2001

HIV Prevention & Community Planning

Epidemiologic Profile for North Carolina

Epidemiology and Special Studies Unit

HIV/STD Prevention and Care Branch
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Epidemiologic Profile for HIV Prevention and Community Planning

I. INTRODUCTION

"AIDS (acquired immunodeficiency syndrome) is a severe, life-threatening clinical condition, first recognized as a distinct syndrome in 1981. This syndrome represents the late clinical stage of infection with the human immunodeficiency virus (HIV), which most often results in progressive damage to the immune and organ systems, including the central nervous system."(Benenson, A. 1995. *Control of Communicable Diseases Manual*. 16th Edition. Washington, D.C. APHA)

This version of the Epidemiologic Profile of HIV/AIDS continues the description of the HIV epidemic among the various populations in North Carolina. As in previous versions, the majority of the data presented are drawn from the surveillance systems maintained by the HIV/STD Prevention and Care Branch. We have attempted to integrate other appropriate data sources in the analysis and discussion presented.

In previous editions of the North Carolina profile, we have attempted to answer four key questions:

1. What are the sociodemographic characteristics of the population?
2. What is the impact of HIV/AIDS on the population?
3. What is the risk for becoming infected with HIV?
4. What is the geographic distribution of HIV infection?

This document seeks to add information to the existing knowledge base concerning HIV incidence in North Carolina. In order to produce an accurate profile, it is critical to consider data limitations when evaluating identified trends and patterns. Data collection systems vary in completeness and relevancy. Also caution must be exercised when extrapolating trends from reported cases to the population at large. Data regarding AIDS and HIV positive cases reported in this profile are from the HARS (HIV/AIDS Reporting System) surveillance system maintained by the Epidemiology and Special Studies Unit, HIV/STD Prevention and Care Branch. AIDS became reportable in North Carolina in 1984 and HIV infection was made reportable by name in 1990.

While AIDS cases reflect the HIV infections that occurred in earlier years, examination of trends in AIDS cases can draw attention to aspects of the epidemic. The impact of treatment advances has delayed the progression from HIV to AIDS and from AIDS to death. This pattern has been demonstrated to some extent in our surveillance data. Thus, "from 1996 on, cases of AIDS and deaths will provide a valuable measure of the continuing impact of treatment, as well as describe populations from whom treatment is either not accessible or not effective." (CDC, 1998, *Trends in the HIV & AIDS Epidemic,* Atlanta, GA.)

A significant portion of both AIDS and HIV cases are reported without an identified transmission mode. Many of these cases have been investigated but do not meet the criteria

to be reported as one of the CDC-defined risk categories. Amendment of existing categories and/or additional categories are needed to facilitate identification of trends and patterns in North Carolina's epidemic. Historically (for the nation) the largest proportion of male cases initially reported as no risk identified were later reclassified as male to male sexual contact, followed by injecting drug use and heterosexual contact. Most female cases initially reported as no risk identified are generally reclassified as heterosexual contact followed by injecting drug use. However, anecdotal data from North Carolina indicates those increasing numbers of the cases reported with no specified risk may be the result of heterosexual transmission (which includes individuals who reported multiple heterosexual partners and exchange of sex for drugs and/or money). The extent to which analysis of trends in AIDS/HIV exposure categories is compromised by the large proportion of cases reported with no risk identified depends on the extent to which AIDS/HIV transmission is changing over time.

The discussion of HIV or what is HIV disease?

In this profile we will attempt to simplify the discussion of the HIV epidemic in North Carolina by combining much of the available HIV and AIDS surveillance information into a single group of reports called *HIV disease*. This larger data set enables us to better describe the HIV epidemic over time. While it is important to examine all reports of infected individuals together, we must be consistent with the reference to time of report. This issue is somewhat difficult because our reporting for this disease has changed over time; however, for this profile we have defined a new date category, "year of first report," that sorts all reports by the date the **individual** was first reported to the surveillance system.

Thus, for our discussion in this profile, HIV disease references all reports by date of *first report for the individual*. For most HIV disease reports, this new report date is determined from the date of an HIV infection report, but for some reports, it is based on the date of report for an AIDS diagnosis because the infected individual was never reported with an HIV infection without an AIDS-defining condition present. The first report for that person was an AIDS diagnosis and it represented a new incident case of an infected individual at that time. HIV disease also includes early surveillance reports of individuals when AIDS surveillance was the only reporting of infected individuals (all reports before 1990) by referencing the AIDS report date. The reference of age for an HIV disease is based upon the age at the time of first report. Therefore HIV disease can be used to examine all reports of all infected individuals based upon the earliest report date and information that we have for an individual. This new category is better reflective of recent changes in trends for the epidemic and provides us with a single category of disease.

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

II. SOCIODEMOGRAPHIC CHARACTERISTICS OF NORTH CAROLINA

Based on the 1990 Federal Census and Census Bureau projections, North Carolina is the eleventh most populous state in the United States. For the first time in history, at the time of the 1990 census, over half of the North Carolina population was urban. The Census Bureau defines urban according to specific criteria. Urban population includes all persons living in urbanized areas and all persons living in places of 2,500 or greater population outside of urbanized areas. An urbanized area has a population of 50,000 or more inhabitants and consists of two parts: (1) a central city which is usually the largest incorporated place within the urbanized area, and (2) the surrounding, closely settled, contiguous territory, called the urban fringe (suburbs). The rural population is all those persons who do not live in an area defined as urban. Nationally, a greater percentage of the population is urban. While just over half of the State's population is urban, it is still a very rural state, ranking third behind Pennsylvania and Texas in the number of rural residents and 46th in the percent of urban population.

Figure 1

The North Carolina Office of State Planning projects the 2001 population as 7,846,219. Over half of the State's population will live in only sixteen of the one hundred counties in North Carolina (Mecklenburg, Wake, Guilford, Cumberland, Forsyth, Durham, Buncombe, Gaston, New Hanover, Onslow, Davidson, Catawba, Pitt, Randolph, Rowan, and Alamance). Seven counties will have a population less than 10,000 (Alleghany, 9,699; Jones, 8,624; Clay, 8,504; Graham, 7,634; Camden, 6,446; Hyde, 5,229; and Tyrrell, 3,540). Figure 1 displays the population distribution among the counties in North Carolina.

North Carolina has the 7th largest racial/ethnic minority population in the United States. By interpolating the North Carolina Office of State Planning's 2000 and 2005 projections of minority population, the 2001 minority population should be approximately 1,891,490. By this interpolation, eight counties will have a population in 2001 that is more than 50%

minority (Robeson, 66.9%; Bertie, 64.2%; Hertford, 62.6%; Edgecombe, 61.8%; Warren, 59.6%; Northampton, 57.4%; Hoke, 56.9%; and Halifax, 56.1%).

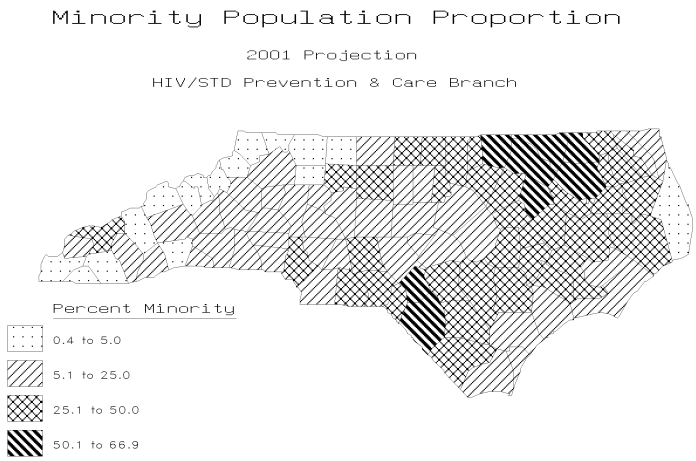


Figure 2

Figure 2 displays each county's minority population as a percentage of the total population. North Carolina has both a relatively low per capita income and low unemployment rate. These two statistics suggest that while many citizens are employed in North Carolina, they work at low paying jobs. According to the U.S. Department of Commerce's Bureau of Economic Analysis, the per capita income (preliminary) for 1999 in North Carolina was $26,220, 92% of the national average of $28,518. This places North Carolina 29th in the U.S. for personal per capita income and 4th in the Southeast.

III. THE IMPACT OF HIV ON THE POPULATION

HIV Incidence

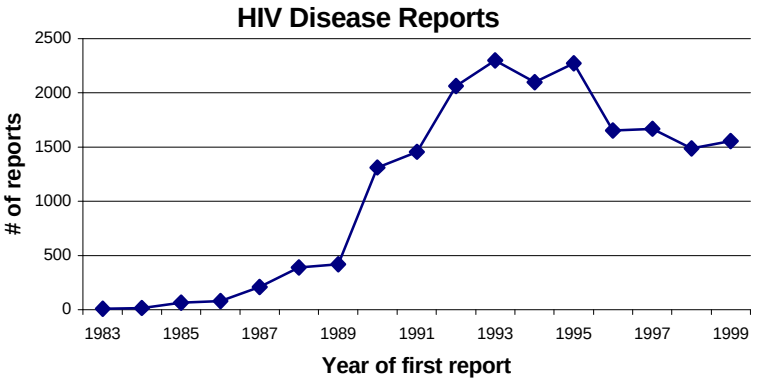


Figure 3

Although HIV reports do not indicate all new infections (true incidence) since not everyone who is infected is tested and reported, it is important to follow the reporting trends to estimate whether incidence is increasing or decreasing. From the early 1980's through December 31, 1999, a total of 19,056 NC HIV disease reports were received by the HIV/STD Prevention and Care Branch. Figure 3 shows all cases reported by year of first report. The addition of HIV

infection reporting in 1990 accounted for the dramatic increase in reports beginning at that time. The number of cases reported was highest from 1992 through 1995, but this spike in reporting was probably a result of better reporting from providers due to enhanced awareness about HIV/AIDS issues. This likely occurred because of the implementation of HIV infection reporting, changes in the AIDS case definition, and/or as a result of enhanced active surveillance activities by Branch Staff. Thus this 1992 –95 spike was likely a reflection of prevalent cases being reported rather than an indication of true increases in new cases. The number of new HIV disease reports per year has been relatively stable since 1994. An interesting correlation to note is that 1992 was the peak year for HIV seropositivity among women who gave birth in North Carolina (data from the Survey in Childbearing Women) and was also the peak year for syphilis cases reported in North Carolina.

HIV Prevalence

As stated earlier, the cumulative number of HIV disease cases reported through December 31, 1999 was 19,056 of whom 6,276 had died. Therefore, the total number of persons living with HIV reported to the HIV/STD Prevention and Care Branch is 12,780. Figure 4 indicates the cumulative number of person living with HIV (by year of first report) for 1985 to 1999. The data are stratified as current HIV(non AIDS) and AIDS reports.

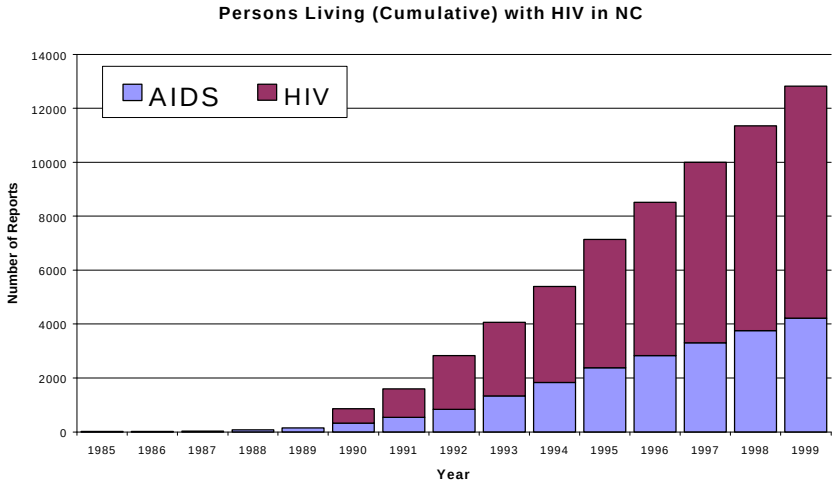


Figure 4

Extrapolation from National Projections of HIV for Prevalence in North Carolina

Crude estimates of HIV prevalence (number of persons living with HIV) among adults and adolescents have been calculated for North Carolina using the CDC methods in appendix D -- Simple Methods for Estimating HIV Prevalence in the Suggested Guidelines for Developing an Epidemiologic Profile for HIV Prevention Community Planning, June 1995, Division of HIV/AIDS Prevention, Centers for Disease Control and Prevention. These estimates include all persons living with HIV, including those diagnosed with AIDS.

One method to estimate North Carolina's HIV prevalence is to use the State's proportion of national AIDS cases reported. Projections available from the Centers for Disease Control and Prevention indicate 110,000 to 155,000 women and 525,000 to 750,000 men were HIV-infected in 1996 nationally. Using the 1998 and 1999 CDC HIV/AIDS Surveillance Report and averaging over 1998 and 1999, North Carolina reported 1.68% of the total AIDS cases in

the U.S. Among females for the U.S., there were 11,190 AIDS reports in 1998 and 10,918 reported in 1999. Also, for the U.S. as a whole, there were 37,076 males reported with AIDS in 1998 and 35,482 males reported with AIDS in 1999. In North Carolina, in 1998, there were 593 males and 197 females reported with AIDS and in 1999, there were 564 males reported with AIDS and 205 females.

These data indicate approximately 1.59% of the AIDS males and 1.82% of the AIDS females in the U.S. were reported in North Carolina during 1998-1999. Using the projected national ranges listed above, we would estimate that between 2,002 and 2,821 females and between 8,347 and 11,925 males in North Carolina are HIV positive for a total prevalence of from 10,349 to 14,746 people in North Carolina who are currently HIV positive.

Another method for estimating HIV prevalence is based upon CDC estimates that two-thirds of the persons living with HIV and AIDS have been tested confidentially. Applying this estimate to our current surveillance total of 12,780 persons living in North Carolina with HIV/AIDS would increase the prevalence estimate to 16,977. This estimate however is likely overstated because some HIV/AIDS reports may be listed as living in the surveillance data but are in fact not. Thus, using this method we would estimate the prevalence to be between 12,780 and 16,977 infected persons living in North Carolina.

Demographics and Risk

Figure 5 demonstrates the gender distribution of HIV disease reports through December 31, 1999. The male/female report ratio has gone from approximately 8:1 in the 1980's to about

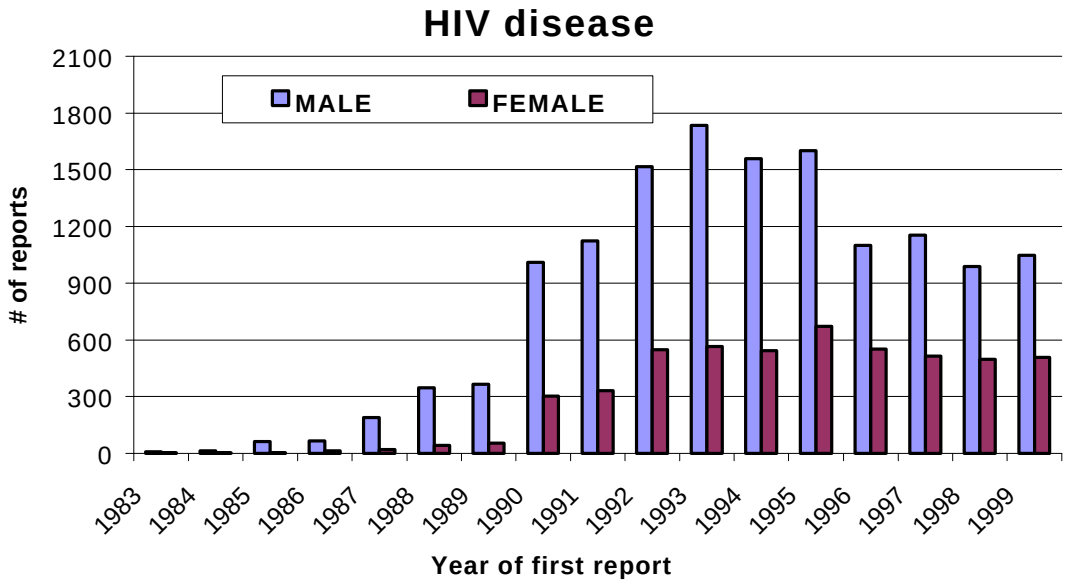


Figure 5

2:1 in 1999. Most reports are for adults and adolescents as only 231 reports have been received for infants or children younger than 13 (Table 1). The race/ethnicity of the

epidemic has shifted from about 35 to 50% African American for cases reported between 1983 and 1989 to about 72% African American among cases reported between 1997 and 1999 (Table 2).

Table 3 indicates the proportion of male HIV disease cases attributed to male to male sexual contact has decreased from 60% of cases reported between 1983 and 1989 to about 36% of cases reported between 1997 and 1999. In addition, in the first time period, 8% of male cases were attributed to both male to male contact and injecting drug use whereas in the most recent period (1997 to 1999) this percentage decreased to about 5%. However, the proportion of male cases attributed to injecting drug use increased from 17% in the first period to 23% for the time 1990 to 1993. Since then the proportion of cases attributed to injecting drug use has decreased. For females, the proportion attributed to injecting drug use decreased from 46% in 1983 to 1989 to 14% between 1997 and 1999. For females, the proportion attributed to heterosexual contact increased from 36% between 1983 and 1989 to 49% between 1997 and 1999. The proportion of cases attributed to contaminated blood or tissue products among both sexes has decreased from 7% in 1983 to 1989 down to 2% in the 1997 to 1999 period.

The proportion of cases for which there is No Identified Risk (NIR) (according to the CDC definition) has remained higher among females than among males in every time period, and for both sexes combined constituted 27% of cases during the 1997 to 1999 time period. Some of these cases are under investigation at this time and may be reclassified to one of the risk groups listed. Investigation of transmission risk of some cases has revealed that while there is no CDC-defined attributed risk, there are behaviors and factors that should be considered for these cases. In Table 3, we have presented the mode of transmission data in a slightly modified manner than the traditional CDC definitions of mode of transmission. It is our belief that while it is true that with in depth follow-up interviews and investigation of sexual partners it may be possible to reclassify many cases as heterosexual based on the CDC guidelines, there is a growing proportion of these cases where the partner may be infected and be unaware of his or her HIV status. We believe that in guiding the planning for HIV Prevention, we must not ignore this behavior or misstate it as “risk not identified.” It is truly the behavior of experiencing multiple partners or exchanging sex for drugs or money that has put many of the people reported at risk for HIV infection. If we continue to only accept heterosexual transmission as occurring when the index case knows the serostatus of a partner, we will under represent the influence of heterosexual transmission. Therefore, the operational definition of heterosexual transmission includes cases where the patient has multiple heterosexual partners, admits to the exchange of sex for drugs or money or has a documented history of a prior sexually transmitted disease. Table 4 displays the rates of HIV disease among seven regions shown below within the state as well as various demographic subgroups.

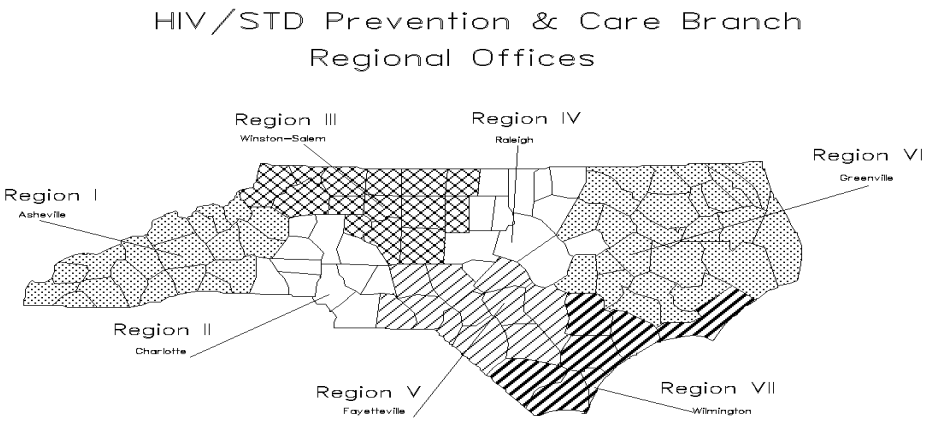


Table 1
HIV Disease Reports in North Carolina
Age Group by Year

	Year of First Report									
	1983-89		**1990-93**		**1994-96**		**1997-99**		**Cumulative**	
Age Group	Cases	Percent	Cases	Percent	Cases	Percent	Cases	Percent	Cases	Percent
<5	17	1.4	78	1.1	61	1.0	33	0.7	189	1.0
5-12	5	0.4	15	0.2	16	0.3	6	0.1	42	0.2
13-19	11	0.9	158	2.2	136	2.3	140	3.0	445	2.3
20-29	281	23.7	2089	29.3	1565	26.0	1058	22.5	4993	26.2
30-39	530	44.7	3179	44.6	2531	42.0	1856	39.4	8096	42.5
40-49	227	19.2	1230	17.2	1306	21.7	1172	24.9	3935	20.6
>49	114	9.6	384	5.4	412	6.837	446	9.5	1356	7.1
Total	1185	100	7133	100	6026	100	4711	100	19056	100

Table 2
HIV Disease Reports in North Carolina
Gender, Race/Ethnicity by Year

Race/ Ethnicity	Year of First Report							
	1983-89		1990-93		1994-96		1997-99	
Male	Cases	Percent	Cases	Percent	Cases	Percent	Cases	Percent
White	544	45.9	1662	23.3	1229	20.4	905	19.2
African American	481	40.6	3584	50.2	2891	48.0	2133	45.3
Hispanic	15	1.3	57	0.8	80	1.3	95	2.0
Asian	3	0.3	10	0.1	14	0.2	8	0.2
American Indian	7	0.6	47	0.7	31	0.5	26	0.6
Unknown	3	0.3	24	0.3	14	0.2	23	0.5
Total	1053	88.9	5384	75.5	4259	70.7	3190	67.7
Female	Cases	Percent	Cases	Percent	Cases	Percent	Cases	Percent
White	22	1.9	283	4.0	268	4.4	242	5.1
African American	108	9.1	1440	20.2	1459	24.2	1235	26.2
Hispanic	2	0.2	4	0.1	15	0.2	18	0.4
Asian	0	0.0	2	0.0	5	0.1	4	0.1
American Indian	0	0.0	16	0.2	16	0.3	15	0.3
Unknown	0	0.0	4	0.1	4	0.1	7	0.1
Total	132	11.1	1749	24.5	1767	29.3	1521	32.3
Both Sexes	Cases	Percent	Cases	Percent	Cases	Percent	Cases	Percent
White	566	47.8	1945	27.3	1497	24.8	1147	24.3
African American	589	49.7	5024	70.4	4351	72.2	3368	71.5
Hispanic	17	1.4	61	0.9	95	1.6	113	2.4
Asian	3	0.3	12	0.2	19	0.3	12	0.3
American Indian	7	0.6	63	0.9	47	0.8	41	0.9
Unknown	3	0.3	28	0.4	18	0.3	30	0.6
Total	1185	100	7133	100	6027	100	4711	100

Table 3
Adult/Adolescent HIV Disease Reports in North Carolina
Mode of Transmission and Gender by Year

Mode of Transmission	Year of First Report							
	1983-89		**1990-93**		**1994-96**		**1997-99**	
	Cases	Percent	Cases	Percent	Cases	Percent	Cases	Percent
Male								
MSM	625	53.7	2038	29.0	1614	27.1	1156	24.8
IDU	174	15.0	1241	17.6	800	13.4	478	10.2
MSM/IDU	86	7.4	446	6.3	202	3.4	163	3.5
Blood/Tissue	68	5.8	119	1.7	83	1.4	47	1.0
Heterosexual*	27	2.3	339	4.8	687	11.5	570	12.2
NIR	60	5.2	1158	16.5	825	13.9	759	16.3
Total	1040	89.4	5341	75.9	4211	70.8	3173	67.9
Female	Cases	Percent	Cases	Percent	Cases	Percent	Cases	Percent
IDU	57	4.9	519	7.4	335	5.6	207	4.4
Blood/Tissue	10	0.9	49	0.7	57	1.0	48	1.0
Heterosexual*	44	3.8	521	7.4	908	15.3	731	15.7
NIR	12	1.0	609	8.7	437	7.3	510	10.9
Total	123	10.6	1698	24.1	1737	29.2	1496	32.0
Both Sexes	Cases	Percent	Cases	Percent	Cases	Percent	Cases	Percent
MSM	625	53.7	2038	29.0	1614	27.1	1156	24.8
IDU	231	19.9	1760	25.0	1135	19.1	685	14.7
MSM/IDU	86	7.4	446	6.3	202	3.4	163	3.5
Blood/Tissue	78	6.7	168	2.4	140	2.4	95	2.0
Heterosexual*	71	6.1	860	12.2	1595	26.8	1301	27.9
NIR	72	6.2	1767	25.1	1262	21.2	1270	27.2
Total	1163	100	7039	100	5949	100	4670	100

* includes multiple heterosexual partners, exchange of sex for drug or money, or previous STD diagnosis

Table 4
HIV Disease Reports in North Carolina
Cases and Rates by Region and Demographic Subgroups by Year

Region	Year of First Report									
	1995		**1996**		**1997**		**1998**		**1999**	
	Cases	Rate*	Cases	Rate*	Cases	Rate*	Cases	Rate*	Cases	Rate*
Region I	111	14.3	110	14.0	118	14.9	78	9.7	67	8.3
Region II	509	33.1	403	25.6	352	21.9	367	22.3	365	21.9
Region III	576	40.2	259	17.8	258	17.5	251	16.8	330	21.8
Region IV	460	37.1	337	26.5	354	27.1	323	24.1	326	23.8
Region V	232	29.6	207	26.2	211	26.4	159	19.7	149	18.3
Region VI	271	30.7	244	27.5	251	28.0	216	24.0	221	24.3
Region VII	110	20.6	86	15.8	123	22.3	86	15.4	95	16.7
Missing	4		7		1		7		3	
North Carolina	2273	31.6	1653	22.6	1668	22.4	1487	19.7	1556	20.3
Age Group	Cases	Rate*	Cases	Rate*	Cases	Rate*	Cases	Rate*	Cases	Rate*
<5	27	5.3	27	5.2	14	2.7	16	3.0	3	0.6
5-12	6	0.8	8	1.0	3	0.4	2	0.2	1	0.1
13-19	55	8.1	37	5.3	50	7.1	52	7.2	38	5.1
20-29	597	55.5	427	40.0	390	36.8	358	34.1	310	29.7
30-39	971	81.6	644	53.8	666	55.7	561	46.9	629	52.5
40-49	464	44.9	395	36.6	392	35.8	365	32.6	415	36.1
>49	153	8.1	115	5.9	153	7.6	133	6.5	160	7.6
Race	Cases	Rate*	Cases	Rate*	Cases	Rate*	Cases	Rate*	Cases	Rate*
White	577	10.8	386	7.1	401	7.3	364	6.6	382	6.8
African American	1647	104.2	1198	74.7	1206	74.1	1072	65.0	1090	65.1
Hispanic	30	25.1	36	27.0	39	26.5	34	21.1	40	22.8
Asian	4	5.3	8	9.7	2	2.3	4	4.2	6	5.9
American Indian	15	16.9	10	11.0	13	14.0	10	10.6	18	18.6
Gender	Cases	Rate*	Cases	Rate*	Cases	Rate*	Cases	Rate*	Cases	Rate*
Male	1601	45.9	1100	31.0	1154	32.0	988	27.0	1048	28.2
Female	672	18.2	552	14.7	514	13.4	499	12.8	508	12.9

* Cases per 100,000 population

IV. WHO IS AT RISK FOR BECOMING INFECTED WITH HIV?

The persons most likely to become infected with HIV are those who engage in high-risk behavior with persons in communities with a high prevalence of HIV infection.

HIV infection in North Carolina disproportionately affects certain groups in the population, particularly men who have sex with men (MSM) and racial and ethnic minority communities. Anecdotal evidence from disease investigations and other information from various outreach activities suggests that among some communities, MSM and bisexual behavior is likely underreported. This may be exacerbated by cultural differences, especially for minorities.

1. Men who have sex with men

The relative proportions of HIV disease cases attributed to verified risk factors have changed over the course of the epidemic (Tables 3 and 3A). In the beginning of the epidemic, from 1983 through 1989, men who have sex with men (MSM) made up the majority of cases, both among males (60%) and among all cases (54%). However, the trend in the past few years, has been for a smaller percentage of total cases to be attributed to men having sex with men. In the most recent time period, from 1997 through 1999, just over one third of the male cases (36%) were attributed to men having sex with men. Likewise, the proportion of cases attributed to men who both use injecting drugs and have sex with men (MSM/IDU) has decreased from 8% of male cases between 1983 and 1989 to 5% of male cases in the 1997 to 1999 time period. Some of the overall changes in proportions reflect the second wave of the epidemic as we see a greater number of cases reported with heterosexual contact as a risk.

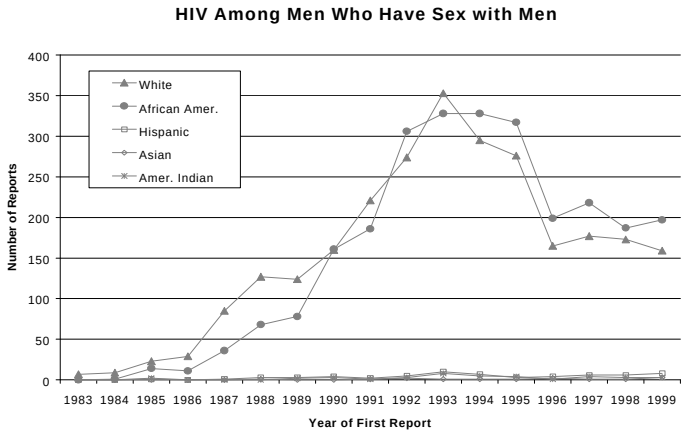


Figure 6

It should be noted that while the proportion of cases reported for MSM and MSM/IDU has declined through time, this remains a very significant proportion of cases and suggests that efforts to minimized risk in the gay community should continue especially among younger men. In reports from 1997-1999, 54% of the cases among adolescent males aged 13 to 19 were attributed to male to male sexual contact. For males aged 20-29 years, the percentage attributed to MSM was 51%.

Until the mid 1990s, whites were reported with greater frequency than African Americans among MSM (figure 6). Since 1994, African Americans have been continuously reported with greater frequency than whites with MSM as a risk.

2. Injecting drug users

Tables 3 and 3A present the change in percentage of HIV disease cases attributed to injecting drug use (IDU) over the course of the epidemic in North Carolina. In the early period, from 1983 through 1989, 17% of the male cases and 46% of the female cases were attributed to injecting drug use. In addition, 8% of male cases were attributed to both males having sex with males and injecting drug use. The percentage of cases attributed to injecting drug use has decreased for females. However, for males, the proportion of cases associated with injecting drug use remains almost as high as the initial time period, but lower than the 1990 to 1993 and the 1994 to 1996 time periods. Also the percentage has decreased for both sexes since the 1990 to 1993 time periods and now represents 15% of all cases.

The impact of drug use as a risk factor for HIV extends beyond the IDU patient reported or documented heterosexual contact with an infected partner. Table 5 indicates some of the documented as well as projected cases of drug involvement. The reader will notice there are some transmission mechanisms, such as "sex with a person with HIV/AIDS" that may not specify drug involvement. These are included because while there was no evidence of either injecting or non-injecting drug use, there were no other risk factors known. We offer these data as "informed suggestions" of the extent to which drug use, both actual use as well as behavioral association, may impact the Prevention Planning Process.

Table 5
HIV Disease Reports in North Carolina
Reports Where Drug Use May Exist

Mode of Transmission	**1983 -89**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**Total**
IDU	231	339	391	497	533	434	395	306	296	193	196	3811
MSM & IDU	86	104	156	81	105	77	55	70	69	35	59	897
Heterosexual contact with IDU	50	46	84	125	146	140	162	91	89	72	87	1092
Sex with Person with HIV/AIDS	11	26	48	121	157	236	262	241	274	260	196	1832
Pediatric, Mother is IDU	6	7	0	9	2	1	5	7	3	3	0	43
Pediatric, Mother had sex with IDU	2	1	0	6	4	2	3	7	3	1	0	29
Pediatric Mother had sex with person with HIV/AIDS	1	2	0	6	1	0	13	8	2	5	1	39
Pediatric, Mother with HIV/AIDS	4	2	3	17	16	3	7	10	7	6	1	76
Non-injecting Drug Use	0	0	0	0	0	0	0	0	0	0	21	21
Sex for Drugs/Money	0	3	2	3	6	57	80	63	61	76	47	398
Total	391	530	684	865	970	950	982	803	804	651	608	8238
Total (as % of all Reports)	33.0	40.4	47.0	41.9	42.2	45.2	43.2	48.6	48.2	43.8	39.1	43.2

3. Persons exposed to HIV through heterosexual contact

Tables 3 and 3A present the change in the percentage of HIV disease reports attributed to heterosexual contact for cases reported through December 31, 1999. While only 3% of male cases were attributed to heterosexual contact during the 1983 to 1989 time period, this percentage had increased to 18 percent between 1997 and 1999. For females, however, the percentage of cases attributed to heterosexual contact increased from 36% in 1983 to 1989 to 49% in 1997 to 1999. The risk for heterosexual transmission for both sexes combined rose from 6% in 1983 to 1989 to 28% in the 1996 to 1998 time period representing an increase of well over 200%. It is important to note, however, that our definition of heterosexual contact was expanded in the mid 1990s to include multiple heterosexual partners, exchange of sex for drugs or money, or previous STD diagnosis (see page 7).

4. Women

Tables 2 and 2A and Figure 5 show the numbers and percentages of cases in women. In the 1980's, women made up just 11 percent of the cases reported. That proportion increased to 32% of cases reported during the 1997 to 1999 time period. Among women, about 82% of the cases have been among African Americans during the entire epidemic. While the proportion of African American reports for all female cases reported have stayed the same, the number of women diagnosed has increased through the 1990s.

Data from the Survey of Childbearing Women (SCBW) have been collected and analyzed through most of 1994. However, in 1995 the survey was discontinued. This population-based survey provided data representative of all women giving birth to live infants. Consistent with other data presented earlier, nonwhite women had higher seroprevalence rates than white women (about 20-fold higher) in all regions. Because of the lack of recent seroprevalence data, we are unable to analyze this further or to update trends.

5. Children less than 13 years of age

Through 1999, 231 pediatric HIV infections have been reported. As the number of HIV infected women continued to grow, the number of HIV infected infants also grew. However, now that physicians are aware that AZT can reduce vertical transmission during pregnancy, we anticipate that the numbers of new HIV cases of HIV in infants will continue to decrease from the peak years of 1992-1993. The number of reports for 1998-1999 is less than one-half of the reports from 1996-1997. Tables 6 and 7 display pediatric reports by race, sex and year of first report.

Table 7 details pediatric HIV cases by exposure category and race. The proportion of pediatric cases among African Americans is higher for those with an exposure category of “mother with/at risk for HIV infection” than for whites. Most of the pediatric cases with hemophilia/coagulation disorder are among whites. Approximately equal numbers of cases with a risk of transfusion/transplant are found among both whites and African Americans. The proportion of pediatric cases reported since 1990 has increased for the exposure group

"mother with/at risk for HIV infection" from 59% to 87%, while the proportion with a risk of hemophilia/coagulation disorder or transfusion/transplant has decreased from 36% in 1981 to 1989 to 4% in 1990 to 1999.

Table 6
Pediatric HIV Disease Reports in North Carolina
(Less than 13 Years of Age)
Race and Gender by Year

		Year of First Report						
		1983-89	**1990-91**	**1992-93**	**1994-95**	**1996-97**	**1998-99**	**Total**
Race	**Gender**							
White	Male	7	3	7	3	4	1	25
	Female	0	1	6	4	1	5	17
African American	Male	6	6	25	22	22	8	89
	Female	8	8	34	11	22	8	91
Hispanic	Male	0	0	0	1	1	0	2
	Female	1	0	0	1	0	0	2
American Indian	Male	0	0	1	0	0	0	1
	Female	0	0	2	0	0	0	2
unknown	Female	0	0	0	0	2	0	2
Total	Both	22	18	75	42	52	22	231

Table7
Pediatric HIV Disease Reports in North Carolina
(Less than 13 Years of Age)
Exposure Category by Year

Exposure category	Year of First Report							
	White		**African American**		**Other**		**Total**	
	Before 1990	1990-99	Before 1990	1990-99	Before 1990	1990-99	Before 1990	1990-99
Hemophilia	2	4	0	2	0	1	2	7
Mother with/ at risk for HIV infection	2	28	10	148	1	5	13	181
Transfusion/ transplant	3	1	3	1	0	0	6	2
Other	0	4	1	15	0	0	1	19
Total	7	37	14	166	1	6	22	209

6. Adolescents (Ages 13 through 19)

The tables earlier (Table 1 and 4) indicate the percentage and rates of HIV disease infections by age group and year of first report. While only just over 2% of reports are found among teenagers aged 13 to 19, an additional 26% are found among those in their twenties who may have acquired their infections while they were in their teens. The proportion of adolescent infection attributed to heterosexual contact has increased since the early 1990's however the large number of reports with unspecified risk make it difficult to draw conclusions about changing risk information for this group.

Table 8
Adolescent (13-19 Years of Age) HIV Disease Reports in North Carolina
Exposure Category by Year

	Year of First Report								
Exposure Category	**1983-89**		**1990-93**		**1994-96**		**1997-99**		**Total**
	Male	**Female**	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**	
MSM	2	0	28	0	22	0	25	0	77
IDU	1	0	3	8	1	5	1	5	24
MSM/IDU	0	0	5	0	0	0	0	0	5
Adult Hemophilia	6	0	5	0	1	0	0	0	12
Heterosexual	0	1	3	27	3	46	3	51	134
Transfusion/ Transplant	0	0	1	0	1	1	2	0	5
Other	0	0	1	0	0	0	0	0	1
Risk not specified	0	1	11	63	13	41	14	38	181
Pediatric Hemophilia	0	0	3	0	2	0	1	0	6
Total	9	2	60	98	43	93	46	94	445

As a surrogate for behaviors that place persons at risk for HIV infection as a result of heterosexual activity, we utilized pregnancy rates. Data from the State Center for Health Statistics, "North Carolina Reported Pregnancies, 1998", indicated that the pregnancy rate for North Carolina was 84.7 per 100,000 females aged 15 to 44 which is rose 3.8% from 1997 (81.6). The 1998 rate includes 76.0 pregnancies per 1,000 for white females and 105.3 per 1,000 nonwhite females.

There were 591 pregnancies among young girls aged 10 to 14, 215 of which were among white girls and 372 among nonwhite girls. In addition, of 21,050 aged 15 to 19 who were pregnant, 11,738 were white and 9,226 were nonwhite. Of the 142,404 pregnancies in 1998, 59,379 were among unmarried women.

The abortion rate for North Carolina in 1998 was 17.8 abortions per 1,000 live births, which includes 11.9 for white females and 32.4 for nonwhite females. The abortion rate increased

slightly between 1997 and 1998. Pregnancy alone is not a risk factor for HIV. However, STD rates among teens (see section 8 and figures 8 through 10) also indicated that much of the sexual activity of teens puts them at risk for sexually transmitted diseases such as gonorrhea and chlamydia where the rates are high for 13 to 19 year olds. Thus, both the sexual activity, and the concomitant STDs put teens at risk for acquiring HIV infection as well.

Table 9
North Carolina Pregnancies*

1998	Induced Abortions	Live Births	Fetal Deaths	Total
Total, All Ages	29,868	111,631	905	142,404
Total Whites	14,631	79,236	905	94,369
Total Minority	14,614	32,395	403	47,412
Ages 10 to 14	254	328	9	591
Whites, 10 to 14	105	107	3	215
Minority, 10 to 14	145	221	6	372
Ages 15 to 19	5,578	15,325	147	21,050
Whites, 15 to 19	2,974	8,698	66	11,738
Minority, 15 to 19	2,5518	6,627	81	9,226
Unmarried Total	22,355	36,592	432	59,379
Unmarried, White	10,571	16,495	151	27,217
Unmarried, Minority	11,489	20,097	281	31,867

*Data from the North Carolina State Center for Health Statistics

As an additional indicator of adolescent risk the *Youth Risk Behavior Surveys* supplies state-specific numbers on specific high-risk behaviors of high school students. The last survey completed was for the year 1997; the next statewide survey is scheduled for 2000. While the increase in adolescent AIDS cases is not as dramatic in North Carolina as in some other areas of the country, these surveys indicate North Carolina adolescents are engaging in behaviors that may place them at risk for HIV exposure. In North Carolina, 60.9% of high school students reported they had ever had sexual intercourse as compared to 48.4% of high school students nationally. In North Carolina a higher proportion of African American students (75.1%) than white students (53.7%) reported having had sexual intercourse. A total of 13.0% of high school students reported having first intercourse before age 13 which includes 8.0% of white high school males, 35% of African American high school males, 4.5% of white high school females and 12.1% of African American high school females. A total of 23.2% of high school students reported having four or more sex partners during their lifetime and 44.4% of students had sexually intercourse recently (in the last 3 months). Of students who had sexual intercourse, 18.2% reported drinking alcohol or using drugs the last time they had sexual intercourse and 60.5% used condoms at the last incidence.

7. Racial/ethnic minorities

About one quarter of North Carolina's population are racial/ethnic minorities. However, the proportion of minority HIV disease reports has increased from just over 50% in the earliest time period to just under two-thirds in the most recent time period (Table 2). This indicates

that HIV/AIDS has a disproportionate effect on minorities in North Carolina compared with the rest of the population.

Considering the 1999 *rates* of HIV among different racial/ethnic groups (Table 4), it is clear that HIV disproportionately affects minority groups especially African American where the rate of HIV disease (65.1/100,000) is almost 10 times that of whites (6.8/100,000). The case rate for Hispanics and American Indians is almost 3 times that of whites. Figure 7 demonstrates the continued disparity between the HIV rates of whites and nonwhites across the years. While the majority of nonwhite cases reported have been among African-Americans, an increase in the proportion of reports from other racial/ethnic communities, especially the Hispanic community, has been noted. We predict an increasing number of cases from the Hispanic community, given the rapid increase in the Hispanic population in North Carolina. Figure 2 details the distribution of minorities across the state of North Carolina. Comparing this to the following maps (Figures 11,12,13, and 14) showing the HIV and other STD distribution, it is apparent that some of the areas of greatest HIV rates are also counties with a high proportion of minorities.

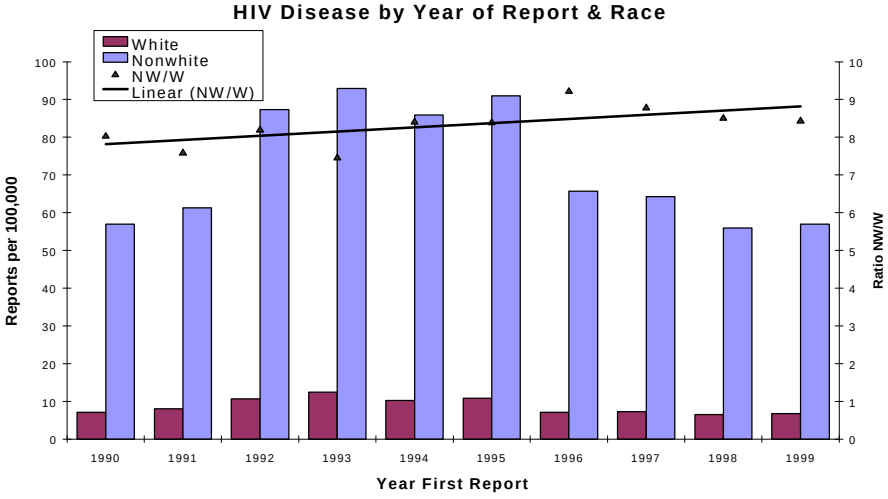


Figure 7

North Carolina collects data on syphilis, gonorrhea and chlamydia. The case rates for racial/ethnic minorities are significantly higher than the statewide case rate for all 3 STDs. In 1999, 75*% of the syphilis cases, 83% of the gonorrhea cases and 67% of the chlamydia cases were reported among African Americans.*

8. Persons with bacterial sexually transmitted diseases

Persons with bacterial sexually transmitted diseases represent a group of sexually active people who have recently had unprotected intercourse. The extent to which STD rates correspond with HIV risk depends on HIV infection rates within the sexual network of persons practicing unsafe sex. While STD data is an imperfect marker for risk of HIV infection, it does provide a reliable indicator of high-risk behavior. Groups with high incidences of STDs are potentially at increased risk for acquiring HIV. Additionally, considering the relatively short incubation periods for these infections, STD morbidity

represents the recent consequences of unsafe sexual behavior and indicates population groups that are practicing unsafe sexual behavior and are at greater risk for acquiring and transmitting HIV infection.

Figures 8, 9, and 10 present the age distribution for cases of infectious syphilis, gonorrhea and chlamydia in 1997 through 1999. This demonstrates the risky behavior among persons of the age groups with the highest rates. For gonorrhea, the rates are highest among 13 to 19 and 20 to 29 year olds. For chlamydia, the rates are highest for 13 to19 year olds. For syphilis, the rates are highest among 20 to 29 and 30 to 39 year olds. These infections not only demonstrate the high risk behavior of the populations involved, they also increase the probability of acquiring the HIV infection should the person involved become exposed to the virus while infected with another sexually transmitted disease. Thus, prevention activities aimed toward sexually transmitted diseases will also help reduce the threat of HIV as well. Figures 11, 12, 13, and 14 display maps of 1999 rates for HIV and other STDs. These maps indicate the strong connection between HIV and other STDs in North Carolina.

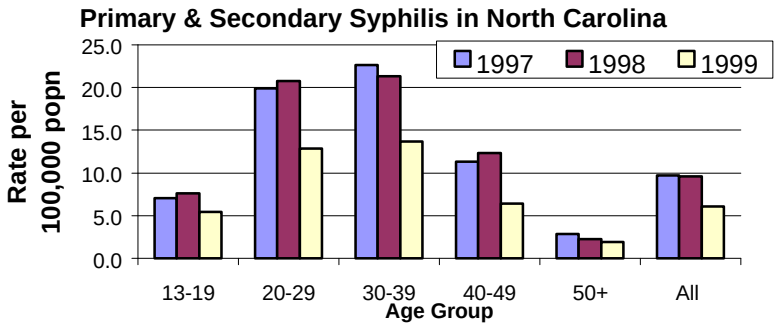


Figure 8

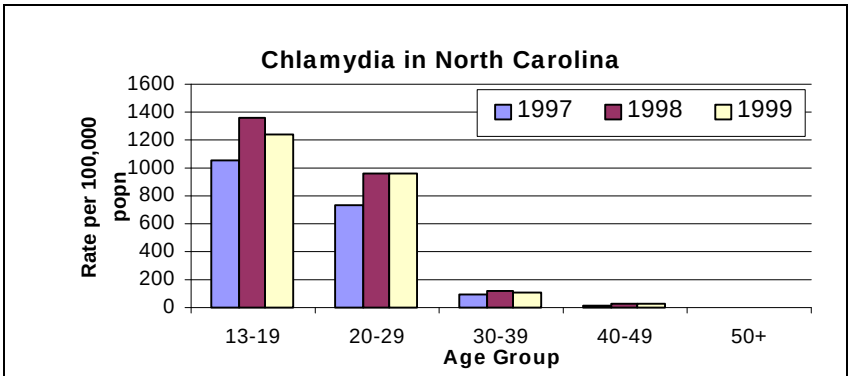


Figure 9

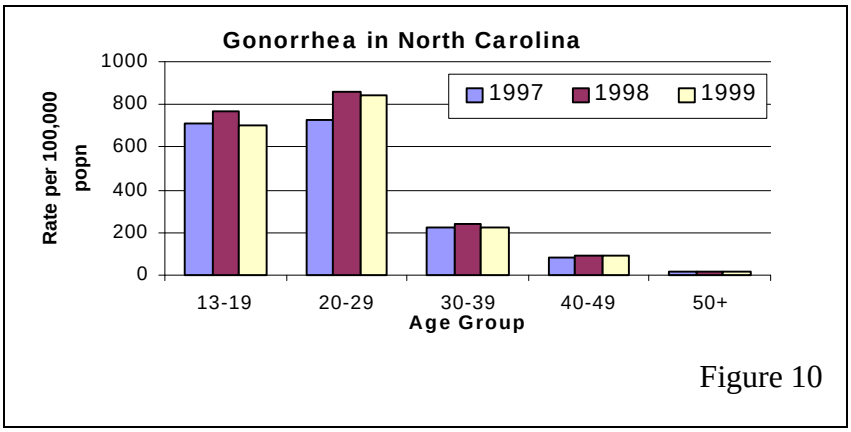


Figure 10

In 1998 five North Carolina counties (Guilford, Mecklenburg, Forsyth, Wake, and Robeson) were among the 28 counties nationally which accounted for 50% of the total primary and secondary syphilis

reported in the U. S. In 1999, preliminary data indicates that North Carolina had the 7th highest primary and secondary syphilis rate in the U.S. However, the syphilis rate in North Carolina has dropped from its 25-year peak in 1992 of 36 cases per 100,000 to 6.1 cases per 100,000 in 1999. The North Carolina gonorrhea rate has decreased from 333.4 cases per 100,000 population in 1995 to 253.3 cases per 100,000 in 1999. This decrease could be seen in all regions, age groups, races and both sexes. Although the chlamydia rate in N.C. has risen from 219.6 cases per 100,000 in 1995 to 284.4 per 100,000 in 1999, this increase may reflect better screening for the disease instead of a true increase in new infections.

Data reported indicate people who are infected with gonorrhea and chlamydia are three to five times as likely to contract HIV, and those with lesion diseases such as herpes and syphilis have nine times the risk (1996 May, Alive and Kicking Issue 55, by Teresa Tamkins, Medical Tribune News Service). According to Dr. Jean Anderson, in the 1996 July, Johns Hopkins University, Hopkins HIV Vol 8 No 3 – Women's Issues, the increased risk is believed to relate, at least in part, to the increased numbers of HIV target cells and the increased HIV shedding in the genital tract associated with STDs. Treatment of genital tract infections has been shown to decrease both the presence and magnitude of HIV shedding.

V. WHAT IS THE GEOGRAPHIC DISTRIBUTION OF HIV INFECTION?

The distribution of HIV is uneven across the state as can be seen in Figure 11. This distribution can be partly explained by the population distribution as the epidemic had been concentrated in urban areas though it now reaches the rural areas as well. The syphilis epidemic preceded the HIV epidemic both because many of the risk factors are the same, and lesion diseases are correlated with increased transmission risk for the virus. While the syphilis epidemic peaked in 1992 and is now decreasing, the evidence for such a decrease in HIV is not yet apparent in North Carolina. STDs remain a marker for high-risk activity which

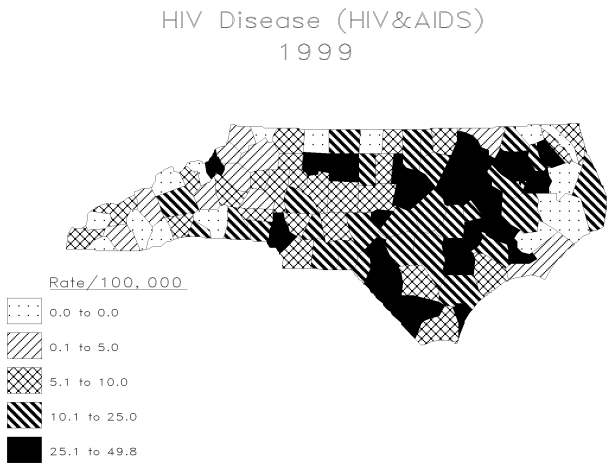


Figure 11

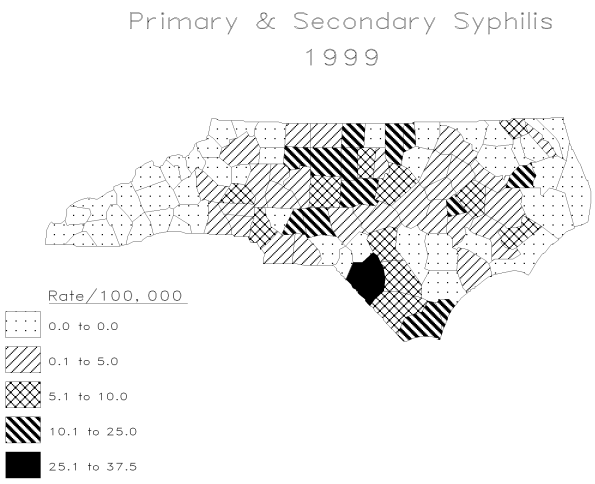


Figure 12

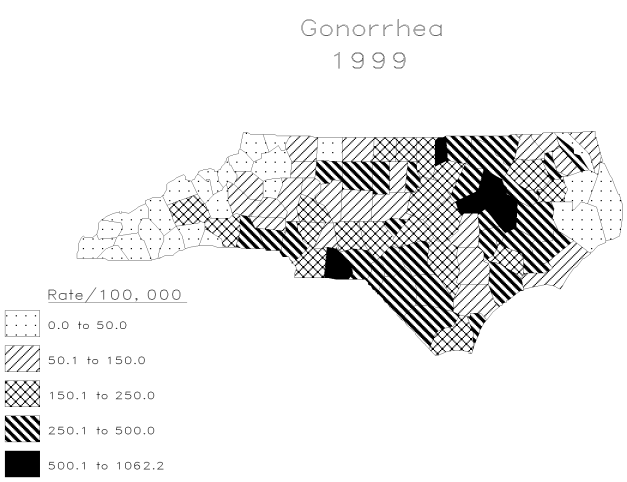


Figure 13

predicts the areas of highest HIV rates as well (Figures 12,13 and 14). While there is a significant amount of in- and out-migration before and after infection with the HIV, prevention activities should be concentrated in the areas where the rate or number of cases is the greatest. Elevated HIV/AIDS rates may be due to different high risk behaviors depending on the community and geographic areas of the state. A knowledge of the communities under consideration will be necessary to determine the prevention activities most useful in that area, and the risk groups to which they should be addressed. Please note that county rates should be viewed with caution as rates representing a small number of cases (numerator) may fluctuate considerably from year to year and may be an unreliable measure of impact.

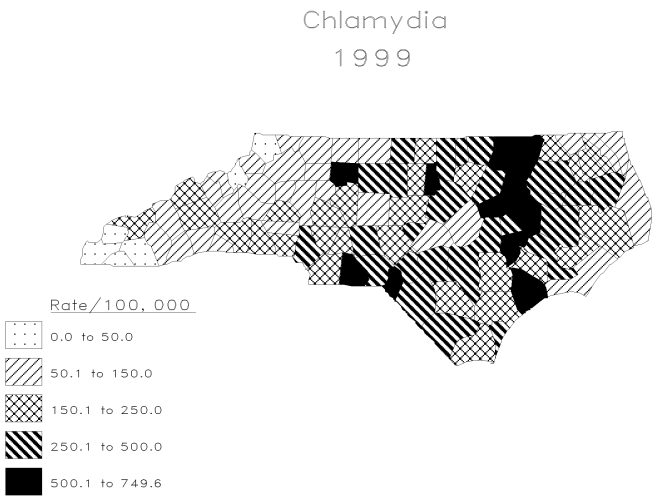


Figure 14

VI. AIDS

As of December 31, 1999, 9,654 cases of AIDS had been reported in the state with North Carolina as residence at the time of diagnosis. The majority of North Carolina's reported AIDS cases were in adults and adolescents as only 114 cases have been reported in infants and children younger than 13 (Table 10). The ethnicity of AIDS has shifted from 50% African American for cases reported between 1984 and 1989 to 72% African American among cases reported between 1997 and 1999 (Table 11). Cumulatively, more than 80% of the AIDS cases reported have been among males although the proportion of cases has steadily declined through time. For example males comprised 89% of the cases reported between 1984 and 1989, 83% of cases reported for 1990 to 1993 and 74% for the 1997 to 1999 aggregate. African American males made up 67% of male AIDS cases reported between 1997 and 1999 and African American females made up 87% of female AIDS cases reported during the same time frame (Table 11A). This represents a significant increase for African American males from 46% in 1984 to 1989 but little change in the proportion of African American female reports from 83% in 1984 to 1989. This shift in AIDS reports to a greater proportion of African Americans was predicted by the HIV disease reports which showed 67% of males with HIV reported between 1990 and 1993 were African American and 82% of females reported with HIV from 1990 to 1993 were African American (Table 2A). The proportion of HIV infections reported from African Americans has remained fairly stable through the 1990s, indicating that the AIDS case distribution will soon stabilize also at approximately the same ratio. For African-American female AIDS cases, we predict the ratio will remain steady at about 83 to 85% among all females while for males we can expect

a short term increase from 65% to 70% African American cases. For alternative presentations of the data contained in Table 11 the reader is referred to the Appendix. Table 11A presents some demographic proportions calculated using different denominators.

Table 10
AIDS Reports in North Carolina
Age Group by Year

	Year of AIDS Report									
	1983-89		**1990-93**		**1994-96**		**1997-99**		**Cumulative**	
Age Group	Cases	Percent	Cases	Percent	Cases	Percent	Cases	Percent	Cases	Percent
<5	17	1.4	42	1.4	25	0.8	9	0.4	93	1.0
5-12	5	0.4	11	0.4	3	0.1	2	0.1	21	0.2
13-19	11	0.9	28	0.9	19	0.6	18	0.8	76	0.8
20-29	280	23.9	617	20.4	536	17.5	355	14.8	1788	18.5
30-39	521	44.4	1445	47.9	1407	45.9	1037	43.2	4410	45.7
40-49	227	19.3	651	21.6	808	26.4	714	29.8	2400	24.9
>49	113	9.6	224	7.4	266	8.7	263	11.0	866	9.0
Total	1174	100	3018	100	3064	100	2398	100	9654	100

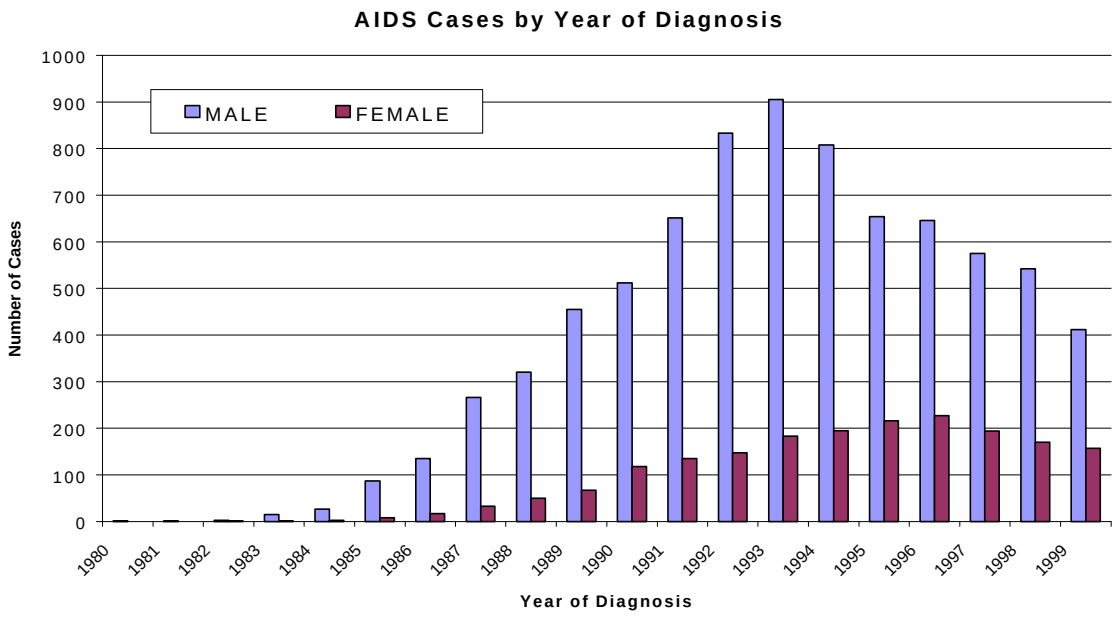


Figure 15

Figure 15 demonstrates the number of new AIDS cases by gender and by year of diagnosis, rather than year of report. From an epidemiological point of view, this is a better method to follow the trends in new cases. However, because of the reporting delay, the newly diagnosed cases are often not reported to the HIV/STD Prevention and Care Branch in a timely manner. For instance, for cases reported between 1990 and 1994, 47% were reported

within 3 months of diagnosis, and 78% were reported within 12 months of diagnosis. By comparison, CDC reports nationally 50% of cases are reported to CDC within 3 months and 80% within one year. Therefore, care must be taken in interpreting Figure 15. Delayed reports mean that cases diagnosed during 1997 and 1998 are still arriving in our office, as well as a few from 1996 and before.

Table 11
AIDS Cases in North Carolina
Race/Ethnicity and Gender by Year

	Year of AIDS Report							
	1984-89		**1990-93**		**1994-96**		**1997-99**	
Male	Cases	Percent	Cases	Percent	Cases	Percent	Cases	Percent
White	536	46.0	1023	33.9	770	25.1	506	21.1
African American	472	40.5	1429	47.3	1563	51.0	1190	49.6
Hispanic	15	1.3	40	1.3	55	1.8	68	2.8
Asian	3	0.3	6	0.2	7	0.2	1	0.0
American Indian	7	0.6	14	0.5	21	0.7	13	0.5
Unknown	3	0.3	6	0.2	4	0.1	0	0.0
Total	1036	88.9	2518	83.4	2420	79.0	1778	74.1
Female	Cases	Percent	Cases	Percent	Cases	Percent	Cases	Percent
White	20	1.7	73	2.4	96	3.1	63	2.6
African American	107	9.2	417	13.8	536	17.5	538	22.4
Hispanic	2	0.2	3	0.1	8	0.3	11	0.5
Asian	0	0.0	2	0.1	0	0.0	2	0.1
American Indian	0	0.0	5	0.2	4	0.1	6	0.3
Total	129	11.1	500	16.6	644	21.0	620	25.9
Both Sexes	Cases	Percent	Cases	Percent	Cases	Percent	Cases	Percent
White	556	47.7	1096	36.3	866	28.3	569	23.7
African American	579	49.7	1846	61.2	2099	68.5	1728	72.1
Hispanic	17	1.5	43	1.4	63	2.1	79	3.3
Asian	3	0.3	8	0.3	7	0.2	3	0.1
American Indian	7	0.6	19	0.6	25	0.8	19	0.8
Unknown	3	0.3	6	0.2	4	0.1	0	0.0
Total	1165	100	3018	100	3064	100	2398	100

Table 12
AIDS Reports in North Carolina
Cases and Rates by Region and Demographic Subgroups by Year

Region	Year of AIDS Report									
	1995		**1996**		**1997**		**1998**		**1999**	
	Cases	Rate*	Cases	Rate*	Cases	Rate*	Cases	Rate*	Cases	Rate*
Region I	62	8.0	76	9.7	87	11.0	44	5.5	47	5.8
Region II	253	16.4	180	11.4	146	9.1	201	12.2	141	8.4
Region III	222	15.5	132	9.1	95	6.4	120	8.0	169	11.2
Region IV	195	15.7	194	15.2	179	13.7	157	11.7	155	11.3
Region V	73	9.3	98	12.4	83	10.4	81	10.1	81	9.9
Region VI	141	16.0	169	19.0	171	19.1	144	16.0	115	12.6
Region VII	56	10.5	54	9.9	77	14.0	37	6.6	43	7.5
Missing	0		0		0		6		19	
North Carolina	1002	13.9	903	12.4	838	11.3	790	10.5	770	10.1
Age Groups	Cases	Rate*	Cases	Rate*	Cases	Rate*	Cases	Rate*	Cases	Rate*
<5	9	1.8	14	2.7	6	1.2	1	0.2	2	0.4
5-12	1	0.1	1	0.1	1	0.1	0	0.0	1	0.1
13-19	3	0.4	8	1.1	4	0.6	6	0.8	8	1.1
20-29	173	16.1	145	13.6	131	12.3	113	10.8	111	10.7
30-39	460	38.6	398	33.3	383	32.0	334	27.9	320	26.7
40-49	266	25.7	253	23.5	229	20.9	254	22.7	231	20.1
>49	90	4.7	84	4.3	84	4.2	82	4.0	96	4.6
Missing	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0
Race	Cases	Rate*	Cases	Rate*	Cases	Rate*	Cases	Rate*	Cases	Rate*
White	285	5.4	223	4.1	199	3.6	201	3.6	169	3.0
African American	692	43.8	645	40.2	604	37.1	560	33.9	564	33.7
Hispanic	18	15.1	25	18.7	29	19.7	22	13.6	28	16.0
Asian	0	0.0	4	4.8	0	0.0	2	2.1	1	1.0
American Indian	7	7.9	5	5.5	6	6.5	5	5.3	8	8.3
Unknown	0	0.0	1	0.0	0	0.0	0	0.0	0	0.0
Gender	Cases	Rate*	Cases	Rate*	Cases	Rate*	Cases	Rate*	Cases	Rate*
Male	787	22.6	680	19.2	620	17.2	593	16.2	565	15.2
Female	215	5.8	223	5.9	218	5.7	197	5.1	205	5.2

* Cases per 100,000 population

HIV/AIDS-related deaths

Unlike chronic diseases with high death rates such as cancer or cardiovascular diseases, AIDS is a killer of the young and middle-aged. The case fatality rate for the cumulative HIV/AIDS reports is 33%, however for those cases diagnosed and reported before 1990, that rate is 88%. Unfortunately, there are several cases where we only learn of the diagnosis at the time the person dies. The data reported in this section of the profile were collected by the North Carolina Center for Health Statistics. Mortality data are coded from death certificates collected by the State's registrars. Reporting is nearly 100% complete, as death certificates are required for every death in North Carolina. However, the causes of death are based on information recorded by the certifying physician and may be inaccurate or incomplete. Due to under-reporting of certain causes of death, the number of HIV-related deaths and the spectrum of related conditions will be underestimated to some extent. AIDS had increased in ranking as a cause of death among 15 to 44 year-olds in North Carolina through the mid 1990s, but since, AIDS has declined in overall ranking of causes of death for this age group (Figure 16). From 1995 to 1998, there was a 60% decrease in AIDS related deaths (776:306) for this age group. The decrease was greater for whites (71%) than for African Americans (53%).

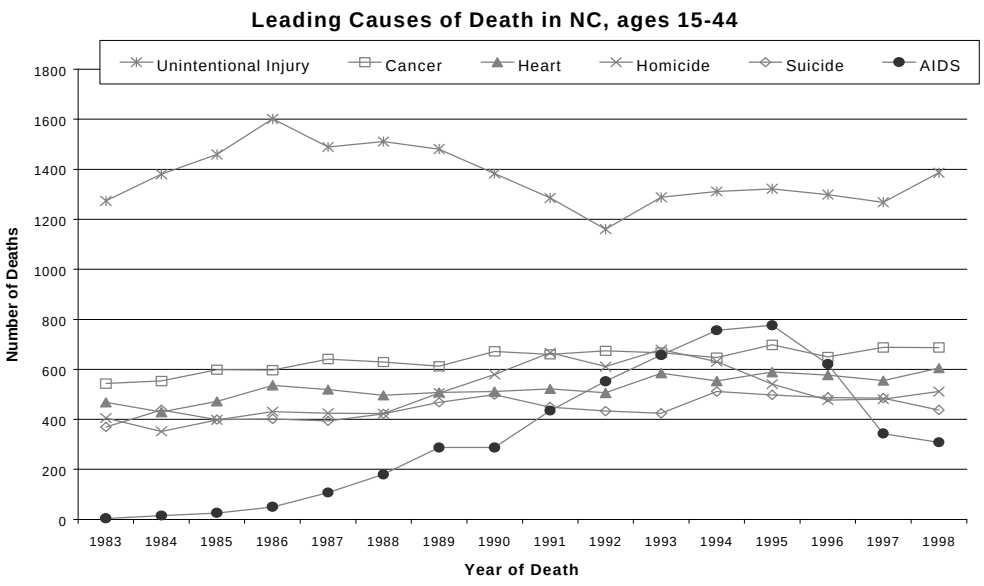


Figure 16

Treatment

As mentioned earlier the introduction of new more effective AIDS has made a tremendous impact on delaying the progression of HIV to AIDS. This is evident in national surveillance data as AIDS incidence and deaths dropped for the first time in 1996. North Carolina surveillance data also suggest that these treatments are having an impact. Figure 17 shows all cases first reported as HIV stratified by cases that have progressed to AIDS and those that have not. It suggests that there are significant numbers of persons reported with HIV in the

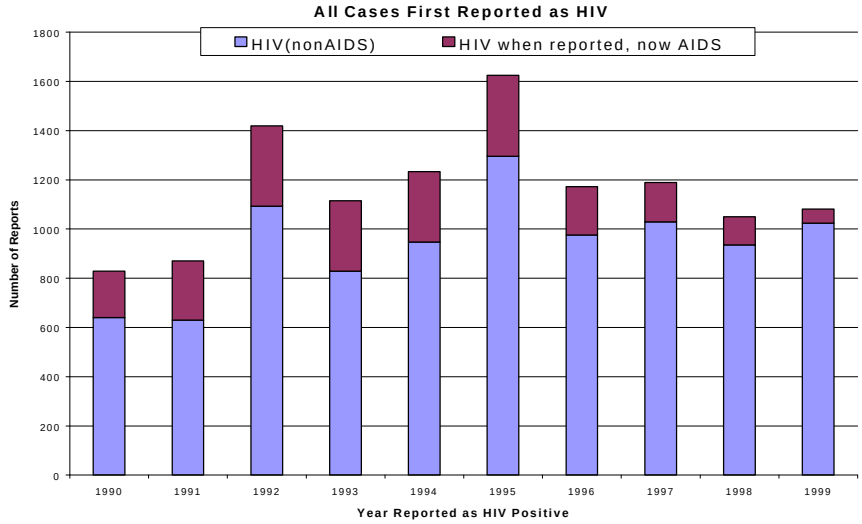


Figure 17

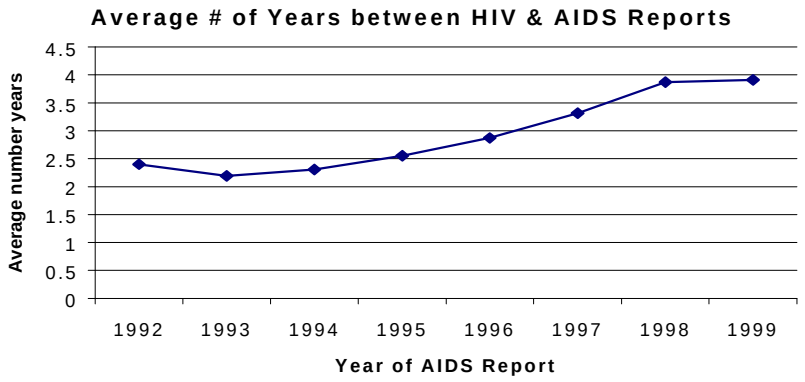


Figure 18

early to mid 1990's that have yet to be reported with AIDS. Figure 18 shows the average number of years between a report with HIV and a report with AIDS. The increase in the time indicates that these new treatments are likely having an impact and slowing the progression from HIV to AIDS. It will be important to monitor these trends in the near future for any changes that might suggest changes in the effectiveness or delivery of AIDS care.

VII. SUMMARY and CONCLUSIONS

The following information summarizes the critical elements of the information presented regarding population subgroups. The order of the categories does not indicate a ranking of importance.

Men who have Sex with Men

Among males, male to male sexual contact has been the most frequently cited exposure mode for HIV disease reports. However, in recent years, this trend has changed so that in the most recent time period, 1997 through 1999, just 36% of the male cases have been attributed to men having sex with men.

Injecting Drug Use
The proportion of HIV and AIDS cases attributed to this exposure mode has decreased to about 15%. However many other HIV cases could be indirectly related to drug use. The majority of cases attributed to injecting drug use are among African Americans.

Heterosexual Contact
Over 65% of the HIV infections attributed to heterosexual contact have been reported since 1993. Higher numbers of STD cases (which indicate higher levels of unsafe sexual practices) were reported among racial/ethnic minorities and persons aged 13 to 39.

Women
The proportion of female HIV disease cases reported has increased from 11% in 1984 through 1989 to 32% between 1997 and 1999. A greater proportion of female HIV infections is attributed to heterosexual contact and a decreasing proportion is attributed to injecting drug use.

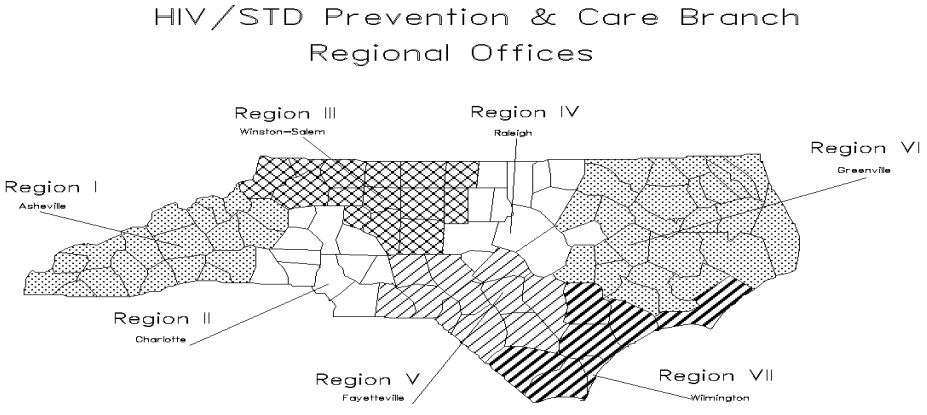
Adolescents
While adolescents represent only 2% of HIV disease reports, many of the cases reported for young adults in their twenties may represent infections acquired when they were adolescents. Also, given the high rates of STDs among adolescents, there exists a strong need for effective prevention efforts aimed at this age group. Of the cases where mode of transmission was determined, a greater number of the HIV disease reports were attributed to heterosexual contact than to any other mode of transmission. Among male adolescents, male to male sexual contact was the most significant mode of transmission.

Racial/Ethnic Minorities
The epidemic has had a disproportionate effect on minorities in North Carolina as seen in HIV disease reports and AIDS cases. The slower decline in AIDS deaths for minorities suggests the need for careful study and follow up. Access to care and treatment may be factors in this disparity.

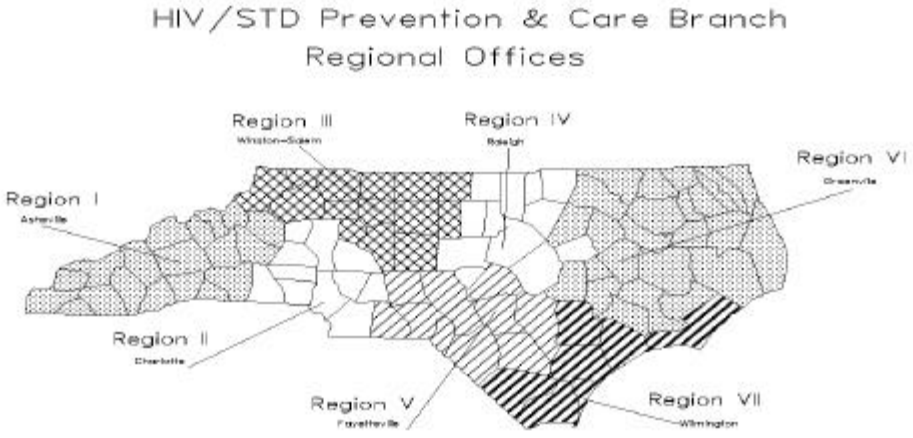
Persons with bacterial sexually transmitted diseases
Because of the correlation between STD and HIV, North Carolina's high rates of STDs especially among adolescents and young adults strengthen the potential for increasing rates of HIV infections. North Carolina is part of the National Syphilis Elimination Project, a collaborative effort between select states and the Centers for Disease Control and Prevention. Investments in this initiative will likely benefit efforts to reduce HIV infections.

Conclusions
The HIV epidemic continues in North Carolina in both urban and rural areas. Rates of infections continue to grow among women with heterosexual contact as their primary mode of transmission. Adolescents are particularly at risk for sexually transmitted diseases including HIV. The minority population is disproportionally affected by this epidemic in all risk groups. The geographic distribution of cases for HIV and bacterial STDs indicates the high correlation of STDs as a predictor of HIV risk.

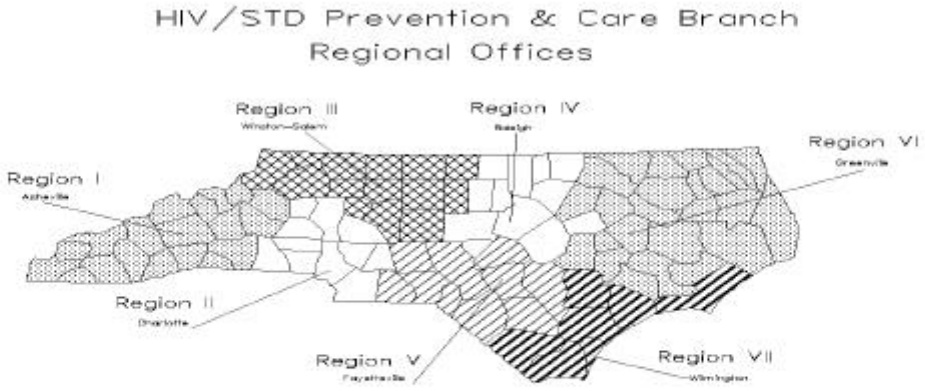
HIV Disease in North Carolina Region 1 : Sex and Race by Year of First Report									
	Time Period	**Sex**	White	African American	Hispanic	Asian	American Indian	Unkn	**Total**
Region 1	Pre 1990	Male	39	9	0	0	2	0	50
		Female	1	1	0	0	0	0	2
		Both	40	10	0	0	2	0	52
	1990-1991	Male	67	37	1	0	1	1	107
		Female	12	6	0	0	1	0	19
		Both	79	43	1	0	2	1	126
	1992-1993	Male	114	39	4	0	2	1	160
		Female	28	20	0	0	0	0	48
		Both	142	59	4	0	2	1	208
	1994-1995	Male	125	57	5	1	2	1	191
		Female	23	13	2	1	0	0	39
		Both	148	70	7	2	2	1	230
	1996-1997	Male	120	45	7	1	0	0	173
		Female	28	27	0	0	0	0	55
		Both	148	72	7	1	0	0	228
	1998-1999	Male	84	23	4	0	1	1	113
		Female	20	11	0	0	1	0	32
		Both	104	34	4	0	2	1	145
	All Years	Male	549	210	21	2	8	4	794
		Female	112	78	2	1	2	0	195
		Both	661	288	23	3	10	4	989



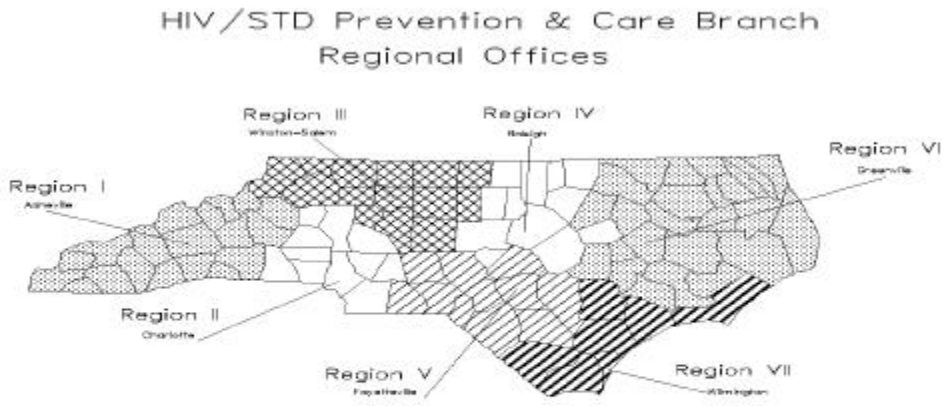
HIV Disease in North Carolina Region 2 : Sex and Race by Year of First Report									
	Time Period	**Sex**	White	African American	Hispanic	Asian	American Indian	Unkn	**Total**
Region 2	Pre 1990	Male	140	97	5	0	0	1	243
		Female	5	16	0	0	0	0	21
		Both	145	113	5	0	0	1	264
	1990-1991	Male	155	423	5	0	3	1	587
		Female	44	141	0	0	0	2	187
		Both	199	564	5	0	3	3	774
	1992-1993	Male	269	644	5	0	1	6	925
		Female	52	242	0	0	0	1	295
		Both	321	886	5	0	1	7	1220
	1994-1995	Male	209	524	9	2	3	0	747
		Female	56	238	0	1	1	0	296
		Both	265	762	9	3	4	0	1043
	1996-1997	Male	129	360	7	3	1	4	504
		Female	46	196	1	3	1	4	251
		Both	175	556	8	6	2	8	755
	1998-1999	Male	156	330	4	1	2	0	493
		Female	37	201	1	0	0	0	239
		Both	193	531	5	1	2	0	732
	All Years	Male	1058	2378	35	6	10	12	3499
		Female	240	1034	2	4	2	7	1289
		Both	1298	3412	37	10	12	19	4788



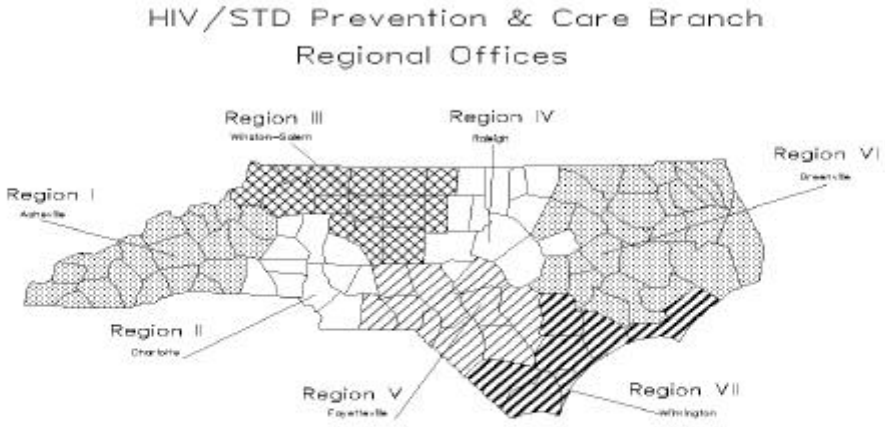
HIV Disease in North Carolina Region 3 : Sex and Race by Year of First Report									
	Time Period	**Sex**	White	African American	Hispanic	Asian	American Indian	Unkn	**Total**
Region 3	Pre 1990	Male	114	66	2	0	1	0	183
		Female	3	11	0	0	0	0	14
		Both	117	77	2	0	1	0	197
	1990-1991	Male	102	230	0	1	3	4	340
		Female	11	69	0	0	0	0	80
		Both	113	299	0	1	3	4	420
	1992-1993	Male	170	299	6	2	4	2	483
		Female	20	112	0	0	2	0	134
		Both	190	411	6	2	6	2	617
	1994-1995	Male	201	396	4	1	3	1	606
		Female	35	170	0	0	0	0	205
		Both	236	566	4	1	3	1	811
	1996-1997	Male	104	240	7	1	0	2	354
		Female	22	135	4	0	2	0	163
		Both	126	375	11	1	2	2	517
	1998-1999	Male	111	242	13	0	2	4	372
		Female	30	175	1	2	0	1	209
		Both	141	417	14	2	2	5	581
	All Years	Male	802	1473	32	5	13	13	2338
		Female	121	672	5	2	4	1	805
		Both	923	2145	37	7	17	14	3143



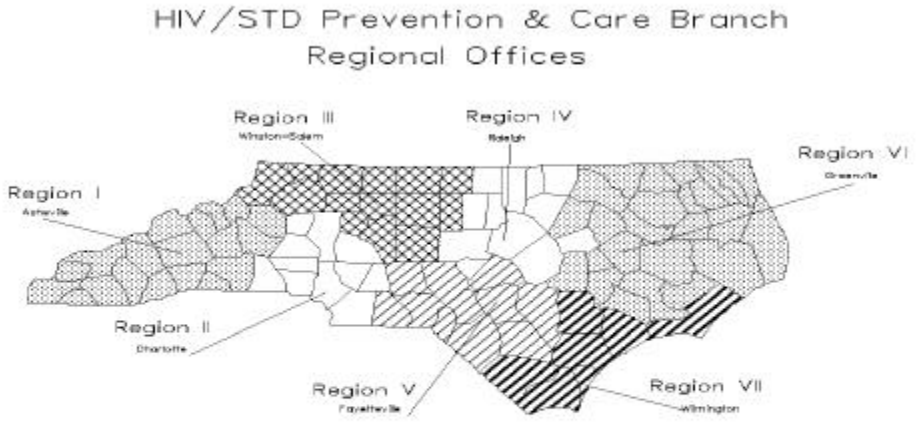
HIV Disease in North Carolina Region 4 : Sex and Race by Year of First Report									
	Time Period	**Sex**	White	African American	Hispanic	Asian	American Indian	Unkn	**Total**
Region 4	Pre 1990	Male	132	151	2	0	1	0	286
		Female	4	34	0	0	0	0	38
		Both	136	185	2	0	1	0	324
	1990-1991	Male	174	395	7	1	2	2	581
		Female	13	142	2	0	0	0	157
		Both	187	537	9	1	2	2	738
	1992-1993	Male	203	490	7	3	3	0	706
		Female	25	192	0	0	1	0	218
		Both	228	682	7	3	4	0	924
	1994-1995	Male	184	513	7	1	0	0	705
		Female	23	232	0	0	0	0	255
		Both	207	745	7	1	0	0	960
	1996-1997	Male	121	352	13	0	1	3	490
		Female	23	176	1	0	0	1	201
		Both	144	528	14	0	1	4	691
	1998-1999	Male	107	312	18	2	0	8	447
		Female	25	172	4	0	0	1	202
		Both	132	484	22	2	0	9	649
	All Years	Male	921	2213	54	7	7	13	3215
		Female	113	948	7	0	1	2	1071
		Both	1034	3161	61	7	8	15	4286



HIV Disease in North Carolina Region 5 : Sex and Race by Year of First Report									
	Time Period	**Sex**	White	African American	Hispanic	Asian	American Indian	Unkn	**Total**
Region 5	Pre 1990	Male	40	41	3	2	2	2	90
		Female	3	18	0	0	0	0	21
		Both	43	59	3	2	2	2	111
	1990-1991	Male	53	135	2	0	7	7	204
		Female	9	56	1	1	3	1	71
		Both	62	191	3	1	10	8	275
	1992-1993	Male	94	229	7	0	21	0	351
		Female	22	123	0	1	9	0	155
		Both	116	352	7	1	30	0	506
	1994-1995	Male	58	243	13	2	16	0	332
		Female	23	109	3	1	9	0	145
		Both	81	352	16	3	25	0	477
	1996-1997	Male	55	194	14	2	8	2	275
		Female	15	116	2	0	8	1	142
		Both	70	310	16	2	16	3	417
	1998-1999	Male	40	135	7	1	14	1	198
		Female	17	82	0	1	7	3	110
		Both	57	217	7	2	21	4	308
	All Years	Male	340	977	46	7	68	12	1450
		Female	89	505	6	4	36	5	645
		Both	429	1482	52	11	104	17	2095



HIV Disease in North Carolina Region 6 : Sex and Race by Year of First Report									
	Time Period	**Sex**	White	African American	Hispanic	Asian	American Indian	Unkn	**Total**
Region 6	Pre 1990	Male	41	84	0	1	1	0	127
		Female	4	19	0	0	0	0	23
		Both	45	103	0	1	1	0	150
	1990-1991	Male	55	156	0	1	0	0	212
		Female	9	85	0	0	0	0	94
		Both	64	241	0	1	0	0	306
	1992-1993	Male	88	327	7	2	0	0	424
		Female	21	165	0	0	0	0	186
		Both	109	492	7	2	0	0	610
	1994-1995	Male	88	312	8	0	0	1	409
		Female	17	181	0	0	1	0	199
		Both	105	493	8	0	1	1	608
	1996-1997	Male	45	252	10	0	0	3	310
		Female	14	167	3	0	1	0	185
		Both	59	419	13	0	1	3	495
	1998-1999	Male	49	221	10	2	0	2	284
		Female	19	132	2	0	0	0	153
		Both	68	353	12	2	0	2	437
	All Years	Male	366	1352	35	6	1	6	1766
		Female	84	749	5	0	2	0	840
		Both	450	2101	40	6	3	6	2606



HIV Disease in North Carolina Region 7 : Sex and Race by Year of First Report									
	Time Period	**Sex**	White	African American	Hispanic	Asian	American Indian	Unkn	**Total**
Region 7	Pre 1990	Male	37	33	3	0	0	0	73
		Female	2	9	2	0	0	0	13
		Both	39	42	5	0	0	0	86
	1990-1991	Male	50	51	2	0	0	0	103
		Female	6	20	1	0	0	0	27
		Both	56	71	3	0	0	0	130
	1992-1993	Male	68	129	4	0	0	0	201
		Female	11	67	0	0	0	0	78
		Both	79	196	4	0	0	0	279
	1994-1995	Male	55	102	5	1	2	0	165
		Female	13	60	3	0	0	0	76
		Both	68	162	8	1	2	0	241
	1996-1997	Male	49	84	5	0	1	1	140
		Female	13	55	1	0	0	0	69
		Both	62	139	6	0	1	1	209
	1998-1999	Male	37	76	5	1	1	2	122
		Female	10	44	5	0	0	0	59
		Both	47	120	10	1	1	2	181
	All Years	Male	296	475	24	2	4	3	804
		Female	55	255	12	0	0	0	322
		Both	351	730	36	2	4	3	1126

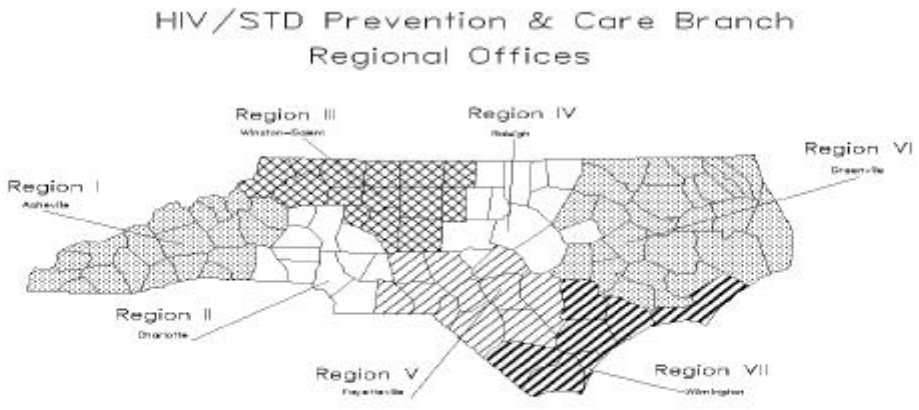


Table 2A
HIV Disease Reports in North Carolina
Gender, Race/ethnicity by Year

Race/ Ethnicity	**Year of First Report**							
	1983-89		**1990-93**		**1994-96**		**1997-99**	
Male	Cases	Percent	Cases	Percent	Cases	Percent	Cases	Percent
White	544	51.7	1662	30.9	1229	28.9	905	28.4
African American	481	45.7	3584	66.6	2891	67.9	2133	66.9
Hispanic	15	1.4	57	1.1	80	1.9	95	3.0
Asian	3	0.3	10	0.2	14	0.3	8	0.3
American Indian	7	0.7	47	0.9	31	0.7	26	0.8
Unknown	3	0.3	24	0.4	14	0.3	23	0.7
Total	1053	100	5384	100	4259	100	3190	100
Female	Cases	Percent	Cases	Percent	Cases	Percent	Cases	Percent
White	22	16.7	283	16.2	268	15.2	242	15.9
African American	108	81.8	1440	82.3	1459	82.6	1235	81.2
Hispanic	2	1.5	4	0.2	15	0.8	18	1.2
Asian	0	0.0	2	0.1	5	0.3	4	0.3
American Indian	0	0.0	16	0.9	16	0.9	15	1.0
Unknown	0	0.0	4	0.2	4	0.2	7	0.5
Total	132	100	1749	100	1767	100	1521	100
Both Sexes	Cases	Percent	Cases	Percent	Cases	Percent	Cases	Percent
White	566	47.8	1945	27.3	1497	24.8	1147	24.3
African American	589	49.7	5024	70.4	4351	72.2	3368	71.5
Hispanic	17	1.4	61	0.9	95	1.6	113	2.4
Asian	3	0.3	12	0.2	19	0.3	12	0.3
American Indian	7	0.6	63	0.9	47	0.8	41	0.9
Unknown	3	0.3	28	0.4	18	0.3	30	0.6
Total	1185	100	7133	100	6027	100	4711	100

Table 3A
Adult/Adolescent HIV Disease in North Carolina
Mode of Transmission and Gender by Year

Mode of Transmission	Year of First Report							
	1983-89		**1990-93**		**1994-96**		**1997-99**	
	Cases	Percent	Cases	Percent	Cases	Percent	Cases	Percent
Male								
MSM	625	60.1	2038	38.2	1614	38.3	1156	36.4
IDU	174	16.7	1241	23.2	800	19.0	478	15.1
MSM/IDU	86	8.3	446	8.4	202	4.8	163	5.1
Blood/Tissue	68	6.5	119	2.2	83	2.0	47	1.5
Heterosexual*	27	2.6	339	6.3	687	16.3	570	18.0
NIR	60	5.8	1158	21.7	825	19.6	759	23.9
Total	1040	100	5341	100	4211	100	3173	100
Female								
IDU	57	46.3	519	30.6	335	19.3	207	13.8
Blood/Tissue	10	8.1	49	2.9	57	3.3	48	3.2
Heterosexual*	44	35.8	521	30.7	908	52.3	731	48.9
NIR	12	9.8	609	35.9	437	25.2	510	34.1
Total	123	100	1698	100	1737	100	1496	100
Both Sexes								
MSM	625	53.7	2038	29.0	1614	27.1	1156	24.8
IDU	231	19.9	1760	25.0	1135	19.1	685	14.7
MSM/IDU	86	7.4	446	6.3	202	3.4	163	3.5
Blood/Tissue	78	6.7	168	2.4	140	2.4	95	2.0
Heterosexual*	71	6.1	860	12.2	1595	26.8	1301	27.9
NIR	72	6.2	1767	25.1	1262	21.2	1270	27.2
Total	1163	100	7039	100	5949	100	4670	100

* includes multiple heterosexual partners, exchange of sex for drug or money, or previous STD diagnosis

Table 11A
AIDS Cases in North Carolina
Race/ethnicity and Gender by Year

Race/ Ethnicity	Year of AIDS Report							
	1984-89		**1990-93**		**1994-96**		**1997-99**	
Male	Cases	Percent	Cases	Percent	Cases	Percent	Cases	Percent
White	536	51.7	1023	40.6	770	31.8	506	28.5
African American	472	45.6	1429	56.8	1563	64.6	1190	66.9
Hispanic	15	1.4	40	1.6	55	2.3	68	3.8
Asian	3	0.3	6	0.2	7	0.3	1	0.1
American Indian	7	0.7	14	0.6	21	0.9	13	0.7
Unknown	3	0.3	6	0.2	4	0.2	0	0.0
Total	1036	100	2518	100	2420	100	1778	100
Female	Cases	Percent	Cases	Percent	Cases	Percent	Cases	Percent
White	20	15.5	73	14.6	96	14.9	63	10.2
African American	107	82.9	417	83.4	536	83.2	538	86.8
Hispanic	2	1.6	3	0.6	8	1.2	11	1.8
Asian	0	0.0	2	0.4	0	0.0	2	0.3
American Indian	0	0.0	5	1.0	4	0.6	6	1.0
Total	129	100	500	100	644	100	620	100
Both Sexes	Cases	Percent	Cases	Percent	Cases	Percent	Cases	Percent
White	556	47.7	1096	36.3	866	28.3	569	23.7
African American	579	49.7	1846	61.2	2099	68.5	1728	72.1
Hispanic	17	1.5	43	1.4	63	2.1	79	3.3
Asian	3	0.3	8	0.3	7	0.2	3	0.1
American Indian	7	0.6	19	0.6	25	0.8	19	0.8
Unknown	3	0.3	6	0.2	4	0.1	0	0.0
Total	1165	100	3018	100	3064	100	2398	100

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