

# HIV/AIDS Mortality Slides

---

## Databases:

### **For analysis of trends in rates and distributions of deaths by underlying cause:**

Death certificate data from the National Center for Health Statistics (NCHS)

- Final data for 1987-1999 and preliminary data for 2000
- From 50 states and District of Columbia
- NCHS Website: <http://www.cdc.gov/nchs/about/major/dvs/mortdata.htm>

### **For analysis of trends in survival after diagnosis of AIDS:**

AIDS case surveillance data from the National Center for HIV, STD, and TB Prevention (NCHSTP)

- Data reported through 2001 for diagnoses in 1984-2000
- From 50 states, District of Columbia, and US territories

## HIV/AIDS Mortality Slides

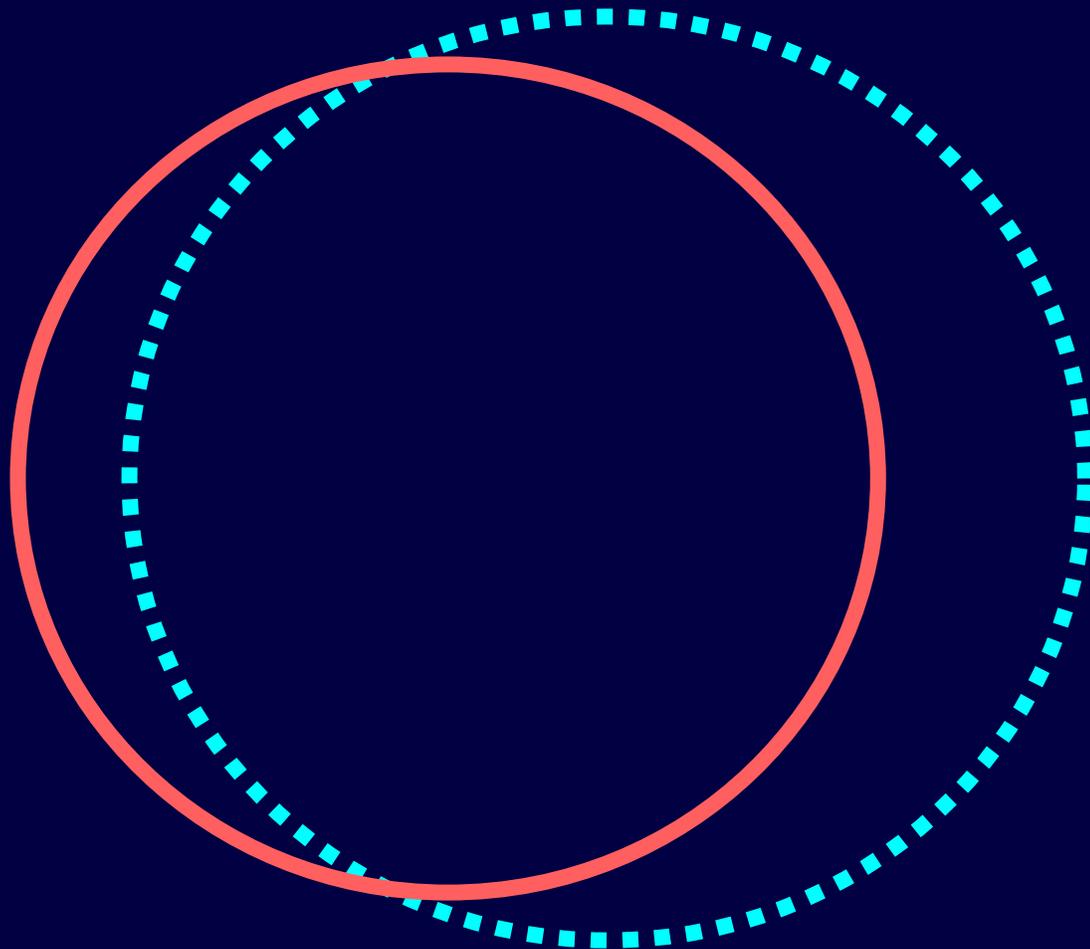
Except for 2 slides showing trends in survival after an AIDS diagnosis, based on AIDS case surveillance data, the slides in this series are based on data compiled by NCHS from death certificates of US residents in the 50 states and the District of Columbia. Some analyses use preliminary data for 2000 and others use only final data through 1999, which are more detailed. The underlying cause of each death is selected from the conditions reported by physicians, medical examiners, and coroners in the cause-of-death section of the death certificate. When more than one condition is reported, the underlying cause is determined using a set of standardized rules promulgated as part of the *International Classification of Diseases (ICD)*. Changes in these rules often accompany a revision of the ICD. Beginning with 1999 deaths, the tenth revision of the ICD (*ICD-10*) became effective and included important changes in the rules for selecting the underlying cause of death. These changes must be taken into account when comparing data for 1999 and later years with data for earlier years. Therefore, in these slides, a simplified version of *ICD-10* rules was used to modify the cause-specific numbers of deaths during the years before 1999, which had been initially determined by *ICD-9* rules. Additional information on the nature and sources of death-certificate data on causes of death may be found at the NCHS web site. These data from NCHS are the sole source of information on all causes of death in the national population, allowing comparison of deaths due to HIV infection with deaths due to other causes.

**Deaths due to HIV infection**

**are not exactly the same as**

**deaths of persons with AIDS.**

**HIV infection**



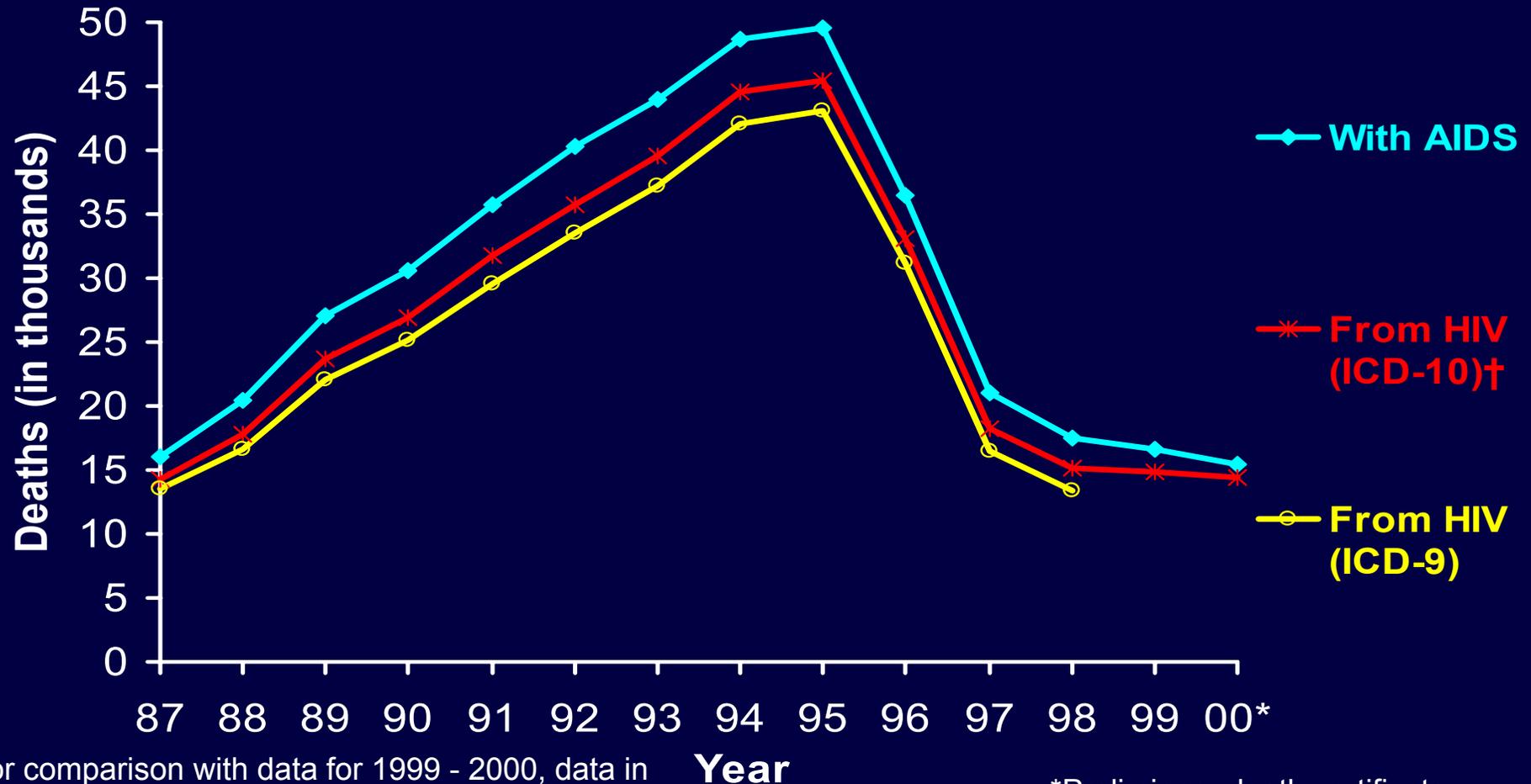
**AIDS**

## **Deaths due to HIV infection are not exactly the same as deaths of persons with AIDS.**

Deaths due to HIV infection, as reported on death certificates, are not exactly the same as deaths of persons with AIDS reported to AIDS surveillance systems of health departments. The crescent shape on the right includes the small proportion of persons with AIDS who die from causes unrelated to HIV infection (such as myocardial infarction, lung cancer, or motor vehicle accidents). Because of improved treatment, survival after diagnosis of AIDS has become longer, which may allow a greater proportion of persons with AIDS to die from other causes. This crescent also includes persons who die of HIV infection that is not reported on the death certificate as the underlying cause of death.

The crescent shape on the left represents the small proportion of persons who do not meet the surveillance criteria for having AIDS among all the persons whose death certificates say they died of HIV infection. The AIDS case definition requires documentation of a low CD4 T-lymphocyte count or diagnosis of 1 of the 27 AIDS-defining illnesses. If such information is missing or no AIDS-defining illness was diagnosed, these persons could not be counted as AIDS cases despite their death due to a condition attributable to, or aggravated by, HIV infection.

# Comparison of Mortality Data from AIDS Case Reports and Death Certificates According to *ICD-9* and *ICD-10* Rules for Selecting the Underlying Cause of Death, USA, 1987-2000



†For comparison with data for 1999 - 2000, data in the middle (red) curve for 1987-1998 were modified to account for *ICD-10* rules instead of *ICD-9* rules.

\*Preliminary death certificate data for 2000

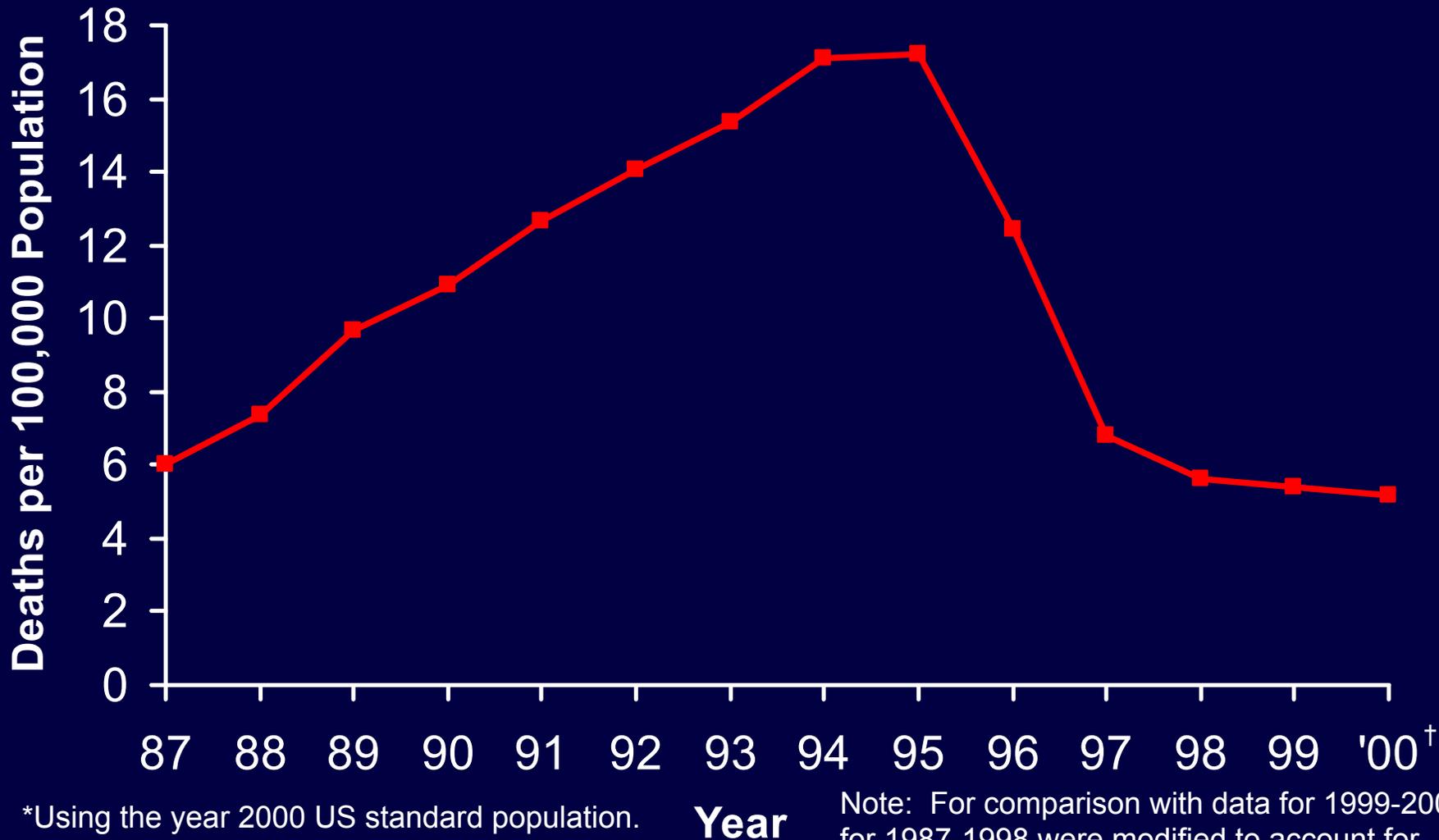


## Comparison of Mortality Data from AIDS Case Reports and Death Certificates According to *ICD-9* and *ICD-10* Rules for Selecting the Underlying Cause of Death, USA, 1987-2000

The annual number of deaths of persons with AIDS (some of which were not caused by AIDS), as reported to the national AIDS surveillance system through September 30, 2001, and adjusted for reporting delay, was 7% to 15% greater than the number of deaths attributed to HIV infection in death certificate data, according to *ICD-10* rules for selecting the underlying cause of death, and 15% to 30% greater than that according to *ICD-9* rules for selecting the underlying cause. The greater number of deaths of persons with AIDS is partly because some persons with AIDS die of causes not attributable to HIV infection, such as motor vehicle accidents, and partly because some deaths due to HIV infection are not reported as such on death certificates.

The *ICD-10* rules for selecting the underlying cause of death result in higher numbers of deaths being attributed to HIV infection (shown by the red curve) than do the *ICD-9* rules (shown by the yellow curve). Because the data for 1999 and 2000 were determined according to *ICD-10* rules, they should be compared with data from earlier years only after the earlier numbers have been modified (as done here) to account for the change in rules.

## Trends in Age-Adjusted\* Rate of Death due to HIV Infection, USA, 1987-2000



\*Using the year 2000 US standard population.

<sup>†</sup>Preliminary mortality data for 2000

Year

Note: For comparison with data for 1999-2000, data for 1987-1998 were modified to account for ICD-10 rules instead of ICD-9 rules.



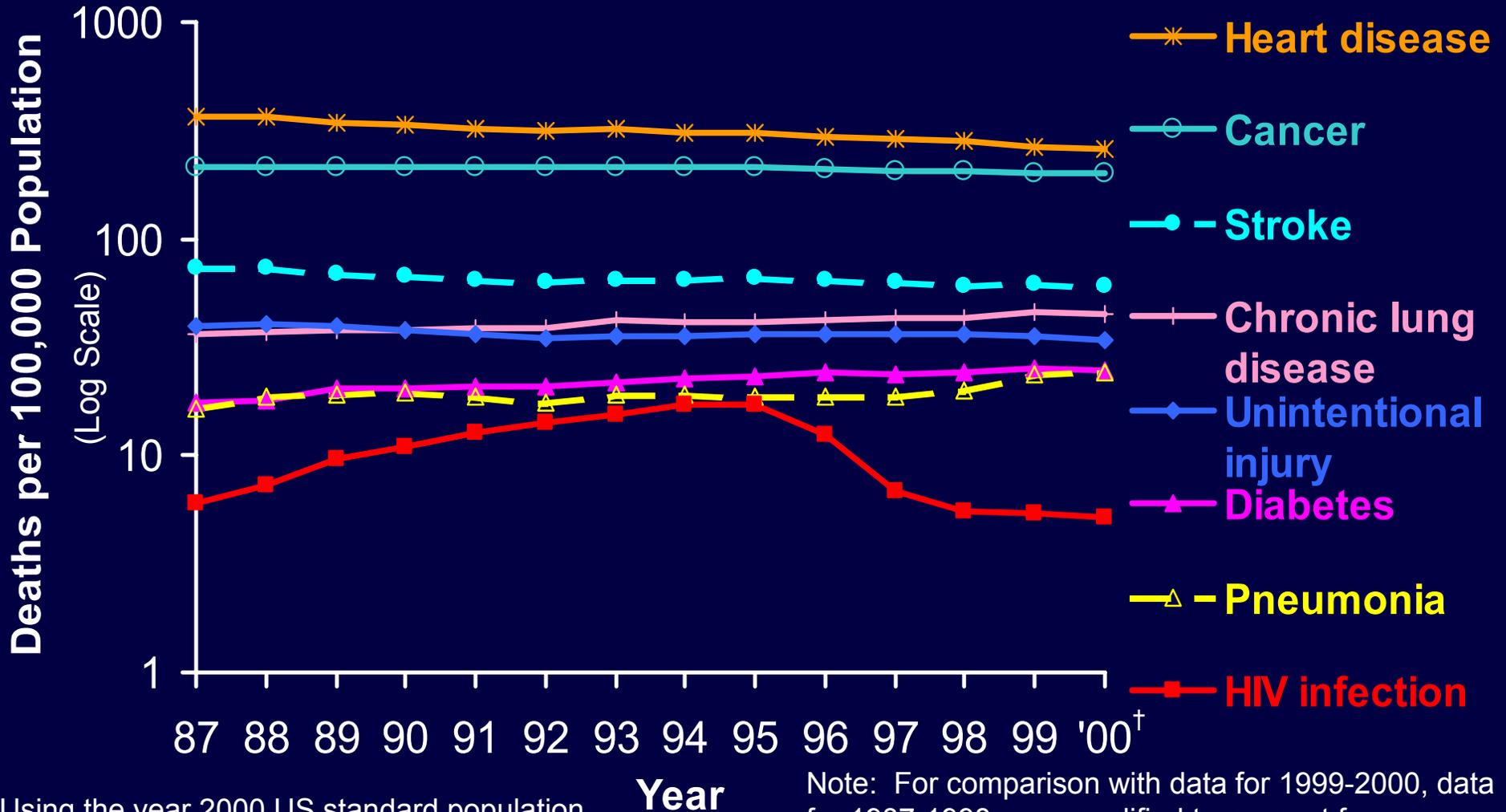
## Trends in Age-Adjusted Rate of Death due to HIV Infection USA, 1987-2000

The age-adjusted rate of death due to HIV infection increased almost linearly from 6 deaths per 100,000 population in 1987 to 17 deaths per 100,000 population in 1994 and 1995, then decreased to 7 deaths per 100,000 population in 1997, and seems to have leveled off at about 5 deaths per 100,000 after 1998. The age-adjusted HIV death rate decreased 28% from 1995 to 1996, 45% from 1996 to 1997, 18% from 1997 to 1998, 4% from 1998 to 1999, and 4% from 1999 to 2000.

The decrease in the rate in 1996 and 1997 was largely due to improvements in antiretroviral therapy. Prophylactic medications for opportunistic infections and the prevention of HIV infection may also have contributed to this decrease. The recent leveling of the trend may reflect a lack of effectiveness of therapy among some patients. Possible reasons for this include delay in diagnosis of HIV infection until severe symptoms have occurred, improper treatment after diagnosis, difficulty in adherence to medication regimens, and development of viral resistance to therapy.

To eliminate the effect on the death rate of changes in age distribution, the rates have been adjusted to appear as though the population in every year had the same age distribution as that for the population in the year 2000, which became the Public Health Service's official standard for age-adjustment as of the 1999 data year. In addition, for comparison with data for 1999 and 2000, data for the years before 1999 were modified to appear as if the underlying cause had been selected according to *ICD-10* rules instead of *ICD-9* rules.

# Trends in Age-Adjusted\* Rates of Death due to the 7 Leading Causes of Death and HIV Infection, USA, 1987-2000



\*Using the year 2000 US standard population.

<sup>†</sup>Preliminary mortality data for 2000

Note: For comparison with data for 1999-2000, data for 1987-1998 were modified to account for ICD-10 rules instead of ICD-9 rules.

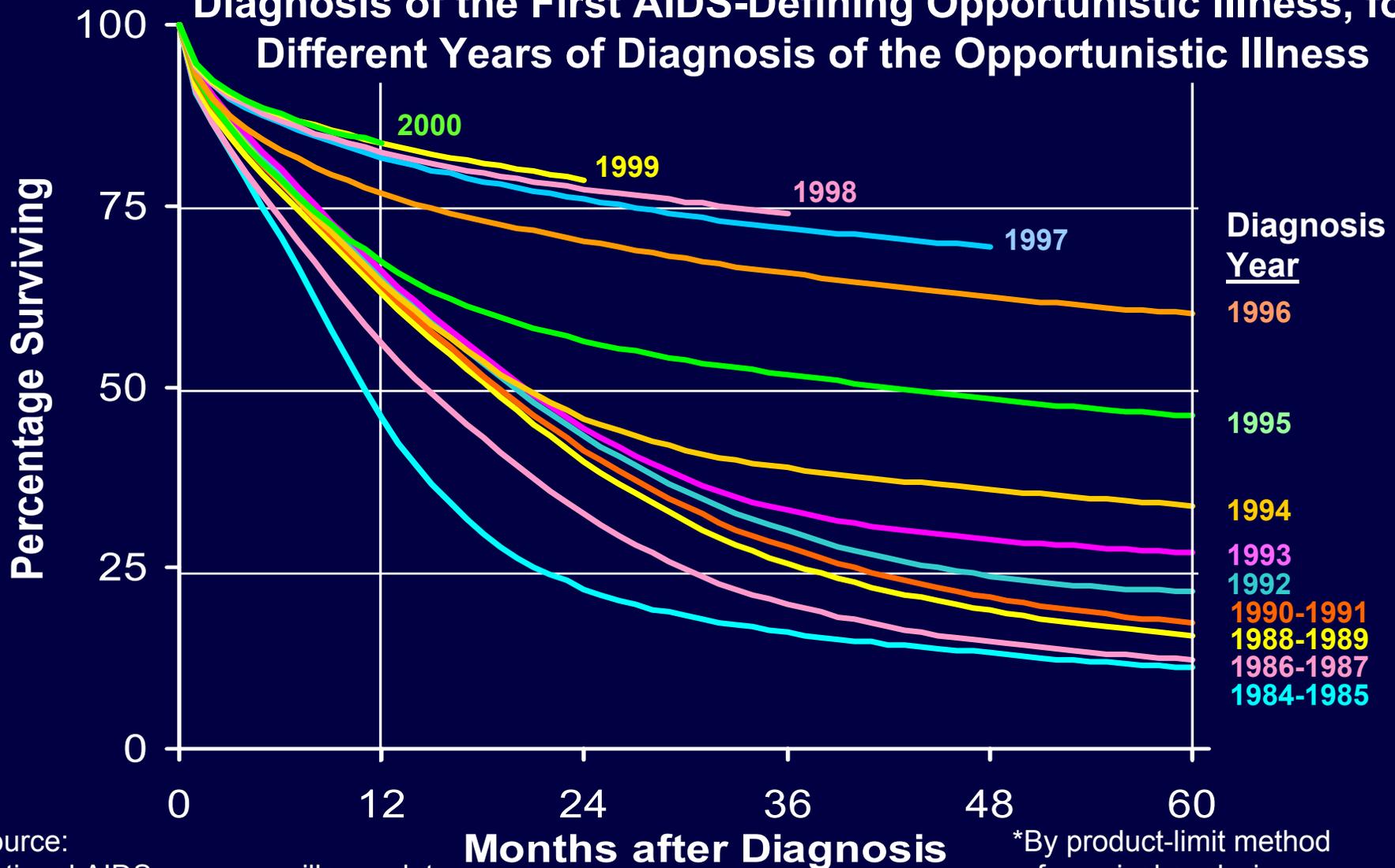


## Trends in Age-Adjusted Rates of Death due to the 7 Leading Causes of Death and HIV Infection, USA, 1987-2000

The red curve representing HIV infection at the bottom of this slide reflects the same data as on the preceding slide, but the scale on the vertical axis is logarithmic instead of linear. The logarithmic scale allows a better comparison of the proportional changes in the rate of death due to HIV infection with changes in the rates due to other causes of death.

The rate of death due to HIV infection increased until HIV became the 8th leading cause of death during 1992 through 1995. At the peak in 1995, HIV infection was the underlying cause of more than 45,000 deaths (according to *ICD-10* rules for selecting the underlying cause). Afterwards the rate fell until HIV infection was the 18th leading cause of death in 2000, when it caused about 14,000 deaths. HIV infection caused 2% of all deaths in 1995, and about 0.6% in 2000.

# Cumulative Proportion of AIDS Patients Surviving\*, by Months after Diagnosis of the First AIDS-Defining Opportunistic Illness, for Different Years of Diagnosis of the Opportunistic Illness



Source:  
National AIDS case surveillance data

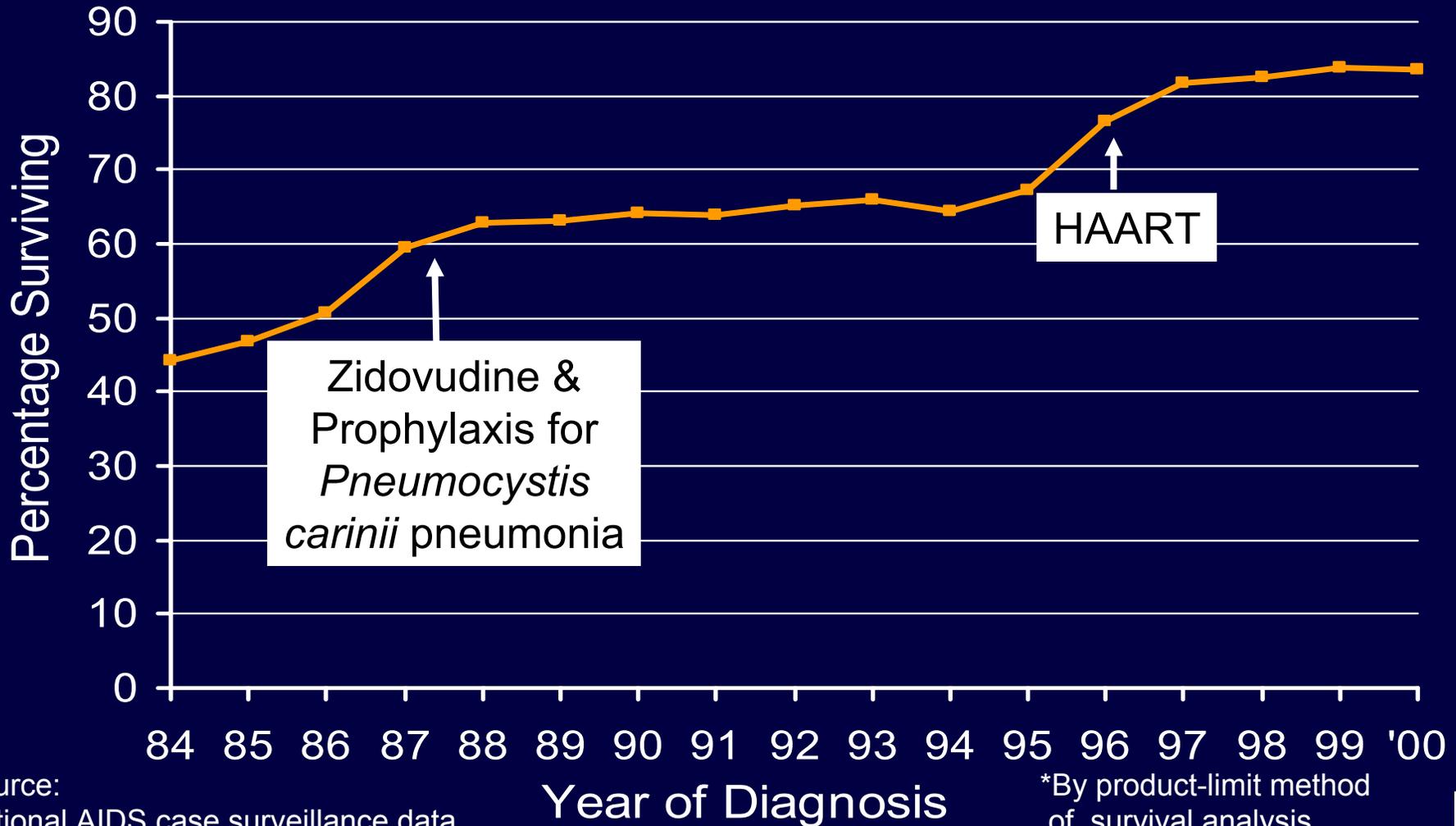
\*By product-limit method of survival analysis



## **Cumulative Proportion of AIDS Patients Surviving\*, by Months after Diagnosis of the First AIDS-Defining Opportunistic Illness, for Different Years of Diagnosis of the Opportunistic Illness**

This is one of two slides in this series based on national AIDS case surveillance data instead of death certificates. It shows the proportion of persons with AIDS surviving at various months after diagnosis of their first AIDS-defining opportunistic illness for different years of that diagnosis. The proportion surviving has been greater among persons with more recent diagnoses. The proportion surviving 60 months (5 years) increased from 11% of persons whose diagnosis was made in 1984 and 1985 to 60% of those whose diagnosis was made in 1996, and the proportion surviving may be even greater among those with more recent diagnosis because of advances in HIV therapy.

# Proportion of AIDS Patients Surviving\* at Least 1 Year after Diagnosis of First AIDS-Defining Opportunistic Illness, by Year of Diagnosis, 1984-2000



Source:  
National AIDS case surveillance data

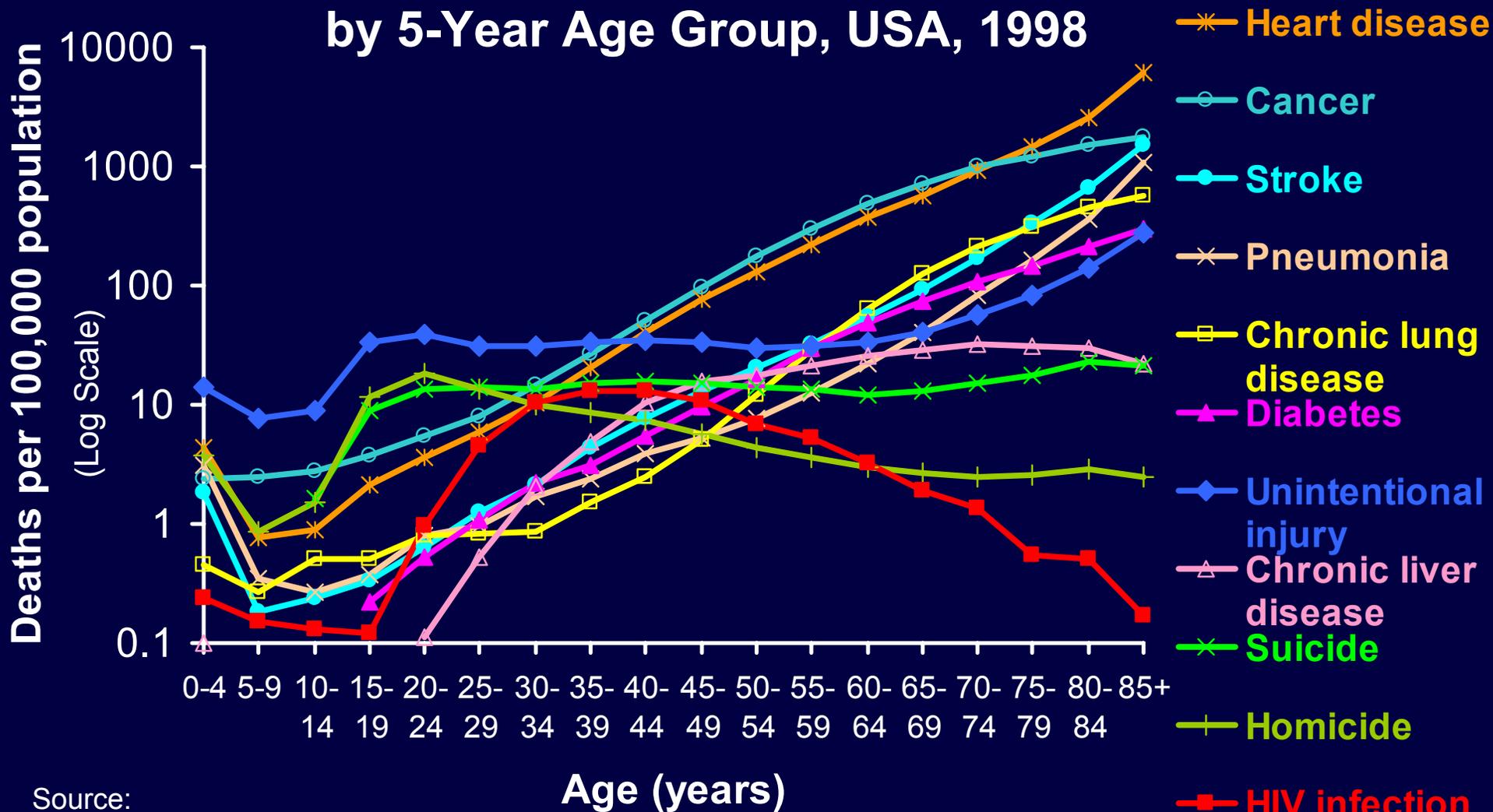
\*By product-limit method  
of survival analysis



## Proportion of AIDS Patients Surviving\* at Least 1 Year after Diagnosis of First AIDS-Defining Opportunistic Illness, by Year of Diagnosis, 1984-2000

Because changes in the proportion surviving at least 1 year occur soon (1 year) after new influences on survival, these changes may provide clues to the reasons for the improvements in survival. This analysis of national AIDS surveillance data shows two periods of rapid increase--from 1984 to 1988, and from 1995 to 1997--separated by a period of little increase, from 1988 to 1995, and followed by another period of little increase, from 1997 to 2000. The first period of rapid increase coincides with, and probably reflects, the increasing use of prophylaxis for *Pneumocystis carinii* pneumonia and the increasing use of antiretroviral therapy with reverse transcriptase inhibitors, such as zidovudine. The second period of rapid increase probably reflects the increasing use of highly active combination antiretroviral therapy (HAART), such as with protease inhibitors, and perhaps the increasing use of prophylaxis for other opportunistic infections, such as *Mycobacterium avium* infection.

# Rates of Death due to Leading Causes, by 5-Year Age Group, USA, 1998



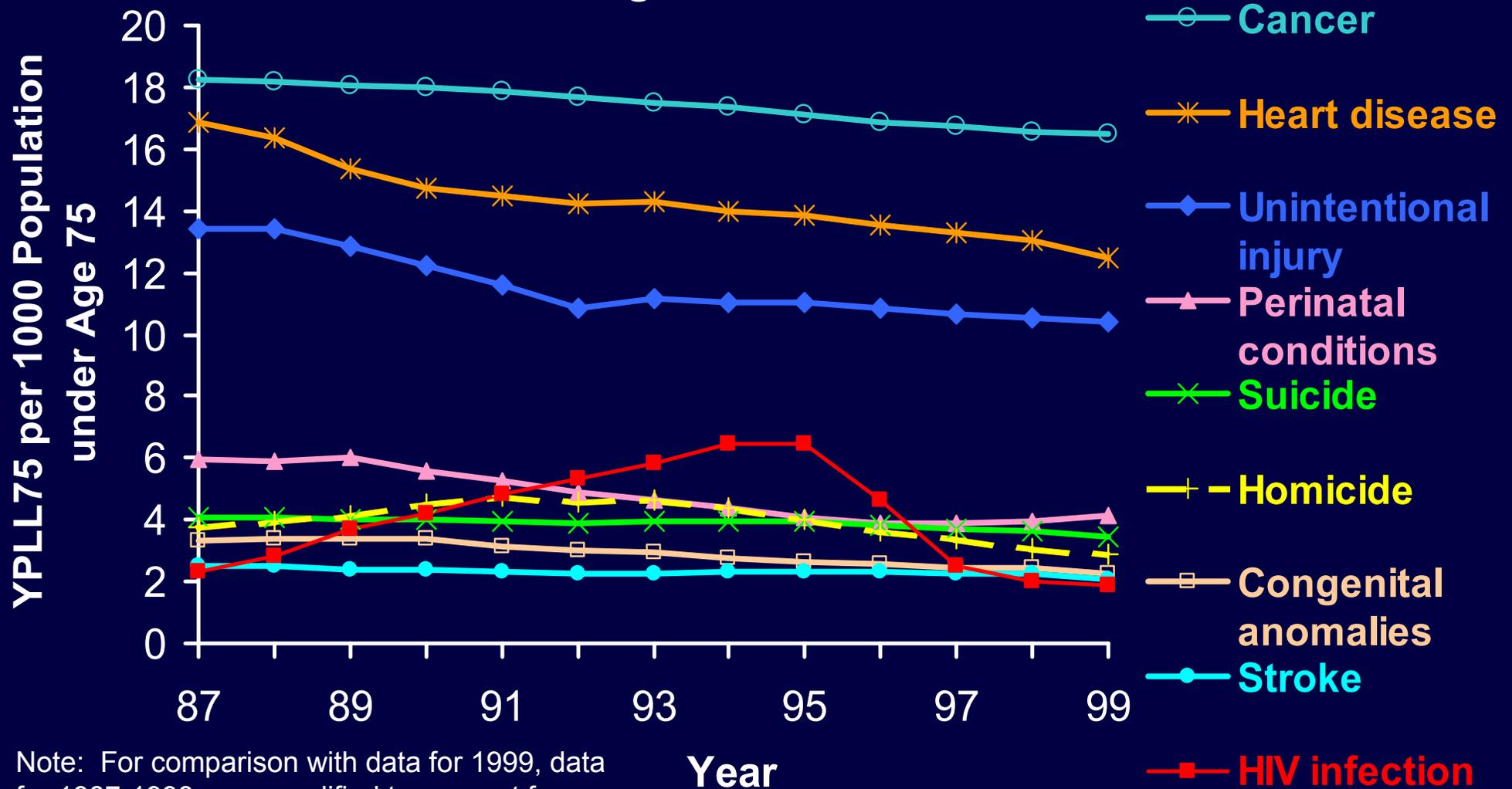
Source:  
National Center for Health Statistics  
National Vital Statistics System



## **Rates of Death due to Leading Causes, by 5-Year Age Group, USA, 1998**

This slide shows age-specific death rates in 1998 on a logarithmic scale. The rate of death due to HIV infection is higher during early childhood than during later childhood because most deaths due to HIV infection in children reflect HIV transmission from mother to child near the time of birth. The HIV death rate is lowest at ages 15 to 19 years because HIV transmission among teenagers usually does not result in death until several years later. The HIV death rate rises steeply during ages 20 to 29, reflecting HIV infections acquired through sexual activity and drug abuse in the teenage and early adult years. It peaks at ages 35 to 44 years and thereafter decreases with age.

# Trends in Rates of Years of Potential Life Lost before Age 75 (YPLL75) due to Leading Causes, USA, 1987-1999

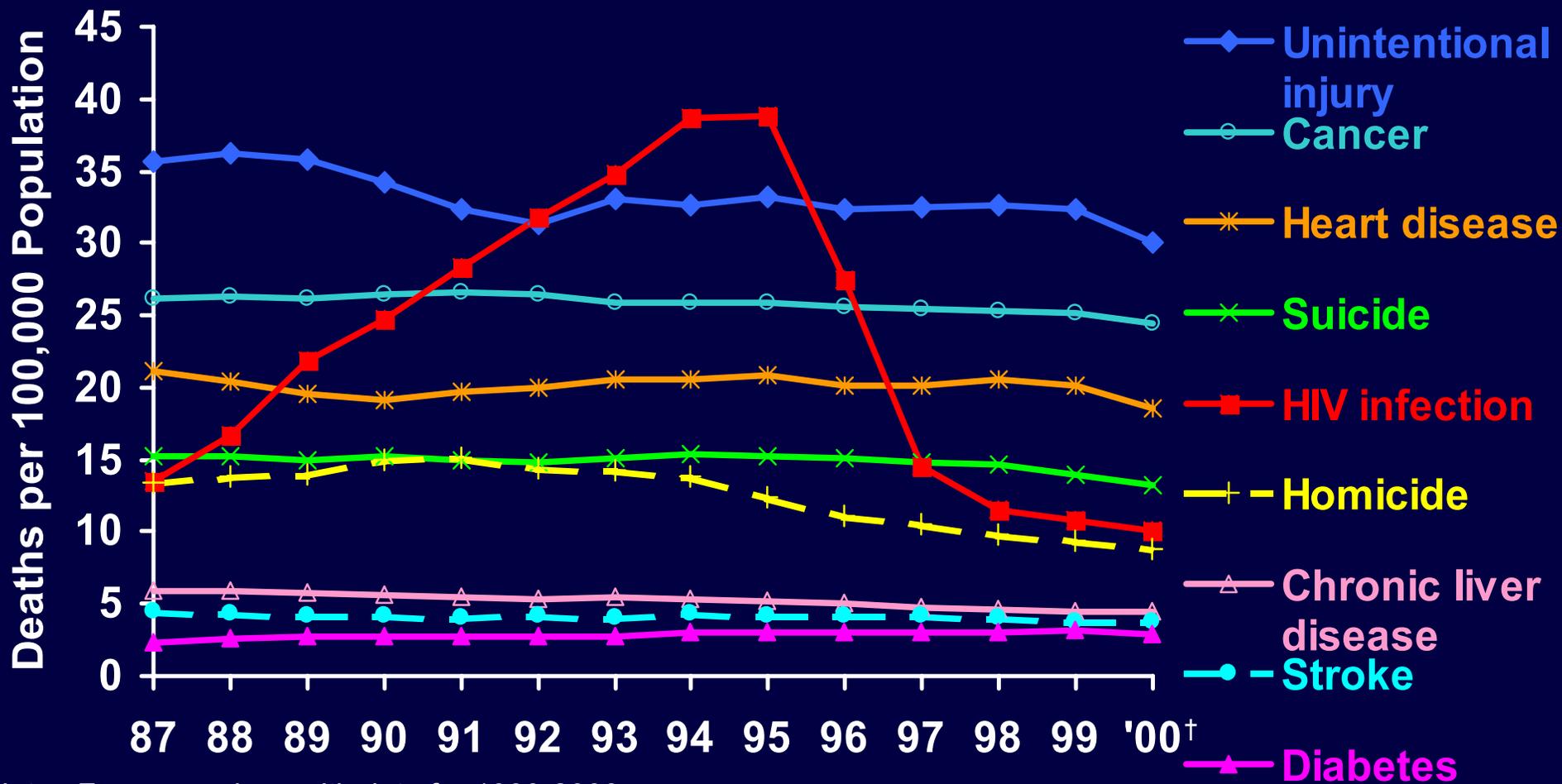


Note: For comparison with data for 1999, data for 1987-1998 were modified to account for ICD-10 rules instead of ICD-9 rules.

## Trends in Rates of Years of Potential Life Lost Before Age 75 (YPLL75) Due to Leading Causes, USA, 1982-1999

A useful way to compare HIV infection with other causes of death is to measure their impact on premature mortality in terms of years of potential life lost before 75 years of age (YPLL75). The number of YPLL75 for each death equals 75 minus the age at death. The YPLL75 due to a given cause of death is the sum of the YPLL75 for the individuals who died of that cause. (Deaths at age 75 or older are not included in the calculation.) HIV infection was the fourth leading cause of YPLL75 in 1994 and 1995, when it caused 8% of all YPLL75. It dropped to 9th place in 1999, when it caused 2% of total YPLL75. To control for the effect that changes in population size may exert on YPLL75, the rates of YPLL75 per 1000 population under age 75 are shown, rather than simply the numbers of YPLL75,.

# Trends in Annual Rates of Death due to Leading Causes of Death among Persons 25-44 Years Old, USA, 1987-2000



Note: For comparison with data for 1999-2000, data for 1987-1998 were modified to account for ICD-10 rules instead of ICD-9 rules.

†Preliminary mortality data for 2000.

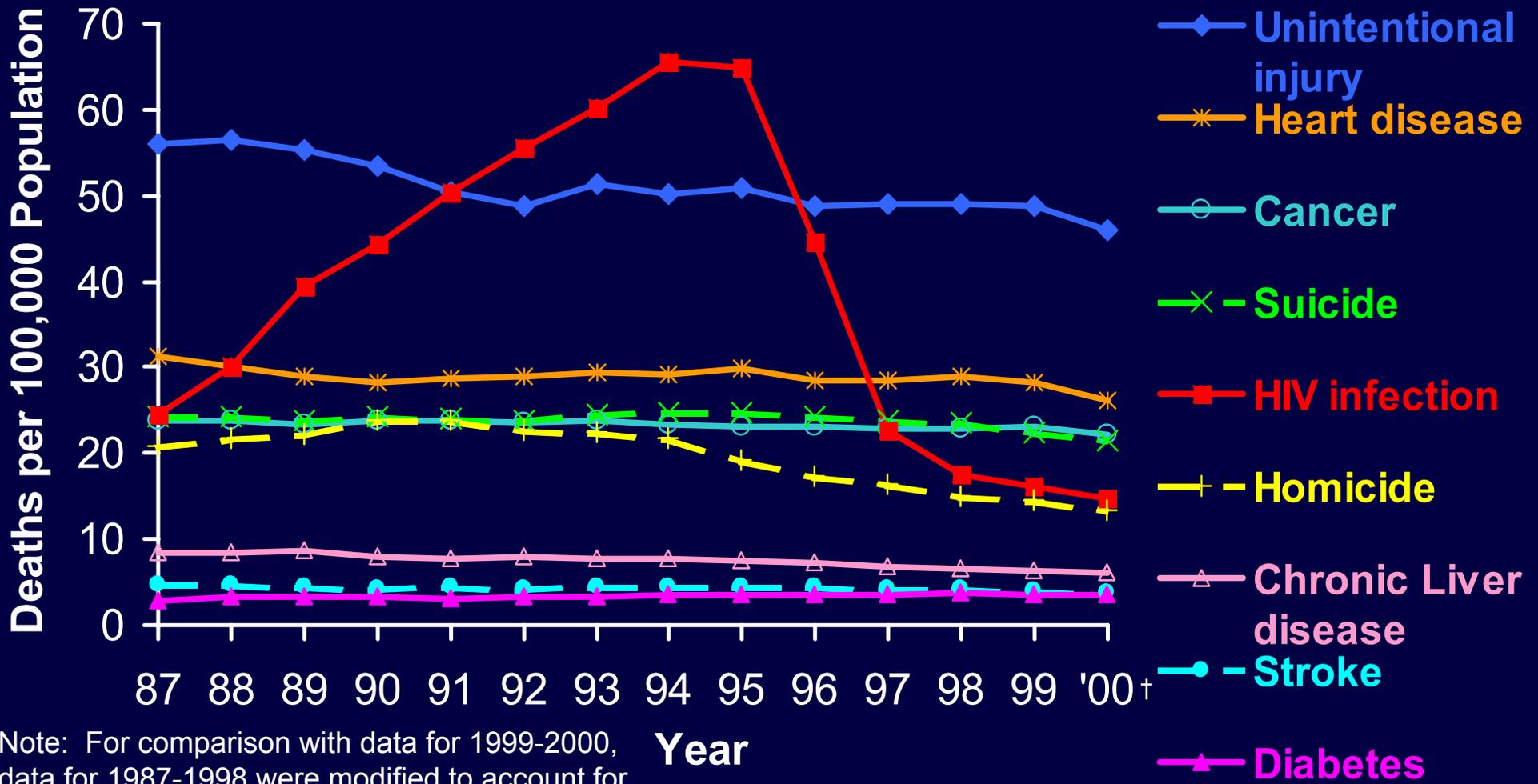


## Trends in Annual Rates of Death due to Leading Causes of Death among Persons 25-44 Years Old, USA, 1987-2000

Focusing on persons 25 to 44 years old emphasizes the importance of HIV infection among causes of death, because, compared with rates at other ages, the rate of death due to HIV infection is relatively high in this age group, whereas rates of death due to other causes are relatively low. Of all deaths due to HIV infection, about 70% have occurred among persons 25 to 44 years old.

HIV infection was the leading cause of death among persons 25 to 44 years old in 1994 and 1995. In 1995, HIV caused about 32,000 deaths, or 20% of the total in this age group (based on *ICD-10* rules for selecting the underlying cause of death). The rank of HIV infection fell to 5th place after 1996. In 2000, it caused about 8,000 deaths, or 6% of the total, in this age group.

# Trends in Annual Rates of Death due to Leading Causes of Death among Men 25-44 Years Old, USA, 1987-2000



Note: For comparison with data for 1999-2000, data for 1987-1998 were modified to account for ICD-10 rules instead of ICD-9 rules.

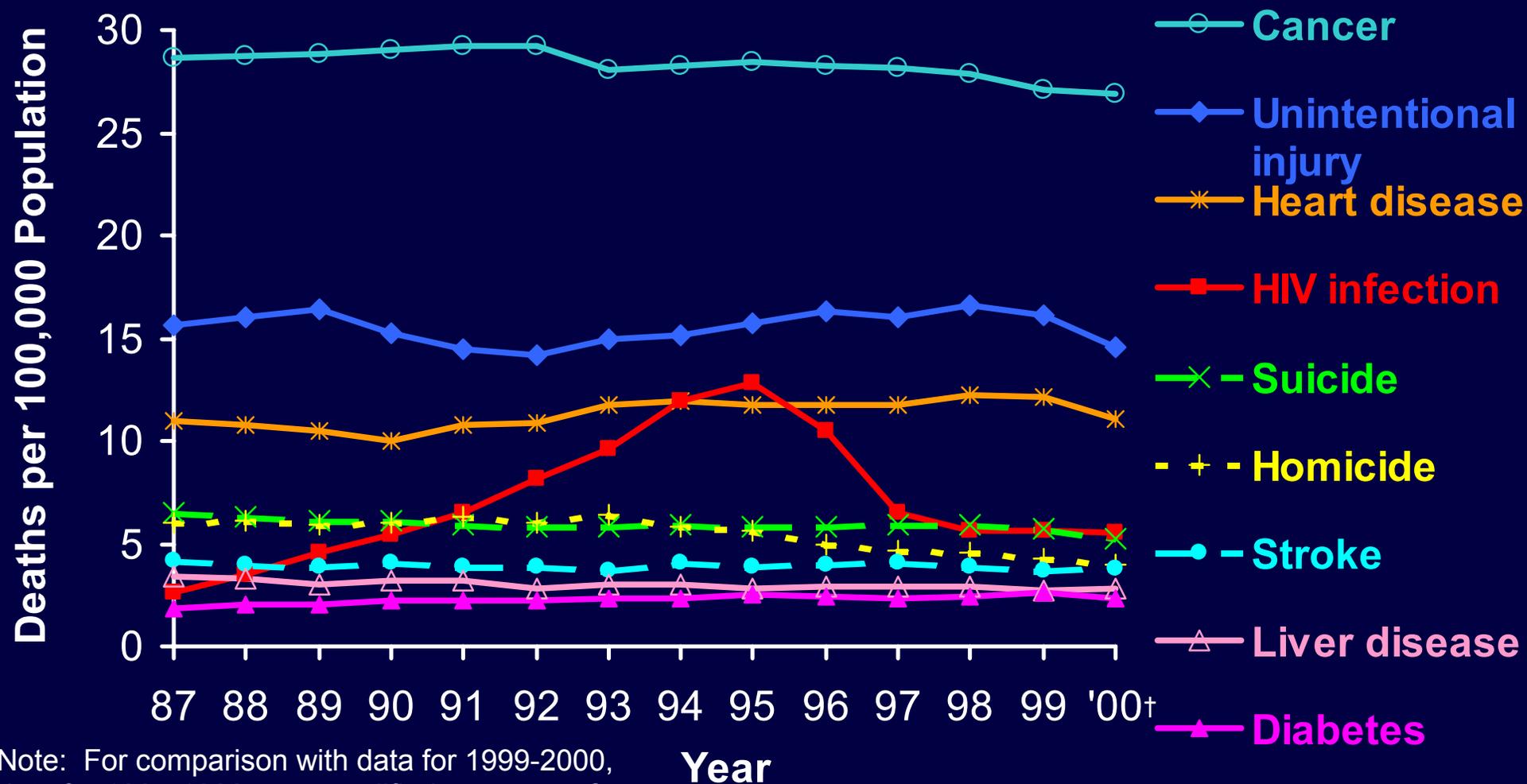
†Preliminary mortality data for 2000.



## Trends in Annual Rates of Death due to Leading Causes of Death among Men 25-44 Years Old, USA, 1987-2000

Among men 25 to 44 years old, HIV infection was the leading cause of death from 1992 through 1995. It caused about 27,000 deaths, or 24% of the total in this group in 1995 (based on *ICD-10* rules for selecting the underlying cause of death). Then the rank of HIV infection fell to 5th place after 1996. It caused about 6,000 deaths, or 7% of the total, in this group in 2000.

# Trends in Annual Rates of Death due to Leading Causes of Death among Women 25-44 Years Old, USA, 1987-2000



Note: For comparison with data for 1999-2000, data for 1987-1998 were modified to account for ICD-10 rules instead of ICD-9 rules.

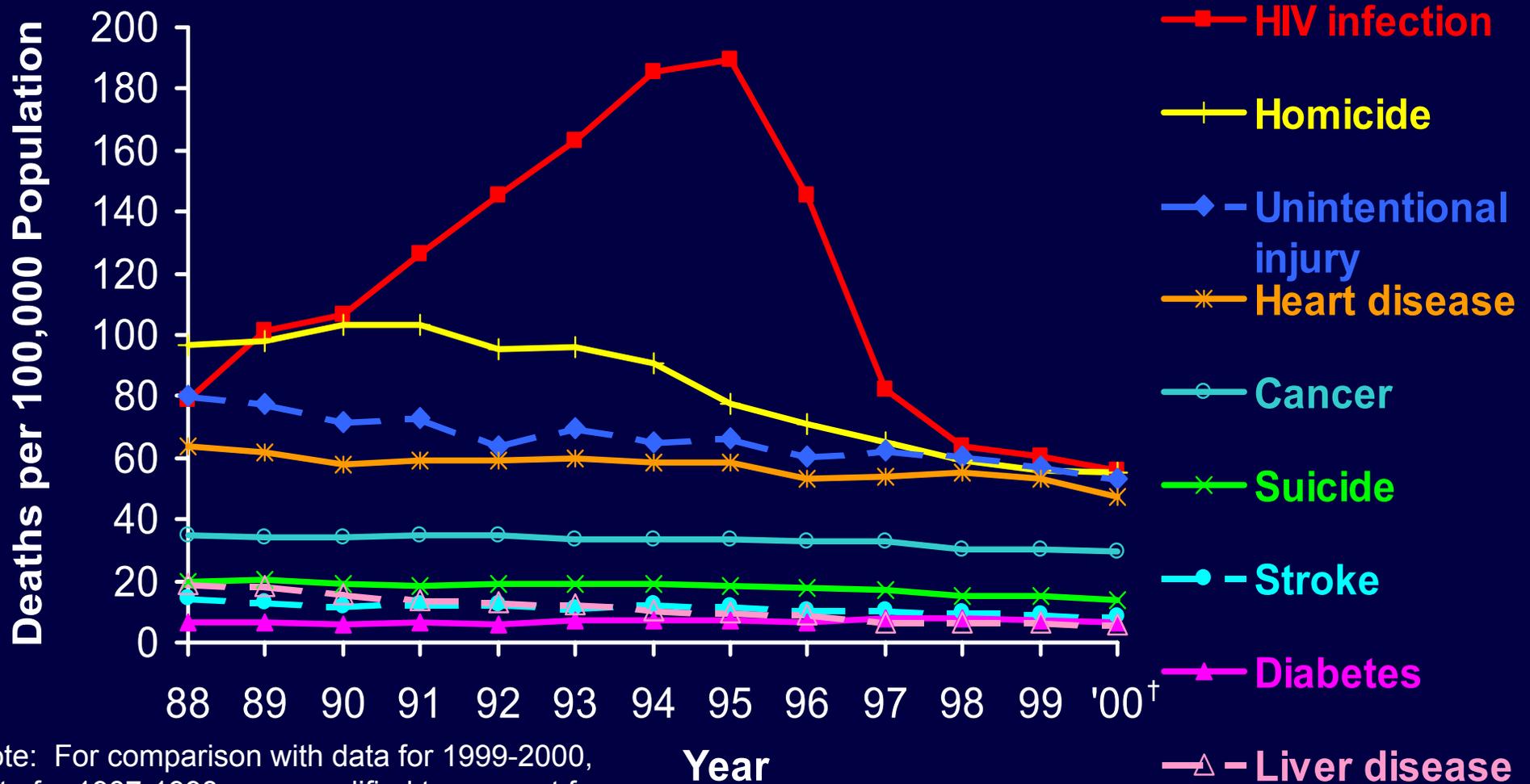
†Preliminary mortality data for 2000.



## **Trends in Annual Rates of Death due to Leading Causes of Death among Women 25-44 Years Old, USA, 1987-2000**

Among women 25 to 44 years old, HIV infection was the 3rd leading cause of death in 1995, when it caused more than 5,000 deaths, or 11% of the total in this group. The rank of HIV infection fell to 5th place in 1998 and 1999, but rose to 4<sup>th</sup> place in 2000, when it caused about 2,000 deaths, or 5% of the total in this group.

# Trends in Annual Rates of Death due to Leading Causes of Death among Black Men 25-44 Years Old, USA, 1987-2000



Note: For comparison with data for 1999-2000, data for 1987-1998 were modified to account for ICD-10 rules instead of ICD-9 rules.

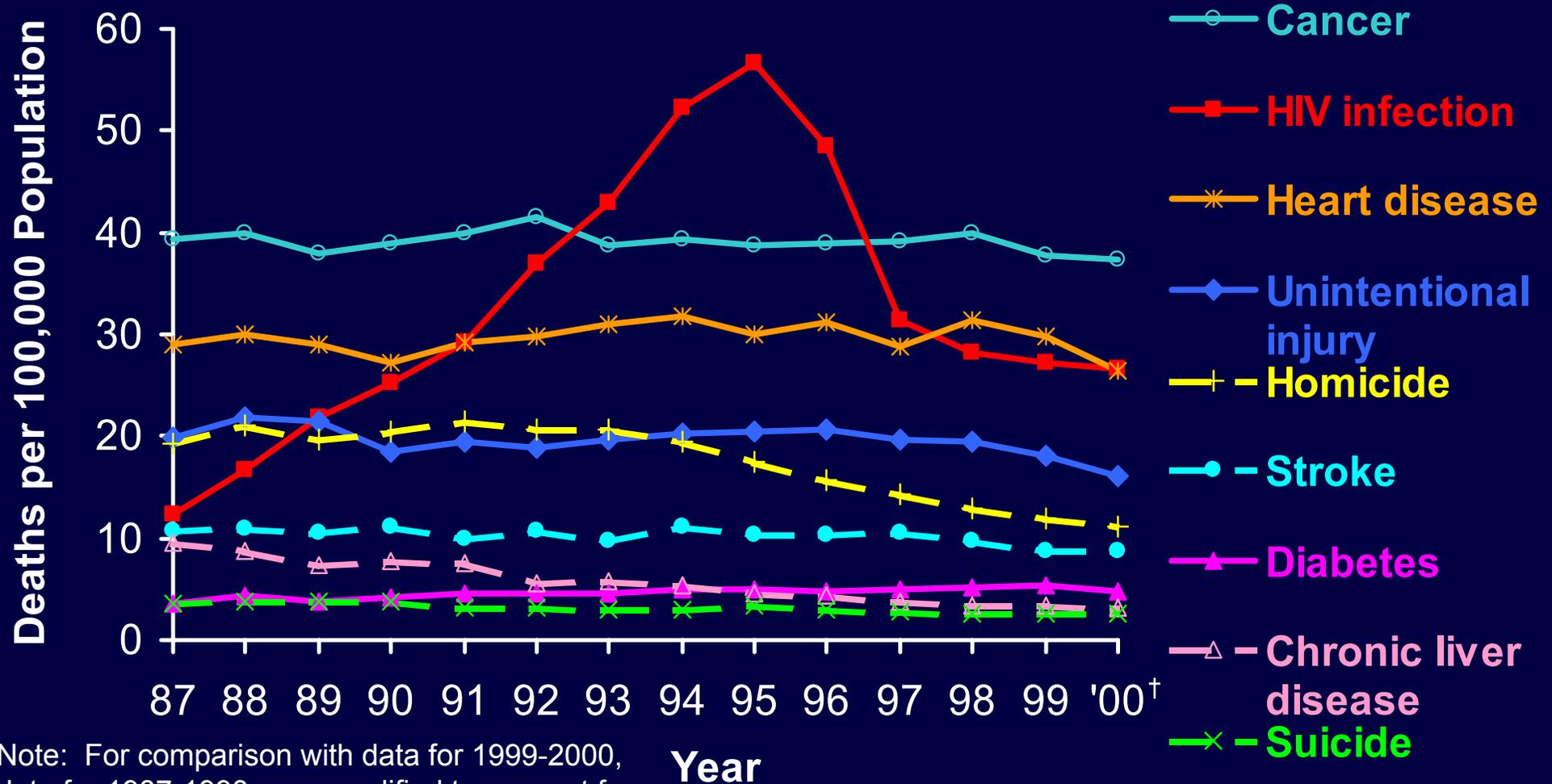
†Preliminary mortality data for 2000.



## **Trends in Annual Rates of Death due to Leading Causes of Death Among Black Men 25-44 Years Old, USA, 1987-2000**

Among black men 25 to 44 years old, HIV infection has been the leading cause of death since 1991, when it surpassed homicide in the ranking of causes of death. HIV infection caused about 9,000 deaths, or 34% of all deaths in this group at its peak in 1995, but only about 3,000 deaths, or 16% of the total, in 2000. If the rates of death due to homicide and unintentional injury had not also decreased, HIV infection would not have continued to be the leading cause of death in 2000.

# Trends in Annual Rates of Death due to Leading Causes of Death among Black Women 25-44 Years Old, USA, 1987-2000



Note: For comparison with data for 1999-2000, data for 1987-1998 were modified to account for ICD-10 rules instead of ICD-9 rules.

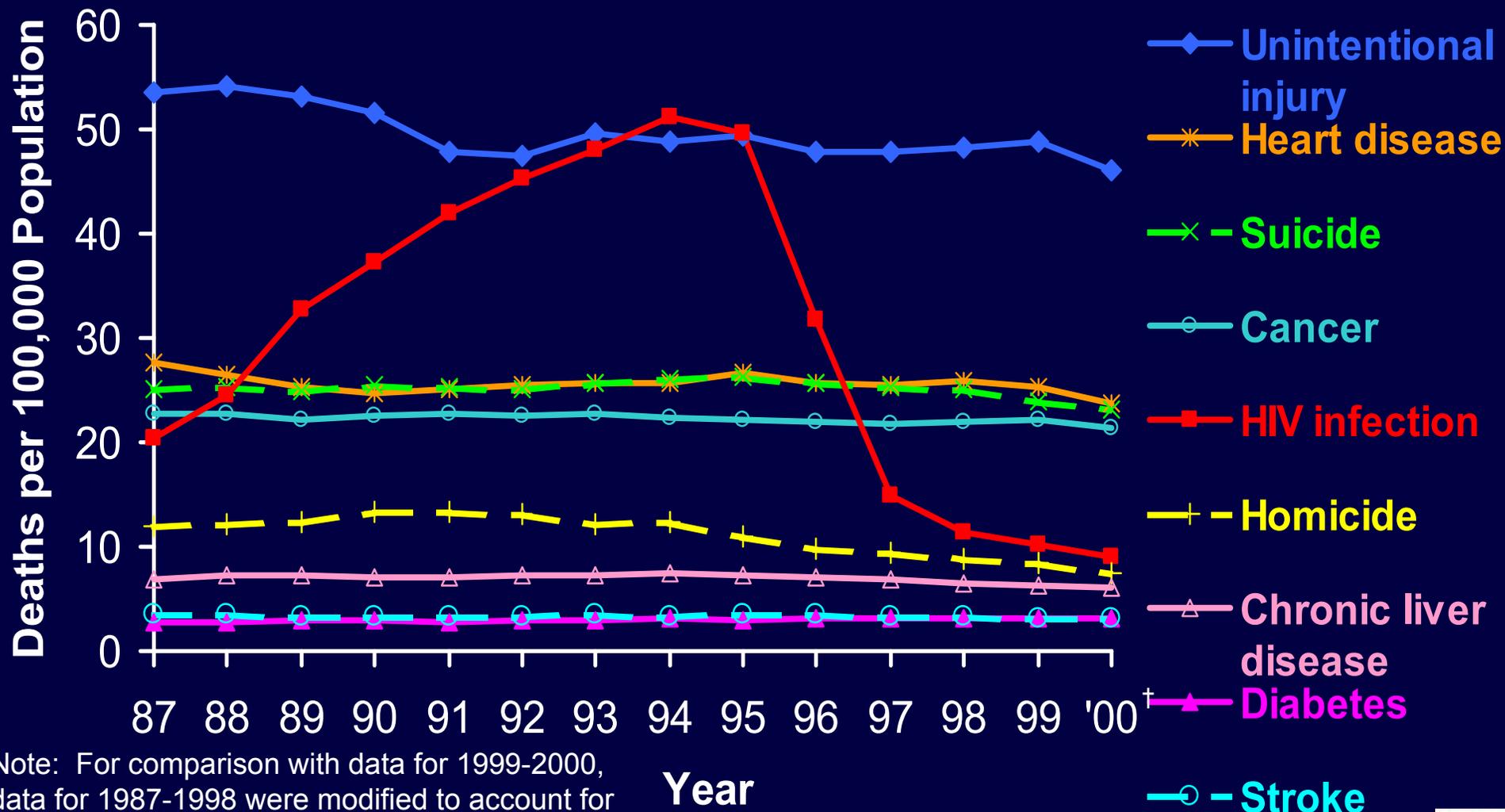
<sup>†</sup>Preliminary mortality data for 2000.



## **Trends in Annual Rates of Death due to Leading Causes of Death among Black Women 25-44 Years Old, USA, 1987-2000**

Among black women 25 to 44 years old, HIV infection was the leading cause of death from 1993 through 1996, and then fell to 3rd place, after cancer and heart disease, in 1998 and 1999, but moved up to 2nd place in 2000. HIV infection caused more than 3,000 deaths, or 23% of all deaths in this group in 1995, and about 1,500 deaths, or 13% of the total, in 2000.

# Trends in Annual Rates of Death due to Leading Causes of Death among White Men 25-44 Years Old, USA, 1987-2000



Note: For comparison with data for 1999-2000, data for 1987-1998 were modified to account for ICD-10 rules instead of ICD-9 rules.

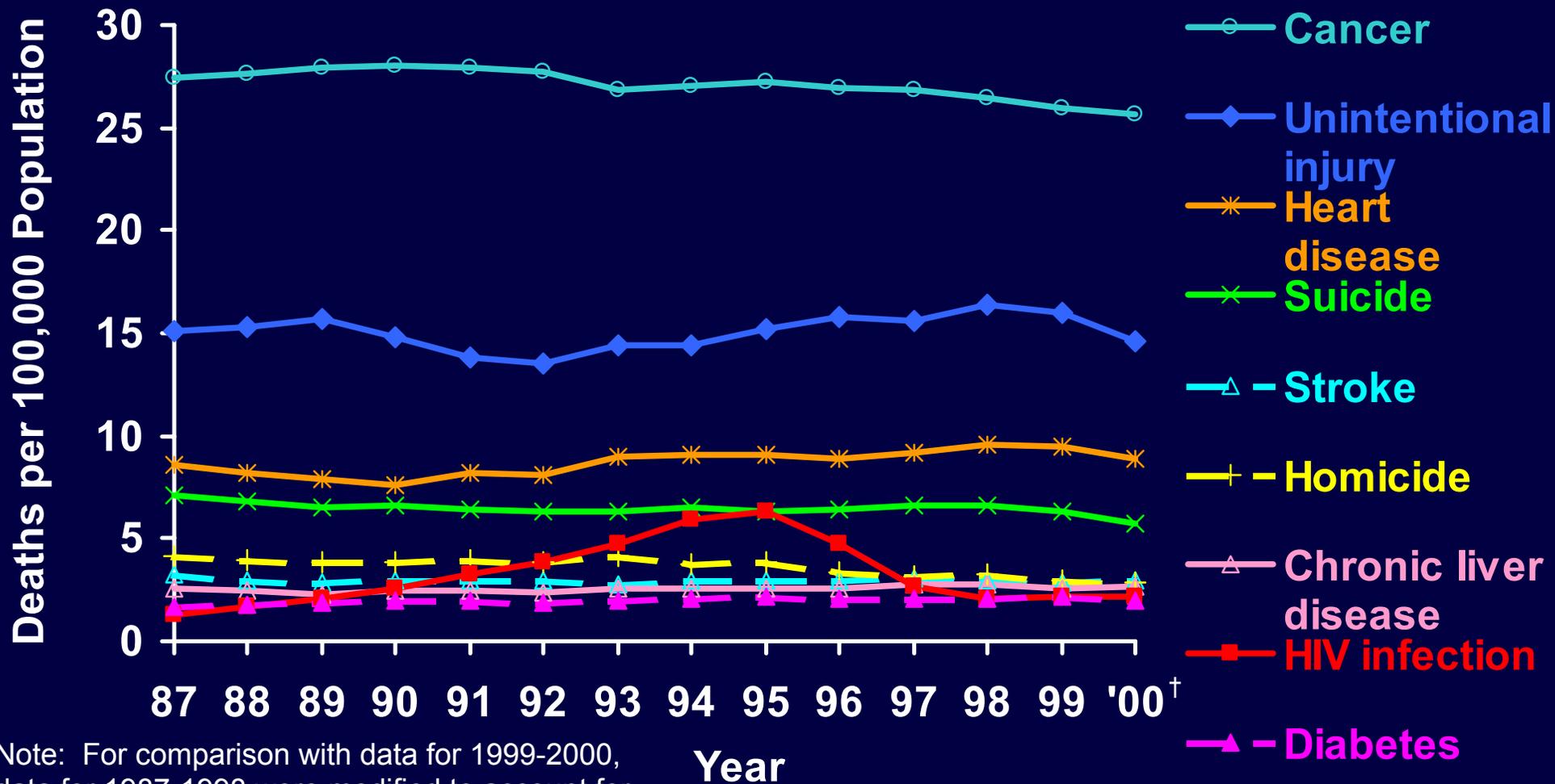
†Preliminary mortality data for 2000.



## Trends in Annual Rates of Death due to Leading Causes of Death among White Men 25-44 Years Old, USA, 1987-2000

Among white men 25 to 44 years old, HIV infection was the leading cause of death in 1994 and 1995 (based on *ICD-10* rules instead of *ICD-9* rules). The rank of HIV fell to 5th place after 1996. HIV infection caused almost 18,000 deaths, or 22% of the total in this group, at its peak in 1994, and about 3,000, or 5%, in 2000.

# Trends in Annual Rates of Death due to Leading Causes of Death among White Women 25-44 Years Old, USA, 1987-2000



Note: For comparison with data for 1999-2000, data for 1987-1998 were modified to account for ICD-10 rules instead of ICD-9 rules.

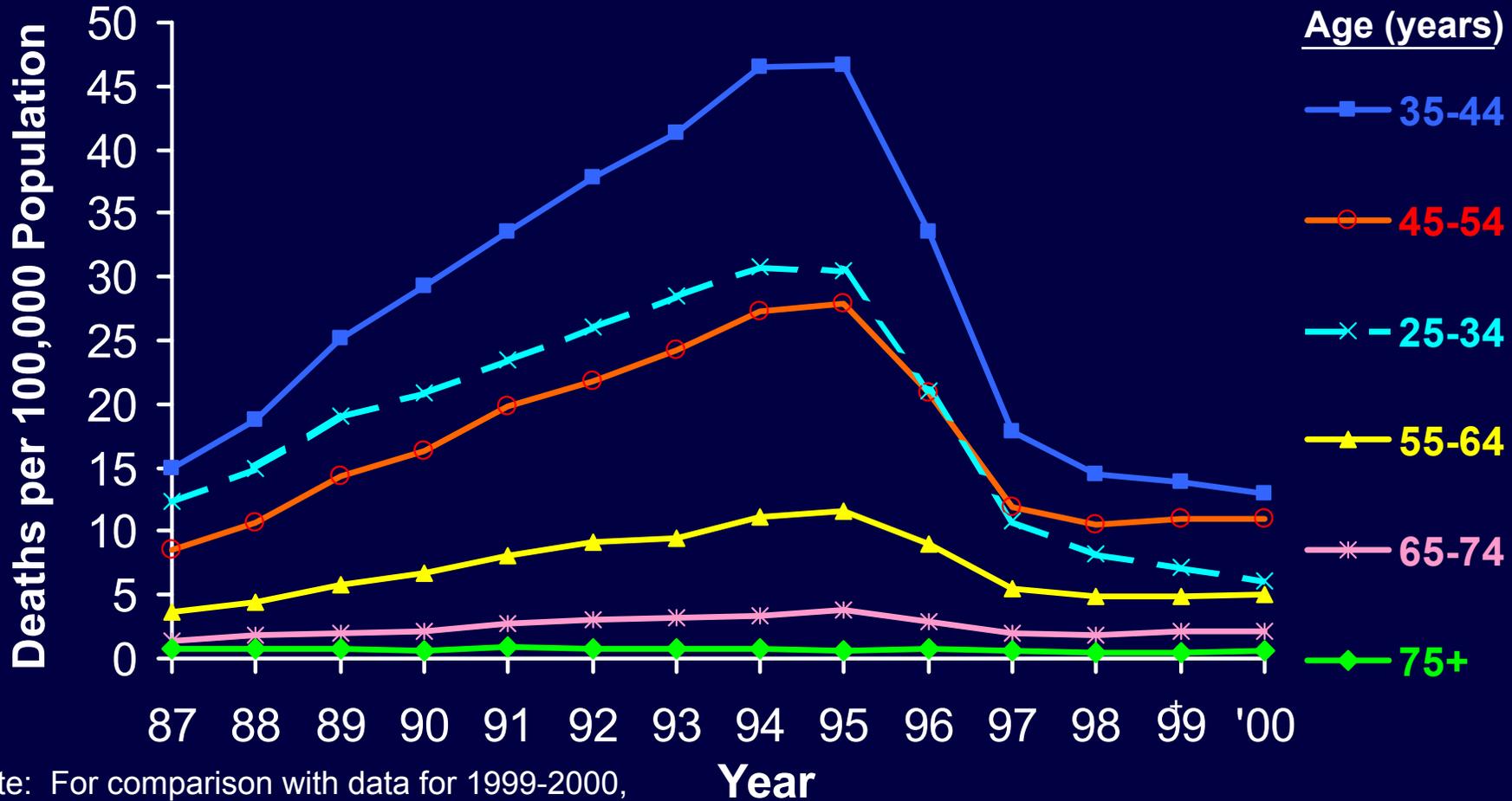
<sup>†</sup>Preliminary mortality data for 2000.



## **Trends in Annual Rates of Death due to Leading Causes of Death among White Women 25-44 Years Old, USA, 1987-2000**

Among white women 25 to 44 years old, HIV infection was the 5th leading cause of death at its peak rate in 1995, when it caused about 2,200 deaths, or 7% of the total in this group. The rank of HIV infection fell to 8th place after 1996. The rate of death from HIV infection has not decreased since 1998. In 2000, HIV infection caused about 700 deaths, or 2% of the total in this group.

# Trends in Annual Rates of Death due to HIV Infection by Age Group, USA, 1987-2000



Note: For comparison with data for 1999-2000, data for 1987-1998 were modified to account for ICD-10 rules instead of ICD-9 rules.

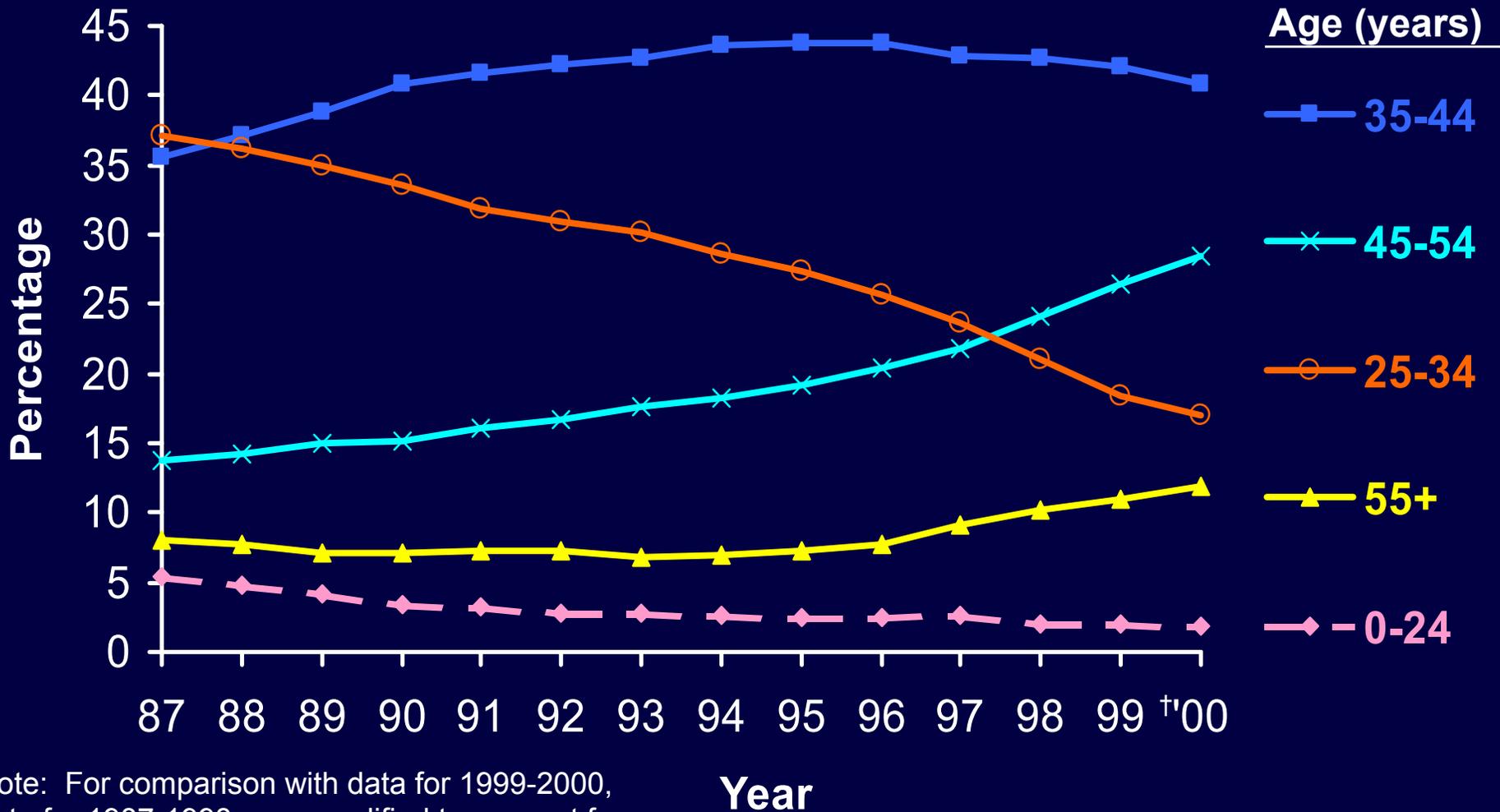
†Preliminary mortality data for 2000.



## **Trends in Annual Rates of Death due to HIV Infection by Age Group, USA, 1987-2000**

Among persons 25 years old or older, the percentage decrease in the rate of death from HIV infection from 1995 to 2000 was inversely correlated with age. It dropped 80% among persons 25 to 34 years old, 72% among persons 35 to 44 years old, 61% among persons 45 to 54 years old, 56% among those 55 to 64 years old, 45% among those 65 to 74 years old, and only 13% among those 75 years or older.

# Trends in the Percentage Distribution of Deaths due to HIV Infection, by Age Group, USA, 1987-2000



Note: For comparison with data for 1999-2000, data for 1987-1998 were modified to account for ICD-10 rules instead of ICD-9 rules.

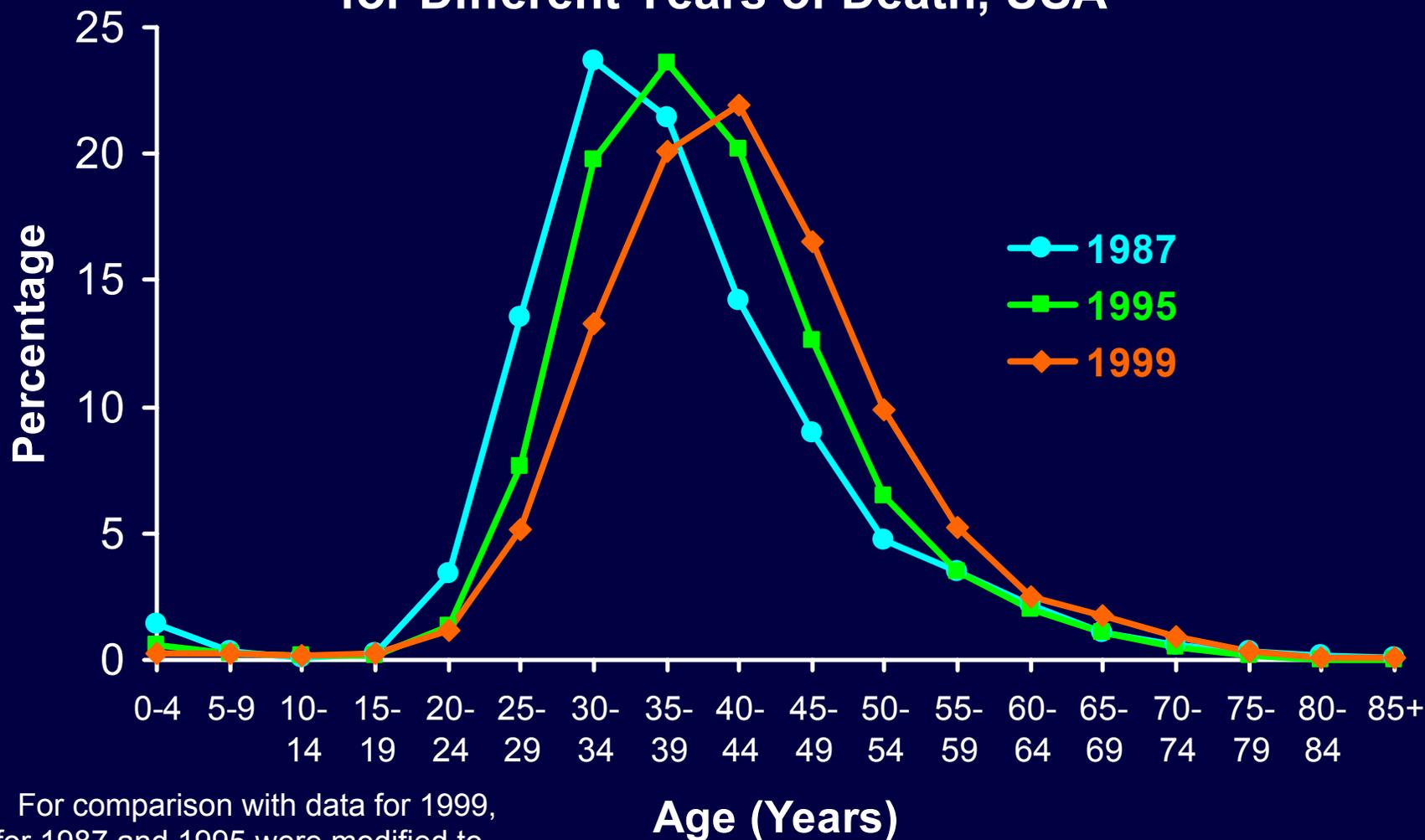
†Preliminary mortality data for 2000.



## **Trends in the Percentage Distribution of Deaths due to HIV Infection, by Age Group, USA, 1987-2000**

Between 1987 and 2000, the proportion of deaths due to HIV infection at ages under 35 years decreased, while the proportion at older ages, particularly 45 years or older, increased. One reason for these changes may be the longer survival of HIV-infected persons, which allows them to reach older ages before they die.

## Distribution of Deaths due to HIV Infection by 5-Year Age Group for Different Years of Death, USA

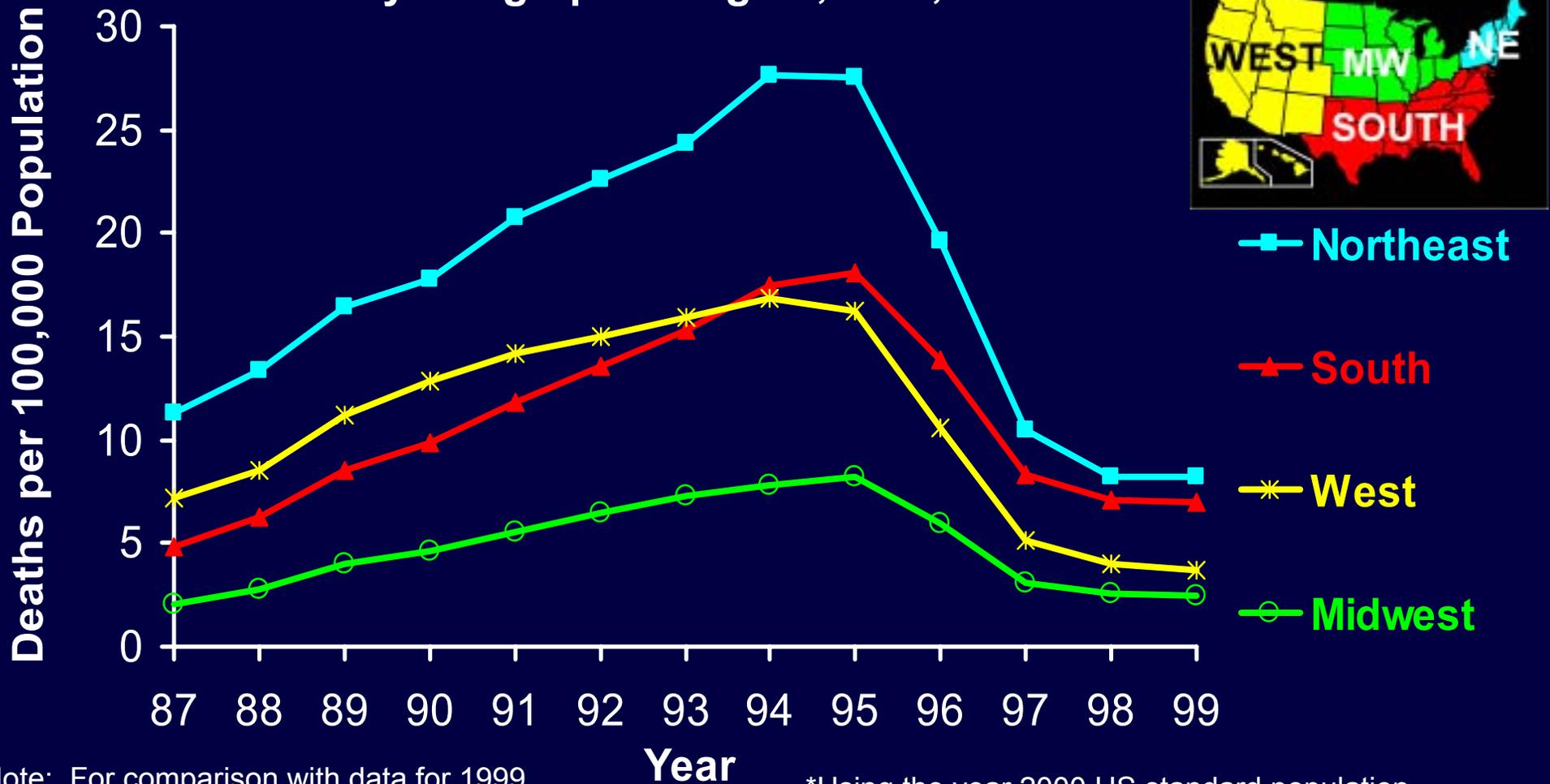


Note: For comparison with data for 1999, data for 1987 and 1995 were modified to account for ICD-10 rules instead of ICD-9 rules.

## **Distribution of Deaths due to HIV Infection by 5-Year Age Group for Different Years of Death, USA**

Here is another way to look at the effect of longer survival on the age distribution of deaths due to HIV infection. The median age at death increased from 36 years in 1987 to 42 years in 1999.

## Trends in Age-Adjusted\* Annual Rates of Death due to HIV Infection, by Geographic Region, USA, 1987-1999



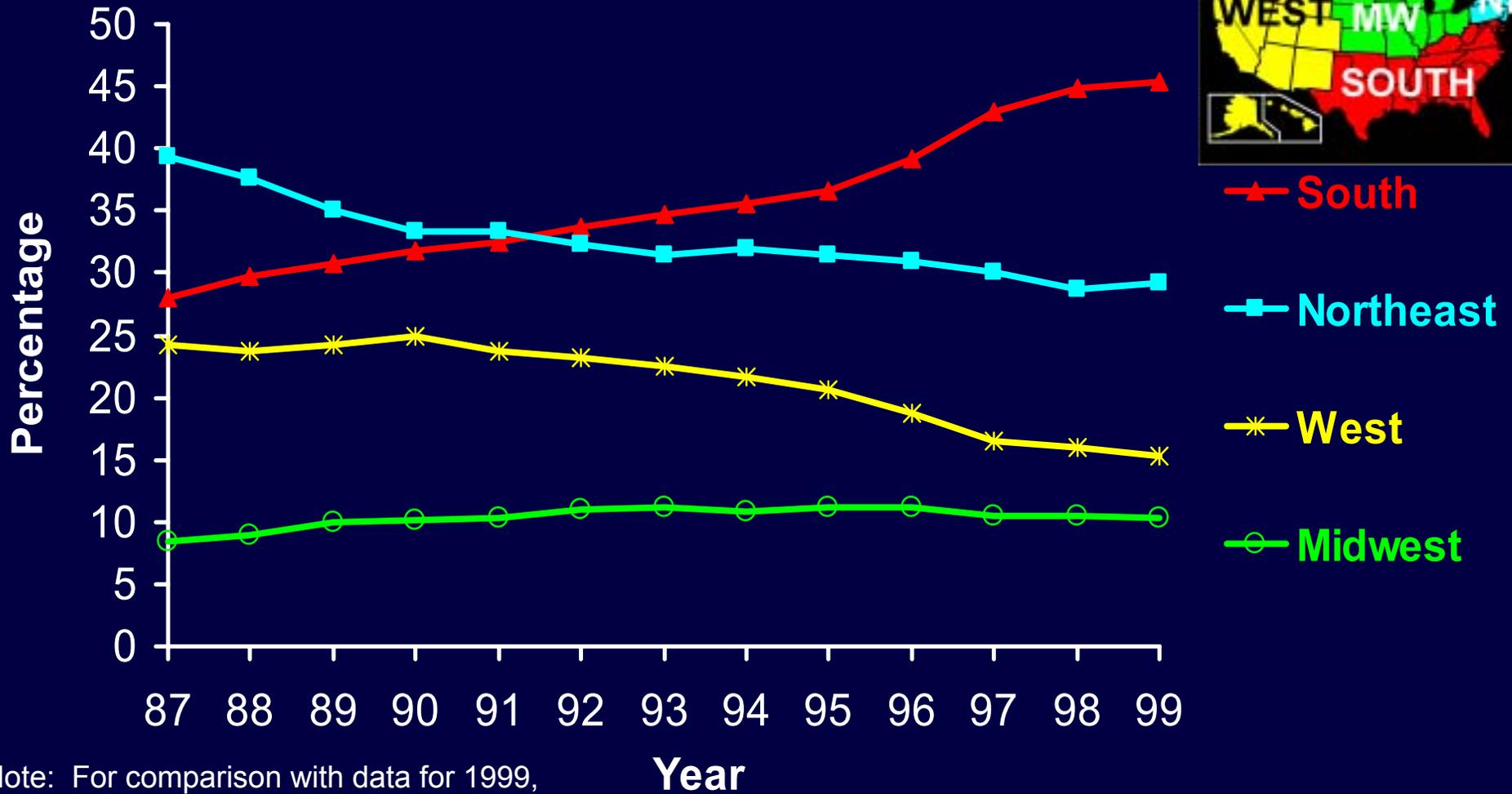
Note: For comparison with data for 1999, data for 1987-1998 were modified to account for ICD-10 rules instead of ICD-9 rules.

\*Using the year 2000 US standard population.

## **Trends in Age-Adjusted Annual Rates of Death due to HIV Infection, by Geographic Region, USA, 1987-1999**

The age-adjusted rate of death due to HIV infection increased slower and decreased faster in the West than in the other 3 regions of the United States. The percentage increase in the rate from 1987 through 1995 was 126% in the West, 144% in the Northeast, 275% in the South, and 299% in the Midwest. As a result, the rate in the South became higher than the rate in the West in 1994. From 1995 to 1999, the percentage decrease in the rate was 77% in the West, 71% in the Midwest, 70% in the Northeast, and 61% in the South.

## Trends in the Percentage Distribution of Deaths due to HIV Infection, by Geographic Region, USA, 1987-1999

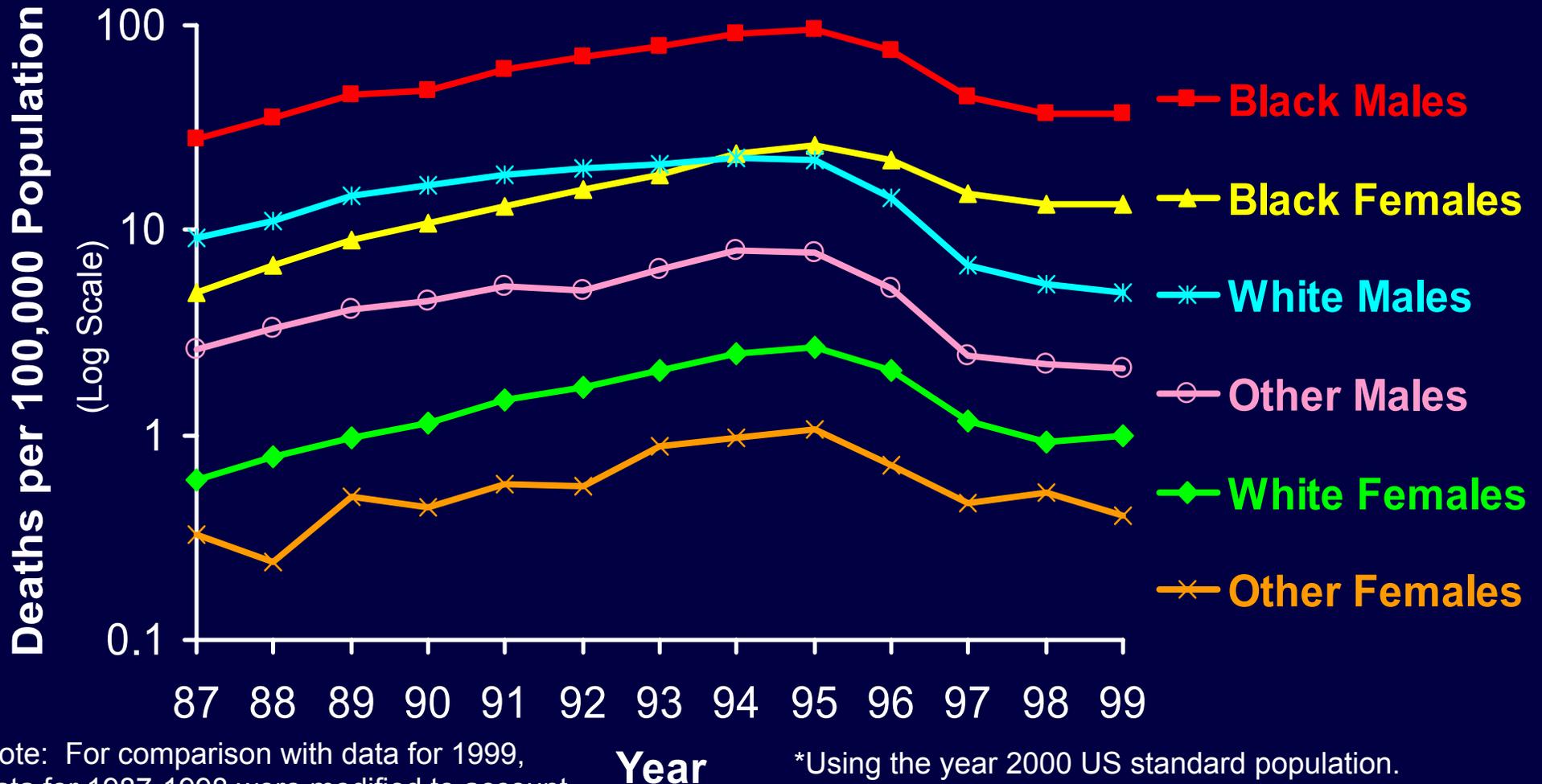


Note: For comparison with data for 1999, data for 1987-1998 were modified to account for ICD-10 rules instead of ICD-9 rules.

## **Trends in the Percentage Distribution of Deaths due to HIV Infection, by Geographic Region, USA, 1987-1999**

Between 1987 and 1999, the proportion of deaths due to HIV infection that were among residents of the South increased from 28% to 45%, while the proportion in the Northeast decreased from 39% to 29%, and the proportion in the West decreased from 24% to 15%.

## Trends in Age-Adjusted\* Annual Rates of Death due to HIV Infection, by Sex and Race, USA, 1987-1999



Note: For comparison with data for 1999, data for 1987-1998 were modified to account for ICD-10 rules instead of ICD-9 rules.

\*Using the year 2000 US standard population.

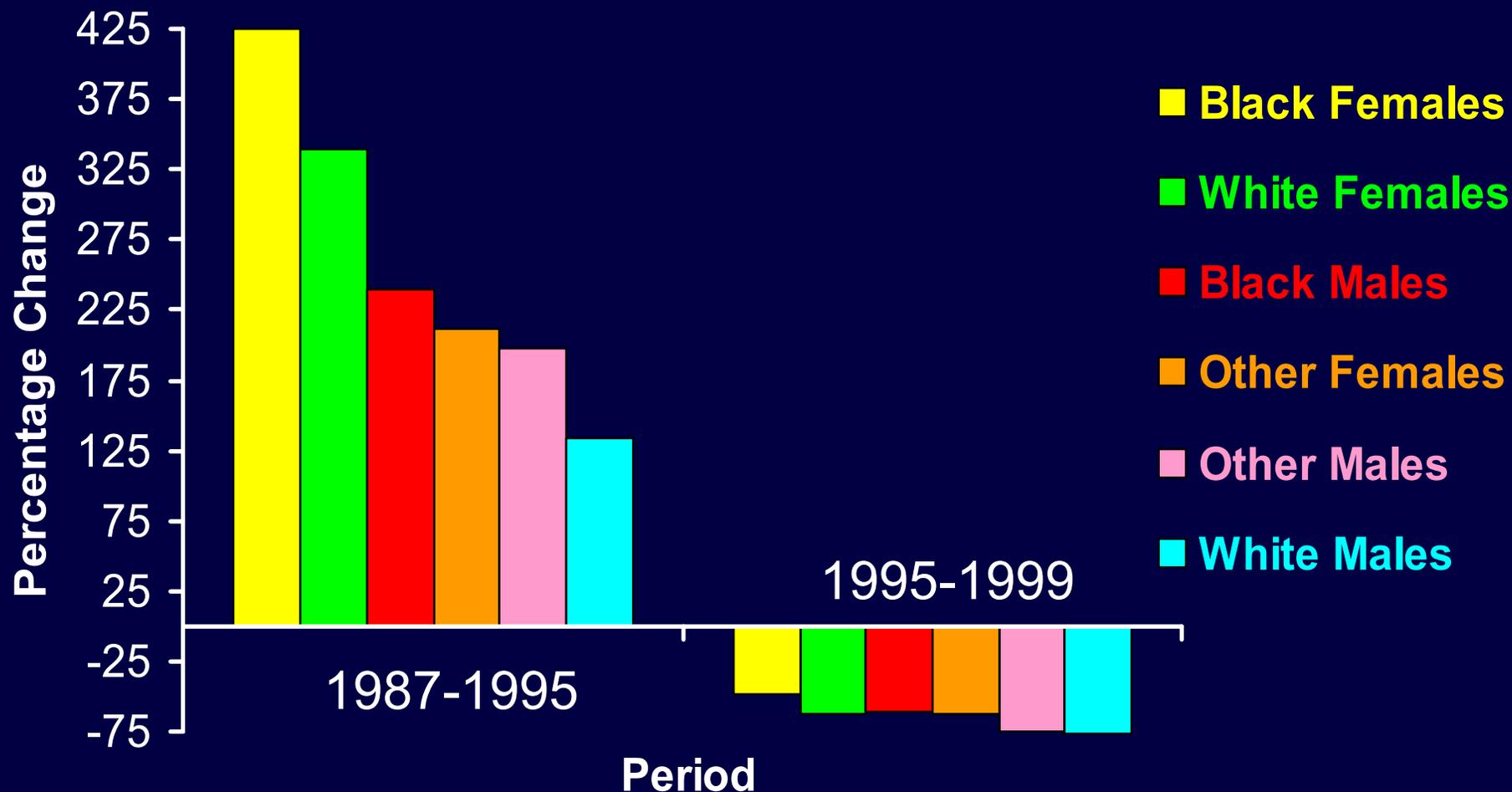
## Trends in Age-Adjusted Annual Rates of Death due to HIV Infection, by Sex and Race, USA, 1987-1999

Among sex and racial groups, from 1987 through 1995, the age-adjusted rate of death due to HIV infection increased fastest among black females and slowest among white males. As a result, the rate among black females became higher than the rate among white males in 1995. Conversely, from 1995 through 1999, the rate decreased slowest among black females and fastest among white males.

Because of the differences in proportional changes in the death rates, the ratios between the rates among different groups changed. For example, between 1987 and 1999, the ratio of the rate among black males to the rate among white males increased from 3 to 7, while the ratio of the rate among black females to the rate among white females increased from 8 to 13.

The category of “Other” races includes Asians, Pacific Islanders, American Indians, and Alaska Natives. Persons of Hispanic ethnicity may be of any race (white, black, or other) shown in this slide; most of them are classified as white.

## Proportional Changes in Age-Adjusted\* Annual Rates of Death due to HIV Infection, by Sex and Race, USA, 1987-1995 and 1995-1999



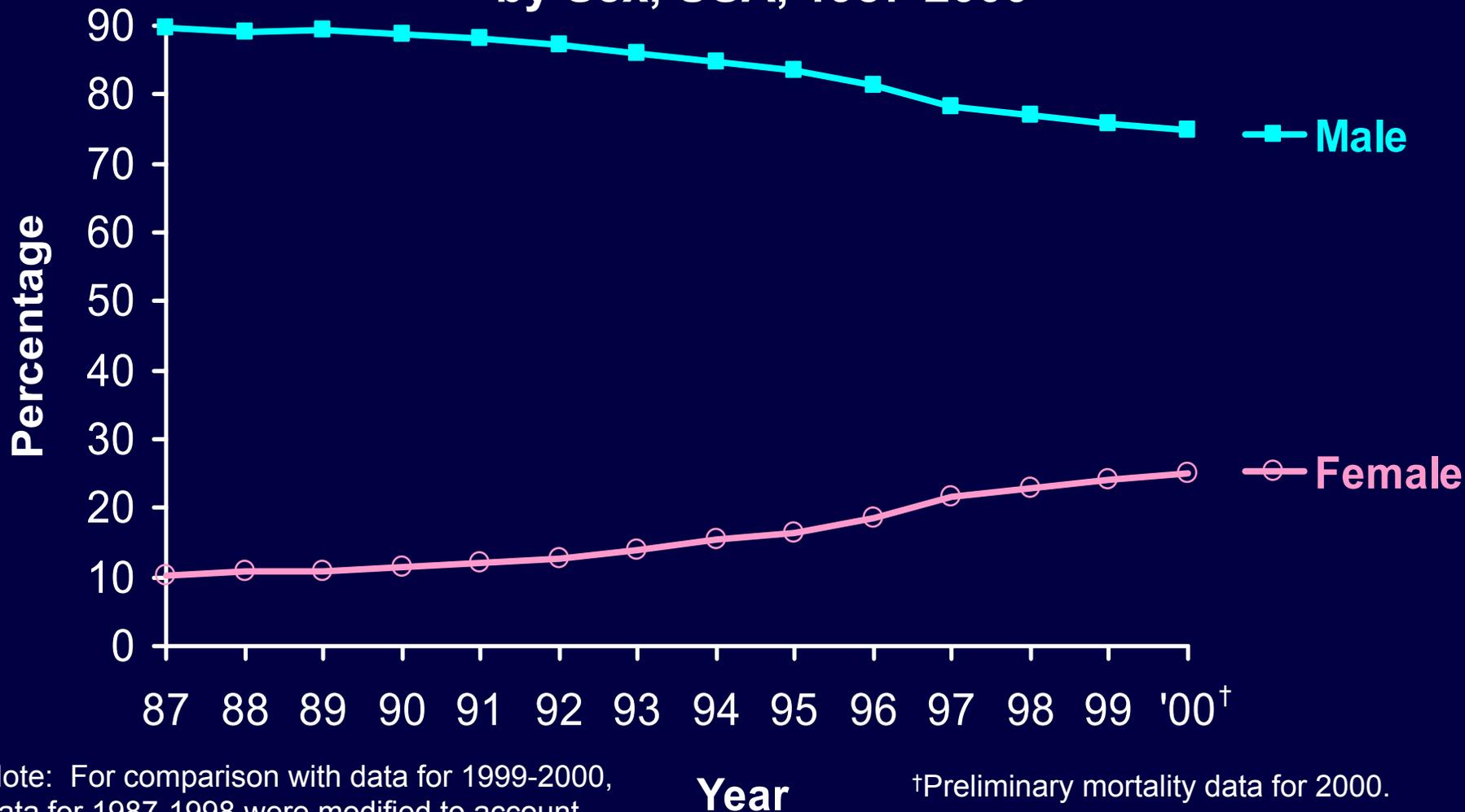
\*Using the year 2000 U.S. standard population.

## **Proportional Changes in Age-Adjusted Annual Rates of Death due to HIV Infection, by Sex and Race, USA, 1987-1995 and 1995-1999**

Rates of death due to HIV infection generally peaked in 1995, the year before the introduction of highly active antiretroviral treatment (HAART) for HIV infection. The ranking of sex and racial groups by the magnitude of the proportional changes in the rate of death due to HIV infection that the groups experienced through 1995 was the reverse of that from 1995 forward. From 1987 through 1995, the rate increased 425% among black females, but only 133% among white males. Conversely, from 1995 through 1999, the rate decreased 77% among white males, but only 48% among black females. These sex and racial differences may be due to differences in access to treatment, the quality of treatment, or social factors that affect treatment acceptance or adherence. Differences in HIV infection incidence trends may also have contributed.

The category of “Other” races includes Asians, Pacific Islanders, American Indians, and Alaska Natives. Persons of Hispanic ethnicity may be of any race (white, black, or other) shown in this slide; most of them are classified as white.

## Trends in the Percentage Distribution of Deaths due to HIV Infection, by Sex, USA, 1987-2000



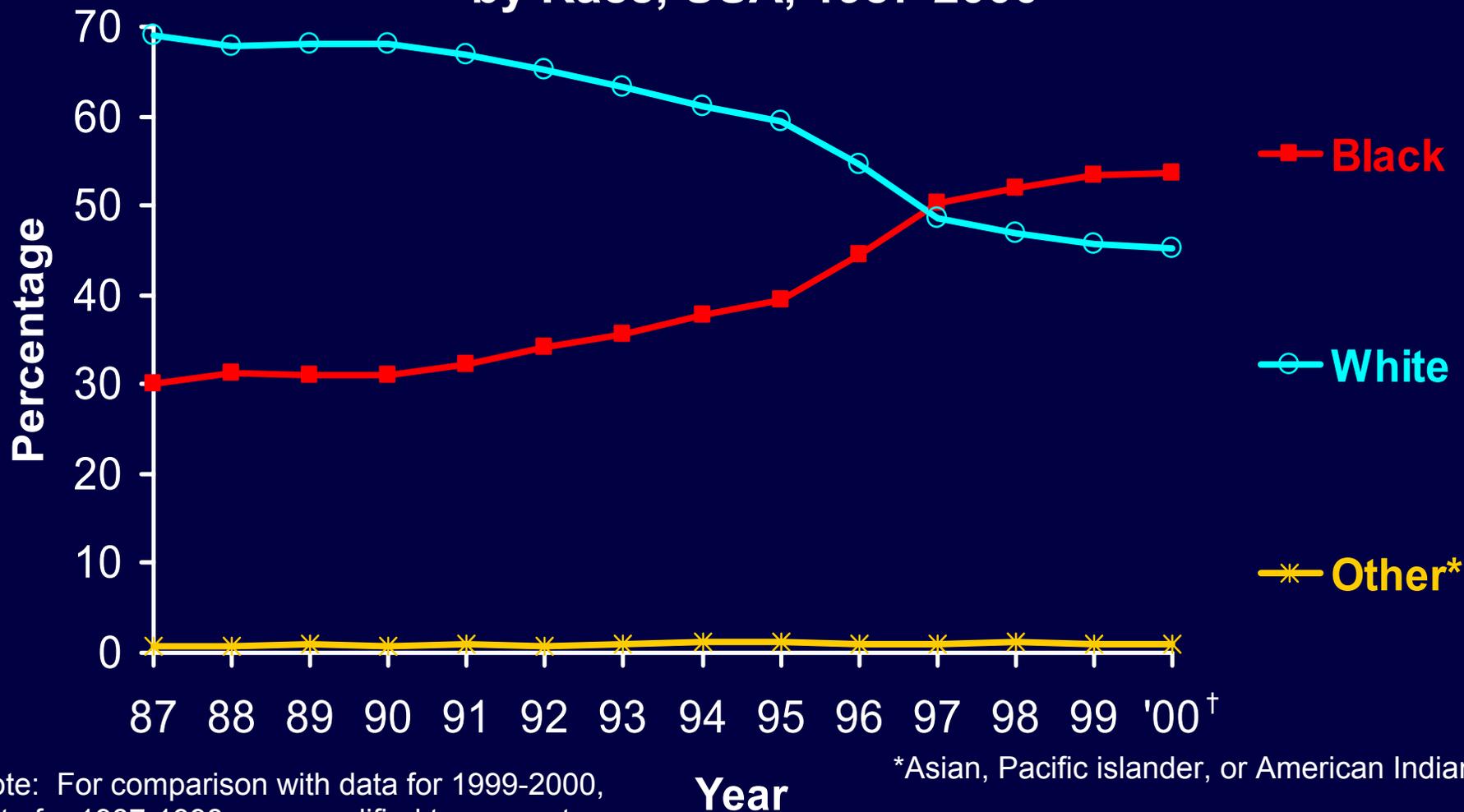
Note: For comparison with data for 1999-2000, data for 1987-1998 were modified to account for *ICD-10* rules instead of *ICD-9* rules.

<sup>†</sup>Preliminary mortality data for 2000.

## **Trends in the Percentage Distribution of Deaths due to HIV Infection, by Sex, USA, 1987-2000**

Between 1987 and 2000, the proportion of females among persons who died due to HIV infection increased from 10% to 25%, while the proportion of males decreased from 90% to 75%.

## Trends in the Percentage Distribution of Deaths due to HIV Infection, by Race, USA, 1987-2000



Note: For comparison with data for 1999-2000, data for 1987-1998 were modified to account for ICD-10 rules instead of ICD-9 rules.

\*Asian, Pacific islander, or American Indian

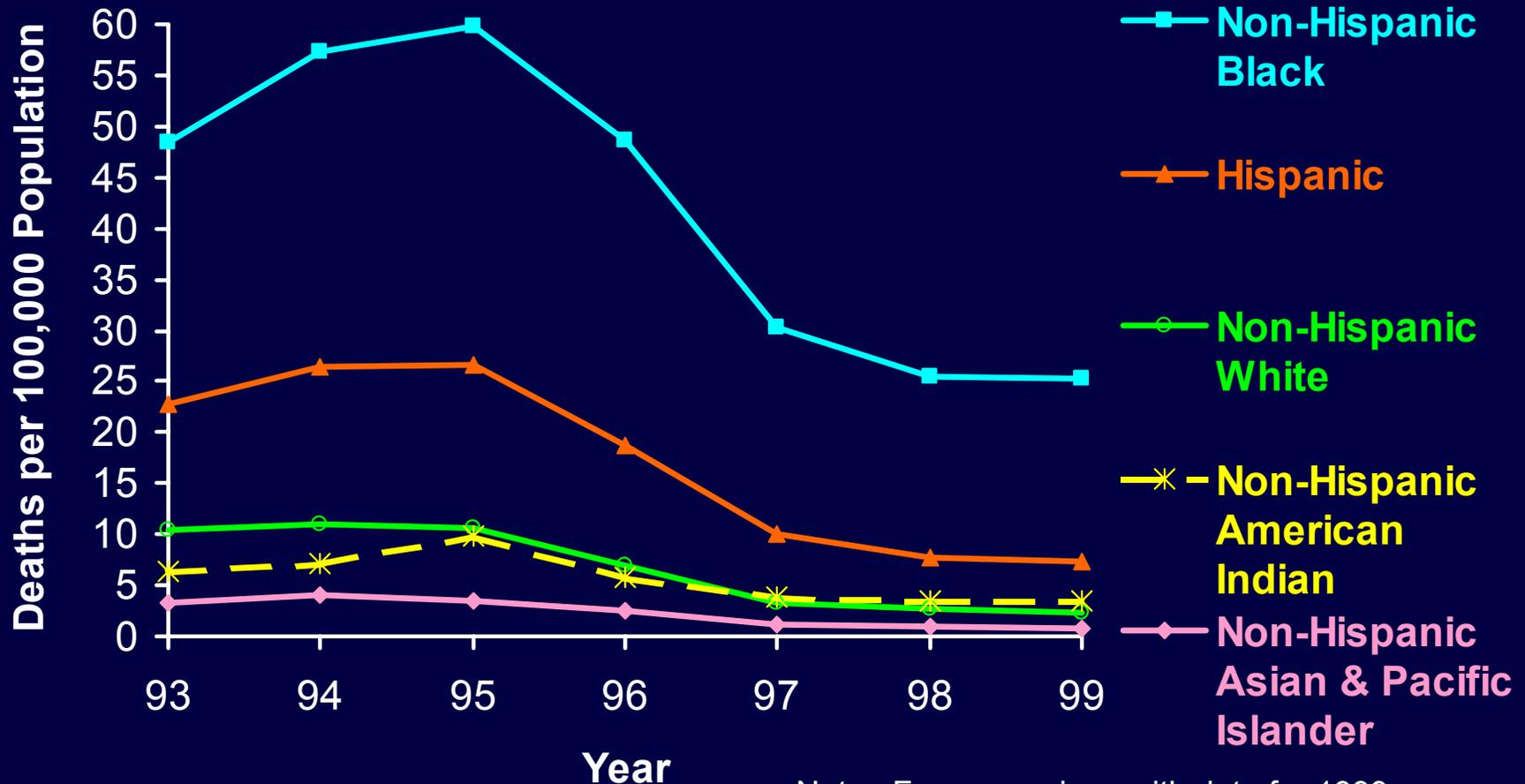
<sup>†</sup>Preliminary mortality data for 2000.



## Trends in the Percentage Distribution of Deaths due to HIV Infection, by Race, USA, 1987-2000

Between 1987 and 1999, among persons who died of HIV infection, the proportion of blacks increased from 30% to 54%, while the proportion of whites decreased from 69% to 45%. Other races, including Asians, Pacific Islanders, and American Indians, have constituted 1% or less of persons who died of HIV infection in all years. Persons of Hispanic ethnicity may be of any race (white, black, or other) shown in this slide; most of them are classified as white.

## Trends in Age-Adjusted\* Annual Rates of Death due to HIV Infection by Race/Ethnicity, USA†, 1993-1999



\*Using the year 2000 US standard population.

†Excluding data from Oklahoma, where Hispanic ethnicity was not recorded on death certificates until 1997.

Note: For comparison with data for 1999, data for 1987-1998 were modified to account for ICD-10 rules instead of ICD-9 rules.

## **Trends in Age-Adjusted Annual Rates of Death due to HIV Infection by Race/Ethnicity, USA, 1993-1999**

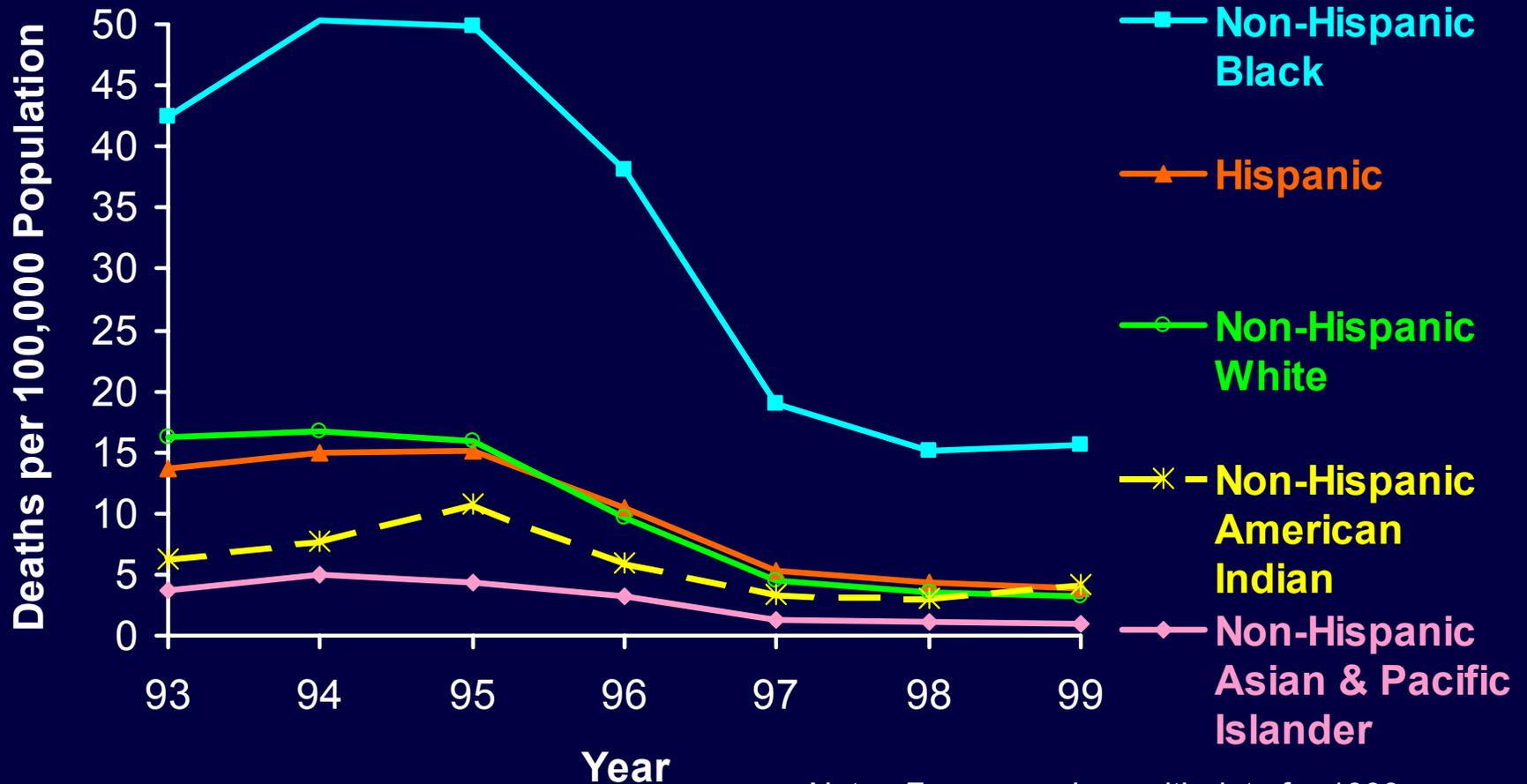
Nationwide death certificate data on Hispanics were not available until 1997. The number of states that recorded Hispanic ethnicity on death certificates increased gradually. From 1993 through 1996, Oklahoma was the only state that did not record ethnicity, so data from Oklahoma are not included in this graph.

Nationally, the rate of death due to HIV infection among Hispanics has been intermediate between the rates among non-Hispanic blacks and non-Hispanic whites.

The percentage decrease in the age-adjusted rate from 1995 to 1999 was lower for non-Hispanic blacks, at 58%, than for the other racial/ethnic groups, in which it ranged from 64% for American Indians to 78% for non-Hispanic whites.

Because of the small numbers of deaths among American Indians, the estimates of death rates for this group are unstable and statistically unreliable.

## Trends in Age-Adjusted\* Annual Rates of Death due to HIV Infection in the West, by Race/Ethnicity, USA, 1993-1999



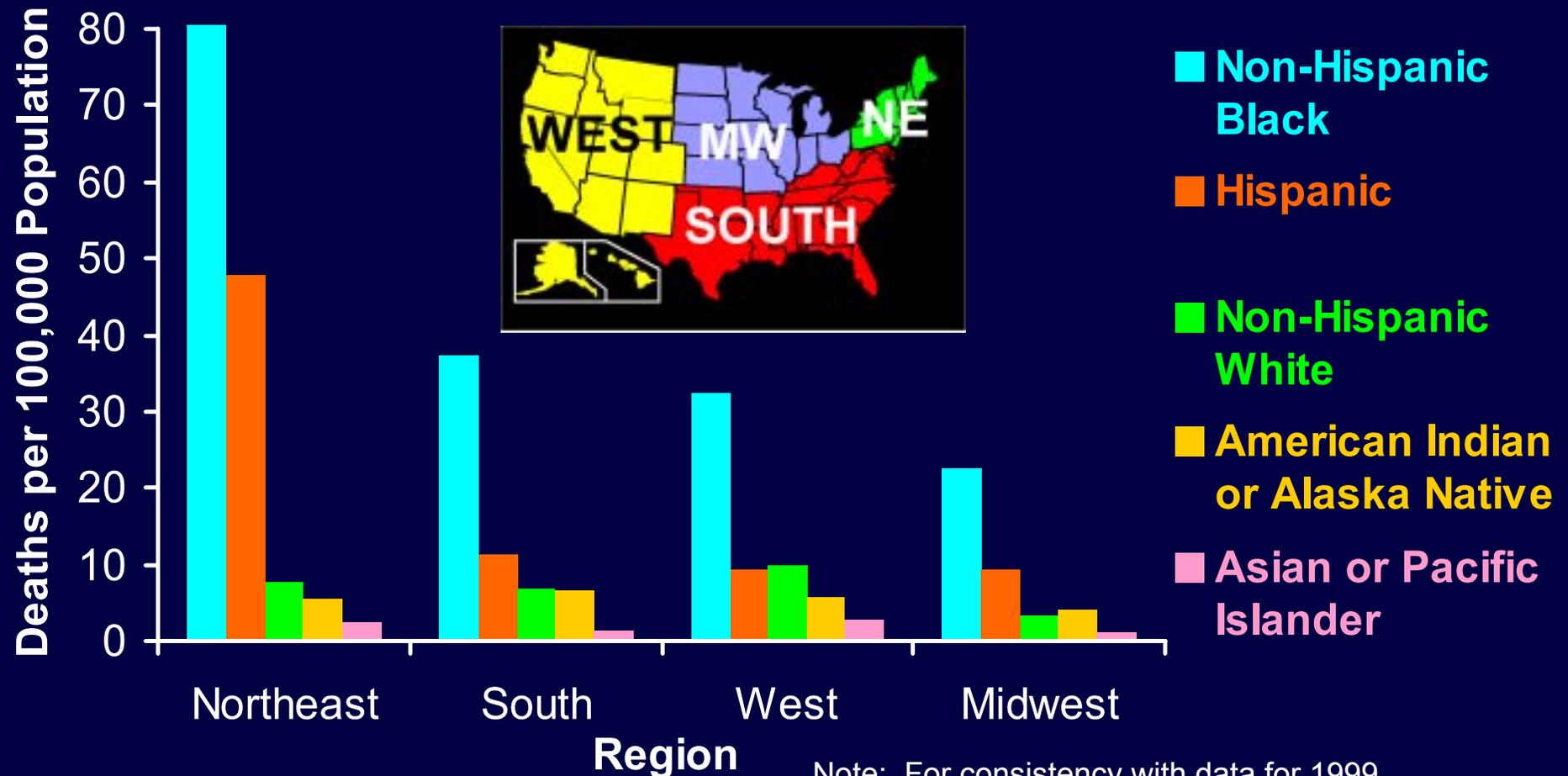
\*Using the year 2000 US standard population.

Note: For comparison with data for 1999, data for 1987-1998 were modified to account for ICD-10 rules instead of ICD-9 rules.

## **Trends in Age-Adjusted Annual Rates of Death due to HIV Infection in the West, by Race/Ethnicity, USA, 1993-1999**

In the West, unlike the other 3 regions of the country, the rate of death due to HIV infection for Hispanics was almost the same as that for non-Hispanic whites. The rate for non-Hispanic whites was at first higher than that for Hispanics, but it fell slightly below the rate for Hispanics after 1995.

## Age-adjusted\* Mean Rate of Death due to HIV Infection, by Race / Ethnicity and Geographic Region, USA†, 1993-1999



\*Using the year 2000 US standard population.

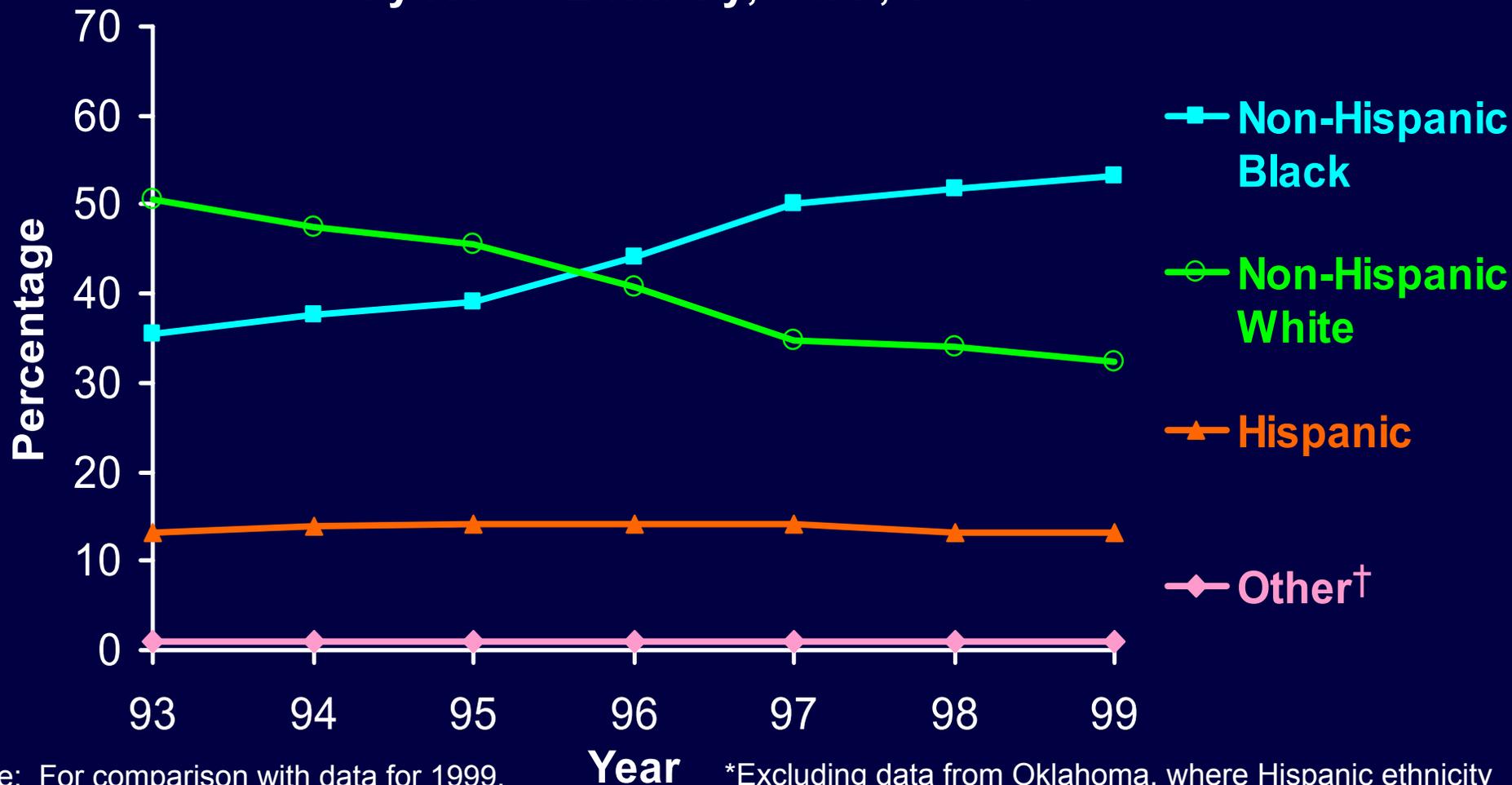
†Excluding data from Oklahoma, where Hispanic ethnicity was not recorded on death certificates until 1997.

Note: For consistency with data for 1999, data for 1987-1998 were modified to account for ICD-10 rules instead of ICD-9 rules.

## **Age-adjusted Mean Rate of Death due to HIV Infection, by Race / Ethnicity and Geographic Region, USA, 1993-1999**

The mean rates of death from HIV infection during 1993-1999 were calculated by combining the data for that period instead of separating the data by year. The rates for non-Hispanic blacks and Hispanics were much higher in the Northeast than in the other 3 regions, and were much higher there than the rates for non-Hispanic whites, Asians, and American Indians. The rate for non-Hispanic whites was highest in the West, and was slightly higher there than the rate for Hispanics.

## Trends in the Percentage Distribution of Deaths due to HIV Infection by Race / Ethnicity, USA\*, 1993-1999



Note: For comparison with data for 1999, data for 1987-1998 were modified to account for ICD-10 rules instead of ICD-9 rules.

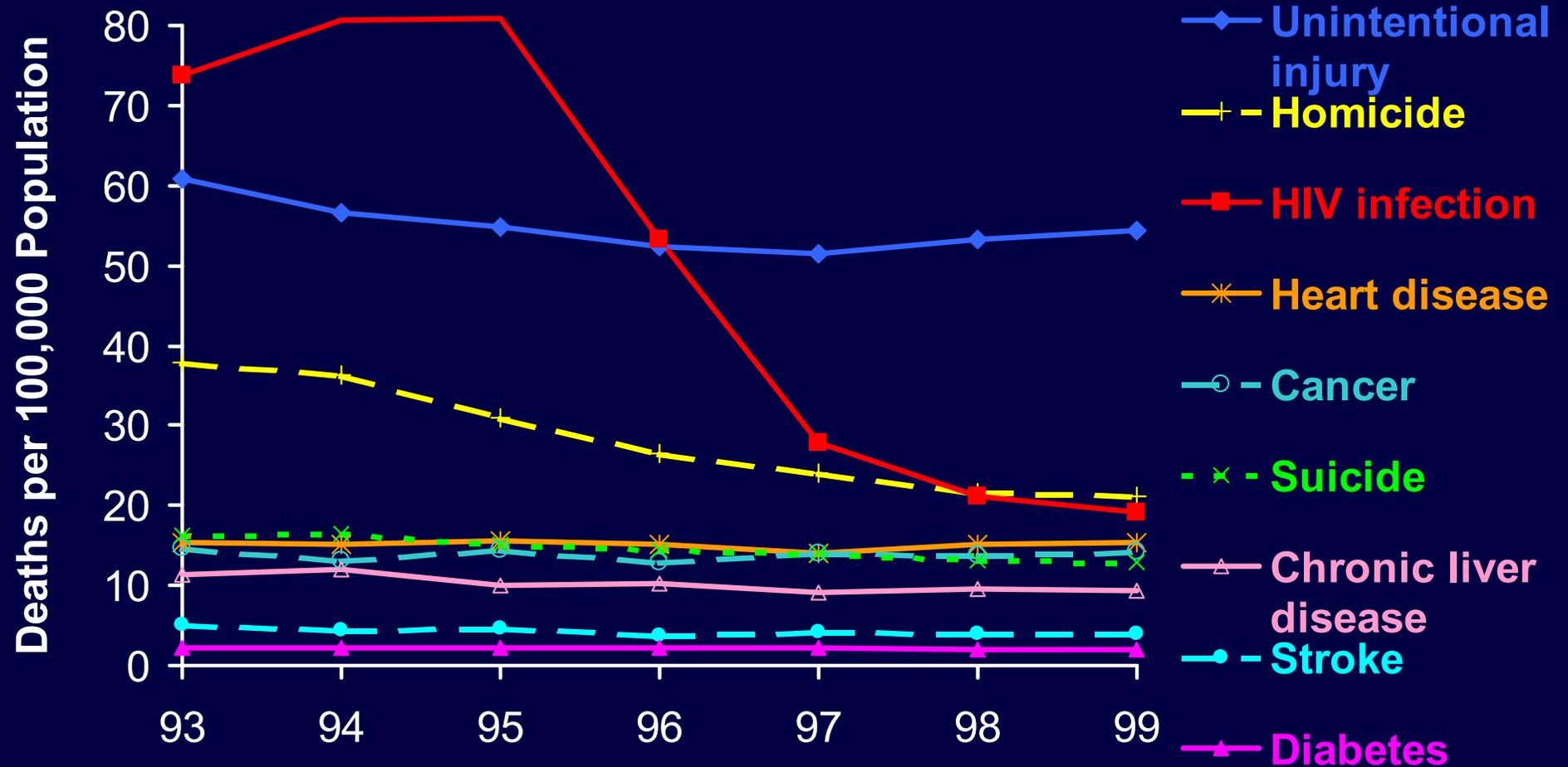
\*Excluding data from Oklahoma, where Hispanic ethnicity was not recorded on death certificates until 1997.

†Asian, Pacific islander, or American Indian

## Trends in the Percentage Distribution of Deaths due to HIV Infection by Race / Ethnicity, USA, 1993-1999

Between 1993 and 1999, the proportion of non-Hispanic blacks among persons who died of HIV infection increased from 36% to 53%, while the proportion of non-Hispanic whites decreased from 50% to 32%. The proportions of Hispanics (at 13% to 14%) and other racial/ethnic groups (including non-Hispanic Asians, Pacific islanders, and American Indians) (at 1%) were relatively stable.

# Trends in Annual Rates of Death due to the 9 Leading Causes of Death among Hispanic Men 25-44 Years Old, USA\*, 1993-1999



Note: For comparison with data for 1999, data for 1987-1998 were modified to account for ICD-10 rules instead of ICD-9 rules.

Year

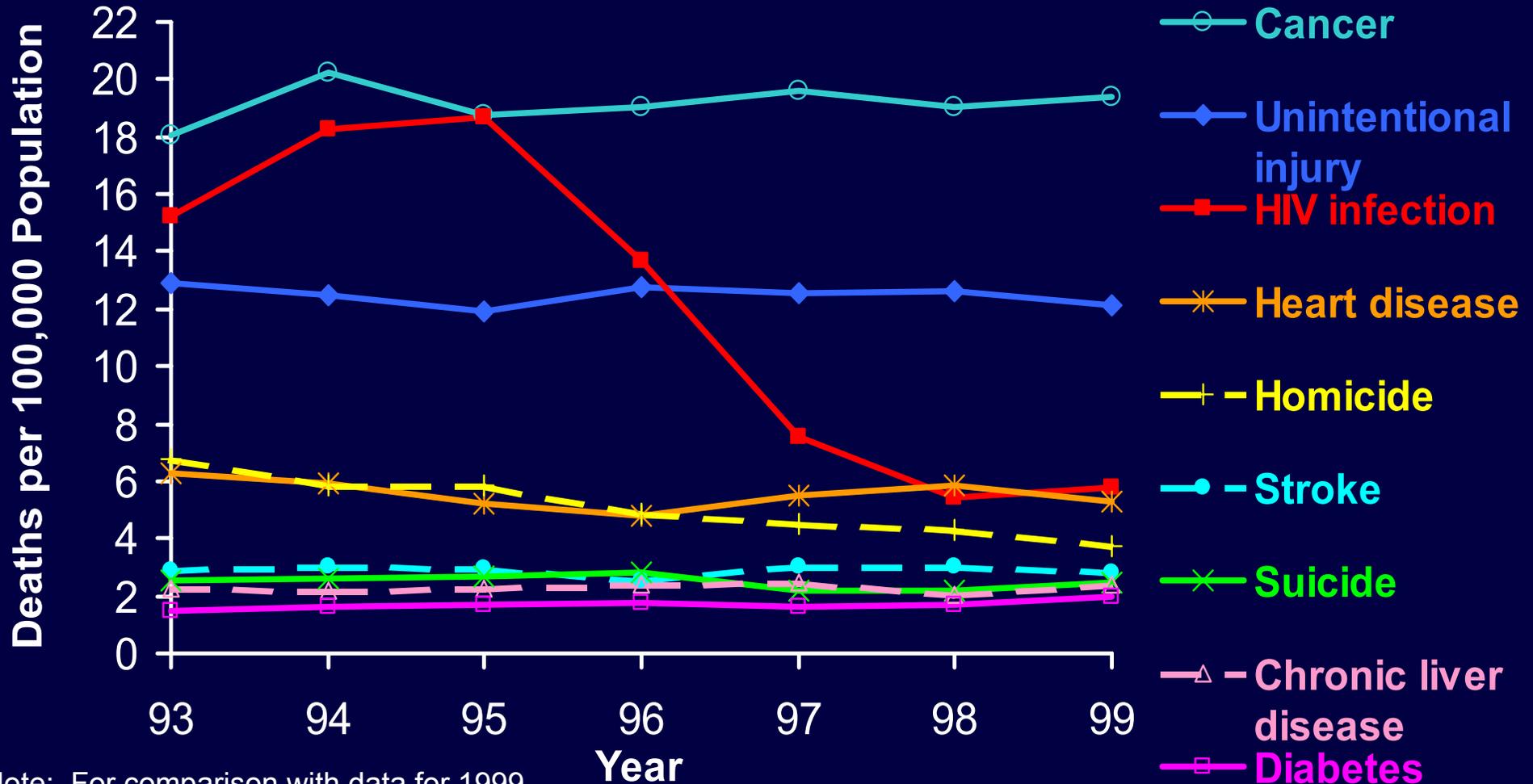
\*Excluding data from Oklahoma, where Hispanic ethnicity was not recorded on death certificates until 1997.



## Trends in Annual Rates of Death due to the 9 Leading Causes of Death among Hispanic Men 25-44 Years Old, USA, 1993-1999

Among Hispanic men 25 to 44 years old, HIV infection was the leading cause of death from 1993 through 1995, causing 31% of deaths in this group in 1995. Then HIV infection fell to 3rd place in 1999, after unintentional injury and homicide, when it caused 10% of deaths in this group.

## Trends in Annual Rates of Death due to the 9 Leading Causes of Death among Hispanic Women 25-44 Years Old, USA\*, 1993-1999



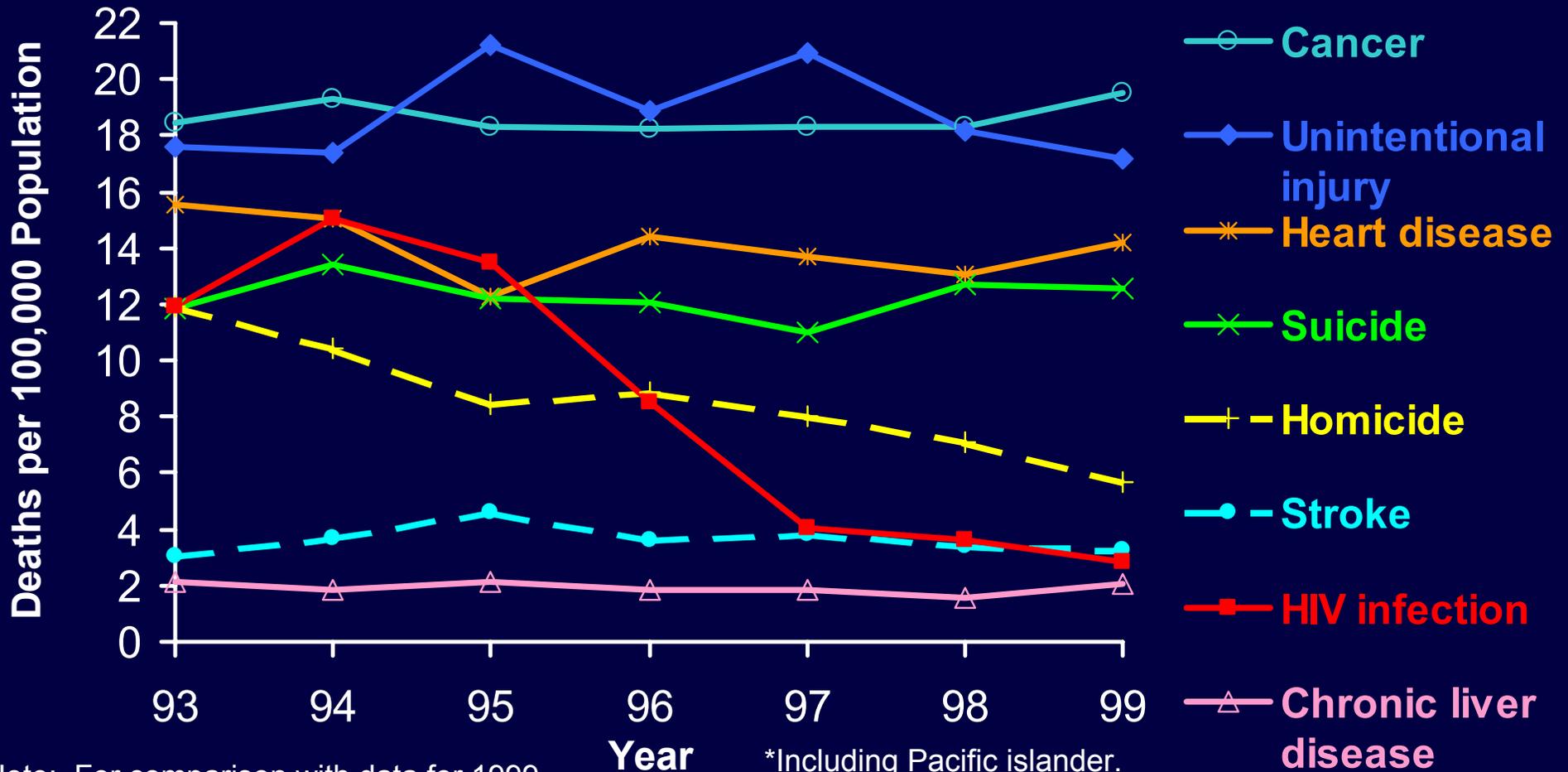
Note: For comparison with data for 1999, data for 1987-1998 were modified to account for ICD-10 rules instead of ICD-9 rules.

\*Excluding data from Oklahoma, where Hispanic ethnicity was not recorded on death certificates until 1997.

## Trends in Annual Rates of Death due to the 9 Leading Causes of Death among Hispanic Women 25-44 Years Old, USA, 1993-1999

Among Hispanic women 25 to 44 years old, HIV infection was the 2nd leading cause of death, after cancer, from 1993 through 1996, and then fell to 3rd place, after cancer and unintentional injury, in 1999. HIV infection caused 21% of deaths in this group in 1995, but only 8% in 1999.

## Trends in Annual Rates of Death due to the 8 Leading Causes of Death among Non-Hispanic Asian\* Men 25-44 Years Old, USA†, 1993-1999



Note: For comparison with data for 1999, data for 1987-1998 were modified to account for ICD-10 rules instead of ICD-9 rules.

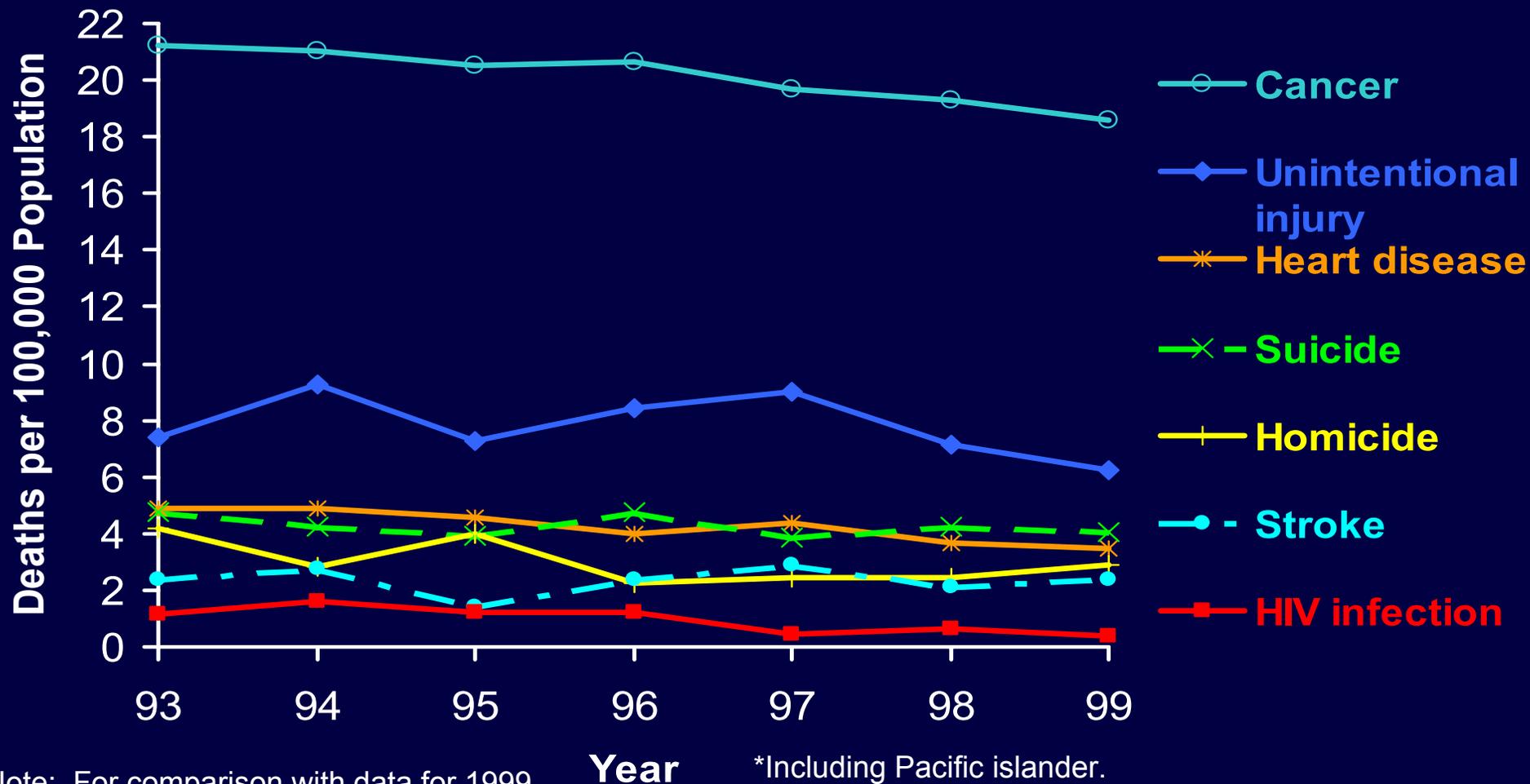
\*Including Pacific islander.

†Excluding data from Oklahoma, where Hispanic ethnicity was not recorded on death certificates until 1997.

## Trends in Annual Rates of Death due to the 8 Leading Causes of Death among Non-Hispanic Asian Men 25-44 Years Old, USA, 1993-1999

Among non-Hispanic Asian and Pacific Islander men 25 to 44 years old, HIV infection was the 3rd leading cause of death in 1994 and 1995, after cancer and unintentional injury. Then it fell to 7th place in 1999. HIV infection caused 12% of deaths in this group in 1995, but only 3% in 1999.

## Trends in Rates of Death due to the 6 Leading Causes of Death and HIV Infection among Non-Hispanic Asian\* Women 25-44 Years Old, USA†, 1993-1999



Note: For comparison with data for 1999, data for 1987-1998 were modified to account for ICD-10 rules instead of ICD-9 rules.

\*Including Pacific islander.

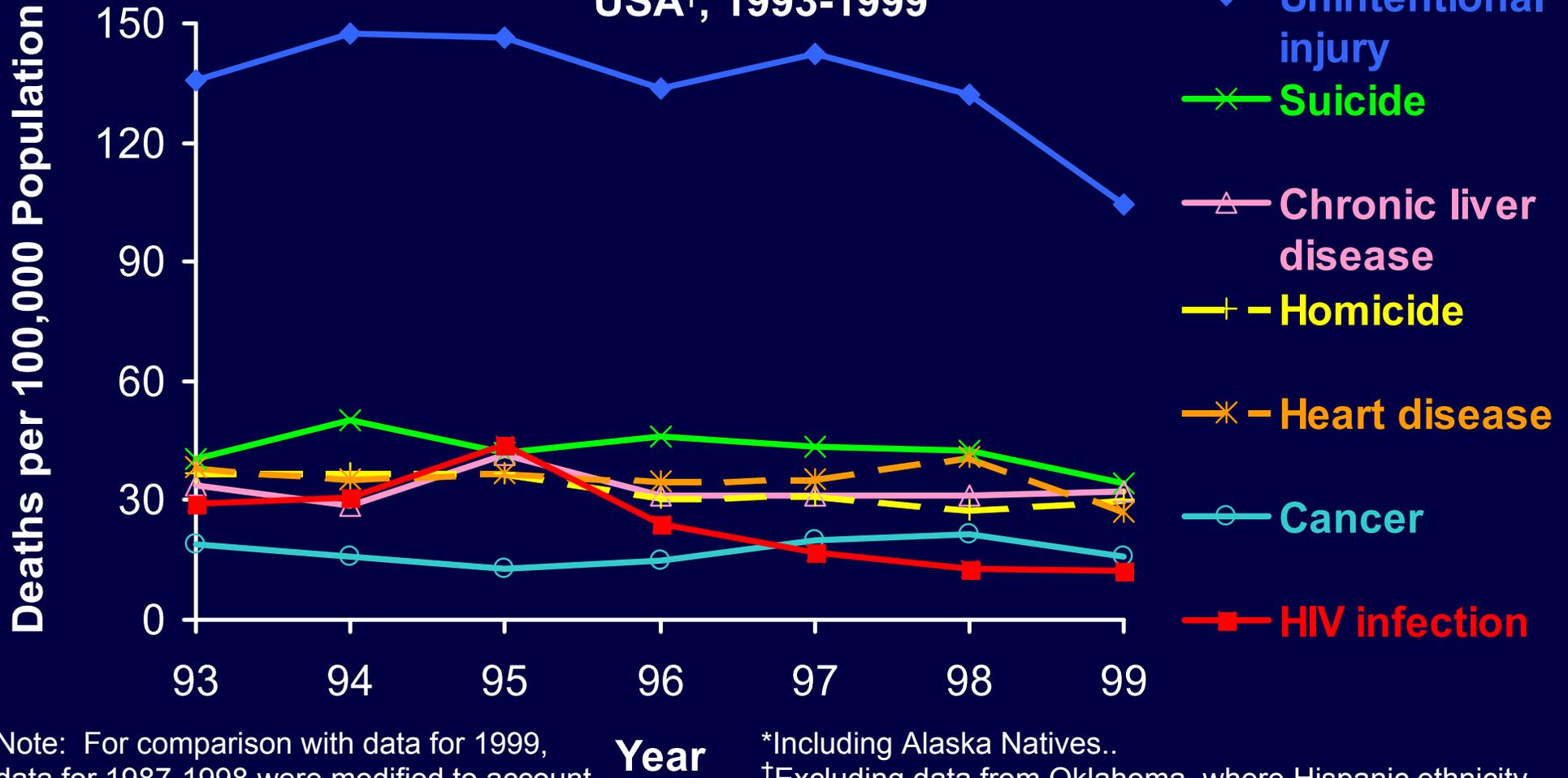
†Excluding data from Oklahoma, where Hispanic ethnicity was not recorded on death certificates until 1997.

## **Trends in Rates of Death due to the 6 Leading Causes of Death and HIV Infection among Non-Hispanic Asian Women 25-44 Years Old, USA, 1993-1999**

Among non-Hispanic Asian and Pacific Islander women 25 to 44 years old, HIV infection was the 7th leading cause of death from 1993 through 1996, and then fell to 13th place in 1999. At its peak, in 1994, HIV infection caused 3% of deaths in this group; in 1999, it caused less than 1%. Because of the small numbers of deaths due to HIV infection, the estimated rates of death due to HIV infection in this group are unstable and statistically unreliable.

# Trends in Annual Rates of Death due to the 6 Leading Causes of Death and HIV Infection among Non-Hispanic American Indian\* Men 25-44 Years Old

USA†, 1993-1999



Note: For comparison with data for 1999, data for 1987-1998 were modified to account for ICD-10 rules instead of ICD-9 rules.

\*Including Alaska Natives..

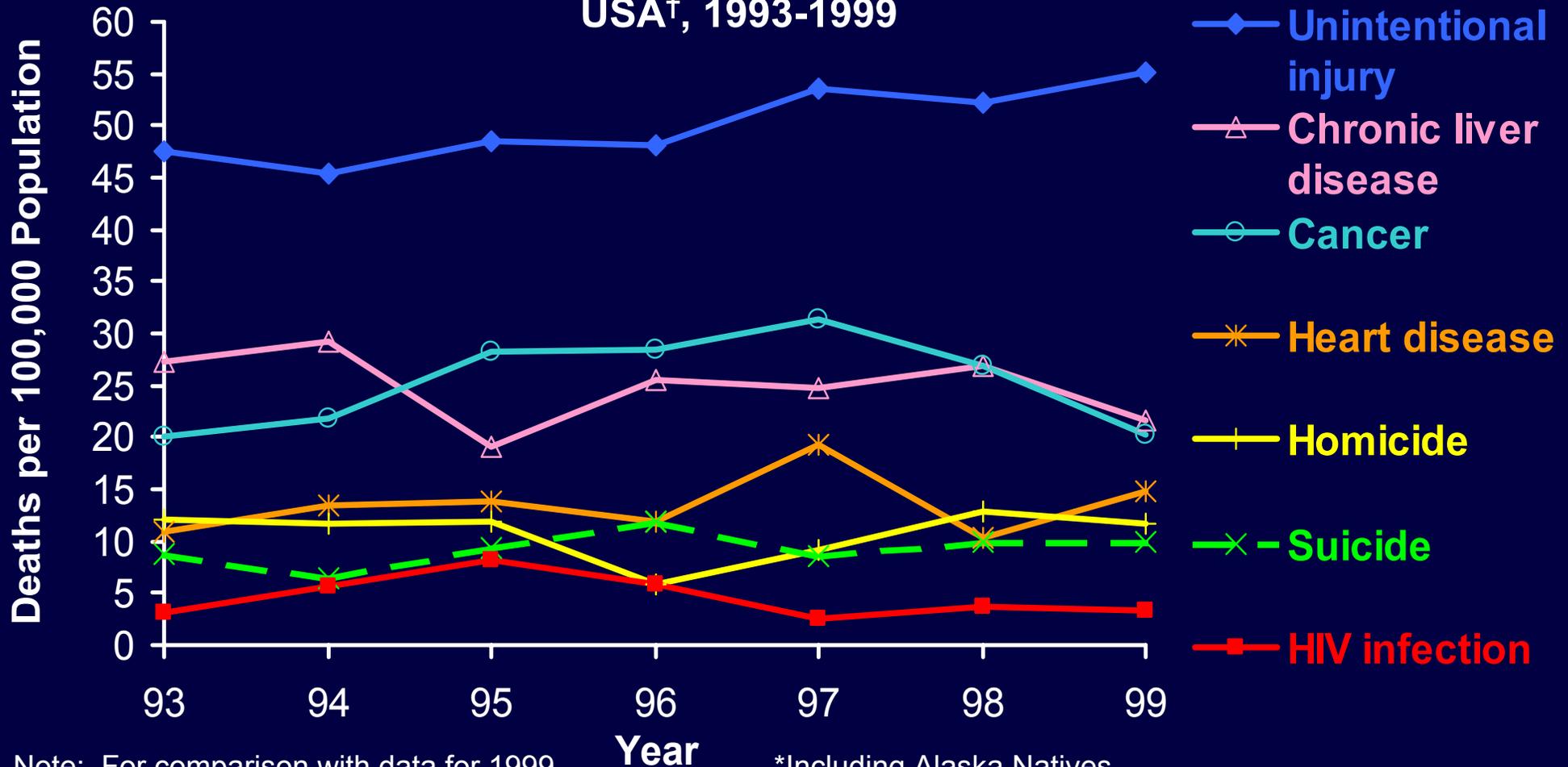
†Excluding data from Oklahoma, where Hispanic ethnicity was not recorded on death certificates until 1997.



## **Trends in Annual Rates of Death due to the 6 Leading Causes of Death and HIV Infection among Non-Hispanic American Indian Men 25-44 Years Old, USA, 1993-1999**

Among non-Hispanic American Indian and Alaska Native men 25 to 44 years old, HIV infection was the 2nd leading cause of death in 1995, after unintentional injury. Then it fell to 7th place in 1999. HIV infection caused 10% of deaths in this group in 1995, and 4% in 1999. Because of the small numbers of deaths due to HIV infection, the estimates of rates of death due to HIV infection in this group are unstable and statistically unreliable.

# Trends in Annual Rates of Death due to the 6 Leading Causes of Death and HIV Infection among Non-Hispanic American Indian\* Women 25-44 Years Old USA†, 1993-1999



Note: For comparison with data for 1999, data for 1987-1998 were modified to account for ICD-10 rules instead of ICD-9 rules.

\*Including Alaska Natives..

†Excluding data from Oklahoma, where Hispanic ethnicity was not recorded on death certificates until 1997.



## **Trends in Annual Rates of Death due to the 6 Leading Causes of Death and HIV Infection among Non-Hispanic American Indian Women 25-44 Years Old USA, 1993-1999**

Among non-Hispanic American Indian and Alaska Native women 25 to 44 years old, HIV infection was the 7th leading cause of death from 1994 through 1996, and then fell to 10th place in 1999. HIV infection caused 4% of deaths in this group in 1995, and 2% in 1998. Because of the small numbers of deaths in this group due to all causes other than unintentional injury, the estimates rates of death due to these causes are unstable and statistically unreliable.

## Conclusions

---

- **After rapidly increasing since the 1980s, the annual rate of death due to HIV infection peaked in 1995, decreased through 1997, and leveled after 1998.**
- **HIV infection remains a leading cause of death among persons 25 to 44 years old, particularly blacks and Hispanics.**
- **Persons dying of HIV infection increasingly consist of females, blacks (a majority since 1997), and residents of the South.**