | **37** | **100%** | **45** | **100%** | **36** | **100%** | **41** | **100%** | **43** | **100%** |
| Total | IDU* | 43 | 8% | 68 | 11% | 57 | 13% | 57 | 11% | 59 | 11% |
| | Blood products* | 19 | 4% | 32 | 5% | 15 | 3% | 21 | 4% | 14 | 3% |
| | Heterosexual-All | 457 | 88% | 534 | 84% | 382 | 84% | 430 | 85% | 463 | 86% |
| | **Total††** | **519** | **100%** | **634** | **100%** | **454** | **100%** | **508** | **100%** | **536** | **100%** |

*NH = Non Hispanic; IDU= intravenous drug use; "Blood products" includes adult hemophilia; **NIR = No identified risk reported**

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

††Totals may not correspond to cases listed above due to redistribution of NIR cases **(See Appendix C pg. C-5)**

## Table F: North Carolina Adult/Adolescent Male HIV Disease† Reports
## Mode of Transmission by Race/Ethnicity (NIRs* Redistributed), 2002-2006

| Mode of Exposure | | 2002 | | 2003 | | 2004 | | 2005 | | 2006 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Cases | Pct | Cases | Pct | Cases | Pct | Cases | Pct | Cases | Pct |
| White, NH | MSM* | 255 | 78% | 328 | 77% | 288 | 81% | 356 | 85% | 348 | 86% |
| | IDU* | 25 | 8% | 21 | 5% | 25 | 7% | 12 | 3% | 12 | 3% |
| | MSM/IDU* | 8 | 2% | 17 | 4% | 11 | 3% | 16 | 4% | 14 | 3% |
| | Blood products* | 7 | 2% | 9 | 2% | 3 | 1% | 2 | 0% | 0 | 0% |
| | Heterosexual-All | 33 | 10% | 53 | 12% | 27 | 8% | 35 | 8% | 32 | 8% |
| | **Total††** | **328** | **100%** | **428** | **100%** | **354** | **100%** | **421** | **100%** | **406** | **100%** |
| Black, NH | MSM* | 340 | 46% | 427 | 49% | 363 | 51% | 438 | 56% | 576 | 63% |
| | IDU* | 93 | 13% | 86 | 10% | 62 | 9% | 64 | 8% | 43 | 5% |
| | MSM/IDU* | 20 | 3% | 20 | 2% | 19 | 3% | 11 | 1% | 14 | 2% |
| | Blood products* | 10 | 1% | 21 | 2% | 10 | 1% | 10 | 1% | 9 | 1% |
| | Heterosexual-All | 277 | 37% | 309 | 36% | 251 | 36% | 265 | 34% | 275 | 30% |
| | **Total††** | **740** | **100%** | **863** | **100%** | **705** | **100%** | **788** | **100%** | **917** | **100%** |
| All Other | MSM* | 48 | 59% | 49 | 47% | 56 | 67% | 68 | 57% | 95 | 61% |
| | IDU* | 7 | 9% | 16 | 15% | 5 | 6% | 7 | 6% | 11 | 7% |
| | MSM/IDU* | 1 | 1% | 6 | 6% | 1 | 1% | 1 | 1% | 0 | 0% |
| | Blood products* | 4 | 5% | 1 | 1% | 0 | 0% | 0 | 0% | 4 | 3% |
| | Heterosexual-All | 21 | 26% | 33 | 31% | 22 | 26% | 43 | 36% | 46 | 29% |
| | **Total††** | **81** | **100%** | **105** | **100%** | **84** | **100%** | **119** | **100%** | **156** | **100%** |
| Total | MSM* | 643 | 56% | 804 | 58% | 707 | 62% | 862 | 65% | 1019 | 69% |
| | IDU* | 125 | 11% | 123 | 9% | 92 | 8% | 83 | 6% | 66 | 4% |
| | MSM/IDU* | 29 | 3% | 43 | 3% | 31 | 3% | 28 | 2% | 28 | 2% |
| | Blood products* | 21 | 2% | 31 | 2% | 13 | 1% | 12 | 1% | 13 | 1% |
| | Heterosexual-All | 331 | 29% | 395 | 28% | 300 | 26% | 343 | 26% | 353 | 24% |
| | **Total††** | **1,149** | **100%** | **1,396** | **100%** | **1,143** | **100%** | **1,328** | **100%** | **1,479** | **100%** |

*NH=non Hispanic; MSM= men who have sex with men; IDU= intravenous drug use; "Blood products" includes adult hemophilia ,
**NIR = No identified risk reported**
†HIV Disease includes all newly reported HIV infected individuals by the date of first report (HIV or AIDS)
††Totals may not correspond to cases listed above due to redistribution of NIR cases **(See Appendix C pg. C-5)**

## Table G: North Carolina Adult/Adolescent HIV Disease† Cases Living as of 12/31/2006 Mode of Transmission by Gender, (NIRs* Redistributed)

| Mode of Exposure | | 2006 | |
|---|---|---|---|
| | | Cases | Pct |
| **Male** | **MSM*** | 7,469 | 55% |
| | **IDU*** | 1,918 | 14% |
| | **MSM/IDU** | 743 | 5% |
| | **Blood products*** | 222 | 2% |
| | **Heterosexual-All** | 3,275 | 24% |
| | **Total††** | **13,627** | **100%** |
| **Female** | **IDU*** | 1123 | 18% |
| | **Blood products*** | 260 | 4% |
| | **Heterosexual-All** | 4,807 | 78% |
| | **Total††** | **6,190** | **100%** |
| **Total** | **MSM*** | 7,469 | 38% |
| | **IDU*** | 3,041 | 15% |
| | **MSM/IDU** | 743 | 4% |
| | **Blood products*** | 482 | 2% |
| | **Heterosexual-All** | 8,082 | 41% |
| | **Total††** | **19,817** | **100%** |

*MSM= men who have sex with men; IDU= intravenous drug use; "Blood products" include adult hemophilia;
**NIR = No identified risk reported**
†HIV Disease includes all newly reported HIV infected individuals by the date of first report (HIV or AIDS)
††Totals may not correspond to cases listed above due to redistribution of NIR cases **(See Appendix C pg. C-5)**

## Table H: North Carolina HIV Disease† Reports Age 13-24 Years
## Mode of Transmission by Gender (NIRs* Redistributed), 2002-2006

| Mode of Exposure | | 2002 | | 2003 | | 2004 | | 2005 | | 2006 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Cases | Pct | Cases | Pct | Cases | Pct | Cases | Pct | Cases | Pct |
| Male | MSM* | 113 | 84% | 119 | 79% | 124 | 83% | 152 | 88% | 196 | 88% |
| | IDU* | 0 | 0% | 1 | 1% | 1 | 1% | 0 | 0% | 2 | 1% |
| | MSM/IDU | 4 | 3% | 1 | 1% | 3 | 2% | 0 | 0% | 2 | 1% |
| | Blood products* | 4 | 3% | 3 | 2% | 1 | 1% | 2 | 1% | 2 | 1% |
| | Heterosexual-All | 14 | 10% | 26 | 17% | 21 | 14% | 18 | 10% | 21 | 9% |
| | **Total††** | **135** | **100%** | **150** | **100%** | **150** | **100%** | **172** | **100%** | **223** | **100%** |
| Female | IDU* | 2 | 3% | 6 | 6% | 2 | 3% | 3 | 4% | 2 | 3% |
| | Blood products* | 0 | 0% | 1 | 1% | 0 | 0% | 3 | 4% | 0 | 0% |
| | Heterosexual-All | 75 | 97% | 87 | 93% | 60 | 97% | 67 | 92% | 66 | 97% |
| | **Total††** | **77** | **100%** | **94** | **100%** | **62** | **100%** | **73** | **100%** | **68** | **100%** |
| Total | MSM* | 113 | 53% | 119 | 49% | 124 | 58% | 152 | 62% | 196 | 67% |
| | IDU* | 2 | 1% | 7 | 3% | 3 | 1% | 3 | 1% | 4 | 1% |
| | MSM/IDU* | 4 | 2% | 1 | 0% | 3 | 1% | 0 | 0% | 2 | 1% |
| | Blood products* | 4 | 2% | 4 | 2% | 1 | 0% | 5 | 2% | 2 | 1% |
| | Heterosexual-All | 89 | 42% | 113 | 46% | 81 | 38% | 85 | 35% | 87 | 30% |
| | **Total††** | **211** | **100%** | **244** | **100%** | **213** | **100%** | **244** | **100%** | **291** | **100%** |

*MSM= men who have sex with men; IDU= intravenous drug use; "Blood products" includes adult hemophilia;
**NIR = No identified risk reported**
†HIV Disease includes all newly reported HIV infected individuals by the date of first report (HIV or AIDS)
††Totals may not correspond to cases listed above due to redistribution of NIR cases **(See Appendix C pg. C-5)**

## Table I: North Carolina HIV Disease† Reports Age 13-24 Years Gender and Race/Ethnicity, 2002-2006

| Race/Ethnicity | | 2002 Cases | 2002 Pct | 2002 Rate* | 2003 Cases | 2003 Pct | 2003 Rate* | 2004 Cases | 2004 Pct | 2004 Rate* | 2005 Cases | 2005 Pct | 2005 Rate* | 2006 Cases | 2006 Pct | 2006 Rate* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Male** | **White**** | 28 | 13% | 6.2 | 27 | 11% | 5.9 | 23 | 11% | 4.9 | 24 | 10% | 5.1 | 31 | 11% | 6.6 |
| | **Black**** | 94 | 45% | 53.8 | 109 | 45% | 60.6 | 116 | 54% | 63.3 | 134 | 55% | 72.0 | 172 | 59% | 92.5 |
| | **All Other***** | 12 | 6% | 13.3 | 14 | 6% | 15.7 | 12 | 6% | 13.5 | 14 | 6% | 15.9 | 20 | 7% | 22.7 |
| | **Total** | **134** | **64%** | **18.6** | **150** | **61%** | **20.6** | **151** | **71%** | **20.5** | **172** | **70%** | **23.1** | **223** | **77%** | **30.0** |
| **Female** | **White**** | 14 | 7% | 3.3 | 13 | 5% | 3.0 | 9 | 4% | 2.1 | 10 | 4% | 2.3 | 11 | 4% | 2.5 |
| | **Black**** | 54 | 26% | 30.7 | 69 | 28% | 38.3 | 48 | 23% | 26.2 | 52 | 21% | 27.9 | 49 | 17% | 26.3 |
| | **All Other***** | 9 | 4% | 14.2 | 12 | 5% | 18.4 | 5 | 2% | 7.5 | 10 | 4% | 14.7 | 8 | 3% | 11.7 |
| | **Total** | **77** | **36%** | **11.6** | **94** | **39%** | **13.9** | **62** | **29%** | **9.1** | **72** | **30%** | **10.4** | **68** | **23%** | **9.8** |
| **Total** | **White**** | 42 | 20% | 4.8 | 40 | 16% | 4.5 | 32 | 15% | 3.6 | 34 | 14% | 3.8 | 42 | 14% | 4.6 |
| | **Black**** | 148 | 70% | 42.2 | 178 | 73% | 49.5 | 164 | 77% | 44.8 | 186 | 76% | 50.0 | 221 | 76% | 59.4 |
| | **All Other***** | 21 | 10% | 13.7 | 26 | 11% | 16.8 | 17 | 8% | 10.9 | 24 | 10% | 15.4 | 28 | 10% | 17.9 |
| | **Total** | **211** | **100%** | **15.3** | **244** | **100%** | **17.4** | **213** | **100%** | **15.0** | **244** | **100%** | **17.0** | **291** | **100%** | **20.3** |

*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 Reports by County of Residence, 1983-2006

| COUNTY | 83-90 | 91-96 | 97-01 | 2002 | 2003 | 2004 | 2005 | 2006 | CUMULATIVE |
|---|---|---|---|---|---|---|---|---|---|
| ALAMANCE | 23 | 134 | 77 | 17 | 26 | 21 | 29 | 17 | 344 |
| ALEXANDER | 1 | 12 | 5 | 5 | 1 | 3 | 7 | 2 | 36 |
| ANSON | 4 | 60 | 25 | 4 | 4 | 3 | 1 | 9 | 110 |
| ASHE | 0 | 3 | 2 | 0 | 0 | 1 | 0 | 2 | 8 |
| AVERY | 2 | 3 | 3 | 1 | 0 | 0 | 0 | 0 | 9 |
| BEAUFORT | 19 | 65 | 43 | 5 | 6 | 5 | 10 | 7 | 160 |
| BERTIE | 8 | 27 | 43 | 5 | 2 | 9 | 7 | 3 | 104 |
| BLADEN | 7 | 34 | 26 | 4 | 12 | 5 | 4 | 7 | 99 |
| BRUNSWICK | 8 | 50 | 45 | 7 | 20 | 16 | 10 | 9 | 165 |
| BUNCOMBE | 38 | 297 | 173 | 29 | 24 | 21 | 23 | 25 | 630 |
| BURKE | 8 | 38 | 21 | 4 | 5 | 1 | 9 | 2 | 88 |
| CABARRUS | 22 | 97 | 52 | 17 | 19 | 6 | 19 | 13 | 245 |
| CALDWELL | 5 | 41 | 11 | 3 | 4 | 2 | 7 | 3 | 76 |
| CAMDEN | 0 | 6 | 6 | 3 | 1 | 0 | 3 | 1 | 20 |
| CARTERET | 12 | 39 | 9 | 2 | 7 | 6 | 0 | 3 | 78 |
| CASWELL | 0 | 14 | 6 | 2 | 5 | 1 | 0 | 2 | 30 |
| CATAWBA | 20 | 81 | 57 | 18 | 21 | 9 | 10 | 16 | 232 |
| CHATHAM | 5 | 36 | 19 | 3 | 6 | 6 | 3 | 0 | 78 |
| CHEROKEE | 1 | 9 | 2 | 1 | 1 | 0 | 2 | 2 | 18 |
| CHOWAN | 4 | 18 | 8 | 2 | 2 | 1 | 3 | 0 | 38 |
| CLAY | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 6 |
| CLEVELAND | 21 | 109 | 64 | 9 | 15 | 20 | 26 | 9 | 273 |
| COLUMBUS | 18 | 84 | 65 | 8 | 23 | 8 | 18 | 13 | 237 |
| CRAVEN | 30 | 126 | 77 | 20 | 26 | 12 | 18 | 28 | 337 |
| CUMBERLAND | 124 | 574 | 311 | 59 | 94 | 71 | 78 | 114 | 1,425 |
| CURRITUCK | 2 | 7 | 5 | 2 | 2 | 1 | 1 | 2 | 22 |
| DARE | 5 | 14 | 14 | 2 | 3 | 7 | 1 | 2 | 48 |
| DAVIDSON | 24 | 101 | 61 | 16 | 14 | 16 | 20 | 13 | 265 |
| DAVIE | 4 | 18 | 13 | 2 | 0 | 1 | 3 | 2 | 43 |
| DUPLIN | 14 | 70 | 52 | 13 | 21 | 16 | 15 | 13 | 214 |
| DURHAM | 173 | 782 | 441 | 118 | 93 | 74 | 112 | 103 | 1,896 |
| EDGECOMBE | 17 | 135 | 85 | 21 | 41 | 23 | 18 | 28 | 368 |
| FORSYTH | 137 | 508 | 437 | 93 | 138 | 93 | 97 | 91 | 1,594 |
| FRANKLIN | 11 | 40 | 35 | 6 | 7 | 5 | 7 | 16 | 127 |
| GASTON | 59 | 328 | 165 | 34 | 40 | 20 | 32 | 34 | 712 |
| GATES | 0 | 3 | 3 | 1 | 2 | 0 | 0 | 1 | 10 |
| GRAHAM | 0 | 2 | 1 | 0 | 0 | 1 | 0 | 0 | 4 |
| GRANVILLE | 18 | 77 | 55 | 10 | 23 | 13 | 20 | 11 | 227 |
| GREENE | 3 | 40 | 31 | 4 | 2 | 3 | 4 | 6 | 93 |
| GUILFORD | 158 | 871 | 605 | 149 | 112 | 119 | 122 | 154 | 2,290 |
| HALIFAX | 21 | 115 | 78 | 6 | 10 | 7 | 10 | 9 | 256 |
| HARNETT | 14 | 87 | 49 | 12 | 13 | 13 | 9 | 21 | 218 |
| HAYWOOD | 6 | 28 | 13 | 4 | 0 | 2 | 9 | 1 | 63 |
| HENDERSON | 12 | 48 | 37 | 7 | 3 | 3 | 4 | 3 | 117 |
| HERTFORD | 11 | 35 | 29 | 14 | 13 | 15 | 13 | 87 | 217 |
| HOKE | 8 | 49 | 40 | 2 | 8 | 1 | 7 | 14 | 129 |
| HYDE | 0 | 3 | 2 | 0 | 3 | 2 | 1 | 0 | 11 |
| IREDELL | 14 | 69 | 31 | 17 | 13 | 9 | 14 | 13 | 180 |
| JACKSON | 2 | 9 | 5 | 0 | 0 | 1 | 2 | 5 | 24 |
| JOHNSTON | 27 | 144 | 95 | 27 | 23 | 12 | 23 | 29 | 380 |

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

## Table J (continued): HIV Disease† Cumulative Reports by County of Residence, 1983-2006

| COUNTY | 83-90 | 91-96 | 97-01 | 2002 | 2003 | 2004 | 2005 | 2006 | CUMULATIVE |
|---|---|---|---|---|---|---|---|---|---|
| JONES | 0 | 11 | 4 | 5 | 1 | 2 | 1 | 0 | 24 |
| LEE | 10 | 52 | 57 | 11 | 9 | 12 | 6 | 11 | 168 |
| LENOIR | 26 | 162 | 113 | 17 | 23 | 12 | 26 | 25 | 404 |
| LINCOLN | 4 | 25 | 20 | 5 | 8 | 5 | 3 | 2 | 72 |
| MACON | 1 | 12 | 9 | 0 | 1 | 3 | 4 | 2 | 32 |
| MADISON | 1 | 8 | 6 | 0 | 1 | 1 | 0 | 2 | 19 |
| MARTIN | 4 | 38 | 30 | 7 | 11 | 5 | 8 | 8 | 111 |
| MCDOWELL | 5 | 14 | 10 | 2 | 1 | 1 | 2 | 4 | 39 |
| MECKLENBURG | 462 | 1,962 | 1,168 | 306 | 436 | 349 | 329 | 390 | 5,402 |
| MITCHELL | 1 | 6 | 3 | 1 | 1 | 0 | 1 | 0 | 13 |
| MONTGOMERY | 4 | 22 | 16 | 0 | 1 | 6 | 4 | 1 | 54 |
| MOORE | 17 | 52 | 48 | 19 | 11 | 7 | 16 | 12 | 182 |
| NASH | 22 | 150 | 100 | 17 | 19 | 12 | 26 | 27 | 373 |
| NEW HANOVER | 51 | 273 | 223 | 47 | 57 | 47 | 64 | 57 | 819 |
| NORTHAMPTON | 8 | 38 | 26 | 2 | 6 | 3 | 4 | 4 | 91 |
| ONSLOW | 30 | 88 | 71 | 19 | 18 | 14 | 16 | 14 | 270 |
| ORANGE | 42 | 120 | 69 | 11 | 16 | 16 | 16 | 23 | 313 |
| PAMLICO | 3 | 11 | 7 | 1 | 4 | 0 | 3 | 2 | 31 |
| PASQUOTANK | 5 | 39 | 27 | 6 | 10 | 6 | 3 | 12 | 108 |
| PENDER | 9 | 42 | 15 | 3 | 7 | 5 | 5 | 5 | 91 |
| PERQUIMANS | 1 | 10 | 14 | 4 | 2 | 0 | 3 | 1 | 35 |
| PERSON | 4 | 36 | 20 | 7 | 6 | 7 | 0 | 2 | 82 |
| PITT | 45 | 304 | 166 | 49 | 36 | 23 | 38 | 23 | 684 |
| POLK | 1 | 13 | 9 | 1 | 3 | 1 | 0 | 0 | 28 |
| RANDOLPH | 12 | 55 | 36 | 16 | 19 | 9 | 8 | 11 | 166 |
| RICHMOND | 4 | 78 | 39 | 2 | 10 | 4 | 10 | 11 | 158 |
| ROBESON | 21 | 179 | 129 | 17 | 32 | 33 | 41 | 26 | 478 |
| ROCKINGHAM | 9 | 80 | 43 | 11 | 4 | 13 | 8 | 4 | 172 |
| ROWAN | 23 | 143 | 70 | 13 | 18 | 23 | 23 | 16 | 329 |
| RUTHERFORD | 12 | 33 | 29 | 2 | 1 | 5 | 4 | 7 | 93 |
| SAMPSON | 16 | 95 | 52 | 9 | 9 | 5 | 13 | 18 | 217 |
| SCOTLAND | 6 | 78 | 38 | 4 | 6 | 13 | 11 | 6 | 162 |
| STANLY | 8 | 34 | 32 | 6 | 1 | 8 | 1 | 3 | 93 |
| STOKES | 2 | 9 | 8 | 1 | 2 | 3 | 5 | 2 | 32 |
| SURRY | 5 | 24 | 17 | 5 | 4 | 6 | 10 | 1 | 72 |
| SWAIN | 5 | 7 | 7 | 1 | 4 | 0 | 2 | 0 | 26 |
| TRANSYLVANIA | 5 | 14 | 10 | 2 | 5 | 0 | 2 | 2 | 40 |
| TYRRELL | 2 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 7 |
| UNION | 14 | 76 | 51 | 11 | 13 | 8 | 7 | 8 | 188 |
| VANCE | 18 | 93 | 61 | 9 | 22 | 15 | 7 | 8 | 233 |
| WAKE | 304 | 956 | 691 | 166 | 223 | 180 | 208 | 257 | 2,985 |
| WARREN | 5 | 10 | 17 | 4 | 6 | 3 | 2 | 4 | 51 |
| WASHINGTON | 3 | 38 | 21 | 3 | 3 | 2 | 8 | 2 | 80 |
| WATAUGA | 4 | 5 | 1 | 0 | 5 | 0 | 5 | 3 | 23 |
| WAYNE | 45 | 157 | 119 | 37 | 23 | 22 | 23 | 27 | 453 |
| WILKES | 3 | 12 | 8 | 2 | 2 | 5 | 3 | 2 | 37 |
| WILSON | 41 | 196 | 126 | 26 | 21 | 17 | 31 | 24 | 482 |
| YADKIN | 3 | 9 | 7 | 1 | 4 | 3 | 3 | 3 | 33 |
| YANCEY | 1 | 7 | 3 | 0 | 1 | 1 | 0 | 0 | 13 |
| UNKNOWN | 4 | 17 | 13 | 0 | 4 | 3 | 1 | 4 | 46 |
| **NC TOTAL** | **2,451** | **11,436** | **7,395** | **1,677** | **2,038** | **1,603** | **1,846** | **2,022** | **30,468** |

†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*), 2004-2006

| COUNTY | 2004 | 2005 | 2006 | 2004 | 2005 | 2006 | AVG | RANK |
|---|---|---|---|---|---|---|---|---|
| HERTFORD | 15 | 13 | 87 | 63.9 | 55.1 | 369.1 | 162.7 | 1 |
| MECKLENBURG | 349 | 329 | 390 | 45.2 | 41.3 | 49.0 | 45.2 | 2 |
| EDGECOMBE | 23 | 18 | 28 | 42.3 | 33.3 | 51.7 | 42.4 | 3 |
| DURHAM | 74 | 112 | 103 | 30.9 | 46.2 | 42.5 | 39.8 | 4 |
| LENOIR | 12 | 26 | 25 | 20.6 | 44.9 | 43.1 | 36.2 | 5 |
| BERTIE | 9 | 7 | 3 | 46.2 | 35.9 | 15.4 | 32.5 | 6 |
| WILSON | 17 | 31 | 24 | 22.4 | 40.6 | 31.5 | 31.5 | 7 |
| NEW HANOVER | 47 | 64 | 57 | 27.1 | 35.6 | 31.7 | 31.5 | 7 |
| WASHINGTON | 2 | 8 | 2 | 15.0 | 60.2 | 15.1 | 30.1 | 9 |
| GUILFORD | 119 | 122 | 154 | 27.2 | 27.5 | 34.7 | 29.8 | 10 |
| WAKE | 180 | 208 | 257 | 25.0 | 27.8 | 34.3 | 29.0 | 11 |
| FORSYTH | 93 | 97 | 91 | 29.0 | 29.8 | 27.9 | 28.9 | 12 |
| CUMBERLAND | 71 | 78 | 114 | 23.1 | 25.6 | 37.4 | 28.7 | 13 |
| MARTIN | 5 | 8 | 8 | 20.1 | 32.5 | 32.5 | 28.3 | 14 |
| DUPLIN | 16 | 15 | 13 | 31.0 | 28.9 | 25.0 | 28.3 | 14 |
| GRANVILLE | 13 | 20 | 11 | 24.6 | 37.3 | 20.5 | 27.4 | 16 |
| SCOTLAND | 13 | 11 | 6 | 35.1 | 29.6 | 16.1 | 26.9 | 17 |
| ROBESON | 33 | 41 | 26 | 26.1 | 32.1 | 20.4 | 26.2 | 18 |
| COLUMBUS | 8 | 18 | 13 | 14.6 | 32.9 | 23.7 | 23.8 | 19 |
| NASH | 12 | 26 | 27 | 13.2 | 28.5 | 29.5 | 23.7 | 20 |
| VANCE | 15 | 7 | 8 | 34.3 | 16.0 | 18.3 | 22.9 | 21 |
| GREENE | 3 | 4 | 6 | 14.9 | 20.0 | 30.0 | 21.6 | 22 |
| CRAVEN | 12 | 18 | 28 | 13.2 | 19.8 | 30.8 | 21.3 | 23 |
| **NORTH CAROLINA** | **1603** | **1846** | **2022** | **18.8** | **21.3** | **23.3** | **21.1** | |
| WAYNE | 22 | 23 | 27 | 19.3 | 20.1 | 23.6 | 21.0 | 24 |
| PITT | 23 | 38 | 23 | 16.4 | 26.7 | 16.1 | 19.7 | 25 |
| SAMPSON | 5 | 13 | 18 | 8.0 | 20.6 | 28.5 | 19.1 | 26 |
| CLEVELAND | 20 | 26 | 9 | 20.4 | 26.5 | 9.2 | 18.7 | 27 |
| PASQUOTANK | 6 | 3 | 12 | 16.2 | 7.8 | 31.4 | 18.5 | 28 |
| HYDE | 2 | 1 | 0 | 36.5 | 18.5 | 0.0 | 18.3 | 29 |
| HOKE | 1 | 7 | 14 | 2.6 | 17.1 | 34.1 | 17.9 | 30 |
| RICHMOND | 4 | 10 | 11 | 8.6 | 21.4 | 23.5 | 17.8 | 31 |
| LEE | 12 | 6 | 11 | 22.1 | 10.8 | 19.7 | 17.5 | 32 |
| FRANKLIN | 5 | 7 | 16 | 9.4 | 12.9 | 29.4 | 17.2 | 33 |
| NORTHAMPTON | 3 | 4 | 4 | 14.0 | 18.6 | 18.6 | 17.1 | 34 |
| ANSON | 3 | 1 | 9 | 11.7 | 3.9 | 35.3 | 17.0 | 35 |
| BLADEN | 5 | 4 | 7 | 15.2 | 12.1 | 21.3 | 16.2 | 36 |
| ALAMANCE | 21 | 29 | 17 | 15.2 | 20.6 | 12.1 | 16.0 | 37 |
| BEAUFORT | 5 | 10 | 7 | 11.0 | 21.7 | 15.2 | 16.0 | 37 |
| ORANGE | 16 | 16 | 23 | 13.7 | 13.5 | 19.4 | 15.5 | 39 |
| HALIFAX | 7 | 10 | 9 | 12.5 | 17.8 | 16.1 | 15.5 | 40 |
| ROWAN | 23 | 23 | 16 | 17.2 | 17.0 | 11.8 | 15.3 | 41 |
| WARREN | 3 | 2 | 4 | 15.1 | 10.1 | 20.3 | 15.2 | 42 |
| CAMDEN | 0 | 3 | 1 | 0.0 | 33.5 | 11.2 | 14.9 | 43 |
| JOHNSTON | 12 | 23 | 29 | 8.5 | 15.7 | 19.8 | 14.7 | 44 |
| GASTON | 20 | 32 | 34 | 10.3 | 16.3 | 17.3 | 14.7 | 44 |
| MOORE | 7 | 16 | 12 | 8.7 | 19.6 | 14.7 | 14.3 | 46 |
| HARNETT | 13 | 9 | 21 | 12.8 | 8.7 | 20.3 | 13.9 | 47 |
| BRUNSWICK | 16 | 10 | 9 | 18.9 | 11.2 | 10.1 | 13.4 | 48 |
| MONTGOMERY | 6 | 4 | 1 | 22.0 | 14.6 | 3.7 | 13.4 | 48 |
| PAMLICO | 0 | 3 | 2 | 0.0 | 23.6 | 15.7 | 13.1 | 50 |

†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*), 2004-2006

| COUNTY | 2004 | 2005 | 2006 | 2004 | 2005 | 2006 | AVG | RANK |
|---|---|---|---|---|---|---|---|---|
| ALEXANDER | 3 | 7 | 2 | 8.5 | 19.7 | 5.6 | 11.3 | 51 |
| PERQUIMANS | 0 | 3 | 1 | 0.0 | 24.8 | 8.3 | 11.0 | 52 |
| PENDER | 5 | 5 | 5 | 11.1 | 10.8 | 10.8 | 10.9 | 53 |
| BUNCOMBE | 21 | 23 | 25 | 9.7 | 10.5 | 11.4 | 10.6 | 54 |
| DAVIDSON | 16 | 20 | 13 | 10.4 | 12.9 | 8.4 | 10.6 | 54 |
| CLAY | 1 | 1 | 1 | 10.5 | 10.2 | 10.2 | 10.3 | 56 |
| DARE | 7 | 1 | 2 | 20.8 | 2.9 | 5.9 | 9.9 | 57 |
| ONSLOW | 14 | 16 | 14 | 9.1 | 10.5 | 9.2 | 9.6 | 58 |
| JONES | 2 | 1 | 0 | 19.2 | 9.7 | 0.0 | 9.6 | 58 |
| MACON | 3 | 4 | 2 | 9.5 | 12.4 | 6.2 | 9.4 | 60 |
| CHOWAN | 1 | 3 | 0 | 6.9 | 20.6 | 0.0 | 9.2 | 61 |
| ROCKINGHAM | 13 | 8 | 4 | 14.1 | 8.6 | 4.3 | 9.0 | 62 |
| IREDELL | 9 | 14 | 13 | 6.6 | 9.9 | 9.2 | 8.6 | 63 |
| CABARRUS | 6 | 19 | 13 | 4.1 | 12.6 | 8.7 | 8.5 | 64 |
| RUTHERFORD | 5 | 4 | 7 | 7.9 | 6.3 | 11.0 | 8.4 | 65 |
| PERSON | 7 | 0 | 2 | 19.0 | 0.0 | 5.4 | 8.1 | 66 |
| YADKIN | 3 | 3 | 3 | 8.0 | 8.0 | 8.0 | 8.0 | 67 |
| SURRY | 6 | 10 | 1 | 8.3 | 13.8 | 1.4 | 7.8 | 68 |
| CATAWBA | 9 | 10 | 16 | 6.0 | 6.6 | 10.6 | 7.7 | 69 |
| JACKSON | 1 | 2 | 5 | 2.8 | 5.7 | 14.1 | 7.5 | 70 |
| STOKES | 3 | 5 | 2 | 6.6 | 10.9 | 4.4 | 7.3 | 71 |
| HAYWOOD | 2 | 9 | 1 | 3.6 | 15.9 | 1.8 | 7.1 | 72 |
| RANDOLPH | 9 | 8 | 11 | 6.6 | 5.8 | 7.9 | 6.8 | 73 |
| STANLY | 8 | 1 | 3 | 13.6 | 1.7 | 5.1 | 6.8 | 73 |
| WATAUGA | 0 | 5 | 3 | 0.0 | 11.8 | 7.1 | 6.3 | 75 |
| CURRITUCK | 1 | 1 | 2 | 4.5 | 4.3 | 8.7 | 5.8 | 76 |
| MCDOWELL | 1 | 2 | 4 | 2.3 | 4.6 | 9.3 | 5.4 | 77 |
| CHEROKEE | 0 | 2 | 2 | 0.0 | 7.8 | 7.8 | 5.2 | 78 |
| CHATHAM | 6 | 3 | 0 | 10.6 | 5.2 | 0.0 | 5.2 | 78 |
| DAVIE | 1 | 3 | 2 | 2.6 | 7.7 | 5.1 | 5.1 | 80 |
| CALDWELL | 2 | 7 | 3 | 2.5 | 8.8 | 3.8 | 5.1 | 80 |
| SWAIN | 0 | 2 | 0 | 0.0 | 15.2 | 0.0 | 5.1 | 80 |
| MADISON | 1 | 0 | 2 | 5.0 | 0.0 | 9.9 | 5.0 | 83 |
| WILKES | 5 | 3 | 2 | 7.5 | 4.5 | 3.0 | 5.0 | 83 |
| UNION | 8 | 7 | 8 | 5.2 | 4.3 | 4.9 | 4.8 | 85 |
| CARTERET | 6 | 0 | 3 | 9.7 | 0.0 | 4.8 | 4.8 | 85 |
| LINCOLN | 5 | 3 | 2 | 7.3 | 4.3 | 2.9 | 4.8 | 85 |
| TRANSYLVANIA | 0 | 2 | 2 | 0.0 | 6.8 | 6.8 | 4.5 | 88 |
| BURKE | 1 | 9 | 2 | 1.1 | 10.1 | 2.2 | 4.5 | 88 |
| CASWELL | 1 | 0 | 2 | 4.2 | 0.0 | 8.5 | 4.2 | 90 |
| GRAHAM | 1 | 0 | 0 | 12.4 | 0.0 | 0.0 | 4.1 | 91 |
| ASHE | 1 | 0 | 2 | 4.0 | 0.0 | 7.9 | 3.9 | 92 |
| HENDERSON | 3 | 4 | 3 | 3.1 | 4.1 | 3.1 | 3.4 | 93 |
| GATES | 0 | 0 | 1 | 0.0 | 0.0 | 8.9 | 3.0 | 94 |
| MITCHELL | 0 | 1 | 0 | 0.0 | 6.3 | 0.0 | 2.1 | 95 |
| YANCEY | 1 | 0 | 0 | 5.5 | 0.0 | 0.0 | 1.8 | 96 |
| POLK | 1 | 0 | 0 | 5.3 | 0.0 | 0.0 | 1.8 | 96 |
| ALLEGHANY | 0 | 0 | 0 | 0.0 | 0.0 | 0.0 | 0.0 | 98 |
| AVERY | 0 | 0 | 0 | 0.0 | 0.0 | 0.0 | 0.0 | 98 |
| TYRRELL | 0 | 0 | 0 | 0.0 | 0.0 | 0.0 | 0.0 | 98 |

†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 12/31/06, by County of Residence and Consortia

| NC Consortia | County of Residence | Report Category | | TOTAL |
|---|---|---|---|---|
| | | HIV (NON AIDS) | AIDS | |
| **CHARLOTTE TRANSITION** | ANSON | 32 | 40 | 72 |
| | CABARRUS | 99 | 60 | 159 |
| | GASTON | 278 | 142 | 420 |
| | MECKLENBURG | 2366 | 1166 | 3532 |
| | UNION | 68 | 47 | 115 |
| | **TOTAL** | 2843 | 1455 | 4298 |
| **COASTAL** | BRUNSWICK | 61 | 50 | 111 |
| | COLUMBUS | 85 | 65 | 150 |
| | DUPLIN | 67 | 78 | 145 |
| | NEW HANOVER | 335 | 237 | 572 |
| | ONSLOW | 107 | 77 | 184 |
| | PENDER | 26 | 31 | 57 |
| | **TOTAL** | 681 | 538 | 1219 |
| **DOGWOOD** | BLADEN | 31 | 31 | 62 |
| | CUMBERLAND | 611 | 314 | 925 |
| | HARNETT | 81 | 74 | 155 |
| | HOKE | 43 | 49 | 92 |
| | MOORE | 84 | 36 | 120 |
| | RICHMOND | 66 | 28 | 94 |
| | ROBESON | 178 | 167 | 345 |
| | SAMPSON | 79 | 53 | 132 |
| | SCOTLAND | 70 | 39 | 109 |
| | **TOTAL** | 1243 | 791 | 2034 |
| **E. C. HIV/AIDS Partnership** | BEAUFORT | 48 | 46 | 94 |
| | BERTIE | 24 | 42 | 66 |
| | CAMDEN | 3 | 10 | 13 |
| | CARTERET | 22 | 19 | 41 |
| | CHOWAN | 16 | 13 | 29 |
| | CRAVEN | 130 | 109 | 239 |
| | CURRITUCK | 6 | 7 | 13 |
| | DARE | 18 | 14 | 32 |
| | EDGECOMBE | 136 | 122 | 258 |
| | GATES | 4 | 4 | 8 |

†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 12/31/06, by County of Residence and Consortia**

| NC Consortia | County of Residence | Report Category | | TOTAL |
|---|---|---|---|---|
| | | HIV (NON AIDS) | AIDS | |
| **E. C. HIV/AIDS Part..(Cont..)** | GREENE | 30 | 39 | 69 |
| | HALIFAX | 68 | 70 | 138 |
| | HERTFORD | 107 | 64 | 171 |
| | HYDE | 2 | 7 | 9 |
| | JONES | 10 | 6 | 16 |
| | LENOIR | 141 | 112 | 253 |
| | MARTIN | 39 | 37 | 76 |
| | NASH | 134 | 107 | 241 |
| | NORTHAMPTON | 21 | 32 | 53 |
| | PAMLICO | 11 | 8 | 19 |
| | PASQUOTANK | 41 | 33 | 74 |
| | PERQUIMANS | 16 | 11 | 27 |
| | PITT | 226 | 209 | 435 |
| | TYRRELL | 3 | 1 | 4 |
| | WASHINGTON | 22 | 27 | 49 |
| | WAYNE | 133 | 132 | 265 |
| | WILSON | 149 | 148 | 297 |
| | **TOTAL** | 1560 | 1429 | 2989 |
| **EASTERN TRIAD** | ALAMANCE | 153 | 80 | 233 |
| | CASWELL | 14 | 7 | 21 |
| | GUILFORD | 992 | 480 | 1472 |
| | MONTGOMERY | 19 | 21 | 40 |
| | RANDOLPH | 74 | 41 | 115 |
| | ROCKINGHAM | 76 | 36 | 112 |
| | **TOTAL** | 1328 | 665 | 1993 |
| **NORTHWEST** | ALEXANDER | 16 | 13 | 29 |
| | ALLEGHANY | 0 | 0 | 0 |
| | ASHE | 2 | 4 | 6 |
| | BURKE | 31 | 34 | 65 |
| | CALDWELL | 28 | 18 | 46 |
| | CATAWBA | 73 | 73 | 146 |
| | DAVIDSON | 113 | 60 | 173 |
| | DAVIE | 16 | 13 | 29 |
| | FORSYTH | 716 | 350 | 1066 |
| | STOKES | 16 | 10 | 26 |
| | SURRY | 34 | 15 | 49 |
| | WATAUGA | 6 | 9 | 15 |
| | WILKES | 12 | 11 | 23 |
| | YADKIN | 13 | 13 | 26 |
| | **TOTAL** | 1076 | 623 | 1699 |

†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 12/31/06, by County of Residence and Consortia

| NC Consortia | County of Residence | Report Category | | TOTAL |
|---|---|---|---|---|
| | | HIV (NON AIDS) | AIDS | |
| **PIEDMONT** | CHATHAM | 35 | 15 | 50 |
| | DURHAM | 756 | 414 | 1170 |
| | FRANKLIN | 46 | 39 | 85 |
| | GRANVILLE | 102 | 56 | 158 |
| | JOHNSTON | 143 | 118 | 261 |
| | LEE | 93 | 39 | 132 |
| | ORANGE | 146 | 61 | 207 |
| | PERSON | 38 | 15 | 53 |
| | VANCE | 80 | 65 | 145 |
| | WAKE | 1110 | 991 | 2101 |
| | WARREN | 19 | 14 | 33 |
| | **TOTAL** | 2568 | 1827 | 4395 |
| **REGIONAL** | CLEVELAND | 105 | 63 | 169 |
| | IREDELL | 59 | 46 | 105 |
| | LINCOLN | 28 | 24 | 52 |
| | ROWAN | 124 | 94 | 218 |
| | STANLY | 46 | 15 | 61 |
| | **TOTAL** | 362 | 242 | 604 |
| **WNCHAC** | AVERY | 4 | 2 | 6 |
| | BUNCOMBE | 207 | 197 | 404 |
| | CHEROKEE | 7 | 4 | 11 |
| | CLAY | 3 | 0 | 3 |
| | GRAHAM | 1 | 2 | 3 |
| | HAYWOOD | 13 | 26 | 39 |
| | HENDERSON | 24 | 39 | 63 |
| | JACKSON | 8 | 12 | 20 |
| | MACON | 9 | 13 | 22 |
| | MADISON | 9 | 4 | 13 |
| | MCDOWELL | 11 | 19 | 30 |
| | MITCHELL | 5 | 4 | 9 |
| | POLK | 6 | 10 | 16 |
| | RUTHERFORD | 28 | 28 | 56 |
| | SWAIN | 4 | 11 | 15 |
| | TRANSYLVANIA | 15 | 8 | 23 |
| | YANCEY | 1 | 6 | 7 |
| | **TOTAL** | 355 | 385 | 740 |
| **MISSING** | | 20 | 5 | 25 |
| **TOTAL** | | **12,036** | **7,960** | **19,996** |

†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, 2002-2006

| Age | | 2002 | 2002 | 2002 | 2003 | 2003 | 2003 | 2004 | 2004 | 2004 | 2005 | 2005 | 2005 | 2006 | 2006 | 2006 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Cases | Pct | Rate* | Cases | Pct | Rate* | Cases | Pct | Rate* | Cases | Pct | Rate* | Cases | Pct | Rate* |
| **Male** | **0-12 Years** | 1 | 0% | 0.1 | 1 | 0% | 0.1 | 0 | 0% | 0.0 | 1 | 0% | 0.1 | 0 | 0% | 0.0 |
| | **13-19 Years** | 1 | 0% | 0.3 | 0 | 0% | 0.0 | 2 | 0% | 0.5 | 8 | 1% | 1.9 | 8 | 1% | 1.9 |
| | **20-29 Years** | 79 | 8% | 12.7 | 60 | 6% | 9.6 | 77 | 7% | 12.2 | 89 | 8% | 13.9 | 117 | 11% | 18.2 |
| | **30-39 Years** | 255 | 26% | 39.7 | 259 | 25% | 40.4 | 265 | 25% | 41.6 | 234 | 22% | 36.6 | 229 | 22% | 35.8 |
| | **40-49 Years** | 243 | 25% | 39.7 | 276 | 27% | 44.5 | 276 | 26% | 43.8 | 266 | 25% | 41.6 | 256 | 25% | 40.0 |
| | **50 and over** | 109 | 11% | 10.5 | 142 | 14% | 13.3 | 132 | 12% | 12.0 | 161 | 15% | 14.2 | 137 | 13% | 12.0 |
| | **Unknown** | 0 | 0% | --- | 0 | 0% | --- | 0 | 0% | --- | 0 | 0% | --- | 0 | 0% | --- |
| | **Total** | **688** | **70%** | **16.9** | **738** | **72%** | **17.8** | **752** | **70%** | **17.9** | **759** | **70%** | **17.8** | **747** | **73%** | **17.5** |
| **Female** | **0-12 Years** | 1 | 0% | 0.1 | 0 | 0% | 0.0 | 1 | 0% | 0.1 | 0 | 0% | 0.0 | 0 | 0% | 0.0 |
| | **13-19 Years** | 2 | 0% | 0.5 | 1 | 0% | 0.3 | 2 | 0% | 0.5 | 2 | 0% | 0.5 | 5 | 0% | 1.2 |
| | **20-29 Years** | 39 | 4% | 6.8 | 51 | 5% | 8.9 | 43 | 4% | 7.5 | 49 | 5% | 8.4 | 34 | 3% | 5.8 |
| | **30-39 Years** | 120 | 12% | 18.9 | 104 | 10% | 16.5 | 107 | 10% | 17.1 | 97 | 9% | 15.5 | 91 | 9% | 14.6 |
| | **40-49 YEARS** | 87 | 9% | 13.7 | 90 | 9% | 14.0 | 101 | 9% | 15.5 | 115 | 11% | 17.4 | 101 | 10% | 15.2 |
| | **50 and over** | 42 | 4% | 3.3 | 40 | 4% | 3.1 | 65 | 6% | 4.8 | 55 | 5% | 4.0 | 51 | 5% | 3.7 |
| | **Unknown** | 0 | 0% | --- | 0 | 0% | --- | 0 | 0% | --- | 0 | 0% | --- | 0 | 0% | --- |
| | **Total** | **291** | **30%** | **6.9** | **286** | **28%** | **6.7** | **319** | **30%** | **7.3** | **318** | **30%** | **7.2** | **282** | **27%** | **6.4** |
| **Total** | **0-12 Years** | 2 | 0% | 0.1 | 1 | 0% | 0.1 | 1 | 0% | 0.1 | 1 | 0% | 0.1 | 0 | 0% | 0.0 |
| | **13-19 Years** | 3 | 0% | 0.4 | 1 | 0% | 0.1 | 4 | 0% | 0.5 | 10 | 1% | 1.2 | 13 | 1% | 1.6 |
| | **20-29 Years** | 118 | 12% | 9.9 | 111 | 11% | 9.3 | 120 | 11% | 9.9 | 138 | 13% | 11.3 | 151 | 15% | 12.3 |
| | **30-39 Years** | 375 | 38% | 29.4 | 363 | 35% | 28.6 | 372 | 35% | 29.5 | 331 | 31% | 26.2 | 320 | 31% | 25.3 |
| | **40-49 Years** | 330 | 34% | 26.4 | 366 | 36% | 28.9 | 377 | 35% | 29.4 | 381 | 35% | 29.3 | 357 | 35% | 27.4 |
| | **50 and over** | 151 | 15% | 6.5 | 182 | 18% | 7.6 | 197 | 18% | 8.1 | 216 | 20% | 8.6 | 188 | 18% | 7.5 |
| | **Unknown** | 0 | 0% | --- | 0 | 0% | --- | 0 | 0% | --- | 0 | 0% | --- | 0 | 0% | --- |
| | **Total** | **979** | **100%** | **11.8** | **1,024** | **100%** | **12.2** | **1,071** | **100%** | **12.5** | **1,077** | **100%** | **12.4** | **1,029** | **100%** | **11.9** |

*per 100,000 population

# Table O: North Carolina AIDS Demographic Rates
# Gender and Race/Ethnicity, 2002-2006

| Race/Ethnicity | | 2002 | 2002 | 2002 | 2003 | 2003 | 2003 | 2004 | 2004 | 2004 | 2005 | 2005 | 2005 | 2006 | 2006 | 2006 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Cases | Pct | Rate* | Cases | Pct | Rate* | Cases | Pct | Rate* | Cases | Pct | Rate* | Cases | Pct | Rate* |
| **Male** | **White**** | 189 | 19% | 6.6 | 216 | 21% | 7.5 | 217 | 20% | 7.5 | 206 | 19% | 7.0 | 186 | 18% | 6.3 |
| | **Black**** | 461 | 47% | 54.1 | 464 | 45% | 53.7 | 501 | 47% | 57.2 | 501 | 47% | 56.3 | 476 | 46% | 53.5 |
| | **Am.In/AN**** | 7 | 1% | 14.0 | 8 | 1% | 15.8 | 13 | 1% | 25.2 | 9 | 1% | 17.2 | 7 | 1% | 13.4 |
| | **Asian,PI**** | 2 | 0% | 2.9 | 2 | 0% | 2.8 | 3 | 0% | 3.9 | 2 | 0% | 2.5 | 5 | 0% | 6.2 |
| | **Hispanic** | 28 | 3% | 10.5 | 42 | 4% | 14.8 | 18 | 2% | 6.0 | 39 | 4% | 12.2 | 73 | 7% | 22.8 |
| | **Unknown** | 1 | 0% | --- | 6 | 1% | --- | 0 | 0% | --- | 2 | 0% | --- | 0 | 0% | --- |
| | **Total** | **688** | **70%** | **16.9** | **738** | **72%** | **17.8** | **752** | **70%** | **17.9** | **759** | **70%** | **17.8** | **747** | **73%** | **17.5** |
| **Female** | **White**** | 38 | 4% | 1.3 | 41 | 4% | 1.4 | 53 | 5% | 1.8 | 42 | 4% | 1.4 | 43 | 4% | 1.4 |
| | **Black**** | 243 | 25% | 25.3 | 229 | 22% | 23.6 | 248 | 23% | 25.2 | 261 | 24% | 26.1 | 215 | 21% | 21.5 |
| | **Am.In/AN**** | 5 | 1% | 9.6 | 2 | 0% | 3.8 | 3 | 0% | 5.6 | 4 | 0% | 7.3 | 1 | 0% | 1.8 |
| | **Asian,PI**** | 0 | 0% | 0.0 | 2 | 0% | 2.6 | 1 | 0% | 1.3 | 1 | 0% | 1.2 | 2 | 0% | 2.4 |
| | **Hispanic** | 5 | 1% | 2.7 | 12 | 1% | 6.0 | 13 | 1% | 6.0 | 10 | 1% | 4.3 | 21 | 2% | 9.0 |
| | **Unknown** | 0 | 0% | --- | 0 | 0% | --- | 1 | 0% | --- | 0 | 0% | --- | 0 | 0% | --- |
| | **Total** | **291** | **30%** | **6.9** | **286** | **28%** | **6.7** | **319** | **30%** | **7.3** | **318** | **30%** | **7.2** | **282** | **27%** | **6.4** |
| **Total** | **White**** | 227 | 23% | 3.9 | 257 | 25% | 4.4 | 270 | 25% | 4.6 | 248 | 23% | 4.2 | 229 | 22% | 3.8 |
| | **Black**** | 704 | 72% | 38.9 | 693 | 68% | 37.8 | 749 | 70% | 40.3 | 762 | 71% | 40.3 | 691 | 67% | 36.6 |
| | **Am.In/AN**** | 12 | 1% | 11.7 | 10 | 1% | 9.6 | 16 | 1% | 15.2 | 13 | 1% | 12.2 | 8 | 1% | 7.5 |
| | **Asian,PI**** | 2 | 0% | 1.4 | 4 | 0% | 2.7 | 4 | 0% | 2.6 | 3 | 0% | 1.8 | 7 | 1% | 4.3 |
| | **Hispanic** | 33 | 3% | 7.3 | 54 | 5% | 11.1 | 31 | 3% | 6.0 | 49 | 5% | 8.9 | 94 | 9% | 17.0 |
| | **Unknown** | 1 | 0% | --- | 6 | 1% | --- | 1 | 0% | --- | 2 | 0% | --- | 0 | 0% | --- |
| | **Total** | **979** | **100%** | **11.8** | **1,024** | **100%** | **12.2** | **1,071** | **100%** | **12.5** | **1,077** | **100%** | **12.4** | **1,029** | **100%** | **11.9** |

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

# Table P: AIDS Cumulative Reports* by County of Residence, 1983-2006

| COUNTY | 83-90 | 91-95 | 96-01 | 2002 | 2003 | 2004 | 2005 | 2006 | CUMULATIVE |
|---|---|---|---|---|---|---|---|---|---|
| ALAMANCE | 16 | 60 | 29 | 4 | 13 | 21 | 16 | 2 | 161 |
| ALEXANDER | 1 | 5 | 2 | 2 | 0 | 2 | 3 | 4 | 19 |
| ALLEGHANY | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ANSON | 2 | 20 | 23 | 4 | 1 | 6 | 6 | 1 | 63 |
| ASHE | 0 | 3 | 1 | 0 | 0 | 0 | 0 | 1 | 5 |
| AVERY | 2 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 5 |
| BEAUFORT | 14 | 41 | 20 | 4 | 5 | 6 | 7 | 5 | 102 |
| BERTIE | 7 | 17 | 28 | 5 | 3 | 5 | 6 | 3 | 74 |
| BLADEN | 6 | 16 | 12 | 4 | 7 | 8 | 2 | 6 | 61 |
| BRUNSWICK | 6 | 30 | 23 | 3 | 8 | 6 | 5 | 8 | 89 |
| BUNCOMBE | 26 | 165 | 126 | 17 | 16 | 19 | 12 | 12 | 393 |
| BURKE | 6 | 26 | 7 | 2 | 3 | 4 | 8 | 4 | 60 |
| CABARRUS | 13 | 46 | 27 | 9 | 10 | 3 | 6 | 8 | 122 |
| CALDWELL | 3 | 16 | 6 | 2 | 3 | 2 | 4 | 0 | 36 |
| CAMDEN | 0 | 3 | 4 | 3 | 1 | 0 | 2 | 1 | 14 |
| CARTERET | 9 | 24 | 6 | 0 | 5 | 4 | 0 | 2 | 50 |
| CASWELL | 0 | 10 | 2 | 0 | 0 | 0 | 0 | 1 | 13 |
| CATAWBA | 14 | 45 | 31 | 11 | 11 | 13 | 6 | 12 | 143 |
| CHATHAM | 5 | 11 | 9 | 1 | 2 | 3 | 2 | 0 | 33 |
| CHEROKEE | 1 | 5 | 1 | 1 | 1 | 0 | 0 | 2 | 11 |
| CHOWAN | 4 | 6 | 5 | 3 | 0 | 0 | 2 | 2 | 22 |
| CLAY | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 2 |
| CLEVELAND | 13 | 32 | 19 | 13 | 6 | 15 | 19 | 9 | 126 |
| COLUMBUS | 15 | 29 | 37 | 6 | 15 | 12 | 7 | 11 | 132 |
| CRAVEN | 22 | 55 | 38 | 17 | 13 | 7 | 17 | 24 | 193 |
| CUMBERLAND | 75 | 227 | 126 | 42 | 48 | 59 | 34 | 56 | 667 |
| CURRITUCK | 1 | 6 | 3 | 0 | 1 | 0 | 1 | 2 | 14 |
| DARE | 5 | 8 | 7 | 2 | 1 | 4 | 1 | 0 | 28 |
| DAVIDSON | 20 | 55 | 27 | 8 | 9 | 4 | 9 | 2 | 134 |
| DAVIE | 2 | 9 | 7 | 1 | 0 | 1 | 0 | 2 | 22 |
| DUPLIN | 10 | 45 | 36 | 8 | 14 | 12 | 11 | 7 | 143 |
| DURHAM | 113 | 424 | 157 | 74 | 39 | 56 | 52 | 41 | 956 |
| EDGECOMBE | 13 | 66 | 53 | 23 | 18 | 20 | 20 | 11 | 224 |
| FORSYTH | 109 | 235 | 209 | 43 | 53 | 39 | 42 | 28 | 758 |
| FRANKLIN | 8 | 17 | 14 | 3 | 6 | 3 | 7 | 8 | 66 |
| GASTON | 25 | 131 | 97 | 16 | 24 | 18 | 32 | 12 | 355 |
| GATES | 0 | 2 | 2 | 1 | 0 | 0 | 0 | 1 | 6 |
| GRAHAM | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 3 |
| GRANVILLE | 10 | 29 | 26 | 6 | 7 | 7 | 10 | 6 | 101 |
| GREENE | 2 | 16 | 31 | 2 | 1 | 4 | 3 | 4 | 63 |
| GUILFORD | 113 | 483 | 258 | 55 | 60 | 40 | 49 | 46 | 1,104 |
| HALIFAX | 14 | 54 | 46 | 4 | 11 | 8 | 8 | 11 | 156 |
| HARNETT | 13 | 40 | 30 | 7 | 10 | 11 | 12 | 9 | 132 |
| HAYWOOD | 5 | 21 | 5 | 5 | 0 | 3 | 5 | 1 | 45 |
| HENDERSON | 8 | 25 | 33 | 5 | 4 | 2 | 3 | 1 | 81 |
| HERTFORD | 10 | 15 | 23 | 3 | 3 | 10 | 1 | 30 | 95 |
| HOKE | 3 | 18 | 29 | 6 | 6 | 5 | 6 | 9 | 82 |
| HYDE | 0 | 3 | 2 | 0 | 1 | 3 | 0 | 0 | 9 |
| IREDELL | 11 | 31 | 23 | 4 | 8 | 6 | 10 | 5 | 98 |
| JACKSON | 2 | 7 | 3 | 0 | 0 | 2 | 1 | 1 | 16 |
| JOHNSTON | 19 | 58 | 37 | 18 | 17 | 14 | 16 | 22 | 201 |

*by county and year of AIDS report

## Table P (continued): AIDS Cumulative Reports* by County of Residence, 1983-2006

| COUNTY | 83-90 | 91-95 | 96-01 | 2002 | 2003 | 2004 | 2005 | 2006 | CUMULATIVE |
|---|---|---|---|---|---|---|---|---|---|
| JONES | 0 | 4 | 3 | 0 | 1 | 2 | 0 | 1 | 11 |
| LEE | 4 | 19 | 16 | 4 | 5 | 5 | 2 | 5 | 60 |
| LENOIR | 12 | 77 | 81 | 10 | 4 | 14 | 16 | 12 | 226 |
| LINCOLN | 3 | 12 | 6 | 5 | 2 | 4 | 3 | 3 | 38 |
| MACON | 0 | 10 | 4 | 1 | 1 | 3 | 2 | 1 | 22 |
| MADISON | 0 | 4 | 4 | 0 | 0 | 1 | 0 | 0 | 9 |
| MARTIN | 3 | 15 | 17 | 6 | 5 | 4 | 9 | 5 | 64 |
| MCDOWELL | 4 | 6 | 13 | 2 | 1 | 0 | 3 | 2 | 31 |
| MECKLENBURG | 229 | 688 | 441 | 148 | 187 | 200 | 183 | 186 | 2,262 |
| MITCHELL | 1 | 2 | 3 | 1 | 0 | 0 | 1 | 0 | 8 |
| MONTGOMERY | 1 | 13 | 9 | 0 | 1 | 3 | 6 | 2 | 35 |
| MOORE | 10 | 21 | 19 | 6 | 7 | 4 | 6 | 6 | 79 |
| NASH | 20 | 77 | 54 | 8 | 10 | 11 | 18 | 13 | 211 |
| NEW HANOVER | 35 | 123 | 115 | 38 | 37 | 24 | 27 | 33 | 432 |
| NORTHAMPTON | 5 | 29 | 17 | 2 | 4 | 4 | 5 | 2 | 68 |
| ONSLOW | 27 | 45 | 35 | 12 | 10 | 10 | 9 | 6 | 154 |
| ORANGE | 36 | 50 | 25 | 2 | 1 | 8 | 5 | 6 | 133 |
| PAMLICO | 3 | 7 | 2 | 1 | 3 | 1 | 2 | 0 | 19 |
| PASQUOTANK | 4 | 18 | 13 | 4 | 6 | 8 | 2 | 4 | 59 |
| PENDER | 5 | 28 | 13 | 2 | 6 | 1 | 5 | 1 | 61 |
| PERQUIMANS | 1 | 4 | 6 | 0 | 1 | 1 | 3 | 1 | 17 |
| PERSON | 2 | 14 | 5 | 6 | 4 | 2 | 0 | 0 | 33 |
| PITT | 38 | 167 | 102 | 28 | 24 | 16 | 26 | 18 | 419 |
| POLK | 1 | 10 | 6 | 0 | 3 | 0 | 0 | 0 | 20 |
| RANDOLPH | 11 | 29 | 10 | 4 | 5 | 12 | 7 | 6 | 84 |
| RICHMOND | 4 | 26 | 14 | 2 | 4 | 3 | 8 | 5 | 66 |
| ROBESON | 16 | 73 | 78 | 21 | 21 | 27 | 29 | 17 | 282 |
| ROCKINGHAM | 6 | 37 | 24 | 7 | 2 | 3 | 1 | 1 | 81 |
| ROWAN | 20 | 75 | 44 | 9 | 6 | 13 | 14 | 12 | 193 |
| RUTHERFORD | 9 | 25 | 15 | 2 | 1 | 2 | 6 | 0 | 60 |
| SAMPSON | 10 | 27 | 34 | 8 | 3 | 6 | 5 | 10 | 103 |
| SCOTLAND | 5 | 34 | 16 | 7 | 4 | 5 | 5 | 3 | 79 |
| STANLY | 5 | 6 | 14 | 1 | 1 | 2 | 2 | 1 | 32 |
| STOKES | 1 | 7 | 6 | 0 | 1 | 0 | 0 | 1 | 16 |
| SURRY | 4 | 14 | 5 | 6 | 1 | 1 | 2 | 0 | 33 |
| SWAIN | 4 | 7 | 6 | 1 | 2 | 1 | 1 | 1 | 23 |
| TRANSYLVANIA | 5 | 7 | 4 | 2 | 2 | 0 | 1 | 1 | 22 |
| TYRRELL | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 3 |
| UNION | 12 | 27 | 28 | 6 | 7 | 7 | 6 | 9 | 102 |
| VANCE | 12 | 41 | 36 | 11 | 12 | 9 | 6 | 6 | 133 |
| WAKE | 197 | 461 | 421 | 102 | 126 | 135 | 138 | 147 | 1,727 |
| WARREN | 2 | 6 | 6 | 3 | 4 | 4 | 1 | 1 | 27 |
| WASHINGTON | 3 | 24 | 12 | 3 | 3 | 0 | 3 | 3 | 51 |
| WATAUGA | 4 | 4 | 1 | 0 | 3 | 0 | 3 | 1 | 16 |
| WAYNE | 38 | 83 | 75 | 24 | 11 | 12 | 17 | 31 | 291 |
| WILKES | 3 | 5 | 10 | 0 | 2 | 1 | 1 | 1 | 23 |
| WILSON | 24 | 76 | 65 | 26 | 12 | 28 | 25 | 26 | 282 |
| YADKIN | 3 | 6 | 4 | 1 | 3 | 2 | 0 | 2 | 21 |
| YANCEY | 1 | 5 | 1 | 0 | 0 | 2 | 0 | 1 | 10 |
| UNKNOWN | 4 | 11 | 8 | 0 | 1 | 1 | 0 | 2 | 27 |
| **NC TOTAL** | **1,624** | **5,252** | **3,690** | **979** | **1,024** | **1,071** | **1,077** | **1,029** | **15,746** |

*by county and year of AIDS report

# Table Q: North Carolina Chlamydia Reports
# Gender and Age, 2002-2006

| Age | | 2002 | 2002 | 2002 | 2003 | 2003 | 2003 | 2004 | 2004 | 2004 | 2005 | 2005 | 2005 | 2006 | 2006 | 2006 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Cases | Pct | Rate* | Cases | Pct | Rate* | Cases | Pct | Rate* | Cases | Pct | Rate* | Cases | Pct | Rate* |
| **Male** | **0-12 Years** | 35 | 0% | 4.6 | 22 | 0% | 2.8 | 20 | 0% | 2.6 | 15 | 0% | 1.9 | 5 | 0% | 0.6 |
| | **13-19 Years** | 887 | 4% | 222.3 | 907 | 3% | 221.5 | 1,058 | 4% | 251.9 | 1,174 | 4% | 274.3 | 1,363 | 4% | 318.4 |
| | **20-29 Years** | 2,666 | 11% | 429.6 | 2,582 | 10% | 412.0 | 3,050 | 11% | 482.8 | 3,252 | 10% | 507.0 | 3,799 | 11% | 592.2 |
| | **30-39 Years** | 557 | 2% | 86.8 | 590 | 2% | 92.1 | 670 | 2% | 105.1 | 739 | 2% | 115.4 | 847 | 3% | 132.3 |
| | **40-49 Years** | 162 | 1% | 26.5 | 181 | 1% | 29.2 | 203 | 1% | 32.2 | 228 | 1% | 35.6 | 231 | 1% | 36.1 |
| | **50 and over** | 41 | 0% | 3.9 | 61 | 0% | 5.7 | 62 | 0% | 5.6 | 73 | 0% | 6.4 | 66 | 0% | 5.8 |
| | **Unknown** | 0 | 0% | --- | 0 | 0% | --- | 1 | 0% | --- | 0 | 0% | --- | 1 | 0% | --- |
| | **Total** | **4,348** | **18%** | **106.5** | **4,343** | **17%** | **104.9** | **5,064** | **17%** | **120.6** | **5,481** | **18%** | **128.3** | **6,312** | **19%** | **147.8** |
| **Female** | **0-12 Years** | 139 | 1% | 19.0 | 73 | 0% | 9.9 | 44 | 0% | 5.9 | 52 | 0% | 6.9 | 36 | 0% | 4.8 |
| | **13-19 Years** | 8,915 | 36% | 2370.4 | 9,403 | 36% | 2427.1 | 10,195 | 35% | 2560.5 | 10,833 | 35% | 2665.3 | 11,237 | 33% | 2764.7 |
| | **20-29 Years** | 9,934 | 40% | 1739.7 | 10,608 | 41% | 1850.7 | 11,777 | 41% | 2040.5 | 12,868 | 41% | 2203.1 | 13,770 | 41% | 2357.5 |
| | **30-39 Years** | 1,179 | 5% | 186.0 | 1,391 | 5% | 221.2 | 1,613 | 6% | 258.4 | 1,636 | 5% | 261.9 | 1,859 | 6% | 297.6 |
| | **40-49 Years** | 181 | 1% | 28.4 | 207 | 1% | 32.1 | 255 | 1% | 39.0 | 255 | 1% | 38.5 | 330 | 1% | 49.8 |
| | **50 and over** | 40 | 0% | 3.1 | 39 | 0% | 3.0 | 51 | 0% | 3.8 | 58 | 0% | 4.2 | 64 | 0% | 4.6 |
| | **Unknown** | 0 | 0% | --- | 0 | 0% | --- | 0 | 0% | --- | 0 | 0% | --- | 1 | 0% | --- |
| | **Total** | **20,388** | **82%** | **481.8** | **21,721** | **83%** | **507.1** | **23,935** | **83%** | **551.3** | **25,702** | **82%** | **582.6** | **27,297** | **81%** | **618.7** |
| **Total** | **0-12 Years** | 174 | 1% | 11.6 | 95 | 0% | 6.3 | 64 | 0% | 4.2 | 67 | 0% | 4.4 | 41 | 0% | 2.7 |
| | **13-19 Years** | 9,802 | 40% | 1264.5 | 10,310 | 40% | 1293.7 | 11,253 | 39% | 1375.4 | 12,007 | 39% | 1438.9 | 12,600 | 37% | 1510.0 |
| | **20-29 Years** | 12,602 | 51% | 1057.5 | 13,191 | 51% | 1099.4 | 14,827 | 51% | 1226.5 | 16,120 | 52% | 1315.3 | 17,569 | 52% | 1433.5 |
| | **30-39 Years** | 1,736 | 7% | 136.1 | 1,981 | 8% | 156.1 | 2,283 | 8% | 180.9 | 2,375 | 8% | 187.8 | 2,706 | 8% | 213.9 |
| | **40-49 Years** | 343 | 1% | 27.5 | 388 | 1% | 30.7 | 458 | 2% | 35.7 | 483 | 2% | 37.1 | 561 | 2% | 43.1 |
| | **50 and over** | 81 | 0% | 3.5 | 100 | 0% | 4.2 | 113 | 0% | 4.6 | 131 | 0% | 5.2 | 130 | 0% | 5.2 |
| | **Unknown** | 0 | 0% | --- | 0 | 0% | --- | 1 | 0% | --- | 0 | 0% | --- | 2 | 0% | --- |
| | **Total** | **24,738** | **100%** | **297.6** | **26,065** | **100%** | **309.5** | **28,999** | **100%** | **339.5** | **31,183** | **100%** | **359.1** | **33,609** | **100%** | **387.1** |

*per 100,000 population

## Table R: North Carolina Chlamydia Reports
## Gender and Race/Ethnicity, 2002-2006

| Race/Ethnicity | | 2002 Cases | 2002 Pct | 2002 Rate* | 2003 Cases | 2003 Pct | 2003 Rate* | 2004 Cases | 2004 Pct | 2004 Rate* | 2005 Cases | 2005 Pct | 2005 Rate* | 2006 Cases | 2006 Pct | 2006 Rate* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Male** | **White**** | 1,036 | 4% | 36.4 | 1,062 | 4% | 37.0 | 1,184 | 4% | 40.9 | 1,186 | 4% | 40.5 | 1,359 | 4% | 46.4 |
| | **Black**** | 2,875 | 12% | 337.2 | 2,869 | 11% | 332.1 | 3,343 | 12% | 381.7 | 3,642 | 12% | 409.5 | 4,055 | 12% | 455.9 |
| | **Am.In/AN**** | 41 | 0% | 82.2 | 23 | 0% | 45.3 | 37 | 0% | 71.8 | 41 | 0% | 78.5 | 36 | 0% | 68.9 |
| | **Asian,PI**** | 38 | 0% | 55.3 | 20 | 0% | 27.5 | 30 | 0% | 39.2 | 42 | 0% | 52.1 | 37 | 0% | 45.9 |
| | **Hispanic** | 350 | 1% | 131.7 | 354 | 1% | 124.9 | 403 | 1% | 133.7 | 413 | 1% | 129.2 | 535 | 2% | 167.4 |
| | **Unknown** | 8 | 0% | --- | 15 | 0% | --- | 67 | 0% | --- | 157 | 1% | --- | 290 | 1% | --- |
| | **Total** | **4,348** | **18%** | **106.5** | **4,343** | **17%** | **104.9** | **5,064** | **17%** | **120.6** | **5,481** | **18%** | **128.3** | **6,312** | **19%** | **147.8** |
| **Female** | **White**** | 5,385 | 22% | 181.8 | 5,695 | 22% | 191.0 | 6,357 | 22% | 211.5 | 6,754 | 22% | 222.2 | 7,146 | 21% | 235.1 |
| | **Black**** | 13,209 | 53% | 1377.0 | 14,020 | 54% | 1443.0 | 15,114 | 52% | 1534.8 | 15,695 | 50% | 1569.2 | 16,092 | 48% | 1608.9 |
| | **Am.In/AN**** | 314 | 1% | 599.9 | 332 | 1% | 626.1 | 356 | 1% | 661.1 | 424 | 1% | 776.9 | 331 | 1% | 606.5 |
| | **Asian,PI**** | 167 | 1% | 231.2 | 153 | 1% | 201.1 | 177 | 1% | 221.9 | 203 | 1% | 242.8 | 193 | 1% | 230.8 |
| | **Hispanic** | 1,274 | 5% | 686.0 | 1,473 | 6% | 731.9 | 1,735 | 6% | 799.2 | 1,900 | 6% | 813.7 | 2,048 | 6% | 877.1 |
| | **Unknown** | 39 | 0% | --- | 48 | 0% | --- | 196 | 1% | --- | 726 | 2% | --- | 1,487 | 4% | --- |
| | **Total** | **20,388** | **82%** | **481.8** | **21,721** | **83%** | **507.1** | **23,935** | **83%** | **551.3** | **25,702** | **82%** | **582.6** | **27,297** | **81%** | **618.7** |
| **Total** | **White**** | 6,421 | 26% | 110.6 | 6,757 | 26% | 115.5 | 7,541 | 26% | 127.8 | 7,940 | 25% | 133.0 | 8,505 | 25% | 142.5 |
| | **Black**** | 16,085 | 65% | 887.7 | 16,890 | 65% | 920.2 | 18,457 | 64% | 992.0 | 19,337 | 62% | 1023.4 | 20,147 | 60% | 1066.2 |
| | **Am.In/AN**** | 355 | 1% | 347.3 | 355 | 1% | 342.1 | 393 | 1% | 373.0 | 465 | 1% | 435.3 | 367 | 1% | 343.6 |
| | **Asian,PI**** | 205 | 1% | 145.5 | 173 | 1% | 116.3 | 207 | 1% | 132.4 | 245 | 1% | 149.2 | 230 | 1% | 140.1 |
| | **Hispanic** | 1,625 | 7% | 360.0 | 1,827 | 7% | 376.9 | 2,138 | 7% | 412.3 | 2,313 | 7% | 418.2 | 2,583 | 8% | 467.0 |
| | **Unknown** | 47 | 0% | --- | 63 | 0% | --- | 263 | 1% | --- | 883 | 3% | --- | 1,777 | 5% | --- |
| | **Total** | **24,738** | **100%** | **297.6** | **26,065** | **100%** | **309.5** | **28,999** | **100%** | **339.5** | **31,183** | **100%** | **359.1** | **33,609** | **100%** | **387.1** |

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

## Table S: North Carolina Gonorrhea Reports
## Gender and Age, 2002-2006

| Age | | 2002 | 2002 | 2002 | 2003 | 2003 | 2003 | 2004 | 2004 | 2004 | 2005 | 2005 | 2005 | 2006 | 2006 | 2006 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Cases | Pct | Rate* | Cases | Pct | Rate* | Cases | Pct | Rate* | Cases | Pct | Rate* | Cases | Pct | Rate* |
| **Male** | **0-12 Years** | 34 | 0% | 4.4 | 22 | 0% | 2.8 | 6 | 0% | 0.8 | 7 | 0% | 0.9 | 3 | 0% | 0.4 |
| | **13-19 Years** | 1,324 | 9% | 331.8 | 1,236 | 8% | 301.8 | 1,232 | 8% | 293.3 | 1,136 | 8% | 265.4 | 1,397 | 8% | 326.4 |
| | **20-29 Years** | 4,091 | 27% | 659.2 | 3,991 | 26% | 636.9 | 4,076 | 27% | 645.2 | 3,675 | 24% | 572.9 | 4,303 | 25% | 670.8 |
| | **30-39 Years** | 1,526 | 10% | 237.9 | 1,485 | 10% | 231.9 | 1,463 | 10% | 229.4 | 1,481 | 10% | 231.3 | 1,640 | 9% | 256.2 |
| | **40-49 Years** | 612 | 4% | 100.0 | 715 | 5% | 115.2 | 717 | 5% | 113.9 | 859 | 6% | 134.3 | 831 | 5% | 129.9 |
| | **50 and over** | 248 | 2% | 23.8 | 270 | 2% | 25.3 | 317 | 2% | 28.8 | 367 | 2% | 32.3 | 419 | 2% | 36.8 |
| | **Unknown** | 0 | 0% | --- | 0 | 0% | --- | 0 | 0% | --- | 0 | 0% | --- | 1 | 0% | --- |
| | **Total** | **7,835** | **51%** | **192.0** | **7,719** | **51%** | **186.5** | **7,811** | **51%** | **186.0** | **7,525** | **50%** | **176.2** | **8,594** | **50%** | **201.2** |
| **Female** | **0-12 Years** | 36 | 0% | 4.9 | 25 | 0% | 3.4 | 16 | 0% | 2.1 | 13 | 0% | 1.7 | 11 | 0% | 1.5 |
| | **13-19 Years** | 2,886 | 19% | 767.4 | 2,760 | 18% | 712.4 | 2,756 | 18% | 692.2 | 2,704 | 18% | 665.3 | 3,028 | 17% | 745.0 |
| | **20-29 Years** | 3,608 | 24% | 631.8 | 3,596 | 24% | 627.4 | 3,622 | 24% | 627.6 | 3,769 | 25% | 645.3 | 4,418 | 26% | 756.4 |
| | **30-39 Years** | 779 | 5% | 122.9 | 765 | 5% | 121.6 | 747 | 5% | 119.7 | 774 | 5% | 123.9 | 918 | 5% | 146.9 |
| | **40-49 Years** | 168 | 1% | 26.4 | 204 | 1% | 31.7 | 210 | 1% | 32.1 | 247 | 2% | 37.3 | 290 | 2% | 43.8 |
| | **50 and over** | 37 | 0% | 2.9 | 16 | 0% | 1.2 | 36 | 0% | 2.7 | 36 | 0% | 2.6 | 50 | 0% | 3.6 |
| | **Unknown** | 0 | 0% | --- | 0 | 0% | --- | 0 | 0% | --- | 0 | 0% | --- | 1 | 0% | --- |
| | **Total** | **7,514** | **49%** | **177.6** | **7,366** | **49%** | **172.0** | **7,387** | **49%** | **170.2** | **7,543** | **50%** | **171.0** | **8,716** | **50%** | **197.6** |
| **Total** | **0-12 Years** | 70 | 0% | 4.7 | 47 | 0% | 3.1 | 22 | 0% | 1.4 | 20 | 0% | 1.3 | 14 | 0% | 0.9 |
| | **13-19 Years** | 4,210 | 27% | 543.1 | 3,996 | 26% | 501.4 | 3,988 | 26% | 487.4 | 3,840 | 25% | 460.2 | 4,425 | 26% | 530.3 |
| | **20-29 Years** | 7,702 | 50% | 646.3 | 7,587 | 50% | 632.3 | 7,698 | 51% | 636.8 | 7,444 | 49% | 607.4 | 8,721 | 50% | 711.6 |
| | **30-39 Years** | 2,306 | 15% | 180.8 | 2,250 | 15% | 177.3 | 2,210 | 15% | 175.1 | 2,255 | 15% | 178.3 | 2,558 | 15% | 202.2 |
| | **40-49 YEARS** | 780 | 5% | 62.5 | 919 | 6% | 72.6 | 927 | 6% | 72.3 | 1,106 | 7% | 84.9 | 1,121 | 6% | 86.1 |
| | **50 and over** | 285 | 2% | 12.3 | 286 | 2% | 12.0 | 353 | 2% | 14.4 | 403 | 3% | 16.0 | 469 | 3% | 18.6 |
| | **Unknown** | 0 | 0% | --- | 0 | 0% | --- | 0 | 0% | --- | 0 | 0% | --- | 2 | 0% | --- |
| | **Total** | **15,353** | **100%** | **184.7** | **15,085** | **100%** | **179.1** | **15,198** | **100%** | **178.0** | **15,068** | **100%** | **173.5** | **17,310** | **100%** | **199.3** |

*per 100,000 population

## Table T: North Carolina Gonorrhea Reports
## Gender and Race/Ethnicity, 2002-2006

| Race/Ethnicity | | 2002 Cases | 2002 Pct | 2002 Rate* | 2003 Cases | 2003 Pct | 2003 Rate* | 2004 Cases | 2004 Pct | 2004 Rate* | 2005 Cases | 2005 Pct | 2005 Rate* | 2006 Cases | 2006 Pct | 2006 Rate* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Male** | **White**** | 851 | 6% | 29.9 | 844 | 6% | 29.4 | 866 | 6% | 29.9 | 914 | 6% | 31.2 | 983 | 6% | 33.6 |
| | **Black**** | 6,695 | 44% | 785.2 | 6,569 | 44% | 760.3 | 6,554 | 43% | 748.3 | 6,074 | 40% | 683.0 | 6,886 | 40% | 774.3 |
| | **Am.In/AN**** | 63 | 0% | 126.3 | 61 | 0% | 120.2 | 76 | 1% | 147.5 | 77 | 1% | 147.4 | 60 | 0% | 114.8 |
| | **Asian,PI**** | 24 | 0% | 35.0 | 14 | 0% | 19.3 | 24 | 0% | 31.4 | 25 | 0% | 31.0 | 21 | 0% | 26.1 |
| | **Hispanic** | 191 | 1% | 71.9 | 223 | 1% | 78.7 | 219 | 1% | 72.6 | 244 | 2% | 76.3 | 277 | 2% | 86.7 |
| | **Unknown** | 11 | 0% | --- | 8 | 0% | --- | 72 | 0% | --- | 191 | 1% | --- | 367 | 2% | --- |
| | **Total** | **7,835** | **51%** | **192.0** | **7,719** | **51%** | **186.5** | **7,811** | **51%** | **186.0** | **7,525** | **50%** | **176.2** | **8,594** | **50%** | **201.2** |
| **Female** | **White**** | 1,292 | 8% | 43.6 | 1,390 | 9% | 46.6 | 1,542 | 10% | 51.3 | 1,557 | 10% | 51.2 | 1,829 | 11% | 60.2 |
| | **Black**** | 5,944 | 39% | 619.6 | 5,673 | 38% | 583.9 | 5,481 | 36% | 556.6 | 5,466 | 36% | 546.5 | 6,055 | 35% | 605.4 |
| | **Am.In/AN**** | 122 | 1% | 233.1 | 121 | 1% | 228.2 | 115 | 1% | 213.6 | 121 | 1% | 221.7 | 97 | 1% | 177.7 |
| | **Asian,PI**** | 28 | 0% | 38.8 | 35 | 0% | 46.0 | 27 | 0% | 33.9 | 34 | 0% | 40.7 | 34 | 0% | 40.7 |
| | **Hispanic** | 115 | 1% | 61.9 | 137 | 1% | 68.1 | 167 | 1% | 76.9 | 154 | 1% | 66.0 | 183 | 1% | 78.4 |
| | **Unknown** | 13 | 0% | --- | 10 | 0% | --- | 55 | 0% | --- | 211 | 1% | --- | 518 | 3% | --- |
| | **Total** | **7,514** | **49%** | **177.6** | **7,366** | **49%** | **172.0** | **7,387** | **49%** | **170.2** | **7,543** | **50%** | **171.0** | **8,716** | **50%** | **197.6** |
| **Total** | **White**** | 2,144 | 14% | 36.9 | 2,234 | 15% | 38.2 | 2,408 | 16% | 40.8 | 2,471 | 16% | 41.4 | 2,812 | 16% | 47.1 |
| | **Black**** | 12,642 | 82% | 697.7 | 12,242 | 81% | 666.9 | 12,035 | 79% | 646.8 | 11,540 | 77% | 610.7 | 12,941 | 75% | 684.9 |
| | **Am.In/AN**** | 185 | 1% | 181.0 | 182 | 1% | 175.4 | 191 | 1% | 181.3 | 198 | 1% | 185.4 | 157 | 1% | 147.0 |
| | **Asian,PI**** | 52 | 0% | 36.9 | 49 | 0% | 32.9 | 51 | 0% | 32.6 | 59 | 0% | 35.9 | 55 | 0% | 33.5 |
| | **Hispanic** | 306 | 2% | 67.8 | 360 | 2% | 74.3 | 386 | 3% | 74.4 | 398 | 3% | 72.0 | 460 | 3% | 83.2 |
| | **Unknown** | 24 | 0% | --- | 18 | 0% | --- | 127 | 1% | --- | 402 | 3% | --- | 885 | 5% | --- |
| | **Total** | **15,353** | **100%** | **184.7** | **15,085** | **100%** | **179.1** | **15,198** | **100%** | **178.0** | **15,068** | **100%** | **173.5** | **17,310** | **100%** | **199.3** |

*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, 2002-2006

| Age | | 2002 | 2002 | 2002 | 2003 | 2003 | 2003 | 2004 | 2004 | 2004 | 2005 | 2005 | 2005 | 2006 | 2006 | 2006 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Cases | Pct | Rate* | Cases | Pct | Rate* | Cases | Pct | Rate* | Cases | Pct | Rate* | Cases | Pct | Rate* |
| **Male** | **0-12 Years** | 1 | 0% | 0.1 | 0 | 0% | 0.0 | 0 | 0% | 0.0 | 1 | 0% | 0.1 | 0 | 0% | 0.0 |
| | **13-19 Years** | 14 | 2% | 3.5 | 9 | 2% | 2.2 | 9 | 2% | 2.1 | 13 | 3% | 3.0 | 20 | 3% | 4.7 |
| | **20-29 Years** | 93 | 15% | 15.0 | 73 | 18% | 11.6 | 88 | 19% | 13.9 | 99 | 20% | 15.4 | 140 | 23% | 21.8 |
| | **30-39 Years** | 98 | 16% | 15.3 | 67 | 17% | 10.5 | 95 | 21% | 14.9 | 98 | 20% | 15.3 | 130 | 21% | 20.3 |
| | **40-49 Years** | 91 | 15% | 14.9 | 57 | 14% | 9.2 | 69 | 15% | 11.0 | 97 | 20% | 15.2 | 109 | 18% | 17.0 |
| | **50 and over** | 45 | 7% | 4.3 | 30 | 8% | 2.8 | 45 | 10% | 4.1 | 35 | 7% | 3.1 | 37 | 6% | 3.3 |
| | **Unknown** | 0 | 0% | --- | 0 | 0% | --- | 0 | 0% | --- | 0 | 0% | --- | 0 | 0% | --- |
| | **Total** | **342** | **56%** | **8.4** | **236** | **60%** | **5.7** | **306** | **68%** | **7.3** | **343** | **70%** | **8.0** | **436** | **71%** | **10.2** |
| **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** | 34 | 6% | 9.0 | 14 | 4% | 3.6 | 12 | 3% | 3.0 | 16 | 3% | 3.9 | 20 | 3% | 4.9 |
| | **20-29 Years** | 80 | 13% | 14.0 | 52 | 13% | 9.1 | 44 | 10% | 7.6 | 41 | 8% | 7.0 | 47 | 8% | 8.0 |
| | **30-39 Years** | 94 | 15% | 14.8 | 56 | 14% | 8.9 | 50 | 11% | 8.0 | 41 | 8% | 6.6 | 51 | 8% | 8.2 |
| | **40-49 Years** | 54 | 9% | 8.5 | 32 | 8% | 5.0 | 33 | 7% | 5.1 | 36 | 7% | 5.4 | 45 | 7% | 6.8 |
| | **50 and over** | 12 | 2% | 0.9 | 6 | 2% | 0.5 | 8 | 2% | 0.6 | 12 | 2% | 0.9 | 13 | 2% | 0.9 |
| | **Unknown** | 0 | 0% | --- | 0 | 0% | --- | 0 | 0% | --- | 0 | 0% | --- | 0 | 0% | --- |
| | **Total** | **274** | **44%** | **6.5** | **160** | **40%** | **3.7** | **147** | **32%** | **3.4** | **146** | **30%** | **3.3** | **176** | **29%** | **4.0** |
| **Total** | **0-12 Years** | 1 | 0% | 0.1 | 0 | 0% | 0.0 | 0 | 0% | 0.0 | 1 | 0% | 0.1 | 0 | 0% | 0.0 |
| | **13-19 Years** | 48 | 8% | 6.2 | 23 | 6% | 2.9 | 21 | 5% | 2.6 | 29 | 6% | 3.5 | 40 | 7% | 4.8 |
| | **20-29 Years** | 173 | 28% | 14.5 | 125 | 32% | 10.4 | 132 | 29% | 10.9 | 140 | 29% | 11.4 | 187 | 31% | 15.3 |
| | **30-39 Years** | 192 | 31% | 15.1 | 123 | 31% | 9.7 | 145 | 32% | 11.5 | 139 | 28% | 11.0 | 181 | 30% | 14.3 |
| | **40-49 Years** | 145 | 24% | 11.6 | 89 | 22% | 7.0 | 102 | 23% | 8.0 | 133 | 27% | 10.2 | 154 | 25% | 11.8 |
| | **50 and over** | 57 | 9% | 2.5 | 36 | 9% | 1.5 | 53 | 12% | 2.2 | 47 | 10% | 1.9 | 50 | 8% | 2.0 |
| | **Unknown** | 0 | 0% | --- | 0 | 0% | --- | 0 | 0% | --- | 0 | 0% | --- | 0 | 0% | --- |
| | **Total** | **616** | **100%** | **7.4** | **396** | **100%** | **4.7** | **453** | **100%** | **5.3** | **489** | **100%** | **5.6** | **612** | **100%** | **7.0** |

*per 100,000 population

## Table V: North Carolina Early Syphilis Reports (Primary, Secondary, Early Latent) Gender and Race/Ethnicity, 2002-2006

| Race/Ethnicity | | 2002 Cases | 2002 Pct | 2002 Rate* | 2003 Cases | 2003 Pct | 2003 Rate* | 2004 Cases | 2004 Pct | 2004 Rate* | 2005 Cases | 2005 Pct | 2005 Rate* | 2006 Cases | 2006 Pct | 2006 Rate* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Male** | **White**** | 50 | 8% | 1.8 | 41 | 10% | 1.4 | 77 | 17% | 2.7 | 136 | 28% | 4.6 | 126 | 21% | 4.3 |
| | **Black**** | 254 | 41% | 29.8 | 162 | 41% | 18.8 | 211 | 47% | 24.1 | 175 | 36% | 19.7 | 283 | 46% | 31.8 |
| | **Am.In/AN**** | 15 | 2% | 30.1 | 13 | 3% | 25.6 | 6 | 1% | 11.6 | 0 | 0% | 0.0 | 0 | 0% | 0.0 |
| | **Asian,PI**** | 1 | 0% | 1.5 | 0 | 0% | 0.0 | 1 | 0% | 1.3 | 2 | 0% | 2.5 | 1 | 0% | 1.2 |
| | **Hispanic** | 22 | 4% | 8.3 | 20 | 5% | 7.1 | 11 | 2% | 3.6 | 28 | 6% | 8.8 | 25 | 4% | 7.8 |
| | **Unknown** | 0 | 0% | --- | 0 | 0% | --- | 0 | 0% | --- | 2 | 0% | --- | 1 | 0% | --- |
| | **Total** | **342** | **56%** | **8.4** | **236** | **60%** | **5.7** | **306** | **68%** | **7.3** | **343** | **70%** | **8.0** | **436** | **71%** | **10.2** |
| **Female** | **White**** | 36 | 6% | 1.2 | 22 | 6% | 0.7 | 20 | 4% | 0.7 | 36 | 7% | 1.2 | 25 | 4% | 0.8 |
| | **Black**** | 203 | 33% | 21.2 | 116 | 29% | 11.9 | 106 | 23% | 10.8 | 98 | 20% | 9.8 | 133 | 22% | 13.3 |
| | **Am.In/AN**** | 19 | 3% | 36.3 | 8 | 2% | 15.1 | 9 | 2% | 16.7 | 4 | 1% | 7.3 | 1 | 0% | 1.8 |
| | **Asian,PI**** | 0 | 0% | 0.0 | 2 | 1% | 2.6 | 0 | 0% | 0.0 | 2 | 0% | 2.4 | 0 | 0% | 0.0 |
| | **Hispanic** | 16 | 3% | 8.6 | 12 | 3% | 6.0 | 11 | 2% | 5.1 | 5 | 1% | 2.1 | 17 | 3% | 7.3 |
| | **Unknown** | 0 | 0% | --- | 0 | 0% | --- | 1 | 0% | --- | 1 | 0% | --- | 0 | 0% | --- |
| | **Total** | **274** | **44%** | **6.5** | **160** | **40%** | **3.7** | **147** | **32%** | **3.4** | **146** | **30%** | **3.3** | **176** | **29%** | **4.0** |
| **Total** | **White**** | 86 | 14% | 1.5 | 63 | 16% | 1.1 | 97 | 21% | 1.6 | 172 | 35% | 2.9 | 151 | 25% | 2.5 |
| | **Black**** | 457 | 74% | 25.2 | 278 | 70% | 15.1 | 317 | 70% | 17.0 | 273 | 56% | 14.4 | 416 | 68% | 22.0 |
| | **Am.In/AN**** | 34 | 6% | 33.3 | 21 | 5% | 20.2 | 15 | 3% | 14.2 | 4 | 1% | 3.7 | 1 | 0% | 0.9 |
| | **Asian,PI**** | 1 | 0% | 0.7 | 2 | 1% | 1.3 | 1 | 0% | 0.6 | 4 | 1% | 2.4 | 1 | 0% | 0.6 |
| | **Hispanic** | 38 | 6% | 8.4 | 32 | 8% | 6.6 | 22 | 5% | 4.2 | 33 | 7% | 6.0 | 42 | 7% | 7.6 |
| | **Unknown** | 0 | 0% | --- | 0 | 0% | --- | 1 | 0% | --- | 3 | 1% | --- | 1 | 0% | --- |
| | **Total** | **616** | **100%** | **7.4** | **396** | **100%** | **4.7** | **453** | **100%** | **5.3** | **489** | **100%** | **5.6** | **612** | **100%** | **7.0** |

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

## Table W: North Carolina Early Syphilis Reports (Primary, Secondary, Early Latent) County Rank, 2002-2006

| | | Cases | | | | |
|---|---|---|---|---|---|---|
| **Rank*** | **County** | **2002** | **2003** | **2004** | **2005** | **2006** |
| 1 | MECKLENBURG | 68 | 42 | 82 | 142 | 194 |
| 2 | GUILFORD | 63 | 80 | 91 | 68 | 75 |
| 3 | WAKE | 43 | 37 | 44 | 65 | 61 |
| 4 | FORSYTH | 18 | 10 | 6 | 16 | 34 |
| 5 | DURHAM | 57 | 40 | 32 | 15 | 34 |
| 6 | CUMBERLAND | 22 | 14 | 23 | 18 | 26 |
| 7 | NASH | 7 | 7 | 2 | 3 | 16 |
| 8 | WAYNE | 11 | 3 | 3 | 5 | 15 |
| 9 | GASTON | 4 | 3 | 1 | 6 | 13 |
| 10 | JOHNSTON | 8 | 4 | 4 | 9 | 12 |
| 11 | NEW HANOVER | 9 | 4 | 6 | 8 | 12 |
| 12 | BUNCOMBE | 1 | 2 | 4 | 6 | 7 |
| 13 | EDGECOMBE | 2 | 2 | 7 | 0 | 7 |
| 14 | CABARRUS | 1 | 5 | 3 | 5 | 6 |
| 15 | ALAMANCE | 12 | 14 | 3 | 4 | 6 |
| 16 | WILSON | 15 | 10 | 21 | 5 | 5 |
| 17 | PITT | 3 | 1 | 2 | 2 | 5 |
| 18 | ORANGE | 13 | 2 | 1 | 0 | 5 |
| 19 | ROBESON | 67 | 32 | 51 | 20 | 4 |
| 20 | RANDOLPH | 7 | 7 | 2 | 11 | 4 |
| 21 | LEE | 3 | 1 | 0 | 3 | 4 |
| 22 | BRUNSWICK | 8 | 0 | 1 | 2 | 4 |
| 23 | PERSON | 1 | 1 | 1 | 0 | 4 |
| 24 | UNION | 0 | 1 | 3 | 4 | 3 |
| 25 | VANCE | 8 | 11 | 1 | 4 | 3 |
| 26 | BLADEN | 3 | 1 | 5 | 3 | 3 |
| 27 | ROCKINGHAM | 6 | 4 | 3 | 2 | 3 |
| 28 | SURRY | 0 | 1 | 2 | 1 | 3 |
| 29 | IREDELL | 1 | 1 | 1 | 1 | 3 |
| 30 | STANLY | 1 | 0 | 0 | 1 | 3 |
| 31 | ONSLOW | 1 | 2 | 0 | 0 | 3 |
| 32 | NORTHAMPTON | 1 | 1 | 0 | 0 | 3 |
| 33 | CLEVELAND | 3 | 1 | 0 | 5 | 2 |
| 34 | HALIFAX | 4 | 4 | 0 | 3 | 2 |
| 35 | CATAWBA | 1 | 3 | 2 | 2 | 2 |
| 36 | DAVIDSON | 6 | 1 | 2 | 2 | 2 |
| 37 | MARTIN | 0 | 0 | 2 | 0 | 2 |
| 38 | WATAUGA | 0 | 0 | 1 | 0 | 2 |
| 39 | CRAVEN | 1 | 1 | 0 | 0 | 2 |
| 40 | PERQUIMANS | 0 | 0 | 0 | 0 | 2 |
| 41 | LENOIR | 4 | 1 | 5 | 5 | 1 |

* Rank based on number of cases reported in 2006. If cases are equal, then rank based on previous year.

## Table W: North Carolina Early Syphilis Reports (Primary, Secondary, Early Latent) County Rank, 2002-2006

| | | Cases | | | | |
|---|---|---|---|---|---|---|
| **Rank*** | **County** | **2002** | **2003** | **2004** | **2005** | **2006** |
| 42 | CHATHAM | 6 | 1 | 1 | 4 | 1 |
| 43 | COLUMBUS | 30 | 5 | 0 | 3 | 1 |
| 44 | SAMPSON | 6 | 4 | 1 | 2 | 1 |
| 45 | MOORE | 36 | 4 | 5 | 1 | 1 |
| 46 | HARNETT | 1 | 0 | 1 | 1 | 1 |
| 47 | MONTGOMERY | 11 | 2 | 0 | 1 | 1 |
| 48 | DAVIE | 0 | 0 | 0 | 1 | 1 |
| 49 | DUPLIN | 1 | 0 | 2 | 0 | 1 |
| 50 | PASQUOTANK | 1 | 3 | 1 | 0 | 1 |
| 51 | BEAUFORT | 0 | 1 | 1 | 0 | 1 |
| 52 | HOKE | 7 | 5 | 0 | 0 | 1 |
| 53 | BERTIE | 4 | 0 | 0 | 0 | 1 |
| 54 | HERTFORD | 1 | 0 | 0 | 0 | 1 |
| 55 | HYDE | 0 | 0 | 0 | 0 | 1 |
| 55 | ANSON | 0 | 0 | 0 | 0 | 1 |
| 57 | ROWAN | 2 | 0 | 3 | 4 | 0 |
| 58 | STOKES | 0 | 2 | 0 | 3 | 0 |
| 59 | BURKE | 0 | 0 | 0 | 3 | 0 |
| 60 | SCOTLAND | 4 | 0 | 1 | 2 | 0 |
| 61 | YADKIN | 0 | 0 | 1 | 2 | 0 |
| 61 | ALEXANDER | 0 | 0 | 1 | 2 | 0 |
| 63 | GRANVILLE | 2 | 1 | 0 | 2 | 0 |
| 64 | MCDOWELL | 0 | 0 | 0 | 2 | 0 |
| 65 | WARREN | 0 | 2 | 4 | 1 | 0 |
| 66 | RUTHERFORD | 0 | 0 | 2 | 1 | 0 |
| 67 | FRANKLIN | 2 | 1 | 1 | 1 | 0 |
| 68 | WILKES | 0 | 0 | 1 | 1 | 0 |
| 69 | GREENE | 2 | 1 | 0 | 1 | 0 |
| 70 | WASHINGTON | 2 | 0 | 0 | 1 | 0 |
| 71 | JONES | 1 | 0 | 0 | 1 | 0 |
| 72 | MACON | 0 | 0 | 0 | 1 | 0 |
| 72 | HAYWOOD | 0 | 0 | 0 | 1 | 0 |
| 72 | CHEROKEE | 0 | 0 | 0 | 1 | 0 |
| 75 | RICHMOND | 4 | 0 | 3 | 0 | 0 |
| 76 | TRANSYLVANIA | 0 | 0 | 2 | 0 | 0 |
| 77 | CALDWELL | 1 | 5 | 1 | 0 | 0 |
| 78 | CASWELL | 4 | 2 | 1 | 0 | 0 |
| 79 | LINCOLN | 0 | 1 | 1 | 0 | 0 |
| 80 | CARTERET | 2 | 0 | 1 | 0 | 0 |
| 81 | GATES | 0 | 0 | 1 | 0 | 0 |
| 82 | JACKSON | 0 | 1 | 0 | 0 | 0 |

* Rank based on number of cases reported in 2006. If cases are equal, then rank based on previous year.

## Table W: North Carolina Early Syphilis Reports (Primary, Secondary, Early Latent) County Rank, 2002-2006

| | | Cases | | | | |
|---|---|---|---|---|---|---|
| **Rank*** | **County** | **2002** | **2003** | **2004** | **2005** | **2006** |
| 82 | CAMDEN | 0 | 1 | 0 | 0 | 0 |
| 84 | PENDER | 3 | 0 | 0 | 0 | 0 |
| 85 | ALLEGHANY | 0 | 0 | 0 | 0 | 0 |
| 85 | ASHE | 0 | 0 | 0 | 0 | 0 |
| 85 | AVERY | 0 | 0 | 0 | 0 | 0 |
| 85 | CHOWAN | 0 | 0 | 0 | 0 | 0 |
| 85 | CLAY | 0 | 0 | 0 | 0 | 0 |
| 85 | CURRITUCK | 0 | 0 | 0 | 0 | 0 |
| 85 | DARE | 0 | 0 | 0 | 0 | 0 |
| 85 | GRAHAM | 0 | 0 | 0 | 0 | 0 |
| 85 | HENDERSON | 0 | 0 | 0 | 0 | 0 |
| 85 | MADISON | 0 | 0 | 0 | 0 | 0 |
| 85 | MITCHELL | 0 | 0 | 0 | 0 | 0 |
| 85 | PAMLICO | 0 | 0 | 0 | 0 | 0 |
| 85 | POLK | 0 | 0 | 0 | 0 | 0 |
| 85 | SWAIN | 0 | 0 | 0 | 0 | 0 |
| 85 | TYRRELL | 0 | 0 | 0 | 0 | 0 |
| 85 | YANCEY | 0 | 0 | 0 | 0 | 0 |
| | **UNKNOWN** | 0 | 0 | 0 | 0 | 0 |
| | **TOTAL** | 616 | 396 | 453 | 489 | 612 |

* Rank based on number of cases reported in 2006. If cases are equal, then rank based on previous year.

# GLOSSARY

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| 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 |

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| 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. |

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| 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. |

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| 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. |

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| 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. |

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| 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 |

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| 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. |

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| 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. |

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| 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. |

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| 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. |

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| 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. |

# INDEX

## A



## B



## C



## D



## E



## F

## G



## H



## I



## J



## K



## L



## M



## N

## O



## P



## Q



## R



## S



## T



## U



## V

## W

# North Carolina HIV/STD Prevention & Care Branch Regions