Epidemiologic Profile
for
HIV/STD Prevention & Care Planning

December 2012

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

Please direct any comments or questions to:

Communicable Disease Surveillance Unit
North Carolina Communicable Disease Branch
1902 Mail Service Center
Raleigh, North Carolina 27699-1902
919-733-7301

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
for
HIV/STD Prevention &
Care Planning

December 2012

This document is for the 2012-2013 planning year and is based on data available through 2011

NCPH
North Carolina
Public Health

GET REAL.
GET TESTED.

State of North Carolina
N.C. Department of Health and Human Services
Division of Public Health
Laura Gerald, M.D., M.P.H., State Health Director

www.ncdhhs.gov

North Carolina
Department of Health and Human Services
Division of Public Health
Epidemiology Section

Communicable Disease Branch

Evelyn Foust, MPH, Head
Jacquelyn Clymore, MS, State HIV/STD Director

Contributing Editors:
Jenna Waggoner
Jason Maxwell
Janet Alexander
Lynne Sampson
John Barnhart
Cindi Snider
Del Williams
Rob Pace
Theresa Rubin
Braiden Eilers

December 2012

Funding to print this document was provided by the Centers for Disease Control and Prevention Cooperative Agreement #5U62PS001035. Its contents are solely the responsibility of the authors and do not necessarily represent the views of the Centers for Disease Control and Prevention

Table of Contents

EXECUTIVE SUMMARY

In 2011, 1,563 new individuals were diagnosed and reported with HIV disease (HIV/AIDS) in North Carolina (data as of 07/02/2012). This number represents a slight increase from the number of cases diagnosed and reported in 2010. Although new diagnoses have increased, they may not represent a true increase in they continue to add to the population of persons in the state living with HIV which is estimated to be about 36,500 people, including those unaware of their status. In 2011, of the 45 states and six territories reporting new HIV diagnoses to the CDC, North Carolina ranked 12th with a rate of 17.8 per 100,000 population (slightly higher than the overall US rate, 16.3 per 100,000). Among the same 45 states and six territories, in 2009, North Carolina ranked 16th in the rate of adults and adolescents living with an HIV infection (N.C. rate = 304.0 per 100,000; U.S. rate = 327.6 per 100,000). Looking at a later stage of disease, in 2010 among all 50 states and six territories, the rate of AIDS diagnoses in North Carolina was 17th highest in the country, at 10.4 per 100,000 (slightly lower than the national rate of 14.0 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 ranked as the 10th most populous state in the nation as of 2011 and has experienced rapid growth. In 2010, North Carolina had the 18th highest non-white population and its foreign born population increased 49 percent from 2002 through 2010. In 2010, the racial/ethnic makeup of the state was about 22 percent black or African American (non-Hispanic), 66 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 1 percent of the state’s population, this group represents the largest population of American Indians in the eastern part of the nation. The state was ranked 37th in the nation for per capita income in 2009, with 31 percent of its child population (0-18 years), 15 percent of the elderly (65+), and 19 percent of the 19-64 year old population at or below the federal poverty level (2009-2010).

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 2011 adult/adolescent rate of new HIV diagnoses for non-Hispanic blacks (62.8 per 100,000) was nearly ten times greater than for whites (6.3 per 100,000) and the rate of new diagnoses for Hispanics (19.1 per 100,000) was three greater than that for whites. American Indians experienced a rate twice that of whites (12.9 per 100,000). The highest rate of new HIV reports was found among adult/adolescent black males (99.3 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 (31.9 per 100,000) was about 19 times higher than that for white non-Hispanic females (1.7 per 100,000). The ratio of male-to-female HIV disease cases diagnosed has risen from 2.5 in 2007 to 3.2 in 2011. Much of the increase in HIV disease cases over the past few years has been attributed to fewer reports among females.

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 2011, 77 percent of new adult and adolescent HIV disease cases for males were attributed to men who have sex with men (MSM), 4 percent to injecting drug use (IDU), 2 percent to MSM who also inject drugs (MSM/IDU); and 18 percent were attributed to heterosexual sex. For adult and adolescent females, heterosexual sex accounted for 92 percent of HIV disease cases in 2011, while injecting drug use accounted for 8 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 2011, MSM (including MSM/IDU) accounted for 90 percent of white non-Hispanic male HIV reports, 75 percent of black non-Hispanic male reports and 75 percent of reports for other minority males.

Heterosexual sex as a primary risk accounts for 35 percent of all (male and female) 2011 adult/adolescent HIV disease reports and was the principal risk for females (92%), especially younger females (100% of likely female adolescent exposures). Heterosexual HIV disease cases for 2011 were higher among minority males (20%) than among white males (6%). Indications of heterosexual risk-taking behavior can be found in the high rates of infection for other sexually transmitted diseases.

Injecting drug use accounted for about 4 percent of male adult/adolescent HIV disease cases in 2011 and accounted for about 8 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 11 percent of living HIV cases had IDU as the hierarchical risk.

Preliminary evaluations indicate that four race/gender/transmission risk categories accounted for 76 percent of all new diagnoses in 2011. These categories include black non-Hispanic MSM (502 cases; 32% of all cases), black non-Hispanic heterosexual women (264 cases; 17% of all cases), white non-Hispanic MSM (248 cases; 16% of all cases), and black non-Hispanic heterosexual men (171 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 MSAs that are found primarily along the interstate highways of I-40, I-85, and I-95. Among MSAs, 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 percent of total living cases) as of Dec. 31, 2011. Over 50 percent of new HIV diagnoses in 2011 were found in five of 100 counties including Mecklenburg, Wake, Guilford, Cumberland, and Forsyth.

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.

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 N.C. Department of Health and Human Services' (DHHS) Communicable Disease Branch, which is part of the Division of Public Health (NCDPH). 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 (CDB). Along with prevention activities, the 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 Branch's 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)

Special Studies (Chapter 4)

This page is intentionally blank.

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

HIGHLIGHTS

- In 2011, North Carolina was the 10th most populous state in the nation, with an estimated population of 9,669,244.

- 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 49 percent from 2002 to 2010.

- 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.

- From 2002 to 2010, the estimated Hispanic/Latino population in North Carolina increased by 77.3 percent.

- In 2010, North Carolina’s per capita income of $36,164 was 37th in the nation, or 86.8 percent of the national average of $41,663.

- From 2009 to 2010, 22 percent of North Carolinians were living at or below the federal poverty level (FPL); 42 percent of the overall population is considered low income (living at or below 199% FPL).

- From 2009 to 2010, 24 percent of the 19 to 64 year old population in North Carolina was uninsured.

- About 19 percent of the state’s population was eligible for Medicaid coverage at some point during 2009.

- Approximately 70 percent of the state’s population lived in urban areas in 2010.

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 United States Census, North Carolina was the 10th most populous state and 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 residents. Only five other states (Arizona, Idaho, Nevada, Texas, and Utah) had a faster population growth rate. From 2008 to 2009, North Carolina ranked 3rd for single year population growth. The 2011 North Carolina *provisional* population estimate was 9,669,244, with county populations ranging from 4,342 (Tyrrell) to 940,697 (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, Pitt, Davidson and Iredell). From July 2010 to July 2011, there were 120,643 births and 78,570 deaths. The average life expectancy for North Carolinians was 77.8 years (State Center for Health Statistics). Map 1 displays the population distribution among the counties in North Carolina for 2010 (Appendix A, pg. A-3).

The most updated gender and age-specific population information available is for the year 2010, so the 2010 population is used as a substitute for 2011 to analyze the HIV disease rates in this profile. In 2010, North Carolina was the 10th most populous state in the United States with an estimated population of 9,535,483 (US Census 2010 population), representing an 18.5 percent increase from that of year 2000.

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 STD infections 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.

In 2010, the median age for people living in North Carolina was 37 years old, with 25.3 percent 18 years and younger, and 12.9 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

2010 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 11th in the nation in 2010 for people under 18 years of age.

Table 1.1. North Carolina bridged-race population estimates by age group, 2010

	Male		Female		Total	
Age	Population	Percent	Population	Percent	Population	Percent
0-12 years	843,667	8.8%	807,813	8.5%	1,651,480	17.3%
13-14 years	126,899	1.3%	120,710	1.3%	247,609	2.6%
15-19 years	338,271	3.5%	321,320	3.4%	659,591	6.9%
20-24 years	336,648	3.5%	324,925	3.4%	661,573	6.9%
25-29 years	311,499	3.3%	315,537	3.3%	627,036	6.6%
30-34 years	304,807	3.2%	314,750	3.3%	619,557	6.5%
35-39 years	324,681	3.4%	335,162	3.5%	659,843	6.9%
40-44 years	329,652	3.5%	337,656	3.5%	667,308	7.0%
45-49 years	341,432	3.6%	357,321	3.7%	698,753	7.3%
50-54 years	323,702	3.4%	346,191	3.6%	669,893	7.0%
55-59 years	285,244	3.0%	315,478	3.3%	600,722	6.3%
60-64 years	255,034	2.7%	283,005	3.0%	538,039	5.6%
65+ years	523,956	5.5%	710,123	7.4%	1,234,079	12.9%
Total	4,645,492	48.7%	4,889,991	51.3%	9,535,483	100.0%

National Center for Health Statistics (NCHS), Bridged-Race Population Estimates, January 2012

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 regions is displayed on the inside back cover.

Table 1.2. North Carolina race/ethnicity proportions by gender and geographic region, 2010

		Western	Piedmont	Eastern	N.C.
	Race/Ethnicity	Pct.	Pct.	Pct.	Pct.
Male	White*	42.6%	31.5%	29.4%	32.3%
	Black*	2.3%	10.3%	13.4%	10.2%
	AI/AN*	0.5%	0.2%	1.4%	0.6%
	Asian/PI*	0.5%	1.6%	0.6%	1.1%
	Hispanic	3.1%	4.9%	4.2%	4.5%
	Total	49.0%	48.5%	49.0%	48.7%
Female	White*	45.4%	33.3%	30.2%	33.9%
	Black*	2.2%	12.0%	15.0%	11.6%
	AI/AN*	0.5%	0.2%	1.5%	0.6%
	Asian/PI*	0.5%	1.6%	0.7%	1.2%
	Hispanic	2.5%	4.4%	3.6%	3.9%
	Total	51.0%	51.5%	51.0%	51.3%
Total	White*	88.0%	64.8%	59.6%	66.2%
	Black*	4.5%	22.3%	28.4%	21.8%
	AI/AN*	1.0%	0.4%	3.0%	1.2%
	Asian/PI*	1.0%	3.2%	1.3%	2.4%
	Hispanic	5.5%	9.3%	7.8%	8.4%
	Total	100.0%	100.0%	100.0%	100.0%

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

Race/Ethnicity and Gender

The racial and ethnic differences of a population play an important role in interpreting gaps in access to health care among groups, and these differences are highlighted through surveillance and shown to be especially true in terms of HIV disease morbidity and intervention. Previous HIV disease surveillance showed that HIV disproportionately affects ethnic minorities in North Carolina. North Carolina has the nation's 18th largest non-white population (3,226,366 people in 2010), with noticeable variations in the demographic composition from region to region. Usually, non-white minorities have poorer health conditions and less access to health care. In 2010, 16 counties had populations consisting of more than 50 percent non-white residents (Robeson: 72.5%; Hertford: 65.3%; Bertie: 65.1%; Edgecombe: 62.0%; Warren: 61.7%; Northampton: 60.8%; Halifax: 60.3%; Hoke: 58.0%; Vance: 57.6 %; Durham: 57.1%; Washington: 54.2%; Anson: 53.7%; Scotland: 53.2%; Greene: 52.7%; Cumberland: 51.4% and Wilson: 50.1%). 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 2010 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 2010.

Blacks

In 2010, 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 eight counties in which blacks comprise more than 50 percent of the total population (Bertie 62.9 %, Hertford 60.9%, Northampton 58.8%, Edgecombe 57.7%, Halifax 53.6%, Warren County 52.9%, Vance County 50.2%, and Washington County 50.1%). Map 3 (Appendix A, pg. A-5) displays the proportion of black population in 2010 by county.

Hispanics

From 2002 to 2010, the estimated Hispanic/Latino population in North Carolina increased by 77.3 percent, from 451,095 to 800,120 residents. Hispanics represented 8.4 percent of the population of the. 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 (20.6%), followed by Lee County (18.3%), Sampson County (16.5%), and Greene County (14.3%).

American Indians

American Indians represent 1.2 percent of the state 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, Scotland, Swain, Jackson, and Mecklenburg counties. Map 4 (Appendix A, pg. A-6) displays the proportion of the American Indian population in 2010 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 49 percent from 2002 to 2010 (480,248 to 719,137). In 2006, North Carolina ranked 15th nationally for the admitted number of immigrants from other countries. In 2009, 30.2 percent of the foreign-born populations in North Carolina were naturalized citizens, while 69.8 percent were not citizens. The various regions of birth are displayed in Table 1.4. The majority (57.6%) of the foreign-born population comes from Latin America, with the other 22.7 percent from Asia, 10.5 percent from Europe, 6.7 percent from Africa, 2.2 percent from North America, and 0.4 percent from Oceania.

Table 1.3. North Carolina bridged-race population estimates by race/ethnicity, 2010

	Male		Female		Total	
Race/Ethnicity	Population	Percent	Population	Percent	Population	Percent
White*	3,077,606	66.2%	3,231,511	66.1%	6,309,117	66.2%
Black*	975,153	21.0%	1,107,560	22.6%	2,082,713	21.8%
AI/AN*	56,005	1.2%	59,953	1.2%	115,958	1.2%
Asian/PI*	108,993	2.3%	118,582	2.4%	227,575	2.4%
Hispanic	427,735	9.2%	372,385	7.6%	800,120	8.4%
Total	4,645,492	100.0%	4,889,991	100.0%	9,535,483	100.0%

* non-Hispanic; AI/AN=American Indian/Alaska Native, PI=Pacific Islander
National Center for Health Statistics (NCHS), Bridged-Race Population Estimates, January 2012

The majority of the 2010 foreign-born population was male (52.1%), and the majority (50%) of the foreign-born population is between ages 25 to 44 years (Table 1.5). About 85 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, 2010

Region	2010	
	Estimated number	Percentage
Europe	75,229	10.5%
Asia	162,964	22.7%
Africa	48,472	6.7%
Oceania	2,555	0.4%
Latin America	413,888	57.6%
North America	16,029	2.2%
Total	719,137	100.0%

Source: U.S. Census Bureau, 2010 American Community Survey

Table 1.5. Gender and age distribution of foreign-born and total population in N.C., 2010

Demographics		N.C. population	Foreign-born
		N=9,535,483	N=719,137
Gender	Male	48.7%	52.1%
	Female	51.3%	47.9%
Age	Under 5 years	6.6%	0.9%
	5–17 years	17.3%	9.0%
	18–24 years	10.0%	12.2%
	25–44 years	27.0%	50.3%
	45–54 years	14.2%	13.7%
	55–64 years	12.0%	7.5%
	65–74 years	7.4%	3.9%
	75 + years	5.6%	2.6%

Source: U.S. Census Bureau, 2010 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 with a metro area containing a core urban area population of 50,000 or more, and a micro area containing a core urban area population of at least 10,000 and less than 50,000 (U.S. Census Bureau, Population Division 2012). 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 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 (Anson, Cabarrus, Franklin, Gaston, Guilford, Johnston, Mecklenburg, Randolph, Rockingham, Union and Wake), are classified as large metropolitan areas, About 35 percent of the state’s 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 (57.5%) living in the large metropolitan areas, followed by Hispanics (41.4%). Similar proportions (around 34%) of all race/ethnic groups, except American Indians (18.0%), live in medium-sized metropolitan areas.

Data from the United States Census showed that in 2006, 65 percent of the general population of the nation lived in large metropolitan areas, 19 percent in medium-size metropolitan areas, and 17 percent in 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, 2010

Race/ Ethnicity	Large Metropolitan areas		Medium Metropolitan areas		Urban total	
	Population	Percent	Population	Percent	Population	Percent
White*	2,109,059	62.3%	2,240,862	67.5%	4,349,921	64.9%
Black*	801,520	23.7%	705,565	21.3%	1,507,085	22.5%
AI/AN*	12,903	0.4%	20,774	0.6%	33,677	0.5%
Asian, PI*	130,888	3.9%	71,301	2.1%	202,189	3.0%
Hispanic	331,886	9.8%	279,600	8.4%	611,486	9.1%
Total	3,386,256	35.5%	3,318,102	34.8%	6,704,358	70.3%

* non-Hispanic; AI/AN=American Indian/Alaska Native, PI=Pacific Islander
National Center for Health Statistics (NCHS), Bridged-Race Population Estimates, January 2012

Table 1.7. North Carolina population by race/ethnicity for rural areas, 2010

Race/ Ethnicity	Micro Metropolitan areas		Non-Metropolitan areas		Rural total	
	Population	Percent	Population	Percent	Population	Percent
White*	1,446,533	69.8%	512,663	67.6%	1,959,196	69.2%
Black*	403,963	19.5%	171,665	22.6%	575,628	20.3%
AI/AN*	66,685	3.2%	15,596	2.1%	82,281	2.9%
Asian, PI*	21,551	1.0%	3,835	0.5%	25,386	0.9%
Hispanic	133,671	6.5%	54,963	7.2%	188,634	6.7%
Total	2,072,403	21.7%	758,722	8.0%	2,831,125	29.7%

* non-Hispanic; AI/AN=American Indian/Alaska Native, PI=Pacific Islander
National Center for Health Statistics (NCHS), Bridged-Race Population Estimates, January 2012

In 2010, the 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 2011 per capita income for North Carolina is $36,164, or 86.8 percent of the national average of $41,663. This figure represents a 1.4 percent increase from 2010 and placed North Carolina 38th in the nation for personal per capita income and 5th 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 5.1 percent in January 2008 to 8.4 percent in December 2008 to 11.2 percent in December 2009, but went down slightly to 10.6 percent in December 2010 and back up to 10.4 percent in December 2011. These rates are all higher than the national unemployment rate which was 5.0 percent in January 2008,7.3 percent in December 2008,9.9 percent in December 2009, 9.4 percent in December 2010, and 8.5 percent in December 2011(Bureau of Labor Statistics, 2012).

According to Income, Earnings, and Poverty Data from the 2010 American Community Survey, 17.5 percent of North Carolinians were living under the poverty line as compared to 14.3 percent nationally. From 2009 to 2010, 22 percent of North Carolinians were below the federal poverty level (FPL); with an overall total of 42 percent of the population considered low income (199% or below FPL). The median household income in North Carolina was $43,275, a figure much lower than the national median of $50,022. North Carolina ranked 14th in percentage of people in poverty in 2009. Table 1.8 displays the individual poverty rate from 2009-2010 by age group for the state and the nation. Table 1.9 displays the 2009-2010 individual poverty rate by race/ethnicity for North Carolina and the United States. Map 7 (Appendix A, pg. A-9) displays the 2009 N.C. per capita income by county.

Table 1.8. North Carolina and U.S. poverty rates by age, 2009–2010

Age in Years	N.C.	U.S.
Children 0–18	31%	28%
Adults 19–64	19%	19%
Elderly 65+	15%	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 2009-2010 North Carolina24 percent of persons ages 19 to 64 years in North Carolina were uninsured (Kaiser Family Foundation, 2012). According to Kaiser, 44 percent of the non-elderly (19–64 year olds) uninsured had an income less than 100 percent of the FPL.

Table 1.9. North Carolina and U.S. poverty rates by race/ethnicity, 2009–2010

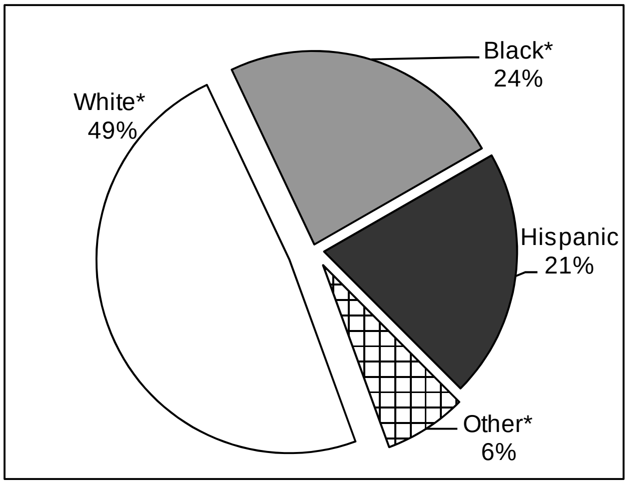
Race/Ethnicity	Individual Poverty Rate (% of each group at or below the federal poverty level)	
	N.C. (Pct.)	US (Pct.)
White*	13%	13%
Black*	33%	35%
Hispanic	40%	34%
Other*	25%	23%

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

Among the non-elderly (0–64 years old), 49 percent of those without health insurance in North Carolina were white, 24 percent were black, and 21 percent were Hispanic (Kaiser Family Foundation, 2012). The racial distribution of non-elderly uninsured people in North Carolina is displayed in Figure 1.1.

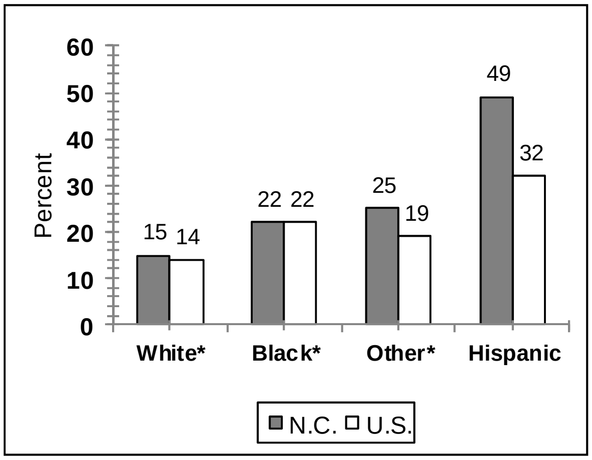
Figure 1.2 displays the uninsured rates by race/ethnicity for North Carolina as compared to the United States. In 2009 to 2010, 47 percent of Latinos or Hispanics, 22 percent of blacks, 13 percent of whites, and 25 percent of other races were uninsured in North Carolina (statehealthfacts.org. Kaiser 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. Percent of uninsured† by race/ethnicity, 2009–2010



†non-elderly *non-Hispanic

Figure 1.2. Rate of uninsured† by race/ethnicity, 2009–2010



†non-elderly *non-Hispanic

Education

According to the 2010 American Community Survey, 84.8 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 3 percent of high school students (grades 9–12) dropped out during the 2009 to 2010 school year (N.C. Public Schools Statistical Profile, 2010).

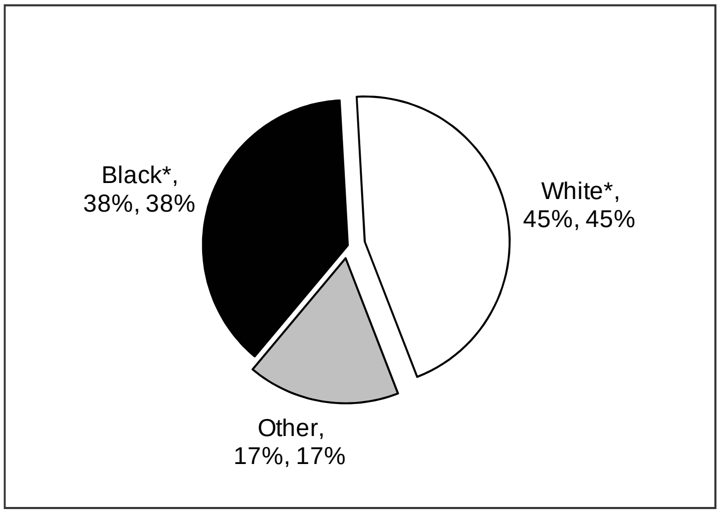
Internet access

The internet has become one of the most important vehicles 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 2008 were approximately $9 billion for approximately 1.7 million Medicaid recipients, giving an average of $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 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 total 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 most 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 2011. (For more information see http://www.ncdhhs.gov/dma/2008report/2008tables.pdf).

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



*non-Hispanic

This page is intentionally blank.

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

HIGHLIGHTS

- As of December 31, 2011, the cumulative number of individuals in North Carolina diagnosed with HIV infection was 40,010 people.

- An estimated 36,500 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, 2012.

- The total number of new HIV diagnoses in 2011 was 1,563 (16.4 per 100,000 population) and the number of new diagnoses of HIV infection among adults/adolescents was 1,556 (19.7 per 100,000 adult/adolescent population).

- In 2011, the rate of new HIV diagnoses for adult/adolescent blacks (62.8 per 100,000) was nearly 10 times greater than that for adult/adolescent whites (6.3 per 100,000). The rate of new HIV diagnosis for adult/adolescent Hispanics (19.1 per 100,000) was three times greater than for whites.

- The highest rate of new HIV diagnoses in 2011 was among adult/adolescent, black males (99.3 per 100,000). This rate was over eight times greater than the rate for adult/adolescent white males (11.3 per 100,000). The rate of new HIV diagnoses for adult/adolescent Hispanic males (27.7 per 100,000) was more than twice the rate among white males.

- The largest disparity in 2011 was for adult/adolescent black females; with a rate of new HIV diagnoses (31.9 per 100,000) that was nearly 19 times higher than that of white females (1.7 per 100,000). The rate among Hispanic adult/adolescent females (8.7 per 100,000) was more than five times the rate among white females.

- For 2011 adult/adolescent HIV disease cases, men who have sex with men (MSM) was the risk category in an estimated 60 percent of total cases (including 1 percent among MSM who also indicated injection drug use)., heterosexual transmission risk was estimated in 35 percent, and IDU was estimated in 5 percent of total cases

- In 2011, MSM (including MSM/IDU) accounted for 79 percent of new HIV disease cases among adult/adolescent males.

- In 2011, heterosexual contact accounted for about 92 percent and injecting drug use accounted for 8 percent of HIV disease cases for adult/adolescent females.

- Twenty percent (20%) of all newly diagnosed HIV disease cases in 2011 were among adolescent males ages 13 to 24 years old.

- In 2011, 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 2011 (n=339), followed by Wake County (n=153) and Guilford County (n=128).

- In 2011, Edgecombe County had the highest three-year average HIV disease rate (40.8 per 100,000), followed by Mecklenburg County (35.8 per 100,000), Wilson County (30.4 per 100,000), Durham County (29.9 per 100,000), Cumberland County (27.1 per 100,000), and Guilford County (25.5 per 100,000).

- In 2010, HIV/AIDS was listed as the 9th leading cause of death for North Carolina adults from 25 to 44 years old. The crude HIV disease death rate for blacks was about ten times higher than for whites (9.8 vs. 0.9 per 100,000) in 2011.

- From the beginning of the epidemic through December 2011 (1983–2011), 20,598 AIDS cases have been reported in North Carolina

- North Carolina ranked 10th among the 50 states in AIDS cases diagnosed in 2010 (the most recent year available for national comparisons) and 9th in the nation in 2009 for estimated persons living with AIDS.

- Eight hundred and thirty AIDS cases were diagnosed in North Carolina in 2011 (8.7 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.*

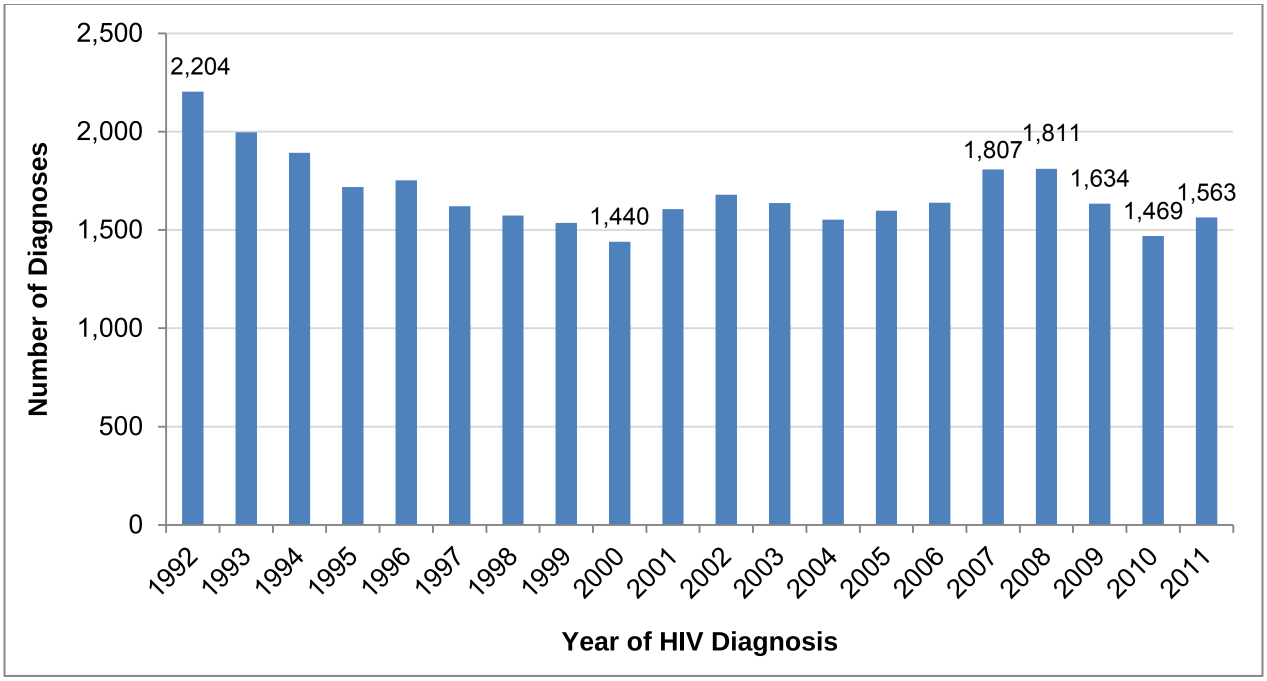
- *Unless otherwise noted, year refers to year of diagnosis, not year of report, as in previous publications.*

- *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 2011 by the year of HIV diagnosis for the individual. New diagnoses for 2011 show a slight increase from the total cases seen in 2010. The highest point in the HIV epidemic occurred in 1992 in North Carolina with 2,204 cases diagnosed and then moderated from 1995 to 2011 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 2011, 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.

Figure 2.1. HIV disease cases diagnosed in North Carolina, 1992–2011



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.

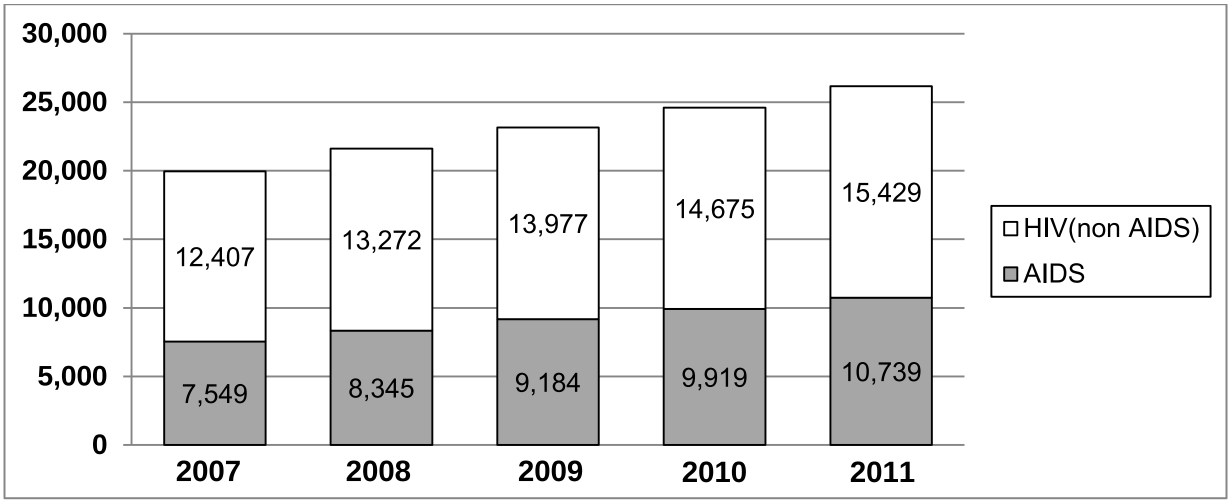
HIV DISEASE PREVALENCE

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, 2011, the cumulative number of HIV disease cases diagnosed in North Carolina is 38,397, of whom

26,168 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 2007 to 2011. 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 antiretroviral 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 state 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 26,168 people living in North Carolina with HIV/AIDS increases the estimated HIV disease prevalence in the state to approximately 36,500 people.

Figure 2.2. Persons (reported) living with HIV disease in N.C., 2007–2011*



*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, 2011. 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 12/31/2011 by selected demographics

	Males			Females			Total		
	No.	Pct.	Rate**	No.	Pct.	Rate**	No.	Pct.	Rate**
	18,397	70%	396.0	7,771	30%	158.9	26,168	100%	274.4
Race/Ethnicity									
White*	5,431	30%	176.5	1,250	16%	38.7	6,681	26%	105.9
Black*	11,337	62%	1162.6	6,000	77%	541.7	17,337	66%	832.4
AI/AN*	141	1%	251.8	65	1%	108.4	206	1%	177.7
Asian/PI*	92	1%	84.4	39	1%	32.9	131	1%	57.6
Hispanic	1,204	7%	281.5	340	4%	91.3	1,544	6%	193.0
Current Age									
0-12	32	0%	3.8	22	0%	2.7	54	0%	3.3
13-14	10	0%	7.9	12	0%	9.9	22	0%	8.9
15-19	69	0%	20.4	61	1%	19.0	130	0%	19.7
20-24	707	4%	210.0	178	2%	54.8	885	3%	133.8
25-29	1,245	7%	399.7	364	5%	115.4	1,609	6%	256.6
30-34	1,530	8%	502.0	596	8%	189.4	2,126	8%	343.1
35-39	1,571	9%	483.9	936	12%	279.3	2,507	10%	379.9
40-44	2,369	13%	718.6	1190	15%	352.4	3,559	14%	533.3
45-49	3,124	17%	915.0	1384	18%	387.3	4,508	17%	645.1
50-54	3,219	17%	994.4	1202	15%	347.2	4,421	17%	660.0
55-59	2,212	12%	775.5	921	12%	291.9	3,133	12%	521.5
60-64	1,294	7%	507.4	511	7%	180.6	1,805	7%	335.5
65+	1,000	5%	190.9	393	5%	55.3	1,393	5%	112.9

*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 47 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 2011

In 2011, 1,563 (16.4 per 100,000) individuals were newly diagnosed with HIV infection in North Carolina. Of the newly diagnosed persons, 1,556 of them were over 13 years old, which makes the rate of HIV infection among adults/adolescents 19.7 per 100,000 (Table 2.2.).

Gender and race/ethnicity

Among individuals diagnosed with HIV disease in 2011, 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 2011.

Table 2.2. N.C. adult/adolescent HIV disease cases by gender and race/ethnicity, 2011

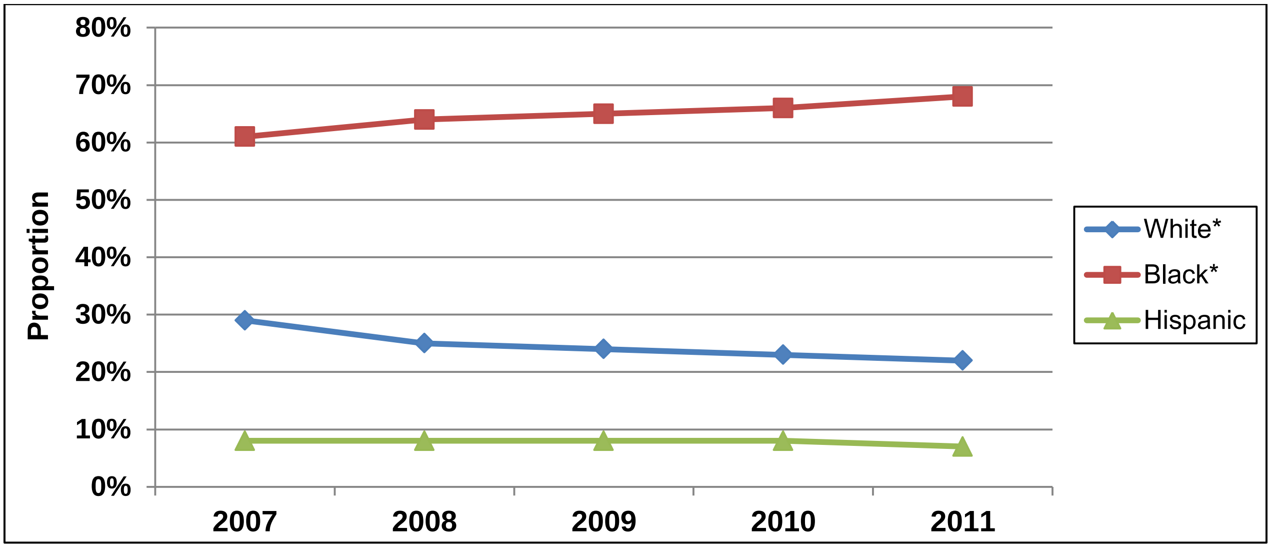
Race/ Ethnicity	Males			Females			Total		
	No.	Pct.	Rate**	No.	Pct.	Rate**	No.	Pct.	Rate**
White*	293	19%	11.3	46	3%	1.7	339	22%	6.3
Black*	764	49%	99.3	290	19%	31.9	1,054	68%	62.8
AI/AN*	8	1%	18.1	<5	---	---	12	1%	12.9
Asian/PI*	8	1%	9.3	<5	---	---	11	1%	6.1
Hispanic	84	5%	27.7	22	1%	8.7	106	7%	19.1
Unknown	32	2%	---	<5	---	---	34	2%	---
Total	1,189	76%	31.3	367	24%	9.0	1,556	100%	19.7

*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 2011, blacks made up the majority of cases (68%), followed by whites (22%), and Hispanics (7%). Over the previous five years (2007–2011), blacks have consisted of from 61 to 68 percent, whites 22 to 29 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 (99.3 per 100,000 adult/adolescent population), which was nearly nine times that for white males (11.3 per 100,000 adult/adolescent population; see Table 2.2). The HIV disease rate among adult/adolescent black females (31.9 per 100,000 adult/adolescent population) was nearly 19 times higher than the rate for adult/adolescent white females (1.7 per 100,000), which represented the largest disparity noted within gender and race/ethnicity categories.

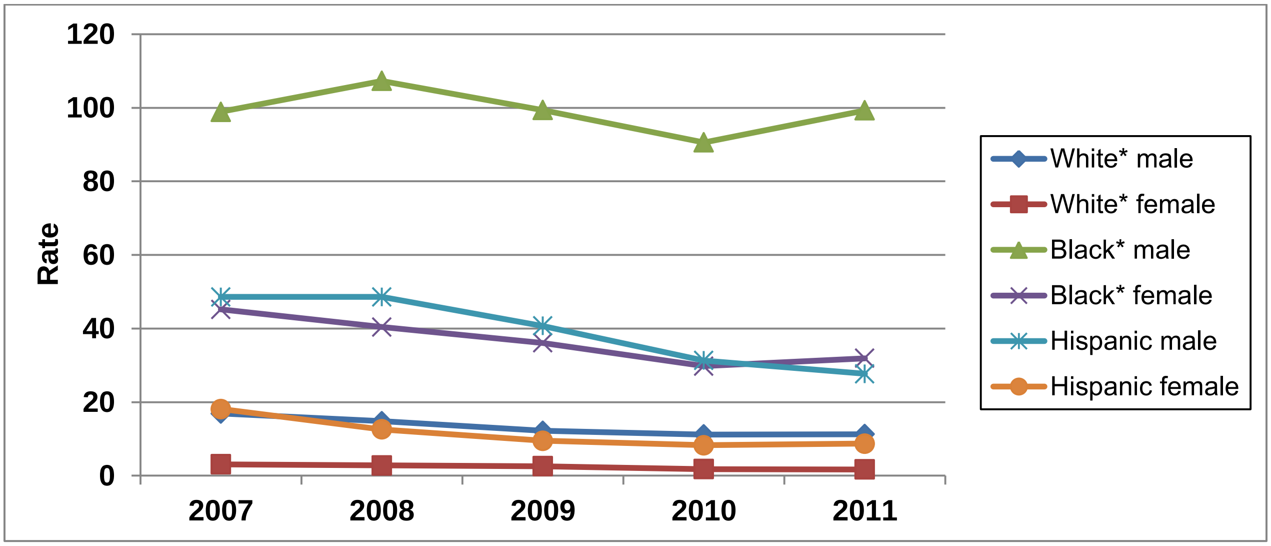
Disparities also existed for Hispanics as compared to whites. The rate for adult/adolescent Hispanic men (27.7 per 100,000) was more than twice the rate for white men, and Hispanic males ranked second highest among the gender and race/ethnicity rates. The rate for adult/adolescent Hispanic women (8.7 per 100,000) was more than five times that for white women. The HIV disease rate for American Indian males (18.1 per 100,000 was 1.5 times the rate for white men, while the rate among Asian/Pacific Islander men was slightly less than that for whites. Figure 2.3 shows that the HIV disease proportion by race has changed slightly over the last five years, with blacks representing an increasing proportion of cases (from 61% in 2007 to 68% in 2011). Figure 2.4 shows the gender and race/ethnicity (for whites, blacks, and Hispanics) specific HIV disease rates. In general, HIV disease rates have decreased for all groups. While initial case rates increased slightly for black males and females in 2011, we are still in the process of evaluating all 2011 HIV reports for potential interstate duplicate resolution.

Figure 2.3. Adult/adolescent HIV disease proportions by race/ethnicity, 2007–2011



*non-Hispanic

Figure 2.4. Adult/adolescent HIV disease rates by race/ethnicity and gender, 2007–2011



*non-Hispanic

Age distribution

Most HIV disease diagnoses in 2011 were for adults and adolescents, with less than 1 percent (n=7) 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 2011 (Table 2.3).

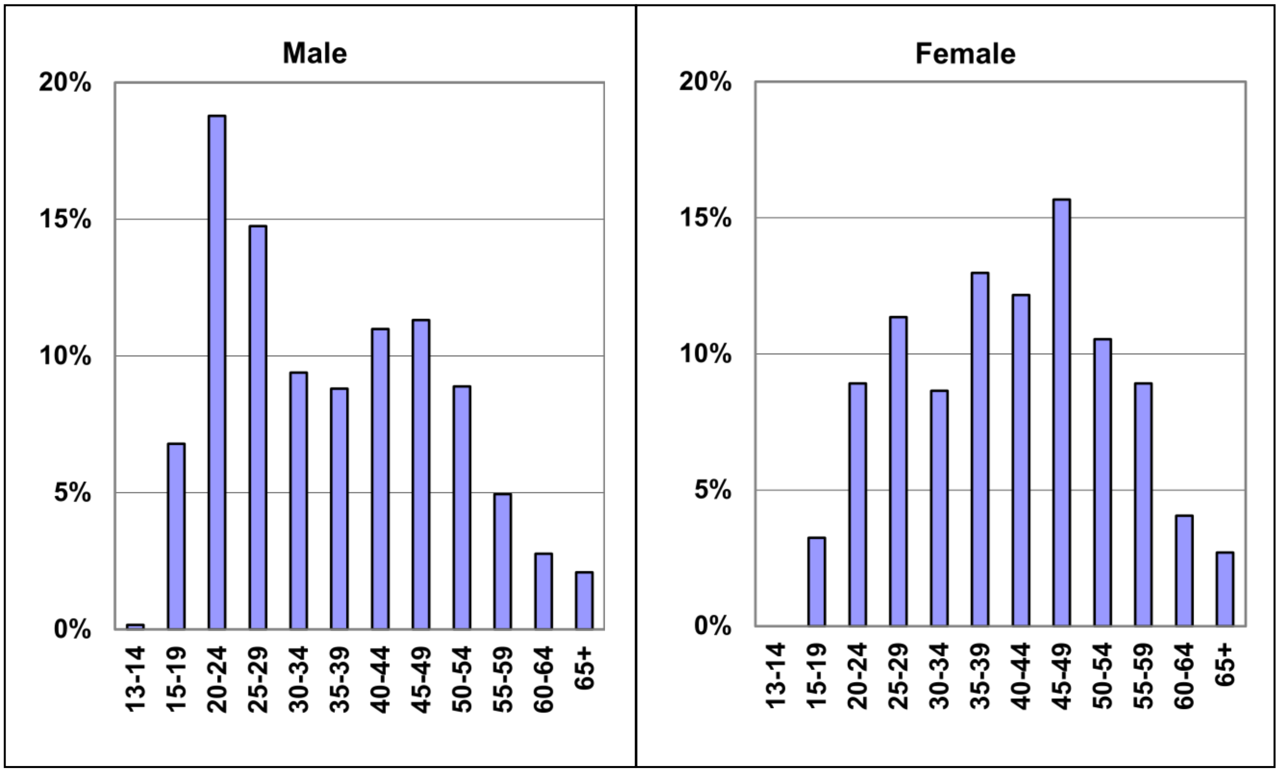
Figure 2.5 displays the difference of ages between males and females diagnosed with HIV disease in 2011. More males between ages 20 to 29 years (34%) were diagnosed, while proportionately more females between ages 35 to 39 years (13%) and 45 to 49 years (16%) were diagnosed. The difference of ages at 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. Diagnoses among older women may represent existing infections previously undiagnosed.

Table 2.3. North Carolina HIV disease cases by age group and gender, 2011

Age	Males			Females			Total		
	No.	Pct.	Rate*	No.	Pct.	Rate*	No.	Pct.	Rate*
0-12	4	0.3%	0.5	3	0.2%	0.4	7	0.4%	0.4
13-14	2	0.1%	1.6	0	0.0%	0.0	2	0.1%	0.8
15-19	81	5.2%	23.9	12	0.8%	3.7	93	6.0%	14.1
20-24	224	14.3%	66.5	33	2.1%	10.2	257	16.4%	38.8
25-29	176	11.3%	56.5	42	2.7%	13.3	218	13.9%	34.8
30-34	112	7.2%	36.7	32	2.0%	10.2	144	9.2%	23.2
35-39	105	6.7%	32.3	48	3.1%	14.3	153	9.8%	23.2
40-44	131	8.4%	39.7	45	2.9%	13.3	176	11.3%	26.4
45-49	135	8.6%	39.5	58	3.7%	16.2	193	12.3%	27.6
50-54	106	6.8%	32.7	39	2.5%	11.3	145	9.3%	21.6
55-59	59	3.8%	20.7	33	2.1%	10.5	92	5.9%	15.3
60-64	33	2.1%	12.9	15	1.0%	5.3	48	3.1%	8.9
65+	25	1.6%	4.8	10	0.6%	1.4	35	2.2%	2.8
Total	1,193	76.3%	25.7	370	23.7%	7.6	1,563	100.0%	16.4

* per 100,000 population

Figure 2.5. Percentage of adult/adolescent HIV disease cases by age and gender, 2011



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 (39%; includes presumed heterosexual). 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 (26%) of cases remained assigned as no identified risk.

Table 2.4. Adult/adolescent HIV disease cases by transmission category, NIR* included, 2011

Exposure category	Males		Females		Total	
	No.	Pct.	No.	Pct.	No.	Pct.
MSM	727	61.1%	---	---	727	46.7%
IDU	35	2.9%	16	4.4%	51	3.3%
MSM/IDU	17	1.4%	---	---	17	1.1%
Heterosexual	67	5.6%	81	22.1%	148	9.5%
Presumed heterosexual	101	8.5%	105	28.6%	206	13.2%
NIR*	242	20.4%	165	45.0%	407	26.2%
Total	1,189	100.0%	367	100.0%	1,556	100.0%

*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 2011, MSM (including MSM/IDU; men who have sex with men and inject drugs) were estimated to represent about 60 percent of all HIV disease cases. Heterosexual transmission risk represented about 35 percent of all HIV disease cases and IDU represented about 5 percent. 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.***

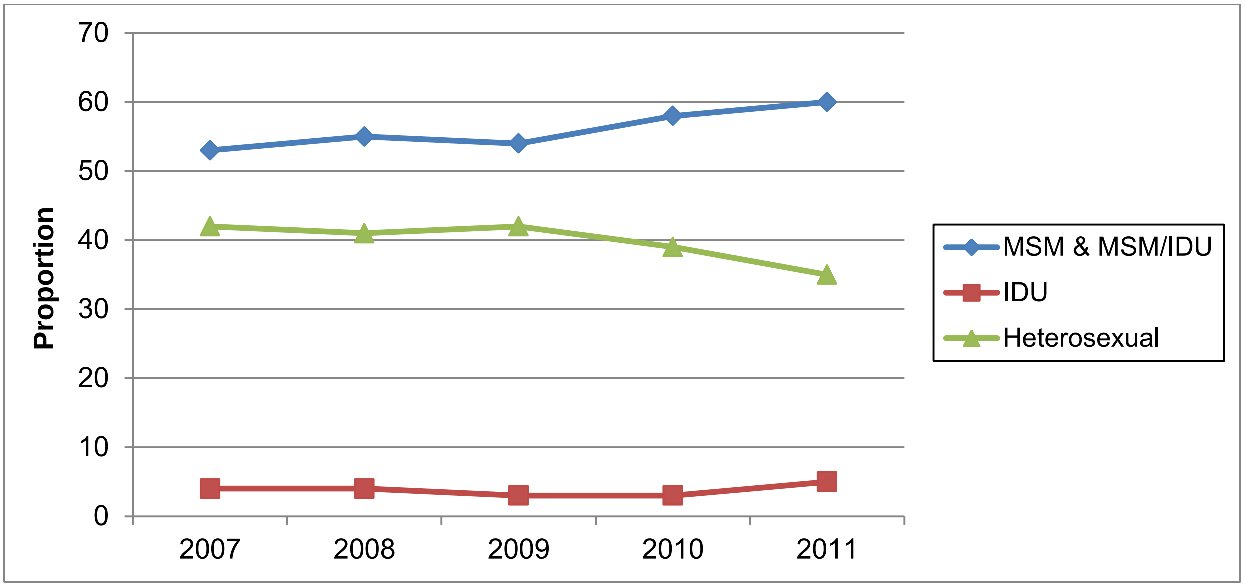
Table 2.5. Adult/adolescent HIV disease cases by transmission category, NIR* redistributed, 2011

Exposure Category	Males		Females		Total	
	No.	Pct.	No.	Pct.	No.	Pct.
MSM	913	77%	---	---	913	59%
IDU	44	4%	29	8%	73	5%
MSM/IDU	21	2%	---	---	21	1%
Heterosexual	211	18%	338	92%	549	35%
Total	1,189	100%	367	100%	1,556	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 2007 to 2011, MSM have been the leading mode of transmission, increasing from 53 percent in 2006 to 57 percent in 2011 (7% increase). During the same time period, IDU transmission increased 3 percent and heterosexual transmission decreased 17 percent.

Figure 2.6. Proportion of HIV disease* cases by mode of transmission, 2007–2011 (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 (including MSM/IDU) accounted for about 78 percent of HIV disease cases diagnosed in 2011; heterosexual contact cases accounted for about 18 percent of cases; and IDU cases accounted for about 3 percent. For females, heterosexual contact accounted for about 92 percent of cases and IDU about 8 percent.

Figure 2.7. Adult/adolescent females HIV disease cases, 2011 N=367

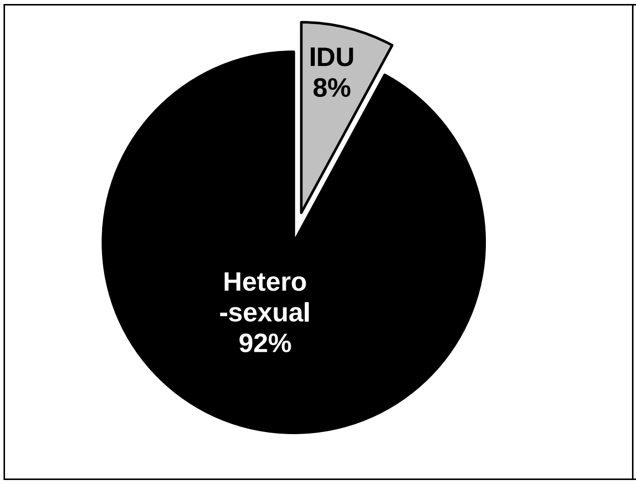
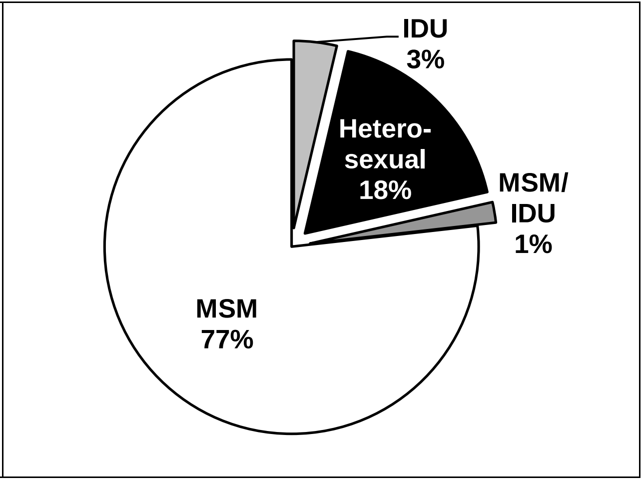


Figure 2.8. Adult/adolescent males HIV disease cases, 2011 N=1,189



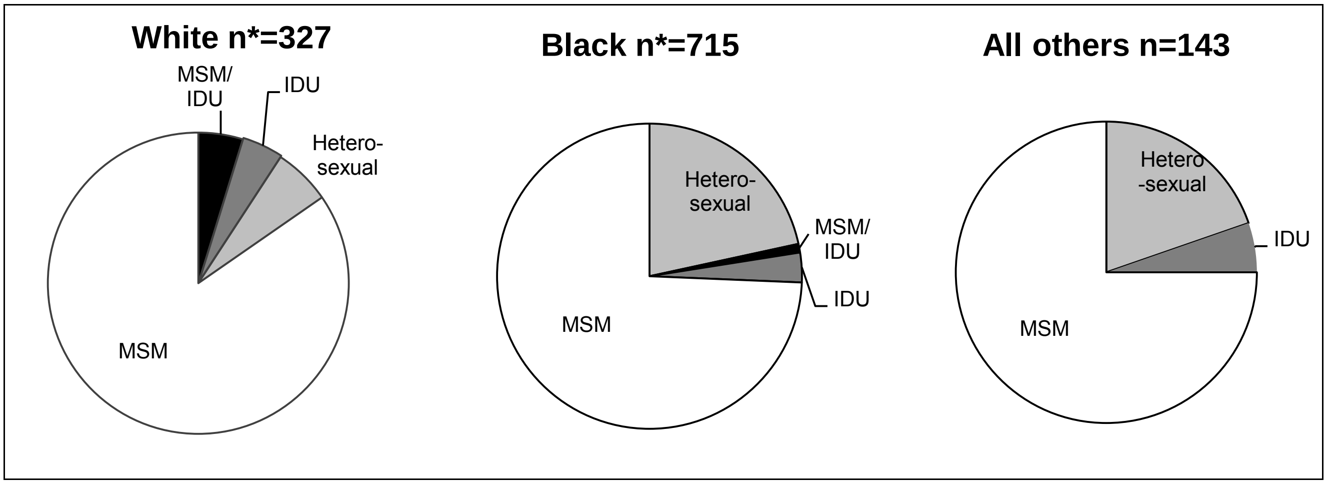
Tables D and E (Appendix D, pg. D-7 to D-8) display the risk categories by gender for HIV disease cases from 2007 to 2011. For males, the proportion of MSM cases (including MSM/IDU cases) has risen in recent years, from 75 percent in 2007 to 79 percent in 2011. The proportion of IDU cases for males has increased slightly from 3 to 4 percent from 2007 through 2011. For females, the proportion of heterosexual contact reports has decreased slightly from 93 to 92 percent and proportion of IDU transmission increased slightly from 7 to 8 percent from 2007 through 2011.

Gender, race/ethnicity, and mode of transmission

Among white males, MSM (including MSM/IDU) represented 90 percent of cases, heterosexual risk represented 6 percent of cases, and IDU risk represented 4 percent of cases (Figure 2.9). For black males, MSM represented about 75 percent of HIV cases, heterosexual risk represented about 22 percent of cases, and IDU risk about 3 percent of cases. The risk breakdown for other races/ethnicities (Hispanics, American Indians, and Asian/Pacific Islanders) are grouped together as “All other” because of low case numbers. Within this aggregated group, MSM risk represented 75 percent of male cases, heterosexual risk 20 percent of cases, and IDU risk 5 percent of cases. The proportions of HIV cases attributed to heterosexual risk among black males and other races are higher than the proportion among white males. 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 effect on risk.

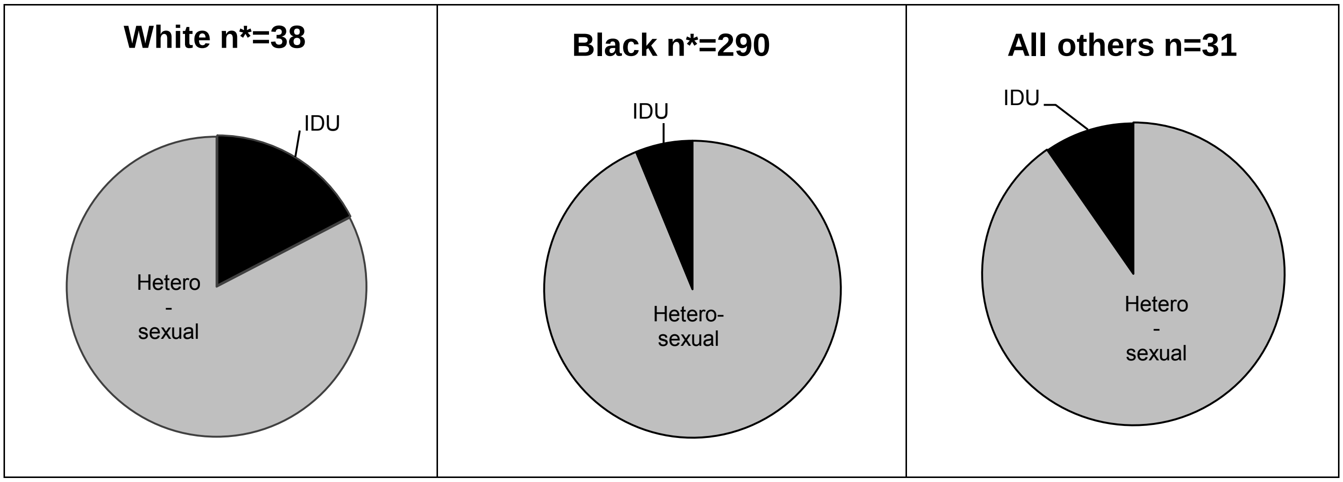
Unlike the differences in risk observed for males among the racial/ethnic groups, the majority of all HIV cases among females, regardless of race/ethnicity, are attributed to heterosexual sex (Figure 2.10). IDU is attributed to a greater proportion of white female cases (17%) than to minority females (6-10%).

Figure 2.9. Adult/Adolescent male HIV disease cases, 2011



*non-Hispanic

Figure 2.10. Adult/adolescent female HIV disease cases, 2011


White n*=38

Black n*=290

All others n=31

*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 2011, while just 6 percent of total cases diagnosed were found among teenagers from 13 to 19 years, the percentage increased to 23 percent when 20 to 24 year olds were included (Figures 2.11 and 2.12). From 2007 to 2011, the proportion of adolescents (13 to 24 years old) among HIV disease cases has increased from 6 percent to 23 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. Blacks represented the majority of HIV disease diagnoses for both men and women among 13 to 24 year olds (82% for each). 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, 2011

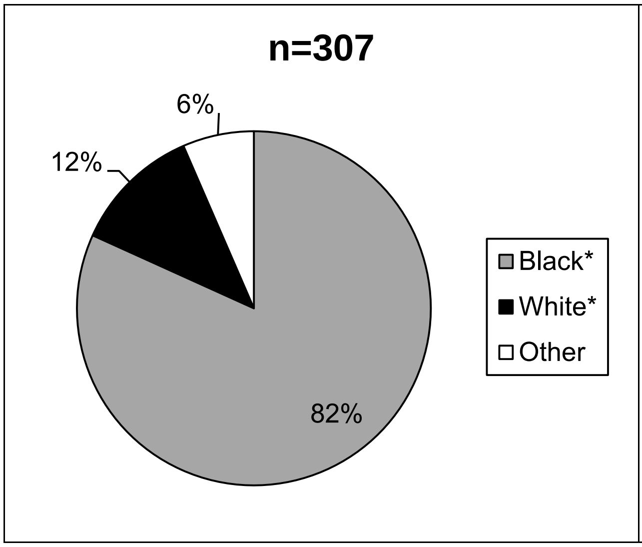
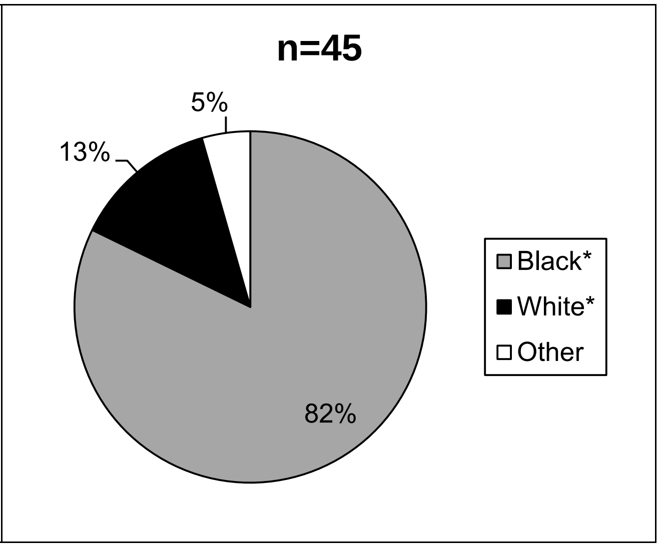


Figure 2.12. New HIV diagnoses among adolescent (13-24) females, by race, 2011



*non-Hispanic

The exposure or risk categories for male and female adolescents are very different (Figures 2.13 and 2.14). In 2011, 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 7 percent and the proportion attributed to MSM risk (including MSM/IDU) accounted for 94 percent, about the same proportion as in 2007. As compared to cases for older persons, adolescent cases are slightly more likely to be associated with sexual activity (99% vs. 95%) 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.

Figure 2.13. Adolescent (13-24 years) male HIV cases, by risk factor, 2011

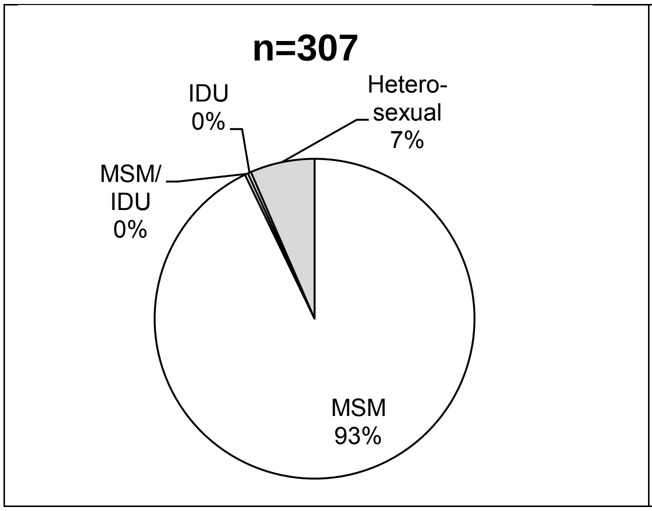
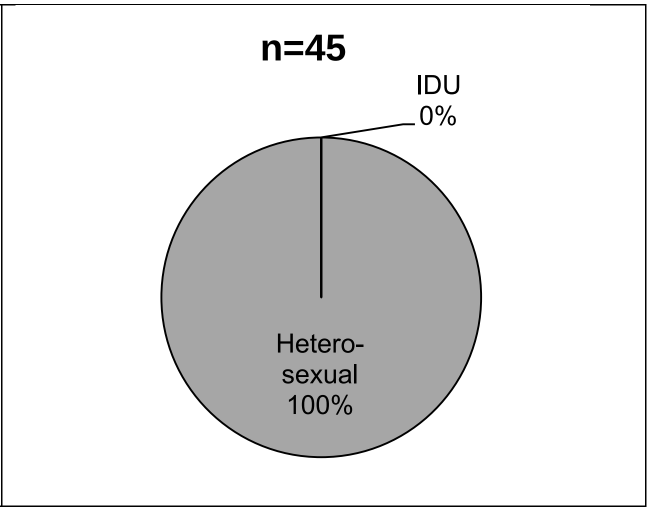


Figure 2.14. Adolescent (13-24 years) female HIV cases, by risk factor, 2011



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 400 women of child-bearing age are diagnosed with HIV each year in North Carolina (approximately 60% of total female HIV cases). Note that the number and proportion of HIV diagnoses among North Carolina 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, 2007–2011

Age	2007		2007		2008		2010		2011	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
0-14 yrs	7	1.4%	4	0.9%	3	0.7%	3	0.8%	3	0.8%
15-44 yrs	348	67.2%	311	66.9%	259	61.8%	212	59.1%	212	57.3%
45+ yrs	163	31.5%	150	32.3%	157	37.5%	144	40.1%	155	41.9%
Total	518	100.0%	465	100.0%	419	100.0%	359	100.0%	370	100.0%

Table 2.7 displays the numbers of likely perinatal HIV transmissions that have occurred from 2002 to 2011 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, 2002–2011

Year of birth	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Number of Cases	3	5	4	3	8	7	9	4	0	1

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 2011 (n=83) represented approximately 8 percent of all foreign-born HIV cases (1,040) for the last 10 years (2002–2011).

Figure 2.15. Foreign-born HIV disease cases diagnosed, 2002–2011

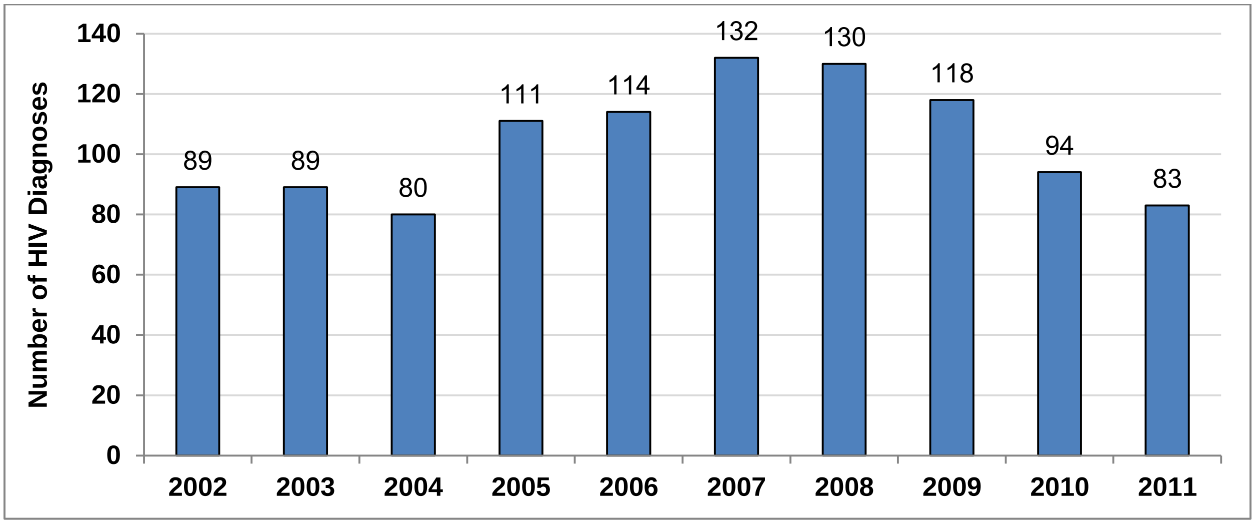


Table 2.8 shows the race/ethnicity of the foreign-born HIV cases. Hispanics comprised the highest proportion (61.7%). Non-Hispanic blacks comprised 28.2 percent of cases; whites and Asian/PI made up 5.3 and 4.4 percent respectively.

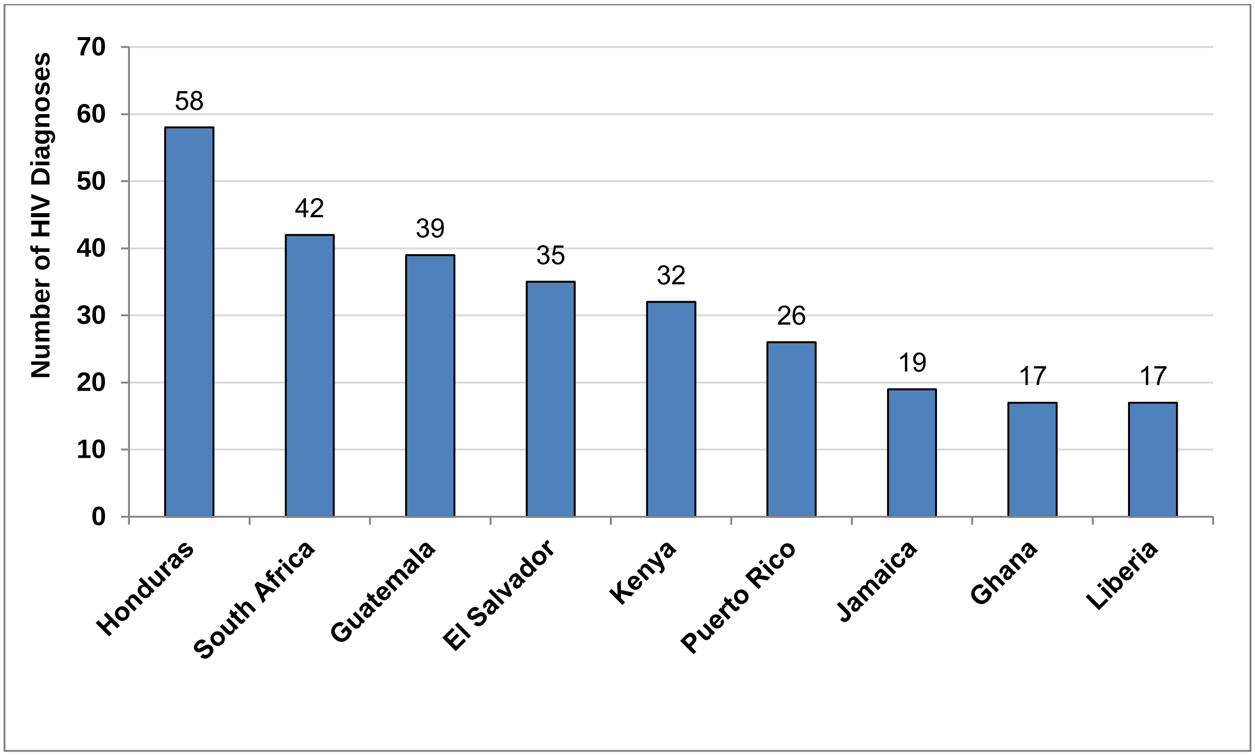
Table 2.8. Race/Ethnicity of foreign-born HIV disease cases diagnosed, 2002–2011

Race/ethnicity	No.	Pct
White*	55	5.3%
Black*	293	28.2%
Asian/Pacific Islander*	46	4.4%
Hispanic	642	61.7%
Others*	4	0.4 %
Total	1,040	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, 2002-2011



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. These areas contain multiple counties. 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

In 2011, 78 percent of new diagnoses were from urban areas, while 17 percent were from rural areas (See Table 2.9, Map 9, Appendix A, pg. A-11). HIV disease rates increased with population size: the highest overall rates were found in large metropolitan areas, followed by medium metropolitan, micropolitan, and non metropolitan areas (Table 2.10). Looking at race/ethnicity, all subgroups experienced the highest rates of new diagnoses in large metropolitan areas (with the exception of Asian/Pacific Islanders, where the rate is based on a very small number of cases and is thus considered unreliable).

Table 2.9. Newly diagnosed HIV disease cases by metropolitan areas, 2011

Race/Ethnicity	Rural			Urban			N.C. Total***		
	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*
White**	66	4.2%	3.4	262	16.8%	6.0	342	21.9%	5.4
Black**	171	10.9%	29.7	831	53.2%	55.1	1,057	67.6%	50.8
AI/AN**	10	0.6%	12.2	2	0.1%	5.9	12	0.8%	10.3
Asian/PI**	2	0.1%	7.9	9	0.6%	4.5	11	0.7%	4.8
Hispanic	17	1.1%	9.0	84	5.4%	13.7	107	6.8%	13.4
Multiple**	4	0.3%	---	30	1.9%	---	34	2.2%	---
Total	270	17.3%	9.5	1,218	77.9%	18.2	1,563	100.0%	16.4

* Rate per 100,000 population ** non-Hispanic; AI/AN=American Indian/Alaska Native; PI=Pacific Islander
***N.C. Total includes 75 cases unassigned to areas.

Table 2.10. Newly diagnosed HIV disease cases by metropolitan areas, 2011

Race/Ethnicity	Rural Areas				Urban Areas			
	Non-metropolitan		Micropolitan		Medium metropolitan		Large metropolitan	
	Cases	Rate*	Cases	Rate*	Cases	Rate*	Cases	Rate*
White**	11	2.1	55	3.8	133	5.9	129	6.1
Black**	33	19.2	138	34.2	318	45.1	513	64.0
AI/AN**	2	12.8	8	12.0	0	0	2	15.5
Asian/PI**	0	0	2	9.3	2	2.8	7	5.3
Hispanic	6	10.9	11	8.2	32	11.4	52	15.7
Multiple**	1	---	3	---	14	---	16	---
Total	53	7.0	217	10.5	499	15.0	719	21.2

* 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 2011, and a ranking of case rates (per 100,000 population) based on a three-year average (2009–2011). Edgecombe County ranked highest with an HIV disease three-year average rate of 40.8 per 100,000 population in 2011, followed by Mecklenburg County (35.8 per 100,000), Wilson County (30.4 per 100,000), Durham County (29.9 per 100,000), Cumberland County (27.1 per 100,000), and Guilford County (25.5 per 100,000). 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 2011, about 20 percent were diagnosed and reported from rural areas (Table 2.11). More than 50 percent of living cases diagnosed in North Carolina were from seven counties, which included Mecklenburg (17.6%), Wake (10.4%), Guilford (7.4%), Durham (5.8%), Forsyth (4.9%), Cumberland (4.7%), and New Hanover (2.4%) counties. About 74 percent of living HIV cases were from urban areas and 20 percent from rural areas. Prevalence rates for blacks, whites, Hispanics and American Indians/Alaska Natives were higher in urban than in rural areas; only Asian/Pacific Islanders experienced higher prevalence rates 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 12/31/2011 by rural/urban areas, 2011

Race/Ethnicity	Rural			Urban			N.C. Total***		
	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*
White**	1,233	24.1%	62.9	5,220	26.9%	120.0	6,681	25.5%	105.9
Black**	3,379	65.9%	587.0	12,678	65.2%	841.2	17,337	66.3%	832.4
AI/AN**	123	2.4%	149.5	69	0.4%	204.9	206	0.8%	177.7
Asian/PI**	25	0.5%	98.5	102	0.5%	50.4	131	0.5%	57.6
Hispanic	304	5.9%	161.2	1,175	6.0%	192.2	1,544	5.9%	193.0
Multiple**	61	1.2%	---	193	1.0%	---	269	1.0%	---
Total	5,125	19.6%	181.0	19,437	74.3%	289.9	26,168	100.0%	274.4

* Rate per 100,000 population ** non-Hispanic; AI/AN=American Indian/Alaska Native; PI=Pacific Islander
***N.C. Total includes 1,606 cases unassigned to areas.

While the highest prevalence rates for whites, blacks, and American Indians/Alaska Natives were found in large metropolitan areas, the highest rates for Hispanics and Asian/Pacific Islanders were in non-metropolitan 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 12/31/2011 by metropolitan areas, 2011

Race/Ethnicity	Rural Areas				Urban Areas			
	Non-metropolitan		Micropolitan		Medium metropolitan		Large metropolitan	
	Cases	Rate*	Cases	Rate*	Cases	Rate*	Cases	Rate*
White**	293	57.2	940	65.0	2,346	104.7	2,874	136.3
Black**	877	510.9	2,502	619.4	5,355	759.0	7,323	913.6
AI/AN**	19	121.8	104	156.0	39	187.7	30	232.5
Asian/PI**	5	130.4	20	92.8	40	56.1	62	47.4
Hispanic	122	222.0	182	136.2	527	188.5	648	195.2
Multiple**	15	---	46	---	96	---	97	---
Total	1,331	175.4	3,794	183.1	8,403	253.2	11,034	325.8

* 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.

For whites, blacks, and Hispanics, the majority of HIV disease cases were diagnosed in the Piedmont Region in 2011, followed by the Eastern Region (Table 2.13). 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.

Table 2.13. Newly diagnosed HIV disease cases by physiographic regions, 2011

Race/Ethnicity	Eastern		Piedmont		Western		N.C. Total***	
	Cases	Rate*	Cases	Rate*	Cases	Rate*	Cases	Rate*
White**	89	5.4	198	5.4	41	3.9	342	5.4
Black**	283	36.4	709	56.6	10	18.9	1,057	50.8
AI/AN**	9	11.0	2	9.0	1	8.3	12	10.3
Asian/PI**	2	5.7	9	5.0	0	0.0	11	4.8
Hispanic	27	12.6	67	12.9	7	10.7	107	13.4
Multiple**	7	---	27	---	0	---	34	---
Total	417	15.2	1,012	18	59	5	1,563	16.4

* Rate per 100,000 population ** non-Hispanic; AI/AN=American Indian/Alaska Native; PI=Pacific Islander ***N.C. Total includes 75 cases unassigned to areas.

Among the HIV disease cases living through the end of 2011, a majority of whites (64%), blacks (62%), and Hispanics (67%) were diagnosed and reported from Piedmont Region, followed by the Eastern Region (Table 2.14). 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. The Western Region had fewer HIV cases and rates for both new diagnoses and prevalent cases in 2011.

Table 2.14. HIV Disease prevalence as of 12/31/2011 by physiographic regions, 2011

Race/Ethnicity	Eastern		Piedmont		Western		N.C. Total***	
	Cases	Rate*	Cases	Rate*	Cases	Rate*	Cases	Rate*
White**	1,424	87.2	4,265	117.4	764	73.3	6,681	105.9
Black**	5,059	650.5	10,738	857.6	260	491.3	17,337	832.4
AI/AN**	141	172.6	39	174.9	12	100.1	206	177.7
Asian PI**	39	111.5	84	46.4	4	34.1	131	57.6
Hispanic	381	178.4	1,033	198.2	65	99.2	1,544	193.0
Multiple**	71		172		11		269	
Total	7,115	259.6	16,331	291.1	1,116	94.3	26,168	274.4

* 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 2011. 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. Overall, 26.1 percent of newly diagnosed individuals had a concurrent AIDS or late HIV diagnosis in 2011, indicating that they probably had HIV for at least five to seven years (CDC, 2006). Hispanic females had the highest proportion (40.9%) of late testers, reflecting possible cultural and language barriers to testing and access to care.

As shown in Table 2.16, roughly 25 to 28 percent of individuals newly diagnosed with HIV disease each year also represented AIDS cases (i.e. late testers) during the 2007–2011 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 United States 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 2007 to 2011. Blacks comprise 59 to 63 percent of total late testers, whites comprise 23 to 27 percent, and Hispanics comprise 9 to 12 percent over the past five years.

Table 2.15. Proportion of late testers by race/ethnicity among HIV disease cases, 2011

Race/ ethnicity	Males	Females	Total
White*	28.5%	19.1%	27.2%
Black*	21.8%	30.5%	24.2%
Hispanic	32.9%	40.9%	34.6%
Other*	39.6%	33.3%	38.6%
Total	25.0%	29.7%	26.1%

*non-Hispanic

Table 2.16. Proportion of HIV and concurrent* AIDS at diagnosis, 2007–2011

	Status at Diagnosis	
Year of Diagnosis	HIV (non-AIDS)	AIDS
2007	75.3%	24.7%
2008	73.8%	26.2%
2009	72.2%	27.8%
2010	74.0%	26.0%
2011	73.9%	26.1%

*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, 2007–2011

		Year of Diagnosis				
Sex	Race/Ethnicity	2007	2008	2009	2010	2011
Male	White*	21.9%	24.2%	20.3%	22.5%	20.6%
	Black*	41.4%	39.2%	46.7%	43.5%	40.9%
	Hispanic	10.3%	11.4%	9.3%	11.0%	6.9%
	Other/Unknown	0.4%	1.3%	2.2%	1.8%	4.7%
	Total	74.0%	76.0%	78.4%	78.8%	73.0%
Female	White*	5.1%	3.2%	3.5%	2.4%	2.2%
	Black*	18.8%	19.4%	16.5%	17.0%	21.8%
	Hispanic	1.6%	1.1%	0.9%	1.0%	2.2%
	Other/Unknown	0.4%	0.4%	0.7%	0.8%	0.7%
	Total	26.0%	24.0%	21.6%	21.2%	27.0%
Total	White*	27.1%	27.4%	23.8%	24.9%	22.8%
	Black*	60.2%	58.5%	63.2%	60.5%	62.7%
	Hispanic	11.9%	12.4%	10.1%	12.0%	9.1%
	Other/Unknown	0.9%	1.7%	2.9%	2.6%	5.4%
	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 2011, the State Laboratory of Public Health performed about 233,072 HIV tests, which represents a 32 percent increase in testing since 2007 when about 176,487 tests were performed (See Chapter 3 for more information about HIV testing in North Carolina).

HIV DISEASE STAGING

The 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 United States territories report AIDS cases to the 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 2011 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 UNITED STATES

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 CDC, the national AIDS case rate in 2010 was 10.8 per 100,000 population (CDC, HIV/AIDS Surveillance Report, 2010). During the same time period, North Carolina's AIDS case rate was 10.4 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 2010
1. California	4,243
2. New York	4,018
3. Florida	3,658
4. Texas	2,745
5. Illinois	1,364
6. New Jersey	1,352
7. Maryland	1,259
8. Pennsylvania	1,074
9. North Carolina	979
10. Georgia	955

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 10th in the nation for estimated number of persons living with an AIDS diagnosis (CDC, HIV/AIDS Surveillance Report, 2010). 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 six percent 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 as of 12/31/11

Demographics	Disease Status				TOTAL	
	HIV non AIDS		AIDS			
	Cases	Pct	Cases	Pct	Cases	Pct
Gender						
Male	10,555	68.4%	7,842	73.0%	18,397	70.3%
Female	4,874	31.6%	2,897	27.0%	7,771	29.7%
Current Age						
Unknown	16	0.1%	0	0.0%	16	0.1%
<2	2	0.0%	0	0.0%	2	0.0%
2-12	55	0.4%	5	0.0%	60	0.2%
13-24	1,110	7.2%	215	2.0%	1,325	5.1%
25-44	6,581	42.7%	3,734	34.8%	10,315	39.4%
45-64	7,056	45.7%	6,229	58.0%	13,285	50.8%
65+	609	3.9%	556	5.2%	1,165	4.5%
Race/ethnicity						
White*	3,984	25.8%	2,697	25.1%	6,681	25.5%
Black*	10,214	66.2%	7,123	66.3%	17,337	66.3%
American Indian/AN*	115	0.7%	91	0.8%	206	0.8%
Asian/PI*	92	0.6%	39	0.4%	131	0.5%
Hispanic	847	5.5%	697	6.5%	1,544	5.9%
Multiple races	177	1.1%	92	0.9%	269	1.0%
Mode of Transmission						
MSM	5,616	36.4%	3,522	32.8%	9,138	34.9%
IDU	1,009	6.5%	1,051	9.8%	2,060	7.9%
MSM/IDU	313	2.0%	284	2.6%	597	2.3%
Blood Products	33	0.2%	51	0.5%	84	0.3%
Heterosexual-all	2,363	15.3%	1,896	17.7%	4,259	16.3%
Pediatric	188	1.2%	73	0.7%	261	1.0%
NIR/NRR	5,907	38.3%	3,862	36.0%	9,769	37.3%
Total	15,429	100.0%	10,739	100.0%	26,168	100.0%

* non-Hispanic

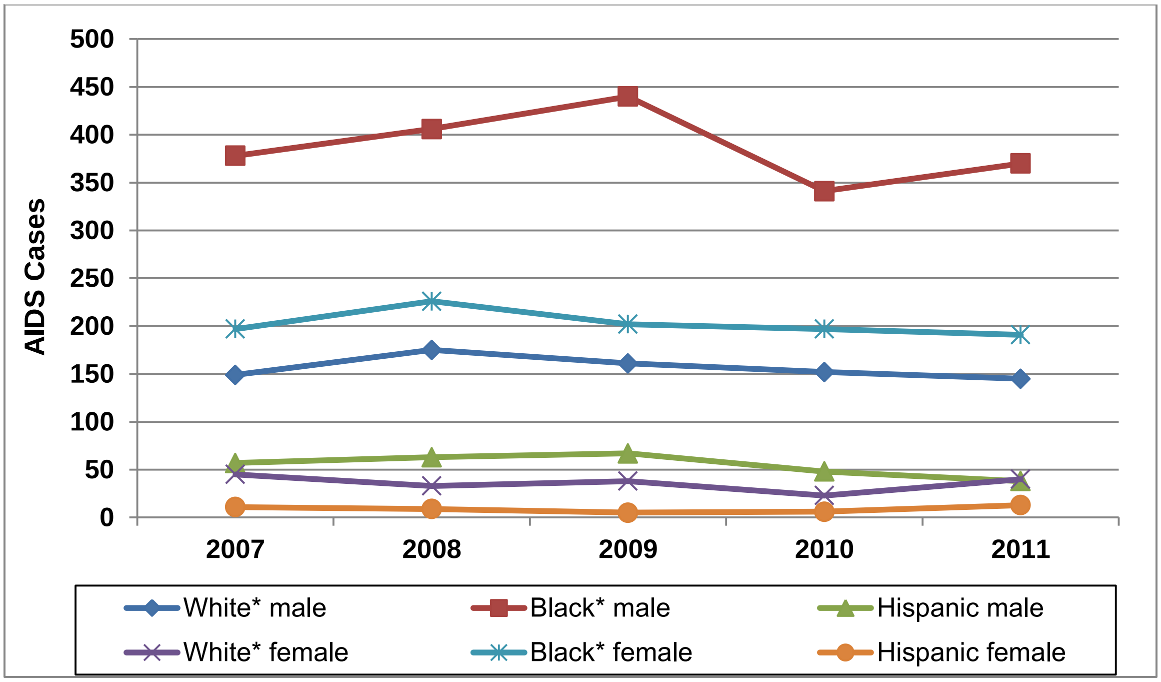
AIDS TRENDS IN NORTH CAROLINA

A total of 20,598 AIDS cases have been diagnosed and reported among North Carolina residents since the beginning of the epidemic in 1983. In 2011, 830 new AIDS cases were diagnosed in North Carolina with a rate of 8.7 per 100,000 population (10.5 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 (45% decrease; from 55 cases in 2007 to 30 cases in 2011), Hispanic males ages 25 to 29 (47% decrease; from 15 cases in 2007 to 8 cases in 2011) and Hispanic males ages 30 to 34 (69% decrease; from 16 in 2007 to 5 in 2011). However, over the past five years, AIDS cases have increased 140 percent among black men ages 15 to 19 (from 5 cases in 2007 to 12 cases in 2011), 73 percent among black males ages 20 to 24 (from 23 cases in 2007 to 40 cases in 2011) and 56 percent among white males ages 50 to 54 (from 16 cases in 2007 to 25 cases in 2011). Although AIDS cases among females have generally decreased over the past five years, increases were observed among older black females ages 45 to 49 (17% increase; from 35 cases in 2007 to 41 cases in 2011) and black females ages 55 to 59 (167% increase; from 3 cases in 2007 to 8 cases in 2011). AIDS cases were also increased among white women ages 30 to 34 (500% increase; from 1 case in 2007 to 6 cases in 2011) and for white women ages 50 to 54 (200% increase; from 3 cases in 2011 to 9 cases in 2011). The number of AIDS cases among American Indians over the past five years has returned to 8 cases in 2011. Asians experienced a return to pre-2009 levels with two AIDS cases in 2011.

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.

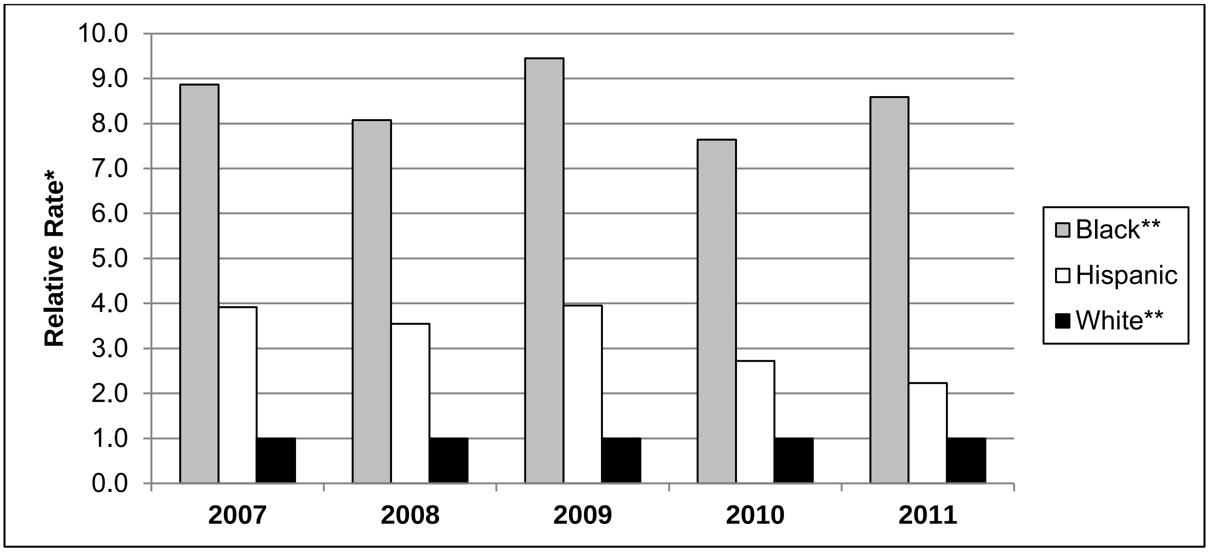
Figure 2.17. AIDS cases by race/ethnicity, 2007–2011



*non-Hispanic

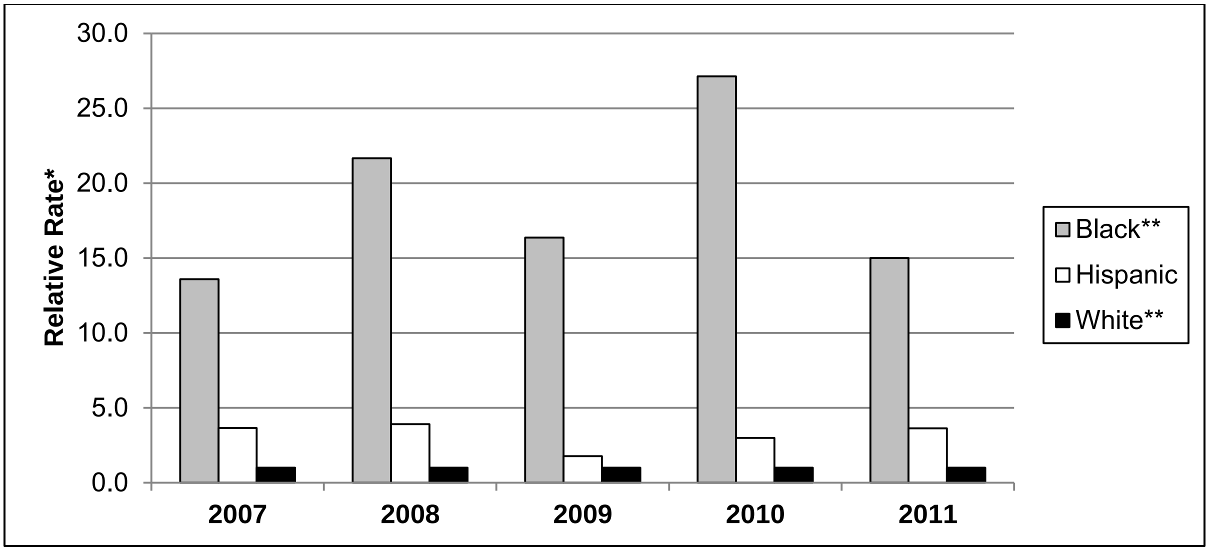
According to the National Center for Health Statistics 2010 bridged race estimates, blacks comprise 22 percent of the total population of North Carolina, yet the same group represented 68 percent of North Carolinians living with AIDS in 2011. The disparity between blacks and whites is about equal for AIDS and for HIV disease in North Carolina, both being nearly nine times the rate for whites. In 2011, black males represented 64 percent of all adult/adolescent male AIDS cases and the AIDS rate among adult/adolescent black men (44.3 per 100,000) was 8.6 times the rate for white men in 2011 (5.6 per 100,000). Hispanics represented six percent of all 2011 AIDS cases and the AIDS rate among Hispanic males (12.5 per 100,000 adult/adolescent population) was 2.2 times higher than for whites (Figure 2.18).

Figure 2.18. Relative AIDS rates for males in N.C. by race/ethnicity, 2007–2011



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

Figure 2.19. Relative AIDS rates for females in N.C. by race/ethnicity, 2007–2011



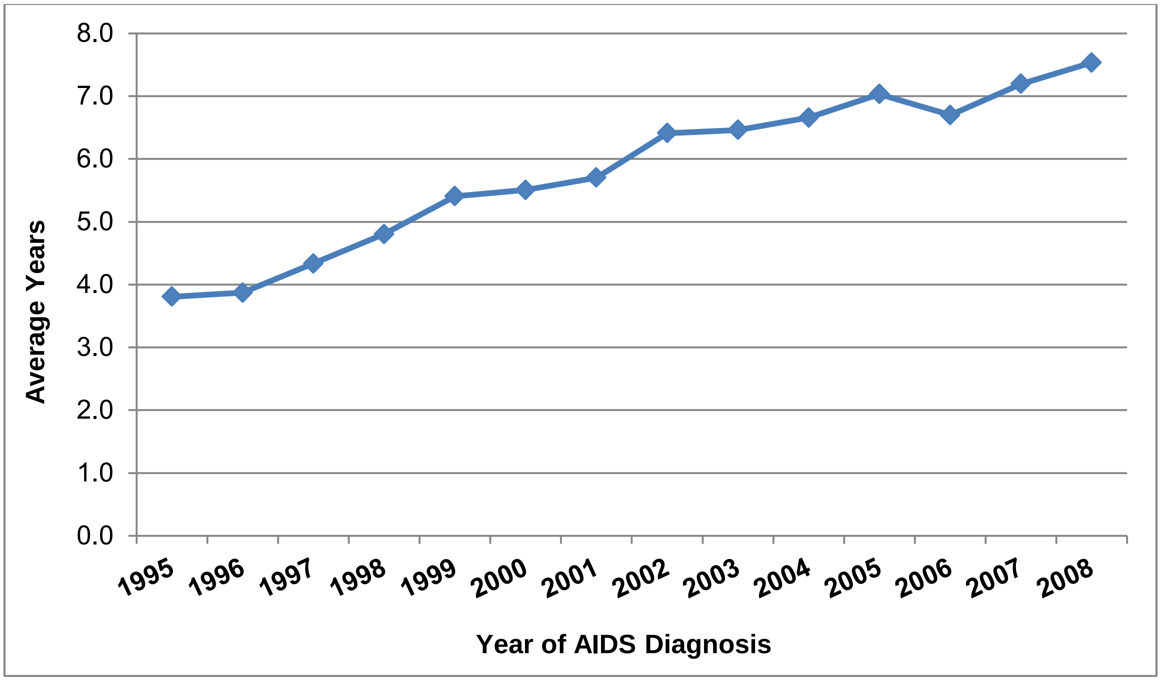
*Referent group=White, non-Hispanic females **non-Hispanic

In North Carolina, black females represented 76 percent of 2011 AIDS cases diagnosed among women and the 2011 rate of AIDS diagnosed in adult/adolescent black women (21.0 per 100,000) was 15 times the rate for white women in 2011 (1.4 per 100,000). Latinas represented five percent of female AIDS cases in 2011 and the AIDS rate among Latinas (5.1 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). 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.

Figure 2.20. Average* years between HIV & AIDS diagnoses, 1994–2011



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).

In August of 2011, a breakthrough study lead by a team of researchers at the University of Chapel Hill showed amazing results. The HIV Trials Prevention Network study 052 (Cohen 2011) demonstrated that if heterosexual people infected with HIV begin antiretroviral therapy when their immune systems are still fairly healthy (in contrast with the former standard of treatment, which was to delay therapy until the disease had advanced), the chance of transmitting HIV to their uninfected partner is **reduced by 96 percent**. Named the 2011 breakthrough of the year by the journal Science, these findings have enormous potential in reshaping the HIV epidemic as the CDC and individual states turn their attention towards treatment as prevention.

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 2003 to 2007, although year-to-year differences were small (Table 2.21). 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, Hispanics and whites, and lowest among American Indians and blacks. Survival was greater among MSM and lowest among men who were infected through blood products. 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, 2003–2007

	No. of Persons	Proportion Survived (in months)			
		<=12	>12	>24	>36
Age at Diagnosis (yr)					
<13	36	1.00	1.00	1.00	1.00
13-24	1,288	0.99	0.99	0.99	0.99
25-44	4,585	0.96	0.95	0.94	0.94
45-64	2,181	0.90	0.86	0.83	0.83
65+	133	0.73	0.68	0.62	0.62
Race/ethnicity					
White*	2,130	0.95	0.94	0.92	0.92
Black*	5,313	0.94	0.92	0.90	0.90
Am. Indian/AN*	70	0.87	0.87	0.87	0.87
Asian, PI*	44	0.98	0.95	0.93	0.93
Hispanic	622	0.96	0.95	0.94	0.94
Unknown	48	0.90	0.83	0.79	0.79
Male Mode of Transmission					
MSM	2,960	0.98	0.97	0.96	0.96
IDU	234	0.94	0.90	0.86	0.86
MSM/IDU	103	0.96	0.95	0.92	0.92
Blood Products	9	0.56	0.44	0.44	0.44
Heterosexual-CDC	481	0.94	0.92	0.89	0.89
Pediatric	18	1.00	1.00	1.00	1.00
NIR/NRR	2,039	0.90	0.87	0.86	0.86
Female Mode of Transmission					
IDU	134	0.94	0.90	0.86	0.86
Blood Products	6	1.00	1.00	1.00	1.00
Heterosexual-CDC	705	0.97	0.94	0.92	0.92
Pediatric	19	1.00	1.00	1.00	1.00
NIR/NRR	1,519	0.95	0.93	0.91	0.91
Year of HIV Diagnosis					
2003	1,635	0.93	0.91	0.89	0.89
2004	1,550	0.95	0.92	0.91	0.91
2005	1,596	0.94	0.92	0.90	0.90
2006	1,639	0.95	0.93	0.92	0.92
2007	1,807	0.96	0.95	0.93	0.93
Total	8,227	0.95	0.93	0.91	0.91

*non-Hispanic

HIV/AIDS RELATED DEATHS

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) and 269 deaths in 2011 (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 2011 is 12,106 (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 in 2011 was about ten times higher for blacks (9.8 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 was the 9th leading cause of death among younger individuals ages 25 to 44 in 2011, and death rates varied by race/ethnicity in 2010 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, 2011

	Males			Females			Total		
Race/ ethnicity	No.	Pct.	Rate*	No.	Pct.	Rate*	No.	Pct.	Rate*
White**	51	27.4%	1.7	7	8.4%	0.2	58	21.6%	0.9
Black**	129	69.4%	13.2	76	91.6%	6.9	205	76.2%	9.8
Hispanic	6	3.2%	1.4	0	0.0%	0.0	6	2.2%	0.7
Other	0	0.0%	0.0	0	0.0%	0.0	0	0.0%	0.0
Total	186	100.0%	4.0	83	100.0%	1.7	269	100.0%	2.8

**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

This page is intentionally blank.

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 NCSLPH.

- In 2011, a total of 258,719 persons were tested through state-sponsored HIV testing programs. Of those tested, 1,130 were positive (519 new cases, 552 previous positives, and 59 unknown).

- In 2011, 47.2 percent (n=245) 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 (3.7%). HIV positivity rates were also elevated for those tested in HIV counseling and testing sites (usually nontraditional testing sites, 1.0% positivity), outreach settings (0.3%) and in STD clinics (0.3%).

- In 2011, 68 percent of those tested were female and 32 percent were male. Positivity rates were higher for males (0.5%) compared to females (0.1%).

- Overall, 44.6 percent of those tested for HIV in 2011 were black non-Hispanic, 26.7 percent were white non-Hispanic, 16.9 percent Hispanic, 1 percent American Indian, 1.3 percent Asian/Pacific Islanders, and 0.1 percent other race/ mixed race .

- HIV positivity rates were highest for black non-Hispanic males (0.7%). The disparity was greatest among women. In 2011, the HIV positivity rate for black non-Hispanic women (0.11%) was 11 times the rate for white women (0.01%).

- In 2011, the largest number of new HIV cases was found in the group with the most tests (age 20-29 years, n=235 cases). Overall the highest positivity rates were seen among those 40 years and older (0.3%).

- The highest new positivity rates in 2011 were among those in the MSM (3.4%) and MSM/IDU (0.9%). The highest new HIV positivity for women was among those with heterosexual high risk (0.2%).

- During 2011, 23,630 people were tested through the N.C. Rapid HIV Testing Program (85 new cases, 0.4% positivity); 23,739 people were tested through the nontraditional testing site program (84 new cases, 0.4% positivity); 58,923 people were tested through the expanded testing program (105 new cases, 0.2% positive) and 4,067 people were tested through the substance abuse testing program (7 new cases, 0. 2% positive).

- During 2011, 1,230 people participated in health education and risk reduction programs that were supported by the Communicable Disease Branch (CDB), 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 (NCSLPH) has been processing blood samples for HIV testing since 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 (NCCHS).

The NCCHS’ 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 the rule change, the CDB 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 clinics. 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 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 aged 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 is 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)). Additionally 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.

Rapid testing technology has helped to make HIV testing easier, more accessible and less invasive than conventional HIV testing The CDB initiated a rapid testing program in 2004 that has provided new opportunities for improving access to testing in both clinical and outreach settings. The Branch distributes rapid HIV test kits to CBOs, community health centers, and other agencies. The project started out small with just a handful of sites participating (6 sites and 235 tests) and has grown to 34 agencies performing over 20,000 tests in 2011. Rapid HIV testing technology was first approved by the Food and Drug Administration in 2002. Currently there are 4 FDA approved rapid tests that have Clinical Laboratory Improvement Amendment (CLIA) waivers (Oraquick Advance Rapid HIV1/2 antibody test, Uni-Gold 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 be followed up with an approved confirmatory 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.

The CDB receives funding from both state and federal sources to pay for a variety of programs, including HIV testing. Most of this funding comes from the CDC but the federal Substance Abuse and Mental Health Services Administration (SAMHSA) has also supplied funding for testing in substance abuse centers. The Branch uses this funding to support health departments and CBOs who test the public for HIV. Increases in this funding have allowed for the expansion of HIV testing efforts . The non-traditional testing site program (NTS) is funded by the CDB with federal funds from the CDC. 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 23,000 tests in 2011.

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 enhance syphilis prevention efforts in 28 counties in the United States. Five of these counties were in North Carolina, with a sixth added later on (Durham, Forsyth, Guildford, Mecklenburg, Robeson, and Wake). 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 Expanded HIV testing funding from the CDC. The Expanded HIV Testing project specifically funded 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 58,000 HIV tests performed in 2011.

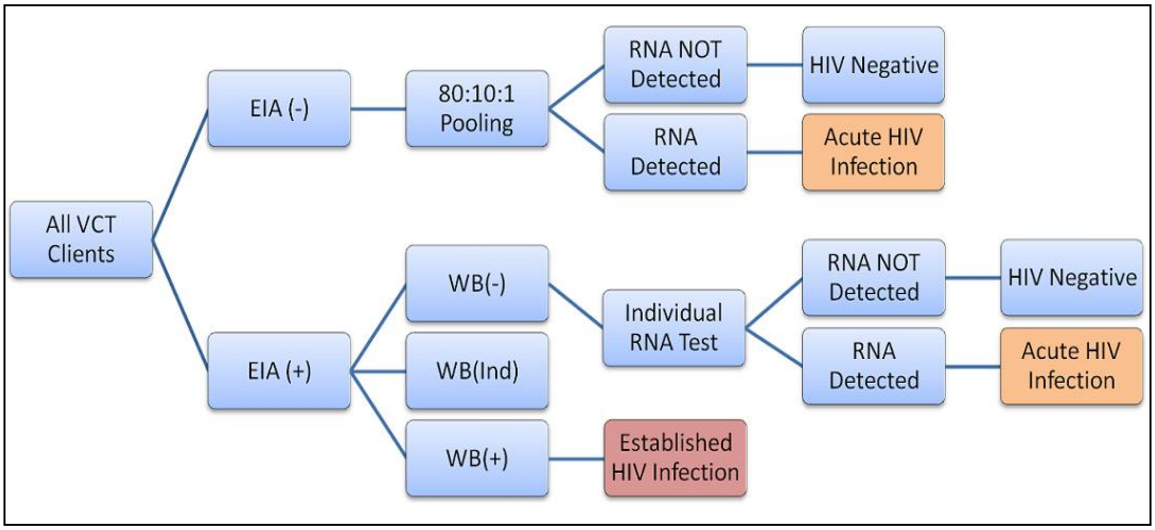
Testing programs supported by the Branch have integrated HIV and STD prevention efforts During 2011, the CDB supported 22 agencies to test in outreach settings, six syphilis elimination agencies, 10 substance abuse program testing agencies, and 28 agencies to test in jails. In addition to providing testing for HIV, twenty-four agencies also tested for syphilis, nine tested for GC/CT, and nine tested for Hepatitis C.

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 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 State Laboratory in November of 2002.

Since November 2002 (referenced as 2003 in the table), 204 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).

Demographics for Cases Identified through STAT

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 (70% of all cases) and males (82% 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 (67%) of the STAT cases were diagnosed among persons less than 30 years old, and 48 percent of the cases were less than 25 years old at diagnoses.

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

Year	2007 (n=16)		2008 (n=30)		2009 (n=27)		2010 (n=24)		2011 (n=28)		Total 2003-2011 (n=204)	
	n	Pct.	n	Pct.	n	Pct.	n	Pct.	n	Pct	n	Pct.
Gender												
Male	14	88%	24	80%	24	89%	18	72%	27	96%	168	82%
Female	2	13%	6	20%	3	11%	6	24%	1	4%	36	18%
Age group												
13-14	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
15-19	7	44%	3	10%	5	19%	2	8%	5	18%	28	14%
20-24	4	25%	9	30%	9	33%	13	52%	12	43%	69	34%
25-29	2	13%	8	27%	4	15%	2	8%	7	25%	39	19%
30-34	1	6%	3	10%	2	7%	2	8%	0	0%	20	10%
35-39	0	0%	3	10%	2	7%	3	12%	1	4%	17	8%
40-44	1	6%	1	3%	1	4%	1	4%	3	11%	13	6%
Over 45	1	6%	3	10%	4	15%	1	4%	0	0%	18	9%
Race												
Black*	11	69%	19	63%	23	85%	18	72%	21	75%	143	70%
White*	4	25%	8	27%	3	11%	4	16%	7	25%	47	23%
Hispanic	1	6%	3	10%	1	4%	2	8%	0	0%	13	6%
Am Ind./AN*	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%

*non-Hispanic

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 2011, a total of 39 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.

HIV Incidence (STARS 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 CDB and the 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 data collected about HIV testing history along with supplemental laboratory testing on remnant diagnostic specimens 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 from the State Laboratory and several commercial laboratories that conduct testing for state providers are sent to the CDC STARHS designated laboratory in New York for STARHS testing. The HIV incidence surveillance project in the state collaborates with the NCSLPH to obtain specimens for STARHS testing. Serum specimens are retained in the NCSLPH 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 North Carolina 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 an eligible 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, 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 NCSLPH accounts for more than 75 percent of the new HIV/AIDS cases reported each year to the CDB. Collaboration of private laboratories and the NCSLPH helps ensures that data used to create the HIV Incidence estimate is representative of the HIV epidemic in North Carolina.

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)

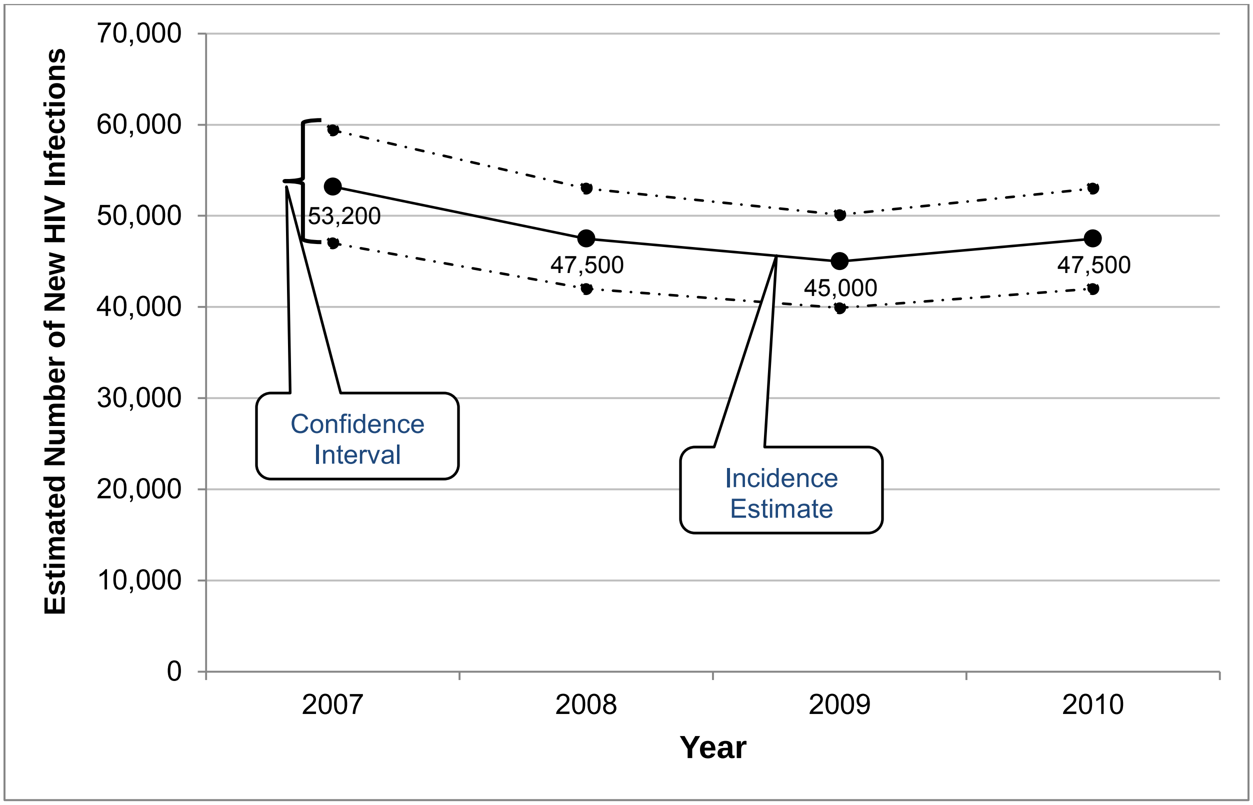
To ensure incidence estimates can be accurately derived, information on prior HIV testing and antiretroviral drug use is needed for all eligible persons reported. The TTH information is collected routinely as part of follow up for all new cases. However, not all of the required elements for STARHS have 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 North Carolina, 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) 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 December of 2012, the CDC released revised estimates for 2007 through 2009 and an initial estimate for 2010. The number of new HIV infections utilizing the STARHS methodology is described in a Supplemental HIV Surveillance Report by the CDC (2012). Using HIV surveillance data through June 2011 and HIV incidence surveillance data through December 2011, CDC estimated 53,200 individuals aged 13 years or older in the United States were infected with HIV in 2007 (95% CI: 47,000-59,400), with an additional 47,500 (95% CI: 42,000-53,000), 45,000 (95% CI: 39,900-50,100), and 47,500 (95% CI: 42,000-53,000) infected in 2008, 2009, and 2010. CDC concluded that the number of new HIV infections in the United States has remained relatively stable at approximately 50,000 per year.

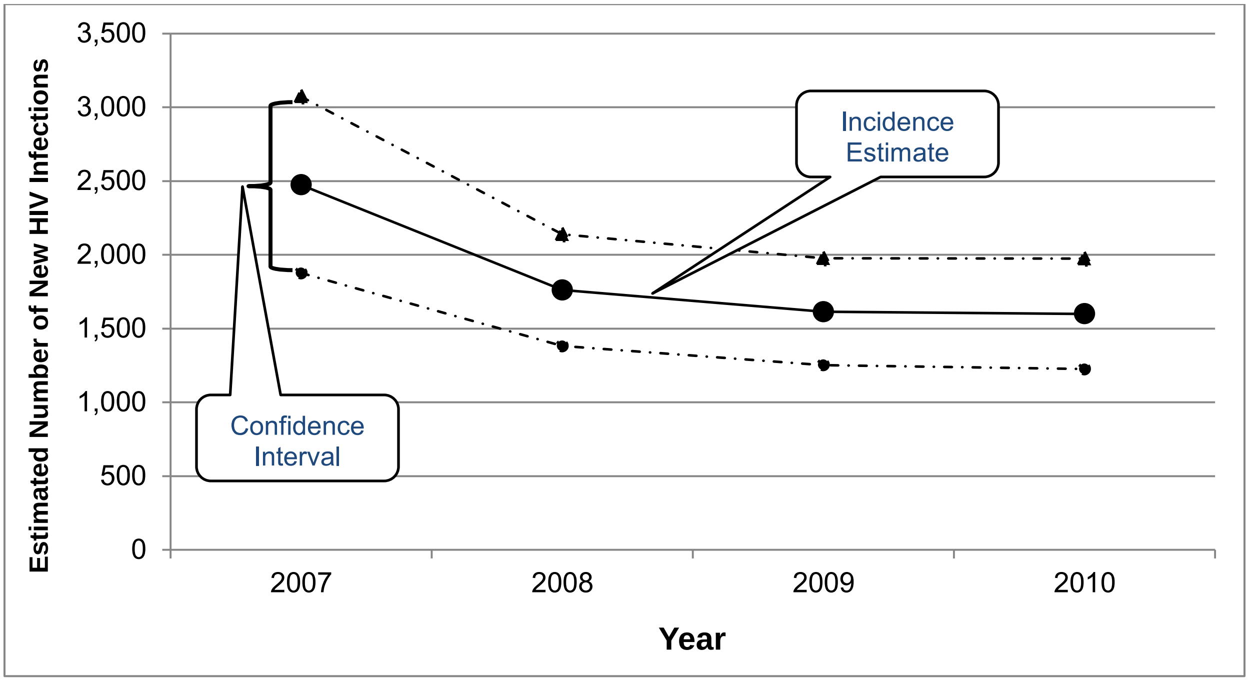
The national estimate for 2010 indicates that there were approximately 47,500 new HIV infections (Figure 3.2). The estimate includes population-specific breakdowns by gender, race/ethnicity, risk, and age groups. The national estimate generated by CDC shows that 80 percent of the newly infected persons were male, 44 percent were black, 21 percent were Hispanic, and 63 percent were among men who had sex with men (MSM). The national estimates for 2007-2010 were created by using data from 18 states (including 4 cities/counties with separately administered HIV surveillance systems): Alabama, Arizona, California (including Los Angeles County and San Francisco), Colorado, Connecticut, Florida, Indiana, Louisiana, Massachusetts, Michigan, Mississippi, New Jersey, New York (including New York City), North Carolina, Texas (including Houston), Virginia, and Washington; 2 cities within states that do not conduct HIV incidence surveillance: Chicago, Illinois and Philadelphia, Pennsylvania; and the District of Columbia. These areas all meet the minimum inclusion criteria of 15 percent completeness of STARHS results and include approximately 72-73% of all cases of HIV diagnosed in the United States from 2007 through 2010.

Figure 3.2. National HIV incidence estimate 2007-2010



North Carolina revised the incidence estimate for 2007 - 2010 utilizing the revised methodology and additional data. The estimate released in 2012 indicated that there were 2,474 (95% CI: 1,876-3,073) individuals aged 13 years or older in the North Carolina who were infected with HIV in 2007, with an additional 1,761 (95% CI: 1,382-2,139), 1,614 (95% CI: 1,253-1,976), and 1,600 (95% CI: 1,226-1,974) infected in 2008, 2009, and 2010 (Figure 3.3). The estimates for 2008, 2009 and 2010 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 cannot be attributed to any single item and the reason for this increase is remains 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 2007 through 2010.

Figure 3.3. North Carolina HIV incidence estimate 2007-2010



The estimate for North Carolina is limited to stratification by gender, race (white, black and Hispanic/other), age groups (13-24, 25-34, 35-45 and 45+) 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 2010, the demographic breakdown for North Carolina yields that 72 percent of the new infections occurred among males, 64 percent were black, and 62 percent are estimated to have occurred among MSM & MSM/IDU combined (Table 3.2). The estimated overall rate of new infections in North Carolina (20.3 per 100,000) is close to estimated national rate (18.8 per 100,000) for 2010. In North Carolina, persons aged 13 to 24 years old experience an estimated rate of new infections of 28.2 per 100,000, which is higher than the national rate of 23.7 per 100,000 for this age group. The incidence estimates for the nation and the state both highlight that blacks are disproportionately impacted by the HIV. The estimated HIV incidence rate for

2010 for North Carolina is approximately seven times greater for blacks (60.9 per 100,000) as compared to whites (8.5 per 100,000).

Table 3.2. North Carolina and United States HIV incidence estimates, 2010

	North Carolina			United States	
	Cases	Proportion	Rate	Proportion	Rate
Gender					
Male	1,148	72%	30.3	80%	30.7
Female	451	28%	11.1	20%	7.3
Race					
White	455	28%	8.5	31%	8.7
Black	1,021	64%	61.5	44%	68.9
Other*	124	8%	--	25%	--
Age					
13-24	443	28%	28.2	26%	23.7
25-34	428	27%	34.4	31%	34.9
35-44	361	23%	27.3	24%	27.3
45-55	249	17%	18.3	15%	15.8
55+	111	7%	4.7	5%	3.3
Risk					
MSM**	989	62%	--	63%	--
IDU	116	7%	--	8%	--
Heterosexual	495	32%	--	25%	--
Total	1,600	--	20.3	--	18.8

*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 North Carolina. 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 by local health departments and community-based organizations to the NCSLPH is housed in the HIV Counseling, Testing and Referral system (CTR). 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 CTR data. For each person tested, this data is recorded on an HIV testing report form and is sent with the blood sample to the NCSLPH for analysis. Data on rapid HIV testing is housed in the HIV CTR dataset as well as in a separate rapid HIV dataset maintained by the CDB. Information collected on clients receiving rapid HIV tests is similar to that collected for conventional HIV tests submitted to the NCSLPH.

HIV Testing Protocol

The NCSLPH 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 N.C. SLPH, 1991-2011

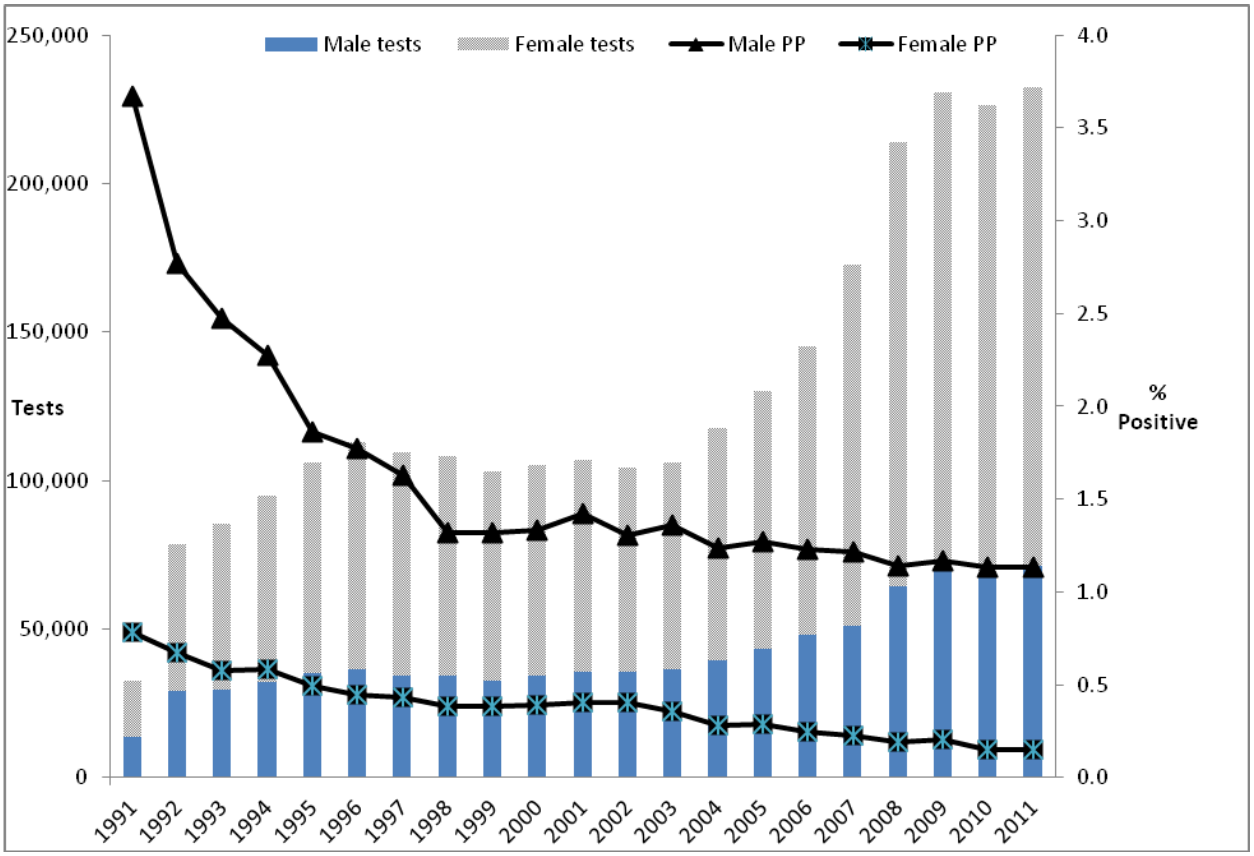
A full-fledged testing program at the NCSLPH was in place by May 1991. A total of 32,747 tests were done that year, primarily in HIV counseling and testing sites and STD clinics (Table 3.1). Overall positivity rates were high at that time (1.98% overall) because testing was highly targeted to those at high risk. The volume of 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 in 2004 due to changes in testing guidelines and rules and to increased funding that supported projects such as the syphilis elimination effort, the non-traditional testing sites, and the expanded HIV Testing sites.

Table 3.3. HIV tests performed by N.C. State Laboratory of Public Health and overall positivity rates, 1991-2011

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)
2011	233,072	1,047 (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 2011 (data not shown).

Figure 3.4. Conventional HIV tests performed and HIV positivity rates, N.C. SLPH 1991-2011



HIV TESTING 2011

In 2011, a total of 258,719 HIV tests (1,130 confirmed positives; 0.4 percent confirmed positive) were performed through state-sponsored programs (Table 3.4). This number includes HIV tests submitted to the NCSLPH, 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 1,130 positive tests, 519 were new cases of HIV and 552 were previously positive cases. Insufficient information exists to determine if the remaining 59 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 2011 and who did not have a previous positive HIV test in the surveillance system, are counted as new cases.

Over two-thirds of the HIV tests were performed in local health department clinics (36.1% in STD clinics, 18.5% in family planning clinics, 12.3% in prenatal/obstetric clinics, and 0.9% in

TB clinics; Table 3.4). Another 6.4 percent were done in correctional settings, 10.0 percent during community outreach activities, 5.0 percent in community health centers, 2.4 percent in drug treatment facilities, and 0.9 percent in emergency departments. The remaining HIV testing occurred at other settings (3.8%) or was missing site type information (3.8%).

Table 3.4. HIV testing in programs supported by the N.C. CD Branch, 2011

Setting	Number Tested	Number Positive	Number Newly Identified Positive	Number of positives where new case status could not be verified
HIV CTS	6,758	138	69	0
STD Clinic	93,303	416	245	0
Drug Treatment	6,219	23	9	0
Family Planning	47,850	25	21	0
Prenatal/OB	31,791	15	10	0
TB Clinic	2,329	9	3	0
CHC/PHC	12,886	90	11	36
Prison/Jail	16,451	116	33	0
Hospital/PMD	808	2	0	1
Emergency Department	2,201	17	1	16
Field Visit	595	44	22	0
Outreach	25,970	194	80	6
Student Health	1,726	3	1	0
Missing	9,832	38	14	0
Total	258,719	1,130	519	59

Site Type

The highest positivity rate of new HIV cases (3.7%) 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 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 counseling and testing sites (usually nontraditional testing sites, 1.0% positivity), outreach settings (0.3%) and in STD clinics (0.3%); (Table 3.5).

Gender

Of those tested, 165,863 (67.9%) were female, 77,422 (31.7%) were male, and 33 were transgender. The remaining 15,401 had missing data for gender (Table 3.5). The positivity rate of new HIV cases was higher for males compared to females (0.5 % versus 0.1%). This is in part because a majority of the women were tested in family planning clinics (28.7%) and prenatal OB clinics 19.1%) 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 (51.4%), in jail (15.4%) or in outreach settings (15.1%) and represented a population at higher risk for HIV.

Table 3.5. HIV testing in NC CD Branch programs by test setting and gender, 2011

	MALE			FEMALE			ALL TESTS		
Setting	Tested	Positive (%)	New (%)	Tested	Positive (%)	New (%)	Tested	Positive (%)	New (%)
STD Clinic	39,788	337 (0.85)	212 (0.53)	53,207	76 (0.14)	32 (0.06)	93,303	416 (0.45)	245 (0.26)
Jail	11,891	84 (0.71)	20 (0.17)	2,884	17 (0.59)	5 (0.17)	16,451	116 (0.71)	33 (0.20)
Outreach	11,700	149 (1.27)	67 (0.57)	12,856	38 (0.30)	12 (0.09)	25,970	194 (0.75)	80 (0.31)
HIV Testing Site	3,598	107 (2.97)	57 (1.58)	3,116	31 (0.99)	12 (0.39)	6,758	138 (2.04)	69 (1.02)
Drug Treatment	3,576	17 (0.48)	7 (0.20)	2,618	6 (0.23)	2 (0.08)	6,219	23 (0.37)	9 (0.14)
CHC/PHC	1,360	46 (3.38)	9 (0.66)	1,673	8 (0.48)	2 (0.12)	12,886	90 (0.70)	11 (0.09)
TB Clinic	1,222	9 (0.74)	3 (0.25)	1,103	0 (0.00)	0 (0.00)	2,329	9 (0.39)	3 (0.13)
Student Health	600	3 (0.50)	1 (0.17)	1,123	0 (0.00)	0 (0.00)	1,726	3 (0.17)	1 (0.06)
Emergency Department	420	1 (0.24)	1 (0.24)	643	0 (0.00)	0 (0.00)	2,201	17 (0.77)	1 (0.05)
Field Visit	414	35 (8.45)	21 (5.07)	173	9 (5.20)	1 (0.58)	595	44 (7.39)	22 (3.70)
Family Planning	151	0 (0.00)	0 (0.00)	47,614	25 (0.05)	21 (0.04)	47,850	25 (0.05)	21 (0.04)
Other Hospital/PMD	46	1 (2.17)	0 (0.00)	29	0 (0.00)	0 (0.00)	808	2 (0.25)	0 (0.00)
Prenatal/OB Clinic	8	0 (0.00)	0 (0.00)	31,701	15 (0.05)	10 (0.03)	31,791	15 (0.05)	10 (0.03)
Missing	2,648	26 (0.98)	10 (0.38)	7,123	12 (0.17)	4 (0.06)	9,832	38 (0.39)	14 (0.14)
TOTAL	77,422	815 (1.05)	408 (0.53)	165,863	237 (0.14)	101 (0.06)	258,719	1,130 (0.44)	519 (0.20)

This table includes both conventional and rapid tests. This includes tests submitted to SLPH and rapid tests submitted to the NC communicable Disease Branch. It also includes data on tests done at community health centers and emergency departments that are also supported by the NC Communicable Disease Branch.

Race/Ethnicity

Overall 44.6 percent of those tested were black non-Hispanic, 26.7 percent were white non-Hispanic, 16.9 percent Hispanic, 1 percent American Indian, 1.3 percent Asian/Pacific Islanders, and 0.1 percent other race/ mixed race (Table 3.6). The remaining 9.4 percent had missing data for race and ethnicity. A larger proportion of the women tested were Hispanic (21.6% for females compared to 10.0% for males). Overall, new positivity rates were highest among black non-Hispanics (0.3%, 369 cases).

Looking at race and gender together, new HIV positivity rates were highest for black non-Hispanic males (0.7%). Disparity was greatest among women. The positivity rate for black non-

Hispanic women (0.11%) was 11 times the rate for white women (0.01%). Among men, the black non-Hispanic rate (0.68%) was 2.7 times the rate for white men (0.25%; Table 3.6).

Table 3.6. HIV testing in NC CD Branch programs by race/ethnicity and gender, 2011

	MALE			FEMALE			ALL TESTS		
Race/Ethnicity	Tested	Positive (%)	New (%)	Tested	Positive (%)	New (%)	Tested	Positive (%)	New (%)
White NH	21,069	112 (0.53)	53 (0.25)	47,954	28 (0.06)	7 (0.01)	69,185	140 (0.20)	60 (0.09)
Black NH	42,552	594 (1.40)	290 (0.68)	72,391	167 (0.23)	78 (0.11)	115,282	764 (0.66)	369 (0.32)
Hispanic	7,751	45 (0.58)	30 (0.39)	35,869	21 (0.06)	9 (0.03)	43,746	66 (0.15)	39 (0.09)
American Indian	1,159	8 (0.69)	3 (0.26)	1,349	2 (0.15)	0 (0.00)	2,513	10 (0.40)	3 (0.12)
Asian/PI	1,204	7 (0.58)	5 (0.42)	2,275	1 (0.04)	1 (0.04)	3,489	8 (0.23)	6 (0.17)
Other/Mixed Race	128	0 (0.00)	0 (0.00)	134	0 (0.00)	0 (0.00)	268	0 (0.00)	0 (0.00)
Missing Race/Ethnicity	3,559	49 (1.38)	27 (0.76)	5,891	18 (0.31)	6 (0.10)	24,236	142 (0.59)	42 (0.17)
TOTAL	77,422	815 (1.05)	408 (0.53)	165,863	237 (0.14)	101 (0.06)	258,719	1,130 (0.44)	519 (0.20)

This table includes both conventional and rapid tests. This includes tests submitted to SLPH and rapid tests submitted to the NC communicable Disease Branch. It also includes data on tests done at community health centers and emergency departments that are also supported by the NC Communicable Disease Branch.

Age

Persons 20 to 29 years of age represented the largest group of people tested through state-sponsored HIV testing programs in 2011 (n=117,921, 45.6%; Table 3.7). The next largest groups were those slightly older (age 30-39, n=50,120, 19.4%) and those slightly younger (age 15-19, n=35,485, 13.7%). Females tended to be younger than the males that were tested. Of the women tested, 66.6 percent were less than 30 years of age compared to 56.4 percent of the men. In addition, only 12.4 percent of females were 40 years of age or greater, compared to 23.8 percent of males. The average age of males who were tested was 31.1 compared to 27.7 for females.

The largest number of new HIV cases was found in the group with the most tests (age 20-29 years, 235 new cases). Overall the highest positivity rates were seen among those 40 years and older (0.3% positivity). For all age groups, the positivity rate was greater for males than females.

Table 3.7. HIV testing in NC CD Branch programs by age and gender, 2011

	MALE			FEMALE			ALL TESTS		
Age in Years	Tested	Positive (%)	New (%)	Tested	Positive (%)	New (%)	Tested	Positive (%)	New (%)
0 to 14	297	0 (0.00)	0 (0.00)	1,064	0 (0.00)	0 (0.00)	1,366	0 (0.00)	0 (0.00)
15 to 19	8,545	54 (0.63)	41 (0.48)	26,793	10 (0.04)	5 (0.02)	35,485	64 (0.18)	46 (0.13)
20 to 29	34,869	337 (0.97)	198 (0.57)	82,615	77 (0.09)	35 (0.04)	117,921	417 (0.35)	235 (0.20)
30 to 39	15,216	173 (1.14)	86 (0.57)	34,719	66 (0.19)	31 (0.09)	50,120	239 (0.48)	117 (0.23)
40 to 49	10,258	157 (1.53)	60 (0.58)	13,836	51 (0.37)	16 (0.12)	24,213	208 (0.86)	76 (0.31)
50+	7,671	92 (1.20)	22 (0.29)	5,983	32 (0.53)	13 (0.22)	13,719	125 (0.91)	35 (0.26)
Missing	566	2 (0.35)	1 (0.18)	853	1 (0.12)	1 (0.12)	15,895	77 (0.48)	10 (0.06)
TOTAL	77,422	815 (1.05)	408 (0.53)	165,863	237 (0.14)	101 (0.06)	258,719	1,130 (0.44)	519 (0.20)

This table includes both conventional and rapid tests. This includes tests submitted to SLPH and rapid tests submitted to the NC communicable Disease Branch. It also includes data on tests done at community health centers and emergency departments that are also supported by the NC Communicable Disease Branch.

Risk Group

Table 3.8 shows the number tested and positivity rates by risk group and gender. 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 cannot be classified in one of the other categories include: women who have sex with only women, persons with gender (or the gender of their sex partners) missing, blood/tissue recipient, health care exposure, child of HIV-infected woman.

Ten percent of the males tested were MSM or MSM/IDU. Eleven percent of females were heterosexual high risk. A majority of the HIV cases identified through testing programs were men who have sex with men (405 positives, 249 new cases). For women, the heterosexual other group had the most cases of HIV (117 positives, 54 new cases). This was followed by the heterosexual high risk group which had 62 positives and 27 new cases. New case positivity rates were highest for MSM (3.4%) and MSM/IDU (0.9%).

Table 3.8. HIV testing in NC CD Branch programs by risk group and gender, 2011

	MALE			FEMALE			ALL TESTS		
Risk Group	Tested	Positive (%)	New (%)	Tested	Positive (%)	New (%)	Tested	Positive (%)	New (%)
IDU	1,349	9 (0.67)	3 (0.22)	1,005	3 (0.30)	0 (0.00)	2,364	12 (0.51)	3 (0.13)
MSM/IDU	107	2 (1.87)	1 (0.93)	--	--	--	107	2 (1.87)	1 (0.93)
MSM	7,379	405 (5.49)	249 (3.37)	--	--	--	7,379	405 (5.49)	249 (3.37)
Heterosexual High Risk	16,737	71 (0.42)	31 (0.19)	18,336	62 (0.34)	27 (0.15)	35,073	133 (0.38)	58 (0.17)
Heterosexual Other	38,040	159 (0.42)	66 (0.17)	116,732	117 (0.10)	54 (0.05)	154,772	276 (0.18)	120 (0.08)
Blood /HC/child	89	0 (0.00)	0 (0.00)	226	1 (0.44)	0 (0.00)	326	1 (0.31)	0 (0.00)
Other	208	9 (4.33)	3 (1.44)	2,498	8 (0.32)	4 (0.16)	3,441	20 (0.58)	9 (0.26)
NIR/Missing	13,513	160 (1.18)	55 (0.41)	27,066	46 (0.17)	16 (0.06)	55,257	281 (0.51)	79 (0.14)
TOTAL	77,422	815 (1.05)	408 (0.53)	165,863	237 (0.14)	101 (0.06)	258,719	1,130 (0.44)	519 (0.20)

This table includes both conventional and rapid tests. This includes tests submitted to SLPH and rapid tests submitted to the NC communicable Disease Branch. It also includes data on tests done at community health centers and emergency departments that are also supported by the NC Communicable Disease Branch.

Risk Profile

Risk information was collected from 214,886 (88%) of persons tested. Table 3.9 shows the prevalence of risk behaviors and the positivity rates among those for whom data was available.

Nearly all of the women reported having sex with men (94.2%) and a high proportion of men reported sex with women (82.8%). Furthermore, 10.1 percent of men reported sex with other men or sex with MSM (5.3%). Other risky sexual exposures were frequently reported including sex while using non-injecting drugs (18.0% of men and 6.1% of women), sex with a partner with HIV risk (8.6% of men and 6.2% of women), sex with an HIV positive partner (1.5% of men and 0.4% of women), sex with a partner who uses injection drugs (1.6% of men and 0.8% of women), and exchanging sex for drugs or money (2.1% of men and 0.9% of women). A current STD diagnosis was reported for 6.7 percent of men and 3.0 percent of women. Men were 3 times as likely to report injection drug use (2.1% of men compared to 0.7% of women).

Among men, the highest new case positivity rates were among those reporting sex with an HIV positive partner 5.5%), sex with MSM (3.8%), sex with male (3.3%), victim of sexual assault (1.3%), and blood exposure (1.2%; Table 3.9). For women, the highest positivity was among those reporting sex with an HIV positive partner (2.7%), blood exposure (0.3%), sex with MSM (0.4%), and blood exposure (0.3%). Note that these risks are not mutually exclusive and a single HIV case may have reported several of these risks.

Table 3.9. Risk prevalence and positivity rates by gender among persons tested for HIV in N.C. CD branch programs, 2011

	MALE				FEMALE				ALL TESTS			
Risk	Tested	Pct. with Risk	Pos. (%)	New (%)	Tested	Pct. with Risk	Pos. (%)	New (%)	Tested	Pct. with Risk	Pos. (%)	New (%)
STD Dx	4,650	6.67	46 (1.0)	18 (0.4)	4,376	3.03	11 (0.3)	1 (0.0)	9,056	4.21	57 (0.6)	19 (0.2)
Sex w. Male	7,044	10.10	378 (5.4)	232 (3.3)	135,996	94.22	182 (0.1)	81 (0.1)	143,531	66.79	563 (0.4)	315 (0.2)
Sex w. Female	57,689	82.76	298 (0.5)	129 (0.2)	5,679	3.93	11 (0.2)	3 (0.1)	63,643	29.62	309 (0.5)	132 (0.2)
Sex w. IDU	1,098	1.58	11 (1.0)	1 (0.1)	1,104	0.76	5 (0.5)	2 (0.2)	2,210	1.03	16 (0.7)	3 (0.1)
Sex w. HIV+	1,055	1.51	106 (10.0)	58 (5.5)	557	0.39	30 (5.4)	15 (2.7)	1,623	0.76	136 (8.4)	73 (4.5)
Sex w. MSM	3,667	5.26	223 (6.1)	138 (3.8)	553	0.38	6 (1.1)	2 (0.4)	4,236	1.97	230 (5.4)	141 (3.3)
Sex w. Other HIV Risk PN	5,989	8.59	55 (0.9)	34 (0.6)	8,912	6.17	19 (0.2)	5 (0.1)	14,983	6.97	74 (0.5)	39 (0.3)
Victim of Sexual Assault	240	0.34	12 (5.0)	3 (1.3)	1,519	1.05	0 (0.0)	5 (0.3)	1,765	0.82	20 (1.1)	8 (0.5)
Exchange Sex for Drugs or	1,441	2.07	20 (1.4)	6 (0.4)	1,285	0.89	8 (0.6)	0 (0.0)	2,738	1.27	28 (1.0)	6 (0.2)
Sex using non-injecting drugs	12,550	18.00	88 (0.7)	49 (0.4)	8,820	6.11	24 (0.3)	9 (0.1)	21,445	9.98	112 (0.5)	58 (0.3)
IDU	1,456	2.09	11 (0.8)	4 (0.3)	1,005	0.70	3 (0.3)	0 (0.0)	2,471	1.15	14 (0.6)	4 (0.2)
Blood Exposure	255	0.37	3 (1.2)	3 (1.2)	382	0.26	2 (0.5)	1 (0.3)	638	0.30	5 (0.8)	4 (0.6)
Health Care Exposure	539	0.77	3 (0.6)	3 (0.6)	1,300	0.90	3 (0.2)	1 (0.1)	1,851	0.86	6 (0.3)	4 (0.2)
Child of HIV+ Woman	94	0.13	1 (1.1)	0 (0.0)	171	0.12	0 (0.0)	0 (0.0)	266	0.12	1 (0.4)	0 (0.0)
Other HIV Risk	9,295	13.33	86 (0.9)	(0.0)	7,840	5.43	28 (0.4)	(0.0)	17,270	8.04	116 (0.7)	0 (0.0)
NAR	4,080	5.85	61 (1.5)	(0.0)	8,602	5.96	18 (0.2)	(0.0)	12,778	5.95	79 (0.6)	0 (0.0)

Risks are NOT mutually exclusive (one patient may report multiple risks). Table includes data only for those clients who answered HIV risk questions (n=69,709 males, n=144,346 females, n=214,886 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 NC 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.

SPECIAL TESTING PROJECTS

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

Rapid Testing Program

The state's 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 2011, the CDB provided free rapid tests (OraQuick Advance, Clearview Complete, and Uni-Gold) to 15 community based organizations, seven local health departments, eight community health centers, and three universities. Rapid tests were also provided to disease intervention specialists to facilitate partner testing and referral services. A total of 23,630 rapid tests were performed and 161 of these were confirmed positive (overall confirmed positivity rate of 0.7%; Table 3.10). Of the positive cases, 85 were new, 56 were previously positive, and 20 did not have sufficient information to determine if they were new or previously positive. The new case positivity rate varies by setting. Positivity was 1.7 percent for rapid testing done through the partner counseling and referral program, 2.3 percent for STD clinic testing, 1.8 percent for HIV counseling and testing sites (health departments and CBO facilities), 0.5% for community health centers, and 0.3 percent for community outreach settings.

Table 3.10. Rapid Testing in N.C. CD Branch Programs, 2011

Setting	Tested	Positive (%)	New (%)
Missing	323	2 (0.60)	0 (0.00)
HIV CTS	1,708	55 (3.20)	31 (1.80)
STD	991	33 (3.30)	23 (2.30)
Drug Treatment	3,564	2 (0.10)	0 (0.00)
Family Planning	358	0 (0.00)	0 (0.00)
Prenatal/OB	234	0 (0.00)	0 (0.00)
TB	21	0 (0.00)	0 (0.00)
CHC/PHC	7,826	27 (0.35)	5 (0.50)
Prison/Jail	1,119	0 (0.00)	0 (0.00)
Hospital/PMD	68	1 (1.50)	0 (0.00)
Field Vis	298	6 (2.00)	5 (1.70)
Outreach/Other	5,971	34 (0.60)	20 (0.30)
Student Health	67	0 (0.00)	0 (0.00)
Emergency Department	1,082	1 (0.10)	1 (0.10)
Total	23,630	161 (0.68)	85 (0.36)

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.

In 2011, a total of 23,739 persons were tested through the NTS projects (this also includes HIV testing done through the syphilis elimination effort program). Of those tested, 197 were positive (0.8%) and 84 were newly identified positives (0.4%). New case status could not be determined for the remaining six positive cases. 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 CDC estimates that despite the availability of a wide array of testing programs, one-fifth to one-quarter of HIV-positive persons still do not know that they are infected. To help identify more of these cases and link them to treatment and care, the CDC launched the Expanded HIV Testing Initiative (ETI) in October of 2007. The three-year program had the goal of conducting over 1.5 million HIV tests and identifying 20,000 HIV-positive persons who did not previously know their status. The program had a focus on minority populations and the jurisdictions eligible for ETI funding reported 95 percent of all AIDS cases among or blacks in 2005.

In year one, $35 million was awarded to 18 states and five cities. In year two, funding increased to $36 million and two states were added to those previously funded. Before the end of year three, a new expanded HIV testing grant was announced. 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 CDB worked with the N.C. General Assembly to bring the state 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 the state and greatly facilitated the establishment of new testing programs in emergency departments and community health centers. In 2011, 58,923 HIV tests were conducted through the expanded testing program (Table 3.11).

Table 3.11. Expanded HIV testing project, 2011

Setting	Number of Sites	Total Number Tested	Overall HIV Positive (%)	Newly identified HIV Positive (%)
Emergency Departments	4	2,201	17 (0.8)	1 (0.1)
Community Health Centers	15	9,669	37 (0.4)	not available
Jails	29	16,261	116 (0.7)	33 (0.2)
STD Clinics	102	29,774	142 (0.5)	71 (0.2)
Dental Clinics	1	286	0 (0.0)	0 (0.0)
Hospital Clinic	2	732	1 (0.1)	not available
Total	153	58,923	313 (0.5)	105 (0.2)

* 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 2011 there were 93,303 total HIV tests in STD clinic settings (Table 3.4) and 29,774 (31.9%) were considered to be expanded tests (Table 3.11). Testing practice in this setting is closest to true “opt-out” testing. The proportion of HIV-positive individuals has remained very stable (0.5% in 2009, 2010 and 2011). The trend for newly-diagnosed HIV positives is slightly down (0.4% in 2009, 0.3% in 2010, 0.2% in 2011).

Emergency Departments

The project supports HIV testing in four hospital emergency departments (EDs). Two of the hospitals perform conventional HIV testing and two are supplied with rapid HIV test kits. The four sites combined tested 2,201 people for HIV and found 17 positives (0.8%). 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 2011, the Branch was able to expand testing in seven FQHCs. Those seven health centers performed 9,669 tests in 2011. There were 37 positive tests (0.4%). This number is down significantly from that seen in 2009 (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 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 29 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 2011, 16.261 jail admittees were screened for HIV and 116 (0.7%) were found to be HIV positive; eighteen were newly identified cases (Table 3.x).

Prior to the 2007 change in the N.C. Administrative Code, the N.C. Department of Corrections (DOC) which oversees all state prisons, 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 2011, the Branch supported 10 agencies to provide HIV testing in substance abuse centers throughout the state. Throughout the year, the project did 4,067 tests, found 18 total positives (0.4%) of which seven were new positives (0.2%).

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 North Carolina 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*. The 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 2011, 1,230 people participated in health education and risk reduction programs that were supported by the CDB. 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 must contribute to the overall goal of reducing high-risk behaviors amongst the population served as well as targeted members of the populations to be served are recruited and identified early, 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 (one agency conducted this intervention – 75 sessions held)

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 (three agencies conducted this intervention – 369 sessions held).

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 (four agencies conducted this intervention – 283 sessions held).

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 (three agencies conducted this intervention – 461 sessions held).

HERMANOS DE LUNA Y SOL was designed as a culturally-appropriate HIV risk-reduction intervention that targets immigrant, Spanish-speaking gay/bisexual men (one agency conducted this intervention – 36 sessions held).

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).

This page is intentionally blank.

CHAPTER 4: SPECIAL STUDIES

CONTENTS

- **PROGRAM COORDINATION AND SYSTEMS INTEGRATION (PCSI)**
- **THE MEDICAL MONITORING PROJECT (MMP)**

PROGRAM COORDINATION AND SYSTEMS INTEGRATION (PCSI)

The North Carolina Division of Public Health (NCDPH) is participating in a CDC demonstration project called Program Collaboration and Service Integration, or PCSI. In addition to North Carolina, five other jurisdictions (Texas; San Francisco, CA; Washington, DC; Philadelphia, PA; and New York, NY) are participating with the CDC in this project.

In North Carolina, Buncombe, Mecklenburg, Wake and Pitt counties are working with the state. These counties are exploring methods to provide persons with risks for HIV/AIDS, sexually transmitted diseases (STDs), viral hepatitis, and tuberculosis (TB) better service while increasing the efficiency of service delivery. Each county has instituted self-designed changes to the services they provide based upon an assessment conducted by the county.

The assessment included documenting where services for each disease were available, what services were available and what barriers existed to persons in receiving those services. Understanding the local epidemiology, as well as understanding risks and the service needs of the communities served are an essential component of developing appropriate, comprehensive services (CDC 2009). As part of the overall assessment, the NCDPH provided information from existing surveillance data to help define the co-infection and synergistic interaction of diseases within North Carolina.

To define syndemics or synergistically interacting epidemics (Milstein 2002) occurring in participating cities and states, CDC required participants to match registries of diseases against each other to find individuals with comorbid conditions. In five of the participating jurisdictions this was complicated because data for each disease was kept by different entities within the jurisdiction. Years of practice, and sometimes law, prevented sharing of data between these entities. Since the Communicable Disease Branch CDB) is a fully integrated organization covering all communicable diseases, surveillance data was readily available to state epidemiology staff for comparison.

While North Carolina does not have the organizational silos that challenged other participants in the sharing of data required for the matching, there are still technical difficulties in describing the epidemiological relationships of comorbid diseases. The main challenge encountered by all participants was that surveillance data was kept in different databases for many of the diseases.

Again, North Carolina had an advantage on other participants since all diseases were reported within NCEDSS with the exception of HIV and Syphilis. This gave a distinct advantage in describing comorbid conditions by overcoming hindrances to using existing data: 1) lack of awareness of the kind of data being collected; 2) technological obstacles created from use of different data systems; and, 3) lack of skills or resources needed to conduct matching of databases (Newman et al. 2009).

Since NCEDSS is a person based system that requires searching of existing person records before a new record is entered, the relatively sophisticated probabilistic matching of the system and individual user review of questionable matches greatly reduces the duplication of person records. This allows us to determine that the individual who had a Gonorrhea event entered in the system last year is the same person that was reported with Acute Hepatitis B this year. It also assigns a single identifier for each person in the database. As such, there is no requirement to match persons from two separate data systems for comorbidities between Tuberculosis, Viral Hepatitis, Gonorrhea and Chlamydia, which are all recorded within NC EDSS.

Unfortunately, at the time matching data was required, HIV and Syphilis were not yet in NCEDSS. Since the effort to convert HIV and Syphilis data to NCEDSS was underway, creation of sophisticated matching algorithms was not attempted. Matching the diseases reported in NCEDSS, Tuberculosis, Acute Hepatitis B, Chronic Hepatitis B, Acute Hepatitis C, Gonorrhea and Chlamydia against HIV was performed by a simple deterministic matching. In Microsoft Excel, a concatenate was created from the last name, first name and date of birth for each HIV record in eHARS and grouped by year of diagnosis for years 2000 through 2010. Years prior to 2000 were lumped into one group. Concatenates were created from NCEDSS files for each of the target diseases and from the database containing Syphilis data (STD*MIS) in the same manner. The HIV file and target disease files were compared on a year group basis for exact matches. No attempt was made to eliminate duplicate matches made for the same person reported in multiple years.

Using this method meant variations in spelling, data-entry and variations of the name like nick name or maiden names would reduce the sensitivity of the match. Reduced sensitivity would understate comorbid rates. Common names could also reduce specificity, allowing for possible false matches and increased rates however the addition of the birth date eliminated most false matches of names. Advantages to this method were the ease and speed at which it could be done, no software other than Excel was required and NCEDSS exported data directly to Excel. The state level results for matching between HIV and TB, Hepatitis B, Syphilis and Gonorrhea are provided in tables 4.1 through 4.4.

Table 4.1 below shows matches between HIV and Tuberculosis by year of diagnosis for each disease. The highlighted diagonal shows that between the years 2000 through 2010, 98 individuals were diagnosed with Tuberculosis the same year they were diagnosed with HIV. The total of the cells above the highlighted diagonal shows that between 2000 and 2010, 65 individuals were diagnosed with Tuberculosis in the years following their HIV diagnosis. Similarly, the total of the cells below the highlighted diagonal shows that 12 individuals were diagnosed with Tuberculosis between 2000 and 2010 preceding their HIV diagnoses.

Table 4.1. North Carolina Tuberculosis vs. HIV Surveillance Matches by Year of Diagnosis

Year of TB Diagnosis	Year of HIV Diagnosis												Total HIV Cases by year of Diagnosis with TB
	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	Pre-2000	
2010	3	0	0	2	1	1	2	0	3	2	1	6	21
2009	0	6	0	1	2	1	1	1	0	1	0	7	20
2008	0	1	5	1	2	1	1	1	2	1	0	6	21
2007	0	0	3	7	3	1	2	1	2	1	1	8	29
2006	0	0	0	1	12	2	2	0	0	0	0	4	21
2005	0	0	0	0	0	6	4	0	0	0	0	12	22
2004	0	0	0	0	0	0	6	3	3	2	0	7	21
2003	0	0	0	0	0	0	0	11	3	1	0	10	25
2002	0	0	0	1	0	0	0	0	14	1	3	11	30
2001	0	0	0	0	0	1	0	0	1	14	2	15	33
2000	0	0	0	0	0	0	0	0	2	2	14	23	41
Pre-2000	0	0	0	1	1	1	0	1	1	2	1	291	299
Total TB cases by year diagnosed with HIV	3	7	8	14	21	14	18	18	31	27	22	400	583

Table 4.2 shows matches between HIV and Hepatitis B chronic by year of diagnosis for each disease. The highlighted diagonal shows that between the years 2000 through 2010, 182 individuals were diagnosed with Hepatitis B chronic the same year they were diagnosed with HIV. The total of the cells above the highlighted diagonal shows that 238 individuals were diagnosed with Hepatitis B chronic in the years following their HIV diagnosis for the same time period (2000-2010). The total of the cells below the highlighted diagonal shows that 90 individuals were diagnosed with Hepatitis B chronic between 2000 and 2010 preceding their HIV diagnoses.

Table 4.2. North Carolina Hepatitis B Chronic vs. HIV Registry Matches by Year of Diagnosis

Year of Hepatitis B chronic Diagnosis	Year of HIV Diagnosis												Total HIV Cases by year of Diagnosis with Hepatitis B chronic
	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	Pre-2000	
2010	17	4	2	3	5	2	3	2	3	1	4	0	17
2009	2	24	10	5	12	8	5	4	8	8	5	2	2
2008	1	1	27	10	7	5	3	6	8	8	4	3	1
2007	1	2	2	20	4	6	1	3	4	3	2	2	1
2006	0	0	0	0	12	7	0	2	1	3	1	3	0
2005	0	0	0	2	0	16	3	5	4	6	1	0	0
2004	0	1	2	2	0	0	14	4	4	4	3	4	0
2003	0	1	1	0	0	0	0	13	6	4	1	2	0
2002	0	1	1	0	5	0	1	1	12	5	2	2	0
2001	0	0	0	1	0	1	1	3	2	15	4	1	0
2000	0	0	1	0	1	1	1	1	0	0	12	2	0
Pre-2000	3	0	4	4	4	7	0	7	5	7	9	23	3
Total Hepatitis B chronic cases by year diagnosed with HIV	24	34	50	47	50	53	32	51	57	64	48	44	24

Table 4.3 shows matches between HIV and Syphilis by year of diagnosis for each disease. The highlighted diagonal shows that between the years 2000 through 2010, 691 individuals were diagnosed with Syphilis the same year they were diagnosed with HIV. The total of the cells above the highlighted diagonal shows that between 2000 and 2010, 749 individuals were diagnosed with Syphilis in the years following their HIV diagnosis. The total of the cells below the highlighted diagonal shows that during the same time period, 201 individuals were diagnosed with Syphilis in the years preceding their HIV diagnoses; of these 201 individuals, 65 (32%) were diagnosed with Syphilis in the year immediately preceding their HIV diagnoses.

Table 4.3. North Carolina Syphilis vs. HIV Registry Matches by Year of Diagnosis

Year of Syphilis Diagnosis	Year of HIV Diagnosis												Total HIV Cases by year of Diagnosis with Syphilis
	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	Pre-2000	
2010	88	35	23	27	24	25	10	17	10	8	5	44	316
2009	8	114	37	25	22	29	19	16	14	5	14	48	349
2008	5	8	82	31	14	17	16	21	9	4	7	57	271
2007	3	7	9	71	25	14	15	16	17	9	10	47	243
2006	4	3	7	11	63	16	17	7	8	10	7	59	212
2005	5	4	13	4	5	56	10	7	5	3	6	35	153
2004	4	1	1	5	6	4	50	6	5	7	10	21	120
2003	1	2	3	1	5	7	7	42	11	3	3	28	113
2002	0	1	1	2	3	2	1	3	32	5	5	21	76
2001	4	1	0	2	3	1	2	1	3	54	8	30	109
2000	1	2	2	2	2	2	1	4	5	7	39	37	104
Pre-2000	2	2	6	4	8	4	13	11	8	17	12	215	302
Total Syphilis cases by year diagnosed with HIV	125	178	182	185	180	177	161	151	127	132	126	642	2,368

Table 4.4 shows matches between HIV and Gonorrhea by year of diagnosis for each disease. For Gonorrhea, name-based case reporting began in 2005; thus, case matching was available beginning that year. The highlighted diagonal shows that between the years 2005 through 2010, 307 individuals were diagnosed with Gonorrhea the same year they were diagnosed with HIV. The total of the cells above the highlighted diagonal shows that between 2005 and 2010, 332 individuals were diagnosed with Gonorrhea in the years following their HIV diagnosis. The total of the cells below the highlighted diagonal shows that during the same time period, 382 individuals were diagnosed with Gonorrhea in the years preceding their HIV diagnoses; of these 382 individuals, 151 (40%) were diagnosed with Gonorrhea in the year immediately preceding their HIV diagnoses.

Table 4.4. North Carolina Gonorrhea vs. HIV Registry Matches by Year of Diagnosis

Year of Gonorrhea Diagnosis	Year of HIV Diagnosis												Total HIV Cases by year of Diagnosis with Gonorrhea
	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	Pre-2000	
2010	70	39	23	21	22	7	16	3	12	3	6	222	70
2009	26	51	27	26	13	12	8	11	7	5	2	188	26
2008	33	33	69	34	22	23	16	10	10	11	3	264	33
2007	22	31	35	44	25	12	16	15	8	8	6	222	22
2006	20	28	33	38	50	26	19	18	12	5	5	254	20
2005	8	19	17	20	19	23	12	13	8	12	4	155	8
Total Gonorrhea cases by year diagnosed with HIV	179	201	204	183	151	103	87	70	57	44	26	1,305	179

Moving forward now that HIV and Syphilis have been integrated into NCEDSS, a new set of matching data with demographic and mapping information will be completed for co-existing conditions. With the matching already performed within NCEDSS, this may be one of the largest, most accurate comparisons of surveillance records for comorbidity undertaken. Using this information, we hope to accurately describe the characteristics of our co-morbid populations so that we can serve them better and reduce the incidence of co-morbidity.

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 individuals in care in the nation. 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) arose out of the need for a nationally representative, population-based surveillance system without the limitations described above. The primary objective of MMP is to provide nationally representative estimates of clinical and behavioral outcomes among persons living with HIV/AIDS who are receiving medical care.

The MMP protocol primarily attempts to provide a consistent methodology for state and local health departments to use in collecting data from a probability sample of adults receiving HIV care in their jurisdictions. The methodology involves the selection of individuals currently receiving care using a three-stage sampling design, an in-person interview and the abstraction of their medical records.

North Carolina completed the three-stage sampling procedure for the 2010 data collection cycle. The first stage of sampling was the selection of states, cities, and US territories that would participate in MMP; NC was selected for participation.

The second-stage of sampling entailed the selection of HIV care providers in the state. For MMP eligibility, HIV medical care was 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 that provided HIV care included outpatient facilities such as hospital-affiliated clinics, free-standing clinics or private physician offices, and Veterans Administration facilities. Inpatient facilities, prisons and jails, federal military and penitentiary facilities, and emergency departments were not considered eligible for MMP participation in 2010. To create a list of HIV care providers, all facilities that reported HIV infections to the NCDPH were contacted and asked about treatment (prescribing anti-retroviral medications) and/or monitoring patient health (through changes in CD4 levels and HIV viral loads). A total of 134 facilities that actively treated individuals for HIV infection were identified. The majority of the HIV providers were located in the Piedmont region of the state.

The third-stage of sampling was participant selection. A sample of HIV care providers were approached to participate in MMP and among those who agreed, a sample of their HIV patients were selected and asked to participate in MMP. Overall, 400 HIV-infected individuals were selected for participation in MMP in 2010. Data collection (interview and medical record abstraction) for the 2010 cycle was conducted from June 1st, 2010 – May 31st, 2011.

Respondent Demographics, 2010 cycle

A total of 161 interviews were successfully completed; to protect their identities, two transgender respondents were not included in the analyses and discussions that follow. Of the 159 respondents, 68 percent were males and 32 percent were females; the majority of respondents (57%) were African-American (Table 4.5).

Table 4.5. Self-reported race/ethnicity by gender, MMP 2010 Cycle*

Race/ethnicity	Male	Female	Total
	n (%)	n (%)	n (%)
Black, non-Hispanic	51 (47%)	39 (76%)	90 (57%)
White, non-Hispanic	45 (42%)	8 (16%)	53 (33%)
Multiracial/Other	12 (11%)	4 (8%)	16 (10%)
Total	108 (68%)	51 (32%)	159 (100%)

[*] To protect MMP participant confidentiality the CDC restricts the reporting of variables where n<3. Populations affected include American Indian/Alaska Native, Asian, Hispanic, and Native Hawaiian/Pacific Islander. These race/ethnicity categories were included in Multiracial/Other.

Males tended to be slightly older than females but overall the majority of respondents (66%) were 45 years or older at the time of their interview (Table 4.6). The MMP sample represents a slightly older age group than the prevalent case age group distribution where approximately 57 percent of the cases were 45 years of age or older.

Table 4.6. Self-reported age at time of interview by gender, MMP 2010 Cycle*

Age (years)	Male	Female	Total
	n (%)	n (%)	n (%)
18-34	14 (13%)	3 (6%)	17 (11%)
35-44	20 (18%)	17 (33%)	37 (23%)
45-54	46 (43%)	20 (39%)	66 (41%)
55+	28 (26%)	11 (22%)	39 (25%)
Total	108 (68%)	51 (32%)	159 (100%)

[*] To protect MMP participant confidentiality the CDC restricts the reporting of variables where n<3. Respondents in the 18-24 and 25-34 age groups were therefore combined.

Table 4.7 summarizes participants' self-reported annual household income in 2010. A little over half (54%) of males and almost three-quarters (74%) of females reported a household income less than $20,000 a year. In contrast, the median household income among all North Carolinians for 2006-2010 was $45,570, a figure already below the national 2006-2010 median of $51,914.

Table 4.7. Self-reported annual household income by gender, MMP 2010 Cycle

Annual Income	Male	Female	Total
	n (%)	n (%)	n (%)
< $10,000	24 (22%)	20 (40%)	44 (28%)
$10,000 to $19, 999	34 (32%)	17 (34%)	51 (32%)
$20,000 to $39,999	20 (19%)	12 (24%)	32 (20%)
$40,000 to $49,999	11 (10%)	0 (0%)	11 (7%)
$50,000 to $74,999	9 (8%)	0 (0%)	9 (6%)
$75,000 or more	9 (8%)	1 (2%)	10 (6%)
Total	107 (68%)	50 (32%)	157 (100%)

Access to Medical Care

Most respondents indicated that they entered into care soon after their HIV diagnosis. Among 39 respondents who were asked when they entered into care, 81 percent (21 of 26) of males and 92 percent (12 of 13) of females reported entering into care within three months of their diagnosis. Reasons for delayed entry included participant felt good or CD4 count or viral load were good, did not want to think about being HIV positive, and lack of money or insurance. There were no differences in delayed entry into care by race/ethnicity.

HIV-infected individuals were also asked questions about health insurance and healthcare seeking behavior. Of the 159 respondents, 16 percent reported having no health insurance at some time during the previous 12 months. Among 132 respondents who received medical coverage or had insurance, Medicaid was the most commonly reported type of insurance (50%), followed by Medicare (39%) and private insurance (39%). Among 152 participants who accessed healthcare in the year preceding their interview, 49 percent reported one visit to his/her healthcare provider, 28 percent reported two visits, 10 percent reported three visits and 14 percent reported four or more visits.

To provide insight into the medical needs of HIV-infected individuals, information on HIV care and support services was collected. The most commonly reported unmet need among the 159 respondents was dental services (43%) followed by a need for public benefits (25%) (Table 4.8). Respondents frequently reported not knowing where to go or whom to call or not eligible or denied services as reasons for not receiving services.

Table 4.8. Top 9 self-reported unmet needs for ancillary services in the past 12 months by gender, MMP 2010 Cycle *

Service	Male	Female	Total**	Most common reason(s) for not receiving service
	n (%)	n (%)	n (%)	
Dental services	25 (49%)	8 (32%)	33 (43%)	Service costs too much/lack of insurance
Public benefits	11 (22%)	7 (32%)	18 (25%)	In process of getting service/not eligible or denied service
Mental health services	9 (11%)	5 (13%)	14 (11%)	Didn’t know where to go or whom to call
HIV case management	6 (10%)	3 (15%)	9 (11%)	Didn’t know where to go or whom to call
HIV peer group support	9 (10%)	5 (12%)	14 (10%)	Didn’t know where to go or whom to call
Transportation services	9 (10%)	2 (6%)	11 (9%)	Psychological barrier
Shelter/housing services	6 (6%)	4 (9%)	10 (7%)	Not eligible or denied service
Meal/food services	2 (2%)	3 (8%)	5 (4%)	Not eligible or denied service
ADAP	4 (6%)	0 (0%)	4 (4%)	Not eligible or denied service

* Categories are not mutually exclusive. **Denominator defined as total number of participants who did not receive the service. The numerator (n) represents the number of respondents who did not receive the service but needed it.

Adherence to drug regimens was also examined; specifically, the use of antiretroviral therapy (ART). Seven of the 159 respondents (4%) reported never taking ART (treatment naïve individuals). Of the 151 participants who reported ever taking ART, 4 (3%) reported they were not currently taking ART; all four were African-American (Table 4.9). The main reason for not taking ART was doctor advised delaying treatment.

Table 4.9. Self-reported current use of antiretroviral therapy (ART) by gender and race/ethnicity, MMP 2010 Cycle

	Not currently taking ART		Currently taking ART		Total
Gender	n	%	n	%	n
Male	1	25%	102	69%	103
Female	3	75%	45	31%	48
Race/ethnicity					
White, non-Hispanic	0	0%	51	35%	51
Black, non-Hispanic	4	100%	81	55%	85
Multiracial/Other	0	0%	15	10%	15
Total	4	100%	147	100%	151

Sexual Behaviors

An important component of MMP is to monitor behaviors that may increase HIV transmission such as sexual behavior. A higher proportion of men who have sex with men (MSM) reported two or more sexual partners than men who have sex with women (MSW) (Table 4.10). However, MSW reported the greatest range in partners, with one MSW reporting as many as 50 sexual partners in the past 12 months.

Table 4.10. Self-reported number of sexual partners in the past 12 months by gender preference, MMP 2010 Cycle

Partners	MSM*	MSW*	MSMW*	WSM*
	n (%)	n (%)	n (%)	n (%)
One	29 (64%)	15 (75%)	-	23 (96%)
Two or more	16 (36%)	5 (25%)	-	1 (4%)
Range	1-15	1-50	-	1-3
Total	45	20	0	24

*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)

Respondents were also asked if they engaged in unprotected sex (Table 4.11). Twice as many MSM reported engaging in unprotected sex compared to MSW and WSM.

Table 4.11. Self-reported unprotected vaginal or anal sex with at least one partner in the past 12 months by gender preference, MMP 2010 Cycle

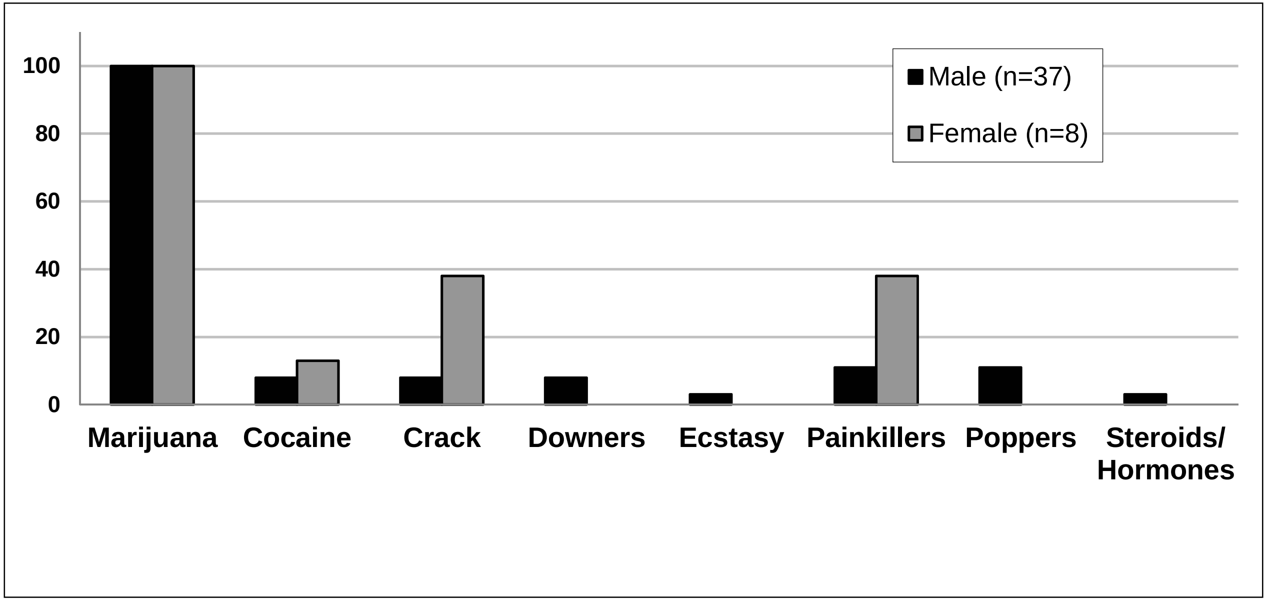
	MSM*	MSW*	WSM*
	n (%)	n (%)	n (%)
Yes	16 (46%)	4 (21%)	5 (22%)
No	19 (54%)	15 (79%)	18 (78%)
Total	35	19	23

*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

Another behavior monitored by MMP was non-prescription substance use. None of the 159 respondents reported injection drug use in the past 12 months; however, 45 (28%) reported non-injection drug use. All respondents reported marijuana use while none of the respondents reported use of amphetamines, GHB, hallucinogens, heroin, or Special K in the past 12 months (Figure 4.1).

Figure 4.1. Self-reported non-injection drug use in the past 12 months by gender, MMP 2010 Cycle*



*Categories are not mutually exclusive

Alcohol consumption was another substance monitored by MMP. Table 4.12 summarizes the frequency of alcohol consumption by gender. A higher proportion of males reported alcohol consumption on a daily, weekly and monthly basis compared to females.

Table 4.12. Self-reported consumption of alcohol in the past 12 months by gender, MMP 2010 Cycle

Frequency of alcohol consumption	Male		Female	
	n	(%)	n	(%)
Never	25	23%	24	47%
Less than monthly	30	28%	15	29%
Monthly	22	20%	4	8%
Weekly	24	22%	6	12%
Daily	7	6%	2	4%
Total	108	99%	51	100%

Finally, data on cigarette smoking was collected. Seventy-one males and 33 females reported smoking at least 100 cigarettes in his/her lifetime. Of these, 49 percent of males and 55 percent of females reported smoking cigarettes daily in the past 12 months (Table 4.13).

Table 4.13. Self-reported use of cigarettes in the past 12 months by gender, MMP 2010 Cycle

Frequency of smoking cigarettes	Male*		Female*	
	n	(%)	n	(%)
Never	27	38%	9	27%
Less than monthly	4	6%	4	12%
Monthly	0	0%	0	0%
Weekly	5	7%	2	6%
Daily	35	49%	18	55%
Total	71	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 5)

This page is intentionally blank.

CHAPTER 5: RYAN WHITE HIV/AIDS CARE ACT AND OTHER SERVICE CONSIDERATIONS

HIGHLIGHTS

- The Ryan White Part B program served a total of 8,016 clients living with HIV disease in North Carolina from April 1, 2011 to March 31, 2012 (Ryan White funding year 2011-2012).

- The majority of services for Ryan White Part B clients involved medical case management (37%) followed by ambulatory/outpatient medical services (29%), Food Bank/Home Delivered Meals (8%), and medical transportation services (4%).

- The AIDS Drug Assistance Program (ADAP) enrolled 6,876 clients in Ryan White 2011-2012.

- Housing Opportunities for Persons with AIDS (HOPWA) served 2,040 clients during 2011.

- Twenty-six percent (26%) 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 2011; 31 percent of those living with HIV-non AIDS, as compared to 21 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 (35%), compared with 26 percent of black, non-Hispanics; 24 percent of white, non-Hispanics; and 22 percent of other non-Hispanic racial groups.

RYAN WHITE

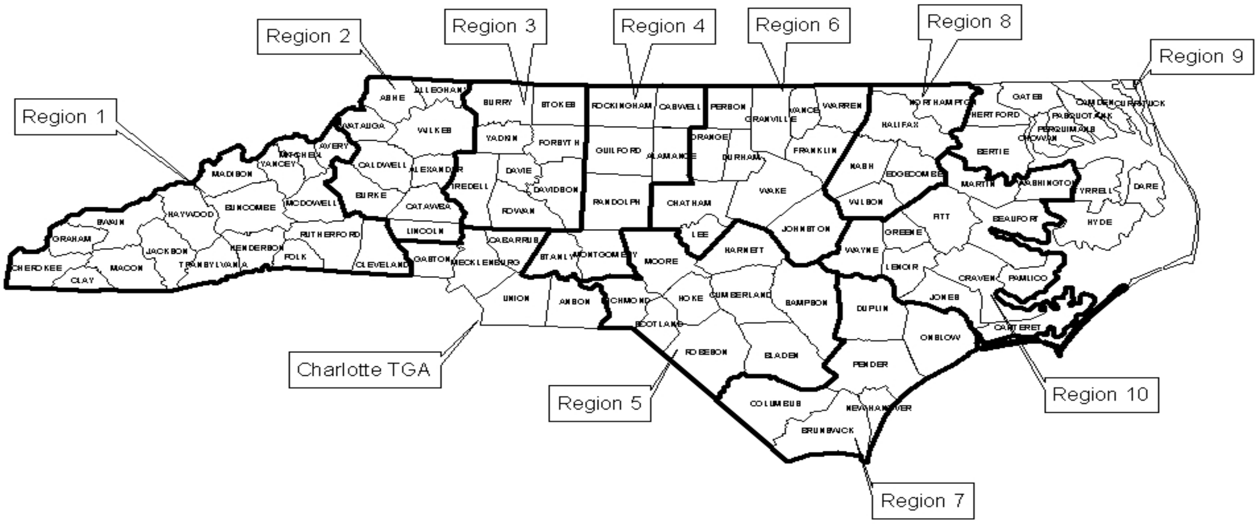
Congress enacted the Ryan White Comprehensive AIDS Resources Emergency (CARE) Act in 1990 to provide funding for states and territories, eligible metropolitan areas (EMAs), as well as direct grants to individual providers to offer primary medical care and support services for people living with HIV disease 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 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 continua 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 necessary services (medical care, oral health care, case management, and other core and support services).

Figure 5.1. 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 Communicable Disease Branch administers the Part B program through the AIDS Care Program (ACP) 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 5.1 summarizes the CAREWare client and service information for Part B clients served from April 1, 2011 to March 31, 2012.

Table 5.1. Ryan White Part B services* provided to clients, RW 2011-2012

Services*	N	Percent
Core Services*		
Ambulatory/Outpatient Medical Care	17,387	29%
Medical Case Management	21,803	37%
Medical Nutrition Therapy	516	1%
Oral Health Care	1,669	3%
Outpatient Substance Abuse Services	1,399	2%
Mental Health Services	1,909	3%
Treatment Adherence Counseling (MCM)	880	1%
Health Insurance Assistance	1,036	2%
Home and Community-Based Services	63	<1%
Referral for Health Care/Supportive Services	214	<1%
Support Services*		
Treatment Adherence Counseling	1,765	3%
Medical Transportation Services	2,389	4%
Food Bank/Home Delivered Meals	4,793	8%
Non-Medical Case Management	750	1%
Emergency Financial Assistance	726	1%
Health Education/Risk Reduction	784	1%
Psychosocial Support Services	435	1%
Linguistic Services	318	1%
Housing Services	229	<1%
Legal Services	74	<1%
Total	59,065	100%

*Ryan White clients may receive more than one service

A total of 8,016 clients received services funded through Ryan White Part B awards from April 1, 2011 to March 31, 2012. 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 5.2). 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 5.2. N.C. living HIV/AIDS cases, Ryan White Part B and ADAP clients, 2011

	Ryan White Part B clients ***	ADAP enrollees ***	Persons living* with HIV/AIDS
	(n=8,016)	(n=6,876)	(n=26,168)
Gender			
Male	67%	71%	70%
Female	32%	29%	30%
Transgender	1%	<1%	-
Race/ethnicity			
White**	28%	27%	26%
Black**	59%	63%	66%
Am Indian/AN**	1%	<1%	1%
Asian/PI**	<1%	<1%	<1%
Hispanic	7%	7%	6%
Other**	4%	1%	1%
Age Group			
0-12	1%	<1%	<1%
13-24	4%	5%	5%
25-44	39%	46%	41%
45-64	51%	46%	51%
65 and over	5%	3%	4%

*Living as of 12/31/2011 ** non-Hispanic ***RWY April 2011 – March 2012

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 state's 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 Program 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 59 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. The state'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 Program has adopted nine of the HRSA/HAB Performance Measures:
HAB 01- 2 Medical visits, HAB 02- 2 CD4 tests, HAB 03- PCP Prophylaxis, HAB 04- HAART for individuals with AIDS, 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, 2011 through March 31, 2012, 22 percent of RW Part B clients had at least one viral load test recorded and 54 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, 2011 through March 31, 2012, 69 percent of men who have sex with men (including those MSM with IDU risk) had an undetectable viral load (Figure 5.2), 65 percent of heterosexuals had undetectable viral loads, and 65 percent of IDU had undetectable viral loads. By race/ethnicity, 75 percent of white, non-Hispanics had undetectable viral loads, 74 percent of Hispanics had an undetectable viral load and only 60 percent of blacks had an undetectable viral load (Figure 5.3). The ACP will continue working with sub-grantees 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 5.2. Viral load of RW Part B clients by risk category, RW 2011-2012

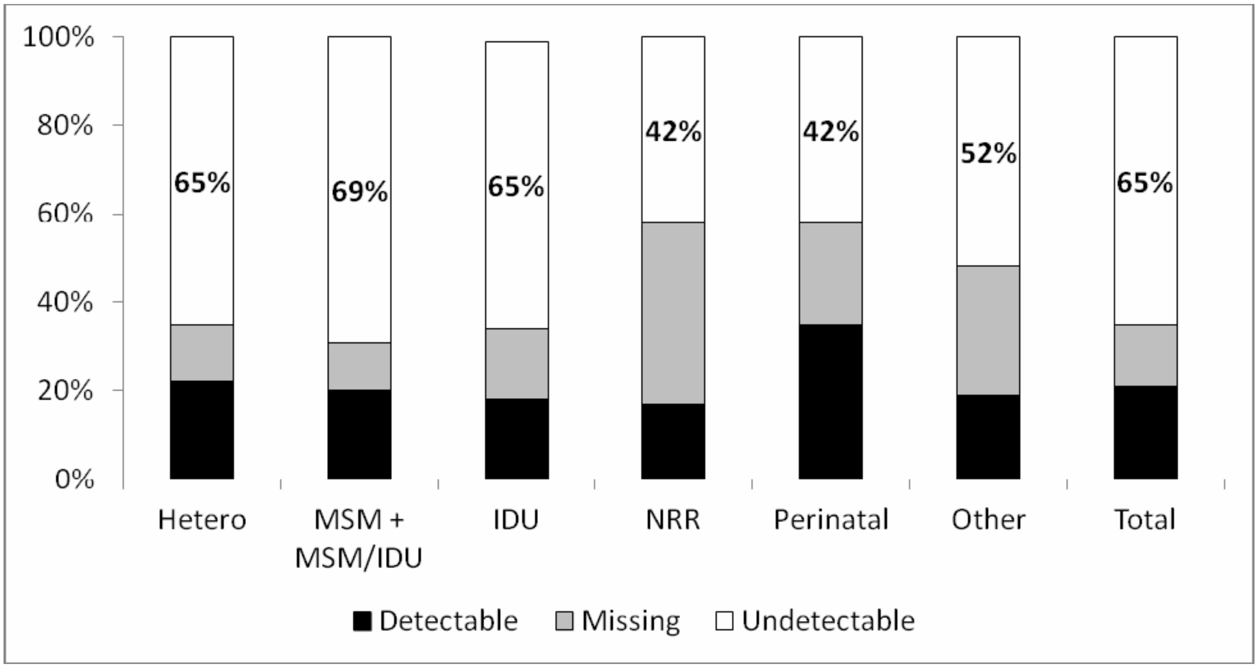
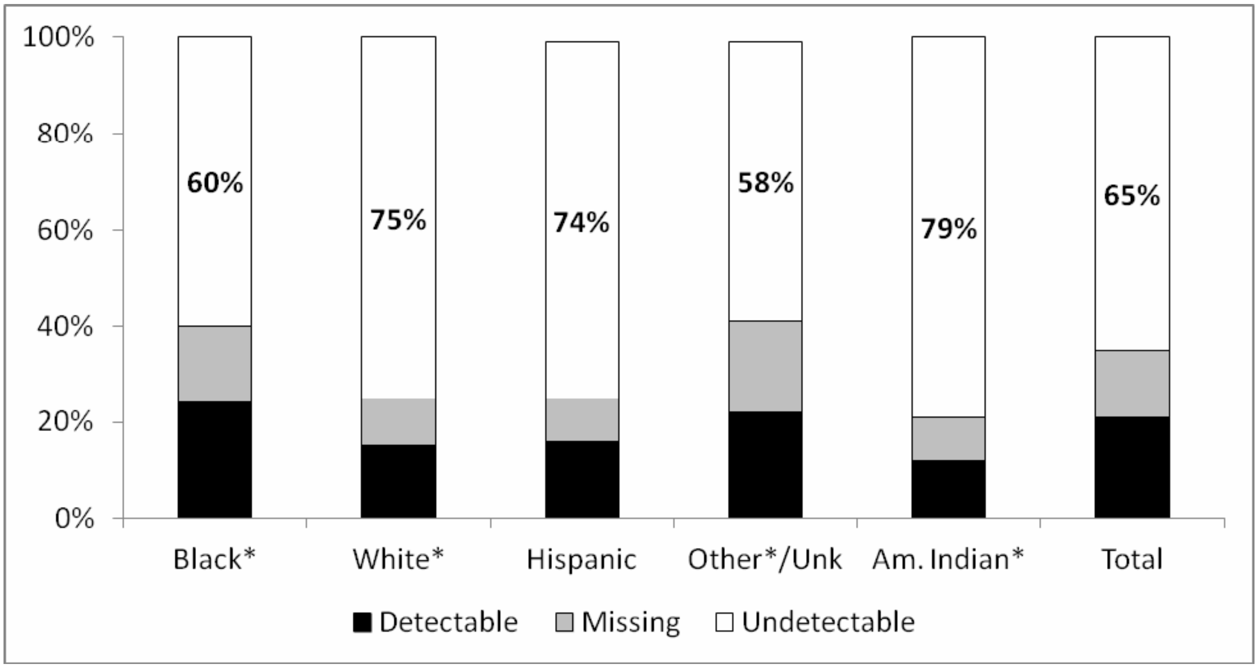


Figure 5.3. Viral load of RW Part B clients by race/ethnicity, RW 2011-2012



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, be a state resident, 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.

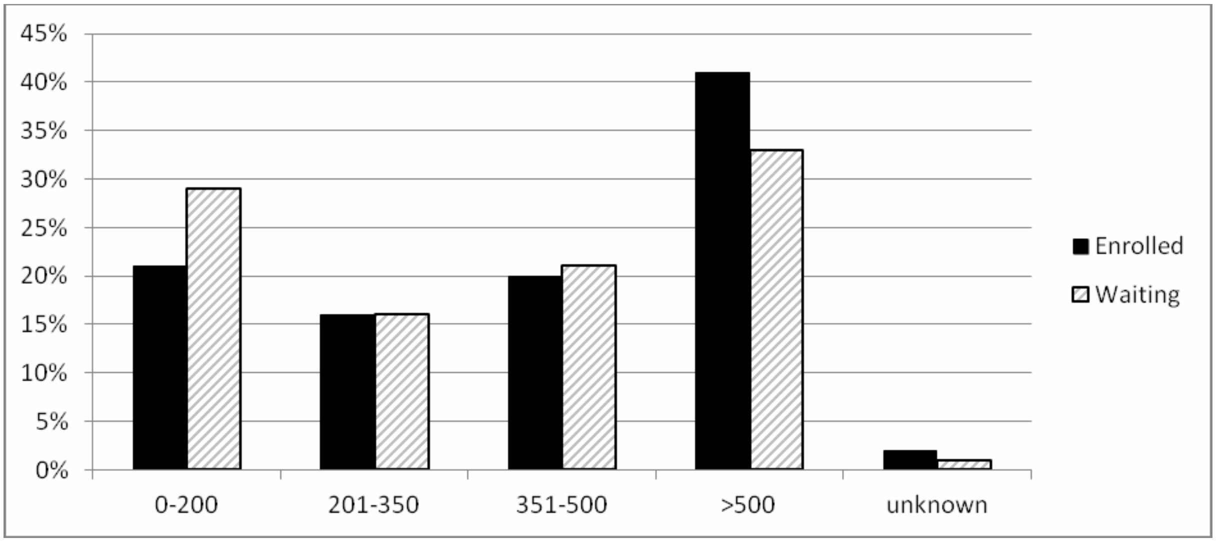
By July 9, 2010, the waiting list topped out at 829 clients who were eligible but not receiving medications from N.C. ADAP. The 2010-2011 state budget provided a substantial increase of $14.1 million dollars in funding for N.C. ADAP. This funding made it possible to move 654 clients off the waiting list 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 client 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 2011-2012 (April 1, 2011 to March 31, 2012) 6,876 individuals were enrolled in ADAP (see Figures 6.4 and 6.5). The gender distribution of ADAP enrollees (71%

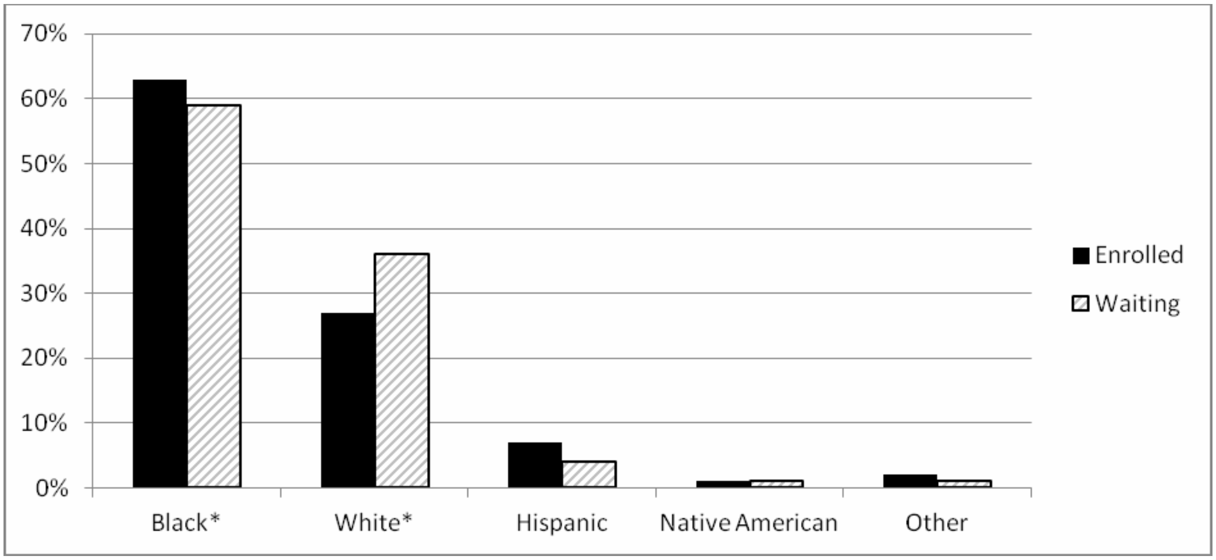
male and 29% female) is in line with the overall gender distribution of people living with HIV/AIDS (PLWHA) in North Carolina (70% male and 30% female). Some small differences exist in the racial and age distributions of ADAP enrollees and PLWHA in North Carolina (see Table 5.2). Of the ADAP enrollees, 75 percent had net family incomes at or below 125 percent of the federal poverty level, 21 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 5.4. ADAP clients enrolled and on the waiting list** by CD4 count



** ADAP waiting list as of March 29, 2012

Figure 5.5. ADAP clients enrolled and on the waiting list** by race/ethnicity



** ADAP waiting list as of March 29, 2012 * non-Hispanic

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 Branch's 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 MSA program in Virginia Beach, Virginia.

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 Program 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 2011, approximately 2,040 clients received HOPWA services. Our Tenant-Based Rental Assistance (TBRA) program served 264 clients. Our Short-term Rent, Mortgage and Utility Assistance (STRMU) program served 979 clients. The clients served by the HOPWA 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 NEEDS ESTIMATE, 2011

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 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. 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 2011 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, 74 percent of persons living in North Carolina with HIV Disease were estimated to be "in care" during calendar year 2011. The remaining 26 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 31 percent, as compared to 21 percent of persons living with an AIDS diagnosis (PLWA). The estimate of persons living with HIV (non AIDS) in care in N.C. has had a percent change of 19 since 2007 from an estimated 58 percent in care in 2007 to an estimated 69 percent of PLWH in care during 2011. The estimate of persons living with an AIDS diagnosis who are accessing medical care has increased by a 5 percent change since 2007, from an estimated 75 percent of persons living with an AIDS diagnosis estimated to be in care in 2007 to an estimated 79 percent in 2011.

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 5.3-5.4 present unmet need by age, race/ethnicity, gender and mode of HIV transmission. There are proportionately more males in the unmet need population (28%) versus females (22%). By race and ethnicity, the highest proportion of unmet need was among Hispanics (35%), compared with 25 percent of white, non-Hispanics, 26 percent of black, non-Hispanics and 22 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 (30%). The proportion of perinatal cases with unmet need was estimated to be 22 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 increased from 18 percent in 2010 to 21 percent in 2011. All ages (with the exception of 0-12 which stayed at 0 percent), genders, race/ethnicities, and transmission categories slightly increased in 2011.

Table 5.3. Persons living[†] with HIV/AIDS with unmet need by gender and age, 2011

	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	32.8%	22.8%	28.2%
Female	26.7%	15.4%	22.1%
Age			
0-12	25.0%	0.0%	25.0%
13-24	27.1%	16.4%	25.5%
25-44	32.0%	21.3%	27.7%
45-64	30.1%	20.5%	25.1%
65+	38.6%	25.2%	32.0%
Race/Ethnicity			
White*	25.7%	22.3%	24.2%
Black*	32.1%	19.2%	26.4%
Hispanic	35.4%	34.5%	34.9%
Other**	26.9%	15.7%	22.4%
Total	30.8%	20.8%	26.4%

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

Table 5.5 presents unmet need by Patient Management Model regions (see Figure 6.1. for a map of the PMM regions). All regions have had a slight increase of unmet need in PLWHA since 2010.These differences may be due to data gaps, or may reflect actual decreases in the proportion of persons accessing HIV care.

Table 5.4. Persons living[†] with HIV/AIDS with unmet need by mode of transmission, 2011

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*	27.3%	21.6%	24.9%
IDU*	37.3%	23.4%	29.8%
MSM/IDU*	31.7%	22.7%	27.1%
Other	48.8%	35.8%	40.8%
Heterosexual	27.1%	16.5%	22.1%
Perinatal	22.2%	0.0%	22.0%
NIR/NRR*	34.7%	20.9%	28.8%
Total	30.8%	20.8%	26.4%

[†] 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 5.5. Persons living[†] with HIV/AIDS with unmet need by PMM regions, 2011

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	35.0%	22.6%	30.1%
Region 1	22.6%	18.5%	21.7%
Region 2	17.3%	16.9%	17.1%
Region 3	22.3%	19.8%	21.3%
Region 4	25.5%	18.0%	22.7%
Region 5	38.6%	21.7%	31.1%
Region 6	33.3%	23.6%	29.0%
Region 7	31.2%	20.4%	26.1%
Region 8	25.5%	11.9%	18.8%
Region 9	37.8%	36.2%	36.9%
Region 10	27.6%	17.4%	22.3%
Total*	30.8%	20.8%	26.4%

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

*Totals include persons with unassigned region.

This page is intentionally blank.

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 6)

This page is intentionally blank.

CHAPTER 6: STDS OTHER THAN HIV/AIDS IN NC

HIGHLIGHTS

- In 2011, North Carolina continued to experience a significant outbreak of new syphilis cases which peaked in 2009 with 938 cases. Seven hundred and sixty-eight (768) cases of early syphilis were reported in 2011 which represents an 18 percent decrease from the number of cases reported in 2009.

- The overall early syphilis rate in 2011 was 8.1 cases per 100,000 population. In 2011, the male to female ratio for early syphilis cases in the state was 6.7, 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 59 percent of 2011 early syphilis reports in North Carolina.

- In 2011, black males represented 63 percent of all early syphilis cases with a rate of 49.5 per 100,000. The syphilis rate among black males was over ten times the rate for white males (4.6 per 100,000) and the rate of syphilis among Hispanic males (5.8 per 100,000) was 1.3 times the rate for white males.

- The highest chlamydia rates in 2011 were among 20 to 24 year olds for both females (5,188.3 per 100,000) and males (1,402.4 per 100,000).

- Racial disparities in female chlamydia reports have remained fairly stable over the past five years (2007–2011), with a rate six to eight times higher among black females than among white females. The rates for Hispanic females have been two to three times higher.

- Chlamydia positivity rates among women <25 years old tested in publicly-funded clinics have not changed over the past five years. In STD clinics the positivity rate has ranged from 15.4 percent to 16.0 percent. Family Planning and OB/GYN clinics have similar rates ranging from 7.5 pecent to 9.2 percent.

- Gonorrhea case reports reflect severe racial disparities. The differences are most dramatic for males, where the 2011 gonorrhea rate among black males (401.3 per 100,000) was 24 times higher, among American Indian males (96.4 per 100,000) was almost six times higher, and the rate for Hispanic males (40.2 per 100,000) was more than two times higher than the rate among white males (16.7 per 100,000).

- The racial disparities in gonorrhea rates were less severe among females. The 2011 gonorrhea rate for black females (465.7 per 100,000) was 13 times higher, the rate for American Indian females (240.2 per 100,000) was over six times higher, and the rate for Hispanic females (57.2 per 100,000) was almost twice the rate for white females (35.8 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 (NCDHHS). 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 NCDPH Communicable Disease Branch.

Table 6.1. North Carolina reportable sexually transmitted diseases, 2011

	Gender		
	Male	Female	Total*
Chlamydia (lab-confirmed)	11,408	42,202	53,854
Gonorrhea	7,187	9,890	17,158
Syphilis			
Primary Syphilis	100	3	103
Secondary Syphilis	301	27	328
Early Latent Syphilis	267	70	337
Late Syphilis	77	16	94
Late Latent Syphilis	276	106	382
Late Syphilis w. symptoms	5	1	6
Neurosyphilis	0	0	0
Congenital Syphilis	1	3	4
Syndromic Diagnoses			
Nongonococcal Urethritis (NGU)	5,088	n/a	5,088
Pelvic Inflammatory Disease (PID)	n/a	677	677
Other STDs			
Chancroid	0	0	0
Granuloma Inguinale	0	0	0
Lymphogranuloma Venereum (LGV)	1	0	1
Opthalmia Neonatorum (gonorrhea)	0	0	0

*Total includes cases with unknown gender

Table 6.1 describes STD cases reported to the CDB in 2011. 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 2011, there were 677 cases of PID reported to NCDHHS. 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 2011, there were zero cases of chancroid and one case of lymphogranuloma venereum or opthalmia neonatorum (opthalmic infection with *N. gonorrhoeae* in infants) reported in N.C.

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 U.S. Food and Drug Administration (FDA) to protect against HPV infection. One vaccine protects against four HPV strains, two that cause 90 percent of genital warts (types 6 and 11), and two that cause 70 percent of cervical cancer (types 16 and 18). This vaccine is recommended for use in females ages 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 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 CDB via the North Carolina Electronic Disease Surveillance System (NCEDSS). This reporting of morbidity through NCEDSS represents a substantial improvement in surveillance reporting for laboratory-based diseases. Because NCEDSS 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 NCEDSS 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 NCEDSS.

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 NCEDSS 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 NCEDSS).

Chlamydia trend analysis

Gender

Due to screening bias, the vast majority (consistently around 80%) of reported chlamydia cases are among females. Male cases are often detected when a female partner tests positive through screening and refers the male for testing and treatment. The number of male cases reported increases as the number of female cases increases but the proportions of each remain relatively consistent. During 2010, 19 percent of the 42,167 cases reported were among males. This proportion increased to 21 percent of cases for 2011 (out of 53,854 cases). Again this increase is likely a factor of screening practices and surveillance reporting, not an alteration in morbidity.

Comparing 2010 and 2011, the rate of male cases and female cases increased by 41 percent and 24 percent, respectively (Appendix D, Table V, pg. D-34). This increase is likely a combination of additional screening targeted to this population as well a result of more accurate reporting through NCEDSS.

Age

Chlamydia is predominantly found in younger age groups. Over the past five years (2007-2011), reported cases and rates have generally been on the rise for all age groups, most likely reflecting more screening. For males, the highest rates are consistently found in the 20 to 24 age group, followed by 15 to 19 year olds. For females the rates for 15 to 19 year olds and 20 to 24 year olds are much closer. In 2011, the rate for females 20 to 24 years of age was the highest rate across all demographic groups (5188.3 per 100,000; Appendix D, Table V, pg. D-34). During 2011, 20 to 24 year olds represented 40 percent of female cases and 41 percent of male cases reported in North Carolina.

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. Historically, the rates among non-Hispanic black males have been 11-12 times the rates for non-Hispanic whites, and the rates for Hispanics have been 3-4 times the rates for non-Hispanic whites. In 2011, the rate among non-Hispanic black males (481.4/100,000) was increased to 12 times the rate for non-Hispanic whites (39.3/100,000), and the rate for Hispanic males (137.5/100,000) was 3.5 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 (1544.7/100,000) seven times higher than the non-Hispanic white female rate (224.4/100,000). The rate for American Indian/Alaskan Native females (AI/AN) (972.4/100,000) was about four times higher than non-Hispanic whites and the Hispanic rate (602.6/100,000) about 2.7 times higher. It is very likely that these disparities are due, at least in part, to screening and reporting bias. About 37 percent of Chlamydia reports for 2011 were missing race/ethnicity information.

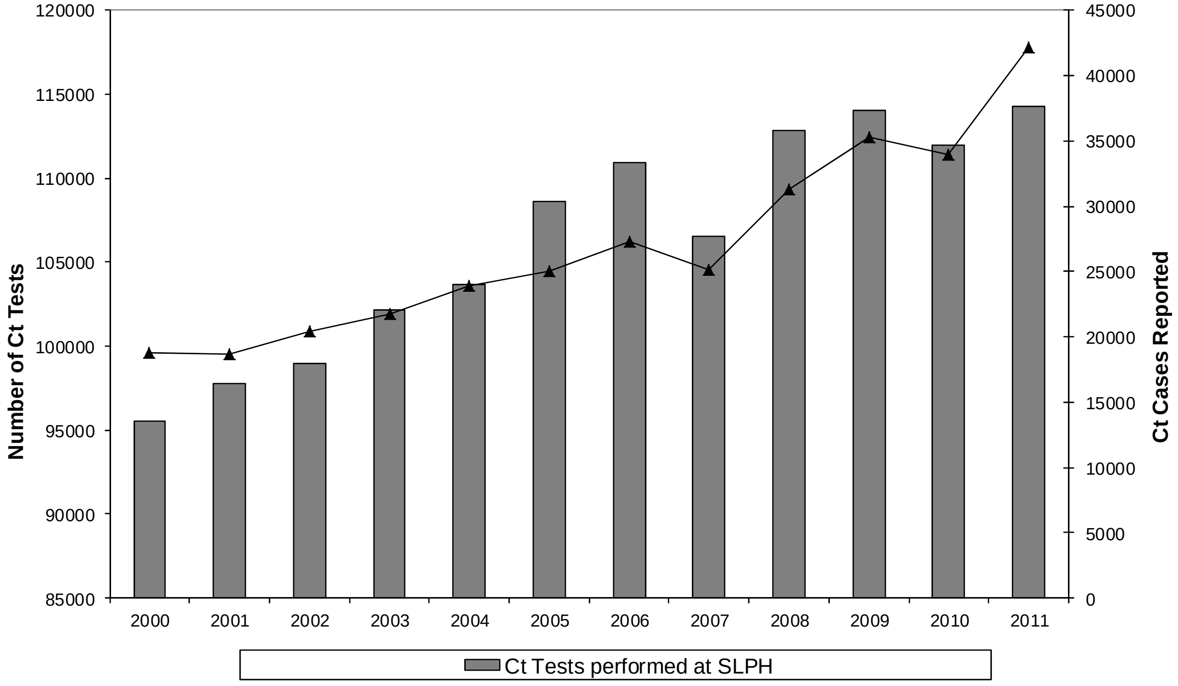
Chlamydia Prevalence Data

Since most county health departments in North Carolina do not have adequate laboratory facilities to process chlamydia samples, they submit their samples to the State Laboratory of Public Health (SLPH) for testing. Information is collected on both positive and negative tests from 95 counties and is used for estimating prevalence and for program evaluation. County Health Clinics (STD, family planning, and OB/Gyn) in the 95 counties screen all sexually active women ages 24 and under, all pregnant women, and women age 25 and over with certain risk factors such as having multiple sexual partners. These data do not include tests from the five counties with the largest health departments (Durham, Forsyth, Guilford, Mecklenburg, Wake) which conduct in-house testing.

In 2004, the SLPH switched from Enzyme Immuno Assay (EIA) testing to the more sensitive Nucleic Acid Amplification Test (NAAT). This caused an immediate increase in positivity (from 5.4 percent to 8.8 percent among women within a single year). Keeping comparisons within a single test type (NAAT), positivity rates have remained fairly stable since 2004, ranging from 7.4 percent to 8.8 percent each year among women screened.

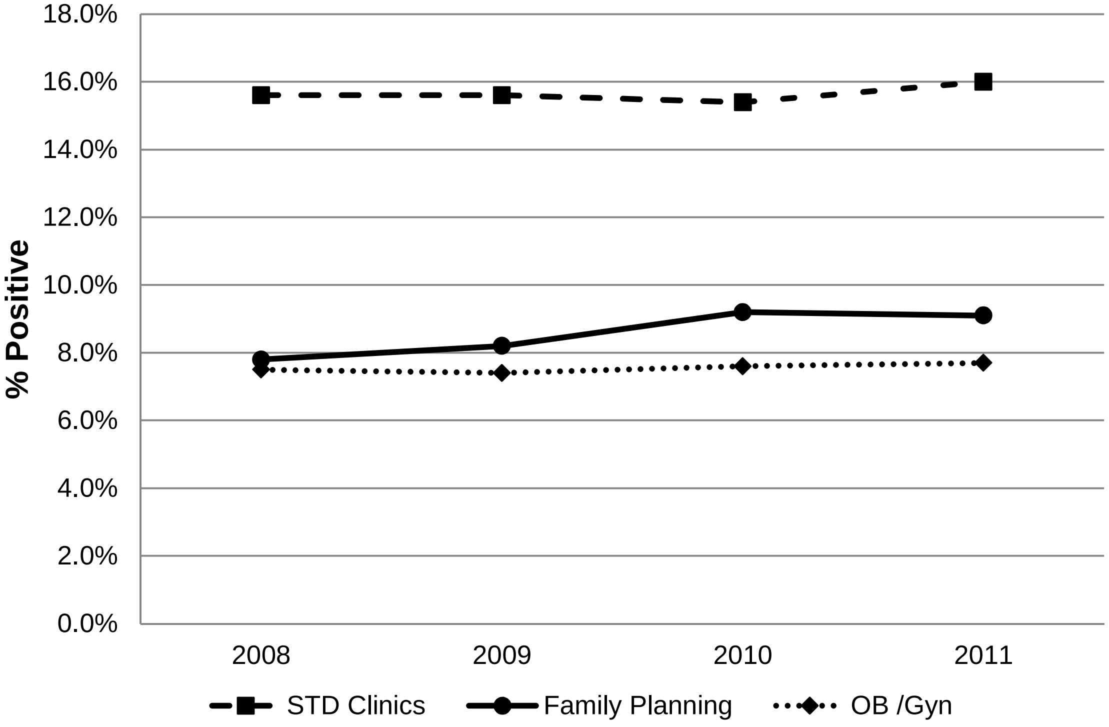
There is some bias in the data because screening is almost exclusively done for women and the data only reflects testing that occurred in publicly-funded clinics. Still, it is the best source of information on chlamydia prevalence that is currently available. The number of reported chlamydia cases (and therefore the chlamydia rates) is highly dependent on screening practices. Figure 6.1 illustrates this phenomenon by comparing the number of Chlamydia tests performed in at the SLPH (for 95 counties) with the number of Chlamydia cases reported for the whole state (100 counties). The cases detected by the SLPH represent a quarter to a third of the overall reported cases each year. It should be noted that the county health departments in the five largest counties follow the same screening practices as those in the other 95 but send their tests to other labs.

Figure 6.1
Chlamydia tests performed at NC SLPH and New Cases Reported, 2000-2011



Because chlamydia reporting is so dependent upon screening practices, it is not especially useful in determining whether or not the prevalence of chlamydial infection is changing. The SLPH screening data provides an opportunity to examine this question by plotting the positivity rates over time among stable, screened populations. Figure 6.2 shows women screened in STD, family planning, and OB/GYN clinics in the 95 county health departments. All sexually active women in this age group are offered testing. Rates are highest among STD clinic patients and lowest among OB/GYN patients but it is clear that the positivity has not changed in the last four years.

Figure 6.2
Chlamydia Testing among Women under 25
Positivity Rates by Clinic Type



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 5,088 male cases of NGU reported in 2011 (Table 6.1). 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 Branch via NCEDSS. This move to NCEDSS may have affected the gonorrhea data similarly to its effect on chlamydia case reporting. As with chlamydia reports, there was an increase in the number of gonorrhea cases reported in North Carolina in 2011 (up 21.2 percent compared to 2010). This increase likely reflects the efforts made toward more accurate reporting. This increase is likely a combination of additional screening targeted to this population as well a result of more accurate reporting through NCEDSS.

Because the majority of males do experience symptoms associated with gonorrhea, they are relatively likely to seek care and therefore get reported as cases. Public clinics and local health departments that screen young women for chlamydia also screen for gonorrhea, in part because they use a single laboratory test for both infections. This contributes greatly to the detection of asymptomatic cases. For these reasons, gonorrhea surveillance data is far more reliable and useful than that for chlamydial infection (Sampson, 2006).

Gonorrhea trend analysis

From 2007 to 2011, rates for gonorrhea have ranged from 148.4 to 183.9 per 100,000 population. The highest rate (183.9/100,000) was observed in 2007 (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 54 percent of cases in 2007 to 58 percent in 2011. 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 the STD clinic, the gender bias in gonorrhea reporting is not as severe as that 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 2011 (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 mirror 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 2011, the rates for males in the 20 to 24 age group were highest (809.7/100,000) and the rates for 25 to 29 year olds (431.5/100,000) were only slightly higher than the rates for 15 to 19 year olds (378.1/100,000) (Appendix D, Table T, pg. D-31). Female gonorrhea rates in 2011 were also highest for 20 to 24 year olds (1197.8/100,000), closely followed by the rates for 15-19 year olds (1012.4/100,000). The rates for 25 to 29 year old females were considerably less (470.3/100,000). For the past five years (2007-2011), individuals 15 to 24 represented more than 60 percent of all gonorrhea cases reported. In part this is likely due to the targeted screening campaigns focused on this population.

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. Nonetheless, gonorrhea case reports reflect severe racial disparities. Historically, the differences are most dramatic among males, where 2011 gonorrhea rates among non-Hispanic blacks (401.3/100,000) were more than 24 times higher than for non-Hispanic whites (16.7/100,000), rates for American Indian/Alaska Natives (AI/AN) were nearly six times higher 96.4/100,000), and for Hispanics 2.4 times higher (40.2/100,000; Appendix D, Table U, pg. D-33). Among women, the trends are similar but less pronounced: in 2011 the non-Hispanic black rate (465.7/100,000) was 13 times higher than for non-Hispanic whites (35.8/100,000) and was the highest rate across all racial/ethnic groups. The rate for AI/AN females (240.2/100,000) was over six times higher than for non-Hispanic whites and the rate for Hispanic females (57.2/100,000) was 1.6 times more than the non-Hispanic white rate. The number of case reports with unknown race/ethnicity has increased from 24 percent in 2010 to 34 percent in 2011, so conclusions based on race/ethnicity continue to be in question as health department users continue to adjust to reporting through NCEDSS.

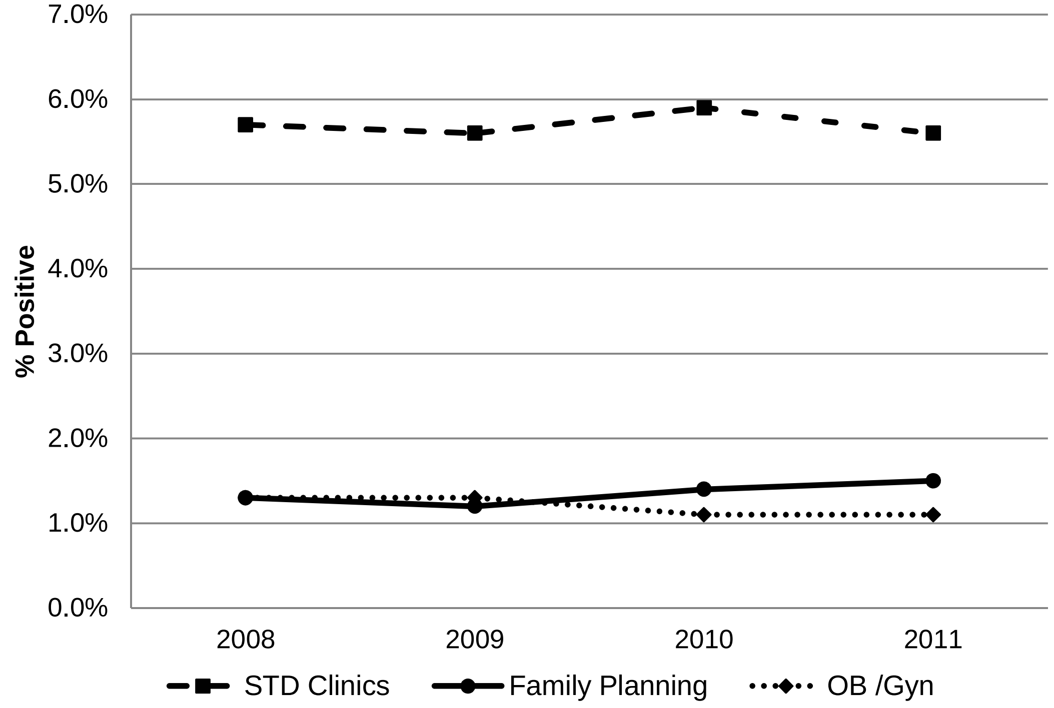
Gonorrhea and HIV co-infection

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, NCEDSS 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.

Gonorrhea Prevalence Data

When the SLPH switched chlamydia testing from EIA to NAAT in 2004, the state gained a comprehensive gonorrhea screening program. Up to that point, Gc screening had been taking place in county health departments but the culture tests were performed locally and with varying levels of expertise. The new test is a combined Chlamydia and Gonorrhea NAAT test so all women screened for chlamydia as previously described were also tested for gonorrhea. Reported Gc cases are less dependent upon screening practices than chlamydia but it is still useful to examine the screened populations over time. Positivity rates by clinic type are shown in Figure 3 and reflect sexually active women under age 25 screened in 95 county health departments. As with chlamydia, rates are highest among STD clinic patients and lowest among OB/GYN patients and have not changed in the last four years.

Figure 6.3
Gonorrhea Testing among Women under 25
Positivity Rates by Clinic Type



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. 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 2010, 189 men were tested at the Greensboro site. Ninety-seven percent were non-Hispanic blacks; about 37 percent were aged 20 to 24 years with another 20 percent aged 25 to 29 years. Over 10 percent of participants reported identifying as men who had sex with men. Resistance to penicillin, ciprofloxacin, and/or tetracycline was detected in slightly more than 21 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 NCDPH 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 Branch, 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 NCEDSS. 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 Branch 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 in part to the work of the Syphilis Elimination Effort.

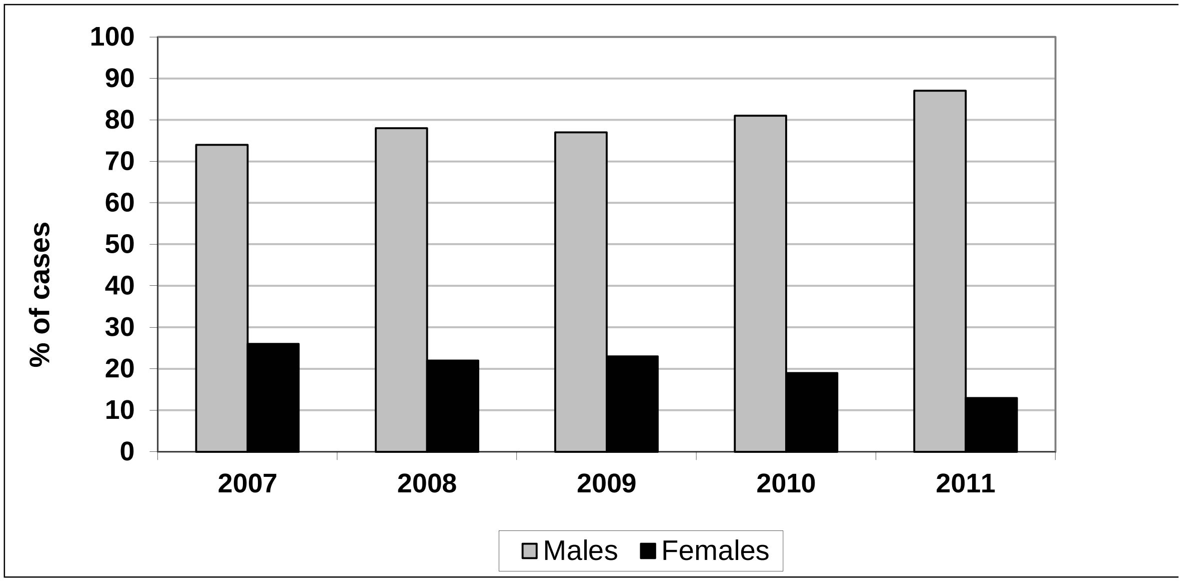
Syphilis trend analysis

In 2009, North Carolina experienced a significant outbreak of new syphilis cases. Nine hundred thirty eight (938) new cases of early syphilis (primary, secondary and early latent) were reported. These new cases represented an 82 percent increase in cases over the 516 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 and in 2011 there were 768 reports.

Gender

Early syphilis rates among males began to rise substantially in 2004 and continue to rise indicative of increasing transmission among men who have sex with men (MSM). In 2011, male cases represented 87 percent of all 768 early syphilis reports and the male-to-female ratio (based on rate) was 7.2 (Appendix D, Table V, pg. D-34). The rate of male early syphilis cases in 2011 was 14.4 per 100,000 males, a 9 percent decrease from 2009 (15.8/100,000 males). The rate of female early syphilis cases decreased by 56 percent (from 4.5/100,000 in 2009) to 2.0 cases per 100,000 in 2011, supporting the assessment that men who have sex with men are a key population of concern in the current outbreak (Figure 6.1).

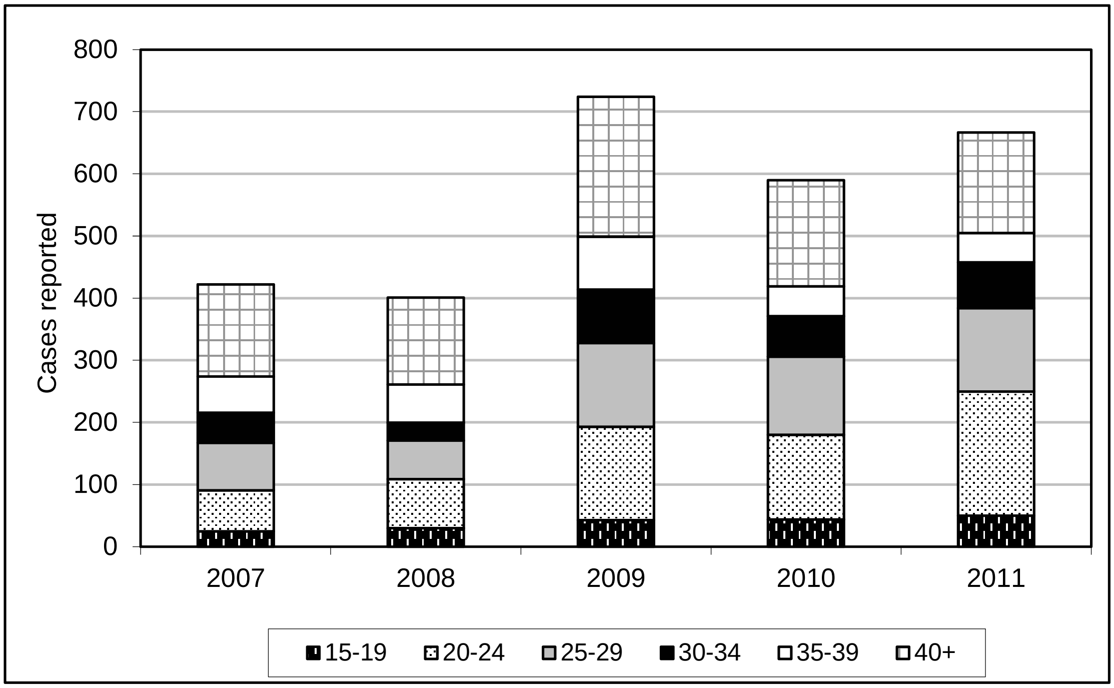
Figure 6.4. Percentage of PSEL syphilis cases by gender, 2007-2011*



Age

Previously in North Carolina, syphilis cases were found among 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 early syphilis rates among younger age groups for both men and women. In 2011, 20 to 24 year old males (59.4/100,000) had the highest rate across all age and gender groups followed closely by 25 to 29 year old males (43.0/100,000) (see Figure 6.2). The highest rate for women was among those age 20-24 (6.8/100,000). The trends are similar when primary and secondary stage syphilis is examined separately.

Figure 6.5. PSEL syphilis cases by age – Males, 2007–2011



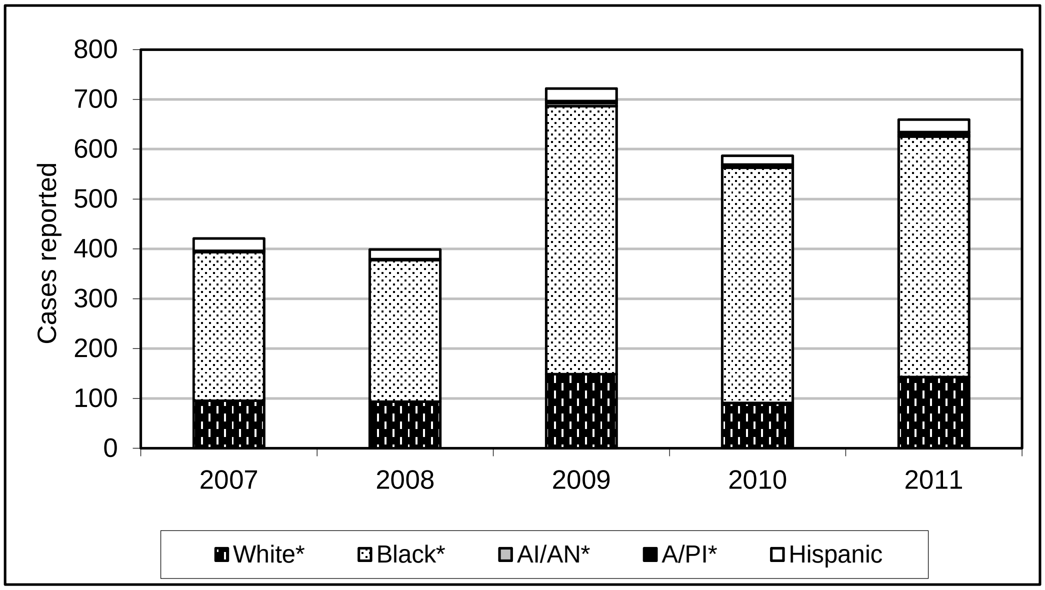
Race/Ethnicity

Syphilis disproportionately affects minority communities, but 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. Syphilis reporting is generally very good in North Carolina, so it is unlikely that this disparity was 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.

For males, the 2011 early syphilis rate for non-Hispanic whites was 4.6 per 100,000, for non-Hispanic blacks the rate was 49.5 per 100,000 or 10.8 times higher, and for Hispanic males the rate was 5.8 per 100,000. For females, the 2011 early syphilis rate for non-Hispanic whites was 0.4 per 100,000 and for non-Hispanic blacks the rate was 7.1 per 100,000 or nearly 18 times that for whites.

In 2005, non-Hispanic whites represented about 40 percent of syphilis reports for males, non-Hispanic blacks about 51 percent, and Hispanics about 8 percent. Since that time, the proportion of non-Hispanic blacks among male reports has increased each year. In 2011, non-Hispanic black males represented 72 percent of reports for males, while reports for non-Hispanic white males decreased to 21 percent and reports for Hispanic males decreased to 3.7 percent (Figure 6.3). For females, the trends are less clear. Among 2005 female syphilis cases, the proportion of non-Hispanic whites was about 25 percent, the proportion of non-Hispanic blacks was about 67 percent and the proportion of Hispanics was about 3 percent. In 2011, non-Hispanic white female cases represented 13 percent of 100 reported cases, non-Hispanic blacks 79 percent, and Hispanics 5 percent (Appendix D, Table W, pg. D-36).

Figure 6.6. PSEL syphilis cases by race/ethnicity – Males, 2007–2011



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

Sexual Orientation

Sex of partner information is collected during the contract tracing and partner notification investigations conducted at the Regional Field Services offices across the state and is not maintained in the central STDMIS database used for official morbidity reporting. As part of the efforts of the Syphilis Elimination Response Team (SERT), a new data collection tool was developed to gather additional risk information, including sex of partner data, on early syphilis cases reported in North Carolina. Of the male cases reported using the SERT form during 2009-2010, just under 69 percent reported having sex with men, with 75 percent of those being non-Hispanic blacks and 51 percent between 20 and 29 years of age.

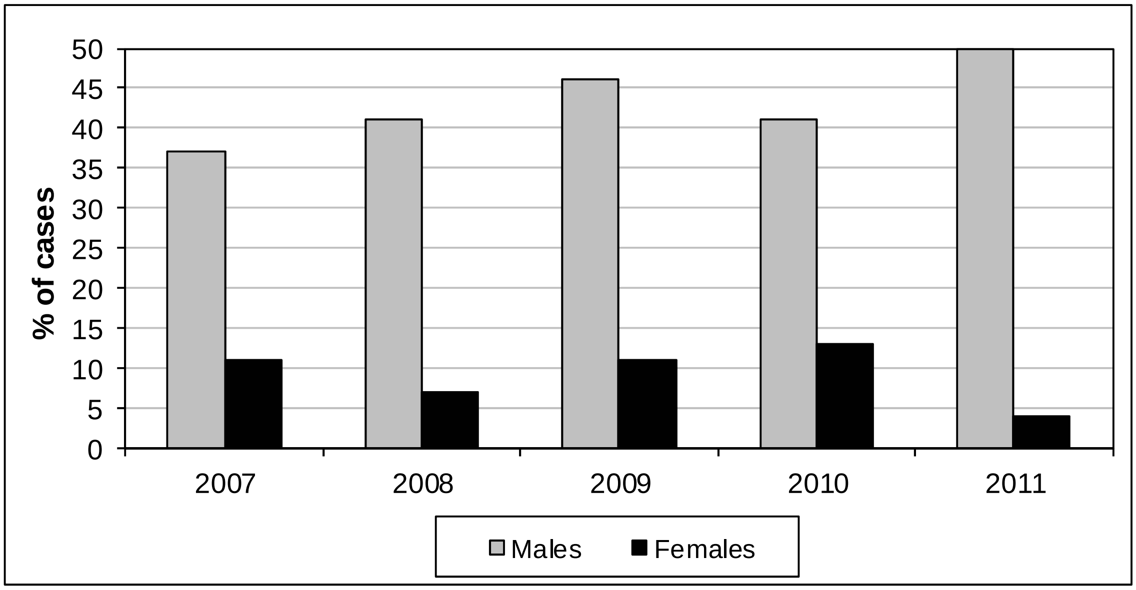
Geography

The increase in syphilis in 2009 occurred throughout the state and included many counties that follow interstate highways 40 and 85 and several eastern counties. In 2009, Forsyth, Mecklenburg, Wake, Guilford, Wayne and Durham counties each contributed at least 40 or more new early syphilis cases to the overall morbidity of the state. Most counties reported fewer early syphilis cases in 2010 compared to 2009 with further declines in 2011. Notable exceptions include Guilford County (68 cases in 2009, 115 in 2011) and Mecklenburg (174 cases in 2009, 190 in 2011). The SERT team continues to operate to contain these outbreaks.

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 all early syphilis cases with HIV was around 4 percent. In 2009, 36 percent of early syphilis cases also had an HIV diagnosis; this rose to 44 percent in 2011. 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 percent and about 7 percent for female cases. By 2011, half of male syphilis cases were diagnosed as comorbid with HIV. For females the trend since 2003 is less clear and the proportion of female cases with HIV fluctuated from a high of 13 percent in 2010 but returned to a level of 4 percent in 2011 (see Figure 6.4).

Figure 6.7. Percent of PSEL syphilis cases with HIV by gender, 2007–2011*

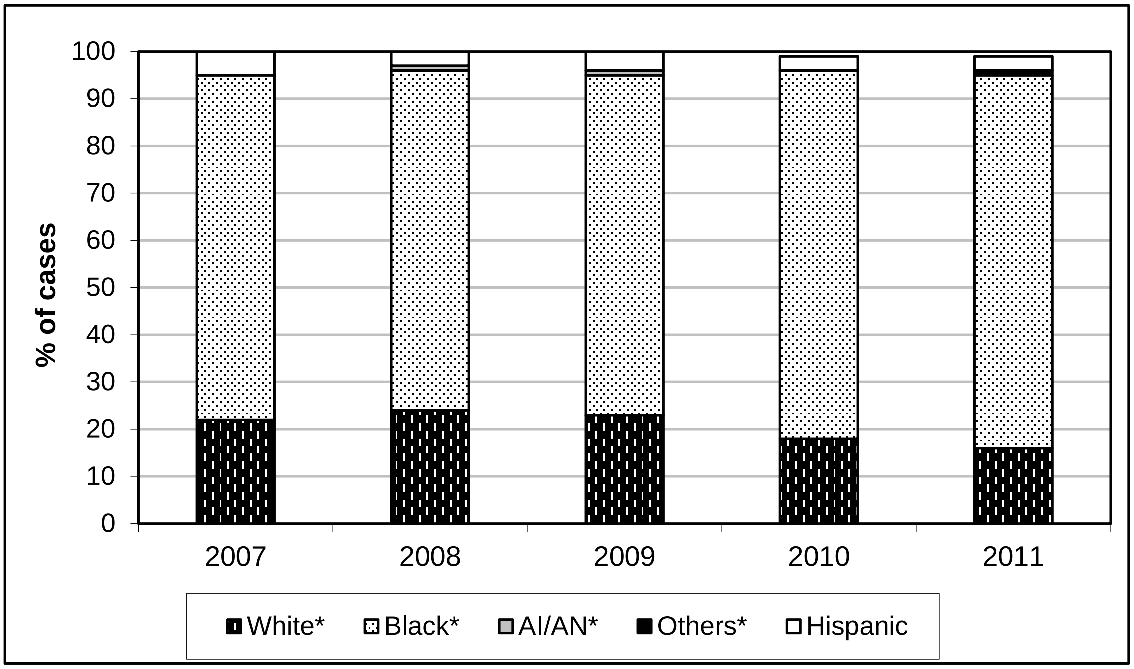


*HIV diagnosis data current as of January, 2012

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 co-morbid male cases and non-Hispanic whites represented 19 percent. This changed dramatically in 2005 when the proportion of non-Hispanic white cases among co-morbid males increased to 54 percent. Since that time the proportion of co-morbid cases represented by non-Hispanic black males has returned to levels observed earlier, with the proportion of co-morbid cases among blacks growing slightly over the last three years. In 2011, 79 percent of co-morbid male cases were black, non-Hispanic and 16 percent were white, non-Hispanic (see Figure 6.5). 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 6.8. Percent of PSEL syphilis cases with HIV by race/ethnicity – Males, 2007–2011



*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. Five infants were born in 2011 to mothers who had active or inadequately treated cases of syphilis. Because of the delay in reporting and confirming congenital syphilis diagnoses, this number should be considered preliminary. There were ten cases of congenital syphilis in 2010. The number of congenital syphilis cases reported remains unacceptably high.

North Carolina law states that medical providers are supposed to test all pregnant women for syphilis between 28-30 weeks gestation and again at delivery for women at high risk for syphilis. Women who do not receive adequate prenatal care services often miss these opportunities for screening. The Communicable Disease Branch is currently partnering with the Women and Children's Health Branch to refer at-risk women into prenatal care services.

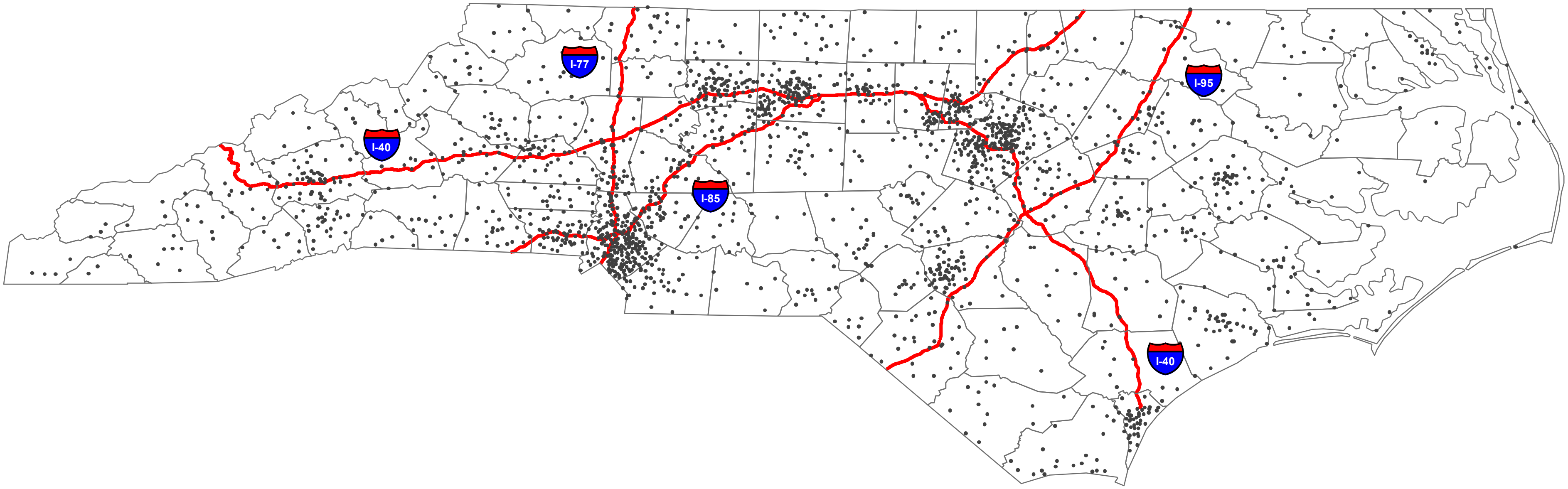
The number of congenital syphilis continues to represent a problem. Mothers of infants with congenital syphilis in North Carolina either lack access to treatment that can prevent the transmission of syphilis or they are not seeking prenatal care and are thus outside the realm of the public health surveillance. 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 N.C. Pregnancy Risk Assessment Monitoring System (PRAMS) survey for 2009, 23 percent of North Carolina 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 Branch is currently partnering with the Women and Children's Health Branch to refer at-risk women into prenatal care services.

APPENDIX A: MAPS

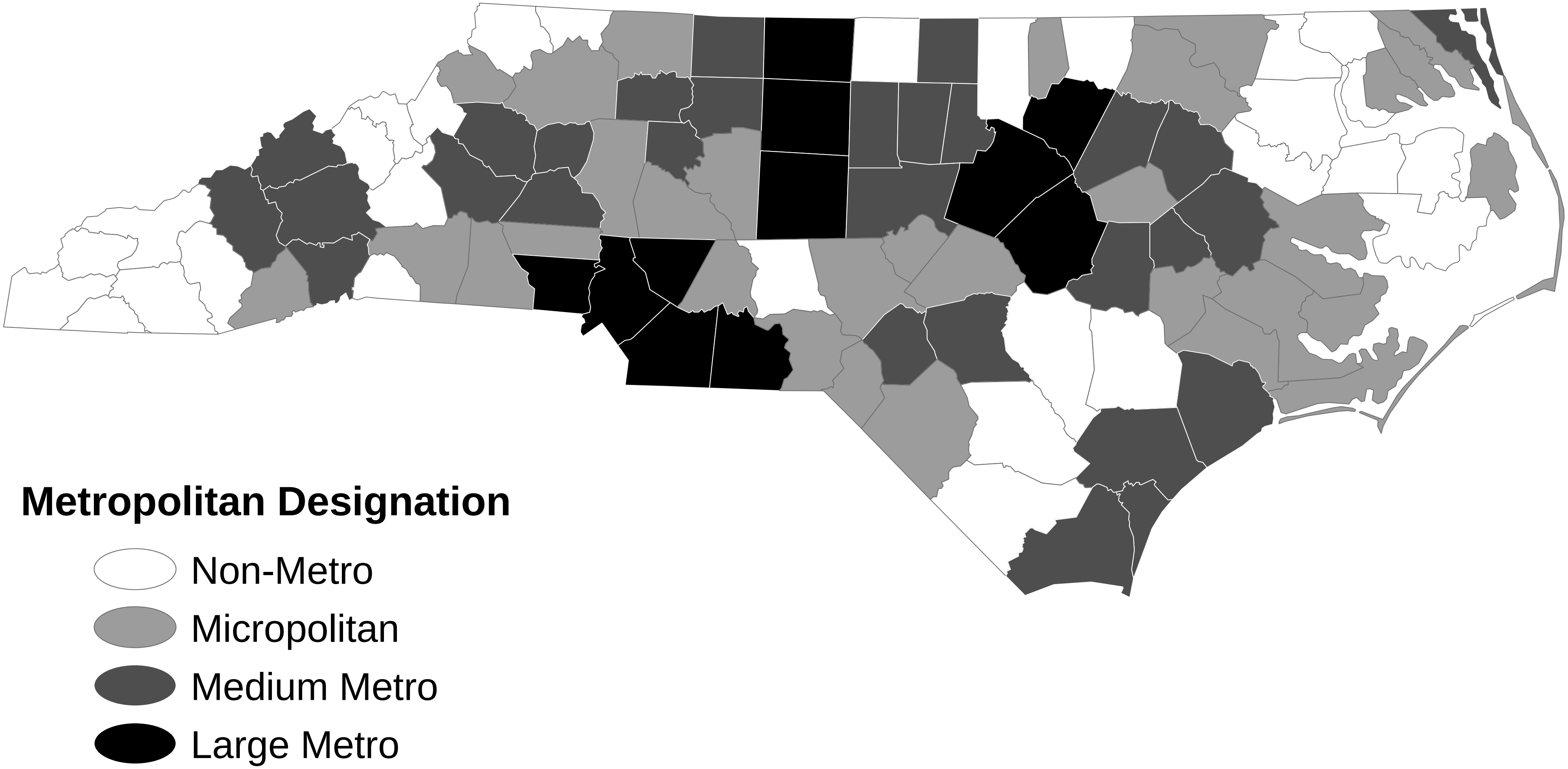
This page is intentionally blank.

Map 1. North Carolina Population by County, 2010

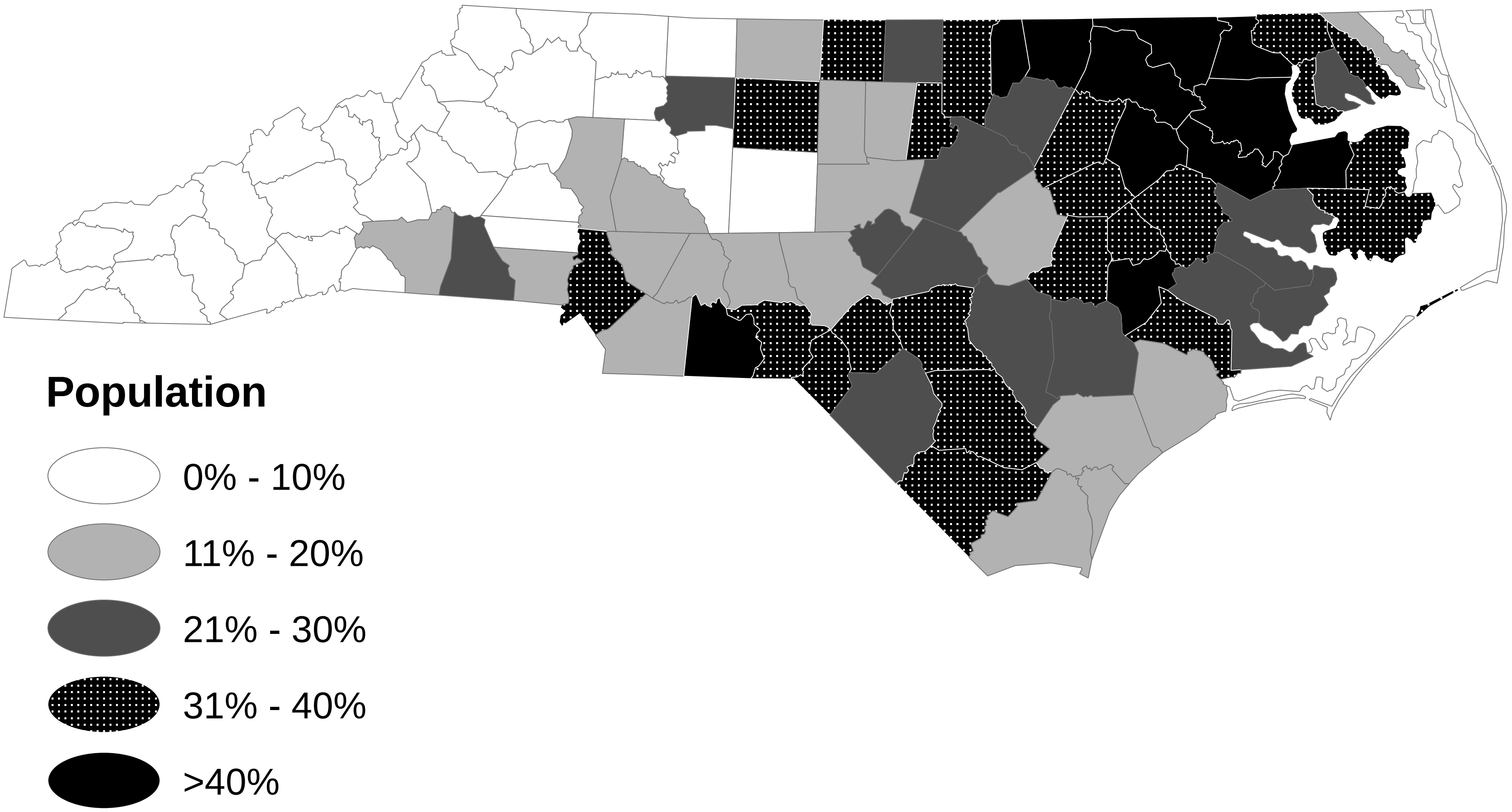


1 Dot = 5,000 persons

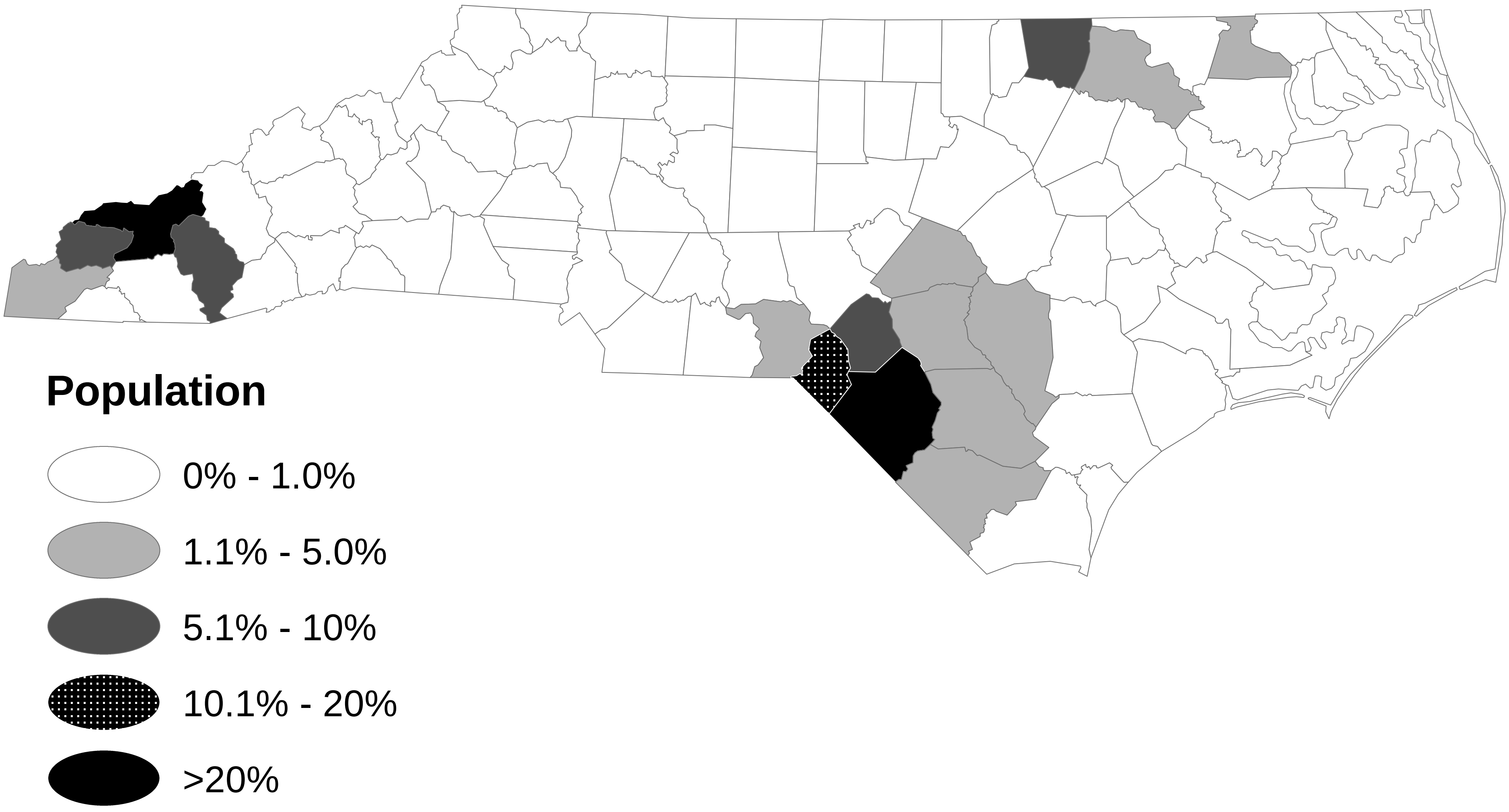
Map 2. North Carolina Metropolitan Designations



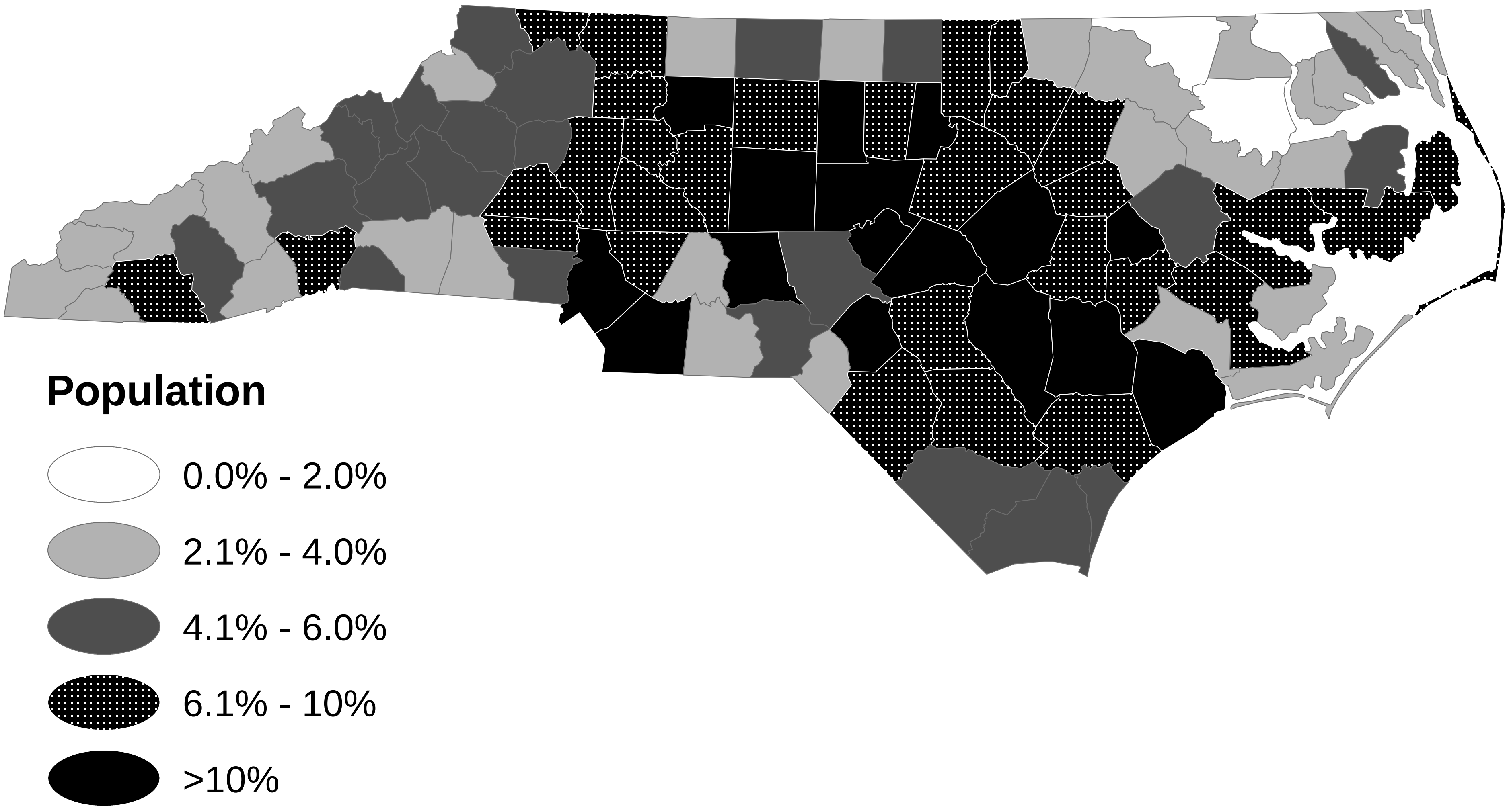
Map 3. North Carolina African American or Black Population, 2010



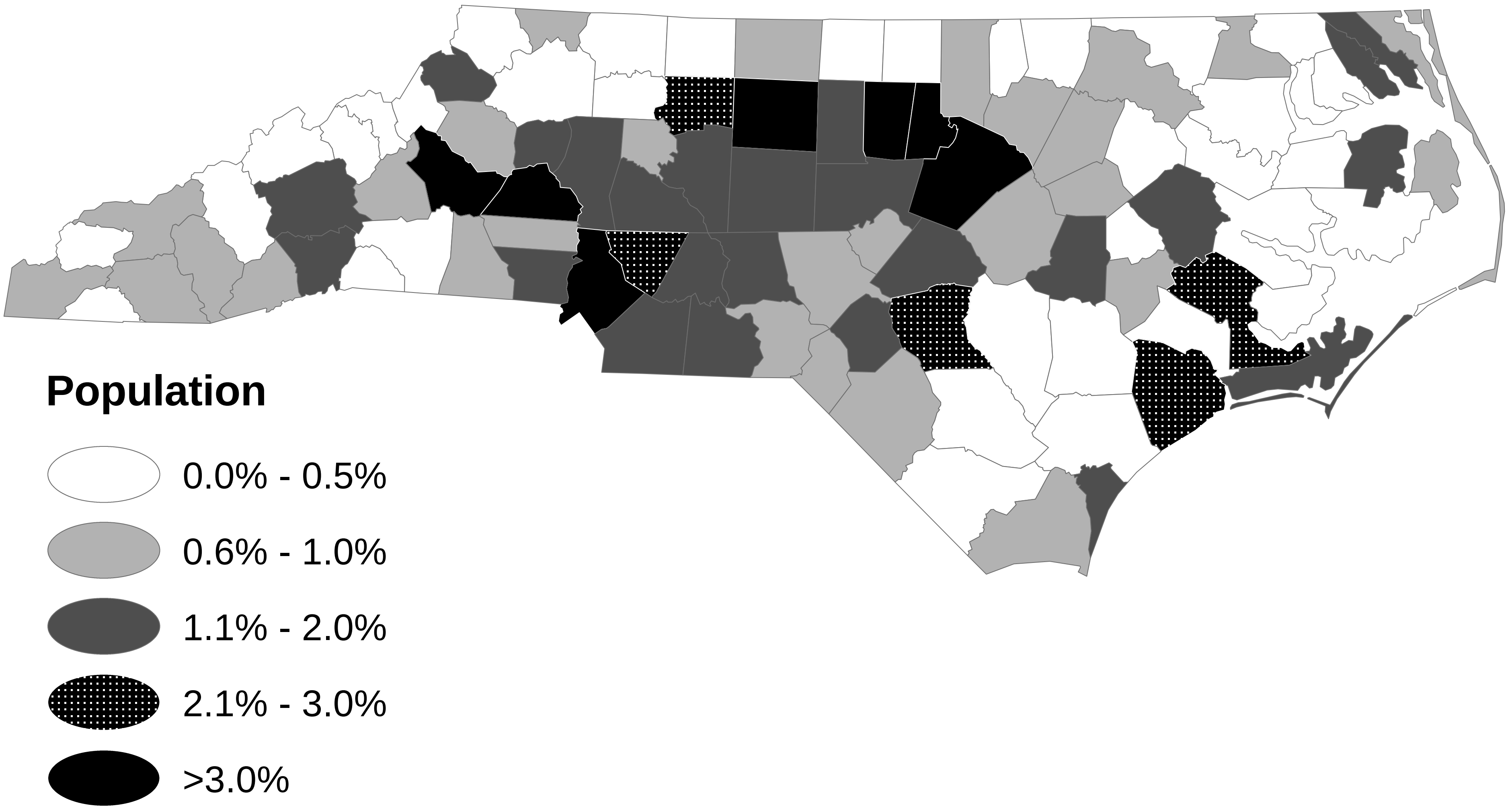
Map 4. North Carolina American Indian/Alaskan Native Population, 2010



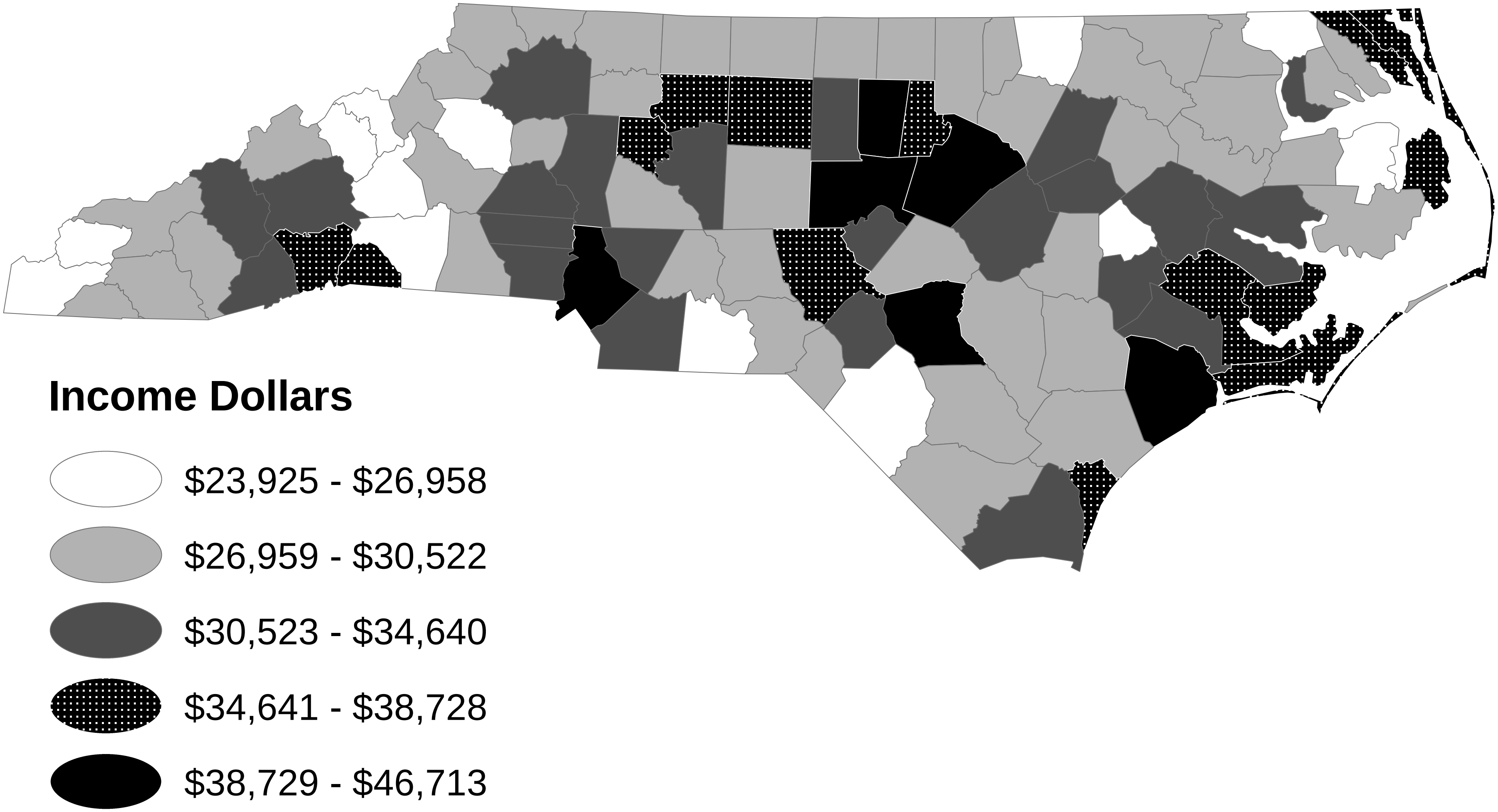
Map 5. North Carolina Hispanic or Latino Population, 2010



Map 6. North Carolina Asian/Pacific Islander Population, 2010

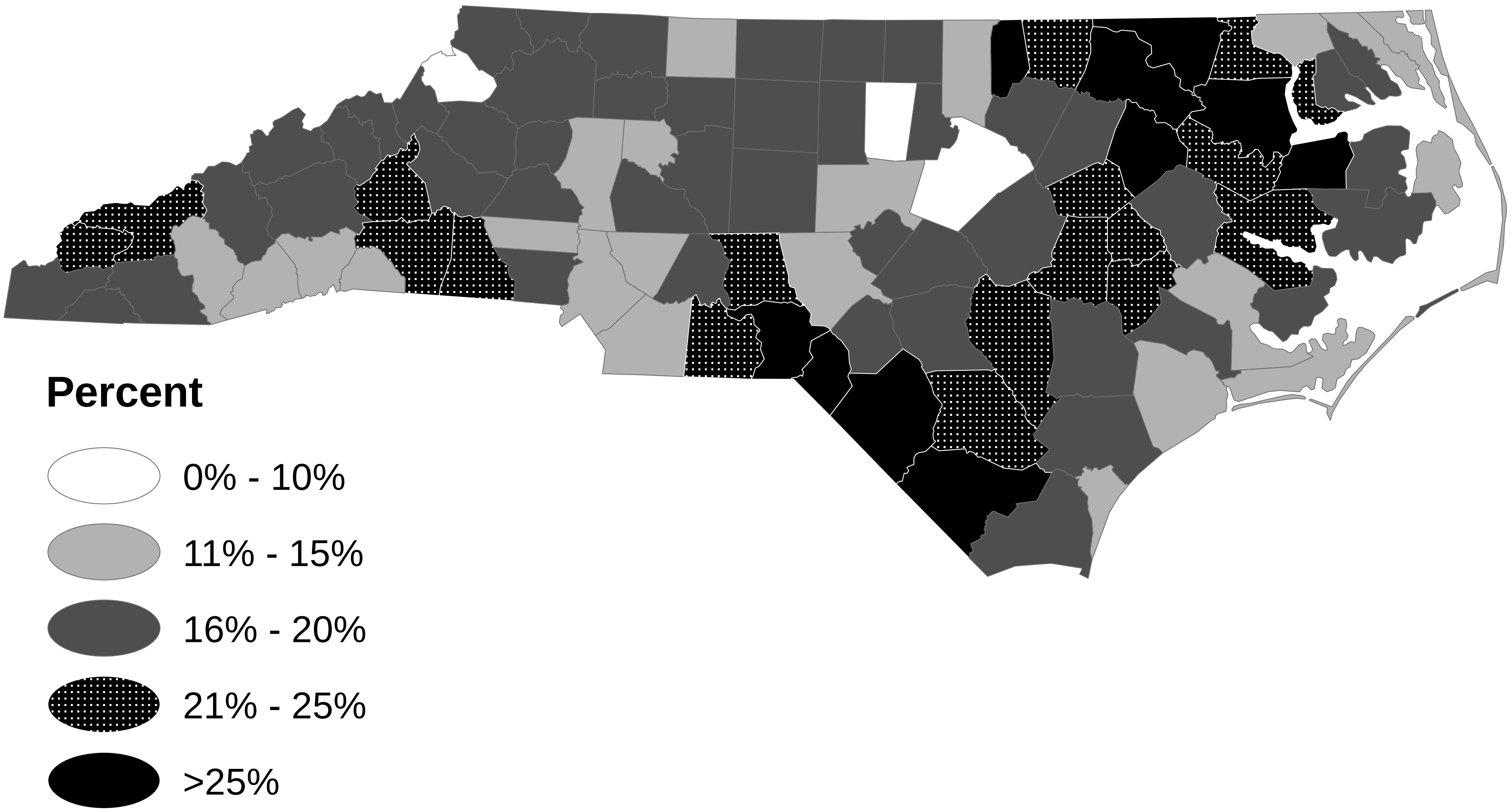


Map 7. North Carolina Per Capita Income, 2010



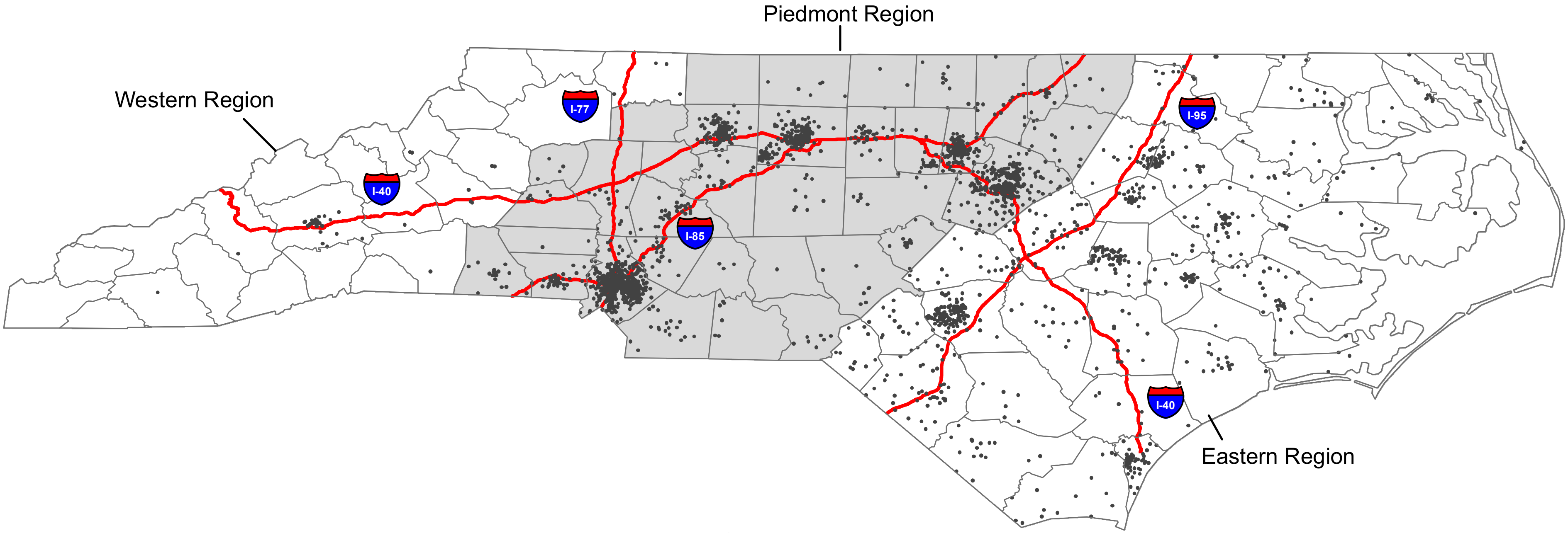
Source: US Bureau Of Economic Analysis

Map 8. North Carolina Medicaid Eligibles, 2011



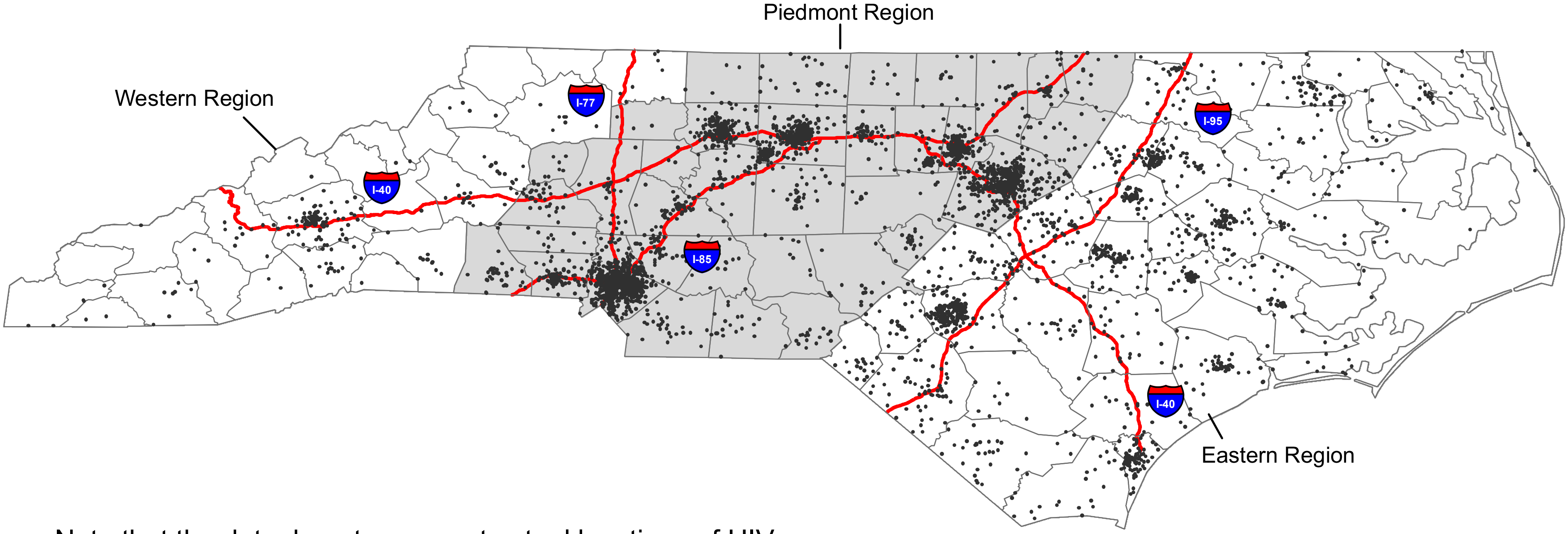
Source: NC DHHS Division of Medical Assistance

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



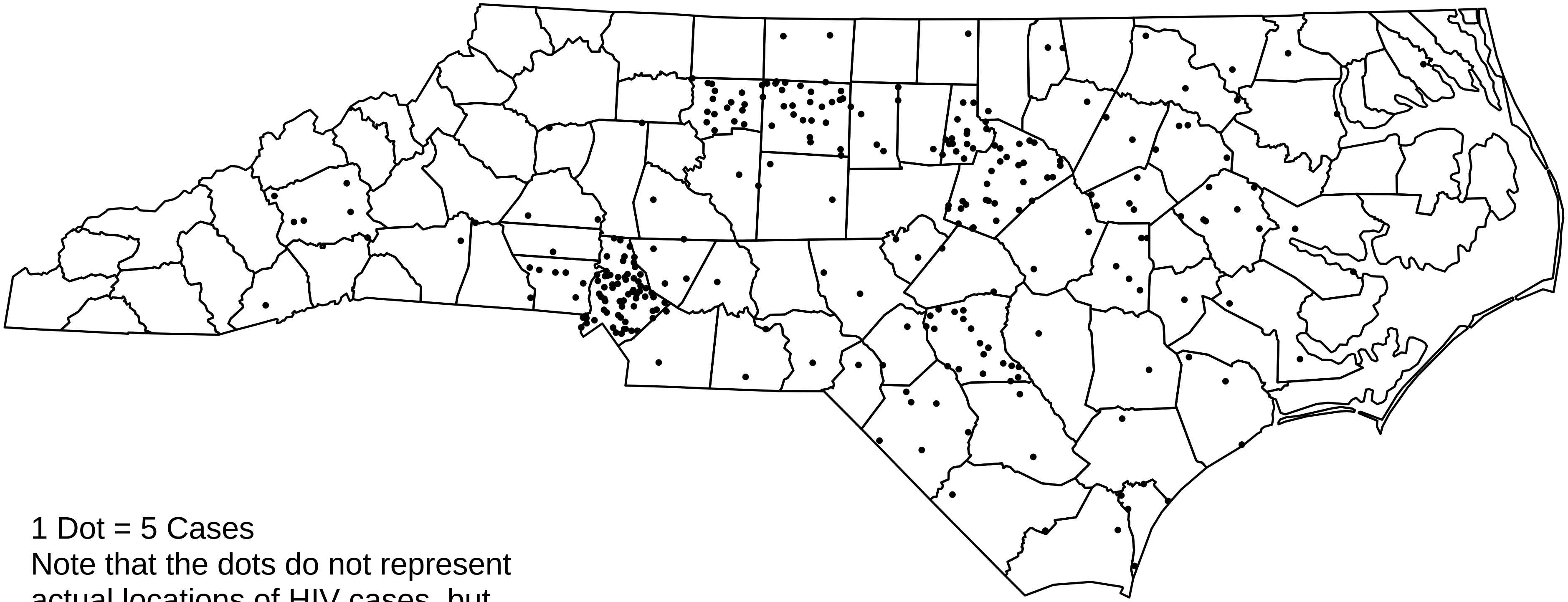
Note that the dots do not represent actual locations of HIV cases,
but reflect the number of diagnoses in each census tract.
1 dot represents 5 cases
Address information was able to be represented for 92.5% of diagnoses

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



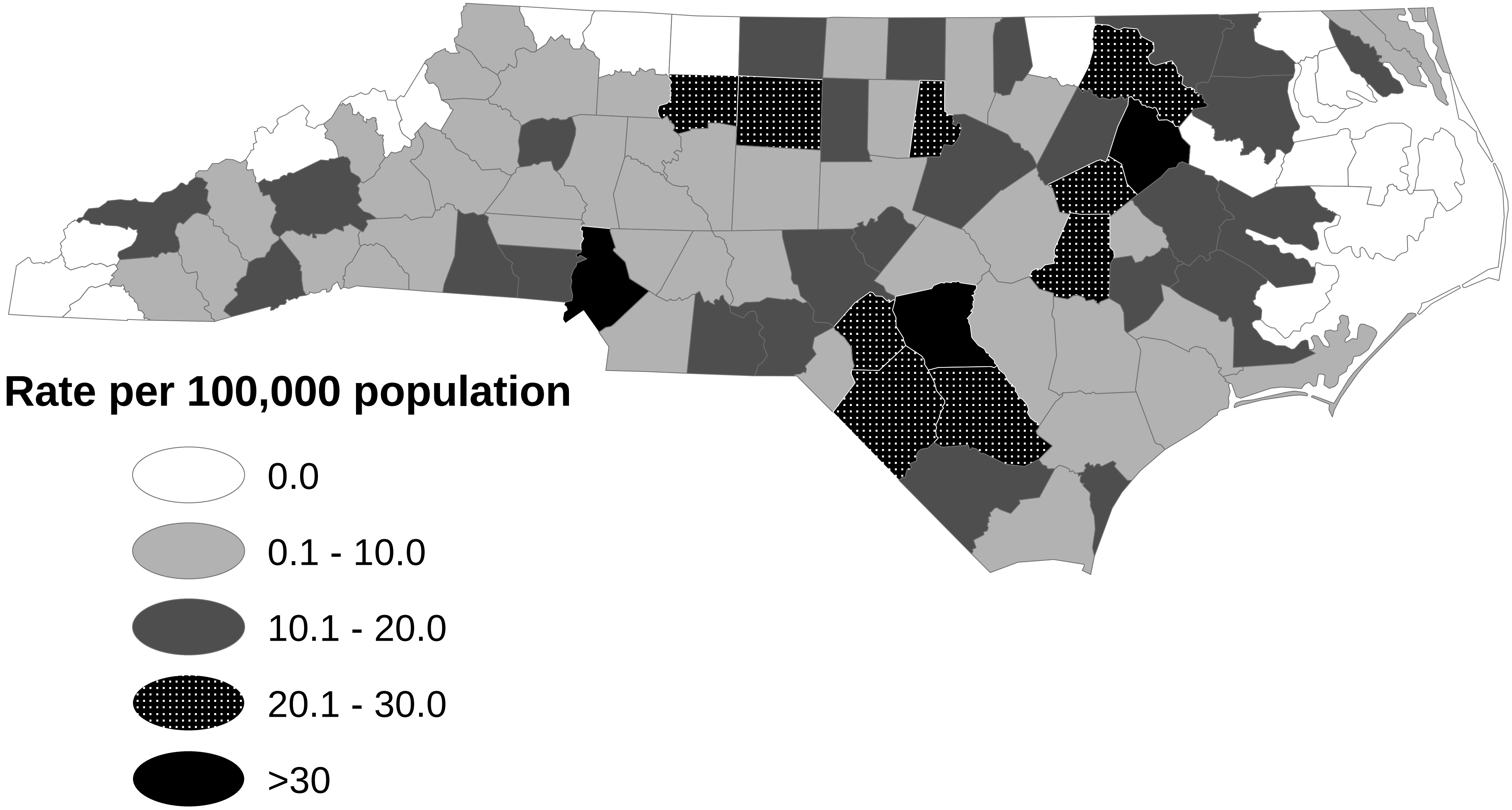
Note that the dots do not represent actual locations of HIV cases, but reflect the number of diagnoses in each census tract.
1 dot represents 5 cases
Address information was able to be represented for 81.7% of diagnoses

Map 11. North Carolina HIV Disease Cases, 2011
By Year Of Diagnosis

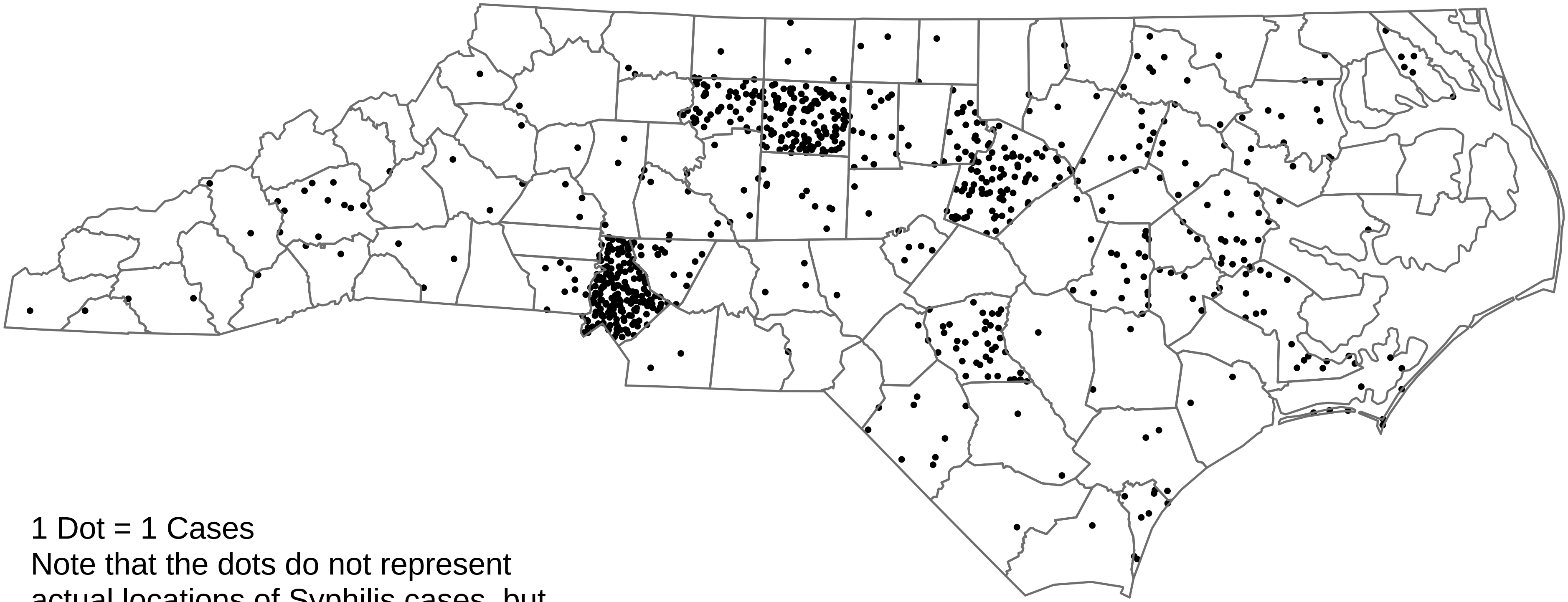


1 Dot = 5 Cases
Note that the dots do not represent actual locations of HIV cases, but reflect the number of cases in each county

Map 12. North Carolina HIV Disease Rates, 2011 By Year Of Diagnosis

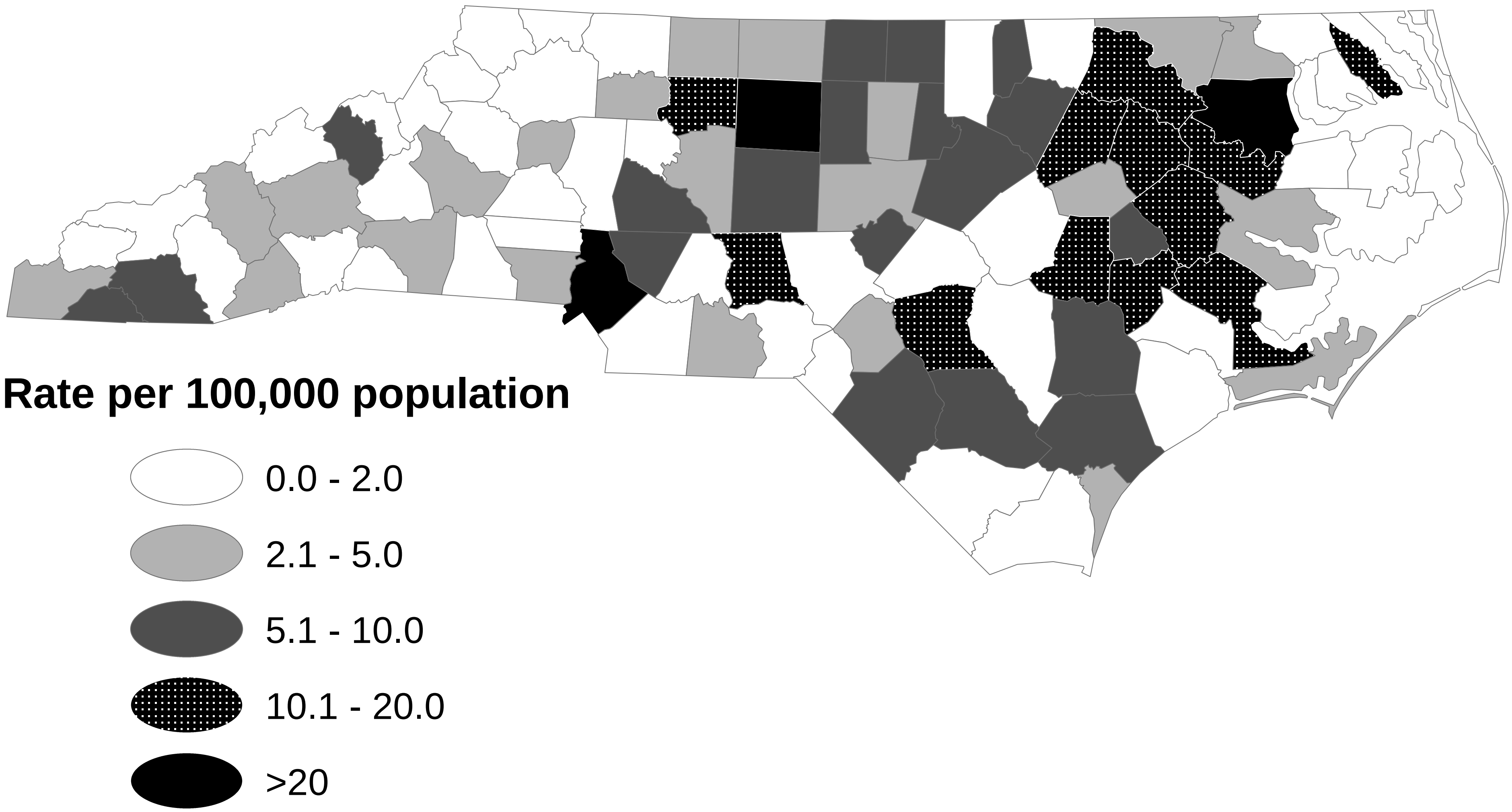


Map 13. North Carolina Early Syphilis Cases, 2011

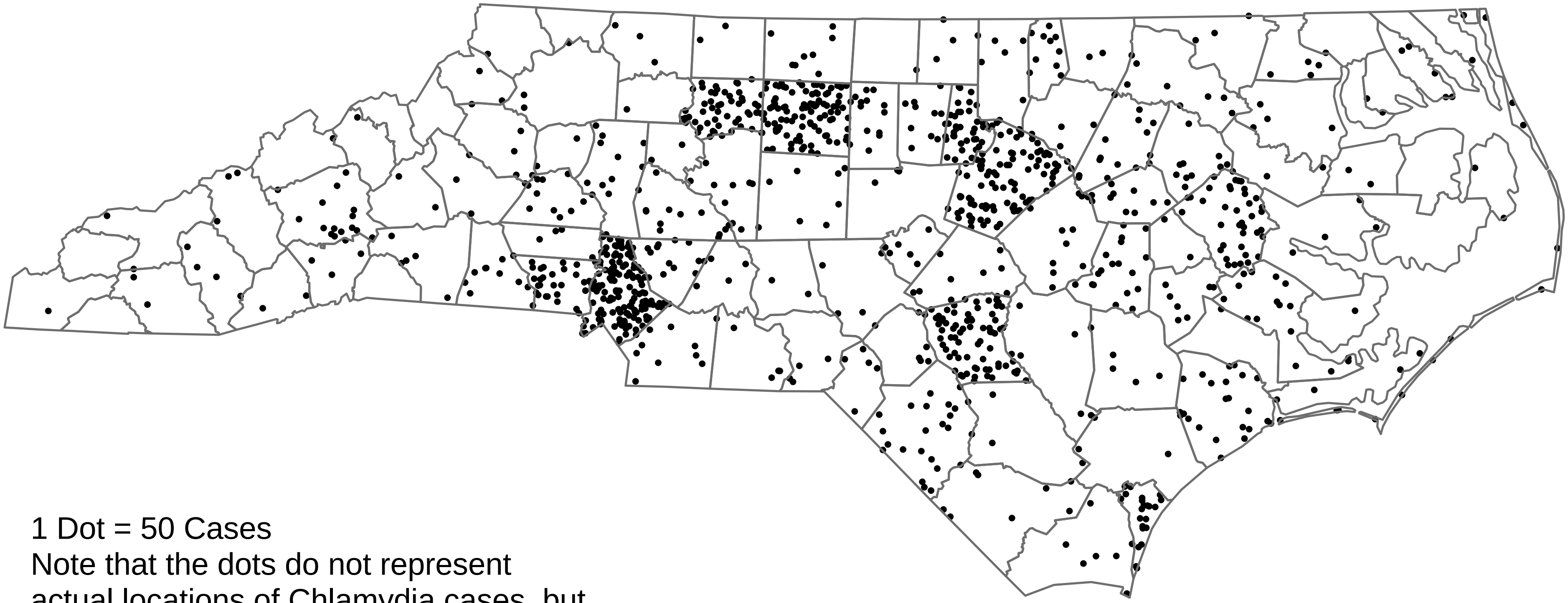


1 Dot = 1 Cases
Note that the dots do not represent actual locations of Syphilis cases, but reflect the number of cases in each county

Map 14. North Carolina Early Syphilis Rates, 2011

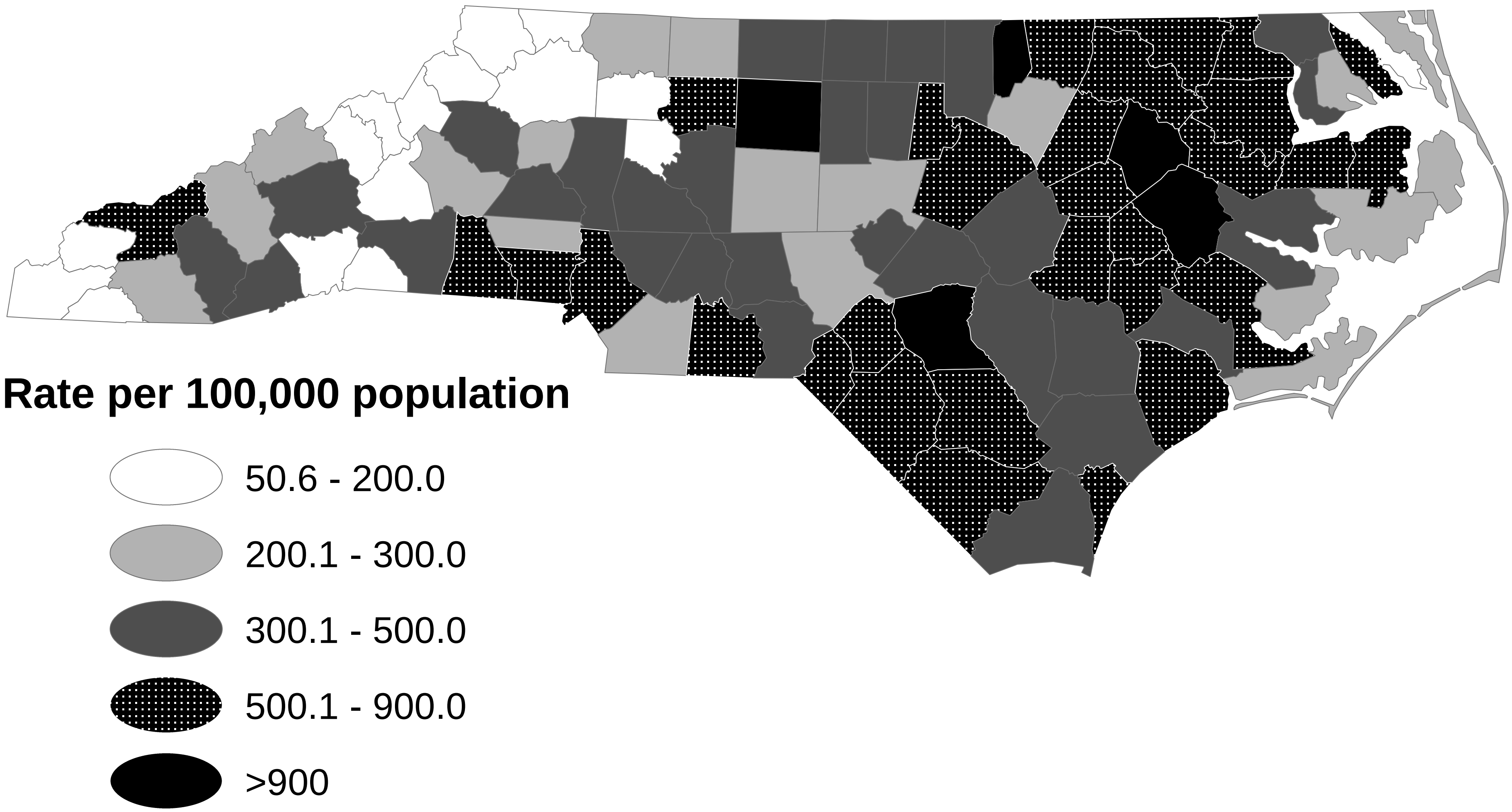


Map 15. North Carolina Chlamydia Cases, 2011

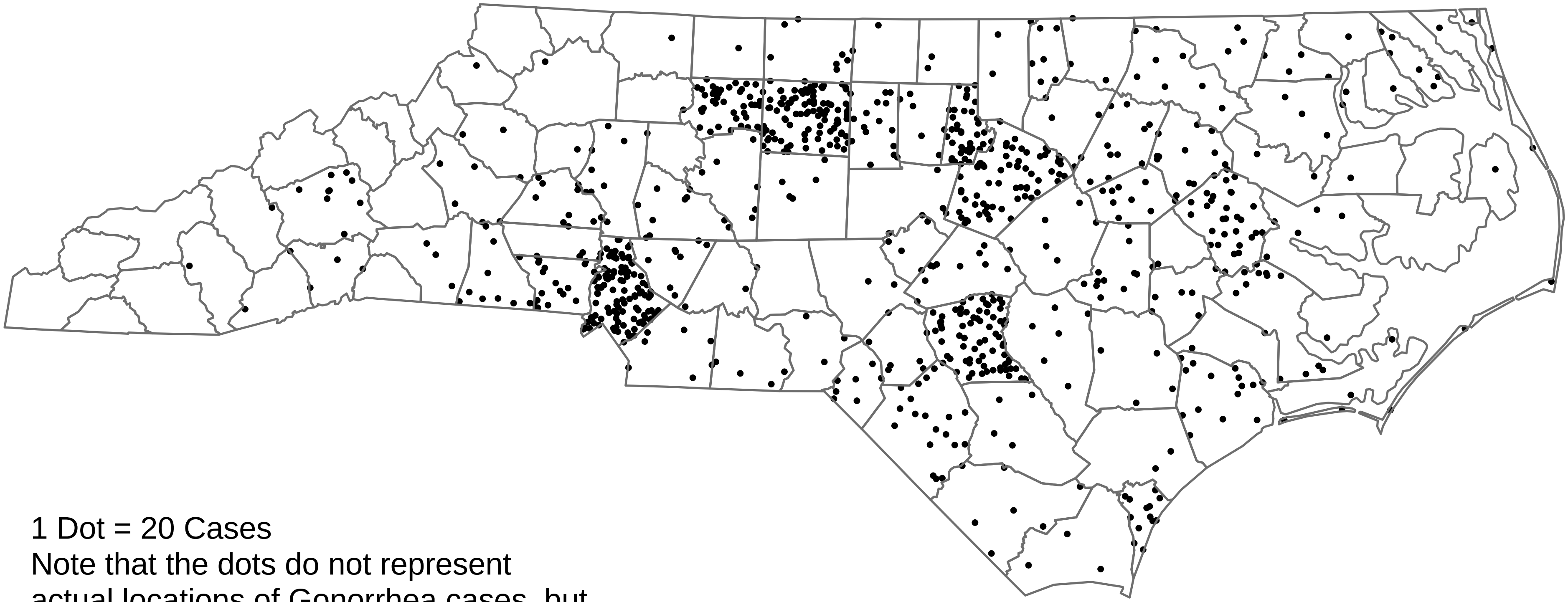


1 Dot = 50 Cases
Note that the dots do not represent actual locations of Chlamydia cases, but reflect the number of cases in each county

Map 16. North Carolina Chlamydia Rates, 2011

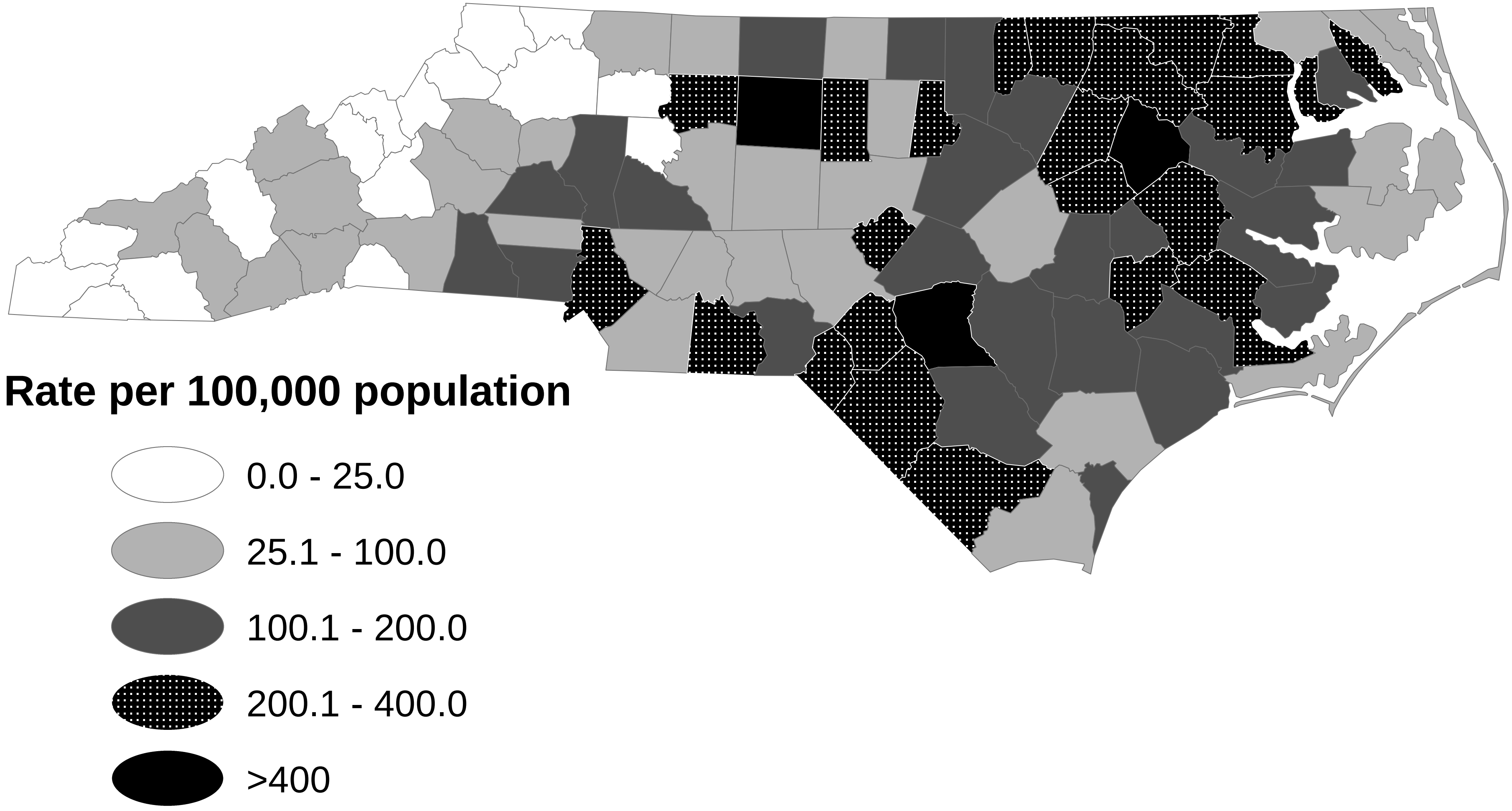


Map 17. North Carolina Gonorrhea Cases, 2011



1 Dot = 20 Cases
Note that the dots do not represent actual locations of Gonorrhea cases, but reflect the number of cases in each county

Map 18. North Carolina Gonorrhea Rates, 2011



APPENDIX B: DATA SOURCES

This page is intentionally blank.

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 Centers for Disease Control and Prevention (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, since some providers may not report all 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 CDC compiles de-identified HIV and AIDS case-report information from each of the 50 states and United States territories. This information is published in aggregate form annually as the "HIV/AIDS Surveillance Report" as well as other reporting publications. The surveillance report contains tabular and graphic information about national 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 United States territories.

Limitations: The same limitations listed under *HIV/AIDS surveillance (N.C.)* may also apply. HIV reporting is not complete nationally 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. Consequentially, 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 (NCDPH) 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. For this reason, NCDPH recommends that all sexually active young women should be screened for chlamydia during any pelvic exam. Originally this screening recommendation included only women age 22 and under. However, since 2008, the screen was expanded to include 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 NCEDSS to the Communicable Disease Branch, 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 NCDPH.

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; (b) if the infection is new or failed treatment of an old infection; and, if new, (c) the stage of the disease. The initial investigation, which is conducted by local or regional health department personnel, can take days or weeks to complete. In some cases, the patient is treated for a probable infection while the investigation is ongoing. 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 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 NCDPH.

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 NCDPH 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

NCEDSS – NORTH CAROLINA ELECTRONIC DISEASE SURVEILLANCE SYSTEM

Overview: Currently, all local health departments use NCEDSS 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. In 2002, the participating clinic was moved to Greensboro.

Population: Ongoing sample of up to 25 men per month from the STD clinic in Greensboro.

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 AND 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: As a high proportion of new cases are interviewed, 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 (NCSEP) 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 nation were identified as reporting more than 50 percent of the nation's morbidity for infectious syphilis. Currently, NC SEE includes six counties: Durham, Forsyth, Guilford, Mecklenburg, Robeson and Wake**.** The NCSEE strives to reduce syphilis through community involvement, surveillance, prevention, rapid outbreak response, targeted testing, health promotion and education. The primary purpose of the NCSEE 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 (SEE).

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

Limitations: SEE is only active in six counties and 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 CDC, but the federal Substance Abuse and Mental Health Services Administration (SAMHSA) has also supplied funding for testing in substance abuse centers. CDB 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.

NCDPH 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 CDB 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 NCDPH Vital Records Unit. 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 joint surveillance project between the 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. State 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: United States population.

Strengths: 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 post-censal 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 national 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, in 2000, and 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, which are 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 had a major impact on 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. It is also the state’s role to act 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 adjacent counties, 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 North Carolina. 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

This page is intentionally blank.

HIV DISEASE

HIV disease case reports represent persons who have a confirmed diagnosis with 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 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 – 2010 is the year of initial HIV diagnosis and 2010 is the year of AIDS diagnosis. 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

The numbers of HIV disease reports for some years – 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. 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 seven 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 the state. 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.

This page is intentionally blank.

APPENDIX D: TABLES

This page is intentionally blank.

Table A: North Carolina Adult/Adolescent HIV Disease[†] Demographic Rates, Gender and Age, 2007-2011

Age		2007	2007	2007	2008	2008	2008	2009	2009	2009	2010	2010	2010	2011	2011	2011
		Cases	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***
Male	**13-14 Years**	<5	---	---	<5	---	---	0	0%	0.0	<5	---	---	<5	---	---
	15-19 Years	83	5%	25.5	65	4%	19.7	66	4%	19.9	65	4%	19.2	81	5%	23.9
	20-24 Years	165	9%	49.4	191	11%	55.2	201	12%	57.1	226	15%	67.1	224	14%	66.5
	25-29 Years	159	9%	53.2	185	10%	59.5	160	10%	50.2	168	11%	53.9	176	11%	56.5
	30-34 Years	146	8%	49.2	142	8%	47.5	127	8%	42.6	112	8%	36.7	112	7%	36.7
	35-39 Years	162	9%	49.0	159	9%	47.6	127	8%	38.6	96	7%	29.6	105	7%	32.3
	40-44 Years	186	10%	56.8	197	11%	60.3	154	9%	47.5	123	8%	37.3	131	8%	39.7
	45-49 Years	173	10%	52.7	161	9%	48.5	177	11%	52.6	123	8%	36.0	135	9%	39.5
	50-54 Years	96	5%	32.2	123	7%	40.1	101	6%	32.4	85	6%	26.3	106	7%	32.7
	55-59 Years	62	3%	23.3	60	3%	22.3	54	3%	19.6	60	4%	21.0	59	4%	20.7
	60-64 Years	33	2%	15.3	31	2%	13.6	24	1%	10.1	25	2%	9.8	33	2%	12.9
	65+ Years	19	1%	4.1	23	1%	4.8	21	1%	4.2	23	2%	4.4	25	2%	4.8
	Total	1,285	72%	35.6	1,338	74%	36.3	1,212	74%	32.4	1,107	76%	29.1	1,189	76%	31.3
Female	**13-14 Years**	0	0%	0.0	<5	---	---	<5	---	---	<5	---	---	0	0%	0.0
	15-19 Years	21	1%	6.8	18	1%	5.8	21	1%	6.7	15	1%	4.7	12	1%	3.7
	20-24 Years	56	3%	18.6	32	2%	10.4	40	2%	12.7	29	2%	8.9	33	2%	10.2
	25-29 Years	53	3%	17.4	52	3%	16.8	37	2%	11.9	36	2%	11.4	42	3%	13.3
	30-34 Years	64	4%	21.3	59	3%	19.5	40	2%	13.0	39	3%	12.4	32	2%	10.2
	35-39 Years	82	5%	24.6	65	4%	19.4	57	3%	17.1	59	4%	17.6	48	3%	14.3
	40-44 Years	72	4%	21.3	85	5%	25.4	64	4%	19.3	34	2%	10.1	45	3%	13.3
	45-49 Years	63	4%	18.3	66	4%	19.0	68	4%	19.3	56	4%	15.7	58	4%	16.2
	50-54 Years	49	3%	15.3	47	3%	14.3	44	3%	13.2	35	2%	10.1	39	3%	11.3
	55-59 Years	26	1%	8.9	18	1%	6.1	28	2%	9.3	29	2%	9.2	33	2%	10.5
	60-64 Years	11	1%	4.6	11	1%	4.4	11	1%	4.2	19	1%	6.7	15	1%	5.3
	65+ Years	14	1%	2.1	8	0%	1.2	6	0%	0.9	5	0%	0.7	10	1%	1.4
	Total	511	28%	13.3	462	26%	11.8	417	26%	10.5	357	24%	8.7	367	24%	9.0

*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, 2007-2011

Age		2007	2007	2007	2008	2008	2008	2009	2009	2009	2010	2010	2010	2011	2011	2011
		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	104	6%	16.4	83	5%	12.9	87	5%	13.5	80	5%	12.1	93	6%	14.1
	20-24 Years	221	12%	34.8	223	12%	34.1	241	15%	36.1	255	17%	38.5	257	17%	38.8
	25-29 Years	212	12%	35.1	237	13%	38.2	197	12%	31.2	204	14%	32.5	218	14%	34.8
	30-34 Years	210	12%	35.2	201	11%	33.4	167	10%	27.6	151	10%	24.4	144	9%	23.2
	35-39 Years	244	14%	36.7	224	12%	33.5	184	11%	27.8	155	11%	23.5	153	10%	23.2
	40-44 Years	258	14%	38.8	282	16%	42.6	218	13%	33.2	157	11%	23.5	176	11%	26.4
	45-49 Years	236	13%	35.2	227	13%	33.4	245	15%	35.6	179	12%	25.6	193	12%	27.6
	50-54 Years	145	8%	23.4	170	9%	26.8	145	9%	22.5	120	8%	17.9	145	9%	21.6
	55-59 Years	88	5%	15.8	78	4%	13.8	82	5%	14.2	89	6%	14.8	92	6%	15.3
	60-64 Years	44	2%	9.7	42	2%	8.8	35	2%	7.0	44	3%	8.2	48	3%	8.9
	65+ Years	33	2%	2.9	31	2%	2.7	27	2%	2.3	28	2%	2.3	35	2%	2.8
	Total	1,796	100%	24.1	1,800	100%	23.7	1,629	100%	21.1	1,464	100%	18.6	1,556	100%	19.7

*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, 2007-2011

Race/Ethnicity		2007	2007	2007	2008	2008	2008	2009	2009	2009	2010	2010	2010	2011	2011	2011
		Cases	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***
Male	**White****	427	24%	16.9	380	21%	14.8	317	19%	12.2	290	20%	11.2	293	19%	11.3
	Black**	715	40%	98.9	794	44%	107.3	747	46%	99.4	697	48%	90.6	764	49%	99.3
	Am. In/AN**	6	0%	14.5	9	1%	21.5	8	0%	18.8	<5	---	---	8	1%	18.1
	Asian/PI**	7	0%	10.0	7	0%	9.4	8	0%	10.3	6	0%	7.0	8	1%	9.3
	Hispanic	120	7%	48.6	127	7%	48.6	111	7%	40.7	95	6%	31.3	84	5%	27.7
	Unknown	10	1%	---	21	1%	---	21	1%	---	16	1%	---	32	2%	---
	Total	1,285	72%	35.6	1,338	74%	36.3	1,212	74%	32.4	1,107	76%	29.1	1,189	76%	31.3
Female	**White****	85	5%	3.1	76	4%	2.8	71	4%	2.6	50	3%	1.8	46	3%	1.7
	Black**	385	21%	45.2	351	20%	40.4	319	20%	36.1	271	19%	29.8	290	19%	31.9
	Am. In/AN**	5	0%	11.2	0	0%	0.0	<5	---	---	<5	---	---	<5	---	---
	Asian/PI**	<5	---	---	<5	---	---	<5	---	---	<5	---	---	<5	---	---
	Hispanic	32	2%	18.1	24	1%	12.6	19	1%	9.5	21	1%	8.3	22	1%	8.7
	Unknown	<5	---	---	7	0%	---	5	0%	---	11	1%	---	<5	---	---
	Total	511	28%	13.3	462	26%	11.8	417	26%	10.5	357	24%	8.7	367	24%	9.0
Total	**White****	512	29%	9.8	456	25%	8.6	388	24%	7.2	340	23%	6.3	339	22%	6.3
	Black**	1,100	61%	69.8	1,145	64%	71.1	1,066	65%	65.2	968	66%	57.7	1,054	68%	62.8
	Am. In/AN**	11	1%	12.8	9	1%	10.3	9	1%	10.2	<5	---	---	12	1%	12.9
	Asian/PI**	8	0%	5.5	11	1%	7.2	10	1%	6.3	9	1%	5.0	11	1%	6.1
	Hispanic	152	8%	35.9	151	8%	33.5	130	8%	27.5	116	8%	20.9	106	7%	19.1
	Unknown	13	1%	---	28	2%	---	26	2%	---	27	2%	---	34	2%	---
	Total	1,796	100%	24.1	1,800	100%	23.7	1,629	100%	21.1	1,464	100%	18.6	1,556	100%	19.7

*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, 2007-2011

Race/Ethnicity		2007	2007	2007	2008	2008	2008	2009	2009	2009	2010	2010	2010	2011	2011	2011
		Cases	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***
Male	**White****	32	10%	6.5	26	8%	5.2	32	10%	6.4	31	9%	6.5	36	10%	7.5
	Black**	193	59%	96.7	205	67%	100.9	213	65%	104.2	235	70%	116.2	251	71%	124.1
	All Other***	24	7%	25.9	26	8%	26.9	22	7%	22.0	26	8%	21.3	20	6%	16.4
	Total	249	76%	31.8	257	83%	32.2	267	81%	33.1	292	87%	36.4	307	87%	38.3
Female	**White****	7	2%	1.5	8	3%	1.7	11	3%	2.4	2	1%	0.4	6	2%	1.3
	Black**	64	20%	32.4	41	13%	20.5	47	14%	23.3	38	11%	18.6	37	11%	18.1
	All Other***	6	2%	7.8	2	1%	2.5	4	1%	4.8	5	1%	4.8	2	1%	1.9
	Total	77	24%	10.6	51	17%	6.9	62	19%	8.3	45	13%	5.9	45	13%	5.9
Total	**White****	39	12%	4.1	34	11%	3.6	43	13%	4.5	33	10%	3.5	42	12%	4.5
	Black**	257	79%	64.7	246	80%	61.1	260	79%	64.0	273	81%	67.2	288	82%	70.9
	All Other***	30	9%	17.8	28	9%	15.8	26	8%	14.1	31	9%	13.7	22	6%	9.7
	Total	326	100%	21.6	308	100%	20.0	329	100%	21.2	337	100%	21.5	352	100%	22.4

*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, 2007-2011

Mode of Transmission		2007		2008		2009		2010		2011	
		Cases	Pct	Cases	Pct	Cases	Pct	Cases	Pct	Cases	Pct
Male	**MSM***	714	40%	735	41%	704	43%	667	46%	727	47%
	IDU*	32	2%	31	2%	27	2%	22	2%	35	2%
	MSM/IDU*	20	1%	23	1%	13	1%	10	1%	17	1%
	Other Risk*	0	0%	<5	---	0	0%	<5	---	0	0%
	Heterosexual-CDC*	81	5%	112	6%	108	7%	67	5%	67	4%
	NIR	438	24%	436	25%	360	22%	340	23%	343	22%
	Total	1285	72%	1338	74%	1212	74%	1107	76%	1189	76%
Female	**IDU***	20	1%	24	1%	13	1%	10	1%	16	1%
	Other Risk*	<5	---	0	0%	0	0%	0	0%	0	0%
	Heterosexual-CDC*	154	9%	144	8%	132	8%	117	8%	81	5%
	NIR	336	19%	294	16%	272	17%	230	16%	270	18%
	Total	511	28%	462	26%	417	26%	357	24%	367	24%
Total	**MSM***	714	40%	735	41%	704	43%	667	46%	727	47%
	IDU*	52	3%	55	3%	40	2%	32	2%	51	3%
	MSM/IDU*	20	1%	23	1%	13	1%	10	1%	17	1%
	Other Risk*	<5	---	<5	---	0	0%	<5	---	0	0%
	Heterosexual-CDC*	235	13%	256	14%	240	15%	184	13%	148	10%
	NIR	774	43%	730	41%	632	38%	570	39%	613	39%
	Total	1796	100%	1800	100%	1629	100%	1464	100%	1556	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), 2007-2011

Mode of Transmission		2007		2008		2009		2010		2011	
		Cases	Pct	Cases	Pct	Cases	Pct	Cases	Pct	Cases	Pct
Male	**MSM***	940	73%	946	71%	870	72%	831	75%	913	77%
	IDU*	42	3%	40	3%	33	3%	27	2%	44	4%
	MSM/IDU	26	2%	30	2%	16	1%	12	1%	21	2%
	Other Risk*	0	0%	1	0%	0	0%	1	0%	0	0%
	Heterosexual-All	276	22%	322	24%	293	24%	234	21%	211	18%
	Total[††]	1285	100%	1338	100%	1212	100%	1107	100%	1189	100%
Female	**IDU***	34	7%	40	9%	20	5%	17	5%	29	8%
	Other Risk *	2	0%	0	0%	0	0%	0	0%	0	0%
	Heterosexual-All	475	93%	422	91%	397	95%	340	95%	338	92%
	Total[††]	511	100%	462	100%	417	100%	357	100%	367	100%
Total	**MSM***	940	52%	946	53%	870	53%	831	57%	913	59%
	IDU*	77	4%	80	4%	54	3%	44	3%	73	5%
	MSM/IDU*	26	1%	30	2%	16	1%	12	1%	21	1%
	Other Risk *	2	0%	1	0%	0	0%	1	0%	0	0%
	Heterosexual-All	751	42%	744	41%	690	42%	575	39%	549	35%
	Total[††]	1796	100%	1800	100%	1629	100%	1464	100%	1556	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), 2007-2011

Mode of Transmission		2007		2008		2009		2010		2011	
		Cases	Pct	Cases	Pct	Cases	Pct	Cases	Pct	Cases	Pct
White, NH*	**IDU***	16	19%	13	18%	9	12%	9	17%	8	17%
	Other Risk *	0	0%	0	0%	0	0%	0	0%	0	0%
	Heterosexual-All	69	81%	63	83%	62	88%	41	83%	38	83%
	Total[††]	85	100%	76	100%	71	100%	50	100%	46	100%
Black, NH*	**IDU***	17	4%	26	7%	9	3%	7	2%	18	6%
	Other Risk *	2	0%	0	0%	0	0%	0	0%	0	0%
	Heterosexual-All	367	95%	325	93%	310	97%	264	98%	272	94%
	Total[††]	385	100%	351	100%	319	100%	271	100%	290	100%
All Other	**IDU***	2	6%	2	5%	2	6%	2	5%	3	9%
	Other Risk *	0	0%	0	0%	0	0	0	0%	0	0%
	Heterosexual-All	39	94%	33	95%	25	94%	34	95%	28	91%
	Total	41	100%	35	100%	27	100%	36	100%	31	100%
Total	**IDU**	35	7%	41	9%	20	5%	17	5%	29	8%
	Other Risk	2	0%	0	0%	0	0%	0	0%	0	0%
	Heterosexual-All	474	93%	421	91%	397	95%	340	95%	338	92%
	Total[††]	511	100%	462	100%	417	100%	357	100%	367	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), 2007-2011

Mode of Transmission		2007		2008		2009		2010		2011	
		Cases	Pct	Cases	Pct	Cases	Pct	Cases	Pct	Cases	Pct
White, NH*	**MSM***	376	88%	306	81%	279	88%	252	87%	248	85%
	IDU*	10	2%	14	4%	5	2%	4	1%	13	4%
	MSM/IDU	13	3%	17	4%	10	3%	9	3%	14	5%
	Other Risk	0	0%	0	0%	0	0%	0	0%	0	0%
	Heterosexual-All	28	7%	43	11%	23	7%	25	9%	18	6%
	Total††	427	100%	380	100%	317	100%	290	100%	293	100%
Black, NH*	**MSM***	472	66%	542	68%	496	66%	502	72%	568	74%
	IDU*	31	4%	21	3%	24	3%	19	3%	24	3%
	MSM/IDU	12	2%	7	1%	4	0%	4	1%	7	1%
	Other Risk *	0	0%	0	0%	0	0%	1	0%	0	0%
	Heterosexual-All	200	28%	223	28%	223	30%	171	25%	165	22%
	Total††	715	100%	794	100%	747	100%	697	100%	764	100%
All Other	**MSM***	86	60%	96	59%	95	64%	77	64%	99	75%
	IDU*	0	0%	4	3%	4	3%	4	4%	7	5%
	MSM/IDU	2	1%	6	4%	3	2%	0	0%	0	0%
	Other Risk *	0	0%	1	1%	0	0%	0	0%	0	0%
	Heterosexual-All	56	39%	56	34%	47	32%	39	32%	26	20%
	Total††	143	100%	164	100%	148	100%	120	100%	132	100%
Total	**MSM***	934	73%	944	71%	871	72%	831	75%	914	77%
	IDU*	41	3%	40	3%	33	3%	27	2%	44	4%
	MSM/IDU	26	2%	30	2%	16	1%	13	1%	22	2%
	Other Risk *	0	0%	1	0%	0	0%	1	0%	0	0%
	Heterosexual-All	283	22%	322	24%	292	24%	235	21%	209	18%
	Total††	1285	100%	1338	100%	1212	100%	1107	100%	1,189	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), 2007-2011

Mode of Transmission		2007		2008		2009		2010		2010	
		Cases	Pct	Cases	Pct	Cases	Pct	Cases	Pct	Cases	Pct
Male	**MSM***	232	93%	225	88%	241	90%	270	92%	285	93%
	IDU*	1	0%	0	0%	0	0%	2	1%	1	0%
	MSM/IDU	5	2%	3	1%	3	1%	1	0%	1	0%
	Other Risk*	0	0%		0%	0	0%	1	0%	0	0%
	Heterosexual-All	12	5%	29	11%	22	8%	18	6%	20	6%
	Total††	249	100%	257	100%	267	100%	292	100%	307	100%
Female	**IDU***	3	4%	1	3%	0	0%	0	0%	0	0%
	Other Risk *	0	0%	0	0%	0	0%	0	0%	0	0%
	Heterosexual-All	74	96%	50	97%	62	100%	45	100%	45	100%
	Total††	77	100%	51	100%	62	100%	45	100%	45	100%
Total	**MSM***	232	71%	225	73%	241	73%	270	80%	285	81%
	IDU*	4	1%	1	0%	0	0%	2	1%	1	0%
	MSM/IDU*	5	1%	3	1%	3	1%	1	0%	1	0%
	Other Risk *	0	0%	0	0%	0	0%	1	0%	0	0%
	Heterosexual-All	85	26%	78	25%	84	26%	63	19%	65	18%
	Total††	326	100%	308	100%	329	100%	337	100%	352	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 12/31/2011 Gender and Mode of Transmission, (NIRs* Redistributed)

Mode of Transmission		Cases	Pct
Male	**MSM***	11,596	63%
	IDU*	1,695	9%
	MSM/IDU	758	4%
	Blood Products*	66	0%
	Heterosexual-All	4,115	22%
	Pediatric	167	1%
	Total[††]	18,397	100%
Female	**IDU***	1,141	15%
	Blood Products*	50	1%
	Heterosexual-All	6,377	82%
	Pediatric	203	3%
	Total[††]	7,771	100%
Total	**MSM***	11,596	47%
	IDU*	2,836	11%
	MSM/IDU	758	3%
	Blood Products*	116	0%
	Heterosexual-All	10,492	38%
	Pediatric	371	1%
	Total[††]	26,168	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 12/31/2011
Gender and Race/Ethnicity

Race/Ethnicity		Cases	Pct	Rate*
Male	**White****	5,431	21%	176.5
	Black**	11,337	43%	1162.6
	Am. In/AN**	141	1%	251.8
	Asian/PI**	92	0%	84.4
	Hispanic	1,204	5%	281.5
	Total	18,397	70%	396.0
Female	**White****	1,250	5%	38.7
	Black**	6,000	23%	541.7
	Am. In/AN**	65	0%	108.4
	Asian/PI**	39	0%	32.9
	Hispanic	340	1%	91.3
	Total	7,771	30%	158.9
Total	**White****	6,681	26%	105.9
	Black**	17,337	66%	832.4
	Am. In/AN**	206	1%	177.7
	Asian/PI**	131	1%	57.6
	Hispanic	1,544	6%	193.0
	Total	26,168	100%	274.4

*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, 1983-2011

COUNTY	83-90 Cases	91-96 Cases	97-04 Cases	2005 Cases	2006 Cases	2007 Cases	2008 Cases	2009 Cases	2010 Cases	2011 Cases	CUMULATIVE CASES
ALAMANCE	50	136	151	26	11	22	34	16	21	20	487
ALEXANDER	2	10	17	3	1	1	1	2	1	4	42
ALLEGHANY	0	0	0	0	0	2	0	0	0	0	2
ANSON	9	44	21	0	6	0	4	3	3	4	94
ASHE	1	1	4	0	0	3	1	0	1	1	12
AVERY	3	2	1	0	0	0	0	2	0	0	8
BEAUFORT	33	52	59	7	3	10	10	6	4	8	192
BERTIE	9	26	56	6	5	4	5	3	7	3	124
BLADEN	11	32	48	6	4	6	5	6	7	8	133
BRUNSWICK	25	52	81	6	4	11	11	10	8	6	214
BUNCOMBE	97	283	195	22	22	31	32	21	13	31	747
BURKE	16	37	29	3	1	8	9	4	1	1	109
CABARRUS	32	103	94	16	19	9	26	21	10	17	347
CALDWELL	9	33	12	4	2	4	6	2	2	1	75
CAMDEN	1	7	11	1	1	1	1	2	1	1	27
CARTERET	22	32	21	1	2	2	5	4	2	2	93
CASWELL	4	16	14	1	1	3	7	4	3	1	54
CATAWBA	36	86	94	6	11	20	17	14	13	10	307
CHATHAM	10	41	45	5	2	9	3	5	5	2	127
CHEROKEE	3	9	5	0	2	3	2	1	0	0	25
CHOWAN	8	18	9	1	0	0	3	0	1	0	40
CLAY	0	1	3	1	1	1	1	1	2	0	11
CLEVELAND	35	99	105	17	13	15	13	12	13	12	334
COLUMBUS	26	84	94	11	8	13	10	9	13	10	278
CRAVEN	46	118	111	11	20	20	14	11	11	12	374
CUMBERLAND	224	565	530	77	99	89	83	82	80	97	1,926
CURRITUCK	6	7	6	2	1	2	1	1	1	1	28
DARE	7	14	24	0	2	3	3	0	2	0	55
DAVIDSON	43	101	97	17	16	12	19	14	10	11	340
DAVIE	7	16	14	2	2	2	0	0	2	1	46
DUPLIN	22	71	98	12	13	6	5	11	11	5	254
DURHAM	313	763	736	86	89	69	95	80	88	73	2,392
EDGECOMBE	30	131	146	22	20	18	17	24	22	21	451
FORSYTH	242	480	721	83	84	82	72	87	59	84	1,994
FRANKLIN	19	39	47	7	10	4	4	9	5	5	149
GASTON	80	329	250	23	32	22	29	38	30	32	865
GATES	1	1	6	1	0	0	1	1	1	0	12
GRAHAM	0	2	2	0	0	0	0	0	0	0	4
GRANVILLE	26	63	60	13	8	7	13	11	10	4	215
GREENE	3	33	29	3	2	2	2	2	2	1	79
GUILFORD	315	804	939	123	144	159	147	129	114	128	3,002
HALIFAX	27	107	87	7	6	10	17	7	3	14	285
HARNETT	22	90	83	13	14	8	13	22	14	10	289
HAYWOOD	11	32	15	3	4	4	1	5	1	2	78
HENDERSON	23	49	37	5	2	9	4	4	6	1	140
HERTFORD	17	31	46	2	3	6	4	2	5	4	120
HOKE	8	43	51	6	12	9	7	10	11	12	169
HYDE	0	4	5	1	0	0	0	0	3	0	13
IREDELL	28	58	67	8	12	10	13	7	11	4	218
JACKSON	4	8	4	3	4	2	3	0	4	2	34
JOHNSTON	45	162	159	18	31	18	23	10	10	10	486

[†] 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, 1983-2011

COUNTY	83-90 Cases	91-96 Cases	97-04 Cases	2005 Cases	2006 Cases	2007 Cases	2008 Cases	2009 Cases	2010 Cases	2011 Cases	CUMULATIVE CASES
JONES	1	13	11	1	0	0	1	2	2	1	32
LEE	19	55	84	5	9	9	7	2	14	8	212
LENOIR	39	159	148	16	19	19	12	9	10	7	438
LINCOLN	7	22	32	2	2	3	3	1	5	4	81
MACON	5	11	11	1	2	0	1	4	1	1	37
MADISON	1	9	8	1	2	0	0	0	0	0	21
MARTIN	7	39	46	6	5	7	1	0	1	0	112
MCDOWELL	6	12	5	0	3	1	2	2	2	2	35
MECKLENBURG	687	1,897	2,197	280	303	391	384	338	309	339	7,125
MITCHELL	2	5	3	0	0	1	3	3	0	0	17
MONTGOMERY	6	21	19	4	1	1	2	1	2	2	59
MOORE	23	60	83	9	12	7	11	7	3	10	225
NASH	38	145	136	22	23	13	23	15	17	12	444
NEW HANOVER	99	261	334	49	49	35	30	28	19	24	928
NORTHAMPTON	14	37	30	2	4	2	11	6	2	4	112
ONSLOW	50	82	113	12	8	10	11	11	14	14	325
ORANGE	70	139	116	17	15	16	19	13	8	13	426
PAMLICO	6	8	9	1	2	1	2	1	1	0	31
PASQUOTANK	15	41	39	3	9	6	8	3	4	7	135
PENDER	20	31	28	4	5	3	5	2	2	4	104
PERQUIMANS	1	11	21	2	1	0	2	2	1	0	41
PERSON	8	41	38	1	3	6	3	4	3	5	112
PITT	90	278	251	30	21	39	34	28	29	33	833
POLK	5	12	9	0	1	1	2	0	1	1	32
RANDOLPH	24	50	79	3	11	8	10	9	6	8	208
RICHMOND	11	84	56	7	10	17	7	6	7	8	213
ROBESON	39	185	205	28	20	40	30	26	13	29	615
ROCKINGHAM	16	78	68	5	5	9	12	6	3	11	213
ROWAN	39	117	103	17	9	25	11	14	15	11	361
RUTHERFORD	19	30	32	2	6	1	4	2	3	6	105
SAMPSON	24	92	72	14	6	7	6	9	13	6	249
SCOTLAND	15	73	64	9	2	4	8	4	5	3	187
STANLY	10	34	45	0	3	9	2	5	4	6	118
STOKES	2	11	19	4	0	3	1	0	2	0	42
SURRY	8	25	29	3	2	2	3	5	2	0	79
SWAIN	8	6	9	2	0	0	0	0	0	2	27
TRANSYLVANIA	9	18	12	2	3	0	1	3	2	4	54
TYRRELL	2	2	2	0	0	2	0	0	0	0	8
UNION	17	79	78	7	8	19	14	19	12	12	265
VANCE	31	94	102	7	4	9	10	6	11	9	283
WAKE	450	943	1,181	175	186	203	203	186	170	153	3,850
WARREN	5	12	26	3	2	2	5	2	5	0	62
WASHINGTON	8	34	34	4	2	6	4	2	0	0	94
WATAUGA	5	5	9	3	3	4	4	2	1	1	37
WAYNE	66	156	157	20	10	17	15	17	13	25	496
WILKES	5	12	18	8	1	5	6	0	3	2	60
WILSON	54	198	170	27	19	19	18	32	18	23	578
YADKIN	5	7	16	3	2	2	2	0	1	1	39
YANCEY	3	8	2	0	1	0	1	2	0	1	18
Unassigned	139	533	747	86	76	72	61	80	63	75	1,932
N.C. TOTAL	4,244	11,600	12,645	1,598	1,639	1,807	1,811	1,634	1,469	1,563	40,010

[†] 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, 2009-2011

COUNTY	2009 CASES	2010 CASES	2011 CASES	2009 RATE	2010 RATE	2011 RATE	AVG RATE*	RANK
EDGECOMBE	24	22	21	46.3	38.9	37.1	40.8	1
MECKLENBURG	338	309	339	37.0	33.6	36.9	35.8	2
WILSON	32	18	23	40.8	22.2	28.3	30.4	3
DURHAM	80	88	73	29.7	32.9	27.3	29.9	4
CUMBERLAND	82	80	97	26.0	25.0	30.4	27.1	5
GUILFORD	129	114	128	26.9	23.3	26.2	25.5	6
HOKE	10	11	12	22.1	23.4	25.6	23.7	7
FORSYTH	87	59	84	24.2	16.8	24.0	21.7	8
BERTIE	3	7	3	15.5	32.9	14.1	20.8	9
BLADEN	6	7	8	18.6	19.9	22.7	20.4	10
VANCE	6	11	9	13.9	24.2	19.8	19.3	11
NORTHAMPTON	6	2	4	29.8	9.1	18.1	19.0	12
WAKE	186	170	153	20.7	18.9	17.0	18.9	13
COLUMBUS	9	13	10	16.6	22.4	17.2	18.7	14
PITT	28	29	33	17.6	17.2	19.6	18.2	15
HYDE	0	3	0	0.0	51.6	0.0	17.2	16
ROBESON	26	13	29	20.1	9.7	21.6	17.1	17
JONES	2	2	1	19.9	19.7	9.8	16.5	18
*NORTH CAROLINA***	1634	1469	1563	17.4	15.4	16.4	16.4	
GASTON	38	30	32	18.2	14.6	15.5	16.1	19
DUPLIN	11	11	5	20.7	18.8	8.5	16.0	20
NASH	15	17	12	15.8	17.7	12.5	15.4	21
WAYNE	17	13	25	14.9	10.6	20.4	15.3	22
RICHMOND	6	7	8	13.1	15.0	17.2	15.1	23
HERTFORD	2	5	4	8.6	20.3	16.2	15.0	24
LENOIR	9	10	7	16.0	16.8	11.8	14.8	25
SAMPSON	9	13	6	14.1	20.5	9.5	14.7	26
HALIFAX	7	3	14	12.8	5.5	25.6	14.6	27
GRANVILLE	11	10	4	19.1	16.7	6.7	14.2	28
LEE	2	14	8	3.3	24.2	13.8	13.8	29
CAMDEN	2	1	1	20.6	10.0	10.0	13.5	30
HARNETT	22	14	10	19.0	12.2	8.7	13.3	31
BEAUFORT	6	4	8	12.9	8.4	16.8	12.7	32
ANSON	3	3	4	12.0	11.1	14.8	12.6	33
ALAMANCE	16	21	20	10.6	13.9	13.2	12.6	33
CLEVELAND	12	13	12	12.1	13.3	12.2	12.5	35
NEW HANOVER	28	19	24	14.4	9.4	11.8	11.9	36
PASQUOTANK	3	4	7	7.2	9.8	17.2	11.4	37
CASWELL	4	3	1	17.4	12.6	4.2	11.4	37
WARREN	2	5	0	10.3	23.8	0.0	11.4	37
CRAVEN	11	11	12	11.2	10.6	11.6	11.1	40
SCOTLAND	4	5	3	11.0	13.8	8.3	11.0	41
FRANKLIN	9	5	5	15.0	8.2	8.2	10.5	42
PERSON	4	3	5	10.6	7.6	12.7	10.3	43
ROWAN	14	15	11	9.9	10.8	7.9	9.6	44
CLAY	1	2	0	9.7	18.9	0.0	9.5	45
TRANSYLVANIA	3	2	4	9.9	6.0	12.1	9.4	46
BUNCOMBE	21	13	31	9.1	5.5	13.0	9.2	47
CABARRUS	21	10	17	12.2	5.6	9.5	9.1	48
ORANGE	13	8	13	10.1	6.0	9.7	8.6	49
STANLY	5	4	6	8.4	6.6	9.9	8.3	50

Continued

Table L (continued): HIV Disease† Rates by County Rank Order, 2009-2011

COUNTY	2009 CASES	2010 CASES	2011 CASES	2009 RATE	2010 RATE	2011 RATE	AVG RATE*	RANK
GREENE	2	2	1	9.7	9.4	4.7	7.9	51
CATAWBA	14	13	10	8.8	8.4	6.5	7.9	51
PERQUIMANS	2	1	0	15.7	7.4	0.0	7.7	53
MOORE	7	3	10	8.0	3.4	11.3	7.6	54
BRUNSWICK	10	8	6	9.3	7.4	5.6	7.5	55
ONSLOW	11	14	14	6.4	7.9	7.9	7.4	56
DAVIDSON	14	10	11	8.8	6.1	6.8	7.2	57
UNION	19	12	12	9.6	6.0	6.0	7.2	57
ROCKINGHAM	6	3	11	6.5	3.2	11.7	7.2	57
MITCHELL	3	0	0	19.2	0.0	0.0	6.4	60
ALEXANDER	2	1	4	5.4	2.7	10.8	6.3	61
CHATHAM	5	5	2	7.7	7.9	3.1	6.2	62
MONTGOMERY	1	2	2	3.6	7.2	7.2	6.0	63
MACON	4	1	1	12.0	2.9	2.9	6.0	63
JOHNSTON	10	10	10	5.9	5.9	5.9	5.9	65
GATES	1	1	0	8.5	8.2	0.0	5.6	66
RUTHERFORD	2	3	6	3.2	4.4	8.8	5.5	67
YANCEY	2	0	1	10.8	0.0	5.6	5.5	67
RANDOLPH	9	6	8	6.3	4.2	5.6	5.4	69
PAMLICO	1	1	0	8.1	7.6	0.0	5.2	70
WASHINGTON	2	0	0	15.6	0.0	0.0	5.2	70
PENDER	2	2	4	3.8	3.8	7.7	5.1	72
JACKSON	0	4	2	0.0	9.9	5.0	5.0	73
SWAIN	0	0	2	0.0	0.0	14.3	4.8	74
HAYWOOD	5	1	2	8.8	1.7	3.4	4.6	75
IREDELL	7	11	4	4.4	6.9	2.5	4.6	75
MCDOWELL	2	2	2	4.5	4.4	4.4	4.5	77
LINCOLN	1	5	4	1.3	6.4	5.1	4.3	78
CURRITUCK	1	1	1	4.1	4.2	4.2	4.2	79
CARTERET	4	2	2	6.2	3.0	3.0	4.1	80
AVERY	2	0	0	11.2	0.0	0.0	3.7	81
HENDERSON	4	6	1	3.9	5.6	0.9	3.5	82
POLK	0	1	1	0.0	4.9	4.9	3.3	83
SURRY	5	2	0	6.9	2.7	0.0	3.2	84
WATAUGA	2	1	1	4.4	2.0	2.0	2.8	85
ASHE	0	1	1	0.0	3.7	3.7	2.4	86
DAVIE	0	2	1	0.0	4.8	2.4	2.4	86
WILKES	0	3	2	0.0	4.3	2.9	2.4	86
CHOWAN	0	1	0	0.0	6.8	0.0	2.3	89
BURKE	4	1	1	4.5	1.1	1.1	2.2	90
CALDWELL	2	2	1	2.5	2.4	1.2	2.0	91
DARE	0	2	0	0.0	5.9	0.0	2.0	91
YADKIN	0	1	1	0.0	2.6	2.6	1.7	93
STOKES	0	2	0	0.0	4.2	0.0	1.4	94
MARTIN	0	1	0	0.0	4.1	0.0	1.4	94
CHEROKEE	1	0	0	3.8	0.0	0.0	1.3	96
ALLEGHANY	0	0	0	0.0	0.0	0.0	0.0	97
GRAHAM	0	0	0	0.0	0.0	0.0	0.0	97
MADISON	0	0	0	0.0	0.0	0.0	0.0	97
TYRRELL	0	0	0	0.0	0.0	0.0	0.0	97

†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 12/31/11, County of Residence and Patient Management Model Regions

		Report Category		TOTAL
		HIV (NON AIDS)	AIDS	
HIV CARE	**COUNTY**			
CHARLOTTE TRANSITIONAL	ANSON	25	30	55
	CABARRUS	158	74	232
	GASTON	298	202	500
	MECKLENBURG	3,113	1,602	4,715
	UNION	100	74	174
	TOTAL	3,694	1,982	5,676
REGION 1	COUNTY			
	AVERY	3	5	8
	BUNCOMBE	275	198	473
	CHEROKEE	8	5	13
	CLAY	6	3	9
	CLEVELAND	106	76	182
	GRAHAM	0	2	2
	HAYWOOD	19	33	52
	HENDERSON	28	55	83
	JACKSON	16	16	32
	MACON	14	14	28
	MADISON	9	7	16
	MCDOWELL	13	14	27
	MITCHELL	4	7	11
	POLK	7	11	18
	RUTHERFORD	25	26	51
	SWAIN	6	8	14
	TRANSYLVANIA	19	8	27
	YANCEY	6	6	12
	TOTAL	564	494	1,058
REGION 2	COUNTY			
	ALEXANDER	18	15	33
	ALLEGHANY	2	0	2
	ASHE	8	1	9
	BURKE	36	33	69
	CALDWELL	16	26	42
	CATAWBA	95	109	204
	LINCOLN	28	22	50
	WATAUGA	14	10	24
	WILKES	23	17	40
	TOTAL	240	233	473
REGION 3	COUNTY			
	DAVIDSON	153	80	233
	DAVIE	13	15	28
	FORSYTH	860	459	1,319
	IREDELL	73	47	120
	ROWAN	139	84	223
	STOKES	20	13	33
	SURRY	34	20	54
	YADKIN	9	15	24
	TOTAL	1,301	733	2,034

[†] 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 12/31/11, County of Residence and Patient Management Model Regions

		Report Category		TOTAL
		HIV (NON AIDS)	AIDS	
REGION 4	**COUNTY**			
	ALAMANCE	211	119	330
	CASWELL	26	13	39
	GUILFORD	1,308	659	1,967
	MONTGOMERY	16	20	36
	RANDOLPH	84	59	143
	ROCKINGHAM	89	40	129
	STANLY	52	21	73
	TOTAL	1,786	931	2,717
REGION 5	COUNTY			
	BLADEN	41	50	91
	CUMBERLAND	796	440	1,236
	HARNETT	102	103	205
	HOKE	68	53	121
	MOORE	75	60	135
	RICHMOND	75	49	124
	ROBESON	208	194	402
	SAMPSON	74	68	142
	SCOTLAND	68	46	114
	TOTAL	1,507	1,063	2,570
REGION 6	COUNTY			
	CHATHAM	58	33	91
	DURHAM	961	506	1,467
	FRANKLIN	47	54	101
	GRANVILLE	92	51	143
	JOHNSTON	149	148	297
	LEE	108	43	151
	ORANGE	195	83	278
	PERSON	46	22	68
	VANCE	100	70	170
	WAKE	1,465	1,256	2,721
	WARREN	28	12	40
	TOTAL	3,249	2,278	5,527
REGION 7	COUNTY			
	BRUNSWICK	68	80	148
	COLUMBUS	91	72	163
	DUPLIN	80	87	167
	NEW HANOVER	347	237	584
	ONSLOW	125	96	221
	PENDER	28	32	60
	TOTAL	739	604	1,343
REGION 8	COUNTY			
	EDGECOMBE	151	149	300
	HALIFAX	72	76	148
	NASH	149	116	265
	NORTHAMPTON	30	34	64
	WILSON	178	164	342
	TOTAL	580	539	1,119

† 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 12/31/11, County of Residence and Patient Management Model Regions

		Report Category		TOTAL
		HIV (NON AIDS)	AIDS	
REGION 9	**COUNTY**			
	BERTIE	32	43	75
	CAMDEN	6	9	15
	CHOWAN	12	15	27
	CURRITUCK	5	9	14
	DARE	15	21	36
	GATES	7	1	8
	HERTFORD	26	56	82
	HYDE	3	7	10
	PASQUOTANK	46	41	87
	PERQUIMANS	16	14	30
	TYRRELL	4	1	5
	TOTAL	171	217	389
REGION 10	COUNTY			
	BEAUFORT	58	55	113
	CARTERET	24	27	51
	CRAVEN	119	116	235
	GREENE	21	29	50
	JONES	11	12	23
	LENOIR	131	124	255
	MARTIN	35	34	69
	PAMLICO	10	7	17
	PITT	248	270	518
	WASHINGTON	20	29	49
	WAYNE	139	137	276
	TOTAL	816	840	1,656
UNASSIGNED		781	825	1,606
TOTAL		15,429	10,739	26,168

[†] 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, 2009-2011

TESTING COUNTY	2009		2010		2011	
	Number Tested	Number Positive[2]	Number Tested	Number Positive[2]	Number Tested	Number Positive[2]
ALAMANCE	3,781	0	3,868	5	4,150	7
ALEXANDER	487	0	481	0	560	3
ALLEGHANEY	116	0	135	0	115	0
ANSON	951	2	959	1	1,174	4
ASHE	369	0	293	0	258	0
AVERY	217	0	185	0	216	0
BEAUFORT	1,544	2	1,366	3	1,506	5
BERTIE	562	1	629	2	629	2
BLADEN	975	0	1,052	5	965	3
BRUNSWICK	1,474	3	1,389	2	1,481	1
BUNCOMBE	5,425	100	5,072	87	4,325	44
BURKE	1,679	0	1,490	0	1,073	0
CABARRUS	3,187	5	2,994	10	2,883	12
CALDWELL	1,626	2	1,454	1	1,494	1
CAMDEN	79	0	85	0	63	0
CARTERET	859	2	1,185	0	1,102	0
CASWELL	523	1	507	0	500	1
CATAWBA	5,253	7	5,703	4	5,911	9
CHATHAM	939	2	1,019	2	1,362	3
CHEROKEE	297	1	356	1	371	0
CHOWAN	403	0	343	1	362	0
CLAY	129	1	140	0	127	0
CLEVELAND	3,343	7	3,383	11	3,396	11
COLUMBUS	1,551	7	1,251	3	1,223	3
CRAVEN	3,114	11	3,753	8	3,646	9
CUMBERLAND	7,765	83	8,173	91	10,363	107
CURRITUCK	274	0	277	0	228	0
DARE	902	2	884	1	988	1
DAVIDSON	2,259	2	2,115	4	2,151	3
DAVIE	627	0	542	1	538	0
DUPLIN	1,953	3	2,044	9	2,073	2
DURHAM	10,875	40	10,547	55	9,777	44
EDGECOMBE	2,741	5	3,066	9	3,162	9
FORSYTH	11,535	83	13,170	56	14,743	88
FRANKLIN	1,295	2	1,318	0	1,270	1
GASTON	9,022	45	9,192	33	8,443	36
GATES	243	0	248	0	210	1
GRAHAM	70	0	68	0	60	0
GRANVILLE	1,075	3	991	0	951	1
GREENE	632	1	583	2	459	2
GUILFORD	16,239	98	15,876	94	18,173	113
HALIFAX	1,287	2	1,171	2	1,197	6
HARNETT	1,450	5	1,490	6	1,547	3
HAYWOOD	1,378	3	1,071	1	1,181	3
HENDERSON	2,325	1	2,125	1	1,892	2
HERTFORD	1,612	7	887	3	803	4
HOKE	691	1	1,037	3	981	2
HYDE	89	0	76	1	127	0
IREDELL	2,939	2	2,530	8	2,699	3
JACKSON	646	0	733	2	698	0
JOHNSTON	2,429	3	2,482	8	2,620	8
JONES	322	0	302	1	306	0
LEE	1,051	1	901	2	1,004	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, 2009-2011

TESTING COUNTY	2009		2010		2011	
	Number Tested	Number Positive[2]	Number Tested	Number Positive[2]	Number Tested	Number Positive[2]
LENOIR	1,693	6	1,383	8	1,534	8
LINCOLN	786	0	739	4	829	2
MACON	476	0	416	2	392	0
MADISON	309	0	297	0	277	0
MARTIN	715	1	673	1	634	0
MCDOWELL	598	2	495	0	426	1
MECKLENBERG	16,947	219	16,521	179	17,624	213
MITCHELL	175	1	147	0	157	0
MONTGOMERY	578	0	509	0	517	0
MOORE	1,317	3	1,426	0	1,378	2
NASH	3,614	17	3,767	8	3,851	6
NEW HANOVER	5,369	16	5,296	15	3,870	20
NORTHAMPTON	839	5	795	3	774	2
ONSLOW	2,305	5	2,444	6	2,389	4
ORANGE	1,911	6	1,873	11	1,824	6
PAMLICO	129	0	181	1	135	0
PASQUOTANK	1,196	3	1,162	1	1,302	1
PENDER	983	0	1,135	1	962	0
PERQUIMANS	248	1	252	0	202	0
PERSON	1,179	0	1,258	0	947	2
PITT	5,132	17	5,650	14	6,549	25
POLK	101	0	97	0	100	0
RANDOLPH	1,227	3	1,269	1	1,519	1
RICHMOND	836	1	851	3	781	3
ROBESON	6,011	42	4,310	20	4,050	14
ROCKINGHAM	1,578	5	1,585	1	1,668	4
ROWAN	1,839	2	2,020	5	2,041	4
RUTHERFORD	1,383	3	1,479	1	1,574	1
SAMPSON	4,460	30	3,529	6	2,932	6
SCOTLAND	1,604	6	1,641	2	1,572	7
STANLY	924	2	768	2	719	4
STOKES	181	0	293	0	318	0
SURRY	577	2	570	1	543	1
SWAIN	90	0	111	0	103	0
TRANSYLVANIA	364	0	382	1	369	2
TYRRELL	325	1	304	0	277	0
UNION	2,042	6	2,059	2	2,263	1
VANCE	647	4	593	2	597	2
WAKE	24,039	144	22,554	125	23,988	86
WARREN	865	1	700	1	693	0
WASHINGTON	447	2	450	0	426	0
WATAUGA	836	1	830	1	849	0
WAYNE	5,071	21	5,115	23	4,924	28
WILKES	1,012	0	932	1	875	1
WILSON	4,387	16	4,653	23	5,040	29
YADKIN	568	0	496	0	451	0
YANCEY	323	1	295	0	313	0
MISSING	534	3	121	4	92	3
TOTAL	231,379	1,144	227,417	1,018	233,186	1,048

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, 2007-2011

Age		2007	2007	2007	2008	2008	2008	2009	2009	2009	2010	2010	2010	2011	2011	2011
		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	5	1%	1.5	7	1%	2.1	8	1%	2.4	10	1%	3.0	13	2%	3.8
	20-24 Years	29	3%	8.7	30	3%	8.7	50	5%	14.2	31	4%	9.2	47	6%	14.0
	25-29 Years	63	7%	21.1	64	7%	20.6	81	9%	25.4	57	7%	18.3	57	7%	18.3
	30-34 Years	70	8%	23.6	80	9%	26.8	63	7%	21.1	71	9%	23.3	67	8%	22.0
	35-39 Years	92	11%	27.8	96	10%	28.7	80	9%	24.3	58	7%	17.9	67	8%	20.6
	40-44 Years	113	13%	34.5	114	12%	34.9	117	13%	36.1	73	9%	22.1	78	9%	23.7
	45-49 Years	118	14%	36.0	102	11%	30.7	127	14%	37.8	109	14%	31.9	88	11%	25.8
	50-54 Years	54	6%	18.1	75	8%	24.4	88	9%	28.2	73	9%	22.6	75	9%	23.2
	55-59 Years	24	3%	9.0	48	5%	17.8	50	5%	18.2	37	5%	13.0	39	5%	13.7
	60-64 Years	13	2%	6.0	23	2%	10.1	9	1%	3.8	18	2%	7.1	21	3%	8.2
	65+ Years	9	1%	1.9	17	2%	3.5	13	1%	2.6	20	3%	3.8	26	3%	5.0
	Total	590	69%	16.4	656	71%	17.8	686	73%	18.4	557	71%	14.7	578	70%	15.2
Female	**13-14 Years**	<5	---	---	0	0%	0.0	0	0%	0.0	0	0%	0.0	0	0%	0.0
	15-19 Years	<5	---	---	<5	---	---	<5	---	---	<5	---	---	<5	---	---
	20-24 Years	9	1%	3.0	6	1%	1.9	10	1%	3.2	11	1%	3.4	8	1%	2.5
	25-29 Years	14	2%	4.6	21	2%	6.8	19	2%	6.1	9	1%	2.9	14	2%	4.4
	30-34 Years	32	4%	10.7	36	4%	11.9	26	3%	8.5	26	3%	8.3	34	4%	10.8
	35-39 Years	55	6%	16.5	50	5%	14.9	49	5%	14.7	41	5%	12.2	35	4%	10.4
	40-44 Years	48	6%	14.2	61	7%	18.2	41	4%	12.4	39	5%	11.6	46	6%	13.6
	45-49 Years	48	6%	14.0	40	4%	11.5	47	5%	13.3	40	5%	11.2	52	6%	14.6
	50-54 Years	30	4%	9.4	28	3%	8.5	22	2%	6.6	21	3%	6.1	28	3%	8.1
	55-59 Years	14	2%	4.8	13	1%	4.4	22	2%	7.3	17	2%	5.4	18	2%	5.7
	60-64 Years	4	0%	1.7	9	1%	3.6	8	1%	3.0	16	2%	5.7	9	1%	3.2
	65+ Years	7	1%	1.1	5	1%	0.7	<5	---	---	8	1%	1.1	6	1%	0.8
	Total	263	31%	6.8	272	29%	6.9	250	27%	6.3	229	29%	5.6	252	30%	6.2

Continued

Table O (continued): NC Adult/Adolescent AIDS Demographic Rates, Gender and Age by Year of Diagnosis, 2007-2011

Age		2007 Cases	2007 Pct	2007 Rate*	2008 Cases	2008 Pct	2008 Rate*	2009 Cases	2009 Pct	2009 Rate*	2010 Cases	2010 Pct	2010 Rate*	2011 Cases	2011 Pct	2011 Rate*
Total	**13-14 Years**	<5	---	---	0	0%	0.0	0	0%	0.0	0	0%	0.0	0	0%	0.0
	15-19 Years	6	1%	0.9	10	1%	1.6	12	1%	1.9	11	1%	1.7	15	2%	2.3
	20-24 Years	38	4%	6.0	36	4%	5.5	60	6%	9.0	42	5%	6.3	55	7%	8.3
	25-29 Years	77	9%	12.8	85	9%	13.7	100	11%	15.9	66	8%	10.5	71	9%	11.3
	30-34 Years	102	12%	17.1	116	13%	19.3	89	10%	14.7	97	12%	15.7	101	12%	16.3
	35-39 Years	147	17%	22.1	146	16%	21.8	129	14%	19.5	99	13%	15.0	102	12%	15.5
	40-44 Years	161	19%	24.2	175	19%	26.5	158	17%	24.1	112	14%	16.8	124	15%	18.6
	45-49 Years	166	19%	24.7	142	15%	20.9	174	19%	25.3	149	19%	21.3	140	17%	20.0
	50-54 Years	84	10%	13.6	103	11%	16.2	110	12%	17.0	94	12%	14.0	103	12%	15.4
	55-59 Years	38	4%	6.8	61	7%	10.8	72	8%	12.5	54	7%	9.0	57	7%	9.5
	60-64 Years	17	2%	3.7	32	3%	6.7	17	2%	3.4	34	4%	6.3	30	4%	5.6
	65+ Years	16	2%	1.4	22	2%	1.9	15	2%	1.3	28	4%	2.3	32	4%	2.6
	Total	853	100%	11.4	928	100%	12.2	936	100%	12.1	786	100%	10.0	830	100%	10.5

*per 100,000 population

Table P: North Carolina Adult/Adolescent AIDS Demographic Rates

Gender and Race/Ethnicity, by Year of Diagnosis, 2007-2011

Race/Ethnicity		2007	2007	2007	2008	2008	2008	2009	2009	2009	2010	2010	2010	2011	2011	2011
		Cases	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***
Male	**White****	149	17%	5.9	175	19%	6.8	161	17%	6.2	152	19%	5.8	145	17%	5.6
	Black**	378	44%	52.3	406	44%	54.9	440	47%	58.6	341	43%	44.3	370	45%	48.1
	Am. In/AN**	2	0%	4.8	5	1%	11.9	3	0%	7.1	3	0%	6.8	4	0%	9.0
	Asian/PI**	1	0%	1.4	1	0%	1.3	4	0%	5.2	3	0%	3.5	1	0%	1.2
	Hispanic	57	7%	23.1	63	7%	24.1	67	7%	24.5	48	6%	15.8	38	5%	12.5
	Unknown	3	0%	---	6	1%	---	11	1%	---	10	1%	---	20	2%	---
	Total	590	69%	16.4	656	71%	17.8	686	73%	18.4	557	71%	14.7	578	70%	15.2
Female	**White****	45	5%	1.7	33	4%	1.2	38	4%	1.4	23	3%	0.8	40	5%	1.4
	Black**	197	23%	23.1	226	24%	26.0	202	22%	22.9	197	25%	21.7	191	23%	21.0
	Am. In/AN**	6	1%	13.4	1	0%	2.2	1	0%	2.2	0	0%	0.0	4	0%	8.2
	Asian/PI**	2	0%	2.7	0	0%	0.0	3	0%	3.6	0	0%	0.0	1	0%	1.1
	Hispanic	11	1%	6.2	9	1%	4.7	5	1%	2.5	6	1%	2.4	13	2%	5.1
	Unknown	2	0%	---	3	0%	---	1	0%	---	3	0%	---	3	0%	---
	Total	263	31%	6.8	272	29%	6.9	250	27%	6.3	229	29%	5.6	252	30%	6.2
Total	**White****	194	23%	3.7	208	22%	3.9	199	21%	3.7	175	22%	3.3	185	22%	3.4
	Black**	575	67%	36.5	632	68%	39.3	642	69%	39.3	538	68%	32.1	561	68%	33.5
	Am. In/AN**	8	1%	9.3	6	1%	6.9	4	0%	4.5	3	0%	3.2	8	1%	8.6
	Asian/PI**	3	0%	2.1	1	0%	0.7	7	1%	4.4	3	0%	1.7	2	0%	1.1
	Hispanic	68	8%	16.1	72	8%	16.0	72	8%	15.2	54	7%	9.7	51	6%	9.2
	Unknown	5	1%	---	9	1%	---	12	1%	---	13	2%	---	23	3%	---
	Total	853	100%	11.4	928	100%	12.2	936	100%	12.1	786	100%	10.0	830	100%	10.5

*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, 1983-2011

AIDS COUNTY	83-90 Cases	91-96 Cases	97-04 Cases	2005 Cases	2006 Cases	2007 Cases	2008 Cases	2009 Cases	2010 Cases	2011 Cases	CUMULATIVE CASES
ALAMANCE	25	66	74	12	3	8	12	12	14	8	234
ALEXANDER	2	4	7	1	3	0	2	2	2	0	23
ALLEGHANY	0	0	0	0	0	0	0	0	0	0	0
ANSON	4	13	26	4	0	0	5	0	2	1	55
ASHE	0	2	1	1	0	0	0	0	0	0	4
AVERY	2	0	1	0	0	2	0	1	1	0	7
BEAUFORT	20	34	39	4	2	4	7	6	1	6	123
BERTIE	8	17	40	3	3	3	3	3	1	5	86
BLADEN	8	13	34	2	3	3	7	0	7	8	85
BRUNSWICK	15	30	39	6	3	8	10	6	6	6	129
BUNCOMBE	30	169	153	7	12	10	13	3	10	21	428
BURKE	8	27	15	4	2	0	5	4	2	1	68
CABARRUS	18	48	45	7	7	6	6	4	5	7	153
CALDWELL	5	16	13	3	0	2	3	1	2	1	46
CAMDEN	0	3	8	1	1	0	1	1	1	1	17
CARTERET	11	21	14	0	2	1	4	2	3	3	61
CASWELL	1	10	4	0	0	2	2	1	1	1	22
CATAWBA	23	40	67	3	10	12	10	14	7	2	188
CHATHAM	5	14	20	4	1	5	1	1	4	3	58
CHEROKEE	1	6	3	0	1	1	1	0	0	0	13
CHOWAN	5	8	9	0	1	0	4	1	0	0	28
CLAY	0	0	2	0	0	0	0	0	1	2	5
CLEVELAND	19	26	49	16	13	12	8	8	5	10	166
COLUMBUS	16	36	62	7	8	9	6	6	8	6	164
CRAVEN	24	55	64	11	11	11	10	15	8	4	213
CUMBERLAND	89	232	284	27	50	47	46	45	37	48	905
CURRITUCK	3	6	3	2	1	0	1	2	2	0	20
DARE	5	9	15	0	0	1	2	1	1	2	36
DAVIDSON	29	49	40	6	2	9	13	10	2	5	165
DAVIE	3	7	8	1	0	0	1	0	3	2	25
DUPLIN	14	45	65	9	5	5	4	5	5	6	163
DURHAM	142	450	311	41	29	31	42	32	36	24	1,138
EDGECOMBE	19	67	105	17	8	9	15	18	12	17	287
FORSYTH	132	242	309	32	23	31	29	46	26	41	911
FRANKLIN	11	15	27	6	6	2	2	5	8	5	87
GASTON	28	137	152	20	10	11	12	20	23	33	446
GATES	0	0	3	0	0	0	0	2	0	0	5
GRAHAM	0	1	1	0	1	0	0	0	0	0	3
GRANVILLE	13	26	38	5	3	3	4	6	6	2	106
GREENE	3	13	23	4	0	1	1	2	4	0	51
GUILFORD	159	467	379	39	44	52	67	60	49	50	1,366
HALIFAX	15	52	60	6	8	6	11	10	2	9	179
HARNETT	11	45	55	6	9	7	13	12	11	10	179
HAYWOOD	5	22	14	3	3	0	2	3	1	3	56
HENDERSON	9	28	38	4	1	8	2	4	4	3	101
HERTFORD	12	14	27	3	3	4	3	4	1	4	75
HOKE	3	12	28	7	4	6	6	4	7	7	84
HYDE	0	3	5	0	0	0	0	0	1	0	9
IREDELL	12	31	38	9	6	1	8	5	2	0	112
JACKSON	2	7	5	1	1	0	0	1	1	2	20
JOHNSTON	26	59	85	13	23	11	14	10	12	12	265

*by county and year of AIDS diagnosis

Continued

Table Q (continued): Cumulative AIDS Cases* by County of Residence, 1983-2011

AIDS COUNTY	83-90 Cases	91-96 Cases	97-04 Cases	2005 Cases	2006 Cases	2007 Cases	2008 Cases	2009 Cases	2010 Cases	2011 Cases	CUMULATIVE CASES
JONES	0	5	5	0	1	1	0	3	3	1	19
LEE	5	20	22	2	5	5	3	8	6	1	77
LENOIR	15	79	105	9	12	7	14	15	11	2	269
LINCOLN	2	9	15	1	4	0	2	0	5	1	39
MACON	0	11	7	0	2	0	1	2	1	0	24
MADISON	0	6	4	0	0	0	0	0	0	2	12
MARTIN	5	16	26	6	3	2	1	6	1	1	67
MCDOWELL	3	5	10	0	4	0	0	1	0	1	24
MECKLENBURG	289	662	949	147	158	153	151	163	121	140	2,933
MITCHELL	1	3	3	0	0	0	1	2	0	1	11
MONTGOMERY	2	7	8	5	2	0	1	1	2	2	30
MOORE	10	23	42	5	6	5	6	3	3	10	113
NASH	23	78	77	14	13	10	11	13	14	7	260
NEW HANOVER	50	122	193	23	27	19	19	11	8	12	484
NORTHAMPTON	5	28	24	5	0	1	3	5	2	3	76
ONSLOW	33	49	58	7	3	4	6	5	10	9	184
ORANGE	42	60	43	3	5	2	6	2	2	4	169
PAMLICO	5	4	7	1	0	0	0	1	0	1	19
PASQUOTANK	8	16	26	3	1	2	3	3	6	3	71
PENDER	10	24	22	5	1	0	2	3	0	3	70
PERQUIMANS	1	4	11	1	1	1	0	2	1	0	22
PERSON	3	15	13	1	1	3	4	4	5	0	49
PITT	40	170	164	20	16	19	21	23	25	21	519
POLK	2	10	8	0	0	1	0	1	0	1	23
RANDOLPH	12	30	33	5	6	4	3	4	8	6	111
RICHMOND	5	32	24	4	5	9	6	4	4	8	101
ROBESON	19	76	150	17	13	21	17	11	18	17	359
ROCKINGHAM	8	36	31	0	1	6	4	1	0	8	95
ROWAN	21	59	53	9	4	9	10	6	6	3	180
RUTHERFORD	10	26	16	3	0	2	1	0	1	5	64
SAMPSON	14	34	45	7	8	7	5	7	4	6	137
SCOTLAND	9	30	35	3	1	5	6	2	4	4	99
STANLY	5	8	15	2	2	3	1	2	1	2	41
STOKES	1	8	7	0	1	1	0	1	2	0	21
SURRY	6	12	13	2	0	0	3	1	1	1	39
SWAIN	5	8	7	1	1	0	0	0	0	0	22
TRANSYLVANIA	5	7	8	1	1	1	0	1	0	3	27
TYRRELL	1	1	1	0	0	0	0	0	0	0	3
UNION	14	23	44	5	8	4	8	8	5	15	134
VANCE	15	40	69	5	3	4	4	3	5	3	151
WAKE	218	472	720	104	120	116	120	109	84	76	2,139
WARREN	2	6	12	0	2	0	0	0	2	1	25
WASHINGTON	5	23	17	5	1	5	2	1	2	2	63
WATAUGA	4	4	4	3	1	0	1	3	0	0	20
WAYNE	42	87	108	14	14	9	10	9	9	18	320
WILKES	3	6	11	0	1	2	2	0	2	1	28
WILSON	28	73	126	18	25	16	13	19	8	10	336
YADKIN	3	3	11	1	1	3	1	0	1	1	25
YANCEY	1	5	2	0	2	0	0	1	0	0	11
Unassigned**	57	291	591	60	76	49	40	68	48	33	1,313
N.C. TOTAL	2,062	5,523	6,902	884	888	855	930	936	788	830	20,598

*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, 2007-2011

Age		2007	2007	2007	2008	2008	2008	2009	2009	2009	2010	2010	2010	2011	2011	2011
		Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*
Male	**10-14 Years**	24	0%	7.9	16	0%	5.2	20	0%	6.5	20	0%	6.2	34	0%	10.5
	15-19 Years	1,236	4%	380.2	1,460	4%	442.8	1,943	4%	585.6	1,989	5%	588.0	2,683	5%	793.2
	20-24 Years	2,167	7%	649.1	2,673	7%	772.4	3,210	7%	911.5	3,137	7%	931.8	4,721	9%	1402.4
	25-29 Years	1,037	3%	346.9	1,161	3%	373.7	1,556	4%	488.2	1,425	3%	457.5	1,960	4%	629.2
	30-34 Years	459	1%	154.7	550	1%	184.1	678	2%	227.6	650	2%	213.2	940	2%	308.4
	35-39 Years	254	1%	76.8	308	1%	92.2	375	1%	113.9	391	1%	120.4	470	1%	144.8
	40-44 Years	138	0%	42.1	171	0%	52.3	203	0%	62.6	213	1%	64.6	271	1%	82.2
	45-54 Years	138	0%	22.0	129	0%	20.2	152	0%	23.4	168	0%	25.3	249	0%	37.4
	55-64 Years	27	0%	5.6	32	0%	6.4	41	0%	8.0	32	0%	5.9	37	0%	6.8
	65+ Years	6	0%	1.3	10	0%	2.1	9	0%	1.8	11	0%	2.1	15	0%	2.9
	Unknown	0	0%	---	24	0%	---	21	0%	---	12	0%	---	14	0%	---
	Total	5,493	18%	124.0	6,567	17%	145.1	8,227	19%	179.2	8,054	19%	173.4	11,408	21%	245.6
Female	**10-14 Years**	319	1%	110.4	369	1%	127.2	424	1%	144.8	398	1%	129.1	463	1%	150.2
	15-19 Years	9,689	32%	3146.6	12,011	32%	3842.9	13,716	31%	4372.3	12,789	30%	3980.1	15,694	29%	4884.2
	20-24 Years	9,381	31%	3109.2	11,742	31%	3811.1	13,319	30%	4222.7	13,261	31%	4081.2	16,858	31%	5188.3
	25-29 Years	3,414	11%	1121.7	4,179	11%	1349.8	4,559	10%	1461.0	4,392	10%	1391.9	5,375	10%	1703.4
	30-34 Years	1,354	4%	451.5	1,521	4%	501.8	1,785	4%	581.9	1,763	4%	560.1	2,193	4%	696.7
	35-39 Years	529	2%	158.8	677	2%	201.8	740	2%	222.2	746	2%	222.6	861	2%	256.9
	40-44 Years	233	1%	69.0	263	1%	78.6	291	1%	87.8	270	1%	80.0	407	1%	120.5
	45-54 Years	144	0%	21.7	159	0%	23.5	182	0%	26.5	201	0%	28.6	255	0%	36.2
	55-64 Years	27	0%	5.1	29	0%	5.3	36	0%	6.3	41	0%	6.9	42	0%	7.0
	65+ Years	<5	---	---	<5	---	---	6	0%	0.9	5	0%	0.7	7	0%	1.0
	Unknown	0	0%	---	129	0%	---	132	0%	---	40	0%	---	31	0%	---
	Total	25,111	82%	541.7	31,160	82%	660.0	35,229	81%	735.4	33,923	80%	693.7	42,202	78%	863.0

*per 100,000 population

Continued

Table R (continued): North Carolina Chlamydia Demographic Rates, Gender and Age, 2007-2011

Age		2007	2007	2007	2008	2008	2008	2009	2009	2009	2010	2010	2010	2011	2011	2011
		Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*
Total	**10-14 Years**	343	1%	57.9	385	1%	64.6	448	1%	74.5	419	1%	66.4	499	1%	79.1
	15-19 Years	10,928	36%	1726.4	13,499	36%	2101.7	15,720	36%	2435.3	14,832	35%	2248.7	18,444	34%	2796.3
	20-24 Years	11,551	38%	1817.4	14,484	38%	2214.2	16,619	38%	2489.4	16,472	39%	2489.8	21,675	40%	3276.3
	25-29 Years	4,453	15%	738.1	5,360	14%	864.1	6,152	14%	975.3	5,845	14%	932.2	7,379	14%	1176.8
	30-34 Years	1,813	6%	303.9	2,076	5%	344.9	2,478	6%	409.8	2,424	6%	391.2	3,148	6%	508.1
	35-39 Years	783	3%	117.9	992	3%	148.2	1,122	3%	169.4	1,142	3%	173.1	1,334	2%	202.2
	40-44 Years	371	1%	55.8	439	1%	66.4	497	1%	75.8	487	1%	73.0	682	1%	102.2
	45-54 Years	282	1%	21.9	289	1%	22.0	336	1%	25.2	370	1%	27.0	504	1%	36.8
	55-64 Years	54	0%	5.3	62	0%	5.9	77	0%	7.1	73	0%	6.4	79	0%	6.9
	65+ Years	9	0%	0.8	12	0%	1.0	15	0%	1.3	16	0%	1.3	22	0%	1.8
	Unknown	0	0%	---	175	0%	---	210	0%	---	64	0%	---	57	0%	---
	Total	30,612	100%	337.7	37,885	100%	409.7	43,734	100%	466.2	42,167	100%	442.2	53,854	100%	564.8

*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.

Table S: North Carolina Chlamydia Demographic Rates
Gender and Race/Ethnicity, 2007-2011

Race/Ethnicity		2007	2007	2007	2008	2008	2008	2009	2009	2009	2010	2010	2010	2011	2011	2011
		Cases	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***
Male	**White****	1,030	3%	34.2	1,050	3%	34.3	958	2%	31.0	945	2%	30.7	1,210	2%	39.3
	Black**	3,480	11%	379.8	3,477	9%	371.4	4,007	9%	421.5	3,835	9%	393.3	4,694	9%	481.4
	Am. In/AN**	33	0%	63.3	51	0%	96.6	73	0%	136.9	95	0%	169.6	102	0%	182.1
	Asian/PI**	49	0%	54.1	34	0%	35.5	38	0%	38.1	34	0%	31.2	35	0%	32.1
	Hispanic	492	2%	138.7	439	1%	115.7	523	1%	131.4	470	1%	109.9	588	1%	137.5
	Unknown	409	1%	---	1,516	4%	---	2,628	6%	---	2,675	6%	---	4,779	9%	---
	Total	5,493	18%	124.0	6,567	17%	145.1	8,227	19%	179.2	8,054	19%	173.4	11,408	21%	245.6
Female	**White****	6,276	21%	198.3	6,427	17%	200.6	6,024	14%	186.3	6,316	15%	195.5	7,250	13%	224.4
	Black**	14,019	46%	1347.4	15,135	40%	1427.5	16,001	37%	1486.2	15,806	37%	1427.1	17,108	32%	1544.7
	Am. In/AN**	337	1%	612.2	449	1%	807.4	498	1%	885.3	432	1%	720.6	583	1%	972.4
	Asian/PI**	156	1%	163.3	212	1%	211.3	176	0%	168.4	206	0%	173.7	181	0%	152.6
	Hispanic	1,807	6%	647.5	1,981	5%	657.4	1,990	5%	622.7	1,777	4%	477.2	2,244	4%	602.6
	Unknown	2,516	8%	---	6,956	18%	---	10,540	24%	---	9,386	22%	---	14,836	28%	---
	Total	25,111	82%	541.7	31,160	82%	660.0	35,229	81%	735.4	33,923	80%	693.7	42,202	78%	863.0
Total	**White****	7,306	24%	118.2	7,502	20%	119.7	7,000	16%	110.7	7,276	17%	115.3	8,480	16%	134.4
	Black**	17,505	57%	894.6	18,687	49%	936.0	20,090	46%	991.0	19,732	47%	947.4	21,860	41%	1049.6
	Am. In/AN**	370	1%	345.2	502	1%	463.1	572	1%	522.0	527	1%	454.5	686	1%	591.6
	Asian/PI**	205	1%	110.2	247	1%	126.0	215	0%	105.3	241	1%	105.9	217	0%	95.4
	Hispanic	2,299	8%	362.7	2,431	6%	357.2	2,525	6%	351.8	2,254	5%	281.7	2,841	5%	355.1
	Unknown	2,927	10%	---	8,516	22%	---	13,332	30%	---	12,137	29%	---	19,770	37%	---
	Total	30,612	100%	337.7	37,885	100%	409.7	43,734	100%	466.2	42,167	100%	442.2	53,854	100%	564.8

*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, 2007-2011

Age		2007	2007	2007	2008	2008	2008	2009	2009	2009	2010	2010	2010	2011	2011	2011
		Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*
Male	**10-14 Years**	19	0%	6.3	20	0%	6.5	16	0%	5.2	17	0%	5.3	9	0%	2.8
	15-19 Years	1,257	8%	386.7	1,129	8%	342.4	1,218	8%	367.1	1,079	8%	319.0	1,279	7%	378.1
	20-24 Years	2,346	14%	702.7	2,144	14%	619.6	2,132	14%	605.4	2,077	15%	617.0	2,726	16%	809.7
	25-29 Years	1,449	9%	484.7	1,229	8%	395.6	1,178	8%	369.6	1,066	8%	342.2	1,344	8%	431.5
	30-34 Years	906	5%	305.3	713	5%	238.7	643	4%	215.9	602	4%	197.5	682	4%	223.7
	35-39 Years	578	3%	174.7	436	3%	130.6	391	3%	118.7	319	2%	98.3	389	2%	119.8
	40-44 Years	452	3%	138.1	317	2%	97.0	264	2%	81.4	247	2%	74.9	296	2%	89.8
	45-54 Years	503	3%	80.3	398	3%	62.3	315	2%	48.6	229	2%	34.4	334	2%	50.2
	55-64 Years	172	1%	35.7	86	1%	17.3	81	1%	15.8	70	0%	13.0	88	1%	16.3
	65+ Years	39	0%	8.4	24	0%	5.0	22	0%	4.4	20	0%	3.8	26	0%	5.0
	Unknown	<5	---	---	32	0%	---	18	0%	---	8	0%	---	7	0%	---
	Total	7,725	46%	174.4	6,554	44%	144.8	6,285	42%	136.9	5,734	41%	123.4	7,187	42%	154.7
Female	**10-14 Years**	117	1%	40.5	86	1%	29.6	95	1%	32.4	83	1%	26.9	93	1%	30.2
	15-19 Years	2,911	17%	945.4	2,763	18%	884.0	2,940	20%	937.2	2,838	20%	883.2	3,253	19%	1012.4
	20-24 Years	3,185	19%	1055.6	3,016	20%	978.9	3,113	21%	986.9	3,191	23%	982.1	3,892	23%	1197.8
	25-29 Years	1,440	9%	473.1	1,332	9%	430.2	1,248	8%	399.9	1,222	9%	387.3	1,484	9%	470.3
	30-34 Years	623	4%	207.8	567	4%	187.1	520	4%	169.5	548	4%	174.1	598	3%	190.0
	35-39 Years	339	2%	101.7	278	2%	82.9	247	2%	74.2	253	2%	75.5	280	2%	83.5
	40-44 Years	171	1%	50.7	150	1%	44.8	114	1%	34.4	85	1%	25.2	159	1%	47.1
	45-54 Years	127	1%	19.1	113	1%	16.7	77	1%	11.2	90	1%	12.8	104	1%	14.8
	55-64 Years	13	0%	2.5	12	0%	2.2	14	0%	2.5	5	0%	0.8	17	0%	2.8
	65+ Years	<5	---	---	<5	---	---	<5	---	---	0	0%	0.0	<5	---	---
	Unknown	5	0%	---	45	0%	---	38	0%	---	13	0%	---	<5	---	---
	Total	8,941	54%	192.9	8,393	56%	177.8	8,416	57%	175.7	8,336	59%	170.5	9,890	58%	202.2

*per 100,000 population

Continued

Table T (continued): North Carolina Gonorrhea Demographic Rates, Gender and Age, 2007-2011

Age		2007	2007	2007	2008	2008	2008	2009	2009	2009	2010	2010	2010	2011	2011	2011
		Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*
Total	**10-14 Years**	136	1%	23.0	106	1%	17.8	111	1%	18.5	100	1%	15.8	103	1%	16.3
	15-19 Years	4,168	25%	658.5	3,900	26%	607.2	4,177	28%	647.1	3,936	28%	596.7	4,553	27%	690.3
	20-24 Years	5,531	33%	870.2	5,183	35%	792.3	5,286	36%	791.8	5,297	37%	800.7	6,649	39%	1005.0
	25-29 Years	2,889	17%	478.9	2,570	17%	414.3	2,441	16%	387.0	2,300	16%	366.8	2,839	17%	452.8
	30-34 Years	1,529	9%	256.3	1,289	9%	214.2	1,170	8%	193.5	1,160	8%	187.2	1,284	7%	207.2
	35-39 Years	917	6%	138.1	717	5%	107.1	640	4%	96.6	577	4%	87.4	670	4%	101.5
	40-44 Years	623	4%	93.7	468	3%	70.8	381	3%	58.1	333	2%	49.9	457	3%	68.5
	45-54 Years	630	4%	48.8	516	3%	39.2	393	3%	29.4	320	2%	23.4	441	3%	32.2
	55-64 Years	185	1%	18.3	101	1%	9.7	95	1%	8.8	75	1%	6.6	105	1%	9.2
	65+ Years	41	0%	3.7	25	0%	2.2	23	0%	1.9	20	0%	1.6	29	0%	2.3
	Unknown	7	0%	---	80	1%	---	78	1%	---	26	0%	---	15	0%	---
	Total	16,666	100%	183.9	15,012	100%	162.3	14,811	100%	157.9	14,153	100%	148.4	17,158	100%	179.9

*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, 2007-2011

Race/Ethnicity		2007	2007	2007	2008	2008	2008	2009	2009	2009	2010	2010	2010	2011	2011	2011
		Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*	Cases	Pct	Rate*
Male	**White****	824	5%	27.3	550	4%	18.0	440	3%	14.2	394	3%	12.8	514	3%	16.7
	Black**	5,971	36%	651.7	4,531	30%	483.9	3,958	27%	416.4	3,604	25%	369.6	3,913	23%	401.3
	Am. In/AN**	63	0%	120.9	80	1%	151.5	68	0%	127.5	52	0%	92.8	54	0%	96.4
	Asian/PI**	27	0%	29.8	18	0%	18.8	16	0%	16.0	8	0%	7.3	9	0%	8.3
	Hispanic	233	1%	65.7	166	1%	43.8	136	1%	34.2	147	1%	34.4	172	1%	40.2
	Unknown	607	4%	---	1,209	8%	---	1,667	11%	---	1,529	11%	---	2,525	15%	---
	Total	7,725	46%	174.4	6,554	44%	144.8	6,285	42%	136.9	5,734	41%	123.4	7,187	42%	154.7
Female	**White****	1,770	11%	55.9	1,321	9%	41.2	1,055	7%	32.6	1,067	8%	33.0	1,157	7%	35.8
	Black**	5,894	35%	566.5	4,957	33%	467.5	4,949	33%	459.7	5,059	36%	456.8	5,158	30%	465.7
	Am. In/AN**	131	1%	238.0	192	1%	345.3	130	1%	231.1	116	1%	193.5	144	1%	240.2
	Asian/PI**	39	0%	40.8	29	0%	28.9	27	0%	25.8	27	0%	22.8	23	0%	19.4
	Hispanic	167	1%	59.8	209	1%	69.4	166	1%	51.9	164	1%	44.0	213	1%	57.2
	Unknown	940	6%	---	1,685	11%	---	2,089	14%	---	1,903	13%	---	3,195	19%	---
	Total	8,941	54%	192.9	8,393	56%	177.8	8,416	57%	175.7	8,336	59%	170.5	9,890	58%	202.2
Total	**White****	2,594	16%	42.0	1,877	13%	30.0	1,503	10%	23.8	1,463	10%	23.2	1,674	10%	26.5
	Black**	11,865	71%	606.4	9,519	63%	476.8	8,940	60%	441.0	8,708	62%	418.1	9,095	53%	436.7
	Am. In/AN**	194	1%	181.0	272	2%	250.9	199	1%	181.6	168	1%	144.9	198	1%	170.8
	Asian/PI**	66	0%	35.5	47	0%	24.0	43	0%	21.1	35	0%	15.4	32	0%	14.1
	Hispanic	400	2%	63.1	379	3%	55.7	304	2%	42.4	313	2%	39.1	387	2%	48.4
	Unknown	1,547	9%	---	2,918	19%	---	3,822	26%	---	3,466	24%	---	5,772	34%	---
	Total	16,666	100%	183.9	15,012	100%	162.3	14,811	100%	157.9	14,153	100%	148.4	17,158	100%	179.9

*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, 2007-2011

Age		2007	2007	2007	2008	2008	2008	2009	2009	2009	2010	2010	2010	2011	2011	2011
		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	<5	---	---
	15-19 Years	25	4%	7.7	30	6%	9.1	43	5%	13.0	44	6%	13.0	50	7%	14.8
	20-24 Years	66	12%	19.8	79	15%	22.8	150	16%	42.6	136	19%	40.4	200	26%	59.4
	25-29 Years	76	13%	25.4	62	12%	20.0	135	14%	42.4	126	17%	40.4	134	17%	43.0
	30-34 Years	49	9%	16.5	29	6%	9.7	86	9%	28.9	65	9%	21.3	74	10%	24.3
	35-39 Years	58	10%	17.5	61	12%	18.3	85	9%	25.8	48	7%	14.8	47	6%	14.5
	40-44 Years	61	11%	18.6	58	11%	17.8	83	9%	25.6	64	9%	19.4	55	7%	16.7
	45-54 Years	62	11%	9.9	65	13%	10.2	106	11%	16.4	78	11%	11.7	82	11%	12.3
	55-64 Years	18	3%	3.7	14	3%	2.8	32	3%	6.2	21	3%	3.9	22	3%	4.1
	65+ Years	7	1%	1.5	<5	---	---	<5	---	---	8	1%	1.5	<5	---	---
	Unknown	0	0%	---	0	0%	---	0	0%	---	0	0%	---	0	0%	---
	Total	422	74%	9.5	401	78%	8.9	724	77%	15.8	590	81%	12.7	668	87%	14.4
Female	**10-14 Years**	0	0%	0.0	<5	---	---	0	0%	0.0	<5	---	---	<5	---	---
	15-19 Years	8	1%	2.6	14	3%	4.5	22	2%	7.0	17	2%	5.3	11	1%	3.4
	20-24 Years	30	5%	9.9	22	4%	7.1	61	7%	19.3	29	4%	8.9	22	3%	6.8
	25-29 Years	22	4%	7.2	13	3%	4.2	44	5%	14.1	23	3%	7.3	11	1%	3.5
	30-34 Years	19	3%	6.3	17	3%	5.6	27	3%	8.8	13	2%	4.1	18	2%	5.7
	35-39 Years	24	4%	7.2	14	3%	4.2	28	3%	8.4	14	2%	4.2	8	1%	2.4
	40-44 Years	20	4%	5.9	12	2%	3.6	13	1%	3.9	14	2%	4.1	9	1%	2.7
	45-54 Years	24	4%	3.6	20	4%	3.0	16	2%	2.3	22	3%	3.1	14	2%	2.0
	55-64 Years	0	0%	0.0	<5	---	---	<5	---	---	0	0%	0.0	<5	---	---
	65+ Years	0	0%	0.0	0	0%	0.0	<5	---	---	0	0%	0.0	<5	---	---
	Unknown	0	0%	---	0	0%	---	0	0%	---	0	0%	---	<5	---	---
	Total	147	26%	3.2	115	22%	2.4	214	23%	4.5	134	19%	2.7	100	13%	2.0

*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, 2007-2011

Age		2007 Cases	2007 Pct	2007 Rate*	2008 Cases	2008 Pct	2008 Rate*	2009 Cases	2009 Pct	2009 Rate*	2010 Cases	2010 Pct	2010 Rate*	2011 Cases	2011 Pct	2011 Rate*
Total	**10-14 Years**	0	0%	0.0	<5	---	---	0	0%	0.0	<5	---	---	<5	---	---
	15-19 Years	33	6%	5.2	44	9%	6.9	65	7%	10.1	61	8%	9.2	61	8%	9.2
	20-24 Years	96	17%	15.1	101	20%	15.4	211	22%	31.6	165	23%	24.9	222	29%	33.6
	25-29 Years	98	17%	16.2	75	15%	12.1	179	19%	28.4	149	21%	23.8	145	19%	23.1
	30-34 Years	68	12%	11.4	46	9%	7.6	113	12%	18.7	78	11%	12.6	92	12%	14.8
	35-39 Years	82	14%	12.4	75	15%	11.2	113	12%	17.1	62	9%	9.4	55	7%	8.3
	40-44 Years	81	14%	12.2	70	14%	10.6	96	10%	14.6	78	11%	11.7	64	8%	9.6
	45-54 Years	86	15%	6.7	85	16%	6.5	122	13%	9.1	100	14%	7.3	96	13%	7.0
	55-64 Years	18	3%	1.8	16	3%	1.5	34	4%	3.1	21	3%	1.8	26	3%	2.3
	65+ Years	7	1%	0.6	<5	---	---	5	1%	0.4	8	1%	0.6	5	1%	0.4
	Unknown	0	0%	---	0	0%	---	0	0%	---	0	0%	---	0	0%	---
	Total	569	100%	6.3	516	100%	5.6	938	100%	10.0	724	100%	7.6	768	100%	8.1

*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, 2007-2011

Race/Ethnicity		2007	2007	2007	2008	2008	2008	2009	2009	2009	2010	2010	2010	2011	2011	2011
		Cases	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***	**Cases**	**Pct**	**Rate***
Male	**White****	96	17%	3.2	94	18%	3.1	149	16%	4.8	91	13%	3.0	143	19%	4.6
	Black**	298	52%	32.5	284	55%	30.3	538	57%	56.6	472	65%	48.4	483	63%	49.5
	Am. In/AN**	<5	---	---	0	0%	0.0	6	1%	11.3	<5	---	---	<5	---	---
	Asian/PI**	<5	---	---	<5	---	---	<5	---	---	<5	---	---	6	1%	5.5
	Hispanic	24	4%	6.8	19	4%	5.0	25	3%	6.3	17	2%	4.0	25	3%	5.8
	Unknown	<5	---	---	<5	---	---	<5	---	---	<5	---	---	8	1%	---
	Total	422	74%	9.5	401	78%	8.9	724	77%	15.8	590	81%	12.7	668	87%	14.4
Female	**White****	28	5%	0.9	22	4%	0.7	54	6%	1.7	26	4%	0.8	13	2%	0.4
	Black**	104	18%	10.0	84	16%	7.9	144	15%	13.4	103	14%	9.3	79	10%	7.1
	Am. In/AN**	<5	---	---	0	0%	0.0	<5	---	---	0	0%	0.0	<5	---	---
	Asian/PI**	<5	---	---	0	0%	0.0	<5	---	---	<5	---	---	<5	---	---
	Hispanic	12	2%	4.3	9	2%	3.0	14	1%	4.4	<5	---	---	5	1%	1.3
	Unknown	0	0%	---	0	0%	---	0	0%	---	<5	---	---	<5	---	---
	Total	147	26%	3.2	115	22%	2.4	214	23%	4.5	134	19%	2.7	100	13%	2.0
Total	**White****	124	22%	2.0	116	22%	1.9	203	22%	3.2	117	16%	1.9	156	20%	2.5
	Black**	402	71%	20.5	368	71%	18.4	682	73%	33.6	575	79%	27.6	562	73%	27.0
	Am. In/AN**	<5	---	---	0	0%	0.0	7	1%	6.4	<5	---	---	<5	---	---
	Asian/PI**	<5	---	---	<5	---	---	5	1%	2.4	<5	---	---	7	1%	3.1
	Hispanic	36	6%	5.7	28	5%	4.1	39	4%	5.4	20	3%	2.5	30	4%	3.7
	Unknown	<5	---	---	<5	---	---	<5	---	---	<5	---	---	9	1%	---
	Total	569	100%	6.3	516	100%	5.6	938	100%	10.0	724	100%	7.6	768	100%	8.1

*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, 2007-2011

		Cases				
Rank*	**County**	**2007**	**2008**	**2009**	**2010**	**2011**
1	MECKLENBURG	141	91	174	167	190
2	GUILFORD	45	50	68	75	115
3	WAKE	40	45	116	83	76
4	FORSYTH	31	46	195	103	47
5	CUMBERLAND	18	18	18	37	37
6	DURHAM	47	39	40	23	24
7	PITT	7	12	15	18	17
8	CRAVEN	12	4	6	8	17
9	WAYNE	17	28	59	46	16
10	CABARRUS	5	4	8	3	15
11	ALAMANCE	7	6	7	7	13
12	BUNCOMBE	5	17	16	7	11
13	NASH	15	16	9	10	10
14	BERTIE	0	0	0	0	10
15	ROBESON	15	5	3	8	9
16	RANDOLPH	2	2	5	2	9
17	EDGECOMBE	11	13	17	7	8
18	GASTON	10	5	20	5	8
19	NEW HANOVER	35	22	14	3	8
20	HALIFAX	3	2	2	3	8
21	ROWAN	5	0	5	8	7
22	DAVIDSON	3	0	5	5	7
23	LENOIR	5	3	4	2	6
24	PASQUOTANK	0	0	1	1	6
25	WILSON	3	5	6	7	4
26	LEE	0	1	6	5	4
27	ROCKINGHAM	5	4	1	5	4
28	FRANKLIN	4	3	3	3	4
29	VANCE	0	2	4	5	3
30	DUPLIN	2	3	2	5	3
31	CHATHAM	1	0	2	4	3
32	RUTHERFORD	1	0	3	2	3
33	ORANGE	8	3	9	1	3
34	BURKE	2	3	4	1	3
35	CATAWBA	2	1	4	1	3
36	IREDELL	1	1	3	1	3
37	MARTIN	1	2	1	1	3
38	PENDER	1	5	1	0	3
39	CARTERET	4	0	0	0	3
40	MONTGOMERY	0	0	0	0	3
41	ONSLOW	3	2	3	4	2
42	UNION	0	2	7	3	2
43	STOKES	0	3	2	3	2
44	JOHNSTON	10	5	4	2	2
45	BEAUFORT	0	0	4	2	2
46	CASWELL	0	0	0	2	2
47	BLADEN	1	0	5	1	2
48	HENDERSON	0	0	5	1	2
49	GREENE	3	0	3	0	2
50	HAYWOOD	1	1	2	0	2
51	MACON	0	0	1	0	2

* Rank based on number of cases reported in 2011. 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, 2007-2011

		Cases				
Rank*	**County**	**2007**	**2008**	**2009**	**2010**	**2011**
51	PERSON	0	0	1	0	2
53	NORTHAMPTON	0	2	1	3	1
54	SAMPSON	3	2	2	2	1
55	HOKE	0	2	1	2	1
56	HERTFORD	0	0	1	2	1
57	MOORE	3	5	3	1	1
58	SURRY	0	2	1	1	1
58	COLUMBUS	2	1	1	1	1
60	ANSON	0	2	0	1	1
61	WILKES	0	1	0	1	1
62	WATAUGA	0	0	0	1	1
63	BRUNSWICK	5	6	2	0	1
63	YADKIN	2	0	2	0	1
65	TRANSYLVANIA	1	0	1	0	1
66	CALDWELL	0	1	0	0	1
66	CHEROKEE	0	1	0	0	1
68	ALEXANDER	0	0	0	0	1
68	CLAY	0	0	0	0	1
68	YANCEY	0	0	0	0	1
71	CLEVELAND	6	4	3	3	0
72	HARNETT	2	0	3	3	0
73	GRANVILLE	1	1	4	2	0
74	WARREN	0	0	3	1	0
75	WASHINGTON	2	0	2	1	0
76	SCOTLAND	1	1	1	1	0
77	RICHMOND	0	1	1	1	0
78	DARE	0	0	1	1	0
78	HYDE	0	0	1	1	0
80	STANLY	3	1	0	1	0
81	GATES	0	1	0	1	0
82	AVERY	0	0	0	1	0
82	GRAHAM	0	0	0	1	0
82	PAMLICO	0	0	0	1	0
85	MADISON	0	0	3	0	0
86	JACKSON	0	2	2	0	0
87	LINCOLN	1	1	2	0	0
88	MCDOWELL	1	1	1	0	0
89	CAMDEN	0	0	1	0	0
89	CURRITUCK	0	0	1	0	0
89	POLK	0	0	1	0	0
92	DAVIE	1	3	0	0	0
93	CHOWAN	1	0	0	0	0
93	JONES	1	0	0	0	0
95	ALLEGHANY	0	0	0	0	0
95	ASHE	0	0	0	0	0
95	MITCHELL	0	0	0	0	0
95	PERQUIMANS	0	0	0	0	0
95	SWAIN	0	0	0	0	0
95	TYRRELL	0	0	0	0	0
	N.C. TOTAL	569	516	938	724	768

* Rank based on number of cases reported in 2011. If cases are equal, then rank based on previous year.

APPENDIX E: REFERENCES

Adimora, A. A., & Schoenbach, V. J. (2005). Social context, sexual networks, and racial disparities in rates of sexually transmitted infections. *J Infect Dis, 191 Suppl 1,* S115-122.

Adimora, A. A., Schoenbach, V. J., Bonas, D. M., Martinson, F. E., Donaldson, K. H., & Stancil, T. R. (2002). Concurrent sexual partnerships among women in the United States. *Epidemiology, 13*(3), 320-327.

Antiretroviral Therapy Cohort Collaboration. Life expectancy of individuals on combination antiretroviral therapy in high-income countries: a collaborative analysis of 14 cohort studies. *The Lancet* 372(9635): 293-299. July 26, 2008.

Auerbach, J. G., Wypijewska, C., Brodie, H. K. H., & Institute of Medicine (U.S.). Division of Biobehavioral Sciences and Mental Disorders. Committee on Substance Abuse and Mental Health Issues in AIDS Research. (1994). *AIDS and behavior: an integrated approach*. Washington, D.C.: National Academy Press.

Becker, E., Rankin, E. D., & Rickel, A. U. (1998). *High-risk sexual behavior: interventions with vulnerable populations*. New York: Plenum Press.

Becker SL, Dezii CM, Burtcel B, Kawabata H, Hodder S. (2002). "Young HIV-infected adults are at greater risk for medication nonadherence". *MedGenMed.* 4 (3): 21

Bost, D. (2006). *North Carolina Men's Health Initiative, Lessons Learned*. Raleigh, NC. (in press).

Brinson, E., Michaels, S., & Stall, R. (1995). Prevalence and social distribution of men who have sex with men: United States and its urban centers. *Journal of Sex Research, 32*, 245-254.

Buie, M. (2005). *Pregnant women in North Carolina with HIV Disease or early syphilis, 1994-2002*. Raleigh, NC.

Bureau of Justice Statistics. (2003). *Bureau of Justice Statistics,* from http://www.ojp.usdoj.gov/bjs/abstract/hivp03.htm

Bureau of Labor Statistics. (2012). *Unemployment: NC*. Retrieved August 2012, from http://data.bls.gov/PDQ/servlet/SurveyOutputServlet?data_tool=latest_numbers&series_id=LASST37000003

Butterfield, F. (2003). Study finds 2.6% increase in US prison population. *New York Times*.

Camarota, S. A. (2006). *States with Statistically, 2000-2005*, from http://www.cis.org/articles/2005/back145.html

Capps, R., Fix, M. E., & Passel, J. S. (2002). *The Dispersal of Immigrants in the 1990s*, from http://www.urban.org/url.cfm?ID=410589

Carballo-Diégues, A. (2008). The Use of Rectal Douches among HIV-uninfected and Infected Men who Have Unprotected Receptive Anal Intercourse: Implications for Rectal Microbicides. *AIDS Behavior* (2008) 12: 860-866.

Celentano, D. (2006). Associations Between Substance Use and Sexual Risk Among Very Young Men Who Have Sex With Men. *Sexually Transmitted Diseases,* 33 (4): 265-271.

Centers for Disease Control and Prevention. HIV/AIDS Surveillance Report, Supplemental Report (2012). *Estimated HIV Incidence in the United States, 2007-2010.* Vol. 17, No. 4.

Centers for Disease Control & Prevention (2000). MMWR, Vol. 49, No. 23; 512-515.

Centers for Disease Control & Prevention. (2001). *The Role of STD Detection and Treatment on HIV Prevention Fact Sheet*, from http://www.cdc.gov/std/STDFact-STD&HIV.htm

Centers for Disease Control & Prevention. (2002). *Drug-associated HIV Transmission Continues in the United States Fact Sheet*, from http://www.cdc.gov/hiv/pubs/facts/idu.htm

Centers for Disease Control & Prevention. (2003). *Fact Sheet for Public Health Personnel: Male Latex Condoms and Sexually Transmitted Diseases*, from http://www.cdc.gov/nchstp/od/condoms.pdf

Centers for Disease Control & Prevention. (2003). *HIV and Its Transmission Fact Sheet*, from http://www.cdc.gov/hiv/pubs/facts/transmission.htm

Centers for Disease Control & Prevention. (2003). *HIV/AIDS Surveillance Report, 2002*. Atlanta, GA.

Centers for Disease Control & Prevention (2003). .MMWR, Vol. 52, No. 25; 581-586

Centers for Disease Control & Prevention. (2010). *Genital Herpes Fact Sheet*, from http://www.cdc.gov/std/Herpes/Herpes-Fact-Sheet-lowres-2010.pdf

Centers for Disease Control & Prevention. (2004). HIV transmission among black college student and non-student men who have sex with men--North Carolina, 2003. *MMWR Morb Mortal Wkly Rep, 53*(32), 731-734.

Centers for Disease Control & Prevention. (2011). *Pelvic Inflammatory Disease Fact Sheet*, from http://www.cdc.gov/std/pid/PID-factsheet-Sept-2011.pdf

Centers for Disease Control & Prevention. (2011). *Sexually Transmitted Disease Surveillance 2010 Supplement: Gonococcal Isolate Surveillance Project (GISP) Annual Report*, from http://www.cdc.gov/std/gisp2009/default.htm

Centers for Disease Control & Prevention. (2009). *Sexually Transmitted Disease Surveillance, 2009*, from http://www.cdc.gov/std/stats09/default.htm

Centers for Disease Control and Prevention (2009). *Program Collaboration and Service Integration: Enhancing the Prevention and Control of HIV/AIDS, Viral Hepatitis, Sexually Transmitted Diseases, and Tuberculosis in the United States*. Atlanta (GA): U.S. Department of Health and Human Services.

Centers for Disease Control & Prevention. (2004). *STDs and Pregnancy Fact Sheet*, from http://www.cdc.gov/std/pregnancy/STDFact-Pregnancy.htm

Centers for Disease Control & Prevention. (2007). *Syphilis and MSM (Men who have Sex with Men) Fact Sheet*, http://www.cdc.gov/std/syphilis/syphilis-MSM-Fact-Sheet.pdf

Centers for Disease Control & Prevention. (2011). *Syphilis Fact Sheet*, from http://www.cdc.gov/std/Syphilis/STDFact-Syphilis.htm

Centers for Disease Control & Prevention. (2005). HIV transmission among black women--North Carolina, 2004. *MMWR Morb Mortal Wkly Rep, 54*(4), 89-94.

Centers for Disease Control & Prevention. (2005). *HIV/AIDS Among Men Who Have Sex With Men Fact Sheet*, from http://www.cdc.gov/hiv/pubs/facts/msm.htm

Centers for Disease Control & Prevention. (2005). *HIV/AIDS Surveillance Report, 2004*. Atlanta, GA.

Centers for Disease Control & Prevention. (2005). *Variant Atypical and Resistant HIV Surveillance (VARHS) Project Guidance Document*. Atlanta, GA.

Centers for Disease Control & Prevention. (2011). *Chlamydia Fact Sheet*, from http://www.cdc.gov/std/chlamydia/chlamydia-fact-sheet-August-2011.pdf

Centers for Disease Control & Prevention. (2011). *Gonorrhea Fact Sheet*, from http://www.cdc.gov/std/gonorrhea/gonorrhea-fact-sheet-April-2011.pdf

Centers for Disease Control & Prevention. (2011). *Human Papillomavirus Fact Sheet*, from http://www.cdc.gov/std/HPV/HPV-Factsheet-Nov-2011.pdf

Centers for Disease Control & Prevention. (2006). Revised Recommendations for HIV Testing of Adults, Adolescents, and Pregnant Women in Health-Care Settings, 2006. *MMWR Recommendations and Reports, 55(RR14)*, 1-17.

Centers for Disease Control & Prevention. (2006). *YRBSS: Youth Risk Behavior Surveillance System, Comprehensive Results*, 2006, from http://www.cdc.gov/HealthyYouth/yrbs/index.htm

Center for Disease Control $ Prevention (2006). Revised recommendations for HIV testing of adults, adolescents, and pregnant women in health-care settings. MMWR 2006; 55(RR14):1-17.

Centers for Disease Control and Prevention. *HIV Surveillance Report*, 2009; vol.21. http://www.cdc.gov/hiv/topics/surveillance/resources/reports/

Centers for Disease Control and Prevention (CDC). Missed opportunities for earlier diagnosis of HIV infection--South Carolina, 1997-2005. MMWR Morb Mortal Wkly Rep. 2006;55:1269-1272.

Centers for Disease Control and Prevention. HIV/AIDS Surveillance Report, 2010. Vol. 22. Atlanta: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention; 2010. http://www.cdc.gov/hiv/surveillance/resources/reports/2010report/index.htm

Centers for Disease Control and Prevention (CDC), National Center for Health Statistics, Division of Vital Statistics, National Vital Statistics Report Vol 57, No. 14, April 2009, http://www.cdc.gov/nchs/data/nvsr/nvsr57/nvsr57_14.pdf.

Centers for Disease Control and Prevention (CDC), National Center for Health Statistics, Division of Vital Statistics, National Vital Statistics Report Volume 58, Number 19, May 2010, Table 29. Available at http://www.cdc.gov/nchs/data/nvsr/nvsr58/nvsr58_19.pdf.

Centers for Disease Control and Prevention (CDC), National Center for Health Statistics, Division of Vital Statistics, National Vital Statistics Report Vol 59, No. 4, March 2011, http://www.cdc.gov/nchs/data/nvsr/nvsr59/nvsr59_04.pdf.

Centers for Disease Control and Prevention, Division of HIV/AIDS Prevention-Surveillance and Epidemiology, Special Data Request, February 2010. Kaiser Family Foundation http://www.statehealthfacts.kff.org/

Centers for Disease Control & Prevention. (2011). Press Briefing: ACIP recommends all 11-12 year-old males get vaccinated against HPV. Available at http://www.cdc.gov/media/releases/2011/t1025_hpv_12yroldvaccine.html.

Centers for Disease Control & Prevention. (2009). Clinic-Based Testing for Rectal and Pharyngeal *Neisseria gonorrhoeae* and *Chlamydia trachomatis* Infections by Community-Based Organizations --- Five Cities, MMWR 58(26); 716-719

Clemetson, L. (2004). Links between prison and AIDS affecting blacks inside and out. *New York Times*.

Cohen, M., Chen, Y., McCauley, M., et al. (2011) Prevention of HIV-1 Infection with Early Antiretroviral Therapy. *N Engl J Med 2011; 365:493-505*. Available at http://www.nejm.org/doi/full/10.1056/NEJMoa1105243.

Contraceptive update: US Study Panel Confirms Condoms are Effective against HIV/AIDS. (2002). *Network*, *21*(2).

Critchlow, C. W., Wolner-Hanssen, P., Eschenbach, D. A., Kiviat, N. B., Koutsky, L. A., Stevens, C. E., et al. (1995). Determinants of cervical ectopia and of cervicitis: age, oral contraception, specific cervical infection, smoking, and douching. *Am J Obstet Gynecol, 173*(2), 534-543.

Des Jarlais, D.C., Marmor, M., Paone, D., Titus, S., Shi, Q., Perlis, T., et. al. (1996). HIV incidence among injecting drug users in New York City syringe-exchange programmes. *Lancet; 348:987-91.*

Dybul, M., Fauci, A. S., Bartlett, J. G., Kaplan, J. E., Pau, A. K.; Panel on Clinical Practices for Treatment of HIV. (2002). "Guidelines for using antiretroviral agents among HIV-infected adults and adolescents". *Ann. Intern. Med.* 137 (5 Pt 2): 381–433.

Edlin, B. R., Irwin, K. L., Faruque, S., McCoy, C. B., Word, C., Serrano, Y., et al. (1994). Intersecting epidemics--crack cocaine use and HIV infection among inner-city young adults. Multicenter Crack Cocaine and HIV Infection Study Team. *N Engl J Med, 331*(21), 1422-1427.

Elifson, K. W., Boles, J., Posey, E., Sweat, M., Darrow, W., & Elsea, W. (1993). Male transvestite prostitutes and HIV risk. *Am J Public Health, 83*(2), 260-262.

Fleming, D. T., & Wasserheit, J. N. (1999). From epidemiological synergy to public health policy and practice: the contribution of other sexually transmitted diseases to sexual transmission of HIV infection. *Sex Transm Infect, 75*(1), 3-17.

Forney, M. A., & Holloway, T. (1990). Crack, syphilis, and HIDS: the triple threat to rural Georgia. *FAFP Journal*(2), 5-6.

Freudenberg, N. (2001). Jails, prisons, and the health of urban populations: a review of the impact of the correctional system on community health. *J Urban Health, 78*(2), 214-235.

Gattari, P., Spizzichino, L., Valenzi, C., Zaccarelli, M., & Rezza, G. (1992). Behavioural patterns and HIV infection among drug using transvestites practising prostitution in Rome. *AIDS Care, 4*(1), 83-87.

Gibson, D.R., Flynn, N.M., & Perales, D., (2001). Effectiveness of syringe exchange programs in reducing HIV risk behavior and HIV seroconversion among injecting drug users. *AIDS, 15:1329-1341.*

Gorbach, P. (2010) *Use of lubricants with anal sex associated with more rectal STIs*, presented May 25, 2010 at the Microbicides 2010 Conference, Pittsburg, Pennsylvania.

Green, K. (2006) Having a Ball. A Look at an Underground Youth Community That Has Taken HIV Prevention and Awareness Into Its Own Hands. The Body. July/August 2006. http://www.thebody.com/content/whatis/art1143.html

Hagan, H., Des Jarlais, D.C., Friedman, S.R., Purchase, D., & Alter, M.J. (1995). Reduced risk of hepatitis B and hepatitis C among injection drug users participating in the Tacoma syringe exchange program. *Am J Public Health; 85:1531-7.*

Hamilton, B., Martin, J., & Sutton, P. (2004). Births: Primary data for 2003. *National Vital Statistics Report, 53*(9).

Hall, HI, Ruiguang, S, Rhodes, P, Prejean, J, Quian, A, Lee, LM, Karon, J, Brookmeyer, R, Kaplan, EH, McKenna, MT, Janssen, RS, the HIV Incidence Surveillance Group. *Estimation of HIV Incidence in the United States*, Journal of the American Medical Association, 2008, 300: 520-529

Harrison, P. M., & Beck, A. J. (2006). *Bureau of Justice Statistics Bulletin: Prison and jail inmates at midyear 2005*: US Department of Justice.

Heath, K. V., Singer, J., O'Shaughnessy, M. V., Montaner, J. S. and Hogg, R. S. (2002). "Intentional Nonadherence Due to Adverse Symptoms Associated With Antiretroviral Therapy". J. Acquir. Immune Defic. Syndr. 31 (2): 211-217.

Hightow, L. B., Leone, P. A., Macdonald, P. D., McCoy, S. I., Sampson, L. A., & Kaplan, A. H. (2006). Men Who Have Sex With Men and Women: A Unique Risk Group for HIV Transmission on North Carolina College Campuses. *Sex Transm Dis,* (in press.).

Hightow, L. B., MacDonald, P. D., Pilcher, C. D., Kaplan, A. H., Foust, E., Nguyen, T. Q., et al. (2005). The unexpected movement of the HIV epidemic in the Southeastern United States: transmission among college students. *J Acquir Immune Defic Syndr, 38*(5), 531-537.

Harrison, K.M., Song, R., Zhang, X. (2010). Life Expectancy After HIV Diagnosis Based on National HIV Surveillance Data From 25 States, United States. *J Acquir Immune Defic Syndr* , 53:124–130.

Hook, E. W. I., & Handsfield, H. H. (1999). Chapter 32, Gonococcal Infections in the Adult. In K. K. Holmes, P. F. Sparling, P. A. Mårdh, S. M. Lemon, W. E. Stamm, P. Piot & J. N. Wasserheit (Eds.), *Sexually Transmitted Diseases, 3rd Edition*. New York: McGraw-Hill.

Jones, K., Gray, P., Wang, T., Johnson, W., Foust, E., Dunbar, E., & The North Carolina Men's Health Initiative. (2007). Evaluation of a community-level peer-based HIV prevention intervention adapted for young black men who have sex with men (MSM).

Kaiser Family Foundation. (2012). *State Health Facts (NC)* Retrieved August 2012, from http://www.statehealthfacts.org/

Kaplan, E., & Heimer, R. (1992). HIV prevalence among intravenous drug users: model-based estimates from New Haven's legal needle exchange. *J Acquir Immune Defic Syndr; 5:163-9.*

Karon, JM, Ruiguang, S, Brookmeyer, R, Kaplan, EH, Hall, HI. (2008) *Estimating HIV Incidence in the United States from HIV/AIDS Surveillance Data and Biomarker HIV Test Results,* Statistics in Medicine, DOI 10.1002/sim

Karon JM, Rosenberg PS, McQuillan G, Khare M, Gwinn M, Petersen LR. Prevalence of HIV infection in the United States, 1984-1992. *JAMA* 1996; 276:126-131.

Kates, J. (2005). *HIV/AIDS in the Southern Region of the United States.* Paper presented at the Southern AIDS Coalition, Washington, DC.

Kipke, M. D., Unger, J., Palmer, R., Iverson, E., & O'Connor, S. (2002). *Association between self-identified peer-group affiliation and HIV risk behaviors among street youth*, 2006, from http://www.cdc.gov/hiv/projects/AESOP/association.htm

Kleeberger, C., Phair, J., Strathdee, S., Detels, R., Kingsley, L. and Jacobson, L. P. (2001). "Determinants of Heterogeneous Adherence to HIV-Antiretroviral Therapies in the Multicenter AIDS Cohort Study". J. Acquir. Immune Defic. Syndr. 26 (1): 82-92.

Klein PW, Patterson E, Scott J, Moore PR, Clymore J, Leone PA. *A Saturation Point for Routine HIV Testing in a Low-Prevalence Community Health Center Population?* Poster Presentation, National HIV Prevention Conference, Atlanta, GA, August 14-17, 2011.

Leigh, B. C., & Stall, R. (1993). Substance use and risky sexual behavior for exposure to HIV. Issues in methodology, interpretation, and prevention. *Am Psychol, 48*(10), 1035-1045.

Lohse N, Hansen AB, Pedersen G, et al. Survival of persons with and without HIV infection in Denmark, 1995-2005. Ann Intern Med. 2007;146:87-95.

Mackay, J. (2000). *The Penguin atlas of human sexual behavior*. New York: Penguin Reference.

Mansergh, G., Marks, G., Colfax, G. N., Guzman, R., Rader, M., & Buchbinder, S. (2002). "Barebacking" in a diverse sample of men who have sex with men. *AIDS, 16*(4), 653-659.

Marks G, Crepaz N, Janssen RS. Estimating sexual transmission of HIV from persons aware and unaware that they are infected with the virus in the USA. AIDS. 2006;20:1447-1450.

Maruschak, L. M. (2005). *Bureau of Justice Statistics Bulletin: HIV in Prisons, 2003*: US Department of Justice.

Mauer, M., Huling, T., & Sentencing Project (U.S.). (1995). *Young Black Americans and the criminal justice system: five years later*. Washington, D.C.: The Sentencing Project.

Milstein B., Centers for Disease Control and Prevention (2002). *Introduction to the Syndemics Prevention Network*. Atlanta, GA:; 2002. Available at: http://www.cdc.gov/syndemics/.

Montessori, V., Press, N., Harris, M., Akagi, L., Montaner, J. S. (2004). "Adverse effects of antiretroviral therapy for HIV infection.". CMAJ 170 (2): 229-238

Morgan D, Mahe C, Mayanja B, Okongo JM, Lubega R, Whitworth JA (2002). "HIV-1 infection in rural Africa: is there a difference in median time to AIDS and survival compared with that in industrialized countries?". *AIDS* 16 (4): 597–632

National Center for Health Statistics. Postcensal estimates of the resident population of the United States for July 1, 2000-July 1, 2009, by year, county, age, bridged race, Hispanic origin, and sex (Vintage 2009). Prepared under a collaborative arrangement with the U.S. Census Bureau; released June 20, 2010. Available from: www.cdc.gov/nchs/nvss/bridged_race.htm as of July 23, 2010.

National Vital Statistics Report, Vol. 55, No. 1, September 29, 2006, Division of Vital Statistics, National Center for Health Statistics. Available at http://www.cdc.gov/nchs/data/nvsr/nvsr55/nvsr55_01.pdf.

Nemoto, T., Operario, D., Keatley, J., & Villegas, D. (2004). Social context of HIV risk behaviours among male-to-female transgenders of colour. *AIDS Care, 16*(6), 724-735.

Newman, Lori M. et al. (2009). *Practical Considerations for Matching STD and HIV Surveillance Data with Data from Other Sources.* Public Health Reports, Supplement 2, Volume 124.

Nieuwkerk, P., Sprangers, M., Burger, D., Hoetelmans, R. M., Hugen, P. W., Danner, S. A., van Der Ende, M. E., Schneider, M. M., Schrey, G., Meenhorst, P. L., Sprenger, H. G., Kauffmann, R. H., Jambroes, M., Chesney, M. A., de Wolf, F., Lange, J. M. and the ATHENA Project. (2001). "Limited Patient Adherence to Highly Active Antiretroviral Therapy for HIV-1 Infection in an Observational Cohort Study". Arch. Intern. Med. 161 (16): 1962-1968.

North Carolina Department of Correction. (2006). *Statistical Report Generator*. Retrieved June, 2006, from http://www.doc.state.nc.us/rap/index.htm.

North Carolina Department of Corrections Website. http://webapps6.doc.state.nc.us/apps/asqExt/ASQ

North Carolina Department of Health & Human Services. (2002). *Hepatitis A among men who have sex with men*. Raleigh, NC.

North Carolina Department of Health & Human Services (2008) Medicaid Report, from http://www.ncdhhs.gov/dma/2008report/2008tables.pdf

North Carolina Public Schools. (2010). *North Carolina Public Schools Statistical Profile*, 2010, from http://www.ncpublicschools.org/fbs/resources/data/

North Carolina State Center for Health Statistics (SCHS). Retrieved August 2012, from http://www.schs.state.nc.us/SCHS/

North Carolina Task Force on Covering the Uninsured. (2006). *Expanding health insurance coverage to more North Carolinians*. Raleigh, NC: North Carolina Institute of Medicine.

North Carolina State Center for Health Statistics (SCHS), Leading causes of Death in North Carolina, 2008 http://www.schs.state.nc.us/SCHS/data/lcd/lcd.cfm

North Carolina State Center for Health Statistics. (2009). *Pregnancy Risk Assessment Monitoring System (PRAMS)*. Retrieved December 2011 from http://www.schs.state.nc.us/SCHS/prams/index.html

North Carolina Department of Health & Human Services, Communicable Disease Branch. *North Carolina 2009 HIV/STD Surveillance Report.* http://www.epi.state.nc.us/epi/hiv/stats.html

North Carolina State Demographer, Retrieved August 2012, from http://www.osbm.state.nc.us/ncosbm/facts_and_figures/socioeconomic-data.shtm

Palella FJ, Deloria-Knoll M, Chimel JS, et al. Survival benefits of initiating antiretroviral therapy in HIV-infected persons in different CD4+ cell strata. *Ann Intern Med* 2003; 138:620-626.

Palella, F. J., Delaney, K. M., Moorman, A. C., Loveless, M. O., Fuhrer, J., Satten, G. A., Aschman, D. J. and Holmberg, S. D. (1998). "Declining morbidity and mortality among patients with advanced human immunodeficiency virus infection". N. Engl. J. Med. 338 (13): 853–860.

Panel on Antiretroviral Guidelines for Adults and Adolescents. Guidelines for the use of antiretroviral agents in HIV-1-infected adults and adolescents. Department of Health and Human Services. December 1, 2009; 1-161. Available at http://www.aidsinfo.nih.gov/ContentFiles/AdultandAdolescentGL.pdf.

Pilcher, C. D., Fiscus, S. A., Nguyen, T. Q., Foust, E., Wolf, L., Williams, D., et al. (2005). Detection of acute infections during HIV testing in North Carolina. *N Engl J Med, 352*(18), 1873-1883.

Pilcher, C. D., McPherson, J. T., Leone, P. A., Smurzynski, M., Owen-O'Dowd, J., Peace-Brewer, A. L., et al. (2002). Real-time, universal screening for acute HIV infection in a routine HIV counseling and testing population. *Jama, 288*(2), 216-221.

Pilcher, C. D., Tien, H. C., Eron, J. J., Jr., Vernazza, P. L., Leu, S. Y., Stewart, P. W., et al. (2004). Brief but efficient: acute HIV infection and the sexual transmission of HIV. *J Infect Dis, 189*(10), 1785-1792.

Prejean J, Song R, Hernandez A, Ziebell R, Green T, et al. (2011) Estimated HIV Incidence in The United States, 2006-2009. PLoS One 6(8): e17502. doi:10.1371/journal.pone.0017502.

Radolf, J. D., Sanchez, P. J., Schulz, K. F., & Murphy, F. K. (1999). Chapter 84, Congenital Syphilis. In K. K. Holmes, P. F. Sparling, P. A. Mårdh, S. M. Lemon, W. E. Stamm, P. Piot & J. N. Wasserheit (Eds.), *Sexually Transmitted Diseases, 3rd Edition* (pp. 1165-1189). New York: McGraw-Hill.

Rosen DL, Schoenbach VJ, Wohl DA, White BL, Stewart PW, Golin CE. An evaluation of HIV testing among inmates in the North Carolina prison system. Am J Public health, 2009 Oct; 99 Suppl 2:S452-9.

Sampson LA. *Interpretation of Sexually Transmitted Disease Data*, North Carolina Medical Journal; 67(5):395-6. September/October 2006.

Sampson, L. A., Leone, P. A., Miller, W. C., & Hedenquist, R. B. (2005). *Risk factors for syphilis and HIV in North Carolina jail detainees*. Paper presented at the International Society of Sexually Transmitted Diseases Research 16th Biennial Conference, Amsterdam, Netherlands.

Schackman BR, Gebo KA, Walensky RP, Losina E, Muccio T, Sax PE, Weinstein MC, Seage GR 3rd, Moore RD, Freedberg KA. (2006). "The lifetime cost of current HIV care in the United States". *Med Care* 44 (11): 990-997.

Schneider MF, Gange SJ, Williams CM, Anastos K, Greenblatt RM, Kingsley L, Detels R,

Munoz A (2005). "Patterns of the hazard of death after AIDS through the evolution of antiretroviral therapy: 1984–2004". AIDS 19 (17): 2009–18

Scientific Evidence on the Effectiveness of Male Latex Condoms Sexually Transmitted Disease (STD) Prevention. (2000). Paper presented at the Workshop on Scientific Evidence on the Effectiveness of Male Latex Condoms Sexually Transmitted Disease (STD) Prevention, Herndon, VA.

Southern States AIDS/STD Directors Work Group. (2003). *Southern States Manifesto-HIV/AIDS and STDs in the South: A Call to Action*.

Stamm, W. F. (1999). Chapter 29, Chlamydia Trachomatis Infections of the Adult. In K. K. Holmes, P. F. Sparling, P. A. Mårdh, S. M. Lemon, W. E. Stamm, P. Piot & J. N. Wasserheit (Eds.), *Sexually Transmitted Diseases, 3rd Edition*. New York: McGraw-Hill.

State Health Facts. (2005). from http://www.statehealthfacts.org

Stradling, R. (2003). Wake ranks 9th in US for inflow of population. *Raleigh News and Observer*.

Substance Abuse and Mental Health Services Administration (SAMHSA). (2006). *State data on alcohol, tobacco, and drug use.* Retrieved June, 2006 from http://oas.samhsa.gov/states.htm.

Substance Abuse and Mental Health Services Administration (SAMHSA). (2005). *Injection Drug Use Update: 2002 and 2003*. Washington, DC.

U.S. Bureau of Economic Analysis. (2012). from www.bea.gov

US Census Bureau. (2010). from http://www.census.gov

Voelker, R. (2003). Detecting acute HIV infections feasible, North Carolina program demonstrates. *Jama, 289*(20), 2633-2634.

Wasserheit, J. N. (1992). Epidemiological synergy. Interrelationships between human immunodeficiency virus infection and other sexually transmitted diseases. *Sex Transm Dis, 19*(2), 61-77.

Westrom, L., & Eschenbach, D. (1999). Chapter 58, Pelvic Inflammatory Disease. In K. K. Holmes, P. F. Sparling, P. A. Mårdh, S. M. Lemon, W. E. Stamm, P. Piot & J. N. Wasserheit (Eds.), *Sexually Transmitted Diseases, 3rd Edition*. New York: McGraw-Hill.

Wohl, D. A., Shain, L., & Adamian, M. (2003). *HIV transmission risk behaviors among HIV-infected individuals released from prison.* Paper presented at the 10th Conference on Retroviruses and Opportunistic Infections, Boston, MA.

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 the 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 percent, the HIV-infected patient is classified as having progressed to AIDS.
CDC	Centers for Disease Control and Prevention – agency under the U.S. Department of Health and Human Services. Located in Atlanta, GA. Its mission is to promote health and quality of life by preventing and controlling disease, injury, and disability.
Chancroid	A sexually transmitted disease characterized by painful genital ulceration and inflammatory inguinal adenopathy, caused by infection with *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 N.C. Division of Public Health’s 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 Oct. 1 through Sept. 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 U.S. Department of Housing and Urban Development (HUD) that provides long-term comprehensive strategies for meeting the housing needs of persons and their families living with AIDS or a related disease.
HPV	Human Papillomavirus – a group of viruses including over 100 different strains, 30 of which are sexually transmitted. Many strains cause no symptoms at all while others are associated with genital warts and others with cervical cancer in women. HPV infection is not a reportable condition in North Carolina.
HRSA	Health Resources and Services Administration – an agency of the U.S. Department of Health and Human Services. Its mission is to assure the availability of quality health care to low-income, uninsured, isolated, vulnerable and special needs populations and to meet their unique health care needs. HRSA administers the Ryan White Care Act programs.
HSV	Herpes Simplex Virus (Type 1 = HSV-1 and Type 2 = HSV-2). See *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 three 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 (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 U.S. Department of Health and Human Services. Its mission is to lead the nation in bringing the power of science to bear on drug abuse and addiction.

NTS	Nontraditional Test Sites – part of the N.C. Counseling and Testing System's (CTS) HIV testing program. NTS sites were added to the CTS program in 1997 as a response to the end of anonymous testing with the goal of making HIV testing available in nontraditional settings. As of 2002, there are 13 NTS sites at CBOs and extended hours at local health departments. See *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	U.S. Office of Management and 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.
pPositivity	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 Virgin Islands and eligible United States 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 U.S. Department of Health and Human Services. Its mission is to strengthen the nation's health care capacity to provide prevention, diagnosis and treatment services for substance abuse and mental illnesses.
SCBW	The Survey of Childbearing Women – conducted from 1988 through 1995 in collaboration with CDC, the National Institute of Child Health and Human Development, and state and territorial health departments. Residual dried blood specimens that are routinely collected on filter paper from newborn infants for metabolic screening programs were tested for HIV antibody after the removal of all personal identifiers. The survey measured the prevalence of HIV infection among women who gave birth to live infants in participating states and territories of the United States.
SDC	State Data Center – a consortium of state and local agencies established in cooperation with the U.S. Bureau of the Census to provide the public with data about North Carolina and its component geographic areas.
Secondary Syphilis	Second stage of syphilis, characterized by a rash that does not itch, swollen glands, fatigue, and other symptoms. Patients at this stage are highly infectious to sexual partners. Symptoms generally appear about 4-10 weeks after the appearance of primary syphilis lesions. If left untreated, the disease will progress to early latent syphilis after 3-12 weeks.

Sensitivity	Refers to the ability of a screening test to detect disease if disease is truly present. A highly sensitive test is likely to have very few false negatives but probably will have some false positives. This is why positives found with a highly sensitive test will often be tested again using a highly specific test (see *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 national 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 state 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*.
Tuberculosis (TB)	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 and Children – a federal grant program to provide nutritional assistance to low-income pregnant and postpartum women, infants, and children up to age 5.

INDEX

This page is intentionally blank.

North Carolina Geographic Regions