



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

**December 2010**



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

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**Note: See the inside back cover for a map of North Carolina regional and geographic designations.**

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

December 2010

This document is for the  
2010-2011 planning year and is based on data  
available through 2009



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State of North Carolina  
Department of Health and Human Services  
Division of Public Health  
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## EXECUTIVE SUMMARY

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In 2009, 1,710 new individuals were diagnosed and reported in North Carolina with HIV disease (HIV/AIDS). This adds to the population of persons in state living with HIV, which is estimated to be about 35,000 people including those unaware of their status. The estimated lifetime medical cost for a newly HIV infected person is about \$367,000 (2009 dollars). This burden of disease and expense illustrate the critical need for adequate funding of HIV prevention and care efforts in the state because infected persons who receive proper care are less likely to transmit the disease and each infection prevented saves dollars. The Communicable Disease Branch has developed key objectives to address these issues: 1) increase and improve referrals to care for persons newly diagnosed with HIV; 2) ensure that persons infected with HIV remain in care; and 3) increase HIV testing for all residents.

Many persons newly diagnosed with HIV are also diagnosed with AIDS at same time or within six months of testing. These late testers represented about 28 percent of all new HIV disease reports in 2009 and further support the need for HIV testing to be part of routine health care for sexually active persons. The Division of Public Health has launched several initiatives aimed at increasing HIV testing in venues such as jails, prisons, STD clinics, emergency departments, and community health centers. In 2009, the N.C. State Laboratory of Public Health (NCSLPH) performed about 231,353 HIV tests, which is an eight percent increase from the 214,648 tests performed in 2008. Testing through the SLPH includes testing from most of these special initiatives and local health departments, and is responsible for identifying at least 30 percent of all new HIV cases each year.

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 10<sup>th</sup> most populous state in the nation and has experienced rapid growth. In 2008, North Carolina had the 18<sup>th</sup> highest non white population and its foreign-born population increased 33 percent from 2002 to 2007. In 2008, the racial/ethnic makeup of the state was about 22 percent black or African American (non-Hispanic), 68 percent white (non-Hispanic), and 7 percent Hispanic, with the remaining proportion consisting of primarily American Indians (1%) and Asians/Pacific Islanders (2%). 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 37<sup>th</sup> in the nation for per capita income in 2008, with 26 percent of its child population (0–18 years), 13 percent of the elderly (65+), and 15 percent of the 19 to 64 year old population at or below the federal poverty level (2007–2008).

As seen with many other diseases, HIV is disproportionately distributed among the state's population. Recognizing these differences is important to knowing how to best direct prevention and care efforts. The 2009 adult/adolescent rate of new HIV diagnoses for non-Hispanic blacks (69.7 per 100,000) was more than nine times greater than for whites (7.7 per 100,000) and the rate of new diagnoses for Hispanics (28.8 per 100,000) was almost four times greater than that for whites. The rate for American Indians (11.5 per 100,000) was just slightly higher than for whites. The highest rate of new HIV cases was found among adult/adolescent black males

(106.3 per 100,000). The largest disparity was found in comparing adult/adolescent white and black females; the HIV rate for black females (38.7 per 100,000) was about 14 times higher than that for white non-Hispanic females (2.7 per 100,000). The ratio of male-to-female HIV disease cases diagnosed has risen from 2.7 in 2005 to 2.9 in 2009. Much of the increase in HIV disease cases over the past few years is attributed to more male HIV disease cases being diagnosed; the number of cases for females has remained relatively constant.

Familiarity with gender and racial/ethnic differences is important but understanding the behavioral risk is also critical. Risk of HIV transmission is very different for males and females. In 2009, 72 percent of new adult and adolescent HIV disease cases for males were attributed to men who have sex with men (MSM), 23 percent were attributed to heterosexual sex; 3 percent to injecting drug use (IDU), and 2 percent to MSM who also inject drugs (MSM/IDU). For adult and adolescent females, heterosexual sex accounted for 96 percent of HIV disease cases in 2009, while injecting drug use accounted for 4 percent.

The proportion of HIV reports among MSM has increased over the past few years for all racial/ethnic groups. In 2009, MSM accounted for 88 percent of white non-Hispanic male HIV reports, 67 percent of black non-Hispanic male reports and 64 percent of reports for other minority 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 2009, 64 percent of interviewed males with early syphilis and 56 percent of those interviewed with HIV indicated MSM risk. According to Counseling, Testing, and Referral (CTR) system data, persons reporting MSM risk have consistently had the highest percent of HIV positive test results.

Injecting drug use (including MSM/IDU) accounted for about 5 percent of male adult/adolescent HIV disease cases in 2009 and accounted for about 4 percent of female cases. Prevention activities aimed at reducing HIV transmission through injecting drug use remains very important to comprehensive HIV prevention strategies. There is substantial evidence that needle exchange programs are effective in reducing HIV risk behavior and HIV seroconversion among injecting drug users. About 15 percent of living HIV disease cases had IDU as their identified risk.

Heterosexual sex as a primary risk accounts for 42 percent of all (male and female) 2009 adult/adolescent HIV disease reports and was the principal risk for females (96%), especially younger females (100% of likely female adolescent exposures). Heterosexual HIV disease cases for 2009 were higher among minority males (29%–31%) than among white males (7%). Indications of heterosexual risk-taking behavior can be found in the high rates for other sexually transmitted infections.

Trends in new HIV disease cases indicate prevention needs; however, trends in new AIDS cases and estimates of persons living with HIV or AIDS can indicate service and care needs. An **estimated** 35,000 people were living with HIV or AIDS in North Carolina (as of 12/31/09), including those who may be unaware of their HIV infection. Of the people who have been reported and were listed as living (as of 12/31/09) with HIV/AIDS, 70 percent were males and 30 percent were females. With respect to race/ethnicity, 67 percent were black non-Hispanic; 26 percent were white non-Hispanic; and 5 percent were Hispanic.



In 2009, 957 new AIDS cases were diagnosed and reported in North Carolina, up slightly from the previous year (n=928). According to the CDC, North Carolina ranked 10<sup>th</sup> among all states and the District of Columbia in the number of new AIDS cases diagnosed in 2008 and is ranked 11<sup>th</sup> in the nation for estimated number of persons living with an AIDS diagnosis.

From July 1, 2008 through June 30, 2009, the Ryan White Part B program served 7,480 total unduplicated clients. Additionally, from April 1, 2009 to March 31, 2010, 6,321 individuals were enrolled in the N.C. AIDS Drug Assistance Program (ADAP). The demographics of Ryan White Part B clients and ADAP enrollees were similar to the observed demographics of persons living in North Carolina with HIV/AIDS. In calendar year 2009, an estimated 24 percent of persons living with HIV/AIDS were estimated to be not “in care.” The estimated number of persons living with HIV (PLWH) with unmet need (or not in care) was 26 percent, as compared to 21 percent of persons living with AIDS (PLWA).

In addition to HIV and AIDS, ten other sexually transmitted conditions (STD) and diseases are reportable to the N.C. Department of Health and Human Services (NCDHHS). Chlamydia was the most prevalent STD, with 43,734 cases reported in 2009. Despite improvements in recent years, severe racial disparities are noted for gonorrhea in North Carolina (14,811 reported cases in 2009). Among males, the rate for blacks in 2009 was over 29 times that for whites (non Hispanic). Disparities among females were less severe than for males, with the gonorrhea rate 14 times higher for black females than for white females in 2009.

Since 2003, early syphilis rates in North Carolina have resumed a gradual annual increase to a rate of 5.6 per 100,000 in 2008. In 2009 however, North Carolina experienced a significant outbreak of new syphilis cases. Nine hundred thirty seven (n=937) new cases of early syphilis (primary, secondary and early latent) were reported. These new cases represented an 84 percent increase in cases over the 509 cases reported in 2008. Increases in morbidity were noted for almost all demographic groups as well as among persons already infected with HIV. This increase in syphilis is cause for concern because infections increase the risk for contracting HIV and high STD rates are markers for high-risk sexual practices.

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# INTRODUCTION

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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 Communicable Disease Branch. We have also integrated other sources in the analysis and discussion where appropriate. The Epidemiologic Profile reflects a broad spectrum of information about the incidence of sexually transmitted diseases in North Carolina to support the integrated activities of the Communicable Disease Branch. Along with prevention activities, the Communicable Disease Branch facilitates several key HIV/AIDS care and service programs across the state.

The HIV and STD epidemics in North Carolina are related since 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. Going forward, cases of AIDS and AIDS-related deaths will provide a valuable measure of the continuing impact of treatment, and describe populations for whom treatment is either not accessible or not effective. This pattern has been demonstrated to some extent in surveillance data.

This document is divided into three parts. Part one describes general population demographics and social characteristics of our state, and 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 of bacterial STDs in North Carolina including syphilis, chlamydia and gonorrhea. Throughout the profile, the following key 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?

Profile information on HIV/AIDS care and services should assist various community-based organizations in assessing the need to provide or expand services for patients in their service area. Surveillance data and other information are described using the current Regional Networks of Care designations of the Communicable Disease Branch HIV/AIDS care programs integrated in April, 2010.

Please note that throughout this document references to race and ethnicity may be different than those found in documents from other agencies. Unless otherwise noted Hispanics or Latinos are counted as a separate group to allow for comparisons with traditional race/ethnicity groups (i.e. “white” refers to white non-Hispanics, “black” refers to black non-Hispanics). Also note that several appendices are included with this document: Maps (Appendix A), Data Sources

(Appendix B), Special Notes (Appendix C), and Tables (Appendix D). 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 because understanding the uniqueness of a data source is very helpful in determining the relevance of the trends. Appendix C: Special Notes has information on the definition and use of “HIV disease,” HIV surveillance reporting issues, HIV risk categories and rate calculation. All calculated rates in this document are based on U.S. Census Bureau bridged-race population estimates.

The HIV Disease and AIDS case totals and rates (See Appendix D: Tables A-F, N-O) presented in this document are restricted to adult/adolescent cases for comparability across states and with national data (CDC). Other sexually transmitted disease rates are calculated per 100,000 population (See Appendix D: Tables Q-V). Any direct comparison of other STDs to HIV Disease or AIDS should be based on a common denominator (per 100,000 population). Readers should note that HIV and AIDS data are summarized by ‘date of diagnosis’ unless otherwise noted. Use of ‘date of diagnosis’ represents a change in data presentation from previous publications. Readers should note how data are presented when comparing data from other sources or previous publications.

## **PART I: CORE EPIDEMIOLOGY**

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**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)**

**HIV Testing, Prevention and Special Studies (Chapter 3–4)**

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

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## HIGHLIGHTS

- In 2008, North Carolina was the 10<sup>th</sup> most populous state in the U.S., with an estimated population of 9,222,414.
- North Carolina's population increased 14.6 percent from 2000 to 2008.
- In 2009, North Carolina ranked 3<sup>rd</sup> in the nation for annual population increase.
- The N.C. foreign-born population increased 31 percent from 2002 to 2007.
- North Carolina has the 18<sup>th</sup> largest non-white population in the nation.
- North Carolina has the 8<sup>th</sup> highest percentage of African American population in the nation.
- North Carolina has the 25<sup>th</sup> largest Hispanic/Latino population and the 10<sup>th</sup> highest birth rate among Hispanics in the nation.
- The median age for the Hispanic population was 23.6 years, while the median age for all North Carolinians was 36.9 years in 2008.
- In 2008, North Carolina was 37<sup>th</sup> in the nation in per capita income of \$34,453 or 88.6 percent of the national average of \$39,138.
- From 2007 to 2008, 19.2 percent of North Carolinians were living at or below the federal poverty level (FPL): 34.1 percent of the overall population is considered low income (living at or below 199% FPL).
- From 2007 to 2008, 21.1 percent of the 19 to 64 year old adult population in North Carolina was uninsured.
- About 19 percent of the N.C. population was eligible for Medicaid coverage at some point during 2008.
- The infant mortality rate was 8.2 deaths per 1,000 live births in North Carolina during 2008.
- About 70 percent of the state's population lived in urban areas in 2008.

## **SOCIODEMOGRAPHIC CHARACTERISTICS OF NORTH CAROLINA**

Knowledge of sociodemographic characteristics is paramount to fully understanding the health of a population. Sociodemographics can be used to identify certain populations that may be at greater risk for morbidity and mortality. This knowledge can also assist in identifying underlying factors that may contribute to a health condition. This chapter will discuss the relevant health indicators and sociodemographic characteristics of the population of North Carolina, including age, race/ethnicity, gender, income, poverty, education, and geography.

### Population

According to the 2000 federal census, North Carolina was one of the most rapidly expanding states during the previous decade. From 1990 to 2000, North Carolina's population grew by 21.4 percent, from 6,628,637 to 8,049,313. Only eight other states (Arizona, Colorado, Florida, Georgia, Idaho, Nevada, Texas, and Utah) grew faster during the last decade. Between 2000 and 2009, North Carolina ranked 6<sup>th</sup> in total amount of population growth and from 2008 to 2009, North Carolina ranked 3<sup>rd</sup> for single year population growth. According to the N.C. State Demographer, the 2009 North Carolina State *provisional* population estimate was 9,382,610 with county populations ranging from 4,247 (Tyrrell) to 894,445 (Mecklenburg). More than one-half of North Carolina's population lived in only 16 counties (Mecklenburg, Wake, Guilford, Forsyth, Cumberland, Durham, Buncombe, Gaston, New Hanover, Union, Onslow, Cabarrus, Johnston, Davidson, Pitt, and Catawba). From July 2007 to July 2008, there were 131,363 births and 78,306 deaths. The average life expectancy for North Carolinians was 75.8 years.

The most updated gender and age-specific population information available is for the year 2008, so we use the 2008 population as a substitute for 2009 in order to analyze the HIV disease rates in this profile. In 2008, North Carolina was the 10<sup>th</sup> most populous state in the United States with an estimated population of 9,222,414 (U.S. Census 2008 population estimate), representing a 14.6 percent increase from that of year 2000. Map 1 displays the population distribution among the counties in North Carolina for 2008 (Appendix A, pg. A-3).

### Age and Gender

Age and gender play an important role in public health planning and in understanding the health of a community. These characteristics are significant indicators of the prevalence of certain diseases, especially for HIV disease and other STDs, as shown in previous Epidemiologic Profiles. Substantial morbidity and social problems among youth are the result of unsafe sex practices, which can result in unwanted pregnancies and STDs, including HIV infection. Nearly one-half of all new sexually transmitted diseases in North Carolina occur in youth ages 15 to 24 years. Research shows that adolescents (ages 13–19 years) are at increased risk, both behaviorally and biologically, for HIV infection. More than one-half of all adolescents infected with HIV are estimated to never have been tested for HIV and are thus unaware of their status (Rotheram-Borus and Futterman 2000).



In 2008, the median age for people living in North Carolina was 35.8 years old, with 25.7 percent 18 years and younger, and 12.4 percent 65 years and older. Approximately 49 percent of the population is male and 51 percent is female. Table 1.1 displays the North Carolina population in 2008 by selected gender and age groups. The trend in North Carolina follows the typical age trend of slightly more males under 12 years old and more females in the older age groups. North Carolina has a younger population than other states, ranking 10<sup>th</sup> in the nation in 2008 with more people under 18 years of age. North Carolina's young population might have extensive health-related needs, such as STDs and unwanted pregnancies.

**Table 1.1. North Carolina Bridged-Race Population Estimates by Age Group, 2008**

Age	Male		Female		Total	
	Population	Percent	Population	Percent	Population	Percent
0-12 years	834,480	9.0%	796,295	8.6%	1,630,775	17.7%
13-14 years	123,324	1.3%	116,910	1.3%	240,234	2.6%
15-19 years	322,815	3.5%	306,177	3.3%	628,992	6.8%
20-24 years	332,226	3.6%	294,847	3.2%	627,073	6.8%
25-29 years	310,456	3.4%	309,204	3.4%	619,660	6.7%
30-34 years	306,253	3.3%	308,716	3.3%	614,969	6.7%
35-39 years	338,088	3.7%	337,749	3.7%	675,837	7.3%
40-44 years	329,337	3.6%	335,800	3.6%	665,137	7.2%
45-49 years	334,723	3.6%	349,809	3.8%	684,532	7.4%
50-54 years	310,094	3.4%	330,853	3.6%	640,947	6.9%
55-59 years	272,181	3.0%	298,688	3.2%	570,869	6.2%
60-64 years	229,278	2.5%	255,059	2.8%	484,337	5.3%
65+ years	473,732	5.1%	665,320	7.2%	1,139,052	12.4%
<b>Total</b>	<b>4,516,987</b>	<b>49.0%</b>	<b>4,705,427</b>	<b>51.0%</b>	<b>9,222,414</b>	<b>100.0%</b>

National Center for Health Statistics (NCHS), Bridged-Race Population Estimates, February 2010

Gender differences also exist in terms of vulnerability to illness, access to preventive and curative measures, burdens of diseases, and quality of care in North Carolina. Table 1.2 displays the percentages of males and females for the major race/ethnicity categories by North Carolina regions. Race/ethnicity also varies by region with a larger proportion of white non-Hispanics in Western Region, American Indians in Eastern Region, and black non-Hispanics in Eastern Region. A state map showing the N.C regions is displayed on the inside back cover.

**Table 1.2. North Carolina race/ethnicity proportions by gender and N.C. Regions, 2008**

		Western	Piedmont	Eastern	N.C.
Race/Ethnicity		Pct.	Pct.	Pct.	Pct.
Male	White*	42.8	32.5	30.1	33.1
	Black*	2.4	10.1	13.5	10.1
	AI/AN*	0.5	0.2	1.4	0.6
	Asian/PI*	0.4	1.4	0.5	1.0
	Hispanic	2.6	4.8	3.5	4.2
	Total	48.8	49.0	48.9	49.0
Female	White*	45.9	34.1	31.0	34.7
	Black*	2.4	11.6	15.2	11.5
	AI/AN*	0.5	0.2	1.5	0.6
	Asian/PI*	0.5	1.4	0.6	1.0
	Hispanic	2.0	3.7	2.8	3.3
	Total	51.2	51.0	51.1	51.0
Total	White*	88.7	66.6	61.1	67.8
	Black*	4.8	21.7	28.6	21.6
	AI/AN*	1.0	0.4	2.8	1.2
	Asian/PI*	0.9	2.7	1.1	2.0
	Hispanic	4.6	8.6	6.3	7.4
	Total	100.0	100.0	100.0	100.0

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

### Race/Ethnicity and Gender

The racial and ethnic differences of a population play an important role in interpreting gaps in access to health care among the different groups, and these differences are especially true in terms of HIV disease surveillance and intervention. Previous HIV disease surveillance showed that HIV disproportionately affected ethnic minorities in North Carolina. North Carolina has the 18<sup>th</sup> largest non-white population in the United States (2,971,927 in year 2008) and there are noticeable variations in the demographic composition of North Carolina from region to region. Usually non-white minorities have poorer health conditions and less access to health care. In 2008, 14 counties had populations consisting of more than 50 percent non-white residents (Robeson: 70.9%; Hertford: 65.2%; Bertie: 62.6%; Warren: 61.9%; Edgecombe: 61.2%; Northampton: 60.0%; Halifax: 59.5%; Vance: 56.7 %; Hoke: 55.8%; Washington: 54.4%; Durham: 54.3%; Greene: 53.0%; Anson: 51.2% and Scotland: 50.5%). 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 2008 bridged-race estimates (please see Appendix C, pg. C-5 for more information about Census data and the bridged-race categories used to calculate rates). Table 1.3 displays the populations for the major race/ethnicity categories in North Carolina according to the bridged-race estimates for 2008.

### *African Americans*

In 2008, North Carolina ranked 8<sup>th</sup> highest in percentage of African Americans (or blacks) nationwide. According to the N.C. Health Profile 2009, compared to whites, African Americans have higher death rates from heart disease, cancer, HIV, diabetes, homicide, and stroke. North Carolina has seven counties with African Americans consisting of more than 50 percent of the total population (Hertford 61.5%, Bertie 60.4%, Northampton 58.2%, Edgecombe 56.6%, Warren 54.1%, Halifax 54.0%, and Washington County 50.4%). Map 3 (Appendix A, pg. A-5) displays the proportion of African American population in 2008 by county.

### *Hispanics*

Over the years, the N.C. Hispanic population has steadily increased. From 2002 to 2008, the estimated Hispanic/Latino population increased from 451,095 to 684,770, representing a 51.8 percent increase. Hispanics represented 7.4 percent of the population of the state and ranked 25<sup>th</sup> nationally. North Carolina ranked 10<sup>th</sup> in Hispanic births in 2007. Compared to other ethnic groups in North Carolina, Hispanics are a relatively young population. Although the median age of the non-Hispanic population is 38.3 years, the median age of Hispanics is 23.6 years. Seventy percent (70%) of Hispanics are under 35 years old, while only 46 percent of non-Hispanic population is in the same age range. Map 5 (Appendix A, pg. A-7) displays the proportion of the Hispanic population in 2008, by county. Within North Carolina, Duplin County had the highest proportion of Hispanic residents (21.4%), followed by Lee County (16.7%), Sampson County (16.5%), and Montgomery County (16.0%).

### *American Indians*

American Indians represent 1.2 percent of the N.C. population and are one of the largest American Indian populations in the U.S. About 45 percent of American Indians in North Carolina live in Robeson County, followed by Cumberland, Hoke, Mecklenburg, Jackson, and Scotland counties. Map 4 (Appendix A, pg. A-6) displays the proportion of Hispanic population in 2008 by county. The N.C. Health Profile 2009 shows that American Indians experience higher death rates due to heart diseases, stroke, homicide, diabetes, kidney disease, and unintentional motor vehicle injuries compared to the white population.

### *Foreign-born Population*

According to the Center for Immigration Studies, North Carolina has experienced a dramatic increase in its immigrant population. The immigrant population in North Carolina has increased three and one-half times between 1995 and 2007 (Camarota, 2007). According to the U.S. Census Bureau's Annual American Community Survey, North Carolina's foreign-born population increased by 33 percent from 2002 to 2007 (480,248 to 641,130). In 2006, North Carolina ranked 15<sup>th</sup> nationally for the admitted number of immigrants from other countries. In 2008, 28.3 percent of the foreign-born populations in North Carolina were naturalized citizens, 71.7 percent were not citizens. The various regions of birth are displayed in Table 1.4. The majority (59.4%) of the foreign-born population come from Latin America, with the other 20.9

percent from Asia, 11.6 percent from Europe, 5.1 percent from Africa, 2.4 percent from North America, and 0.6 percent from Oceania.

**Table 1.3. North Carolina Bridged-Race Population Estimates by Race/Ethnicity, 2008**

Race/Ethnicity	Male		Female		Total	
	Population	Percent	Population	Percent	Population	Percent
White*	3,054,241	67.6%	3,196,246	67.9%	6,250,487	67.8%
Black*	933,107	20.7%	1,057,389	22.5%	1,990,496	21.6%
AI/AN*	52,670	1.2%	55,609	1.2%	108,279	1.2%
Asian/PI*	92,155	2.0%	96,227	2.0%	188,382	2.0%
Hispanic	384,814	8.5%	299,956	6.4%	684,770	7.4%
Total	4,516,987	100.0%	4,705,427	100.0%	9,222,414	100.0%

\* non-Hispanic; AI/AN=American Indian/Alaska Native, PI=Pacific Islander  
National Center for Health Statistics (NCHS), Bridged-Race Population Estimates, February 2010

The majority of the 2008 foreign-born population was male (54.1%) as opposed to female (45.9%). A majority (52%) of the foreign-born population is between ages 25 to 44 years (Table 1.5). About 84 percent speak a language other than English at home and 53 percent do not speak English “very well.”

**Table 1.4. North Carolina foreign-born population by region of birth, 2008**

Region	2008	
	Estimated number	Percentage
Europe	74,394	11.6%
Asia	134,010	20.9%
Africa	32,670	5.1%
Oceania	3,832	0.6%
Latin America	380,758	59.4%
North America	15,466	2.4%
Total	641,130	100.0%

Source: U.S. Census Bureau, 2008 American Community Survey

**Table 1.5. Gender and age distribution of foreign-born and total population in N.C., 2008**

Demographics		N.C. population	Foreign-born
		N=9,222,414	N=641,130
Gender	Male	48.9%	55.5%
	Female	51.1%	44.5%
Age	Under 5 years	7.0%	1.7%
	5–17 years	17.3%	9.5%
	18–24 years	9.7%	11.9%
	25–44 years	27.9%	51.6%
	45–54 years	14.4%	12.9%
	55–64 years	11.5%	7.9%
	65–74 years	6.7%	3.2%
	75 + years	5.5%	2.7%

Source: U.S. Census Bureau, 2008 American Community Survey

### Metropolitan and Micropolitan Statistical Areas

Metropolitan and Micropolitan Statistical Areas are population areas that represent the social and economic linkages and commuting patterns between urban cores and outlying integrated areas. Collectively called Core Based Statistical Areas (CBSAs), a metro area contains a core urban area of 50,000 or more population, and a micro area contains an urban core of at least 10,000 (but less than 50,000) population (U.S. Census Bureau, Population Division). 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>. In the *HIV/AIDS Surveillance Supplemental Report, Volume 13 Number 2*, the Centers for Disease Control and Prevention (CDC) divides metropolitan areas into large (population greater than or equal to 500,000) and medium-sized metropolitan areas (population 50,000 to 499,999), which are all defined as urban areas. Areas other than metropolitan areas (including micropolitan and non-metropolitan areas) are defined as rural areas. Eleven North Carolina counties, including Anson, Cabarrus, Franklin, Gaston, Guilford, Johnston, Mecklenburg, Randolph, Rockingham, Union and Wake County, are classified as large metropolitan areas, while other metropolitan counties are classified as medium-sized metropolitan areas. About 35 percent of the N.C. population resides in large metropolitan areas, 35 percent in medium-sized metropolitan areas, 22 percent in micropolitan areas, and 8 percent in non-metropolitan areas in 2008. Asian and Pacific Islanders have the highest proportion (55.2%) living in the large metropolitan areas, followed by Hispanics (42.3%). Similar proportions (around 33%) of all race/ethnic groups, except American Indians (17.7%), live in medium-sized metropolitan areas.

Data from the U.S. Census showed that in 2006, 65 percent of the general population of the United States was living in large metropolitan areas, 19 percent in medium-size metropolitan areas, and 17 percent in areas other than metropolitan, i.e. rural areas. Compared to national figures, North Carolina has less people in urban areas, substantially less in large metropolitan areas, and more people in rural areas. In North Carolina, a majority of Asians (88%) live in

urban areas, followed by Hispanics (76%) and blacks (71%). A majority of American Indians (70%) live in rural areas (Tables 1.6 and 1.7). North Carolina's metropolitan and non-metropolitan counties are displayed in Map 2 (Appendix A, pg. A-4).

**Table 1.6. North Carolina Population by Race for Urban Areas, 2008**

Race/ Ethnicity	Large Metropolitan areas		Medium metropolitan areas		Urban total	
	Population	Percent	Population	Percent	Population	Percent
White*	2,118,570	64.6%	2,216,852	69.1%	4,335,422	66.8%
Black*	747,674	22.8%	679,781	21.2%	1,427,455	22.0%
AI/AN*	13,703	0.4%	19,089	0.6%	32,792	0.5%
Asian, PI*	106,240	3.2%	60,974	1.9%	167,214	2.6%
Hispanic	292,613	8.9%	230,738	7.2%	523,351	8.1%
Total	3,278,800	35.6%	3,207,434	34.8%	6,486,234	70.3%

\* non-Hispanic; AI/AN=American Indian/Alaska Native, PI=Pacific Islander  
National Center for Health Statistics (NCHS), Bridged-Race Population Estimates, February 2010

**Table 1.7. North Carolina Population by Race for Rural Areas, 2008**

Race/ Ethnicity	Micro metropolitan areas		Non-metropolitan areas		Rural total	
	Population	Percent	Population	Percent	Population	Percent
White*	1,420,686	70.6%	494,379	68.2%	1,915,065	70.0%
Black*	397,769	19.8%	165,272	22.8%	563,041	20.6%
AI/AN*	61,053	3.0%	14,434	2.0%	75,487	2.8%
Asian, PI*	17,713	0.9%	3,455	0.5%	21,168	0.8%
Hispanic	113,883	5.7%	47,536	6.6%	161,419	5.9%
Total	2,011,104	21.8%	725,076	7.9%	2,736,180	29.7%

\* non-Hispanic; AI/AN=American Indian/Alaska Native, PI=Pacific Islander  
National Center for Health Statistics (NCHS), Bridged-Race Population Estimates, February 2010

In 2008, a majority of whites, blacks, Hispanics, and Asians lived in urban areas, while the majority of American Indians lived in rural areas.

## HEALTH INDICATORS

### Poverty and Income

Contextual factors such as poverty, income, and education, as well as racial segregation, discrimination, and incarceration rates influence sexual behavior and sexual networks. These factors likely contribute substantially to the persistence of marked racial disparities in rates of STDs (Adimora and Schoenbach 2005).

According to the U.S. Department of Commerce's Bureau of Economic Analysis, the preliminary 2009 per capita income for North Carolina is \$34,453, or 88.0 percent of the national average of \$39,138. This figure represents a 2.3 percent decrease from 2008 (\$35,249) and placed North Carolina 37<sup>th</sup> in the nation for personal per capita income and 4<sup>th</sup> in the Southeast.

Economic recession has impacted North Carolina more than the national average. According to the Bureau of Labor Statistics, the unemployment rate in North Carolina rose from 4.9 percent in January 2008 to 8.5 percent in December 2008 to 10.9 percent in December 2009, which is higher than the national unemployment rate (the national unemployment rate was 5.0 percent in January 2008 to 7.4 percent in December 2008, and to 10.0 percent in December 2009) (Bureau of Labor Statistics).

According to Income, Earnings, and Poverty Data from the 2008 American Community Survey, 14.6 percent of North Carolinians are living under the poverty line (while 13.2% nationally). From 2007 to 2008, 19.2 percent of North Carolinians were below the federal poverty level (FPL); with an overall total of 34.1 percent of the population considered low income (199% or below FPL). The median household income in North Carolina was \$43,538, a figure much lower than the national median of \$51,233. North Carolina ranked 14<sup>th</sup> in percentage of people in poverty in 2008. Table 1.7 displays the individual poverty rate by age group for the state (2007–2008) and the nation (2008). Table 1.8 displays the individual poverty rate by race/ethnicity for North Carolina and the United States (2007–2008). North Carolina is poorer than the nation in all age/race categories. Map 7 (Appendix A, pg. A-9) displays the N.C. per capita income for 2008 by county.

**Table 1.8. North Carolina and U.S. (2007–2008) poverty rates by age**

Age in Years	N.C. (Pct.)	U.S. (Pct.)
Children 0–18	26%	25%
Adults 19–64	18%	17%
Elderly 65+	13%	13%

Source: Urban Institute and Kaiser Family Foundation

### Health Insurance

The percentage of the non-elderly without health insurance in North Carolina has been increasing over the years. In North Carolina (2007–2008), 21.1 percent of persons ages 19 to 64 years were uninsured (statehealthfacts.org. Kaiser Family Foundation). The primary reason people lack health insurance is financial. According to the statehealthfacts.org, 41 percent of the non-elderly (0–64 year olds) uninsured had incomes less than 100 percent of the Federal Poverty Guidelines.

**Table 1.9. North Carolina and U.S. (2007–2008) 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*	12.1%	12.3%
Black*	34.4%	33.2%
Hispanic	38.5%	30.6%
Other*	25.3%	20.6%

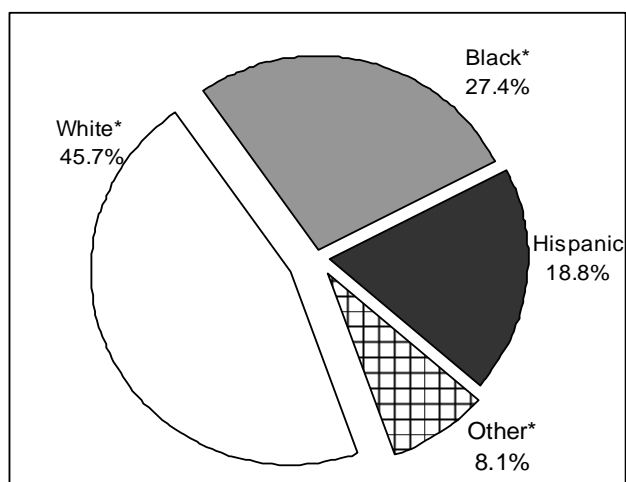
\* non-Hispanic

Source: Urban Institute and Kaiser Family Foundation

Among the non-elderly (0–64 years old), 45.7 percent of those without health insurance in North Carolina were white, 27.4 percent were black, and 18.8 percent were Hispanic (statehealthfacts.org. Kaiser Family Foundation). The racial distribution of non-elderly uninsured people in North Carolina is displayed in Figure 1.1.

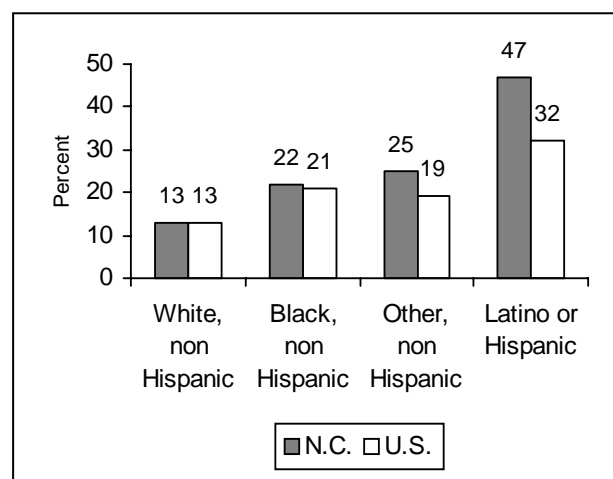
Figure 1.2 displays the uninsured rates by race/ethnicity for North Carolina as compared to the United States. In 2007 to 2008, 47 percent of Latinos or Hispanics, 22 percent of blacks, 13 percent of whites, and 25 percent of other races were uninsured in North Carolina (statehealthfacts.org. Kaiser Family Foundation). Rates of uninsured among all racial/ethnic groups in North Carolina were higher than those in the nation. Although whites comprise the greatest proportion of the uninsured population (Figure 1.1), minorities have the highest uninsured rates (Figure 1.2). Latinos in North Carolina are more likely to be uninsured because they are often recent immigrants with low-wage jobs in industries that do not offer health insurance.

**Figure 1.1. Distribution of uninsured<sup>†</sup> by race/ethnicity, 2007–2008**



<sup>†</sup>non-elderly      \*non-Hispanic

**Figure 1.2. Rate of uninsured by race/ethnicity, 2007–2008**





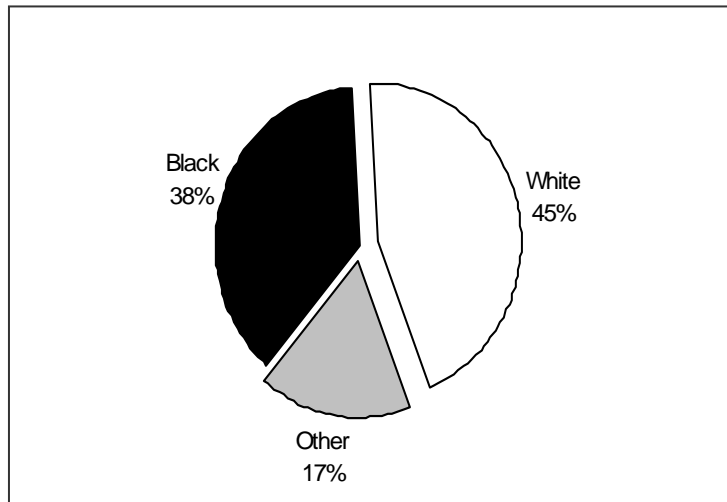
## Education

According to the 2007 American Community Survey, 83.6 percent of North Carolinians who were 25 years or older had a high school diploma or higher and 26.1 percent had a bachelor's degree or higher. Around five percent of high school students (grades 9–12) dropped out during the 2007 to 2008 school year (N.C. Public Schools Statistical Profile, 2009).

## Internet access

To some extent, health education depends on the facilities at home and in the communities. The internet has become one of the most important venues in health education. In 2007, North Carolina ranked 42<sup>nd</sup> for the percentage of households with computers (57.7%), and 40<sup>th</sup> for the percentage of households with internet access (56.8%).

**Figure 1.3. N.C. Medicaid recipients by race, 2008**



## Public Aid

Total Medicaid and Medicaid-related expenditures in North Carolina for State Fiscal Year (SFY) 2007 were approximately \$9 billion for approximately 1.7 million Medicaid recipients (an average \$5,262 per recipient). The number of Medicaid recipients increased by 2.6 percent from 2007 to 2008. A total of 1,726,412 North Carolinians, or 18.7 percent of the total

N.C. population, received at least one Medicaid service during the 2008 fiscal year (Medicaid N.C. Report 2008). Among them, 40 percent were male and 60 percent were female.

Elderly and Disabled recipients comprised about 13.1 and 15.5 percent of total Medicaid recipients, respectively, and their expenditures amounted to \$6.2 billion or 65 percent of the total service expenditures. Families and Children comprised 70 percent of all recipients, accounting for \$3 billion or about 34 percent of total service expenditures. Aliens and Refugees represented 1.3 percent of all recipients and accounted for about \$67.8 million, or about 0.8 percent of total service expenditures. Of all Medicaid services provided, Nursing Facility, Inpatient Hospital, Prescription Drug, and Non-Physician Practitioner services were the top four expensive services and accounted for about \$4 billion, or 45 percent of total expenditures. Figure 1.3 displays the percentage of North Carolinians by race who received Medicaid in 2008. Map 8 (Appendix A, pg. A-10) displays the percent of Medicaid eligibles by county for 2009. (For more information see <http://www.ncdhhs.gov/dma/2007report/2007tables.pdf> ).

Another useful health indicator is the infant mortality rate (IMR). According to the N.C. Center for Health Statistics, the 2009 infant mortality rate for North Carolina was 7.9 per 1,000 live births, a decrease of 3.7 percent from the 2008 rate of 8.2. The IMR among minorities rose by 4.4 percent in 2009 to 14.1 per 1,000 births and is more than double that of whites (5.4 per 1,000 births). According to Kaiser Family Foundation, North Carolina still ranked among the top 10 states with highest infant mortality and large racial disparities persisted. Due to limited data availability, a national infant mortality rate comparison can only be made for 2004 to 2006. Table 1.10 displays the North Carolina and United States infant mortality rates.

**Table 1.10. N.C. and U.S. Infant Mortality Rate (deaths per 1,000 live births) by race/ethnicity, 2004–2006**

Race/Ethnicity	N.C. 2004–2006	U.S. 2004–2006
White*	6.4	5.7
Black*	15.7	13.5
Hispanic	6.2	5.5
Total	8.5	6.8

\*Whites and Blacks may include individuals of Hispanic origin

Source: Kaiser Family Foundation

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

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### HIGHLIGHTS

- As of December 31, 2009, the cumulative number of individuals in North Carolina diagnosed with HIV infection was 36,898 people.
- An estimated 35,000 people were living with HIV/AIDS in North Carolina (including individuals who may have been unaware of their infections) as of December 31, 2009.
- The total number of new diagnoses of HIV infection in 2009 was 1,710 (18.5 per 100,000) and the number of new diagnoses of HIV infection among adults/adolescents was 1,705 (22.5 per 100,000 adult/adolescent population).
- In 2009, the rate of new diagnoses of HIV infection for adult/adolescent, non-Hispanic blacks (69.7 per 100,000) was more than nine times greater than that for adult/adolescent, non-Hispanic whites (7.7 per 100,000). The rate of new HIV diagnosis for adult/adolescent Hispanics (28.8 per 100,000) was almost four times greater than for whites.
- The highest rate of new HIV diagnoses in 2009 was among adult/adolescent, non-Hispanic black males (106.3 per 100,000). This rate was more than eight times greater than the rate for adult/adolescent, non-Hispanic white males (13.1 per 100,000).
- The largest observed disparity in 2009 was for adult/adolescent, non-Hispanic, black females; with a rate of new HIV diagnoses (38.7 per 100,000) that was more than 14 times higher than that of non-Hispanic, white females (2.7 per 100,000).
- For 2009 adult/adolescent HIV disease cases, men who have sex with men (MSM) was the principal risk category indicated in 54 percent of total cases, heterosexual transmission risk was indicated in 42 percent, MSM/IDU was indicated in 1 percent, and injecting drug use (IDU) was indicated in 3 percent of total cases.
- In 2009, MSM (including MSM/IDU) accounted for 74 percent of new HIV disease cases among adult/adolescent males. This percentage represented a notable increase in MSM reports over the last five years (74% in 2009 compared to 67% in 2005).
- In 2009, heterosexual contact accounted for about 96 percent and injecting drug use accounted for 4 percent of HIV disease cases for adult/adolescent females.
- Nineteen percent (19%) of newly diagnosed HIV disease cases in 2009 were among likely adolescents, ages 13 to 24 years old.

- In 2009, 27.7 percent of newly diagnosed HIV disease cases also represented new AIDS cases (i.e., HIV and AIDS were reported at or near the same time for the individual).
- Since the early 1990s, about 25 percent of North Carolina's HIV disease cases have consistently come from rural areas.
- In 2009, Mecklenburg County had the highest 3 year average HIV disease rate (41.5 per 100,000), followed by Edgecombe County (39.9 per 100,000), Washington County (33.6 per 100,000), Durham County (32.7 per 100,000), Northampton County (32.5 per 100,000), and Wilson County (29.8 per 100,000).
- In 2008, HIV/AIDS was listed as the 7<sup>th</sup> leading cause of death for N.C. adults ages 25 to 44 years old. The crude HIV disease death rate for blacks is more than 11 times higher than for whites (13.3 vs. 1.2 per 100,000).

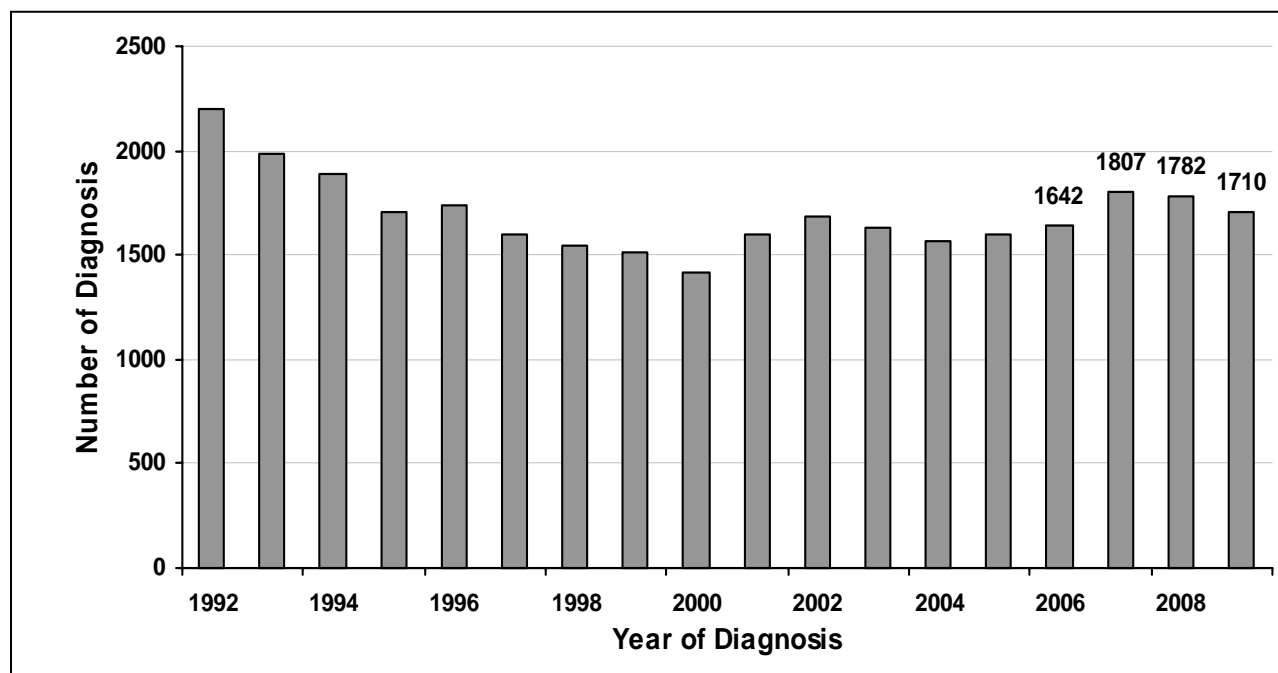
*Special notes:*

- *HIV disease includes all initial diagnoses of HIV as well as those diagnosed with AIDS as their initial diagnosis. More information about this designation of HIV disease can be found in Appendix C (pg. C-3).*
- *The HIV disease and AIDS case totals and rates presented in the demographic tables (See Appendix D: Tables A–H, O–P) and discussed in this document are restricted to adults/adolescents only for comparability across states and with national data reported by the Centers for Disease Control and Prevention (CDC). All county totals and references to cumulative cases and persons living with HIV/AIDS do include the 0 to 12 age group.*
- *Unless otherwise noted, year refers to year of diagnosis, not year of report, as in previous publications.*
- *Unless otherwise noted, references to all racial groups in surveillance data are presented in a race/ethnic designation. Hispanics are considered a separate race/ethnicity group. Thus, “white” refers to white non-Hispanics; “black” refers to black non-Hispanics, etc.*

## OVERALL HIV DISEASE TRENDS

Figure 2.1 displays the number of HIV disease cases diagnosed from 1992 to 2009 by the year of first diagnosis for the individual. The highest point in the HIV epidemic occurred in 1992 in North Carolina with around 2,200 cases and then moderated from 1995 to 2009 with 1,400–1,800 cases each year. The number of HIV disease cases diagnosed in 1992 represented a time when HIV incidence was likely at its peak. From 1995 to 2009, the epidemic was relatively stable; however, changes in reporting practices contributed to the fluctuations during this period, especially for 2002. The increase in cases in 2007 and 2008 was at least partially a result of efforts to increase HIV testing, like the *Get Real. Get Tested* campaign, and might not necessarily represent new incidence. 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.

**Figure 2.1. HIV disease cases diagnosed in North Carolina, 1992–2009**



Please note the numbers in Figure 2.1 above are periodically updated due to completion of information and deletion of interstate duplications. Readers are encouraged to use the numbers in the latest report.

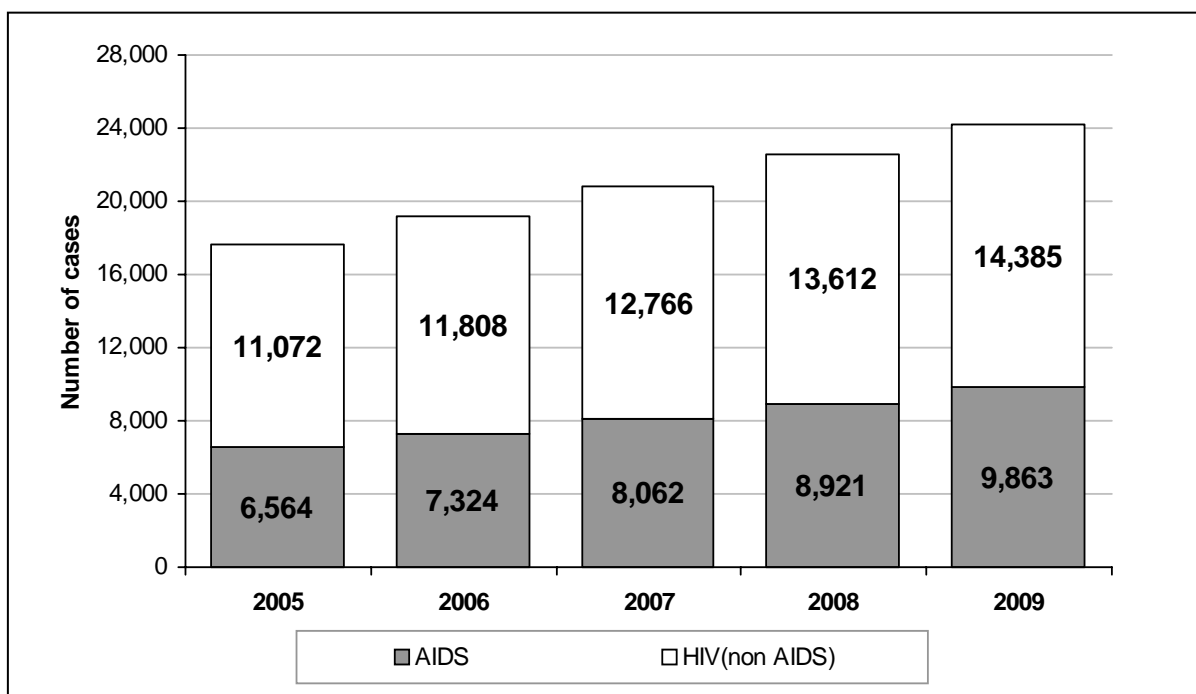
## HIV DISEASE PREVALENCE

Prevalent cases represent all individuals living with HIV disease in North Carolina communities. Information about persons living with HIV disease is very critical for case follow-up, AIDS care provision, and strategic intervention activities. From 1983, the year the first HIV disease case

was diagnosed and reported to the health department, through December 31, 2009, the cumulative number of HIV disease cases diagnosed in North Carolina was 36,906, of whom 24,248 are living, and 12,658 have died, including some HIV positive individuals who died of non AIDS-related causes (see pg. 39 for HIV disease related deaths). Figure 2.2 displays the numbers of people living with HIV disease, which represent the prevalent cases at the end of each year from 2005 to 2009. The numbers of people living with HIV disease have been increasing every year, an indication that the number of newly diagnosed HIV disease cases exceeds the number of people who died. Due to the advancement of highly effective anti-retroviral treatment and opportunistic infection control, people with HIV infection may live longer and healthier lives.

Persons living with HIV represent individuals who have been diagnosed and subsequently reported to the North Carolina public health surveillance system. Case counts are affected by some amount of under-reporting by clinicians and people that are infected with HIV but have not been tested and reported. Thus, the number of total living cases in the figure under-represents true HIV prevalence and must be adjusted to account for those who have been diagnosed but not reported and those who are unaware of their status. One method for estimating people who are unaware they are HIV positive is based upon the CDC estimate that 79 percent of the people living with HIV have been tested and know their status. Studies indicate that the N.C. HIV surveillance system currently captures 85 to 90 percent of new HIV diagnoses (Appendix B, pg. B-3). Applying these two statistics to our current surveillance total of 24,248 people living in North Carolina with HIV/AIDS would increase the estimate to about 35,000 people.

**Figure 2.2. Persons (reported) living with HIV disease in North Carolina 2005–2009\***



\*represents December 31 of each year

Please note HIV disease reports are periodically updated with vital status data available from the State Center for Health Statistics, thus “living totals” for earlier years, especially for the last two years, have been revised.

### Demographics of Persons Living with HIV Disease

#### *Gender, race/ethnicity, and age distribution*

Table 2.1 and Table J (Appendix D, pg. D-13) display the demographics of people living with HIV disease as of December 31, 2009. Male prevalent cases were nearly 70 percent of the total and more than double the female prevalence. Blacks (or African Americans) comprised the majority (67%) of cases, followed by whites (26%) and Hispanics (6%). Older individuals represented a larger percentage of people living with HIV, as many people can live for years with an HIV diagnosis. The greater percentages of males (70%) and blacks (67%) living with HIV disease indicated that these groups were more affected by the HIV epidemic.

**Table 2.1. North Carolina HIV cases living as of 12/31/2009 by selected demographics**

	Males			Females			Total		
	No.	Pct.	Rate**	No.	Pct.	Rate**	No.	Pct.	Rate**
	16,894	69.7%	374.0	7,354	30.3%	156.3	24,248	100.0%	262.9
<b>Race/Ethnicity</b>									
White*	5,027	20.7%	164.6	1,195	4.9%	37.4	6,222	25.7%	99.5
Black*	10,471	43.2%	1122.2	5,715	23.6%	540.5	16,186	66.8%	813.2
AI/AN*	143	0.6%	271.5	61	0.3%	109.7	204	0.8%	188.4
Asian/PI*	79	0.3%	85.7	32	0.1%	33.3	111	0.5%	58.9
Hispanic	1,038	4.3%	269.7	290	1.2%	96.7	1,328	5.5%	193.9
<b>Current Age</b>									
0-12	38	0.2%	4.6	29	0.1%	3.6	67	0.3%	4.1
13-14	11	0.0%	8.9	26	0.1%	22.2	37	0.2%	15.4
15-19	132	0.5%	40.9	76	0.3%	24.8	208	0.9%	33.1
20-24	727	3.0%	218.8	237	1.0%	80.4	964	4.0%	153.7
25-29	1,177	4.9%	379.1	446	1.8%	144.2	1,623	6.7%	261.9
30-34	1,403	5.8%	458.1	776	3.2%	251.4	2,179	9.0%	354.3
35-39	1,983	8.2%	586.5	1,139	4.7%	337.2	3,122	12.9%	461.9
40-44	2,867	11.8%	870.5	1,292	5.3%	384.8	4,159	17.2%	625.3
45-49	3,351	13.8%	1001.1	1,301	5.4%	371.9	4,652	19.2%	679.6
50-54	2,453	10.1%	791.1	983	4.1%	297.1	3,436	14.2%	536.1
55-59	1,517	6.3%	557.3	569	2.3%	190.5	2,086	8.6%	365.4
60-64	722	3.0%	314.9	274	1.1%	107.4	996	4.1%	205.6
65+	512	2.1%	108.1	206	0.8%	31.0	718	3.0%	63.0

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

\*\*per 100,000 population

### Mode of Transmission for HIV Prevalent Cases

Information about modes of transmission of HIV is very useful for disease prevention because without effective behavioral interventions for people living with HIV disease, people may continue to transmit HIV to others. Table I (Appendix D, pg. D-12) shows that 45 percent of living cases were likely infected through MSM activities, 38 percent through heterosexual transmission, 12 percent through IDU, and 3 percent through MSM/IDU activities.

### **NEWLY DIAGNOSED HIV DISEASE CASES IN 2009**

In 2009, 1,710 (18.5 per 100,000) individuals were newly diagnosed with HIV infection in North Carolina. Of the newly diagnosed persons, 1,705 of them were over 13 years old, which makes the rate of HIV infection among adults/adolescents 22.5 per 100,000 (Table 2.2.).

### Demographics of newly diagnosed HIV in 2009

#### *Gender and race/ethnicity*

Among the individuals diagnosed with HIV disease in 2009, about three times as many individuals were males compared to females. Table 2.2 displays the gender and race/ethnicity distribution of newly diagnosed HIV disease among adults/adolescents for 2009.

**Table 2.2. North Carolina adult/adolescent HIV disease cases by gender and race/ethnicity, 2009**

Race/ Ethnicity	Males			Females			Total		
	No.	Pct.	Rate**	No.	Pct.	Rate**	No.	Pct.	Rate**
	1,269	74.4%	34.5	436	25.6%	11.2	1,705	100.0%	22.5
White*	335	19.6%	13.1	73	4.3%	2.7	408	23.9%	7.7
Black*	783	45.9%	106.3	335	19.6%	38.7	1,118	65.6%	69.7
AI/AN*	9	0.5%	21.5	1	0.1%	2.2	10	0.6%	11.5
Asian/PI*	8	0.5%	11.1	2	0.1%	2.6	10	0.6%	6.8
Hispanic	113	6.6%	41.9	20	1.2%	10.4	133	7.8%	28.8
Multiple*	21	1.2%	---	5	0.3%	---	26	1.5%	---

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

\*\*per 100,000 adult/adolescent population

Among the adults/adolescents newly diagnosed with HIV disease in 2009, blacks or African Americans made up majority of cases (65.6%), followed by whites (23.9%), and Hispanics (7.8%). Over the previous five years (2005–2009), blacks have consisted of about 65 percent, whites 26 percent, and Hispanics around 8 percent of total cases, as shown in Figure 2.3 and Table B (Appendix D, pg. D-5).

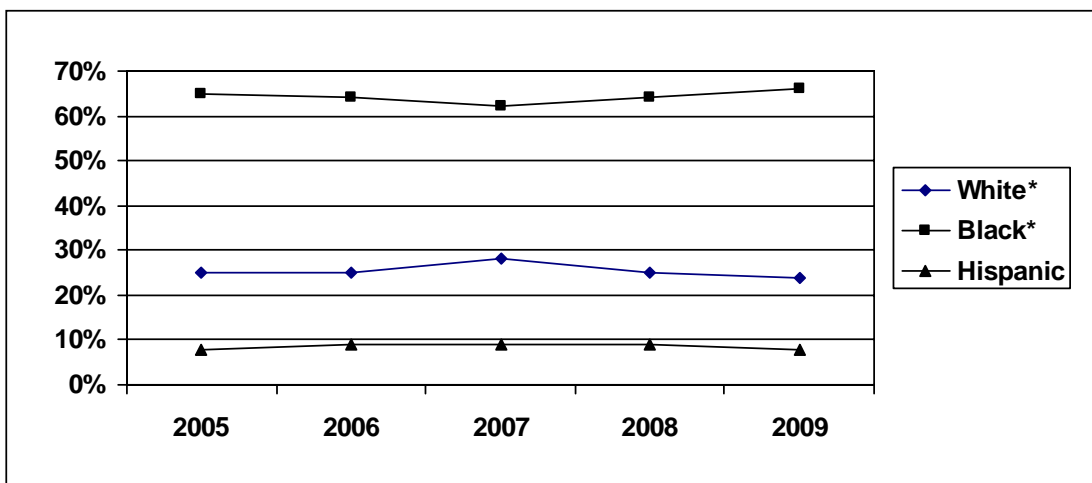
HIV disease rates are different from the proportion of total cases because they take into account the race/ethnicity of the state's population. The highest rate of newly diagnosed HIV disease was among black males (106.3 per 100,000 adult/adolescent population), which was more than eight times that for white males (13.1 per 100,000 adult/adolescent population). The HIV disease rate among adult/adolescent black females (38.7 per 100,000 adult/adolescent population) was more



than 14 times higher than the rate for adult/adolescent white females (2.7 per 100,000), which represented the largest disparity noted within gender and race/ethnicity categories.

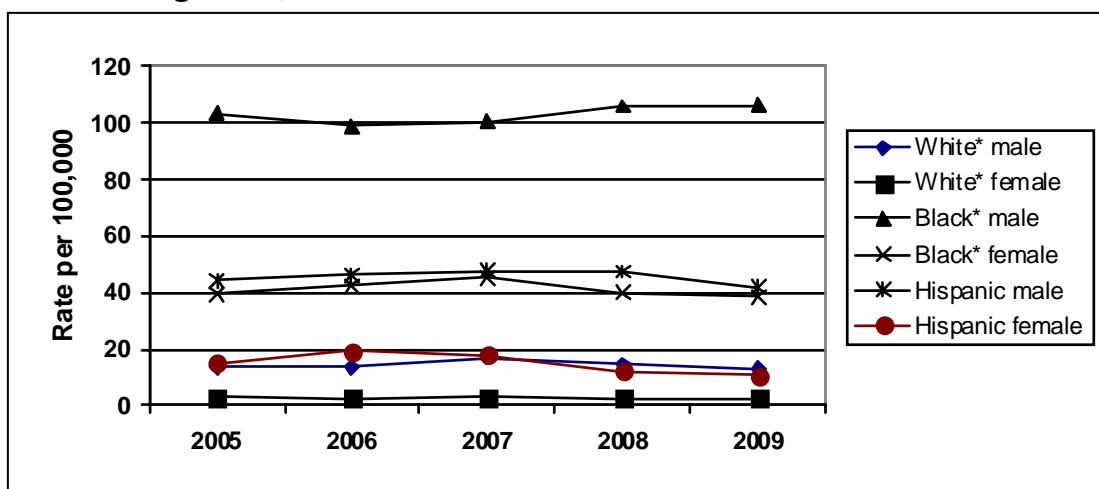
Disparities also existed for Hispanics as compared to whites. The rate for Hispanic men (41.9 per 100,000) was more than three times that for white men, and ranked third among the gender and race/ethnicity rates. The rate for Hispanic women (10.4 per 100,000) was about four times that for white women. Rates for other racial/ethnic groups are based on numbers too small for meaningful comparisons but are displayed in Table 2.2. Figure 2.3 shows that the proportions of racial composition of HIV disease cases remained stable over the last five years, and blacks have consistently represented over 60 percent of HIV disease cases. Figure 2.4 shows the gender and race/ethnicity (for whites, African Americans and Hispanics) specific HIV disease rates. From 2005 to 2009, HIV disease rates for black males have increased slightly while the rates for black females and Hispanic females have decreased slightly.

**Figure 2.3. Adult/adolescent HIV disease by race/ethnicity, 2005–2009**



\*non-Hispanic

**Figure 2.4. Adult/adolescent HIV disease rates by race/ethnicity and gender, 2005–2009**



\*non-Hispanic

*Age distribution*

Figure 2.5 displays the difference of ages between males and females diagnosed with HIV disease in 2009. More males between ages 20 to 29 and 40 to 49 years were diagnosed, while more females between ages 39 to 49 years were diagnosed. The difference of ages at diagnosis reflects the difference in risk for male and females.

Most HIV disease diagnoses were for adults and adolescents, with less than one percent of newly diagnosed representing infants or children younger than 13 years. For males, there were more HIV disease cases for age groups 20 to 29 years (29%) and 40 to 49 years (28%); for females, there were more HIV disease cases for age groups 30 to 39 years (23%) and 40 to 49 years (31%). Overall, adults ages 20 to 29 years and 40 to 49 years accounted for the greatest proportion (about 55% together) of individuals diagnosed in 2009 (Table 2.3).

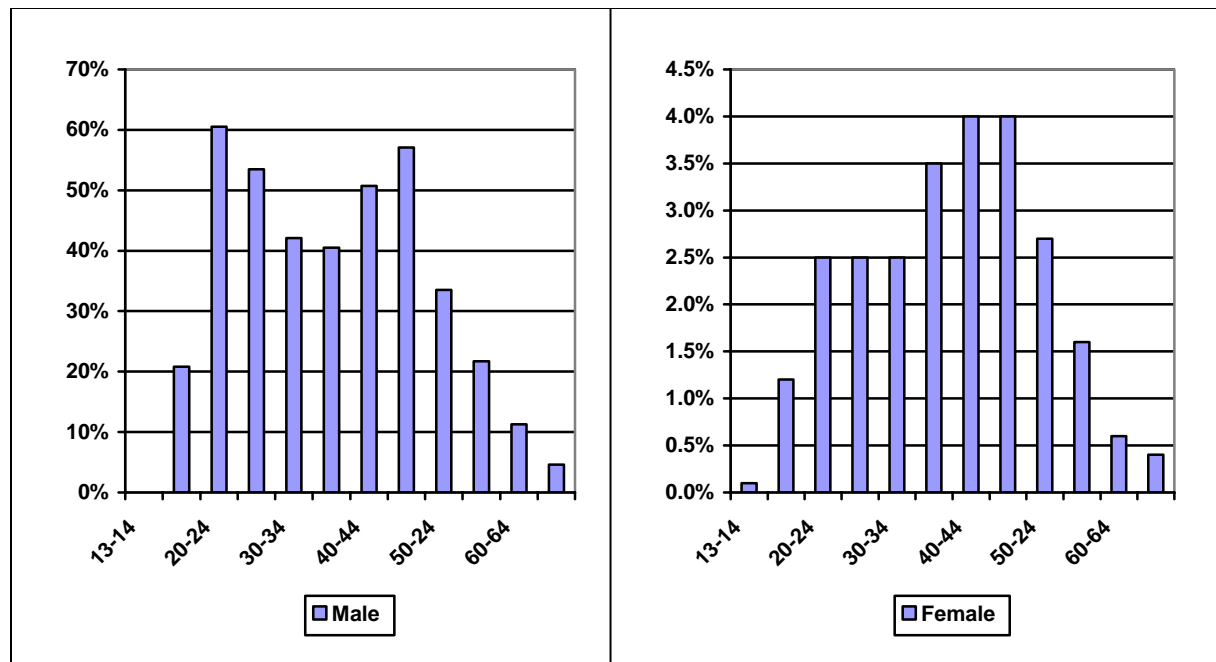
HIV has increased among an older population in comparison to other sexually transmitted diseases like gonorrhea and chlamydia; age distribution of HIV cases is more like that of syphilis reports (Chapter 7). However, a lag is often found between HIV infection and subsequent HIV diagnosis.

**Table 2.3. North Carolina HIV disease cases by age group and gender, 2009**

Age	Males			Females			Total		
	No.	Pct.	Rate*	No.	Pct.	Rate*	No.	Pct.	Rate*
0-12	3	0.2%	--	2	0.1%	--	5**	0.3%	--
13-14	0	0.0%	--	1	0.1%	--	1	0.1%	--
15-19	67	3.9%	20.8	20	1.2%	6.5	87	5.1%	13.8
20-24	201	11.8%	60.5	42	2.5%	14.2	243	14.2%	38.8
25-29	166	9.7%	53.5	43	2.5%	13.9	209	12.2%	33.7
30-34	129	7.5%	42.1	42	2.5%	13.6	171	10.0%	27.8
35-39	137	8.0%	40.5	60	3.5%	17.8	197	11.5%	29.1
40-44	167	9.8%	50.7	68	4.0%	20.3	235	13.7%	35.3
45-49	191	11.2%	57.1	69	4.0%	19.7	260	15.2%	38.0
50-54	104	6.1%	33.5	46	2.7%	13.9	150	8.8%	23.4
55-59	59	3.5%	21.7	28	1.6%	9.4	87	5.1%	15.2
60-64	26	1.5%	11.3	11	0.6%	4.3	37	2.2%	7.6
65+	22	1.3%	4.6	6	0.4%	0.9	28	1.6%	2.5
Total	1,272	74.4%	28.2	438	25.6%	9.3	1,710	100%	18.5

\* per 100,000 population \*\* cases under investigation for which diagnosis year may change

**Figure 2.5. Percentage of adult/adolescent HIV disease cases by age and gender, 2009**



Mode of HIV Disease Transmission for Adults/Adolescents

As part of HIV surveillance activities, a great deal of importance is placed on determining the key HIV risk factors associated with each case. Interviewing the patient, the sex and/or drug-using partners, and the treating physician are methods to determine the risk factors. 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 mode of transmission for adult/adolescent HIV disease cases diagnosed in 2009. The principal risk categories were: men who have sex with men (MSM), injection drug use (IDU), and heterosexual sex. The proportion of cases for which there was no identified risk (NIR) reported was substantial and was higher among females than among males when proportions were compared for each gender separately. A portion of these NIR cases were classified as NIR not because of missing or incomplete information, but because the reported risk(s) did not meet one of the CDC-defined risk classifications, in particular the heterosexual category. These classifications include knowing a partner’s risk (sex with known MSM or IDU, or sex with known HIV-positive person). Consequently, some NIR cases have been reevaluated and reassigned to a “presumed heterosexual” risk category based on additional information gathered 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). Even with the reassignment of presumed heterosexual risk for some NIR cases, a substantial proportion of cases remained assigned as no identified risk.

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 (Table

2.5). More explanation of this general risk reassignment of NIR cases can be found in Appendix C (pg. C-4). In addition, the redistributed risk assignment of NIR cases for all living cases can be found in Table I (Appendix D, pg. D-12). ***Please note all further discussions of risk or transmission categories in this profile will be based on the fully redistributed risk of all HIV disease cases.***

Table 2.5 shows that in 2009, MSM and MSM/IDU (men who have sex with men and inject drugs) were estimated to represent about 55 percent of all HIV disease cases. Heterosexual transmission risk represented about 42 percent of all HIV disease cases and IDU represented about 4 percent (including MSM/IDU).

Figure 2.6 shows over 90 percent of the HIV disease cases were likely transmitted via sex, either homosexual or heterosexual. Over the period of 2005 to 2009, MSM (including MSM/IDU) has been the leading mode of transmission, increasing from 49 percent in 2004 to 55 percent in 2009 (12% increase). During the same time period, IDU (including MSM/IDU) transmission decreased 50 percent and heterosexual transmission decreased slightly.

**Table 2.4. Adult/adolescent HIV disease cases by transmission category, NIR\* included, 2009**

Exposure category	Males		Females		Total	
	No.	Pct.	No.	Pct.	No.	Pct.
MSM	724	42%	---	---	724	42%
IDU	30	2%	12	1%	42	2%
MSM/IDU	16	1%	---	---	16	1%
Heterosexual	106	6%	136	8%	242	14%
Presumed heterosexual	130	8%	125	7%	255	15%
NIR*	263	15%	163	10%	426	25%
Total	1,269	74%	436	26%	1,705	100%

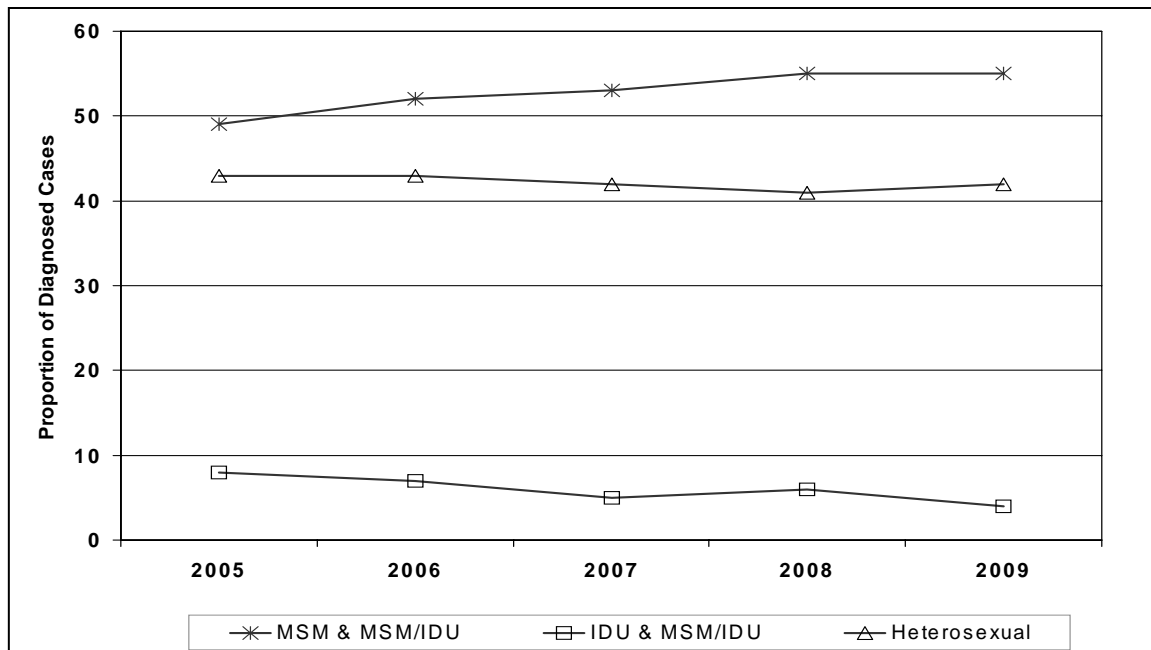
\*no indicated risk

**Table 2.5. Adult/adolescent HIV disease cases by transmission category, NIR\* redistributed, 2009**

Exposure Category	Males		Females		Total	
	No.	Pct.	No.	Pct.	No.	Pct.
MSM	915	72%	---	---	915	54%
IDU	38	3%	19	4%	56	3%
MSM/IDU	20	2%	---	---	20	1%
Heterosexual	296	23%	417	96%	713	42%
Total	1,269	100%	436	100%	1,705	100%

\*no indicated risk

**Figure 2.6. Proportion of HIV disease\* cases by mode of transmission, 2005–2009**



\* Adult/adolescent

### *Gender and mode of transmission*

HIV risk is very different for males and females; therefore, risk is discussed separately for each gender. Figures 2.7 and 2.8 display adult/adolescent risk categories for each gender. For males, MSM and MSM/IDU together accounted for about 74 percent of HIV disease cases diagnosed in 2009; heterosexual contact cases accounted for about 22 percent of cases; and IDU cases accounted for about 4 percent. For females, heterosexual contact accounted for about 96 percent of cases and IDU about 4 percent. Tables D and E (Appendix D, pg. D-7 to D-8) display the risk categories by gender for HIV disease cases from 2005 to 2009. For males, the proportion of MSM cases has risen in recent years, from 66 percent in 2005 to 72 percent in 2009. More male HIV cases associated with MSM risks observed during the same time period account for most of the overall increase in cases. The proportion of IDU cases (2005–2009) for males has declined from 5 percent to 3 percent from 2005 to 2009. IDU-associated cases for females did not show a discernable trend. For females, the proportion of heterosexual contact reports has increased from 86 to 96 percent and proportion of IDU transmission decreased from 13 to 4 percent.

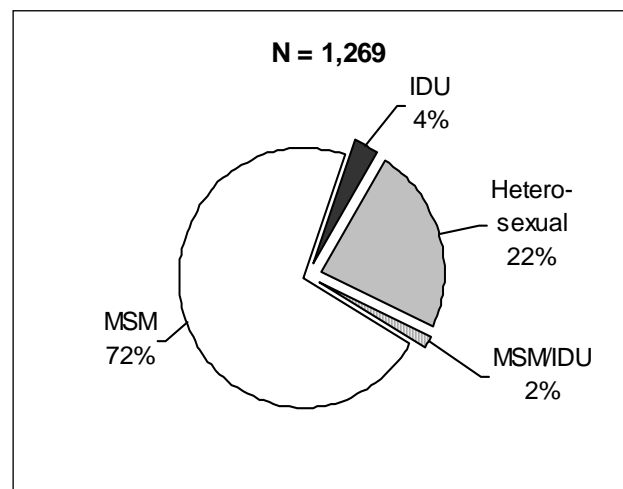
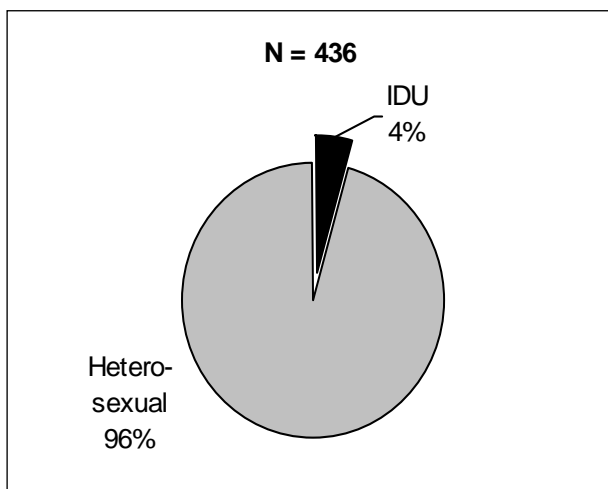
### *Gender, race/ethnicity, and mode of transmission*

Among white males, MSM (including MSM/IDU) represented 86 percent of cases, heterosexual risk represented 10 percent of cases, and IDU risk represented 1 percent of cases. For black males, MSM (including MSM/IDU) represented about 68 percent of HIV cases, heterosexual risk represented about 29 percent of cases, and IDU risk about 3 percent of cases. 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, “All other”, MSM (including MSM/IDU) risk represented 67 percent of male cases, heterosexual risk 31

percent of cases, and IDU risk 3 percent of cases. The proportions of HIV cases attributed to heterosexual risk among black males (29%) and other races (31%) are higher than the proportion among white males (10%). Although some of this observed difference may be due to underreporting of MSM activity among minority males, some is attributed to the difference in disease prevalence for each racial/ethnic group and the subsequent affect on risk. Unlike the differences in risk observed for males among the racial/ethnic groups, the majority of all HIV cases among females, regardless of race/ethnicity are attributed to heterosexual sex. IDU is attributed to a greater proportion of non-Hispanic white female (10%) cases than to minority females (3–4%) (Figures 2.9 and 2.10).

**Figure 2.7. Adult/adolescent females HIV disease cases, 2009**

**Figure 2.8. Adult/adolescent males HIV disease cases, 2009**

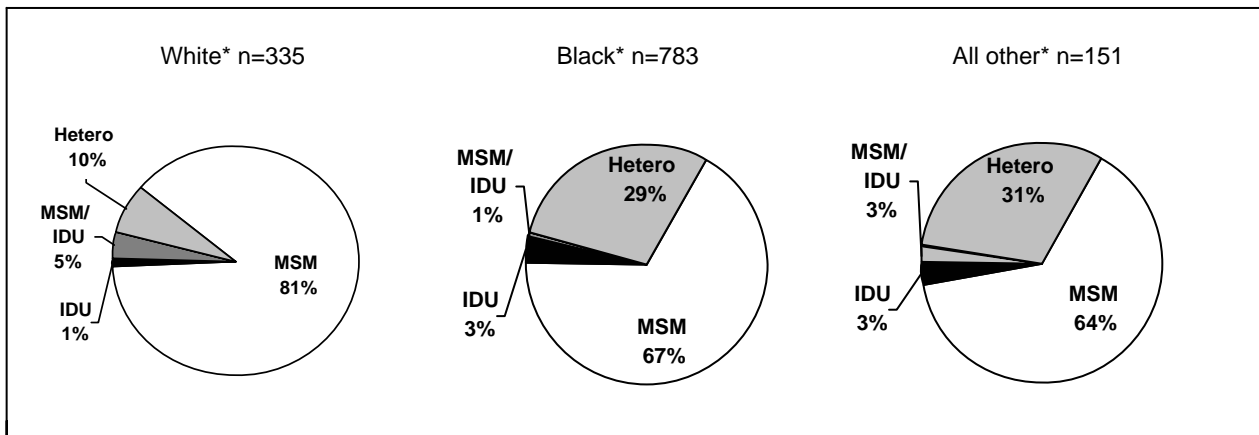


**ADOLESCENT ACQUIRED HIV/AIDS**

Figures 2.11 and 2.12 display the percentage of newly diagnosed HIV disease cases by risk and demographic categories for each gender for individuals ages 13 to 24 years at time of diagnosis. 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 2009, while just 5.2 percent of total cases diagnosed were found among teenagers ages 13 to 19 years, the percentage increased to almost 19.4 percent when 20 to 24 year olds were included.

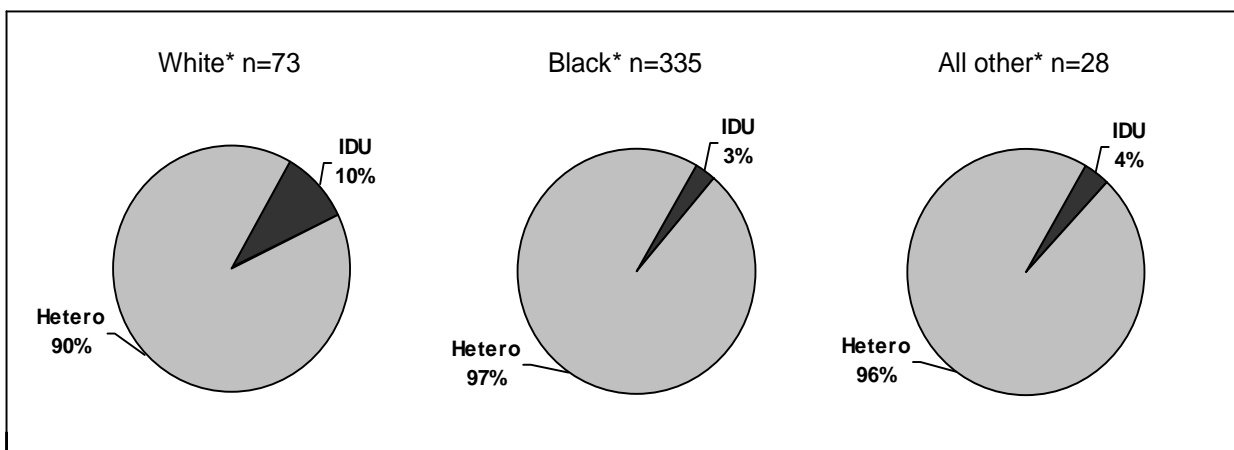
The exposure or risk categories for male adolescents and for female adolescents were very different. For adolescent females, all HIV disease cases are attributed to heterosexual contact. For adolescent males, the proportion of HIV disease cases attributed to heterosexual contact was only 9 percent and the proportion attributed to MSM risk (including MSM/IDU) accounted for 91 percent, up from the 88 percent of the diagnosed in 2005. As compared to cases for older persons, adolescent cases are more likely to be associated with sexual activity. Table C (Appendix D, pg. D-6) shows the detailed statistics about the percentage by gender over years.

**Figure 2.9. Male HIV disease cases, 2009**



\*Pediatric reports excluded

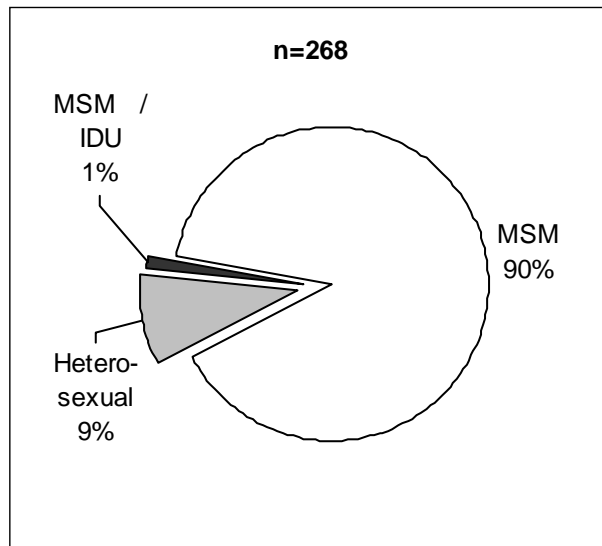
**Figure 2.10. Female HIV disease cases, 2009**



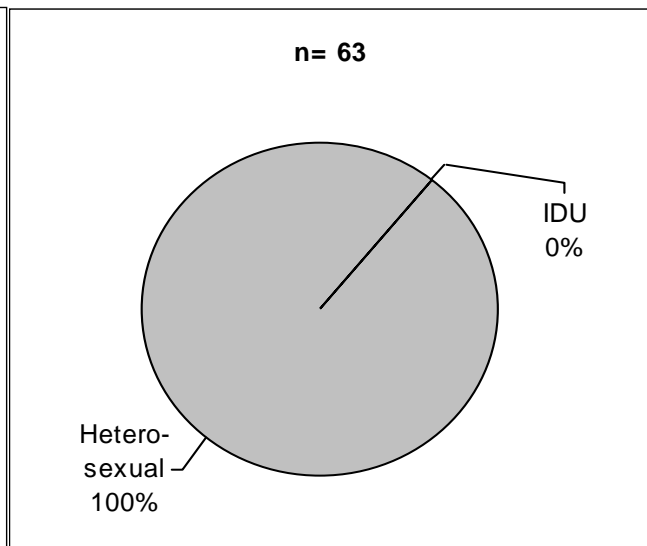
\*Pediatric reports excluded

From 2005 to 2009, the proportions of adolescents among HIV disease cases have increased from 15.8 percent to 19.4 percent of all reports. Although adolescent cases do not represent the majority of HIV cases diagnosed in each year, adolescence is the critical age for health education and HIV prevention.

**Figure 2.11. Adolescent (13–24 years) male HIV disease cases, 2009**



**Figure 2.12. Adolescent (13–24 years) female HIV disease cases, 2009**



**FEMALES OF CHILD-BEARING AGE AND PERINATAL HIV/AIDS**

Perinatal transmission of HIV is generally preventable if appropriate drugs are administered to the mothers during pregnancy and delivery. For this reason, special emphasis is placed on follow-up for known HIV-infected mothers in North Carolina. Table 2.6 displays the proportion of HIV-infected women who were of child-bearing age (15–44 years old). Around 300 (65% of female total) women of child-bearing age were diagnosed with HIV each year. This group of women represents the bulk of females diagnosed with disease. Note that the proportion of all female reports 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 2.6. Female HIV disease cases by special age groups, 2005–2009**

Age	2005		2006		2007		2008		2009	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
0-14 yrs	4	0.9%	5	1.1%	5	1.0%	5	1.1%	3	0.7%
15-44 yrs	322	74.0%	293	64.0%	352	68.5%	309	67.5%	275	62.8%
45 + yrs	109	25.1%	160	34.9%	157	30.5%	144	31.4%	160	36.5%
<b>Total</b>	<b>435</b>	<b>100%</b>	<b>458</b>	<b>100%</b>	<b>514</b>	<b>100%</b>	<b>458</b>	<b>100%</b>	<b>438</b>	<b>100%</b>



Table 2.7 displays the numbers of likely perinatal HIV transmissions that have occurred from 2000 to 2009 by year of birth. These numbers represent pediatric reports that indicate likely perinatal transmission based on exposure categories found in routine HIV surveillance data. These cases were HIV-positive children whose mothers had HIV or an HIV risk, and are likely HIV positive due to perinatal transmission. Confirming perinatal HIV cases takes time, so readers should consider the numbers here preliminary for recent years.

**Table 2.7. Likely perinatal HIV disease cases, year of birth, 2000–2009**

Year of birth	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Number of Cases	4	7	3	5	4	1	5	6	2	2

### HIV DISEASE AMONG FOREIGN-BORN RESIDENTS

Figure 2.13 displays the number of HIV disease cases that were identified among foreign-born people in North Carolina. Substantial increases in the number of cases for this group have been noted over the last eight years. The number of foreign-born HIV disease cases in 2009 (n=120) represented approximately 13 percent of all foreign-born HIV cases (926) for the last ten years (2000–2009). Table 2.8 shows the race/ethnicity of the foreign-born HIV cases. Hispanics comprised the highest proportion (61.2%). Non-Hispanic blacks comprised 28.8 percent of cases; whites and Asian/PI made up 5.7 and 3.9 percent respectively.

**Table 2.8. Race/Ethnicity of foreign-born HIV disease cases diagnosed 2000–2009**

Race/ethnicity	No.	Pct
White, non-Hispanic	53	5.7%
Black, non-Hispanic	267	28.8%
Asian/Pacific Islander	36	3.9%
Hispanic	567	61.2%
Others	3	0.3%
Total	926	100%

For the previous ten years, Mexico was the origin country with the highest number (409 cases) of foreign-born HIV cases. For HIV-infected Hispanics, the principal country of origin was Mexico, followed by Honduras, Guatemala, El Salvador, and Puerto Rico. For foreign-born blacks, the principal countries of origin were South Africa, Kenya, Zambia, Haiti, Jamaica and Liberia.

**Figure 2.13. Foreign-born HIV disease cases diagnosed, 1991–2009**

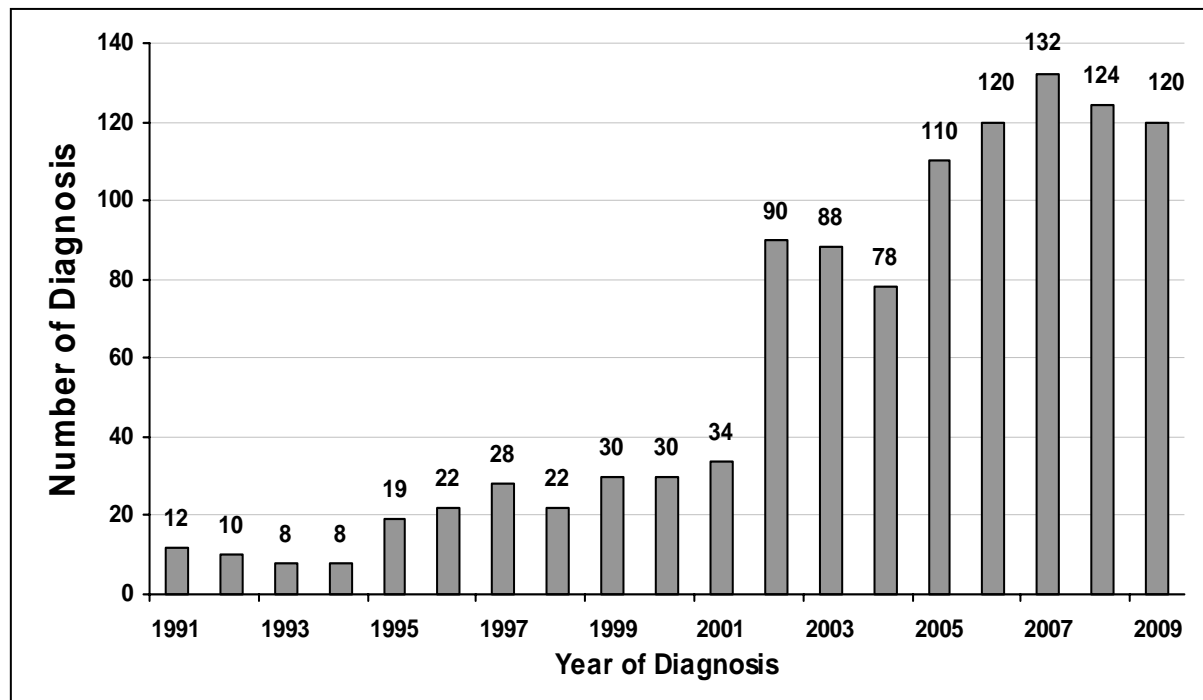
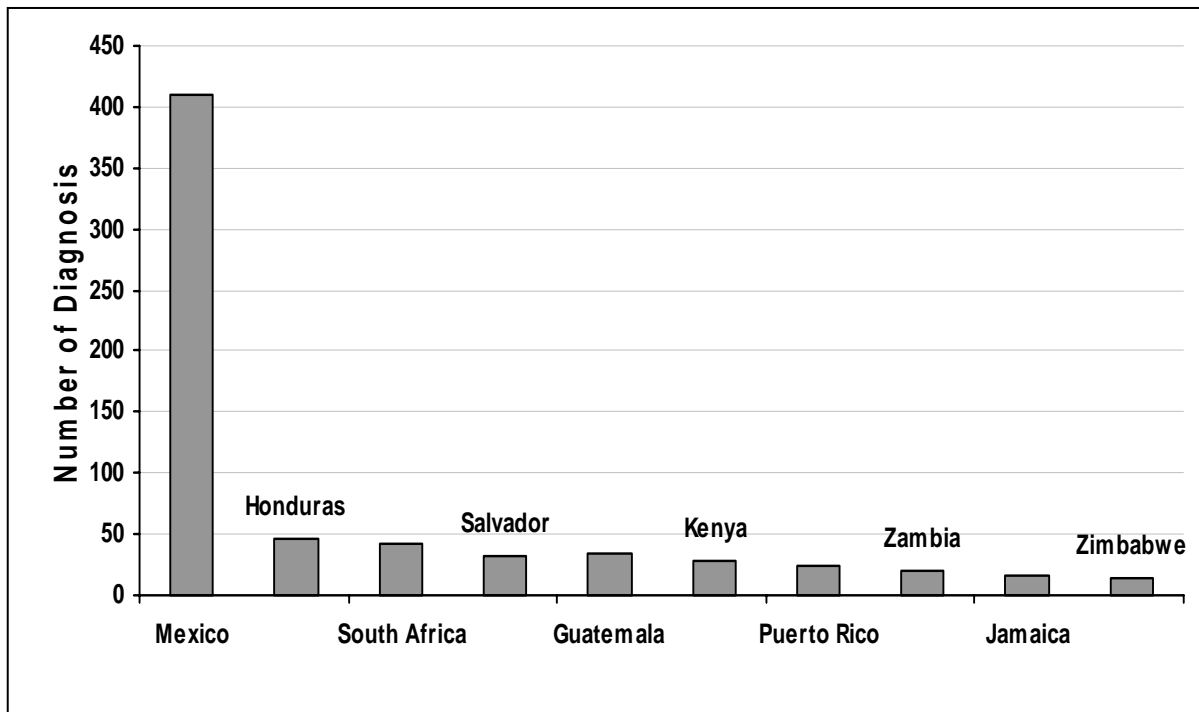


Figure 2.14 shows the number of HIV disease cases by country origin for the top 10 countries among all foreign-born HIV cases diagnosed from 2000 to 2009. The majority (84.7%) of these foreign-born HIV disease cases were diagnosed in urban counties including Wake (19.9%), Mecklenburg (19.5%), Guilford (9.1%), Durham (9.0%), and Forsyth (5.8%). About 13 percent of foreign-born cases were diagnosed in rural counties, including Duplin, Davidson, Rowan, Hertford, Craven, Robeson, Sampson, and Lee counties. Information about foreign-born HIV cases is important for planning outreach and prevention initiatives, because messages and information must be tailored or designed reflecting the appropriate culture and language. Information on the foreign-born population in North Carolina is presented in Chapter 1.

**Figure 2.14. Country of birth for foreign-born HIV disease cases, 2000–2009**

### HIV DISEASE CASES DIAGNOSED LATE

Table 2.9 shows the proportion of individuals diagnosed as AIDS when they were first diagnosed as HIV infected (late HIV diagnosis or concurrent AIDS cases) in 2009. These persons with concurrent diagnosis are generally referred to as “late testers” and include any person who receives an AIDS diagnosis within six months of the initial HIV positive screening. Hispanics had the highest proportion (34.1%) of late testing cases. Overall, 27.7 percent of newly diagnosed individuals had a concurrent AIDS or late HIV diagnosis in 2009.

As shown in Table 2.10, roughly 25 to 30 percent of new individuals diagnosed with HIV disease each year also represent AIDS cases (i.e. late testers) during the 2005–2009 period. The significant proportions of late diagnoses indicate the need for increased HIV testing within North Carolina. These figures support the recommendation to include voluntary HIV testing as part of routine medical examinations for all U.S. residents ages 13 to 64 years (Kaiser, 2006). Table 2.11 displays the gender and race specific proportions of all late testers (concurrent AIDS cases) diagnosed from 2005 to 2009. African Americans comprise 59 to 64 percent of total late testers, whites comprise 23 to 27 percent, and Hispanics comprise 7 to 15 percent in the previous five years.

**Table 2.9. The proportion of late testers by race/ethnicity among HIV disease cases, 2009**

Race/ ethnicity	Males	Females	Total
White*	28.1%	20.5%	26.7%
Black*	28.8%	23.7%	27.3%
Hispanic	36.5%	20.0%	34.1%
Other*	23.7%	37.5%	26.1%
Overall	29.2%	23.3%	27.7%

\*non-Hispanic

Late diagnosis of HIV not only increases the likelihood of missed opportunities for effective antiretroviral therapy, but also increases the risk of transmission. Research shows that persons who know their infection status are less likely to transmit the infection to others. In order to reduce the number concurrent AIDS diagnoses, the Communicable Disease Branch is actively pursuing new policies and guidelines aimed at making HIV testing routine within the state. In addition, the Branch has enacted specific initiatives addressing early HIV testing (Chapter 3).

**Table 2.10. Proportion of HIV and concurrent\* AIDS at diagnosis, 2005–2009**

Year of Diagnosis	Status at Diagnosis	
	HIV (non-AIDS)	AIDS
2005	70.7%	29.3%
2006	71.2%	28.8%
2007	75.7%	24.3%
2008	73.7%	26.3%
2009	72.3%	27.7%

\*HIV and AIDS diagnosed within six months of testing

## GEOGRAPHIC DISTRIBUTION OF HIV/AIDS

Geographic areas can be defined in many ways and readers sometimes request data on different geographic areas. In this HIV/STD Epidemiologic Profile, data are presented in three categories of geographic areas for the convenience of readers: metropolitan areas, rural/urban areas, and physiographic regions.

The distribution of HIV disease is uneven across North Carolina, as can be seen in Maps 9 and 10 (Appendix A, pg. 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.

**Table 2.11. Proportions of sex and race/ethnicity among late HIV diagnoses, 2005–2009**

Sex	Race/Ethnicity	Year of Diagnosis				
		2005 Pct.	2006 Pct.	2007 Pct.	2008 Pct.	2009 Pct.
Male	White*	22.6%	21.6%	21.9%	23.5%	19.9%
	Black*	43.7%	41.6%	41.5%	39.5%	47.8%
	Hispanic	6.4%	12.1%	10.3%	11.5%	8.9%
	Other/Unknown	1.5%	1.9%	0.2%	1.3%	1.9%
	Total	74.2%	77.2%	73.8%	75.9%	78.4%
Female	White*	4.9%	3.0%	5.0%	3.2%	3.2%
	Black*	19.6%	16.5%	19.4%	19.4%	16.9%
	Hispanic	0.9%	3.0%	1.6%	1.1%	0.8%
	Other/Unknown	0.4%	0.4%	0.2%	0.4%	0.6%
	Total	25.8%	22.8%	26.2%	24.1%	21.6%
Total	White*	27.5%	24.5%	26.9%	26.7%	23.0%
	Black*	63.3%	58.1%	60.8%	59.0%	64.7%
	Hispanic	7.2%	15.0%	11.8%	12.6%	9.7%
	Other/Unknown	1.9%	2.3%	0.5%	1.7%	2.5%
	Total	100%	100%	100%	100%	100%

\*non-Hispanic

*Urban/Rural and Metropolitan areas*

Based on criteria from Office of Management and Budget (OMB) and the Centers for Disease Control and Prevention (CDC), North Carolina could be categorized into large metropolitan (metropolitan area with 500,000 population or more), medium-sized metropolitan (metropolitan area with population between 50,000 to 499,999), micropolitan and non-metropolitan areas. Large and medium-sized metropolitan areas are usually referred to as urban areas, and micropolitan and non-metropolitan areas as rural areas. According to CDC, 82 percent of national AIDS reports are from large metropolitan areas and 11 percent are from medium-sized metropolitan areas, ending up with 93 percent of reports from urban areas and 7 percent from rural areas in 2006.

HIV New Diagnoses in Urban/Rural and Metropolitan Areas

While 75 percent of new diagnosis in 2009 were from urban areas, (See Table 2.12, Map 9, Appendix A, pg. A-11), some of the highest HIV disease rates (per 100,000 population) are found in rural areas, especially among blacks and Hispanics (See Table 2.13, Map 10, pg. A-12). The HIV disease rate in medium metropolitan areas in 2009 was slightly higher than the rates in micropolitan and non-metropolitan areas (Table 2.13).

Tables K–L (Appendix D, pg. D- 14–17) give individual county totals of HIV disease and AIDS cases reported, cases listed as living at the end of 2009, and a ranking of case rates (per 100,000 population) based on a three-year average (2007–2009). Mecklenburg County ranked highest with an HIV disease three-year average rate of 41.5 per 100,000 population in 2009, followed by Edgecombe County (39.9), Washington County (33.6), Durham County (32.7), Northampton County (32.7), and Wilson County (29.8). Readers are cautioned to view rates carefully, as rates based on small numbers (generally less than 20) are considered unreliable. Persons diagnosed in long-term institutions, such as prisons, are removed from county totals for a better comparison of HIV impact among communities.

**Table 2.12. Newly diagnosed HIV disease cases by metropolitan areas, 2009**

Race/Ethnicity	Rural			Urban			N.C. Total***		
	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*
White**	85	5.0%	4.4	310	18.1%	7.2	408	23.9%	6.5
Black**	218	12.7%	38.7	840	49.1%	58.8	1,121	65.6%	56.3
AI/AN**	7	0.4%	9.3	3	0.2%	9.1	10	0.6%	9.2
Asian/PI**	3	0.2%	14.2	7	0.4%	4.2	10	0.6%	5.3
Hispanic	16	0.9%	9.9	114	6.7%	21.8	135	7.9%	19.7
Multiple**	9	0.5%	---	16	0.9%	---	26	1.5%	---
<b>Total</b>	<b>338</b>	<b>19.8%</b>	<b>12.4</b>	<b>1,290</b>	<b>75.4%</b>	<b>19.9</b>	<b>1,710</b>	<b>100.0%</b>	<b>18.5</b>

\* Rate per 100,000 population      \*\* non=Hispanic; AI/AN=American Indian/Alaska Native; PI=Pacific Islander  
 \*\*\*N.C. Total includes cases unassigned to areas.

**Table 2.13. Newly diagnosed HIV disease cases by metropolitan areas, 2009**

Race/Ethnicity	Urban Areas				Rural Areas			
	Large metropolitan		Medium metropolitan		Micro Metropolitan		Non-Metropolitan	
	Cases	Rate*	Cases	Rate*	Cases	Rate*	Cases	Rate*
White**	178	8.4	132	6.0	57	4.0	28	5.7
Black**	534	71.4	306	45.0	163	41.0	55	33.3
AI/AN**	0	0.0	3	15.7	7	11.5	0	0.0
Asian/PI**	3	2.8	4	6.6	3	16.9	0	0.0
Hispanic	69	23.6	45	19.5	7	6.1	9	18.9
Multiple**	8	---	8	---	8	---	1	---
<b>Total</b>	<b>792</b>	<b>24.2</b>	<b>498</b>	<b>15.5</b>	<b>245</b>	<b>12.2</b>	<b>93</b>	<b>12.8</b>

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

### HIV Prevalence Cases in Urban/Rural and Metropolitan Areas

Among the HIV disease cases living through the end of 2009, about 19 percent were diagnosed and reported from rural areas (Table 2.14). More than 50 percent of living cases diagnosed in North Carolina were from seven counties, which included Mecklenburg (17.6%), Wake (10.4%), Guilford (7.4%), Durham (5.8%), Forsyth (4.9%), Cumberland (4.7%), and New Hanover (2.4%) counties. About 74 percent of living HIV cases were in urban areas and 18.5 percent in rural areas. Roughly, the prevalence rates for blacks and whites were higher in urban than in rural areas (Table 2.14).

County of residence is based on where the individuals were living when diagnosed with HIV disease. People may move to other areas in the years after diagnosis. Assuming no significant difference between the numbers of HIV disease cases moving in and out of the original residence county, the statistics above still indicate roughly the number and rate of living HIV disease cases in the corresponding counties.

**Table 2.14. HIV Disease prevalence as of 12/31/2009 by rural/urban areas, 2009**

Race/Ethnicity	Rural			Urban			N.C. Total***		
	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*
White**	1,141	4.7%	59.6	4,882	20.1%	112.6	6,222	25.7%	99.5
Black**	3,281	13.5%	582.7	11,846	48.9%	829.9	16,186	66.8%	813.2
AI/AN**	118	0.5%	156.3	70	0.3%	213.5	204	0.8%	188.4
Asian/PI**	23	0.1%	108.7	85	0.4%	50.8	111	0.5%	58.9
Hispanic	269	1.1%	166.6	1,014	4.2%	193.8	1,328	5.5%	193.9
Multiple**	49	0.2%	---	139	0.6%	---	197	0.8%	---
<b>Total</b>	<b>4,481</b>	<b>18.5%</b>	<b>178.4</b>	<b>18,036</b>	<b>74.4%</b>	<b>278.1</b>	<b>24,248</b>	<b>100%</b>	<b>262.9</b>

\* Rate per 100,000 population

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

\*\*\*N.C. Total includes cases unassigned to areas.

Although the highest prevalence rates for whites and blacks were in urban (large and medium-sized metropolitan areas), the highest rate for Hispanics was in non-metropolitan areas (Table 2.15). As with new HIV diagnoses in 2009, more American Indian prevalent cases were diagnosed and reported in micropolitan areas, making the rate in that area much higher than the rate in other areas (Table 2.15). The number of prevalent cases for Asian/Pacific Islanders and American Indians/Alaska Natives were still too small to make comparisons, especially in non-metropolitan areas.

**Table 2.15. HIV Disease prevalence as of 12/31/2009 by metropolitan areas, 2009**

Race/Ethnicity	Urban Areas				Rural Areas			
	Large metropolitan		Medium metropolitan		Micro Metropolitan		Non-metropolitan	
	Cases	Rate*	Cases	Rate*	Cases	Rate*	Cases	Rate*
White**	2,695	127.2	2,187	98.7	863	60.7	278	56.2
Black**	6,756	903.6	5,090	748.8	2,435	612.2	846	511.9
AI/AN**	34	248.1	36	188.6	102	167.1	16	110.8
Asian/PI**	51	48.0	34	55.8	18	101.6	5	144.7
Hispanic	553	189.0	461	199.8	159	139.6	110	231.4
Multiple**	73	---	66	---	39	---	10	---
<b>Total</b>	<b>10,162</b>	<b>309.9</b>	<b>7,874</b>	<b>245.5</b>	<b>3,616</b>	<b>179.8</b>	<b>1,265</b>	<b>174.5</b>

\* Rate per 100,000 population

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

*Physiographic Regions*

The North Carolina state demographer and the GIS lab at the State Center for Health Statistics have produced a Geographic Regional Classification scheme based on "physiographic" qualities. According to this scheme, North Carolina has three regions, West Region, Piedmont Region, and East Region (Table 2.16). Western Region includes counties west of (and including) Surry, Wilkes, Caldwell, Burke, and Rutherford; Eastern Region includes everything east of (and including) Northampton, Halifax, Nash, Johnston, Cumberland, Hoke, Harnett, and Scotland. Piedmont Region includes the counties in between the Western Region and the Eastern Region.

**Table 2.16. Newly diagnosed HIV disease cases by physiographic regions, 2009**

Race/Ethnicity	Eastern		Piedmont		Western		N.C. Total***	
	Cases	Rate*	Cases	Rate*	Cases	Rate*	Cases	Rate*
White**	96	6.0	240	6.6	59	5.9	408	6.5
Black**	309	41.1	741	62.6	8	14.6	1,121	56.3
AI/AN**	8	10.7	2	9.0	0	0.0	10	9.2
Asian/PI**	5	17.3	5	3.4	0	0.0	10	5.3
Hispanic	28	16.9	100	21.4	2	3.8	135	19.7
Multiple**	8	---	13	---	4	---	26	---
<b>Total</b>	<b>454</b>	<b>17.3</b>	<b>1,101</b>	<b>20.2</b>	<b>73</b>	<b>6.4</b>	<b>1,710</b>	<b>18.5</b>

\* Rate per 100,000 population

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

\*\*\*N.C. Total includes cases unassigned to areas.



For whites, blacks, and Hispanics, the majority of HIV disease cases were diagnosed in the Piedmont Region in 2009, followed by the Eastern Region. For American Indian/Alaska Natives, most HIV disease cases were diagnosed in the Eastern Region. The number of Asian/Pacific Islanders HIV cases diagnosed in Eastern and Piedmont Regions were same, while the rate in the Eastern Region is much higher than the Piedmont Region because a smaller Asian/PI population in Eastern Region (Table 2.16).

Among the HIV disease cases living through the end of 2009, a majority of whites, blacks, and Hispanics were diagnosed and reported from Piedmont Region, followed by the Eastern Region. Because the American Indian population in the Piedmont Region is smaller than in the Eastern Region, the prevalence rate in the Piedmont Region is higher than the rate in the Eastern Region (Table 2.17). The Western Region had fewer HIV cases and rates for both new diagnoses in 2009 and prevalent cases.

**Table 2.17. HIV Disease prevalence as of 12/31/2009 by physiographic regions, 2009**

Race/Ethnicity	Eastern		Piedmont		Western		N.C. Total***	
	Cases	Rate*	Cases	Rate*	Cases	Rate*	Cases	Rate*
White**	1,347	84.0	3,966	109.0	710	70.5	6,222	99.5
Black**	4,883	649.5	9,977	842.6	267	488.9	16,186	813.2
AI/AN**	132	176.8	44	197.8	12	105.5	204	188.4
Asian PI**	36	124.6	67	44.9	5	48.7	111	58.9
Hispanic	339	205.0	886	189.7	58	110.8	1,328	193.9
Multiple**	60	---	115	---	13		197	---
<b>Total</b>	<b>6,797</b>	<b>258.9</b>	<b>15,055</b>	<b>275.6</b>	<b>1,065</b>	<b>93.8</b>	<b>24,248</b>	<b>262.9</b>

\* Rate per 100,000 population

\*\*non-Hispanic

\*\*\*N.C. Total includes cases unassigned to areas.

## HIV/AIDS-RELATED DEATH

According to the National Center for Health Statistics, the cumulative number of people with HIV disease as cause of death through 2006 in North Carolina is 10,421. The North Carolina State Center for Health Statistics reported 355 in 2008 (3.8 per 100,000) HIV/AIDS deaths (Table 2.18). Together with 382 deaths in 2007, the total number of deaths caused by HIV disease in North Carolina is 11,158 (different from the total number of deaths for persons infected with HIV/AIDS mentioned in pg. 20). Unlike chronic diseases with high death rates among older populations (such as cancer or cardiovascular diseases), HIV/AIDS death rates are concentrated among the young and middle-aged people. According to the State Center for Health Statistics the crude death rate is about 11 times higher for blacks (13.3 per 100,000) than for whites (1.2 per 100,000).

**Table 2.18. N.C. HIV/AIDS-related deaths by race/ethnicity and gender, 2008**

Race/ ethnicity	Males			Females			Total		
	No.	Pct.	Rate*	No.	Pct.	Rate*	No.	Pct.	Rate*
White**	61	24.3%	2.0	15	14.4%	0.5	76	21.4%	1.2
Black**	176	70.1%	18.9	88	84.6%	8.3	264	74.4%	13.3
Hispanic	13	5.2%	3.4	0	0.0%	0.0	13	3.7%	1.9
Other	1	0.4%	0.7	1	1.0%	0.7	2	0.6%	0.7
Total	251	100%	5.6	104	100%	2.2	355	100%	3.8

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

HIV/AIDS as a leading cause of death is usually among people ages 25 to 60 years and varies by race/ethnicity in North Carolina. HIV/AIDS ranked as the 5<sup>th</sup> leading cause of death among blacks ages 25 to 44 years and 7<sup>th</sup> among Hispanics, as well as the overall population ages 25 to 44 years in North Carolina; HIV/AIDS also ranked as the 5<sup>th</sup> leading cause of death among blacks and 8<sup>th</sup> among Hispanics ages 45 to 64 years in 2008 (Table 2.19).

**Table 2.19. HIV Disease as the leading cause of death among N.C. residents, 2008**

Age Group	Race/Ethnicity	Number of Deaths	Rank as the leading cause of death
25–44 years	American Indian*	1	9th
	White*	28	10th
	Black*	96	5th
	Hispanic	9	7th
	All Races	134	7th
45–64 years	Black*	146	5th
	Hispanic	4	8th

\*non-Hispanic

Source: N.C. State Center for Health Statistics

## CHAPTER 3: HIV TESTING AND PREVENTION IN NORTH CAROLINA

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### HIGHLIGHTS

- In 2009, a total of 276,017 HIV tests were performed through state-sponsored programs. Most tests (93%) were performed using a conventional blood test for HIV, while an additional 18,926 used a rapid HIV test.
- Over 50 percent of the conventional blood tests were performed in local health department clinics (29.9% in STD clinics, 16.8% in family planning clinics, and 12.9% in prenatal/obstetric clinics), 13.8 percent in correctional settings (8.9% in state prisons and 4.9% in local jails), and 6.1 percent in outreach/community settings.
- For rapid HIV tests, 38.3 percent were done in outreach/community settings, 32.9 percent in community health centers, 12.5 percent in drug treatment facilities, and 8.6 percent in HIV testing sites (NTS).
- The highest positivity rate of new HIV cases (4.2%) was seen among the tests conducted through Disease Intervention Specialist (DIS) Field visits. Clients tested in a hospital or private doctor's office also had a high positivity rate (1.7%). For those tested in HIV testing sites, positivity rates were highest in NTS (1.5%), community health centers (1.5%), and jails (0.59%).
- The positivity rate of new HIV cases was higher for males compared to females (0.79 % versus 0.14%). Most of the men were tested in an STD clinic (50.1%) or in jail (14.8%); and they represented a population at higher risk for HIV. The majority of women were tested in family planning clinics (28.1%) and prenatal OB clinics (21.5%).
- New HIV positivity rates were highest for black males (1.01%). The positivity rate for black males was 2.3 times higher than the rate for white men (0.43%).
- The rate of positivity for black non-Hispanic women (0.24%) was 3.0 times higher than that for white women (0.08%).
- Among men, the highest new case positivity rates were among those reporting sex with an HIV-positive partner (6.3%), sex with MSM (4.8%), sex with male (4.2%), child of HIV-positive woman (5.1%), and victim of sexual assault (1.6%).
- For women, the highest positivity was among those reporting sex with an HIV-positive partner (3.2%), exchanging sex for drugs or money (0.99%), injection drug use (0.75%), and sex with an injecting drug user (IDU) (0.69%).

## BACKGROUND

The information in this chapter will focus on state-supported HIV testing programs and on prevention activities that encourage testing for HIV. In North Carolina, HIV testing is offered at no charge to clients in all local health departments and a number of community-based organizations (CBOs). In addition, the North Carolina Division of Public Health's Communicable Disease Branch provides resources and technical support to community health centers, emergency departments, health departments, and state prisons to expand HIV testing in clinical and jail settings. HIV prevention activities include the "Get Real, Get Tested" campaign, Project Commit to Prevent, and other health education and risk reduction projects conducted by local health departments and CBOs.

### History of State-Sponsored HIV Testing in North Carolina

The North Carolina State Laboratory of Public Health (SLPH) has been processing blood samples for HIV testing since about 1987. When the state-sponsored program began, testing was available anonymously at 100 local health departments. In September 1991, North Carolina began to evaluate the use of confidential (client's name obtained), rather than anonymous HIV testing. All 100 sites offered confidential tests; eighteen of these sites continued to offer anonymous testing as an option. Effective in May 1997, anonymous testing in North Carolina was eliminated through a ruling made by the North Carolina Commission of Health Services (reference).

The North Carolina Commission for Health Services' ruling to discontinue anonymous testing for HIV raised some concern that by removing the anonymous test option, testing among people with high risk for HIV infection would be reduced. Before the option for anonymous testing was eliminated, the N.C. Division of Public Health's Communicable Disease Branch implemented procedures to make HIV testing available in nontraditional settings. Some nontraditional test sites are operated by CBOs or local health departments and offer HIV testing in venues outside of the traditional health department testing sites. Other sites are physically located in a local health department but operate outside the normal working hours.

Changes in policy, HIV testing technology, and funding have enabled the Division of Public Health to expand the numbers of people tested for HIV each year. In 2006, the Centers for Disease Control and Prevention (CDC) published revised HIV testing guidelines that encouraged HIV testing for adults as part of their routine health care (CDC 2006). Screening for HIV infection should be performed routinely for all patients ages 13 to 64 years and should be included in the routine panel of prenatal screening tests for all pregnant women. The CDC further recommended that separate written consent for HIV testing should not be required (general consent for medical care should be considered sufficient to encompass consent for HIV testing) and that prevention counseling should not be required with HIV diagnostic testing or as part of screening programs in clinical settings. In response to these new guidelines, North Carolina passed a rule change to the administrative code on November 1, 2007. For tests done in clinical settings, a written HIV consent form and pre-test counseling were no longer required; thereby removing some of the barriers to routine HIV testing (10A NCAC 41A.0202(10); 10A NCAC 41A.0202(16) ). Additional rule changes require that pregnant women shall be offered

HIV tests at the first prenatal visit and in the third trimester (10A NCAC 41A.0202 (14)). These policy changes have resulted in increased testing in prenatal/obstetric clinics, STD clinics, jails, and prisons in North Carolina and greatly facilitated the establishment of new testing programs in emergency departments and community health centers.

The Division of Public Health initiated a rapid testing program in 2004 that has provided new opportunities for improving access to testing in both clinical and outreach settings. Rapid HIV testing technology was first approved by the Food and Drug Administration (FDA) in 2002. Currently there are six FDA approved rapid tests, four of which have CLIA (Clinical Laboratory Improvement Amendment) waivers (Oraquick Advance Rapid HIV1/2 antibody test, Unigold recombinant HIV, Clearview HIV 1/2 Stat Pak, Clearview Complete HIV1/2). Rapid tests with a CLIA waiver can be processed outside of a clinical setting, thus allowing HIV testing to be done more easily in outreach settings. Rapid HIV tests can be performed using oral fluid, finger stick blood, serum, plasma, or whole blood collected by venipuncture. Preliminary rapid test results can be obtained in 10 to 20 minutes (all preliminary rapid tests should then be followed by a confirmatory conventional HIV test). Clients undergoing rapid HIV testing can receive their preliminary HIV test result the same day they were tested; consequently, a rapid HIV test is useful in testing settings where clients tend not to return for conventional HIV test results. Rapid testing technology has helped to make HIV testing easier, more accessible, and less invasive than conventional HIV testing.

The Division of Public Health receives funding from both federal and state sources to pay for a variety of programs, including HIV testing. Most of this funding comes from the Centers for Disease Control and Prevention (CDC), but the federal Substance Abuse and Mental Health Services Administration (SAMHSA) has also supplied funding for testing in substance abuse centers. The Branch then distributes money to the health departments and CBOs that test the public for HIV. Increases in funding have allowed for the continuing expansion of HIV testing efforts.

The non-traditional testing site (NTS) program is funded by the N.C. Division of Public Health with federal funds from the CDC. The purpose of the NTS program is to serve difficult to reach populations through mobile outreach or extended office hours. The program started out small, became more formalized in 1999, and funding has increased steadily since then. In 1999, the project did about 3,000 tests at a handful of sites. The project has grown to 19 sites and performed 26,982 tests in 2009.

Also during 1999, the CDC launched the Syphilis Elimination Effort to combat syphilis in the United States. In 1998, syphilis disease rates were at an all-time low but the distribution of cases in the United States was highly concentrated geographically. In 1999, funding was awarded to 28 counties to enhance syphilis prevention efforts. Five of these counties were in North Carolina, with a sixth added later on. The project performed syphilis screening in a variety of settings and policies were instituted to test those same subjects for HIV whenever possible. This effort led to increased HIV testing in those areas.

Funding under the Syphilis Elimination Effort was dramatically reduced in 2007; but many of the programs remained in place with the addition of new HIV testing funding from CDC. The

Expanded HIV Testing Project began in October of 2007 and specifically funds testing in clinical settings such as STD clinics, community health centers, hospital emergency departments, jails, and prisons. Some testing in these settings was already underway, but many new sites were added as a direct result of this funding. The project was responsible for 68,800 HIV tests performed in 2009.

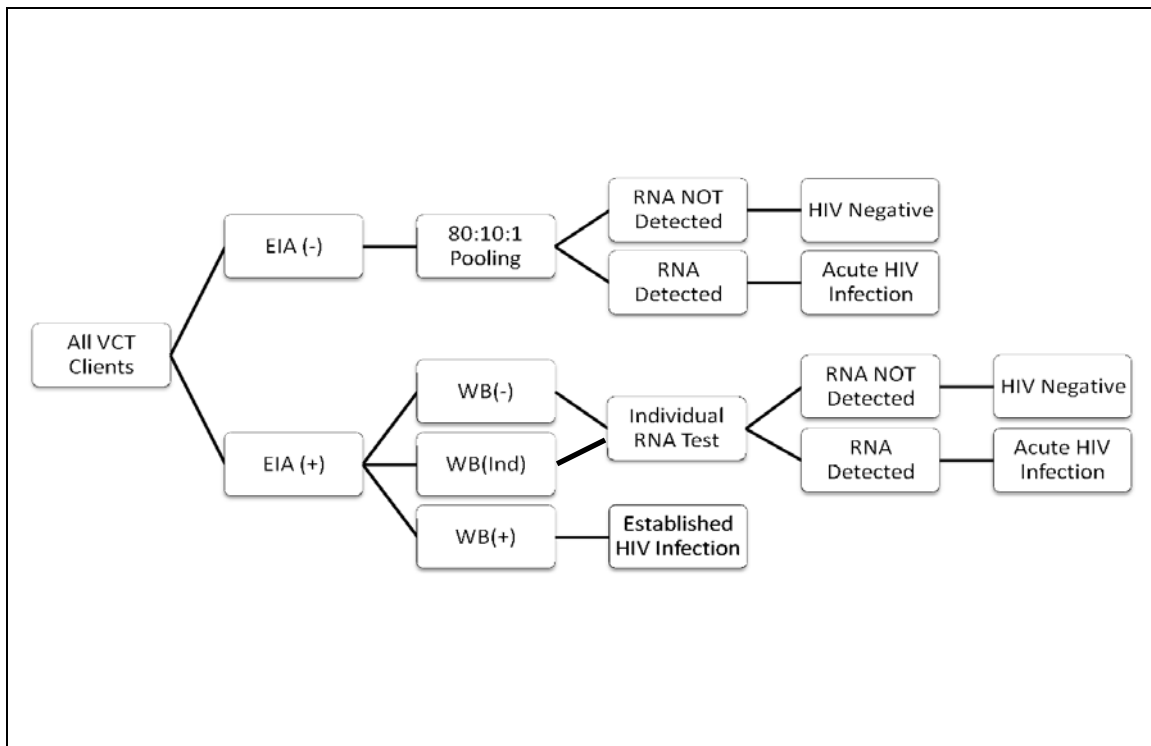
In 2004, the Branch began to receive additional funding specifically for the distribution of rapid testing kits to CBOs, community health centers, and other agencies. Similar to the NTS project, the Rapid HIV Testing Project started out small with just a handful of participating sites (6 sites and 235 tests) and has grown to 38 sites and performed 18,926 tests in 2009.

### **HIV TESTING DATA**

Data on HIV tests submitted to the North Carolina State Laboratory of Public Health (SLPH) is housed in the HIV Counseling, Testing, and Referral System (CTR). This system includes data on all HIV tests that are submitted by local health departments and CBOs to the N.C. SLPH for processing. During a pre-test interview, demographic data, information on HIV risk behaviors, reasons for getting tested, and HIV testing history are collected from all clients tested through this state-sponsored program. Beginning in the middle of 2005, personal identifiers were also included in the CTR data. For each person tested, this data is collected and sent with the blood sample to the North Carolina State Laboratory for Public Health for analysis. Data on rapid HIV testing is housed in the HIV CTR dataset as well as in the rapid HIV dataset maintained by the N.C. Communicable Disease Branch. Information collected on clients receiving rapid HIV tests is similar to that collected for conventional HIV tests submitted to the N.C. SLPH.

### **HIV Testing Protocol**

The N.C. State Laboratory of Public Health (SLPH) conducts HIV screening assays as a service for public health agencies and for designated counseling and testing sites. Three serologic assays are available for the detection of HIV antibodies (Figure 3.1). An enzyme immunoassay (EIA) is used as a screening test for antibodies to HIV. Through the end of 2007, the EIA tests were specific to HIV-1.

**Figure 3.1 HIV screening assays utilized by the N.C. SLPH**

In January 2009, the SLPH adopted a new 3<sup>rd</sup> generation EIA that tests for both HIV-1 and HIV-2. All reactive EIA tests are repeated in duplicate to verify the initially reactive test result. All repeatedly reactive EIA tests (2 or more reactive) are confirmed by the Western Blot (WB) HIV-1 assay. Samples that test repeatedly reactive on the EIA screening assay but fail to test as reactive by HIV-1 WB or HIV-1 RNA are further tested by a third serologic assay that differentiates HIV-1 and HIV-2. All HIV specimens that test non-reactive for HIV antibodies by the EIA screening assay are then tested for HIV-1 RNA using molecular methodology to detect acute HIV infections.

#### HIV Testing at SLPH, 1991–2009

A full-fledged testing program at the N.C. State Laboratory of Public Health (SLPH) was in place by May of 1991. A total of 32,747 tests were performed that year, primarily in HIV counseling and testing sites and STD clinics (Table 3.1). New positivity rates were high at that time (1.5% overall) because testing was highly targeted to those at high risk. HIV testing increased steadily over the next five years and the proportion of tests from family planning and prenatal/OB clinics increased as well. As more low risk women were added to the testing pool, the positivity rates declined. HIV testing levels remained relatively stable from 1996 to 2003 and then began to increase from 2004 to 2009 due to expanded HIV testing and other projects.

**Table 3.1 HIV Tests performed by N.C. State Laboratory of Public Health (SLPH) and positivity rates, 1991–2009**

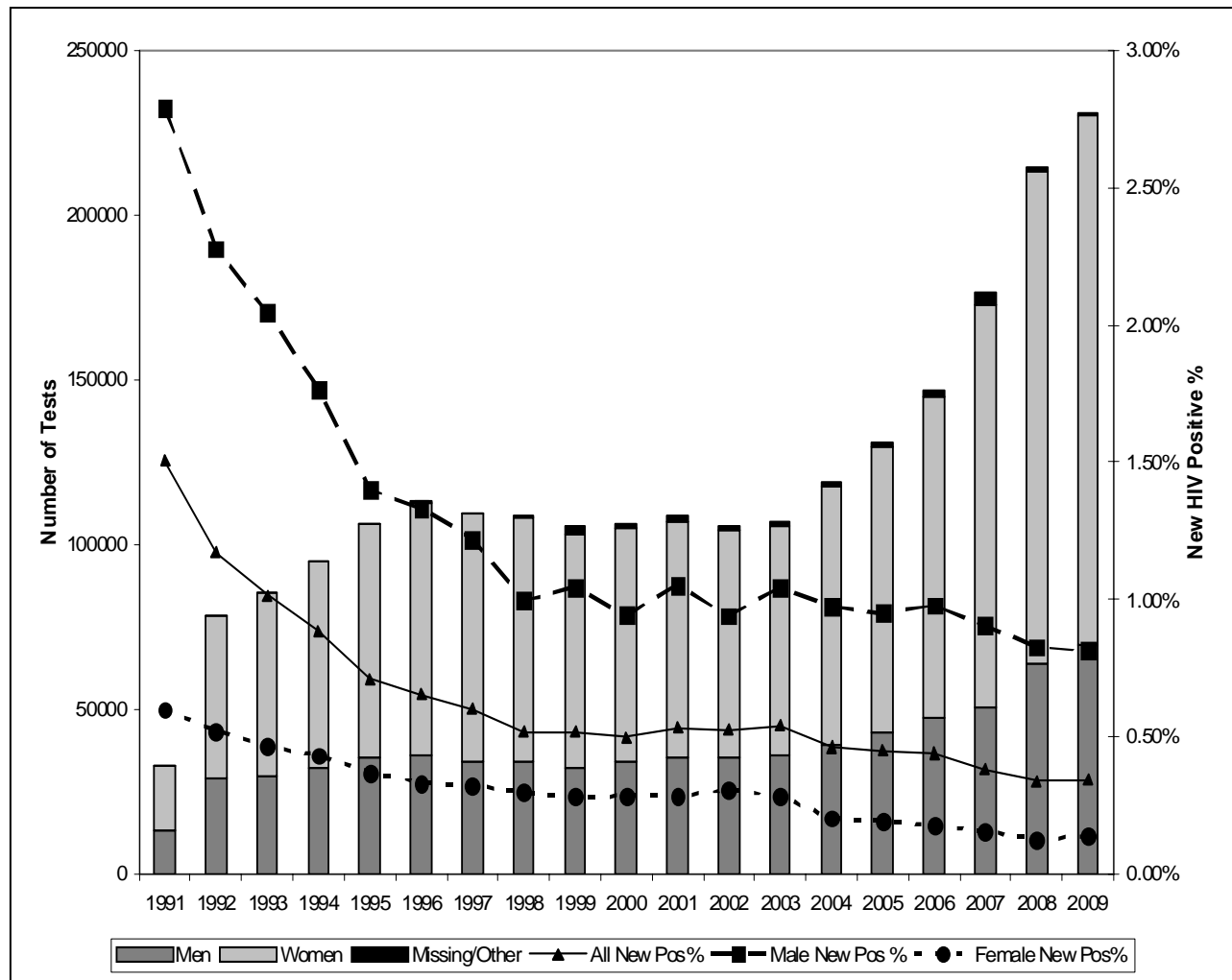
Year	Tests Performed	Total Positives (%)	New Positives* (%)
1991	32,747	647 (1.98)	493 (1.51)
1992	78,655	1,137 (1.45)	921 (1.17)
1993	85,356	1,057 (1.24)	868 (1.02)
1994	94,858	1,101 (1.16)	842 (0.89)
1995	106,318	1,007 (0.95)	757 (0.71)
1996	113,363	987 (0.87)	742 (0.65)
1997	109,723	879 (0.80)	661 (0.60)
1998	108,612	736 (0.68)	561 (0.52)
1999	105,792	711 (0.67)	548 (0.52)
2000	106,197	744 (0.70)	531 (0.50)
2001	109,164	803 (0.74)	584 (0.53)
2002	105,724	754 (0.71)	554 (0.52)
2003	107,210	744 (0.69)	581 (0.54)
2004	119,143	716 (0.60)	552 (0.46)
2005	131,265	813 (0.62)	590 (0.45)
2006	146,548	837 (0.57)	645 (0.44)
2007	176,487	915 (0.52)	670 (0.38)
2008	214,648	1,027 (0.48)	728 (0.34)
2009	231,353	1,144 (0.49)	794 (0.34)

\*New positivity rate is based on patient self-report of HIV testing history.

The new HIV positivity rates, based on patient self-report of HIV infection history, have been higher for males than females for the entire testing period (Figure 3.2). The rate among females tested has declined modestly over the time period, but the decline among men has been rather dramatic because testing in the early years was much more targeted than testing is today. The ratio of females to males among the tested population has increased from 1.4 in 1991 to 2.3 in 2009 (data not shown). The overall new HIV-positive rate more closely follows the trend of the female rates because there are so many more women in the data (Figure 3.2).



**Figure 3.2 Conventional HIV tests performed and New HIV positivity rates, N.C. SLPH 1991–2009**



**HIV TESTING 2009**

In 2009, a total of 276,017 HIV tests were performed through state-sponsored programs (Table 3.2). This number includes HIV tests submitted to the SLPH, rapid HIV tests conducted by health departments and CBOs, tests done through the N.C. Department of Correction, and tests conducted through the expanded testing program in emergency departments and community health centers. Most tests (n=257,091) were performed using a conventional blood test for HIV, while an additional 18,926 used a rapid HIV test. Some duplication of persons exists in these numbers because an individual may be tested multiple times throughout the year, and therefore counted more than one time.

Over one-half of the HIV tests were performed in local health department clinics (29.9% in STD clinics, 16.8% in family planning clinics, and 12.9% in prenatal/obstetric clinics) and 13.8

percent in correctional settings (8.9% in state prisons and 4.9% in local jails) (Table 3.2). Another 6.1 percent of tests were performed during outreach activities. The remaining HIV testing occurred at other settings (14.8%) or was missing site type information (5.7%). The venue where an HIV test was done differed for rapid HIV tests compared to conventional blood tests for HIV. The majority of tests performed were conventional blood tests (93.1%) and their distribution mirrors the overall distribution described above with the majority of testing in health department clinics and correctional settings. For rapid HIV tests, 38.3 percent were done in outreach/community settings, 32.9 percent in community health centers, 12.5 percent in drug treatment facilities, and 8.6 percent in HIV testing sites (NTS) (Table 3.2).

### Site Type

Individual-level data (including sex, race/ethnicity, age, and risk) was available for 239,128 of the state-sponsored HIV tests in 2009 (Table 3.3). Duplication of testing events is reduced in this data compared to Table 3.2 and is therefore a better resource for describing persons tested and positivity rates. In this report, new case positivity rates are based on the patient's self-report of their HIV testing history. Only persons who had a positive HIV test in 2009, and who reported no previous positive test, are counted as new cases. The highest positivity rate of new HIV cases (4.2%) was seen among the tests conducted through Disease Intervention Specialist (DIS) field visits. These tests were performed by state or county DIS as part of partner counseling and referral services (PCRS). This high positivity rate is expected because DIS are testing partners and associates of known cases. Clients tested in a hospital or private doctor's office also had a high positivity rate (1.7%). This high rate is also expected because in this setting, the testing is often highly targeted to patients with suspected HIV infection. In contrast to testing individuals based on risk, screening occurs when all individuals in a given setting are offered testing (not just those perceived to be at greatest risk). HIV positivity rates were highest for those tested in HIV testing sites (usually NTS, 1.5% positivity), community health centers (1.5%), and jails (0.59%).

### Gender

Of those persons tested, 165,072 (69.0%) were female; 73,311 (30.7%) were male; and 35 were transgender. The remaining 710 (0.3%) had missing data for gender (Table 3.3). The positivity rate of new HIV cases was higher for males compared to females (0.79 % versus 0.14%). This difference is in part because a majority of the women were tested in family planning clinics (28.1%) and prenatal OB clinics (21.5%) as part of their routine or prenatal health care and represented a lower risk group, in general, compared to the men that were tested. Most of the men were tested in an STD clinic (50.1%) or in jail (14.8%) and represented a population at higher risk for HIV.

**Table 3.2 HIV Testing in N.C. CDB Programs, by Setting and Test Type 2009\***

Setting	Conventional			Rapid			Total Tests		
	No. Tests	Pos (%)	New Pos (%)	No. Tests	Pos (%)	New Pos (%)	No. Tests	Pos (%)	New Pos (%)
STD Clinic	82,562	432 (0.52)	313 (0.38)	0	0	0	82,562	432 (0.52)	313 (0.38)
Family Planning Clinic	46,466	16 (0.03)	14 (0.03)	0	0	0	46,466	16 (0.03)	14 (0.03)
Prenatal/OB Clinic	35,466	22 (0.06)	19 (0.05)	2	0 (0.00)	0 (0.00)	35,468	22 (0.06)	19 (0.05)
HIV Testing Site	6,969	172 (2.47)	110 (1.58)	1,629	34 (2.09)	26 (1.60)	8,598	206 (2.40)	136 (1.58)
DIS Field Visit	462	33 (7.14)	20 (4.33)	100	12 (12.00)	9 (9.00)	562	45 (8.01)	29 (5.16)
TB Clinic	1,823	2 (0.11)	2 (0.11)	0	0	0	1,823	2 (0.11)	2 (0.11)
Drug Treatment	1,741	11 (0.63)	8 (0.46)	2,360	9 (0.38)	7 (0.30)	4,101	20 (0.49)	15 (0.37)
Community Health Center	3,760	128 (3.40)	58 (1.54)	6,234	16 (0.26)	7 (0.11)	9,994	144 (1.44)	65 (0.65)
Emergency Department	1,221	39 (3.19)	27 (2.21)	940	0 (0.00)	0 (0.00)	2,161	39 (1.80)	27 (1.25)
Other Hospital/Private MD	96	1 (1.04)	1 (1.04)	22	1 (4.55)	1 (4.55)	118	2 (1.69)	2 (1.69)
Student Health	1,392	1 (0.07)	1 (0.07)	97	0 (0.00)	0 (0.00)	1,489	1 (0.07)	1 (0.07)
Jail	13,397	99 (0.74)	80 (0.60)	70	0 (0.00)	0 (0.00)	13,467	99 (0.74)	80 (0.59)
Prison	24,517	340 (1.39)	340 (1.39)	0	0	0	24,517	340 (1.39)	340 (1.39)
Outreach	9,547	59 (0.62)	45 (0.47)	7,256	51 (0.70)	51 (0.70)	16,803	110 (0.65)	96 (0.57)
Other	11,985	112 (0.93)	89 (0.74)	81	0 (0.00)	0 (0.00)	12,066	112 (0.93)	89 (0.74)
Missing	15,687	56 (0.36)	34 (0.22)	135	1 (0.74)	0 (0.00)	15,822	57 (0.36)	34 (0.21)
<b>Total</b>	<b>257,091</b>	<b>1,523 (0.59)</b>	<b>1,161 (0.45)</b>	<b>18,926</b>	<b>124 (0.66)</b>	<b>101 (0.53)</b>	<b>276,017</b>	<b>1,647 (0.60)</b>	<b>1,262 (0.46)</b>

\*This table includes data submitted on individual-level test forms (tests submitted to the SLPH and to the rapid testing program) and from aggregate data reported by agencies. The table is intended to illustrate testing resources used. There may be some duplication of testing events. For example, a patient may be tested using a rapid test (shown in that column) which is confirmed by a conventional test (shown in that column). New positivity rate is based on patient self-report of HIV testing history.

**Table 3.3 HIV Testing in N.C. DHHS Programs, by Gender and Age, 2009\***

Setting	Males		Females		Total**	
	No. Tested	New pos (%)	No. Tested	New pos (%)	No. Tested	New pos (%)
STD Clinic	36,731	248 (0.68)	45,651	65 (0.14)	82,562	313 (0.38)
Family Planning	122	1 (0.82)	46,297	13 (0.03)	46,466	14 (0.03)
Prenatal/OB Clinic	0	0	35,447	19 (0.05)	35,468	19 (0.05)
HIV Testing Site	3,822	78 (2.04)	3,316	32 (0.97)	7,162	110 (1.54)
DIS Field Visit	322	18 (5.59)	172	3 (1.74)	496	21 (4.23)
TB Clinic	966	1 (0.10)	846	1 (0.12)	1,823	2 (0.11)
Drug Treatment	2,389	6 (0.25)	1,692	9 (0.53)	4,101	15 (0.37)
Community Hlth Ctr	1,596	33 (2.07)	2,274	24 (1.06)	3,909	58 (1.48)
Emergency Dept	395	0 (0.00)	527	0 (0.00)	940	0 (0.00)
Hospital/Private MD	25	2 (8.00)	93	0 (0.00)	118	2 (1.69)
Student Health	460	1 (0.22)	1,023	0 (0.00)	1,489	1 (0.07)
Jail	10,829	64 (0.59)	2,557	16 (0.63)	13,455	80 (0.59)
Outreach	4,976	39 (0.78)	8,117	16 (0.20)	13,251	57 (0.43)
Other	6,279	65 (1.04)	5,716	24 (0.42)	12,066	89 (0.74)
Missing	4,399	22 (0.50)	11,344	11 (0.10)	15,822	34 (0.21)
<b>Total</b>	<b>73,311</b>	<b>578 (0.79)</b>	<b>165,072</b>	<b>233 (0.14)</b>	<b>239,128</b>	<b>815 (0.34)</b>

\*This table includes data submitted on individual-level test forms (tests submitted to the SLPH and to the rapid testing program). The table includes both rapid and conventional tests and is intended to illustrate testing events occurred. There may be some duplication for individuals who had a rapid test and a conventional test done at separate HIV testing sites. New positivity rate is based on patient self-report of HIV testing history.

\*\*Total column includes n=35 (0 positives) individuals with transgender sex and n=710 (4 positives) individuals with missing sex.

### Race/Ethnicity

Overall, 45.4 percent of those tested were black non-Hispanic, 28.5 percent were white non-Hispanic, 20.4 percent Hispanic, 1.4 percent American Indian, 1 percent Asian/Pacific Islanders, and 0.1 percent other race/ mixed race (Table 3.4). The remaining 3.3 percent had missing data for race and ethnicity. A larger proportion of the women tested were Hispanic (24.0% for females compared to 12.1% for males). The highest new positivity rates were among those with other/mixed race (0.68% positivity, but based on just two cases) and black non-Hispanics (0.52%, 565 cases). American Indians had the third highest rate (0.32%), but this is the only racial/ethnic group for which more men were screened than women and 10 of the 11 cases were male. In contrast, the rates were lowest for Hispanics (0.13%, 62 cases) who had the highest proportion of women screened (female to male ratio: 4.5).

New HIV positivity rates were highest for black males (1.01%) followed by other/mixed race females (1.27%), Hispanic males (0.56%), American Indian males (0.55%), and Asian/Pacific Islander males (0.55%). Disparity was greatest among women. The rate of positivity for black non-Hispanic women (0.24%) was 3 times higher than that for white women (0.08%). Among

men, the black non-Hispanic rate (1.01%) was 2.3 times higher than the rate for white men (0.43%) (Table 3.4).

**Table 3.4 HIV Testing in N.C. CDB Programs, by Gender and Race/Ethnicity, 2009\***

Race/Ethnicity	Males		Females		Total**	
	No. Tested	New pos (%)	No. Tested	New pos (%)	No. Tested	New pos (%)
White NH	19,621	84 (0.43)	48,448	38 (0.08)	68,144	122 (0.18)
Black NH	39,545	399 (1.01)	68,684	165 (0.24)	108,469	565 (0.52)
Hispanic American	8,900	50 (0.56)	39,690	12 (0.03)	48,685	62 (0.13)
Asian/PI	1,810	10 (0.55)	1,605	1 (0.06)	3,424	11 (0.32)
Other/Mixed	546	3 (0.55)	1,734	2 (0.12)	2,296	5 (0.22)
Missing	133	0 (0.00)	158	2 (1.27)	295	2 (0.68)
Total	2,756	32 (1.16)	4,753	13 (0.27)	7,815	48 (0.61)
	73,311	578 (0.79)	165,072	233 (0.14)	239,128	815 (0.34)

\*This table includes data submitted on individual-level test forms (tests submitted to the SLPH and to the rapid testing program). The table includes both rapid and conventional tests and is intended to illustrate testing events occurred. There may be some duplication for individuals who had a rapid test and a conventional test done at separate HIV testing sites. New positivity rate is based on patient self-report of HIV testing history.

\*\*Total column includes n=35 (0 positives) individuals with transgender sex and n=710 (4 positives) individuals with missing sex.

### Age

Persons ages 20 to 29 years represented the largest group of people tested through state-sponsored HIV testing programs in 2009 (n=113,680, 47.5%) (Table 3.5). The next largest groups were those slightly older (ages 30–39, n=47,719, 20.0%) and slightly younger (ages 15–19, n=40,477, 16.9%). Females tended to be younger than the males that were tested. Of the women tested, 19.7 percent were less than 20 years of age compared to 13.5 percent of the men. In addition, only 11 percent of females were 40 years of age or greater, compared to 22.3 percent of males.

The largest number of new HIV cases was found in the age group with the most tests (ages 20–29 years, 301 cases). Overall the highest positivity rates were seen among 40 to 49 year olds (0.79% positivity) and among those 50 years or greater (0.82% positivity). For all age groups, the positivity rate was greater for males than females. The difference in positivity rates between males and females was greatest among the younger age groups and decreased with increasing age.

**Table 3.5 HIV Testing in N.C. CDB Programs, by Gender and Age, 2009\***

Age in years	Males		Females		Total**	
	No. Tested	New pos (%)	No. Tested	New pos (%)	No. Tested	New pos (%)
0 to 14	418	3 (0.72)	1,585	0 (0.00)	2,017	3 (0.15)
15 to 19	9,453	35 (0.37)	30,898	6 (0.02)	40,477	41 (0.10)
20 to 29	32,233	231 (0.72)	81,143	70 (0.09)	113,680	301 (0.26)
30 to 39	14,604	128 (0.88)	32,985	62 (0.19)	47,719	192 (0.40)
40 to 49	9,865	123 (1.25)	12,802	56 (0.44)	22,755	180 (0.79)
50+	6,499	58 (0.89)	5,330	39 (0.73)	11,891	98 (0.82)
Missing	239	0 (0.00)	329	0 (0.00)	589	0 (0.00)
<b>Total</b>	<b>73,311</b>	<b>578 (0.79)</b>	<b>165,072</b>	<b>233 (0.14)</b>	<b>239,128</b>	<b>815 (0.34)</b>

\*This table includes data submitted on individual-level test forms (tests submitted to the SLPH and to the rapid testing program). The table includes both rapid and conventional tests and is intended to illustrate testing events occurred. There may be some duplication for individuals who had a rapid test and a conventional test done at separate HIV testing sites. New positivity rate is based on patient self-report of HIV testing history.

\*\*Total column includes n=35 (0 positives) individuals with transgender sex and n=710 (4 positives) individuals with missing sex.

### Risk Profile

Table 3.6 shows the prevalence of risk behaviors among those tested. Individual-level data were collected for a total of 239,128 tests. However, the risk information section of these forms was only completed for 213,762 (89.4%) of these persons. The following risk discussion refers to those persons for whom the risk information was available.

Nearly all of the women reported having sex with men (95.4%) and a high proportion of men reported sex with women (88.7%) and 8.9 percent reported sex with other men (MSM). Other risky sexual exposures were frequently reported including sex while using non-injecting drugs (21.1% of men and 6.7% of women), sex with a partner with HIV risk (10.8% of men and 7.6% of women), and exchanging sex for drugs or money (2.2% of men and 1.2% of women). Men were nearly 3 times more likely to report injection drug use (1.8% of men compared to 0.64% of women).

Among men, the highest new case positivity rates were among those reporting sex with an HIV-positive partner (6.3%), sex with MSM (4.8%), sex with male (4.2%), child of HIV-positive woman (5.1%), and victim of sexual assault (1.6%). For women, the highest positivity was among those reporting sex with an HIV-positive partner (3.2%), exchanging sex for drugs or money (0.99%), injection drug use (0.75%), and sex with an IDU (0.69%) (Table 3.6). Note that these risks are not mutually exclusive and one patient may have reported multiple risks.

**Table 3.6 HIV Testing in N.C. CDB Programs, by Gender and Risk, 2009\***

RISK***	Males		Females		Total**	
	# Tested (% of Tested)*	New pos (% among risk group)	# Tested (% of Tested)*	New pos (% among risk group)	# Tested (% of Tested)*	New pos (% among risk group)
STD Dx	4,610 (6.82)	46 (1.00)	4,924 (3.38)	17 (0.35)	9,551 (4.47)	63 (0.66)
Sex w. Male	6,021 (8.90)	249 (4.14)	138,849 (95.42)	183 (0.13)	145,203 (67.93)	435 (0.30)
Sex w. Female	59,976 (88.67)	302 (0.50)	5,875 (4.04)	16 (0.27)	66,097 (30.92)	318 (0.48)
Sex w. IDU	875 (1.29)	11 (1.26)	1,153 (0.79)	8 (0.69)	2,035 (0.95)	19 (0.93)
Sex w. HIV+	1,075 (1.59)	68 (6.33)	634 (0.44)	20 (3.15)	1,718 (0.80)	89 (5.18)
Sex w. MSM	3,029 (4.48)	145 (4.79)	579 (0.40)	3 (0.52)	3,627 (1.70)	149 (4.11)
Sex w. Other HIV Risk PN	7,313 (10.81)	38 (0.52)	10,986 (7.55)	19 (0.17)	18,370 (8.59)	58 (0.32)
Victim of Sexual Assault	252 (0.37)	4 (1.59)	2,156 (1.48)	10 (0.46)	2,415 (1.13)	14 (0.58)
Exchange Sex for Drugs or \$	1,512 (2.24)	18 (1.19)	1,710 (1.18)	17 (0.99)	3,236 (1.51)	35 (1.08)
Sex using non- injecting drugs	14,269 (21.09)	99 (0.69)	9,805 (6.74)	29 (0.30)	24,159 (11.30)	129 (0.53)
IDU	1,246 (1.84)	11 (0.88)	936 (0.64)	7 (0.75)	2,191 (1.02)	18 (0.82)
Blood Exposure	259 (0.38)	1 (0.39)	546 (0.38)	2 (0.37)	807 (0.38)	3 (0.37)
Health Care Exposure	436 (0.64)	5 (1.15)	1495 (1.03)	3 (0.20)	1,938 (0.91)	8 (0.41)
Child of HIV+ Woman	118 (0.17)	6 (5.08)	230 (0.16)	0 (0.00)	349 (0.16)	6 (1.72)
Other HIV Risk	6,279 (9.28)	43 (0.68)	6,531 (4.49)	24 (0.37)	13,195 (6.17)	68 (0.52)
No Acknowledged Risk	4,687 (6.93)	31 (0.66)	11,443 (7.86)	13 (0.11)	16,181 (7.57)	44 (0.27)

\*This table includes data submitted on individual-level test forms (tests submitted to the SLPH and to the rapid testing programs). The table includes both rapid and conventional tests and is intended to illustrate testing events occurred. There may be some duplication for individuals who had a rapid test and a conventional test done at separate HIV testing sites. New positivity rate is based on patient self-report of HIV testing history.

\*\*Total column includes n=35 (0 positives) individuals with transgender sex and n=710 (4 positives) individuals with missing sex.

\*\*\*Risks are NOT mutually exclusive (one patient may report multiple risks). Denominator is the number of persons who answered risk questions (67643 for males, 145508 for females, and 213762 for total)

Table 3.7 examines the risk issue in another way. Each individual test is categorized with one single risk based on hierarchical risk categories. These categories assign the risk with the highest likelihood of transmission. For example, a woman reporting both sex with male and injection drug use will be assigned to the IDU category because that route of infection is more efficient and more likely to cause the exposed person to become infected. This hierarchy distinguishes between high-risk heterosexual sex and other heterosexual sex. Persons determined to be high-risk heterosexual are those who report any of the following personal risks: victim of sexual assault, trading sex for drugs or money, recent STD diagnosis, sex while using non-injecting drugs, and persons who report partners with the following risks: MSM, IDU, HIV-positive, Other HIV risk. Persons who cannot be classified in one of the other categories include: women who have sex with only women, persons with gender (or the gender of their sex partners) missing, blood/tissue recipient, health care exposure, and child of HIV-infected woman.

Among men, the majority fell into the heterosexual risk categories (26.2% high risk and 51.8% other). However, the highest new positivity rates by far were among those in the MSM (4.3%) and MSM/IDU (2.75%). For women, an even higher majority of cases reported heterosexual risk (13.2% high risk and 70.4% other). This result is likely due to the larger numbers of women screened in family planning and prenatal/ob settings. The highest new HIV positivity for women was among IDU and this rate was nearly identical to the positivity rate among male IDUs (0.75% for women, 0.70% for men).

**Table 3.7 HIV Testing in N.C. CDB Programs, by Gender and Hierarchical Risk, 2009\***

Risk***	Males		Females		Total**	
	No. Tested	New pos (%)	No. Tested	New pos (%)	No. Tested	New pos (%)
MSM/IDU	109	3 (2.75)	n/a	n/a	109	3 (2.75)
MSM	6,294	270 (4.29)	n/a	n/a	6,294	270 (4.29)
IDU	1,137	8 (0.70)	936	7 (0.75)	2,082	15 (0.72)
High-Risk Heterosexual	19,203	101 (0.53)	21,799	59 (0.27)	41,002	160 (0.39)
Heterosexual other	38,005	133 (0.35)	116,182	118 (0.10)	154,187	251 (0.16)
Other Risk	378	3 (0.79)	2,704	13 (0.48)	3,646	19 (0.52)
No Risk Reported	2,517	20 (0.79)	3,887	7 (0.18)	6,442	27 (0.42)
Missing Risk	5,668	40 (0.71)	19,564	29 (0.15)	25,366	70 (0.28)
<b>Total</b>	<b>73,311</b>	<b>578 (0.79)</b>	<b>165,072</b>	<b>233 (0.14)</b>	<b>239,128</b>	<b>815 (0.34)</b>

\*This table includes data submitted on individual-level test forms (tests submitted to the SLPH and to the rapid testing programs). The table includes both rapid and conventional tests and is intended to illustrate testing events occurred. There may be some duplication for individuals who had a rapid test and a conventional test done at separate HIV testing sites. New positivity rate is based on patient self-report of HIV testing history.

\*\*Total column includes n=35 (0 positives) individuals with transgender sex and n=710 (4 positives) individuals with missing sex.

\*\*\*Risks are mutually exclusive (one risk category assigned for each patient). Heterosexual high risk includes women who report any male partners and men who report only female partners who also report sex partners with HIV risk OR who report victim of sexual assault, trade sex for drugs or money, recent STD diagnosis, sex while



using non-injecting drugs. Heterosexual other includes heterosexuals who do not report the risks listed above. Other risk includes blood/tissue recipient, health care exposure, and child of HIV-infected woman

## SPECIAL TESTING PROJECTS

### Rapid Testing Program

The N.C. Communicable Disease Rapid Testing Program was 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 tests can be processed in 10–20 minutes, which makes it possible to provide HIV education, preliminary HIV test results, and linkage to care in the same day. In addition, the rapid HIV test is sometimes more acceptable to a client because an oral swab or a finger-stick blood sample can be used rather than the venipuncture blood sample required for a conventional HIV test.

During 2009, the Communicable Disease Branch provided free rapid tests (Oraquick Advance, Clearview Complete, and Unigold) to 16 community-based organizations, seven local health departments, seven federally qualified health centers, four outreach programs conducted by universities, three health clinics, and one hospital. Rapid tests were also provided to N.C. Disease Intervention Specialists to facilitate partner testing and referral services. A total of 18,926 rapid tests were performed, 124 of these were confirmed positive (0.7%), and 101 were newly identified HIV cases (0.5%) (Table 3.8). The positivity rate for new cases varied by setting. Positivity was 9 percent for rapid testing done through the partner counseling and referral program, 0.7 percent for community outreach settings, 1.6 percent for HIV counseling and testing sites (health departments and CBOs), 0.3 percent for drug treatment program sites, 0.1 percent in community health centers, and 4.6 percent for hospitals/private doctor offices.

**Table 3.8 Rapid HIV Testing Program, 2009**

<b>Setting</b>	<b>No. Tested</b>	<b>No. confirmed Positives</b>	<b>Newly identified HIV-Positive (%)</b>
Community Health	6,234	16	7 (0.11)
Drug Treatment	2,360	9	7 (0.30)
DIS field visit	100	12	9 (9.00)
HIV Testing Site	1,629	34	26 (1.60)
Emergency Department	940	0	0 (0.00)
Hospital/Private MD	22	1	1 (4.55)
Other	81	0	0 (0.00)
Outreach	7,256	51	51 (0.70)
Prenatal/ OB	2	0	0 (0.00)
Jail	70	0	0 (0.00)
Student health	97	0	0 (0.00)
Missing	135	1	0 (0.00)
<b>Total</b>	<b>18,926</b>	<b>124</b>	<b>101 (0.53)</b>

### Non-Traditional Testing Site Project (NTS)

The non-traditional testing site project (NTS) has created an opportunity to overcome some of the traditional barriers to early diagnosis and treatment of HIV infection by implementing new models for diagnosing HIV infections outside traditional medical settings. Through collaboration between community-based organizations, statewide community planning groups, local health departments, and AIDS Care Organizations, NTS projects have been able to increase access to HIV/STD services and provide HIV tests (rapid and/or traditional), syphilis tests, gonorrhea, chlamydia, and hepatitis C testing to local populations with a high prevalence of HIV/STDs, high prevalence of risk factors for HIV/STDs and limited access to traditional HIV/STD counseling, testing, and referral services. NTS projects identify areas frequented by persons at high risk for HIV/STDs or by members of populations with high HIV/STD prevalence to serve as testing venues. NTS projects educate persons about the risks of hepatitis C and refer them for testing. They also ensure that HIV-infected persons are successfully linked with HIV medical care and psychosocial services through active follow-up and referrals through active referrals to local or regional care coordinators that can make calls to providers, arrange transportation, and/or provide other support.

NTS projects focus on homeless youth and adults; the uninsured; persons with alcohol or substance abuse issues; women and men who exchange sex for money, drugs, or survival; men who have sex with men; racial and ethnic minorities; and other at-risk populations. Testing is offered in public parks, on street corners, and at other areas where these persons congregate. Testing is also offered at fixed testing sites including homeless shelters, jails, drug treatment centers, migrant health centers, mental health facilities, nightclubs, and colleges. NTS projects help to identify persons who are unaware of their HIV status and actively facilitate getting them into treatment and prevention services. Projects are asked to identify the number of HIV-positives identified, referred to care, and those that actually show up in care.

In 2009, a total of 26,982 persons were tested through the NTS projects. Of those tested, 309 were positive (1.2%) and 190 were newly identified positives (0.7%). The positivity rate was 0.9 percent for males and 0.5 percent for females that were tested (Table 3.9).

**Table 3.9 HIV Testing in Nontraditional Test Sites (NTS) Funded by N.C. CDB, 2009**

Gender	No. Tested	No. Positive (%)	New Positives (%)
Men	15,620	222 (1.4)	132 (0.9)
Women	11,169	84 (0.8)	55 (0.5)
Transgender/Unknown	193	3 (1.6)	3 (1.6)
<b>Total</b>	<b>26,982</b>	<b>309 (1.2)</b>	<b>190 (0.7)</b>

\*Includes 9 persons with transgender sex and 184 persons with missing gender data

### Expanded HIV Testing

The Centers for Disease Control and Prevention (CDC) estimates that despite the availability of a wide array of testing programs, one fifth to one quarter of HIV-positive persons still do not know that they are infected. To help identify more of these cases and link them to treatment and care, the CDC launched the Expanded HIV Testing Initiative (ETI) in October of 2007. The three-year program had the goal of conducting over 1.5 million HIV tests and identifying 20,000 HIV-positive persons who did not previously know their status. The program had a focus on minority populations; and the jurisdictions eligible for ETI funding reported 95 percent of all AIDS cases among African-Americans in 2005.

In year one, \$35 million was awarded to 18 states and five cities. In year two, funding increased to \$36 million and two states were added to those previously funded. Before the end of year three, a new Expanded HIV testing grant was announced to continue the work of the first grant when it expires in September 2010. North Carolina received funding for all three years of the original grant and has been awarded continuation funding under the new one. Both grants require that efforts be largely focused on increasing testing in clinical settings.

In North Carolina, the program has centered on initiating or expanding HIV testing in the following venues: jails, prisons, STD clinics, emergency departments, and community health centers. The Communicable Disease Branch worked with the N.C. General Assembly to bring North Carolina into compliance with the 2006 Revised CDC HIV Testing Guidelines. On November 1, 2007, North Carolina passed a rule change to allow local health departments to begin using general consent forms and to incorporate routine opt-out HIV testing in both clinics and in correctional settings. This policy change has resulted in increased testing in STD clinics, jails, and prisons in North Carolina and greatly facilitated the establishment of new testing programs in emergency departments and community health centers. In 2009, a total of 68,800 HIV tests were conducted through the expanded testing program (Table 3.10).

**Table 3.10 Expanded HIV Testing Project, 2009**

Setting	# Sites	Total No. Tested	HIV-Positive (%)	Newly identified HIV-Positive (%)
Emergency Departments	3	2,161	39 (1.80)	27 (1.28)
Community Health Centers	6	9,671	143 (1.48)	65 (0.67)
Prison	70	24,517	340 (1.39)	Not available
Jails	28	13,264	99 (0.75)	80 (0.60)
STD Clinics	102	19,187	101 (0.53)	69 (0.36)
<b>Total</b>	<b>209</b>	<b>68,800</b>	<b>722 (1.05)</b>	<b>241 (0.54)</b>

### Corrections

The Expanded HIV Testing Initiative (ETI) grant allowed the Communicable Disease Branch to dramatically expand jail STD testing. From 2001 to 2007, the program was funded under

Syphilis Elimination and covered seven jails in six counties. Only two jails in one county screened for HIV in addition to syphilis. With ETI funds, the program has expanded to 15 agencies testing for both HIV and syphilis in 28 county jails across the state. The grant currently supports 27 part- and full-time positions ranging from phlebotomists, lab technicians, DIS and an ID physician. Additional jail screening positions are funded through the HIV Prevention grant. During 2009, HIV tests were performed for 13,264 jail admittees and 99 (0.75%) were found to be HIV-positive. Most (n=80) of those cases were newly identified infections (Table 3.10).

Prior to the 2007 change in the N.C. Administrative Code, the N.C. Department of Corrections (DOC) which oversees all prisons in North Carolina, was doing intermittent testing of inmates for HIV. A study of DOC inmates from January 2004 to May 2006 found that only 38 percent had been tested for HIV (Rosen 2009). After the rule change, all DOC inmates are now offered HIV testing upon entry. During the first 11 months of 2009, the DOC tested 24,517 inmates and identified 340 HIV-positives (1.4%) (Table 3.10). Only 29,695 inmates were admitted to DOC facilities during 2009 (NC DOC Website). Extrapolating that number to 11 months, roughly 90 percent of new DOC inmates are now screened for HIV.

### STD Clinics

To assess the extent to which STD clinic testing increased after the Administrative Rule change, we calculated the average number of HIV tests in each of the 102 health department STD clinics for the year prior to the implementation of the ETI. Each month, testing above those levels is considered to be expanded HIV testing. In 2009, a total of 82,562 HIV tests were performed in STD clinic settings (Table 3.2) and 19,187 (23.7%) were considered to be expanded tests (Table 3.10). Testing practice in this setting is closest to true “opt-out” testing.

### Emergency Departments

The project supports HIV testing in three hospital emergency departments (EDs). Two hospitals perform conventional HIV testing and a third is supplied with rapid HIV test kits. These three sites combined tested 2161 people for HIV and found 39 positives (1.8%). This percentage is the highest positivity rate of all of the sites but this fact should be interpreted with caution. Although the goal is to operate as an “opt-out” program, in practice only a small portion of the ED admittees are screened and those screened are high risk.

### Community Health Centers

Federally qualified community health centers (FQHC) were another area supported for expanding testing. In 2007, the Branch supported two FQHCs and by the end of 2009, the Branch was able to supply rapid test kits to six FQHCs. Those six health centers performed 9,671 tests in 2009. There were 143 positive tests (1.5%) and 65 of those were new cases (0.7%) (Table 3.10).

## Counseling, Testing and Referral Activities in Substance Abuse Centers

The Non-traditional Testing in Substance Abuse Centers (SAC) project was developed in response to a mandate from the federal Substance Abuse and Mental Health Services Administration (SAMHSA) to support HIV prevention activities among substance abusers. The purpose of the SAC project is to provide HIV/STD counseling, testing, and referral services for substance abusers in care at the locations where they are receiving their substance abuse treatment services. This initiative is aimed at reducing barriers to early diagnosis of HIV infection and increasing access to quality medical care, treatment, and ongoing prevention services for those with a diagnosis of HIV infection. During 2009, the Communicable Disease Branch supported seven agencies to provide HIV testing in substance abuse centers throughout the state. In 2009, the project performed 2,186 tests, finding 9 total positives (0.4%) of which 5 were new positives (0.23%) (data not shown).

### **OTHER HIV PREVENTION PROJECTS**

#### The *Get Real. Get Tested.* Campaign

The goals of the *Get Real. Get Tested.* campaign, which began in 2006, are to test and educate people for HIV and syphilis, identify persons living with HIV/AIDS who need care, and to link HIV-positive patients to care. The campaign's messages are consistent with the CDC HIV counseling and testing guidelines. This campaign presents a two-pronged approach: television commercials which air statewide and HIV/STD testing focused on high-morbidity communities. The 2009–10 campaign sponsors include the State of North Carolina's Division of Public Health and Gilead Sciences.

A website has been created, [www.getrealgettested.com](http://www.getrealgettested.com), which has several features. The site allows a visitor to enter their zip code to be linked to a list of places where they can get tested for HIV and other STDs.

The *Get Real. Get Tested.* commercials feature people that are recognizable in the community. Each commercial has targeted a different group of people and encourages them to get tested for HIV and other STDs. The latest commercial focuses on African American men and stresses the importance of getting tested. *Get Real. Get Tested.* commercials have been nominated for three Emmy awards.

Throughout the year, the *Get Real. Get Tested.* campaign will host community testing events. In the past, these events were very large and teams would go door to door to offer testing. We have found that with the current epidemiological profile, we are better served to focus our attention and resources on smaller events. These testing events are conducted in clubs, on college campuses, and other stationary locations. Street outreach/testing is still conducted, but it is minimal and very focused.

During 2010, the *Get Real. Get Tested.* campaign will expand by airing television commercials on new stations, creating a radio advertisement campaign and partnering with the North Carolina

Syphilis Epidemic Response Team. The goal of this new partnership is to reduce the number of cases of HIV and syphilis in North Carolina.

### Project Commit to Prevent

In keeping with the North Carolina Department of Health and Human Services mission to eliminate health disparities for racial and ethnic minorities, the Division of Public Health's Communicable Disease Branch has developed the Project Commit to Prevent initiative. This project has as its overall goal to empower college/university students, with special emphasis on African Americans and American Indians, to change behaviors that put them at risk for HIV and STD infections. The Communicable Disease Branch will partner with North Carolina's Minority Colleges/Universities to assist each institution to achieve the following objectives:

1. Expand HIV/STD prevention/risk reduction educational programs on campus.
2. Integrate HIV/STD testing programs on campus.
3. Enhance the capacity of the health services on each campus to provide HIV/STD risk reduction services, including HIV counseling and testing services.
4. Strengthen linkages between each institution and other HIV/STD service providers near the campus.

### Health Education and Risk Reduction Program (HE/RR)

The overall goal of the Health Education and Risk Reduction Program is to reduce the rate of HIV in targeted populations and targeted areas. Based on the current N.C. Comprehensive HIV Prevention Plan, prevention services are prioritized for: 1) people living with HIV/AIDS (PLWHA); 2) heterosexual contact (HSC); 3) men who have sex with men (MSM); and 4) injection drug users (IDU).

The North Carolina HIV and STD Prevention Program funds CBOs and local health departments to provide HE/RR services in selected communities. HE/RR programs are encouraged to choose best-evidence interventions that have been rigorously evaluated and have been shown to reduce or eliminate the rate of new HIV infections or to reduce or eliminate sex or drug-related risk behaviors (Compendium of HIV Prevention Interventions with Evidence of Effectiveness, Academy for Educational Development's website (<http://www.aed.org/>) and the Diffusion of Effective Behavioral Interventions website ([www.effectiveinterventions.org](http://www.effectiveinterventions.org))). Interventions utilized in North Carolina during 2009 are described below.

***Be Proud! Be Responsible!*** is a small group skills building and motivational intervention to increase knowledge of AIDS and STDs and to reduce positive attitudes and intentions toward risky sexual behaviors among urban, African American male adolescents. The intervention consists of one 5-hour session delivered to groups of 5 to 6 males. The intervention includes facts about HIV/AIDS and risks associated with intravenous drug use and sex behaviors, clarifies myths about HIV, and helps adolescents realize their vulnerability to AIDS and STDs. Videos, games, exercises, and other culturally and developmentally appropriate materials are used to reinforce learning and build a sense of pride and responsibility in reducing HIV risk.

Adolescents also engage in role-playing situations to practice implementing abstinence and other safer sex practices, including practicing condom use skills.

***CLEAR: Choosing Life: Empowerment! Action! Results!*** is an evidence-based, health promotion intervention for males and females ages 16 and older living with HIV/AIDS and high-risk HIV-negative individuals. CLEAR is a client-centered program delivered one-on-one using cognitive behavioral techniques to change risk behavior. The intervention provides clients with the skills necessary to be able to make healthy choices for their lives. CLEAR is a structured intervention that may be integrated into CTR programs.

***Healthy Relationships*** is a five-session, small-group intervention for men and women living with HIV/AIDS. The intervention is based on Social Cognitive Theory and focuses on developing skills and building self-efficacy and positive expectations about new behaviors through modeling behaviors and practicing new skills. Decision-making and problem-solving skills are developed to enable participants to make informed and safe decisions about disclosure and behavior. The sessions create a context where people can interact, examine their risks, develop skills to reduce their risks, and receive feedback from others.

***Making Proud Choices*** is an eight module curriculum that provides young adolescents with the knowledge, confidence and skills necessary to reduce their risk of STDs, HIV, and pregnancy by abstaining from sex or using condoms if they choose to have sex. The curriculum is based on cognitive-behavioral theories, focus groups, and the authors' extensive experience working with youth. Making Proud Choices! is an adaptation and extension of the original Be Proud! Be Responsible! curriculum in that it integrates teen pregnancy prevention along with HIV/STD prevention.

***Many Men, Many Voices*** is a seven-session, group level STD-HIV prevention for gay men of color. The intervention addresses behavioral influencing factors specific to gay men of color, including cultural/social norms, sexual relationship dynamics, and the social influences of racism and homophobia.

***RAPP (Real AIDS Prevention Project)*** was developed to help women and their partners reduce their risk for HIV infection. The intervention objectives are to increase consistent condom use by women and their partners, to change community norms so that practicing safer sex is seen as the acceptable norm, and to involve as many people in the community as possible. The program has two phases: 1) community assessment, which involves finding out about the community and how to talk to women and their partners about their risk for HIV infection, and 2) getting the community involved in a combination of risk reduction activities directed toward these women and their partners.

***RESPECT*** is an individual-level, client-focused, HIV prevention intervention, consisting of two brief interactive counseling sessions. The intervention is based on the Theory of Reasoned Action and Social Cognitive Theory. The provider follows a structured protocol to guide the delivery of the intervention, using or creating a "teachable moment" to enhance a client's perception of their risk and level of concern for HIV infection. Teachable moments can be used to increase a person's motivation to change behaviors (i.e., being diagnosed with a new STD, or

having a recent STD/HIV exposure). By discussing recent risk incidents, the provider helps the client identify triggers, circumstances, and patterns of risk-taking behavior, to increase perception of susceptibility. The provider works with the client to develop a risk reduction plan including referrals which support risk reduction.

**Safety Counts** is an HIV prevention intervention for out-of-treatment active injection and non-injecting drug users aimed at reducing both high-risk drug use and sexual behaviors. The intervention is a behaviorally focused, seven-session intervention, which includes both structured and unstructured psycho-educational activities in group and individual settings.

**SISTA** is a social-skills training intervention for African American women. The intervention is aimed at reducing HIV sexual risk behavior. It is comprised of five 2-hour sessions, delivered by peer facilitators in a community-based setting. The sessions are gender specific and culturally relevant and include behavioral skills practice, group discussions, lectures, role-playing, prevention video viewing, and take-home exercises.

**VOICES/VOCES** involves groups of four to eight clinic patients who are convened in a room that allows privacy for discussions. Groups are gender-and-ethnic specific, so that participants can develop prevention strategies appropriate for their culture. Information on HIV risk behavior and condom use is delivered by videos, facilitated group discussion, and a poster board presenting features of various condom brands in English and Spanish. The five culturally specific videos can be used to target both African American and Latino participants. Skills in condom use and negotiation are modeled in the videos, then role-played and practiced by participants during the discussion that follows. At the end of the single, 45-minute session, participants are given samples of the types of condoms they have identified as best meeting their needs.

### North Carolina MSM Task Force

The North Carolina MSM (men who have sex with men) Task Force, comprised of many leaders from around the state, is being established in order to foster dialogue and effective partnership with the MSM community, currently at highest risk for syphilis and/or new HIV infection. This task force is focused on:

- Developing strategies to reach the MSM population.
- Creating appropriate prevention messages, reinforcing early awareness of signs and symptoms, linkage to care, and risk reduction.
- Addressing issues of stigma and other social issues that may prevent someone from getting tested and treated.
- Developing an environment of a 'safe space' for the MSM population to be able to express their feelings, concerns, and experiences particularly those that may be cause hesitancy to access care or affect risk behaviors.
- Planning for outreach, education, and testing in non-traditional ways (meeting the people where they are).



## CHAPTER 4: SPECIAL STUDIES

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### CONTENTS

- **SCREENING AND TRACING ACTIVE TRANSMISSION (STAT PROGRAM)**
- **FACTORS ASSOCIATED WITH CONDOM USE AMONG YOUNG BLACK MSM ATTENDING A HOUSE BALL**
- **PARTNER CONTACT AND REFERRAL SERVICES (PCRS)**
- **THE MEDICAL MONITORING PROJECT (MMP)**

### SCREENING AND TRACING ACTIVE TRANSMISSION (STAT PROGRAM)

The Screening and Tracing Active Transmission (STAT) program is an initiative designed to detect individuals who are likely newly infected with HIV or 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 Communicable Disease Branch, the State Laboratory for Public Health (SLPH) and the University of North Carolina at Chapel Hill. The program 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 undetectable levels of HIV antibody by EIA and Western Blot testing (i.e., seronegative) were sent from the SLPH 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 SLPH in November of 2002.

In a one-year period (November 1, 2002 to October 31, 2003), a total of 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 4 percent (n=23) 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, 2005).

Since November 2002, 152 people have been identified with Acute HIV infection (Table 4.1). Information derived from this project is used along with routine HIV surveillance data by public health officials in developing and implementing treatment and prevention programs. Recently infected individuals can receive counseling and treatment earlier with the goal of better health outcomes and ultimately preventing inadvertent exposure to partners. The case follow-up protocol for Disease Intervention Specialists (DIS) is to contact individuals with acute HIV infection within 72 hours of receipt of the case. The DIS interview and counsel individuals and their partners (sexual and/or needle sharing) and offer HIV and STD testing. Patients are encouraged to have a repeat HIV-antibody test within two weeks (and at four and 12 weeks, if necessary).

**Table 4.1. Demographics for Cases Identified through STAT: Jan. 2003 – Dec. 2009**

Year	2003		2004		2005		2006		2007		2008		2009		Total	
	(n=22)		(n=21)		(n=21)		(n=15)		(n=16)		(n=29)		(n=28)		(n=152)	
	n	Pct.	n	Pct.	n	Pct.	n	Pct.	n	Pct.	n	Pct.	n	Pct.	n	Pct.
<b>Gender</b>																
Male	15	68%	16	76%	17	81%	13	87%	14	88%	24	83%	24	86%	123	81%
Female	7	32%	5	24%	4	19%	2	13%	2	13%	5	17%	4	14%	29	19%
<b>Age group</b>																
13-14	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
15-19	1	5%	3	14%	1	5%	1	7%	7	44%	3	10%	6	21%	22	14%
20-24	5	23%	7	33%	4	19%	6	40%	4	25%	9	31%	9	32%	44	29%
25-29	2	9%	4	19%	7	33%	3	20%	2	13%	8	28%	4	14%	30	20%
30-34	4	18%	2	10%	5	24%	1	7%	1	6%	3	10%	2	7%	18	12%
35-39	3	14%	2	10%	2	10%	1	7%	0	0%	3	10%	2	7%	13	9%
40-44	5	23%	1	5%	0	0%	0	0%	1	6%	1	3%	1	4%	9	6%
Over 45	2	9%	2	10%	2	10%	3	20%	1	6%	2	7%	4	14%	16	11%
<b>Race</b>																
Black*	14	64%	16	76%	14	67%	7	47%	11	69%	17	59%	24	86%	103	68%
White*	5	23%	4	19%	5	24%	7	47%	4	25%	9	31%	3	11%	37	24%
Hispanic Am.	2	9%	1	5%	2	10%	1	7%	1	6%	3	10%	1	4%	11	7%
Ind./AN*	1	5%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	1	1%
Other	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%

Acute case numbers are small; therefore, assessing meaningful demographic trends is difficult, but 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. Additionally, the use of social networks to identify cases may bias the data toward certain groups. It is noteworthy however, that the cumulative data indicate that blacks and males are being disproportionately identified as acute cases. Cumulatively, 81 percent of the 152 people identified through the STAT project have been males (see Table 4.1). The median age of acute HIV infection is 25 years old (range: 16–56 years). Forty-nine percent (49%) of the STAT cases were diagnosed among person in their twenties, with 29 percent between the ages of 20 to 24 years.

In addition to the laboratory initiated STAT cases, Branch field staff also work with medical providers throughout the state to identify any new HIV acute (primary infection) cases that were diagnosed through private care providers. The DIS attempt to identify any newly diagnosed people that had a recently documented HIV-negative antibody test. The cases are collectively referred to as community acute/recent cases. In 2009, a total of 46 community acute/recent cases were identified based on follow-up and additional information collected during field investigations. These cases and the associated social networks are being studied to enhance field intervention efforts.

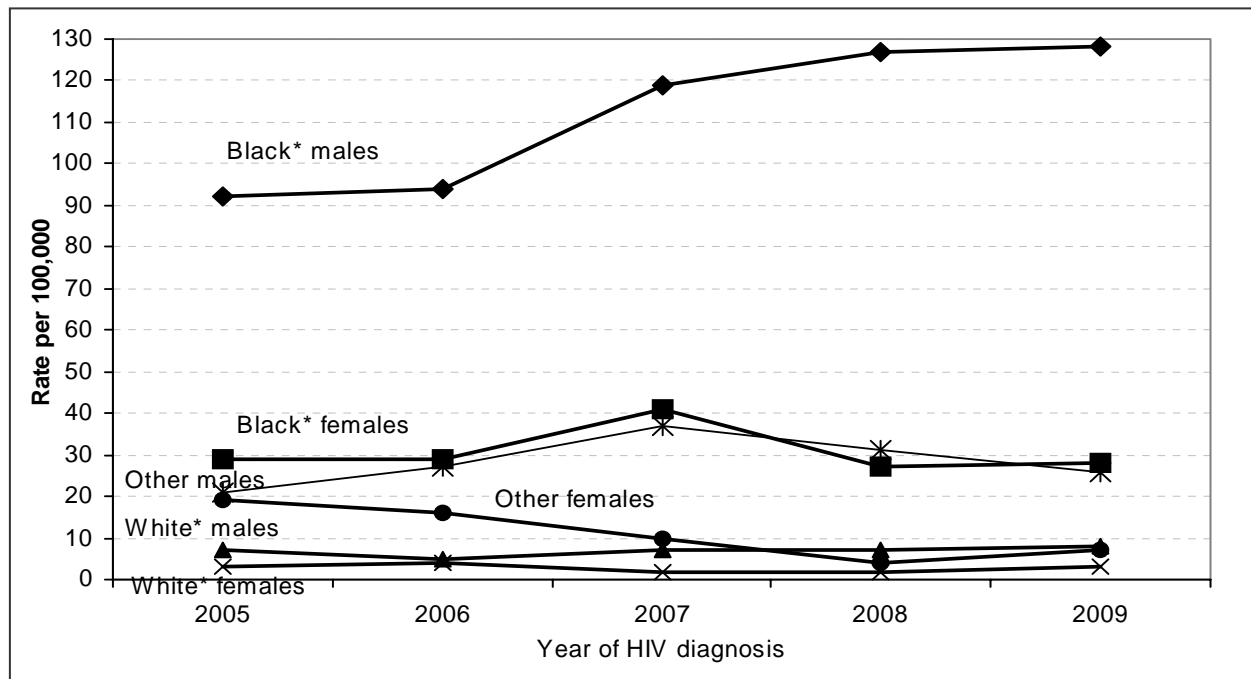
#### Changes in HIV Testing at the N.C. State Laboratory for Public Health (SLPH)

Beginning January 2008, The N.C. SLPH implemented the use of the HIV-1/HIV-2 plus O EIA antibody assay along with using the APTIMA HIV-1 RNA Qualitative Assay by GenProbe for identifying potential Acute HIV cases. Use of the APTIMA HIV-1 RNA Qualitative Assay enables the N.C. SLPH to identify Acute HIV infection by identifying HIV RNA in persons prior to the development of antibodies to HIV-1. The STAT program noted a 113 percent increase in the number of people identified with Acute HIV in 2008. The increase is attributed to the implementation of new HIV testing technology used at the N.C. SLPH, in addition to increased testing. In 2003, when the STAT program was implemented, the N.C. SLPH processed approximately 109,000 HIV tests. In 2009, a total of 257,091 HIV tests were performed using a conventional blood test through the N.C. SLPH. The additional 148,091 tests processed in 2009 represent a 136 percent increase in HIV testing since 2003. The increased HIV testing is result of several State initiatives to expand HIV testing in order to increase the number of persons that are aware of their HIV status.

### FACTORS ASSOCIATED WITH CONDOM USE AMONG YOUNG BLACK MEN WHO HAVE SEX WITH MEN ATTENDING A HOUSE BALL

Young black men who have sex with men are at high risk for HIV infection in North Carolina and Mecklenburg county had the highest rate of HIV Disease in North Carolina in 2009 (38.3 per 100,000 population) (N.C. DHHS, 2009). The rate of HIV infection among black males ages 15

**Figure 4.1. HIV infections diagnosed in N.C. among adult/adolescents ages 15–24**



\*non-Hispanic Others include: Hispanics. American Indians. Alaskan Natives. Asians. and Pacific

to 24 in North Carolina has increased almost 40 percent in the past five years, from 92 per 100,000 in 2005 to 128 per 100,000 in 2009 (Figure 4.1). In 2009, young black males were 16 times more likely to be diagnosed with HIV than young white males. The male to female ratio in 2009 was 4.7, or almost five black males diagnosed with HIV for every one black female (ages 15–24).

The following report is a brief analysis and description of data collected in Charlotte, North Carolina during the 2010 D-Up! *Clash of the Champions III* house ball event. The data presented include sociodemographic characteristics, prevalence of self-reported risk behaviors, self-reported HIV status and STD diagnoses. This analysis report will provide basic descriptive information and evaluate specific HIV risk behaviors among the eligible respondents, focusing primarily on the association between various factors and unprotected anal sex. Understanding the influence of these factors is critical in designing effective prevention efforts in this population. The D-Up! project will evaluate the penetration and awareness of the D-Up! project and any changes over time in sexual behaviors and/or attitudes about safer sex that can be attributed to this program.

## Methods

### *Survey population and data collection*

Carolinas CARE Partnership's D-Up! prevention project collaborated with the N.C. Division of Public Health's Communicable Disease Branch to administer the survey. The purpose of the survey was to collect demographic and behavioral data among young black men attending house balls (as defined below; see *The Event*) in North Carolina who may be at risk for HIV infection. Volunteers and staff were trained to administer surveys using handheld computers. The survey included questions regarding demographics, sexual behavior, condom use, previous STD diagnoses, HIV testing and status, their exposure to prevention services, and their attitudes and their friends' attitudes about safe sex. Once eligibility was established through pre-screening questions, the objectives of the survey were explained to them and informed consent was obtained. Participants entered their own answers directly into the handheld computers. Each participant had an assigned interviewer to assist them with any technical difficulties and to answer questions about the survey. No identifying information was collected and the survey took about 10 minutes. Persons who completed the survey were entered into a drawing for a \$50 gift certificate. Because the intent of this survey was not to conduct research but to evaluate a prevention initiative and to collect behavioral surveillance data, this project was not reviewed by an Institutional Review Board (IRB).

Individuals were recruited for participation in the survey who met the following criteria:

- Race= African American or black (can be multiple races/ethnicities)
- Gender at birth= male
- Calculated Age (from date of birth) = 13 to 24 years
- Have had sex with a man
- Have been sexually active in the past 12 months

### *The Event*

The "Prevention is Sexy" *Clash of the Champions III* was a house ball held at the Grady Cole Center in the city of Charlotte on July 17, 2010. The ballroom community is an underground and transient social network that consists of some 50 nationally recognized houses, each named after a different fashion designer. Houses support their members much like a traditional family would, with a house mother and father, and provide affirmation and acceptance for their "children" who are oftentimes marginalized due to their sexuality and gender identities (Green, 2006). House balls involve members of the house/ballroom community "walking" or competing for prizes in various categories like voguing, runway, and realness. Competitors are judged on their attitude, appearance, costume, and the ability to vogue or dance as they walk the runway.

### Data collection, cleaning and analysis

Data were collected with Questionnaire Development System (QDS) version 2.4 software (Nova Research, Bethesda, M.D.) and were imported into SAS version 9.1 (SAS Institute, Cary, N.C.) for cleaning and analysis. This report will summarize data on eligible respondents only, and the primary focus was factors either contributing to or impeding the use of condoms during anal sex with other men. Univariate analysis of factors associated with condom use during last anal sex

were assessed using chi square ( $X^2$ ) statistics and calculation of odds ratios and their 95% confidence intervals (CIs).

**Results**

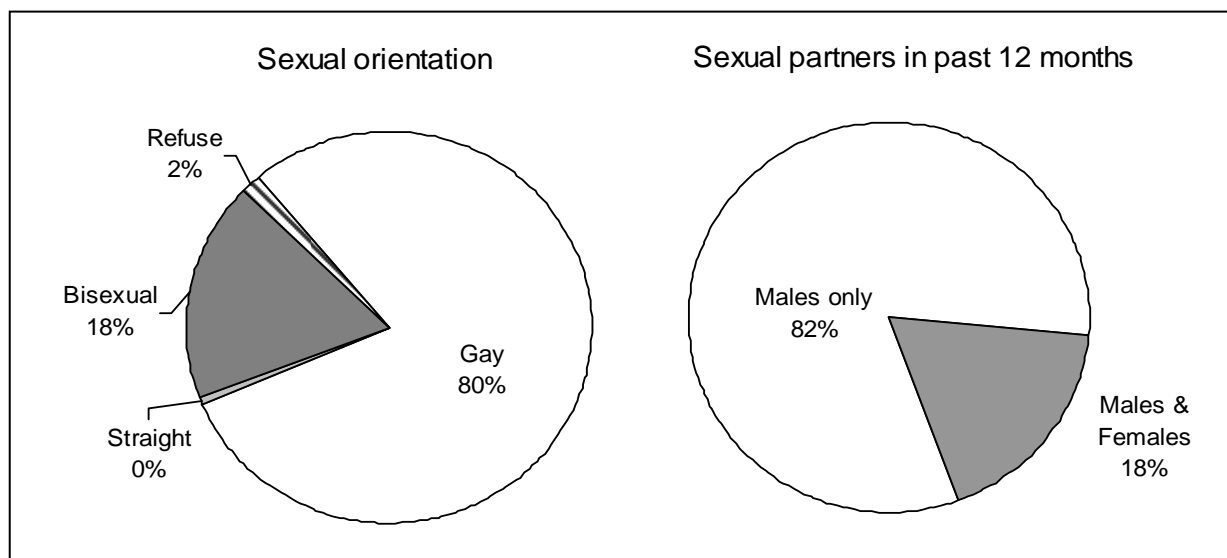
*Sociodemographic characteristics*

There were over 2,000 people in attendance for the D-Up! ball. Data were limited to 221 males who were determined to be eligible (Table 4.2). The median age was 20 years (range: 16 to 24 years). All respondents reported being born male but four identified their gender as female and three identified as intersex or ambiguous. Ninety-five percent (95%) identified solely as black or African American and five percent were bi-racial (including black Hispanics). Fifty-eight percent (58%) reported living in the Charlotte/Mecklenburg area and 25 percent were students in a high school or university in Charlotte. Forty-eight percent (48%) had a high school diploma or less education, and 52 percent had some additional education beyond high school. Fifty-eight percent (58%) were employed at least 30 hours per week, 18 percent were employed less than 30 hours per week, and 22 percent were not currently employed. Forty-two percent (42%) identified themselves as members of the house/ball community. Over a quarter (26%) of the young men surveyed had been previously arrested.

*Sexual identity*

All eligible respondents reported having previous male sex partners and being sexually active (meaning they had oral, anal or vaginal sex in the past 12 months). Eighty-two percent (82%) had *only* male sex partners in the past 12 months and 18 percent had both male and female sex partners (Figure 4.2). Nearly eighty percent (79.6%) of the respondents identified as homosexual or gay, 18 percent identified as bisexual, less than one percent (0.5%) as heterosexual or straight, and 2 percent refused to label their sexual orientation (Figure 4.2).

**Figure 4.2. Sexual orientation & gender of sex partners in the past 12 mo.**



**Table 4.2. Number and percentage of respondents, by selected characteristics, 2010**

Characteristic	No.	Pct.	Most recent sex=UAI	
			No.	Pct.
<b>Age Group (yrs)</b>				
16-18	33	14.9%	6	12.5%
19-21	134	60.6%	33	68.8%
22-24	54	24.4%	9	18.7%
Total	221	100.0%	48	100.0%
<b>Race/Ethnicity</b>				
Black, non-Hispanic	210	95.0%	46	95.8%
Black, other*	11	5.0%	2	4.2%
Total	221	100.0%	48	100.0%
<b>Education</b>				
≤12 yrs	105	47.5%	24	50.0%
>12 yrs	116	52.5%	24	50.0%
Total	221	100.0%	48	100.0%
<b>Sexual identity</b>				
Homosexual/Gay	176	79.6%	40	83.3%
Bisexual	40	18.1%	5	10.4%
Heterosexual/Straight	1	0.5%	1	2.1%
Other/Refused	4	1.8%	2	4.2%
Total	221	100.0%	48	100.0%
<b>HIV status (self report)</b>				
Negative	185	83.7%	36	75.0%
Positive	11	5.0%	4	8.3%
Never tested	20	9.0%	7	14.6%
Missing/Unknown	5	2.3%	1	2.1%
Total	221	100.0%	48	100.0%
<b>Sexual behavior</b>				
Receptive anal sex**	146	66.1%	32	66.7%
Insertive anal sex**	119	53.9%	34	70.8%
Male sex partners ≥ 5	42	19.0%	10	20.8%

UAI= Unprotected anal intercourse

\*Includes those who self-identified as multiple races and/or Hispanic

\*\*Receptive and Insertive anal sex are not mutually exclusive categories

*Risk behaviors and self-reported HIV status and recent STD history*

The survey indicated that 90 percent of respondents had been previously tested for HIV; eighty-four percent (84%) self-reported being HIV negative, five percent (5%) were HIV-positive (n=11). Those individuals whose self-reported HIV status was negative were significantly less likely (OR 0.38 95% CI: 0.17–0.86) to report having unprotected anal intercourse (UAI). For the 20 individuals who had not been tested for HIV, the main reason given for not getting tested was “Don’t have time” (60%), 25 percent were “Afraid that I am HIV-positive,” 10 percent had “No

transportation,” and one person didn’t know where to get tested. Ten percent (10%) of respondents had been diagnosed with a sexually transmitted disease in the 12 months prior: 8 with syphilis, 4 with gonorrhea, 4 with chlamydia, 2 with herpes, 2 with genital warts, and 1 with hepatitis.

A large proportion of this sample of young black MSM engaged in high-risk sexual practices that placed them at risk for HIV infection. Nineteen percent (19%) of MSM had five or more sexual partners in the past 12 months. Among sexually active MSM, the median number of male sex partners in the past 12 months was 2 (range: 1–133 male sex partners) and the mean was 3.8. There were 40 MSM who also had female partners in the past 12 months; the median number of female sex partners in the past 12 months was 2 (range: 1–9 female sex partners) and the mean was 2.6. Three percent (3%) had five or more female sex partners in the past 12 months. Oral sex was very common (85%) and 21 percent reported having 5 or more male oral sex partners in the past 12 months. While 43 percent did not use a condom the last time they gave or received oral sex, 72 percent report they “always” ask their male sex partners about their HIV status before having oral sex.

Proportionately more MSM reported receptive anal sex (66%) than insertive anal sex (54%). Of the respondents who were the insertive partner, or “top,” during their last sexual encounter, 73 percent reported they used condoms the whole time. Of MSM who reported being the receptive partner, or “bottom,” during their last sexual encounter, 80 percent reported that their partner used a condom the whole time. Receptive partners were significantly less likely to report UAI (OR 0.41 95% CI: 0.20–0.83) than those reporting versatile or only insertive sexual behaviors (Table 4.3).

Exchanging sex for money, drugs, or something else that the respondent needed was associated with a significant risk of having unprotected anal sex. With respect to odds, persons reporting exchange sex were almost seven times more likely to have engaged in unprotected anal sex than those who did not report exchange sex (OR 6.75 95% CI: 2.31–19.74). Respondents who reported that safer sex was always accepted by their male friends were significantly less likely to report having UAI (OR 0.29 95% CI: 0.15–0.56), as were those respondents who report always asking the HIV status of their male sex partners (OR 0.24 95% CI: 0.12–0.47).

**Table 4.3. Factors significantly\* associated with condom use during last sexual intercourse among young black MSM, Recruited in Charlotte, 2010 (n=221)**

Factors	Protected Anal Sex		Unprotected Anal Sex		OR (95% CI)
	N	%	N	%	
Receptive partner (bottom)	76	85.39	13	14.61	0.41 (0.20–0.83)
HIV negative (self report)	142	79.78	36	20.22	0.38 (0.17–0.86)
Safer sex “Always” accepted by male friends	117	84.78	21	15.22	0.29 (0.15–0.56)
“Always” asking HIV status of sex partners	125	85.03	22	14.97	0.24 (0.12–0.47)

\* $P < 0.05$



The use of lubricants was very common, with 90 percent of “tops” and 86 percent of “bottoms” reporting that they or their partner used a lubricant at some point during their last sexual intercourse. Rectal douching was common practice in this sample of men, with 86 percent of respondents engaging in receptive anal sex reporting that they douche as a cleaning method to prepare for sex. Because rectal douching and lubricants are so popular among MSM, rectal microbicides, preventative douches, and lubricants should be developed for HIV and STI prevention purposes and could become an important prevention tool. These data are also important in that products used in some enemas and lubricants may result in damage to the epithelium of the rectum; thereby increasing the chances of HIV infection (Carballo-Diégues, 2008; Gorbach, 2010).

### *Drugs and Alcohol*

Alcohol was used by the majority of respondents (72.9%) and 41 percent reported that they had sex while under the influence of drugs or alcohol in the past 12 months. Twenty-four percent (24%) reported taking drugs that were not prescribed to them in the past 12 months. Respondents who reported recreational drug use (OR 2.03 95% CI: 1.01–4.10), or reported using drugs or alcohol prior to sex in the past 12 months (OR 2.20 95% CI: 1.14–4.24), were twice as likely to report UAI, with respect to odds. Marijuana was the most commonly used recreational drug (90%), followed by X or ecstasy (6%). Other drugs, such as cocaine (N=1), downers such as Valium or Xanax (N=1), inhalants such as poppers or amyl nitrate (N=1) were rarely reported in this sample. Only four respondents reported that they had injected or shot up drugs that were not prescribed for them in the past 12 months (including hormones, steroids, or silicone).

### Discussion

The entire sample of young black MSM had either insertive or receptive anal sex in the past 12 months; and over 20 percent reported not consistently using condoms during last sexual intercourse. Exchanging sex for money, drugs, or something else the respondent needed was strongly associated with having UAI. Recreational drug use and having sex while under the influence of alcohol or drugs was also associated with UAI.

While being a member of the house/ballroom community was not a significant factor in reported UAI, sampling young black MSM at a house ball setting, where alcohol and substance use, as well as risky sexual behavior can occur, may bias the data and make drawing inferences about other subpopulations of MSM problematic. Furthermore, any study which measures self-reported behaviors may be less reliable than cross-sectional studies in finding an association between substance abuse and sexual risk behavior (Celentano, 2006).

To reduce the number of new HIV infections among young black MSM in the Charlotte/Mecklenburg county area, a multifaceted approach that includes effective HIV prevention messages and activities designed to reduce risk behaviors, increase knowledge of HIV serostatus, and promote interpersonal skills that encourage disclosure of HIV status, must be continued. Comprehensive health programs should not only educate young MSM about HIV risk, but also should address sexuality in the context of young black men’s lives. Many young black MSM feel isolated or rejected by their families, school, and the religious community. Problems of self loathing, resulting from homophobia and racism can influence risk-taking

behaviors and may discourage young black MSM from accessing prevention services. In the words of Frank Leon Roberts, also known as Frank Mizrahi of the House of Mizrahi:

*“The problem with telling people to put on a condom and protect themselves is that you assume that they have a positive sense of self worth and identity. But if you have been systematically taught to devalue your life and your body, then why the hell are you going to protect yourself?”* (Green, 2006)

### Acknowledgement

Thank you to the Carolinas CARE Partnership’s D-Up! Prevention Project for their permission to use these data, and special thanks to the D-Up! staff for all of the good work that they do on behalf of the community.

## PARTNER COUNSELING AND REFERRAL SERVICES DATA, 2005–2009

Partner Counseling and Referral Services are offered to all persons newly diagnosed with syphilis, and to anyone diagnosed and reported with HIV or AIDS in North Carolina. The 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. The DIS work in the Field Services Unit of the Communicable Disease Branch. More information about the Field Services Unit can be found in Appendix B (pg. B9).

### MEN WHO HAVE SEX WITH MEN (MSM)

Among all males interviewed with a HIV Disease diagnosis in 2009 (n=1,247), MSM risk was associated with 56 percent. MSM associated HIV infection has increased 19 percent (47% to 56%) as a proportion of male HIV disease cases interviewed through PCRS from 2005 to 2009. Among all males interviewed with early syphilis in 2009 (n=635), MSM activity was identified in 64 percent of cases (Table 4.4). Reports of MSM activity show a 39 percent increase from 2005 to 2009 (46%–64%).

**Table 4.4. Males interviewed with HIV or syphilis who reported MSM activity, 2005–2009**

Disease	2005		2006		2007		2008		2009	
	n	Pct.	n	Pct.	n	Pct.	n	Pct.	n	Pct.
HIV	559	47%	605	49%	710	52%	700	52%	699	56%
Syphilis	162	46%	216	54%	247	60%	262	65%	409	64%

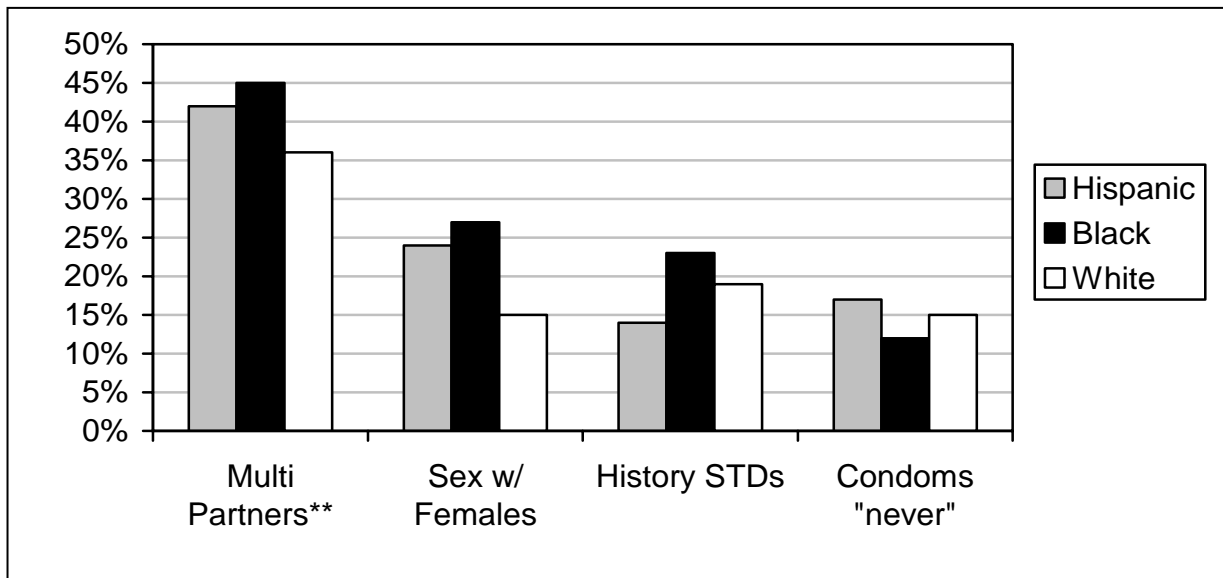
### *Sex partners and condom use*

Among men with HIV interviewed from 2005 to 2009 who indicated MSM activity (n=3,202), 14 percent indicated having had more than one sexual partner in the past 90 days; 41 percent indicated having had multiple partners in the past year; and 14 percent indicated they had a new sex partner within the past 90 days. Twenty-two percent (22%) of MSM interviewed with HIV from 2005 to 2009 indicated they had female as well as male sexual partners. Twenty-one percent (21%) of MSM with HIV infection indicated that they had a previous STD infection. Among MSM interviewed with syphilis from 2005 to 2009, 25 percent indicated having multiple sexual partners in the past 90 days; 59 percent indicated they had multiple sexual partners in the past year; 27 percent indicated they had a new sex partner within the past 90 days. Seventeen percent (17%) of MSM with syphilis also indicated they had female as well as male sexual partners. Thirty-nine percent (39%) of MSM with syphilis indicated they had been previously infected with a STD.

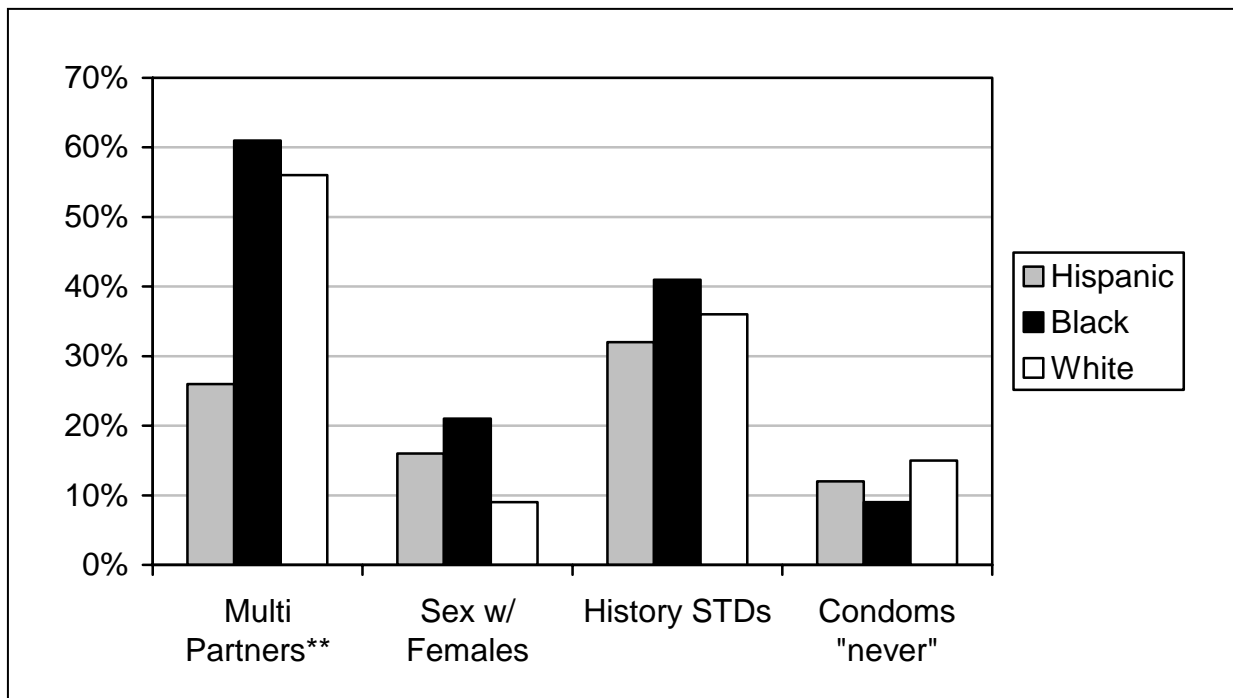
Patients with HIV and/or syphilis infection are asked about condom usage in five categories: always, never, sometimes, pick-ups only, and unknown. “Pick-ups” are described as sex with a casual partner, sometimes involving exchange sex (sex for drugs, money, shelter, etc.). Of MSM with HIV interviewed from 2005 to 2009, 11 percent indicated that they always used a condom, 13 percent indicated they never used a condom, and 66 percent indicated they used condoms sometimes, or with pick-ups only. Similarly, 11 percent of MSM interviewed with early syphilis indicated they used condoms always, 11 percent indicated never, and 72 percent indicated they

used condoms sometimes or with pick-ups only (See Figure 4.3–4.4).

**Figure 4.3. Additional risk behaviors of MSM interviewed through PCRS with HIV Disease, by race/ethnicity, 2005–2009**



**Figure 4.4. Additional risk behaviors of MSM interviewed through PCRS with syphilis, by race/ethnicity, 2005–2009**



\*\*Multiple sex partners in the past year

†Early Syphilis includes only Primary, Secondary and Early Latent syphilis cases

## HETEROSEXUAL RISK

In 2009, 88 percent of interviewed females infected with HIV reported heterosexual activity as their only risk factor (Table 4.5). Of males interviewed with HIV in 2009, 31 percent reported heterosexual sex as their only risk factor for HIV transmission. Of males interviewed with syphilis in 2009, 34 percent reported heterosexual sex (versus 64% who reported MSM activity).

**Table 4.5. Persons interviewed with HIV or syphilis with heterosexual risk only, 2005–2009**

	2005		2006		2007		2008		2009	
	n	Pct.	n	Pct.	N	Pct.	n	Pct.	n	Pct.
<b>HIV Disease</b>										
Males	423	35%	400	33%	423	31%	436	33%	386	31%
Females	415	84%	394	81%	488	86%	403	85%	369	88%
<b>Early Syphilis</b>										
Males	162	46%	165	41%	149	36%	126	31%	217	34%
Females	150	100%	142	100%	149	100%	119	100%	203	100%

### *Sex Partners and Exchange Sex*

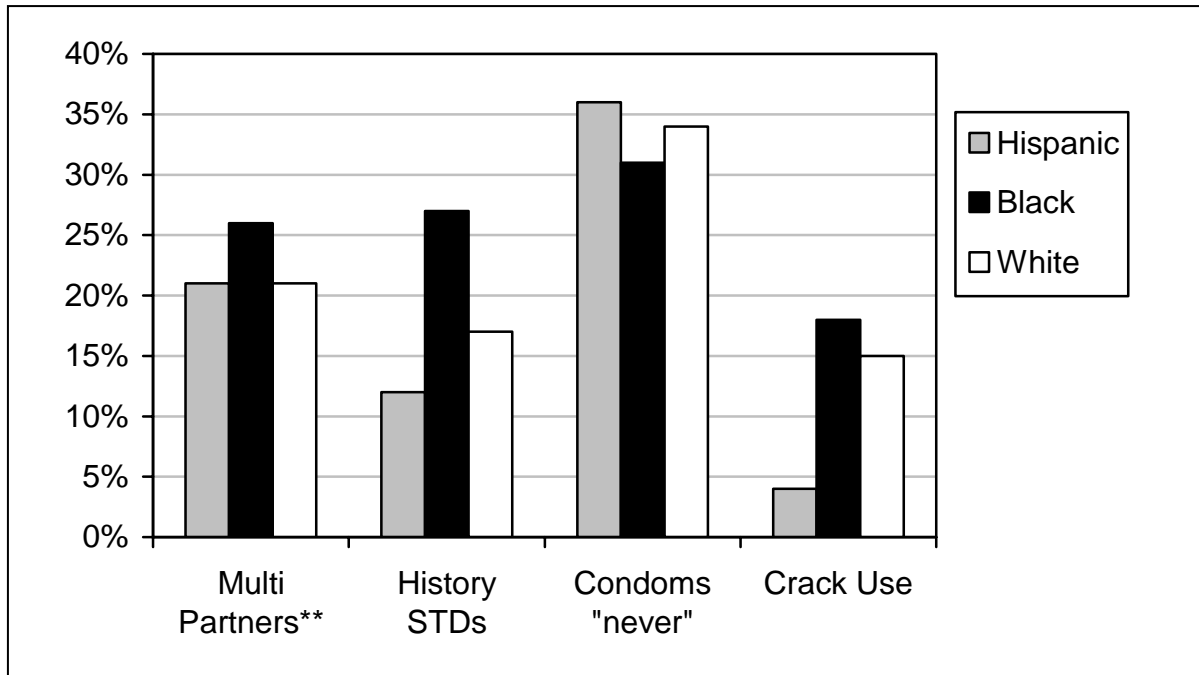
Twenty-four percent (24%) of heterosexuals with HIV interviewed from 2005 to 2009 reported multiple sexual partners in the past year; over one-half (51%) of the interviewed (heterosexual) syphilis cases reported multiple partners in the past year. Seven percent (7%) of heterosexuals with HIV reported having more than one sex partner in the past 90 days and, 6 percent had a new sex partner in the past 90 days. Twenty-five percent (25%) of heterosexuals with syphilis interviewed from 2005 to 2009 had more than one sex partner in the past 90 days, and 24 percent had a new partner in the past 90 days.

The exchange of sex for drugs or money is commonly reported among high-risk heterosexuals with HIV and/or syphilis. People diagnosed with HIV or syphilis are asked by DIS if they have given or received money or drugs in exchange for sex. Proportions of people exchanging sex for drugs or money (2005–2009) are higher among heterosexual men and women diagnosed with syphilis (25%) than with those diagnosed with HIV (14%).

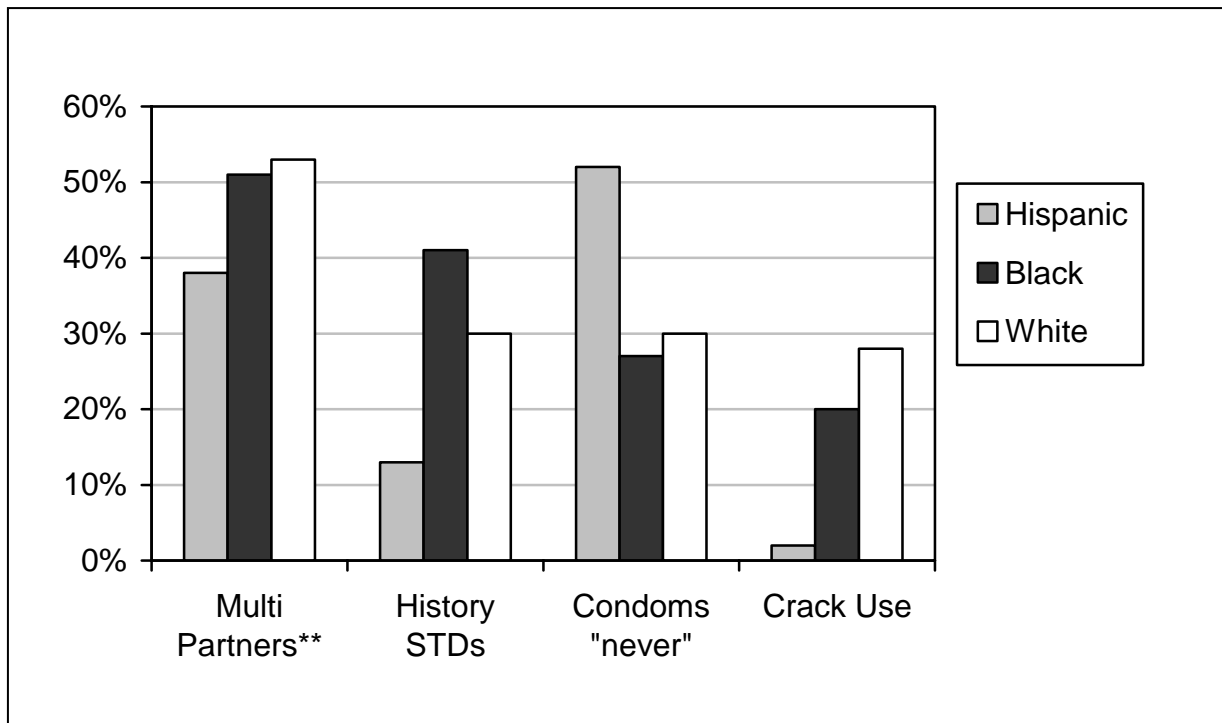
### *History of Sexually Transmitted Infections and Condom Use*

Thirty-two percent (32%) of heterosexual people with HIV who were interviewed from 2005 to 2009 indicated that they “never” use condoms and 47 percent reported using condoms with pick-ups only. Twenty-nine percent (29%) of people interviewed with syphilis from 2005 to 2009 with only heterosexual risk, indicated that they “never” use condoms; 58 percent reported only using condoms with pick-ups (Figure 4.5–4.6). High STD rates in North Carolina are markers for high-risk sexual practices and are cause for concern because STDs such as gonorrhea and syphilis increase the risk of HIV infection. Twenty-three percent of interviewed heterosexual males with HIV infection (2005–2009) and 26 percent of interviewed heterosexual females indicated that they had previously been infected with a sexually transmitted disease. Among men diagnosed with early syphilis and interviewed from 2005 to 2009, 34 percent had previously been diagnosed with a STD and 41 percent of women diagnosed with early syphilis had a previous STD.

**Figure 4.5. Additional risk behaviors of Heterosexuals interviewed with HIV Disease, by race/ethnicity, 2005–2009**



**Figure 4.6. Additional risk behaviors of Heterosexuals interviewed with Early Syphilis†, by race/ethnicity, 2005–2009**



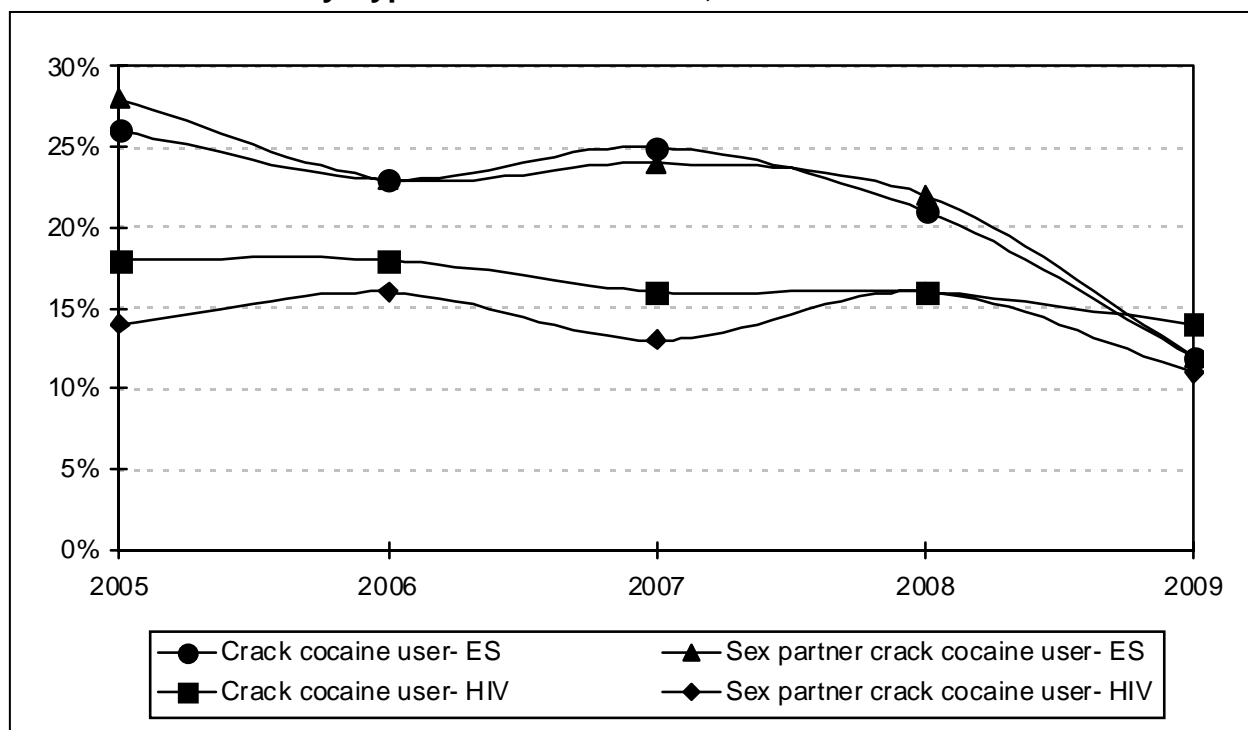
\*\*Multiple sex partners in the past year

†Early Syphilis includes only Primary, Secondary and Early Latent syphilis cases

### Crack Cocaine and Non Injection Drug Use

Syphilis epidemics and the epidemic use of crack cocaine are leading co-factors in both the rural and urban HIV epidemics in the United States, especially in the South. Crack cocaine and other (non injection) 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. According to PCRS interview data, from 2005 to 2009, 21 percent of people infected with syphilis through heterosexual sex also reported crack cocaine use and 21 percent reported a sex partner who used crack. Of the people with HIV interviewed from 2005 to 2009 who reported only heterosexual sex as a risk factor, 16 percent used crack cocaine and 14 percent reported a sex partner who used crack. There has been a decrease in the interviewees with either HIV or syphilis who reported using crack from 2005 to 2009 (Figure 4.7). Other commonly used drugs among heterosexuals interviewed from 2005 to 2009 with HIV were marijuana (27%) and cocaine (11%). Heroin, methamphetamines, and narcotics were used by less than 2 percent of interviewees.

**Figure 4.7. Crack cocaine use among Heterosexuals interviewed through PCRS with Early Syphilis or HIV Disease, 2005–2009**



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, and these populations experience higher rates of HIV infection, making transmission within these networks more likely. From 2005 to 2009, 126 people interviewed with HIV who reported only heterosexual risk, also reported having a sexual partner who is an injecting drug user (4% of heterosexual females interviewed and 2% of heterosexual males).

## **INJECTING DRUG USE (IDU)**

Among HIV cases interviewed through PCRS, IDU risk has decreased 34 percent from 2005 to 2009 (6%–4%). Of HIV cases interviewed through PCRS from 2005 to 2009, the majority reporting IDU risk were male (69%). From 2005 to 2009, IDU risk was reported by 283 males (including MSM/IDU) and 127 females interviewed with HIV Disease. Twenty-four percent (24%) of persons interviewed through PCRS who indicated they have IDU risk also indicated having a sex partner who has injected drugs. Thirty-one percent (31%) of persons with HIV who indicated IDU risk reported having a history of STDs and 34 percent reported having exchange sex for drugs or money.

Over half (51%) of all people interviewed with HIV and reporting IDU risk from 2005 to 2009 reported crack cocaine use. Also, 31 percent of males and 42 percent of females with IDU risk indicated having a sex partner who used crack cocaine. Other drugs reported from 2005 to 2009 include: marijuana (43%), cocaine (28%), methamphetamine (9%), heroin (7%), and narcotics (6%). PCRS data has limitations and DIS may differ in the way they record drug information (for more information about the Field Services and the PCRS data source can be found in Appendix B (pg. B-9).



## **MORBIDITY AND RISK BEHAVIOR SURVEILLANCE: THE MEDICAL MONITORING PROJECT (MMP)**

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, that included over 60,000 people. ASD data have been used to examine trends in the incidence of AIDS-defining opportunistic illnesses, to determine if eligible patients were receiving prophylactic and antiretroviral medications, and to inform treatment and prevention guidelines.

The need for data on risk and health care seeking behavior among HIV-infected persons led to the implementation of the Supplement to HIV/AIDS Surveillance (SHAS) project in 1990. SHAS surveyed persons newly reported as having HIV or AIDS in 19 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 persons 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, which reduces 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 diminished 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 ability to generalize 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 to 2004, modified SHDC by conducting interviews on a subset of persons for whom medical record abstraction had occurred. Both of these projects were conducted in limited geographic areas. The Medical Monitoring Project (MMP), as it now called, 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 provide nationally representative estimates of clinical and behavioral outcomes among persons living with HIV infection. The data collected from this national probability sample of HIV-infected persons receiving care in the U.S. will provide:

- A description of the clinical care and status of HIV-infected patients
- Better understanding of the existence and quality of HIV support services
- Prevalence data for co-morbidities related to HIV disease
- An understanding of the prevalence of ongoing risk behaviors
- Insight into the access and utilization of prevention services
- An ability to identify met and unmet needs for HIV care and prevention services 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 the selection of patients currently receiving care using a three-stage sampling design, an in-person interview of eligible patients, and the abstraction of their medical records.

Collection of data from interviews with HIV-infected patients is providing 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 provide information on clinical conditions that occur in HIV-infected persons as a result of their disease or the medications they take. In addition, MMP will provide information on 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. These programs 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 completed the three-stage sampling procedure for the 2009 data collection cycle. All health care providers who provided HIV medical care to HIV-infected patients were identified and contacted. For identifying facilities that were eligible for MMP, HIV medical care was care defined as "conducting CD4 or HIV viral load testing and/or providing prescriptions for antiretroviral medications in the context of treating and managing a patient's HIV disease on an outpatient basis". Thus, facilities providing HIV care could include outpatient facilities such as hospital-affiliated clinics, free-standing clinics or private physician offices, and Veterans Administration facilities. Although inpatient facilities, prisons and jails, federal military and

penitentiary facilities, and emergency departments may provide HIV care, these types of facilities were not considered eligible for the 2009 data collection cycle.

To obtain the list of providers who treat HIV patients, all North Carolina facilities that report HIV cases to the N.C. Division of Public Health were contacted and asked about treatment by prescribing anti-retroviral medications or monitoring patient health (through changes in CD4 levels and HIV viral loads). A total of 179 facilities that actively treat patients for HIV infection were identified. The general location and type of these 179 providers are summarized in Table 5.1. The majority of the HIV care providers are located in the Piedmont region of the state.

The national 2009 MMP data cycle started on May 1, 2009, and ended on May 31, 2010. In preparation for the 2009 cycle, the N.C. MMP team requested an estimated patient load (EPL) from each of the 179 medical providers for the time period of January 1, 2009, through April 30, 2009. The EPL represents the total number of adult HIV-infected patients treated at each facility during the specified time period. The providers' reported EPLs ranged from zero patients to a maximum of 1,122 patients. A de-identified list of the 179 medical providers was submitted to the CDC and 29 providers were subsequently selected from the list to participate in the 2009 MMP cycle. The 2009 provider sample/ selection was made completely independently of the provider sample/ selection made during the previous (2008) MMP cycle. The twenty-nine providers selected for participation in the 2009 cycle were approached by the N.C. MMP team and asked to participate by providing a list of the HIV-infected adult patients seen at their facility between January 1, 2009, and April 30, 2009. Of the twenty-nine selected providers, thirteen were eligible to participate and provided their patient lists to the N.C. MMP team. A de-identified aggregated (statewide) patient list (again, no names were included in the data) from these thirteen providers was sent to the CDC and 400 patients were selected to participate in the 2009 MMP cycle (Table 4.5). North Carolina MMP team members subsequently contacted and attempted to recruit the 400 selected patients to participate in MMP; they conducted face-to-face interviews with the patients who agreed to participate and medical record abstractions were subsequently conducted on the records of those participating patients. A total of 202 interviews and medical record abstractions were completed by the N.C. MMP team between August, 2009, and May, 2010.

**Table 4.5. Health Care Providers who Treat HIV Patients in North Carolina**

Region <sup>1</sup>	VA Hospitals		General Medical Clinics		ID Clinics		Hospitals		Total Providers	
	n	Pct.	n	Pct.	n	Pct.	N	Pct.	n	Pct.
Mountains	1	25.0%	12	%	1	8.3%	2	10.0%	16	8.9%
Piedmont	3	75.0%	80	%	9	75.0%	10	50.0%	102	57.0%
Coastal Plain	0	0.0%	51	%	2	16.7%	8	40.0%	61	34.1%
<b>Total</b>	<b>4</b>	<b>100%</b>	<b>143</b>	<b>100%</b>	<b>12</b>	<b>100%</b>	<b>20</b>	<b>100%</b>	<b>179</b>	<b>100%</b>

<sup>1</sup>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.

Table 4.6 includes a summary of select demographic characteristics of the 202 patients interviewed during the 2009 MMP data cycle.

**Table 4.6\*\* Patients Interviewed in N.C., 2009 MMP Data Cycle**

	N	Pct.
<b>Gender</b>		
Male	136	68.7%
Female	61	30.8%
Transgender	1	0.5%
<b>Age (as of 01/01/2009)</b>		
0-20 years	0	0.0%
21-30 years	15	7.6%
31-40 years	42	21.2%
41-50 years	81	40.9%
51-60 years	46	23.2%
>61 years	14	7.1%
<b>Race/Ethnicity</b>		
Asian *	1	0.5%
Black or African	122	61.9%
American Indian or Alaska	5	2.54%
Multiracial*	10	5.1%
White *	56	28.4%
Hispanic	3	1.5%
<b>Education</b>		
No School	0	0.0%
Grade 1-8	8	4.0%
Grade 9-11	31	15.7%
Grade 12 or GED	55	27.8%
Some college	69	34.9%
Bachelor degree	15	7.6%
Post graduate work	20	10.1%
<b>Health Insurance in the 12 months preceding the 2009 MMP Interview</b>		
No	37	18.7%
Yes	161	81.3%
<b>Sexual Orientation</b>		
Heterosexual	116	59.5%
Homosexual	65	33.3%
Bisexual	14	7.2%
<b>Country or Territory of Birth</b>		
United States	192	97.0%
Other	6	3.0%
<b>Jail, Detention, or Prison (&gt; 24 hours) in the 12 months preceding the 2009 MMP Interview</b>		
Yes	7	3.6%
No	188	96.4%
<b>Total</b>	<b>198</b>	<b>100.0%</b>

\*non-Hispanic

\*\*At the time of this publication these data are still considered preliminary and are subject to change. Please note that only 198 of the 202 interviews resulted in usable/analyzable data due to technical issues with the various software and/or hardware instruments used to collect the data. Please also note the responses in interviews are completely voluntary; therefore, not all questions were answered by all participants. More males than females were interviewed (136 versus 61) and 60 patients (30.3%) were age 51 or older; six patients were born outside the United

States (or its territories); the other countries of origin included Africa, Egypt, Jamaica, Mexico, Panama, and Trinidad. A total of 116 of the interviewees (59.5%), identified themselves as heterosexual, 65 (33.3%) identified themselves as homosexual, and 14 identified themselves as bisexual. Seven interviewees (3.6%) reported having been arrested and put in jail, detention, or prison for more than 24 hours during the year immediately preceding the interview; 104 (52.5%) of the interviewed patients had at least some college education, 37 (18.7%) reported not having health insurance during the year immediately preceding the MMP interview.

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## **PART II: HIV/AIDS TREATMENT & CARE IN NORTH CAROLINA**

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**What is the Impact of AIDS in North Carolina? (Chapter 5)**

**What are Ryan White HIV/AIDS CARE Act and Service Considerations?  
(Chapter 6)**

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## CHAPTER 5: THE IMPACT OF AIDS IN NORTH CAROLINA

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### HIGHLIGHTS

- 18,964 AIDS cases have been reported in North Carolina from the beginning of the epidemic through December 2009 (1983–2009).
- North Carolina ranked 10<sup>th</sup> among the 50 states in AIDS cases diagnosed in 2008 (the most recent year available for national comparisons) and 11<sup>th</sup> in the nation for estimated persons living with AIDS.
- 957 AIDS cases were diagnosed in North Carolina in 2009 (10.4 per 100,000 population).
- In North Carolina in 2009, blacks accounted for 69 percent (n=661) of the adult/adolescent AIDS cases diagnosed; whites accounted for 22 percent (n=206), Hispanics accounted for 7 percent (n=70), Asians and Pacific Islanders accounted for 1 percent (n=7), and less than one percent of AIDS diagnoses were American Indian (n=4).
- The AIDS rate for black women (23.9 per 100,000) was 17 times greater than the rate for white women (1.4 per 100,000). The AIDS rate among adult/adolescent black men (61.6 per 100,000) was nine times greater than the rate for white men (6.6 per 100,000).
- In 2009, one-half of all patients diagnosed with AIDS in North Carolina were diagnosed within six months of their initial HIV disease diagnosis.

### AIDS SURVEILLANCE

All 50 states, the District of Columbia, and the U.S. dependent areas report AIDS cases to the Centers for Disease Control and Prevention (CDC) by using a uniform surveillance case definition and a case report form. For persons with laboratory-confirmed HIV infection, AIDS cases represent individuals with CD4+ T-lymphocyte percentages of less than 14 or CD4+ T-lymphocyte counts of fewer than 200 cells/ $\mu$ L or the presence of one of 23 clinical conditions indicating an impaired immune system. The date of AIDS diagnosis represents the date that an individual is diagnosed with AIDS based on the above case definition. Ideally, individuals are diagnosed with HIV infection long before they are diagnosed with AIDS. In North Carolina, however, 50 percent of 2009 AIDS diagnoses were made at the same time or within six months of HIV diagnoses.

Monitoring cases that transition from HIV to AIDS in North Carolina provides both a valuable measure of the continuing efficacy of treatment as well as an indication of which patients may not have access to care. Increases in AIDS diagnoses have several implications. First, these increases may indicate that more HIV-infected individuals are being tested and reported in North Carolina. Another possible implication is that HIV-infected (status aware) individuals are not receiving proper medical care. Finally, increases in AIDS diagnoses may suggest that current treatments are no longer as effective. Since changes in AIDS cases and rates may indicate

changes in the anticipated care needs, agencies that provide medical care and support services to persons living with HIV/AIDS should closely monitor cases.

## NORTH CAROLINA AND THE U.S.

All states have name-based AIDS case reporting by law and provide data that are acceptable for state-to-state and state-to-U.S. comparisons. Comparing North Carolina to the nation is limited to earlier years because national surveillance data is released later than state data.

According to the Centers for Disease Control and Prevention (CDC), the national AIDS case rate in 2008 was 12.2 per 100,000 population (CDC, HIV/AIDS Surveillance Report, 2008). During the same time period, North Carolina's AIDS case rate was 12.5 per 100,000 population. North Carolina ranked 10th among all states and the District of Columbia in the number of new AIDS cases reported (Table 5.1). *Please note that comparisons made between other states, North Carolina, and the U.S. are based on counts and rates calculated by the CDC and have been statistically adjusted for delays in reporting; these numbers may differ slightly from North Carolina's unadjusted case counts and rates.*

**Table 5.1. Top 10 States for AIDS diagnoses**

State	AIDS Cases Diagnosed in 2008
1. California	4,835
2. Florida	4,766
3. New York	4,571
4. Texas	2,924
5. Georgia	1,908
6. Maryland	1,557
7. New Jersey	1,527
8. Pennsylvania	1,402
9. Illinois	1,305
10. North Carolina	1,157

Source: CDC HIV/AIDS Surveillance Report, 2008. Vol.20

The impact of HIV/AIDS in the South is a growing concern. In 2008, the South had 47 percent of new AIDS cases overall, including five of the top 10 states reporting the most AIDS cases (Table 5.1). The South also had the highest regional rate in 2008 (15.6 per 100,000). In 2008, seven of the top ten states by AIDS case rate were in the South (Top 10: DC, MD, FL, LA, NY, GA, NJ, DE, SC, and CA). Mississippi and North Carolina were 11<sup>th</sup> and 12<sup>th</sup>, respectively.

## AIDS PREVALENCE IN NORTH CAROLINA

North Carolina is ranked 11<sup>th</sup> in the nation for estimated number of persons living with an AIDS diagnosis (CDC, HIV/AIDS Surveillance Report, 2008). Table 5.2 displays HIV disease prevalence in North Carolina by HIV disease stage (HIV/AIDS), demographic characteristics, and transmission categories. AIDS cases were notably higher (proportionately) than HIV (non AIDS) cases for males, Hispanics, injection drug users (IDU), heterosexuals (CDC defined), and

persons ages 45 years and older. Sixty seven percent (67%) of both AIDS and HIV (non AIDS) cases were among blacks in North Carolina. North Carolina ranked 7th in the nation and D.C. for the percentage of all AIDS cases among blacks in 2007 (CDC special request, 2/10)

**Table 5.2. North Carolina Living<sup>†</sup> HIV/AIDS Cases**

Demographics	Disease Status				TOTAL	
	HIV non AIDS		AIDS		Cases	Pct
	Cases	Pct	Cases	Pct	Cases	Pct
Gender						
Male	9,676	67.3%	7,218	73.2%	16,894	69.7%
Female	4,709	32.7%	2,645	26.8%	7,354	30.3%
Current Age						
Unknown	161	1.1%	176	1.8%	337	1.4%
<2	8	0.1%	0	0.0%	8	0.0%
2-12	48	0.3%	6	0.1%	54	0.2%
13-24	922	6.4%	168	1.7%	1,090	4.5%
25-44	6,751	46.9%	3,888	39.4%	10,639	43.9%
45-64	6,078	42.3%	5,284	53.6%	11,362	46.9%
65+	417	2.9%	341	3.5%	758	3.1%
Race/ethnicity						
White*	3,733	26.0%	2,489	25.2%	6,222	25.7%
Black*	9,590	66.7%	6,596	66.9%	16,186	66.8%
American Indian/AN*	114	0.8%	90	0.9%	204	0.8%
Asian/PI*	76	0.5%	35	0.4%	111	0.5%
Hispanic	723	5.0%	605	6.1%	1,328	5.5%
Multiple races	149	1.0%	48	0.5%	197	0.8%
Mode of Transmission						
MSM	4,869	33.8%	3,118	31.6%	7,987	32.9%
IDU	1,066	7.4%	1,072	10.9%	2,138	8.8%
MSM/IDU	316	2.2%	280	2.8%	596	2.5%
Blood Products	36	0.3%	55	0.6%	91	0.4%
Heterosexual-CDC	2,338	16.3%	1,787	18.1%	4,125	17.0%
Pediatric	177	1.2%	65	0.7%	242	1.0%
NIR/NRR	3,859	26.8%	2,448	24.8%	6,307	26.0%
Presumed Heterosexual	1,724	12.0%	1,038	10.5%	2,762	11.4%
<b>Total</b>	<b>14,385</b>	<b>100.0%</b>	<b>9,863</b>	<b>100.0%</b>	<b>24,248</b>	<b>100.0%</b>

<sup>†</sup> Living as of 12/31/09

\* non-Hispanic

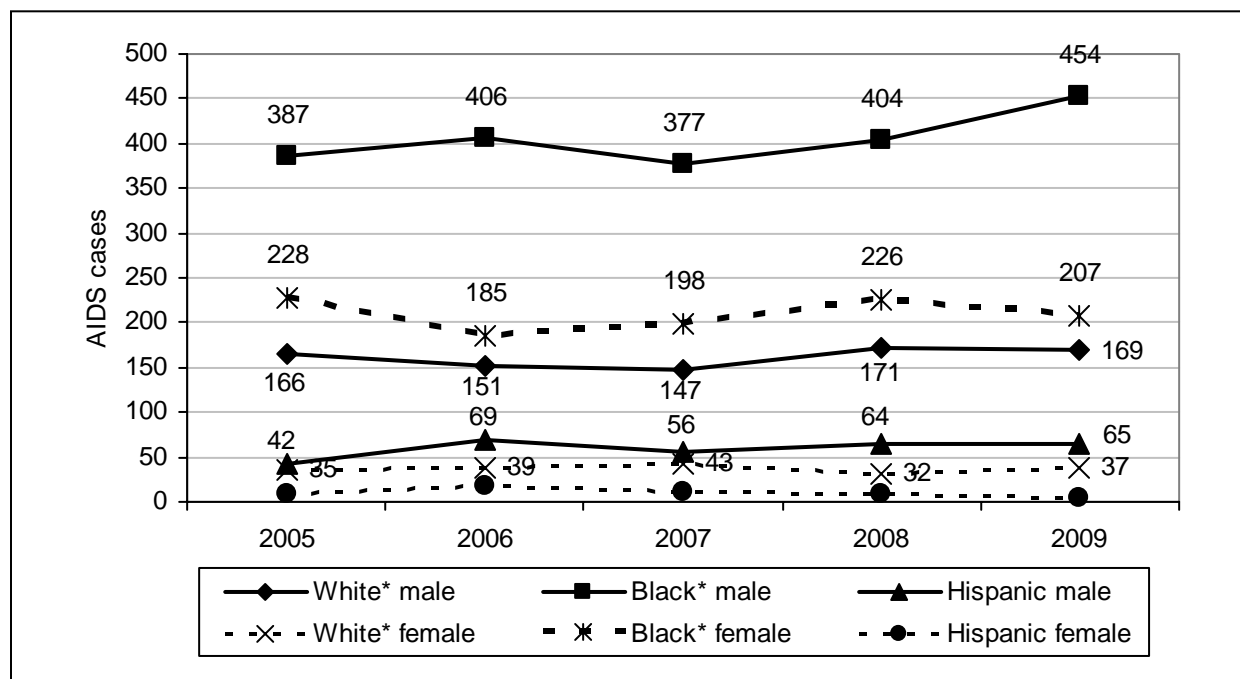
### AIDS TRENDS IN NORTH CAROLINA

A total of 18,964 AIDS cases have been diagnosed and reported among North Carolina residents since the beginning of the epidemic in 1983. In 2009, 957 new AIDS cases were diagnosed in North Carolina with a rate of 10.4 per 100,000 population (12.6 per 100,000 adult/adolescent population). Most subpopulations in North Carolina have experienced stable or decreasing rates of AIDS. However, over the past five years, AIDS cases have increased 173 percent among black males ages 20 to 24 (from 15 cases in 2005 to 41 cases in 2009), 61 percent among black males ages 25 to 29 (from 33 cases in 2005 to 53 cases in 2009) and 62 percent among black males ages 45 to 54 (from 93 cases in 2005 to 151 cases in 2009). AIDS cases have also increased 157 percent among Hispanic males ages 25 to 29 (from 7 cases in 2005 to 18 cases in 2009) and AIDS cases have increased 22 percent among white males ages 45 to 54 (from 49 cases in 2005 to 60 cases in 2009). Although AIDS cases among females have decreased over the past five years, black females ages 55 to 64 are the exception with a 67 percent increase (from 15 cases in 2005 to 25 cases in 2009). The number of AIDS cases among American Indians has decreased over the past five years to a minimum of four cases in 2009. Asians experienced a recent increase with a five year high of seven AIDS cases in 2009 (four males and three females).

### AIDS IMPACT ON RACIAL AND ETHNIC MINORITIES

Racial and ethnic minorities continue to be disproportionately affected by the AIDS epidemic in North Carolina (Figure 5.1). Blacks account for a disproportionate share of AIDS cases, relative to their size in the population of North Carolina. According to the National Center for Health

**Figure 5.1 AIDS cases by Race/Ethnicity, 2005–2009**

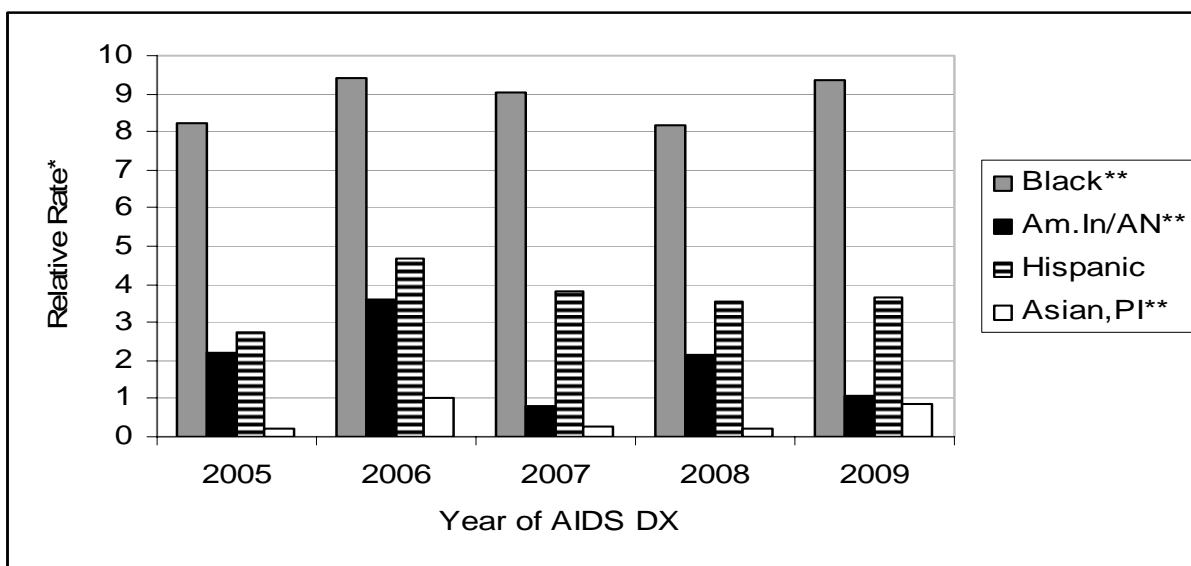


\*non-Hispanic

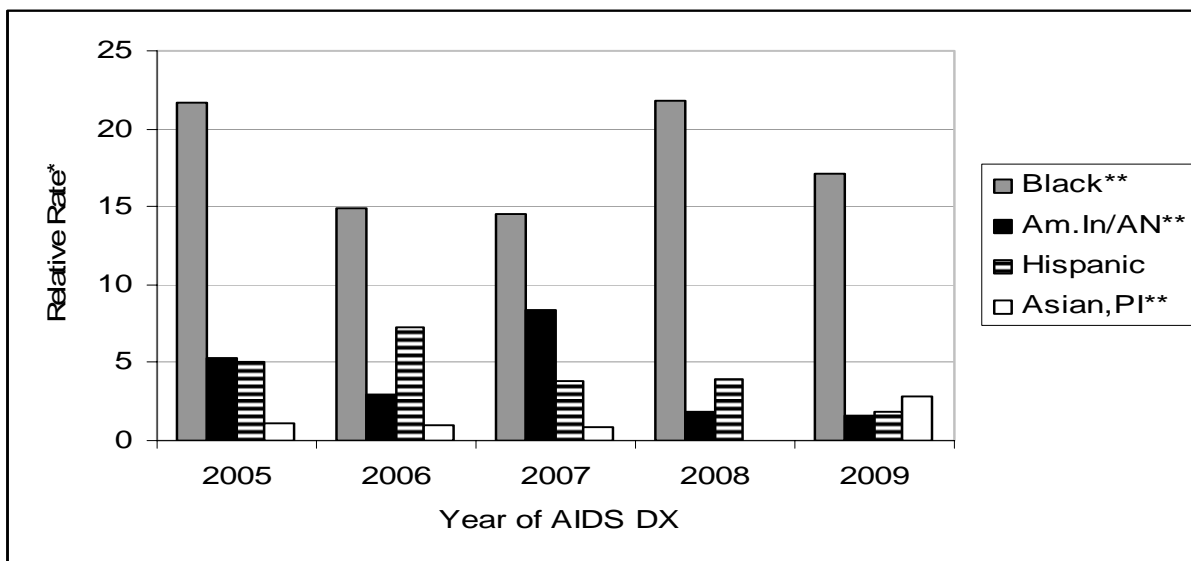
Statistics 2008 bridged race estimates, blacks comprise 22 percent of the total population of North Carolina, yet represent 67 percent of North Carolinians living with AIDS.

The disparity between blacks and whites is greater for AIDS than for HIV disease in North Carolina. The AIDS rate among blacks is 10 times higher than for whites while the rate for HIV disease is eight times higher among blacks than whites. In 2009, black males represented 65 percent of all adult/adolescent male AIDS cases and the AIDS rate among adult/adolescent black men (61.6 per 100,000) was 9.3 times the rate for white men in 2009 (6.6 per 100,000). Latinos represented nine percent of the 2009 AIDS cases and AIDS rate among Hispanic males (24.1 per 100,000 adult/adolescent population) was 3.7 times higher than for whites (Figure 5.2).

**Figure 5.2. Relative AIDS rates for Males in North Carolina, by Race/Ethnicity, 2005–2009**



**Figure 5.3. Relative AIDS rates for Females in North Carolina, by Race/Ethnicity, 2005–2009**



\*Referent group=White, non-Hispanic females

\*\*non-Hispanic

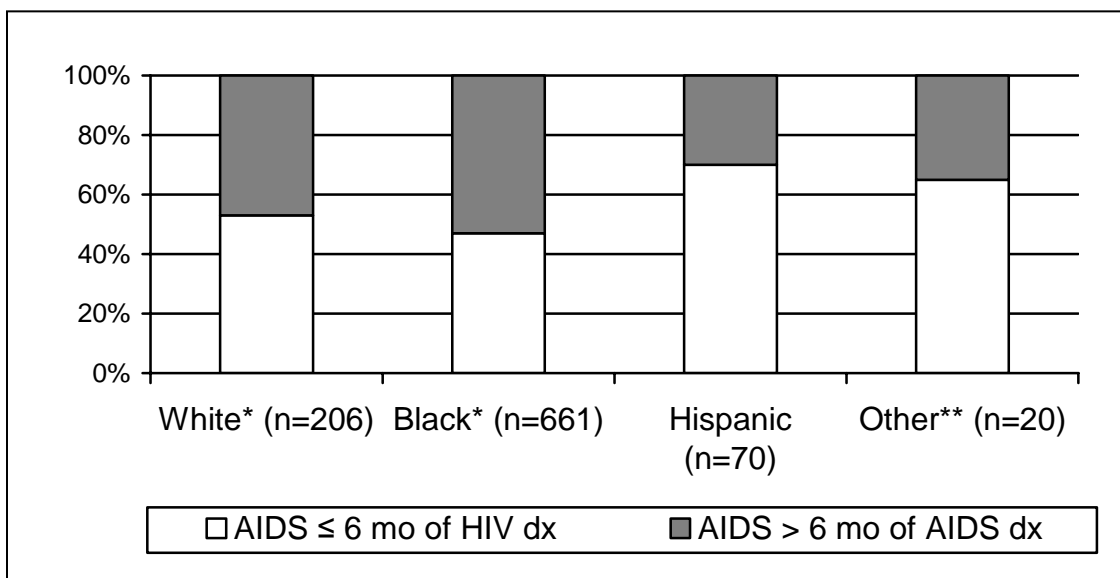
In North Carolina, black females represented 82 percent of 2009 AIDS cases diagnosed among women and the 2009 rate of AIDS diagnosed in adult/adolescent black women (23.9 per 100,000) was 17 times the rate for white women (1.4 per 100,000). Latinas represented 2 percent of AIDS cases in 2009 and the AIDS rate among Latinas (2.6 per 100,000) was almost twice the rate among white women (Figure 5.3).

**LATE AIDS DIAGNOSES**

Late testers represent a significant proportion of AIDS diagnoses in North Carolina, indicating the need for increased HIV testing. In 2009, one-half of all patients diagnosed with AIDS were diagnosed within six months of their initial HIV disease diagnosis, indicating that they probably had HIV for at least five to seven years (CDC, 2006). People who test late in the course of HIV infection may already have serious HIV-associated complications and are not able to benefit fully from antiretroviral therapy and prophylaxis to prevent opportunistic infections (Palella, 2003). Late testing also results in missed opportunities for preventing new HIV infections, as knowledge of positive HIV status promotes adoption of safer sex practices (CDC, 2000). The 21 percent of people in the United States who have HIV and do not know it are estimated to account for 54 percent of new transmissions (Marks, 2006).

Figure 5.4 displays the 2009 AIDS cases by race/ethnicity and concurrency of HIV/AIDS diagnoses. In 2009, 70 percent of AIDS cases diagnosed among Hispanics, 47 percent of AIDS cases diagnosed among blacks, 53 percent of AIDS cases diagnosed among whites, and 65 percent of AIDS cases diagnosed among other racial/ethnic groups were diagnosed within six

**Figure 5.4. AIDS within 6 months of HIV diagnosis by race/ethnicity, 2009**



\*non Hispanic

\*\*Other includes Asian, PI and American Indian/AN

months of their HIV diagnosis. Hispanics are more likely to be late testers in North Carolina, reflecting possible cultural and language barriers to testing and access to care.

In general, this significant proportion of late diagnoses indicates a need for increased HIV testing in North Carolina. The N.C. Division of Public Health is actively pursuing new policies and guidelines aimed at making HIV testing part of routine medical care settings and working with HIV-infected persons and their partners to reduce transmission. Rapid HIV tests have also created new opportunities to expand HIV testing into nontraditional and high prevalence settings (e.g. emergency rooms, correctional facilities, community settings and mobile testing sites).

In addition, the Branch has enacted specific initiatives such as the statewide *Get Real. Get Tested.* campaign designed to encourage North Carolinians to get educated about and tested for HIV (see Chapter 3). As a result of the implementation of the CDC HIV testing recommendations, statewide testing initiatives like the *Get Real. Get Tested* campaign and expanded HIV testing in nontraditional settings, HIV testing has increased substantially. In 2009, the state laboratory of public health performed about 234,749 HIV tests, which represents a 96 percent increase in testing since 2004 when about 119,617 tests were performed (See Chapter 4 for more information about HIV testing in North Carolina).

## TREATMENT

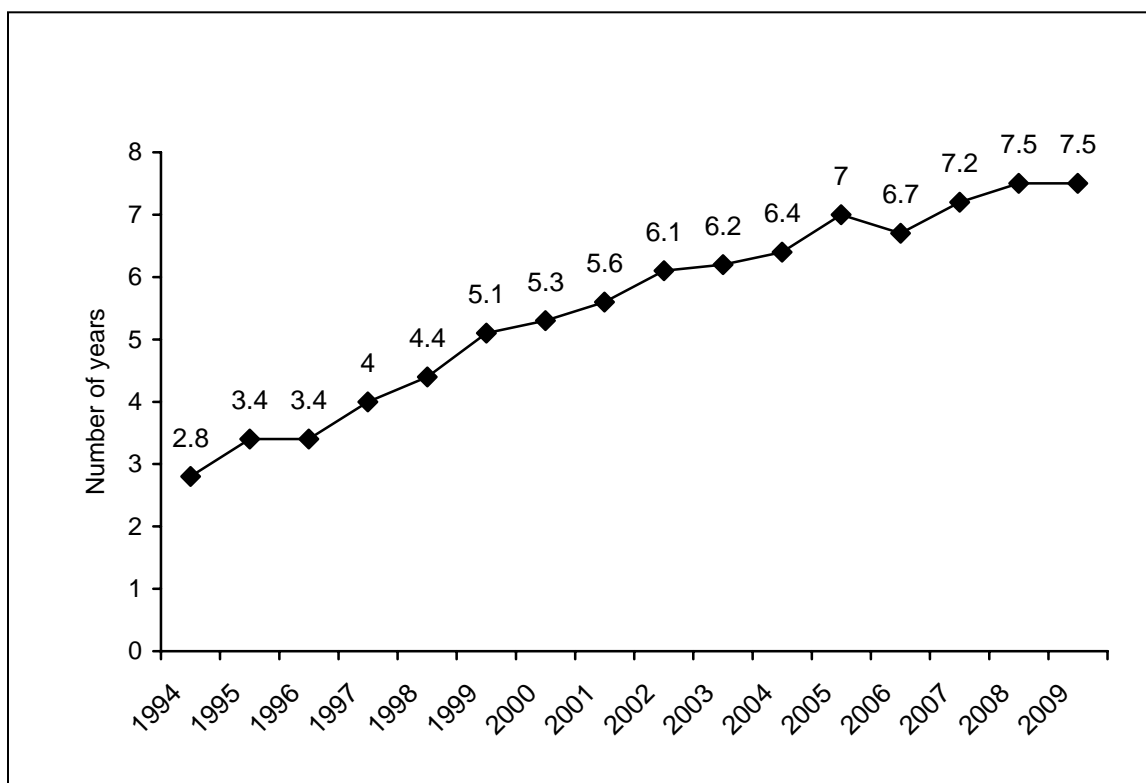
The lifetime cost of treating HIV disease is approximately \$367,000 (CDC, 2010). Identifying HIV infected individuals early in the course of disease and linking those individuals to medical care extends life expectancy, reduces medical costs, and reduces the spread of HIV to others. When the first test for HIV was introduced in 1985, a 25-year-old man with AIDS lived to be 27 years old; with current therapy, that 25-year-old man is projected to live to 64 years (Lohse, 2007). Current treatment for HIV infection consists of highly active antiretroviral therapy, also known as HAART. Many HIV-infected individuals have experienced remarkable improvements in their general health and quality of life while on HAART, leading to a large reduction in HIV-associated morbidity and mortality (Palella, 1998). Without treatment, progression from HIV infection to AIDS has been observed to occur at a median of between nine to ten years with the median survival time after developing AIDS only 9.2 months (Morgan, 2002).

Since the mid 1990s and the introduction of antiretroviral drugs to combat the progression of HIV disease, increases in the length of time between HIV and AIDS diagnosis have been observed in North Carolina surveillance data, generally indicating an improvement in health status and access to care for many HIV infected persons (Figure 5.5). Continued access to effective drug treatments should further improve health status for infected persons and continue this trend.

HAART does not cure the patient of HIV, nor does it remove all symptoms. If treatment is stopped, high levels of HIV-1 virus return, and may be anti-retroviral drug resistant (Dybul, 2002). Non-adherence to antiretroviral therapy is the major reason individuals fail to benefit from HAART (Becker, 2002). The reasons for non-adherence with HAART are varied and include: poor access to medical care, inadequate social supports, psychiatric disease, and drug abuse (Nieuwkerk, 2001). The complexity of HAART regimens, whether due to pill number,

dosing frequency, meal restrictions or side effects of the medication, contribute to the problem of intentional non-adherence (Heath, 2002). Although antiretroviral therapy frequently improves quality of life among symptomatic patients, ARVs may also be associated with reduced quality of life in asymptomatic patients. Adverse effects including nausea, vomiting, diarrhea, and abdominal pain, as well as the inconvenience of taking medication every day, may outweigh the overall benefit in some patients. As a result, the patient may decide to delay therapy whenever possible. Known complications related to cumulative use of antiretroviral drugs include increased incidence of cardiovascular disease, loss of bone density, loss of subcutaneous fat, the accumulation of fat in some parts of the body, and insulin resistance (DHHS, 2009; Montessori, 2004).

**Figure 5.5. Average\* years between HIV & AIDS diagnoses 1994–2009**



\*Average excludes late testers or persons with an AIDS diagnosis within six months of their initial HIV diagnoses

**AIDS RELATED DEATH**

Despite advances in combating HIV, eventually most HIV-infected individuals develop AIDS. Once HIV has progressed to diagnosable AIDS, the average survival time with antiretroviral therapy is estimated to be more than five years (Schneider, 2005). Patients with AIDS mostly die from opportunistic infections or malignancies associated with the progressive failure of the immune system. One study suggests the average life expectancy of an HIV infected individual is



32 years from the time of infection if treatment is started when the CD4 count is 350/ $\mu$ L (Schackman, 2006). In a recent study published in 2008, Robert Hogg, Jonathan Sterne, and colleagues with the Antiretroviral Therapy (ART) Cohort Collaboration predicted that a 20-year-old person starting ARV treatment between 2003 and 2005 would be expected to live an additional 49 years, to the age of 69.

According to North Carolina's State Center for Health Statistics (SCHS, 2008), HIV disease was the 3<sup>rd</sup> leading cause of death among African American females ages 25 to 44 (n=50 deaths) and the 5<sup>th</sup> leading cause of death among African American males ages 25 to 44 (n=46 deaths). HIV disease was the 7<sup>th</sup> leading cause of death among Hispanic males ages 25 to 44 in 2008 (n=9 deaths) and HIV was not listed in the top 10 leading cause of death among Hispanic females (ages 25–44 years). HIV disease was the 8<sup>th</sup> leading cause of death among white males ages 25 to 44, in 2008 (n=19 deaths) and was not listed among the top ten causes of death among white females. HIV disease was the 6<sup>th</sup> leading cause of death among American Indian females ages 25 to 44 in 2008 (n=1) and was not a leading cause of death among American Indian males (ages 25–44 years) in 2008.

The age adjusted death rate for HIV disease in North Carolina for 2007 (the last year of data for national comparisons) was 4.1 per 100,000 (the U.S. death rate was 3.7 per 100,000) (CDC, 2010). North Carolina was 8<sup>th</sup> in the nation for deaths due to HIV (n=384) in 2007 (CDC, 2010). In North Carolina, survival (the estimated proportion of persons surviving a given length of time after diagnosis) increased with the year of diagnosis for diagnoses made during 2001 to 2005, although year-to-year differences were small. Survival decreased as age increased, particularly among the 65+ age group. Survival was greatest for persons ages under 13 and ages 13 to 24 and lowest among the ages 65+ group. Survival was greater among Asians and Hispanics than among blacks, American Indians, and whites (Table 5.3). Survival was greater among MSM and lowest among females who were injecting drug users (IDU). Vital status may not be determined or reported for all cases, however, the reporting of deaths for persons reported as having AIDS is estimated to be more than 90 percent complete.

**Table 5.3. Survival for more than 12, 24, and 36 months after an AIDS diagnosis, 2001–2005**

	No. of persons	Proportion survived (in months)		
		>12	>24	>36
<b>Age at diagnosis (yr)</b>				
<13	3	1.00	1.00	1.00
13-24	218	0.94	0.92	0.90
25-44	2,992	0.91	0.87	0.84
45-64	1,447	0.85	0.80	0.75
65+	96	0.65	0.58	0.54
<b>Race/ethnicity</b>				
White*	1,112	0.88	0.85	0.82
Black*	3,345	0.88	0.84	0.79
American Indian/AN*	57	0.86	0.86	0.81
Asian/PI*	13	0.92	0.92	0.92
Hispanic	211	0.94	0.93	0.92
Unknown	18	0.94	0.78	0.72
<b>Male Mode of Transmission</b>				
MSM	1,292	0.92	0.89	0.86
IDU	332	0.91	0.85	0.79
MSM/IDU	119	0.92	0.89	0.85
Heterosexual-CDC	438	0.90	0.86	0.81
NIR/NRR	1,148	0.84	0.80	0.76
Subtotal	3,356	0.89	0.85	0.81
<b>Female Mode of Transmission</b>				
IDU	155	0.88	0.83	0.77
Heterosexual-CDC	559	0.90	0.85	0.81
NIR/NRR	673	0.87	0.82	0.78
Subtotal	1,400	0.88	0.84	0.79
Pediatric	14	0.86	0.79	0.79
<b>Year of AIDS diagnosis</b>				
2001	834	0.87	0.82	0.78
2002	1,078	0.89	0.85	0.81
2003	1,181	0.88	0.84	0.80
2004	779	0.89	0.85	0.81
2005	884	0.89	0.87	0.83
<b>Total</b>	<b>4,756</b>	<b>0.88</b>	<b>0.85</b>	<b>0.81</b>

\*non-Hispanic

## **CHAPTER 6: RYAN WHITE HIV/AIDS CARE ACT AND OTHER SERVICE CONSIDERATIONS**

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### **HIGHLIGHTS**

- In 2009, the Ryan White Part B program served a total of 7,480 clients with HIV disease.
- The majority of services for Ryan White Part B clients involved ambulatory/outpatient medical services (33%), followed by non-medical case management (18%), and medical case management (8%).
- The AIDS Drug Assistance Program (ADAP) enrolled 6,321 clients in Ryan White (RW) Fiscal Year 2009 to 2010 (April 1, 2009 to March 31, 2010).
- ADAP clients who were adherent to their drug regimens experienced an average 19 percent increase in CD4+ T-lymphocyte counts from RW Fiscal Year 2009 to 2010.
- Housing Opportunities for Persons with AIDS (HOPWA) served approximately 2,385 clients and their families during state fiscal year (SFY) 2008 to 2009.
- In 2009, 76 percent of persons living in North Carolina with HIV Disease were estimated to be “in care.” The remaining 24 percent were estimated to be not “in care,” thus representing those with unmet need.
- The estimated number of persons living with HIV (PLWH) with unmet need was 26 percent, as compared to 21 percent of persons living with AIDS (PLWA).
- Persons living with HIV/AIDS (PLWHA) ages 13 to 24 had a 30 percent improvement in access to primary medical care over the 2008 estimate (in 2008, 23% had unmet need, versus only 16% with unmet need in 2009).

### **RYAN WHITE**

Congress enacted the Ryan White Comprehensive AIDS Resources Emergency (CARE) Act in 1990 to provide funding for states and territories, eligible metropolitan areas (EMAs), as well as 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 were part of the CARE Act.

The Ryan White Modernization Act of 2006 (which superseded the CARE Act) 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 remained essentially the

same as the old CARE 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 (aid to localities), North Carolina now has its first direct-funded locality (Mecklenburg County, along with four other N.C. counties in that metropolitan area, and also including one South Carolina county). As a result, North Carolina has seen a significant increase in federal resources to the State for HIV/AIDS care purposes. In addition, some of the State's Part B funding which formerly went to this region has now been redirected to other areas of the State. Two significant changes in the Part B 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; meaning 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 Ryan White spending in previous years.
- Any expenditure by the HIV Care Consortia is now defined as a “support” service, no matter what the expenditure is for. This change has led to a reevaluation of the Consortia system, and the development of the Patient Management Model, implemented in April 2010.

The Ryan White Treatment Extension Act was passed by Congress in 2009 to allow continuation of Ryan White services while a reevaluation of the program takes place. This reevaluation will include basic program goals, as well as reassessment of the methods used to provide services. Efforts to integrate HIV/AIDS care services into the broader context of recently enacted health care reform will also be included.

North Carolina's Ryan White Title II/Part B program has been an important component of HIV/AIDS care services in the State since its inception in 1991. As required by the initial authorizing legislation, North Carolina encouraged the development of regional HIV Care Consortia to serve as planning/coordinating/services funding entities covering all 100 counties in the State. However, the last several years have demonstrated that the Consortia mechanism has not been operating as effectively as needed to ensure the availability of high quality care services throughout the State. This ineffectiveness, coupled with the 2006 legislative mandate that any services funded through the Consortia mechanism could not be counted as core services, led to the State's decision to discontinue Consortia as a key mechanism in the provision of HIV/AIDS care services.

The Patient Management Model, which focuses on services as they relate to patient health outcomes rather than the agencies which supply those services, was implemented on April 1, 2010. Ten Regional Networks of Care (RNC), covering 95 of the State's 100 counties have been established to assume a greater role in ensuring that a continuum of HIV/AIDS care services, including both core and support services, are available in an integrated fashion to all individuals who qualify to receive services funded through the Ryan White program. Five counties in the Part A Transitional Grant Area are not included in the regular Part B program, although patients from those counties still participate in the AIDS Drug Assistance Program (ADAP). Each RNC

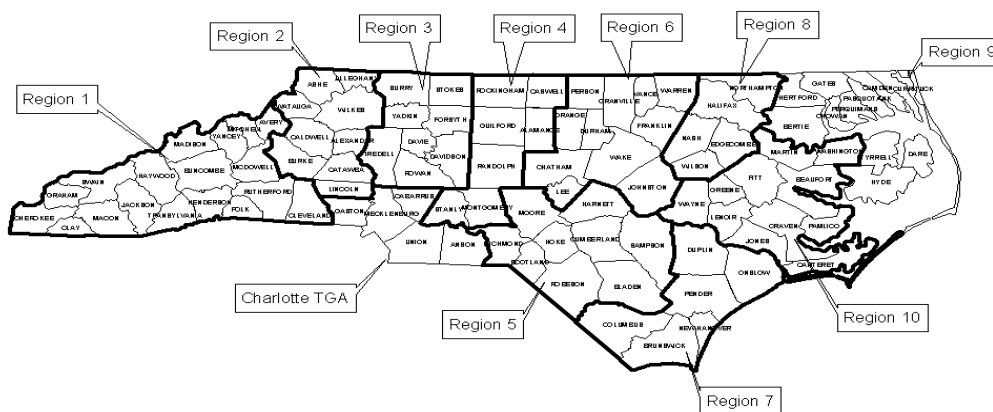
is comprised of a group of partnering agencies providing the gamut of needed services (medical care, oral health care, case management, and all other core and support services).

**Part B funding**

Ryan White Part B 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 the 10 Regional Networks of Care, ADAP, and a variety of other services (Figure 6.1). Descriptions of the clients and services provided through funded providers are collected through a Health Resources and Services Administration (HRSA)-sponsored computer software program called CAREWare. CAREWare collects and stores data for completion of the annual Ryan White Program Data (RDR) Report, the Ryan White Program Services (RSR) Report and the Client Level Data (CLD) report. 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 RDR/RSR/CLD requirements. Table 6.1 summarizes the CAREWare client and service information for clients served by funded Part B providers during 2009.

HRSA has placed growing emphasis on quality management in recent years. The agency has developed and released 36 quality measures covering all phases of program activities, and have included methods in CAREWare (or are developing such methods) for generating these quality measures from the data entered into the software. North Carolina has adopted six of these measures for its quality management program, and is in the process of adding an additional three measures. North Carolina’s Ryan White Title II/Part B program will continue to review all of the measures, and will recommend adoption of those which are in accord with the state’s activity program.

**Figure 6.1. Patient Management Model Regions and Charlotte Transitional Area**



**Table 6.1. Services provided to clients by Ryan White Part B providers, RW 2009**

<b>Services*</b>	<b>No. Services</b>	<b>Percent of Services Provided</b>
<b>Core services</b>		
Ambulatory/Outpatient Medical Care	27,339	33%
Medical Case Management	6,564	8%
Medical Nutrition Therapy	1,385	2%
Medications Assistance	1,429	2%
Mental Health Services	2,043	2%
Oral Health Care	1,964	2%
Outpatient Substance Abuse Services	1,395	2%
Referral for Health Care/Supportive Services	1,380	2%
Health Insurance Assistance	739	1%
Home Health Care	559	1%
Treatment Adherence Counseling (MCM)	878	1%
Home and Community-Based Services	20	<1%
<b>Support services</b>		
Non-Medical Case Management	14,813	18%
Medical Transportation Services	4,844	6%
Health Education/Risk Reduction	3,861	5%
Food Bank/Home Delivered Meals	3,114	4%
Psychosocial Support Services	3,456	4%
Treatment Adherence Counseling	3,461	4%
Emergency Financial Assistance	1,959	2%
Child care services	4	<1%
Legal Services	81	<1%
Linguistic Services	354	<1%
Referral for Health Care/Supportive Services	100	<1%
<b>Total</b>	<b>81,742</b>	<b>100%</b>

\*Ryan White clients may receive more than one service

From July 1, 2008 through June 30, 2009, the Ryan White Part B program served 7,480 total unduplicated clients. These clients received services funded through Ryan White Part B awards in North Carolina. The distribution of the Part B Modernization 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 (Table 6.2). State estimates of the number of people living with HIV/AIDS (PLWHA) listed by county of residence and sorted by PMM region are found in Table M (Appendix D, pg. D-18 to D-20). This estimation of reported PLWHA can be used to approximate actual and anticipated care needs within the state.

**Table 6.2. N.C. living HIV/AIDS cases, Ryan White Part B and ADAP clients, 2009**

	Ryan White Part B clients (n=7,480)	ADAP enrollees RWFY 2009/2010 (n=6,321)	Persons living* with HIV/AIDS (n=24,248)
<b>Gender</b>			
Male	67%	71%	70%
Female	33%	29%	30%
Transgender	<1%	<1%	-
<b>Race/ethnicity</b>			
White**	27%	30%	26%
Black**	62%	60%	67%
Am Indian/AN**	1%	<1%	1%
Asian/PI**	<1%	<1%	<1%
Hispanic	7%	8%	6%
Other**	2%	2%	<1%
<b>Age Group</b>			
0-12	<1%	<1%	<1%
13-24	5%	5%	5%
25-44	46%	49%	44%
45-64	47%	44%	47%
65 and over	2%	2%	3%

\*Living as of 12/31/2009 \*\*includes Hispanics for Title II groupings; represents non-Hispanics for the others

### **AIDS DRUG ASSISTANCE PROGRAM (ADAP)**

Since 1987, Congress has appropriated funds to assist states in providing people living with HIV/AIDS 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 (Part B) and eventually became known as the AIDS Drug Assistance Program (ADAP). ADAP is available in every state along with Puerto Rico, Guam, and the Virgin Islands, and provides FDA-approved HIV-related and occasionally other prescription drugs, to uninsured and underinsured people living with HIV/AIDS. For many people living with HIV/AIDS, 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 ADAP uses a combination of state and federal funds to provide medication to people living with HIV/AIDS with low income. To be eligible for ADAP in North Carolina an individual must be HIV positive, reside in North Carolina, require an anti-retroviral medication, have no other third-party insurance coverage (e.g., private insurance or Medicaid), and have an annual gross income that is equal to or less than 300 percent of the federal poverty line.

North Carolina's ADAP was first started in 1995 using state appropriated funds. Since 1996, the program has been supported by a combination of state and federal funding. From 1997 to 2004, the program experienced moderate growth. A waiting list was started in 2004. That waiting list grew to over 1000 clients before it ended in 2005 as a result of a federal initiative and increased state funding. ADAP experienced continued growth in enrollment, utilization, and funding from 2006 to 2009.

In 2006, N.C.'s ADAP increased its financial eligibility from 125 percent of the federal poverty level to 200 percent of the federal poverty level. In 2007 and 2008 the program expanded its formulary to include two additional tiers of medications, primarily to treat other chronic conditions such as hypertension, diabetes, Hepatitis C, etc. In addition, some preventative medicines, such as common vaccines and smoking cessation aids were added. In 2008, the program increased its financial eligibility from 200 percent of the federal poverty level to 300 percent of the federal poverty level.

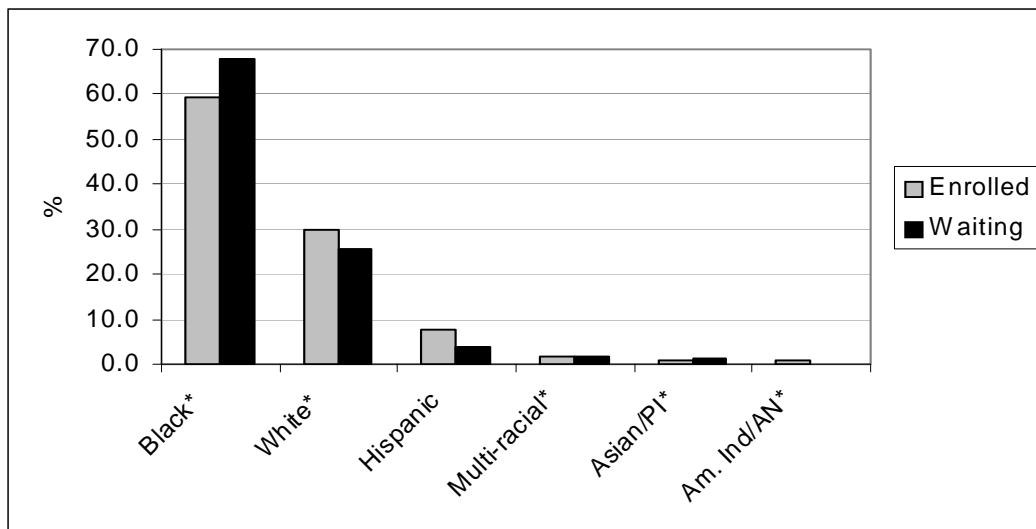
On March 1, 2009 the N.C. HIV State Pharmaceutical Assistance Program (SPAP) was implemented as a one year pilot, coordinating with the Medicare Part D benefit, to evaluate cost effectiveness. SPAP was found to be cost effective, saving approximately one-half of what would have been expended if ADAP purchased drugs for the over 700 clients enrolled in the program. The state will re-bid the SPAP contract through the RFP process in the fall of 2010. Until a pharmacy benefits manager (PBM) is awarded the SPAP contract, dually eligible clients will receive their medications through the traditional ADAP. Services will not be interrupted since all dispenses are currently coordinated with the same pharmacy, CVS Caremark.

In January 2010, N.C.'s ADAP had to initiate a waiting list and remove the additional two tiers of medications from its formulary. These cost-containment measures were adopted as a result of a state budget shortfall, flat funding from the federal government, and increased enrollment which were all partly due to the larger economic crisis across the nation and state. Other contributing factors include increased HIV testing initiatives, an increase in AIDS diagnoses, and a clinical shift toward starting antiretroviral treatment sooner. Putting these cost containment measures in place ensured current enrollees could continue to be served. By July 9, 2010, the waiting list topped out at 829 clients who were eligible for medication from N.C. ADAP but not receiving medications.

As a result of the Governor's support along with the efforts of the state legislators and the community, the state budget was finalized at the end of June 2010. The 2010/2011 state budget provided a substantial increase of \$14.1 million dollars to funding for N.C. ADAP, which made it possible to move 654 clients off the waiting list and reopen the program to clients with the greatest need. The program is now open to new enrollment for all applicants whose net income is equal to or less than 125 percent of the federal poverty level. New applicants whose income is between 126 percent and 300 percent of the federal poverty level continue to be placed on the waiting list and are referred to pharmaceutical patient assistance programs. On July 30, 2010, the program had 5,327 clients enrolled and 186 clients on the waiting list (see Figures 6.2 and 6.3). At that time, North Carolina had the sixth largest waiting list in the country, out of thirteen states with ADAP waiting lists.



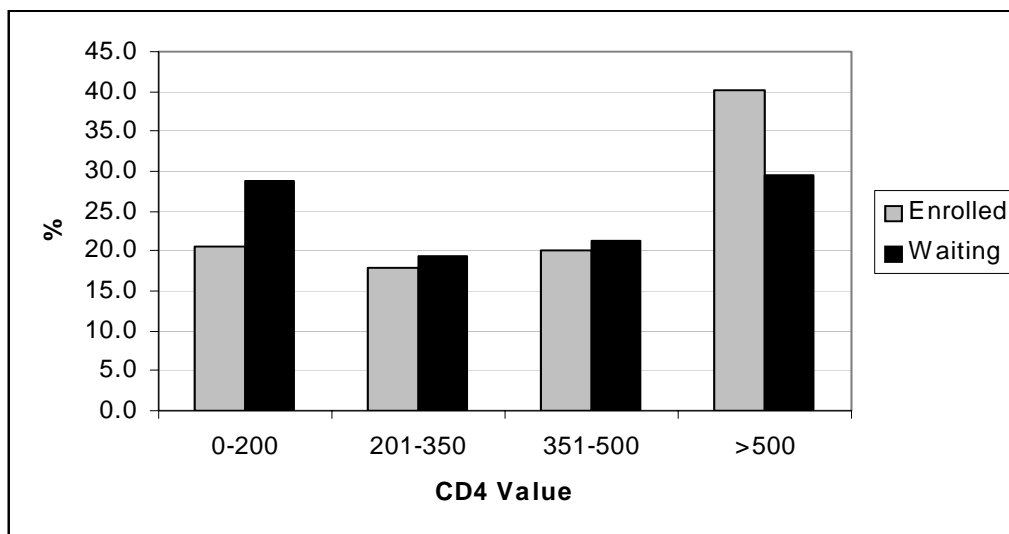
**Figure 6.2. ADAP clients enrolled and on the waiting list\*\* by race/ethnicity**



\*non-Hispanic

\*\*ADAP waiting list as of July 30,

**Figure 6.3. ADAP clients enrolled and on the waiting list\*\* by CD4 values**



\*\*ADAP waiting list as of July 30, 2010

In Ryan White Fiscal Year 2009/2010 (April 1, 2009 to March 31, 2010) 6,321 individuals were enrolled in ADAP. The gender distribution of ADAP enrollees (71% male and 29% female) is in line with the overall gender distribution of people living with HIV/AIDS (PLWHA) in North Carolina (70% male and 30% female). Some small differences exist in the racial and age distributions of ADAP enrollees and PLWHA in North Carolina (see Table 6.2). Of the ADAP enrollees, 67.51 percent had net family incomes at or below 125 percent of the federal poverty level, 22.28 percent had net family incomes between 125 percent and 200 percent of the federal

poverty level and 3.75 percent had net family income between 200 percent and 300 percent of the federal poverty level.

ADAP clients who are adherent to their drug regimens are better able to manage their HIV infection and live healthier lives. These clients demonstrated improved health outcomes and experienced, on average, a 19 percent increase in CD4+ T-lymphocyte counts from Ryan White Fiscal Year 2009 to 2010.

### **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. Charlotte and Raleigh became eligible for a HOPWA formula allocation in 1998 and the state's area was reduced. Since 1998, the N.C. Department of Health and Human Services, Division of Public Health's Communicable Disease Branch, AIDS Care Unit has served persons living with HIV/AIDS (PLWHA) and their families who live outside of the Charlotte and Raleigh metropolitan areas. PLWHA in Currituck County are served by the Virginia Beach, VA MSA. The state funding covers 91 of the 100 counties in North Carolina.

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 AIDS or related diseases. 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 80 percent of the median income for the state of North Carolina and the county of residence. The services provided include, but are not limited to, short-term rent, mortgage and utility payments, tenant-based rental assistance, housing information and supportive services (i.e., nutrition, transportation). The AIDS Care Unit will seek out opportunities to work with organizations to provide services for those who are triply diagnosed (HIV/AIDS, mental illness, and substance abuse issues).

Originally, HOPWA funds were used solely for emergency rent, mortgage and utility payments. Currently, the program provides funds to networks of care such as local health departments, non-profit community based organizations, housing authorities, AIDS service organizations, and other interested provider agencies that provide housing and related services to people living with HIV/AIDS in an effort to improve their health status.

In state fiscal year (SFY) 2008 to 2009, approximately 2,385 clients and families received HOPWA services. The number of clients served in our Tenant-Based Rental Assistance (TBRA) program increased from 194 last year to 268 this year. The clients in this program are able to improve their access to health care supportive services. The number of clients in stable housing situations increased last year by 48 percent, thereby reducing the risk of homelessness for these clients. HUD has asked programs to report according their consolidated plan year, which for North Carolina is January through December. The 2010 annual HOPWA report will be completed in January 2011 and the data will be included in next year's profile.

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. Also, the HOPWA program will continue as an active participant on the Housing Coordination and Policy Council as well as the Inter-agency Council for Coordinating Homeless Programs.

## **ESTIMATE OF UNMET NEED IN NORTH CAROLINA, 2009**

### Background

Specific information about the disparities in access and services among HIV-affected subpopulations and underserved communities guides state and national planning as well as resource allocations. The Health Resources and Administration (HRSA) requires that each Part A and Part B program determine the size and demographics of the population of individuals with HIV disease. HRSA also requires the program determine the needs of such populations, with particular attention to individuals who know their positive HIV status and are not receiving HIV-related primary health care. Primary medical care includes medical evaluation and clinical care that is consistent with U.S. Public Health Service guidelines for the treatment of HIV/AIDS and must include access to antiretrovirals and other drug therapies and treatment of opportunistic infections. The term “unmet need” is used only to describe the unmet need for HIV-related primary health care. An individual with HIV/AIDS is considered to have an “unmet need” for care (or to be out of care) when there is no evidence of any of the following three components of HIV primary medical care during a defined twelve-month timeframe: (1) viral load testing, (2) CD4 count, or (3) provision of anti-retroviral therapy (ART). A person is considered to have “met need” (or to be in care) when there is evidence of one or more of these three measures during a specified 12-month timeframe.

### Data Sources and Methodology

The Surveillance Unit of the Communicable Disease Branch maintains the public health surveillance system for all morbidity and laboratory reports for HIV/AIDS in North Carolina. Individuals meeting the definition of “in care” were initially identified based on the available laboratory information collected within the surveillance system. The surveillance system captured 23 percent of persons with HIV (non AIDS) and 37 percent of persons with AIDS “in care” in 2009. North Carolina does not mandate universal reporting of all laboratory tests associated with HIV disease, but laboratories are required to report positive antibody, PCR, RNA, and DNA results that indicate HIV. These reports include HIV viral load results and CD4 test results for individuals with CD4 lymphocytes count less than 200 or less than 14 percent, indicating a possible AIDS diagnosis. All cases that had a CD4 or viral load reported in 2009 were identified as receiving care. The eligible population was then linked to Medicaid, AIDS Drug Assistance Program (ADAP) data, and CAREWare to assess “unmet need.”

## Results

Seventy-six percent (76%) of persons living in North Carolina with HIV Disease were estimated to be “in care” during calendar year 2009. The remaining 24 percent were estimated to be not “in care,” thus representing those with unmet need. The estimated number of persons living with HIV (PLWH) with unmet need was 26 percent, as compared to 21 percent of persons living with AIDS (PLWA).

The estimate of PLWH in care in North Carolina has increased 28 percent since 2007. In 2007, only 58 percent of PLWH were estimated to be in care; the number increased to 72 percent in 2008 and increased again to an estimated 74 percent in 2009. This welcome increase in persons with HIV (non AIDS) accessing primary medical care may be for several reasons. The increase in PLWH accessing care may be the result the Communicable Disease Branch efforts to link persons newly diagnosed with HIV into care through active referrals into the Ryan White Part B Program and ADAP. As the economy has worsened, people are relying more heavily on publicly funded services, thus the increase could be an artifact of increased data collection in the ancillary data sources from publicly funded programs like Ryan White, ADAP, and Medicaid. PLWA, however, did not see consistent improvement. In 2007, 75 percent of persons living with an AIDS diagnosis were estimated to be in care; the number of PLWA in care increased to 80 percent in 2008 and was estimated to be 79 percent in 2009. Vital status is not known on all PLWHA, and this slight decrease in the estimate of PLWA in care may be an artifact of estimating unmet need for persons who have died.

To further describe the subpopulations that have unmet need for HIV primary medical care, Tables 6.3–6.6 present unmet need by age, race/ethnicity, gender, and mode of HIV transmission. Table 6.7 presents unmet need by Patient Management Model regions (see Figure 6.1 for a map of PMM regions).

## Discussion

Overall, the unmet need distribution resembles the distribution of the population aware of their HIV/AIDS status. However, there are more males in the unmet need population (26.6%) than females (18.5%). The percentage of unmet need in each racial/ethnic subgroup also resembles the overall distribution of the HIV/AIDS aware population in North Carolina. A higher proportion of Hispanics (28.8%) have unmet need, compared with whites (24.9%) and blacks (23.6%). The age range 65+ has highest unmet need (33.3%), but some individuals in this age category may have died and their death information was not recorded in eHARS. A notable finding was that PLWHA ages 13 to 24 had a 30 percent improvement in access to primary medical care over the 2008 estimate (in 2008, 23% had unmet need, versus only 16% with unmet need in 2009). Geographically, the greatest improvements in were for persons with HIV (non AIDS) in the Charlotte Transitional Area (most populous N.C. region), where PLWH experienced a 14 percent decrease in unmet need (from 35% in 2008 to 30% in 2009), in Region 7 where unmet need improved 19 percent among PLWH (from 32% in 2008 to 26% in 2009) and in Region 5 where PLWH experienced an 11 percent decrease in unmet need (from 35% in 2008 to 31% in 2009). Region 9 had the highest proportion (34.4%) of PLWHA with unmet need (Table 7), but some of these people might be accessing medical care in bordering Virginia.

**Table 6.3. Percent of Persons Living<sup>†</sup> with HIV/AIDS with Unmet Need by Gender, 2009**

Gender	Persons Living with HIV (PLWH)	Persons Living with AIDS (PLWA)	Total Persons Living with HIV/AIDS (PLWHA)
	% Unmet Need	% Unmet Need	% Unmet Need
Male	29.2%	23.4%	26.6%
Female	20.4%	15.6%	18.5%
Total	26.3%	21.4%	24.2%

**Table 6.4. Percent of Persons Living<sup>†</sup> with HIV/AIDS with Unmet Need by Age, 2009**

Current Age	Persons Living with HIV (PLWH)	Persons Living with AIDS (PLWA)	Total Persons Living with HIV/AIDS (PLWHA)
	% Unmet Need	% Unmet Need	% Unmet Need
0-12	6.6%	0.0%	6.6%
13-24	18.4%	5.5%	16.2%
25-44	26.8%	20.2%	24.0%
45-64	27.6%	22.8%	25.2%
65+	34.0%	32.5%	33.3%
Total	26.3%	21.4%	24.2%

**Table 6.5. Percent of Persons Living<sup>†</sup> with HIV/AIDS with Unmet Need by Race/ethnicity , 2009**

Race/Ethnicity	Persons Living with HIV (PLWH)	Persons Living with AIDS (PLWA)	Total Persons Living with HIV/AIDS (PLWHA)
	% Unmet Need	% Unmet Need	% Unmet Need
White*	24.6%	25.3%	24.9%
Black*	26.9%	19.4%	23.6%
Hispanic	30.2%	27.3%	28.8%
Other**	23.6%	17.4%	21.3%
Total	26.3%	21.4%	24.2%

<sup>†</sup>Persons Living totals do not include Veterans Administration data

\*non-Hispanic      \*\*Other includes Asian, Pacific Islanders, American Indian, AL Native

**Table 6.6. Percent of Persons living<sup>†</sup> with HIV/AIDS with unmet need by Mode of HIV Transmission, 2009**

Transmission Category	Persons Living with HIV (PLWH)	Persons Living with AIDS (PLWA)	Total Persons Living with HIV/AIDS (PLWHA)
	% Unmet Need	% Unmet Need	% Unmet Need
MSM*	24.4%	22.8%	23.8%
IDU*	29.0%	23.2%	26.0%
MSM/IDU*	31.1%	27.4%	29.3%
Blood Products	35.4%	40.7%	38.6%
Heterosexual	21.1%	16.2%	18.9%
Pediatric	10.9%	0.0%	10.8%
NIR/NRR*	29.8%	21.3%	26.3%
<b>Total</b>	<b>26.3%</b>	<b>21.4%</b>	<b>24.2%</b>

\*MSM=Men who have Sex with Men; IDU=Injecting Drug User; NIR/NRR=No Indicated Risk/No Risk Reported

**Table 6.7. Percent of Persons living<sup>†</sup> with HIV/AIDS with unmet need by PMM Regions, 2009**

PMM Region	Persons Living with HIV (PLWH)	Persons Living with AIDS (PLWA)	Total Persons Living with HIV/AIDS (PLWHA)
	% Unmet Need	% Unmet Need	% Unmet Need
Charlotte TGA**	29.8%	24.6%	27.8%
Region 1	18.7%	17.2%	18.0%
Region 2	15.4%	20.4%	17.9%
Region 3	20.4%	19.5%	20.0%
Region 4	22.8%	20.8%	22.0%
Region 5	30.9%	21.1%	26.6%
Region 6	29.6%	24.1%	27.1%
Region 7	25.8%	19.5%	22.8%
Region 8	24.1%	13.8%	19.0%
Region 9	35.7%	33.4%	34.4%
Region 10	25.0%	20.1%	22.5%
<b>Total*</b>	<b>26.3%</b>	<b>21.4%</b>	<b>24.2%</b>

<sup>†</sup>Persons Living totals do not include Veterans Administration data

\*Totals include persons with unassigned region.

\*\*Charlotte TGA is a Ryan White Part A grantee and these estimates of unmet need are based on limited data available.

## **PART III: SEXUALLY TRANSMITTED DISEASES OTHER THAN HIV/AIDS IN NORTH CAROLINA**

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**What is the impact of sexually transmitted diseases other than HIV/AIDS in  
North Carolina? (Chapter 7)**

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## CHAPTER 7: STDS OTHER THAN HIV/AIDS IN N.C.

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### HIGHLIGHTS

- In 2009, North Carolina experienced a significant outbreak of new syphilis cases. Nine hundred thirty-seven (937) cases of early syphilis were reported. The overall early syphilis rate in 2009 was 10.2 cases per 100,000 population. In 2009, the male to female ratio for early syphilis cases in the state was 3.4, with men who have sex with men (MSM) contributing an increase in the proportion of the total number of cases.
- The six Syphilis Elimination Effort (SEE) counties (Mecklenburg, Guilford, Wake, Forsyth, Durham, and Robeson) accounted for 63 percent of 2009 early syphilis reports in North Carolina.
- In 2009, African American males represented 57 percent of all early syphilis cases with a rate of 57.5 per 100,000. The syphilis rate among African American males was almost 12 times the rate for white males (4.9 per 100,000) and the rate of syphilis among Hispanic males was only slightly higher than the rate for white males.
- The highest chlamydia rate in 2009 was among 20 to 24 year olds for both females (4,517.3 per 100,000) and males (966.2 per 100,000).
- Racial disparities in female chlamydia reports have remained fairly stable over the past five years (2005–2009), with a rate about seven to eight times higher among black females and a rate three to four times higher among American Indian/Alaska Native and Hispanic females than among white females.
- Gonorrhea case reports reflect severe racial disparities. The differences are most dramatic for males, where the 2009 gonorrhea rate among black males (424.2 per 100,000) was 29 times higher, among American Indian males (129.1 per 100,000) was nine times higher, and the rate for Hispanic males (35.3 per 100,000) was more than two times higher than the rate among white males (14.4 per 100,000).
- The racial disparities in gonorrhea rates were less severe among females. The 2009 gonorrhea rate for black females (468.0 per 100,000) was 14 times higher, the rate for American Indian females (233.8 per 100,000) was over seven times higher, and the rate for Hispanic females (55.3 per 100,000) was almost twice the rate for white females (33.0 per 100,000).

## REPORTABLE STDS IN NORTH CAROLINA

In addition to HIV disease, there are 16 other sexually transmitted conditions reportable by law 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 ophthalmia neonatorum), chancroid, and granuloma inguinale are required to be reported to the local health department within 24 hours of diagnosis. Lab-confirmed chlamydia, lymphogranuloma venereum (LGV), nongonococcal urethritis (NGU), and pelvic inflammatory disease (PID), all must be reported within seven days to the local health department. Hepatitis A and B can also be transmitted through sexual contact; acute cases are reportable within 24 hours to the local health department. Statewide surveillance is directed by the Communicable Disease Surveillance Unit at the N.C. Division of Public Health.

**Table 7.1. North Carolina reportable sexually transmitted diseases, 2009**

	Gender		Total*
	Male	Female	
Chlamydia (lab-confirmed)	8,227	35,229	43,734
Gonorrhea	6,285	8,416	14,811
Syphilis			
Primary Syphilis	129	19	148
Secondary Syphilis	344	89	433
Early Latent Syphilis	250	106	356
Late Syphilis	98	31	129
Late Latent Syphilis	294	151	445
Late Syphilis w. symptoms	3	1	4
Neurosyphilis	12	0	12
Congenital Syphilis	4	5	10
Syndromic Diagnoses			
Nongonococcal Urethritis (NGU)	4,949	n/a	4,949
Pelvic Inflammatory Disease (PID)	n/a	432	432
Other STDs			
Chancroid	4	10	15
Granuloma Inguinale	0	0	0
Lymphogranuloma Venereum (LGV)	0	1	1
Ophthalmia Neonatorum (gonorrhea)	1	1	2

\*Total includes cases with unknown gender

Table 7.1 describes STD cases reported to the Communicable Disease Surveillance Unit in 2009. The remainder of this report will focus on the three most commonly reported conditions: lab-confirmed chlamydial infection, gonorrhea, and syphilis. Although NGU is reported in relatively high numbers, this condition will not be discussed in detail because the data is difficult to interpret. NGU is a diagnosis of exclusion, which requires specific physical characteristics and the documented absence of *Neisseria gonorrhoeae*. Although NGU can be caused by several different organisms, most cases are assumed to be *Chlamydia trachomatis*. However, since these cases are not laboratory confirmed, grouping these diagnoses with the chlamydia cases would not

be accurate. Similarly, PID is a syndromic diagnosis with multiple possible causes, the most common being gonorrhea and chlamydial infection. In 2009, there were 432 cases of PID reported to N.C. DHHS. Since an estimated 10 to 15 percent of untreated female chlamydia infections will eventually lead to PID (CDC Chlamydia Fact Sheet 2009), this number represents a drastic underreporting of PID cases. Other reportable STDs are almost non-existent in the state of North Carolina. In 2009, there were 15 cases of chancroid reported and one case of lymphogranuloma venereum. Two cases of ophthalmia neonatorum (ophthalmic infection with *N. gonorrhoeae* in infants) were reported in 2009.

## **NON-REPORTABLE STDS IN NORTH CAROLINA**

There are a number of important sources of sexually transmitted infections that are not reportable in the state of North Carolina.

### Human papillomavirus (HPV)

Genital human papillomavirus (HPV) is the most common sexually transmitted infection (CDC, HPV Fact Sheet, 2009). More than 40 strains of human papillomavirus (HPV) 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. Thus, screening efforts focus on the detection of cervical cancer rather than HPV infection. On average, over 350 cases of cervical cancer are reported in North Carolina each year (NC SCHS 2007).

Currently, there are two vaccines licensed by the U.S. Food and Drug Administration (FDA) to protect against HPV infection. One vaccine protects against 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). This vaccine is recommended for use in females ages 11 to 26 years but can also be given to males ages 9 to 26 (CDC, HPV Fact Sheet, 2009).

### Genital Herpes

The CDC estimates that one out of six people in the United States, ages 14 to 49, have a genital herpes simplex virus (HSV) type 2 infection (CDC, HSV Fact Sheet, 2007). Currently in North Carolina, herpes is not reportable for a number of reasons. Historically, there have not been good diagnostic tests available. Reporting requirements 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. HSV-2 infection is more common in women than in men but transmission from an infected male to a female partner is more likely than from an infected female to a male partner (CDC, HSV Fact Sheet, 2007). Symptoms are most severe immediately following the initial infection and subsequent outbreaks decrease in severity. A rare but extreme consequence of genital herpes is transmission to newborns during birth.

## **CHLAMYDIA**

### Chlamydia disease

Nationally, as well as in North Carolina, chlamydia is the most frequently reported bacterial STD, and is easily treated with antibiotics. When symptoms occur, they include discharge and painful urination. Approximately three-quarters of infected females and one-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 pelvic inflammatory disease (PID). For this reason, the CDC and the N.C. Division of Public Health recommend that all sexually active females age 25 years and under, as well as all pregnant women, be screened for chlamydia. No comparable screening programs exist for young men. For this reason, chlamydia cases are always highly biased with respect to gender.

### 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 takes place at a number of private labs; however, most public clinics send their samples to the North Carolina State Laboratory of Public Health. Laboratory confirmed chlamydia 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. Chlamydia cases for males are severely underreported due to the lack of screening in men. The data for females is more complete, although cases are still underreported and may be biased toward public clinics which are more likely to screen and report cases.

Beginning in 2008, morbidity reports are forwarded electronically to the Communicable Disease Surveillance Unit at the State Division of Public Health via the North Carolina Electronic Disease Surveillance System (NC EDSS). This reporting of morbidity through NC EDSS represents a substantial improvement in surveillance reporting for laboratory-based diseases. With the continuing implementation of NC EDSS and the related extensive changes in surveillance procedures, morbidity data for 2008 and 2009 should be viewed with extreme caution (see Appendix B for more information about NC EDSS).

### Chlamydia trend analysis

#### *Gender*

Due to screening bias, the vast majority (over 80 percent) of reported chlamydia cases are among females. Male cases are often detected when a female partner tests positive through screening and refers her male sex partner 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 2009, only 19 percent of the 43,734 cases reported were male (Appendix D, Table Q, pg. D-26).

### *Age*

Chlamydia is predominantly found in younger age groups. For males, the highest rates are consistently found in the 20 to 24 year old age group, followed by ages 15 to 19 years. For females, the rates for ages 15 to 19 years (4,479.8 per 100,000) and 20 to 24 years (4,517.3 per 100,000) are much closer, with females ages 20 to 24 years having the highest rates in 2009 (Appendix D, Table Q, pg. D-26). Over the past five years, reported cases and rates have generally been on the rise for all age groups, most likely reflecting increased screening; however, the large increase in reported cases observed since 2008 is likely reflective of changes to the reporting system rather than differences in morbidity or screening.

### *Race/Ethnicity*

Chlamydia case reports reflect severe racial disparities that have remained relatively consistent over the past five years. Historically, the rates among black, non-Hispanic males have been 10 to 11 times the rates for non-Hispanic whites, and the rates for Hispanics have been three to four times the rates for whites. In 2009, the rate among non-Hispanic black males (429.4 per 100,000) increased to 14 times the rate for non-Hispanic white males (31.4 per 100,000), and the rate for Hispanic males (135.9 per 100,000) was four times the rate for whites (Appendix D, Table R; pg. D-28). The disparity for females is nearly as severe, with the non-Hispanic black female rate (1513.3 per 100,000) almost eight times higher than the rate for non-Hispanic white females (188.5 per 100,000) in 2009. The rate for American Indians/Alaska Native females (895.5 per 100,000) was about five times higher than white females and the Hispanic rate (663.4 per 100,000) about four times higher. These disparities are likely due, at least in part, to screening and reporting bias.

### Chlamydia prevalence data

Since most county health departments in North Carolina do not have adequate laboratory facilities to process chlamydia samples, they submit their samples to the State Laboratory of Public Health for testing. Information is collected on both positive and negative tests from 95 counties and is used for estimating prevalence and program evaluation. This data is subject to a certain degree of bias because screening is almost exclusively done for women and the data reflects testing that occurred only in publicly funded clinics. Participating county health departments offer screening to all sexually active women ages 24 and under, all pregnant women, and women over age 25 with certain risk factors such as having multiple sexual partners. These data do not include tests from the five counties with the largest health departments (Durham, Forsyth, Guilford, Mecklenburg and Wake) which conduct in-house testing.

The State Laboratory now uses a more sensitive test for all chlamydia testing: the nucleic acid amplification test (NAAT). Since initiating NAAT testing, the positivity rates have declined for the 0 to 14 and 25+ age groups and increased for the 15 to 24 age group (see Table 7.2). In 2009, the highest proportion of individuals screened (65 percent) was in the recommended age group for chlamydia screening (24 years and under) with a positivity rate of 9.7 percent. The

positivity rate in the 25 and older age group was 3.8 percent in 2009. Women ages 15 to 24 years are screened without regard to risk and therefore offer the best approximation to changes in prevalence. Women ages 14 and under and 25 and older are screened based on risk factors for STDs.

**Table 7.2. Women tested for chlamydia in publicly funded clinics in N.C., 2005–2009**

Age	2005		2006		2007		2008		2009	
	Tested	Pos (%)	Tested	Pos (%)	Tested	Pos (%)	Tested	Pos (%)	Tested	Pos (%)
0-14	1,401	180 (12.8)	1,260	1,090 (12.1)	1,163	117 (10.1)	1,308	132 (10.1)	1,091	109 (10.0)
15-24	72,310	6,721 (9.3)	71,289	6,645 (9.3)	68,893	6,395 (9.3)	74,722	7,142 (9.6)	73,749	7,168 (9.7)
25+	34,936	1,401 (4.0)	38,404	1,425 (3.7)	36,497	1,378 (3.8)	36,760	1,367 (3.7)	39,152	1,467 (3.8)
Total*	108,363	8,303 (7.6)	110,956	8,223 (7.4)	106,505	7,890 (7.4)	112,810	8,643 (7.7)	114,023	8,748 (7.7)

\* Total includes women with missing age.

## NGU

Nongonococcal urethritis (NGU) in males is a clinical diagnosis of exclusion. The NGU case definition requires a certain set of physical symptoms to be present along with a documented absence of infection with *N. gonorrhoeae*. The most likely cause of such infections is *C. trachomatis*. This diagnosis is often made locally without sending samples to an outside lab for *C. trachomatis* testing. Antibiotics appropriate for chlamydial infection are most often used to treat the patient; however, there are other possible causes for NGU, making it inappropriate to group these cases with the laboratory-confirmed cases of *C. trachomatis*. There were 4,949 male cases of NGU reported in 2009 (Table 7.1). A large number of these cases are suspected to be unconfirmed chlamydia cases.

## **GONORRHEA**

### Gonorrhea disease

Nationally and in North Carolina, gonorrhea is the second-most commonly reported STD, after 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. Most publicly funded clinics send their samples to the State Laboratory of Public Health, where they perform a nucleic acid amplification test (NAAT) for gonorrhea. 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 the Communicable Disease Surveillance Unit at the State Division of Public Health via NC EDSS. Reporting issues associated with NC EDSS require that morbidity data for 2008 and 2009 be viewed with extreme caution (see Appendix B for more information about NC EDSS).

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. Since larger proportions of patients seen at public clinics versus private clinics are minorities, this may contribute to racial bias in the data. However, required laboratory reporting may also reduce some possible private versus public provider bias in reporting.

### Gonorrhea trend analysis

From 2005 to 2009, rates for gonorrhea have ranged from 174 to 196 per 100,000 population. The highest rate (195.7 per 100,000) was observed in 2006. The slight fluctuations between years are likely the result of reporting issues and do not represent a discernable trend in changes to disease morbidity. Nationally, gonorrhea rates have remained fairly stable. The proportion of female cases has increased from 50 percent of cases in 2005 to 57 percent in 2009. True increases (or decreases) may be masked by changes in screening practices, use of diagnostic tests with differing test performance, population shifts resulting from natural disasters, and changes in reporting practices.

### *Gender*

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 an STD clinic, the gender bias in gonorrhea reporting is not as severe as the bias for chlamydia reporting. From 2004 to 2006, rates for males were consistently a bit higher than the rates for females with the male-to-female case ratio stable around 1.0. In both 2007 and 2008, the rate was higher for females and thus the male-to-female ratio dropped to 0.8 (in 2008). In 2009, female reports for all racial/ethnic groups outnumbered reports for males and the rate for females was 178.9 per 100,000 (the rate for males was 139.1 per 100,000) (Appendix D, Table S; pg. D-29). In general, the increased rates for females would indicate a lack of substantial transmission among men who have sex with men (MSM). Detailed surveillance of rectal gonorrhea would assist in understanding this type of trend; however, the current diagnostic test of choice for gonorrheal infection (NAAT) has not been approved by the FDA for the diagnosis of extragenital gonorrhea (CDC 2009, Clinic-Based Testing for Rectal and Pharyngeal *Neisseria gonorrhoeae* and *Chlamydia trachomatis* Infections by Community-Based Organizations --- Five Cities, MMWR 58(26); 716-719).

## Age

Gonorrhea is predominantly found in younger age groups; and the relative rates are somewhat similar to those for chlamydia with respect to age. From 2005 to 2009, the age group with the highest gonorrhea rates for both males and females has been 20 to 24 year olds. However, the age group with the second highest rates differs between the genders. For males, the age group with the second highest gonorrhea rate has consistently been 25 to 29 year olds. However, in 2009, the rate for 25 to 29 year old males (379.4 per 100,000) was only slightly higher than the rate for 15 to 19 year olds (377.3 per 100,000). For females, the age group with the second highest rate is consistently 15 to 19 year olds with rates very close to the rates for 20 to 24 year olds (Appendix D, Table S, pg. D-29).

## Race/Ethnicity

Trends over time for various racial/ethnic groups are difficult to determine because in recent years, more reports are missing racial/ethnic information. However, gonorrhea case reports reflect severe racial disparities. Historically the differences are most dramatic among males, where gonorrhea rates for 2009 among non-Hispanic black males (424.2 per 100,000) were more than 29 times higher than for non-Hispanic white males (14.4 per 100,000), while rates for American Indians (AI/AN) (129.1 per 100,000) were nine times higher, and rates for Hispanics (35.3 per 100,000) were more than two times higher. Among females, the trends are similar but less severe. In 2009, the rate for non-Hispanic black females (468.0 per 100,000) was fourteen times higher than for non-Hispanic white females (33.0 per 100,000) and the American Indian rate (233.8 per 100,000) was over seven times higher. The 2009 gonorrhea rate for Hispanic females (55.3 per 100,000) was almost two times higher than white rate and the rate for Asian/Pacific Islanders (A/PI) (28.1 per 100,000) was the lowest of all for most years as well as 2009. In 2009, the rates for all race/ethnicity groups were below their rate in 2008 (Appendix D, Table T, pg. D-31).

## 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, located at Fort Bragg from 1998 to 2001. In mid-2002, the participating clinic was changed to a location in Greensboro, North Carolina. Samples are collected from men who would have been tested for gonorrhea anyway, so the project does not artificially inflate gonorrhea reports from the site.

During 2008, 167 men were tested at the Greensboro site. Ninety-one percent were non-Hispanic blacks; almost 38 percent were aged 20 to 24 years with another 20 percent aged 25 to 29 years. About 7 percent reported having sex with other men. Just over 40 percent of those tested



reported ever having a previous episode of gonorrhea and about 25 percent reported an episode in the previous 12 months. Resistance to penicillin and/or tetracycline was detected in slightly more than 18 percent of the samples (CDC, GISP Report, 2010).

## **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. These stages are also of the greatest concern for sexual transmission because they are the most infectious. Patients in the asymptomatic early latent stage may also be infectious to their sexual partners, although less so than in the primary or secondary stages of disease. 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 lead to transmission of syphilis to sexual partners. Therefore, these stages are often grouped together when discussing infectious syphilis and are called “early syphilis” or PSEL. If a case progresses past the early latent stage, the infection will move into a stage known as late syphilis. There are several different ways late syphilis cases are reported. 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 these cases is still important in terms of morbidity and care. In addition, pregnant women 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 investigation 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. The 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 aids in diagnosing the stage of the infection. In addition to mandatory provider reports of syphilis, laboratories are required to report certain positive test results to the State Health Department within 24 hours, which speeds up the reporting process by initiating investigations earlier. When a new case is diagnosed, a morbidity report is forwarded to the Communicable Disease Surveillance Unit at the state Division of Public Health, where information on patient names, demographics, and disease diagnoses are compiled for analysis.

Due to the severity and comparative rarity of syphilis compared to other sexually transmitted diseases, syphilis reporting, even from private providers, is believed to be 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 (such as chancre, and/or a rash on palms of hands and soles of feet for primary and secondary stages respectively). Many latent cases of syphilis are asymptomatic and are only found through screening. Latent syphilis case reporting may be biased towards groups that receive syphilis screening (pregnant women, jail inmates, others). Distinguishing between the various latent stages of syphilis (early latent, late latent, latent of unknown duration) is also slightly more difficult than distinguishing between primary and secondary stages, so the stage of the infection may be misdiagnosed in some cases. Thorough contact tracing and partner notification activities greatly reduce bias in reporting by locating and reporting partners with asymptomatic infections that may not have otherwise been found.

Syphilis morbidity reporting has not changed thus far with the implementation of NC EDSS. Currently, syphilis morbidity data management is maintained in a central STD MIS database and additional data collected through partner service investigations is maintained in stand-alone regional databases. Syphilis cases are reported to the Communicable Disease Surveillance Unit by name, so accidental duplicates in the database are unlikely. As such, morbidity data for syphilis cases does not suffer from some of the reporting issues observed with gonorrhea and chlamydia.

### Syphilis Elimination Effort (SEE)

In 1998, the CDC estimated that 50 percent of all primary and secondary syphilis cases in the United States were reported from 28 select counties across the country. Five of those counties (Forsyth, Guilford, Mecklenburg, Robeson, and Wake) were located in North Carolina. In response to these findings, the CDC announced the beginning of the Syphilis Elimination Project (SEP) in 1999, now called the Syphilis Elimination Effort (SEE), which provides funding to high-morbidity areas (HMAs) for syphilis elimination and prevention efforts. The current project focuses on three strategic goals: investment in and enhancement of public health services; prioritization of evidence-based, culturally competent interventions; and increasing accountability for syphilis elimination services and interventions. These goals incorporate enhancements in surveillance, outbreak response, clinical and laboratory services, health promotion, and community involvement.

North Carolina has identified a total of six counties for enhanced efforts. These counties, which include the original five counties identified by the CDC, have had historically high morbidity and consist of Forsyth, Guilford, Mecklenburg, Robeson, Wake, and Durham. In the years immediately following the implementation of the Syphilis Elimination Effort, syphilis rates declined steadily. Early syphilis rates dropped from 15.1 cases per 100,000 in 1999 to a low of 4.7 in 2003. Late syphilis rates also declined during this period but more slowly. This decline was likely due, at least in part, to the work of the Syphilis Elimination Effort.

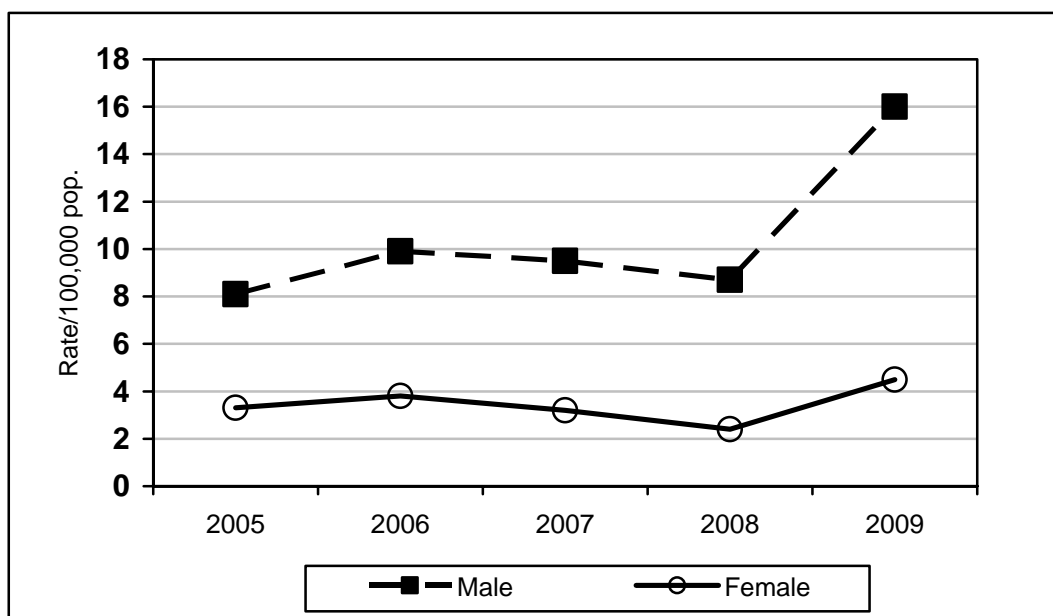
Syphilis trend analysis

Since 2003, early syphilis rates in North Carolina have resumed a gradual annual increase to a rate of 5.6 per 100,000 in 2008. In 2009, North Carolina experienced a significant outbreak of new syphilis cases. Nine hundred thirty seven (937) new cases of early syphilis (primary, secondary and early latent) were reported. These new cases represented an 84 percent increase in cases over the 509 cases reported in 2008. Increases in morbidity were noted for almost all demographic groups as well as among persons already infected with HIV. The six SEE counties accounted for 63 percent of the total early syphilis morbidity for the state in 2009 (Appendix D, Table W, pg. D-35). Forsyth County experienced a dramatic, over four-fold, increase in syphilis cases. Wayne and Gaston counties have also experienced substantial increases in reports of early syphilis since 2008. Unless otherwise noted, references below to syphilis are “early syphilis” which includes primary, secondary and early latent stages.

*Gender*

Early syphilis rates among males began to rise substantially in 2004 and continued to rise through 2006. In 2009, male cases represented 77 percent of all early syphilis reports and the male-to-female case ratio was 3.4 (Appendix D, Table U, pg. D-32). The rise in male cases is indicative of increasing transmission among men who have sex with men (MSM). The rate of male early syphilis cases in 2009 was 16.0 per 100,000 males, which represented an 84 percent increase from 2008 (8.7 per 100,000). In 2009, three counties had particularly high male-to-female case ratios. These counties were: Durham County with 9.0, Wake County with 8.6, and Mecklenburg County with 6.2 male cases for every female case. Female early syphilis cases declined to 2.4 cases per 100,000 in 2008, which was the lowest observed rate for 2004 to 2008. However, the early syphilis rate for females increased to 4.5 cases per 100,000 in 2009, which represented an 87 percent increase from 2008 (see Figure 7.1).

**Figure 7.1. PSEL syphilis rates by gender, 2005–2009**

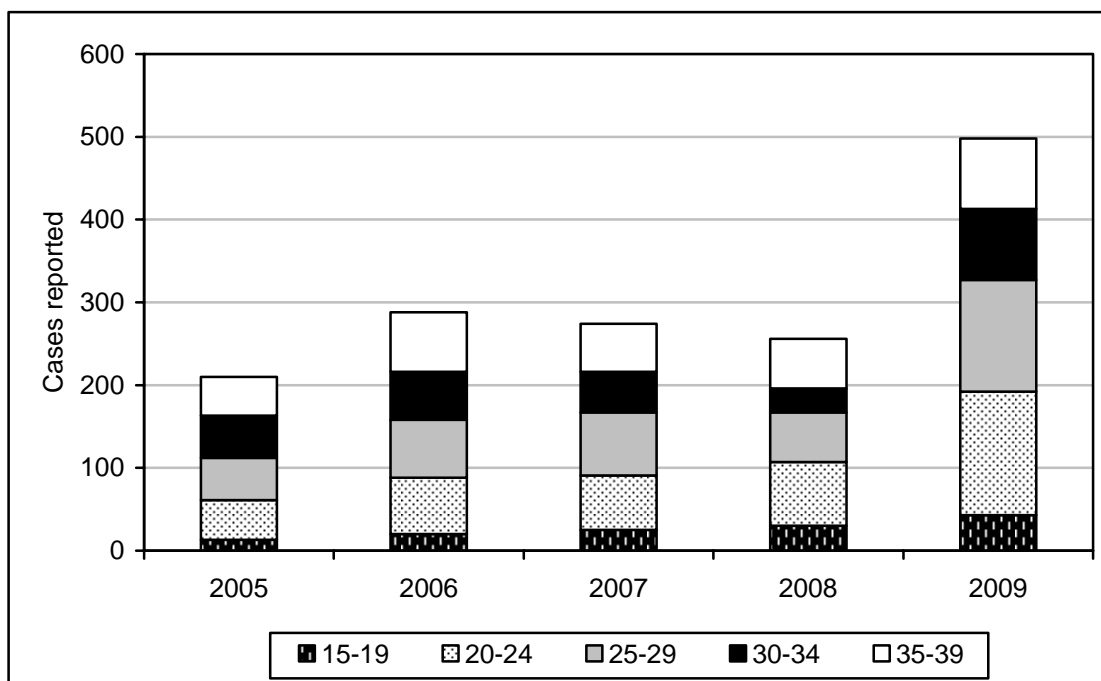


In response to the syphilis outbreak among MSM seen in 2009, the N.C. Communicable Disease Branch has created the North Carolina MSM Taskforce as a joint collaboration of community leaders and public health professionals to help target prevention efforts towards this population (see Chapter 4: HIV Testing & Related Programs for more information).

*Age*

Previously in North Carolina, syphilis affected an older population than those affected by gonorrhea and chlamydia, especially among men. In 2004, the age groups with the highest early syphilis rate were 35 to 39 year olds for both men and women. Since that time, there has been a general shift to higher syphilis rates among younger age groups for both men and women. In 2006 and 2007, the highest early syphilis rates for males were found in 25 to 29 year olds (see Figure 7.2) while the highest rates for females were among 20 to 24 year olds.

**Figure 7.2. PSEL syphilis cases by age – Males, 2005–2009**



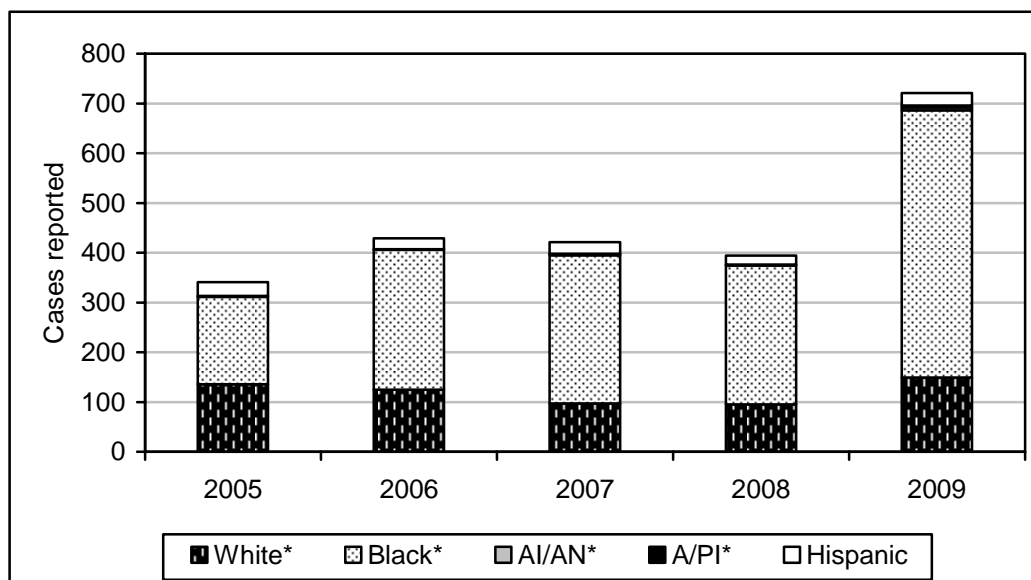
In 2009, the age groups with the highest syphilis rate were 20 to 24 year olds for both men (44.8 per 100,000) and women (20.7 per 100,000). The age groups with the second highest rates for syphilis for both men and women were 25 to 29 year olds followed by 30 to 34 year olds (Appendix D, Table U, pg. D-32). The trends are similar when primary and secondary stage syphilis is examined separately.

*Race/Ethnicity*

Syphilis disproportionately affects minority communities, however, increases in early syphilis rates were observed for almost all racial/ethnic groups in 2009. Syphilis rates for non-Hispanic blacks and Hispanics are many times higher than for non-Hispanic whites (Appendix D, Table V, pg. D-34). Syphilis reporting is considered to be very good in North Carolina, so this disparity is unlikely to be due to reporting or testing bias. A complex combination of health care access, poverty, racism, and the composition of sexual networks likely produce these differences in syphilis rates.

Figure 7.3 shows the male early syphilis (PSEL) cases by race/ethnicity from 2005 to 2009. In 2005, non-Hispanic whites represented about 40 percent of syphilis reports for males, non-Hispanic blacks about 51 percent, and Hispanics about 8 percent. Since that time, the proportions of non-Hispanic blacks among male reports has increased each year. In 2009, non-Hispanic black males represented 74 percent of reports for males, while reports for non-Hispanic white males decreased to 21 percent, and reports for Hispanics decreased to 3 percent (Appendix D, Table V, pg. D-34). While the absolute numbers of reports have increased for all ethnic male groups in 2009, the increases have been substantial for non-Hispanic black males with consistent increases in proportion over time. For females, trends are less clear. Among 2005 female syphilis cases, the proportion of non-Hispanic whites was about 25 percent, the proportion of non-Hispanic blacks was about 67 percent and the proportion of Hispanics was about 3 percent. The proportions of non-Hispanic black and white female syphilis cases reported have varied over the past five years and the proportions in 2009 mimicked those observed in 2005. The proportion of syphilis cases for Hispanic females however, increased to about 7 percent of all female reports in 2009 (Appendix D, Table V, pg. D-34).

**Figure 7.3. PSEL syphilis cases by race/ethnicity – Males, 2005–2009**



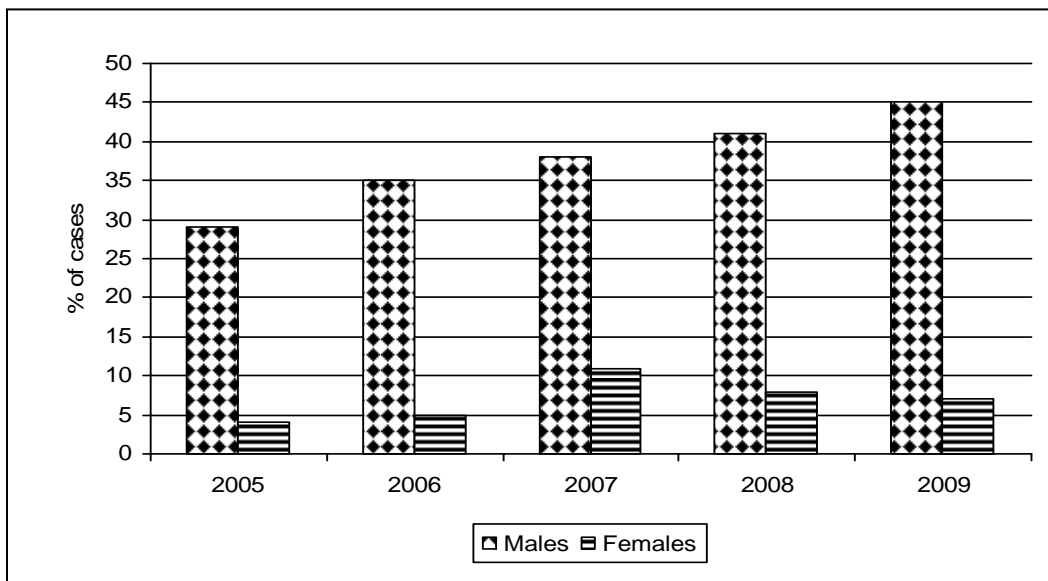
\*non-Hispanic; AI/AN=American Indian/Alaska Native; A/PI=Asian/Pacific Islander

Hispanic blacks the rate was 57.5 per 100,000 or 9.6 times that for whites and for Hispanics the rate was 6.5 per 100,000 or 1.3 times that for whites. For females, the 2009 early syphilis rate for non-Hispanic whites was 1.7 per 100,000, for non-Hispanic blacks the rate was 13.6 per 100,000 or 8 times that for whites, and for Hispanics the rate was 4.3 per 100,000 or about 3 times that for whites (Appendix D, Table V, pg. D-34).

Comorbidity of Syphilis and HIV

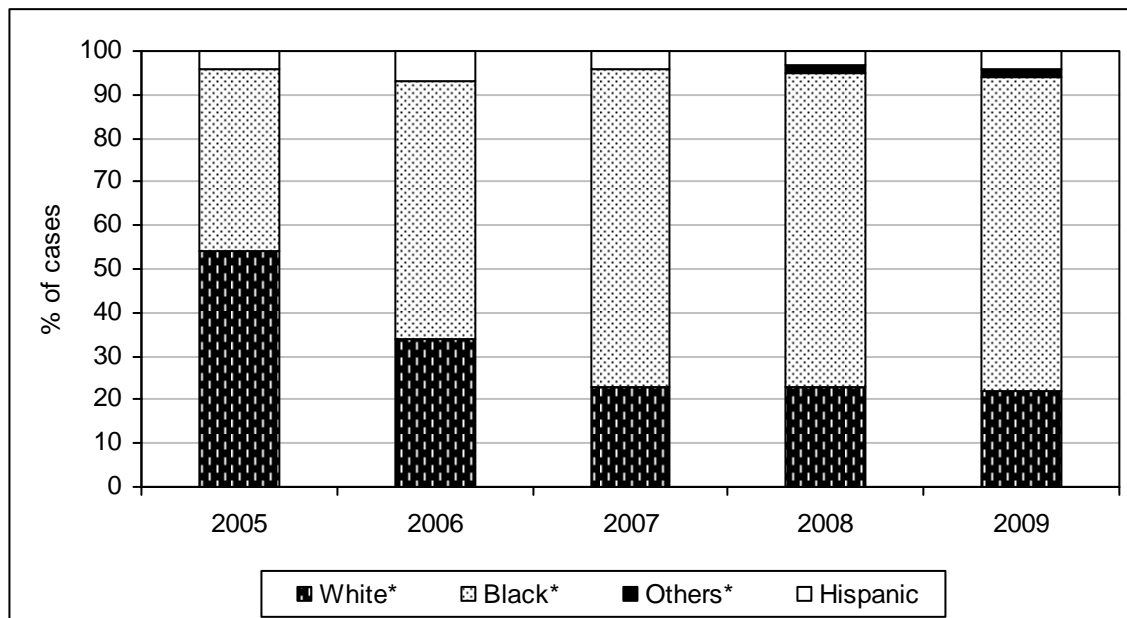
Syphilis infections among persons living with HIV disease have increased as a proportion of newly diagnosed syphilis cases. In 1999, the proportion of early syphilis cases with HIV was 4.3 percent. In recent years, the proportion of comorbid cases has increased. In 2003, the proportion of male syphilis cases with HIV was about 18 percent and seven percent for females. By 2009, the proportion of male syphilis cases with HIV had increased to 45 percent. For females, the trend since 2003 is less clear and the proportion of female cases with HIV fluctuated from a low of 4.1 percent in 2004 to a high of 10.9 percent in 2007. Although the proportional change in female syphilis cases with HIV from 2008 to 2009 was small, the change represented a notable increase in cases from 9 in 2008 to 15 in 2009 (Figure 7.4).

**Figure 7.4. Percent of PSEL syphilis cases with HIV by gender, 2005–2009**



The race/ethnicity of male syphilis cases with HIV has changed over the past few years. In 2003, non-Hispanic blacks represented 77 percent of comorbid male cases and non-Hispanic whites represented 19 percent. These rates changed dramatically in 2005 when the proportion of non-Hispanic white cases among comorbid males increased to 54 percent. Since that time the proportion of comorbid cases represented by non-Hispanic black males has returned to levels observed in earlier years. In 2009, 72 percent of comorbid male cases were black and 22 percent were white (see Figure 7.5). The male cases with both syphilis and HIV are overwhelmingly associated with MSM risk. In 2009, almost 89 percent of male syphilis cases with HIV had

**Figure 7.5. Percent of PSEL syphilis cases with HIV by race/ethnicity – Males, 2005–2009**



\*non-Hispanic

MSM or MSM/IDU (men who have sex with men and use injection drugs) as the reported risk for HIV morbidity.

### Congenital Syphilis

Untreated syphilis in pregnant women can lead to serious complications, including premature birth and infant death. Women with early syphilis are the most likely to infect their fetuses in utero or during delivery, but women with late latent syphilis can also have congenitally infected infants (Radolf, et al 1999). Under current CDC case definitions, infants whose mothers receive treatment for syphilis less than 30 days prior to delivery are still classified as congenital syphilis cases, regardless of whether or not the child displays symptoms.

North Carolina continues to suffer from cases of congenital syphilis. In 2008, eleven infants were born to mothers who had active or inadequately treated cases of syphilis. This number was up from 2006 when seven congenital syphilis cases were reported. Ten infants were born to mothers who had active or inadequately treated cases of syphilis in 2009. This number should be considered preliminary due to the delay in reporting and confirming congenital syphilis diagnoses. Readers should note that some reports display congenital syphilis cases by year of report rather than year of birth.

The number of congenital syphilis cases remains unacceptably high. Mothers of infants with congenital syphilis in North Carolina either lack access to treatment that can prevent the transmission of syphilis or they are not seeking prenatal care and are thus outside the realm of the public health surveillance. These women pose a special challenge to public health and

continue to need our attention if we are to eliminate congenital syphilis in North Carolina. North Carolina law states that medical providers are to test all pregnant women for syphilis between 28 to 30 weeks gestation and again at delivery for women at high risk for syphilis. Women who do not receive adequate prenatal care often miss these opportunities for screening.

According to the N.C. Pregnancy Risk Assessment Monitoring System (PRAMS) survey for 2008, 42 percent of N.C. mothers reported a barrier to receiving prenatal care services (NCSCHS, PRAMS, 2010). Younger mothers and those of black or Hispanic race/ethnicity were most likely to report experiencing barriers to adequate prenatal care. The Communicable Disease Branch is currently partnering with the Division of Public Health's Women & Children's Health Section to refer at-risk women into prenatal care services.



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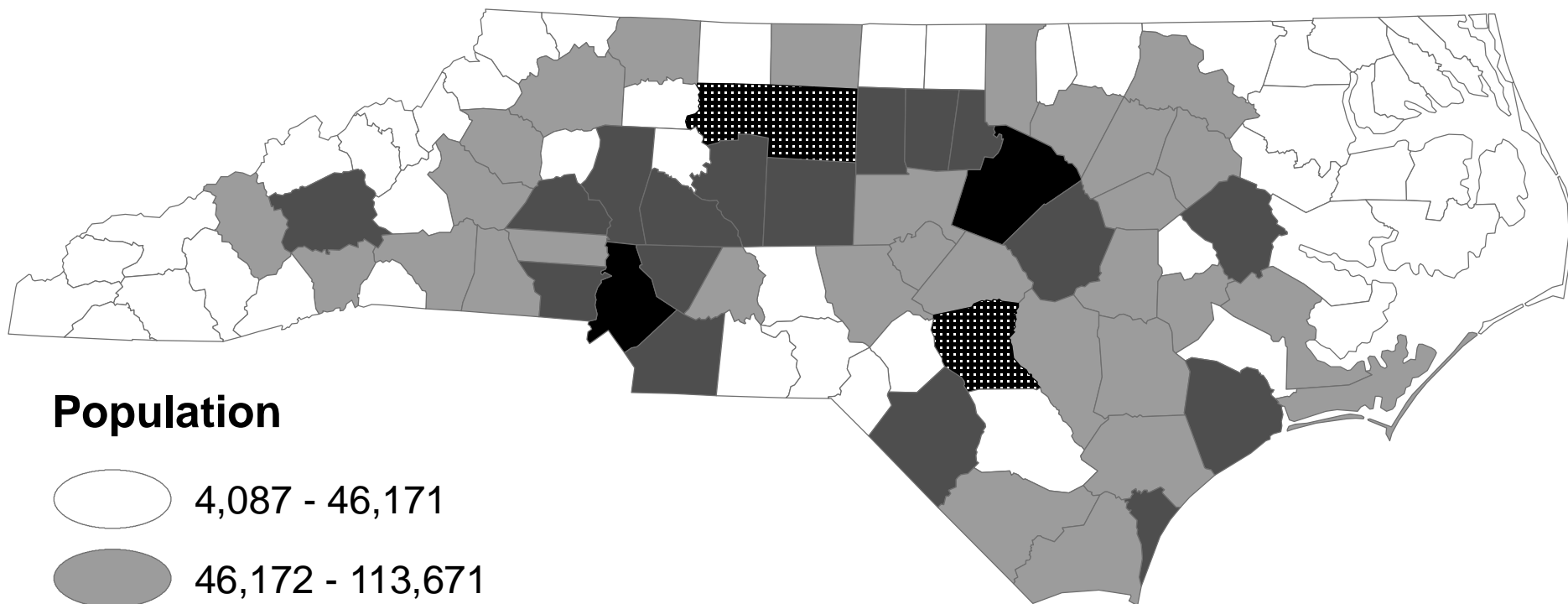
## **APPENDIX A: MAPS**

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MAP 1. NORTH CAROLINA COUNTY POPULATIONS, 2008 .....	<b>A-3</b>
MAP 2. NORTH CAROLINA METROPOLITAN/MICROPOLITAN DESIGNATIONS.....	<b>A-4</b>
MAP 3. NORTH CAROLINA AFRICAN AMERICAN OR BLACK POPULATION, 2008 .	<b>A-5</b>
MAP 4. NORTH CAROLINA AMERICAN INDIAN/AN POPULATION, 2008.....	<b>A-6</b>
MAP 5. NORTH CAROLINA HISPANIC OR LATINO POPULATION, 2008 .....	<b>A-7</b>
MAP 6. NORTH CAROLINA ASIAN/PACIFIC ISLANDER POPULATION, 2008.....	<b>A-8</b>
MAP 7. NORTH CAROLINA PER CAPITA INCOME, 2008.....	<b>A-9</b>
MAP 8. NORTH CAROLINA MEDICAID ELIGIBLES, 2008 .....	<b>A-10</b>
MAP 9. NORTH CAROLINA HIV DISEASE CASES, 2009 .....	<b>A-11</b>
MAP 10. NORTH CAROLINA HIV DISEASE RATES, 2009 .....	<b>A-12</b>

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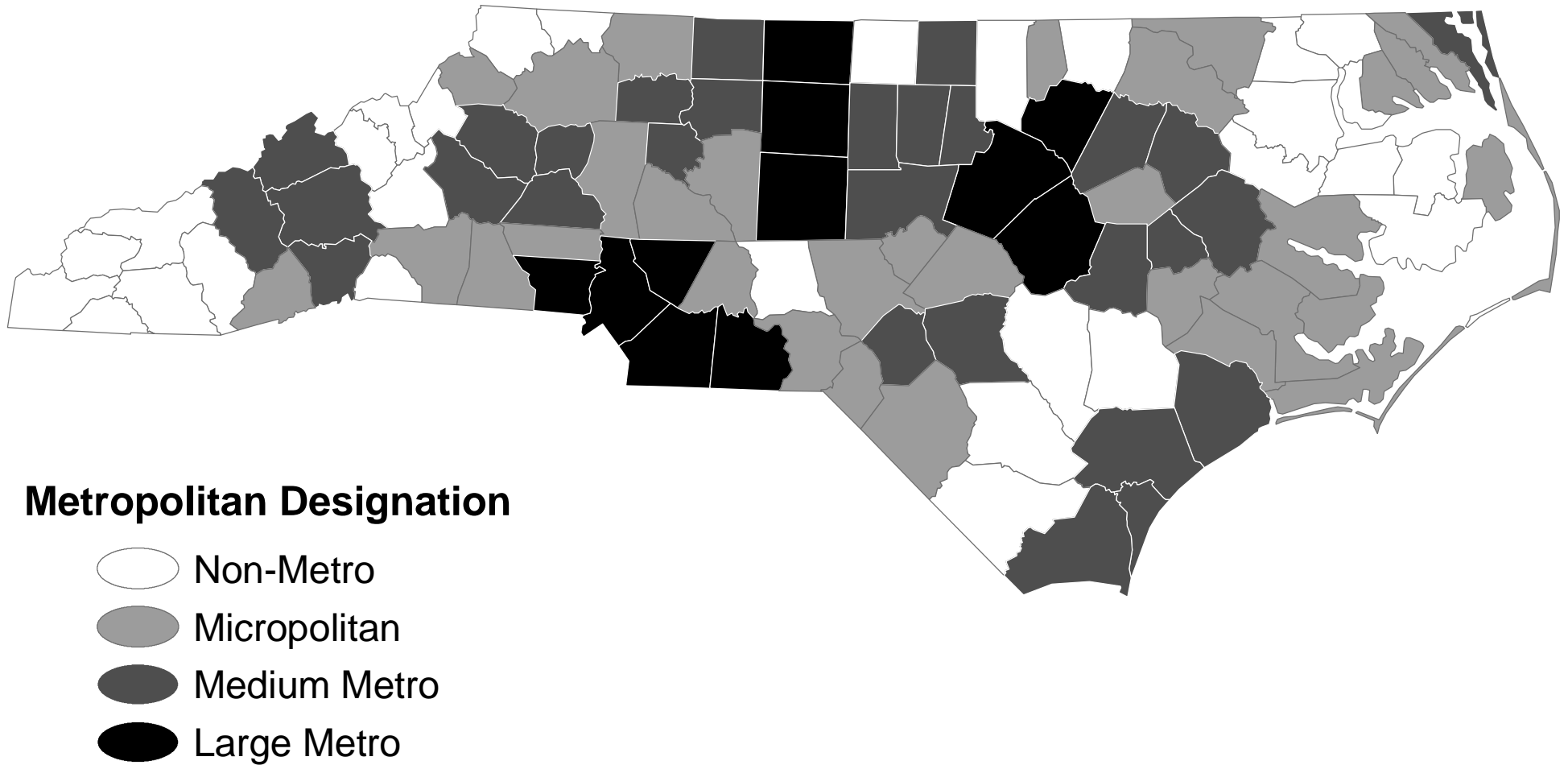
### Map 1. North Carolina County Populations, 2008



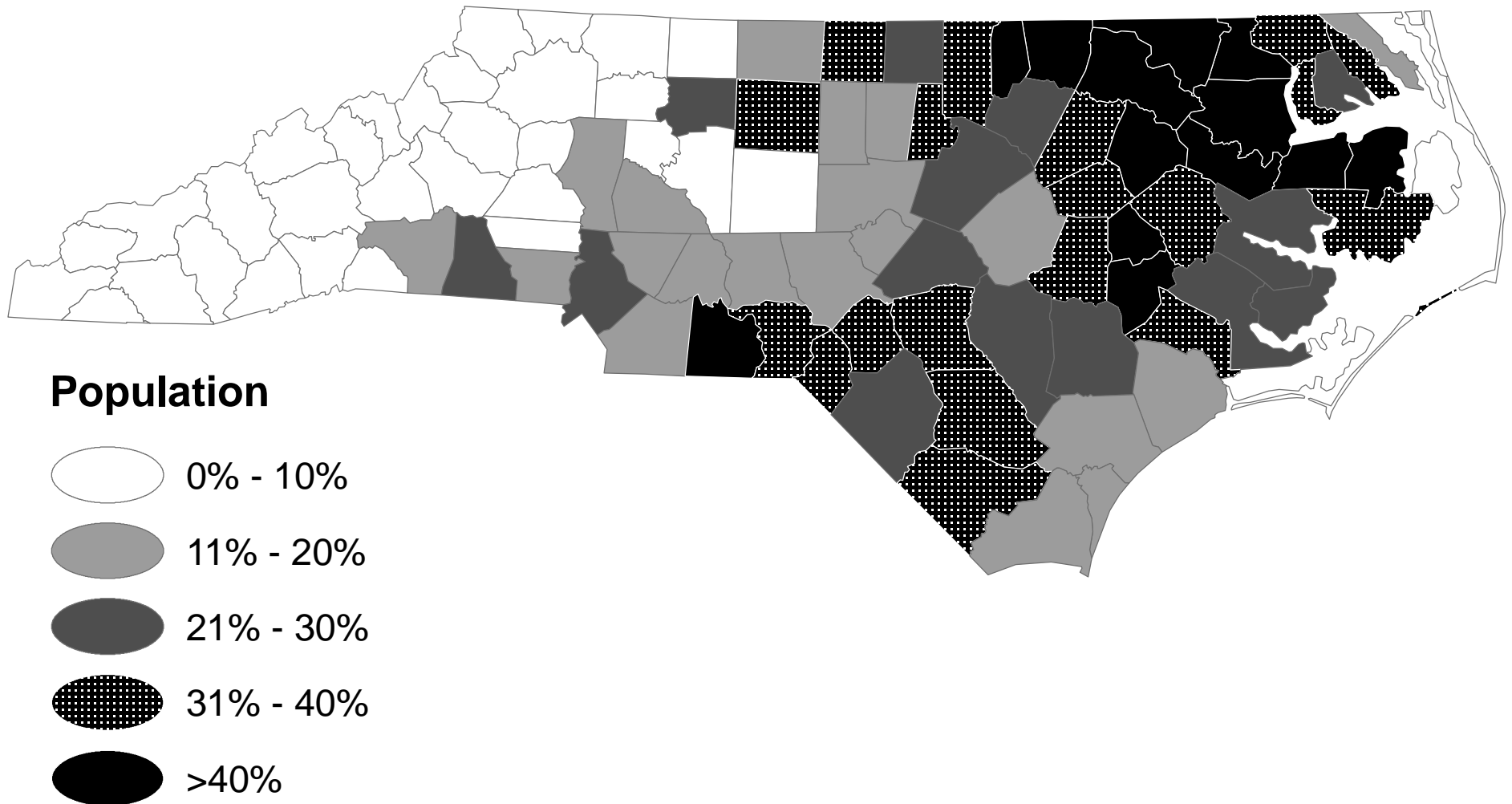
#### Population

-  4,087 - 46,171
-  46,172 - 113,671
-  113,672 - 262,715
-  262,716 - 472,216
-  472,217 - 890,515

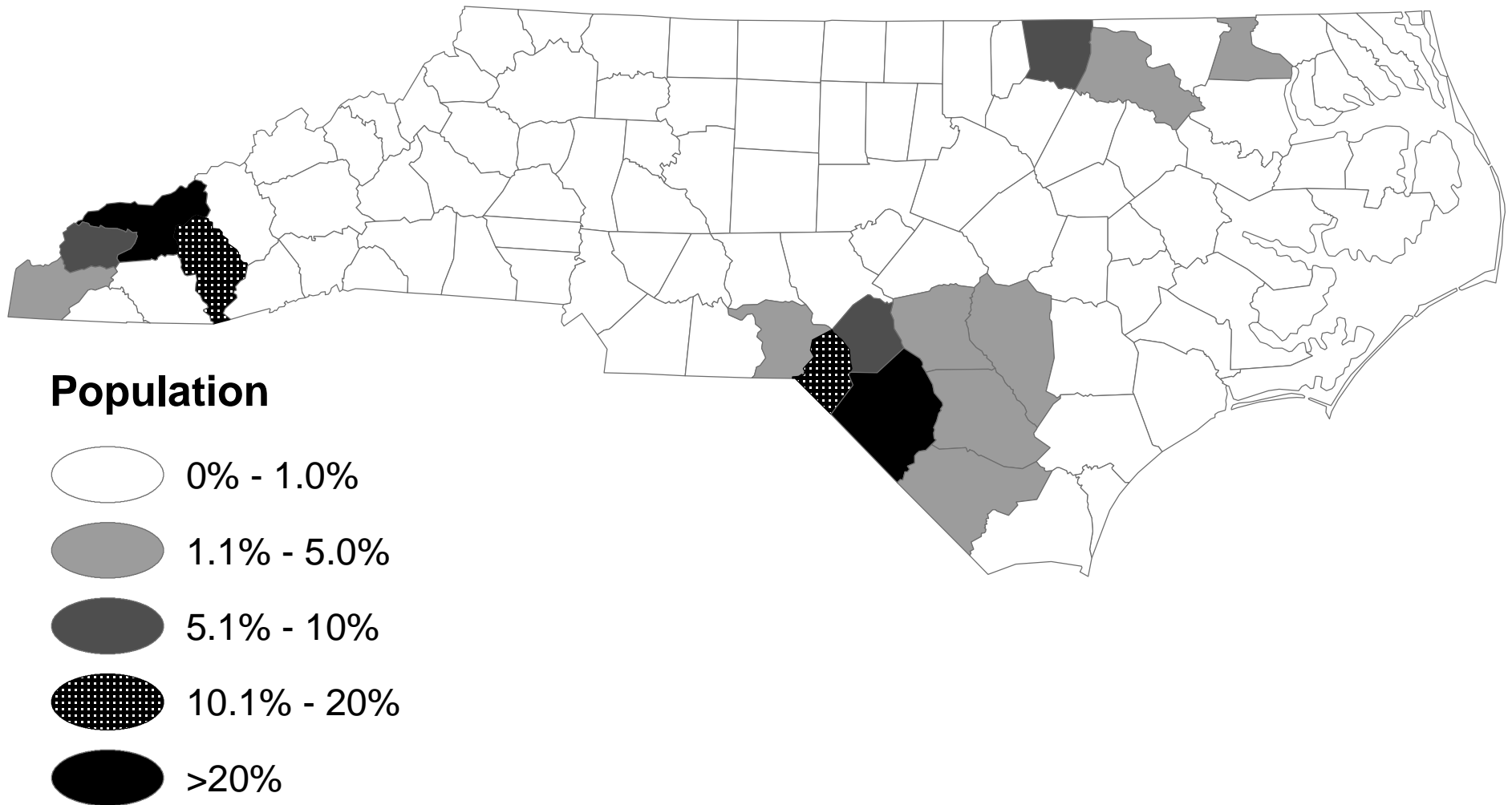
## Map 2. North Carolina Metropolitan Designations



### Map 3. North Carolina African American or Black Population, 2008

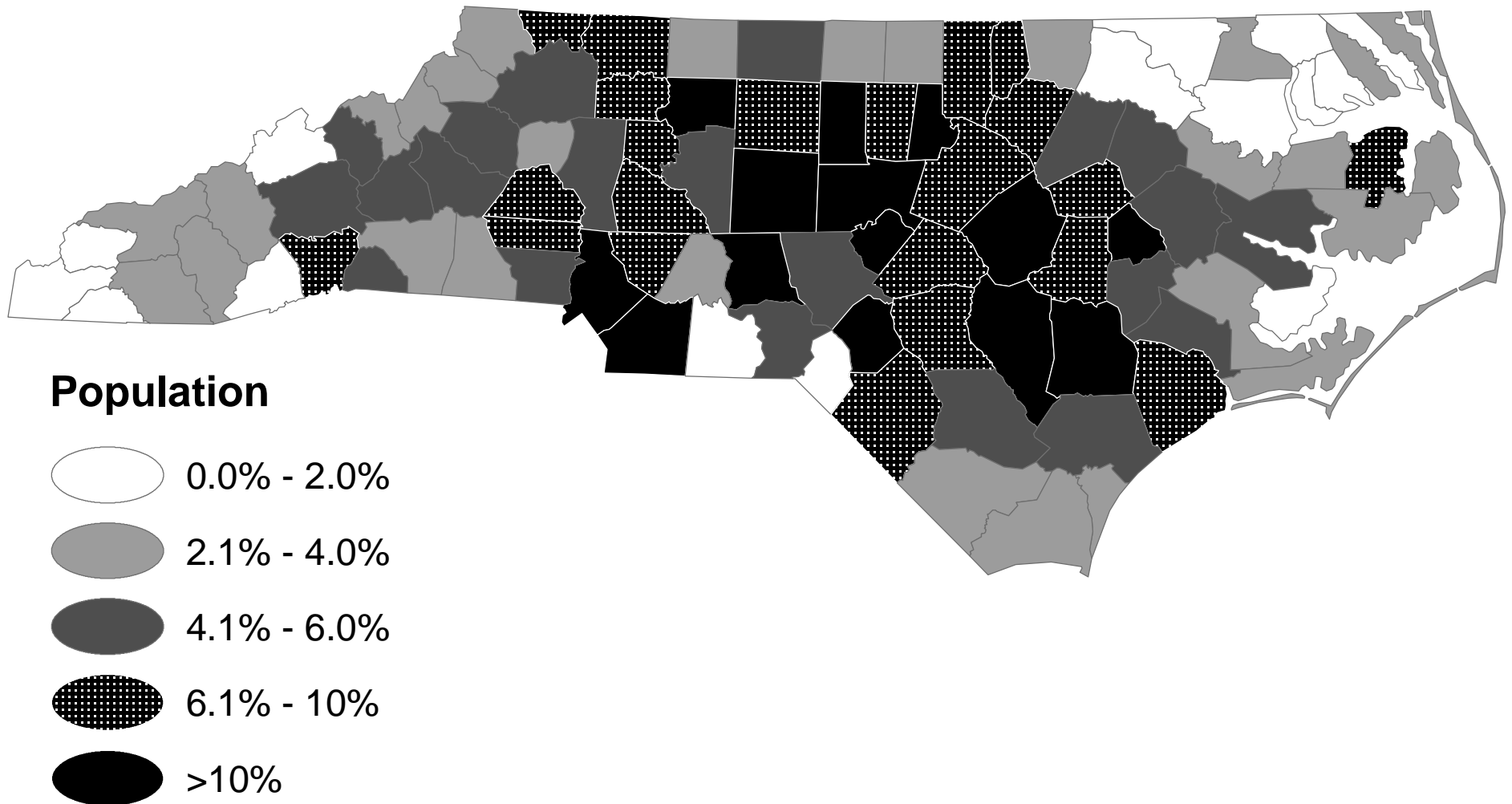


### Map 4. North Carolina American Indian/Alaskan Native Population, 2008

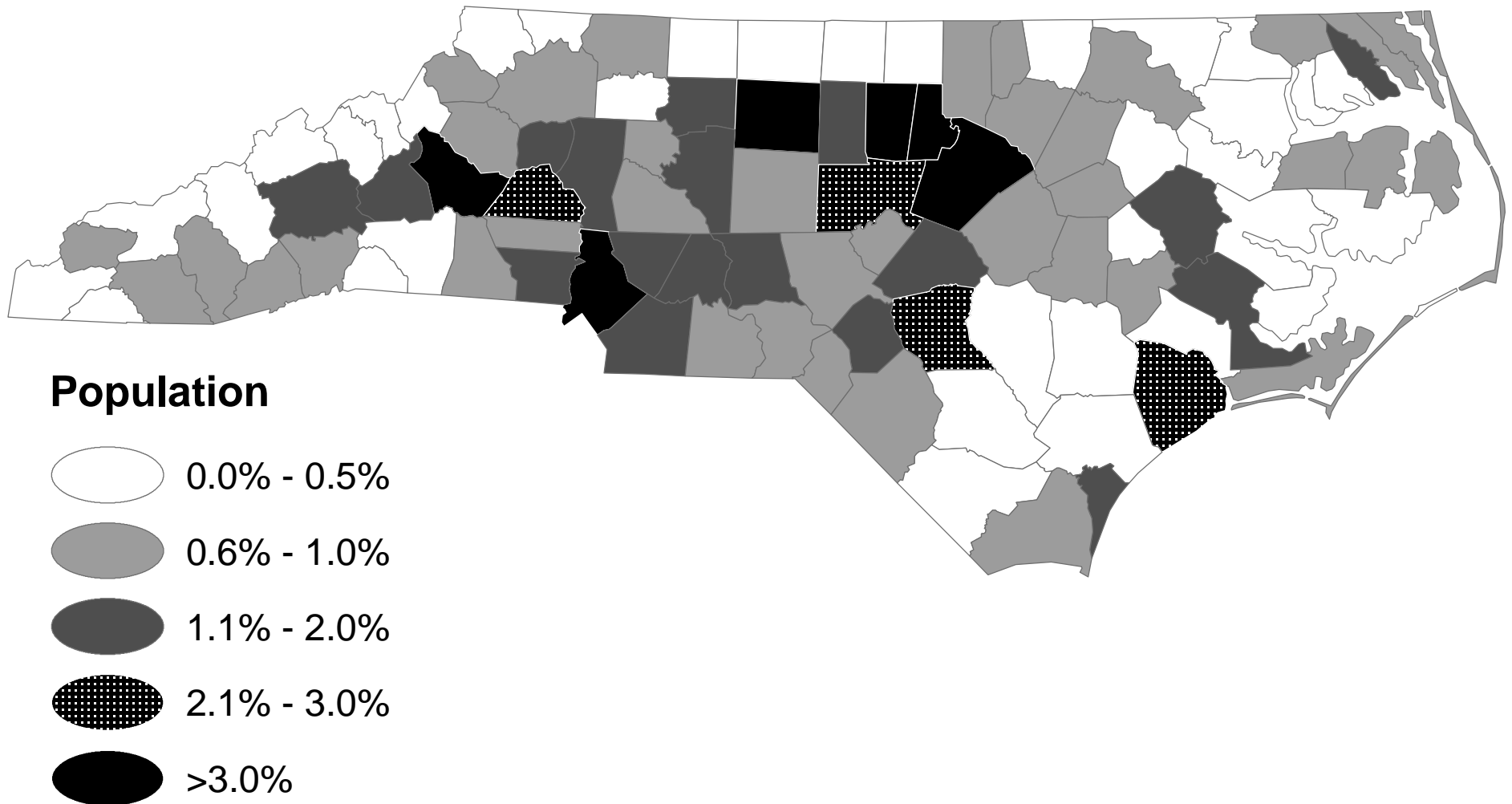




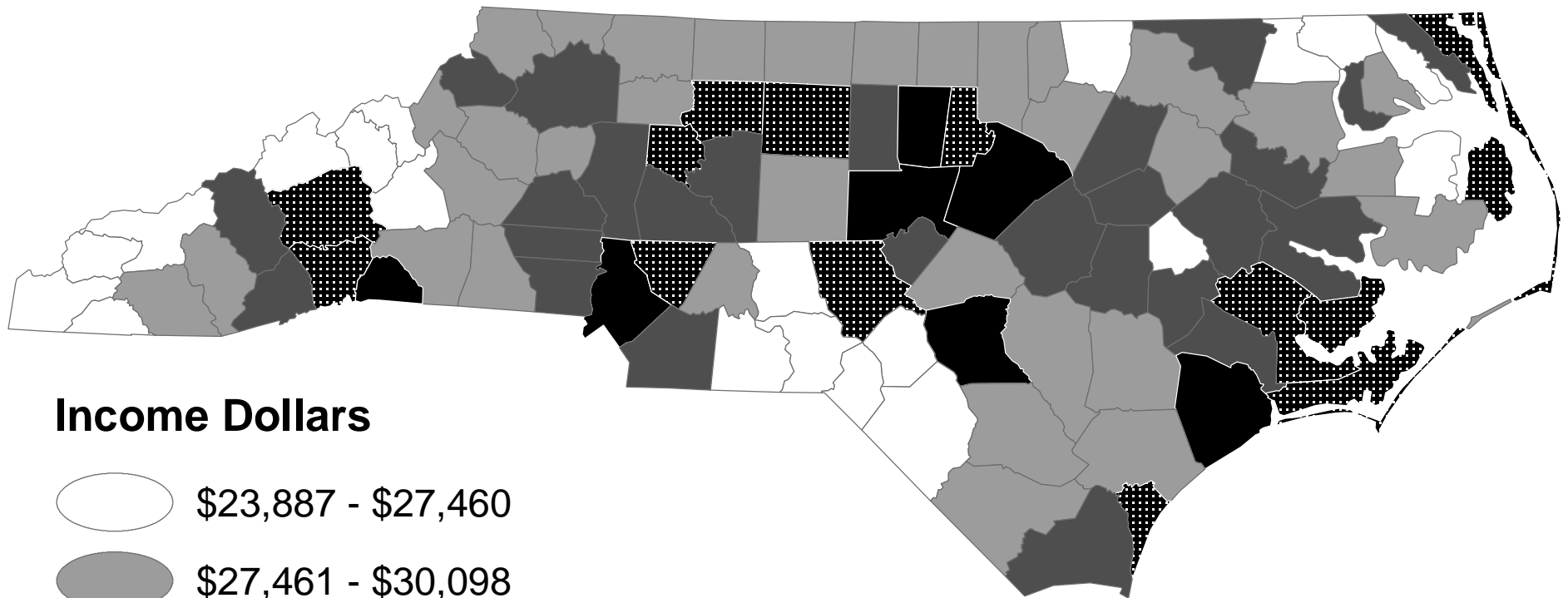
## Map 5. North Carolina Hispanic or Latino Population, 2008






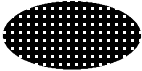

### Map 6. North Carolina Asian/Pacific Islander Population, 2008



### Map 7. North Carolina Per Capita Income, 2008

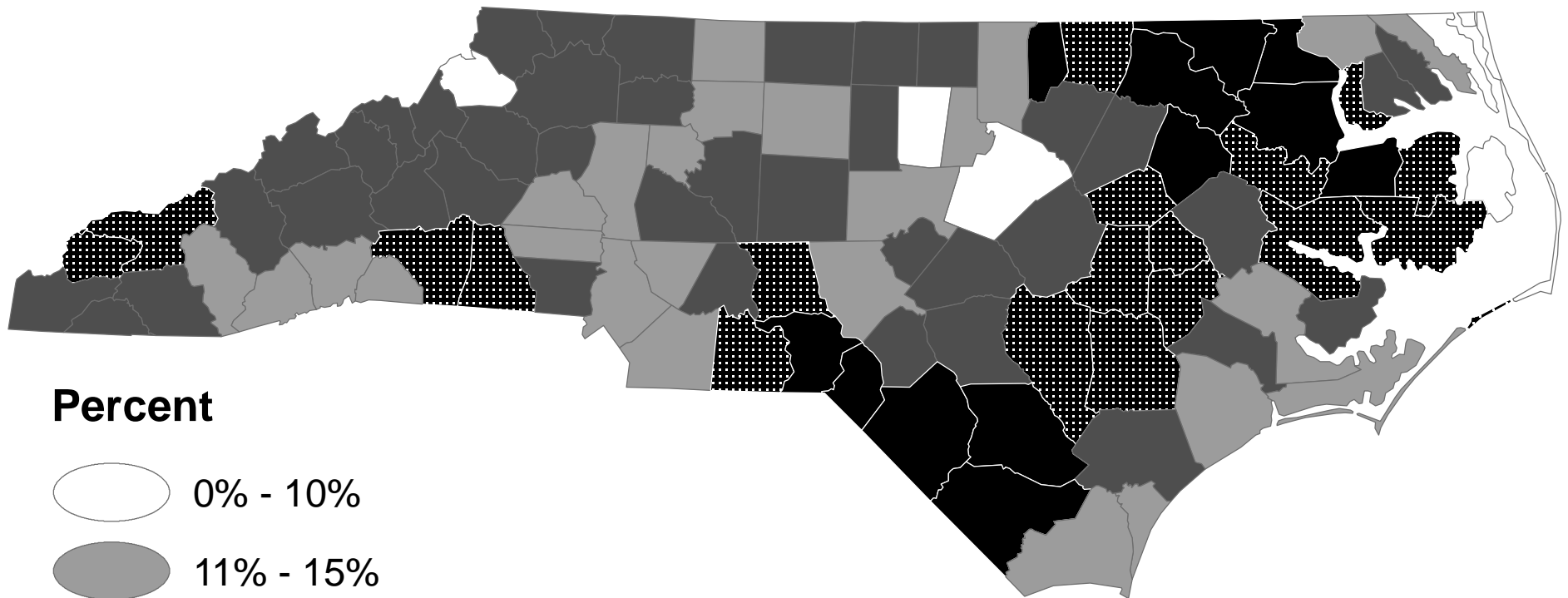


#### Income Dollars






-  \$23,887 - \$27,460
-  \$27,461 - \$30,098
-  \$30,099 - \$33,881
-  \$33,882 - \$38,919
-  \$38,920 - \$47,063

Source: US Bureau Of Economic Analysis

## Map 8. North Carolina Medicaid Eligibles, 2009

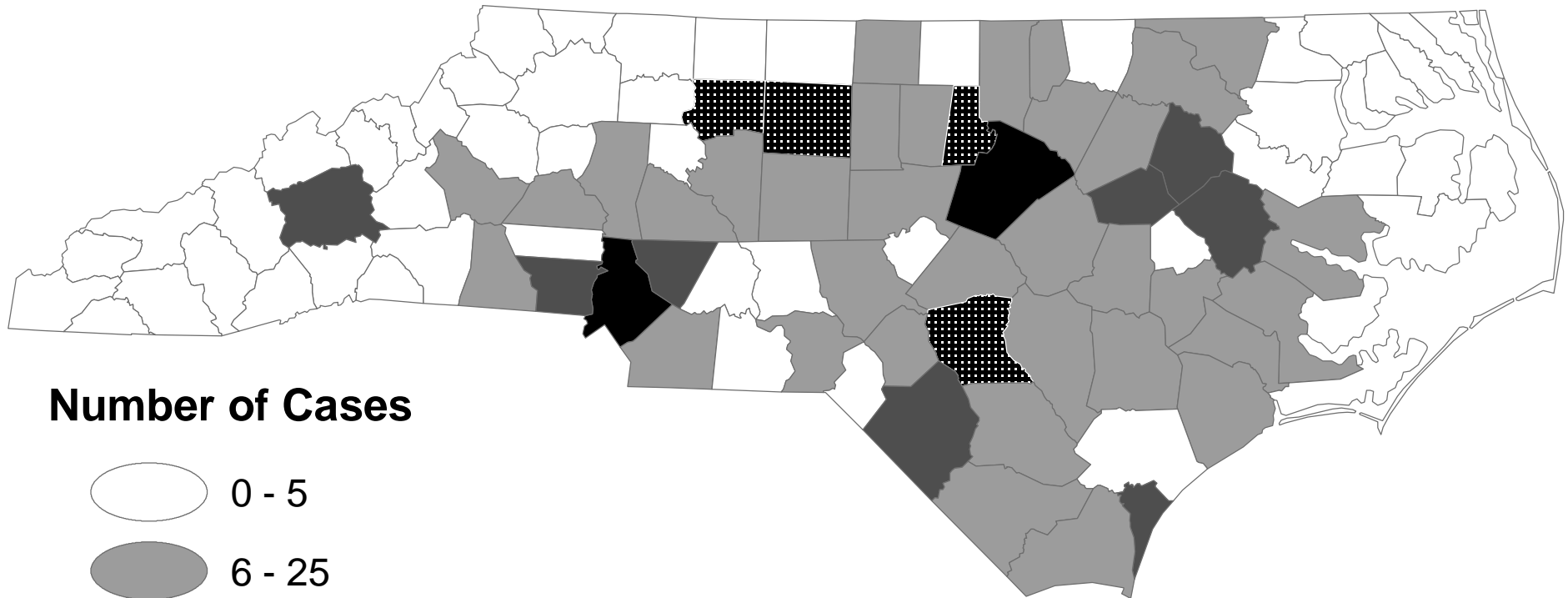


### Percent

-  0% - 10%
-  11% - 15%
-  16% - 20%
-  21% - 25%
-  >25%

Source: NC DHHS Division of Medical Assistance

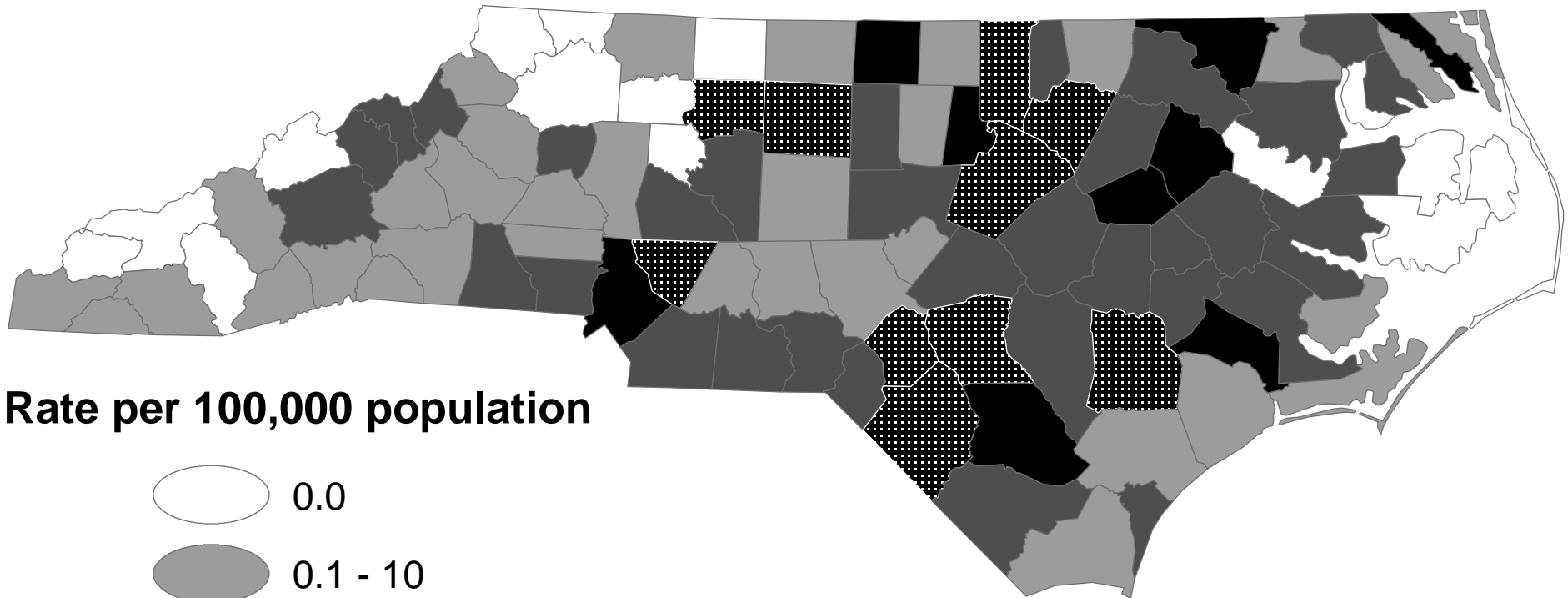
### Map 9. North Carolina HIV Disease Cases, 2009 By Year Of Diagnosis






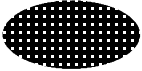

#### Number of Cases

- 0 - 5
- 6 - 25
- 26 - 50
- 51 - 150
- >150

### Map 10. North Carolina HIV Disease Rates, 2009 By Year Of Diagnosis



**Rate per 100,000 population**

-  0.0
-  0.1 - 10
-  10.1 - 20
-  20.1 - 30
-  >30

## 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 Communicable Disease Branch, which maintains the data from the 100 counties in eHARS (electronic HIV/AIDS Reporting 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 N.C. 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 2006 study indicated that completeness of HIV/AIDS reporting was approximately 85 percent statewide. This estimate of completeness is used to adjust estimates of prevalence.

### 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, 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)* may 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. Every two years, North Carolina adds the sexual behavior module to collect information on sexual behavior. 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.

**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 condom-use questions should be interpreted with caution due to the inherent problem that those who report condom use often 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).

## 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 statewide partner notification procedure. When a new case is diagnosed, the provider sends a morbidity report to the Communicable Disease Branch, via North Carolina Electronic Disease Surveillance System (N.C. EDSS) 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 N.C. 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; 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, since 2008 it included women age 25 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 via N.C. EDSS to the Communicable Disease 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 N.C. 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 and to the Communicable Disease Branch 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 Communicable Disease 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 N.C. 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.

**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 Communicable Disease 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 or syphilis case follow-up or partner notification.

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

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

## HIV COUNSELING, TESTING & REFERRAL DATA

### CTR – COUNSELING, TESTING AND REFERRAL SYSTEM

**Overview:** The Communicable Disease Branch receives funding from both federal and state sources to pay for a variety of HIV testing programs. Most of this funding comes from the Centers for Disease Control and Prevention (CDC), but the federal Substance Abuse and Mental Health Services Administration (SAMHSA) also has supplied funding for testing in substance abuse centers. The Branch then distributes money to the health departments and Community Based Organizations (CBOs) that test the public for HIV. Increases in funding have allowed for the continuing expansion of HIV testing efforts. The CTRS collects information on counseling and testing services delivered, client demographics, insurance, risk factors, and reasons for testing.

The N.C. Division of Public Health provides funds for HIV counseling, testing and referral (CTR) at 169 sites across the state. These include 155 traditional test sites in local health departments, university health centers, and Community Based Organizations (CBOs) and 19 nontraditional test sites (NTS). The non-traditional testing site program is funded by the Division's Communicable Disease Branch with federal funds from the CDC. The purpose of the NTS program is to serve difficult to reach populations through mobile outreach or extended office hours. The program started out small, became more formalized in 1999, and funding has increased steadily since then. The NTS project performed 26,982 tests in 2009. Expanded HIV Testing Project began in October of 2007 and specifically funds testing in clinical settings such as STD clinics, community health centers, hospital emergency departments, jails, and prisons. The project was responsible for 68,800 HIV tests performed in 2009. The Rapid HIV Testing Project started out small with just a handful of participating sites (6 sites and 235 tests) and has grown to 38 sites and performed 18,926 tests in 2009.

**Population:** All clients who receive confidential HIV testing services at a publicly funded counseling and testing site in North Carolina.

**Strengths:** CTR 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:** CTR covers only publicly funded clinics and therefore does not reflect all the HIV tests done in the state. In fact, only about 30 percent of new HIV cases reported to the state come from the CTR. 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 CTR 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.

## **PRAMS – PREGNANCY RISK ASSESSMENT MONITORING SYSTEM**

**Overview:** PRAMS, the Pregnancy Risk Assessment Monitoring System, is a surveillance project of the Centers for Disease Control and Prevention (CDC) and state health departments. PRAMS collects state-specific, population-based data on maternal attitudes and experiences before, during, and shortly after pregnancy.

PRAMS was initiated in 1987 because infant mortality rates were no longer declining as rapidly as they had in prior years. In addition, the incidence of low birth weight infants had changed little in the previous 20 years. Research has indicated that maternal behaviors during pregnancy may influence infant birth weight and mortality rates. The goal of the PRAMS project is to improve the health of mothers and infants by reducing adverse outcomes such as low birth weight, infant mortality and morbidity, and maternal morbidity. PRAMS provides state-specific data for planning and assessing health programs and for describing maternal experiences that may contribute to maternal and infant health. N.C. data comes directly from the most recently published tables available from the State Center at: <http://www.schs.state.nc.us/SCHS/prams/>

**Population:** Mothers who had given birth to a live infant in North Carolina

**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**

### **BRIDGED-RACE POPULATION ESTIMATES**

**Overview:** The National Center for Health Statistics releases bridged-race population estimates of the July 1st resident population of the United States, based on Census 2000 counts, for use in calculating vital rates. 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 (Asian or Pacific Islander, Black or African American, American Indian or Alaska Native, White). Many data systems, such as vital statistics, are continuing to use the 1977 OMB standards during the transition to full implementation of the 1997 OMB standards. More



information can be found at: <http://wonder.cdc.gov/wonder/help/populations/bridged-race/VitalHealthStatistics-Series2No135.pdf>

**Population:** U.S. population.

**Strengths:** The Bridged-Race Population Estimates are available as separate online databases. Each query includes the bridged-race intercensal population estimates for 1990-1999 and population estimates for 2000 and beyond from a particular postcensal vintage of estimates.

**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.

### **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:** Congress enacted the Ryan White Comprehensive AIDS Resources Emergency (CARE) Act in 1990 to provide funding for states and territories, eligible metropolitan areas (EMAs), as well as 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 were part of the CARE Act.

The Ryan White Modernization Act of 2006 (which superseded the CARE Act) 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 remained essentially the

same as the old CARE 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 (aid to localities), North Carolina now has its first direct-funded locality (Mecklenburg County, along with four other N.C. counties in that metropolitan area, and also including one South Carolina county). As a result, North Carolina has seen a significant increase in federal resources to the State for HIV/AIDS care purposes. In addition, some of the State's Part B funding which formerly went to this region has now been redirected to other areas of the State. Data are available about services provided through the State's Part B program.

**Population:** All people who received Ryan White Care Act Part B 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:** Currently only Part B funded agencies are required to report services provided to the state; others (Part A, C and D) report directly to HRSA. Thus, the care and service information is incomplete at the state level.

## **APPENDIX C: SPECIAL NOTES**

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## HIV DISEASE

*HIV disease case reports* represent persons who have a confirmed diagnosis with human immunodeficiency virus (HIV). This category represents all new diagnoses with HIV regardless of the stage of the disease and is sometimes referred to as simply “HIV infection.” Cases are counted by the date of diagnosis for the initial HIV diagnosis. *AIDS* (acquired immunodeficiency syndrome) *case reports*, by contrast, represent only persons with HIV infection who have progressed to this later, more life threatening, stage of disease. AIDS cases are counted by the date of AIDS diagnosis. Most AIDS case reports represent persons who were diagnosed with HIV infection in earlier years. However, in North Carolina, about one-fourth to one-third of the new HIV disease reports may represent persons who are initially diagnosed with HIV infection and AIDS at or very near the same time (concurrent). HIV disease reports and AIDS case reports should be considered separately. The two categories should never be combined to estimate an infected population, as the broad category of HIV disease includes AIDS cases that are counted by the initial diagnosis of HIV infection. It should also be noted that HIV disease also includes early surveillance reports of individuals when AIDS surveillance was the only reporting of infected individuals (all reports before 1990); by default the earliest known HIV diagnoses for these reports was the generally the AIDS diagnosis date.

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 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.

## HIV/AIDS SURVEILLANCE REPORTING ISSUES

Readers will note that the numbers of HIV disease reports for some years (i.e. 2003 and 2007) were higher than the number of reports expected. These spikes of HIV disease reports may be the result of more intensive surveillance efforts involving follow up of laboratory reports. HIV cases are counted by the residency at earliest HIV diagnosis. AIDS cases are counted by the residency at earliest AIDS diagnosis. Readers should also note that the assignment of residency for some cases may change as more information is received. This can cause disease totals for previous years to change. For the most comprehensive data, readers should refer to the latest publications.

## 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 2009 were not available at press time; thus

rates for 2009 were calculated using 2008 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 Health 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 on 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.

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**Table A: North Carolina Adult/Adolescent HIV Disease<sup>†</sup> Demographic Rates, Gender and Age, 2005-2009**

	Age	2005	2005	2005	2006	2006	2006	2007	2007	2007	2008	2008	2008	2009	2009	2009
		Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*
<b>Male</b>	<b>13-14 Years</b>	1	0%	0.8	1	0%	0.8	1	0%	0.8	0	0%	0.0	0	0%	0.0
	<b>15-19 Years</b>	51	3%	16.9	46	3%	14.8	80	4%	25.1	63	4%	19.5	64	4%	19.8
	<b>20-24 Years</b>	134	8%	43.2	141	9%	43.7	162	9%	50.5	186	11%	56.0	203	12%	61.1
	<b>25-29 Years</b>	133	8%	45.4	170	10%	56.7	162	9%	53.8	190	11%	61.2	166	10%	53.5
	<b>30-34 Years</b>	173	11%	55.6	141	9%	46.0	149	8%	49.1	143	8%	46.7	129	8%	42.1
	<b>35-39 Years</b>	170	11%	53.6	182	11%	55.8	164	9%	49.1	150	8%	44.4	137	8%	40.5
	<b>40-44 Years</b>	188	12%	57.1	175	11%	53.0	184	10%	55.8	189	11%	57.4	166	10%	50.4
	<b>45-49 Years</b>	135	8%	42.7	151	9%	46.7	171	10%	51.8	158	9%	47.2	192	11%	57.4
	<b>50-54 Years</b>	81	5%	28.7	85	5%	29.3	99	6%	32.9	125	7%	40.3	105	6%	33.9
	<b>55-59 Years</b>	52	3%	20.5	48	3%	18.0	63	4%	23.5	57	3%	20.9	59	3%	21.7
	<b>60-64 Years</b>	23	1%	12.1	24	1%	12.1	33	2%	15.2	31	2%	13.5	26	2%	11.3
	<b>65+ Years</b>	19	1%	4.4	16	1%	3.6	20	1%	4.4	24	1%	5.1	22	1%	4.6
<b>Total</b>	1,161	73%	33.6	1,180	72%	33.3	1,288	72%	35.7	1,316	74%	35.7	1,269	74%	34.5	
<b>Female</b>	<b>13-14 Years</b>	1	0%	0.9	3	0%	2.6	0	0%	0.0	1	0%	0.9	1	0%	0.9
	<b>15-19 Years</b>	16	1%	5.6	25	2%	8.5	21	1%	7.0	18	1%	5.9	18	1%	5.9
	<b>20-24 Years</b>	49	3%	17.4	42	3%	14.8	56	3%	19.3	32	2%	10.9	44	3%	14.9
	<b>25-29 Years</b>	62	4%	21.2	45	3%	14.9	52	3%	17.0	52	3%	16.8	43	3%	13.9
	<b>30-34 Years</b>	59	4%	19.1	50	3%	16.4	63	4%	20.6	57	3%	18.5	42	2%	13.6
	<b>35-39 Years</b>	70	4%	22.1	63	4%	19.3	85	5%	25.4	64	4%	18.9	60	4%	17.8
	<b>40-44 Years</b>	64	4%	18.8	66	4%	19.5	75	4%	22.1	86	5%	25.6	68	4%	20.3
	<b>45-49 Years</b>	53	3%	16.0	69	4%	20.4	61	3%	17.7	66	4%	18.9	69	4%	19.7
	<b>50-54 Years</b>	23	1%	7.6	53	3%	17.0	47	3%	14.6	42	2%	12.7	45	3%	13.6
	<b>55-59 Years</b>	20	1%	7.3	24	1%	8.3	24	1%	8.2	18	1%	6.0	29	2%	9.7
	<b>60-64 Years</b>	7	0%	3.3	11	1%	5.0	10	1%	4.1	10	1%	3.9	11	1%	4.3
	<b>65+ Years</b>	7	0%	1.1	5	0%	0.8	15	1%	2.3	8	0%	1.2	6	0%	0.9
<b>Total</b>	431	27%	11.7	456	28%	12.1	509	28%	13.2	454	26%	11.6	436	26%	11.2	

\*per 100,000 population <sup>†</sup>HIV Disease includes all newly diagnosis HIV infected individuals by the date of first diagnosis (HIV or AIDS)

**Table A (continued): North Carolina Adult/Adolescent HIV Disease<sup>†</sup> Demographic Rates, Gender and Age, 2005-2009**

Age	2005	2005	2005	2006	2006	2006	2007	2007	2007	2008	2008	2008	2009	2009	2009
	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*
<b>Total</b>															
<b>13-14 Years</b>	2	0%	0.8	4	0%	1.7	1	0%	0.4	1	0%	0.4	1	0%	0.4
<b>15-19 Years</b>	67	4%	11.4	71	4%	11.7	101	6%	16.3	81	5%	12.9	82	5%	13.0
<b>20-24 Years</b>	183	11%	30.9	183	11%	30.2	218	12%	35.7	218	12%	34.8	247	14%	39.4
<b>25-29 Years</b>	195	12%	33.3	215	13%	35.7	214	12%	35.2	242	14%	39.1	209	12%	33.7
<b>30-34 Years</b>	232	15%	37.4	191	12%	31.3	212	12%	34.8	200	11%	32.5	171	10%	27.8
<b>35-39 Years</b>	240	15%	37.9	245	15%	37.6	249	14%	37.2	214	12%	31.7	197	12%	29.1
<b>40-44 Years</b>	252	16%	37.6	241	15%	36.1	259	14%	38.7	275	16%	41.3	234	14%	35.2
<b>45-49 Years</b>	188	12%	29.1	220	13%	33.2	232	13%	34.4	224	13%	32.7	261	15%	38.1
<b>50-54 Years</b>	104	7%	17.8	138	8%	22.9	146	8%	23.4	167	9%	26.1	150	9%	23.4
<b>55-59 Years</b>	72	5%	13.6	72	4%	13.0	87	5%	15.5	75	4%	13.1	88	5%	15.4
<b>60-64 Years</b>	30	2%	7.5	35	2%	8.4	43	2%	9.4	41	2%	8.5	37	2%	7.6
<b>65+ Years</b>	26	2%	2.5	21	1%	2.0	35	2%	3.2	32	2%	2.8	28	2%	2.5
<b>Total</b>	1,592	100%	22.3	1,636	100%	22.4	1,797	100%	24.1	1,770	100%	23.3	1,705	100%	22.5

\*per 100,000 population <sup>†</sup>HIV Disease includes all newly diagnosed HIV infected individuals by the date of first diagnosis (HIV or AIDS)

**Table B: North Carolina Adult/Adolescent HIV Disease<sup>†</sup> Demographic Rates  
Gender and Race/Ethnicity, 2005-2009**

Race/Ethnicity		2005	2005	2005	2006	2006	2006	2007	2007	2007	2008	2008	2008	2009	2009	2009
		Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*
Male	White**	327	21%	13.4	340	21%	13.7	424	24%	16.8	369	21%	14.4	335	20%	13.1
	Black**	712	45%	103.3	702	43%	99.3	725	40%	100.7	782	44%	106.1	783	46%	106.3
	Am.In/AN**	12	1%	30.0	10	1%	24.5	6	0%	14.5	10	1%	23.9	9	1%	21.5
	Asian/PI**	7	0%	11.4	11	1%	17.0	7	0%	10.3	7	0%	9.7	8	0%	11.1
	Hispanic	101	6%	44.4	111	7%	46.1	121	7%	47.6	128	7%	47.4	113	7%	41.9
	Unknown	2	0%	---	6	0%	---	5	0%	---	20	1%	---	21	1%	---
	<b>Total</b>	1,161	73%	33.6	1,180	72%	33.3	1,288	72%	35.7	1,316	74%	35.7	1,269	74%	34.5
Female	White**	72	5%	2.8	66	4%	2.5	84	5%	3.1	74	4%	2.7	73	4%	2.7
	Black**	322	20%	39.7	352	22%	42.4	385	21%	45.3	348	20%	40.2	335	20%	38.7
	Am.In/AN**	9	1%	20.7	1	0%	2.3	5	0%	11.2	0	0%	0.0	1	0%	2.2
	Asian/PI**	4	0%	6.1	2	0%	2.9	0	0%	0.0	2	0%	2.6	2	0%	2.6
	Hispanic	23	1%	15.1	32	2%	19.4	32	2%	17.9	23	1%	12.0	20	1%	10.4
	Unknown	1	0%	---	3	0%	---	3	0%	---	7	0%	---	5	0%	---
	<b>Total</b>	431	27%	11.7	456	28%	12.1	509	28%	13.2	454	26%	11.6	436	26%	11.2
Total	White**	399	25%	7.9	406	25%	7.9	508	28%	9.7	443	25%	8.4	408	24%	7.7
	Black**	1,034	65%	68.9	1,054	64%	68.6	1,110	62%	70.7	1,130	64%	70.5	1,118	66%	69.7
	Am.In/AN**	21	1%	25.2	11	1%	13.0	11	1%	12.8	10	1%	11.5	10	1%	11.5
	Asian/PI**	11	1%	8.6	13	1%	9.7	7	0%	5.0	9	1%	6.1	10	1%	6.8
	Hispanic	124	8%	32.6	143	9%	35.3	153	9%	35.4	151	9%	32.7	133	8%	28.8
	Unknown	3	0%	---	9	1%	---	8	0%	---	27	2%	---	26	2%	---
	<b>Total</b>	1,592	100%	22.3	1,636	100%	22.4	1,797	100%	24.1	1,770	100%	23.3	1,705	100%	22.5

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

<sup>†</sup>HIV Disease includes all newly diagnosed HIV infected individuals by the date of first diagnosis (HIV or AIDS)

**Table C: North Carolina HIV Disease<sup>†</sup> Demographic Rates, Age 13-24 Years  
Gender and Race/Ethnicity, 2005-2009**

Race/Ethnicity	2005	2005	2005	2006	2006	2006	2007	2007	2007	2008	2008	2008	2009	2009	2009	
	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	
<b>Male</b>	<b>White**</b>	27	11%	5.8	21	8%	4.4	30	9%	6.3	26	9%	5.3	33	10%	6.8
	<b>Black**</b>	144	57%	76.6	147	57%	75.9	188	59%	96.1	199	66%	99.9	214	65%	107.5
	<b>All Other***</b>	15	6%	18.0	20	8%	23.3	25	8%	28.8	24	8%	26.4	20	6%	22.0
	<b>Total</b>	186	74%	25.3	188	73%	24.9	243	76%	31.9	249	83%	32.0	267	81%	34.3
<b>Female</b>	<b>White**</b>	10	4%	2.3	14	5%	3.2	7	2%	1.6	8	3%	1.8	12	4%	2.7
	<b>Black**</b>	46	18%	24.6	46	18%	24.1	64	20%	32.9	41	14%	20.9	47	14%	23.9
	<b>All Other***</b>	10	4%	15.6	10	4%	15.1	6	2%	8.6	2	1%	2.7	4	1%	5.5
	<b>Total</b>	66	26%	9.6	70	27%	10.1	77	24%	10.9	51	17%	7.1	63	19%	8.8
<b>Total</b>	<b>White**</b>	37	15%	4.1	35	14%	3.8	37	12%	4.0	34	11%	3.6	45	14%	4.8
	<b>Black**</b>	190	75%	50.7	193	75%	50.2	252	79%	64.6	240	80%	60.7	261	79%	66.0
	<b>All Other***</b>	25	10%	16.9	30	12%	19.7	31	10%	19.8	26	9%	15.8	24	7%	14.6
	<b>Total</b>	252	100%	17.7	258	100%	17.8	320	100%	21.7	300	100%	20.0	330	100%	22.1

\*per 100,000 population \*\*non Hispanic; \*\*\*All Other includes Hispanic, American Indian/Alaskan Native, Asian/Pacific Islander

<sup>†</sup>HIV Disease includes all newly diagnosed HIV infected individuals by the date of first diagnosis (HIV or AIDS)

**Table D: North Carolina Adult/Adolescent HIV Disease<sup>†</sup> Cases  
Gender and Mode of Transmission, 2005-2009**

Mode of Transmission		2005		2006		2007		2008		2009	
		Cases	Pct	Cases	Pct	Cases	Pct	Cases	Pct	Cases	Pct
Male	MSM*	570	36%	607	37%	706	39%	723	41%	724	42%
	IDU*	46	3%	30	2%	32	2%	31	2%	30	2%
	MSM/IDU	11	1%	22	1%	20	1%	23	1%	16	1%
	Blood Products*	---	---	1	0%	---	---	1	0%	0	---
	Heterosexual-CDC*	93	6%	75	5%	84	5%	106	6%	106	6%
	NIR	442	28%	445	28%	446	25%	432	25%	393	23%
	<b>Total</b>	<b>1,162</b>	<b>73%</b>	<b>1,180</b>	<b>72%</b>	<b>1,288</b>	<b>72%</b>	<b>1,316</b>	<b>74%</b>	<b>1,269</b>	<b>74%</b>
Female	IDU*	31	2%	19	1%	20	1%	24	1%	12	1%
	Blood Products*	3	0%	1	0%	1	0%	0	---	0	---
	Heterosexual-CDC*	109	7%	96	6%	156	9%	142	8%	136	8%
	NIR	289	18%	339	21%	332	19%	288	16%	288	17%
	<b>Total</b>	<b>432</b>	<b>27%</b>	<b>455</b>	<b>28%</b>	<b>509</b>	<b>28%</b>	<b>454</b>	<b>26%</b>	<b>436</b>	<b>26%</b>
Total	MSM*	570	36%	607	37%	706	39%	723	41%	724	42%
	IDU*	77	5%	49	3%	52	3%	55	3%	42	2%
	MSM/IDU	11	1%	22	1%	20	1%	23	1%	16	1%
	Blood Products*	3	0%	2	0%	1	0%	1	0%	0	---
	Heterosexual-CDC*	202	13%	171	10%	240	13%	248	14%	242	14%
	NIR	731	46%	784	48%	778	43%	720	41%	681	40%
	<b>Total</b>	<b>1,594</b>	<b>100%</b>	<b>1,635</b>	<b>100%</b>	<b>1,797</b>	<b>100%</b>	<b>1,770</b>	<b>100%</b>	<b>1,705</b>	<b>100%</b>

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

<sup>†</sup>HIV Disease includes all newly diagnosed HIV infected individuals by the date of first diagnosis (HIV or AIDS)

**Table E: North Carolina Adult/Adolescent HIV<sup>†</sup> Disease Cases  
Gender and Mode of Transmission (NIRs Redistributed), 2005-2009**

Mode of Transmission		2005		2006		2007		2008		2009	
		Cases	Pct	Cases	Pct	Cases	Pct	Cases	Pct	Cases	Pct
Male	MSM*	768	66%	819	69%	936	73%	930	71%	913	72%
	IDU*	62	5%	40	3%	42	3%	40	3%	38	3%
	MSM/IDU	15	1%	30	3%	27	2%	30	2%	20	2%
	Blood products*	0	0%	1	0%	0	0%	1	0%	0	0%
	Heterosexual-All	317	27%	290	25%	283	22%	315	24%	298	23%
	<b>Total<sup>††</sup></b>	<b>1,162</b>	<b>100%</b>	<b>1,180</b>	<b>100%</b>	<b>1,288</b>	<b>100%</b>	<b>1,316</b>	<b>100%</b>	<b>1,269</b>	<b>100%</b>
Female	IDU*	55	13%	40	9%	34	7%	39	9%	19	4%
	Blood products*	5	1%	2	0%	2	0%	0	0%	0	0%
	Heterosexual-All	372	86%	412	91%	473	93%	415	91%	417	96%
	<b>Total<sup>††</sup></b>	<b>432</b>	<b>100%</b>	<b>455</b>	<b>100%</b>	<b>509</b>	<b>100%</b>	<b>454</b>	<b>100%</b>	<b>436</b>	<b>100%</b>
Total	MSM*	768	48%	819	50%	936	52%	930	53%	913	54%
	IDU*	117	7%	81	5%	77	4%	79	4%	57	3%
	MSM/IDU*	15	1%	30	2%	27	1%	30	2%	20	1%
	Blood products*	5	0%	3	0%	2	0%	1	0%	0	0%
	Heterosexual-All	689	43%	702	43%	756	42%	730	41%	715	42%
	<b>Total<sup>††</sup></b>	<b>1,594</b>	<b>100%</b>	<b>1,635</b>	<b>100%</b>	<b>1,797</b>	<b>100%</b>	<b>1,770</b>	<b>100%</b>	<b>1,705</b>	<b>100%</b>

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

<sup>†</sup>HIV Disease includes all newly reported HIV infected individuals by the date of first diagnosis (HIV or AIDS)

<sup>††</sup>Totals may not correspond to cases listed above due to redistribution of NIR cases (**See Appendix C pg C-4.**)



**Table F: North Carolina Adult/Adolescent Female HIV Disease<sup>†</sup> Cases  
Race/Ethnicity and Mode of Transmission (NIRs\* Redistributed), 2005-2009**

Mode of Transmission		2005		2006		2007		2008		2009	
		Cases	Pct	Cases	Pct	Cases	Pct	Cases	Pct	Cases	Pct
White*	IDU*	17	23%	18	23%	16	19%	11	15%	7	10%
	Blood products*	2	2%	2	2%	0	0%	0	0%	0	0%
	Heterosexual-All	54	75%	46	75%	68	81%	63	85%	66	90%
	Total <sup>††</sup>	72	100%	66	100%	84	100%	74	100%	73	100%
Black*	IDU**	34	10%	19	5%	16	4%	27	8%	10	3%
	Blood products*	2	1%	0	0%	2	0%	0	0%	0	0%
	Heterosexual-All	288	89%	332	95%	367	95%	321	92%	325	97%
	Total <sup>††</sup>	323	100%	351	100%	385	100%	348	100%	335	100%
All Other	IDU*	3	9%	3	9%	2	6%	2	6%	1	5%
	Blood products*	2	4%	0	0%	0	0%	0	0%	0	0%
	Heterosexual-All	32	87%	35	91%	38	94%	30	94%	27	95%
	Total	37	100%	38	100%	40	100%	32	100%	28	100%
Total	IDU*	53	12%	40	9%	35	7%	40	9%	19	4%
	Blood Products*	5	1%	2	0%	2	0%	0	0%	0	0%
	Heterosexual-All	374	87%	413	91%	472	93%	414	91%	417	96%
	Total <sup>††</sup>	432	100%	455	100%	509	100%	454	100%	436	100%

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

<sup>†</sup>HIV Disease includes all newly reported HIV infected individuals by the date of first diagnosis (HIV or AIDS)

<sup>††</sup>Totals may not correspond to cases listed above due to redistribution of NIR cases (See Appendix C pg C-4.)

**Table G: North Carolina Adult/Adolescent Male HIV Disease<sup>†</sup> Cases  
Race/Ethnicity and Mode of Transmission (NIRs\* Redistributed), 2005-2009**

Mode of Transmission		2005		2006		2007		2008		2009	
		Cases	Pct	Cases	Pct	Cases	Pct	Cases	Pct	Cases	Pct
White *	MSM*	276	84%	284	83%	372	88%	298	81%	295	88%
	IDU*	9	3%	8	2%	10	2%	15	4%	5	2%
	MSM/IDU	9	3%	13	4%	13	3%	17	4%	12	3%
	Blood Products*	0	0%	0	0%	0	0%	0	0%	0	0%
	Heterosexual-All	34	10%	35	10%	29	7%	39	11%	23	7%
	Total <sup>††</sup>	328	100%	340	100%	424	100%	369	100%	335	100%
Black *	MSM*	427	60%	436	62%	476	66%	534	68%	523	67%
	IDU*	46	6%	23	3%	31	4%	20	3%	27	4%
	MSM/IDU	4	1%	15	2%	12	2%	8	1%	6	1%
	Blood Products*	0	0%	1	0%	0	0%	0	0%	0	0%
	Heterosexual-All	235	33%	226	32%	206	28%	220	28%	226	29%
	Total <sup>††</sup>	712	100%	702	100%	725	100%	782	100%	783	100%
All Other	MSM*	62	51%	91	66%	82	59%	96	58%	96	64%
	IDU*	7	6%	11	8%	0	0%	4	3%	5	3%
	MSM/IDU	1	1%	0	0%	2	1%	6	4%	3	2%
	Blood Products*	0	0%	0	0%	0	0%	1	1%	0	0%
	Heterosexual-All	51	42%	35	26%	55	40%	57	35%	47	31%
	Total <sup>††</sup>	122	100%	138	100%	139	100%	165	100%	151	100%
Total	MSM*	765	66%	811	69%	930	72%	927	70%	915	72%
	IDU*	62	5%	43	4%	41	3%	40	3%	38	3%
	MSM/IDU	15	1%	28	2%	26	2%	30	2%	20	2%
	Blood Products*	0	0%	1	0%	0	0%	1	0%	0	0%
	Heterosexual-All	320	28%	297	25%	290	23%	317	24%	296	23%
	Total <sup>††</sup>	1,162	100%	1,180	100%	1,288	100%	1,316	100%	1,269	100%

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

<sup>†</sup>HIV Disease includes all newly reported HIV infected individuals by the date of first diagnosis (HIV or AIDS)

<sup>††</sup>Totals may not correspond to cases listed above due to redistribution of NIR cases (See Appendix C pg C-4.)

**Table H: North Carolina HIV Disease<sup>†</sup> Cases Age 13-24 Years  
Mode of Transmission by Gender (NIRs\* Redistributed), 2005-2009**

Mode of Transmission		2005		2006		2007		2008		2009	
		Cases	Pct	Cases	Pct	Cases	Pct	Cases	Pct	Cases	Pct
Male	MSM*	164	88%	166	87%	229	93%	223	87%	240	90%
	IDU*	0	0%	2	1%	1	0%	0	0%	0	0%
	MSM/IDU	0	0%	2	1%	5	2%	3	1%	3	1%
	Blood products*	0	0%	0	0%	0	0%	0	0%	0	0%
	Heterosexual-All	22	12%	21	11%	12	5%	29	11%	25	9%
	<b>Total<sup>††</sup></b>	<b>186</b>	<b>100%</b>	<b>191</b>	<b>100%</b>	<b>246</b>	<b>100%</b>	<b>255</b>	<b>100%</b>	<b>268</b>	<b>100%</b>
Female	IDU*	1	2%	3	5%	3	4%	1	3%	0	0%
	Blood products*	1	2%	0	0%	0	0%	0	0%	0	0%
	Heterosexual-All	63	96%	66	95%	74	96%	50	97%	63	100%
	<b>Total<sup>††</sup></b>	<b>66</b>	<b>100%</b>	<b>69</b>	<b>100%</b>	<b>77</b>	<b>100%</b>	<b>51</b>	<b>100%</b>	<b>63</b>	<b>100%</b>
Total	MSM*	164	65%	166	64%	229	71%	223	73%	240	72%
	IDU*	1	1%	6	2%	4	1%	1	0%	0	0%
	MSM/IDU*	0	0%	2	1%	5	1%	3	1%	3	1%
	Blood products*	1	1%	0	0%	0	0%	0	0%	0	0%
	Heterosexual-All	85	34%	86	33%	85	26%	78	26%	88	26%
	<b>Total<sup>††</sup></b>	<b>252</b>	<b>100%</b>	<b>260</b>	<b>100%</b>	<b>323</b>	<b>100%</b>	<b>306</b>	<b>100%</b>	<b>331</b>	<b>100%</b>

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

<sup>†</sup>HIV Disease includes all newly reported HIV infected individuals by the date of first diagnosis (HIV or AIDS)

<sup>††</sup>Totals may not correspond to cases listed above due to redistribution of NIR cases (See Appendix C pg C-4. )

**Table I: Persons Living in North Carolina with HIV Disease<sup>†</sup> as of 12/31/2009  
Gender and Mode of Transmission, (NIRs\* Redistributed)**

Mode of Transmission		2009	
		Cases	Pct
<b>Male</b>	<b>MSM*</b>	10,199	60%
	<b>IDU*</b>	1,792	11%
	<b>MSM/IDU</b>	761	5%
	<b>Blood Products*</b>	73	0%
	<b>Heterosexual-All</b>	3,913	23%
	<b>Pediatric</b>	157	1%
	<b>Total<sup>††</sup></b>	16,894	100%
<b>Female</b>	<b>IDU*</b>	1,147	16%
	<b>Blood Products*</b>	53	1%
	<b>Heterosexual-All</b>	5,968	81%
	<b>Pediatric</b>	186	3%
	<b>Total<sup>††</sup></b>	7,354	100%
<b>Total</b>	<b>MSM*</b>	10,199	45%
	<b>IDU*</b>	2,939	12%
	<b>MSM/IDU</b>	761	3%
	<b>Blood Products*</b>	126	1%
	<b>Heterosexual-All</b>	9,880	38%
	<b>Pediatric</b>	343	1%
	<b>Total<sup>††</sup></b>	24,248	100%

\*MSM= men who have sex with men; IDU= intravenous drug use; "Blood products" include adult hemophilia; NIR = No identified risk reported  
<sup>†</sup>HIV Disease includes all newly reported HIV infected individuals by the date of first diagnosis (HIV or AIDS)

<sup>††</sup>Totals may not correspond to cases listed above due to redistribution of NIR cases (See Appendix C pg C-4.)

**Table J: Persons Living with HIV Disease<sup>†</sup> as of 12/31/2009  
Gender and Race/Ethnicity**

Race/Ethnicity		Cases	Pct	Rate*
<b>Male</b>	<b>White**</b>	5,027	21%	164.6
	<b>Black**</b>	10,471	43%	1122.2
	<b>Am.In/AN**</b>	143	1%	271.5
	<b>Asian/PI**</b>	79	0%	85.7
	<b>Hispanic</b>	1,038	4%	269.7
	<b>Total</b>	16,894	70%	374.0
<b>Female</b>	<b>White**</b>	1,195	5%	37.4
	<b>Black**</b>	5,715	24%	540.5
	<b>Am.In/AN**</b>	61	0%	109.7
	<b>Asian/PI**</b>	32	0%	33.3
	<b>Hispanic</b>	290	1%	96.7
	<b>Total</b>	7,354	30%	156.3
<b>Total</b>	<b>White**</b>	6,222	26%	99.5
	<b>Black**</b>	16,186	67%	813.2
	<b>Am.In/AN**</b>	204	1%	188.4
	<b>Asian/PI**</b>	111	0%	58.9
	<b>Hispanic</b>	1,328	5%	193.9
	<b>Total</b>	24,248	100%	262.9

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

<sup>†</sup>HIV Disease includes all HIV infected individuals (HIV or AIDS)

**Table K: Cumulative HIV Disease<sup>†</sup> Cases by County of Residence, 1983-2009**

COUNTY	83-90 Cases	91-96 Cases	97-02 Cases	2003 Cases	2004 Cases	2005 Cases	2006 Cases	2007 Cases	2008 Cases	2009 Cases	CUMULATIVE CASES
ALAMANCE	51	134	107	23	22	26	11	23	33	16	446
ALEXANDER	2	11	10	1	5	4	1	1	2	5	42
ALLEGHANY	0	0	0	0	0	0	0	2	0	0	2
ANSON	9	45	19	1	2	0	6	0	4	3	89
ASHE	1	2	3	0	1	0	0	3	1	0	11
AVERY	3	3	1	0	0	0	0	2	0	2	11
BEAUFORT	33	52	48	4	6	7	3	10	10	8	181
BERTIE	9	26	42	4	9	6	5	4	4	3	112
BLADEN	11	32	32	9	4	5	3	4	5	16	121
BRUNSWICK	25	53	53	17	13	4	4	11	10	10	200
BUNCOMBE	97	282	160	20	14	19	23	31	31	26	703
BURKE	16	35	24	2	2	3	1	8	9	8	108
CABARRUS	32	100	67	15	11	14	18	11	30	40	338
CALDWELL	10	32	8	2	0	4	2	4	4	2	68
CAMDEN	1	7	10	0	1	1	1	0	1	5	27
CARTERET	22	32	12	5	4	1	2	2	5	4	89
CASWELL	4	15	7	3	1	1	1	3	6	7	48
CATAWBA	36	86	67	20	7	6	11	21	19	10	283
CHATHAM	10	40	25	5	6	3	2	8	4	9	112
CHEROKEE	3	9	5	0	0	1	1	2	3	1	25
CHOWAN	8	18	6	2	1	1	0	0	3	0	39
CLAY	0	1	2	0	1	1	1	1	0	1	8
CLEVELAND	35	99	73	15	17	18	14	14	13	12	310
COLUMBUS	26	85	73	13	11	14	9	14	9	9	263
CRAVEN	47	118	87	20	8	11	19	18	13	12	353
CUMBERLAND	225	567	396	74	63	76	102	91	82	80	1,756
CURRITUCK	6	7	5	1	1	2	2	3	1	1	29
DARE	7	14	14	5	4	0	2	2	3	0	51
DAVIDSON	41	99	70	11	11	14	14	12	19	22	313
DAVIE	7	17	12	0	1	2	1	2	0	0	42
DUPLIN	22	72	74	16	12	12	10	8	5	12	243
DURHAM	313	762	567	73	85	89	96	71	99	86	2,241
EDGECOMBE	30	132	99	32	16	24	20	19	17	27	416
FORSYTH	242	469	518	99	75	83	81	79	72	85	1,803
FRANKLIN	19	41	34	5	5	7	12	3	6	14	146
GASTON	79	326	196	29	29	22	31	24	30	38	804
GATES	1	1	4	2	0	1	0	0	1	2	12
GRAHAM	0	2	1	0	1	0	0	0	0	0	4
GRANVILLE	26	63	38	12	10	12	7	9	15	13	205
GREENE	4	34	24	1	2	3	3	2	2	3	78
GUILFORD	311	800	712	108	111	125	144	151	144	123	2,729
HALIFAX	27	108	73	8	6	7	7	10	16	7	269
HARNETT	22	89	55	6	14	8	14	7	14	20	249
HAYWOOD	11	32	12	2	1	3	4	4	1	5	75
HENDERSON	22	50	32	1	3	4	2	9	4	5	132
HERTFORD	17	31	34	7	6	2	3	6	4	2	112
HOKE	8	45	40	4	1	5	11	7	8	9	138
HYDE	0	4	1	2	2	1	0	0	0	0	10
IREDELL	27	59	45	11	11	7	10	9	12	8	199
JACKSON	4	8	3	1	0	3	4	1	3	0	27
JOHNSTON	46	165	120	12	16	18	23	14	20	23	457

<sup>†</sup>HIV Disease includes all newly diagnosed HIV infected individuals by the date of first diagnosed (HIV or AIDS)

**Table K (continued): Cumulative HIV Disease<sup>†</sup> Cases by County of Residence, 1983-2009**

COUNTY	83-90 Cases	91-96 Cases	97-02 Cases	2003 Cases	2004 Cases	2005 Cases	2006 Cases	2007 Cases	2008 Cases	2009 Cases	CUMULATIVE CASES
JONES	1	13	7	1	2	1	0	0	0	6	31
LEE	19	55	65	10	11	5	9	10	7	4	195
LENOIR	39	159	124	16	12	17	21	19	12	7	426
LINCOLN	7	23	22	6	3	2	2	4	2	2	73
MACON	5	11	9	1	1	1	2	0	1	3	34
MADISON	1	9	6	0	1	0	2	0	0	0	19
MARTIN	7	39	34	10	5	7	7	7	0	0	116
MCDOWELL	6	12	4	0	1	0	3	1	1	2	30
MECKLENBURG	684	1,903	1,541	318	327	280	300	386	371	341	6,451
MITCHELL	2	5	3	0	0	0	0	1	2	3	16
MONTGOMERY	6	21	13	2	3	3	1	2	2	2	55
MOORE	23	60	74	9	6	11	13	7	11	6	220
NASH	38	144	109	13	18	19	24	15	21	14	415
NEW HANOVER	99	264	249	44	41	52	50	36	30	29	894
NORTHAMPTON	14	36	23	4	3	2	4	2	11	7	106
ONSLow	51	82	87	14	12	10	8	11	12	12	299
ORANGE	69	142	87	15	16	20	15	19	14	9	406
PAMLICO	6	9	6	3	0	1	2	1	2	1	31
PASQUOTANK	16	40	27	5	5	3	9	6	8	1	120
PENDER	20	31	17	8	3	5	5	3	4	2	98
PERQUIMANS	1	11	19	1	1	2	1	0	2	2	40
PERSON	8	40	24	5	5	1	3	7	2	2	97
PITT	90	279	195	35	19	34	18	40	34	27	771
POLK	5	12	9	0	0	0	1	1	2	1	31
RANDOLPH	24	51	53	16	9	3	12	12	10	7	197
RICHMOND	11	84	43	8	6	8	9	16	6	7	198
ROBESON	39	184	157	24	25	28	20	42	30	30	579
ROCKINGHAM	15	77	50	5	11	5	5	9	12	4	193
ROWAN	39	117	61	14	21	16	8	20	11	15	322
RUTHERFORD	19	31	27	1	4	2	5	2	3	2	96
SAMPSON	24	92	59	6	7	12	8	6	7	9	230
SCOTLAND	15	74	48	6	10	9	2	4	8	5	181
STANLY	10	33	36	2	7	0	3	8	2	5	106
STOKES	2	11	10	3	4	3	1	3	1	0	38
SURRY	8	24	19	4	6	6	1	2	3	5	78
SWAIN	8	5	6	3	0	2	0	1	0	0	25
TRANSYLVANIA	10	15	10	3	0	3	3	0	1	3	48
TYRRELL	2	2	2	0	0	0	0	1	0	0	7
UNION	17	77	54	11	8	7	7	20	12	23	236
VANCE	31	94	74	14	12	7	4	9	9	6	260
WAKE	450	941	845	156	188	177	189	206	203	176	3,531
WARREN	5	12	19	4	3	3	2	2	4	1	55
WASHINGTON	8	34	25	2	5	4	2	7	4	2	93
WATAUGA	5	5	3	3	2	3	3	1	3	2	30
WAYNE	66	157	125	20	11	18	11	16	14	16	454
WILKES	5	11	12	4	0	5	1	4	6	0	48
WILSON	54	199	137	13	18	27	19	19	19	31	536
YADKIN	5	7	10	3	1	3	2	2	2	0	35
YANCEY	3	8	2	0	0	0	1	0	1	2	17
UNKNOWN	135	507	602	87	81	93	83	77	63	82	1,810
NC TOTAL	4,235	11,566	9,363	1,635	1,566	1,600	1,642	1,807	1,782	1,710	36,906

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

**Table L: HIV Disease<sup>†</sup> Rates by County Rank Order, 2007-2009**

COUNTY	2007 CASES	2008 CASES	2009 CASES	2007 RATE	2008 RATE	2009 RATE	AVG RATE*	RANK
MECKLENBURG	386	371	341	44.7	41.7	38.3	41.5	1
EDGEcombe	19	17	27	36.1	32.3	51.3	39.9	2
WASHINGTON	7	4	2	54.4	30.9	15.4	33.6	3
DURHAM	71	99	86	27.8	37.7	32.7	32.7	4
NORTHAMPTON	2	11	7	9.6	53.7	34.2	32.5	5
WILSON	19	19	31	24.8	24.5	40.0	29.8	6
GUILFORD	151	144	123	32.5	30.5	26.0	29.7	7
CUMBERLAND	91	82	80	29.5	26.2	25.6	27.1	8
ROBESON	42	30	30	32.8	23.2	23.2	26.4	9
BLADEN	4	5	16	12.4	15.5	49.5	25.8	10
FORSYTH	79	72	85	23.4	21.0	24.8	23.1	11
CASWELL	3	6	7	12.9	25.8	30.1	22.9	12
WAKE	206	203	176	24.8	23.4	20.3	22.9	13
LENOIR	19	12	7	33.5	21.1	12.3	22.3	14
PITT	40	34	27	26.3	21.8	17.3	21.8	15
GRANVILLE	9	15	13	16.1	26.3	22.8	21.7	16
RICHMOND	16	6	7	34.8	13.0	15.2	21.0	17
CAMDEN	0	1	5	0.0	10.3	51.6	20.7	18
BEAUFORT	10	10	8	21.9	21.7	17.4	20.3	19
HALIFAX	10	16	7	18.2	29.1	12.7	20.0	20
JONES	0	0	6	0.0	0.0	59.3	19.8	21
COLUMBUS	14	9	9	25.9	16.6	16.6	19.7	22
NORTH CAROLINA	1807	1782	1710	20.0	19.3	18.5	19.3	
BERTIE	4	4	3	20.6	20.7	15.5	18.9	23
VANCE	9	9	6	21.0	21.0	14.0	18.7	24
HOKE	7	8	9	16.6	18.4	20.7	18.6	25
NASH	15	21	14	16.2	22.4	14.9	17.8	26
HERTFORD	6	4	2	25.8	17.2	8.6	17.2	27
NEW HANOVER	36	30	29	18.9	15.6	15.1	16.5	28
ALAMANCE	23	33	16	15.9	22.3	10.8	16.3	29
CABARRUS	11	30	40	6.8	17.8	23.7	16.1	30
DUPLIN	8	5	12	15.2	9.4	22.5	15.7	31
SCOTLAND	4	8	5	11.0	21.9	13.7	15.5	32
GASTON	24	30	38	11.9	14.5	18.4	14.9	33
CRAVEN	18	13	12	18.7	13.4	12.4	14.8	34
WAYNE	16	14	16	14.1	12.3	14.1	13.5	35
CLEVELAND	14	13	12	14.2	13.1	12.1	13.2	36
FRANKLIN	3	6	14	5.3	10.2	23.8	13.1	37
BUNCOMBE	31	31	26	13.7	13.5	11.4	12.9	38
MITCHELL	1	2	3	6.3	12.7	19.0	12.7	39
HARNETT	7	14	20	6.4	12.5	17.9	12.3	40
PASQUOTANK	6	8	1	14.7	19.5	2.4	12.2	41
WARREN	2	4	1	10.3	20.6	5.2	12.0	42
LEE	10	7	4	17.3	11.8	6.8	12.0	42
JOHNSTON	14	20	23	8.9	12.2	14.1	11.7	44
SAMPSON	6	7	9	9.5	10.9	14.1	11.5	45
GREENE	2	2	3	9.7	9.7	14.5	11.3	46
CHATHAM	8	4	9	13.1	6.3	14.3	11.2	47
DAVIDSON	12	19	22	7.7	12.0	13.9	11.2	47
ORANGE	19	14	9	15.3	11.1	7.1	11.2	47

<sup>†</sup>HIV Disease includes all newly diagnosed HIV infected individuals by the date of first diagnosis (HIV or AIDS)

\*three-year average of rates per 100,000 population



**Table L (continued): HIV Disease<sup>†</sup> Rates by County Rank Order, 2007-2009**

COUNTY	2007 CASES	2008 CASES	2009 CASES	2007 RATE	2008 RATE	2009 RATE	AVG RATE*	RANK
ROWAN	20	11	15	14.6	7.9	10.8	11.1	50
CATAWBA	21	19	10	13.5	12.1	6.4	10.7	51
PAMLICO	1	2	1	8.0	16.0	8.0	10.7	51
PERQUIMANS	0	2	2	0.0	15.6	15.6	10.4	53
BRUNSWICK	11	10	10	11.1	9.7	9.7	10.2	54
MARTIN	7	0	0	29.8	0.0	0.0	9.9	55
PERSON	7	2	2	18.8	5.3	5.3	9.8	56
UNION	20	12	23	10.9	6.2	11.9	9.7	57
MOORE	7	11	6	8.3	12.8	7.0	9.4	58
BURKE	8	9	8	9.0	10.1	9.0	9.3	59
ANSON	0	4	3	0.0	15.9	11.9	9.3	59
ROCKINGHAM	9	12	4	9.8	13.0	4.3	9.0	61
GATES	0	1	2	0.0	8.5	17.1	8.5	62
STANLY	8	2	5	13.5	3.4	8.4	8.4	63
TYRRELL	1	0	0	24.1	0.0	0.0	8.0	64
CHEROKEE	2	3	1	7.6	11.3	3.8	7.5	65
AVERY	2	0	2	11.2	0.0	11.2	7.5	65
MONTGOMERY	2	2	2	7.3	7.3	7.3	7.3	67
ALEXANDER	1	2	5	2.8	5.5	13.7	7.3	67
ONSLow	11	12	12	6.7	7.2	7.2	7.1	69
POLK	1	2	1	5.3	10.5	5.2	7.0	70
CURRITUCK	3	1	1	12.6	4.1	4.1	6.9	71
RANDOLPH	12	10	7	8.6	7.1	5.0	6.9	71
CHOWAN	0	3	0	0.0	20.6	0.0	6.9	71
CLAY	1	0	1	9.8	0.0	9.6	6.5	74
IREDELL	9	12	8	6.0	7.7	5.1	6.3	75
ALLEGHANY	2	0	0	18.4	0.0	0.0	6.1	76
HENDERSON	9	4	5	9.0	3.9	4.9	5.9	77
PENDER	3	4	2	6.0	7.8	3.9	5.9	77
HAYWOOD	4	1	5	7.1	1.8	8.8	5.9	77
CARTERET	2	5	4	3.2	7.9	6.3	5.8	80
YANCEY	0	1	2	0.0	5.4	10.8	5.4	81
ASHE	3	1	0	11.8	3.9	0.0	5.2	82
WILKES	4	6	0	6.0	9.0	0.0	5.0	83
DARE	2	3	0	5.9	8.9	0.0	5.0	83
SURRY	2	3	5	2.8	4.1	6.9	4.6	85
WATAUGA	1	3	2	2.2	6.6	4.4	4.4	86
TRANSYLVANIA	0	1	3	0.0	3.3	9.9	4.4	86
CALDWELL	4	4	2	5.0	5.0	2.5	4.2	88
MACON	0	1	3	0.0	3.0	9.1	4.0	89
RUTHERFORD	2	3	2	3.2	4.7	3.2	3.7	90
JACKSON	1	3	0	2.8	8.2	0.0	3.6	91
LINCOLN	4	2	2	5.5	2.7	2.7	3.6	91
YADKIN	2	2	0	5.3	5.3	0.0	3.5	93
MCDOWELL	1	1	2	2.3	2.3	4.6	3.0	94
STOKES	3	1	0	6.5	2.2	0.0	2.9	95
SWAIN	1	0	0	7.5	0.0	0.0	2.5	96
DAVIE	2	0	0	5.0	0.0	0.0	1.7	97
GRAHAM	0	0	0	0.0	0.0	0.0	0.0	98
HYDE	0	0	0	0.0	0.0	0.0	0.0	98
MADISON	0	0	0	0.0	0.0	0.0	0.0	98

<sup>†</sup>HIV Disease includes all newly diagnosed HIV infected individuals by the date of first diagnosis (HIV or AIDS)

\*three-year average of rates per 100,000 population

**Table M: Persons Living in North Carolina with HIV Disease<sup>†</sup> as of 12/31/09,  
County of Residence and Patient Management Model Regions**

		Report Category		TOTAL
		HIV (NON AIDS)	AIDS	
<b>HIV CARE</b>	<b>COUNTY</b>			
<b>CHARLOTTE TRANSITIONAL</b>	<b>ANSON</b>	22	33	55
	<b>CABARRUS</b>	158	76	234
	<b>GASTON</b>	304	164	468
	<b>MECKLENBURG</b>	2,812	1,462	4,274
	<b>UNION</b>	93	64	157
	<b>TOTAL</b>	<b>3,389</b>	<b>1,799</b>	<b>5,188</b>
<b>REGION 1</b>	<b>COUNTY</b>			
	<b>AVERY</b>	4	4	8
	<b>BUNCOMBE</b>	260	194	454
	<b>CHEROKEE</b>	9	7	16
	<b>CLAY</b>	5	0	5
	<b>CLEVELAND</b>	104	70	174
	<b>GRAHAM</b>	1	2	3
	<b>HAYWOOD</b>	20	29	49
	<b>HENDERSON</b>	31	48	79
	<b>JACKSON</b>	11	13	24
	<b>MACON</b>	12	12	24
	<b>MADISON</b>	8	4	12
	<b>MCDOWELL</b>	10	12	22
	<b>MITCHELL</b>	4	8	12
	<b>POLK</b>	6	10	16
	<b>RUTHERFORD</b>	23	27	50
	<b>SWAIN</b>	4	9	13
	<b>TRANSYLVANIA</b>	17	8	25
	<b>YANCEY</b>	5	6	11
<b>TOTAL</b>	<b>534</b>	<b>463</b>	<b>997</b>	
<b>REGION 2</b>	<b>COUNTY</b>			
	<b>ALEXANDER</b>	18	16	34
	<b>ALLEGHANY</b>	2	0	2
	<b>ASHE</b>	6	4	10
	<b>BURKE</b>	37	44	81
	<b>CALDWELL</b>	18	22	40
	<b>CATAWBA</b>	83	93	176
	<b>LINCOLN</b>	28	19	47
	<b>WATAUGA</b>	10	12	22
	<b>WILKES</b>	19	15	34
	<b>TOTAL</b>	<b>221</b>	<b>225</b>	<b>446</b>
<b>REGION 3</b>	<b>COUNTY</b>			
	<b>DAVIDSON</b>	138	84	222
	<b>DAVIE</b>	14	11	25
	<b>FORSYTH</b>	773	413	1,186
	<b>IREDELL</b>	60	49	109
	<b>ROWAN</b>	117	98	215
	<b>STOKES</b>	18	10	28
	<b>SURRY</b>	34	19	53
	<b>YADKIN</b>	11	12	23
<b>TOTAL</b>	<b>1,165</b>	<b>696</b>	<b>1,861</b>	

<sup>†</sup>HIV Disease includes all newly diagnosed HIV infected individuals by the date of first diagnosis (HIV or AIDS)

**Table M (continued): Persons Living in North Carolina with HIV Disease<sup>†</sup> as of 12/31/09,  
County of Residence and Patient Management Model Regions**

		Report Category		TOTAL
		HIV (NON AIDS)	AIDS	
REGION 4	COUNTY			
	ALAMANCE	191	103	294
	CASWELL	26	10	36
	GUILFORD	1,182	603	1,785
	MONTGOMERY	17	19	36
	RANDOLPH	85	50	135
	ROCKINGHAM	81	40	121
	STANLY	47	21	68
	<b>TOTAL</b>	<b>1,629</b>	<b>846</b>	<b>2,475</b>
REGION 5	COUNTY			
	BLADEN	46	38	84
	CUMBERLAND	737	396	1,133
	HARNETT	82	85	167
	HOKE	56	46	102
	MOORE	89	50	139
	RICHMOND	77	35	112
	ROBESON	212	177	389
	SAMPSON	64	63	127
	SCOTLAND	69	42	111
	<b>TOTAL</b>	<b>1,432</b>	<b>932</b>	<b>2,364</b>
REGION 6	COUNTY			
	CHATHAM	54	24	78
	DURHAM	915	484	1,399
	FRANKLIN	54	45	99
	GRANVILLE	89	52	141
	JOHNSTON	160	146	306
	LEE	96	45	141
	ORANGE	187	81	268
	PERSON	41	18	59
	VANCE	89	66	155
	WAKE	1,308	1,220	2,528
	WARREN	24	10	34
		<b>TOTAL</b>	<b>3,017</b>	<b>2,191</b>
REGION 7	COUNTY			
	BRUNSWICK	66	66	132
	COLUMBUS	89	69	158
	DUPLIN	78	85	163
	NEW HANOVER	341	249	590
	ONSLow	125	83	208
	PENDER	27	33	60
		<b>TOTAL</b>	<b>726</b>	<b>585</b>
REGION 8	COUNTY			
	EDGECOMBE	148	128	276
	HALIFAX	68	76	144
	NASH	136	127	263
	NORTHAMPTON	31	33	64
	WILSON	157	161	318
	<b>TOTAL</b>	<b>540</b>	<b>525</b>	<b>1,065</b>

<sup>†</sup>HIV Disease includes all newly diagnosed HIV infected individuals by the date of first diagnosis (HIV or AIDS)

**Table M (continued): Persons Living in North Carolina with HIV Disease<sup>†</sup> as of 12/31/09, County of Residence and Patient Management Model Regions**

		Report Category		TOTAL
		HIV (NON AIDS)	AIDS	
<b>REGION 9</b>	<b>COUNTY</b>			
	<b>BERTIE</b>	28	43	71
	<b>CAMDEN</b>	5	11	16
	<b>CHOWAN</b>	12	16	28
	<b>CURRITUCK</b>	8	11	19
	<b>DARE</b>	16	18	34
	<b>GATES</b>	6	2	8
	<b>HERTFORD</b>	23	51	74
	<b>HYDE</b>	1	6	7
	<b>PAMLICO</b>	12	7	19
	<b>PASQUOTANK</b>	45	35	80
	<b>PERQUIMANS</b>	17	13	30
	<b>TYRRELL</b>	3	2	5
	<b>TOTAL</b>	176	215	391
<b>REGION 10</b>	<b>COUNTY</b>			
	<b>BEAUFORT</b>	56	59	115
	<b>CARTERET</b>	27	25	52
	<b>CRAVEN</b>	107	128	235
	<b>GREENE</b>	22	32	54
	<b>JONES</b>	12	13	25
	<b>LENOIR</b>	135	116	251
	<b>MARTIN</b>	34	39	73
	<b>PITT</b>	239	253	492
	<b>WASHINGTON</b>	26	28	54
	<b>WAYNE</b>	129	131	260
	<b>TOTAL</b>	787	824	1,611
<b>UNASSIGNED</b>		769	562	1,331
<b>TOTAL</b>		14,385	9,863	24,248

<sup>†</sup>HIV Disease includes all newly diagnosed HIV infected individuals by the date of first diagnosis (HIV or AIDS)

**Table N: HIV Testing at North Carolina Counseling and Testing Sites, 2006-2009**

TESTING COUNTY	2006 Tests	2006 Positives	2007 Tests	2007 Positives	2008 Tests	2008 Positives	2009 Tests	2009 Positives
ALAMANCE	3,108	11	3,735	8	4,065	13	4,702	1
ALEXANDER	247	0	312	0	407	0	487	0
ALLEGHANNEY	55	0	121	0	114	0	116	0
ANSON	664	0	716	1	802	1	951	2
ASHE	143	0	338	0	464	1	369	0
AVERY	178	0	168	0	206	0	217	0
BEAUFORT	1,119	1	1,369	2	1,342	4	1,683	2
BERTIE	426	3	422	0	584	1	562	1
BLADEN	628	0	969	1	886	1	975	0
BRUNSWICK	802	1	1,248	3	1,555	1	1,472	3
BUNCOMBE	4,275	19	4,414	41	5,123	23	5,475	27
BURKE	1,396	3	1,380	2	1,505	2	1,679	0
CABARRUS	2,435	8	3,127	8	3,492	6	3,187	4
CALDWELL	1,313	0	1,559	1	1,628	1	1,626	2
CAMDEN	46	1	52	0	53	0	79	0
CARTERET	770	0	706	1	790	1	859	2
CASWELL	415	0	504	2	490	1	522	1
CATAWBA	3,294	6	3,460	7	3,807	2	5,252	4
CHATHAM	608	0	685	1	814	0	1,349	2
CHEROKEE	171	0	277	1	312	0	297	1
CHOWAN	145	0	219	1	268	1	403	0
CLAY	80	0	97	0	101	0	129	1
CLEVELAND	1,773	7	2,348	12	2,922	3	3,343	5
COLUMBUS	1,008	2	1,272	4	1,438	5	1,551	5
CRAVEN	1,050	9	1,912	7	2,853	3	3,113	9
CUMBERLAND	5,659	88	5,670	75	7,121	54	7,974	65
CURRITUCK	253	0	264	0	238	0	274	0
DARE	752	2	922	1	942	1	902	0
DAVIDSON	1,562	0	1,883	1	1,944	3	2,259	2
DAVIE	592	1	590	2	626	0	627	0
DUPLIN	789	2	988	3	1,281	1	1,953	2
DURHAM	6,072	47	8,320	42	11,618	41	12,989	37
EDGECOMBE	3,019	17	2,537	13	2817	9	2,978	5
FORSYTH	6,226	46	7,238	42	9384	33	11,658	67
FRANKLIN	873	4	1,108	1	1386	1	1,292	1
GASTON	5,160	23	6,667	19	8268	29	9,022	25
GATES	237	1	197	0	191	0	243	0
GRAHAM	49	0	78	0	82	0	70	0
GRANVILLE	640	0	774	1	1,087	5	1,075	3
GREENE	372	1	385	1	503	0	632	1
GUILFORD	10,182	105	11,923	99	15,190	87	16,270	70
HALIFAX	796	1	1,027	6	1,247	13	1,287	1
HARNETT	803	2	1,420	5	1,302	1	1,505	5
HAYWOOD	760	1	957	2	1,422	0	1,378	2
HENDERSON	1,701	1	1,804	3	2,085	3	2,321	0
HERTFORD	241	4	891	2	1,230	2	1,612	2
HOKE	492	4	861	3	919	2	691	0
HYDE	49	0	72	0	117	0	89	0
IREDELL	1,725	7	2,499	9	3,032	6	2,939	1
JACKSON	493	4	531	0	726	0	646	0
JOHNSTON	1,297	6	2,032	7	2,456	4	2,532	2
JONES	100	0	188	1	210	0	322	0
LEE	746	2	1,046	1	915	0	1,052	0
LENOIR	1,546	10	1,868	13	1,694	2	1,693	5

**Table N: HIV Testing at North Carolina Counseling and Testing Sites, 2006-2009**

TESTING COUNTY	2006 Tests	2006 Positives	2007 Tests	2007 Positives	2008 Tests	2008 Positives	2009 Tests	2009 Positives
LINCOLN	385	4	692	1	764	0	786	0
MACON	313	1	380	1	477	0	476	0
MADISON	232	0	316	0	351	0	309	0
MARTIN	716	2	727	3	761	1	715	1
MCDOWELL	575	0	729	0	883	0	598	2
MECKLENBERG	11,024	153	12,305	200	15,744	170	16,947	174
MITCHELL	117	0	172	0	171	0	174	1
MONTGOMERY	444	0	441	0	538	1	578	0
MOORE	763	1	1,075	1	1,071	4	1,317	3
NASH	1,503	8	3,489	8	3,899	9	3,622	16
NEW HANOVER	3,345	29	3,569	16	4,738	12	6,528	12
NORTHAMPTON	544	5	586	0	834	5	839	5
ONslow	2,409	8	2,251	6	2,086	3	2,305	5
ORANGE	3,035	6	2,982	4	3,028	7	3,586	15
PAMLICO	54	2	37	1	52	0	129	0
PASQUOTANK	737	5	1,008	4	1,055	3	1,195	2
PENDER	425	1	501	1	911	0	983	0
PERQUIMANS	159	2	166	1	226	2	248	1
PERSON	809	2	1,169	2	1,336	0	1,179	0
PITT	4,392	17	4,994	27	5,626	8	5,539	13
POLK	116	1	126	2	97	0	101	0
RANDOLPH	764	5	1,083	5	1,220	5	1,227	3
RICHMOND	742	2	812	5	945	1	835	1
ROBESON	2,304	9	2,469	14	5,134	19	6,010	26
ROCKINGHAM	1,208	0	1,259	1	1,467	2	1,578	3
ROWAN	1,436	3	1,371	5	1,996	4	1,839	2
RUTHERFORD	944	4	1,308	0	1,388	1	1,384	2
SAMPSON	2,727	13	3,630	20	4,733	12	4,460	25
SCOTLAND	1,118	0	1,369	0	1,558	3	1,604	2
STANLY	527	2	615	2	806	2	924	1
STOKES	187	0	218	1	173	0	181	0
SURRY	571	0	540	1	529	0	577	1
SWAIN	35	1	63	0	93	0	90	0
TRANSYLVANIA	307	0	377	0	390	0	364	0
TYRRELL	156	0	343	2	343	0	325	1
UNION	1,403	1	1,864	8	2,042	3	2,042	4
VANCE	520	2	520	1	570	1	647	4
WAKE	15,643	89	19,612	108	22,626	78	24,091	90
WARREN	441	2	475	3	498	2	865	0
WASHINGTON	333	0	395	1	477	0	446	2
WATAUGA	335	0	575	0	956	1	836	1
WAYNE	3,379	13	3,974	16	4,216	4	5,072	9
WILKES	443	1	568	0	818	3	1,012	0
WILSON	2,070	6	2,205	5	3,705	10	4,424	16
YADKIN	396	1	544	0	585	0	568	1
YANCEY	211	0	260	0	257	0	323	0
MISSING	96	0	155	3	65	2	567	3
<b>TOTAL</b>	<b>149,728</b>	<b>851</b>	<b>180,469</b>	<b>934</b>	<b>218,292</b>	<b>745</b>	<b>239,128</b>	<b>815</b>

**Table O: N.C. Adult/Adolescent AIDS Demographic Rates,  
Gender and Age, by Year of Diagnosis, 2005-2009**

Age	2005	2005	2005	2006	2006	2006	2007	2007	2007	2008	2008	2008	2009	2009	2009	
	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	
<b>Male</b>	<b>13-14 Years</b>	2	0%	1.6	0	0%	0.0	0	0%	0.0	0	0%	0.0	0	0%	0.0
	<b>15-19 Years</b>	4	0%	1.3	8	1%	2.6	5	1%	1.6	7	1%	2.2	8	1%	2.5
	<b>20-24 Years</b>	24	3%	7.7	33	4%	10.2	27	3%	8.4	31	3%	9.3	48	5%	14.4
	<b>25-29 Years</b>	49	6%	16.7	72	8%	24.0	62	7%	20.6	63	7%	20.3	84	9%	27.1
	<b>30-34 Years</b>	79	9%	25.4	89	10%	29.0	70	8%	23.1	80	9%	26.1	63	7%	20.6
	<b>35-39 Years</b>	96	11%	30.3	114	13%	34.9	88	10%	26.4	96	10%	28.4	82	9%	24.3
	<b>40-44 Years</b>	130	15%	39.5	115	13%	34.9	112	13%	34.0	115	12%	34.9	123	13%	37.3
	<b>45-49 Years</b>	99	11%	31.3	84	9%	26.0	115	14%	34.8	101	11%	30.2	126	13%	37.6
	<b>50-54 Years</b>	50	6%	17.7	60	7%	20.7	57	7%	18.9	75	8%	24.2	93	10%	30.0
	<b>55-59 Years</b>	41	5%	16.2	37	4%	13.9	24	3%	8.9	48	5%	17.6	53	6%	19.5
	<b>60-64 Years</b>	18	2%	9.5	15	2%	7.6	13	2%	6.0	24	3%	10.5	10	1%	4.4
	<b>65+ Years</b>	14	2%	3.2	14	2%	3.2	8	1%	1.8	17	2%	3.6	13	1%	2.7
<b>Total</b>	606	69%	17.5	641	72%	18.1	581	69%	16.1	657	71%	17.8	703	73%	19.1	
<b>Female</b>	<b>13-14 Years</b>	0	0%	0.0	1	0%	0.9	1	0%	0.8	0	0%	0.0	0	0%	0.0
	<b>15-19 Years</b>	1	0%	0.3	4	0%	1.4	1	0%	0.3	3	0%	1.0	4	0%	1.3
	<b>20-24 Years</b>	10	1%	3.5	9	1%	3.2	9	1%	3.1	6	1%	2.0	10	1%	3.4
	<b>25-29 Years</b>	34	4%	11.6	18	2%	6.0	14	2%	4.6	21	2%	6.8	19	2%	6.1
	<b>30-34 Years</b>	32	4%	10.4	30	3%	9.9	32	4%	10.5	33	4%	10.7	26	3%	8.4
	<b>35-39 Years</b>	54	6%	17.1	49	6%	15.0	54	6%	16.1	53	6%	15.7	50	5%	14.8
	<b>40-44 Years</b>	50	6%	14.7	47	5%	13.9	49	6%	14.5	62	7%	18.5	40	4%	11.9
	<b>45-49 Years</b>	55	6%	16.6	44	5%	13.0	47	6%	13.6	40	4%	11.4	48	5%	13.7
	<b>50-54 Years</b>	19	2%	6.3	14	2%	4.5	30	4%	9.3	27	3%	8.2	25	3%	7.6
	<b>55-59 Years</b>	11	1%	4.0	21	2%	7.3	13	2%	4.4	13	1%	4.4	22	2%	7.4
	<b>60-64 Years</b>	7	1%	3.3	7	1%	3.2	4	0%	1.7	8	1%	3.1	8	1%	3.1
	<b>65+ Years</b>	4	0%	0.6	3	0%	0.5	7	1%	1.1	5	1%	0.8	2	0%	0.3
<b>Total</b>	277	31%	7.5	247	28%	6.6	261	31%	6.8	271	29%	6.9	254	27%	6.5	

\* per 100,000 population

Continued

**Table O (continued): N.C. Adult/Adolescent AIDS Demographic Rates, Gender and Age, by Year of Diagnosis, 2005-2009**

Age	2005	2005	2005	2006	2006	2006	2007	2007	2007	2008	2008	2008	2009	2009	2009
	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*
<b>Total</b>															
<b>13-14 Years</b>	2	0%	0.8	1	0%	0.4	1	0%	0.4	0	0%	0.0	0	0%	0.0
<b>15-19 Years</b>	5	1%	0.8	12	1%	2.0	6	1%	1.0	10	1%	1.6	12	1%	1.9
<b>20-24 Years</b>	34	4%	5.7	42	5%	6.9	36	4%	5.9	37	4%	5.9	58	6%	9.2
<b>25-29 Years</b>	83	9%	14.2	90	10%	14.9	76	9%	12.5	84	9%	13.6	103	11%	16.6
<b>30-34 Years</b>	111	13%	17.9	119	13%	19.5	102	12%	16.8	113	12%	18.4	89	9%	14.5
<b>35-39 Years</b>	150	17%	23.7	163	18%	25.0	142	17%	21.2	149	16%	22.0	132	14%	19.5
<b>40-44 Years</b>	180	20%	26.9	162	18%	24.2	161	19%	24.1	177	19%	26.6	163	17%	24.5
<b>45-49 Years</b>	154	17%	23.8	128	14%	19.3	162	19%	24.0	141	15%	20.6	174	18%	25.4
<b>50-54 Years</b>	69	8%	11.8	74	8%	12.3	87	10%	14.0	102	11%	15.9	118	12%	18.4
<b>55-59 Years</b>	52	6%	9.8	58	7%	10.4	37	4%	6.6	61	7%	10.7	75	8%	13.1
<b>60-64 Years</b>	25	3%	6.2	22	2%	5.3	17	2%	3.7	32	3%	6.6	18	2%	3.7
<b>65+ Years</b>	18	2%	1.7	17	2%	1.6	15	2%	1.4	22	2%	1.9	15	2%	1.3
<b>Total</b>	883	100%	12.4	888	100%	12.2	842	100%	11.3	928	100%	12.2	957	100%	12.6

\*per 100,000 population



**Table P: North Carolina Adult/Adolescent AIDS Demographic Rates  
Gender and Race/Ethnicity, by Year of Diagnosis, 2005-2009**

Race/Ethnicity		2005	2005	2005	2006	2006	2006	2007	2007	2007	2008	2008	2008	2009	2009	2009
		Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*
<b>Male</b>	<b>White**</b>	167	19%	6.8	151	17%	6.1	145	17%	5.8	173	19%	6.8	169	18%	6.6
	<b>Black**</b>	387	44%	56.1	406	46%	57.5	375	45%	52.1	406	44%	55.1	454	47%	61.6
	<b>Am.In/AN**</b>	6	1%	15.0	9	1%	22.1	2	0%	4.8	6	1%	14.3	3	0%	7.2
	<b>Asian/PI**</b>	1	0%	1.6	4	0%	6.2	1	0%	1.5	1	0%	1.4	4	0%	5.6
	<b>Hispanic</b>	42	5%	18.5	69	8%	28.6	56	7%	22.1	64	7%	23.7	65	7%	24.1
	<b>Unknown</b>	3	0%	---	2	0%	---	2	0%	---	7	1%	---	8	1%	---
	<b>Total</b>	606	69%	17.5	641	72%	18.1	581	69%	16.1	657	71%	17.8	703	73%	19.1
<b>Female</b>	<b>White**</b>	35	4%	1.3	39	4%	1.5	43	5%	1.6	32	3%	1.2	37	4%	1.4
	<b>Black**</b>	227	26%	28.0	186	21%	22.4	198	24%	23.3	226	24%	26.1	207	22%	23.9
	<b>Am.In/AN**</b>	3	0%	6.9	2	0%	4.5	6	1%	13.4	1	0%	2.2	1	0%	2.2
	<b>Asian/PI**</b>	1	0%	1.5	1	0%	1.4	1	0%	1.4	0	0%	0.0	3	0%	3.9
	<b>Hispanic</b>	10	1%	6.5	18	2%	10.9	11	1%	6.2	9	1%	4.7	5	1%	2.6
	<b>Unknown</b>	1	0%	---	1	0%	---	2	0%	---	3	0%	---	1	0%	---
	<b>Total</b>	277	31%	7.5	247	28%	6.6	261	31%	6.8	271	29%	6.9	254	27%	6.5
<b>Total</b>	<b>White**</b>	202	23%	4.0	190	21%	3.7	188	22%	3.6	205	22%	3.9	206	22%	3.9
	<b>Black**</b>	614	70%	40.9	592	67%	38.5	573	68%	36.5	632	68%	39.4	661	69%	41.2
	<b>Am.In/AN**</b>	9	1%	10.8	11	1%	13.0	8	1%	9.3	7	1%	8.0	4	0%	4.6
	<b>Asian/PI**</b>	2	0%	1.6	5	1%	3.7	2	0%	1.4	1	0%	0.7	7	1%	4.7
	<b>Hispanic</b>	52	6%	13.7	87	10%	21.5	67	8%	15.5	73	8%	15.8	70	7%	15.2
	<b>Unknown</b>	4	0%	---	3	0%	---	4	0%	---	10	1%	---	9	1%	---
	<b>Total</b>	883	100%	12.4	888	100%	12.2	842	100%	11.3	928	100%	12.2	957	100%	12.6

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

**Table Q: Cumulative AIDS Cases\* by County of Residence, 1983-2009**

AIDS COUNTY	83-90 Cases	91-96 Cases	97-02 Cases	2003 Cases	2004 Cases	2005 Cases	2006 Cases	2007 Cases	2008 Cases	2009 Cases	CUMULATIVE CASES
ALAMANCE	26	66	43	17	11	11	3	8	11	13	209
ALEXANDER	3	4	5	1	1	1	3	0	2	3	23
ALLEGHANY	0	0	0	0	0	0	0	0	0	0	0
ANSON	4	13	20	3	3	4	0	0	6	0	53
ASHE	0	3	1	0	0	1	0	0	0	0	5
AVERY	2	0	1	0	0	0	0	2	0	1	6
BEAUFORT	20	34	26	5	7	4	2	4	7	9	118
BERTIE	8	17	30	5	5	3	3	3	3	3	80
BLADEN	8	13	21	10	2	2	3	1	8	3	71
BRUNSWICK	15	31	31	5	3	6	3	8	9	6	117
BUNCOMBE	30	169	125	16	14	7	11	9	13	6	400
BURKE	8	26	9	3	3	5	3	0	6	8	71
CABARRUS	18	48	33	9	2	6	7	6	7	10	146
CALDWELL	5	16	8	3	2	2	0	2	3	1	42
CAMDEN	0	3	8	0	1	1	1	0	1	3	18
CARTERET	11	22	6	6	1	1	2	1	4	2	56
CASWELL	1	10	2	0	0	0	0	2	3	1	19
CATAWBA	22	40	42	19	4	3	10	12	10	9	171
CHATHAM	5	14	11	5	1	3	0	4	1	4	48
CHEROKEE	1	6	2	0	1	1	1	1	1	0	14
CHOWAN	5	8	6	2	1	0	1	0	4	1	28
CLAY	0	0	1	0	1	0	0	0	0	0	2
CLEVELAND	19	26	34	9	5	16	13	12	8	7	149
COLUMBUS	16	36	38	17	5	8	8	10	5	5	148
CRAVEN	24	55	47	11	6	11	10	11	9	15	199
CUMBERLAND	89	233	196	59	28	28	50	47	47	42	819
CURRITUCK	3	6	3	0	0	2	1	0	1	2	18
DARE	5	9	10	3	2	0	0	0	2	1	32
DAVIDSON	30	49	29	7	2	6	2	8	13	14	160
DAVIE	3	7	7	1	0	1	0	0	1	0	20
DUPLIN	14	45	47	14	6	8	5	4	4	6	153
DURHAM	142	450	212	55	42	42	31	31	41	35	1,081
EDGEcombe	19	66	63	26	14	16	9	9	14	18	254
FORSYTH	131	239	231	48	29	30	21	29	30	48	836
FRANKLIN	11	15	15	6	3	6	6	2	2	7	73
GASTON	28	137	117	17	20	19	9	11	12	22	392
GATES	0	0	3	0	0	0	0	0	0	2	5
GRAHAM	0	1	0	0	1	0	1	0	0	0	3
GRANVILLE	13	26	24	7	6	5	3	4	4	7	99
GREENE	2	13	21	1	1	4	1	1	2	2	48
GUILFORD	158	465	301	50	28	38	43	53	66	55	1,257
HALIFAX	15	53	42	10	7	6	8	6	11	10	168
HARNETT	11	45	37	12	7	6	9	5	11	12	155
HAYWOOD	5	22	9	1	4	3	3	0	2	3	52
HENDERSON	9	29	35	1	1	4	1	8	2	3	93
HERTFORD	12	14	23	1	3	3	3	4	3	4	70
HOKE	3	12	23	3	2	6	4	6	7	4	70
HYDE	0	3	1	2	2	0	0	0	0	0	8
IREDELL	12	31	27	8	2	9	4	1	7	6	107
JACKSON	2	7	3	2	0	1	1	0	0	1	17
JOHNSTON	26	59	61	16	10	13	23	11	14	19	252

\*by county and year of AIDS diagnosis

**Table Q (continued): Cumulative AIDS Cases\* by County of Residence, 1983-2009**

AIDS COUNTY	83-90 Cases	91-96 Cases	97-02 Cases	2003 Cases	2004 Cases	2005 Cases	2006 Cases	2007 Cases	2008 Cases	2009 Cases	CUMULATIVE CASES
JONES	0	5	4	0	1	0	1	1	0	9	21
LEE	5	21	16	6	2	2	4	6	4	7	73
LENOIR	15	79	83	9	13	8	12	7	14	10	250
LINCOLN	2	9	10	1	3	1	4	0	2	0	32
MACON	0	11	5	1	1	0	2	0	1	1	22
MADISON	0	6	2	0	1	0	0	0	0	0	9
MARTIN	5	16	19	6	4	7	4	2	1	4	68
MCDOWELL	3	5	6	0	3	0	4	0	0	1	22
MECKLENBURG	288	666	627	189	132	150	157	149	147	162	2,667
MITCHELL	1	3	3	0	0	0	0	0	1	2	10
MONTGOMERY	2	7	4	2	2	5	2	0	1	1	26
MOORE	10	23	32	6	6	5	6	5	7	3	103
NASH	23	79	60	14	8	14	12	10	12	15	247
NEW HANOVER	50	122	148	30	15	22	27	19	21	12	466
NORTHAMPTON	5	28	15	4	5	5	0	1	2	6	71
ONslow	33	49	43	12	3	8	3	3	6	5	165
ORANGE	41	61	31	5	8	4	5	3	6	1	165
PAMLICO	5	4	3	3	1	1	0	0	0	1	18
PASQUOTANK	8	16	14	7	4	3	1	2	3	1	59
PENDER	10	24	14	6	2	5	1	0	2	3	67
PERQUIMANS	1	4	6	3	2	1	1	1	0	2	21
PERSON	3	15	10	3	0	1	1	3	3	2	41
PITT	41	171	124	23	14	22	15	19	21	22	472
POLK	2	10	8	0	0	0	0	1	0	1	22
RANDOLPH	12	31	16	7	8	5	6	4	3	4	96
RICHMOND	5	31	15	4	5	4	5	8	4	4	85
ROBESON	19	76	101	29	19	17	14	23	18	11	327
ROCKINGHAM	8	36	28	3	1	0	1	6	4	2	89
ROWAN	21	60	36	11	6	10	3	9	9	5	170
RUTHERFORD	10	26	12	1	3	3	0	3	1	1	60
SAMPSON	14	34	37	5	4	6	8	7	5	7	127
SCOTLAND	9	30	26	4	4	3	1	5	6	3	91
STANLY	5	8	14	1	0	2	2	3	1	2	38
STOKES	1	8	6	0	0	0	1	1	0	0	17
SURRY	6	12	10	1	1	2	0	0	3	1	36
SWAIN	5	8	5	1	1	1	1	0	0	0	22
TRANSYLVANIA	5	7	7	1	0	1	1	1	0	1	24
TYRRELL	1	1	1	0	0	0	0	0	0	0	3
UNION	14	22	32	7	6	5	9	4	8	10	117
VANCE	15	40	54	8	7	5	3	4	4	1	141
WAKE	218	469	480	145	104	103	121	119	118	99	1,976
WARREN	2	6	8	4	1	0	2	0	0	0	23
WASHINGTON	5	23	12	3	0	5	1	5	2	1	57
WATAUGA	4	4	1	3	0	3	1	0	1	3	20
WAYNE	42	87	85	12	7	15	14	10	9	9	290
WILKES	3	5	8	2	0	0	1	2	2	0	23
WILSON	28	73	85	26	15	17	25	16	12	19	316
YADKIN	3	3	8	2	0	1	1	2	1	0	21
YANCEY	1	5	2	0	0	0	2	0	0	1	11
UNASSIGNED**	57	288	457	75	58	60	80	48	44	69	1,236
NC TOTAL	2,060	5,523	4,923	1,181	779	884	887	848	926	957	18,968

\*by county and year of AIDS diagnosis  
such as Prisons (See Technical Notes).

\*\*Unassigned includes cases with unknown county of residence or long-term care facilities

**Table R: North Carolina Chlamydia Demographic Rates,  
Gender and Age, 2005-2009**

Age		2005	2005	2005	2006	2006	2006	2007	2007	2007	2008	2008	2008	2009	2009	2009
		Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*
Male	10-14 Years	25	0%	8.3	25	0%	8.3	24	0%	7.9	16	0%	5.2	20	0%	6.6
	15-19 Years	1,150	4%	380.8	1,338	4%	431.2	1,236	4%	388.1	1,460	4%	452.3	1,943	4%	601.9
	20-24 Years	2,239	7%	722.3	2,571	8%	797.4	2,167	7%	675.6	2,673	7%	804.6	3,210	7%	966.2
	25-29 Years	1,013	3%	346.1	1,230	4%	409.9	1,037	3%	344.2	1,161	3%	374.0	1,556	4%	501.2
	30-34 Years	492	2%	158.2	537	2%	175.3	459	1%	151.2	550	1%	179.6	678	2%	221.4
	35-39 Years	247	1%	77.9	310	1%	95.0	254	1%	76.1	308	1%	91.1	375	1%	110.9
	40-44 Years	143	0%	43.4	132	0%	40.0	138	0%	41.9	171	0%	51.9	203	0%	61.6
	45-54 Years	124	0%	20.7	141	0%	23.0	138	0%	21.9	129	0%	20.0	152	0%	23.6
	55-64 Years	21	0%	4.7	14	0%	3.0	27	0%	5.6	32	0%	6.4	41	0%	8.2
	65+ Years	13	0%	3.0	10	0%	2.3	6	0%	1.3	10	0%	2.1	9	0%	1.9
	Unknown	0	0%	---	1	0%	---	0	0%	---	24	0%	---	21	0%	---
<b>Total</b>	5,481	18%	129.4	6,314	19%	145.8	5,493	18%	124.3	6,567	17%	145.4	8,227	19%	182.1	
Female	10-14 Years	487	2%	169.7	444	1%	154.9	319	1%	110.5	369	1%	127.3	424	1%	146.3
	15-19 Years	10,367	33%	3619.7	10,812	32%	3675.4	9,689	32%	3206.6	12,011	32%	3922.9	13,716	31%	4479.8
	20-24 Years	9,541	31%	3378.7	10,135	30%	3573.2	9,381	31%	3236.8	11,742	31%	3982.4	13,319	30%	4517.3
	25-29 Years	3,328	11%	1136.1	3,638	11%	1204.7	3,414	11%	1116.1	4,179	11%	1351.5	4,559	10%	1474.4
	30-34 Years	1,138	4%	368.2	1,305	4%	428.5	1,354	4%	443.7	1,521	4%	492.7	1,785	4%	578.2
	35-39 Years	498	2%	157.3	554	2%	169.9	529	2%	158.1	677	2%	200.4	740	2%	219.1
	40-44 Years	171	1%	50.3	210	1%	62.1	233	1%	68.8	263	1%	78.3	291	1%	86.7
	45-54 Years	118	0%	18.6	158	0%	24.3	144	0%	21.6	159	0%	23.4	182	0%	26.7
	55-64 Years	18	0%	3.7	24	0%	4.7	27	0%	5.0	29	0%	5.2	36	0%	6.5
	65+ Years	6	0%	1.0	3	0%	0.5	3	0%	0.5	2	0%	0.3	6	0%	0.9
	Unknown	0	0%	---	0	0%	---	0	0%	---	129	0%	---	132	0%	---
<b>Total</b>	25,704	82%	580.8	27,301	81%	604.8	25,111	82%	543.4	31,160	82%	662.2	35,229	81%	748.7	

\*per 100,000 population

The 0-9 age group is not shown because some of these cases may not be due to sexual transmission; however they are included in the totals

Continued

**Table R (continued): North Carolina Chlamydia Demographic Rates,  
Gender and Age, 2005-2009**

Age		2005	2005	2005	2006	2006	2006	2007	2007	2007	2008	2008	2008	2009	2009	2009
		Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*
Total	10-14 Years	512	2%	87.0	469	1%	79.7	343	1%	57.7	385	1%	64.7	448	1%	75.3
	15-19 Years	11,517	37%	1957.3	12,150	36%	2010.1	10,928	36%	1737.4	13,499	36%	2146.1	15,720	36%	2499.2
	20-24 Years	11,780	38%	1988.7	12,706	38%	2096.5	11,551	38%	1842.1	14,484	38%	2309.8	16,619	38%	2650.2
	25-29 Years	4,341	14%	741.3	4,868	14%	808.6	4,453	15%	718.6	5,360	14%	865.0	6,152	14%	992.8
	30-34 Years	1,630	5%	262.9	1,842	5%	301.5	1,813	6%	294.8	2,076	5%	337.6	2,478	6%	402.9
	35-39 Years	745	2%	117.5	864	3%	132.5	783	3%	115.9	992	3%	146.8	1,122	3%	166.0
	40-44 Years	314	1%	46.9	342	1%	51.2	371	1%	55.8	439	1%	66.0	497	1%	74.7
	45-54 Years	242	1%	19.7	299	1%	23.7	282	1%	21.3	289	1%	21.8	336	1%	25.3
	55-64 Years	39	0%	4.2	38	0%	3.9	54	0%	5.1	62	0%	5.9	77	0%	7.3
	65+ Years	19	0%	1.8	13	0%	1.2	9	0%	0.8	12	0%	1.1	15	0%	1.3
	Unknown	0	0%	---	1	0%	---	0	0%	---	175	0%	---	210	0%	---
<b>Total</b>		31,185	100%	360.1	33,615	100%	380.0	30,612	100%	331.9	37,885	100%	410.8	43,734	100%	474.2

\*per 100,000 population

The 0-9 age group is not shown because some of these cases may not be due to sexual transmission; however they are included in the totals.

**Table S: North Carolina Chlamydia Demographic Rates  
Gender and Race/Ethnicity, 2005-2009**

Race/Ethnicity		2005	2005	2005	2006	2006	2006	2007	2007	2007	2008	2008	2008	2009	2009	2009
		Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*
<b>Male</b>	<b>White**</b>	1,186	4%	40.7	1,359	4%	45.8	1,030	3%	34.2	1,050	3%	34.4	958	2%	31.4
	<b>Black**</b>	3,642	12%	414.5	4,057	12%	452.6	3,480	11%	381.1	3,477	9%	372.6	4,007	9%	429.4
	<b>Am.In/AN**</b>	41	0%	80.9	36	0%	70.1	33	0%	63.4	51	0%	96.8	73	0%	138.6
	<b>Asian/PI**</b>	42	0%	53.6	37	0%	44.6	49	0%	56.0	34	0%	36.9	38	0%	41.2
	<b>Hispanic</b>	413	1%	131.9	535	2%	159.4	492	2%	136.9	439	1%	114.1	523	1%	135.9
	<b>Unknown</b>	157	1%	---	290	1%	---	409	1%	---	1,516	4%	---	2,628	6%	---
	<b>Total</b>	5,481	18%	129.4	6,314	19%	145.8	5,493	18%	124.3	6,567	17%	145.4	8,227	19%	182.1
<b>Female</b>	<b>White**</b>	6,754	22%	220.7	7,148	21%	230.3	6,276	21%	198.7	6,427	17%	201.1	6,024	14%	188.5
	<b>Black**</b>	15,697	50%	1576.2	16,094	48%	1586.1	14,019	46%	1351.0	15,135	40%	1431.4	16,001	37%	1513.3
	<b>Am.In/AN**</b>	424	1%	790.1	331	1%	609.5	337	1%	612.0	449	1%	807.4	498	1%	895.5
	<b>Asian/PI**</b>	203	1%	245.4	193	1%	221.7	156	1%	169.4	212	1%	220.3	176	0%	182.9
	<b>Hispanic</b>	1,900	6%	813.4	2,048	6%	806.7	1,807	6%	650.2	1,981	5%	660.4	1,990	5%	663.4
	<b>Unknown</b>	726	2%	---	1,487	4%	---	2,516	8%	---	6,956	18%	---	10,540	24%	---
	<b>Total</b>	25,704	82%	580.8	27,301	81%	604.8	25,111	82%	543.4	31,160	82%	662.2	35,229	81%	748.7
<b>Total</b>	<b>White**</b>	7,940	25%	132.9	8,507	25%	140.2	7,306	24%	118.5	7,502	20%	120.0	7,000	16%	112.0
	<b>Black**</b>	19,339	62%	1031.6	20,151	60%	1054.4	17,505	57%	897.3	18,687	49%	938.8	20,090	46%	1009.3
	<b>Am.In/AN**</b>	465	1%	445.8	367	1%	347.2	370	1%	345.4	502	1%	463.6	572	1%	528.3
	<b>Asian/PI**</b>	245	1%	152.1	230	1%	135.3	205	1%	114.2	247	1%	131.1	215	0%	114.1
	<b>Hispanic</b>	2,313	7%	423.1	2,583	8%	438.1	2,299	8%	360.7	2,431	6%	355.0	2,525	6%	368.7
	<b>Unknown</b>	883	3%	---	1,777	5%	---	2,927	10%	---	8,516	22%	---	13,332	30%	---
	<b>Total</b>	31,185	100%	360.1	33,615	100%	380.0	30,612	100%	338.6	37,885	100%	410.8	43,734	100%	474.2

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

**Table T: North Carolina Gonorrhea Demographic Rates  
Gender and Age, 2005-2009**

Age		2005	2005	2005	2006	2006	2006	2007	2007	2007	2008	2008	2008	2009	2009	2009
		Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*
Male	10-14 Years	23	0%	7.6	27	0%	9.0	19	0%	6.3	20	0%	6.6	16	0%	5.2
	15-19 Years	1,116	7%	369.5	1,369	8%	441.2	1,257	8%	394.7	1,129	8%	349.7	1,218	8%	377.3
	20-24 Years	2,196	15%	708.5	2,578	15%	799.6	2,346	14%	731.4	2,144	14%	645.3	2,132	14%	641.7
	25-29 Years	1,479	10%	505.4	1,724	10%	574.6	1,449	9%	480.9	1,229	8%	395.9	1,178	8%	379.4
	30-34 Years	882	6%	283.7	981	6%	320.2	906	5%	298.5	713	5%	232.8	643	4%	210.0
	35-39 Years	599	4%	188.9	658	4%	201.7	578	3%	173.1	436	3%	129.0	391	3%	115.7
	40-44 Years	513	3%	155.7	461	3%	139.7	452	3%	137.1	317	2%	96.3	264	2%	80.2
	45-54 Years	521	3%	87.1	576	3%	93.8	503	3%	79.7	398	3%	61.7	315	2%	48.9
	55-64 Years	159	1%	35.8	168	1%	36.2	172	1%	35.4	86	1%	17.1	81	1%	16.2
	65+ Years	33	0%	7.6	45	0%	10.2	39	0%	8.5	24	0%	5.1	22	0%	4.6
	Unknown	0	0%	---	1	0%	---	2	0%	---	32	0%	---	18	0%	---
<b>Total</b>	7,524	50%	177.6	8,591	50%	198.3	7,725	46%	174.8	6,554	44%	145.1	6,285	42%	139.1	
Female	10-14 Years	135	1%	47.0	150	1%	52.3	117	1%	40.5	86	1%	29.7	95	1%	32.8
	15-19 Years	2,573	17%	898.4	2,882	17%	979.7	2,911	17%	963.4	2,763	18%	902.4	2,940	20%	960.2
	20-24 Years	2,577	17%	912.6	3,046	18%	1073.9	3,185	19%	1099.0	3,016	20%	1022.9	3,113	21%	1055.8
	25-29 Years	1,194	8%	407.6	1,375	8%	455.3	1,440	9%	470.8	1,332	9%	430.8	1,248	8%	403.6
	30-34 Years	499	3%	161.5	571	3%	187.5	623	4%	204.1	567	4%	183.7	520	4%	168.4
	35-39 Years	275	2%	86.8	348	2%	106.8	339	2%	101.3	278	2%	82.3	247	2%	73.1
	40-44 Years	173	1%	50.9	197	1%	58.3	171	1%	50.5	150	1%	44.7	114	1%	33.9
	45-54 Years	94	1%	14.8	128	1%	19.7	127	1%	19.0	113	1%	16.6	77	1%	11.3
	55-64 Years	12	0%	2.5	14	0%	2.7	13	0%	2.4	12	0%	2.2	14	0%	2.5
	65+ Years	4	0%	0.6	1	0%	0.2	2	0%	0.3	1	0%	0.2	1	0%	0.2
	Unknown	0	0%	---	1	0%	---	5	0%	---	45	0%	---	38	0%	---
<b>Total</b>	7,545	50%	170.5	8,720	50%	193.2	8,941	54%	193.5	8,393	56%	178.4	8,416	57%	178.9	

\*per 100,000 population

The 0-9 age group is not shown because some of these cases may not be due to sexual transmission; however they are included in the totals

Continued

**Table T (continued): North Carolina Gonorrhea Demographic Rates,  
Gender and Age, 2005-2009**

Age		2005	2005	2005	2006	2006	2006	2007	2007	2007	2008	2008	2008	2009	2009	2009
		Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*
Total	10-14 Years	158	1%	26.8	177	1%	30.1	136	1%	23.0	106	1%	17.8	111	1%	18.7
	15-19 Years	3,689	24%	626.9	4,251	25%	703.3	4,168	25%	671.5	3,900	26%	620.0	4,177	28%	664.1
	20-24 Years	4,773	32%	805.8	5,624	32%	928.0	5,531	33%	905.9	5,183	35%	826.5	5,286	36%	843.0
	25-29 Years	2,673	18%	456.5	3,099	18%	514.8	2,889	17%	475.8	2,570	17%	414.7	2,441	16%	393.9
	30-34 Years	1,381	9%	222.7	1,552	9%	254.0	1,529	9%	251.2	1,289	9%	209.6	1,170	8%	190.3
	35-39 Years	874	6%	137.9	1,006	6%	154.2	917	6%	137.2	717	5%	106.1	640	4%	94.7
	40-44 Years	686	5%	102.5	658	4%	98.5	623	4%	93.2	468	3%	70.4	381	3%	57.3
	45-54 Years	615	4%	50.0	704	4%	55.7	630	4%	48.5	516	3%	38.9	393	3%	29.6
	55-64 Years	171	1%	18.4	182	1%	18.7	185	1%	18.1	101	1%	9.6	95	1%	9.0
	65+ Years	37	0%	3.5	46	0%	4.3	41	0%	3.7	25	0%	2.2	23	0%	2.0
	Unknown	0	0%	---	2	0%	---	7	0%	---	80	1%	---	78	1%	---
<b>Total</b>	<b>15,069</b>	<b>100%</b>	<b>174.0</b>	<b>17,311</b>	<b>100%</b>	<b>195.7</b>	<b>16,666</b>	<b>100%</b>	<b>184.3</b>	<b>15,012</b>	<b>100%</b>	<b>162.8</b>	<b>14,811</b>	<b>100%</b>	<b>160.6</b>	

\*per 100,000 population

The 0-9 age group is not shown because some of these cases may not be due to sexual transmission; however they are included in the totals.



**Table U: North Carolina Gonorrhea Demographic Rates  
Gender and Race/Ethnicity, 2005-2009**

Race/Ethnicity		2005	2005	2005	2006	2006	2006	2007	2007	2007	2008	2008	2008	2009	2009	2009
		Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*
<b>Male</b>	<b>White**</b>	915	6%	31.4	981	6%	33.1	824	5%	27.4	550	4%	18.0	440	3%	14.4
	<b>Black**</b>	6,072	40%	691.0	6,888	40%	768.3	5,971	36%	653.9	4,531	30%	485.6	3,958	27%	424.2
	<b>Am.In/AN**</b>	77	1%	152.0	60	0%	116.8	63	0%	121.0	80	1%	151.9	68	0%	129.1
	<b>Asian/PI**</b>	25	0%	31.9	21	0%	25.3	27	0%	30.9	18	0%	19.5	16	0%	17.4
	<b>Hispanic</b>	245	2%	78.2	276	2%	82.2	233	1%	64.8	166	1%	43.1	136	1%	35.3
	<b>Unknown</b>	190	1%	---	365	2%	---	607	4%	---	1,209	8%	---	1,667	11%	---
	<b>Total</b>	7,524	50%	177.6	8,591	50%	198.3	7,725	46%	174.8	6,554	44%	145.1	6,285	42%	139.1
<b>Female</b>	<b>White**</b>	1,557	10%	50.9	1,830	11%	59.0	1,770	11%	56.0	1,321	9%	41.3	1,055	7%	33.0
	<b>Black**</b>	5,469	36%	549.2	6,061	35%	597.3	5,894	35%	568.0	4,957	33%	468.8	4,949	33%	468.0
	<b>Am.In/AN**</b>	121	1%	225.5	97	1%	178.6	131	1%	237.9	192	1%	345.3	130	1%	233.8
	<b>Asian/PI**</b>	34	0%	41.1	34	0%	39.1	39	0%	42.4	29	0%	30.1	27	0%	28.1
	<b>Hispanic</b>	154	1%	65.9	184	1%	72.5	167	1%	60.1	209	1%	69.7	166	1%	55.3
	<b>Unknown</b>	210	1%	---	514	3%	---	940	6%	---	1,685	11%	---	2,089	14%	---
	<b>Total</b>	7,545	50%	170.5	8,720	50%	193.2	8,941	54%	193.5	8,393	56%	178.4	8,416	57%	178.9
<b>Total</b>	<b>White**</b>	2,472	16%	41.4	2,811	16%	46.3	2,594	16%	42.1	1,877	13%	30.0	1,503	10%	24.0
	<b>Black**</b>	11,541	77%	615.7	12,949	75%	677.5	11,865	71%	608.2	9,519	63%	478.2	8,940	60%	449.1
	<b>Am.In/AN**</b>	198	1%	189.8	157	1%	148.5	194	1%	181.1	272	2%	251.2	199	1%	183.8
	<b>Asian/PI**</b>	59	0%	36.6	55	0%	32.4	66	0%	36.8	47	0%	24.9	43	0%	22.8
	<b>Hispanic</b>	399	3%	73.0	460	3%	78.0	400	2%	62.8	379	3%	55.3	304	2%	44.4
	<b>Unknown</b>	400	3%	---	879	5%	---	1,547	9%	---	2,918	19%	---	3,822	26%	---
	<b>Total</b>	15,069	100%	174.0	17,311	100%	195.7	16,666	100%	184.3	15,012	100%	162.8	14,811	100%	160.6

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

**Table V: North Carolina Early Syphilis Demographic Rates (Primary, Secondary, Early Latent)  
Gender and Age, 2005-2009**

Age		2005	2005	2005	2006	2006	2006	2007	2007	2007	2008	2008	2008	2009	2009	2009
		Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*
Male	10-14 Years	0	0%	0.0	0	0%	0.0	0	0%	0.0	0	0%	0.0	0	0%	0.0
	15-19 Years	13	3%	4.3	20	3%	6.4	25	4%	7.8	30	6%	9.3	43	5%	13.3
	20-24 Years	48	10%	15.5	68	11%	21.1	66	12%	20.6	77	15%	23.2	149	16%	44.8
	25-29 Years	51	10%	17.4	70	12%	23.3	76	13%	25.2	60	12%	19.3	135	14%	43.5
	30-34 Years	51	10%	16.4	58	10%	18.9	49	9%	16.1	29	6%	9.5	86	9%	28.1
	35-39 Years	47	10%	14.8	72	12%	22.1	58	10%	17.4	60	12%	17.7	85	9%	25.1
	40-44 Years	59	12%	17.9	63	10%	19.1	61	11%	18.5	58	11%	17.6	83	9%	25.2
	45-54 Years	53	11%	8.9	57	9%	9.3	62	11%	9.8	64	13%	9.9	106	11%	16.4
	55-64 Years	18	4%	4.1	17	3%	3.7	18	3%	3.7	14	3%	2.8	32	3%	6.4
	65+ Years	2	0%	0.5	5	1%	1.1	7	1%	1.5	3	1%	0.6	4	0%	0.8
	Unknown	0	0%	---	0	0%	---	0	0%	---	0	0%	---	0	0%	---
<b>Total</b>	343	70%	8.1	430	71%	9.9	422	74%	9.5	395	78%	8.7	723	77%	16.0	
Female	10-14 Years	0	0%	0.0	0	0%	0.0	0	0%	0.0	1	0%	0.3	0	0%	0.0
	15-19 Years	16	3%	5.6	20	3%	6.8	8	1%	2.6	14	3%	4.6	22	2%	7.2
	20-24 Years	23	5%	8.1	31	5%	10.9	30	5%	10.4	21	4%	7.1	61	7%	20.7
	25-29 Years	18	4%	6.1	15	2%	5.0	22	4%	7.2	13	3%	4.2	44	5%	14.2
	30-34 Years	16	3%	5.2	24	4%	7.9	19	3%	6.2	17	3%	5.5	27	3%	8.7
	35-39 Years	25	5%	7.9	25	4%	7.7	24	4%	7.2	13	3%	3.8	28	3%	8.3
	40-44 Years	22	4%	6.5	25	4%	7.4	20	4%	5.9	12	2%	3.6	13	1%	3.9
	45-54 Years	22	4%	3.5	28	5%	4.3	24	4%	3.6	20	4%	2.9	16	2%	2.4
	55-64 Years	3	1%	0.6	4	1%	0.8	0	0%	0.0	2	0%	0.4	2	0%	0.4
	65+ Years	1	0%	0.2	0	0%	0.0	0	0%	0.0	0	0%	0.0	1	0%	0.2
	Unknown	0	0%	---	0	0%	---	0	0%	---	0	0%	---	0	0%	---
<b>Total</b>	146	30%	3.3	172	29%	3.8	147	26%	3.2	114	22%	2.4	214	23%	4.5	

\*per 100,000 population

The 0-9 age group is not shown because some of these cases may not be due to sexual transmission; however they are included in the totals.

Continued

**Table V (continued): North Carolina Early Syphilis Demographic Rates (Primary, Secondary, Early Latent), Gender and Age, 2005-2009**

Age		2005	2005	2005	2006	2006	2006	2007	2007	2007	2008	2008	2008	2009	2009	2009
		Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*
Total	10-14 Years	0	0%	0.0	0	0%	0.0	0	0%	0.0	1	0%	0.2	0	0%	0.0
	15-19 Years	29	6%	4.9	40	7%	6.6	33	6%	5.3	44	9%	7.0	65	7%	10.3
	20-24 Years	71	15%	12.0	99	16%	16.3	96	17%	15.7	98	19%	15.6	210	22%	33.5
	25-29 Years	69	14%	11.8	85	14%	14.1	98	17%	16.1	73	14%	11.8	179	19%	28.9
	30-34 Years	67	14%	10.8	82	14%	13.4	68	12%	11.2	46	9%	7.5	113	12%	18.4
	35-39 Years	72	15%	11.4	97	16%	14.9	82	14%	12.3	73	14%	10.8	113	12%	16.7
	40-44 Years	81	17%	12.1	88	15%	13.2	81	14%	12.1	70	14%	10.5	96	10%	14.4
	45-54 Years	75	15%	6.1	85	14%	6.7	86	15%	6.6	84	17%	6.3	122	13%	9.2
	55-64 Years	21	4%	2.3	21	3%	2.2	18	3%	1.8	16	3%	1.5	34	4%	3.2
	65+ Years	3	1%	0.3	5	1%	0.5	7	1%	0.6	3	1%	0.3	5	1%	0.4
	Unknown	0	0%	---	0	0%	---	0	0%	---	0	0%	---	0	0%	---
	<b>Total</b>		489	100%	5.6	602	100%	6.8	569	100%	6.3	509	100%	5.5	937	100%

\*per 100,000 population

The 0-9 age group is not shown because some of these cases may not be due to sexual transmission; however they are included in the totals.

**Table W: North Carolina Early Syphilis Rates (Primary, Secondary, Early Latent)  
Gender and Race/Ethnicity, 2005-2009**

Race/Ethnicity		2005	2005	2005	2006	2006	2006	2007	2007	2007	2008	2008	2008	2009	2009	2009
		Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*
<b>Male</b>	<b>White**</b>	136	28%	4.7	125	21%	4.2	97	17%	3.2	95	19%	3.1	149	16%	4.9
	<b>Black**</b>	175	36%	19.9	281	47%	31.3	298	52%	32.6	279	55%	29.9	537	57%	57.5
	<b>Am.In/AN**</b>	0	0%	0.0	0	0%	0.0	2	0%	3.8	0	0%	0.0	6	1%	11.4
	<b>Asian/PI**</b>	2	0%	2.6	1	0%	1.2	1	0%	1.1	2	0%	2.2	4	0%	4.3
	<b>Hispanic</b>	28	6%	8.9	22	4%	6.6	23	4%	6.4	18	4%	4.7	25	3%	6.5
	<b>Unknown</b>	2	0%	---	1	0%	---	1	0%	---	1	0%	---	2	0%	---
	<b>Total</b>	343	70%	8.1	430	71%	9.9	422	74%	9.5	395	78%	8.7	723	77%	16.0
<b>Female</b>	<b>White**</b>	36	7%	1.2	25	4%	0.8	28	5%	0.9	22	4%	0.7	54	6%	1.7
	<b>Black**</b>	98	20%	9.8	129	21%	12.7	104	18%	10.0	82	16%	7.8	144	15%	13.6
	<b>Am.In/AN**</b>	4	1%	7.5	1	0%	1.8	2	0%	3.6	0	0%	0.0	1	0%	1.8
	<b>Asian/PI**</b>	2	0%	2.4	0	0%	0.0	1	0%	1.1	0	0%	0.0	1	0%	1.0
	<b>Hispanic</b>	5	1%	2.1	17	3%	6.7	12	2%	4.3	8	2%	2.7	14	1%	4.7
	<b>Unknown</b>	1	0%	---	0	0%	---	0	0%	---	2	0%	---	0	0%	---
	<b>Total</b>	146	30%	3.3	172	29%	3.8	147	26%	3.2	114	22%	2.4	214	23%	4.5
<b>Total</b>	<b>White**</b>	172	35%	2.9	150	25%	2.5	125	22%	2.0	117	23%	1.9	203	22%	3.2
	<b>Black**</b>	273	56%	14.6	410	68%	21.5	402	71%	20.6	361	71%	18.1	681	73%	34.2
	<b>Am.In/AN**</b>	4	1%	3.8	1	0%	0.9	4	1%	3.7	0	0%	0.0	7	1%	6.5
	<b>Asian/PI**</b>	4	1%	2.5	1	0%	0.6	2	0%	1.1	2	0%	1.1	5	1%	2.7
	<b>Hispanic</b>	33	7%	6.0	39	6%	6.6	35	6%	5.5	26	5%	3.8	39	4%	5.7
	<b>Unknown</b>	3	1%	---	1	0%	---	1	0%	---	3	1%	---	2	0%	---
	<b>Total</b>	489	100%	5.6	602	100%	6.8	569	100%	6.3	509	100%	5.5	937	100%	10.2

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

**Table X: North Carolina Early Syphilis Cases (Primary, Secondary, Early Latent)  
County Rank, 2005-2009**

Rank*	County	Cases				
		2005	2006	2007	2008	2009
1	FORSYTH	16	34	31	46	195
2	MECKLENBURG	142	188	141	91	174
3	WAKE	65	60	39	37	115
4	GUILFORD	68	74	45	50	68
5	WAYNE	5	15	17	28	59
6	DURHAM	15	33	47	39	40
7	GASTON	6	12	10	5	20
8	CUMBERLAND	18	26	18	18	18
9	EDGECOMBE	0	7	11	13	17
10	BUNCOMBE	6	7	5	17	16
11	PITT	2	5	7	12	15
12	NEW HANOVER	8	12	35	22	14
13	NASH	3	16	15	16	9
14	ORANGE	0	5	8	3	9
15	CABARRUS	5	5	5	4	8
16	ALAMANCE	4	6	7	6	7
17	UNION	4	3	0	2	7
18	WILSON	5	5	3	5	6
19	CRAVEN	0	2	12	4	6
20	LEE	3	4	0	1	6
21	RANDOLPH	11	4	2	2	5
22	ROWAN	4	1	5	0	5
23	DAVIDSON	2	2	3	0	5
24	BLADEN	3	3	1	0	5
25	HENDERSON	0	0	0	0	5
26	JOHNSTON	9	12	10	5	4
27	LENOIR	5	1	5	3	4
28	BURKE	3	0	2	3	4
29	VANCE	4	3	0	2	4
30	CATAWBA	2	2	2	1	4
31	GRANVILLE	2	0	1	1	4
32	BEAUFORT	0	1	0	0	4
33	ROBESON	20	4	15	5	3
34	MOORE	1	1	3	5	3
35	CLEVELAND	5	2	6	4	3
36	FRANKLIN	1	0	4	3	3
37	ONSLOW	0	3	3	2	3
38	IREDELL	1	3	1	1	3
39	GREENE	1	0	3	0	3
40	HARNETT	1	1	2	0	3
41	RUTHERFORD	1	0	1	0	3
42	WARREN	1	0	0	0	3
43	MADISON	0	0	0	0	3
44	BRUNSWICK	2	4	5	6	2
45	DUPLIN	0	1	2	3	2
46	STOKES	3	0	0	3	2
47	HALIFAX	3	2	4	2	2
48	SAMPSON	2	1	3	2	2
49	JACKSON	0	0	0	2	2
50	HAYWOOD	1	0	1	1	2
51	LINCOLN	0	0	1	1	2

\* Rank based on number of cases reported in 2009. If cases are equal, then rank is based on the previous year.

**Table X (continued): North Carolina Early Syphilis Cases (Primary, Secondary, Early Latent) County Rank, 2005-2009**

Rank*	County	Cases				
		2005	2006	2007	2008	2009
52	YADKIN	2	0	2	0	2
53	WASHINGTON	1	0	2	0	2
54	CHATHAM	4	1	1	0	2
55	PENDER	0	0	1	5	1
56	ROCKINGHAM	2	3	5	4	1
57	MARTIN	0	2	1	2	1
58	SURRY	1	3	0	2	1
59	NORTHAMPTON	0	3	0	2	1
60	HOKE	0	1	0	2	1
61	COLUMBUS	3	1	2	1	1
62	MCDOWELL	2	0	1	1	1
62	SCOTLAND	2	0	1	1	1
64	RICHMOND	0	0	0	1	1
65	TRANSYLVANIA	0	0	1	0	1
66	PERSON	0	4	0	0	1
67	HERTFORD	0	1	0	0	1
67	HYDE	0	1	0	0	1
67	PASQUOTANK	0	1	0	0	1
70	MACON	1	0	0	0	1
71	CAMDEN	0	0	0	0	1
71	CURRITUCK	0	0	0	0	1
71	DARE	0	0	0	0	1
71	POLK	0	0	0	0	1
72	DAVIE	1	1	1	3	0
73	ANSON	0	1	0	2	0
74	STANLY	1	3	3	1	0
75	CHEROKEE	1	0	0	1	0
75	WILKES	1	0	0	1	0
80	CALDWELL	0	0	0	1	0
80	GATES	0	0	0	1	0
82	CARTERET	0	0	4	0	0
83	JONES	1	0	1	0	0
84	CHOWAN	0	0	1	0	0
85	PERQUIMANS	0	2	0	0	0
85	WATAUGA	0	2	0	0	0
87	MONTGOMERY	1	1	0	0	0
88	BERTIE	0	1	0	0	0
89	ALEXANDER	2	0	0	0	0
90	ALLEGHANY	0	0	0	0	0
90	ASHE	0	0	0	0	0
90	AVERY	0	0	0	0	0
90	CASWELL	0	0	0	0	0
90	CLAY	0	0	0	0	0
90	GRAHAM	0	0	0	0	0
90	MITCHELL	0	0	0	0	0
90	PAMLICO	0	0	0	0	0
90	SWAIN	0	0	0	0	0
90	TYRRELL	0	0	0	0	0
90	YANCEY	0	0	0	0	0
	<b>NC TOTAL</b>	<b>489</b>	<b>602</b>	<b>569</b>	<b>508</b>	<b>937</b>

\* Rank based on number of cases reported in 2009. If cases are equal, then rank is based on the previous year.

## GLOSSARY

Acute HIV Testing	See <i>STAT</i>
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 <i>Mean</i>
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 the Health Resources and Services Administration (HRSA) to produce the CADR report for Ryan White programs. See <i>HRSA</i> , <i>CADR</i> .
CBO	Community-Based Organization

CD4 T-lymphocyte	Type of white blood cell that coordinates a number of important immunologic functions. These cells are the primary targets of HIV. Severe declines in the number of these cells indicate progression of an immunologic disease. When the count of these cells reaches <200/uL or 14%, the HIV-infected patient is classified as having progressed to AIDS.
CDC	U.S. Centers for Disease Control and Prevention - agency under the U.S. Department of Health and Human Services. Located in Atlanta, GA. Its mission is 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 <i>Haemophilus ducreyi</i> . Chancroid is a reportable disease in North Carolina.
chlamydia	Infection with <i>Chlamydia trachomatis</i> bacteria. To meet the surveillance case definition, all reported chlamydia cases must be confirmed by laboratory diagnosis: either isolation of <i>C. trachomatis</i> 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 <i>Chlamydia trachomatis</i> . See <i>chlamydia</i> .
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 <i>NTS</i> , <i>TTS</i> .
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 - state or local government employees who interview individuals with reported STD cases (primarily HIV and syphilis). DIS staff are trained to locate and counsel infected patients and their partners, draw blood for testing, and collect interview data on risk behaviors and partners.



early latent syphilis	Also referenced as EL. The 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 referenced as 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 <i>ELISA</i>
EL	See <i>Early Latent Syphilis</i>
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, <i>A Dictionary of Epidemiology</i> , 1995)
FDA	Food and Drug Administration
FFY	Federal Fiscal Year – runs October 1 through September 30
GC	Infection with <i>Neisseria gonorrhoeae</i> . See <i>gonorrhea</i> .
Genital Herpes	A common sexually transmitted disease resulting from infection with HSV types 1 or 2 (see <i>HSV</i> ) and characterized by painful genital ulcers. Genital herpes is not a reportable disease in North Carolina. See <i>HSV</i> .
Genotyping	The determination of the genetic sequence of an organism or a portion of the genome.

GISP	Gonococcal Isolate Surveillance Project – a collaborative project between selected STD clinics, five regional laboratories, and the CDC. Established in 1986 to monitor trends in antimicrobial susceptibilities of strains of <i>Neisseria gonorrhoeae</i> 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 <i>Neisseria gonorrhoeae</i> . 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 <i>N. gonorrhoeae</i> 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 <i>ELISA</i> , <i>WB</i>
HOPWA	Housing Opportunities for Person with AIDS- A program from the U.S. Department of Housing and Urban Development (HUD) that provides long-term comprehensive strategies for meeting the housing needs of persons and their families living with AIDS or a related disease.
HPV	Human Papillomavirus - a group of viruses including over 100 different strains, 30 of which are sexually transmitted. Many strains cause no symptoms at all while others are associated with genital warts and others with cervical cancer in women. HPV infection is not a reportable condition in North Carolina.
HRSA	Health Resources & Services Administration – an agency of the U.S. Department of Health and Human Services. Its mission is 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 <i>genital herpes</i> .
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 <i>HIV</i> .
IVDU	Intravenous drug user. Alternative name: IDU - injecting drug user.
KFF	Kaiser Family Foundation ( <a href="http://www.kff.org">www.kff.org</a> )
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 <i>Chlamydia trachomatis</i> that are distinct from the serovars that cause reportable chlamydial infections. LGV is a reportable disease in North Carolina.
MA	Metropolitan area – a geographical designation defined by the federal Office of Management and Budget (OMB) for federal statistical activities. See <i>OMB</i> .
mean	Mathematical average. Example: the mean of 3 numbers is the sum of the three numbers divided by three: $(a+b+c)/3$ .
Medicaid	A federally-aided, state-operated and administered program authorized by Title XIX of the Social Security Act which provides medical benefits for qualifying low-income persons in need of health and medical care. The program is subject to broad federal guidelines; however, 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 - 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 <i>Neisseria gonorrhoeae</i> or <i>Trichomonas vaginalis</i> . 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 <i>STAT</i> .
NAIM	Native American Interfaith Ministry
NCCIA	North Carolina Commission on Indian Affairs
neurosyphilis	Devastating stage of syphilis affecting some untreated patients. Outcomes include shooting pains in the extremities, blindness, deafness, paralysis, and death.
NGU	Nongonococcal urethritis - a clinical diagnosis of exclusion involving evidence of urethral infection or discharge and the documented absence of <i>N. gonorrhoeae</i> infection. The syndrome may result from infection with a number of agents, though most cases are likely to be caused by <i>C. trachomatis</i> . 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 the federal Substance Abuse and Mental Health Services Administration (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. Its mission is 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. Counseling and Testing System's (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 <i>CTS</i> .
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 – an agency within the Executive Office of the President of the United States. Its mission is to assist the President in overseeing the preparation of the federal budget and to supervise its administration in Executive Branch agencies. See <i>MA</i> .
ophthalmia neonatorum	<i>N. gonorrhoeae</i> infection of the eyes of an infant during birth when mother has gonorrhea. Ophthalmia 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	<i>Pneumocystis carinii</i> pneumonia. One of the 26 AIDS-defining opportunistic infections.
PCRS	Partner Counseling & Referral Services - conducted by the Communicable Disease Branch's Field Services Unit for persons newly diagnosed with HIV or syphilis. Data collected are maintained in local STD-MIS. See <i>Appendix A: Data Sources</i> .
percentage	A type of proportion in which the denominator is set at 100. For example, if two 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: $2/50 = 4/100 = 4$ percent. 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 <i>Appendix B: Special Notes</i> 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 three people have a disease, this can be expressed as the proportion 3/50.
PSEL	Primary, secondary, and early latent syphilis cases. See <i>early syphilis</i> .
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.

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 <i>ADAP</i> . (source of definition: kff.org)
SAMHSA	Substance Abuse and Mental Health Services Administration – an agency within the U.S. Department of Health and Human Services. Its mission is to strengthen the nation's health care capacity to provide prevention, diagnosis, and treatment services for substance abuse and mental illnesses.
SCBW	The Survey of Childbearing Women - conducted from 1988 through 1995 in collaboration with CDC, the National Institute of Child Health and Human Development, and state and territorial health departments. Residual dried blood specimens that are routinely collected on filter paper from newborn infants for metabolic screening programs were tested for HIV antibody after the removal of all personal identifiers. The survey measured the prevalence of HIV infection among women who gave birth to live infants in participating states and territories of the United States.
SDC	State Data Center - a consortium of state and local agencies established in cooperation with the U.S. Bureau of the Census to provide the public with data about North Carolina and its component geographic areas.
secondary syphilis	Second stage of syphilis, characterized by a rash that does not itch, swollen glands, fatigue, and other symptoms. Patients at this stage are highly infectious to sexual partners. Symptoms generally appear about 4-10 weeks after the appearance of primary syphilis lesions. If left untreated, the disease will progress to early latent syphilis after 3-12 weeks.



sensitivity	Refers to the ability of a screening test to detect disease if disease is truly present. A highly sensitive test is likely to have very few false negatives but probably will have some false positives. This is why positives found with a highly sensitive test will often be tested again using a highly specific test (see <i>specificity</i> ). Example: ELISA test for HIV.
SEE	Syphilis Elimination Effort (formerly Syphilis Elimination Project) - CDC-funded project that provides funding to the 28 U.S. counties that accounted for over 50 percent 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 six: Durham, Forsyth, Guilford, Mecklenburg, Robeson, and Wake.
SFY	State Fiscal Year. In North Carolina, the fiscal year runs from 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 <i>sensitivity</i> ). Example: Western Blot (WB) test for HIV.
STARHS	Serologic Testing Algorithm for Recent HIV - method for determining the proportion of individuals who test positive for HIV for the first time that may have been recently infected by HIV. Sera, which have tested positive for HIV antibodies by EIA and have been confirmed as positive by Western Blot, are tested by a second, less sensitive enzyme immunoassay (LS-EIA). In the context of a reactive, standard HIV EIA, recent HIV seroconversion is likely if the LS-EIA is nonreactive because HIV antibody levels have not reached their peak. STARHS can determine with reasonable probability the number of HIV infections recently acquired within the testing population.
STAT	Screening and Tracing Active Transmission - a new HIV screening protocol applied to HIV tests performed at the State Laboratory for Public Health. Specimens that test negative on the traditional Elisa antibody test are pooled and tested for viral RNA. Reactive pools are then deconstructed to allow identification of the specimen(s) containing HIV-1 RNA. This method allows for the detection of infection within the first several weeks after transmission has occurred (acute infection) and before the body has had time to mount an antibody response. The screening is linked to a comprehensive program of immediate referral for clinical evaluation, treatment and partner notification.
STD	Sexually Transmitted Disease.

STD-MIS	Sexually Transmitted Disease-Management Information System - the computer data system developed by the CDC that houses information on patients infected with HIV, syphilis, and other STDs at the N.C. Communicable Disease 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 <i>Treponema pallidum</i> . See: <i>primary syphilis, secondary syphilis, early latent syphilis, early syphilis, latent syphilis</i> .
TB	Tuberculosis (infection with <i>Mycobacterium tuberculosis</i> ).
Trichomoniasis	A common sexually transmitted disease resulting from infection with the parasite <i>Trichomonas vaginalis</i> . Trichomoniasis is not a reportable disease in North Carolina.
TTS	Traditional Test Sites - part of the N.C. Counseling and Testing System's (CTS) HIV testing program. The 135 TTS sites include local health departments and some community based organizations (CBOs). See <i>CTS</i> .
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).
WB	Western Blot - 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.

# North Carolina Geographic Regions

