Epidemiologic Profile
for
HIV/STD Prevention & Care Planning

December 2011

Division of Public Health
NC Department of Health & Human Services

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http://epi.publichealth.nc.gov/cd/stds/figures.html

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

North Carolina
Epidemiologic Profile
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This document is for the 2011-2012 planning year and is based on data available through 2010

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The CDB would like to offer special recognition and heartfelt thanks to Bill Jones (HIV Surveillance Coordinator) for his 32 years of service to state government and to people living with HIV. This profile has been the result of his dedication and commitment to epidemiology and surveillance. Bill will be greatly missed upon his retirement.

December 2011

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Table of Contents

EXECUTIVE SUMMARY

In 2010, 1,487 new individuals were diagnosed and reported with HIV disease (HIV/AIDS) in the North Carolina (data as of 06/30/2011). This number represents a continuation of the declining annual number of new diagnoses seen in 2009 from the recent peak in 2008. We believe that the decrease seen in 2009 and further in 2010 might be evidence of a true decline in incidence resulting from the Branch's prevention strategies including increasing HIV testing (with priority follow-up of acute or primary infections), increasing referrals to care for new diagnoses and facilitating reentry into care; additional years of data will clarify these findings. Although new diagnoses have decreased, they continue to add to the population of persons in the state living with HIV which is estimated to be about 35,000 people including those unaware of their status. In 2009, of the 40 states and 5 territories reporting new HIV diagnoses to the CDC, North Carolina ranked 8th with a rate of 23.8 per 100,000 population (slightly higher than the overall US rate, 21.1 per 100,000). Among the same 40 states and 5 territories, in 2008, North Carolina ranked 13th in the rate of adults and adolescents living with an HIV infection (NC rate = 294.0 per 100,000; US rate = 337.5 per 100,000). Looking at a later stage of disease, in 2009 among all 50 states and 5 territories, the rate of AIDS diagnoses in North Carolina was 11th highest in the nation, at 11.6 per 100,000 (slightly higher than the national rate of 11.2 per 100,000).

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 10th most populous state in the nation and has experienced rapid growth. In 2009, North Carolina had the 18th highest non-white population and its foreign born population increased 38 percent from 2002 through 2008. In 2010, the racial/ethnic makeup of the state was about 22 percent black or African American (non-Hispanic), 69 percent white (non-Hispanic), and 8 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 37th in the nation for per capita income in 2009, with 27 percent of its child population (0-18 years), 14 percent of the elderly (65+), and 18 percent of the 19-64 year old population at or below the federal poverty level (2008-2009).

As seen with many other diseases, HIV is disproportionately distributed among the state's population. Recognizing these differences is important in knowing how to best direct prevention and care efforts. The 2010 adult/adolescent rate of new HIV diagnoses for non-Hispanic blacks (59.7 per 100,000) was more than nine times greater than for whites (6.5 per 100,000) and the rate of new diagnoses for Hispanics (24.7 per 100,000) was almost four times greater than that for whites. American Indians experienced fewer than 5 cases in 2010, which is considered too unstable a number on which to base an estimate. The highest rate of new HIV reports was found among adult/adolescent black males (94.0 per 100,000). The largest disparity in HIV diagnoses was found in comparing adult/adolescent white and black females; the HIV rate for black females (30.5 per 100,000) was about 17 times higher than that for white non-Hispanic females (1.8 per 100,000). The ratio of male-to-female HIV disease cases diagnosed has risen from 2.5

in 2006 to 3.2 in 2010. Much of the increase in HIV disease cases over the past few years has been attributed to more male HIV disease cases diagnosed; the number of reports for females has remained relatively constant.

Being familiar 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; therefore, discussing risk separate by gender is important. In 2010, 75 percent of new adult and adolescent HIV disease cases for males were attributed to men who have sex with men (MSM), 3 percent to injecting drug use (IDU), 1 percent to MSM who also inject drugs (MSM/IDU); and 21 percent were attributed to heterosexual sex. For adult and adolescent females, heterosexual sex accounted for 95 percent of HIV disease cases in 2010, while injecting drug use accounted for 5 percent.

The proportion of male HIV reports with MSM as a risk factor has increased over the past few years for all racial/ethnic groups. In 2010, MSM accounted for 87 percent of white non-Hispanic male HIV reports, 72 percent of black non-Hispanic male reports and 62 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 2010, 73 percent of interviewed males with early syphilis and 61 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 positive HIV test results.

Heterosexual sex as a primary risk accounts for 39 percent of all (male and female) 2010 adult/adolescent HIV disease reports and was the principal risk for females (95%), especially younger females (100% of likely female adolescent exposures). Heterosexual HIV disease cases for 2010 were higher among minority males (25% to 34%) than among white males (8%). Indications of heterosexual risk-taking behavior can be found in the high rates of infection for other sexually transmitted diseases.

Injecting drug use (including MSM/IDU) accounted for about 4 percent of male adult/adolescent HIV disease cases in 2010 and accounted for about 5 percent of female cases. Prevention activities aimed at reducing HIV transmission through injecting drug use remains very important to comprehensive HIV prevention strategies. Substantial evidence shows that needle exchange programs are effective in reducing HIV risk behavior and HIV seroconversion among injecting drug users. About 14 percent of living HIV cases had IDU as the hierarchical risk.

Preliminary evaluations indicate that four race/gender/transmission risk categories accounted for over 80 percent of all new diagnoses in 2010. These categories include black non-Hispanic MSM (506 cases; 34% of all cases), black non-Hispanic heterosexual women (262 cases; 18% of all cases), white non-Hispanic MSM (261 cases; 18% of all cases), and black non-Hispanic heterosexual men (174 cases; 11% of all cases).

In North Carolina, urban areas account for most (~74%) of HIV prevalence; however, no one MSA (metropolitan statistical areas) contains the bulk of cases. Cases are spread among several MSA that are found primarily along the interstate highways of I-40, I-85, and I-95. Among

MSA, the Charlotte MSA (which includes Mecklenburg, Gaston, Anson, Union, and Cabarrus counties) had the greatest proportion of living cases of HIV disease in the state, with 5,399 cases (22% of total living cases) as of 12/31/2010. Over 50 percent of new HIV diagnoses in 2010 were found in five of NC's 100 counties including Mecklenburg, Wake, Durham, Guilford and Cumberland.

While metropolitan areas account for the majority of HIV prevalence, the burden of HIV disease faced by rural areas in North Carolina should be acknowledged. In 2006, the CDC reported that North Carolina had the highest number of reported cases in rural areas for both AIDS (among 46 states) and HIV (non-AIDS, among 33 states). Additionally, in 2006 among 33 states with confidential name-based HIV reporting, North Carolina ranked the highest for living HIV cases (non-AIDS) and 3rd highest for living AIDS cases in rural areas.

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INTRODUCTION

The North Carolina HIV/STD Epidemiologic Profile describes the HIV (human immunodeficiency virus) and STD (sexually transmitted disease) epidemics among various populations in North Carolina. As in previous versions, the majority of the data presented are drawn from surveillance systems maintained by the 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 services 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, as well as 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, 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 for patients should assist various community-based organizations in assessing the need to provide or expand services in their service area. Some surveillance and other information is described using the current Regional Networks of Care designations of the Communicable Disease Branch HIV/AIDS care programs.

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 Hispanic, “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 and 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 US 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. This categorization 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

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 and Prevention (Chapter 3)

Partner Counseling and Referral Services (Chapter 4)

Special Studies (Chapter 5)

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

HIGHLIGHTS

- In 2009, North Carolina was the 10th most populous state in the U.S., with an estimated population of 9,535,483.

- North Carolina's population increased 18.5 percent from 2000 to 2010.

- In 2009, North Carolina ranked 3rd in the nation for annual population increase.

- The N.C. foreign-born population increased 38 percent from 2002 to 2008.

- North Carolina has the 18th largest non-white population in the nation.

- North Carolina has the 8th highest percentage of black population in the nation.

- North Carolina has the 26th largest Hispanic/Latino population and the 10th highest birth rate among Hispanics in the nation.

- The median age for the Hispanic population was 23.7 years, while the median age for all North Carolinians was 38.3 years in 2008.

- In 2010, North Carolina was 37th in the nation with a per capita income of $35,638 or 87.8 percent of the national average of $40,584.

- From 2008 to 2009, 19.7 percent of North Carolinians were living at or below the federal poverty level (FPL); 39.9 percent of the overall population is considered low income (living at or below 199% FPL).

- From 2008 to 2009, 23 percent of the 19 to 64 year old population in North Carolina was uninsured.

- About 19 percent of the N.C. population was eligible for Medicaid coverage at some point during 2009.

- About 70 percent of the state's population lived in urban areas in 2009.

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 2010 federal census, North Carolina was one of the most rapidly expanding states during the previous decade. From 2000 to 2010, North Carolina's population grew by 18.5 percent, from 8,049,313 to 9,535,483. Only five other states (Arizona, Idaho, Nevada, Texas, and Utah) grew faster during the last decade. From 2008 to 2009, North Carolina ranked 3rd for single year population growth. According to the State Demographer, the 2010 North Carolina *provisional* population estimate was 9,572,454, with county populations ranging from 4,403 (Tyrrell) to 923,944 (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 Iredell). From July 2008 to July 2009, there were 129,618 births and 79,441 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 2009, so the 2009 population is used as a substitute for 2010 to analyze the HIV disease rates in this profile. In 2009, North Carolina was the 10th most populous state in the United States with an estimated population of 9,380,884 (US Census 2009 population estimate), representing a 16.1 percent increase from that of year 2000. Map 1 displays the population distribution among the counties in North Carolina for 2009 (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 HIV disease and other STDs, as shown in previous Epidemiologic Profiles. Substantial morbidity and social problems among youth result from 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. Of the adolescents infected with HIV, more than half are estimated to be unaware of their status, having never been tested for the virus (Rotheram-Borus and Futterman 2000).

In 2009, the median age for people living in North Carolina was 36 years old, with 25.7 percent 18 years and younger, and 12.7 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

2009 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 10th in the nation in 2009 for people under 18 years of age.

Table 1.1. North Carolina bridged-race population estimates by age group, 2009

	Male		Female		Total	
Age	Population	Percent	Population	Percent	Population	Percent
0-12 years	852,562	9.1%	814,513	8.7%	1,667,075	17.8%
13-14 years	123,186	1.3%	116,919	1.2%	240,105	2.6%
15-19 years	331,810	3.5%	313,702	3.3%	645,512	6.9%
20-24 years	352,186	3.8%	315,417	3.4%	667,603	7.1%
25-29 years	318,747	3.4%	312,056	3.3%	630,803	6.7%
30-34 years	297,877	3.2%	306,767	3.3%	604,644	6.4%
35-39 years	329,377	3.5%	333,088	3.6%	662,465	7.1%
40-44 years	324,252	3.5%	331,509	3.5%	655,761	7.0%
45-49 years	336,379	3.6%	352,478	3.8%	688,857	7.3%
50-54 years	311,837	3.3%	333,787	3.6%	645,624	6.9%
55-59 years	274,939	2.9%	302,483	3.2%	577,422	6.2%
60-64 years	238,302	2.5%	264,686	2.8%	502,988	5.4%
65+ years	498,731	5.3%	693,294	7.4%	1,192,025	12.7%
Total	4,590,185	48.9%	4,790,699	51.1%	9,380,884	100.0%

National Center for Health Statistics (NCHS), Bridged-Race Population Estimates, January 2011

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 geographic region, 2009

		Western	Piedmont	Eastern	N.C.
	Race/Ethnicity	Pct.	Pct.	Pct.	Pct.
Male	White*	42.7%	32.3%	30.1%	32.9%
	Black*	2.4%	10.1%	13.4%	10.1%
	AI/AN*	0.5%	0.2%	1.4%	0.6%
	Asian/PI*	0.5%	1.5%	0.5%	1.1%
	Hispanic	2.7%	4.9%	3.6%	4.2%
	Total	48.8%	48.9%	49.0%	48.9%
Female	White*	45.7%	33.9%	30.9%	34.5%
	Black*	2.4%	11.6%	15.1%	11.5%
	AI/AN*	0.5%	0.2%	1.5%	0.6%
	Asian/PI*	0.5%	1.5%	0.6%	1.1%
	Hispanic	2.1%	3.9%	2.9%	3.4%
	Total	51.2%	51.1%	51.0%	51.1%
Total	White*	88.3%	66.1%	61.0%	67.4%
	Black*	4.8%	21.8%	28.5%	21.6%
	AI/AN*	1.0%	0.4%	2.8%	1.2%
	Asian/PI*	1.0%	2.9%	1.2%	2.2%
	Hispanic	4.8%	8.8%	6.5%	7.7%
	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 18th largest non-white population in the United States (3,058,647 in year 2009) 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 2009, 14 counties had populations consisting of more than 50 percent non-white residents (Robeson: 71.0%; Hertford: 65.1%; Bertie: 64.9%; Edgecombe: 61.6%; Warren: 61.4%; Northampton: 59.8%; Halifax: 59.4%; Vance: 56.9 %; Hoke: 55.8%; Washington: 55.0%; Durham: 54.2%; Greene: 53.6%; Anson: 51.3% and Scotland: 50.7%). 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 2009 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 2009.

Blacks

In 2009, North Carolina ranked 8th highest in percentage of blacks nationwide. According to the N.C. Health Profile 2009, compared to whites, blacks have higher death rates from heart disease, cancer, HIV, diabetes, homicide, and stroke. North Carolina has seven counties in which blacks comprise more than 50 percent of the total population (Bertie 62.9 %, Hertford 61.3%, Northampton 57.9%, Edgecombe 56.4%, Halifax 53.8%, and Warren County 53.0%). Map 3 (Appendix A, pg. A-5) displays the proportion of black population in 2009 by county.

Hispanics

From 2002 to 2009, the estimated Hispanic/Latino population in North Carolina increased by 59.1 percent, from 451,095 to 717,662. Hispanics represented 7.7 percent of the population of the state and ranked 26th nationally. North Carolina ranked 10th in Hispanic births in 2008. 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 23.7 years. Seventy percent (70%) of Hispanics are under 35 years old, while only 46 percent of the non-Hispanic population is under 35. Map 5 (Appendix A, pg. A-7) displays the proportion of the Hispanic population in 2009 by county. In North Carolina, Duplin County had the highest proportion of Hispanic residents (22.0%), followed by Sampson County (17.0%), Lee County (17.0%), and Montgomery County (16.5%).

American Indians

American Indians represent 1.2 percent of the N.C. population and are one of the largest American Indian populations in the United States. About 45 percent of American Indians in North Carolina live in Robeson County, followed by Cumberland, Hoke, Mecklenburg, Wake, Jackson, and Scotland counties. Map 4 (Appendix A, pg. A-6) displays the proportion of the American Indian population in 2009 by county. The 2009 N.C. Health Profile shows that American Indians experience higher death rates due to heart disease, 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 38 percent from 2002 to 2008 (480,248 to 665,270). In 2006, North Carolina ranked 15th nationally for the admitted number of immigrants from other countries. In 2009, 30.6 percent of the foreign-born populations in North Carolina were naturalized citizens, while 69.4 percent were not citizens. The various regions of birth are displayed in Table 1.4. The majority (57.3%) of the foreign-born population comes from Latin America, with the other 22.2 percent from Asia, 11.7 percent from Europe, 5.7 percent from Africa, 2.7 percent from North America, and 0.5 percent from Oceania.

Table 1.3. North Carolina bridged-race population estimates by race/ethnicity, 2009

	Male		Female		Total	
Race/Ethnicity	Population	Percent	Population	Percent	Population	Percent
White*	3,088,480	67.3%	3,233,757	67.5%	6,322,237	67.4%
Black*	950,549	20.7%	1,076,621	22.5%	2,027,170	21.6%
AI/AN*	53,326	1.2%	56,249	1.2%	109,575	1.2%
Asian/PI*	99,748	2.2%	104,492	2.2%	204,240	2.2%
Hispanic	398,082	8.7%	319,580	6.7%	717,662	7.7%
Total	4,590,185	100.0%	4,790,699	100.0%	9,380,884	100.0%

* non-Hispanic; AI/AN=American Indian/Alaska Native, PI=Pacific Islander
National Center for Health Statistics (NCHS), Bridged-Race Population Estimates, January 2011

The majority of the 2009 foreign-born population was male (52.8%) as opposed to female (47.2%). A majority (50%) of the foreign-born population is between ages 25 to 44 years (Table 1.5). About 83 percent speak a language other than English at home and 50 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	77,661	11.7%
Asia	147,358	22.2%
Africa	37,723	5.7%
Oceania	3,138	0.5%
Latin America	381,445	57.3%
North America	17,945	2.7%
Total	665,270	100.0%

Source: U.S. Census Bureau, 2009 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=9,380,884	N=665,270
Gender	Male	48.8%	52.8%
	Female	51.2%	47.2%
Age	Under 5 years	7.0%	1.0%
	5–17 years	17.3%	9.5%
	18–24 years	10.2%	11.4%
	25–44 years	27.2%	50.4%
	45–54 years	14.1%	13.9%
	55–64 years	11.5%	7.1%
	65–74 years	7.0%	4.1%
	75 + years	5.7%	2.7%

Source: U.S. Census Bureau, 2009 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. These areas are collectively referred to as Core Based Statistical Areas (CBSAs), with a metro area containing a core urban area of 50,000 or more population, and a micro area containing 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/metro/data/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 2009. Asian and Pacific Islanders have the highest proportion (56.7%) living in the large metropolitan areas, followed by Hispanics (42.9%). Similar proportions (around 34%) of all race/ethnic groups, except American Indians (18.0%), 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 (72%). A majority of American Indians (69%) 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/ethnicity for urban areas, 2009

Race/ Ethnicity	Large Metropolitan areas		Medium Metropolitan areas		Urban total	
	Population	Percent	Population	Percent	Population	Percent
White*	2,151,894	64.1%	2,249,079	68.8%	4,400,973	66.4%
Black*	769,348	22.9%	693,577	21.2%	1,462,925	22.1%
AI/AN*	14,229	0.4%	19,758	0.6%	33,987	0.5%
Asian, PI*	115,818	3.4%	64,936	2.0%	180,754	2.7%
Hispanic	307,824	9.2%	239,475	7.3%	547,299	8.3%
Total	3,359,113	35.8%	3,266,825	34.8%	6,625,938	70.6%

* non-Hispanic; AI/AN=American Indian/Alaska Native, PI=Pacific Islander
National Center for Health Statistics (NCHS), Bridged-Race Population Estimates, January 2011

Table 1.7. North Carolina population by race/ethnicity for rural areas, 2009

Race/ Ethnicity	Micro Metropolitan areas		Non-Metropolitan areas		Rural total	
	Population	Percent	Population	Percent	Population	Percent
White*	1,428,791	70.4%	492,473	67.8%	1,921,264	69.7%
Black*	399,374	19.7%	164,871	22.7%	564,245	20.5%
AI/AN*	61,029	3.0%	14,559	2.0%	75,588	2.7%
Asian, PI*	19,723	1.0%	3,763	0.5%	23,486	0.9%
Hispanic	119,803	5.9%	50,560	7.0%	170,363	6.2%
Total	2,028,720	21.6%	726,226	7.7%	2,754,946	29.4%

* non-Hispanic; AI/AN=American Indian/Alaska Native, PI=Pacific Islander
National Center for Health Statistics (NCHS), Bridged-Race Population Estimates, January 2011

In 2009, 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 2010 per capita income for North Carolina is $35,638, or 87.8 percent of the national average of $40,584. This figure represents a 2.5 percent decrease from 2009 and placed North Carolina 37th in the nation for personal per capita income and 4th in the Southeast.

The 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 5.0 percent in January 2008 to 8.5 percent in December 2008 to 11.3 percent in December 2009, but went down slightly to 9.8 percent in December 2010. These rates are all higher than the national unemployment rate (the national unemployment rate was 5.0 percent in January 2008 to 7.3 percent in December 2008 to 9.9 percent in December 2009 and to 9.4 percent in December 2010) (Bureau of Labor Statistics).

According to Income, Earnings, and Poverty Data from the 2009 American Community Survey, 16.3 percent of North Carolinians were living under the poverty line (while 14.3% nationally). From 2008 to 2009, 19.7 percent of North Carolinians were below the federal poverty level (FPL); with an overall total of 39.9 percent of the population considered low income (199% or below FPL). The median household income in North Carolina was $43,674, a figure much lower than the national median of $50,221. North Carolina ranked 14th in percentage of people in poverty in 2009. Table 1.8 displays the individual poverty rate by age group for the state (2008–2009) and the nation (2009). Table 1.9 displays the individual poverty rate by race/ethnicity for North Carolina and the United States (2008–2009). Map 7 (Appendix A, pg. A-9) displays the N.C. per capita income for 2009 by county.

Table 1.8. North Carolina and U.S. poverty rates by age, 2008–2009

Age in Years	N.C.	U.S.
Children 0–18	27%	27%
Adults 19–64	18%	17%
Elderly 65+	14%	14%

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 (2008–2009), 23 percent of persons ages 19 to 64 years were uninsured (statehealthfacts.org. Kaiser Family Foundation). According to statehealthfacts.org, 39 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. poverty rates by race/ethnicity, 2008–2009

Race/Ethnicity	Individual Poverty Rate (% of each group at or below the federal poverty level)	
	N.C. (Pct.)	US (Pct.)
White*	13%	13%
Black*	33%	35%
Hispanic	40%	34%
Other*	25%	23%

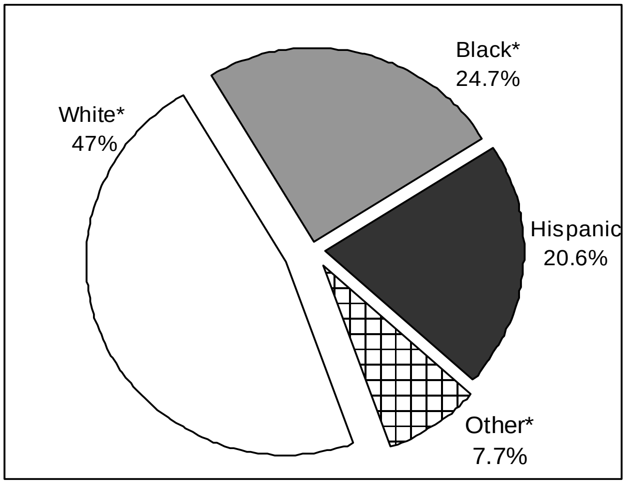
* non-Hispanic

Source: Urban Institute and Kaiser Family Foundation

Among the non-elderly (0–64 years old), 47 percent of those without health insurance in North Carolina were white, 24.7 percent were black, and 20.6 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.

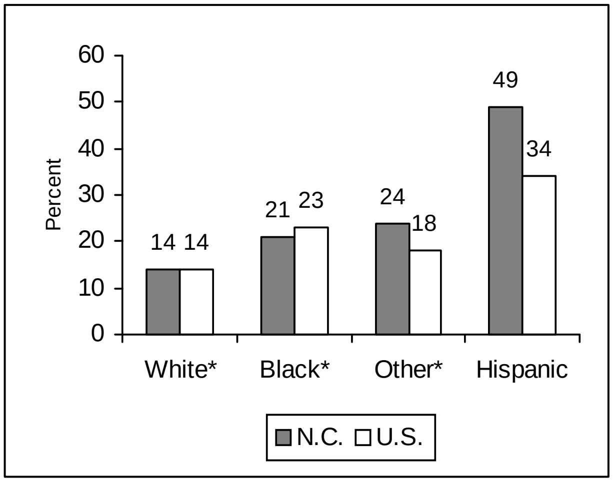
Figure 1.2 displays the uninsured rates by race/ethnicity for North Carolina as compared to the United States. In 2008 to 2009, 47 percent of Latinos or Hispanics, 22 percent of blacks, 13 percent of whites, and 25 percent of other races were uninsured in North Carolina (statehealthfacts.org. Kaiser 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). Hispanics 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† by race/ethnicity, 2008–2009



†non-elderly *non-Hispanic

Figure 1.2. Percent of uninsured by race/ethnicity, 2008–2009



*non-Hispanic

Education

According to the 2009 American Community Survey, 84.3 percent of North Carolinians who were 25 years or older had a high school diploma or higher and 26.5 percent had a bachelor's degree or higher. Around 5 percent of high school students (grades 9–12) dropped out during the 2008 to 2009 school year (N.C. Public Schools Statistical Profile, 2010).

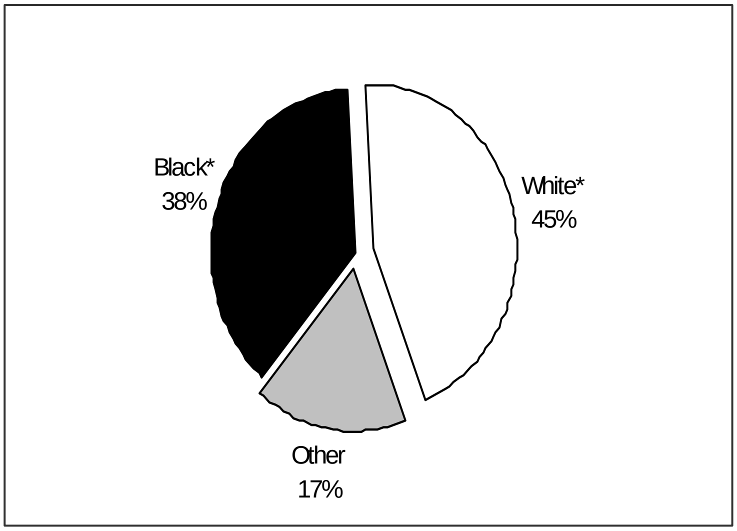
Internet access

The internet has become one of the most important venues for health education. In 2007, North Carolina ranked 42nd for the percentage of households with computers (57.7%), and 40th for the percentage of households with internet access (56.8%).

Public Aid

Total Medicaid and Medicaid-related expenditures in North Carolina for State Fiscal Year (SFY) 2008 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 (N.C. Medicaid 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 2010. (For more information see http://www.ncdhhs.gov/dma/2008report/2008tables.pdf).

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



*non-Hispanic

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

HIGHLIGHTS

- As of December 31, 2010, the cumulative number of individuals in North Carolina diagnosed with HIV infection was 38,397 people.

- An estimated 35,000 people were living with HIV/AIDS in North Carolina (including 7,000 individuals who may have been unaware of their infections) as of December 31, 2010.

- The total number of new HIV diagnoses in 2010 was 1,487 (15.9 per 100,000 population) and the number of new diagnoses of HIV infection among adults/adolescents was 1,482 (19.2 per 100,000 adult/adolescent population).

- In 2010, the rate of new HIV diagnoses for adult/adolescent blacks (59.7 per 100,000) was more than 10 times greater than that for adult/adolescent whites (5.6 per 100,000). The rate of new HIV diagnosis for adult/adolescent Hispanics (24.7 per 100,000) was more than four times greater than for whites.

- The highest rate of new HIV diagnoses in 2010 was among adult/adolescent, black males (94.0 per 100,000). This rate was eight times greater than the rate for adult/adolescent white males (11.6 per 100,000). The rate of new HIV diagnoses for adult/adolescent Hispanic males (35.5 per 100,000) was three times the rate among white males.

- The largest disparity in 2010 was for adult/adolescent black females; with a rate of new HIV diagnoses (30.5 per 100,000) that was nearly 17 times higher than that of white females (1.8 per 100,000). The rate among Hispanic adult/adolescent females (10.0 per 100,000) was more than five times the rate among white females.

- For 2010 adult/adolescent HIV disease cases, men who have sex with men (MSM) was the risk category in an estimated 57 percent of total cases, heterosexual transmission risk was estimated in 39 percent, and IDU was estimated in 4 percent of total cases (including 1 percent among MSM who also indicated injection drug use).

- In 2010, MSM (including MSM/IDU) accounted for 76 percent of new HIV disease cases among adult/adolescent males.

- In 2010, heterosexual contact accounted for about 95 percent and injecting drug use accounted for 5 percent of HIV disease cases for adult/adolescent females.

- Twenty percent (20%) of newly diagnosed HIV disease cases in 2010 were among adolescent males ages 13 to 24 years old.

- In 2010, 26.0 percent of newly diagnosed HIV disease cases also represented new AIDS cases (i.e., HIV and AIDS diagnosed at the same time or within six months).

- Mecklenburg County had the most HIV cases diagnosed in 2010 (n=312), followed by Wake County (n=172) and Guilford County (n=118).

- In 2010, Edgecombe County had the highest three-year average HIV disease rate (41.0 per 100,000), followed by Mecklenburg County (38.1 per 100,000), Durham County (33.7 per 100,000), Northampton County (31.2 per 100,000), Wilson County (29.0 per 100,000), and Guilford County (27.5 per 100,000).

- In 2010, HIV/AIDS was listed as the 7th leading cause of death for N.C. adults from 25 to 44 years old. The crude HIV disease death rate for blacks is more than 13 times higher than for whites (12.1 vs. 0.9 per 100,000).

- From the beginning of the epidemic through December 2010 (1983–2010), 19,761 AIDS cases have been reported in North Carolina

- North Carolina ranked 11th among the 50 states in AIDS cases diagnosed in 2009 (the most recent year available for national comparisons) and 13th in the nation in 2008 for estimated persons living with AIDS.

- Seven hundred ninety-six AIDS cases were diagnosed in North Carolina in 2010 (8.5 per 100,000 population).

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.*

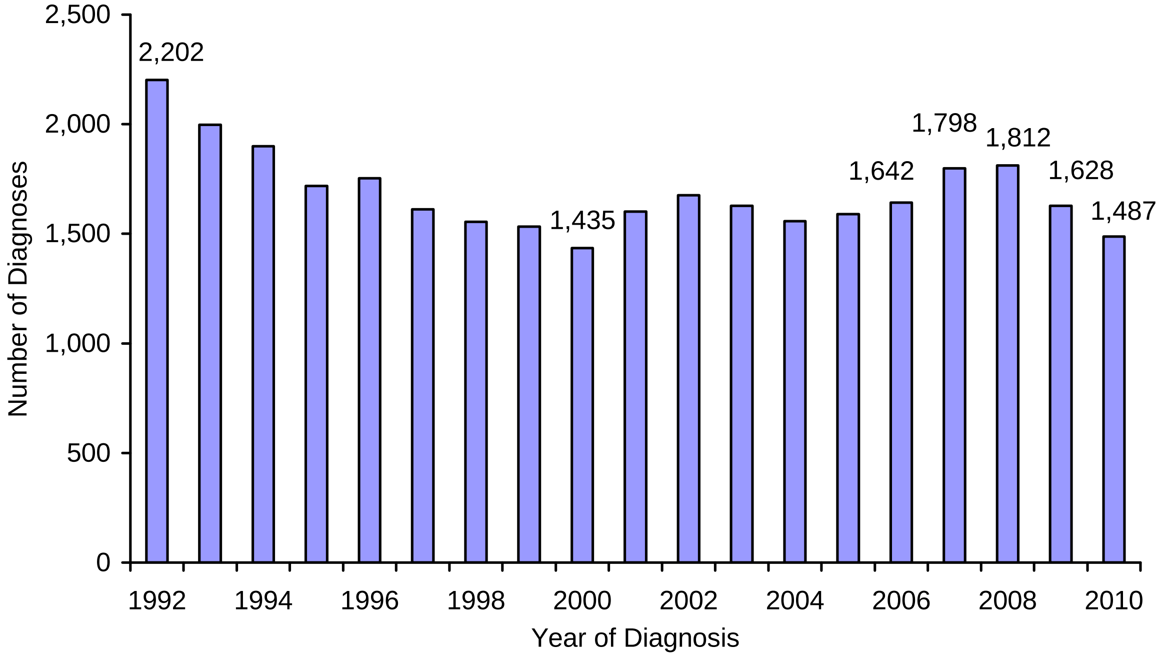
- *Unless otherwise noted, year refers to year of diagnosis, not year of report, as in previous publications.*

- *Unless otherwise noted, references to all racial groups in surveillance data are presented in a race/ethnic designation. Hispanics are considered a separate racial/ethnic 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 2010 by the year of HIV diagnosis for the individual. New diagnoses for 2010 reflect a continuation of the decline seen in 2009 and the lowest number of new cases diagnosed since the year 2000. The highest point in the HIV epidemic occurred in 1992 in North Carolina with 2,202 cases diagnosed and then moderated from 1995 to 2010 with an average of 1,600 cases (range: 1,400–1,800) 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 2010, 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 Communicable Disease Branch efforts to increase HIV testing, including the *Get Real. Get Tested* campaign, and might not necessarily represent increased incidence. The fact that a decrease was seen in 2009 and further in 2010 might be evidence of a true decline in incidence; however, only additional years of data will determine whether this is actually the case.

Figure 2.1. HIV disease cases diagnosed in North Carolina, 1992–2010



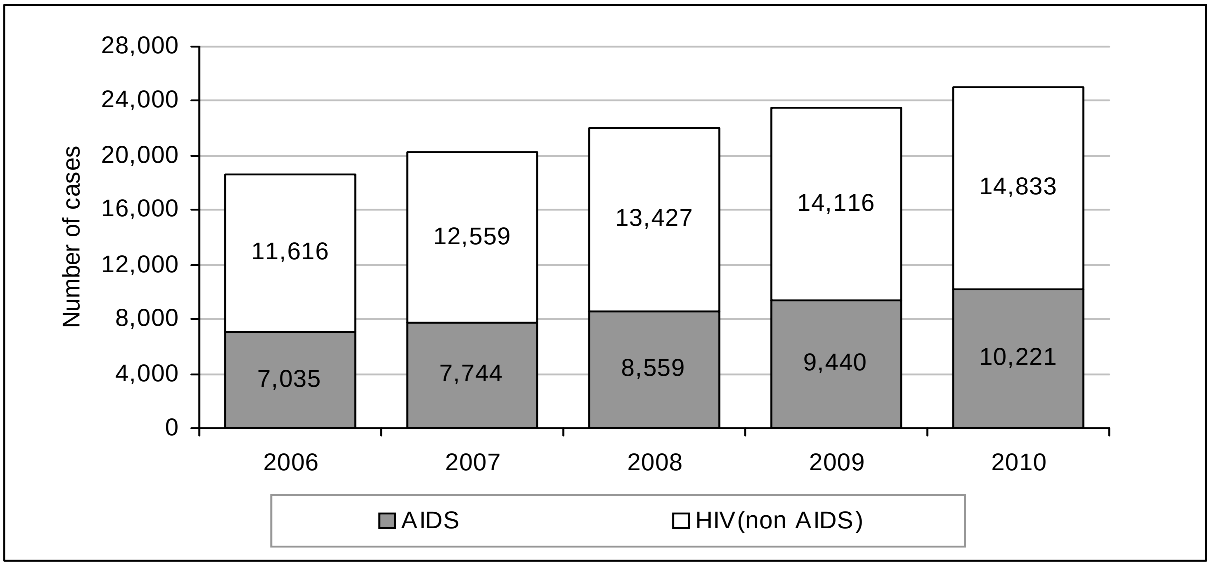
Please note the numbers in Figure 2.1 (above) are periodically updated due to completion of information and deletion of interstate duplications. Readers are encouraged to use the numbers in the latest report.

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 and testing activities. From the first HIV disease case diagnosed and reported to the Division of Public Health in 1983, through December 31, 2010, the cumulative number of HIV disease cases diagnosed in North Carolina is 38,397, of whom 25,074 are living and 13,323 have died. This number includes some HIV-positive individuals that died of non AIDS-related causes (see pg. 49 for HIV disease related deaths). Figure 2.2 displays the numbers of people living with HIV disease, which represent prevalent cases at the end of each year from 2006 to 2010. The number of people living with HIV disease has been increasing every year, indicating 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 disease may live longer and healthier lives.

Persons living with HIV represent individuals that 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 as well as people who are infected with HIV but have not been tested and reported. Efforts to identify the unaware positive population will increase new diagnoses in the future. However, the current number of total living cases in Figure 2.2 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 on the CDC estimate that 80 percent of people living with HIV have been tested and know their status. Studies indicate that the N.C. HIV surveillance system currently captures 85 to 95 percent of HIV diagnoses (Appendix B, pg. B-3). Applying these two statistics to our current surveillance total of 25,074 people living in North Carolina with HIV/AIDS increases the estimated HIV disease prevalence in the state to approximately 35,000 people.

Figure 2.2. Persons (reported) living with HIV disease in N.C., 2006–2010*



*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, 2010. Male prevalent cases were 70 percent of the total and more than double the female prevalence. Blacks comprised the majority (66%) of cases, followed by whites (26%) and Hispanics (6%). Older individuals represented a larger percentage of people living with HIV, as people can live for many years on HAART (Highly Active AntiRetroviral Treatment) with an HIV diagnosis. The greater percentages of males (70%) and blacks (66%) living with HIV disease indicates that these groups are most affected by the HIV epidemic in North Carolina.

Table 2.1. North Carolina HIV cases living as of 12/31/2010 by selected demographics

	Males			Females			Total		
	No.	Pct.	Rate**	No.	Pct.	Rate**	No.	Pct.	Rate**
	17,544	70.0%	382.2	7,530	30.0%	157.2	25,074	100.0%	267.3
Race/Ethnicity									
White*	5,216	20.8%	168.9	1,220	4.9%	37.7	6,436	25.7%	101.8
Black*	10,822	43.2%	1138.5	5,828	23.2%	541.3	16,650	66.4%	821.3
AI/AN*	139	0.6%	260.7	63	0.3%	112.0	202	0.8%	184.3
Asian/PI*	85	0.3%	85.2	35	0.1%	33.5	120	0.5%	58.8
Hispanic	1,129	4.5%	283.6	309	1.2%	96.7	1,438	5.7%	200.4
Current Age									
0-12	33	0.1%	3.9	24	0.1%	2.9	57	0.2%	3.4
13-14	10	0.0%	8.1	15	0.1%	12.8	25	0.1%	10.4
15-19	100	0.4%	30.1	72	0.3%	23.0	172	0.7%	26.6
20-24	741	3.0%	210.4	215	0.9%	68.2	956	3.8%	143.2
25-29	1,201	4.8%	376.8	407	1.6%	130.4	1,608	6.4%	254.9
30-34	1,518	6.1%	509.6	673	2.7%	219.4	2,191	8.7%	362.4
35-39	1,695	6.8%	514.6	1,054	4.2%	316.4	2,749	11.0%	415.0
40-44	2,670	10.6%	823.4	1,256	5.0%	378.9	3,926	15.7%	598.7
45-49	3,352	13.4%	996.5	1,387	5.5%	393.5	4,739	18.9%	688.0
50-54	2,769	11.0%	888.0	1,067	4.3%	319.7	3,836	15.3%	594.2
55-59	1,713	6.8%	623.0	670	2.7%	221.5	2,383	9.5%	412.7
60-64	877	3.5%	368.0	372	1.5%	140.5	1,249	5.0%	248.3
65+	623	2.5%	124.9	239	1.0%	34.5	862	3.4%	72.3

*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; without effective behavioral interventions for people living with HIV disease, they may continue to transmit HIV to others. Table I (Appendix D, pg. D-12) shows that 46 percent of living cases were likely infected through MSM activities, 38 percent through heterosexual transmission, 11 percent through injection drug use practices (IDU), and 3 percent through MSM/IDU activities.

NEWLY DIAGNOSED HIV DISEASE CASES IN 2010

In 2010, 1,487 (15.9 per 100,000) individuals were newly diagnosed with HIV infection in North Carolina. Of the newly diagnosed persons, 1,482 of them were over 13 years old, which makes the rate of HIV infection among adults/adolescents 19.2 per 100,000 (Table 2.2.).

Gender and race/ethnicity

Among individuals diagnosed with HIV disease in 2010, about three times as many were male compared to female. Table 2.2 displays the gender and race/ethnicity distribution of newly diagnosed HIV disease among adults/adolescents for 2010.

Table 2.2. N.C. adult/adolescent HIV disease cases by gender and race/ethnicity, 2010

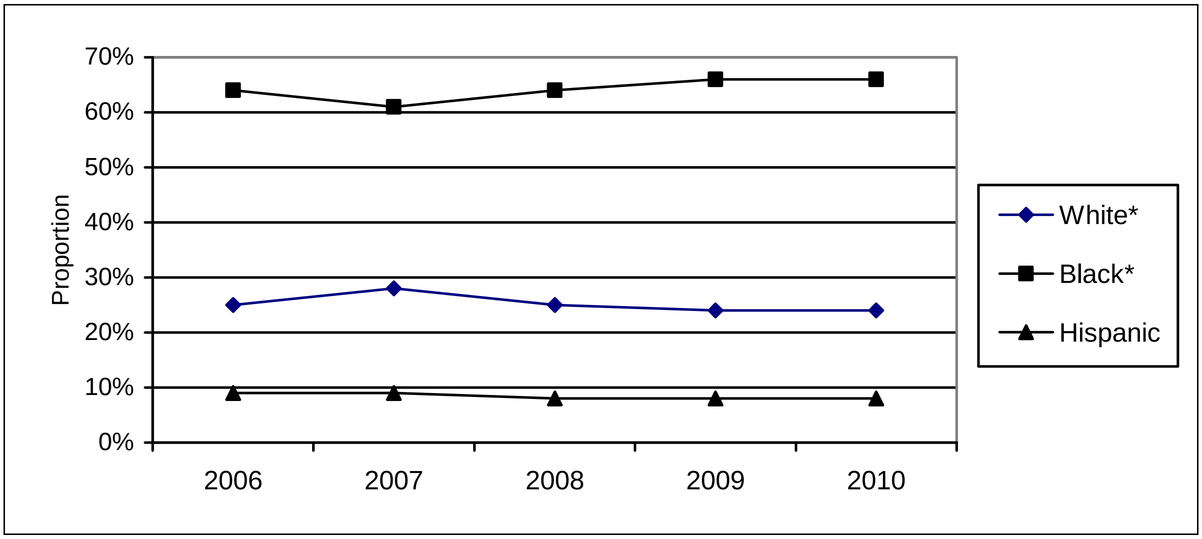
Race/ Ethnicity	Males			Females			Total		
	No.	Pct.	Rate**	No.	Pct.	Rate**	No.	Pct.	Rate**
White*	300	20%	11.6	50	3%	1.8	350	24%	6.5
Black*	706	48%	94.0	269	18%	30.5	975	66%	59.7
AI/AN*	3	0%	7.1	1	0%	2.2	4	0%	4.5
Asian/PI*	7	0%	9.0	2	0%	2.4	9	1%	5.6
Hispanic	97	7%	35.5	20	1%	10.0	117	8%	24.7
Multiple*	15	1%	---	12	1%	---	27	2%	---
Total	1,128	76%	30.2	354	24%	8.9	1,482	100%	19.2

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

Among the adult/adolescent population newly diagnosed with HIV disease in 2010, blacks made up the majority of cases (65.7%), followed by whites (23.9%), and Hispanics (7.8%). Over the previous five years (2006–2010), 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 HIV cases because rates take into account the race/ethnicity of the state’s population. The highest rate of newly diagnosed HIV disease was among black males (94.0 per 100,000 adult/adolescent population), which was eight times that for white males (11.6 per 100,000 adult/adolescent population). The HIV disease rate among adult/adolescent black females (30.5 per 100,000 adult/adolescent population) was nearly 17 times higher than the rate for adult/adolescent white females (1.8 per 100,000), which represented the largest disparity noted within gender and race/ethnicity categories.

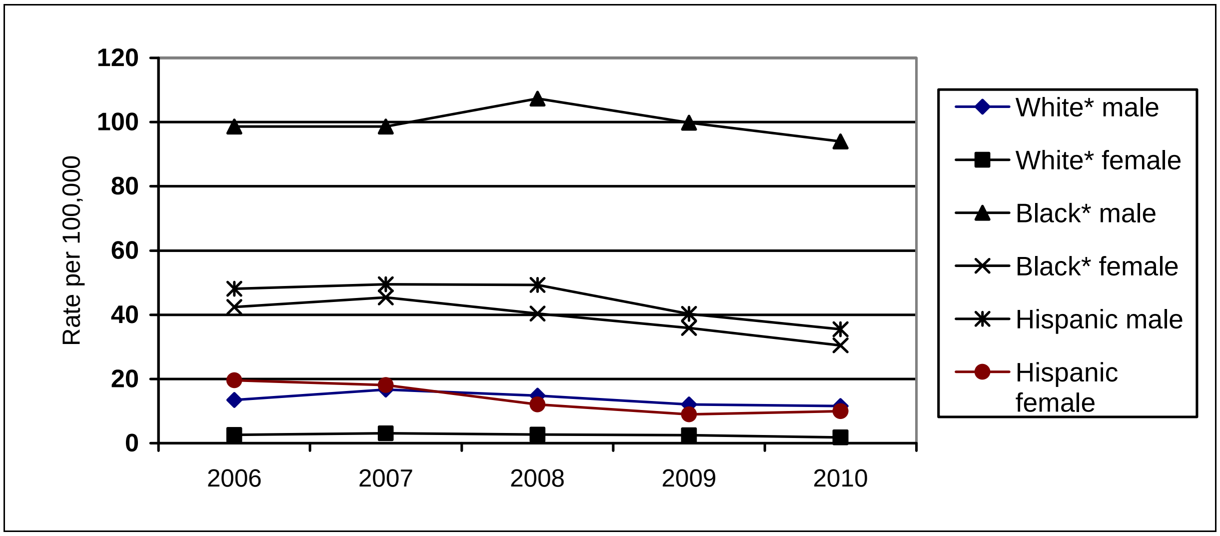
Disparities also existed for Hispanics as compared to whites. The rate for adult/adolescent Hispanic men (35.5 per 100,000) was more than three times the rate for white men, and Hispanic males ranked second highest among the gender and race/ethnicity rates. The rate for adult/adolescent Hispanic women (10.0 per 100,000) was more than five 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, blacks, and Hispanics) specific HIV disease rates. Over the past several years, HIV disease rates for black males, black females, and Hispanic females have shown decreases.

Figure 2.3. Adult/adolescent HIV disease proportions by race/ethnicity, 2006–2010



*non-Hispanic

Figure 2.4. Adult/adolescent HIV disease rates by race/ethnicity and gender, 2006–2010



*non-Hispanic

Age distribution

Most HIV disease diagnoses in 2010 were for adults and adolescents, with less than 1 percent (n=5) of newly diagnosed cases representing infants or children younger than 13 years. Overall, adults ages 20 to 29 years and 40 to 49 years accounted for the greatest proportion (about 54% together) of individuals diagnosed in 2010 (Table 2.3).

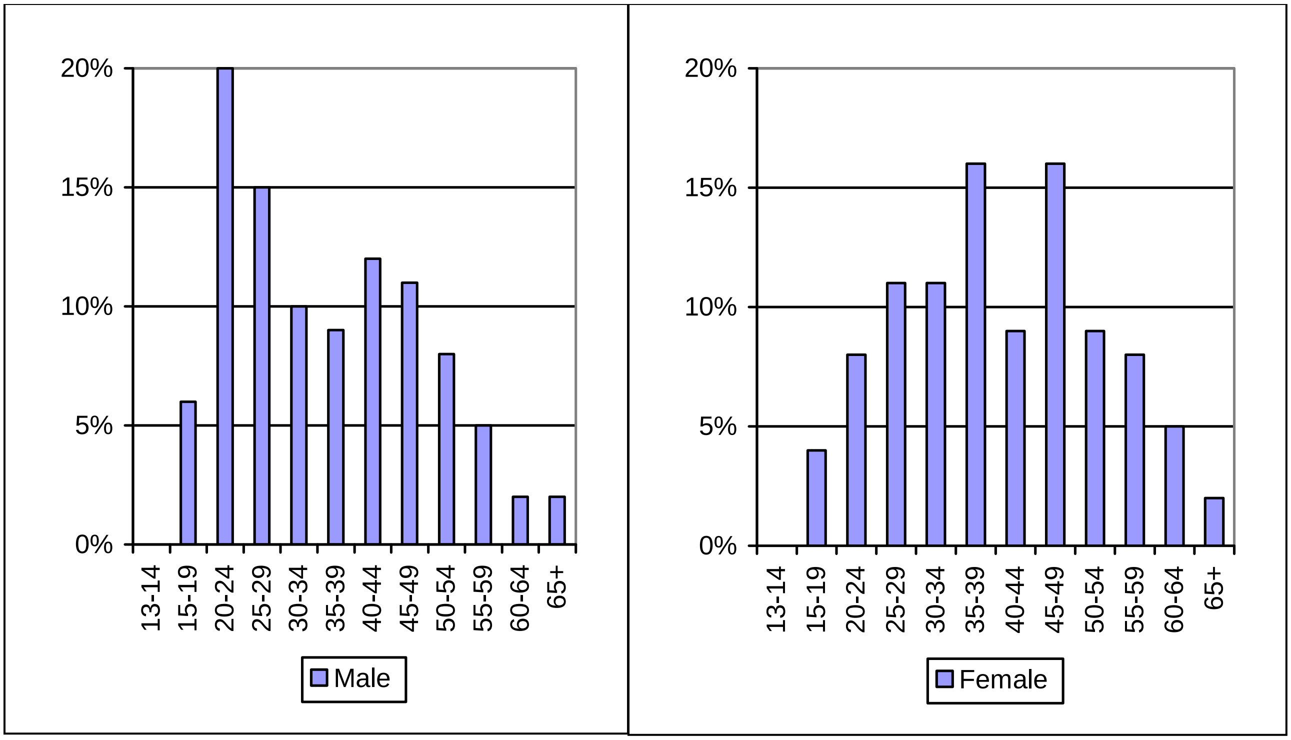
Figure 2.5 displays the difference of ages between males and females diagnosed with HIV disease in 2010. More males between ages 20 to 29 years (20%) were diagnosed, while proportionately more females between ages 35 to 39 years (16%) and 45 to 49 years (16%) were diagnosed. The difference of ages at diagnosis reflects the difference in risk for male and females. In recent years, HIV disease has been increasing among young black men in North Carolina, unlike previous years, when the HIV epidemic was increasing primarily among an older population.

Table 2.3. North Carolina HIV disease cases by age group and gender, 2010

Age	Males			Females			Total		
	No.	Pct.	Rate*	No.	Pct.	Rate*	No.	Pct.	Rate*
0-12	3	0%	0.4	2	0%	0.2	5	0%	0.3
13-14	1	0%	0.8	1	0%	0.9	2	0%	0.8
15-19	65	4%	19.6	15	1%	4.8	80	5%	12.4
20-24	229	15%	65.0	29	2%	9.2	258	17%	38.6
25-29	166	11%	52.1	38	3%	12.2	204	14%	32.3
30-34	113	8%	37.9	40	3%	13.0	153	10%	25.3
35-39	100	7%	30.4	56	4%	16.8	156	10%	23.5
40-44	130	9%	40.1	33	2%	10.0	163	11%	24.9
45-49	126	8%	37.5	55	4%	15.6	181	12%	26.3
50-54	90	6%	28.9	32	2%	9.6	122	8%	18.9
55-59	60	4%	21.8	28	2%	9.3	88	6%	15.2
60-64	23	2%	9.7	19	1%	7.2	42	3%	8.4
65+	24	2%	4.8	8	1%	1.2	32	2%	2.7
Total	1,131	76%	24.6	356	24%	7.4	1,487	100%	15.9

* per 100,000 population

Figure 2.5. Percentage of adult/adolescent HIV disease cases by age and gender, 2010



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 all methods used to determine risk factors. Ultimately, each case is assigned to one 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 2010. 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 (38%). A portion of these NIR cases were classified as NIR not due to missing or incomplete information, but rather because the reported risk(s) did not meet one of the CDC-defined risk classifications; this was especially common for the heterosexual risk category. Meeting the CDC-defined risk of heterosexual transmission includes the requirement of 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, or multiple sexual partners). Even with the reassignment of presumed heterosexual risk for some NIR cases, a substantial proportion (24%) of cases remained assigned as no identified risk.

Table 2.4. Adult/adolescent HIV disease cases by transmission category, NIR* included, 2010

Exposure category	Males		Females		Total	
	No.	Pct.	No.	Pct.	No.	Pct.
MSM	681	60%	---	---	681	46%
IDU	24	2%	10	3%	34	2%
MSM/IDU	10	1%	---	---	10	1%
Heterosexual	72	6%	115	32%	187	13%
Presumed heterosexual	121	11%	90	25%	211	14%
NIR*	219	19%	139	39%	358	24%
Total	1,128	100%	354	100%	1,482	100%

*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). Table 2.5 shows that in 2010, MSM were estimated to represent about 57 percent of all HIV disease cases. Heterosexual transmission risk represented about 39 percent of all HIV disease cases and IDU and MSM/IDU (men who have sex with men and inject drugs) represented about 4 percent (including MSM/IDU). 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 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.***

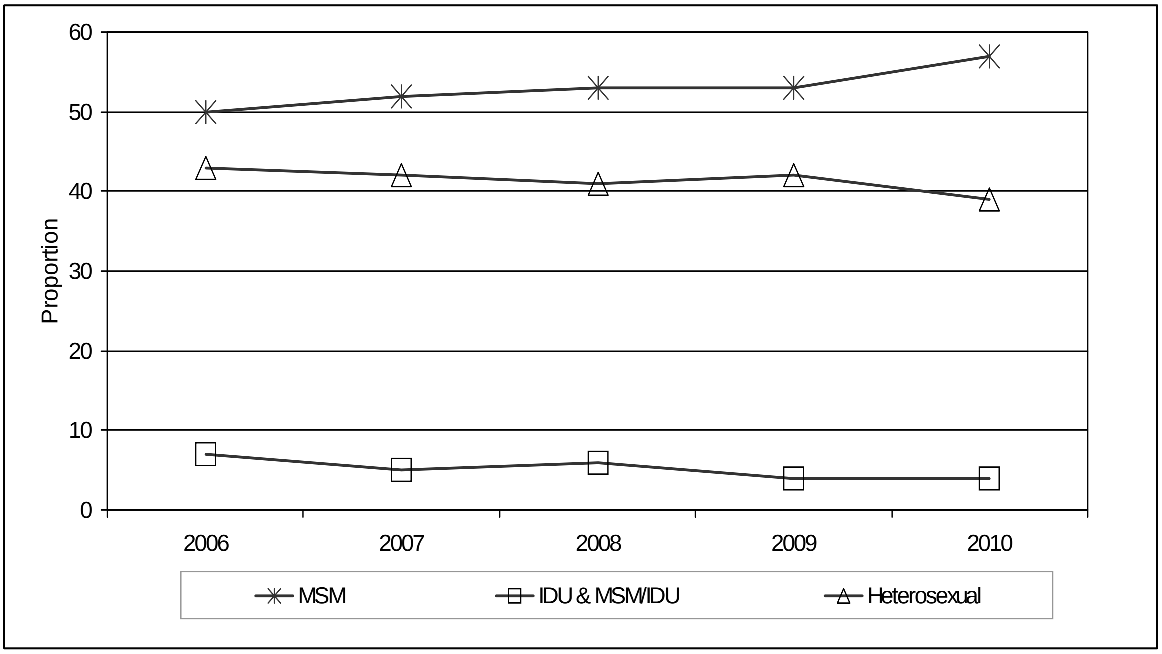
Table 2.5. Adult/adolescent HIV disease cases by transmission category, NIR* redistributed, 2010

Exposure Category	Males		Females		Total	
	No.	Pct.	No.	Pct.	No.	Pct.
MSM	845	75%	---	---	354	57%
IDU	30	3%	16	5%	46	3%
MSM/IDU	12	1%	---	---	12	1%
Heterosexual	239	21%	338	95%	577	39%
Total	1,128	100%	354	100%	1,482	100%

*no identified risk

Figure 2.6 shows more than 90 percent of the HIV disease cases were likely transmitted via sex, either homosexual or heterosexual. Over the period of 2006 to 2010, MSM have been the leading mode of transmission, increasing from 50 percent in 2006 to 57 percent in 2010 (14% increase). During the same time period, IDU (including MSM/IDU) transmission decreased 43 percent and heterosexual transmission decreased 9 percent.

Figure 2.6. Proportion of HIV disease* cases by mode of transmission, 2006–2010 (NIRs redistributed)



* 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 accounted for about 75 percent of HIV disease cases diagnosed in 2010; heterosexual contact cases accounted for about 21 percent of cases; and IDU cases (including MSM/IDU) accounted for about 4 percent. For females, heterosexual contact accounted for about 95 percent of cases and IDU about 5 percent.

Figure 2.7. Adult/adolescent females HIV disease cases, 2010 N=354

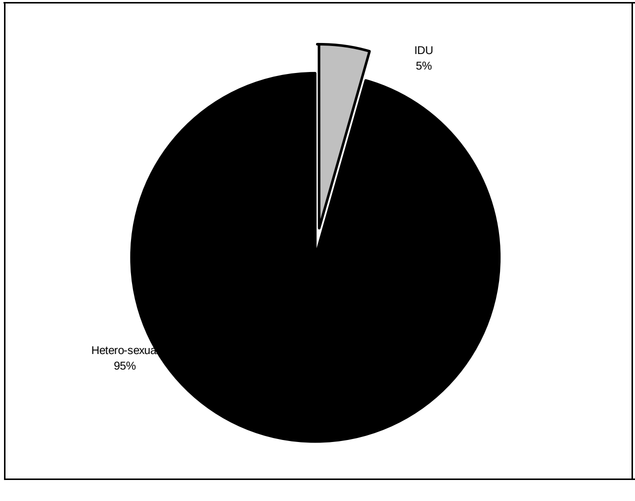
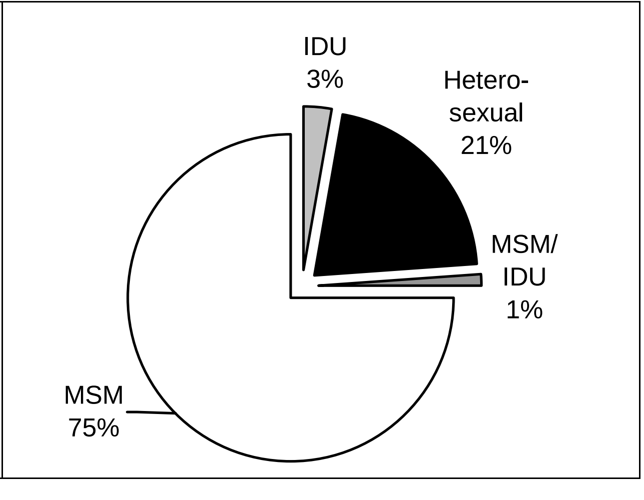


Figure 2.8. Adult/adolescent males HIV disease cases, 2010 N=1,128



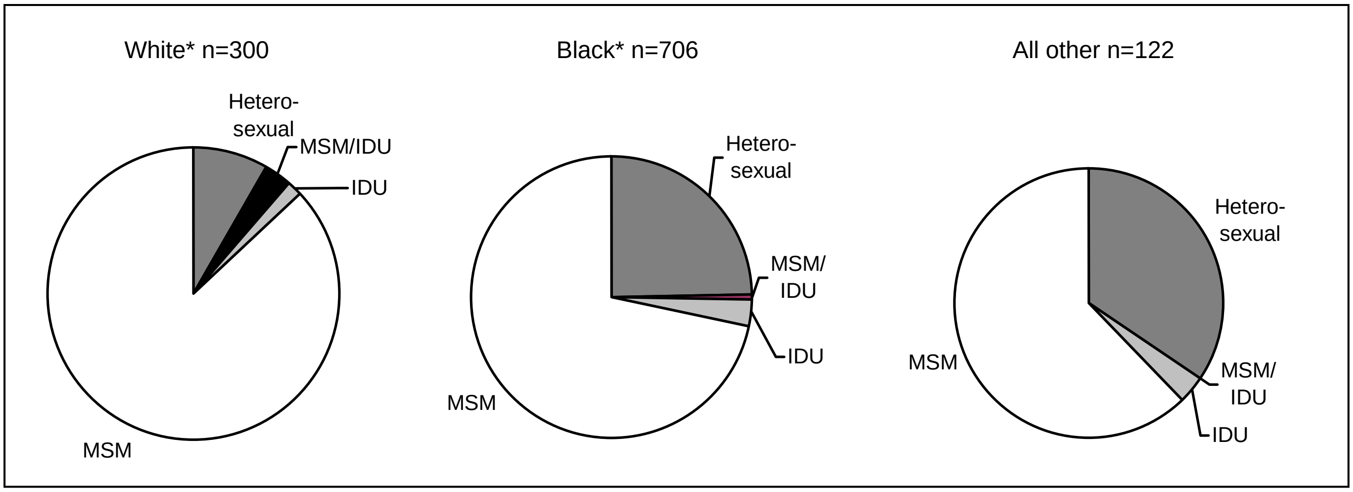
Tables D and E (Appendix D, pg. D-7 to D-8) display the risk categories by gender for HIV disease cases from 2006 to 2010. For males, the proportion of MSM cases has risen in recent years, from 70 percent in 2006 to 75 percent in 2010. The proportion of IDU cases (including MSM/IDU) for males has declined from 6 percent to 4 percent from 2006 through 2010. For females, the proportion of heterosexual contact reports has increased from 91 to 95 percent and proportion of IDU transmission decreased from 9 to 4 percent from 2006 through 2010.

Gender, race/ethnicity, and mode of transmission

Among white males, MSM represented 87 percent of cases, heterosexual risk represented 8 percent of cases, and IDU risk represented 2 percent of cases. For black males, MSM represented about 72 percent of HIV cases, heterosexual risk represented about 25 percent of cases, and IDU risk (including MSM/IDU) about 4 percent of cases. The risk breakdown for other races/ethnicities (Hispanics, American Indians, and Asian/Pacific Islanders) are grouped together as "All other" because of low case numbers. Within this aggregated group, MSM risk represented 76 percent of male cases, heterosexual risk 34 percent of cases, and IDU risk (including MSM/IDU) 4 percent of cases. The proportions of HIV cases attributed to heterosexual risk among black males (25%) and other races (34%) are higher than the proportion among white males (8%). 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.

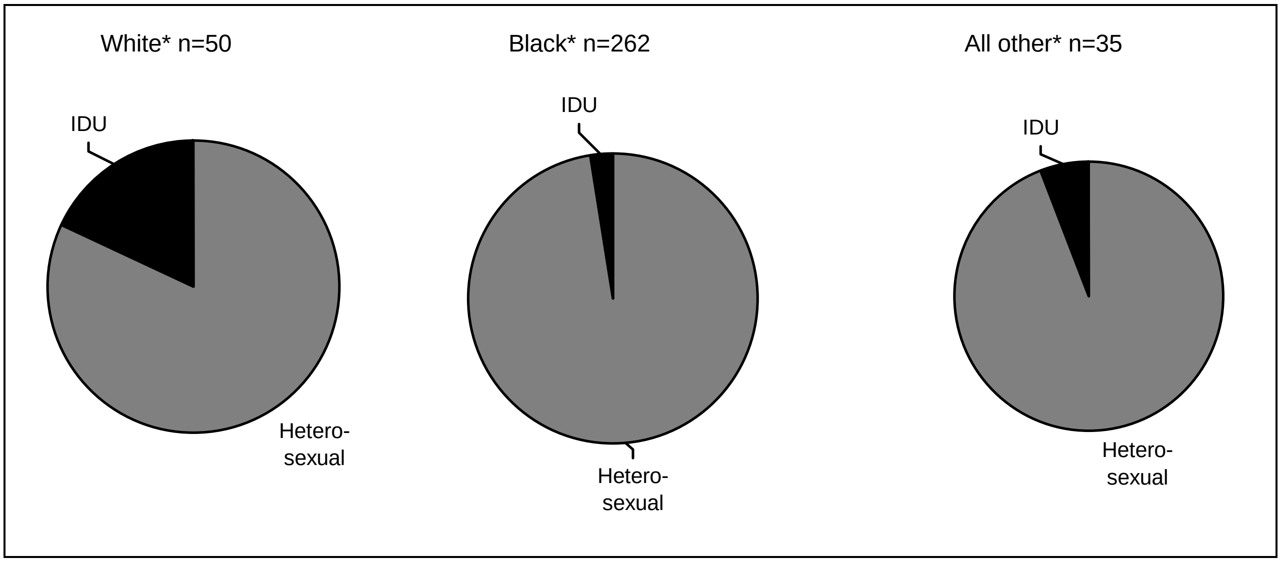
Unlike the differences in risk observed for males among the racial/ethnic groups, the majority of all HIV cases among females, regardless of race/ethnicity, are attributed to heterosexual sex. IDU is attributed to a greater proportion of white female cases (17%) than to minority females (2–5%; Figures 2.9 and 2.10).

Figure 2.9. Adult/Adolescent male HIV disease cases, 2010



*non Hispanic

Figure 2.10. Adult/adolescent female HIV disease cases, 2010



*non Hispanic

ADOLESCENT ACQUIRED HIV/AIDS

Figures 2.11 through 2.14 display the percentage of newly diagnosed HIV disease cases by risk and demographic categories for each gender for individuals ages 13 to 24 years when diagnosed with HIV. Because there can be significant delay between infection and subsequent testing and reporting, the age group 13 to 24 years better describes infections that likely occurred during adolescence. In 2010, while just 5.5 percent of total cases diagnosed were found among teenagers from 13 to 19 years, the percentage increased to 22.9 percent when 20 to 24 year olds were included. From 2006 to 2010, the proportion of adolescents among HIV disease cases has increased from 15.9 percent to 22.9 percent of all reports. The proportion of cases among each racial group for adolescents is similar to that of HIV cases overall: minorities are disproportionally affected. Examining the race of new adolescent HIV cases 2010 shows that infections were concentrated among blacks for both men (81%) and women (85%; Figures 2.11 and 2.12). 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. New HIV diagnoses among adolescent (13-24) males, by race, 2010

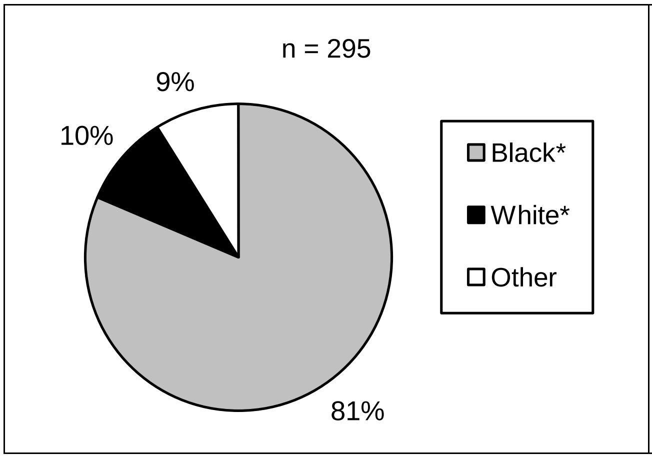
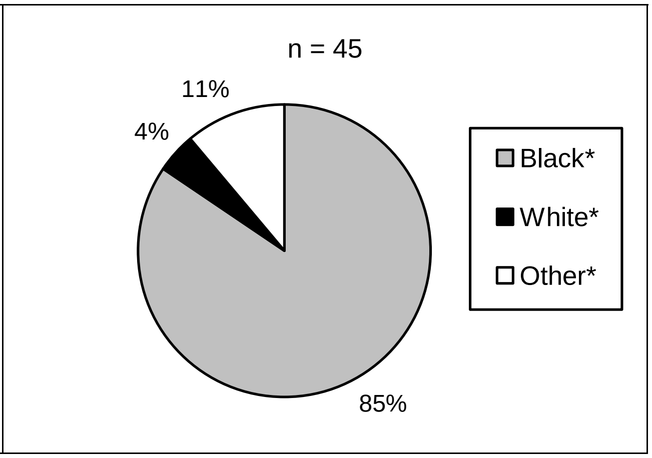


Figure 2.12. New HIV diagnoses among adolescent (13-24) females, by race, 2010



*non Hispanic

The exposure or risk categories for male and female adolescents are very different (Figures 2.13 and 2.14). In 2010, all new HIV disease cases among adolescent females were attributed to heterosexual contact. For adolescent males, the proportion of HIV disease cases attributed to heterosexual contact was only 6 percent and the proportion attributed to MSM risk accounted for 92 percent, up from the 88 percent of the diagnosed in 2006. As compared to cases for older persons, adolescent cases are more likely to be associated with sexual activity (99% vs. 96%) and not injection drug use practices. Table C (Appendix D, pg. D-6) shows the detailed statistics about the percentage by gender over the past five years (2006-2010).

Figure 2.13. Adolescent (13-24 years) male HIV cases, 2010

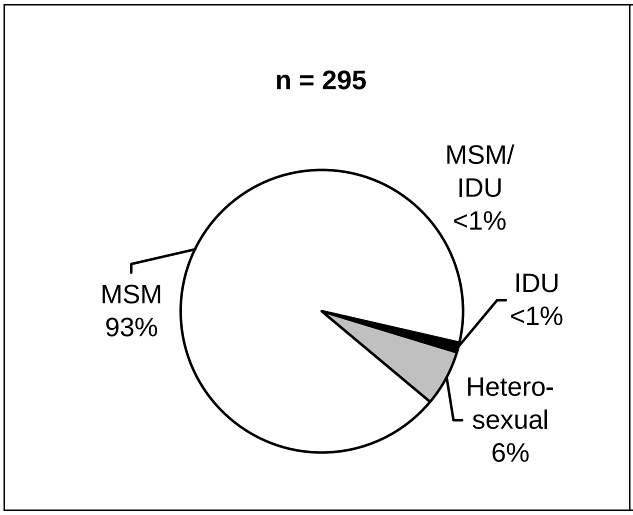
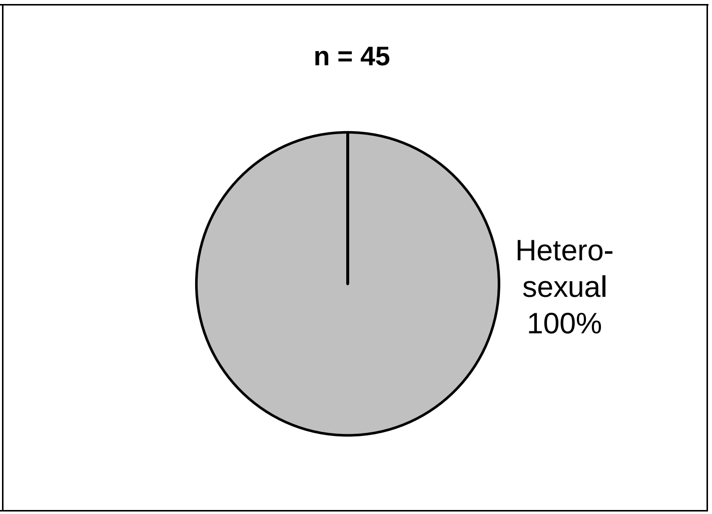


Figure 2.14. Adolescent (13-24 years) female HIV cases, 2010



FEMALES OF CHILD-BEARING AGE AND PERINATAL HIV/AIDS

Perinatal transmission of HIV is generally preventable if appropriate drugs are administered to 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). Approximately 300 women of child-bearing age are diagnosed with HIV each year in North Carolina (65% of total female HIV cases). Note that the number and proportion of HIV diagnoses among N.C. females has decreased in recent years. Readers should keep in mind that the delays in testing and diagnosis can significantly affect the assessment of the actual number of females in this category.

Table 2.6. Female HIV disease cases by special age groups, 2006–2010

Age	2006		2007		2008		2009		2010	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
0-14 yrs	5	1%	5	1%	5	1%	3	1%	3	1%
15-44 yrs	296	64%	353	68%	312	67%	257	62%	211	59%
45+ yrs	163	35%	159	31%	147	32%	154	37%	142	40%
Total	464	100%	517	100%	464	100%	414	100%	356	100%

Table 2.7 displays the numbers of likely perinatal HIV transmissions that have occurred from 2001 to 2010 by year of birth. These numbers represent pediatric reports that indicate likely perinatal transmission based on exposure categories in HIV surveillance data. Since 2007, there have been decreases noted in the number of HIV-positive babies born in North Carolina. Confirming HIV in perinatal cases takes time, so case totals for recent years should be considered preliminary. In November 2007, North Carolina implemented new HIV testing statues that require every pregnant woman be offered HIV testing by her attending physician at her first prenatal visit and in the third trimester. If there is no HIV result test on record during the current pregnancy, the pregnant woman will be tested at labor and delivery and/or the infant will be tested for HIV.

Table 2.7. Likely perinatal HIV disease cases by year of birth, 2001–2010

Year of birth	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Number of Cases	7	3	5	4	1	6	6	3	2	0

HIV DISEASE AMONG FOREIGN-BORN RESIDENTS

Information about foreign-born HIV cases is important for planning outreach and prevention initiatives because messages and information must be tailored or designed for the appropriate culture and language. Information on the foreign-born population in North Carolina is presented in Chapter 1. The number of HIV disease cases identified among foreign-born people in North Carolina (Figure 2.15) has increased in the last eight years. These increases reflect the greater pattern of migration to the state and may indicate better data collection of country of origin in surveillance data. The number of foreign-born HIV disease cases in 2010 (n=93) represented approximately 9 percent of all foreign-born HIV cases (987) for the last 10 years (2001–2010).

Figure 2.15. Foreign-born HIV disease cases diagnosed, 2001–2010

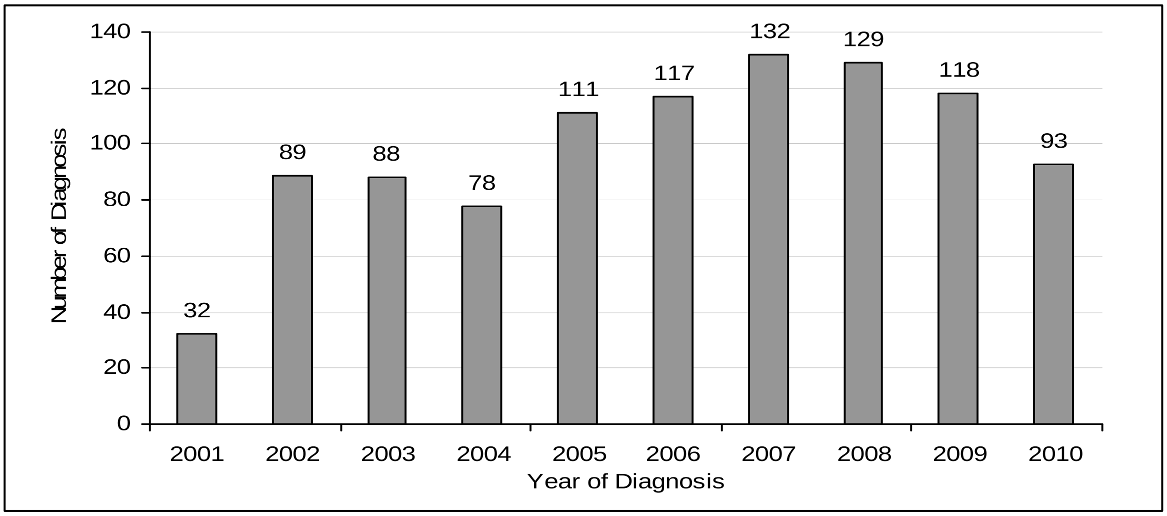


Table 2.8 shows the race/ethnicity of the foreign-born HIV cases. Hispanics comprised the highest proportion (61.2%). Non-Hispanic blacks comprised 27.5 percent of cases; whites and Asian/PI made up 5.4 and 4.5 percent respectively.

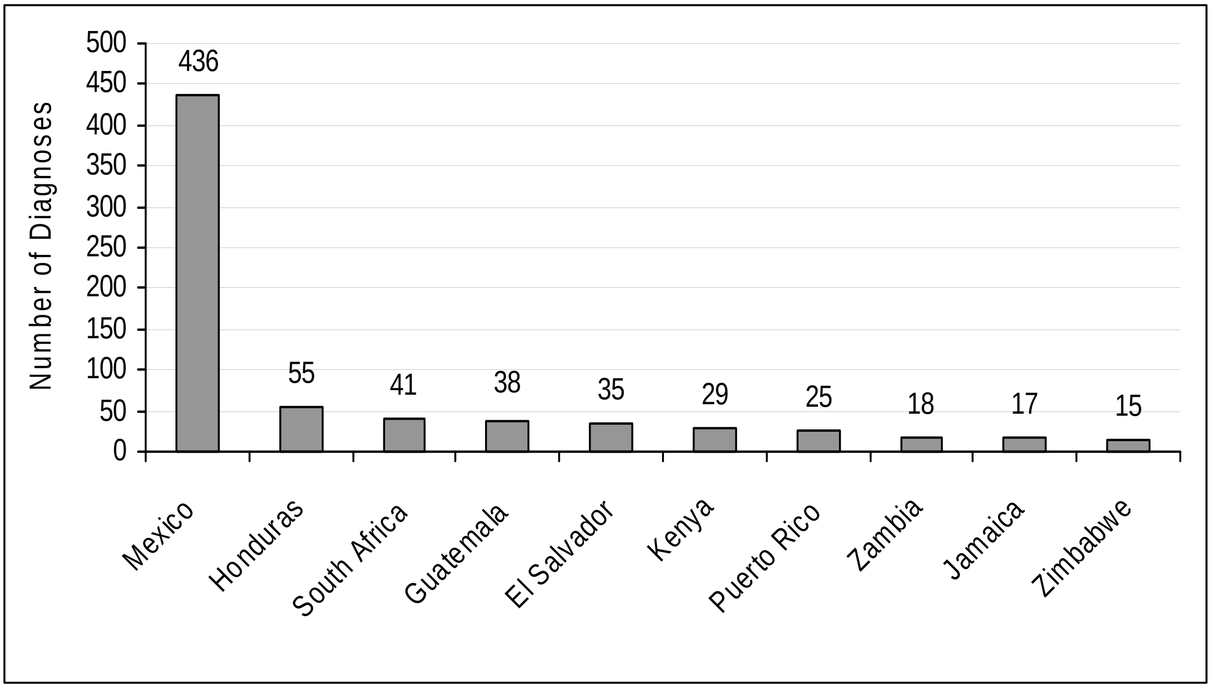
Table 2.8. Race/Ethnicity of foreign-born HIV disease cases diagnosed, 2001–2010

Race/ethnicity	No.	Pct
White*	53	5.4%
Black*	271	27.5%
Asian/Pacific Islander*	44	4.5%
Hispanic	616	62.4%
Others*	3	0.3 %
Total	987	100.0%

* non-Hispanic

For the previous 10 years, Mexico was the origin country with the highest number (Figure 2.16) of foreign-born HIV cases (n=436), followed by Honduras, South Africa, Guatemala, El Salvador, Kenya, Puerto Rico, Zambia, Jamaica, and Zimbabwe. The majority (63%) of foreign-born HIV disease cases were diagnosed in urban counties including Wake (20%), Mecklenburg (20%), Durham (9%), Guilford (9%), and Forsyth (5%). About 7 percent of foreign-born cases were diagnosed in rural counties, including Duplin, Davidson, Rowan, Hertford, Craven, Robeson, Sampson, and Lee counties.

Figure 2.16. Country of birth for foreign-born HIV disease cases, 2001–2010



GEOGRAPHIC DISTRIBUTION OF HIV/AIDS

Urban/Rural and Metropolitan areas

Based on criteria from the Office of Management and Budget (OMB) and the Centers for Disease Control and Prevention (CDC), North Carolina can 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, 79 percent of national AIDS reports are from large metropolitan areas and 13 percent are from medium-sized metropolitan areas, resulting in 92 percent of reports from urban areas and 8 percent from rural areas in 2009.

New HIV Diagnoses in Urban/Rural and Metropolitan Areas

While 77 percent of new diagnosis in 2010 were from urban areas, (See Table 2.9, 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 2010 was slightly higher than the rates in micropolitan and non-metropolitan areas (Table 2.10).

Table 2.9. Newly diagnosed HIV disease cases by metropolitan areas, 2010

Race/Ethnicity	Rural			Urban			N.C. Total***		
	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*
White**	70	4.7%	3.6	270	18.2%	6.1	352	23.7%	5.6
Black**	177	11.9%	31.4	757	50.9%	51.7	977	65.7%	48.2
AI/AN**	2	0.1%	2.6	2	0.1%	5.9	4	0.3%	3.7
Asian/PI**	1	0.1%	4.3	8	0.5%	4.4	9	0.6%	4.4
Hispanic	25	1.7%	14.7	86	5.8%	15.7	118	7.9%	16.4
Multiple**	8	0.5%	---	17	1.1%	---	27	1.8%	---
Total	283	19.0%	10.3	1,140	76.7%	17.2	1,487	100.0%	15.9

* 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 2.10. Newly diagnosed HIV disease cases by metropolitan areas, 2010

Race/Ethnicity	Rural Areas				Urban Areas			
	Mirco metropolitan		Non-metropolitan		Large metropolitan		Medium metropolitan	
	Cases	Rate*	Cases	Rate*	Cases	Rate*	Cases	Rate*
White**	49	3.4	21	4.3	155	7.2	115	5.1
Black**	111	27.8	66	40.0	469	61.0	288	41.5
AI/AN**	2	3.3	0	0.0	0	0.0	2	10.1
Asian/PI**	1	5.1	0	0.0	5	4.3	3	4.6
Hispanic	19	15.9	6	11.9	46	14.9	40	16.7
Multiple**	5	---	3	---	10	---	7	---
Total	187	9.2	96	13.2	685	20.4	455	13.9

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

Tables K–L (Appendix D, pg. D- 14–17) give county totals of HIV disease and AIDS cases reported, cases living at the end of 2010, and a ranking of case rates (per 100,000 population) based on a three-year average (2008–2010). Edgecombe County ranked highest with an HIV disease three-year average rate of 41.0 per 100,000 population in 2010, followed by Mecklenburg County (38.1), Durham County (33.7), Northampton County (31.2), Wilson County (29.0), and Guilford County (27.5). 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.

HIV Prevalence Cases in Urban/Rural and Metropolitan Areas

Among the HIV disease cases living through the end of 2010, about 20 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 75 percent of living HIV cases were in urban areas and 20 percent in rural areas. Roughly, the prevalence rates for blacks and whites were higher in urban than in rural areas (Table 2.11).

County of residence is based on where an individual was 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 still indicate roughly the number and rate of living HIV disease cases in the corresponding counties.

Table 2.11. HIV Disease prevalence as of 12/31/2010 by rural/urban areas, 2010

Race/Ethnicity	Rural			Urban			N.C. Total***		
	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*
White**	1,190	4.7%	61.9	5,041	20.1%	114.5	6,436	25.7%	101.8
Black**	3,367	13.4%	596.7	12,238	48.8%	836.5	16,650	66.4%	821.3
AI/AN**	116	0.5%	153.5	70	0.3%	206.0	202	0.8%	184.3
Asian/PI**	24	0.1%	102.2	93	0.4%	51.5	120	0.5%	58.8
Hispanic	288	1.1%	169.1	1,098	4.4%	200.6	1,438	5.7%	200.4
Multiple**	56	0.2%		159	0.6%		228	0.9%	
Total	5,041	20.1%	183.0	18,699	74.6%	282.2	25,074	100.0%	267.3

* 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 2.12). As with new HIV diagnoses in 2010, 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 2.12). 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 2.12. HIV Disease prevalence as of 12/31/2010 by metropolitan areas, 2010

Race/Ethnicity	Rural Areas				Urban Areas			
	Micro metropolitan		Non-metropolitan		Large metropolitan		Medium 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	---
Total	10,162	309.9	7,874	245.5	3,616	179.8	1,265	174.5

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

Physiographic Regions

Geographic areas can be defined in many ways. 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.

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 2.13. Newly diagnosed HIV disease cases by physiographic regions, 2010

Race/Ethnicity	Eastern		Piedmont		Western		N.C. Total***	
	Cases	Rate*	Cases	Rate*	Cases	Rate*	Cases	Rate*
White**	61	3.8	243	6.6	36	3.6	352	5.6
Black**	282	37.2	641	52.8	11	20.0	977	48.2
AI/AN**	4	5.3	0	0.0	0	0.0	4	3.7
Asian/PI**	2	6.5	7	4.3	0	0.0	9	4.4
Hispanic	28	16.2	81	16.5	2	3.6	118	16.4
Multiple**	7	---	17	---	1	---	27	---
Total	384	14.4	989	17.7	50	4.4	1,487	15.9

* 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 (67%) were diagnosed in the Piedmont Region in 2010, followed by the Eastern Region. For American Indian/Alaska Natives, most HIV disease cases were diagnosed in the Eastern Region. For Asian/Pacific Islanders, HIV cases were most prominent in the Piedmont Region, while the rate in the Eastern Region is higher than the Piedmont Region because of a smaller Asian/PI population in Eastern Region (Table 2.13).

Among the HIV disease cases living through the end of 2010, a majority of whites, blacks, and Hispanics were diagnosed and reported from Piedmont Region (66%), 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 2.14). The Western Region had fewer HIV cases and rates for both new diagnoses and prevalent cases in 2010.

Table 2.14. HIV Disease prevalence as of 12/31/2010 by physiographic regions, 2010

Race/Ethnicity	Eastern		Piedmont		Western		N.C. Total***	
	Cases	Rate*	Cases	Rate*	Cases	Rate*	Cases	Rate*
White**	1,379	84.9	4,122	111.7	730	72.4	6,231	98.6
Black**	5,003	659.7	10,337	851.6	265	482.2	15,605	769.8
AI/AN**	134	178.2	41	179.3	11	95.4	186	169.7
Asian PI**	37	120.9	74	45.5	6	53.7	117	57.3
Hispanic	359	208.0	967	197.4	60	108.6	1,386	193.1
Multiple**	63	---	139	---	13	---	215	---
Total	6975	262.2	15680	281.0	1085	95.1	23,740	253.1

* Rate per 100,000 population **non-Hispanic ***N.C. Total includes cases unassigned to areas.

HIV DISEASE CASES DIAGNOSED LATE

Late testers represent a significant proportion of new HIV diagnoses in North Carolina, indicating the need for increased HIV testing and linkage to medical care. 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. 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 estimated 20 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).

Table 2.15 shows the proportion of individuals diagnosed as AIDS when they were first diagnosed as HIV infected (late HIV diagnosis or concurrent AIDS cases) in 2010. 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. Hispanic males had the highest proportion (43.9%) of late testers, reflecting possible cultural and language barriers to testing and access to care.

Overall, 26.0 percent of newly diagnosed individuals had a concurrent AIDS or late HIV diagnosis in 2010, indicating that they probably had HIV for at least five to seven years (CDC, 2006). Hispanic men experienced a much higher proportion of late testers than other racial/ethnic groups, with nearly 44 percent of new infections diagnosed late. This figure represents an increase from the proportion of late testers among Hispanic men in 2009 (36.5%).

As shown in Table 2.16, roughly 25 to 30 percent of individuals newly diagnosed with HIV disease each year also represent AIDS cases (i.e. late testers) during the 2006–2010 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 (CDC, 2006). Table 2.17 displays the gender and race specific proportions of all late testers (concurrent AIDS cases) diagnosed from 2006 to 2010. Blacks comprise 57 to 61 percent of total late testers, whites comprise 23 to 27 percent, and Hispanics comprise 10 to 15 percent in the past five years.

Table 2.15. Proportion of late testers by race/ethnicity among HIV disease cases, 2010

Race/ ethnicity	Males	Females	Total
White*	29.9%	19.6%	28.4%
Black*	23.3%	24.4%	23.6%
Hispanic	43.9%	20.0%	39.8%
Other*	24.0%	20.0%	22.5%
Total	26.9%	23.3%	26.0%

*non-Hispanic

Table 2.16. Proportion of HIV and concurrent* AIDS at diagnosis, 2006–2010

	Status at Diagnosis	
Year of Diagnosis	HIV (non-AIDS)	AIDS
2006	71.4%	28.6%
2007	75.5%	24.5%
2008	73.6%	26.4%
2009	72.1%	27.9%
2010	74.0%	26.0%

*HIV and AIDS diagnosed within six months of testing ; also referenced as “late testers”

Table 2.17. Late HIV diagnoses by sex and race/ethnicity, 2006−2010

		Year of Diagnosis				
Sex	Race/Ethnicity	2006	2007	2008	2009	2010
Male	White*	21.7%	21.8%	23.8%	20.0%	23.3%
	Black*	41.3%	41.6%	39.3%	47.5%	42.6%
	Hispanic	1.9%	0.5%	1.3%	2.2%	1.6%
	Other/Unknown	12.1%	10.2%	11.5%	9.0%	11.1%
	Total	77.0%	74.1%	75.9%	78.7%	78.6%
Female	White*	3.0%	5.0%	3.1%	3.3%	2.6%
	Black*	16.6%	19.1%	19.5%	16.5%	17.1%
	Hispanic	0.4%	0.2%	0.4%	0.7%	0.8%
	Other/Unknown	3.0%	1.6%	1.0%	0.9%	1.0%
	Total	23.0%	25.9%	24.1%	21.3%	21.4%
Total	White*	24.7%	26.8%	27.0%	23.3%	25.8%
	Black*	57.9%	60.7%	58.8%	64.0%	59.7%
	Hispanic	2.3%	0.7%	1.7%	2.9%	2.3%
	Other/Unknown	15.1%	11.8%	12.6%	9.9%	12.1%
	Total	100.0%	100.0%	100.0%	100.0%	100.0%

*non-Hispanic

In general, significant proportions of late HIV diagnoses indicate 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 continues to work 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, specific initiatives such as the statewide *Get Real. Get Tested.* Campaign have been designed to encourage North Carolinians to get educated about and tested for HIV. 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 2010, the State Laboratory of Public Health performed about 227,038 HIV tests, which represents a 55 percent increase in testing since 2006 when about 146,548 tests were performed (See Chapter 3 for more information about HIV testing in North Carolina).

HIV DISEASE STAGING

The Centers for Disease Control and Prevention (CDC) uses a new staging system for HIV disease to monitor the epidemic. This staging system is based on CD4+ cell counts as well as the existence of certain HIV-related clinical conditions at the time of diagnosis and is meant to assess the severity of HIV disease. Table 2.18 below shows the current staging definitions used by the CDC. The nine mutually exclusive categories allow clinicians and epidemiologists to view HIV disease on a spectrum, ranging from acute HIV infection (A1) to advanced AIDS (C3). In order to properly stage HIV infection using these new categories, it will be important to increase CD-4 reporting in North Carolina.

Table 2.18. CDC classification system for HIV infection

	Clinical categories		
	A	**B**	**C**
CD4+ cell count (CD4%)	**Asymptomatic, acute (primary) HIV or PGL**[*]	**Symptomatic, not A or C conditions**[†]	**AIDS-indicator conditions**[‡]
> 500 (28%)	A1	B1	C1
200–499 (15–28%)	A2	B2	C2
< 200 (14%)	A3	B3	C3

[*] Category A: asymptomatic HIV infection, persistent generalized lymphadenopathy (PGL).

[†] Category B: oropharyngeal and vulvovaginal candidiasis, constitutional symptoms such as fever (38·5°C) or diarrhea lasting >1 month, herpes zoster (shingles).

[‡] Category C: Mycobacterium tuberculosis (pulmonary and disseminated), Pneumocystis carinii pneumonia, candidiasis of bronchi; trachea or lungs, extrapulmonary cryptococcosis, CMV, HIV-related encephalopathy, Kaposi's sarcoma, wasting syndrome due to HIV.

THE IMPACT OF AIDS IN NORTH CAROLINA

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/μL 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, 49 percent of 2010 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 and also indicates 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 or patients are not adherent to their HIV drug regimes. Because 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 2009 was 11.2 per 100,000 population (CDC, HIV/AIDS Surveillance Report, 2009). During the same time period, North Carolina's AIDS case rate was 11.6 per 100,000 population. North Carolina ranked 9th among all states and the District of Columbia in the number of new AIDS cases reported (Table 2.19). *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 2.19. Top 10 States for AIDS diagnoses

State	AIDS Cases Diagnosed in 2009
1. New York	4,799
2. Florida	4,392
3. California	3,760
4. Texas	2,652
5. New Jersey	1,475
6. Georgia	1,391
7. Illinois	1,202
8. Maryland	1,134
9. North Carolina	1,088
10. Pennsylvania	917

Source:CDC *HIV/AIDS Surveillance Report*, 2009. Vol.21

The impact of HIV/AIDS in the South is a growing concern. In 2009, the South had 49 percent of new AIDS cases overall, including five of the top 10 states reporting the most AIDS cases (Table 2.19). The South also had the highest regional rate in 2009 (13.9 per 100,000). In 2009, seven of the top 10 states by AIDS case rate were in the South (Top 10: DC, NY, FL, MD, LA, Puerto Rico, DE, NJ, SC, and GA); Mississippi (11th) and North Carolina (12th) followed.

AIDS PREVALENCE IN NORTH CAROLINA

North Carolina is ranked 13th in the nation for estimated number of persons living with an AIDS diagnosis (CDC, HIV/AIDS Surveillance Report, 2009). Table 2.20 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, 2/2010).

Table 2.20. North Carolina living† HIV/AIDS cases

Demographics	Disease Status				TOTAL	
	HIV non AIDS		AIDS			
	Cases	Pct	Cases	Pct	Cases	Pct
Gender						
Male	10,052	67.8	7,492	73.2	17,544	70.0
Female	4,781	32.2	2,749	26.8	7,530	30.0
Current Age						
Unknown	18	0.1	3	0	21	0.1
<2	1	0	0	0	0	0.0
2-12	48	0.3	5	0	53	0.2
13-24	840	5.7	152	1.5	992	4.0
25-44	6,327	42.7	3,431	33.5	9,758	38.9
45-64	6,978	47	6,106	59.6	13,084	52.2
65+	621	4.2	543	5.3	1,164	4.6
Race/ethnicity						
White*	3,855	26	2,581	25.2	6,436	25.7
Black*	9,831	66.3	6,819	66.6	16,650	66.4
American Indian/AN*	112	0.8	90	0.9	202	0.8
Asian/PI*	84	0.6	36	0.4	120	0.5
Hispanic	789	5.3	649	6.3	1,438	5.7
Multiple races	162	1.1	66	0.6	228	0.9
Mode of Transmission						
MSM	5,215	35.2	3,316	32.4	8,531	34.0
IDU	1,022	6.9	1,055	10.3	2,077	8.3
MSM/IDU	310	2.1	285	2.8	595	2.4
Blood Products	35	0.2	51	0.5	86	0.3
Heterosexual-all	3,644	24.6	2,609	25.5	6,253	24.9
Pediatric	168	1.1	63	0.6	231	0.9
NIR/NRR	4,439	29.9	2,862	27.9	7,301	29.1
Total	14,833	100	10,241	100	25,074	100.0

† Living as of 12/31/10

* non-Hispanic

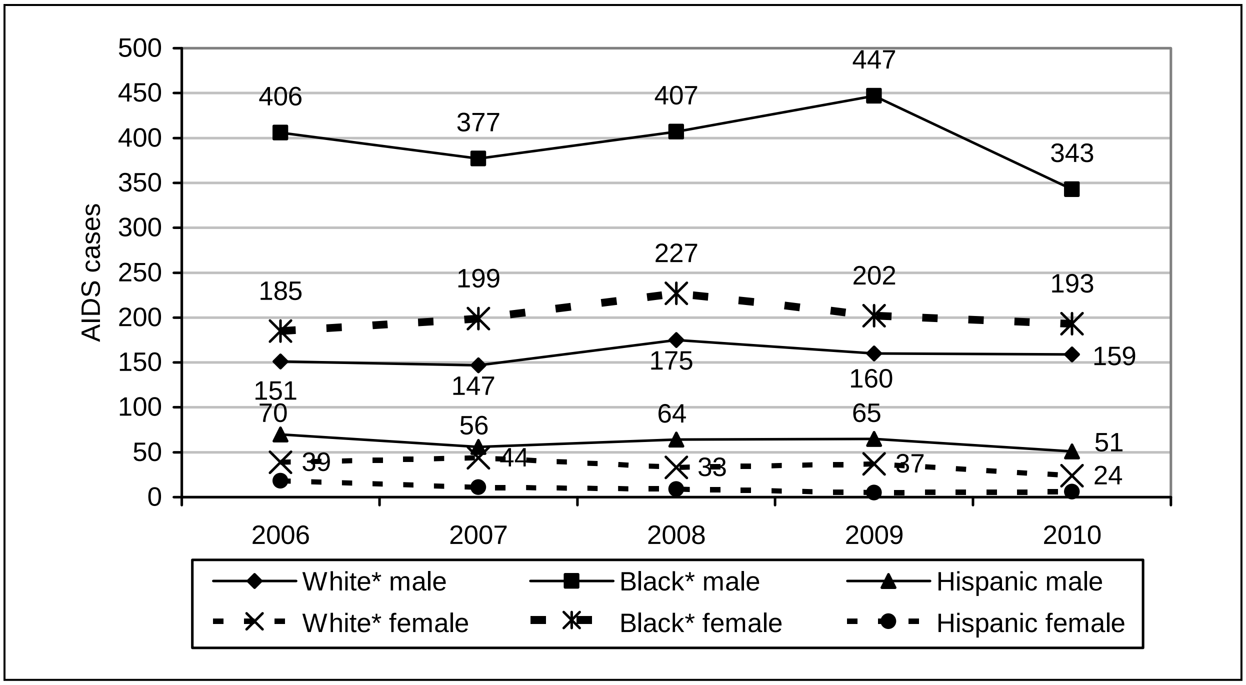
AIDS TRENDS IN NORTH CAROLINA

A total of 19,761 AIDS cases have been diagnosed and reported among North Carolina residents since the beginning of the epidemic in 1983. In 2010, 796 new AIDS cases were diagnosed in North Carolina with a rate of 8.5 per 100,000 population (10.3 per 100,000 adult/adolescent population). Most subpopulations in North Carolina have experienced stable or decreasing rates of AIDS. Particularly large decreases were seen among black males ages 35-39 (63% decrease; from 68 cases in 2006 to 25 cases in 2010), black males ages 40 to 44 (45% decrease; from 74 cases in 2006 to 41 cases in 2010) and Hispanic males ages 25 to 29 (67% decrease; from 15 in 2006 to 5 in 2010). However, over the past five years, AIDS cases have increased 60 percent among white males ages 45 to 49 (from 28 cases in 2006 to 45 cases in 2010) and 50 percent among white males ages 50 to 54 (from 16 cases in 2006 to 24 cases in 2010). Although AIDS cases among females have generally decreased over the past five years, increases were observed among younger black females ages 20 to 24 (67% increase; from 6 cases in 2006 to 10 cases in 2010) as well as older black females ages 60 to 64 (200% increase; from 5 cases in 2006 to 15 cases in 2010) and black females age 65 years and older (300% increase; from 2 cases in 2006 to 8 cases in 2010). The number of AIDS cases among American Indians has decreased over the past five years to a minimum of three cases in 2010. Asians experienced a return to pre-2009 levels with three AIDS cases in 2010.

AIDS IMPACT ON RACIAL AND ETHNIC MINORITIES

As observed for HIV disease, racial and ethnic minorities continue to be disproportionately affected by the AIDS epidemic in North Carolina (Figure 2.17). Blacks account for a disproportionate share of AIDS cases, relative to their size in the population of North Carolina.

Figure 2.17. AIDS cases by race/ethnicity, 2006–2010



*non-Hispanic

According to the National Center for Health Statistics 2009 bridged race estimates, blacks comprise 22 percent of the total population of North Carolina, yet they represent 68 percent of North Carolinians living with AIDS. The disparity between blacks and whites is slightly greater for AIDS than for HIV disease in North Carolina. The AIDS rate among blacks is nearly 10 times higher than for whites while the rate for HIV disease is nine times higher among blacks than whites. In 2010, black males represented 60 percent of all adult/adolescent male AIDS cases and the AIDS rate among adult/adolescent black men (45.7 per 100,000) was 7.5 times the rate for white men in 2010 (6.1 per 100,000). Hispanics represented six percent of all 2010 AIDS cases and the AIDS rate among Hispanic males (18.7 per 100,000 adult/adolescent population) was 3.1 times higher than for whites (Figure 2.18).

Figure 2.18. Relative AIDS rates for males in N.C. by race/ethnicity, 2006–2010

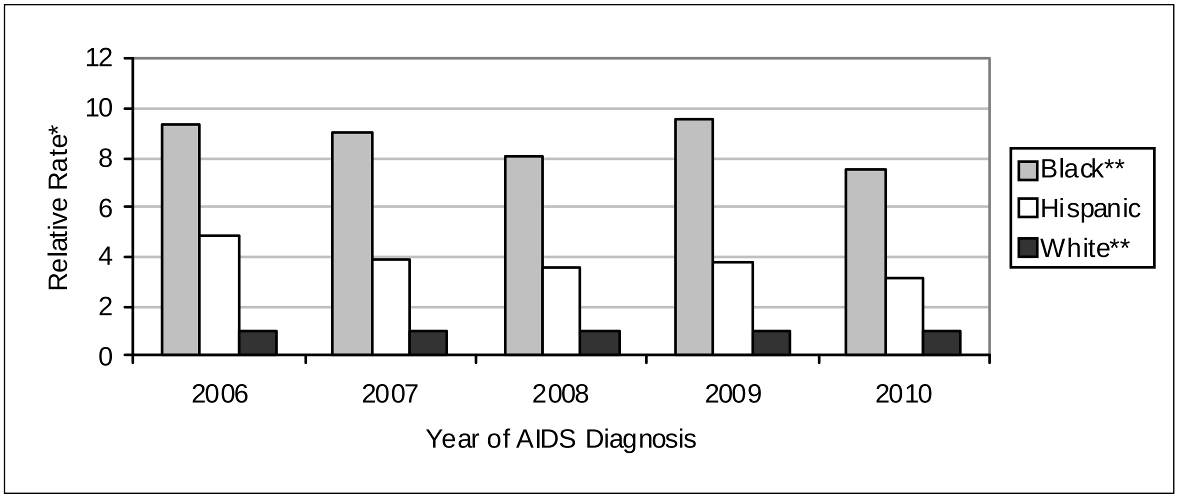
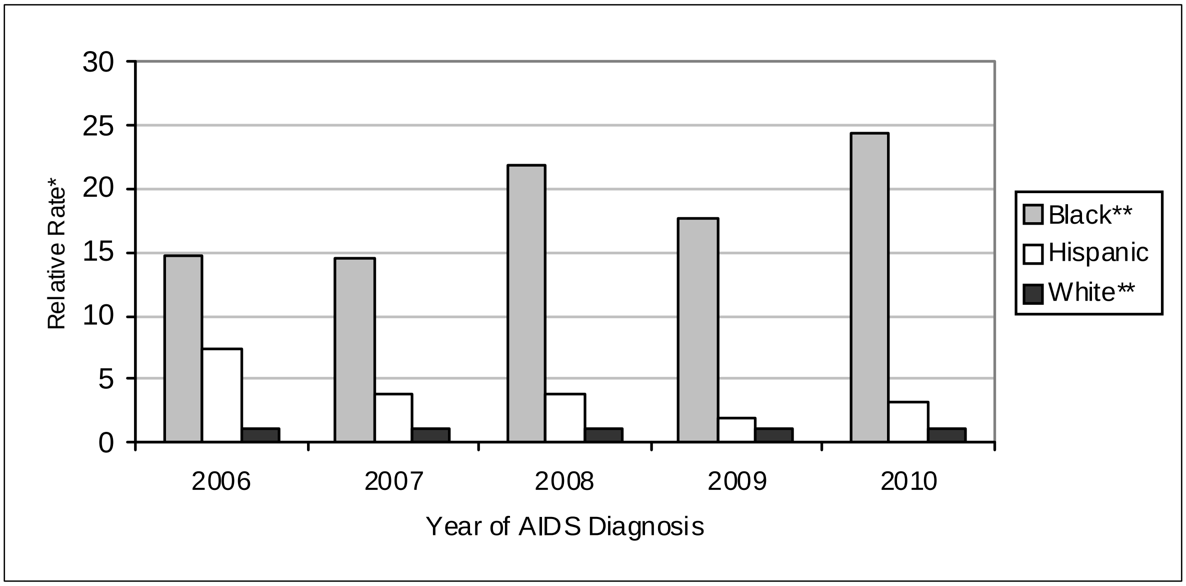


Figure 2.19. Relative AIDS rates for females in N.C. by race/ethnicity, 2006–2010



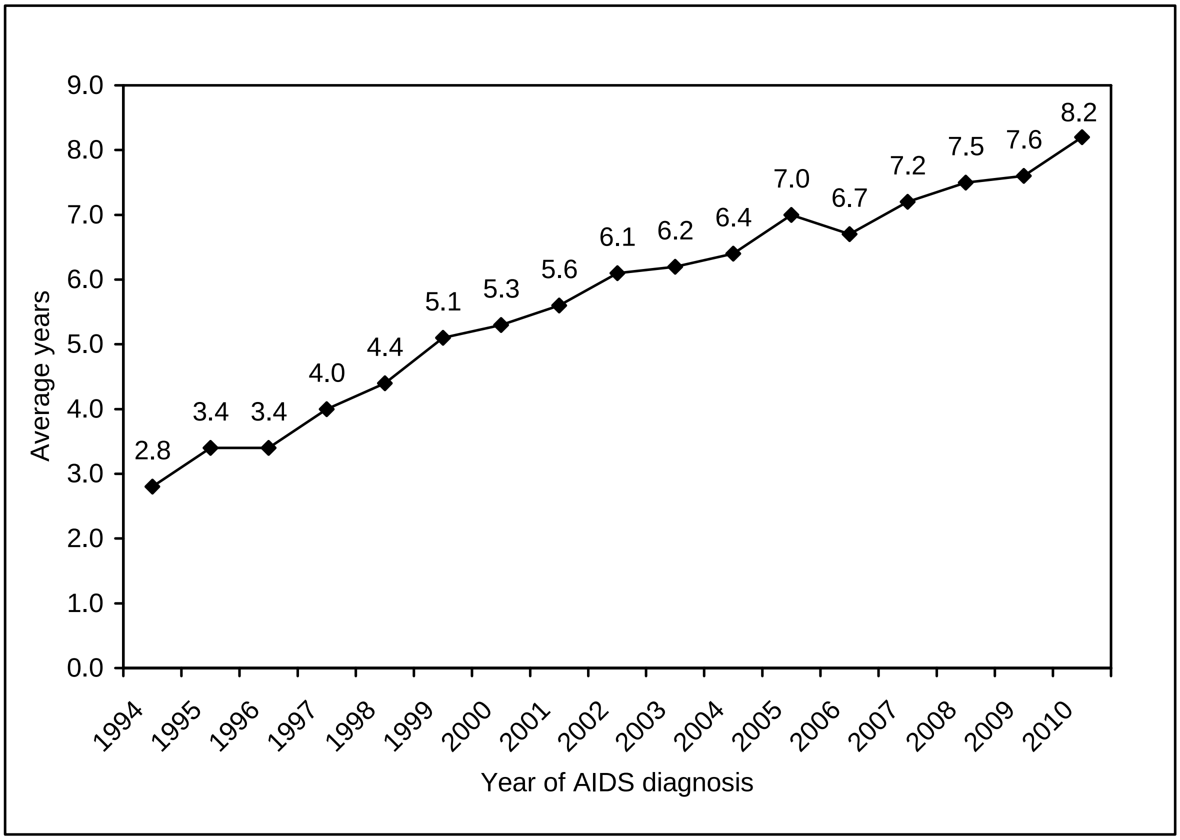
*Referent group=White, non-Hispanic females **non-Hispanic

In North Carolina, black females represented 85 percent of 2010 AIDS cases diagnosed among women and the 2010 rate of AIDS diagnosed in adult/adolescent black women (21.9 per 100,000) was 24 times the rate for white women in 2010 (0.9 per 100,000). Latinas represented three percent of female AIDS cases in 2010 and the AIDS rate among Latinas (3.0 per 100,000) was almost more than three times the rate among white women (Figure 2.19).

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. Current treatment for HIV infection consists of highly active antiretroviral therapy (HAART). 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 2.20).

Figure 2.20. Average* years between HIV & AIDS diagnoses, 1994–2010



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

Continued access to effective drug treatments and medical case management that includes adherence counseling and education 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, antiretrovirals 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).

SURVIVAL

In North Carolina, survival (the estimated proportion of persons surviving a given length of time after diagnosis) increased with the year of diagnosis for HIV 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 2.21). 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 2.21. Survival for more than 12, 24, and 36 months after initial HIV diagnosis, 2002–2006

	No. of Persons	Proportion Survived (in months)			
		<=12	>12	>24	>36
Age at Diagnosis (yr)					
<13	36	0.94	0.94	0.94	0.94
13-24	1,175	0.99	0.99	0.98	0.98
25-44	4,676	0.96	0.94	0.93	0.93
45-64	2,067	0.89	0.85	0.82	0.82
65+	128	0.70	0.65	0.60	0.60
Race/ethnicity					
White*	2,000	0.94	0.93	0.91	0.91
Black*	5,356	0.94	0.91	0.90	0.90
Am. Indian/AN*	78	0.90	0.90	0.90	0.90
Asian, PI*	45	0.96	0.96	0.93	0.93
Hispanic	565	0.96	0.95	0.94	0.94
Unknown	38	0.95	0.84	0.82	0.82
Male Mode of Transmission					
MSM	2,771	0.97	0.96	0.95	0.95
IDU	299	0.92	0.89	0.86	0.86
MSM/IDU	101	0.96	0.95	0.91	0.91
Blood Products	11	0.64	0.55	0.55	0.55
Heterosexual-CDC	504	0.93	0.90	0.88	0.88
Pediatric	19	1.00	1.00	1.00	1.00
NIR/NRR	1,995	0.89	0.87	0.85	0.85
Female Mode of Transmission					
IDU	138	0.95	0.91	0.87	0.87
Blood Products	7	1.00	1.00	1.00	1.00
Heterosexual-CDC	742	0.96	0.93	0.91	0.91
Pediatric	14	1.00	1.00	1.00	1.00
NIR/NRR	1,480	0.95	0.92	0.90	0.90
Year of HIV Diagnosis					
2002	1,672	0.94	0.92	0.89	0.89
2003	1,626	0.93	0.91	0.89	0.89
2004	1,553	0.95	0.92	0.91	0.91
2005	1,589	0.94	0.92	0.90	0.90
2006	1,642	0.95	0.93	0.92	0.92
Total	8,082	0.94	0.92	0.90	0.90

*non-Hispanic

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 321 HIV/AIDS deaths in 2010 (3.4 per 100,000) (Table 2.22). Together with 1,095 deaths occurring from 2007-2009, the total number of deaths caused by HIV disease in North Carolina through 2010 is 11,837 (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 young and middle-aged people. According to the State Center for Health Statistics, the crude death rate is about 13 times higher for blacks (12.1 per 100,000) than for whites (0.9 per 100,000).

Advances in treatment of HIV with antiretrovirals (ARVs) have been reflected with a major increase in life expectancy for people diagnosed with HIV infection. Between 1996 and 2005, average life expectancy after HIV diagnosis increased from 10.5 to 22.5 years (Harrison, 2010). Despite advances in combating HIV, eventually most HIV-infected individuals develop AIDS. However, individuals diagnosed with AIDS have also seen increases in life expectancy: among individuals diagnosed with HIV having an initial CD4 count of <200 or a CD4 count of <200 within 6 months of their initial diagnosis, the average survival time had nearly quadrupled from 1996 to 2005 (5.5 years in 1996 to 19.4 years in 2005; Harrison, 2010). Patients with AIDS mostly die from opportunistic infections or malignancies associated with the progressive failure of the immune system.

The age adjusted death rate for HIV disease in North Carolina for 2008 (the last year of data for national comparisons) was 4.2 per 100,000 (the U.S. death rate was 5.3 per 100,000) (CDC, 2011). HIV Disease is a leading cause of death among younger individuals ages 25 to 64 and varies by race/ethnicity in North Carolina (Table 2.23). According to North Carolina's State Center for Health Statistics (SCHS, 2011), in 2009, HIV disease was the 3rd leading cause of death among black females ages 25 to 44 (n=46 deaths) and the 5th leading cause of death among black males of the same age (n=53 deaths). HIV disease was the 7th leading cause of death among Hispanic males ages 25 to 44 in 2009 (n=10 deaths) and HIV was not listed in the top 10 leading cause of death among Hispanic females of the same age. HIV disease was not listed among the top 10 causes of death among white males or females ages 25 to 44 in 2009. HIV disease was the 8th leading cause of death among American Indian males ages 25 to 44 in 2009 (n=1) and was not a leading cause of death among American Indian females of the same age.

Table 2.22. N.C. HIV/AIDS-related deaths by race/ethnicity and gender, 2010

	Males			Females			Total		
Race/ ethnicity	No.	Pct.	Rate*	No.	Pct.	Rate*	No.	Pct.	Rate*
White**	48	23.6%	1.6	12	10.2%	0.4	60	18.7%	0.9
Black**	144	70.9%	15.1	102	86.4%	9.5	246	76.6%	12.1
Hispanic	9	4.4%	2.3	3	2.5%	0.9	12	3.7%	1.7
Other	2	1.0%	1.3	1	0.8%	0.6	3	0.9%	1.0
Total	203	100.0%	4.4	118	100.0%	2.5	321	100.0%	3.4

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

Table 2.23. HIV Disease as the leading cause of death among N.C. residents, 2009

Age Group	Race/Ethnicity	Number of Deaths	Rank as the leading cause of death
25–44 years	American Indian*	1	9th
	Black*	99	4th
	Hispanic	10	7th
	All Races	134	7th
45–64 years	Black*	146	5th

*non-Hispanic Source: N.C. State Center for Health Statistics

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CHAPTER 3: HIV TESTING AND PREVENTION IN NORTH CAROLINA

HIGHLIGHTS

- Since November 2002, 176 people have been identified with acute HIV infection by the N.C. State Lab of Public Health (N.C. SLPH). Acute HIV infection refers to the very early, particularly infectious stages of HIV infection. The diagnosis of acute HIV provides an opportunity for early linkage to HIV care and helps reduce potential HIV transmission by newly infected patients.

- In 2010, 24 acute infections were detected by N.C. SLPH.

- In 2010, a total of 246,458 persons were tested through state-sponsored HIV testing programs. Of those tested, 1,103 were positive (501 new cases, 546 previous positives, and 56 unknown).

- In 2010, 49 percent (n=244) of all new HIV cases were found through testing done at STD clinics, where a majority of the testing takes place.

- New case positivity rates were highest for testing done through partner counseling and referral services (5.7%). HIV positivity rates were also elevated for those tested in HIV test sites (usually nontraditional testing sites, 0.9% positivity), and community health sites (0.5%).

- In 2010, 69 percent of those tested were female and 30.7 percent were male. Positivity rates were higher for males (0.55%) compared to females (0.06%).

- Overall, 44 percent of those tested for HIV in 2010 were black non-Hispanic, 27.5 percent were white non-Hispanic, 18.1 percent Hispanic, 1 percent American Indian, 1.1 percent Asian/Pacific Islanders, and 0.1 percent other race/ mixed race .

- HIV positivity rates were highest for males in the other/mixed race group (1.25%) followed by black non-Hispanic males (0.67%). The disparity was greatest among women. In 2010, the HIV positivity rate for black non-Hispanic women (0.31%) was 2.6 times the rate for white women (0.12%).

- In 2010, the largest number of new HIV cases was found in the group with the most tests (age 20-29 years, n=250 cases). Overall the highest positivity rates were seen among those 40 years and older (0.29%).

- The highest new positivity rates in 2010 were among those in the MSM (3.7%) and MSM/IDU (1.0%). The highest new HIV positivity for women was among those with heterosexual high risk (0.13%).

- During 2010, 20,741 people were tested through the N.C. Rapid HIV Testing Program (40 new cases, 0.2% positivity); 22,171 people were tested through the nontraditional testing site program (68 new cases, 0.3% positivity); 45,861 people were tested through the expanded testing program (96 new cases, 0.3% positive) and 2,230 people were tested through the substance abuse testing program (7 new cases, 0. 3% positive).

- During 2010, 2,617 people participated in health education and risk reduction programs that were supported by the Communicable Disease Control Branch of the N.C. Division of Public Health.

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 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 health education and risk reduction projects conducted by local health departments and CBOs and the *Get Real. Get Tested*. campaign.

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, and 18 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.

The North Carolina Commission for Health Services’ ruling raised some concern that by removing the anonymous test option, testing among people with high risk for HIV infection would be reduced. Prior to implementation of the ruling, the Communicable Disease Branch implemented procedures to increase access to HIV testing by making 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 traditional health department testing sites. Others 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 Branch 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 healthcare (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 N.C.AC 41A.0202(10); 10A N.C.AC 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 N.C.AC 41A.0202(14)). In total, these policy changes have resulted in increased testing in prenatal/obstetric clinics, STD clinics, jails, and prisons in N.C. and greatly facilitated the establishment of new testing programs in emergency departments and community health centers.

The N.C. Communicable Disease Branch 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 in 2002. Currently there are 6 FDA approved rapid tests, four of which have Clinical Laboratory Improvement Amendment (CLIA) waivers (Oraquick Advance Rapid HIV1/2 antibody test, Unigold recombigen 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, which allows 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). Because clients undergoing rapid HIV testing can receive their preliminary HIV test result the same day they were tested, 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 Communicable Disease Branch (CDB) 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 who test the public for HIV. Increases in this funding have allowed for the continuing expansion of HIV testing efforts.

The non-traditional testing site program (NTS) is funded by the N.C. Communicable Disease Branch with federal funds from the CDC. The purpose of the NTS program is to serve difficult to reach populations through community outreach or extended office hours. The program started out small and 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. It has grown to 20 sites and over 22,000 tests in 2010.

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 Syphilis Elimination 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 over 45,000 HIV tests performed in 2010.

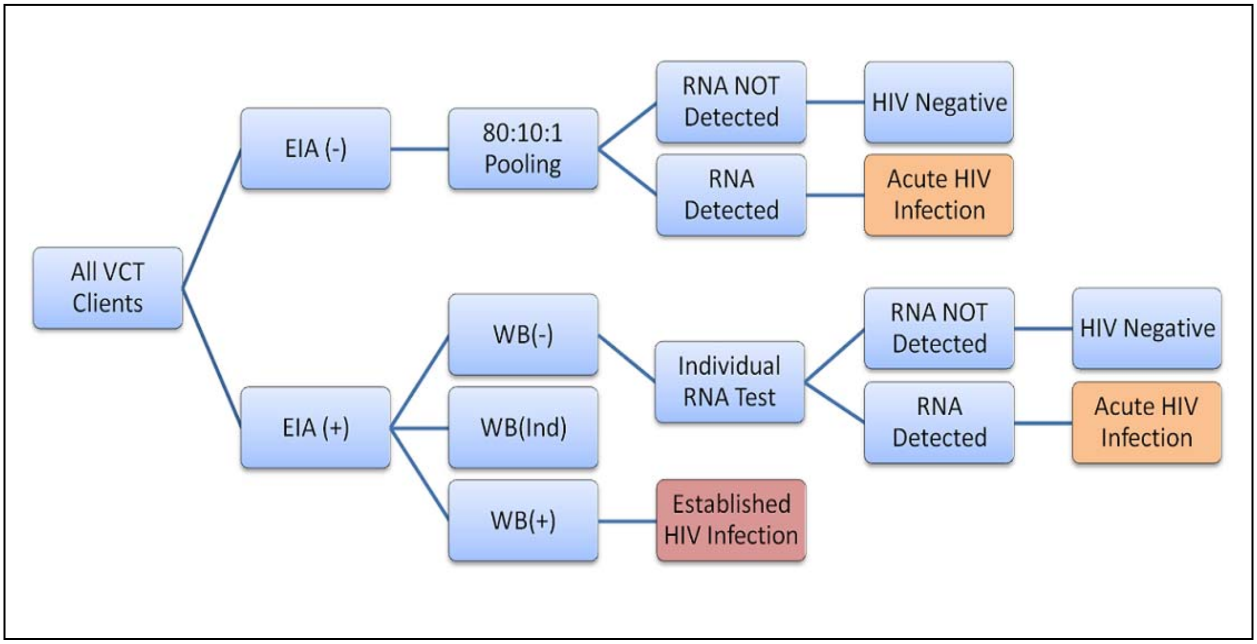
In 2004, the CDB began to receive additional funding specifically for the distribution of rapid testing kits to CBOs, community health centers, and other agencies. Like the NTS project, it started out small with just a handful of sites participating (6 sites and 235 tests) and has grown to 34 agencies and performing over 20,000 tests in 2010.

RECENT INFECTIONS

Screening and Tracing Active Transmission (STAT program)

The Screening and Tracing Active Transmission (STAT) program is an initiative designed to detect individuals who likely are 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; Figure 3.1).

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



In North Carolina, the STAT concept was implemented as a cooperative arrangement between the Communicable Disease Branch, the State Laboratory for Public Health and the University of North Carolina at Chapel Hill. This initiative 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 State Laboratory for Public Health to Dr. Pilcher's laboratory for further testing. These sera were tested for the presence of the HIV virus (not the antibody) using the polymerase chain reaction (PCR) to detect viral RNA. Due to the large number of specimens which are seronegative (more than 100,000 per year) and for the purposes of cost containment, the serum aliquots were pooled such that up to 100 sera were tested together. If a pool of 100 sera tested positive, the researchers worked backwards in the dilution scheme to identify which individual specimen(s) contained viral nucleic acid. Following the demonstration of feasibility through the pilot program, STAT was implemented as a routine program at the North Carolina Public Health Laboratory in November of 2002.

Since November 2002, 176 people have been identified with acute HIV infection (Table 3.1). 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 4 and 12 weeks, if necessary).

Because acute case numbers are small, 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. Cumulative data indicates that blacks (69% of all cases) and males (80% of all cases) are being disproportionately identified as acute cases (Table 3.1). The median age of acute HIV infection is 25 years old (range: 16-56 years). Sixty three percent (63%) of the STAT cases were diagnosed among persons less than 30 years old, and 45 percent of the cases were less than 25 years old at diagnoses.

In addition to the laboratory initiated STAT cases, CDB field staff work with medical providers throughout the state to identify any new HIV acute (primary infection) cases that were diagnosed through private care providers. DIS attempt to identify newly diagnosed people that had a recently documented HIV-negative antibody test. These cases are collectively referred to as community acute/recent cases. In 2010, a total of 42 community acute/recent cases were identified based on follow up and additional information collected during field investigations. These cases and associated social networks are being studied to enhance field intervention efforts.

Table 3.1. Demographics for HIV cases identified through STAT: Jan. 2003 – Dec. 2010

Year	2004 (n=21)		2005 (n=21)		2006 (n=15)		2007 (n=16)		2008 (n=30)		2009 (n=27)		2010 (n=24)		Total (n=176)	
	n	Pct.	n	Pct.	n	Pct.	n	Pct.	n	Pct.	n	Pct.	n	Pct.	n	Pct.
Gender																
Male	16	76%	17	81%	13	87%	14	88%	24	80%	24	89%	18	72%	141	80%
Female	5	24%	4	19%	2	13%	2	13%	6	20%	3	11%	6	24%	35	20%
Age group																
13-14	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
15-19	3	14%	1	5%	1	7%	7	44%	3	10%	5	19%	2	8%	23	13%
20-24	7	33%	4	19%	6	40%	4	25%	9	30%	9	33%	13	52%	57	32%
25-29	4	19%	7	33%	3	20%	2	13%	8	27%	4	15%	2	8%	32	18%
30-34	2	10%	5	24%	1	7%	1	6%	3	10%	2	7%	2	8%	20	11%
35-39	2	10%	2	10%	1	7%	0	0%	3	10%	2	7%	3	12%	16	9%
40-44	1	5%	0	0%	0	0%	1	6%	1	3%	1	4%	1	4%	10	6%
Over 45	2	10%	2	10%	3	20%	1	6%	3	10%	4	15%	1	4%	18	10%
Race																
Black*	16	76%	14	67%	7	47%	11	69%	19	63%	23	85%	18	72%	122	69%
White*	4	19%	5	24%	7	47%	4	25%	8	27%	3	11%	4	16%	40	23%
Hispanic	1	5%	2	10%	1	7%	1	6%	3	10%	1	4%	2	8%	13	7%
Am Ind./AN*	0	0%	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%

*non-Hispanic

HIV Incidence (STARHS program)

The HIV Incidence or Serologic Testing Algorithm for Recent HIV Seroconversion (STARHS) program was developed to generate timely and relevant estimates of the annual number of new HIV infections. Data generated from this project is designed to be used by the North Carolina Communicable Disease Branch and our federal partners at Centers for Disease Control and Prevention (CDC) to better understand the leading edge of the epidemic. Data obtained from the STARHS project helps to focus prevention efforts, and assist with evaluating progress toward reducing the spread of HIV. North Carolina is one of 25 jurisdictions funded by the CDC as part of a cooperative agreement to participate in the HIV Incidence Surveillance project.

Methods

The HIV Incidence program builds upon the existing HIV/AIDS case reporting system by combining additional STARHS and laboratory testing to determine the proportion of individuals who test positive for HIV for the first time who may have been recently infected with HIV. Remnant sera, which have tested positive for HIV antibodies by EIA and have been confirmed as positive by Western Blot are tested by a second antibody assay, the BED HIV-1 Capture enzyme immunoassay (BED), which distinguishes recent (on average, 162 days after seroconversion on standard diagnostic assays) from long standing infections. The BED assay uses antibodies to detect all HIV subtypes. The assay detects levels of anti-HIV IgG relative to total IgG and is based on observation that the ratio of anti-HIV IgG to total IgG increases with time shortly after HIV infection. The combination of diagnostic testing (confirmed HIV antibody-positive) followed by testing for a recent infection is known as Serologic Testing Algorithm for Recent HIV Seroconversion (STARHS). Laboratory test results are combined with information collected regarding previous HIV testing and treatment to generate estimates for number of new HIV infections. Additional information regarding the complex methodology used for generating HIV incidence estimates is described in *Estimated HIV Incidence in The United States, 2006-2009* (Prejean, 2011) and *Estimating HIV Incidence in the United States from HIV/AIDS Surveillance Data and Biomarker HIV Test Results* (Karon, 2008). North Carolina implemented the HIV Incidence project by routinely collecting remnant diagnostic specimens and collecting Testing and Treatment History (TTH) questionnaires for STARHS in the summer of 2005 for all newly diagnosed and reported cases.

Remnant samples of confirmed HIV antibody–positive serum (by Western Blot) from the N.C. State Laboratory of Public Health (N.C. SLPH) and several commercial laboratories that conduct testing for providers in N.C. are sent to the CDC STARHS designated laboratory in New York for STARHS testing. The HIV incidence surveillance project in N.C. collaborates with the N.C. SLPH to obtain specimens for STARHS testing. Serum specimens are retained in the N.C. SLPH until the staff from the HIV Incidence program, using routine HIV/AIDS surveillance reporting procedures, determines that the specimen represents the person’s first reported positive HIV test result. HIV positive sera for persons that have been previously reported and/or diagnosed are not considered eligible for additional STARHS testing. The specimens are handled according to routine laboratory protocols for HIV-positive specimens.

All newly reported persons in N.C. undergo a review of medical records to complete case report information which is used to determine if the case is STARHS eligible. People with a positive HIV test result will be considered STARHS eligible if they meet the following requirements:

- They have not been reported previously as HIV-infected and included in the states HIV/AIDS Reporting System.
- The serum specimen held in the laboratory represents their first confirmatory positive HIV test result from a confidential test.

In order to account for persons diagnosed through private providers, commercial laboratories have been recruited by the N.C. HIV Incidence project. Private laboratories that currently provide remnant diagnostic specimens for STARHS testing include: Laboratory Corporation of America, Associated Regional University Pathologists (ARUP), Quest Diagnostics, Specialty Laboratories, University of North Carolina Hospitals, Duke University Medical Center and Mayo Laboratories.

The N.C. HIV Incidence program monitors the test results received from private laboratories and forwards the STARHS-designated laboratory a list of eligible accession numbers for specimens that need to be tested. Results are identified by the STARHS laboratory by accession number and linked to the unique identification numbers used to label the original specimen. The collection of private labs along with the N.C. SLPH accounts for more than 75 percent of the new HIV/AIDS cases reported each year to the N.C. Communicable Disease Branch. Collaboration of private laboratories and the N.C. SLPH helps ensures that data used to create the HIV Incidence estimate is representative of the HIV epidemic in N.C.

Because of the variability in antibody development in the individuals, the predictive value of an individual’s STARHS result is low. The data only reliably support using STARHS for estimating incidence at the population level. The FDA has labeled the BED HIV-1 Capture EIA and methodology being used, “*For surveillance use. Not for diagnostic or clinical use*.” Consequently, STARHS results cannot be returned to individuals or to care providers.

Testing Treatment History Questionnaire (TTH)

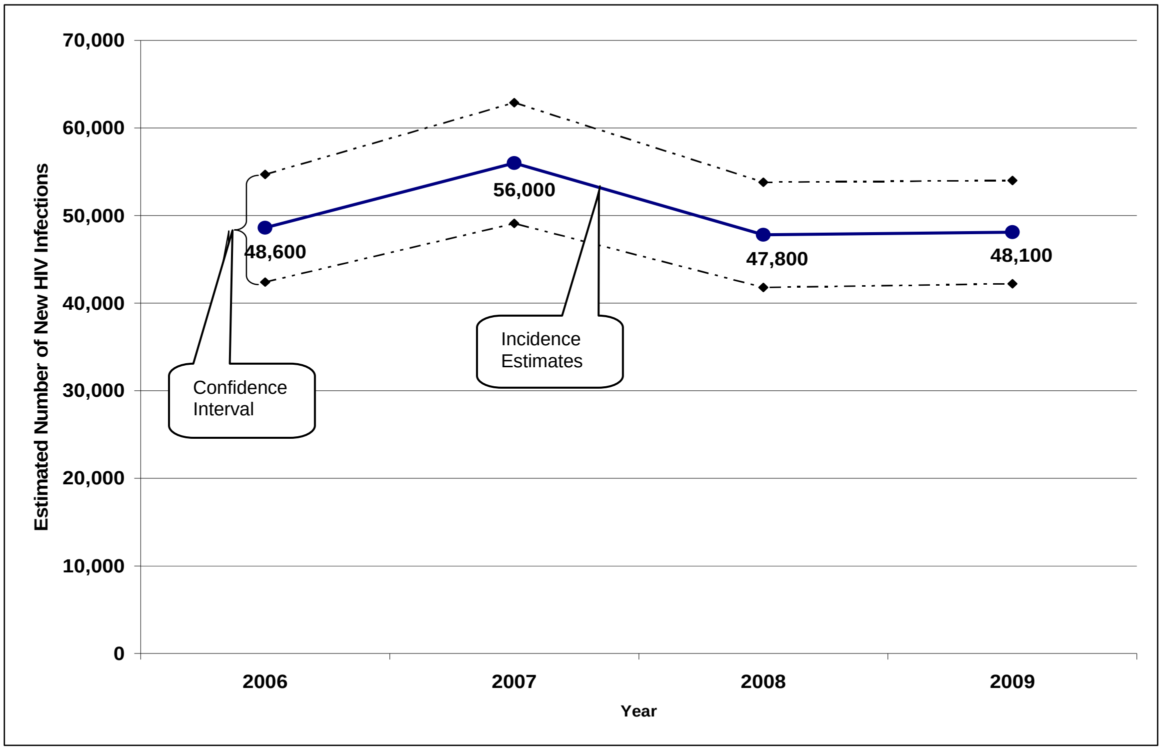
To ensure incidence estimates can be accurately derived, information on prior HIV testing and antiretroviral drug use is needed for all eligible persons reported. The TTH information is collected routinely as part of follow up for all new cases. However, not all of the required elements for STARHS have been collected uniformly prior to the implementation of the project. Therefore, a standard set of questions and corresponding data elements was developed for the project. In N.C. the TTH is collected when the individual returns to receive test results and/or during HIV counseling. Obtaining the HIV testing history when individuals return for the HIV test result takes advantage of the individual’s ability to recall information about HIV testing behaviors. Local surveillance personnel use their best judgment in each instance regarding when to approach individuals for their testing history. Standard HIV investigation procedures are followed in contacting individuals to prevent them from becoming lost to follow-up. Data, such as the date of the previous negative HIV test(s), test location, and use of antiretroviral medications may be obtained from care providers or other data systems if the patient is not able to be interviewed. The data management system for the HIV incidence surveillance program allows for the collection of information for each data element from multiple sources to be identified in the database.

Results

In August 2011, CDC released a revised estimate for 2006 along with an estimate of new HIV infections for 2007-2009. The number of new HIV infections utilizing the STARHS methodology is described in *Public Library of Science* PLoSOne (Prejean, 2011). The estimate for 2006 was revised based on additional data and revision to the methodology for using a stratified extrapolation approach for creating the estimate. The estimate for 2006 was revised and extended to include incidence estimates for 2007, 2008 and 2009. Using data through June 2010, CDC estimated 48,600 individuals aged 13 years or older in the United States were infected with HIV in 2006 (95% CI: 42,400-54,700), with an additional 56,000 (95% CI: 49,100-62,900), 47,800 (95% CI: 41,800-53,800), and 48,100 (95% CI: 42,200-54,000) infected in 2007, 2008, and 2009 (Prejean, 2011). Utilizing the revised stratification approach, CDC concluded that the number of new HIV infections in the United States has remained relatively stable at approximately 50,000 per year. *"The only population with a change in HIV incidence over the entire four year period was 13-29 year olds, and within that age group, the only risk group experiencing increases was MSM. Among young MSM the estimated number of new infections increased significantly from 2006-2009; the increase in incidence in this group was largely driven by a statistically significant increase in new HIV infections of 48% (12.2% annually) in young, black MSM." (Prejean, 2011)*

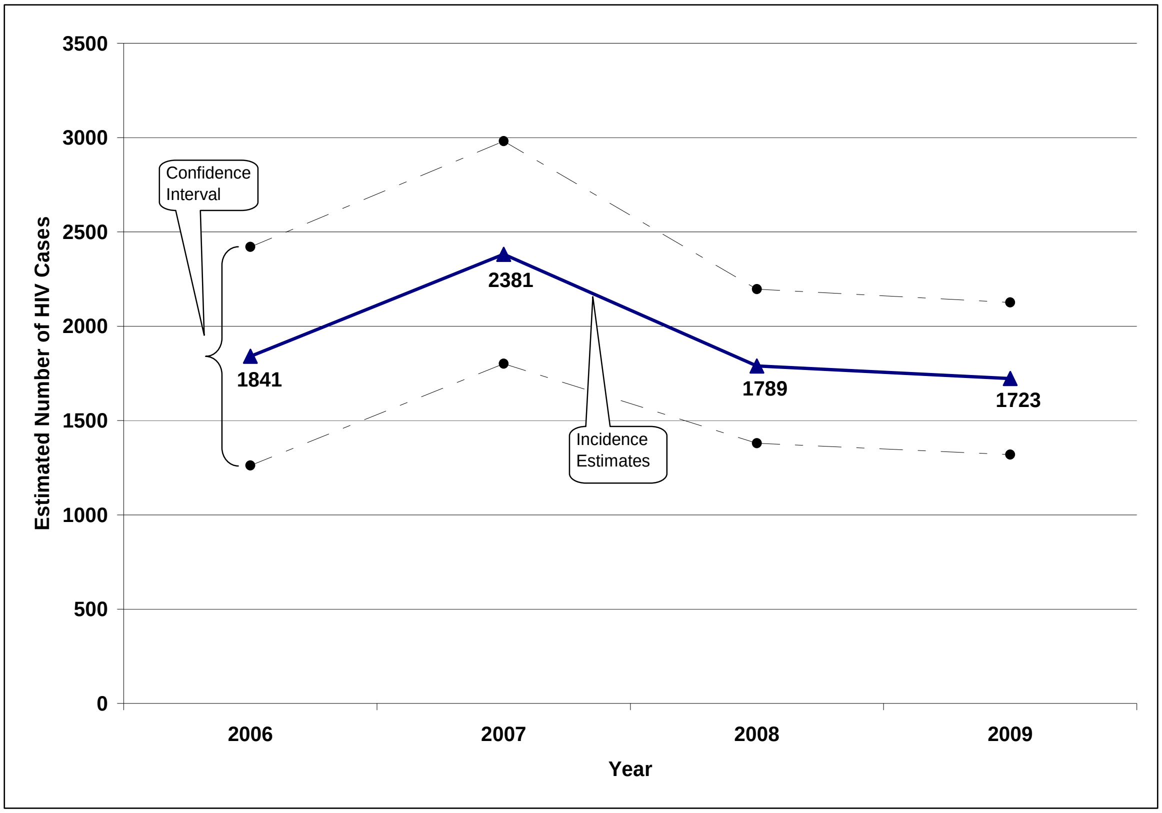
The national estimate for 2009 indicates that there were approximately 48,100 new HIV infections (Figure 3.2). The estimate includes population-specific breakdowns by gender, race/ethnicity, risk, and age groups. The national estimate generated by CDC shows that 77 percent of the newly infected persons were male, 44 percent were black, 20 percent were Hispanic, and 64 percent were among men who had sex with men (MSM). The national estimates for 2006-2009 were created by using data from 16 states (Alabama, Arizona, Colorado, Connecticut, Florida, Indiana, Louisiana, Michigan, Mississippi, New Jersey, New York, North Carolina, South Carolina, Texas, Virginia, and Washington) and two cities (Chicago and Philadelphia). The 18 areas all meet the minimum inclusion criteria of 15 percent completeness of STARHS results.

Figure 3.2. National HIV incidence estimate 2006-2009



North Carolina revised the incidence estimate for 2006 utilizing the revised methodology and additional data. The estimate released in 2011 indicated that there were 1,841 (95% CI: 1,262-2,421) individuals aged 13 years or older in the North Carolina who were infected with HIV in 2006, with an additional 2,381 (95% CI: 1,801-2,981), 1,789 (95% CI: 1,380-2,197), and 1,721 (95% CI: 1,320-2,126) infected in 2007, 2008, and 2009 (Figure 3.3). The estimates for 2006, 2008 and 2009 are fairly similar and indicate that the number of new infections in N.C. has remained relatively stable. The estimate for 2007 highlights a single year increase of 27.1 percent from 2006 through 2007. The increase can not be attributed to any single item and the reason for this increase is currently unclear. However, this pattern is similar to what is represented in the national estimate and among states that were funded to conduct HIV incidence and generated local estimates for 2006 through 2009.

Figure: 3.3. North Carolina HIV incidence estimate, 2006-2009



The estimate for NC is limited to stratification by gender, race (white, black and other), age groups (13-29, 30-29, 40-49 and 50+) and risk categories (MSM, IDU and Heterosexual). The state specific estimate is limited to this level of stratification due to the robustness that is required for presenting additional stratifications.

Utilizing data from 2009, the demographic breakdown for N.C. yields that 74 percent of the new infections occurred among males, 67 percent were black, and 60 percent are estimated to have occurred among MSM & MSM/IDU combined (Table 3.2). The estimated overall rate of new infections in N.C. (18.4 per 100,000) is very close to estimated national rate (19.0 per 100,000) for 2009. In N.C., persons aged 13 to 29 years olds are estimated to have the highest rate of new infections at 37.6 per 100,000, this is higher than the national rate of 25.8 per 100,000 for this age group. The incidence estimates for the U.S. and N.C. both highlight that blacks are disproportionately impacted by the HIV. The estimated HIV incidence rate for 2009 for N.C. is approximately 9 times greater for blacks (56.5 per 100,000) as compared to whites (6.0 per 100,000).

Table 3.2. North Carolina and United States HIV incidence estimates, 2009

	North Carolina			United States	
	Cases	Proportion	Rate	Proportion	Rate
Gender					
Male	1,272	73.8%	27.7	77%	29.8
Female	451	26.2%	9.4	23%	8.6
Race					
White	381	22.1%	6.0	32%	9.1
Black	1,146	66.5%	56.5	44%	69.9
Other*	196	11.4%	--	24%	--
Age					
13-29	822	47.7%	37.6	39%	25.8
30-39	452	26.2%	35.7	27%	32.2
40-49	325	18.9%	24.2	23%	25.1
50+	125	7.3%	4.3	11%	5.5
Risk					
MSM**	1,037	60.2%	--	64%	--
IDU	110	6.4%	--	9%	--
Heterosexual	576	33.4%	--	27%	--
Total	1,723	--	18.4	--	19.0

*Other includes: Hispanics, Asian/Pacific Islanders, American Indian/Alaskan Natives

** MSM =men who have sex with men and includes MSM who inject drugs. IDU =injection drug use.

1. The case number for Hispanics, Asian/Pacific Islanders, American Indian/Alaskan Natives in N.C. was too small to generate rates incidence estimates
2. The estimate formula is applied separately to each group, therefore numbers in the breakdowns may not total 2,356. Percentages are similarly affected
3. Incidence rates could not be calculated by risk factor, due to lack of population data for risk groups
4. Rate is expressed as cases per 100,000 population

Accurately measuring HIV incidence will help us better understand how HIV is spreading, where to more effectively focus prevention efforts, and evaluate our progress in reducing the spread of HIV in N.C. The new HIV incidence estimates illustrate the critical need for adequate funding of HIV prevention efforts in North Carolina. Additionally, these findings confirm the need to provide focused HIV prevention efforts tailored for youth, MSM, and minority populations (including blacks and Hispanics) that are disproportionately impacted by HIV.

HIV TESTING DATA

Data on HIV tests submitted to the N.C. SLPH is housed in the HIV Counseling, Testing and Referral system (CTR). The CTR system includes data on all HIV tests that are submitted by local health departments and community-based organizations to the N.C. SLPH for processing. During a pre-test process, demographic data and 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 CTS data. For each person tested, this data is collected and sent with the blood sample to the N.C. SLPH for analysis. Data on rapid HIV testing is housed in the HIV CTR dataset as well as in a 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. 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 (see 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.

In January 2008, the N.C. SLPH adopted a new 3rd generation EIA that tests for antibodies to both HIV-1 (including Group O subtypes) 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 HIV-1 Western Blot (WB) assay. Samples that test repeatedly reactive on the EIA screening assay but fail to test as reactive by HIV-1 WB (either Indeterminate or Nonreactive) are further tested for HIV-1 RNA. If the sample is negative for HIV-1 RNA, it is then 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 also tested for HIV-1 RNA using molecular methodology to detect acute HIV infections.

HIV Testing at SLPH, 1991-2010

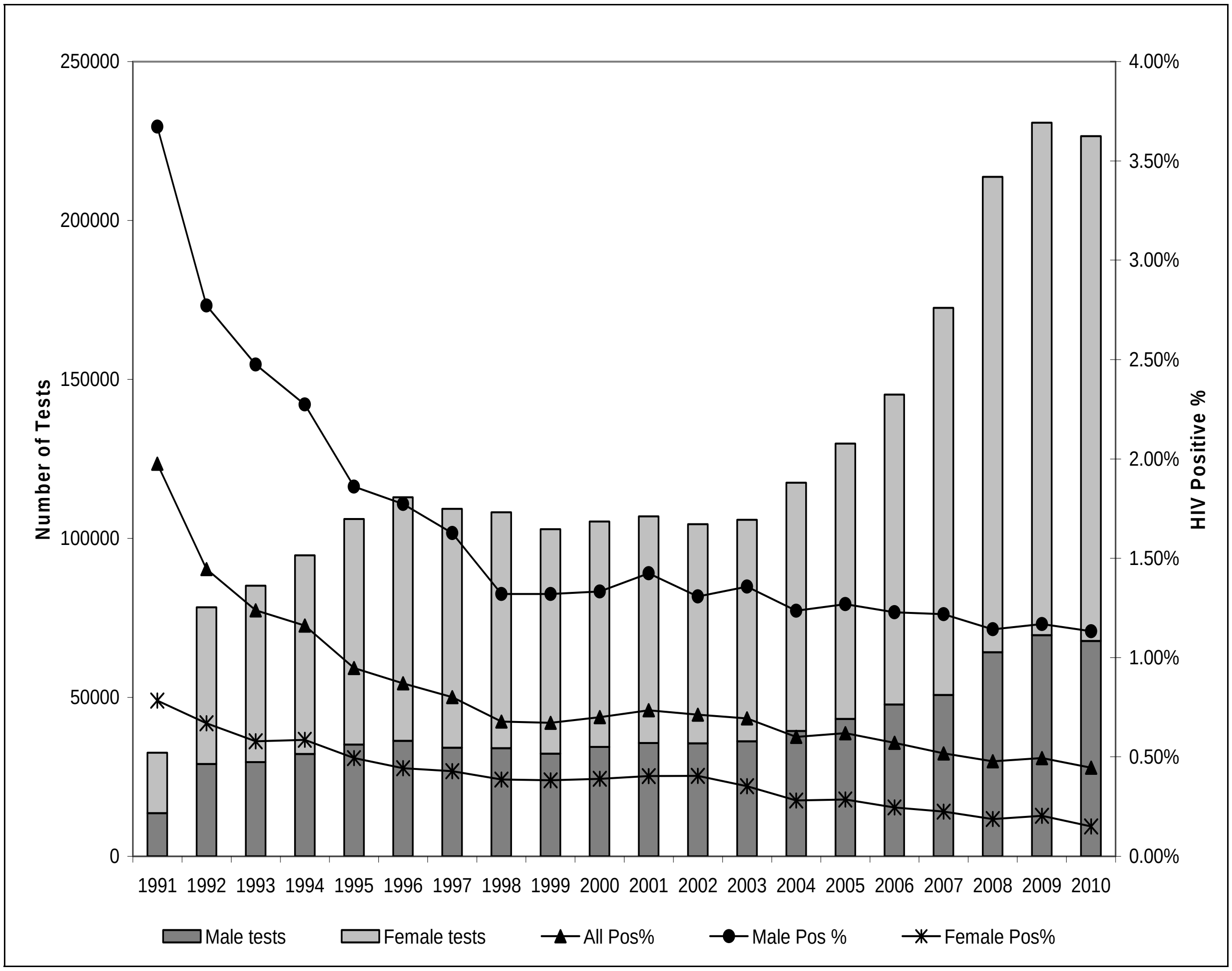
A full fledged testing program at the N.C. SLPH was in place by May of 1991. A total of 32,747 tests were done that year, primarily in HIV counseling and testing sites and STD clinics (Table 3.3). New positivity rates were high at that time (1.5% overall) because testing was highly targeted to those 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 3.3. HIV tests performed by N.C. State Laboratory of Public Health (N.C. SLPH) and positivity rates, 1991-2010

Year	Tests Performed	Overall Positives (%)
1991	32,747	647 (1.98)
1992	78,655	1,137 (1.45)
1993	85,356	1,057 (1.24)
1994	94,858	1,101 (1.16)
1995	106,318	1,007 (0.95)
1996	113,363	987 (0.87)
1997	109,723	879 (0.80)
1998	108,612	736 (0.68)
1999	105,792	711 (0.67)
2000	106,197	744 (0.70)
2001	109,164	803 (0.74)
2002	105,724	754 (0.71)
2003	107,210	744 (0.69)
2004	119,143	716 (0.60)
2005	131,265	813 (0.62)
2006	146,548	837 (0.57)
2007	176,487	915 (0.52)
2008	214,648	1,027 (0.48)
2009	231,353	1,144 (0.49)
2010	227,038	1,011 (0.45)

HIV positivity rates have been higher for males than females for the entire testing period (Figure 3.4). The rate among females tested has declined modestly over the time period but among men, the decline has been rather dramatic because the testing in the early years was much more targeted than it is today. The ratio of females to males among the tested population has increased from 1.4 in 1991 to 2.3 in 2010 (data not shown). The overall HIV positive rate more closely follows the trend of the female rates because there are so many more women in the data (Figure 3.4).

Figure 3.4. Conventional HIV tests performed and new HIV positivity rates, N.C. SLPH 1991-2010



HIV TESTING 2010

In 2010, a total of 246,458 HIV tests (1,103 confirmed positives; 0.5 percent confirmed positive) were performed through state-sponsored programs (Table 3.3). This number includes HIV tests submitted to the N.C. SLPH, rapid HIV tests conducted by health departments and community-based organizations, and tests conducted through the expanded testing program in emergency departments and community health centers. Some duplication of persons is inevitable in these numbers because an individual may be tested multiple times throughout the year, and therefore counted more than one time. Of the 1,103 positive tests, 501 were new cases of HIV and 546 were previously positive cases. Insufficient information exists to determine if the remaining 56 positive tests were new or previously positive (only aggregate testing information was available). In this report, “new cases” were determined by matching HIV testing data to HIV surveillance data. The date that the positive HIV test was conducted was compared to the date of HIV disease diagnosis (obtained from surveillance data). Only persons who had a positive HIV test in 2010 and who did not have a previous positive HIV test in the surveillance system, are counted as new cases.

Over one-half of the HIV tests were performed in local health department clinics (35.9% in STD clinics, 19.0% in family planning clinics, 13.6% in prenatal/obstetric clinics, and 0.8% in TB clinics; Table 3.3). Another 5.1 percent were done in correctional settings, 6.2 percent during community outreach activities, 3.4 percent in community health centers, and 1.2 percent in emergency departments. The remaining HIV testing occurred at other settings (9.7%) or was missing site type information (5.1%).

Table 3.4. HIV testing in N.C. CDB programs by setting 2010

Setting	No. Tested	Positives	New Positives	Positives with unverified status	% Positive	% New Positive
HIV CTS	6,171	112	57	0	1.81	0.92
STD Clinic	88,383	444	244	0	0.50	0.28
Drug Treatment	4,543	24	8	0	0.53	0.18
Family Planning	46,708	11	9	0	0.02	0.02
Prenatal/OB	33,538	12	6	0	0.04	0.02
TB Clinic	1,971	5	2	0	0.25	0.10
Community Health Center	8,399	104	15	9	1.24	0.51
Prison/Jail	12,623	65	17	0	0.51	0.13
Hospital/Private MD	72	3	0	0	4.17	0.00
Emergency Dept	2,890	24	2	21	0.83	0.16
DIS Field Visit	646	57	37	0	8.82	5.73
Outreach	15,293	106	33	26	0.69	0.25
Other	11,140	90	45	0	0.81	0.40
Student Health	1,582	4	3	0	0.25	0.19
Missing	12,499	42	23	0	0.34	0.18
Total	246,458	1,103	501	56	0.45	0.21

The denominator for percent positive is the number tested.
The denominator for percent new positives is the number of tests where the new case status could be determined. For CHC/PHC, emergency departments, and outreach site types, the denominator is different than the number tested. Denominators used for these site types are as follows: CHC/PHC n=2,942; emergency dept n=1,264; outreach n=13,410; total n=237,492)

Site Type

Individual-level data (including sex, race/ethnicity, age, risk, and new case status) was available for 237,492 of the state-sponsored HIV tests in 2010 (Table 3.4). Data on conventional tests submitted to N.C. SLPH and data on rapid tests submitted to the N.C. CDB are included. The highest positivity rate of new HIV cases (5.7%) was seen among the tests conducted through Disease Intervention Specialist (DIS) field visits. These tests were done 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. HIV positivity rates were also elevated for those tested in HIV test sites (usually nontraditional testing sites, 0.9% positivity), and community health sites (0.5%; Table 3.5).

Table 3.5. HIV testing in N.C. DHHS programs by gender and setting, 2010*

Setting	Males		Females		Total**	
	No. Tested	New Positives (%)	No. Tested	New Positives (%)	No. Tested	New Positives (%)
STD Clinic	38,499	206 (0.54)	49,730	37 (0.07)	88,383	244 (0.28)
Jail	10,065	10 (0.10)	2,502	7 (0.28)	12,623	17 (0.13)
Other	5,538	38 (0.69)	5,542	7 (0.13)	11,140	45 (0.40)
Outreach	5,319	28 (0.53)	7,977	5 (0.06)	13,410	33 (0.25)
Missing	3,727	17 (0.46)	8,697	5 (0.06)	12,499	23 (0.18)
HIV Testing Site	3,294	43 (1.31)	2,862	14 (0.49)	6,171	57 (0.92)
Drug Treatment	2,572	7 (0.27)	1,957	1 (0.05)	4,543	8 (0.18)
Community Health Center	1,384	11 (0.79)	1,521	4 (0.26)	2,942	15 (0.51)
TB Clinic	1,083	2 (0.18)	885	0 (0.00)	1,971	2 (0.10)
Student Health	512	2 (0.39)	1,064	1 (0.09)	1,582	3 (0.19)
Emergency Department	458	1 (0.22)	782	1 (0.13)	1,264	2 (0.16)
DIS Field Visit	387	33 (8.53)	257	4 (1.56)	646	37 (5.73)
Family Planning Clinic	125	0 (0.00)	46,537	9 (0.02)	46,708	9 (0.02)
Hospital/Private MD	9	0 (0.00)	63	0 (0.00)	72	0 (0.00)
Prenatal/OB Clinic	8	0 (0.00)	33,494	6 (0.02)	33,538	6 (0.02)
Total	72,980	398 (0.55)	163,870	101 (0.06)	237,492	501 (0.21)

*This table includes both conventional and rapid tests. It is limited to tests submitted to SLPH and to rapid tests submitted to the N.C. Communicable Disease Branch. It does not include data on some of the tests done at community health centers and emergency departments that are supported by the N.C. Communicable Disease Branch.

**Total column includes n=32 (1 positive) individuals with transgender sex and n=610 (1 positive) individuals with missing sex.

Gender

Of those tested, 163,870 (69.0%) were female, 72,980 (30.7%) were male, and 32 were transgender. The remaining 610 (0.3%) had missing data for gender (Table 3.5). The positivity rate of new HIV cases was higher for males compared to females (0.55 % versus 0.06%). This is in part because a majority of the women were tested in family planning clinics (28.4%) and prenatal OB clinics (20.4%) as part of their routine or prenatal healthcare 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 (52.8%) or in jail (13.8%) and represented a population at higher risk for HIV.

Race/Ethnicity

Overall 44.0 percent of those tested were black non-Hispanic, 27.5 percent were white non-Hispanic, 18.1 percent Hispanic, 1 percent American Indian, 1.1 percent Asian/Pacific Islanders, and 0.1 percent other race/ mixed race (Table 3.6). The remaining 8.2 percent had missing data for race and ethnicity. A larger proportion of the women tested were Hispanic (22.0% for females compared to 9.6% for males). Overall, new positivity rates were high among those with other/mixed race (0.47% positivity, but based on just one new case) and black non-Hispanics (0.31%, 319 cases).

Looking at race and gender together, new HIV positivity rates were highest for males in the other/mixed race group (1.25%) followed by black non-Hispanic males (0.67%), Asian/Pacific Islander males (0.40%), white non-Hispanic males (0.38%), and Hispanic males (0.36%). Disparity was greatest among women. The rate of positivity for black non-Hispanic women (0.31%) was 2.6 times the rate for white women (0.12%). Among men, the black non-Hispanic rate (0.67%) was 1.8 times the rate for white men (0.38%; Table 3.6).

Table 3.6. HIV testing in N.C. DHHS programs, by gender and race/ethnicity, 2010*

	Males		Females		All Tests**	
Race/ Ethnicity	No. Tested	New Positives (%)	No. Tested	New Positives (%)	No. Tested	New Positives (%)
White NH	18,193	69 (0.38)	46,967	12 (0.03)	65,217	81 (0.12)
Black NH	37,455	251 (0.67)	66,999	67 (0.10)	104,574	319 (0.31)
Hispanic	6,970	25 (0.36)	36,025	13 (0.04)	43,061	38 (0.09)
American Indian	1,054	0 (0.00)	1,261	0 (0.00)	2,320	0 (0.00)
Asian/PI	756	3 (0.40)	1,949	1 (0.05)	2,716	4 (0.15)
Other/ Mixed	80	1 (1.25)	132	0 (0.00)	212	1 (0.47)
Missing	8,472	49 (0.58)	10,537	8 (0.08)	19,392	58 (0.30)
Total	72,980	398 (0.55)	163,870	101 (0.06)	237,492	501 (0.21)

*This table includes both conventional and rapid tests. It is limited to tests submitted to SLPH and to rapid tests submitted to the N.C. Communicable Disease Branch. It does not include data on some of the tests done at community health centers and emergency departments that are supported by the N.C. Communicable Disease Branch.

**Total column includes n=32 (1 positive) individuals with transgender sex and n=610 (1 positive) individuals with missing sex.

Age

Persons 20 to 29 years of age represented the largest group of people tested through state-sponsored HIV testing programs in 2010 (n=114,633, 48.3%; Table 3.7). The next largest groups were those slightly older (age 30-39, n=47,745, 20.1%) and those slightly younger (age 15-19, n=37,048, 15.6%). Females tended to be younger than the males that were tested. Of the women tested, 18.2 percent were less than 20 years of age compared to 12.3 percent of the men. In addition, only 11.6 percent of females were 40 years of age or greater, compared to 22.5 percent of males.

The largest number of new HIV cases was found in the group with the most tests (age 20-29 years, 250 cases). Overall the highest positivity rates were seen among those 40 years and older (0.29% positivity). For all age groups, the positivity rate was greater for males than females.

Table 3.7. HIV testing in N.C. DHHS programs, by gender and age, 2010*

Age in years	Males		Females		Total**	
	No. Tested	New Positives (%)	No. Tested	New Positives (%)	No. Tested	New Positives (%)
0 to 14	440	1 (0.23)	1,442	2 (0.14)	1,883	3 (0.16)
15 to 19	8,565	39 (0.46)	28,390	7 (0.02)	37,048	46 (0.12)
20 to 29	33,039	215 (0.65)	81,307	34 (0.04)	114,633	250 (0.22)
30 to 39	14,206	73 (0.51)	33,413	25 (0.07)	47,745	98 (0.21)
40 to 49	9,861	50 (0.51)	13,258	18 (0.14)	23,198	68 (0.29)
50+	6,592	20 (0.30)	5,778	15 (0.26)	12,413	36 (0.29)
Missing	277	0 (0.00)	282	0 (0.00)	572	0 (0.00)
Total	72,980	398 (0.55)	163,870	101 (0.06)	237,492	501 (0.21)

*This table includes both conventional and rapid tests. It is limited to tests submitted to SLPH and to rapid tests submitted to the N.C. Communicable Disease Branch. It does not include data on some of the tests done at community health centers and emergency departments that are supported by the N.C. Communicable Disease Branch.

**Total includes n=32 (1 positive) individuals with transgender sex and n=610 (1 positive) individuals with missing sex.

Risk Profile

Table 3.8 shows the prevalence of risk behaviors among those tested. A total of 237,492 were collected with individual-level data. However, the risk information section of these forms was only completed for 213,433 (89.9%) of these forms. 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 (95.1%) and a high proportion of men reported sex with women (83.9%). Furthermore, 9.9 percent of men reported sex with other men, or sex with MSM (5.2%). Other risky sexual exposures were frequently reported including sex while using non-injecting drugs (18.0% of men and 6.2% of women), sex with a partner with

HIV risk (9.4% of men and 6.8% of women), sex with an HIV positive partner (1.4% of men and 0.4% of women), sex with a partner who uses injection drugs (1.2% of men and 0.8% of women), and exchanging sex for drugs or money (2.0% of men and 1.0% of women). A current STD diagnosis was reported for 7.1 percent of men and 3.2 percent of women. Men were 3 times as likely to report injection drug use (1.8% of men compared to 0.6% of women).

Table 3.8. HIV testing in N.C. DHHS programs by gender and risk, 2010*

Risk***	Male		Female		Total	
	No. Tested	% who reported risk	No. Tested	% who reported risk	No. Tested	% who reported risk
STD Dx	4,810	7.11	4,608	3.17	9,433	4.42
Sex w. Male	6,701	9.91	138,181	95.12	145,191	68.03
Sex w. Female	56,704	83.85	5,967	4.11	62,856	29.45
Sex w. IDU	822	1.22	1,091	0.75	1,918	0.90
Sex w. HIV+	976	1.44	618	0.43	1,600	0.75
Sex w. MSM	3,526	5.21	633	0.44	4,181	1.96
Sex w. Other HIV Risk Partner	6,349	9.39	9,849	6.78	16,235	7.61
Victim of Sexual Assault	273	0.40	1,862	1.28	2,140	1.00
Exchange Sex for Drugs/$	1,366	2.02	1,393	0.96	2,769	1.30
Sex using non-injecting drugs	12,158	17.98	8,983	6.18	21,192	9.93
IDU	1,241	1.84	961	0.66	2,208	1.03
Blood Exposure	247	0.37	453	0.31	700	0.33
Health Care Exposure	473	0.70	1,498	1.03	1,979	0.93
Child of HIV+	102	0.15	246	0.17	,351	0.16
Other HIV Risk	8,286	12.25	6,206	4.27	14,552	6.82
No Acknowledged Risk	3,741	5.53	9,058	6.24	12,837	6.01

*Table includes data only for those clients who answered HIV risk questions (n=67,629 males, n=145,269 females, n=213,433 for all tested). This table includes both conventional and rapid tests. It is limited to tests submitted to SLPH and to rapid tests submitted to the N.C. communicable Disease Branch. It does not include data on some of the tests done at community health centers and emergency departments that are supported by the N.C. Communicable Disease Branch.

**Total column includes n=32 (1 positive) individuals with transgender sex and n=610 (1 positive) individuals with missing sex.

***Risks are NOT mutually exclusive (one patient may report multiple risks)

Among men, the highest new case positivity rates were among those reporting sex with an HIV positive partner (8.1%), sex with MSM (4.7%), sex with male (3.4%), and victim of sexual assault (1.5%; Table 3.9). For women, the highest positivity was among those reporting sex with an HIV positive partner (2.4%), blood exposure (0.7%), and exchanging sex for drugs or money

(0.4%). Note that these risks are not mutually exclusive and a single HIV case may have reported several of these risks.

Table 3.9. HIV testing in N.C. DHHS programs, positivity rates among risk groups by gender, 2010*

Risk***	Male		Female		Total**	
	No. Tested	New positives (%)	No. Tested	New positives (%)	No. Tested	New positives (%)
STD Dx	4,810	28 (0.58)	4,608	2 (0.04)	9,433	30 (0.32)
Sex w. Male	6,701	228 (3.40)	138,181	86 (0.06)	145,191	315 (0.22)
Sex w. Female	56,704	158 (0.28)	5,967	5 (0.08)	62,856	164 (0.26)
Sex w. IDU	822	2 (0.24)	1,091	0 (0.00)	1,918	2 (0.10)
Sex w. HIV+	976	79 (8.09)	618	15 (2.43)	1,600	94 (5.88)
Sex w. MSM	3,526	165 (4.68)	633	0 (0.00)	4,181	166 (3.97)
Sex w. Other HIV Risk PN	6,349	27 (0.43)	9,849	6 (0.06)	16,235	33 (0.20)
Victim of Sexual Assault	273	4 (1.47)	1,862	1 (0.05)	2,140	5 (0.23)
Exchange Sex for Drugs/$	1,366	8 (0.59)	1,393	6 (0.43)	2,769	14 (0.51)
Sex using non-inject drugs	12,158	43 (0.35)	8,983	10 (0.11)	21,192	53 (0.25)
IDU	1,241	3 (0.24)	961	1 (0.10)	2,208	4 (0.18)
Blood Exposure	247	2 (0.81)	453	3 (0.66)	700	5 (0.71)
Health Care Exposure	473	1 (0.21)	1,498	1 (0.07)	1,979	2 (0.10)
Child of HIV+ Woman	102	0 (0.00)	246	0 (0.00)	351	0 (0.00)
Other HIV Risk	8,286	34 (0.41)	6,206	6 (0.10)	14,552	40 (0.27)
NIR	3,741	13 (0.35)	9,058	4 (0.04)	12,837	17 (0.13)

*Table includes data only for those clients who answered HIV risk questions (n=67,629 males, n=145,269 females, n=213,433 for all tested). This table includes both conventional and rapid tests. It is limited to tests submitted to SLPH and to rapid tests submitted to the N.C. communicable Disease Branch. It does not include data on some of the tests done at community health centers and emergency departments that are supported by the N.C. Communicable Disease Branch.

**Total column includes n=32 (1 positive) individuals with transgender sex and n=610 (1 positive) individuals with missing sex.

***Risks are NOT mutually exclusive (one patient may report multiple risks)

Table 3.10 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. Note that this hierarchy distinguishes between high risk heterosexual sex and other heterosexual sex. High risk heterosexual includes those who report any of the following personal risks: victim of sexual assault, trade sex for drugs or money, recent STD diagnosis, sex while using non-injecting drugs, and those who report partners with the following risks: MSM, IDU, HIV positive, other HIV risk. Persons who can not 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, child of HIV-infected woman.

Among men, the majority fell into the heterosexual risk categories (16.0% high risk and 50.9% other). However, the highest new positivity rates by far were among those in the MSM (3.7%) and MSM/IDU (1.0%). For women, an even higher majority of cases reported heterosexual risk (12.2% high risk and 85.5% other). This result is likely due to the large numbers screened in family planning and prenatal/ob settings. The highest new HIV positivity for women was among heterosexual high risk (0.13%).

Table 3.10. HIV testing in N.C. DHHS programs, by gender and hierarchical risk, 2010*

Risk***	Male		Female		Total**	
	No. Tested	New positives (%)	No. Tested	New positives (%)	No. Tested	New positives (%)
MSM/IDU	102	1 (0.98)	n/a	n/a	102	1 (0.98)
MSM	7,054	258 (3.66)	n/a	n/a	7,054	258 (3.66)
IDU	1,139	2 (0.18)	961	1 (0.10)	2,106	3 (0.14)
Heterosexual High Risk	16,682	40 (0.24)	19,940	26 (0.13)	36,622	66 (0.18)
Heterosexual other	37,181	62 (0.17)	117,342	59 (0.05)	154,523	121 (0.08)
Other	201	2 (1.00)	2,264	2 (0.09)	2,930	6 (0.20)
Blood Recipient/ Healthcare Exposure/Child of HIV Infected Woman	80	0 (0.00)	230	0 (0.00)	320	0 (0.00)
NIR	2,338	9 (0.38)	3,501	2 (0.06)	5,863	11 (0.19)
Missing	8,203	24 (0.29)	19,632	11 (0.06)	27,972	35 (0.13)
Total	72,980	398 (0.55)	163,870	101 (0.06)	237,492	501 (0.21)

*This table includes both conventional and rapid tests. It is limited to tests submitted to SLPH and to rapid tests submitted to the N.C. communicable Disease Branch. It does not include data on some of the tests done at community health centers and emergency departments that are supported by the N.C. Communicable Disease Branch.

**Total column includes n=32 (1 positive) individuals with transgender sex and n=610 (1 positive) individuals with missing sex.

***Risks ARE mutually exclusive (one risk category assigned for each patient).

SPECIAL TESTING PROJECTS

Note that these numbers are PART of the overall numbers already discussed.

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, making 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 a venipuncture blood sample that is required for a conventional HIV test.

During 2010, the N.C. Communicable Disease Branch provided free rapid tests (Oraquick Advance, Clearview Complete, and Unigold) to 15 community based organizations, 7 local health departments, 8 community health centers, and 3 universities. Rapid tests were also provided to N.C. Disease Intervention Specialists to facilitate partner testing and referral services. A total of 20,741 rapid tests were performed and 83 of these were confirmed positive (overall confirmed positivity rate of 0.4%; Table 3.11). Of the positive cases, 40 were new, 37 were previously positive, and 6 did not have sufficient information to determine if they were new or previously positive. The new case positivity rate varies by setting. Positivity was 8% for rapid testing done through the partner counseling and referral program, 3.6 percent for STD clinic testing, 1.3 percent for student health, 0.7 percent for HIV counseling and testing sites (health departments and CBO facilities), 0.6 percent in community health centers, 0.2 percent for community outreach settings, 0.2 percent for hospitals/private doctor offices, and 0.1 percent for drug treatment program sites.

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. These projects 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.

Table 3.11. North Carolina rapid HIV testing program 2010

Setting	No. Tested	No. Confirmed positives	No. New positives	Positives with unverified status	% Confirmed positives	% New positives
STD Clinic	167	6	6	0	3.6	3.6
Family Planning	39	0	0	0	0.0	0.0
Community	7,687	11	5	6	0.1	0.6
Drug Treatment	2,761	10	2	0	0.4	0.1
DIS field visit	50	7	4	0	14.0	8.0
HIV Testing	708	8	5	0	1.1	0.7
Hospital/Private	1,298	6	2	0	0.5	0.2
Other	1,748	3	1	0	0.2	0.1
Outreach	5,235	25	12	0	0.5	0.2
Prenatal/ OB	22	0	0	0	0.0	0.0
Jail	583	2	0	0	0.3	0.0
Student Health	157	3	2	0	1.9	1.3
TB Clinic	1	0	0	0	0.0	0.0
Missing	285	2	1	0	0.7	0.4
Total	20,741	83	40	6	0.4	0.2

The denominator for percent positive is the number tested. The denominator for percent new positives is the number of tests where the new case status could be determined.
For community health site type, the denominator is different than the # tested.
Denominator used for community health was n=807

In 2010, a total of 22,171 persons were tested through the NTS projects. Of those tested, 215 were positive (1.0%) and 68 were newly identified positives (0.3%). NTS projects target 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 or 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, the number referred to care, and those that actually showed up for care.

Expanded HIV Testing

The Centers for Disease Control and Prevention 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 or blacks in 2005.

In year one, $35 million was awarded to 18 states and 5 cities. In year two, funding increased to $36 million and 2 states were added to those previously funded. Before the end of year three, a new Expanded HIV testing grant was announced. 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 N.C. 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 N.C. and greatly facilitated the establishment of new testing programs in emergency departments and community health centers. In 2010, 45,861 HIV tests were conducted through the expanded testing program (Table 3.12).

Table 3.12. Expanded HIV testing project, 2010

Setting	# Sites	Total Number Tested	Overall HIV Positive (%)	Newly identified HIV Positive (%)
Emergency Departments	4	2,445	23 (0.94)	8 (0.33)
Community Health Centers	7	7,218	18 (0.25)	Not available
Jails	33	13,061	65 (0.50)	18 (0.14)
STD Clinics	102	23,137	121 (0.52)	70 (0.30)
Total	146	45,861	227 (0.49)	96 (0.25)*

* Among tests with new diagnosis information available

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 2010 there were 88,383 total HIV tests in STD clinic settings (Table 3.4) and 23,137 (26.4%) were considered to be expanded tests (Table 3.12). Testing practice in this setting is closest to true "opt-out" testing. The proportion of HIV-positive individuals has remained very stable (0.53% in 2009 and 0.52% in 2010). The trend for newly-diagnosed HIV positives is slightly down (0.36% in 2009 vs. 0.30% in 2010).

Emergency Departments

The project supports HIV testing in four hospital emergency departments (EDs). Two hospitals perform conventional HIV testing and two are supplied with rapid HIV test kits. The four sites combined tested 2,445 people for HIV and found 23 positives (0.94%). This positivity rate is the highest of all 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 that do are high risk.

Community Health Centers

Federally qualified community health centers (FQHC) were another area for expanding testing: in 2007 the CDB supported two FQHCs and by the end of 2010, the Branch was able to supply rapid test kits to seven FQHCs. Those seven health centers performed 7,218 tests in 2010, down from 9,671 tests in 2009. There were 18 positive tests (0.25%). This number is down significantly from the previous year (1.5% HIV positive). This decrease may be explained by the possibility that when the new HIV testing program was introduced, higher risk individuals were disproportionately identified, yielding a high seropositivity. However, after this initial period, seropositivity declined over time as more low-risk clients were screened and the proportion of clients reporting previous HIV testing increased (Klein, 2011).

Corrections

The Expanded HIV Testing 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 19 agencies testing for both HIV and syphilis in 33 county jails across the state. The grant currently supports 27 part and full-time positions ranging from phlebotomists, lab technicians and DIS to a part-time ID physician. Additional jail screening positions are funded through the HIV Prevention grant. During 2010, 13,061 jail admittees were screened for HIV and 65 (0.50%) were found to be HIV positive; eighteen were newly identified cases (Table 3.12).

Prior to the 2007 change in the N.C. Administrative Code, the N.C. Department of Corrections (DOC) which oversees all prisons in N.C., 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 offered HIV testing upon entry. During 2010, there were 27,294 inmates admitted to DOC facilities and 25,910 (95.0%) were tested for HIV.

Counseling, Testing and Referral Activities in Substance Abuse Center

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 2010, the Communicable Disease Branch supported 14 agencies to provide HIV testing in substance abuse centers throughout the state (not all were funded for the whole year). Throughout the year, the project did 2,230 tests, found 8 total positives (0.4%) of which 7 were new positives (0. 3%) (agency quarterly report 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.org, which has several features. The site allows a visitor to enter their zip code 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 black 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. With the current epidemiological profile, attention and resources are better focused 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 is very focused.

During 2010, the *Get real. Get tested.* campaign expanded 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.

Health Education and Risk Reduction Program (HE/RR)

During 2010, 2,617 people participated in health education and risk reduction programs that were supported by the N.C. Communicable Disease Branch. The primary mission of the (HE/RR) is to target persons at increased risk of becoming infected with HIV or, if already infected, prevent the transmission of the virus to others. Activities should be directed to persons whose behaviors or personal circumstances place them at risk. HE/RR contracts shall contribute to the reduction of HIV/AIDS. HE/RR services increase the ability of individuals living with HIV disease to better manage their health through the provision of services that educate people with HIV, about HIV transmission and how to reduce the risk of infection.

HIV-positive individuals and their partners will be prioritized as the number one group within each proposed targeted population. Likewise, specific strategies will be identified and thoroughly described for this population. All HE/RR activities related to HIV/AIDS shall contribute to the over all goal of reducing high-risk behaviors amongst the population to be served. Of critical importance is that members of the populations to be served are recruited and identified early in the process, so they can ensure appropriate care. Their early recruitment ensures that decisions are made, purposes are defined and intervention messages are developed specifically to cater to the population served.

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/) Diffusion of Effective Behavioral Interventions website (www.effectiveinterventions.org). Currently there are five community-based organizations, three local health departments and three historically black colleges and universities that are funded to conduct effective interventions throughout North Carolina. Interventions utilized in North Carolina during 2010-2011 are described below.

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 CRCS programs.

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 (RR) plan including referrals which support risk reduction.

SISTA is a social-skills training intervention for black women. The intervention is aimed at reducing HIV sexual risk behavior and 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 groups of four to eight clinic patients are convened in a room that allows privacy for discussions. Groups are gender-and-ethic 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 black and Hispanic 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 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).

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CHAPTER 4: PARTNER COUNSELING AND REFERRAL SERVICES

HIGHLIGHTS

- MSM activity was associated with 73 percent of early syphilis cases and 61 percent of HIV cases among all males interviewed through PCRS in 2010.
- Twenty-six percent (26%) of MSM interviewed with HIV in 2010, and 18 percent of MSM interviewed with syphilis indicated that they had female as well as male sexual partners.
- Four percent (4%) of HIV cases interviewed through PCRS in 2010 indicated they had injected drugs. Injecting cocaine was most frequently reported (33%), followed by heroin (33%) and narcotics (18%).
- In 2010, 23 percent of heterosexuals interviewed with HIV and 48 percent of heterosexuals interviewed with syphilis reported multiple sexual partners in the past year.
- In 2010, 20 percent of heterosexual males interviewed with HIV and 32 percent of heterosexual males with interviewed with syphilis indicated that they had previously been infected with a sexually transmitted disease.
- Twenty four percent (24%) of interviewed heterosexual females with HIV and 48 percent of females interviewed with early syphilis in 2010 indicated they had a previous STD diagnosis

PARTNER COUNSELING AND REFERRAL SERVICES (PCRS)

The Communicable Disease Branch (CDB) supports a statewide comprehensive Partner Counseling and Referral Services (PCRS) program for local health departments and other HIV testing and prevention agencies. Partner notification and services for syphilis and HIV are prioritized as the primary role of the Disease Intervention Specialist (DIS). The DIS staff work in the Field Services Unit and work in collaboration with the community, medical and support service providers to offer clients and their (sex and needle sharing) partners comprehensive HIV/STD counseling and testing services. Syphilis and HIV testing and treatment are recommended for all patients, partners, suspects and associates and the DIS facilitates testing and treatment for clients as needed. The DIS attempt to interview all people newly diagnosed with HIV and syphilis in North Carolina 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 Field Services Unit is comprised of seven regional offices located in Black Mountain, Charlotte, Winston-Salem, Raleigh, Fayetteville, Greenville and Wilmington. The Field Services staff includes Disease Intervention Specialists, Surveillance Coordinators, HIV Bridge Counselors, Regional Supervisors and Regional Secretaries. Bridge Counselors and DIS staff assist people diagnosed with HIV/AIDS in accessing medical care and support services. Regional supervisors participate in the Syphilis Elimination task force and coordinate their activities with the Ryan White Part B Regional Networks of Care. The Field Services Unit Manager and Rapid Response Coordinator monitor HIV/syphilis trends to stay on top of any potential outbreak.

PCRS INTERVIEW DATA

Disease Intervention Specialists are responsible for conducting patient interviews of persons newly diagnosed with HIV or syphilis. The DIS and Bridge Counselors counsel patients on prevention of subsequent risk, assist with referrals for treatment and services, and help with partner notification. Information is collected pertaining to clients' clinical status and treatment, demographics, and detailed risk factors for HIV and syphilis. These data are recorded and maintained in regional STD*MIS data bases. The following analysis does not represent all newly infected individuals and is restricted to the interviewed population. These data represent an estimated 98 percent of diagnosed syphilis cases and 85 to 90 percent of diagnosed HIV cases interviewed by DIS in 2010. HIV/STD risk and demographic information collected during the Field Services interview are described below to enhance our understanding of the additional behaviors that place individuals at risk for HIV and syphilis infection in North Carolina.

MEN WHO HAVE SEX WITH MEN (MSM)

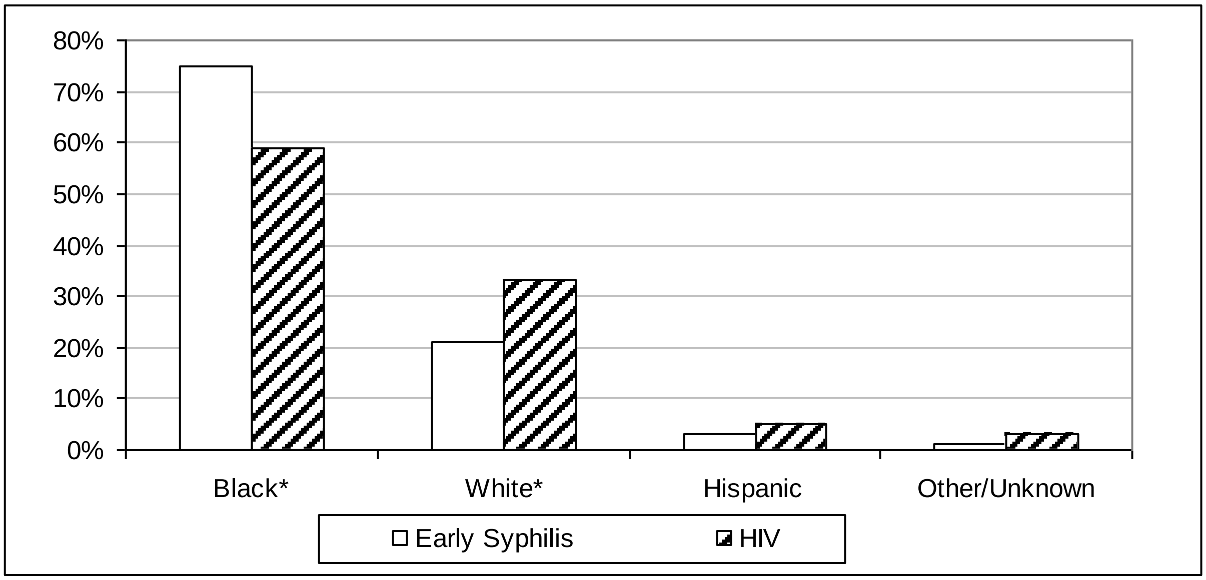
MSM risk was associated with 61 percent of all males interviewed in 2010 with HIV Disease (n=1,078). Among all males interviewed in 2010 with early syphilis (n=524), MSM activity was associated with 73 percent of male cases. Among MSM interviewed in 2010, blacks compose a greater proportion of early syphilis cases interviewed (75%) than HIV cases (58%), whereas whites compose a greater proportion of HIV cases interviewed (33%) than early syphilis cases (21%). In 2010, 5 percent of MSM interviewed with HIV and 3 percent of MSM interviewed with early syphilis were Hispanic (Figure 4.1).

Sex partners and STD history

Among MSM interviewed in 2010 with HIV (n=623), 15 percent indicated having had more than one sexual partner in the past 90 days, 42 percent indicated having had multiple partners in the past year and, 15 percent indicated they had a new sex partner within the past 90 days. Twenty-six percent (26%) of MSM interviewed with HIV in 2010 indicated they had female as well as male sexual partners. Twenty-two percent (22%) of MSM interviewed in 2010 with HIV indicated that they had a previous STD.

Among MSM interviewed with syphilis in 2010, 28 percent indicated having multiple sexual partners in the past 90 days, 62 percent indicated they had multiple sexual partners in the past year and, 33 percent indicated they had a new sex partner within the past 90 days. Eighteen percent (18%) of MSM with syphilis indicated they had female as well as male sexual partners. Fifty two percent (52%) of MSM with syphilis indicated they had been previously diagnosed with a STD (Figure 4.2-4.3).

Figure 4.1. MSM interviewed by race/ethnicity and disease, PCRS 2010



*non-Hispanic

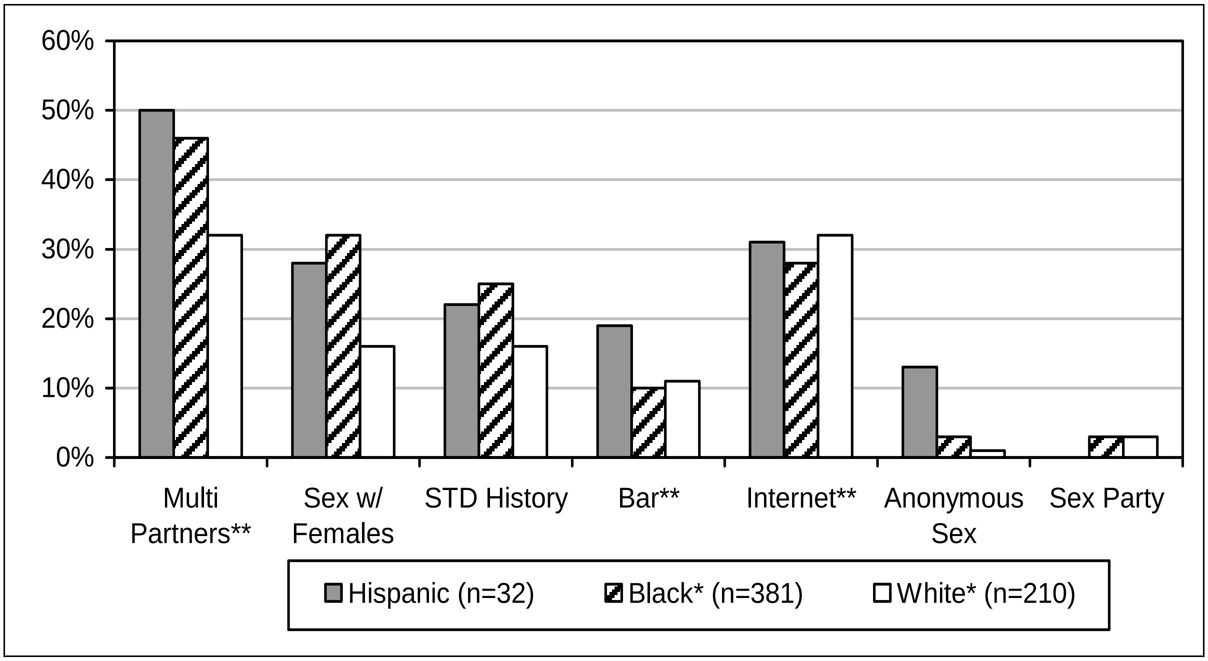
The STD*MIS data collection system used by Field Services was updated in 2010 to capture information about the use of internet various sites to meet sex partners. In 2010, 36 percent of black MSM interviewed with syphilis and 28 percent interviewed with HIV indicated meeting sex partners on the internet. Thirty six percent (36%) percent of white MSM interviewed with syphilis and 32 percent with HIV indicated having internet sex partners. Fifty percent of Hispanic MSM interviewed with syphilis (n=10) and 31 percent of Hispanic MSM interviewed with HIV (n=32) indicated meeting sex partners on the internet. Bars or clubs were other popular places to meet sex partners for MSM with HIV or syphilis (Figures 4.2-4.3).

In 2011 the Field Services Unit (FSU) began to collaborate with UNC Hospitals to conduct partner notification activities, with the goals of delivering more timely HIV positive test results and improving internet partner notification. The FSU is also partnering with UNC Hospitals as apart of the "STOP" grant funded by the CDC to develop an improved Partner Notification program and to strengthen efforts with internet chat rooms.

Condom use

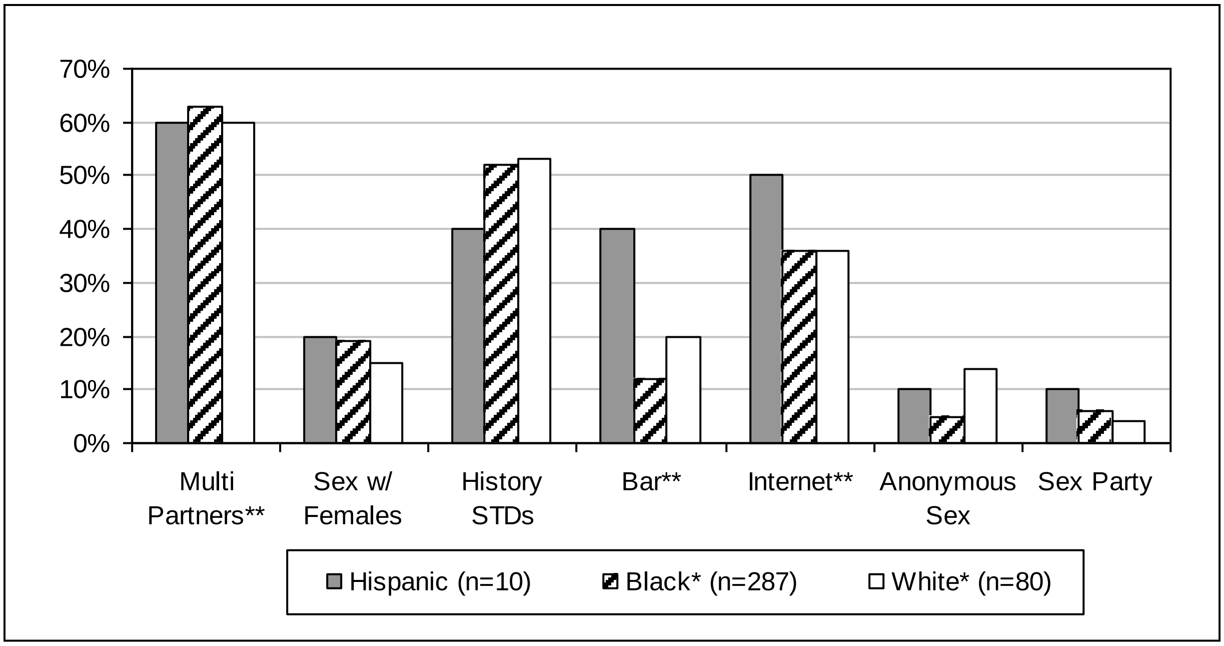
Patients with HIV or syphilis are asked about condom usage and these answers are categorized in five ways: always, never, sometimes (including "pick-ups only"), and unknown. "Pick-ups" are described as sex with a casual partner, not a main partner or someone they feel committed to and sometimes involve the exchange of sex for drugs, money or something else the person might need, like shelter. Overall, 11 percent of MSM interviewed in 2010 with HIV indicated that they "always" use a condom, 12 percent indicated they "never" use a condom, and 70 percent indicated that they used condoms "sometimes," or with "pick-ups only." The pattern of condom usage differed slightly by race/ethnicity of MSM (Figure 4.4).

Figure 4.2. Additional risk behaviors of MSM interviewed with HIV, 2010



*non-Hispanic; **Multiple sex partners in the past year, "Bar"= met previous sex partners at a bar; "Internet"=met sex partners over the Internet;

Figure 4.3. Additional risk behaviors of MSM interviewed with syphilis[†], 2010

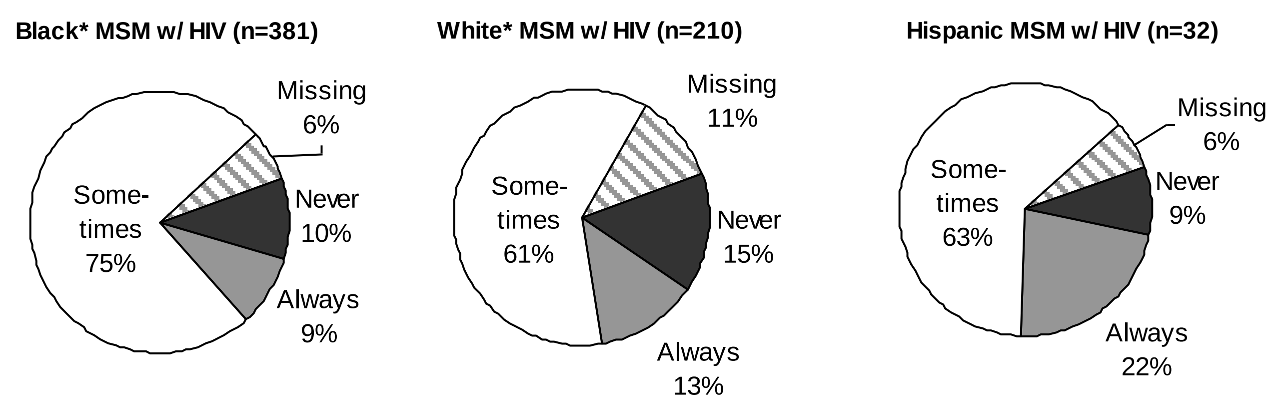


*non-Hispanic

**Multiple sex partners in the past year, "Bar"= met sex partners at a bar; "Internet"=met sex partners over the Internet;

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

Figure 4.4. Condom use among MSM interviewed with HIV Disease by race/ethnicity, 2010

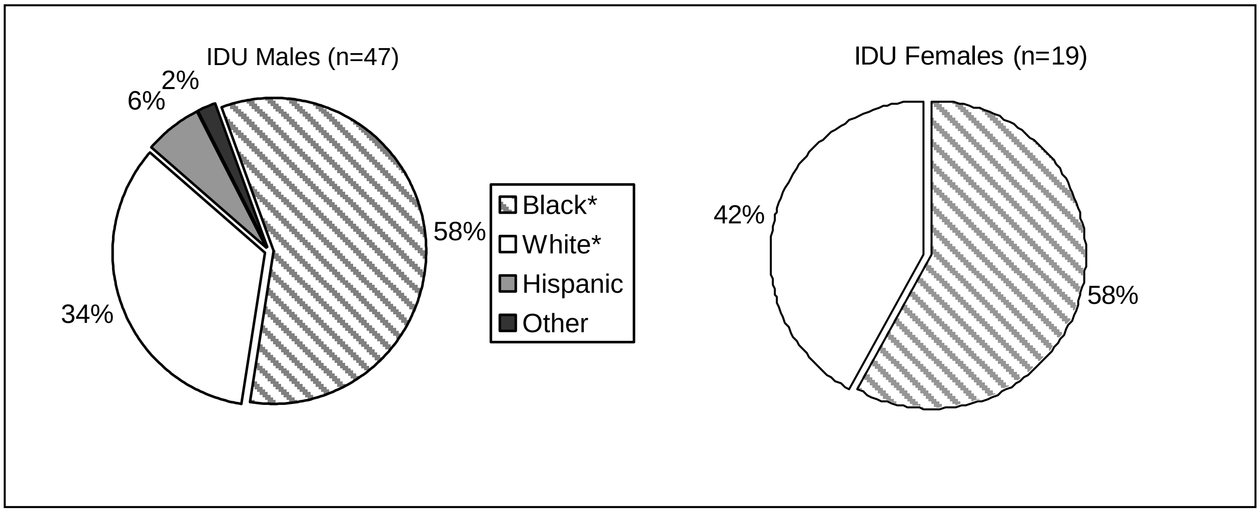


*non-Hispanic

INJECTING DRUG USE (IDU)

Among HIV cases interviewed through PCRS in 2010, four percent (n=66) indicated they had HIV risk associated with the practice of injecting drugs. Males make up the majority reporting IDU-associated HIV transmission (71% versus 29% reporting IDU that were female). Among males 58 percent were black, 34 percent were white and 6 percent were Hispanic (see Figure 4.5). Among females, 58 percent were black and 42 percent were white.

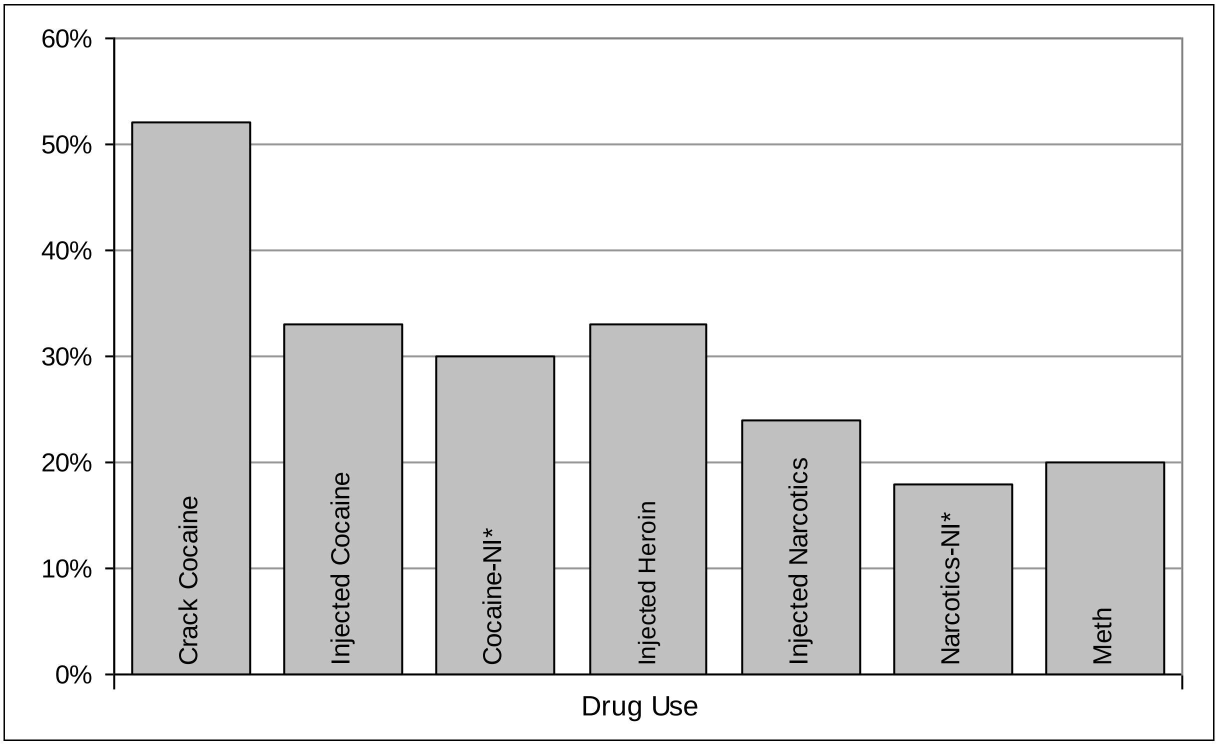
Figure 4.5. IDU-associated HIV by gender and race/ethnicity, 2010 PCRS



Drug use and sexual risk factors

More than half (52%) of all people interviewed in 2010 with IDU-associated HIV transmission (n=66) reported crack cocaine use; and 30 percent of males and 53 percent of females with IDU-associated HIV transmission indicated having a sex partner who used crack cocaine. The most frequently reported injected drug was cocaine (33%), followed by heroin (33%) and narcotics (18%) (Figure 4.6). Other non injection drugs (NI) reported in 2010 include: marijuana (44%), cocaine (30%), methamphetamine (20%), and narcotics (18%). PCRS data has limitations and DIS may differ in the way each interviewer records drug information (for more information about the Field Services and the PCRS data source can be found in Appendix B (pg. B-7). In addition to drug use, other risk factors among IDU include multiple sex partners in the past year (21%), history of STDs (36%), "never" using condoms (19%), and exchanging sex for drugs or money (33%).

Figure 4.6. Drugs used by IDU interviewed with HIV, PCRS 2010



*non-Injection

HETEROSEXUAL RISK

Of interviewed females infected with HIV in 2010 (n=384), 85 percent reported heterosexual sex as their only risk factor. Of males interviewed with HIV in 2010 (n=1,078), 27 percent reported heterosexual sex as their only risk factor for HIV transmission. Of males interviewed with syphilis in 2010 (n=524), 25 percent reported heterosexual sex as their only risk factor (versus 74% who reported MSM activity).

Sex Partners and Exchange Sex

People diagnosed with HIV or syphilis are asked by the DIS if they have given or received money or drugs in exchange for sex. Proportions of people exchanging sex for drugs or money are similar among heterosexual men and women diagnosed with syphilis (14%) and those interviewed heterosexuals diagnosed with HIV (14%).

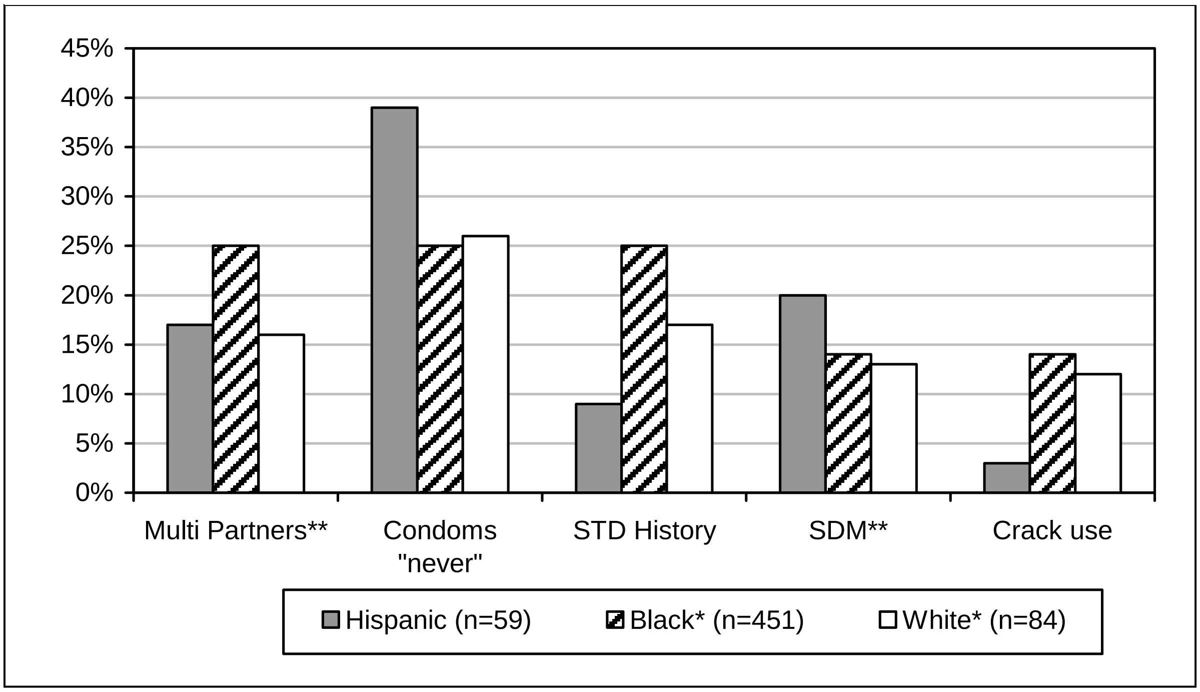
Twenty-three percent (23%) of heterosexuals with HIV interviewed in 2010 reported multiple sexual partners in the past year; 9 percent (9%) of heterosexuals with HIV reported having more than one sex partner in the past 90 days and, 7 percent had a new sex partner in the past 90 days. Of the interviewed (heterosexual) syphilis cases in 2010, 48 percent reported multiple partners in the past year; 18 percent had more than one sex partner in the past 90 days, and 17 percent had a new partner in the past 90 days.

History of Sexually Transmitted Diseases and Condom Use

High STD rates in North Carolina are markers for high-risk sexual practices and are cause for concern because STDs, including gonorrhea and syphilis, increase the risk of HIV infection. Twenty percent of interviewed heterosexual males with HIV infection (2010) and 24 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 in 2010, 32 percent had previously been diagnosed with a STD and 48 percent of women diagnosed with early syphilis and interviewed in 2010 had a previous STD. Blacks interviewed with heterosexually transmitted HIV had higher proportions of previously diagnosed STD (25%) when compared to whites (17%) or Hispanics (9%) (Figures 4.7-4.8). This trend was similar among people interviewed with syphilis, except among people interviewed with syphilis in 2010, the proportion who were previously diagnosed with a STD was much higher (42% of blacks, 29% of whites and 20% of Hispanics had been previously diagnosed with a STD).

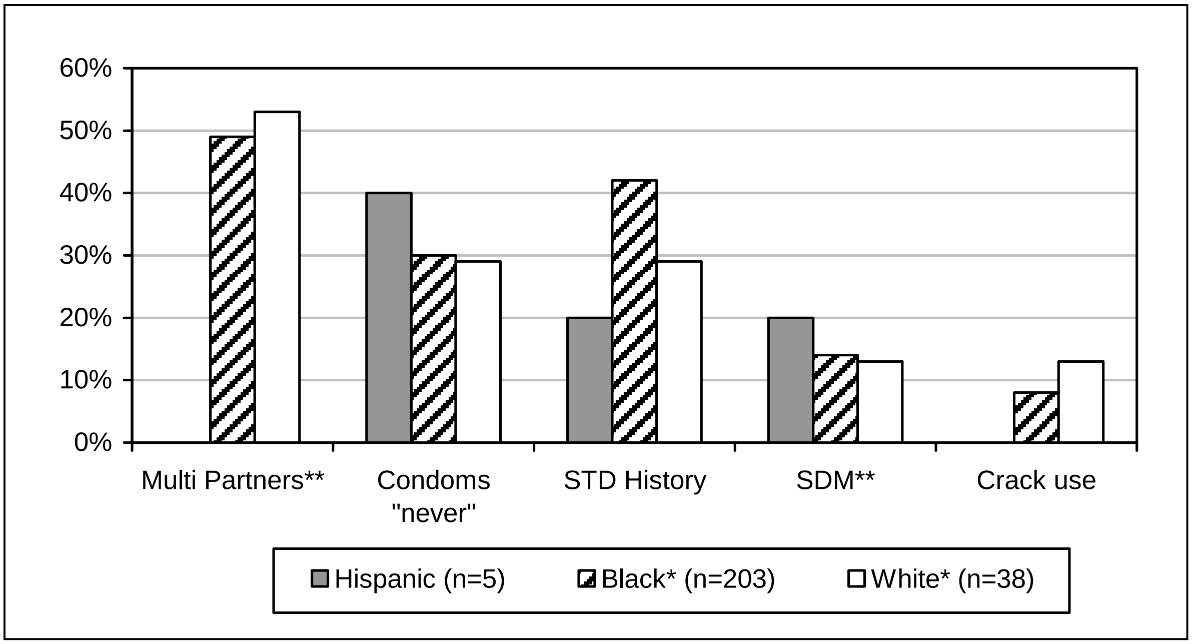
Twenty six percent (26%) of heterosexual people with HIV who were interviewed in 2010 indicated that they “never” use condoms and 52 percent reported using condoms sometimes. Thirty percent (30%) of people interviewed with syphilis in 2010 with only heterosexual risk indicated that they “never” use condoms; 62 percent reported only using condoms sometimes. Heterosexual Hispanics diagnosed with either HIV or syphilis and interviewed in 2010 were more likely than blacks or whites to report “never” using condoms (Figure 4.7-4.8).

Figure 4.7. Risk behaviors of heterosexuals interviewed with HIV, PCRS 2010



*non-Hispanic
**Multiple sex partners in the past year; **SDM=exchange sex for drugs or money

Figure 4.8. Risk behaviors of heterosexuals interviewed with syphilis†, PCRS 2010

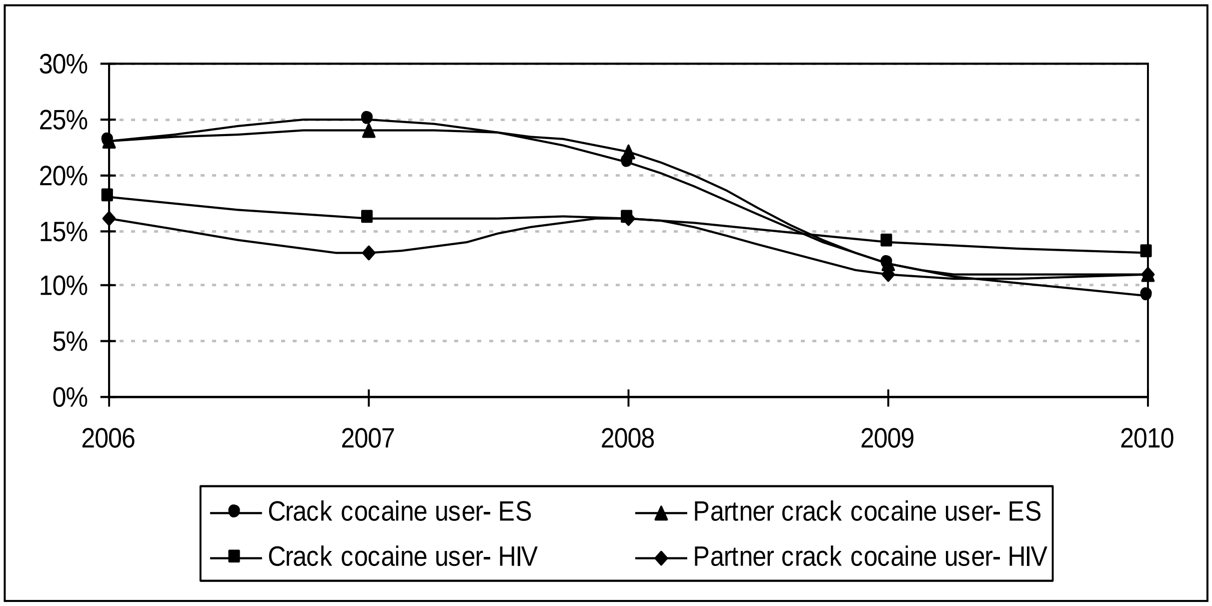


*non-Hispanic
**Multiple sex partners in the past year, **SDM=exchange sex for drugs or money
† Syphilis includes only Primary, Secondary and Early Latent syphilis cases

Crack Cocaine and Non Injection Drug Use

Historically, syphilis epidemics and the use of crack cocaine have been co-factors in both the rural and urban HIV epidemics, 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. From 2006 to 2010, there has been an overall decrease in the proportion of interviewees with either HIV or syphilis who reported using crack personally or having sex with a partner who uses crack cocaine (Figure 4.9). According to 2010 PCRS interview data, 9 percent of people infected with syphilis through heterosexual sex also reported crack cocaine use and 11 percent reported a sex partner who used crack. Of people with HIV interviewed in 2010 who reported only heterosexual sex as a risk factor, 13 percent used crack cocaine and 11 percent reported a sex partner who used crack. Blacks interviewed in 2010 had higher proportions of crack use among heterosexuals diagnosed with HIV (14%) than whites (12%) or Hispanics (3%). White heterosexuals diagnosed with syphilis and interviewed in 2010 had higher proportions of crack use (13%) than blacks (8%) or Hispanics (0%).

Figure 4.9. Crack cocaine use among heterosexuals interviewed through PCRS with early syphilis or HIV disease, 2006-2010



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, traded sex for money or drugs, been victims of trauma, or been incarcerated. These populations experience higher rates of HIV infection, making transmission within these networks more likely. Other commonly used drugs among heterosexuals interviewed in 2010 with HIV were marijuana (25%), non-injected cocaine (11%), and narcotics (4%). Heroin and methamphetamines were used by less than 1 percent of interviewees. Among heterosexual persons interviewed with early syphilis, the proportion of drug use was similar to those of persons interviewed with heterosexually transmitted HIV, with the exception of higher rates of marijuana use among persons interviewed with syphilis (39%).

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CHAPTER 5: SPECIAL STUDIES

CONTENTS

- **SYPHILIS EPIDEMIC RESPONSE TEAM (SERT)**
- **THE MEDICAL MONITORING PROJECT (MMP)**

SYPHILIS EPIDEMIC RESPONSE TEAM (SYPHILIS-ERT)

In response to the sustained increase in syphilis cases seen in North Carolina during 2009 and 2010, the North Carolina Division of Public Health created the Syphilis Epidemic Response Team (SERT). This team was composed of field staff, prevention, surveillance and epidemiology staff, the syphilis and HIV outbreak response staff, and Communicable Disease Branch leadership. This team participated in active surveillance and data analysis, provider awareness/education campaigns, targeted testing efforts to pinpoint high risk populations, and partnered with the North Carolina MSM Task Force and the *Get Real, Get Tested* statewide testing initiative.

SERT Form

As part of the Syphilis Epidemic Response Team (SERT) efforts, a data collection tool was created to gather additional information on confirmed syphilis cases in a more real-time manner. This form collected data about co-infections, risk history, internet sites used for locating partners, clubs attended, and key locations for partner connections. SERT forms were only submitted on Primary, Secondary, and Early Latent syphilis cases (known as Early Syphilis). ***The SERT form was NOT name-based reporting and date analysis was based on the "Date the Original Interview was Initiated." Therefore, the population identified through the SERT form may not exactly represent the population described by morbidity data, which is named reporting and uses the "Date of Report." The analysis of the data collected through the SERT form was limited to the information provided to the Disease Intervention Specialist (DIS) during the original interview.***

From June 1, 2009 to March 4, 2011, a total of 1,357 SERT forms were collected and entered. Of those total forms, 1,296 reports had an interview initiation date (96% completeness), which was the date basis for analysis. All records without an initiation date (or if the initiation date was prior to June 1, 2009) were excluded from the analysis. The total number of reports used for analysis was 1,259.

Demographic trends look very similar between the SERT population and the morbidity reports received at the Communicable Disease Surveillance Unit for the analysis timeframe. During June through December 2009, 75 percent of all SERT cases were male and the male-to-female ratio was 3:1. For the full calendar year 2010, 81 percent of SERT cases were male and the male-to-female ratio was 4:1. Black males represented 57 percent of SERT cases during the last six months of 2009 and 62 percent of SERT cases in the full calendar year 2010. During June to December 2009, 26 percent of SERT cases were individuals 20 to 24 years of age. This single age group also represented the largest proportion of SERT cases initiated during that year (25%), as well as the largest percentage of morbidity reports in 2010 (23%).

From June 1, 2009 through March 4, 2011, 36 percent of SERT cases were co-morbid with HIV, meaning that the HIV diagnosis must have occurred before the syphilis diagnosis or within six months following the syphilis diagnosis. In addition, 3 percent of SERT cases were co-infected with either chlamydia or gonorrhea at the time of diagnosis with syphilis from June 2009 through December 2010.

More than 25 percent of SERT cases were identified through partner referrals. Approximately 34 percent of SERT cases reported a single sex partner, 27 percent reported two partners, and 25 percent reported between three and five partners. The average number of sex partners reported by a single SERT case was three, with a median number of two sex partners. Less than 20 percent of SERT cases reported encountering a partner through the internet. On average, SERT cases named four contacts (sex partners, suspects, or associates), with a median of two contacts named.

As with HIV, transmission of syphilis is very different for males and females. Oral sex was the most frequently reported risk (reported by over 75% of SERT cases) with 83 percent of individuals reporting this risk being male, 76 percent being black, and more than 48 percent within the 20 to 29 age group. Just less than 69 percent of male SERT cases reported having sex with men, 75 percent of those were black, and 51 percent were between 20 and 29 years of age. This data, together with the fact that 63 percent of male SERT cases reported rectal intercourse, suggests that young black men who have sex with men (MSM) continue to play a role in the transmission of the current syphilis outbreak.

Just over 31 percent of all SERT cases (males and females) reported using internet sites to connect with partners. Of the SERT cases that reported utilizing internet sites, more than 53 percent were between the ages of 20 and 29. The 20 to 24 age group alone represented 27 percent of the individuals using internet sites. Over 73 percent of internet users were black and 23 percent were white. While these trends represent all internet users (males and females combined), the trends appear very similar when looking at the genders separately; however, male SERT cases represent the majority (more than 92% of cases with a male-to-female ratio of 15:1) of internet users. Compared with the population that uses internet sites, those who do not locate their partners through the internet appear to be more evenly distributed among the age groups and have a male to female ratio of 3:1.

Approximately 25 percent of SERT cases reported frequenting clubs across the state, as well as those in neighboring states, to locate their partners. Of the 317 SERT cases that reported attending clubs, a large proportion of cases (87%) again were male, 81 percent were black, and 60 percent were between 20 and 29 years of age. As expected, younger individuals (those in the 15 to 34 age group) make up a larger proportion of the SERT cases that frequent clubs when compared with the population that does not attend clubs. SERT data continues to indicate that prevention activities aimed at high risk individuals who attend clubs should focus on clubs frequented by young black males.

More than a quarter of SERT cases reported travel directly prior to their diagnosis with early syphilis (within 3 to 12 months prior to diagnosis depending on their stage of disease). Outside of North Carolina, the most frequently named state was Georgia, followed by South Carolina and Virginia. Other states repeatedly named included Florida and New York.

Based on this analysis, the population identified through the SERT form closely resembles the N.C. population described in other published morbidity data. According to the risk information collected, the average number of sexual partners for the population affected by this outbreak was three and the most frequently reported (75%) high risk activity was oral sex. Young black men who have sex with men represented a large proportion of syphilis cases involved in the current outbreak. Among social connections/locations, internet site usage and frequenting local clubs represented the most frequent avenues for connecting with and encountering partners. Travel also appears to play an increased role in partner connections and disease transmission.

Syphilis Elimination Effort (SEE) Activities

SEE screening activities for 2010 included community-wide screenings based on county disease morbidity and collaboration with Regional Supervisors and DIS staff to identify and determine “hot spots” for testing. For 2011, all SEE screening activities will be conducted within targeted testing communities. At least half of all SEE screening activities will focus on the black MSM community. North Carolina’s SEE Program currently has two Evidence Based-Action Plans (EBAPs). The first EBAP will focus exclusively on the black MSM population with an objective to identify 10 newly diagnosed syphilis cases by December 31, 2011 through targeting screening activities in locations frequented by MSM. The second EBAP is targeted testing among the Non-MSM/High Risk Population. The objective is to identify 10 newly diagnosed syphilis cases by December 31, 2011 among non-MSM/high risk populations in community settings. Testing sites, “hot spots,” and locations for both EBAPs will be identified by DIS investigations and through collaboration with community partners. Evaluation of both interventions will be based on the number of new cases identified from each screening event.

MSM Task Force Activities

The first MSM Task Force Meeting was held on May 3, 2010, in Winston-Salem. Members of this task force consisted of state staff, county staff, Community Based Organizations (CBOs), and the community. During this meeting four sub-groups were created: Safe-Space, Houses and Balls, Prevention, and Care. Each one of the groups developed goals and objectives, which were presented during the meeting.

The second MSM Task Force Meeting was in Charlotte, NC on July 14, 2010. Sub-groups were determined to be important; however participants of the sub-groups were spread across the state and they weren’t effectively reaching the goals set by the task force. The task force created seven Regional Task Force Teams with five sub-groups (Media was added as a fifth sub-group) within each regional team. The Regional Task Force Teams are based in Asheville, Charlotte, Winston-

Salem, Raleigh, Fayetteville, Greenville, and Wilmington. The regional teams consist of participants from Office of Minority Health, CBO's, Local Health Departments, Community Partners, Fort Bragg, members from the targeted population, and CDB Staff. These members have spent many hours during and after normal work time to make the events successful.

Task Force members participated in several different kinds of MSM/MAI events and activities: Dinner and Movie, Prevention for Positives, Meeting with House and Ball Members, Gay Pride Events, D-UP, MSM Social Network Events, and small group meetings with members of the MSM community to understand how to meet the needs of the affected MSM community most effectively.

Non-Traditional Testing Sites (NTS)

Nineteen NTS projects were funded to implement HIV/syphilis screening programs throughout the State. Twelve of these projects also tested in county jails. These projects are on pace to conduct over 18,000 HIV and syphilis tests as well as 3,700 CT/GC tests and 1,000 HCV tests by the end of 2011. NTS projects participated in various social network activities and other outreach activities including creating Facebook pages, outreach in internet chatrooms, posting ads on Craig's list advertising testing to MSM, creating safe spaces for MSM and testing at Lesbian and Gay Community Centers, gay bars, Gay Pride Festivals and other MSM events (see Chapter 3 for more information about NTS).

Communications

Public Service Announcements began airing on June 28th in conjunction with WRAL Fox 50. The commercial focuses on young black men and encourages getting tested for HIV and other STDs. A radio campaign in Wayne County that covered four radio stations and newspaper articles advertised the June 18th Syphilis and HIV Screening at the Wayne County Health Department. Hertford County provided its mobile unit for the screening. In 2010, North Carolina received a little over $271,000 in order to launch a new project entitled “Safe Space” aimed at linking high risk and/or HIV positive patients to care and treatment. Two different projects were developed for this grant, one for HIV positive patients and a second for MSM who may or may not be HIV positive.

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 more than 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 used to understand the HIV epidemic. In recent years, the utility of these surveillance projects has become progressively limited due to several factors. Early in the epidemic, HIV/AIDS cases were concentrated in large urban areas, primarily on the East and West coasts; however, a much larger number of cities and states now are heavily impacted by the HIV/AIDS epidemic, reducing the utility of data collected from the limited number of geographic areas included in the ASD and SHAS projects. In addition, 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. Lastly, the ability to generalize results from ASD and SHAS to the rest of the adult HIV-infected community has been limited because they were composed of convenience samples.

The Survey of HIV Disease and Care (SHDC) was piloted in several geographic areas in 1999 to address concerns about surveillance data and its usefulness. SHDC was a cross-sectional, population-based medical record abstraction project that used two-stage sampling to obtain a probability sample of HIV-infected patients in care in the U.S. The SHDC-Plus, conducted in three areas during 2003 and 2004, modified SHDC by conducting interviews on a subset of persons for whom medical record abstraction had occurred. Both of these pilot 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 MMP protocol primarily attempts 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 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.

North Carolina completed the three-stage sampling procedure for the 2009 data collection cycle. All healthcare 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 majority of the HIV providers are located in the Piedmont region of the state.

Patient Demographics, 2009 cycle

The primary objective of MMP is to provide nationally representative estimates of clinical and behavioral outcomes among persons living with HIV infection. The methodology involves the selection of patients currently receiving care using the three-stage sampling design as previously described, an in-person interview of eligible patients, and the abstraction of their medical records. In 2009, 196 patient interviews were successfully completed; 69 percent of participants were male and 31 percent were female (Table 5.1). The majority of participants were black (62%), followed by white (29%), multiracial/other (6%) and American Indian/Alaska Native (2%) and Hispanic (2%).

Table 5.1. MMP patient race/ethnicity, self-report, 2009 interview cycle*

Race/ethnicity**	Male	Female	Total
	n (%)	n (%)	n (%)
Black, non-Hispanic	71 (53%)	50 (83%)	121 (62%)
White, non-Hispanic	51 (38%)	5 (8%)	56 (29%)
Hispanic	3 (2%)	0 (0%)	3 (2%)
American Indian/Alaska Native	4 (3%)	0 (0%)	4 (2%)
Multiracial/other	6 (4%)	5 (8%)	11 (6%)
Total	135 (69%)	60 (31%)	195 (100%)

*To protect MMP participant confidentiality the CDC restricts the reporting of variables where n<3. Populations affected include transgender and Asian **Participants who refused to report race or gender are excluded from race/ethnicity table

For the 2009 MMP interview cycle, male participants tended to be slightly older than female participants (Table 5.2). For both genders combined, 13 percent of respondents were age 34 years or younger, with the majority of participants ages 35 to 54 years (63%) at the time of their interview. Participants age 55 years and older represented 25 percent of respondents overall.

Table 5.2. Self-reported age of MMP participants at time of interview, 2009 cycle

Age (years)	Male	Female	Total
	n (%)	n (%)	n (%)
18-24	3 (2%)	0 (0%)	3 (2%)
25-34	12 (9%)	10 (17%)	22 (11%)
35-44	29 (21%)	21 (35%)	50 (26%)
45-54	58 (43%)	14 (23%)	72 (37%)
55+	34 (25%)	15 (25%)	49 (25%)
Total	136 (69%)	60 (31%)	196 (100%)

Table 5.3 shows participants' self-reported annual household income in 2009. Nearly half (49%) of males reported a household income of less than $20,000 a year, while nearly two thirds of female respondents (65%) indicated the same. In contrast, the median household income among all North Carolinians in 2009 was $43,674, a figure already below the national median of $50,221. Men were more likely to indicate higher salaries, with 12 percent indicating an annual household income of $75,000 or more; only 2 percent of females indicated household incomes in this range.

Table 5.3. Self-reported annual household income, 2009 interview cycle

Annual Income	Male	Female	Total
	n (%)	n (%)	n (%)
< $10,000	31 (23%)	26 (43%)	57 (29%)
$10,000 to $19, 999	36 (26%)	13 (22%)	49 (25%)
$20,000 to $39,999	24 (18%)	9 (15%)	33 (17%)
$40,000 to $49,999	5 (4%)	2 (3%)	7 (4%)
$50,000 to $74,999	12 (9%)	3 (5%)	15 (9%)
$75,000 or more	16 (12%)	1 (2%)	17 (9%)

Access to Medical Care

The North Carolina MMP 2009 sample showed that most individuals entered into care fairly soon after their initial HIV diagnosis. Specifically, 98 percent of men and 93 percent of women reported entering into care within three months. The main reasons for delaying entry into care were that the patient was in the hospital or they didn't want to think about being HIV positive. There were no differences among race/ethnic groups regarding delayed entry into care.

Collection of data from interviews with HIV-infected patients provides information on current behaviors that may contribute to increased HIV transmission, including patients' access to medical care. Among those who indicated receiving medical coverage or having insurance in 2009, Medicaid was indicated as the most common type of insurance (39%), followed by Medicare (30%) and private insurance (30%). Nearly one-fifth of respondents (19%) indicated having no health insurance at some time during the previous 12-month period. Among participants who indicated accessing healthcare in the year preceding their interview, 45 percent indicated one visit; 24 percent indicated two visits; 13 percent indicated three visits and 18 percent indicated four or more visits.

To provide insight into medical needs among HIV-infected patients, part of the MMP examines HIV care and support services received. In the 2009 interview sample, the most commonly listed unmet need was for dental services, with both men (49%) and women (54%) mentioning needing dental services most frequently, followed by a need for public benefits (30% overall; Table 5.4). Slightly more men indicated a need for HIV case management, meal/food services, and HIV peer group support. In contrast, women were slightly more likely to report needing mental health services, shelter/housing services, and ADAP benefits. Patients frequently mentioned not knowing who to call or where to go or being ineligible for services as reasons for not receiving care.

Table 5.4. Top ten unmet needs for ancillary services* and main reason for not receiving that service in the past 12 months, 2009 cycle (self-reported)

Services	Men	Women	Total**	Most Common Reason(s) for not receiving service
	n (%)	n (%)	n (%)	
Dental Services	32 (49%)	13 (54%)	45 (31%)	In process of getting service
Public Benefits	19 (27%)	11 (29%)	30 (30%)	Not eligible or denied service
HIV Case Management	10 (14%)	3 (11%)	13 (13%)	In process of getting service
Meal/Food Services	13 (14%)	3 (11%)	16 (13%)	Not eligible or denied service
HIV Peer Group Support	15 (13%)	4 (8%)	19 (11%)	Service isn’t available
Transportation Services	11 (10%)	5 (12%)	16 (11%)	Didn’t know where to go/who to call
Mental Health Services	10 (9%)	6 (14%)	16 (10%)	Didn’t know where to go/who to call; service costs too much/lack of insurance
Shelter/Housing Services	9 (7%)	7 (13%)	16 (9%)	Not eligible or denied service
ADAP	4 (5%)	6 (15%)	10 (9%)	Didn’t know where to go/who to call
Home Health Services	3 (2%)	3 (6%)	6 (3%)	Didn’t know where to go/who to call; not eligible or denied service; service hours inconvenient

* Categories are not mutually exclusive. **Denominator defined as total number of participants who needed that service.

Adherence to drug regimens was also examined; specifically, the use of antiretroviral therapy (ART). Ten individuals reported never having used ART (treatment naïve individuals). Of those who reported ever taking ART, 10 individuals (5%) reported they were not currently using ART: six men and four women (Table 5.5). Examining race/ethnicity, blacks were the largest group not currently receiving ART (6 of 10 individuals). The main reason patients reported for not taking ART was that their doctor had advised delaying treatment.

Table 5.5. Current use of antiretroviral therapy (ART) by gender and race/ethnicity, self-report, 2009 MMP cycle

	Not currently taking ART		Currently taking ART		Total
Gender	n	%	n	%	n
Male	6	60%	122	71%	128
Female	4	40%	51	29%	55
Race/ethnicity					
White, non-Hispanic	1	10%	54	31%	55
Asian	0	0%	1	1%	1
Hispanic	0	0%	2	1%	2
Am. Indian/AN	1	10%	2	1%	3
Black, non-Hispanic	6	60%	106	61%	112
Multiracial	2	20%	7	4%	9
Refused	0	0%	1	1%	1
Total	10	100%	173	100%	183

Sexual Behaviors

An important component of the MMP includes monitoring behaviors that may increase transmission of HIV, including sexual behavior. Table 5.6 shows that men who have sex with men (MSM) were most likely to report two or more sexual partners (53%), while men who have sex with women (MSW) were most likely to report one sexual partner in the last 12 months (82%). Additionally, MSM reported the greatest range in partners, with some men indicating as many as 30 sexual partners in the past 12 months.

Table 5.6. Self-reported number of sexual partners in the past 12 months, 2009 MMP

Partners	MSM*	MSW*	MSMW*	WSM*
	n (%)	n (%)	n (%)	n (%)
One	21 (47%)	23 (82%)	0 (0%)	24 (77%)
Two or more	24 (53%)	5 (18%)	1 (100%)	7 (23%)
Range	1-30	1-5	1-2	1-2
Total	45	28	1	31

*Men who have sex w/men (MSM), Men who have sex w/women (MSW), Men who have sex w/men & women (MSMW), Women who have sex w/ men (WSM)

Patients were also asked whether they engaged in unprotected sex, which is shown in Table 5.7. Men who have sex with women were most likely (74%) to report having unprotected sex, while MSM were least likely; though more than half of MSM respondents still indicated unsafe sexual behavior (58%).

Table 5.7. Self-reported unprotected vaginal or anal sex with at least one partner in the past 12 months, 2009 MMP

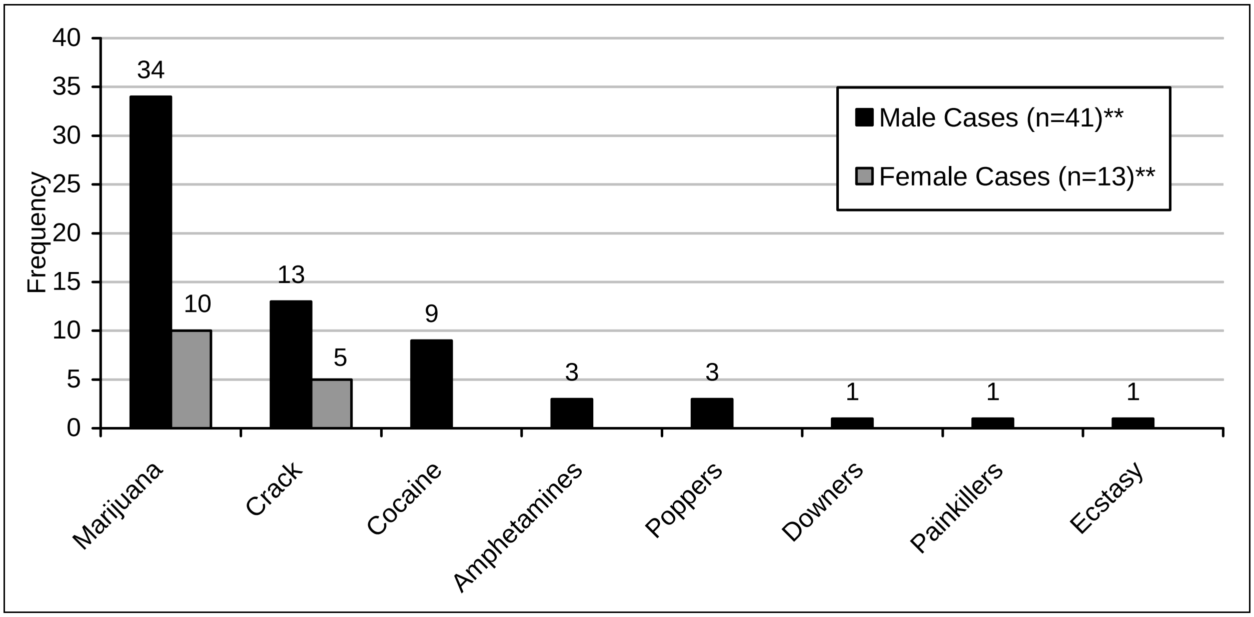
	MSM*	MSW*	WSM*
	n (%)	n (%)	n (%)
Yes	21 (58%)	20 (74%)	21 (68%)
No	15 (42%)	7 (26%)	10 (32%)
Total	36	27	31

*Men who have sex w/men (MSM), Men who have sex w/women (MSW), Women who have sex w/ men (WSM)

Self-Reported Substance Use

Yet another part of the MMP measures non-prescription substance use among participants. For the 2009 interview cycle, of all 196 respondents, only two men (1% of all participants) reported injection drug use in the past 12 months. In contrast, 41 men (30% of all men) and 13 women (22% of all women) reported ever using non-injection drugs. Of these 41 men and 13 women, among the specific substances asked about, the most frequently used drugs were marijuana (34 men, 10 women), crack (13 men, 5 women), and cocaine (9 men) (Figure 5.1). There were three male responses for each having used amphetamines and having used poppers in the past 12 months, with one male response each for use or downers, painkillers, and ecstasy in the past 12 months. There was no indication of use of hallucinogens, Special K, GHB, heroin, nor steroids or hormones in the past 12 months among either men or women.

Figure 5.1. Self-reported non-injection drug use among 2009 MMP interviewees*



*Categories are not mutually exclusive

**While there were a total of 136 male and 60 female participants overall, only 41 males and 13 females responded "yes" to using non-injection drugs in the past 12 months. This chart shows the responses among the 54 individuals who reported using non-injection drugs in the past year.

In addition to asking about illegal substance use, the MMP also includes questions about alcohol use. In 2009, women were more likely to report never consuming alcohol (40% vs. 26% of men) as well as drinking alcohol less than monthly (30% vs. 24% of men, Table 5.8). Conversely, men were more likely to report drinking alcohol on a more frequent basis; more men responded having consumed alcohol monthly, weekly, and daily than did women.

Table 5.8. Self-reported consumption of alcohol in the past 12 months, 2009 MMP

Frequency of alcohol consumption	Men*		Women*	
	n	(%)	n	(%)
Never	34	26%	24	40%
Less than monthly	32	24%	18	30%
Monthly	25	19%	7	12%
Weekly	33	25%	10	17%
Daily	7	5%	1	2%
Total	131	100%	60	100%

*131 of 136 men and all 60 women responded to this question.

Cigarette smoking also is measured in the MMP. In 2009, 85 men and 33 women reported having smoked at least 100 cigarettes in his or her lifetime. Of these individuals who ever smoked (at least 100 cigarettes) in their lifetime, 30 men and 17 women reported not having smoked any cigarettes in the past 12 months; however, 49 men and 16 women reported smoking cigarettes daily (Table 5.9).

Table 5.9. Self-reported use of cigarettes in the past 12 months, 2009 MMP

Frequency of smoking Cigarettes	Men*		Women*	
	n	(%)	n	(%)
Never	30	35%	17	52%
Less than monthly	3	4%	0	0%
Monthly	2	2%	0	0%
Weekly	1	1%	0	0%
Daily	49	58%	16	48%
Total	85	100%	33	100%

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

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

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

HIGHLIGHTS

- The Ryan White Part B program served a total of 7,324 clients living with HIV disease in North Carolina from April 1, 2010 to March 31, 2011 (Ryan White funding year 2010-2011).

- The majority of services for Ryan White Part B clients involved ambulatory/outpatient medical services (31%), followed by medical case management (30%), treatment adherence counseling (7%) and medical transportation services (6%).

- The AIDS Drug Assistance Program (ADAP) enrolled 6,591 clients in Ryan White 2010-2011.

- Housing Opportunities for Persons with AIDS (HOPWA) served approximately 2,699 clients and their families during 2010.

- Twenty-three percent (23%) of persons living with HIV disease in North Carolina were estimated to have unmet need (no evidence of being in care in the last 12 months) in 2010; 27 percent of those living with HIV-non AIDS, as compared to 18 percent of persons living with an AIDS diagnosis.

- The highest proportion of unmet need (no evidence of being in care in the last 12 months) was among Hispanics (34%), compared with 21 percent of white, non Hispanics, 24 percent of black, non Hispanics and 24 percent of other non Hispanic racial groups.

RYAN WHITE

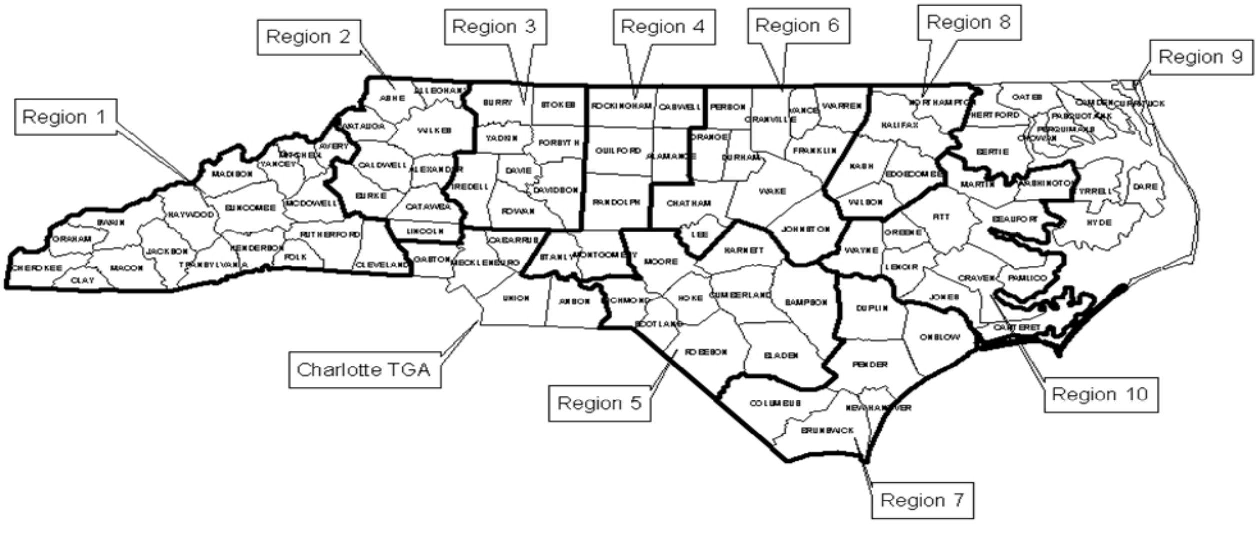
Congress enacted the Ryan White Comprehensive AIDS Resources Emergency (CARE) Act in 1990 to provide funding for states and territories, eligible metropolitan areas (EMAs), as well as direct grants to individual providers to offer primary medical care and support services for people living with HIV disease who lack health insurance and financial resources for care. North Carolina's Ryan White Part B program has been an important component of the state's HIV/AIDS care services since its inception in 1991.

Congress reauthorized the Ryan White CARE Act in 1996, 2000, 2006 and again in 2009, to support Parts A-D (formerly Titles I-IV), Special Projects of National Significance (SPNS), the HIV/AIDS Education Training Centers and the Dental Reimbursement Program. 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 also will be included.

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 services in North Carolina. The new legislation placed additional emphasis on the role of the state as a facilitator to ensure better integration of services among HIV care and service providers. As a result of new definitions adopted for determining aid to localities, the Charlotte Transitional Grant area (TGA) which includes Mecklenburg County and four other N.C. counties in the Charlotte-Gastonia-Concord metropolitan area, became directly-funded through Ryan White Part A. As a result, the Part B funding that had gone to the TGA has been redirected to other areas of the state. Other significant changes for the Part B program (assistance to states and territories) included a new requirement that at least 75 percent of all service dollars be spent on defined “core” services with an emphasis on medical care, and that expenditures by the HIV Care Consortia be considered “support” services. This change led to the development of the Patient Management Model implemented in April 2010.

The Patient Management Model (PMM) incorporates 95 of the state’s 100 counties within 10 Regional Networks of Care (RNC). The Regional Networks ensure that continuums of HIV/AIDS care and support services are available in an integrated fashion to all individuals who qualify for the Ryan White Part B program. The five counties in the Charlotte Transitional Grant area (TGA) 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 a range of needed services (medical care, oral health care, case management, and other core and support services).

Figure 6.1. PMM Regional Networks of Care and Charlotte TGA



Ryan White Part B

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. The N.C. Division of Public Health's Communicable Disease Branch administers the Part B program through the AIDS Care Unit and provides funding for the 10 Regional Networks of Care, ADAP, and a variety of other services. 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 stores data for completion of 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 RSR/CLD reporting requirements. Table 6.1 summarizes the CAREWare client and service information for Part B clients served from April 1, 2010 to March 31, 2011.

Table 6.1. Ryan White Part B services* provided to clients, RW 2010-2011

Services*	N	Percent
Core Services*		
Ambulatory/Outpatient Medical Care	17,786	31%
Medical Case Management	17,476	30%
Medical Nutrition Therapy	962	2%
Oral Health Care	1,598	3%
Outpatient Substance Abuse Services	1,515	3%
Mental Health Services	1,193	2%
Treatment Adherence Counseling (MCM)	948	2%
Health Insurance Assistance	746	1%
Home and Community-Based Services	129	<1%
Referral for Health Care/Supportive Services	125	<1%
Support Services*		
Treatment Adherence Counseling	3,771	7%
Medical Transportation Services	3,213	6%
Food Bank/Home Delivered Meals	2,716	5%
Non-Medical Case Management	2,294	4%
Emergency Financial Assistance	1,357	2%
Health Education/Risk Reduction	765	1%
Psychosocial Support Services	368	1%
Linguistic Services	365	1%
Housing Services	24	<1%
Legal Services	78	<1%
Total	57,429	100%

*Ryan White clients may receive more than one service

A total of 7,324 N.C. clients received services funded through Ryan White Part B awards from April 1, 2010 to March 31, 2011. The distribution of the Part B Modernization Act clients by race/ethnicity, gender, and age was similar to the distribution of these characteristics among North Carolina residents known to be living with HIV/AIDS (Table 6.2). The number of people living with HIV/AIDS (PLWHA) listed by county of residence and PMM region may be found in Table M (Appendix D, pg. D-18 to D-20) and should 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, 2010

	Ryan White Part B clients	ADAP enrollees	Persons living* with HIV/AIDS
	(n=7,324)	(n=6,591)	(n=25,074)
Gender			
Male	67%	71%	70%
Female	32%	29%	30%
Transgender	1%	<1%	-
Race/ethnicity			
White**	28%	29%	26%
Black**	59%	61%	66%
Am Indian/AN**	1%	<1%	1%
Asian/PI**	<1%	<1%	<1%
Hispanic	7%	7%	6%
Other**	4%	2%	1%
Age Group			
0-12	1%	<1%	<1%
13-24	4%	5%	4%
25-44	39%	48%	39%
45-64	51%	45%	52%
65 and over	5%	2%	5%

*Living as of 12/31/2010 ** non-Hispanic

CLINICAL QUALITY MANAGEMENT

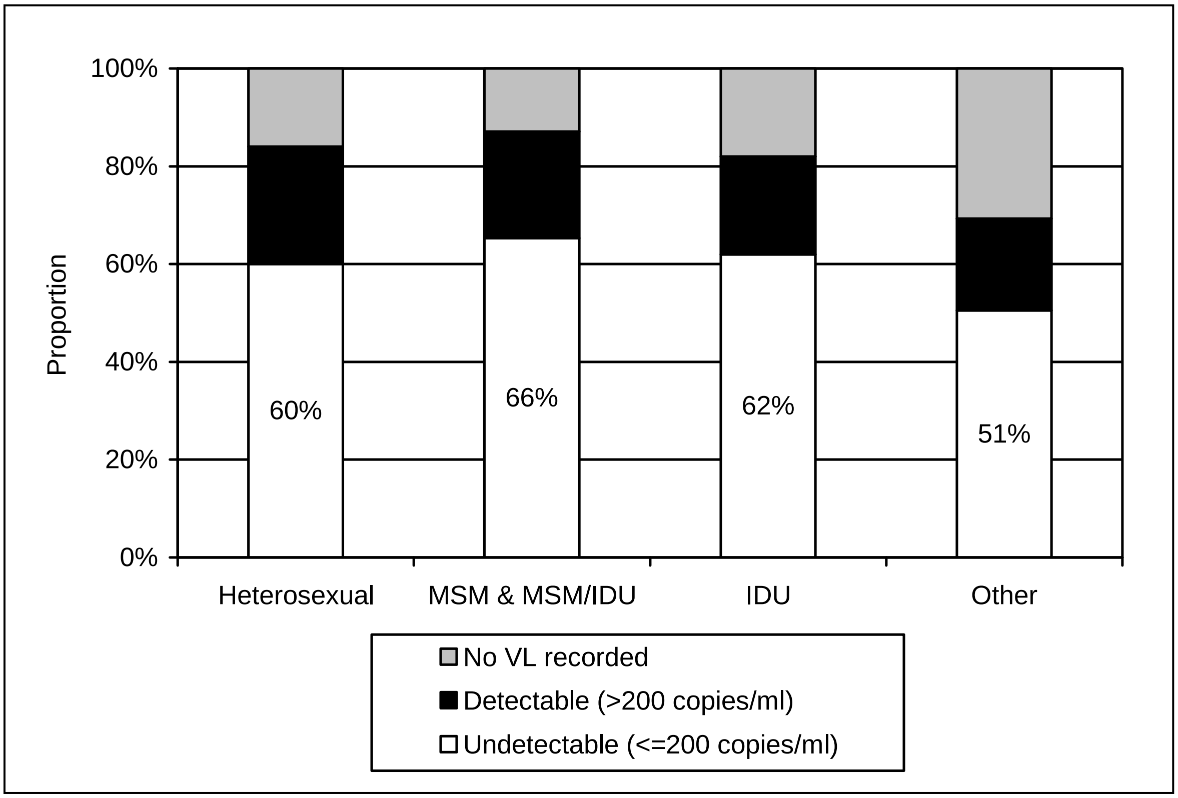
The mission of the Ryan White Part B Clinical Quality Management (QM) Program is to ensure the highest quality of medical care and supportive services for people living with HIV/AIDS in North Carolina. The purpose of the Quality Management Program for the N.C. RW Part B program is to systematically monitor and evaluate the Regional Networks of Care so the quality and appropriateness of services to PLWHA can be continuously improved. The N.C. AIDS Care Unit has incorporated quality-related expectations into the Scope of Work for each sub grantee’s contract and has worked with each sub grantee to develop and implement a local Network Quality Management (QM) Plan written during the first year of funding. Networks are required to provide updates of the Quality Management/Quality Improvement Projects they implement in quarterly reports.

The Health Resources and Services Administration (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 nine of these measures for its quality management program. North Carolina's Ryan White Part B program will continue to review all of the measures, and will recommend adoption of those that are in accord with the state's program. The AIDS Care Unit has adopted nine of the HRSA/HAB Performance Measures:
HAB 01- Medical visits, HAB 02- CD4 tests, HAB 03- HAART, HAB 04- PCP Prophylaxis, HAB 05- ARV therapy for pregnant women, HAB 07- Cervical cancer screening, HAB 09- Hepatitis C Screening, HAB 13- Syphilis screening, and HAB 17- Hepatitis B Screening.

Quality Management and NHAS Strategies

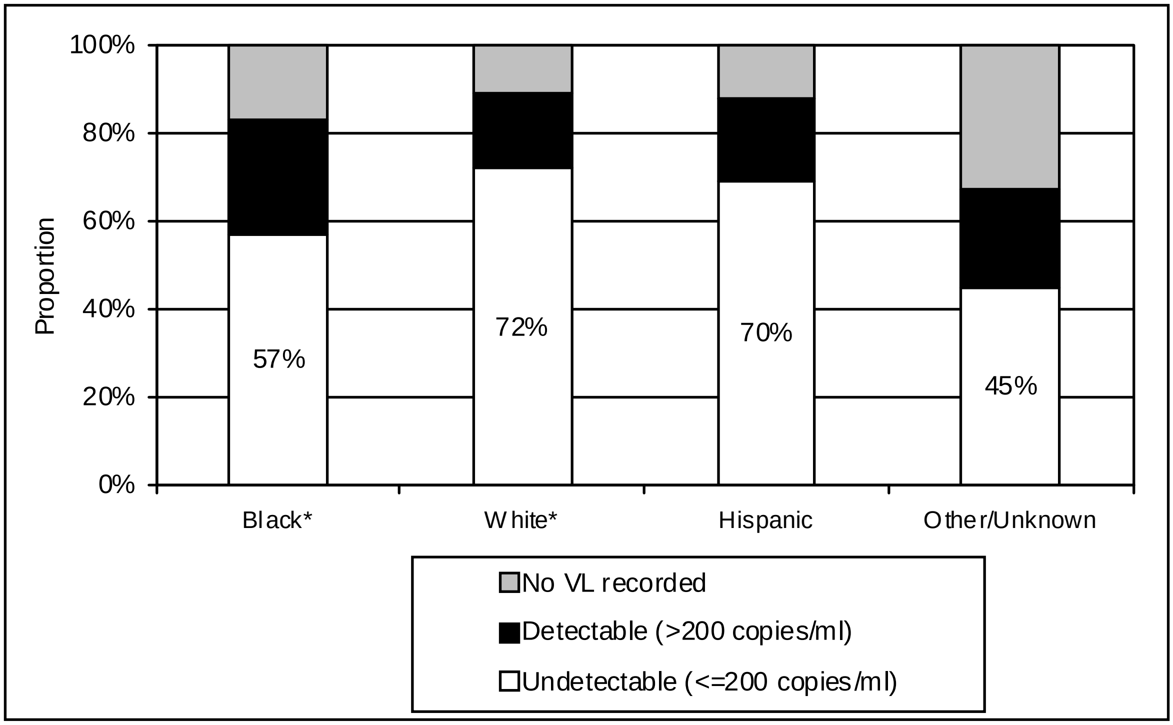
In addition to the HRSA/HAB performance measures, the ACU Quality Management team evaluates programs using process measures, including the number of medical visits and HAART utilization as well as the National HIV/AIDS Strategy (NHAS) goals for increasing the percent of gay and bisexual men, blacks and Hispanics with undetectable viral loads. From April 1, 2010 through March 31, 2011, 84 percent of RW Part B clients had at least one viral load test recorded and 60 percent had at least two tests recorded in the measurement period. For the purposes of establishing a baseline, the last viral load test recorded in the measurement period was used in determining if clients had undetectable viral loads (≤ 200 copies/ml). From April 1, 2010 through March 31, 2011, 66 percent of men who have sex with men (including those MSM

Figure 6.2. Viral load of RW Part B clients by risk category, RW 2010-2011



with IDU risk) had an undetectable viral load (Figure 6.2), 60 percent of heterosexuals had undetectable viral loads, and 62 percent of IDU had undetectable viral loads. By race/ethnicity, 72 percent of white, non Hispanics had undetectable viral loads, 70 percent of Hispanics had an undetectable viral load and only 57 percent of blacks had an undetectable viral load (Figure 6.3). The ACU will continue working with subgrantees to improve the delivery of care, treatment adherence and prevention services for all persons with HIV infection, with particular attention to groups with disproportionate health impacts.

Figure 6.3. Viral load of RW Part B clients by race/ethnicity, RW 2010-2011



*non-Hispanic

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 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 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.

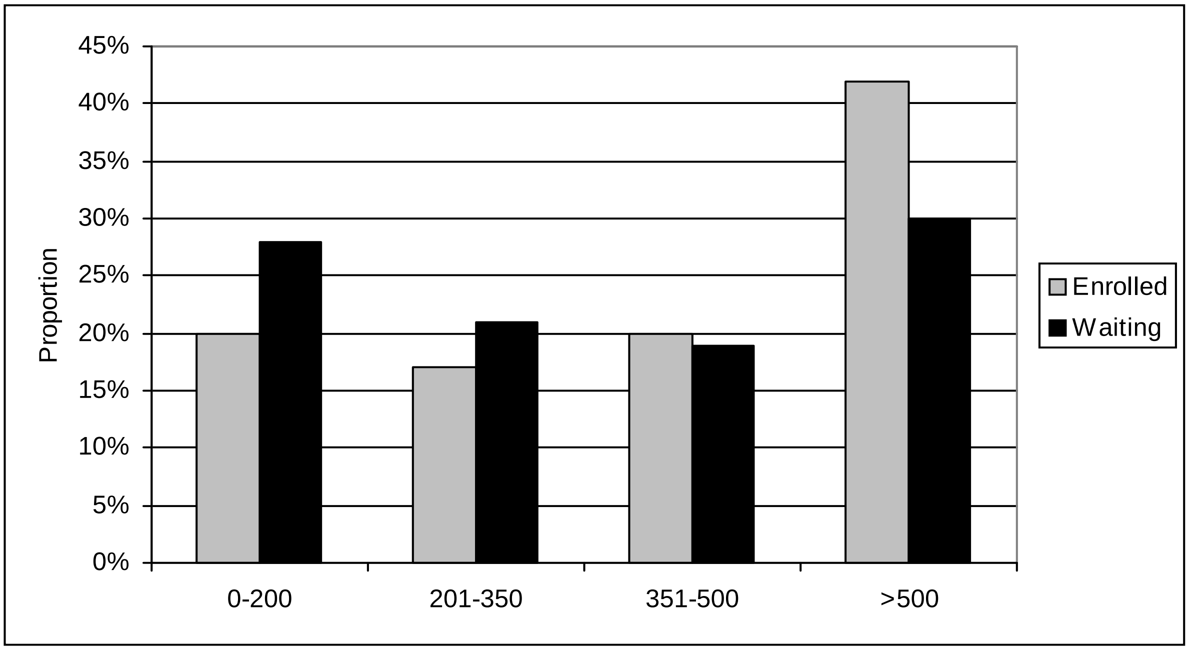
N.C. ADAP uses a combination of state and federal funds to provide medications to low income people living with HIV/AIDS. To be eligible for ADAP in North Carolina, an individual must be HIV positive, reside in North Carolina, require an anti-retroviral medication, have no other third-party insurance 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 level. North Carolina's ADAP was first started in 1995 using state appropriated funds, but since 1996, the program has been supported by a combination of state and federal funding. N.C. ADAP has experienced continued growth in enrollment and utilization, and in January 2010, the program had to initiate a waiting list and remove 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, all due in part 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. By putting these cost containment measures in place, the program ensured current enrollees could continue to be served.

By July 9, 2010, the waiting list topped out at 829 clients who were eligible but not receiving medications from N.C. ADAP. With the Governor's support and with the efforts of state legislators and the community, the 2010-2011 state budget provided a substantial increase of $14.1 million dollars in funding for N.C. ADAP. This funding made it possible to move 654 clients off the waiting list and to reopen the program to clients whose net income is equal to or less than 125 percent of the federal poverty level. Today, 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 March 1, 2011, the N.C. HIV State Pharmaceutical Assistance Program (SPAP),which coordinates with Medicare prescription drug coverage, was reinstated. All ADAP clients with Medicare prescription drug coverage are served through SPAP. When a client on SPAP fills a prescription for a medication on the SPAP formulary, the Medicare prescription drug plan is charged as the primary payer and SPAP pays all the client's out of pocket costs (deductibles, copays, and payments during the coverage gap). Walgreens is the ADAP and SPAP contracted ADAP Pharmacy and contracted SPAP Pharmacy Benefits Manager.

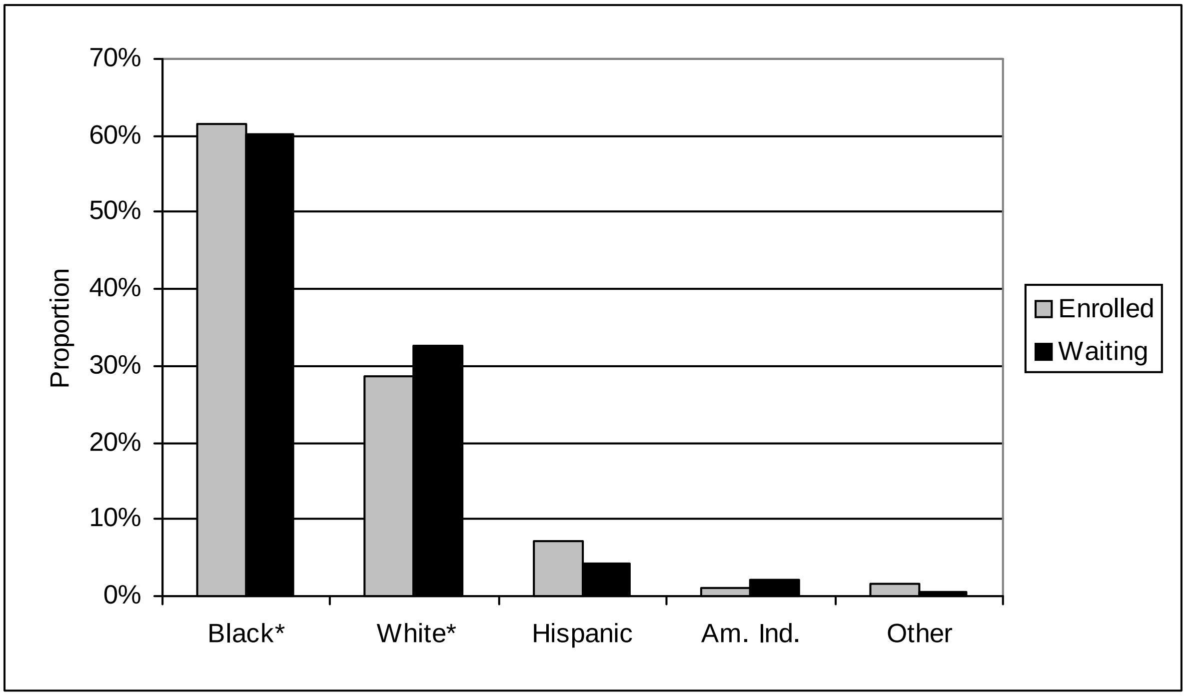
In Ryan White Fiscal Year 2010-2011 (April 1, 2010 to March 31, 2011) 6,591 individuals were enrolled in ADAP (see Figures 6.4 and 6.5). The gender distribution of ADAP enrollees (71% male and 29% female) is in line with the overall gender distribution of people living with HIV/AIDS (PLWHA) in North 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, 74 percent had net family incomes at or below 125 percent of the federal poverty level, 22 percent had net family incomes between 125 percent and 200 percent of the federal poverty level and 4 percent had net family income between 200 percent and 300 percent of the federal poverty level.

Figure 6.4. ADAP clients enrolled and on the waiting list** by CD4 count



**ADAP waiting list as of Sept. 31, 2011

Figure 6.5. ADAP clients enrolled and on the waiting list** by race/ethnicity



*non-Hispanic

**ADAP waiting list as of Sept. 31, 2011

HOUSING OPPORTUNITIES FOR PERSONS WITH AIDS (HOPWA)

Since 1992, the federal government has allocated more than $2.3 billion across the country 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 each became eligible for a HOPWA formula allocation in 1998. Since then, 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 in 91 of the 100 counties in North Carolina, including those who live outside of the Charlotte and Raleigh metropolitan areas. PLWHA in Currituck County are served by the Virginia Beach, V.A. MSA.

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. 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. For someone to be eligible for HOPWA, he or she 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).

In 2010, approximately 2,699 clients and families received HOPWA services. The number of clients served in our Tenant-Based Rental Assistance (TBRA) program increased from 268 last year to 346 this year. The clients in this program are able to improve their access to health care supportive services. 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.

NORTH CAROLINA UNMET NEED ESTIMATE, 2010

Background

Specific information about the disparities in access and services among HIV-affected subpopulations and underserved communities guides state and national planning and 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 and 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 12-month time frame: (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 any one or more of these three measured during the specified 12-month time frame.

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 and 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 37 percent of persons with HIV (non AIDS) and 54 percent of persons with AIDS "in care" in 2010. 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. This reporting includes 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 2010 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

In total, 77 percent of persons living in North Carolina with HIV Disease were estimated to be "in care" during calendar year 2010. The remaining 23 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 27 percent, as compared to 18 percent of persons living with an AIDS diagnosis (PLWA). The estimate of persons living with HIV (non AIDS) in care in N.C. has increased 25 percent since 2007 from an estimated 58 percent in care in 2007 to an estimated 77 percent of PLWH in care during 2010. The estimate of persons living with an AIDS diagnosis who are accessing medical care has increased by 28 percent since 2007, from an estimated 75 percent of persons living with an AIDS diagnosis estimated to be in care in 2007 to an estimated 82 percent in 2010.

There are many potential reasons for this welcomed increase in persons living with HIV/AIDS accessing primary medical care. The increase may be the result of efforts to link persons newly diagnosed with HIV into care through active referrals to the Card to Care program, to Ryan White funded programs, and to the AIDS Drug Assistance Program. As the N.C. economy has worsened and more people are unemployed and without private health insurance, persons living with HIV/AIDS may be relying more heavily on publicly funded services. Also, the Communicable Disease Branch Surveillance Unit has become more active in soliciting HIV/AIDS case reports and laboratory test results from providers that treat HIV patients. Thus, the increases could be an outcome of increased data collection in eHARS and ancillary data sources from publicly funded programs like Ryan White, ADAP and Medicaid.

To further describe the subpopulations that have unmet need for HIV primary medical care, Tables 6.3-6.4 present unmet need by age, race/ethnicity, gender and mode of HIV transmission. There are proportionately more males in the unmet need population (25%) versus females (19%). By race and ethnicity, the highest proportion of unmet need was among Hispanics (34%), compared with 21 percent of white, non Hispanics, 24 percent of black, non Hispanics and 24 percent of other non Hispanic racial groups (including individuals of multiple races, American Indians and Asian, Pacific Islanders). There were slight differences by transmission category, the highest proportion of unmet need among IDU (26.6%). The proportion of perinatal cases with unmet need was estimated to be 18 percent, which likely reflects care data gaps due to underreporting of laboratory tests from major hospital laboratories and other issues related gaps in the data sources available for this analysis (i.e. Charlotte TGA Ryan White Part A data and Ryan White Part C data for programs who do not use CAREWare to record laboratory information).

Overall, the number of persons living with AIDS who have unmet need decreased from 21 percent in 2009 to 18 percent in 2010. The most significant decreases from 2009 were among females with AIDS, persons ages 45 and older, blacks living with AIDS and white, non Hispanics. All persons living with AIDS, by risk group, experienced decreases in unmet need. However, persons who have injected drugs and are living with HIV non AIDS with unmet need increased from 29 to 33 percent from 2009-2010.

Table 6.3. Persons living† with HIV/AIDS with unmet need by gender and age, 2010

	Persons Living with HIV (PLWH)	Persons Living with AIDS (PLWA)	Total Persons Living with HIV/AIDS (PLWHA)
	% Unmet Need	% Unmet Need	% Unmet Need
Gender			
Male	29.5%	20.1%	25.2%
Female	22.9%	13.1%	19.1%
Age			
0-12	34.3%	0.0%	34.3%
13-24	24.3%	10.4%	22.3%
25-44	28.6%	18.5%	24.5%
45-64	26.6%	18.0%	22.3%
65+	32.8%	23.8%	28.5%
Race/Ethnicity			
White*	21.7%	19.9%	20.9%
Black*	28.8%	16.7%	23.5%
Hispanic	36.7%	31.7%	34.3%
Other**	30.9%	13.0%	24.0%
Total	27.4%	18.3%	23.4%

†Persons Living totals do not include Veterans Administration data
*non-Hispanic
**Other includes Asian, Pacific Isl, American Indian, AL Native

Table 6.5 presents unmet need by Patient Management Model regions (see Figure 6.1. for a map of the PMM regions). Geographically, the greatest improvement areas were for persons living with HIV in Region 2, where PLWHA with unmet need went from 18% in 2009 to only 10% in 2010. All regions appear to have better met the needs of persons living with HIV/AIDS, with the exception of the Charlotte Transitional Area (N.C.'s most populous region), Region 1 and Region 5. These differences may be due to data gaps, or may reflect actual decreases in the proportion of persons accessing HIV care in those areas.

Table 6.4. Persons living[†] with HIV/AIDS with unmet need by mode of transmission, 2010

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*	23.6%	18.2%	21.3%
IDU*	33.2%	20.8%	26.6%
MSM/IDU*	30.8%	19.9%	25.3%
Other	52.4%	28.5%	37.6%
Heterosexual	23.3%	15.4%	19.7%
Perinatal	18.3%	0.0%	18.1%
NIR/NRR*	31.9%	19.0%	26.5%
Total	27.4%	18.3%	23.4%

[†] Persons Living totals do not include Veterans Administration data

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

Table 6.5. Persons living[†] with HIV/AIDS with unmet need by PMM regions, 2010

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	34.0%	21.5%	29.2%
Region 1	24.0%	17.9%	21.0%
Region 2	9.5%	10.6%	10.0%
Region 3	18.0%	14.8%	16.7%
Region 4	23.1%	13.2%	19.4%
Region 5	34.4%	18.5%	27.4%
Region 6	27.7%	20.7%	24.6%
Region 7	24.9%	18.2%	21.7%
Region 8	22.5%	10.2%	16.3%
Region 9	29.6%	29.5%	29.6%
Region 10	22.8%	15.2%	18.9%
Total*	27.4%	18.3%	23.4%

[†] Persons Living totals do not include Veterans Administration data

*Totals include persons with unassigned region.

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

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

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CHAPTER 7: STDS OTHER THAN HIV/AIDS IN NC

HIGHLIGHTS

- In 2010, North Carolina continued to experience a significant outbreak of new syphilis cases. Seven hundred and twenty-four (724) cases of early syphilis were reported in 2010 which represents a 23 percent decrease from the number of cases reported in 2009.

- The overall early syphilis rate in 2010 was 7.7 cases per 100,000 population. In 2010, the male to female ratio for early syphilis cases in the state was 4.4, with men who have sex with men (MSM) contributing an increased proportion of the total number of cases.

- The six Syphilis Elimination Effort (SEE) counties (Mecklenburg, Guilford, Wake, Forsyth, Durham, and Robeson) accounted for over 63 percent of 2010 early syphilis reports in North Carolina.

- In 2010, black males represented 65 percent of all early syphilis cases with a rate of 49.7 per 100,000. The syphilis rate among black males was almost 17 times the rate for white males (2.9 per 100,000) and the rate of syphilis among Hispanic males (4.3 per 100,000) was one a half times the rate for white males.

- The highest chlamydia rate in 2010 was among 20 to 24 year olds for both females (4,204.3 per 100,000) and males (890.7 per 100,000).

- Racial disparities in female chlamydia reports have remained fairly stable over the past five years (2006–2010), with a rate seven to eight times higher among black and Hispanic females than among white females.

- Gonorrhea case reports reflect severe racial disparities. The differences are most dramatic for males, where the 2010 gonorrhea rate among black males (379.1 per 100,000) was 30 times higher, among American Indian males (97.5 per 100,000) was almost eight times higher, and the rate for Hispanic males (36.9 per 100,000) was more than two times higher than the rate among white males (12.8 per 100,000).
- The racial disparities in gonorrhea rates were less severe among females. The 2010 gonorrhea rate for black females (469.9per 100,000) was 14 times higher, the rate for American Indian females (206.2 per 100,000) was over six times higher, and the rate for Hispanic females (51.3 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 (NC DHHS). Cases of syphilis (eight possible stages), gonorrhea (genito-urinary/non-PID or opthalmia 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 NC Division of Public Health.

Table 7.1. North Carolina reportable sexually transmitted diseases, 2010

	Gender		
	Male	Female	Total*
Chlamydia (lab-confirmed)	8,054	33,923	42,167
Gonorrhea	5,734	8,336	14,153
Syphilis			
Primary Syphilis	64	4	68
Secondary Syphilis	277	51	328
Early Latent Syphilis	249	79	328
Late Syphilis	87	26	113
Late Latent Syphilis	265	119	384
Late Syphilis w. symptoms	2	0	2
Neurosyphilis	6	2	8
Congenital Syphilis	3	4	7
Syndromic Diagnoses			
Nongonococcal Urethritis (NGU)	4,402	n/a	4,402
Pelvic Inflammatory Disease (PID)	n/a	510	510
Other STDs			
Chancroid	1	0	1
Granuloma Inguinale	1	0	1
Lymphogranuloma Venereum (LGV)	0	0	0
Opthalmia Neonatorum (gonorrhea)	0	0	0

*Total includes cases with unknown gender

Table 7.1 describes STD cases reported to the Communicable Disease Surveillance Unit in 2010. 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 (CDC, PID Fact Sheet, 2011). In 2010, there were 510 cases of PID reported to NC DHHS. Since an estimated 10 to 15 percent of untreated female chlamydia infections will eventually lead to PID (CDC, Chlamydia Fact Sheet, 2011), this number represents a drastic underreporting of PID cases. Other reportable STDs are almost non-existent in the state of North Carolina. In 2010, there was one case of chancroid reported and zero cases of lymphogranuloma venereum or opthalmia neonatorum (opthalmic infection with *N. gonorrhoeae* in infants).

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, 2011). 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 cancer in both females and males. 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 cancer, in particular cervical cancer in females, rather than HPV infection. On average, over 300 cases of cervical cancer are reported in North Carolina each year (NC SCHS 2008).

Currently, there are two vaccines licensed by the US 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 9 to 26 years (CDC, HPV Fact Sheet, 2011). Currently, the CDC is reviewing a recommendation by the Advisory Committee for Immunization Practices (ACIP) for the vaccination of males ages 11 to 21 (CDC, Press Briefing, 2011).

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, 2010). 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, 2010). 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, Chlamydia Fact Sheet, 2011). 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 NC Division of Public Health recommend that all sexually active females age 25 years and under, as well as all pregnant women and older women with risk factors, such as new or multiple sex partners, 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 NC 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. Because NC EDSS has an electronic laboratory submission mechanism, laboratory reporting of cases has become more accurate and timely; however, case processing remains resource intensive at the local level.

With the implementation of NC EDSS in 2008, there was a 23 percent increase in the number of chlamydia cases reported in North Carolina. In 2009, there was a 15 percent increase over the number of reports for 2008. This increase was likely due to reporting issues and the duplication of reports in the new system. During 2010, a program-wide effort was initiated to reduce the number of duplicates in the system, to target key reporting issues through trainings and internal quality control audits, and to utilize more accurate analysis tools to extract morbidity data from NC EDSS.

In 2010, there was a 3.6 percent decline in the number of chlamydia cases reported in North Carolina. This decrease likely reflects the efforts toward more accurate reporting and not a change in morbidity. Health departments are becoming more proficient in data entry and processing, thus data quality should continue to improve over time. With the continuing implementation of NC EDSS and the related extensive changes in surveillance procedures, morbidity data for 2008, 2009, and 2010 should be viewed with extreme caution (see Appendix B, pg. B-6 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. During 2010, 19 percent of the 42,167 cases reported were among males. This number is consistent with proportion of male cases reported in 2009. Both the rate of male cases and female cases decreased in 2010 by 2.1 percent and 3.7 percent, respectively (Appendix D, Table R, pg. D-28). This decrease is likely a factor of better surveillance reporting and not an alteration in morbidity.

Age

Chlamydia is predominantly found in populations that are targeted for screening, such as males and females less than 25 years of age. 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 15 to 19 year olds and 20 to 24 year olds are much closer. In 2010, the rate for females 20 to 24 years of age was the highest rate across all demographic groups (4,204.3/100,000); however, this rate was 0.4 percent lower than the rate for this age group in 2009 (4,222.7/100,000) (Appendix D, Table R, pg. D-28). 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, perhaps due to the more accurate reporting in 2010, the rates as well as the number of cases declined for all age groups except for 35 to 39 and 45 to 54 year olds. Cases in these age groups represent less than 5 percent of the total cases reported in 2010 and are less likely to create duplicate morbidity reports in the system as they are not routinely screened through public clinics.

Race/Ethnicity

Chlamydia case reports reflect severe racial disparities that have remained relatively consistent over the past five years. However, with the proportion of chlamydia reports missing race/ethnicity information in 2010 at 29 percent (30% in 2009), it is difficult to formulate any conclusions regarding trends in race/ethnicity at this time. 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 non-Hispanic whites. In 2010, the rate among non-Hispanic black males (403.5/100,000) increased to 13 times the rate for non-Hispanic whites (30.6/100,000), and the rate for Hispanic males (118.1/100,000) was four times the rate for non-Hispanic whites (Appendix D, Table S; pg. D-30). The disparity for females is nearly as severe, with the non-Hispanic black female rate (1,468.1/100,000) being nearly eight times higher than the non-Hispanic white female rate (195.3/100,000). The rate for American Indians (AI/AN) (768.0/100,000) was about four times higher than non-Hispanic whites and the Hispanic rate (556.0/100,000) about three times higher. Overall, the number of cases as well as the rate decreased across all race/ethnicity categories except non-Hispanic whites and Asian/Pacific Islanders, whose rates increased by 3.9 percent and 12.1 percent, respectively. These disparities are likely due, at least in part, to screening and reporting bias.

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 4,402 male cases of NGU reported in 2010 (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 a commonly reported STD (CDC, Gonorrhea Fact Sheet, 2011). Nearly all infected males experience symptoms, including discharge and burning on urination (Hook 1999). Many women also experience symptoms, though they may be mild. Like chlamydia, untreated gonorrhea can cause severe damage to the female reproductive tract, including PID and infertility.

Gonorrhea reporting

North Carolina law states that all cases of gonorrhea must be reported to the local health department within 24 hours. Laboratory confirmation of gonorrhea cases takes place at a number of private labs with most public clinics sending their samples to the State Laboratory of Public Health. Results are returned to the provider, who reports them to the local health department. Infected patients are treated and encouraged to bring their partners in for treatment but there is no formal partner notification procedure. Morbidity reports of gonorrhea are then forwarded to the Communicable Disease Surveillance Unit at the NC Division of Public Health via NC EDSS. This move to NC EDSS may have affected the gonorrhea data similarly to its affect on chlamydia case reporting. As with chlamydia reports, there was a decline (4.4 percent) in the number of gonorrhea cases reported in North Carolina in 2010. This decrease likely reflects the efforts made toward more accurate reporting. Reporting issues associated with NC EDSS require that morbidity data for 2008, 2009, and 2010 be viewed with extreme caution (see Appendix B, pg. B-6 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 2006 to 2010, rates for gonorrhea have ranged from 150.9 to 195.2 per 100,000 population. The highest rate (195.2/100,000) was observed in 2006 (Appendix D, Table T; pg. D-31). 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 2006 to 59 percent in 2010. 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. Since 2007, the rate has gradually increased for females and thus the male-to-female ratio dropped to 0.7 in 2009. In 2010, the male-to-female ratio continued to decreased to 0.6 and 59 percent of new cases were female. (Appendix D, Table T; pg. D-31). 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, Clinic-Based Testing for Rectal and Pharyngeal *Neisseria gonorrhoeae* and *Chlamydia trachomatis* Infections by Community-Based Organizations, 2009).

Age

Gonorrhea is predominantly found in younger age groups; and the relative rates are somewhat similar to those for chlamydia with respect to age. For males, the highest rates are consistently found in the 20 to 24 age group, followed by 25 to 29 and 15 to 19 year olds. In 2010, the rates for males in the 20 to 24 age group were highest (589.7/100,000) and the rates for 25 to 29 year olds (334.4/100,000) were only slightly higher than the rates for 15 to 19 year olds (325.2/100,000). While female gonorrhea rates in 2010 were also highest for 20 to 24 year olds (1011.7/100,000), the rates for 25 to 29 year old females were considerably less (391.6/100,000). The rates for 15 to 19 year old females were 904.7 per 100,000. In 2010, the rate for the 20 to 24 year old females increased by 2.5 percent and this age group was the only group where the overall rate (for both males and females) increased. Cases in this group represented the largest proportion of gonorrhea reports submitted in 2010 (37 percent) (Appendix D, Table T, pg. D-31).

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 2010 gonorrhea rates among non-Hispanic blacks were more than 30 times higher than non-Hispanic white males, rates for American Indians (AI/AN) were eight times higher, and for Hispanics three times higher. In 2010, the rate among Hispanic males increased by 7.9 percent (36.9/100,000) over the rate in 2009 (34.2/100,000). Among females, the trends are similar but less severe; in 2010 the non-Hispanic black female rate was fourteen times higher than for non-Hispanic white females and the American Indian rate was over six times higher. The gonorrhea rates for Hispanic females were one-half times more than the non-Hispanic white female rate. The gonorrhea rate among non-Hispanic black females (469.9/100,000) was the highest rate across all of the racial groups. As with chlamydia, the number of case reports with unknown race/ethnicity has decreased from 26 percent in 2009 to 24 percent in 2010, so conclusions based on race/ethnicity continue to be in question as health department users continue to adjust to reporting through NC EDSS (Appendix D, Table U, pg. D-33).

Gonorrhea and HIV co-infection

In 2009, a special investigation using the currently available data systems was initiated to compare the HIV morbidity data to gonorrhea morbidity data to identify co-infection. There were 194 cases reported with both gonorrhea (out of 14,811 total cases) and HIV morbidity (out of 1,710 newly diagnosed cases) in 2009. Together eight counties accounted for over 75 percent of the co-morbidity reported in North Carolina (Mecklenburg, Wake, Guilford, Forsyth, Cumberland, Durham, Pitt, and Onslow). Currently, NC EDSS has the capacity to collect further behavioral characteristic information for gonorrhea cases; however, this information is not consistently reported and is only identified through special analysis projects such as the one performed in 2009.

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 2009, 160 men were tested at the Greensboro site. Ninety-four percent were non-Hispanic blacks; more than 42 percent were aged 20 to 24 years with another 16 percent aged 25 to 29 years. Over 15 percent of participants reported identifying as men who had sex with men. Resistance to penicillin, ciprofloxacin, and/or tetracycline was detected in slightly less than 17 percent of the samples (CDC, GISP Report, 2011).

SYPHILIS

Syphilis disease

Syphilis is a complex disease with a natural history encompassing a number of different stages (CDC, Syphilis Fact Sheet, 2011). 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. Late syphilis cases are reported in several different ways. 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 most 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 (see Appendix B, pg. B-8) for more information on the SEE). 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.

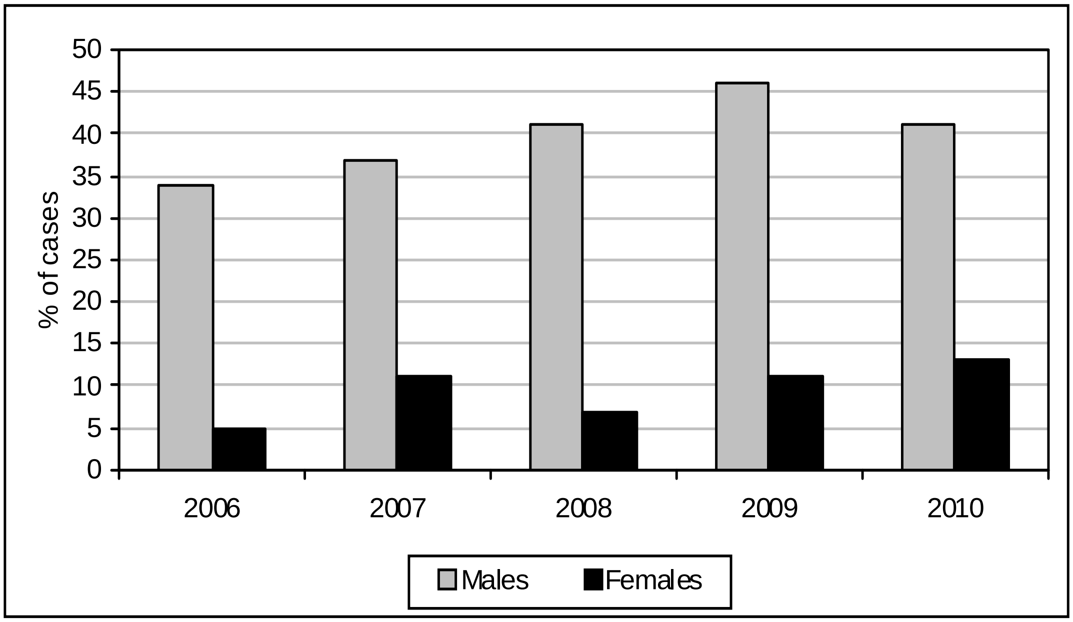
Syphilis trend analysis

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. In response to this increase in morbidity, the Syphilis Epidemic Response Team (SERT) was developed to enhance collaboration between prevention, testing, and partner services programs and to centrally coordinate a more targeted public health campaign across the state (see Chapter 5: Syphilis Elimination Response Team for more information). During 2010, 724 cases of early syphilis were reported in North Carolina. This represents a 23 percent decrease when compared with the number of cases reported in 2009; however, it still represents a 42 percent increase over the number of cases reported in 2008. Unless otherwise noted references below to syphilis are “early syphilis” which includes primary, secondary and early latent stages (PSEL).

Gender

Early syphilis rates among males began to rise substantially in 2004 and continued to rise indicative of increasing transmission among men who have sex with men (MSM). In 2009, male cases represented 77 percent of all early syphilis reports and the male-to-female case ratio was 3.4. In 2010, that proportion increased to 82 percent of all newly reported early syphilis cases being male (Appendix D, Table V, pg. D-34). The rate of male early syphilis cases in 2010 was 12.9 per 100,000 males, an 18 percent decrease from 2009 (15.8/100,000 males). The rate of female early syphilis cases increased to its highest rate since 2002 in 2009 of 4.5 cases per 100,000 females. However, this rate decreased by 38 percent to 2.8 cases per 100,000 in 2010, nearly returning to its lowest rate since 2000 of 2.4 per 100,000 reported in 2008 (see Figure 7.1).

Figure 7.1. PSEL syphilis rates by gender, 2006–2010

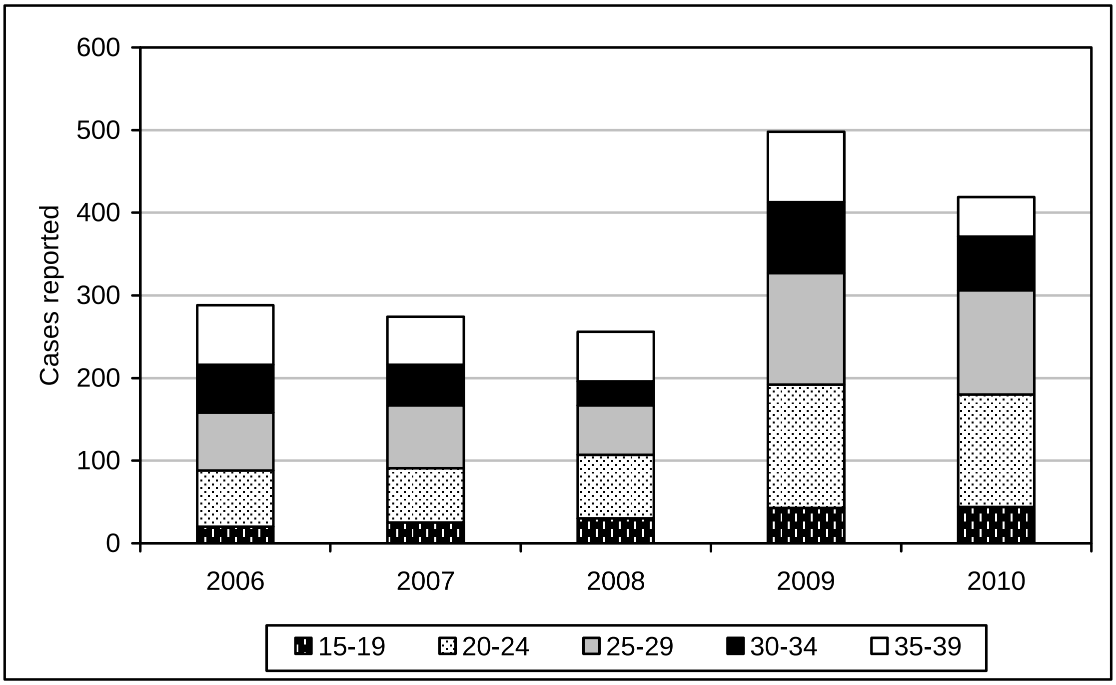


Age

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.

In 2010, 25 to 29 year old males had the highest rate (39.5/100,000) across all age and gender groups followed closely by 20 to 24 year old males (38.6/100,000). Among female early syphilis cases, 20 to 24 year olds had the highest rate (9.2/100,000) followed by 25 to 29 year old female cases (7.4/100,000). For both males and females combined, more than 52 percent of all new cases reported in 2010 were between 15 and 29 years of age (Appendix D, Table V, pg. D-34). The trends are similar when primary and secondary stage syphilis is examined separately.

Figure 7.2. PSEL syphilis cases by age – Males, 2006–2010



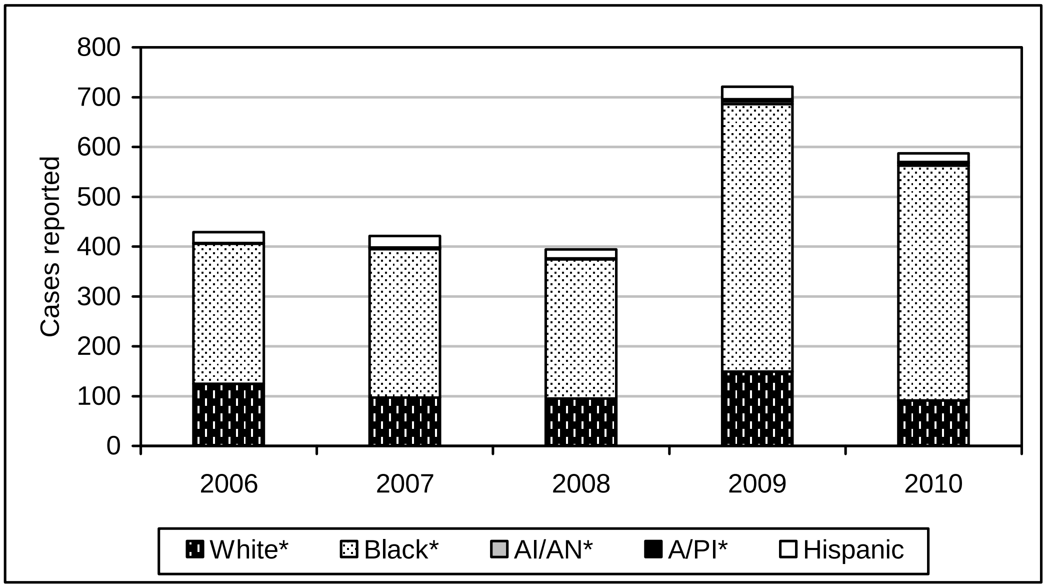
Race/Ethnicity

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 W, pg. D-36). Syphilis reporting is considered to be very good in North Carolina, so this disparity is unlikely to be due to reporting or testing bias. Racial and ethnic disparities in syphilis rates are likely the result of a complex combination of poor access to health care, poverty, and the dynamics of sexual networks.

Figure 7.3 shows the male early syphilis (PSEL) cases by race/ethnicity from 2006 to 2010. In 2006, non-Hispanic whites represented about 29 percent of syphilis reports for males, non-Hispanic blacks about 65 percent, and Hispanics about 5 percent. Since that time, the proportions of non-Hispanic blacks among male reports has increased each year. In 2010, non-Hispanic black males represented 80 percent of reports for males, while reports for non-Hispanic white males decreased to 15 percent and reports for Hispanic males decreased to 2 percent. For males, the 2010 early syphilis rate for non-Hispanic whites was 3.0 per 100,000, for non-Hispanic black males the rate was 50.0 per 100,000 or sixteen times that for whites and for Hispanics the rate was 4.0 per 100,000 (Appendix D, Table W, pg. D-36). While the absolute numbers of reports did not increased for non-Hispanic Black males in 2010, the proportion of total early syphilis cases represented by this single demographic group increased to 65 percent.

For females, the trends are less clear. Among 2006 female syphilis cases, the proportion of non-Hispanic whites was about 14 percent, the proportion of non-Hispanic blacks was about 75 percent and the proportion of Hispanics was about 10 percent. In 2010, non-Hispanic white female cases represented 20 percent of cases, non-Hispanic blacks 76 percent, and Hispanics 2 percent. The 2010 early syphilis rate for non-Hispanic white females was 0.8 per 100,000 and for non-Hispanic black females the rate was 9.5 per 100,000 or nearly twelve times that for whites. For Hispanics, the rate was 0.3 per 100,000; however, this rate was based on a small number of cases and may not be significant. (Appendix D, Table W, pg. D-36).

Figure 7.3. PSEL syphilis cases by race/ethnicity – Males, 2006–2010

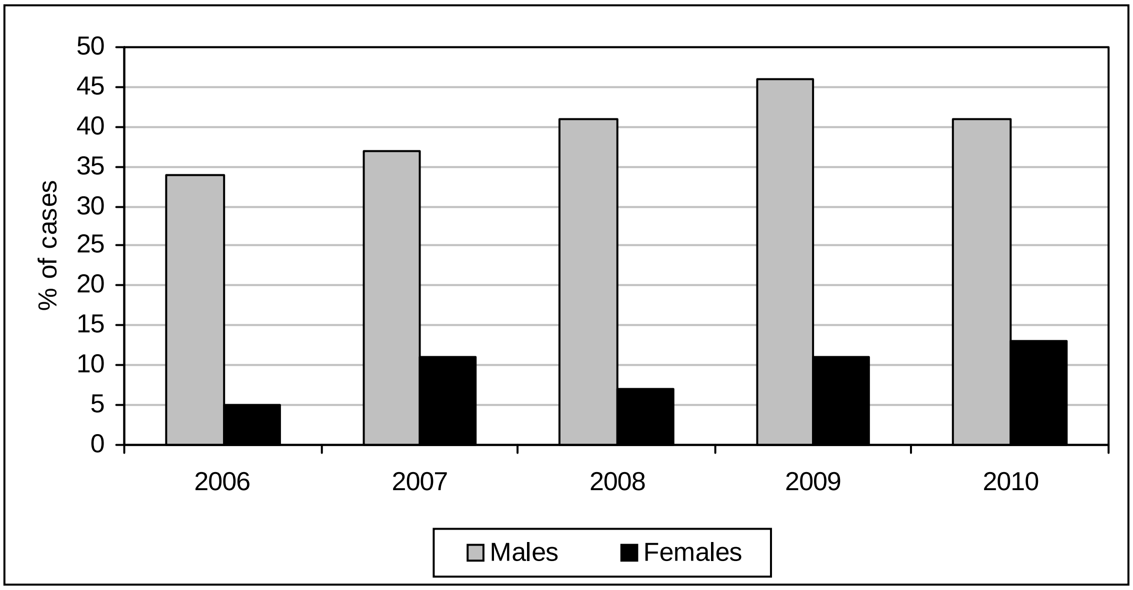


*non-Hispanic; AI/AN=American Indian/Alaska Native; A/PI=Asian/Pacific Islander

Comorbidity of Syphilis and HIV

A special investigation using the currently available data systems was initiated to compare the HIV morbidity data to syphilis morbidity data to identify co-infection. Syphilis cases that are also infected with HIV (co-morbid) have increased as a proportion of syphilis cases in recent years. In order for a syphilis case to be considered co-morbid, the HIV diagnosis must have occurred before the syphilis diagnosis or determined within 6 months after the syphilis diagnosis. In 1999, the proportion of early syphilis cases with HIV was 4.3 percent. In 2009, 36 percent of early syphilis cases also had an HIV diagnosis and this level of co-morbidity was maintained in 2010. The increase in co-morbidity among male syphilis cases has been especially dramatic. In 2003, the proportion of male early syphilis cases with HIV was about 18.2 percent and about 7.0 percent for female cases. By 2009, the proportion of male syphilis cases with HIV had increased steadily to 44.5 percent. In 2010, that proportion decreased slightly to 41.3 percent; however, because of the 6 month reporting delay for HIV diagnosis, it is not yet clear is this decrease is meaningful. 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 to a high of 12.6 percent in 2010. (see Figure 7.4).

Figure 7.4. Percent of PSEL syphilis cases with HIV by gender, 2006–2010*



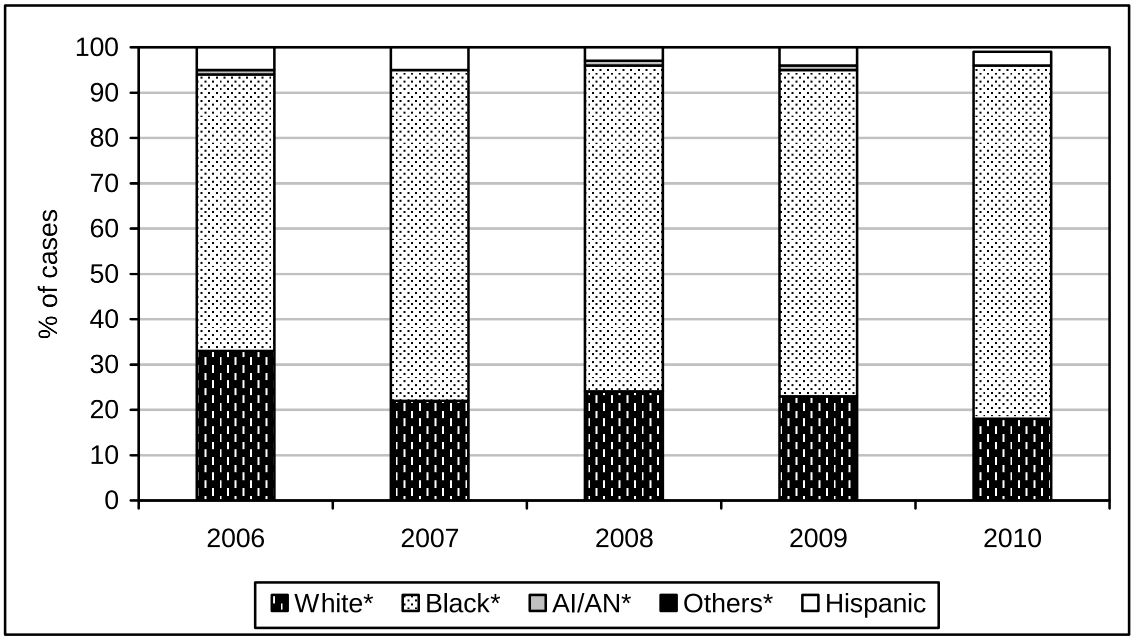
*HIV diagnosis data current as of July, 2011

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 earlier. In 2010, 78 percent of co-morbid male cases were black, non-Hispanic and 18 percent were white, non-Hispanic (see Figure 7.5). The male cases with both syphilis and HIV are overwhelmingly associated with MSM risk. This is a trend that is being seen both in North

Carolina and across the United States (CDC, Syphilis and MSM Fact Sheet, 2007). In 2009, almost 89 percent of male syphilis cases with HIV had MSM or MSM/IDU as the listed hierarchical risk for HIV morbidity.

In response to the syphilis outbreak among MSM seen in 2009, the NC 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. The MSM Taskforce is especially focused on developing “safe spaces” for the MSM community to be able express and address their concerns and questions that may be causing hesitancy to access care or affect risk behaviors (see Chapter 3: HIV Testing for more information).

Figure 7.5. Percent of PSEL syphilis cases with HIV by race/ethnicity – Males, 2006–2010



*non-Hispanic

Congenital Syphilis

Untreated syphilis in pregnant women can lead to serious complications, including premature birth and infant death (CDC, STDs & Pregnancy, 2011). Women with early syphilis are the most likely to infect their fetuses in uteri or during delivery, but women with late latent syphilis can also have congenitally infected infants (Radolf, 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. As of March 17, 2011, ten infants were known born in 2010 to mothers who had active or inadequately treated cases of syphilis. There were eleven cases of congenital syphilis in 2009. Because of the delay in reporting and confirming congenital syphilis diagnoses, this number should be considered preliminary. Readers should note that some reports display congenital syphilis cases by year of report rather than year of birth.

The number of congenital syphilis continues to represent a problem. 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 NC Pregnancy Risk Assessment Monitoring System (PRAMS) survey for 2009, 23 percent of NC mothers reported a barrier to receiving prenatal care services (NCSCHS, PRAMS, 2009). 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.

APPENDIX A: MAPS

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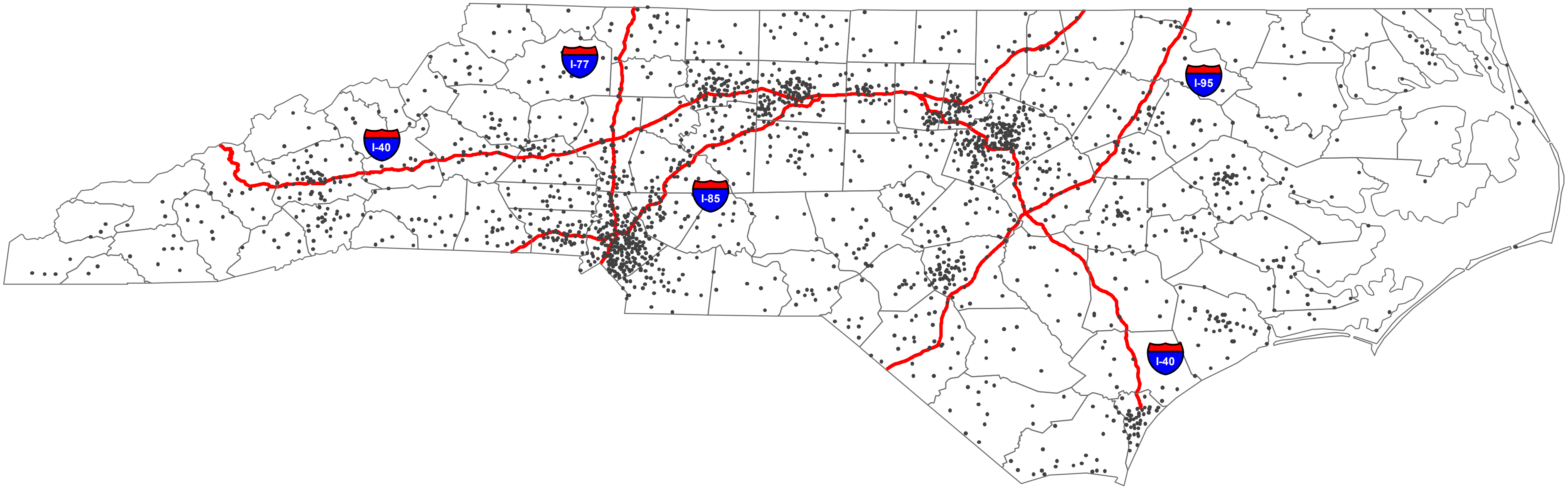
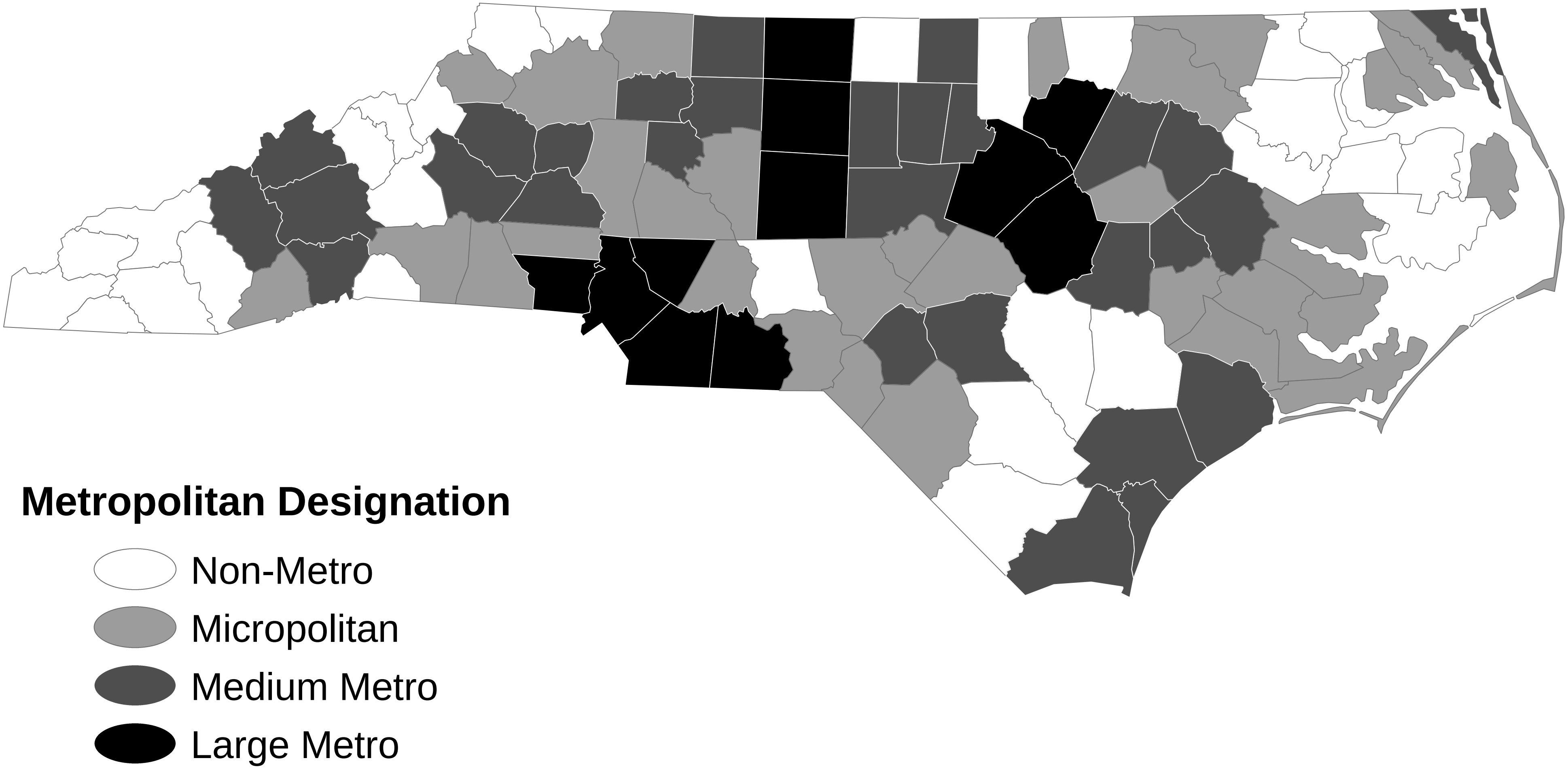
Map 1. North Carolina Population by County, 2010

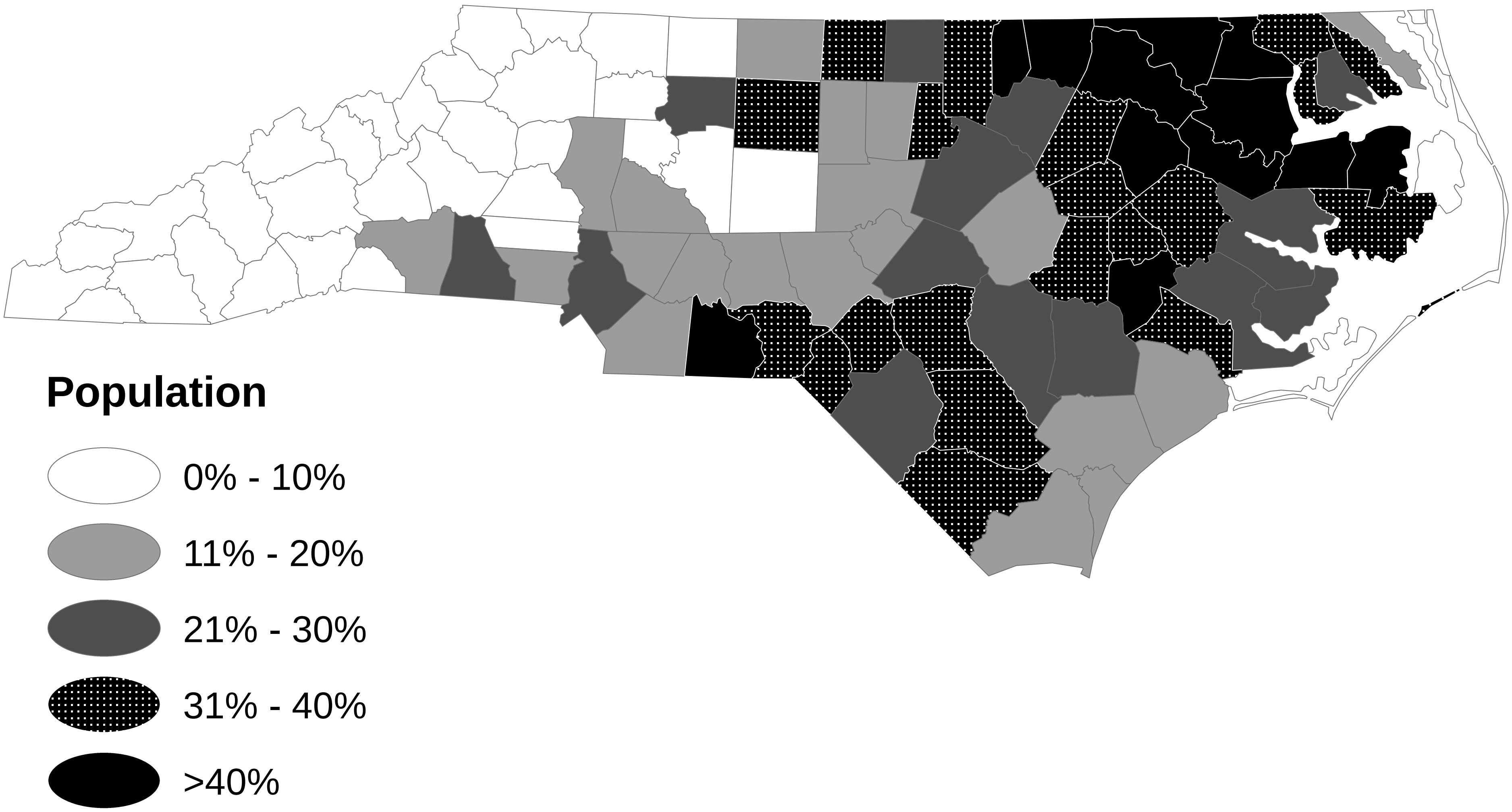


1 Dot = 5,000 persons

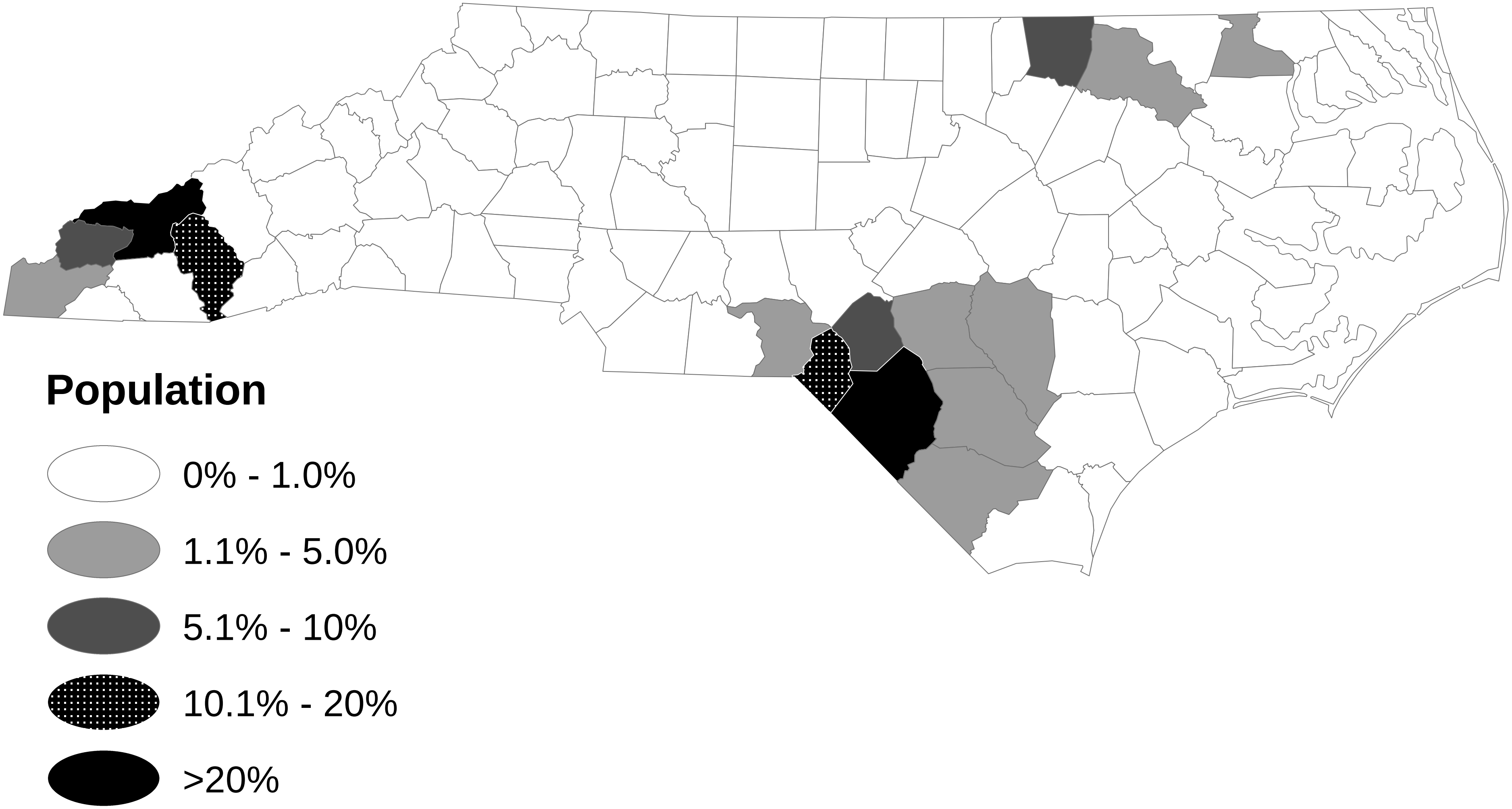
Map 2. North Carolina Metropolitan Designations



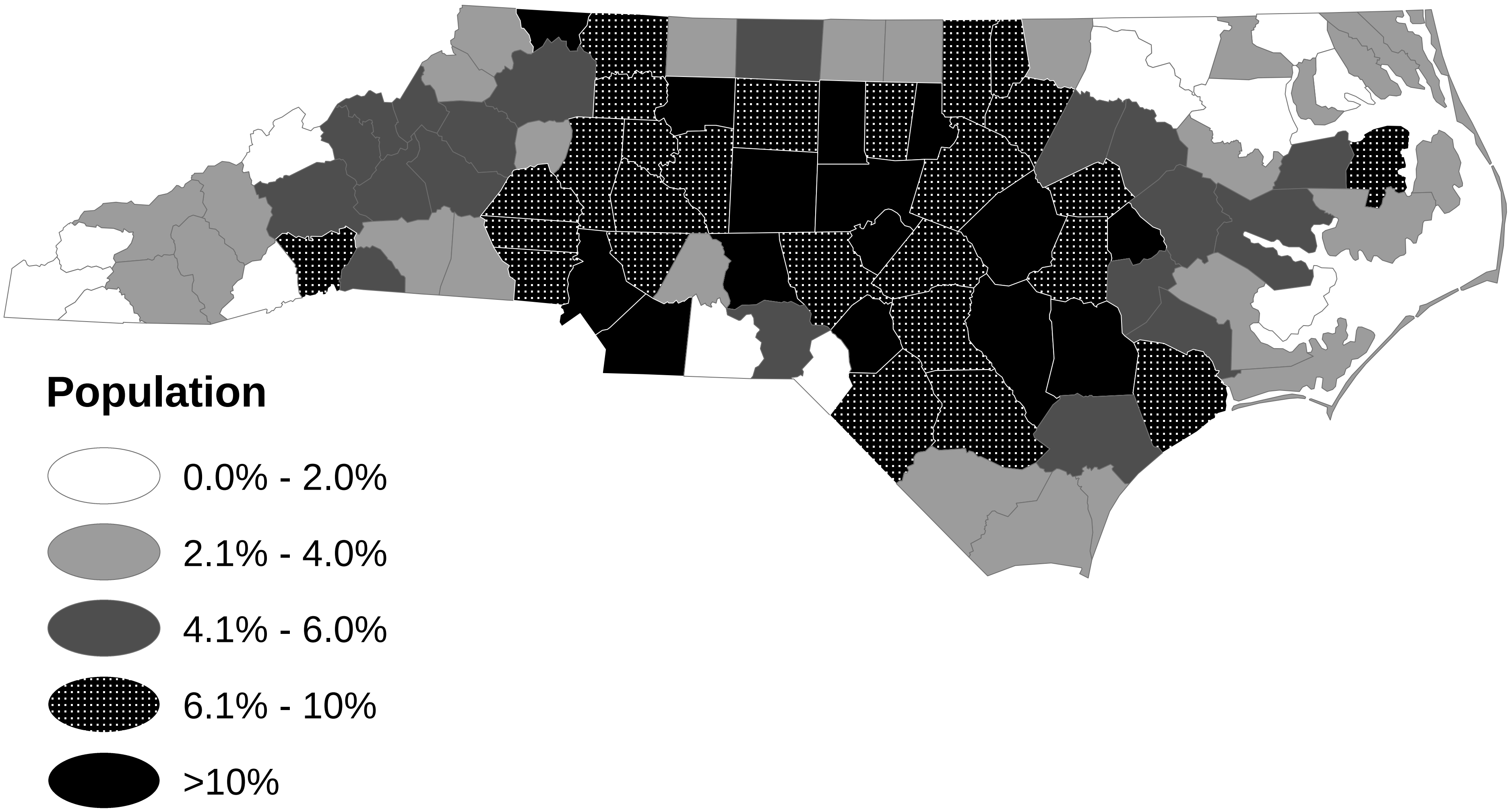
Map 3. North Carolina African American or Black Population, 2009



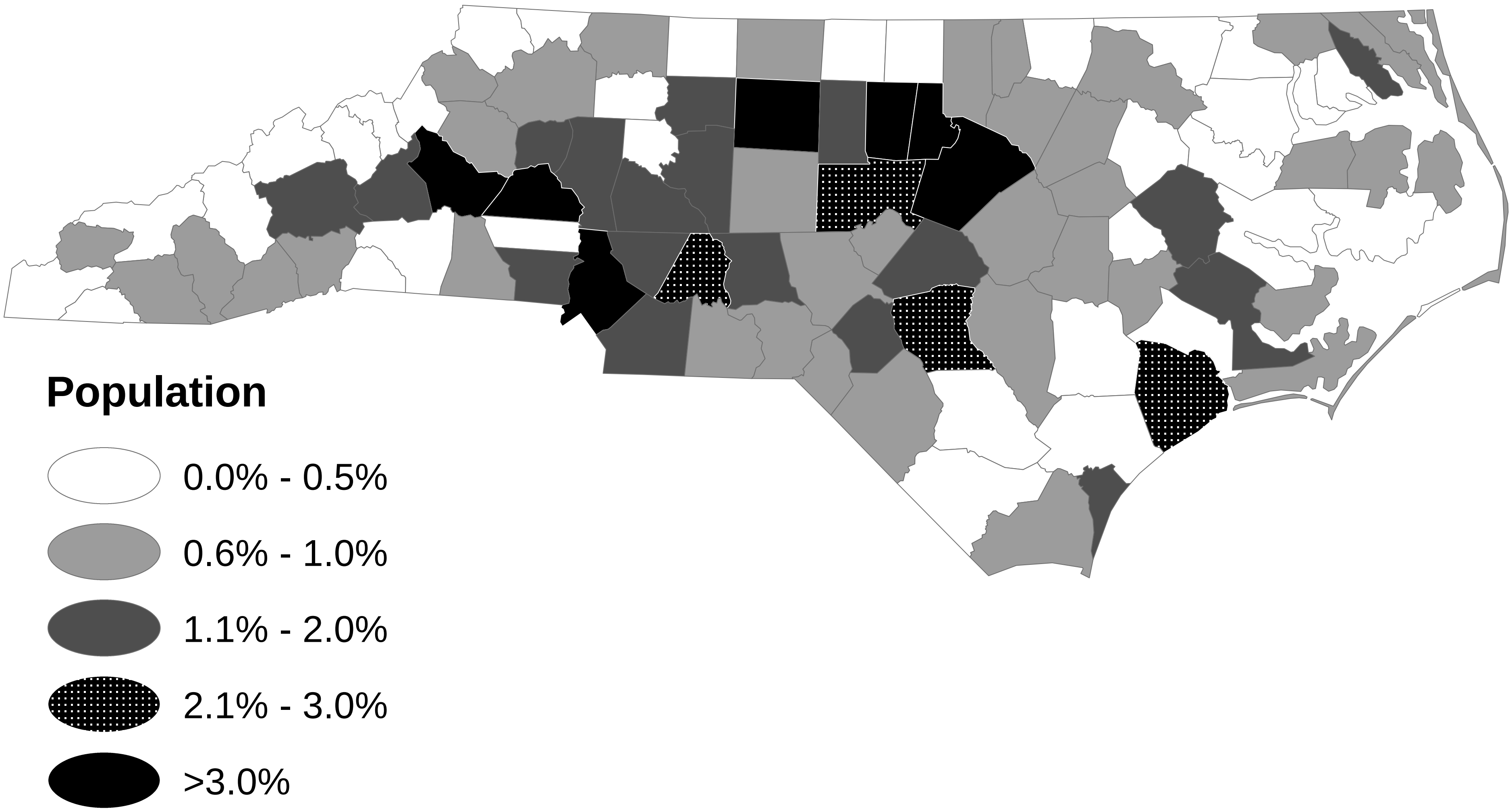
Map 4. North Carolina American Indian/Alaskan Native Population, 2009



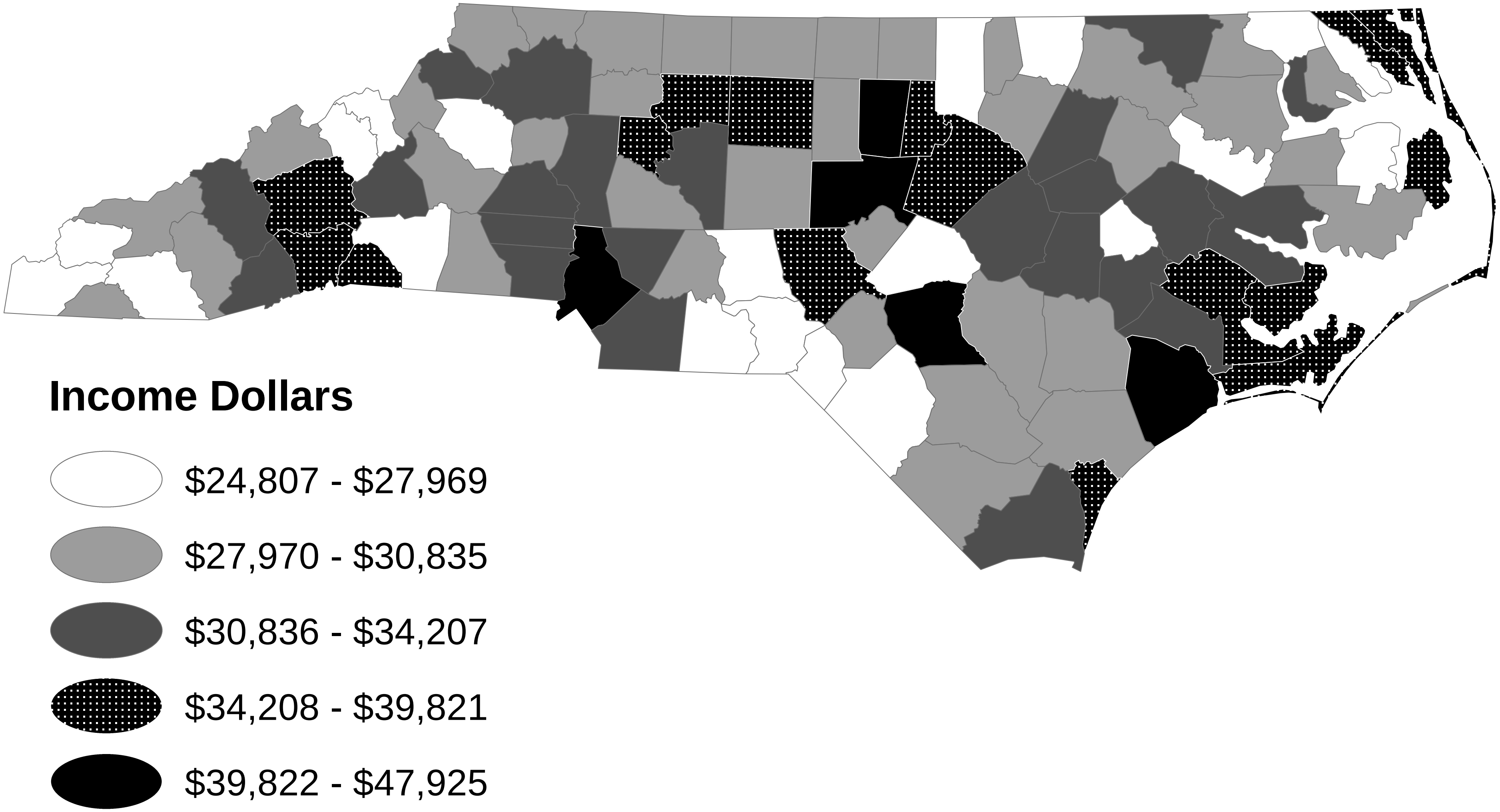
Map 5. North Carolina Hispanic or Latino Population, 2009



Map 6. North Carolina Asian/Pacific Islander Population, 2009

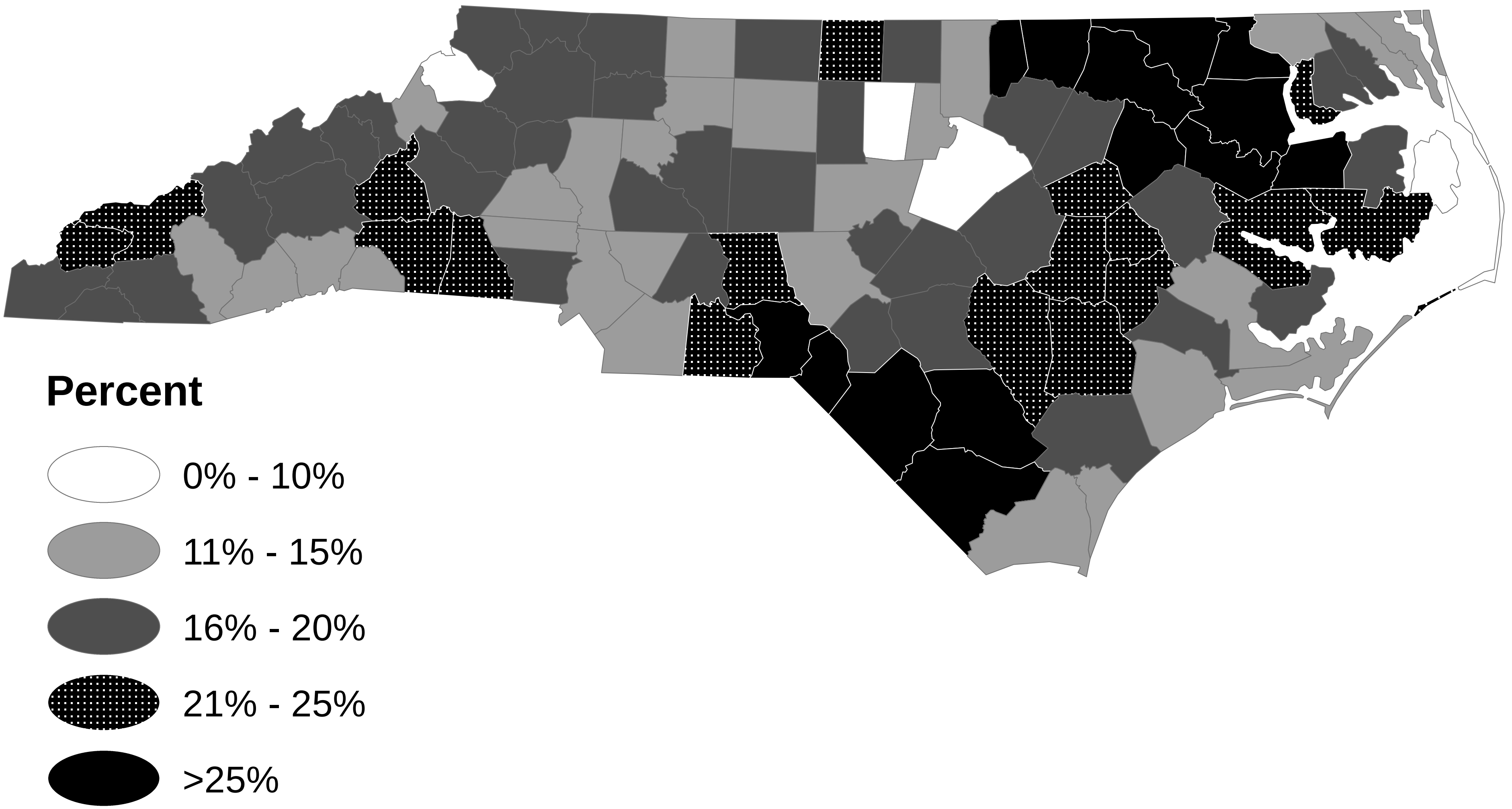


Map 7. North Carolina Per Capita Income, 2009



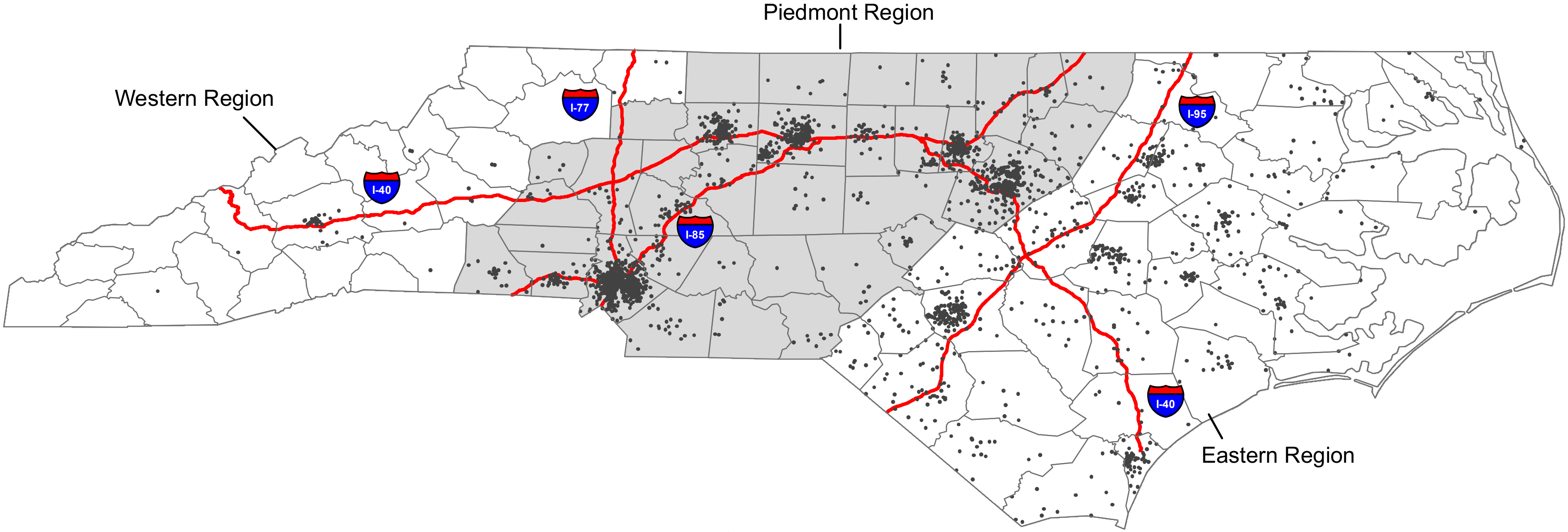
Source: US Bureau Of Economic Analysis

Map 8. North Carolina Medicaid Eligibles, 2010



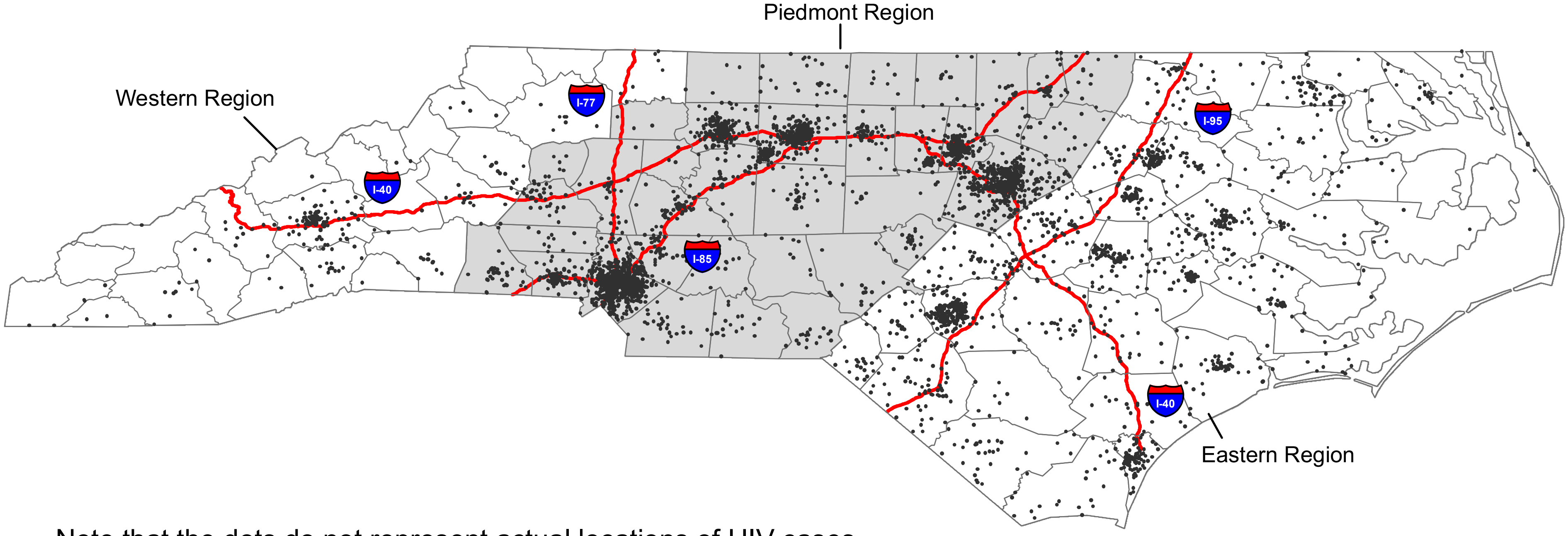
Source: NC DHHS Division of Medical Assistance

Map 9. North Carolina Newly Diagnosed HIV Disease Cases, 2001-2010, by County of Residence at Diagnosis



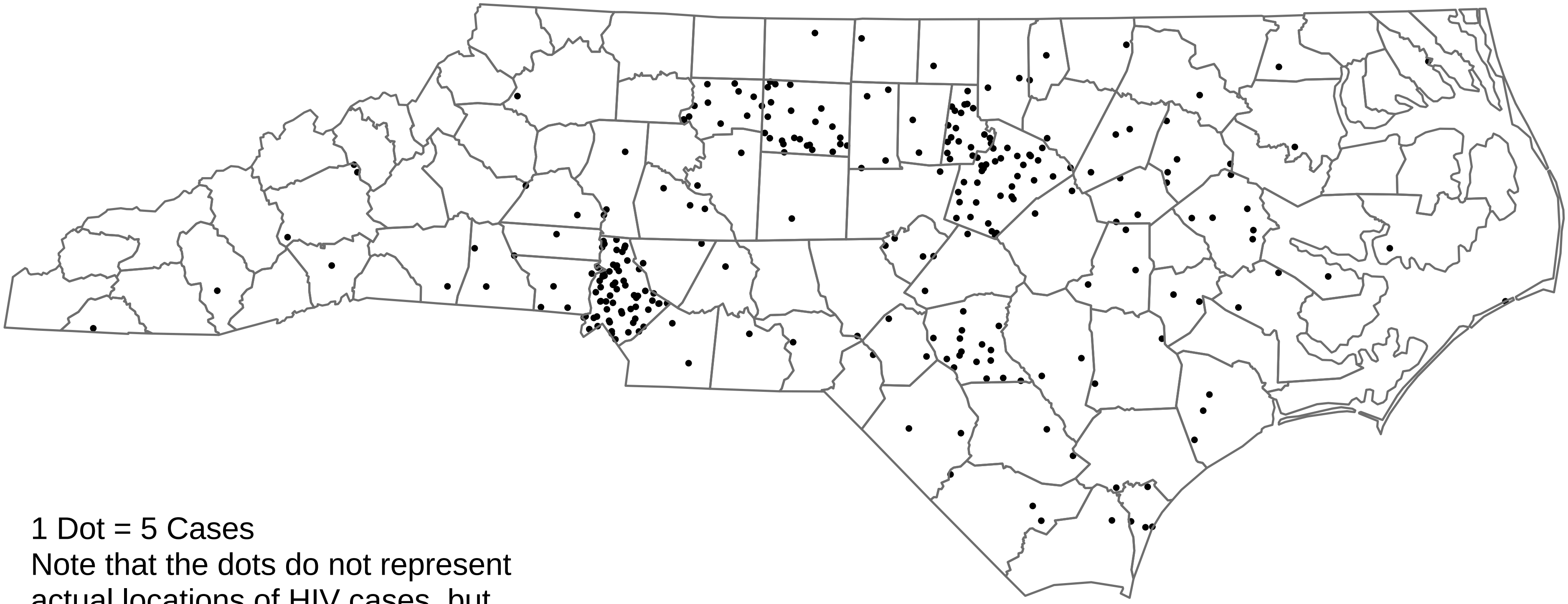
Note that the dots do not represent actual locations of HIV cases,
but reflect the number of diagnoses in each census tract.
1 dot represents 5 cases
Address information was able to be represented for 92.5% of diagnoses

Map 10. North Carolina Living HIV Disease Cases, as of 12/31/2010, by County of Current Residence



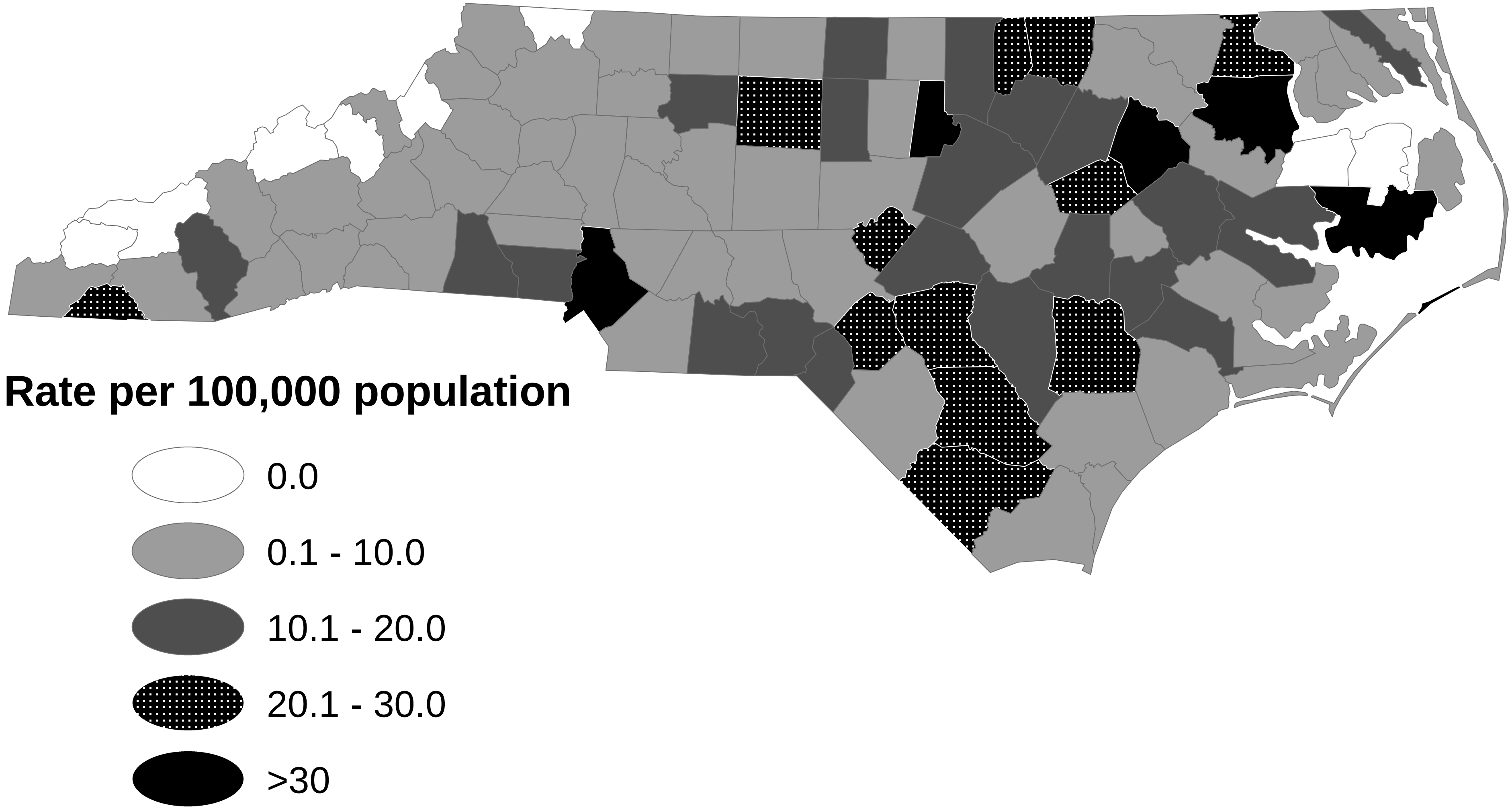
Note that the dots do not represent actual locations of HIV cases,
but reflect the number of diagnoses in each census tract.
1 dot represents 5 cases
Address information was able to be represented for 81.7% of diagnoses

Map 11. North Carolina HIV Disease Cases, 2010
By Year Of Diagnosis

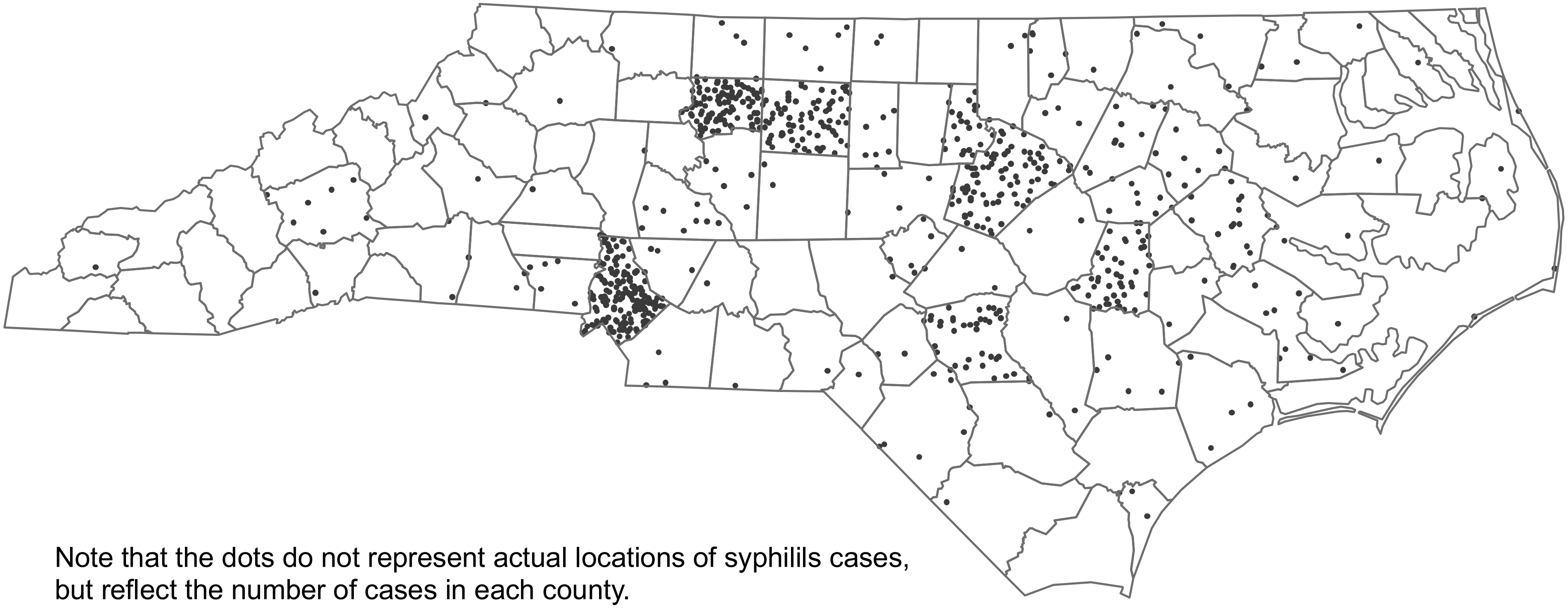


1 Dot = 5 Cases
Note that the dots do not represent actual locations of HIV cases, but reflect the number of cases in each county

Map 12. North Carolina HIV Disease Rates, 2010
By Year Of Diagnosis

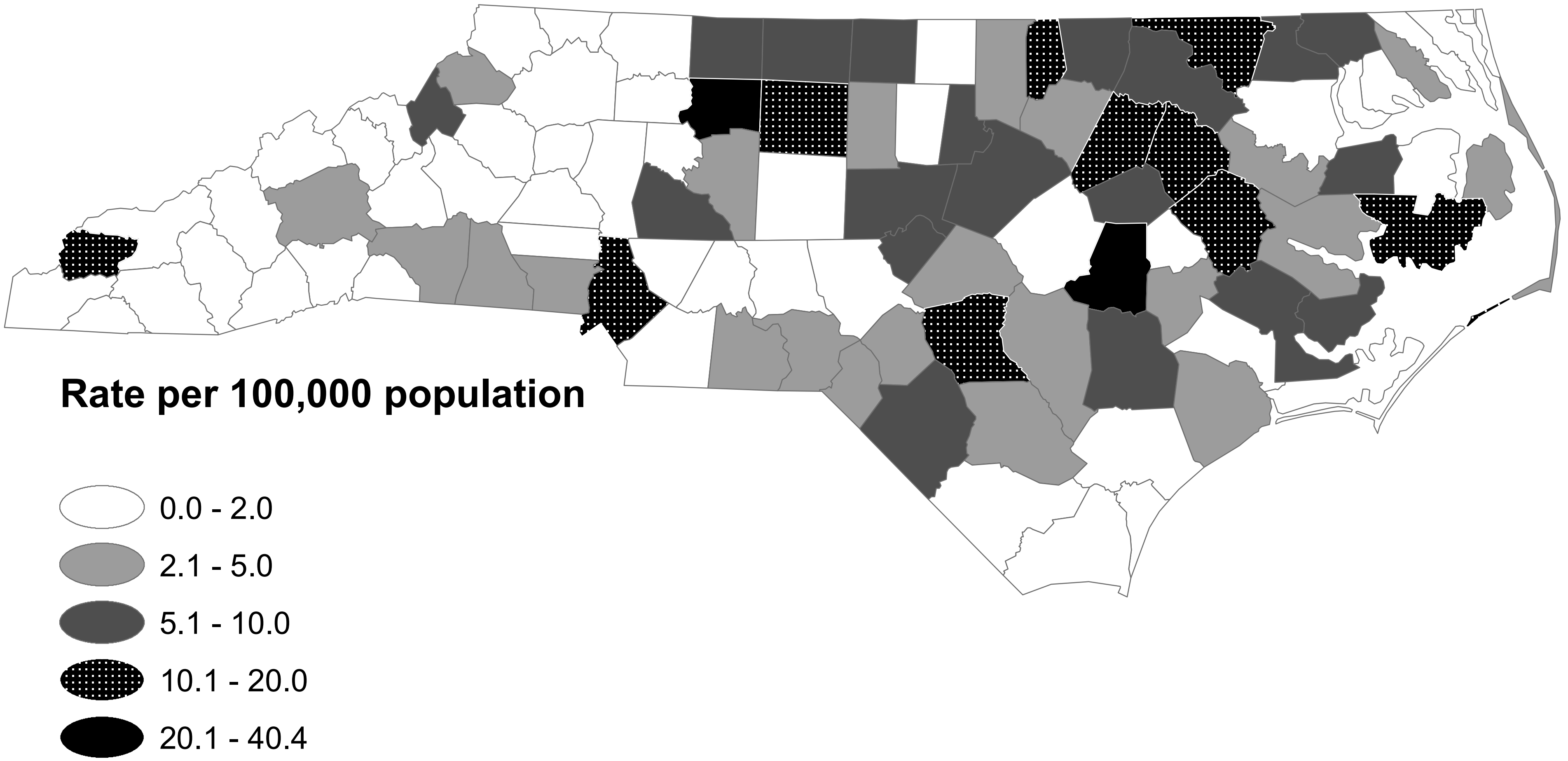


Map 13. North Carolina Syphilis Disease Cases, 2010
By Year of Diagnosis

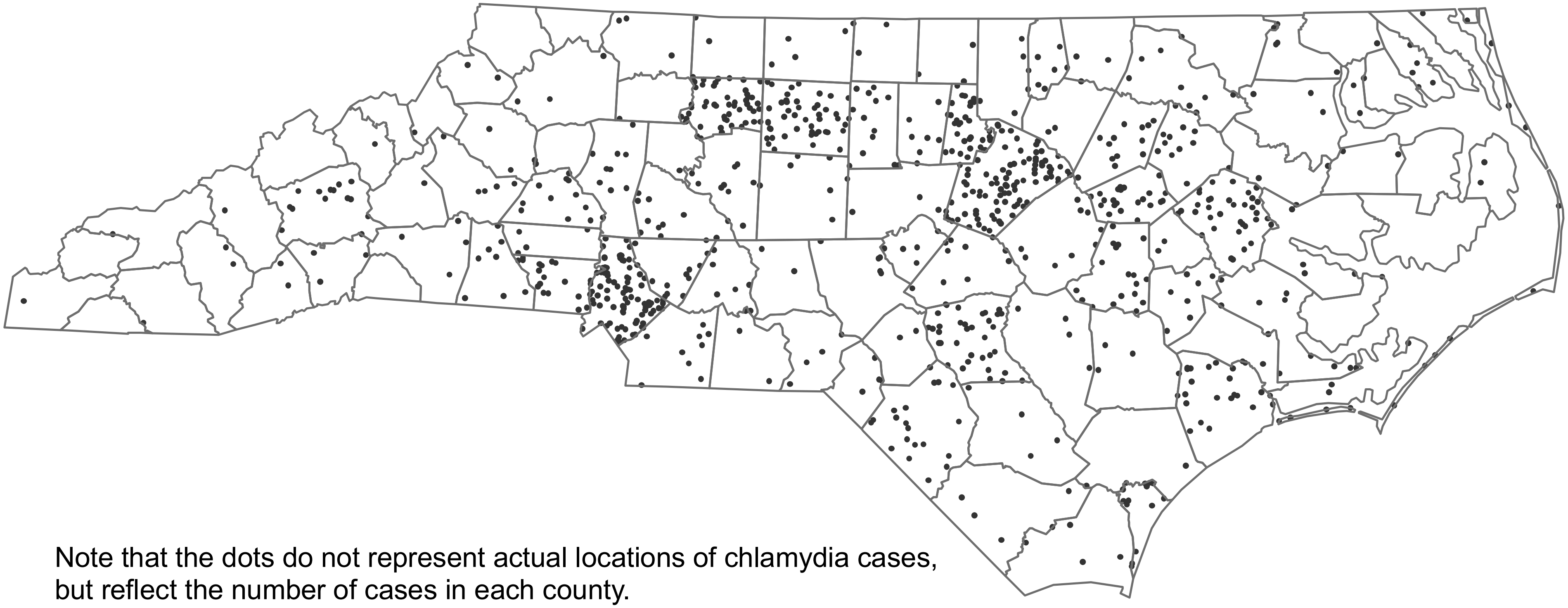


Note that the dots do not represent actual locations of syphilils cases,
but reflect the number of cases in each county.
1 dot represents 1 case

Map 14. North Carolina Early Syphilis Rates, 2010

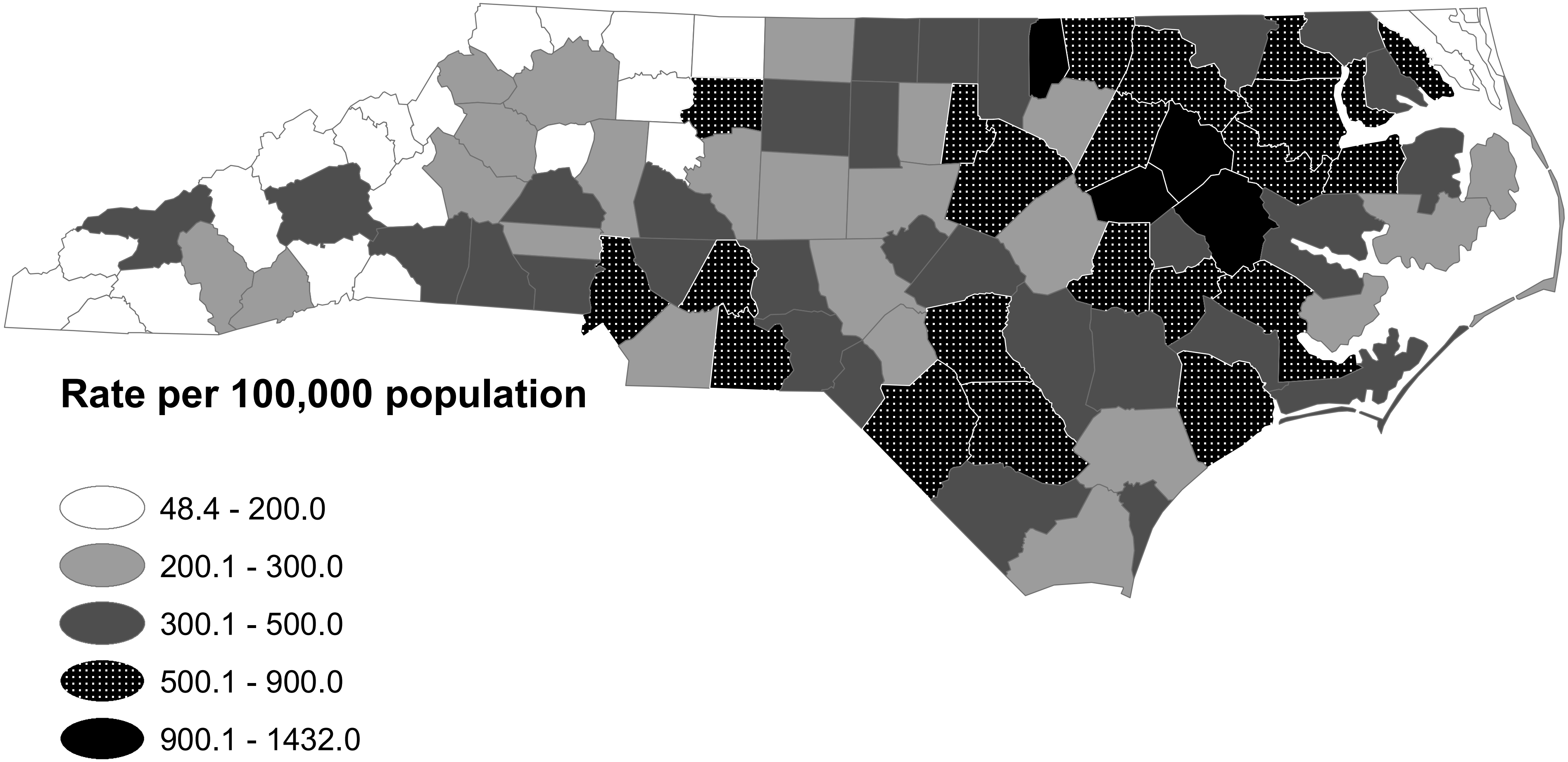


Map 15. North Carolina Chlamydia Disease Cases, 2010
By Year of Diagnosis

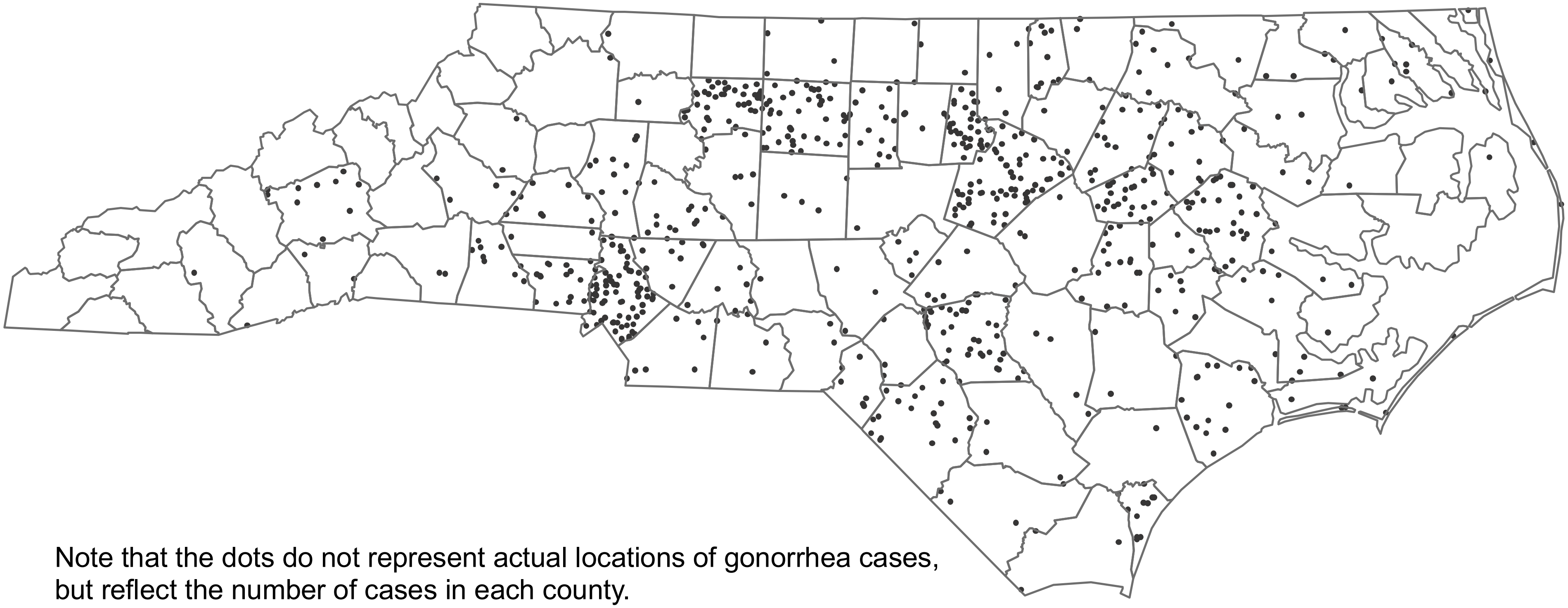


Note that the dots do not represent actual locations of chlamydia cases,
but reflect the number of cases in each county.
1 dot represents 50 cases

Map 16. North Carolina Chlamydia Rates, 2010

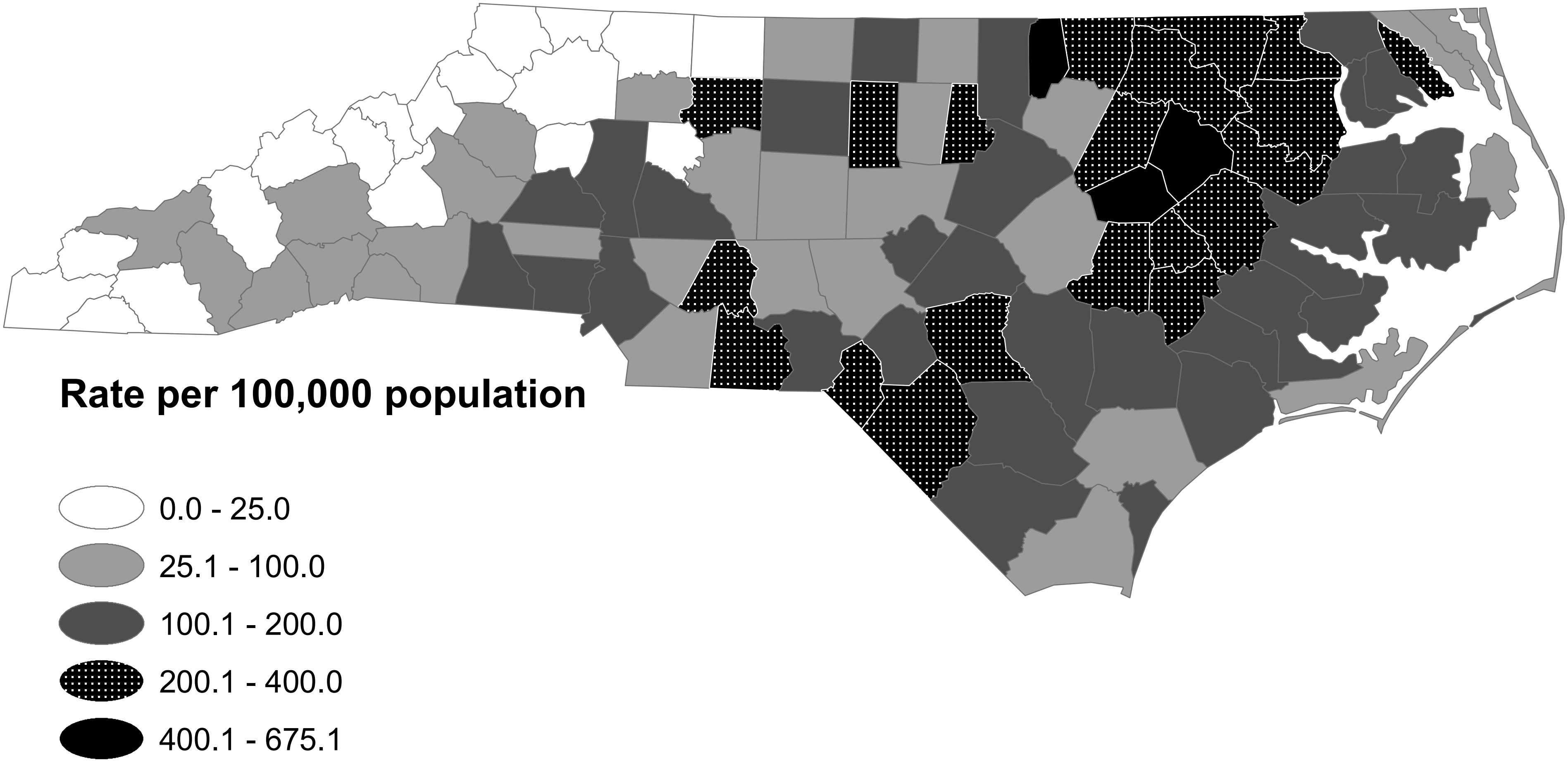


Map 17. North Carolina Gonorrhea Disease Cases, 2010
By Year of Diagnosis



Note that the dots do not represent actual locations of gonorrhea cases,
but reflect the number of cases in each county.
1 dot represents 20 cases

Map 18. North Carolina Gonorrhea Rates, 2010



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 North Carolina Division of Public Health.

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

Limitations: The data can only provide estimates of HIV infection because not all persons who are infected are tested and reported. Surveillance data alone may not provide reliable information about newly acquired infections because there may be significant delay between infection and testing. A third limitation is that reporting may not be complete (i.e., some providers may not report cases). A 2006 study indicated that completeness of HIV/AIDS reporting was approximately 85 to 90 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/resources/reports/index.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.

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 North Carolina Division of Public Health.

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

Limitations: Chlamydia is often asymptomatic in both males and females. It is also a major cause of pelvic inflammatory disease (PID) in females and, for this reason, the N.C. Division of Public Health recommends that all sexually active young women should be screened for chlamydia during any pelvic exam. Please note that this screening recommendation once included only women age 22 and under; however, 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 North Carolina Division of Public Health.

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

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

SYPHILIS CASE REPORTING

Overview: North Carolina law requires that all cases of syphilis be reported to the local health department within 24 hours. However, syphilis testing and case diagnosis require multiple stages and can take several weeks. Each individual with a reactive syphilis test must be investigated thoroughly to determine (a) if the person is genuinely infected and, if so, (b) if the infection is new or failed treatment of an old infection, and, if new, (c) the stage of the disease. This investigation, conducted by local or regional health department personnel, can take days or weeks. In some cases, the patient is treated for a probable infection before the investigation is complete. Contact tracing and partner notification are also initiated for all probable syphilis cases because often partner information can aid in diagnosing the stage of the infection. Laboratories are required to report certain positive test results to local health departments 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 North Carolina Division of Public Health.

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

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

ELECTRONIC DISEASE SURVEILLANCE

NC EDSS – NORTH CAROLINA ELECTRONIC DISEASE SURVEILLANCE SYSTEM

Overview: Currently, all local health departments use NC EDSS to communicate new diagnoses of reportable conditions (including gonorrhea and syphilis, but not currently including HIV or syphilis) to the Communicable Disease Branch. The CDB is updating its procedures for incoming case reports to utilize the same electronic system for HIV and syphilis.

Population: All individuals in North Carolina diagnosed with a reportable condition (other than HIV or syphilis, which will be included in the future).

Strengths: Electronic systems allow for quicker communication of data between the state and local health departments, which may slightly reduce reporting delay. Data errors should be reduced, since the data will be entered once at the source of the report and thus will not need to be recoded from paper documents after arriving at the state. Electronic systems allow importation of ancillary data such as laboratory reports. Such data may improve morbidity report completeness.

Limitations: Due to the nature of electronic systems, an error in one process may be repeated in other processes. As with most surveillance systems, not every infected person is included, just those reported.

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.

NCSEE – NORTH CAROLINA SYPHILIS ELIMINATION EFFORT

Overview: The North Carolina Syphilis Elimination Project (NC SEP) is a collaborative effort of the Communicable Disease Branch and six local health departments across the state. The project began in 1998 when 28 counties across the U.S. were identified as reporting more than 50% of the nation's morbidity for infectious syphilis. Currently, the North Carolina Syphilis Elimination Effort (NC SEE) includes six counties; Durham, Forsyth, Guilford, Mecklenburg, Robeson, and Wake**.** The NC SEE strives to reduce syphilis through community involvement, surveillance, prevention, rapid outbreak response, targeted testing, health promotion and education. The primary purpose of the NC SEE is to provide syphilis testing and awareness to those individuals most at risk for contracting the disease; targeted testing is made available through community screening events.

Population: All clients who receive confidential Syphilis counseling and testing services at any of the local health departments of the six counties involved in the Syphilis Elimination Effort.

Strengths: Provides detailed and specific information about a specialized population indentified at the SEE local health departments.

Limitations: SEE covers only local health department clinics in the six SEE counties and therefore does not reflect all the Syphilis tests done in the state.

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) 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 CTRS collects information on counseling and testing services delivered, client demographics, insurance, risk factors, and reasons for testing.

The North Carolina 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 N.C. 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.

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.

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, 2000, and extended it again in 2009 to support Titles A-D (formerly 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 “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 HIV disease. AIDS cases are counted by the date of AIDS diagnosis. Most AIDS case reports represent persons who were diagnosed with HIV infection previously. However, in North Carolina, about one-fourth to one-third of the new HIV disease reports represent persons who are initially diagnosed with HIV infection and AIDS at or very near the same time (concurrently).

HIV disease reports and AIDS case reports should never be combined to estimate an infected population, and should be considered separately. HIV disease reports, presented by diagnosis year, include those AIDS cases that were diagnosed concurrently in that same year (i.e. 2010 is the year of initial HIV diagnosis and 2010 is the year of AIDS diagnosis). Note that HIV disease also includes early surveillance reports of individuals then 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 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 assess treatment and care needs and to make national comparisons, while HIV disease is used to describe the HIV 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 AIDS diagnosis. Readers should also note that the assignment of residency for some cases may change as additional information is received. Changes in residency can cause disease totals for previous years to change. For the most comprehensive and accurate data, readers should refer to the latest publications (http://epi.publichealth.nc.gov/cd/stds/figures.html).

HIV RISK CATEGORIES AND DISTRIBUTION

The assignment to individual cases of HIV risk or mode of transmission to individual cases 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, hierarchical risk is assigned for the case. This assignment 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. Readers should 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. Many HIV disease cases are classified as non-identified risk (NIR) not because of missing or incomplete information, but because reported risks do not meet one of the CDC-defined risk classifications. In North Carolina, this occurs frequently with heterosexual cases. The CDC hierarchical risk definition for “heterosexual contact” requires that index cases know their partners’ HIV-positive status or their sex partners hierarchical risk for HIV. Without knowing their sexual partners’ HIV status, these cases are categorized as NIR. The CDB has reevaluated and reassigned some of these cases to a “presumed heterosexual” risk category, based on information from field services follow-up interviews. When newly diagnosed individuals report having sex partners of the opposite gender, as well as any additional risk factors, such as the exchange of sex for drugs or money, previous STD diagnoses, or multiple sexual partners these NIR cases are reassigned as likely heterosexual transmission. Reassignment of presumed heterosexual cases gives a more accurate description of HIV disease in the state, especially among females.

Even with the reassignment of cases to “presumed heterosexual” mode of transmission, North Carolina still has a group of cases with insufficient information to assign risk. To simplify the discussion and better describe the overall changes over time, these remaining NIR cases are assigned to a risk category based on the proportionate representation of the various risk groups within the surveillance data. These remaining NIR cases do not appear to differ substantially from the overall risk profile of all HIV disease cases, and risk 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 race/ethnicity group (if the group represents a sufficient number of cases).

For example, if 20 in 100 male HIV 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 example, 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. Actual reassignment takes into account the differences of racial/ethnic, age and gender distributions for each risk group.

RATE CALCULATION AND DENOMINATOR DETERMINATION

Rates are presented throughout the *Profile* for several demographic categories including gender, race/ethnicity, and age. Rates are also presented for counties and geographic regions across N.C. Rates are expressed as cases per 100,000 population. Unless otherwise noted, all rate denominators were derived using bridged-race category estimates for North Carolina, for the referenced year available. Estimates for 2010 were not available at press time; thus rates for 2010 were calculated using 2009 estimates. The bridged-race estimates are published by the National Center for Health Statistics (NCHS) and are based on census counts. These estimates result from bridging the 31 race categories used by the Census (2000), to the four race categories specified by the Office of Management and Budget (OMB, 1997). More information about bridged-race categories and the OMB standards for the collection of data on race and ethnicity is available at NCHS website, http://www.cdc.gov/nchs/nvss.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/pdf/primer12_2.pdf. In order to reliably describe county rates for HIV disease, the county rankings in Appendix D (Table L) are based on three-year averages. The averaging of three years smoothes out erratic annual rates for counties with small numbers of cases, and small population sizes, and provides a better statewide comparison.

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APPENDIX D: TABLES

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Table A: North Carolina Adult/Adolescent HIV Disease† Demographic Rates, Gender and Age, 2006-2010

Age		2006	2006	2006	2007	2007	2007	2008	2008	2008	2009	2009	2009	2010	2010	2010
		Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*
Male	**13-14 Years**	<5	---	---	<5	---	---	<5	---	---	0	0%	0.0	<5	---	---
	15-19 Years	47	3%	14.8	82	5%	25.2	65	4%	19.7	67	4%	20.2	65	4%	19.6
	20-24 Years	142	9%	42.3	163	9%	48.8	190	11%	54.9	201	12%	57.1	229	15%	65.0
	25-29 Years	168	10%	57.2	159	9%	53.2	186	10%	59.9	159	10%	49.9	166	11%	52.1
	30-34 Years	143	9%	47.5	145	8%	48.9	144	8%	48.2	127	8%	42.6	113	8%	37.9
	35-39 Years	179	11%	55.3	163	9%	49.3	158	9%	47.3	127	8%	38.6	100	7%	30.4
	40-44 Years	174	11%	53.1	187	10%	57.1	193	11%	59.1	156	10%	48.1	130	9%	40.1
	45-49 Years	148	9%	46.0	170	10%	51.8	164	9%	49.4	176	11%	52.3	126	9%	37.5
	50-54 Years	85	5%	29.5	95	5%	31.8	125	7%	40.7	100	6%	32.1	90	6%	28.9
	55-59 Years	47	3%	17.8	61	3%	22.9	60	3%	22.3	53	3%	19.3	60	4%	21.8
	60-64 Years	23	1%	11.7	32	2%	14.8	31	2%	13.6	24	1%	10.1	23	2%	9.7
	65+ Years	17	1%	3.8	19	1%	4.1	23	1%	4.8	21	1%	4.2	24	2%	4.8
	Total	1,174	72%	33.1	1,277	71%	35.4	1,340	74%	36.3	1,211	75%	32.4	1,128	76%	30.2
Female	**13-14 Years**	<5	---	---	0	0%	0.0	<5	---	---	<5	---	---	<5	---	---
	15-19 Years	27	2%	9.0	21	1%	6.8	18	1%	5.8	20	1%	6.4	15	1%	4.8
	20-24 Years	41	3%	13.9	56	3%	18.6	32	2%	10.4	40	2%	12.7	29	2%	9.2
	25-29 Years	48	3%	16.2	52	3%	17.1	52	3%	16.8	37	2%	11.9	38	3%	12.2
	30-34 Years	48	3%	16.0	65	4%	21.7	59	3%	19.5	40	2%	13.0	40	3%	13.0
	35-39 Years	65	4%	20.0	83	5%	24.9	66	4%	19.7	58	4%	17.4	56	4%	16.8
	40-44 Years	67	4%	19.9	76	4%	22.5	85	5%	25.4	62	4%	18.7	33	2%	10.0
	45-49 Years	68	4%	20.2	63	4%	18.3	66	4%	19.0	65	4%	18.4	55	4%	15.6
	50-54 Years	54	3%	17.4	47	3%	14.7	45	3%	13.7	44	3%	13.2	32	2%	9.6
	55-59 Years	24	1%	8.4	24	1%	8.3	18	1%	6.1	28	2%	9.3	28	2%	9.3
	60-64 Years	11	1%	5.0	11	1%	4.6	10	1%	4.0	11	1%	4.2	19	1%	7.2
	65+ Years	6	0%	0.9	14	1%	2.1	8	0%	1.2	6	0%	0.9	8	1%	1.2
	Total	461	28%	12.2	512	29%	13.3	460	26%	11.7	412	25%	10.4	354	24%	8.9

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

Table A (continued): North Carolina Adult/Adolescent HIV Disease[†] Demographic Rates, Gender and Age, 2006-2010

Age		2006	2006	2006	2007	2007	2007	2008	2008	2008	2009	2009	2009	2010	2010	2010
		Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*
Total	**13-14 Years**	<5	---	---	<5	---	---	<5	---	---	<5	---	---	<5	---	---
	15-19 Years	74	5%	12.0	103	6%	16.3	83	5%	12.9	87	5%	13.5	80	5%	12.4
	20-24 Years	183	11%	29.0	219	12%	34.5	222	12%	33.9	241	15%	36.1	258	17%	38.6
	25-29 Years	216	13%	36.6	211	12%	35.0	238	13%	38.4	196	12%	31.1	204	14%	32.3
	30-34 Years	191	12%	31.8	210	12%	35.2	203	11%	33.7	167	10%	27.6	153	10%	25.3
	35-39 Years	244	15%	37.6	246	14%	37.1	224	12%	33.5	185	11%	27.9	156	11%	23.5
	40-44 Years	241	15%	36.2	263	15%	39.6	278	15%	42.0	218	13%	33.2	163	11%	24.9
	45-49 Years	216	13%	32.8	233	13%	34.7	230	13%	33.8	241	15%	35.0	181	12%	26.3
	50-54 Years	139	9%	23.2	142	8%	23.0	170	9%	26.8	144	9%	22.3	122	8%	18.9
	55-59 Years	71	4%	12.9	85	5%	15.3	78	4%	13.8	81	5%	14.0	88	6%	15.2
	60-64 Years	34	2%	8.2	43	2%	9.4	41	2%	8.5	35	2%	7.0	42	3%	8.4
	65+ Years	23	1%	2.1	33	2%	2.9	31	2%	2.7	27	2%	2.3	32	2%	2.7
	Total	1,635	100%	22.4	1,789	100%	24.0	1,800	100%	23.7	1,623	100%	21.0	1,482	100%	19.2

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

Table B: North Carolina Adult/Adolescent HIV Disease† Demographic Rates
Gender and Race/Ethnicity, 2006-2010

Race/Ethnicity		2006	2006	2006	2007	2007	2007	2008	2008	2008	2009	2009	2009	2010	2010	2010
		Cases	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***
Male	**White****	337	21%	13.5	422	24%	16.7	380	21%	14.8	314	19%	12.1	300	20%	11.6
	Black**	698	43%	98.6	713	40%	98.6	794	44%	107.3	750	46%	99.8	706	48%	94.0
	Am. In/AN**	10	1%	24.5	6	0%	14.5	9	1%	21.5	9	1%	21.2	<5	---	---
	Asian/PI**	11	1%	16.5	7	0%	10.0	7	0%	9.4	8	0%	10.3	7	0%	9.0
	Hispanic	113	7%	48.1	122	7%	49.5	129	7%	49.3	110	7%	40.3	97	7%	35.5
	Unknown	5	0%	---	7	0%	---	21	1%	---	20	1%	---	15	1%	---
	Total	1,174	72%	33.1	1,277	71%	35.4	1,340	74%	36.3	1,211	75%	32.4	1,128	76%	30.2
Female	**White****	70	4%	2.6	85	5%	3.1	75	4%	2.7	69	4%	2.5	50	3%	1.8
	Black**	353	22%	42.4	387	22%	45.4	351	20%	40.4	317	20%	35.9	269	18%	30.5
	Am. In/AN**	<5	---	---	5	0%	11.2	0	0%	0.0	<5	---	---	<5	---	---
	Asian/PI**	<5	---	---	0	0%	0.0	<5	---	---	<5	---	---	<5	---	---
	Hispanic	32	2%	19.6	32	2%	18.1	23	1%	12.1	18	1%	9.0	20	1%	10.0
	Unknown	<5	---	---	<5	---	---	7	0%	---	5	0%	---	12	1%	---
	Total	461	28%	12.2	512	29%	13.3	460	26%	11.7	412	25%	10.4	354	24%	8.9
Total	**White****	407	25%	7.9	507	28%	9.7	455	25%	8.6	383	24%	7.1	350	24%	6.5
	Black**	1,051	64%	68.2	1,100	61%	69.8	1,145	64%	71.1	1,067	66%	65.3	975	66%	59.7
	Am. In/AN**	11	1%	13.0	11	1%	12.8	9	1%	10.3	10	1%	11.3	<5	---	---
	Asian/PI**	13	1%	9.4	7	0%	4.8	11	1%	7.2	10	1%	6.3	9	1%	5.6
	Hispanic	145	9%	36.4	154	9%	36.3	152	8%	33.7	128	8%	27.0	117	8%	24.7
	Unknown	8	0%	---	10	1%	---	28	2%	---	25	2%	---	27	2%	---
	Total	1,635	100%	22.4	1,789	100%	24.0	1,800	100%	23.7	1,623	100%	21.0	1,482	100%	19.2

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

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

Table C: North Carolina HIV Disease[†] Demographic Rates, Age 13-24 Years Gender and Race/Ethnicity, 2006-2010

Race/Ethnicity		2006	2006	2006	2007	2007	2007	2008	2008	2008	2009	2009	2009	2010	2010	2010
		Cases	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***
Male	**White****	21	8%	4.3	32	10%	6.5	26	8%	5.2	32	10%	6.4	29	9%	5.8
	Black**	149	57%	75.7	190	59%	95.2	205	67%	100.9	216	66%	105.7	240	71%	117.4
	All Other***	20	8%	21.8	24	7%	25.9	25	8%	25.9	20	6%	20.0	26	8%	26.0
	Total	190	73%	24.5	246	76%	31.5	256	83%	32.0	268	81%	33.2	295	87%	36.5
Female	**White****	14	5%	3.1	7	2%	1.5	8	3%	1.7	11	3%	2.4	<5	---	---
	Black**	46	18%	23.8	64	20%	32.4	41	13%	20.5	46	14%	22.8	38	11%	18.8
	All Other***	10	4%	13.8	6	2%	7.8	<5	---	---	<5	---	---	5	1%	6.0
	Total	70	27%	9.8	77	24%	10.6	51	17%	6.9	61	19%	8.2	45	13%	6.0
Total	**White****	35	13%	3.7	39	12%	4.1	34	11%	3.6	43	13%	4.5	31	9%	3.2
	Black**	195	75%	50.0	254	79%	64.0	246	80%	61.1	262	80%	64.5	278	82%	68.5
	All Other***	30	12%	18.3	30	9%	17.8	27	9%	15.3	24	7%	13.0	31	9%	16.8
	Total	260	100%	17.5	323	100%	21.4	307	100%	20.0	329	100%	21.2	340	100%	21.9

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

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

Table D: North Carolina Adult/Adolescent HIV Disease[†] Cases
Gender and Mode of Transmission, 2006-2010

Mode of Transmission		2006		2007		2008		2009		2010	
		Cases	Pct	Cases	Pct	Cases	Pct	Cases	Pct	Cases	Pct
Male	**MSM***	611	37%	705	39%	735	41%	697	43%	681	46%
	IDU*	30	2%	32	2%	32	2%	27	2%	24	2%
	MSM/IDU*	23	1%	20	1%	24	1%	13	1%	10	1%
	Other Risk*	<5	---	0	0%	<5	---	0	0%	<5	---
	Heterosexual-CDC*	75	5%	83	5%	111	6%	109	7%	72	5%
	NIR	434	26%	437	24%	437	25%	365	23%	340	23%
	Total	1,174	72%	1,277	71%	1,340	74%	1,211	75%	1,128	76%
Female	**IDU***	19	1%	20	1%	23	1%	12	1%	10	1%
	Other Risk*	<5	---	<5	---	0	0%	0	0%	0	0%
	Heterosexual-CDC*	100	6%	156	9%	145	8%	132	8%	115	8%
	NIR	341	21%	335	19%	292	16%	268	17%	229	15%
	Total	461	28%	512	29%	460	26%	412	25%	354	24%
Total	**MSM***	611	37%	705	39%	735	41%	697	43%	681	46%
	IDU*	49	3%	52	3%	55	3%	39	2%	34	2%
	MSM/IDU*	23	1%	20	1%	24	1%	13	1%	10	1%
	Other Risk*	<5	---	<5	---	<5	---	0	0%	<5	---
	Heterosexual-CDC*	175	11%	239	13%	256	14%	241	15%	187	13%
	NIR	775	47%	772	43%	729	41%	633	39%	569	38%
	Total	1,635	100%	1,789	100%	1,800	100%	1,623	100%	1,482	100%

*MSM= men who have sex with men; IDU= intravenous drug use; “Other Risk” includes Blood Products (adult hemophilia) and pediatric risk; “Heterosexual-CDC” includes cases that met the CDC hierarchical heterosexual transmission definition. NIR= no identified risk reported

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

Table E: North Carolina Adult/Adolescent HIV[†] Disease Cases
Gender and Mode of Transmission (NIRs Redistributed), 2006-2010

Mode of Transmission		2006		2007		2008		2009		2010	
		Cases	Pct	Cases	Pct	Cases	Pct	Cases	Pct	Cases	Pct
Male	**MSM***	818	70%	928	73%	945	71%	866	71%	845	75%
	IDU*	40	3%	42	3%	41	3%	34	3%	30	3%
	MSM/IDU	31	3%	26	2%	31	2%	16	1%	12	1%
	Other Risk*	1	0%	0	0%	1	0%	0	0%	1	0%
	Heterosexual-All	284	24%	280	22%	321	24%	296	24%	239	21%
	Total[††]	1174	100%	1277	100%	1340	100%	1211	100%	1128	100%
Female	**IDU***	40	9%	34	7%	38	8%	19	5%	16	5%
	Other Risk *	2	0%	2	0%	0	0%	0	0%	0	0%
	Heterosexual-All	419	91%	476	93%	422	92%	393	95%	338	95%
	Total[††]	461	100%	512	100%	460	100%	412	100%	354	100%
Total	**MSM***	818	50%	928	52%	945	53%	866	53%	845	57%
	IDU*	80	5%	76	4%	79	4%	52	3%	46	3%
	MSM/IDU*	31	2%	26	1%	31	2%	16	1%	12	1%
	Other Risk *	3	0%	2	0%	1	0%	0	0%	1	0%
	Heterosexual-All	703	43%	756	42%	743	41%	689	42%	577	39%
	Total[††]	1635	100%	1789	100%	1800	100%	1623	100%	1482	100%

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

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

[††] Totals may not correspond to cases listed above due to redistribution of NIR cases

Table F: North Carolina Adult/Adolescent Female HIV Disease[†] Cases Race/Ethnicity and Mode of Transmission (NIRs* Redistributed), 2006-2010

Mode of Transmission		2006		2007		2008		2009		2010	
		Cases	Pct	Cases	Pct	Cases	Pct	Cases	Pct	Cases	Pct
White, NH*	**IDU***	19	26%	16	19%	11	15%	7	10%	9	17%
	Other Risk *	2	3%	0	0%	0	0%	0	0%	0	0%
	Heterosexual-All	49	71%	69	81%	64	85%	62	90%	41	83%
	Total[††]	70	100%	85	100%	75	100%	69	100%	50	100%
Black, NH*	**IDU***	18	5%	17	4%	26	7%	9	3%	7	2%
	Other Risk *	0	0%	2	0%	0	0%	0	0%	0	0%
	Heterosexual-All	335	95%	369	95%	325	93%	308	97%	262	98%
	Total[††]	353	100%	387	100%	351	100%	317	100%	269	100%
All Other	**IDU***	3	9%	2	6%	2	5%	2	6%	2	5%
	Other Risk *	0	0%	0	0%	0	0	0	0%	0	0%
	Heterosexual-All	35	91%	38	94%	32	95%	24	94%	33	95%
	Total	38	100%	40	100%	34	100%	26	100%	35	100%
Total	**IDU**	40	9%	35	7%	39	8%	18	4%	17	5%
	Other Risk	2	0%	2	0%	0	0%	0	0%	0	0%
	Heterosexual-All	419	91%	476	93%	421	92%	394	96%	337	95%
	Total[††]	461	100%	512	100%	460	100%	412	100%	354	100%

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

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

[††] Totals may not correspond to cases listed above due to redistribution of NIR cases

Table G: North Carolina Adult/Adolescent Male HIV Disease[†] Cases Race/Ethnicity and Mode of Transmission (NIRs* Redistributed), 2006-2010

Mode of Transmission		2006		2007		2008		2009		2010	
		Cases	Pct	Cases	Pct	Cases	Pct	Cases	Pct	Cases	Pct
White, NH*	**MSM***	281	83%	371	88%	305	80%	276	88%	261	87%
	IDU*	10	3%	10	2%	14	4%	5	2%	5	2%
	MSM/IDU	13	4%	13	3%	18	5%	10	3%	9	3%
	Other Risk	0	0%	0	0%	0	0%	0	0%	0	0%
	Heterosexual-All	34	10%	28	7%	43	11%	23	7%	25	8%
	Total[††]	337	100%	422	100%	380	100%	314	100%	300	100%
Black, NH*	**MSM***	439	63%	467	65%	542	68%	496	66%	506	72%
	IDU*	21	3%	31	4%	21	3%	25	3%	21	3%
	MSM/IDU	15	2%	12	2%	7	1%	4	0%	4	1%
	Other Risk *	1	0%	0	0%	0	0%	0	0%	1	0%
	Heterosexual-All	221	32%	204	29%	223	28%	225	30%	174	25%
	Total[††]	698	100%	713	100%	794	100%	750	100%	706	100%
All Other	**MSM***	91	66%	0	59%	97	58%	94	64%	76	62%
	IDU*	11	8%	2	0%	6	4%	4	3%	4	4%
	MSM/IDU	2	1%	0	1%	6	4%	3	2%	0	0%
	Other Risk *	0	0%	12	0%	1	1%	0	0%	0	0%
	Heterosexual-All	35	25%	186	40%	56	34%	46	32%	42	34%
	Total[††]	139	100%	138	100%	166	100%	147	100%	122	100%
Total	**MSM***	811	69%	922	72%	944	70%	867	72%	844	75%
	IDU*	42	4%	41	3%	41	3%	33	3%	30	3%
	MSM/IDU	30	3%	26	2%	32	2%	16	1%	12	1%
	Other Risk *	1	0%	0	0%	1	0%	0	0%	1	0%
	Heterosexual-All	290	25%	288	23%	322	24%	295	24%	241	21%
	Total[††]	1174	100%	1277	100%	1340	100%	1211	100%	1128	100%

*NH=non-Hispanic; MSM= men who have sex with men; IDU= intravenous drug use; “Blood products” includes adult hemophilia; NIR = No identified risk reported

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

[††] Totals may not correspond to cases listed above due to redistribution of NIR cases

Table H: North Carolina HIV Disease[†] Cases Age 13-24 Years Mode of Transmission by Gender (NIRs* Redistributed), 2006-2010

Mode of Transmission		**2006**		**2007**		**2008**		**2009**		**2010**	
		Cases	**Pct**	**Cases**	**Pct**	**Cases**	**Pct**	**Cases**	**Pct**	**Cases**	**Pct**
Male	**MSM***	167	88%	229	93%	224	88%	241	90%	272	92%
	IDU*	2	1%	1	0%	0	0%	0	0%	2	1%
	MSM/IDU	2	1%	5	2%	3	1%	3	1%	1	0%
	Other Risk*	0	0%	0	0%	0	0%	0	0%	1	0%
	Heterosexual-All	18	10%	12	5%	28	11%	24	9%	19	6%
	Total[††]	186	100%	191	100%	246	100%	255	100%	295	100%
Female	**IDU***	3	5%	3	4%	1	3%	0	0%	0	0%
	Other Risk *	0	0%	0	0%	0	0%	0	0%	0	0%
	Heterosexual-All	67	95%	74	96%	50	97%	61	100%	45	100%
	Total[††]	70	100%	77	100%	51	100%	61	100%	45	100%
Total	**MSM***	167	71%	229	71%	224	73%	241	73%	272	80%
	IDU*	6	2%	4	1%	1	0%	0	0%	2	1%
	MSM/IDU*	2	1%	5	1%	3	1%	3	1%	1	0%
	Other Risk *	0	0%	0	0%	0	0%	0	0%	1	0%
	Heterosexual-All	85	26%	85	26%	78	25%	85	26%	64	19%
	Total[††]	260	100%	323	100%	307	100%	329	100%	340	100%

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

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

[††] Totals may not correspond to cases listed above due to redistribution of NIR cases

Table I: Persons Living in North Carolina with HIV Disease[†] as of 12/31/2010 Gender and Mode of Transmission, (NIRs* Redistributed)

Mode of Transmission		2009	
		Cases	Pct
Male	**MSM***	10,833	62%
	IDU*	1,717	10%
	MSM/IDU	756	4%
	Blood Products*	67	0%
	Heterosexual-All	4,013	23%
	Pediatric	159	1%
	Total[††]	17,544	100%
Female	**IDU***	1,135	15%
	Blood Products*	52	1%
	Heterosexual-All	6,150	82%
	Pediatric	194	3%
	Total[††]	7,530	100%
Total	**MSM***	10,833	46%
	IDU*	2,851	11%
	MSM/IDU	756	3%
	Blood Products*	119	0%
	Heterosexual-All	10,162	38%
	Pediatric	353	1%
	Total[††]	25,074	100%

*MSM= men who have sex with men; IDU= intravenous drug use; “Blood products” include adult hemophilia; NIR = No identified risk reported

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

[††] Totals may not correspond to cases listed above due to redistribution of NIR cases

Table J: Persons Living with HIV Disease as of 12/31/2010
Gender and Race/Ethnicity

Race/Ethnicity		Cases	Pct	Rate*
Male	**White****	5,216	21%	168.9
	Black**	10,822	43%	1138.5
	Am. In/AN**	139	1%	260.7
	Asian/PI**	85	0%	85.2
	Hispanic	1,129	5%	283.6
	Total	17,544	70%	382.2
Female	**White****	1,220	5%	37.7
	Black**	5,828	23%	541.3
	Am. In/AN**	63	0%	112.0
	Asian/PI**	35	0%	33.5
	Hispanic	309	1%	96.7
	Total	7,530	30%	157.2
Total	**White****	6,436	26%	101.8
	Black**	16,650	66%	821.3
	Am. In/AN**	202	1%	184.3
	Asian/PI**	120	0%	58.8
	Hispanic	1,438	6%	200.4
	Total	25,074	100%	267.3

*per 100,000 population **non-Hispanic; Am. In/AN= American Indian/Alaskan Native; Asian/PI= Asian/Pacific Islander
†HIV Disease includes all HIV infected individuals (HIV or AIDS)

Table K: Cumulative HIV Disease[†] Cases by County of Residence, 1983-2010

COUNTY	83-90 Cases	91-96 Cases	97-03 Cases	2004 Cases	2005 Cases	2006 Cases	2007 Cases	2008 Cases	2009 Cases	2010 Cases	CUMULATIVE CASES
ALAMANCE	49	136	127	23	26	11	24	35	17	21	469
ALEXANDER	2	11	12	5	3	1	1	1	2	1	39
ALLEGHANY	0	0	1	0	0	0	2	0	0	0	3
ANSON	9	44	19	2	0	6	0	4	3	3	90
ASHE	1	2	3	1	0	0	3	1	0	1	12
AVERY	3	3	1	0	0	0	0	0	2	0	9
BEAUFORT	33	52	52	6	7	3	10	10	6	5	184
BERTIE	9	26	47	9	6	5	4	5	3	6	120
BLADEN	11	32	42	6	6	4	6	5	6	8	126
BRUNSWICK	25	53	69	13	6	4	11	11	10	7	209
BUNCOMBE	98	284	179	15	21	21	32	32	20	14	716
BURKE	16	36	27	2	3	2	8	9	4	1	108
CABARRUS	32	102	83	12	16	18	10	27	23	10	333
CALDWELL	9	33	11	0	4	2	4	6	2	2	73
CAMDEN	1	7	10	1	1	1	1	1	3	1	27
CARTERET	22	32	17	3	1	2	2	5	4	2	90
CASWELL	4	16	13	1	1	2	3	6	6	3	55
CATAWBA	36	86	85	7	6	10	20	17	13	15	295
CHATHAM	10	40	37	9	5	2	9	4	4	4	124
CHEROKEE	3	9	5	0	0	1	2	2	1	1	24
CHOWAN	8	18	8	1	1	0	0	3	0	1	40
CLAY	0	1	2	1	1	1	1	1	1	3	12
CLEVELAND	35	99	88	16	17	13	15	13	12	12	320
COLUMBUS	27	85	84	10	11	8	13	10	10	14	272
CRAVEN	47	118	105	8	11	19	20	12	11	8	359
CUMBERLAND	223	566	466	61	76	98	89	82	79	82	1,822
CURRITUCK	6	7	5	1	2	2	2	1	1	1	28
DARE	7	14	19	5	0	2	2	3	0	2	54
DAVIDSON	42	100	82	11	16	16	11	18	13	9	318
DAVIE	7	16	13	1	2	2	2	0	0	2	45
DUPLIN	22	72	87	10	12	14	6	5	11	12	251
DURHAM	314	764	650	83	86	90	68	96	81	93	2,325
EDGECOMBE	30	134	128	20	22	21	18	16	24	24	437
FORSYTH	243	477	623	76	80	79	77	70	86	59	1,870
FRANKLIN	19	41	42	6	7	10	4	5	9	7	150
GASTON	80	328	221	30	23	30	23	30	38	31	834
GATES	1	1	6	0	1	0	0	1	1	1	12
GRAHAM	0	2	1	1	0	0	0	0	0	0	4
GRANVILLE	26	64	51	9	13	8	7	14	11	9	212
GREENE	4	33	27	2	3	3	2	2	2	2	80
GUILFORD	312	807	819	112	123	143	157	148	128	118	2,867
HALIFAX	27	108	81	6	7	6	10	17	7	3	272
HARNETT	22	89	70	12	15	14	8	12	22	14	278
HAYWOOD	11	32	14	1	3	4	4	1	5	1	76
HENDERSON	22	50	32	4	5	2	9	4	4	7	139
HERTFORD	17	31	40	6	2	4	6	4	2	5	117
HOKE	8	45	49	1	6	12	9	7	10	10	157
HYDE	0	4	3	2	1	0	0	0	0	3	13
IREDELL	27	59	57	10	8	11	10	13	6	11	212
JACKSON	4	8	4	0	3	4	2	3	0	4	32
JOHNSTON	45	164	140	21	18	31	18	23	12	11	483

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

Continued

Table K (continued): Cumulative HIV Disease[†] Cases by County of Residence, 1983-2010

COUNTY	83-90 Cases	91-96 Cases	97-03 Cases	2004 Cases	2005 Cases	2006 Cases	2007 Cases	2008 Cases	2009 Cases	2010 Cases	CUMULATIVE CASES
JONES	1	13	9	2	1	0	0	1	2	2	31
LEE	19	55	73	11	5	9	9	7	3	14	205
LENOIR	39	159	138	11	16	20	19	12	9	10	433
LINCOLN	7	22	30	3	2	2	3	3	1	5	78
MACON	5	11	10	1	2	2	1	2	3	1	38
MADISON	1	9	6	1	0	2	0	0	0	0	19
MARTIN	7	39	42	5	6	5	7	1	0	1	113
MCDOWELL	6	12	4	1	0	3	1	2	2	2	33
MECKLENBURG	689	1,901	1,875	323	278	306	390	389	333	312	6,796
MITCHELL	2	5	3	0	0	0	1	3	3	1	18
MONTGOMERY	6	21	16	3	3	1	1	2	1	2	56
MOORE	23	60	79	5	9	12	7	12	7	4	218
NASH	38	143	123	13	22	22	13	23	15	16	428
NEW HANOVER	99	263	294	41	49	50	35	30	28	19	908
NORTHAMPTON	14	36	27	2	2	4	2	11	6	2	106
ONSLOW	51	82	100	12	11	8	11	11	11	13	310
ORANGE	71	141	97	15	18	15	16	18	12	8	411
PAMLICO	6	8	9	0	1	3	1	2	1	1	32
PASQUOTANK	16	41	33	6	3	9	6	8	2	3	127
PENDER	20	31	26	3	4	6	3	5	2	3	103
PERQUIMANS	1	11	20	1	2	1	0	2	2	1	41
PERSON	8	41	33	6	1	3	6	3	4	3	108
PITT	90	278	233	19	31	20	39	34	29	31	804
POLK	5	12	9	0	0	1	1	2	0	1	31
RANDOLPH	24	50	66	8	3	11	8	10	9	6	195
RICHMOND	11	84	51	6	8	10	17	7	6	7	207
ROBESON	39	186	180	25	27	20	40	30	26	12	585
ROCKINGHAM	15	78	56	12	5	5	9	12	5	3	200
ROWAN	39	115	77	22	17	9	23	11	15	13	341
RUTHERFORD	19	31	28	4	2	7	1	4	2	3	101
SAMPSON	24	92	64	9	13	6	7	6	9	12	242
SCOTLAND	15	74	55	10	10	2	4	8	4	5	187
STANLY	10	34	39	6	0	3	9	2	5	3	111
STOKES	2	11	14	3	4	0	2	1	0	1	38
SURRY	8	25	22	6	3	2	1	3	5	2	77
SWAIN	8	6	9	0	2	0	0	0	0	0	25
TRANSYLVANIA	9	18	12	0	2	3	0	1	3	2	50
TYRRELL	2	2	2	0	0	0	2	0	0	0	8
UNION	17	78	69	9	7	10	19	12	20	12	253
VANCE	31	94	88	14	7	5	9	10	6	10	274
WAKE	451	945	993	182	174	188	205	203	184	172	3,697
WARREN	5	12	23	3	3	2	2	4	2	5	61
WASHINGTON	8	34	28	5	4	2	6	4	2	0	93
WATAUGA	5	5	6	2	3	3	4	3	2	1	34
WAYNE	67	158	144	12	21	9	17	14	17	14	473
WILKES	5	12	18	0	8	2	4	6	0	3	58
WILSON	54	199	152	19	27	19	19	18	33	17	557
YADKIN	5	7	13	1	3	1	2	2	0	1	35
YANCEY	3	8	2	0	0	1	0	1	2	0	17
Unassigned	134	510	680	73	84	76	71	62	80	64	1,834
NC TOTAL	4,243	11,603	11,037	1,557	1,590	1,642	1,798	1,812	1,628	1,487	38,397

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

Table L: HIV Disease[†] Rates by County Rank Order, 2008-2010

COUNTY	2008 CASES	2009 CASES	2010 CASES	2008 RATE	2009 RATE	2010 RATE	AVG RATE*	RANK
EDGECOMBE	16	24	24	30.5	46.3	46.3	41.0	1
MECKLENBURG	389	333	312	43.6	36.4	34.1	38.1	2
DURHAM	96	81	93	36.5	30.0	34.5	33.7	3
NORTHAMPTON	11	6	2	53.8	29.8	9.9	31.2	4
WILSON	18	33	17	23.2	42.1	21.7	29.0	5
GUILFORD	148	128	118	31.2	26.6	24.6	27.5	6
CUMBERLAND	82	79	82	26.4	25.1	26.0	25.8	7
BERTIE	5	3	6	25.7	15.5	31.0	24.1	8
CASWELL	6	6	3	25.9	26.1	13.0	21.7	9
WAKE	203	184	172	23.4	20.5	19.2	21.0	10
COLUMBUS	10	10	14	18.4	18.4	25.8	20.9	11
VANCE	10	6	10	23.3	13.9	23.2	20.1	12
HOKE	7	10	10	16.0	22.1	22.1	20.1	12
FORSYTH	70	86	59	19.7	23.9	16.4	20.0	14
PITT	34	29	31	21.8	18.2	19.5	19.8	15
GRANVILLE	14	11	9	24.5	19.1	15.6	19.7	16
BLADEN	5	6	8	15.4	18.6	24.7	19.6	17
HYDE	0	0	3	0.0	0.0	57.6	19.2	18
NASH	23	15	16	24.4	15.8	16.9	19.1	19
WARREN	4	2	5	20.5	10.3	25.7	18.8	20
LENOIR	12	9	10	21.2	16.0	17.7	18.3	21
NORTH CAROLINA**	1812	1628	1487	19.6	17.4	15.9	17.6	
DUPLIN	5	11	12	9.4	20.7	22.6	17.6	22
ROBESON	30	26	12	23.3	20.1	9.3	17.5	23
CAMDEN	1	3	1	10.4	30.8	10.3	17.2	24
JONES	1	2	2	10.0	19.9	19.9	16.6	25
HALIFAX	17	7	3	30.9	12.8	5.5	16.4	26
ALAMANCE	35	17	21	23.7	11.3	14.0	16.3	27
CLAY	1	1	3	9.7	9.7	29.0	16.1	28
GASTON	30	38	31	14.5	18.2	14.8	15.8	29
HERTFORD	4	2	5	17.1	8.6	21.5	15.7	30
SCOTLAND	8	4	5	21.9	11.0	13.8	15.6	31
WASHINGTON	4	2	0	30.9	15.6	0.0	15.5	32
BEAUFORT	10	6	5	21.6	12.9	10.8	15.1	33
MITCHELL	3	3	1	19.1	19.2	6.4	14.9	34
RICHMOND	7	6	7	15.2	13.1	15.2	14.5	35
SAMPSON	6	9	12	9.5	14.1	18.8	14.1	36
HARNETT	12	22	14	10.7	19.0	12.1	13.9	37
LEE	7	3	14	11.8	5.0	23.1	13.3	38
ANSON	4	3	3	15.9	12.0	12.0	13.3	38
NEW HANOVER	30	28	19	15.6	14.4	9.7	13.2	40
WAYNE	14	17	14	12.3	14.9	12.3	13.2	40
PERQUIMANS	2	2	1	15.7	15.7	7.9	13.1	42
CLEVELAND	13	12	12	13.1	12.1	12.1	12.4	43
CABARRUS	27	23	10	16.0	13.4	5.8	11.7	44
FRANKLIN	5	9	7	8.5	15.0	11.6	11.7	44
PAMLICO	2	1	1	16.1	8.1	8.1	10.7	46
CRAVEN	12	11	8	12.3	11.2	8.1	10.5	47
PASQUOTANK	8	2	3	19.3	4.8	7.2	10.4	48
ORANGE	18	12	8	14.2	9.3	6.2	9.9	49
GREENE	2	2	2	9.7	9.7	9.7	9.7	50

Continued

Table L (continued): HIV Disease[†] Rates by County Rank Order, 2007-2009

COUNTY	2008 CASES	2009 CASES	2010 CASES	2008 RATE	2009 RATE	2010 RATE	AVG RATE*	RANK
BUNCOMBE	32	20	14	14.0	8.6	6.0	9.5	51
CATAWBA	17	13	15	10.8	8.2	9.4	9.5	51
ROWAN	11	15	13	7.9	10.7	9.2	9.3	53
JOHNSTON	23	12	11	14.1	7.1	6.5	9.2	54
CHOWAN	3	0	1	20.4	0.0	6.8	9.1	55
PERSON	3	4	3	8.0	10.6	8.0	8.9	56
MOORE	12	7	4	13.9	8.0	4.6	8.9	56
BRUNSWICK	11	10	7	10.6	9.3	6.5	8.8	58
GATES	1	1	1	8.5	8.5	8.5	8.5	59
DAVIDSON	18	13	9	11.4	8.2	5.7	8.4	60
UNION	12	20	12	6.2	10.1	6.0	7.4	61
ROCKINGHAM	12	5	3	13.0	5.4	3.3	7.2	62
ONSLOW	11	11	13	6.5	6.4	7.5	6.8	63
TRANSYLVANIA	1	3	2	3.3	9.9	6.6	6.6	64
PENDER	5	2	3	9.8	3.8	5.7	6.4	65
IREDELL	13	6	11	8.4	3.8	7.0	6.4	65
JACKSON	3	0	4	8.2	0.0	10.8	6.3	67
CHATHAM	4	4	4	6.3	6.2	6.2	6.2	68
MACON	2	3	1	6.0	9.0	3.0	6.0	69
MONTGOMERY	2	1	2	7.2	3.6	7.2	6.0	69
RANDOLPH	10	9	6	7.1	6.3	4.2	5.9	71
CARTERET	5	4	2	7.9	6.2	3.1	5.7	72
STANLY	2	5	3	3.4	8.4	5.0	5.6	73
YANCEY	1	2	0	5.4	10.8	0.0	5.4	74
BURKE	9	4	1	10.1	4.5	1.1	5.2	75
POLK	2	0	1	10.4	0.0	5.2	5.2	75
CHEROKEE	2	1	1	7.5	3.8	3.8	5.0	77
DARE	3	0	2	8.8	0.0	5.8	4.9	78
HENDERSON	4	4	7	3.9	3.9	6.8	4.8	79
RUTHERFORD	4	2	3	6.3	3.2	4.7	4.7	80
SURRY	3	5	2	4.1	6.9	2.8	4.6	81
MCDOWELL	2	2	2	4.6	4.5	4.5	4.5	82
WILKES	6	0	3	9.0	0.0	4.5	4.5	82
WATAUGA	3	2	1	6.6	4.4	2.2	4.4	84
CALDWELL	6	2	2	7.5	2.5	2.5	4.2	85
CURRITUCK	1	1	1	4.1	4.1	4.1	4.1	86
HAYWOOD	1	5	1	1.8	8.8	1.8	4.1	86
LINCOLN	3	1	5	4.0	1.3	6.6	4.0	88
AVERY	0	2	0	0.0	11.2	0.0	3.7	89
ALEXANDER	1	2	1	2.7	5.4	2.7	3.6	90
MARTIN	1	0	1	4.3	0.0	4.3	2.8	91
YADKIN	2	0	1	5.3	0.0	2.7	2.7	92
ASHE	1	0	1	3.9	0.0	3.9	2.6	93
DAVIE	0	0	2	0.0	0.0	4.8	1.6	94
STOKES	1	0	1	2.2	0.0	2.2	1.4	95
ALLEGHANY	0	0	0	0.0	0.0	0.0	0.0	96
GRAHAM	0	0	0	0.0	0.0	0.0	0.0	96
MADISON	0	0	0	0.0	0.0	0.0	0.0	96
SWAIN	0	0	0	0.0	0.0	0.0	0.0	96
TYRRELL	0	0	0	0.0	0.0	0.0	0.0	96

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

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

Table M: Persons Living in North Carolina with HIV Disease[†] as of 12/31/10, County of Residence and Patient Management Model Regions

		Report Category		
		HIV (NON AIDS)	**AIDS**	**TOTAL**
HIV CARE	**COUNTY**			
CHARLOTTE TRANSITIONAL	**ANSON**	23	32	55
	CABARRUS	151	72	223
	GASTON	302	175	477
	MECKLENBURG	2,958	1,521	4,479
	UNION	98	67	165
	TOTAL	3,532	1,867	5,399
REGION 1	**COUNTY**			
	AVERY	3	5	8
	BUNCOMBE	265	191	456
	CHEROKEE	8	6	14
	CLAY	8	1	9
	CLEVELAND	108	70	178
	GRAHAM	0	2	2
	HAYWOOD	19	30	49
	HENDERSON	32	53	85
	JACKSON	15	14	29
	MACON	15	13	28
	MADISON	8	4	12
	MCDOWELL	12	13	25
	MITCHELL	6	8	14
	POLK	6	10	16
	RUTHERFORD	29	21	50
	SWAIN	4	9	13
	TRANSYLVANIA	19	5	24
	YANCEY	5	6	11
	TOTAL	562	461	1,023
REGION 2	**COUNTY**			
	ALEXANDER	15	17	32
	ALLEGHANY	2	1	3
	ASHE	7	3	10
	BURKE	35	38	73
	CALDWELL	18	22	40
	CATAWBA	87	103	190
	LINCOLN	27	22	49
	WATAUGA	12	10	22
	WILKES	22	16	38
	TOTAL	225	232	457
REGION 3	**COUNTY**			
	DAVIDSON	140	79	219
	DAVIE	14	13	27
	FORSYTH	793	418	1,211
	IREDELL	71	49	120
	ROWAN	126	104	230
	STOKES	18	12	30
	SURRY	34	20	54
	YADKIN	9	13	22
	TOTAL	1,205	708	1,913

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

Continued

Table M (continued): Persons Living in North Carolina with HIV Disease[†] as of 12/31/10, County of Residence and Patient Management Model Regions

		Report Category		TOTAL
		HIV (NON AIDS)	AIDS	
REGION 4	**COUNTY**			
	ALAMANCE	196	114	310
	CASWELL	27	13	40
	GUILFORD	1,249	629	1,878
	MONTGOMERY	16	20	36
	RANDOLPH	80	55	135
	ROCKINGHAM	86	37	123
	STANLY	52	21	73
	TOTAL	1,706	889	2,595
REGION 5	**COUNTY**			
	BLADEN	42	43	85
	CUMBERLAND	754	410	1,164
	HARNETT	102	93	195
	HOKE	62	54	116
	MOORE	78	51	129
	RICHMOND	81	42	123
	ROBESON	197	186	383
	SAMPSON	72	64	136
	SCOTLAND	71	46	117
	TOTAL	1,459	989	2,448
REGION 6	**COUNTY**			
	CHATHAM	60	29	89
	DURHAM	935	505	1,440
	FRANKLIN	51	50	101
	GRANVILLE	90	54	144
	JOHNSTON	157	147	304
	LEE	103	46	149
	ORANGE	185	81	266
	PERSON	42	23	65
	VANCE	95	73	168
	WAKE	1,394	1,270	2,664
	WARREN	28	12	40
	TOTAL	3,140	2,290	5,430
REGION 7	**COUNTY**			
	BRUNSWICK	66	72	138
	COLUMBUS	91	70	161
	DUPLIN	83	88	171
	NEW HANOVER	343	246	589
	ONSLOW	124	91	215
	PENDER	30	31	61
	TOTAL	737	598	1,335
REGION 8	**COUNTY**			
	EDGECOMBE	147	142	289
	HALIFAX	66	72	138
	NASH	145	124	269
	NORTHAMPTON	29	33	62
	WILSON	168	162	330
	TOTAL	555	533	1,088

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

Continued

Table M (continued): Persons Living in North Carolina with HIV Disease[†] as of 12/31/10, County of Residence and Patient Management Model Regions

		Report Category		TOTAL
		HIV (NON AIDS)	AIDS	
REGION 9	**COUNTY**			
	BERTIE	32	44	76
	CAMDEN	5	9	14
	CHOWAN	12	15	27
	CURRITUCK	5	11	16
	DARE	17	19	36
	GATES	7	2	9
	HERTFORD	27	54	81
	HYDE	3	7	10
	PASQUOTANK	42	42	84
	PERQUIMANS	17	14	31
	TYRRELL	4	2	6
	TOTAL	171	219	390
REGION 10	**COUNTY**			
	BEAUFORT	56	55	111
	CARTERET	26	27	53
	CRAVEN	108	134	242
	GREENE	19	37	56
	JONES	11	12	23
	LENOIR	127	124	251
	MARTIN	35	35	70
	PAMLICO	12	7	19
	PITT	240	264	504
	WASHINGTON	22	30	52
	WAYNE	135	146	281
	TOTAL	791	871	1,662
UNASSIGNED		750	584	1,334
TOTAL		14,833	10,241	25,074

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

Table N: HIV Testing at North Carolina Counseling and Testing Sites, 2008-2010

TESTING COUNTY	2008		2009		2010	
	Number Tested	Number Positive[2]	Number Tested	Number Positive[2]	Number Tested	Number Positive[2]
ALAMANCE	3,589	10	3,780	0	3,858	5
ALEXANDER	407	0	487	0	481	0
ALLEGHANEY	114	0	116	0	134	0
ANSON	802	1	951	2	958	1
ASHE	464	1	369	0	293	0
AVERY	206	0	217	0	184	0
BEAUFORT	1,342	7	1,544	2	1,357	3
BERTIE	584	3	562	1	628	2
BLADEN	886	1	975	0	1,051	5
BRUNSWICK	1,555	1	1,473	3	1,389	2
BUNCOMBE	4,950	110	5,425	100	5,058	85
BURKE	1,505	4	1,679	0	1,484	0
CABARRUS	3,492	6	3,187	5	2,991	10
CALDWELL	1,628	2	1,626	2	1,454	1
CAMDEN	53	0	79	0	85	0
CARTERET	790	2	859	2	1,183	0
CASWELL	490	1	523	1	505	0
CATAWBA	3,807	3	5,253	7	5,701	4
CHATHAM	814	0	939	2	1,016	2
CHEROKEE	312	0	297	1	353	1
CHOWAN	268	1	403	0	342	1
CLAY	101	0	129	1	140	0
CLEVELAND	2,922	3	3,343	7	3,383	11
COLUMBUS	1,438	12	1,551	7	1,249	3
CRAVEN	2,853	4	3,114	11	3,743	8
CUMBERLAND	6,899	73	7,764	83	8,164	91
CURRITUCK	238	0	274	0	277	0
DARE	942	1	902	2	879	1
DAVIDSON	1,944	3	2,259	2	2,108	4
DAVIE	626	0	627	0	542	1
DUPLIN	1,281	2	1,953	3	2,044	9
DURHAM	10,484	45	10,875	40	10,522	55
EDGECOMBE	2,817	12	2,739	5	3,061	9
FORSYTH	9,384	37	11,535	83	13,155	55
FRANKLIN	1,386	2	1,295	2	1,313	0
GASTON	8,268	40	9,022	45	9,187	31
GATES	191	0	243	0	241	0
GRAHAM	82	0	70	0	67	0
GRANVILLE	1,087	6	1,075	3	991	0
GREENE	503	0	632	1	582	2
GUILFORD	15,187	114	16,237	98	15,857	93
HALIFAX	1,247	19	1,287	2	1,167	2
HARNETT	1,301	2	1,450	5	1,484	6
HAYWOOD	1,422	0	1,378	3	1,071	1
HENDERSON	2,085	3	2,325	1	2,114	1
HERTFORD	1,230	3	1,612	7	886	3
HOKE	919	3	691	1	1,035	3
HYDE	117	0	89	0	77	1
IREDELL	3,032	7	2,939	2	2,529	8
JACKSON	726	0	646	0	732	2
JOHNSTON	2,393	6	2,429	3	2,482	8
JONES	210	0	322	0	301	1
LEE	915	3	1,051	1	897	2

1. This table includes only HIV tests done through the North Carolina State Laboratory for Public Health (excludes rapid tests).
2. Positives include all positive tests (previous positives and new positives) identified through testing in a given year.

Continued

Table N (continued): HIV Testing at North Carolina Counseling and Testing Sites, 2008-2010

TESTING COUNTY	2008		2009		2010	
	Number Tested	Number Positive[2]	Number Tested	Number Positive[2]	Number Tested	Number Positive[2]
LENOIR	1,694	6	1,693	6	1,380	8
LINCOLN	764	0	786	0	739	4
MACON	477	0	476	0	415	2
MADISON	351	0	309	0	297	0
MARTIN	761	1	715	1	673	1
MCDOWELL	883	0	598	2	493	0
MECKLENBERG	15,744	205	16,947	219	16,500	179
MITCHELL	171	0	175	1	147	0
MONTGOMERY	538	1	578	0	510	0
MOORE	1,071	6	1,317	3	1,424	0
NASH	3,899	10	3,614	17	3,764	8
NEW HANOVER	4,578	15	5,369	16	5,289	15
NORTHAMPTON	834	6	839	5	793	3
ONSLOW	2,086	6	2,305	5	2,442	6
ORANGE	1,852	0	1,910	6	1,873	11
PAMLICO	52	0	129	0	180	1
PASQUOTANK	1,055	4	1,196	3	1,159	1
PENDER	911	1	983	0	1,135	1
PERQUIMANS	226	3	248	1	252	0
PERSON	1,336	0	1,179	0	1,258	0
PITT	5,412	14	5,131	17	5,643	14
POLK	97	1	101	0	97	0
RANDOLPH	1,220	5	1,227	3	1,267	1
RICHMOND	945	2	836	1	849	3
ROBESON	5,134	24	6,011	42	4,289	20
ROCKINGHAM	1,467	3	1,578	5	1,585	1
ROWAN	1,996	4	1,839	2	2,019	5
RUTHERFORD	1,388	1	1,383	3	1,476	1
SAMPSON	4,733	21	4,460	30	3,516	6
SCOTLAND	1,558	4	1,604	6	1,640	2
STANLY	806	3	924	2	767	2
STOKES	173	0	181	0	290	0
SURRY	529	0	577	2	570	1
SWAIN	93	0	90	0	111	0
TRANSYLVANIA	390	0	364	0	381	1
TYRRELL	343	0	325	1	303	0
UNION	2,042	4	2,042	6	2,057	2
VANCE	570	1	647	4	591	2
WAKE	22,626	94	24,039	144	22,528	125
WARREN	498	2	865	1	695	1
WASHINGTON	477	0	447	2	449	0
WATAUGA	956	1	836	1	826	1
WAYNE	4,216	11	5,071	21	5,106	23
WILKES	818	3	1,012	0	932	1
WILSON	3,688	11	4,387	16	4,635	22
YADKIN	585	0	568	0	494	0
YANCEY	257	0	323	1	294	0
MISSING	60	1	534	3	120	4
TOTAL	214,648	1,027	231,370	1,144	227,038	1,011

1. This table includes only HIV tests done through the North Carolina State Laboratory for Public Health (excludes rapid tests).
2. Positives include all positive tests (previous positives and new positives) identified through testing in a given year.

Table O: NC Adult/Adolescent AIDS Demographic Rates, Gender and Age by Year of Diagnosis, 2006-2010

Age		2006	2006	2006	2007	2007	2007	2008	2008	2008	2009	2009	2009	2010	2010	2010
		Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*
Male	**13-14 Years**	0	0%	0.0	0	0%	0.0	0	0%	0.0	0	0%	0.0	0	0%	0.0
	15-19 Years	8	1%	2.5	5	1%	1.5	7	1%	2.1	8	1%	2.4	10	1%	3.0
	20-24 Years	33	4%	9.8	29	3%	8.7	31	3%	9.0	51	5%	14.5	31	4%	8.8
	25-29 Years	74	8%	25.2	61	7%	20.4	64	7%	20.6	82	9%	25.7	56	7%	17.6
	30-34 Years	89	10%	29.6	70	8%	23.6	80	9%	26.8	63	7%	21.1	70	9%	23.5
	35-39 Years	113	13%	34.9	91	11%	27.5	97	10%	29.0	80	9%	24.3	60	8%	18.2
	40-44 Years	116	13%	35.4	113	13%	34.5	113	12%	34.6	118	13%	36.4	76	10%	23.4
	45-49 Years	83	9%	25.8	118	14%	36.0	104	11%	31.3	126	13%	37.5	114	14%	33.9
	50-54 Years	59	7%	20.5	54	6%	18.1	75	8%	24.4	89	9%	28.5	75	9%	24.1
	55-59 Years	39	4%	14.8	24	3%	9.0	48	5%	17.8	50	5%	18.2	37	5%	13.5
	60-64 Years	15	2%	7.6	13	2%	6.0	23	2%	10.1	9	1%	3.8	18	2%	7.6
	65+ Years	14	2%	3.1	8	1%	1.7	17	2%	3.5	13	1%	2.6	21	3%	4.2
	Total	643	72%	18.1	586	69%	16.2	659	71%	17.9	689	73%	18.4	568	72%	15.2
Female	**13-14 Years**	<5	---	---	<5	---	---	0	0%	0.0	0	0%	0.0	0	0%	0.0
	15-19 Years	5	1%	1.7	<5	---	---	<5	---	---	<5	---	---	<5	---	---
	20-24 Years	8	1%	2.7	9	1%	3.0	6	1%	1.9	10	1%	3.2	10	1%	3.2
	25-29 Years	19	2%	6.4	14	2%	4.6	21	2%	6.8	19	2%	6.1	9	1%	2.9
	30-34 Years	29	3%	9.7	32	4%	10.7	36	4%	11.9	26	3%	8.5	26	3%	8.5
	35-39 Years	48	5%	14.8	55	6%	16.5	51	5%	15.2	49	5%	14.7	41	5%	12.3
	40-44 Years	48	5%	14.2	49	6%	14.5	62	7%	18.5	40	4%	12.1	37	5%	11.2
	45-49 Years	43	5%	12.8	48	6%	14.0	40	4%	11.5	46	5%	13.1	39	5%	11.1
	50-54 Years	14	2%	4.5	30	4%	9.4	28	3%	8.5	23	2%	6.9	20	3%	6.0
	55-59 Years	22	2%	7.7	13	2%	4.5	13	1%	4.4	22	2%	7.3	17	2%	5.6
	60-64 Years	6	1%	2.7	<5	---	---	8	1%	3.2	8	1%	3.0	17	2%	6.4
	65+ Years	<5	---	---	7	1%	1.1	5	1%	0.7	<5	---	---	9	1%	1.3
	Total	246	28%	6.5	263	31%	6.8	273	29%	7.0	249	27%	6.3	226	28%	5.7

Continued

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

Age		2006	2006	2006	2007	2007	2007	2008	2008	2008	2009	2009	2009	2010	2010	2010
		Cases	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***
Total	**13-14 Years**	<5	---	---	<5	---	---	0	0%	0.0	0	0%	0.0	0	0%	0.0
	15-19 Years	13	1%	2.1	6	1%	0.9	10	1%	1.6	12	1%	1.9	11	1%	1.7
	20-24 Years	41	5%	6.5	38	4%	6.0	37	4%	5.7	61	7%	9.1	41	5%	6.1
	25-29 Years	93	10%	15.7	75	9%	12.4	85	9%	13.7	101	11%	16.0	65	8%	10.3
	30-34 Years	118	13%	19.6	102	12%	17.1	116	12%	19.3	89	9%	14.7	96	12%	15.9
	35-39 Years	161	18%	24.8	146	17%	22.0	148	16%	22.1	129	14%	19.5	101	13%	15.2
	40-44 Years	164	18%	24.7	162	19%	24.4	175	19%	26.5	158	17%	24.1	113	14%	17.2
	45-49 Years	126	14%	19.1	166	20%	24.7	144	15%	21.2	172	18%	25.0	153	19%	22.2
	50-54 Years	73	8%	12.2	84	10%	13.6	103	11%	16.2	112	12%	17.3	95	12%	14.7
	55-59 Years	61	7%	11.1	37	4%	6.6	61	7%	10.8	72	8%	12.5	54	7%	9.4
	60-64 Years	21	2%	5.0	17	2%	3.7	31	3%	6.5	17	2%	3.4	35	4%	7.0
	65+ Years	17	2%	1.6	15	2%	1.3	22	2%	1.9	15	2%	1.3	30	4%	2.5
	Total	889	100%	12.2	849	100%	11.4	932	100%	12.3	938	100%	12.2	794	100%	10.3

*per 100,000 population

Table P: North Carolina Adult/Adolescent AIDS Demographic Rates
Gender and Race/Ethnicity, by Year of Diagnosis, 2006-2010

Race/Ethnicity		**2006**	**2006**	**2006**	**2007**	**2007**	**2007**	**2008**	**2008**	**2008**	**2009**	**2009**	**2009**	**2010**	**2010**	**2010**
		Cases	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***
Male	**White****	151	17%	6.1	147	17%	5.8	175	19%	6.8	160	17%	6.2	159	20%	6.1
	Black**	406	46%	57.3	377	44%	52.1	407	44%	55.0	447	48%	59.5	343	43%	45.7
	Am. In/AN**	9	1%	22.0	<5	---	---	6	1%	14.3	<5	---	---	<5	---	---
	Asian/PI**	<5	---	---	<5	---	---	<5	---	---	<5	---	---	<5	---	---
	Hispanic	70	8%	29.8	56	7%	22.7	64	7%	24.5	65	7%	23.8	51	6%	18.7
	Unknown	<5	---	---	<5	---	---	6	1%	---	9	1%	---	9	1%	---
	Total	643	72%	18.1	586	69%	16.2	659	71%	17.9	689	73%	18.4	568	72%	15.2
Female	**White****	39	4%	1.5	44	5%	1.6	33	4%	1.2	37	4%	1.3	24	3%	0.9
	Black**	185	21%	22.2	199	23%	23.4	227	24%	26.1	202	22%	22.9	193	24%	21.9
	Am. In/AN**	<5	---	---	6	1%	13.4	<5	---	---	<5	---	---	0	0%	0.0
	Asian/PI**	<5	---	---	<5	---	---	0	0%	0.0	<5	---	---	0	0%	0.0
	Hispanic	18	2%	11.0	11	1%	6.2	9	1%	4.7	5	1%	2.5	6	1%	3.0
	Unknown	<5	---	---	<5	---	---	<5	---	---	<5	---	---	<5	---	---
	Total	246	28%	6.5	263	31%	6.8	273	29%	7.0	249	27%	6.3	226	28%	5.7
Total	**White****	190	21%	3.7	191	22%	3.7	208	22%	3.9	197	21%	3.7	183	23%	3.4
	Black**	591	66%	38.4	576	68%	36.6	634	68%	39.4	649	69%	39.7	536	68%	32.8
	Am. In/AN**	11	1%	13.0	8	1%	9.3	7	1%	8.0	5	1%	5.7	<5	---	---
	Asian/PI**	5	1%	3.6	<5	---	---	<5	---	---	7	1%	4.4	<5	---	---
	Hispanic	88	10%	22.1	67	8%	15.8	73	8%	16.2	70	7%	14.8	57	7%	12.0
	Unknown	<5	---	---	5	1%	---	9	1%	---	10	1%	---	12	2%	---
	Total	889	100%	12.2	849	100%	11.4	932	100%	12.3	938	100%	12.2	794	100%	10.3

*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, 1983-2010

AIDS COUNTY	83-90 Cases	91-96 Cases	97-03 Cases	2004 Cases	2005 Cases	2006 Cases	2007 Cases	2008 Cases	2009 Cases	2010 Cases	CUMULATIVE CASES
ALAMANCE	25	66	61	11	11	3	8	12	12	17	226
ALEXANDER	3	4	7	1	1	3	0	2	2	2	25
ALLEGHANY	0	0	1	0	0	0	0	0	0	0	1
ANSON	4	13	22	3	4	0	0	5	0	2	53
ASHE	0	3	1	0	1	0	0	0	0	0	5
AVERY	2	0	1	0	0	0	2	0	1	1	7
BEAUFORT	20	34	32	7	4	2	4	7	8	1	119
BERTIE	8	17	36	5	3	3	3	3	3	1	82
BLADEN	8	13	31	3	2	3	3	8	0	7	78
BRUNSWICK	15	31	36	3	6	3	8	9	6	6	123
BUNCOMBE	30	169	139	14	7	11	10	13	3	11	407
BURKE	8	26	12	3	5	3	0	5	4	2	68
CABARRUS	18	48	43	2	7	7	6	7	4	5	147
CALDWELL	5	16	11	1	2	0	2	3	1	2	43
CAMDEN	0	3	8	1	1	1	0	1	3	1	19
CARTERET	11	22	12	1	1	2	1	4	2	3	59
CASWELL	1	10	4	0	0	0	2	2	1	1	21
CATAWBA	22	40	60	4	3	10	11	10	13	8	181
CHATHAM	5	14	19	1	4	1	5	1	1	3	54
CHEROKEE	1	6	2	1	0	1	1	1	0	0	13
CHOWAN	5	8	8	1	0	1	0	4	1	0	28
CLAY	0	0	1	1	0	0	0	0	0	1	3
CLEVELAND	19	26	43	5	16	13	12	8	8	5	155
COLUMBUS	16	36	56	5	7	8	9	5	5	8	155
CRAVEN	24	55	57	6	11	10	11	10	15	8	207
CUMBERLAND	89	232	255	28	27	50	47	47	43	36	854
CURRITUCK	3	6	3	0	2	1	0	1	2	2	20
DARE	5	9	13	2	0	0	0	2	1	1	33
DAVIDSON	30	49	36	2	6	2	8	12	10	3	158
DAVIE	3	6	8	0	1	0	0	1	0	3	22
DUPLIN	14	45	61	6	8	5	5	4	5	5	158
DURHAM	142	451	269	42	42	30	31	42	33	38	1,120
EDGECOMBE	19	66	90	14	17	9	9	14	18	14	270
FORSYTH	131	239	279	29	30	21	30	30	48	24	861
FRANKLIN	11	15	23	3	6	6	2	2	6	8	82
GASTON	28	137	134	20	19	9	11	12	21	22	413
GATES	0	0	3	0	0	0	0	0	2	0	5
GRAHAM	0	1	0	1	0	1	0	0	0	0	3
GRANVILLE	13	26	32	6	5	3	3	4	6	6	104
GREENE	3	13	22	1	4	1	1	2	2	4	53
GUILFORD	159	467	350	28	38	44	52	68	60	47	1,313
HALIFAX	15	53	52	7	6	8	6	11	10	2	170
HARNETT	11	45	50	6	6	9	6	12	11	10	166
HAYWOOD	5	22	10	4	3	3	0	2	3	1	53
HENDERSON	9	29	36	1	4	1	8	2	4	5	99
HERTFORD	12	14	24	3	3	3	4	3	4	1	71
HOKE	3	12	27	2	7	4	6	7	4	7	79
HYDE	0	3	3	2	0	0	0	0	0	1	9
IREDELL	12	31	35	2	9	5	1	8	5	2	110
JACKSON	2	7	5	0	1	1	0	0	1	1	18
JOHNSTON	26	59	76	10	13	23	11	14	10	11	253

*by county and year of AIDS diagnosis

Continued

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

AIDS COUNTY	83-90 Cases	91-96 Cases	97-03 Cases	2004 Cases	2005 Cases	2006 Cases	2007 Cases	2008 Cases	2009 Cases	2010 Cases	CUMULATIVE CASES
JONES	0	5	4	1	0	1	1	0	4	3	19
LEE	5	20	20	2	2	4	6	3	8	6	76
LENOIR	15	79	92	13	8	12	7	14	14	11	265
LINCOLN	2	9	11	3	1	4	0	2	0	4	36
MACON	0	11	6	1	0	2	0	1	2	1	24
MADISON	0	6	2	1	0	0	0	0	0	0	9
MARTIN	5	16	24	4	6	3	2	1	4	1	66
MCDOWELL	3	5	6	3	0	4	0	0	1	0	22
MECKLENBURG	289	665	819	132	149	160	152	154	164	124	2,808
MITCHELL	1	3	3	0	0	0	0	1	2	0	10
MONTGOMERY	2	7	6	2	5	2	0	1	1	2	28
MOORE	10	23	37	6	5	6	5	6	3	3	104
NASH	23	79	73	7	14	12	10	12	14	13	257
NEW HANOVER	50	122	179	15	22	27	19	21	11	8	474
NORTHAMPTON	5	28	19	5	5	0	1	2	6	2	73
ONSLOW	33	49	55	3	8	3	3	6	5	10	175
ORANGE	42	60	36	8	3	5	2	6	2	2	166
PAMLICO	5	4	6	1	1	0	0	0	1	0	18
PASQUOTANK	8	16	21	4	3	1	2	3	1	7	66
PENDER	10	24	20	2	5	1	0	2	3	0	67
PERQUIMANS	1	4	9	2	1	1	1	0	2	1	22
PERSON	3	15	13	1	1	1	3	4	4	5	50
PITT	40	171	147	14	21	16	19	21	23	25	497
POLK	2	10	8	0	0	0	1	0	1	0	22
RANDOLPH	12	30	23	8	5	6	4	3	4	8	103
RICHMOND	5	32	19	5	4	5	9	5	4	4	92
ROBESON	19	76	130	19	17	14	22	16	11	19	343
ROCKINGHAM	8	36	30	1	0	1	6	4	2	0	88
ROWAN	21	59	46	6	10	3	10	9	5	6	175
RUTHERFORD	10	26	13	3	3	0	2	1	0	1	59
SAMPSON	14	34	42	3	6	8	7	5	7	4	130
SCOTLAND	9	30	31	4	3	1	5	6	2	4	95
STANLY	5	8	15	0	2	2	3	1	2	0	38
STOKES	1	8	7	0	0	1	1	0	0	2	20
SURRY	6	12	11	1	2	0	0	3	1	1	37
SWAIN	5	8	6	1	1	1	0	0	0	0	22
TRANSYLVANIA	5	7	8	0	1	1	1	0	1	0	24
TYRRELL	1	1	1	0	0	0	0	0	0	0	3
UNION	14	22	39	6	5	8	4	8	9	5	120
VANCE	15	40	62	7	5	3	4	4	3	5	148
WAKE	218	471	617	104	103	122	117	119	108	85	2,064
WARREN	2	6	11	1	0	2	0	0	0	2	24
WASHINGTON	5	23	16	0	5	1	5	2	1	2	60
WATAUGA	4	4	4	0	3	1	0	1	3	0	20
WAYNE	42	87	99	7	15	14	10	9	10	10	303
WILKES	3	6	10	0	0	1	2	2	0	2	26
WILSON	28	73	111	16	18	25	16	12	18	8	325
YADKIN	3	3	10	0	1	1	2	1	0	1	22
YANCEY	1	5	2	0	0	2	0	0	1	0	11
Unassigned**	57	288	532	56	60	77	48	43	68	50	1,279
NC TOTAL	2,062	5,523	6,110	776	882	889	851	934	938	796	19,761

*by county and year of AIDS diagnosis **Unassigned includes cases with unknown county of residence at diagnosis or cases that were diagnosed at a long-term care facility such as prisons

Table R: North Carolina Chlamydia Demographic Rates, Gender and Age, 2006-2010

Age		2006	2006	2006	2007	2007	2007	2008	2008	2008	2009	2009	2009	2010	2010	2010
		Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*
Male	**10-14 Years**	25	0%	8.3	24	0%	7.9	16	0%	5.2	20	0%	6.5	20	0%	6.5
	15-19 Years	1,338	4%	421.9	1,236	4%	380.2	1,460	4%	442.8	1,943	4%	585.6	1,989	5%	599.4
	20-24 Years	2,571	8%	765.9	2,167	7%	649.1	2,673	7%	772.4	3,210	7%	911.5	3,137	7%	890.7
	25-29 Years	1,230	4%	418.6	1,037	3%	346.9	1,161	3%	373.7	1,556	4%	488.2	1,425	3%	447.1
	30-34 Years	537	2%	178.4	459	1%	154.7	550	1%	184.1	678	2%	227.6	650	2%	218.2
	35-39 Years	310	1%	95.7	254	1%	76.8	308	1%	92.2	375	1%	113.9	391	1%	118.7
	40-44 Years	132	0%	40.3	138	0%	42.1	171	0%	52.3	203	0%	62.6	213	1%	65.7
	45-54 Years	141	0%	23.1	138	0%	22.0	129	0%	20.2	152	0%	23.4	168	0%	25.9
	55-64 Years	14	0%	3.0	27	0%	5.6	32	0%	6.4	41	0%	8.0	32	0%	6.2
	65+ Years	10	0%	2.2	6	0%	1.3	10	0%	2.1	9	0%	1.8	11	0%	2.2
	Unknown	<5	---	---	0	0%	---	24	0%	---	21	0%	---	12	0%	---
	Total	6,314	19%	145.5	5,493	18%	124.0	6,567	17%	145.1	8,227	19%	179.2	8,054	19%	175.5
Female	**10-14 Years**	444	1%	154.8	319	1%	110.4	369	1%	127.2	424	1%	144.8	398	1%	135.9
	15-19 Years	10,812	32%	3603.3	9,689	32%	3146.6	12,011	32%	3842.9	13,716	31%	4372.3	12,789	30%	4076.8
	20-24 Years	10,135	30%	3429.3	9,381	31%	3109.2	11,742	31%	3811.1	13,319	30%	4222.7	13,261	31%	4204.3
	25-29 Years	3,638	11%	1225.4	3,414	11%	1121.7	4,179	11%	1349.8	4,559	10%	1461.0	4,392	10%	1407.4
	30-34 Years	1,305	4%	434.7	1,354	4%	451.5	1,521	4%	501.8	1,785	4%	581.9	1,763	4%	574.7
	35-39 Years	554	2%	170.2	529	2%	158.8	677	2%	201.8	740	2%	222.2	746	2%	224.0
	40-44 Years	210	1%	62.2	233	1%	69.0	263	1%	78.6	291	1%	87.8	270	1%	81.4
	45-54 Years	158	0%	24.4	144	0%	21.7	159	0%	23.5	182	0%	26.5	201	0%	29.3
	55-64 Years	24	0%	4.7	27	0%	5.1	29	0%	5.3	36	0%	6.3	41	0%	7.2
	65+ Years	<5	---	---	<5	---	---	<5	---	---	6	0%	0.9	5	0%	0.7
	Unknown	0	0%	---	0	0%	---	129	0%	---	132	0%	---	40	0%	---
	Total	27,301	81%	603.0	25,111	82%	541.7	31,160	82%	660.0	35,229	81%	735.4	33,923	80%	708.1

*per 100,000 population

Continued

Table R (continued): North Carolina Chlamydia Demographic Rates, Gender and Age, 2006-2010

Age		2006 Cases	2006 Pct	2006 Rate*	2007 Cases	2007 Pct	2007 Rate*	2008 Cases	2008 Pct	2008 Rate*	2009 Cases	2009 Pct	2009 Rate*	2010 Cases	2010 Pct	2010 Rate*
Total	**10-14 Years**	469	1%	79.7	343	1%	57.9	385	1%	64.6	448	1%	74.5	419	1%	69.7
	15-19 Years	12,150	36%	1968.6	10,928	36%	1726.4	13,499	36%	2101.7	15,720	36%	2435.3	14,832	35%	2297.7
	20-24 Years	12,706	38%	2012.9	11,551	38%	1817.4	14,484	38%	2214.2	16,619	38%	2489.4	16,472	39%	2467.3
	25-29 Years	4,868	14%	824.1	4,453	15%	738.1	5,360	14%	864.1	6,152	14%	975.3	5,845	14%	926.6
	30-34 Years	1,842	5%	306.4	1,813	6%	303.9	2,076	5%	344.9	2,478	6%	409.8	2,424	6%	400.9
	35-39 Years	864	3%	133.1	783	3%	117.9	992	3%	148.2	1,122	3%	169.4	1,142	3%	172.4
	40-44 Years	342	1%	51.4	371	1%	55.8	439	1%	66.4	497	1%	75.8	487	1%	74.3
	45-54 Years	299	1%	23.8	282	1%	21.9	289	1%	22.0	336	1%	25.2	370	1%	27.7
	55-64 Years	38	0%	3.9	54	0%	5.3	62	0%	5.9	77	0%	7.1	73	0%	6.8
	65+ Years	13	0%	1.2	9	0%	0.8	12	0%	1.0	15	0%	1.3	16	0%	1.3
	Unknown	<5	---	---	0	0%	---	175	0%	---	210	0%	---	64	0%	---
	Total	33,615	100%	379.1	30,612	100%	337.7	37,885	100%	409.7	43,734	100%	466.2	42,167	100%	449.5

*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.

Table S: North Carolina Chlamydia Demographic Rates
Gender and Race/Ethnicity, 2006-2010

Race/Ethnicity		2006	2006	2006	2007	2007	2007	2008	2008	2008	2009	2009	2009	2010	2010	2010
		Cases	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***
Male	**White****	1,359	4%	45.7	1,030	3%	34.2	1,050	3%	34.3	958	2%	31.0	945	2%	30.6
	Black**	4,057	12%	451.3	3,480	11%	379.8	3,477	9%	371.4	4,007	9%	421.5	3,835	9%	403.5
	Am. In/AN**	36	0%	70.0	33	0%	63.3	51	0%	96.6	73	0%	136.9	95	0%	178.1
	Asian/PI**	37	0%	43.3	49	0%	54.1	34	0%	35.5	38	0%	38.1	34	0%	34.1
	Hispanic	535	2%	161.2	492	2%	138.7	439	1%	115.7	523	1%	131.4	470	1%	118.1
	Unknown	290	1%	---	409	1%	---	1,516	4%	---	2,628	6%	---	2,675	6%	---
	Total	6,314	19%	145.5	5,493	18%	124.0	6,567	17%	145.1	8,227	19%	179.2	8,054	19%	175.5
Female	**White****	7,148	21%	229.8	6,276	21%	198.3	6,427	17%	200.6	6,024	14%	186.3	6,316	15%	195.3
	Black**	16,094	48%	1581.2	14,019	46%	1347.4	15,135	40%	1427.5	16,001	37%	1486.2	15,806	37%	1468.1
	Am. In/AN**	331	1%	609.6	337	1%	612.2	449	1%	807.4	498	1%	885.3	432	1%	768.0
	Asian/PI**	193	1%	214.7	156	1%	163.3	212	1%	211.3	176	0%	168.4	206	0%	197.1
	Hispanic	2,048	6%	804.0	1,807	6%	647.5	1,981	5%	657.4	1,990	5%	622.7	1,777	4%	556.0
	Unknown	1,487	4%	---	2,516	8%	---	6,956	18%	---	10,540	24%	---	9,386	22%	---
	Total	27,301	81%	603.0	25,111	82%	541.7	31,160	82%	660.0	35,229	81%	735.4	33,923	80%	708.1
Total	**White****	8,507	25%	139.9	7,306	24%	118.2	7,502	20%	119.7	7,000	16%	110.7	7,276	17%	115.1
	Black**	20,151	60%	1051.3	17,505	57%	894.6	18,687	49%	936.0	20,090	46%	991.0	19,732	47%	973.4
	Am. In/AN**	367	1%	347.0	370	1%	345.2	502	1%	463.1	572	1%	522.0	527	1%	480.9
	Asian/PI**	230	1%	131.1	205	1%	110.2	247	1%	126.0	215	0%	105.3	241	1%	118.0
	Hispanic	2,583	8%	440.3	2,299	8%	362.7	2,431	6%	357.2	2,525	6%	351.8	2,254	5%	314.1
	Unknown	1,777	5%	---	2,927	10%	---	8,516	22%	---	13,332	30%	---	12,137	29%	---
	Total	33,615	100%	379.1	30,612	100%	337.7	37,885	100%	409.7	43,734	100%	466.2	42,167	100%	449.5

*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, 2006-2010

Age		2006	2006	2006	2007	2007	2007	2008	2008	2008	2009	2009	2009	2010	2010	2010
		Cases	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***
Male	**10-14 Years**	27	0%	8.9	19	0%	6.3	20	0%	6.5	16	0%	5.2	17	0%	5.5
	15-19 Years	1,369	8%	431.7	1,257	8%	386.7	1,129	8%	342.4	1,218	8%	367.1	1,079	8%	325.2
	20-24 Years	2,578	15%	768.0	2,346	14%	702.7	2,144	14%	619.6	2,132	14%	605.4	2,077	15%	589.7
	25-29 Years	1,724	10%	586.8	1,449	9%	484.7	1,229	8%	395.6	1,178	8%	369.6	1,066	8%	334.4
	30-34 Years	981	6%	325.9	906	5%	305.3	713	5%	238.7	643	4%	215.9	602	4%	202.1
	35-39 Years	658	4%	203.2	578	3%	174.7	436	3%	130.6	391	3%	118.7	319	2%	96.8
	40-44 Years	461	3%	140.6	452	3%	138.1	317	2%	97.0	264	2%	81.4	247	2%	76.2
	45-54 Years	576	3%	94.4	503	3%	80.3	398	3%	62.3	315	2%	48.6	229	2%	35.3
	55-64 Years	168	1%	36.4	172	1%	35.7	86	1%	17.3	81	1%	15.8	70	0%	13.6
	65+ Years	45	0%	10.0	39	0%	8.4	24	0%	5.0	22	0%	4.4	20	0%	4.0
	Unknown	<5	---	---	<5	---	---	32	0%	---	18	0%	---	8	0%	---
	Total	8,591	50%	198.0	7,725	46%	174.4	6,554	44%	144.8	6,285	42%	136.9	5,734	41%	124.9
Female	**10-14 Years**	150	1%	52.3	117	1%	40.5	86	1%	29.6	95	1%	32.4	83	1%	28.3
	15-19 Years	2,882	17%	960.5	2,911	17%	945.4	2,763	18%	884.0	2,940	20%	937.2	2,838	20%	904.7
	20-24 Years	3,046	18%	1030.6	3,185	19%	1055.6	3,016	20%	978.9	3,113	21%	986.9	3,191	23%	1011.7
	25-29 Years	1,375	8%	463.2	1,440	9%	473.1	1,332	9%	430.2	1,248	8%	399.9	1,222	9%	391.6
	30-34 Years	571	3%	190.2	623	4%	207.8	567	4%	187.1	520	4%	169.5	548	4%	178.6
	35-39 Years	348	2%	106.9	339	2%	101.7	278	2%	82.9	247	2%	74.2	253	2%	76.0
	40-44 Years	197	1%	58.4	171	1%	50.7	150	1%	44.8	114	1%	34.4	85	1%	25.6
	45-54 Years	128	1%	19.8	127	1%	19.1	113	1%	16.7	77	1%	11.2	90	1%	13.1
	55-64 Years	14	0%	2.8	13	0%	2.5	12	0%	2.2	14	0%	2.5	5	0%	0.9
	65+ Years	<5	---	---	<5	---	---	<5	---	---	<5	---	---	0	0%	0.0
	Unknown	<5	---	---	5	0%	---	45	0%	---	38	0%	---	13	0%	---
	Total	8,720	50%	192.6	8,941	54%	192.9	8,393	56%	177.8	8,416	57%	175.7	8,336	59%	174.0

*per 100,000 population

Continued

Table T (continued): North Carolina Gonorrhea Demographic Rates, Gender and Age, 2006-2010

Age		2006	2006	2006	2007	2007	2007	2008	2008	2008	2009	2009	2009	2010	2010	2010
		Cases	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***
Total	**10-14 Years**	177	1%	30.1	136	1%	23.0	106	1%	17.8	111	1%	18.5	100	1%	16.6
	15-19 Years	4,251	25%	688.8	4,168	25%	658.5	3,900	26%	607.2	4,177	28%	647.1	3,936	28%	609.7
	20-24 Years	5,624	32%	891.0	5,531	33%	870.2	5,183	35%	792.3	5,286	36%	791.8	5,297	37%	793.4
	25-29 Years	3,099	18%	524.6	2,889	17%	478.9	2,570	17%	414.3	2,441	16%	387.0	2,300	16%	364.6
	30-34 Years	1,552	9%	258.1	1,529	9%	256.3	1,289	9%	214.2	1,170	8%	193.5	1,160	8%	191.8
	35-39 Years	1,006	6%	155.0	917	6%	138.1	717	5%	107.1	640	4%	96.6	577	4%	87.1
	40-44 Years	658	4%	98.9	623	4%	93.7	468	3%	70.8	381	3%	58.1	333	2%	50.8
	45-54 Years	704	4%	56.0	630	4%	48.8	516	3%	39.2	393	3%	29.4	320	2%	24.0
	55-64 Years	182	1%	18.8	185	1%	18.3	101	1%	9.7	95	1%	8.8	75	1%	6.9
	65+ Years	46	0%	4.2	41	0%	3.7	25	0%	2.2	23	0%	1.9	20	0%	1.7
	Unknown	<5	---	---	7	0%	---	80	1%	---	78	1%	---	26	0%	---
	Total	17,311	100%	195.2	16,666	100%	183.9	15,012	100%	162.3	14,811	100%	157.9	14,153	100%	150.9

*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.

Table U: North Carolina Gonorrhea Demographic Rates
Gender and Race/Ethnicity, 2006-2010

Race/Ethnicity		2006	2006	2006	2007	2007	2007	2008	2008	2008	2009	2009	2009	2010	2010	2010
		Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*
Male	**White****	981	6%	33.0	824	5%	27.3	550	4%	18.0	440	3%	14.2	394	3%	12.8
	Black**	6,888	40%	766.2	5,971	36%	651.7	4,531	30%	483.9	3,958	27%	416.4	3,604	25%	379.1
	Am. In/AN**	60	0%	116.6	63	0%	120.9	80	1%	151.5	68	0%	127.5	52	0%	97.5
	Asian/PI**	21	0%	24.6	27	0%	29.8	18	0%	18.8	16	0%	16.0	8	0%	8.0
	Hispanic	276	2%	83.1	233	1%	65.7	166	1%	43.8	136	1%	34.2	147	1%	36.9
	Unknown	365	2%	---	607	4%	---	1,209	8%	---	1,667	11%	---	1,529	11%	---
	Total	8,591	50%	198.0	7,725	46%	174.4	6,554	44%	144.8	6,285	42%	136.9	5,734	41%	124.9
Female	**White****	1,830	11%	58.8	1,770	11%	55.9	1,321	9%	41.2	1,055	7%	32.6	1,067	8%	33.0
	Black**	6,061	35%	595.5	5,894	35%	566.5	4,957	33%	467.5	4,949	33%	459.7	5,059	36%	469.9
	Am. In/AN**	97	1%	178.6	131	1%	238.0	192	1%	345.3	130	1%	231.1	116	1%	206.2
	Asian/PI**	34	0%	37.8	39	0%	40.8	29	0%	28.9	27	0%	25.8	27	0%	25.8
	Hispanic	184	1%	72.2	167	1%	59.8	209	1%	69.4	166	1%	51.9	164	1%	51.3
	Unknown	514	3%	---	940	6%	---	1,685	11%	---	2,089	14%	---	1,903	13%	---
	Total	8,720	50%	192.6	8,941	54%	192.9	8,393	56%	177.8	8,416	57%	175.7	8,336	59%	174.0
Total	**White****	2,811	16%	46.2	2,594	16%	42.0	1,877	13%	30.0	1,503	10%	23.8	1,463	10%	23.1
	Black**	12,949	75%	675.5	11,865	71%	606.4	9,519	63%	476.8	8,940	60%	441.0	8,708	62%	429.6
	Am. In/AN**	157	1%	148.5	194	1%	181.0	272	2%	250.9	199	1%	181.6	168	1%	153.3
	Asian/PI**	55	0%	31.4	66	0%	35.5	47	0%	24.0	43	0%	21.1	35	0%	17.1
	Hispanic	460	3%	78.4	400	2%	63.1	379	3%	55.7	304	2%	42.4	313	2%	43.6
	Unknown	879	5%	---	1,547	9%	---	2,918	19%	---	3,822	26%	---	3,466	24%	---
	Total	17,311	100%	195.2	16,666	100%	183.9	15,012	100%	162.3	14,811	100%	157.9	14,153	100%	150.9

*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, 2006-2010

Age		2006	2006	2006	2007	2007	2007	2008	2008	2008	2009	2009	2009	2010	2010	2010
		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	20	3%	6.3	25	4%	7.7	30	6%	9.1	43	5%	13.0	44	6%	13.3
	20-24 Years	68	11%	20.3	66	12%	19.8	77	15%	22.3	149	16%	42.3	136	19%	38.6
	25-29 Years	70	12%	23.8	76	13%	25.4	60	12%	19.3	135	14%	42.4	126	17%	39.5
	30-34 Years	58	10%	19.3	49	9%	16.5	29	6%	9.7	86	9%	28.9	65	9%	21.8
	35-39 Years	72	12%	22.2	58	10%	17.5	60	12%	18.0	85	9%	25.8	48	7%	14.6
	40-44 Years	63	10%	19.2	61	11%	18.6	58	11%	17.8	83	9%	25.6	64	9%	19.7
	45-54 Years	57	9%	9.3	62	11%	9.9	64	13%	10.0	106	11%	16.4	78	11%	12.0
	55-64 Years	17	3%	3.7	18	3%	3.7	14	3%	2.8	32	3%	6.2	21	3%	4.1
	65+ Years	5	1%	1.1	7	1%	1.5	<5	---	---	<5	---	---	8	1%	1.6
	Unknown	0	0%	---	0	0%	---	0	0%	---	0	0%	---	0	0%	---
	Total	430	71%	9.9	422	74%	9.5	395	78%	8.7	723	77%	15.8	590	81%	12.9
Female	**10-14 Years**	0	0%	0.0	0	0%	0.0	<5	---	---	0	0%	0.0	<5	---	---
	15-19 Years	20	3%	6.7	8	1%	2.6	14	3%	4.5	22	2%	7.0	17	2%	5.4
	20-24 Years	31	5%	10.5	30	5%	9.9	21	4%	6.8	61	7%	19.3	29	4%	9.2
	25-29 Years	15	2%	5.1	22	4%	7.2	13	3%	4.2	44	5%	14.1	23	3%	7.4
	30-34 Years	24	4%	8.0	19	3%	6.3	17	3%	5.6	27	3%	8.8	13	2%	4.2
	35-39 Years	25	4%	7.7	24	4%	7.2	13	3%	3.9	28	3%	8.4	14	2%	4.2
	40-44 Years	25	4%	7.4	20	4%	5.9	12	2%	3.6	13	1%	3.9	14	2%	4.2
	45-54 Years	28	5%	4.3	24	4%	3.6	20	4%	3.0	16	2%	2.3	22	3%	3.2
	55-64 Years	<5	---	---	0	0%	0.0	<5	---	---	<5	---	---	0	0%	0.0
	65+ Years	0	0%	0.0	0	0%	0.0	0	0%	0.0	<5	---	---	0	0%	0.0
	Unknown	0	0%	---	0	0%	---	0	0%	---	0	0%	---	0	0%	---
	Total	172	29%	3.8	147	26%	3.2	114	22%	2.4	214	23%	4.5	134	19%	2.8

*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		2006 Cases	2006 Pct	2006 Rate*	2007 Cases	2007 Pct	2007 Rate*	2008 Cases	2008 Pct	2008 Rate*	2009 Cases	2009 Pct	2009 Rate*	2010 Cases	2010 Pct	2010 Rate*
Total	**10-14 Years**	0	0%	0.0	0	0%	0.0	<5	---	---	0	0%	0.0	<5	---	---
	15-19 Years	40	7%	6.5	33	6%	5.2	44	9%	6.9	65	7%	10.1	61	8%	9.4
	20-24 Years	99	16%	15.7	96	17%	15.1	98	19%	15.0	210	22%	31.5	165	23%	24.7
	25-29 Years	85	14%	14.4	98	17%	16.2	73	14%	11.8	179	19%	28.4	149	21%	23.6
	30-34 Years	82	14%	13.6	68	12%	11.4	46	9%	7.6	113	12%	18.7	78	11%	12.9
	35-39 Years	97	16%	14.9	82	14%	12.4	73	14%	10.9	113	12%	17.1	62	9%	9.4
	40-44 Years	88	15%	13.2	81	14%	12.2	70	14%	10.6	96	10%	14.6	78	11%	11.9
	45-54 Years	85	14%	6.8	86	15%	6.7	84	17%	6.4	122	13%	9.1	100	14%	7.5
	55-64 Years	21	3%	2.2	18	3%	1.8	16	3%	1.5	34	4%	3.1	21	3%	1.9
	65+ Years	5	1%	0.5	7	1%	0.6	<5	---	---	5	1%	0.4	8	1%	0.7
	Unknown	0	0%	---	0	0%	---	0	0%	---	0	0%	---	0	0%	---
	Total	602	100%	6.8	569	100%	6.3	509	100%	5.5	937	100%	10.0	724	100%	7.7

*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.

Table W: North Carolina Early Syphilis Rates (Primary, Secondary, Early Latent) Gender and Race/Ethnicity, 2006-2010

Race/Ethnicity		2006	2006	2006	2007	2007	2007	2008	2008	2008	2009	2009	2009	2010	2010	2010
		Cases	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***
Male	**White****	125	21%	4.2	97	17%	3.2	95	19%	3.1	149	16%	4.8	91	13%	2.9
	Black**	281	47%	31.3	298	52%	32.5	279	55%	29.8	537	57%	56.5	472	65%	49.7
	Am. In/AN**	0	0%	0.0	<5	---	---	0	0%	0.0	6	1%	11.3	<5	---	---
	Asian/PI**	<5	---	---	<5	---	---	<5	---	---	<5	---	---	<5	---	---
	Hispanic	22	4%	6.6	23	4%	6.5	18	4%	4.7	25	3%	6.3	17	2%	4.3
	Unknown	<5	---	---	<5	---	---	<5	---	---	<5	---	---	<5	---	---
	Total	430	71%	9.9	422	74%	9.5	395	78%	8.7	723	77%	15.8	590	81%	12.9
Female	**White****	25	4%	0.8	28	5%	0.9	22	4%	0.7	54	6%	1.7	26	4%	0.8
	Black**	129	21%	12.7	104	18%	10.0	82	16%	7.7	144	15%	13.4	103	14%	9.6
	Am. In/AN**	<5	---	---	<5	---	---	0	0%	0.0	<5	---	---	0	0%	0.0
	Asian/PI**	0	0%	0.0	<5	---	---	0	0%	0.0	<5	---	---	<5	---	---
	Hispanic	17	3%	6.7	12	2%	4.3	8	2%	2.7	14	1%	4.4	<5	---	---
	Unknown	0	0%	---	0	0%	---	<5	---	---	0	0%	---	<5	---	---
	Total	172	29%	3.8	147	26%	3.2	114	22%	2.4	214	23%	4.5	134	19%	2.8
Total	**White****	150	25%	2.5	125	22%	2.0	117	23%	1.9	203	22%	3.2	117	16%	1.9
	Black**	410	68%	21.4	402	71%	20.5	361	71%	18.1	681	73%	33.6	575	79%	28.4
	Am. In/AN**	<5	---	---	<5	---	---	0	0%	0.0	7	1%	6.4	<5	---	---
	Asian/PI**	<5	---	---	<5	---	---	<5	---	---	5	1%	2.4	<5	---	---
	Hispanic	39	6%	6.6	35	6%	5.5	26	5%	3.8	39	4%	5.4	20	3%	2.8
	Unknown	<5	---	---	<5	---	---	<5	---	---	<5	---	---	<5	---	---
	Total	602	100%	6.8	569	100%	6.3	509	100%	5.5	937	100%	10.0	724	100%	7.7

*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, 2006-2010

		Cases				
Rank*	**County**	**2006**	**2007**	**2008**	**2009**	**2010**
1	**MECKLENBURG**	188	141	91	174	167
2	**FORSYTH**	34	31	46	195	103
3	**WAKE**	60	39	37	115	83
4	**GUILFORD**	74	45	50	68	75
5	**WAYNE**	15	17	28	59	46
6	**CUMBERLAND**	26	18	19	18	37
7	**DURHAM**	33	47	39	40	23
8	**PITT**	5	7	12	15	18
9	**NASH**	16	15	16	9	10
10	**CRAVEN**	2	12	4	6	8
11	**ROWAN**	1	5	0	5	8
12	**ROBESON**	4	15	5	3	8
13	**EDGECOMBE**	7	11	13	17	7
14	**BUNCOMBE**	7	5	17	16	7
15	**ALAMANCE**	6	7	6	7	7
16	**WILSON**	5	3	5	6	7
17	**GASTON**	12	10	5	20	5
18	**LEE**	4	0	1	6	5
19	**DAVIDSON**	2	3	0	5	5
20	**VANCE**	3	0	2	4	5
21	**DUPLIN**	1	2	3	2	5
22	**ROCKINGHAM**	3	5	4	1	5
23	**ONSLOW**	3	3	2	3	4
24	**CHATHAM**	1	1	0	2	4
25	**NEW HANOVER**	12	35	22	14	3
26	**CABARRUS**	5	5	4	8	3
27	**UNION**	3	0	2	7	3
28	**CLEVELAND**	2	6	4	3	3
29	**FRANKLIN**	0	4	3	3	3
30	**HARNETT**	1	2	0	3	3
31	**STOKES**	0	0	3	2	3
32	**HALIFAX**	2	4	2	2	3
33	**NORTHAMPTON**	3	0	2	1	3
34	**RANDOLPH**	4	2	1	5	2
35	**JOHNSTON**	12	10	5	4	2
36	**LENOIR**	1	5	3	4	2
37	**GRANVILLE**	0	1	1	4	2
38	**BEAUFORT**	1	0	0	4	2
39	**RUTHERFORD**	0	1	0	3	2
40	**SAMPSON**	1	3	2	2	2
41	**HOKE**	1	0	2	1	2
42	**HERTFORD**	1	0	0	1	2
43	**CASWELL**	0	0	0	0	2
44	**ORANGE**	5	8	3	9	1
45	**BLADEN**	3	1	0	5	1
46	**HENDERSON**	0	0	0	5	1
47	**BURKE**	0	2	3	4	1
48	**CATAWBA**	2	2	1	4	1
49	**MOORE**	1	3	5	3	1
50	**IREDELL**	3	1	1	3	1
51	**WARREN**	0	0	0	3	1

* Rank based on number of cases reported in 2007. If cases are equal, then rank based on previous year.

Continued

Table X (continued): North Carolina Early Syphilis Cases (Primary, Secondary, Early Latent) County Rank, 2006-2010

		Cases				
Rank*	**County**	**2006**	**2007**	**2008**	**2009**	**2010**
52	**WASHINGTON**	0	2	0	2	1
53	**MARTIN**	2	1	2	1	1
54	**SURRY**	3	0	2	1	1
55	**COLUMBUS**	1	2	1	1	1
56	**SCOTLAND**	0	1	1	1	1
57	**RICHMOND**	0	0	1	1	1
58	**HYDE**	1	0	0	1	1
58	**PASQUOTANK**	1	0	0	1	1
60	**DARE**	0	0	0	1	1
61	**ANSON**	1	0	2	0	1
62	**STANLY**	3	3	1	0	1
63	**GATES**	0	0	1	0	1
63	**WILKES**	0	0	1	0	1
65	**WATAUGA**	2	0	0	0	1
66	**AVERY**	0	0	0	0	1
66	**GRAHAM**	0	0	0	0	1
66	**PAMLICO**	0	0	0	0	1
69	**MADISON**	0	0	1	3	0
70	**GREENE**	0	3	0	3	0
71	**BRUNSWICK**	4	5	6	2	0
72	**JACKSON**	0	0	2	2	0
73	**HAYWOOD**	0	1	1	2	0
73	**LINCOLN**	0	1	1	2	0
75	**YADKIN**	0	2	0	2	0
76	**PENDER**	0	1	5	1	0
77	**MCDOWELL**	0	1	1	1	0
78	**TRANSYLVANIA**	0	1	0	1	0
79	**PERSON**	4	0	0	1	0
80	**CAMDEN**	0	0	0	1	0
80	**CURRITUCK**	0	0	0	1	0
80	**MACON**	0	0	0	1	0
80	**POLK**	0	0	0	1	0
84	**DAVIE**	1	1	3	0	0
85	**CALDWELL**	0	0	1	0	0
85	**CHEROKEE**	0	0	1	0	0
87	**CARTERET**	0	4	0	0	0
88	**CHOWAN**	0	1	0	0	0
88	**JONES**	0	1	0	0	0
90	**PERQUIMANS**	2	0	0	0	0
91	**BERTIE**	1	0	0	0	0
91	**MONTGOMERY**	1	0	0	0	0
93	**ALEXANDER**	0	0	0	0	0
93	**ALLEGHANY**	0	0	0	0	0
93	**ASHE**	0	0	0	0	0
93	**CLAY**	0	0	0	0	0
93	**MITCHELL**	0	0	0	0	0
93	**SWAIN**	0	0	0	0	0
93	**TYRRELL**	0	0	0	0	0
93	**YANCEY**	0	0	0	0	0
	NC TOTAL	602	569	509	937	724

* Rank based on number of cases reported in 2007. If cases are equal, then rank based on previous year.

APPENDIX E: REFERENCES

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GLOSSARY

Acute HIV Testing	See *STAT*
ADAP	AIDS Drug Assistance Program - funding program through Title II of the Ryan White Care Act to provide for medications for the treatment of HIV disease. Program funds may also be used to purchase health insurance for eligible clients, and to pay for services that enhance access, adherence, and monitoring of drug treatments.
AIDS	Acquired Immune Deficiency Syndrome - late stage of HIV infection characterized by breakdown of the immune system. Individuals with documented HIV infection will be reported as AIDS cases if they meet certain immunologic criteria (CD4 T-lymphocyte count <200 or <14%) or if the patient becomes ill with one of 26 AIDS-defining conditions.
ART	Anti-Retroviral Therapy - indicates that a patient is on any antiretroviral drug or drugs for HIV infection.
average	See *Mean*
BRFSS	Behavioral Risk Factor Surveillance System - a collaborative project of the Centers for Disease Control and Prevention (CDC), and US 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 *HRSA*, *CADR*.
CBO	Community-Based Organization

CD4 T-lymphocyte	Type of white blood cell that coordinates a number of important immunologic functions. These cells are the primary targets of HIV. Severe declines in the number of these cells indicate progression of an immunologic disease. When the count of these cells reaches <200/uL or 14%, the HIV-infected patient is classified as having progressed to AIDS.
CDC	US Centers for Disease Control and Prevention - agency under the US 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 *Haemophilus ducreyi*. Chancroid is a reportable disease in North Carolina.
chlamydia	Infection with *Chlamydia trachomatis* bacteria. To meet the surveillance case definition, all reported chlamydia cases must be confirmed by laboratory diagnosis: either isolation of *C. trachomatis* by culture or by detection of antigen or nucleic acid. Chlamydial infection is a reportable disease in North Carolina.
congenital	Of or relating to a condition that is present at birth (example: congenital syphilis).
Ct	Infection with *Chlamydia trachomatis*. See *chlamydia*.
CTS	Counseling and Testing System - a national CDC program administered in North Carolina by the Division of Public Health to provide HIV counseling and testing services at 149 local health departments and CBOs across the state. All patients are asked a series of questions on reasons for testing and risk behaviors. All samples are sent to the State Laboratory of Public Health for testing and data entry. State results are aggregated with national data. See *NTS*, *TTS*.
CY	Calendar Year (January 1 to December 31)
denominator	The divisor in a fraction. (In the fraction 3/4, 4 is the denominator). With respect to disease rates and proportions, it is generally the number of people in the population at-risk for having the disease (a smaller number, found in the numerator, actually will have the disease).
DIS	Disease Intervention Specialists - 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.
eHARS	Electronic HIV/AIDS Reporting System - the computer data system developed by the CDC that houses information on HIV-infected persons at the NCssssssssssssssssss Communicable Disease Branch.
EIA	See *ELISA*
EL	See *Early Latent Syphilis*
ELISA	Enzyme-linked immunoassay - initial screening test for HIV infection. Highly sensitive. If this test is positive, the sample will then be tested with the more specific confirmatory test the Western Blot. If this test is negative, the result is returned as negative. Alternative name: EIA.
EMA/EMSA	Eligible Metropolitan (Statistical) Area - the geographic area, based on population and cumulative AIDS cases, eligible to receive Title I Ryan White CARE Act and HOPWA program funds.
epidemiology	The study of the distribution and determinants of health-related events in specified populations, and the application of this study to the control of health problems. (Source: J. Last, *A Dictionary of Epidemiology*, 1995)
FDA	Food and Drug Administration
FFY	Federal Fiscal Year – runs October 1 through September 30
GC	Infection with *Neisseria gonorrhoeae*. See *gonorrhea*.
Genital Herpes	A common sexually transmitted disease resulting from infection with HSV types 1 or 2 (see *HSV*) and characterized by painful genital ulcers. Genital herpes is not a reportable disease in North Carolina. See *HSV*.

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

HIV Test	See *ELISA, WB*
HOPWA	Housing Opportunities for Person with AIDS- A program from the US 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 US 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 *genital herpes.*
IDU	Injecting drug user. Alternative name IVDU - Intravenous drug user.
incidence	Measurement of the number of new cases of disease that develop in a specific population of individuals at risk over a specific period of time (often a year). With respect to HIV, the closest we can come to this is reporting of newly diagnosed cases which may or may not represent newly infected individuals. Incidence measures are most often used to assess the success of prevention efforts and the progress of epidemics. See *HIV*.
IVDU	Intravenous drug user. Alternative name: IDU - injecting drug user.
KFF	Kaiser Family Foundation (www.kff.org)
late syphilis	Syphilis infections that have progressed beyond one year past the initial infection. Patients in late syphilis are not considered to be infectious to sexual partners, but women can pass the infection to their newborns well into the late stages. For the purposes of this report, “late syphilis” includes late latent syphilis (asymptomatic, infection probably > 1 year prior), latent of unknown duration (asymptomatic, unable to document likely infection in last year), late with symptoms, and neurosyphilis.

LGV	Lymphogranuloma venereum - a sexually transmitted disease caused by infection with specific serovars of *Chlamydia trachomatis* that are distinct from the serovars that cause reportable chlamydial infections. LGV is a reportable disease in North Carolina.
MA	Metropolitan area – a geographical designation defined by the federal Office of Management and Budget (OMB) for federal statistical activities. See *OMB*.
mean	Mathematical average. Example: the mean of 3 numbers is the sum of the three numbers divided by three: (a+b+c)/3.
Medicaid	A federally-aided, state-operated and administered program authorized by Title XIX of the Social Security Act which provides medical benefits for qualifying low-income persons in need of health and medical care. 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 *Neisseria gonorrhoeae* or *Trichomonas vaginalis*. MPC is not a reportable condition in North Carolina.
MSM	Men who have sex with men.
MSM/IDU	Men who have sex with men and also report injecting drug use.
n	Number - used to designate the number of people or number of cases.
NAAT	Nucleic Acid Amplification Testing. See *STAT*.
NAIM	Native American Interfaith Ministry
NCCIA	North Carolina Commission on Indian Affairs
neurosyphilis	Devastating stage of syphilis affecting some untreated patients. Outcomes include shooting pains in the extremities, blindness, deafness, paralysis, and death.
NGU	Nongonococcal urethritis - a clinical diagnosis of exclusion involving evidence of urethral infection or discharge and the documented absence of *N. gonorrhoeae* infection. The syndrome may result from infection with a number of agents, though most cases are likely to be caused by *C. trachomatis*. NGU is a reportable condition in North Carolina.
NHSDA	National Household Survey of Drug Abuse - national survey of drug use behavior collected by in-person interviews. Conducted by 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 US 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 NC 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 *CTS.*
numerator	The dividend in a fraction. (In the fraction 3/4, 3 is the numerator). With respect to disease rates and proportions, it is generally the number of people with the disease.
OMB	Office of Management & Budget – 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 *MA.*
opthalmia neonatorum	*N. gonorrhoeae* infection of the eyes of an infant during birth when mother has gonorrhea. Opthalmia neonatorum is a reportable condition in North Carolina.
P & S	Primary and secondary syphilis cases. These earliest stages of syphilis are the most highly infectious and also represent cases acquired within the last year. They are often reported separately from other stages of syphilis because they most accurately represent disease incidence and have the greatest impact on continued spread of the disease.
PCP	*Pneumocystis carinii* pneumonia. One of the 26 AIDS-defining opportunistic infections.
PCRS	Partner Counseling & Referral Services - conducted by the Communicable Disease Branch's Field Services Unit for persons newly diagnosed with HIV or syphilis. Data collected are maintained in local STD-MIS. See *Appendix A: Data Sources.*
percentage	A type of proportion in which the denominator is set at 100. For example, if 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 *Appendix B: Special Notes* for more information.
prevalence	Measurement of the number of total cases of disease that exist in a specific population of individuals at risk at a specific instant in time (note that an “instant in time” can be a single day or even a whole year). With respect to HIV, this is generally presented as the number of persons living with HIV. Prevalence measures are most often used to assess the need for care and support services for infected persons.
primary syphilis	Earliest stage of syphilis, characterized by the presence of one or more painless ulcers and lasting 10-90 days. At this stage the patient is highly infectious to sexual partners. If untreated, the infection will proceed to secondary syphilis.
proportion	A type of ratio in which the numerator is included in the denominator. For example, in an at-risk population of 50, if three people have a disease, this can be expressed as the proportion 3/50.
PSEL	Primary, secondary, and early latent syphilis cases. See *early syphilis*.
rate	A proportion that specifies a time component. For example, the number of new cases of disease that developed over a certain period of time divided by the eligible at-risk population for that time period. Note: many diseases are rare enough that if they were expressed as percentages, the numbers would be very small and confusing. For this reason, the denominators for disease rates are often converted to 100,000 so that the numerators can be expressed in terms of whole numbers.

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: Part B	Federal grants to all 50 states, the District of Columbia, Puerto Rico, Guam, the US Virgin Islands, and eligible US Pacific Territories and Associated Jurisdictions to provide health care and support services for people living with HIV/AIDS. Part B (formerly Title II) funds may be used for a variety of services, including home and community-based services, continuation of health insurance coverage, and direct health and support services. Also see *ADAP*. (source of definition: kff.org)
SAMHSA	Substance Abuse and Mental Health Services Administration – an agency within the US 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 US Bureau of the Census to provide the public with data about North Carolina and its component geographic areas.
secondary syphilis	Second stage of syphilis, characterized by a rash that does not itch, swollen glands, fatigue, and other symptoms. Patients at this stage are highly infectious to sexual partners. Symptoms generally appear about 4-10 weeks after the appearance of primary syphilis lesions. If left untreated, the disease will progress to early latent syphilis after 3-12 weeks.

sensitivity	Refers to the ability of a screening test to detect disease if disease is truly present. A highly sensitive test is likely to have very few false negatives but probably will have some false positives. This is why positives found with a highly sensitive test will often be tested again using a highly specific test (see *specificity*). Example: ELISA test for HIV.
SEE	Syphilis Elimination Effort (formerly Syphilis Elimination Project) - CDC-funded project that provides funding to the 28 US counties that accounted for over 50 percent of all US 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.
SERT	Syphilis Epidemic Response Team (Syphilis-ERT). Team formed in response to the sustained increase in syphilis cases seen in North Carolina during 2009 and 2010.
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 *sensitivity*). 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 NC 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 *Treponema pallidum*. See: *primary syphilis, secondary syphilis, early latent syphilis, early syphilis, latent syphilis*.
TB	Tuberculosis (infection with *Mycobacterium tuberculosis*).
Trichomoniasis	A common sexually transmitted disease resulting from infection with the parasite *Trichomonas vaginalis*. Trichomoniasis is not a reportable disease in North Carolina.
TTS	Traditional Test Sites - part of the NC Counseling and Testing System's (CTS) HIV testing program. The 135 TTS sites include local health departments and some community based organizations (CBOs). See *CTS*.
VARHS	Variant, atypical, and resistant HIV surveillance (VARHS) evaluates the prevalence of HIV drug resistance and HIV-1 subtypes among individuals newly diagnosed with HIV through a process of gene amplification and genotyping (genetic sequencing).
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.

INDEX

North Carolina Geographic Regions