Surveillance Data for Heart Disease And Stroke Prevention: A Clinician Educator's Perspective

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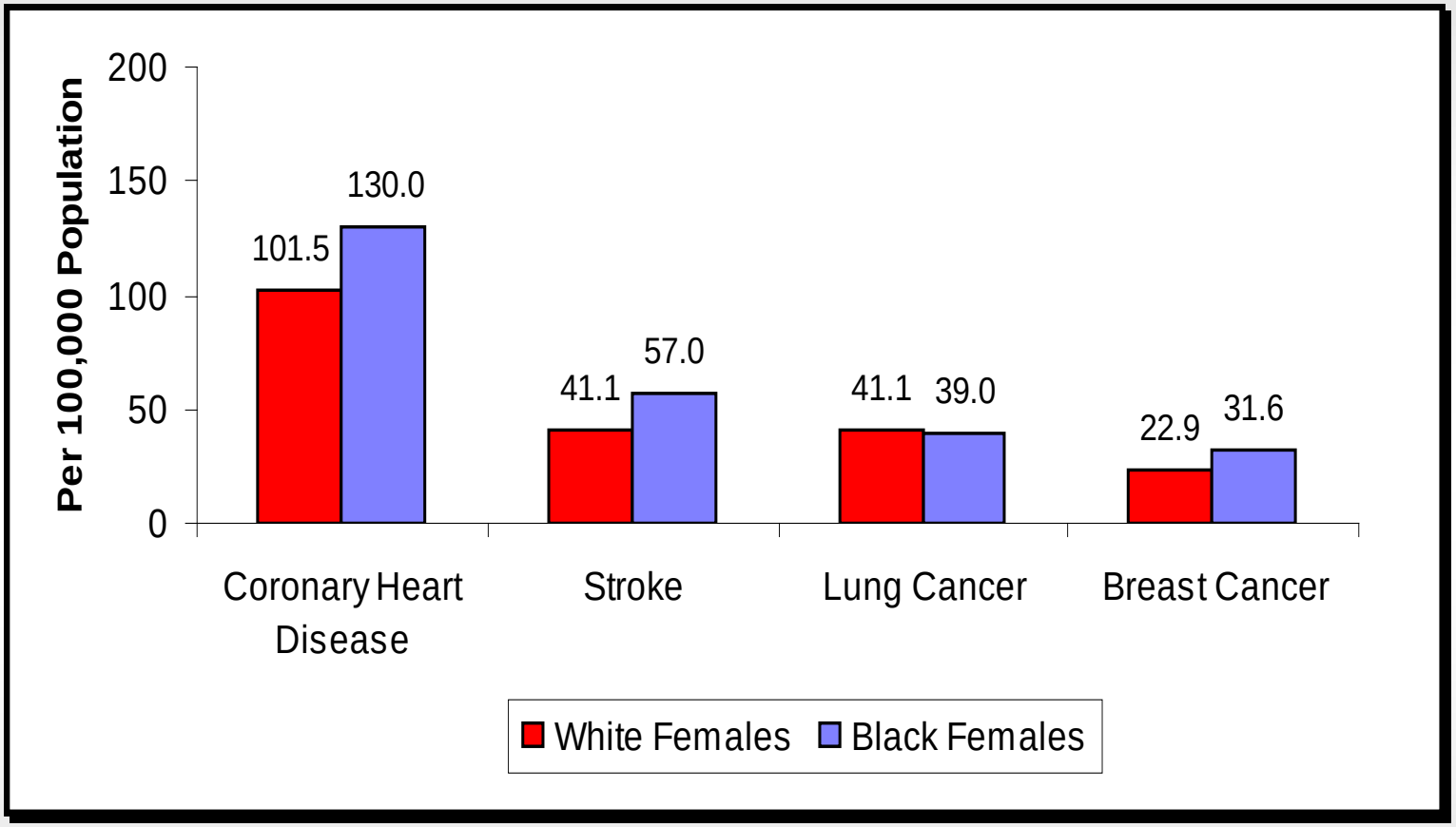

Age-adjusted death rates for CHD, stroke, lung and breast for white and black females (United States: 2006).

Source: NCHS.

American Heart Association
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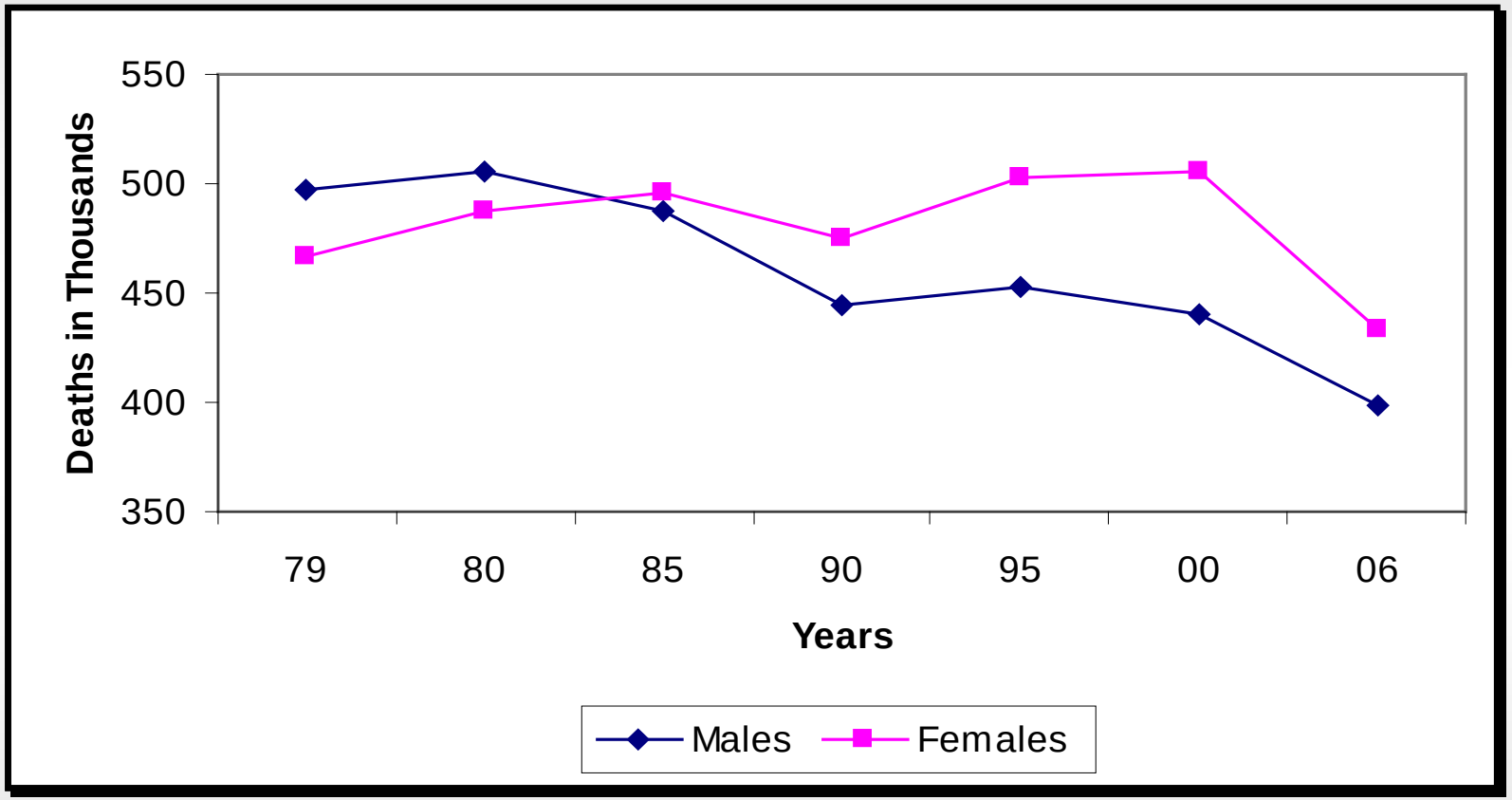
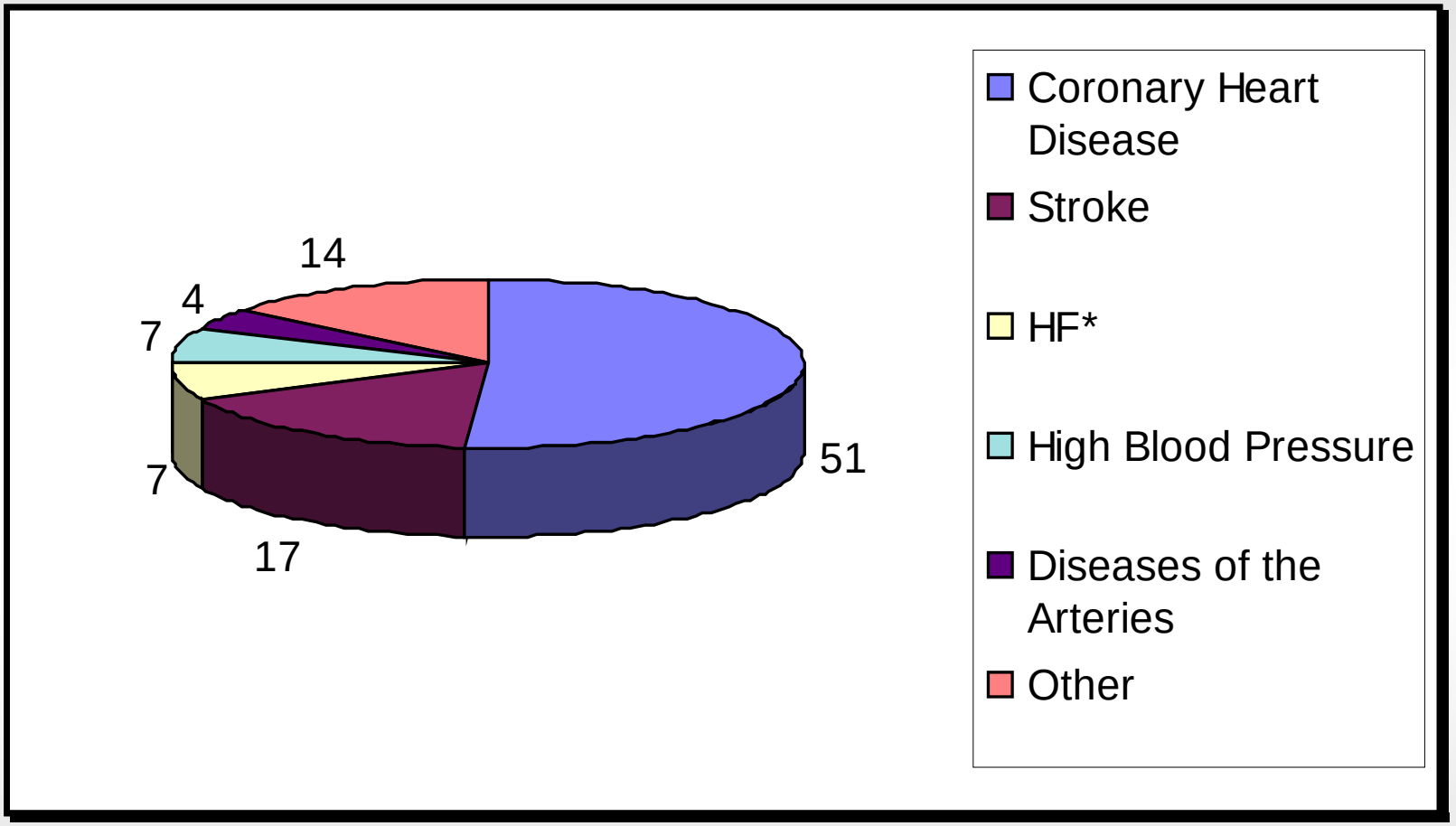


CVD disease mortality trends for males and females (United States: 1979-2006).

Source: NCHS and NHLBI.



Percentage breakdown of deaths from cardiovascular diseases (United States: 2006) * - Not a true underlying cause.
Source: NCHS.

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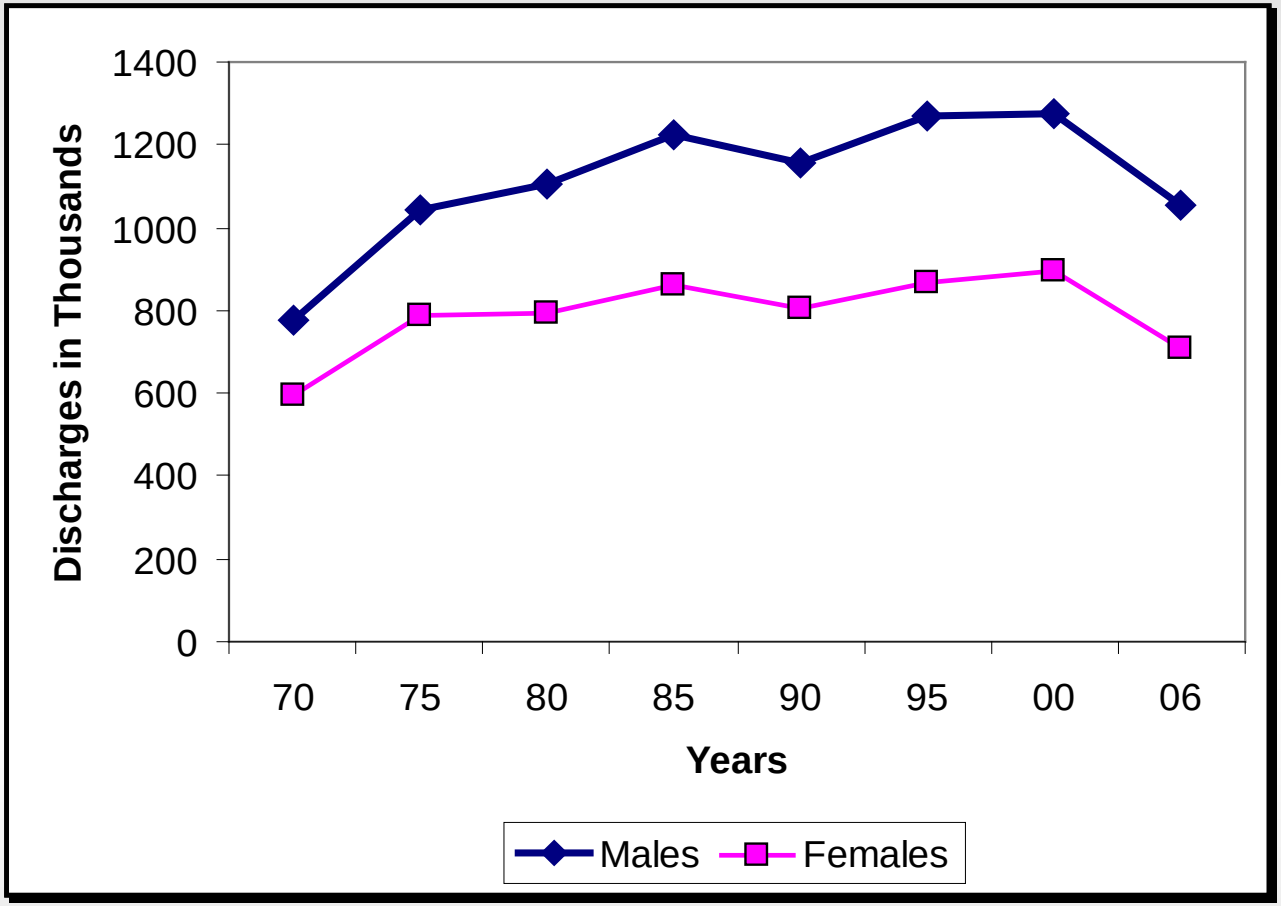

Hospital discharges for coronary heart disease by sex (United States: 1970-2006). Source: NHDS/NCHS.

Note: Hospital discharges include people discharged alive, dead, and status unknown.

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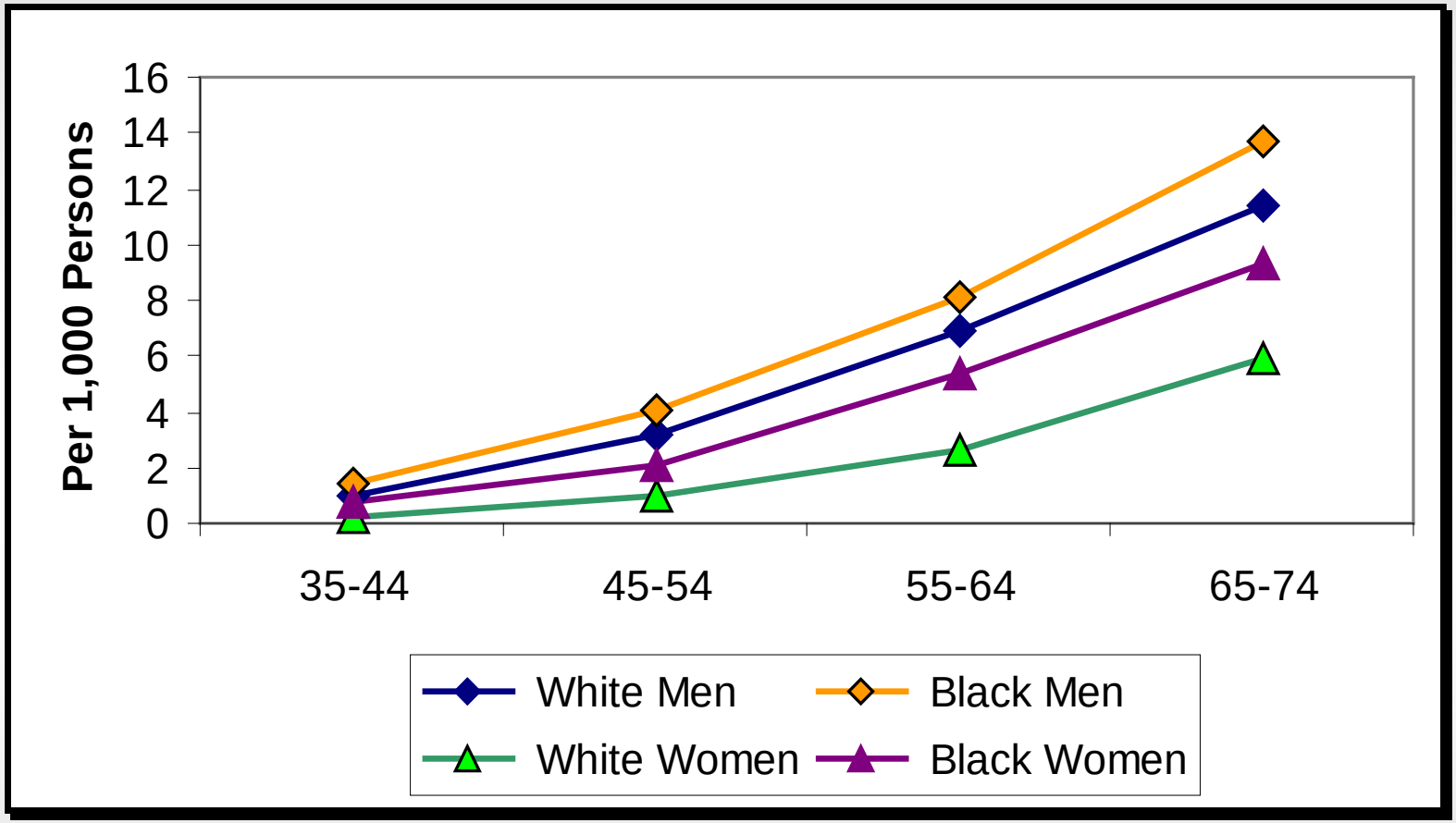
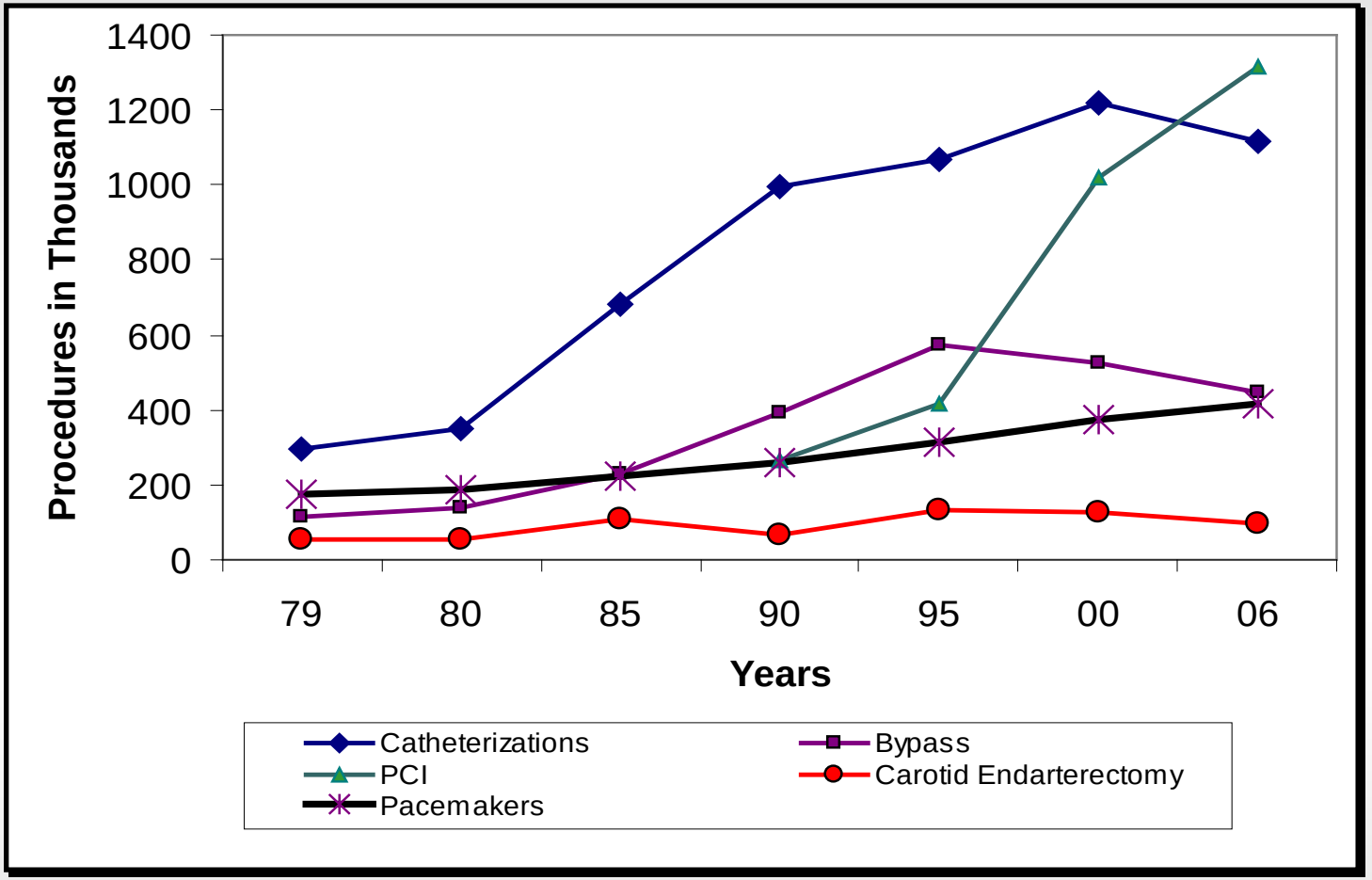
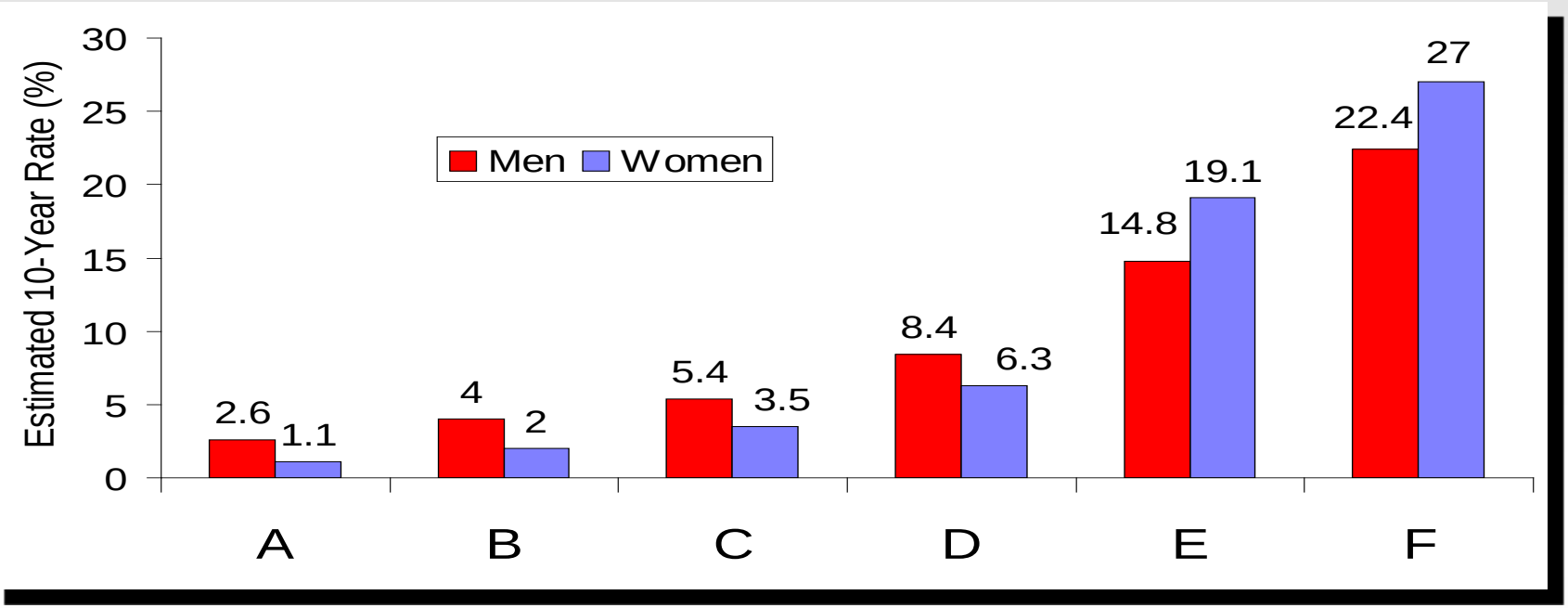


Annual rate of first heart attack by age, sex and race. (ARIC Surveillance:1987-2004). Source: NHLBI.



Trends in Cardiovascular Operations and Procedures (United States: 1979-2006). Source: NCHS and NHLBI.

Note: In-hospital procedures only.



	A	B	C	D	E	F
Systolic BP*	95-105	130-148	130-148	130-148	130-148	130-148
Diabetes	No	No	Yes	Yes	Yes	Yes
Cigarettes	No	No	No	Yes	Yes	Yes
Prior Atrial Fib.	No	No	No	No	Yes	Yes
Prior CVDNo	No	No	No	No	Yes	

*Closest ranges for women are: 95-104 and 115-124.

Estimated 10-year stroke risk in 55-year-old adults according to levels of various risk factors (FHS).

Source: Wolf et al., Stroke.1991;22:312-318.

Prevalence of Lower-Extremity Disease in the U.S. Adult Population ≥40 Years of Age With and Without Diabetes

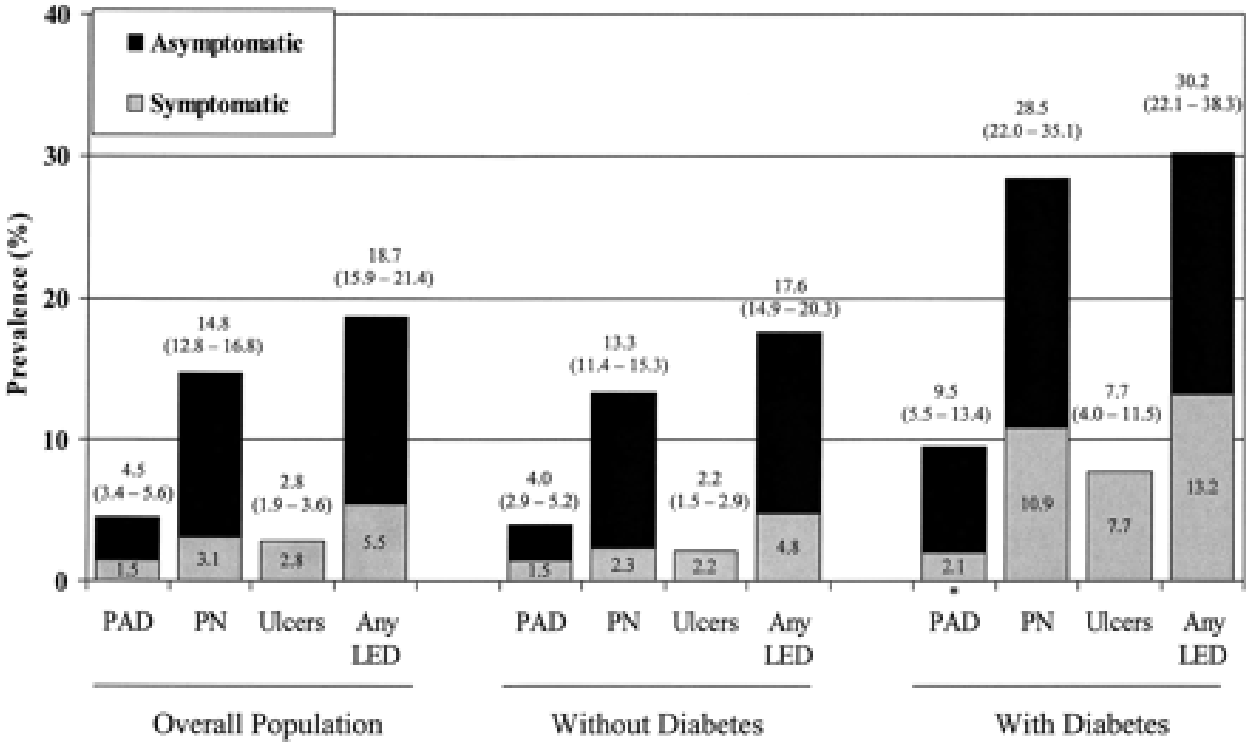
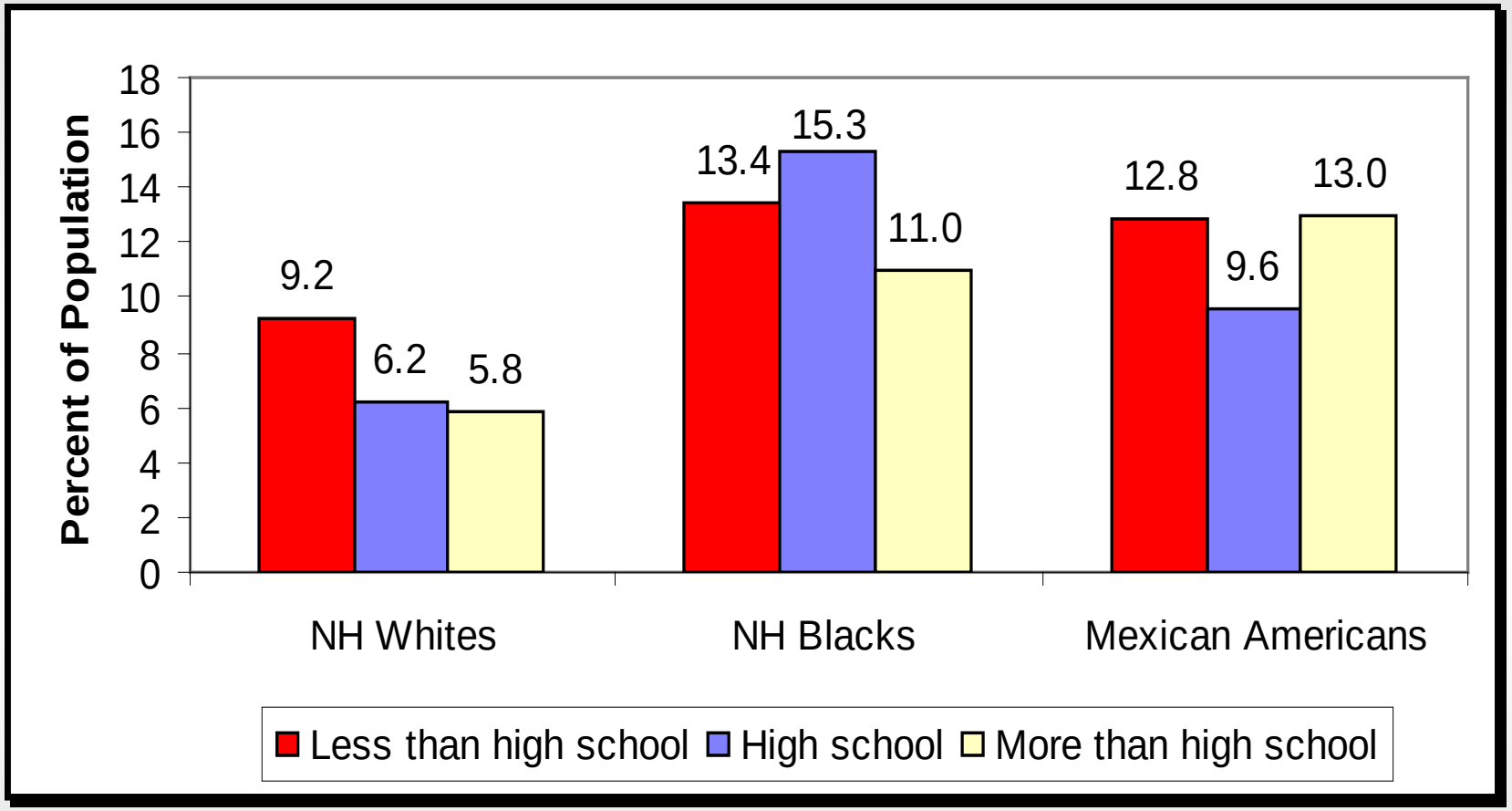
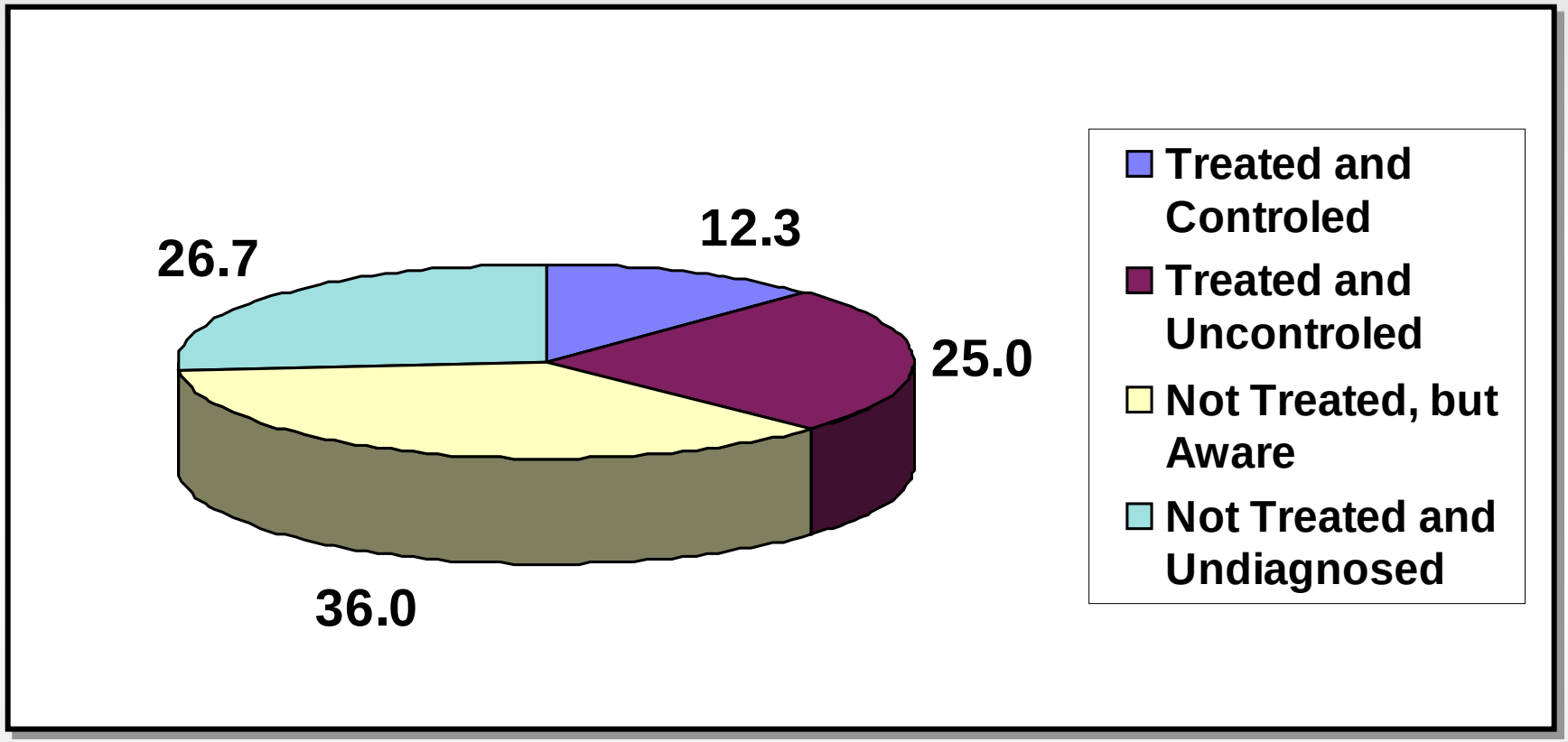


Figure 1—

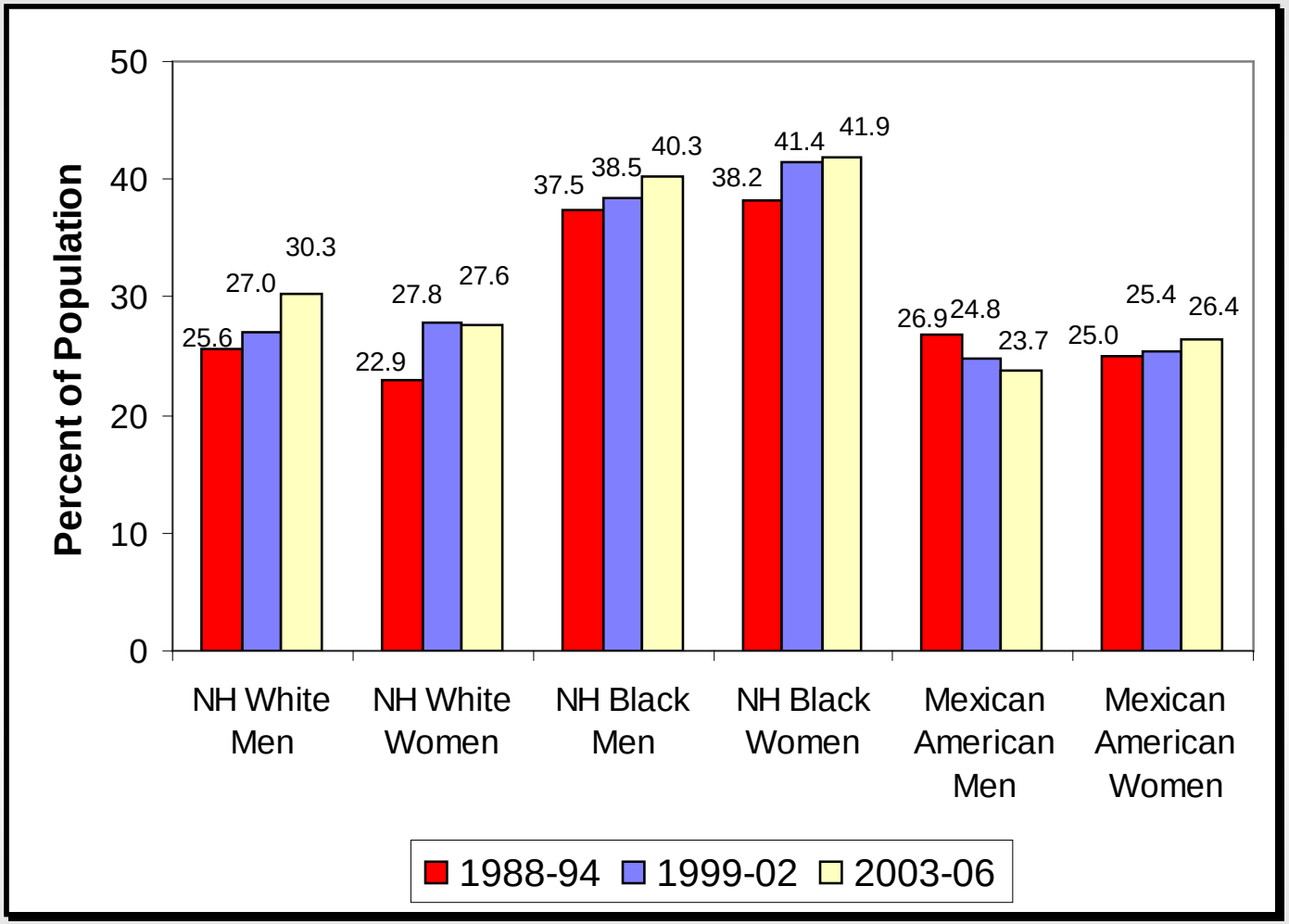
Prevalence of LED among the overall, nondiabetic population, and diabetic population aged ≥40 years in the U.S., 1999–2000. *Does not meet standard of statistical reliability and precision (relative SE >30%).



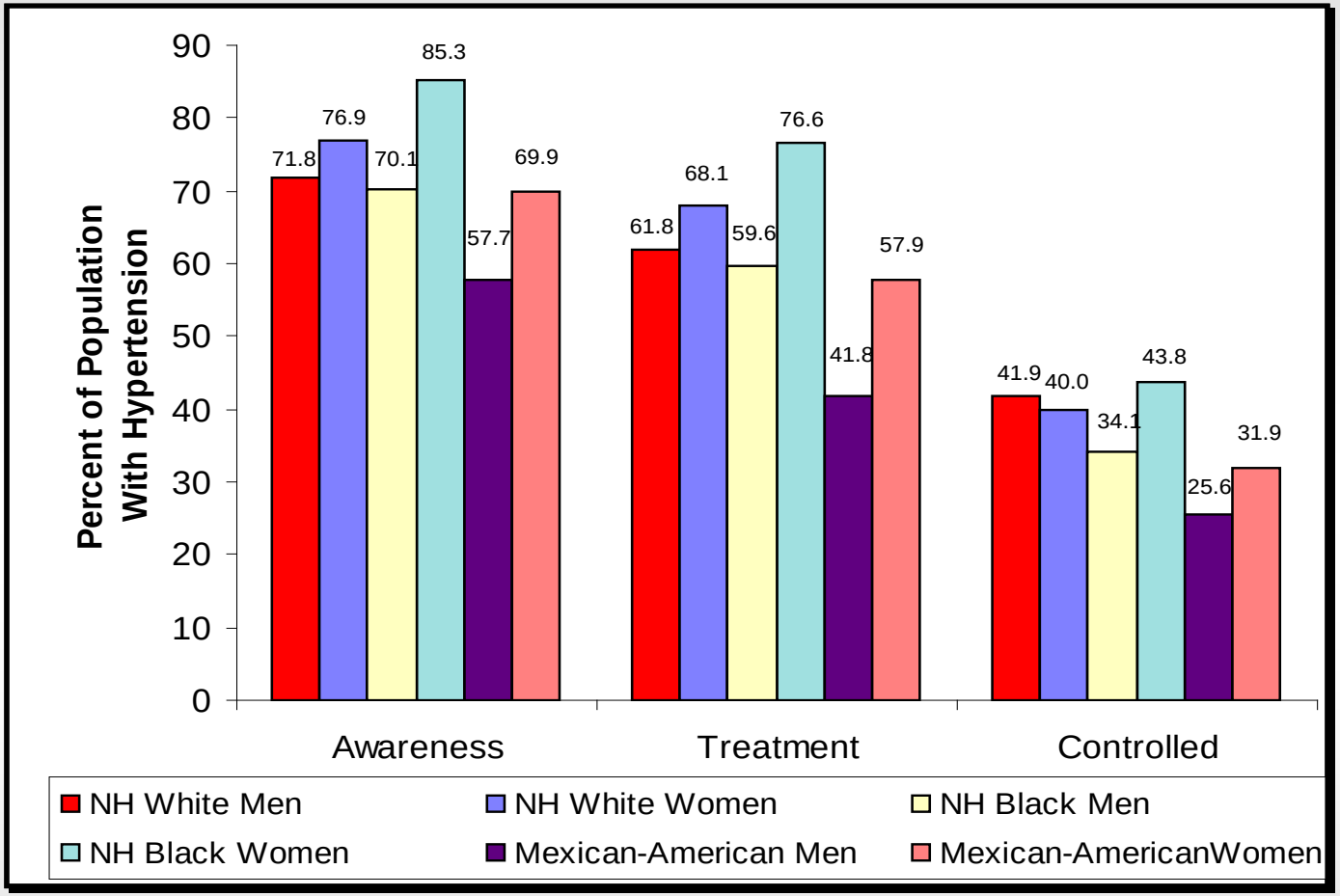
Prevalence of Physician Diagnosed Type 2 diabetes in Adults age 20+ by Race/Ethnicity, and Years of Education (NHANES: 2003-2006). Source: NCHS and NHLBI. NH – non-Hispanic.



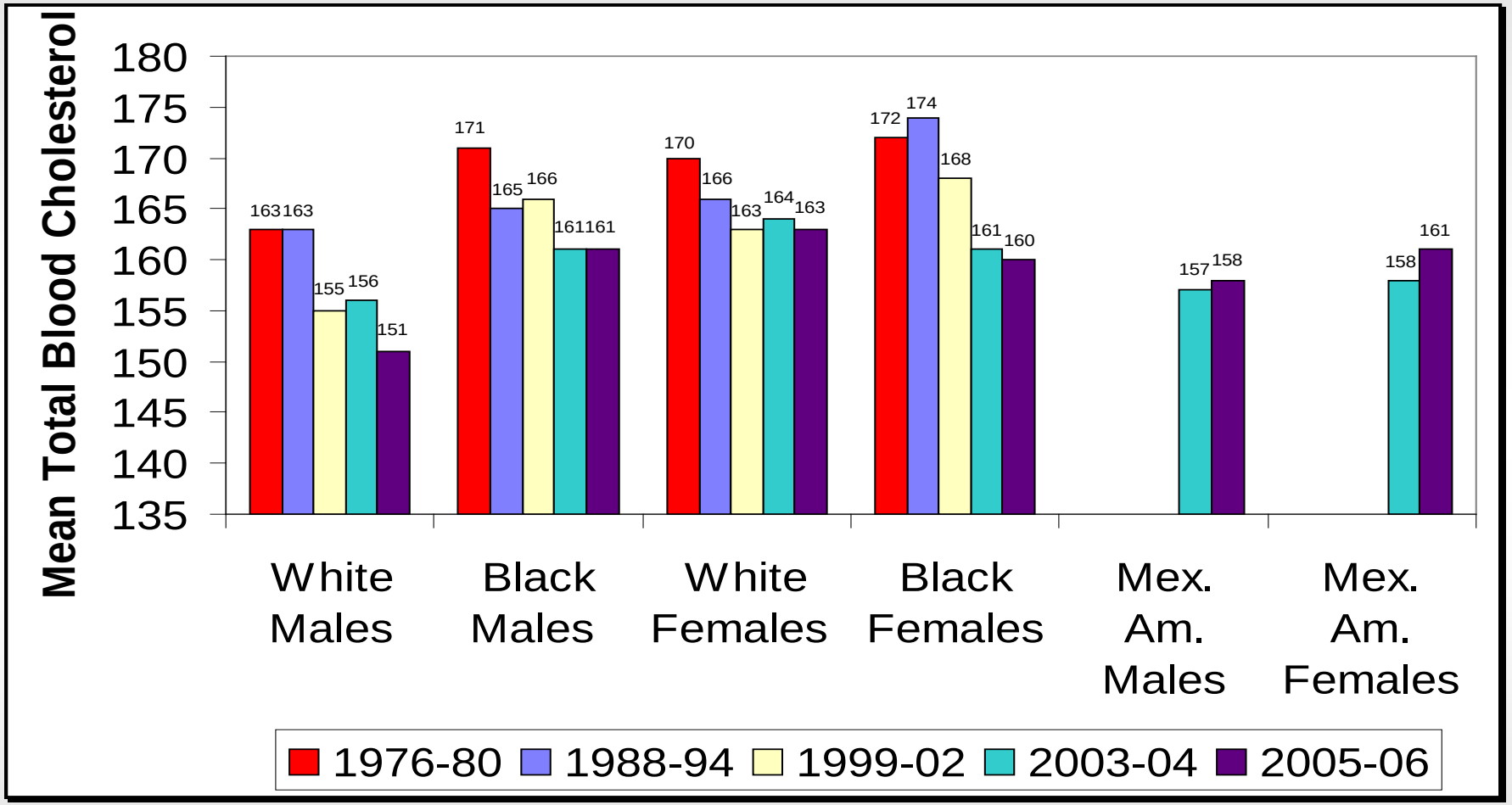
Diabetes Awareness, Treatment and Control (NHANES: 2003-2006). Source: NHLBI.



Age-adjusted prevalence trends for high blood pressure in Adults age 20 and older by race/ethnicity, sex and survey (NHANES: 1988-94, 1999-02 and 2003-06). Source: NCHS and NHLBI. NH- non-Hispanic.

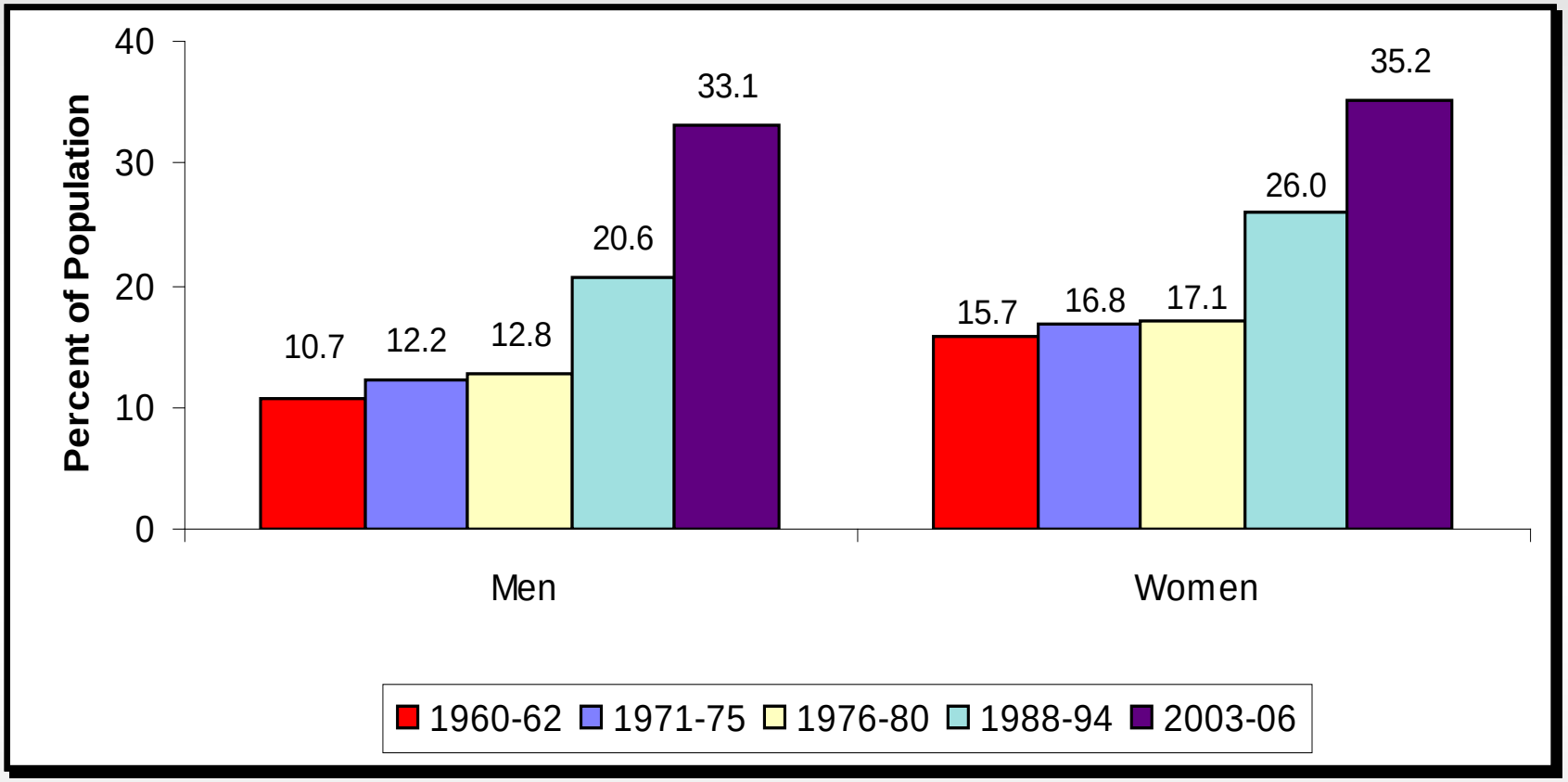


Extent of Awareness, Treatment and Control of High Blood Pressure by Race/Ethnicity and Sex (NHANES: 1999-2006). Source: NCHS and NHLBI.



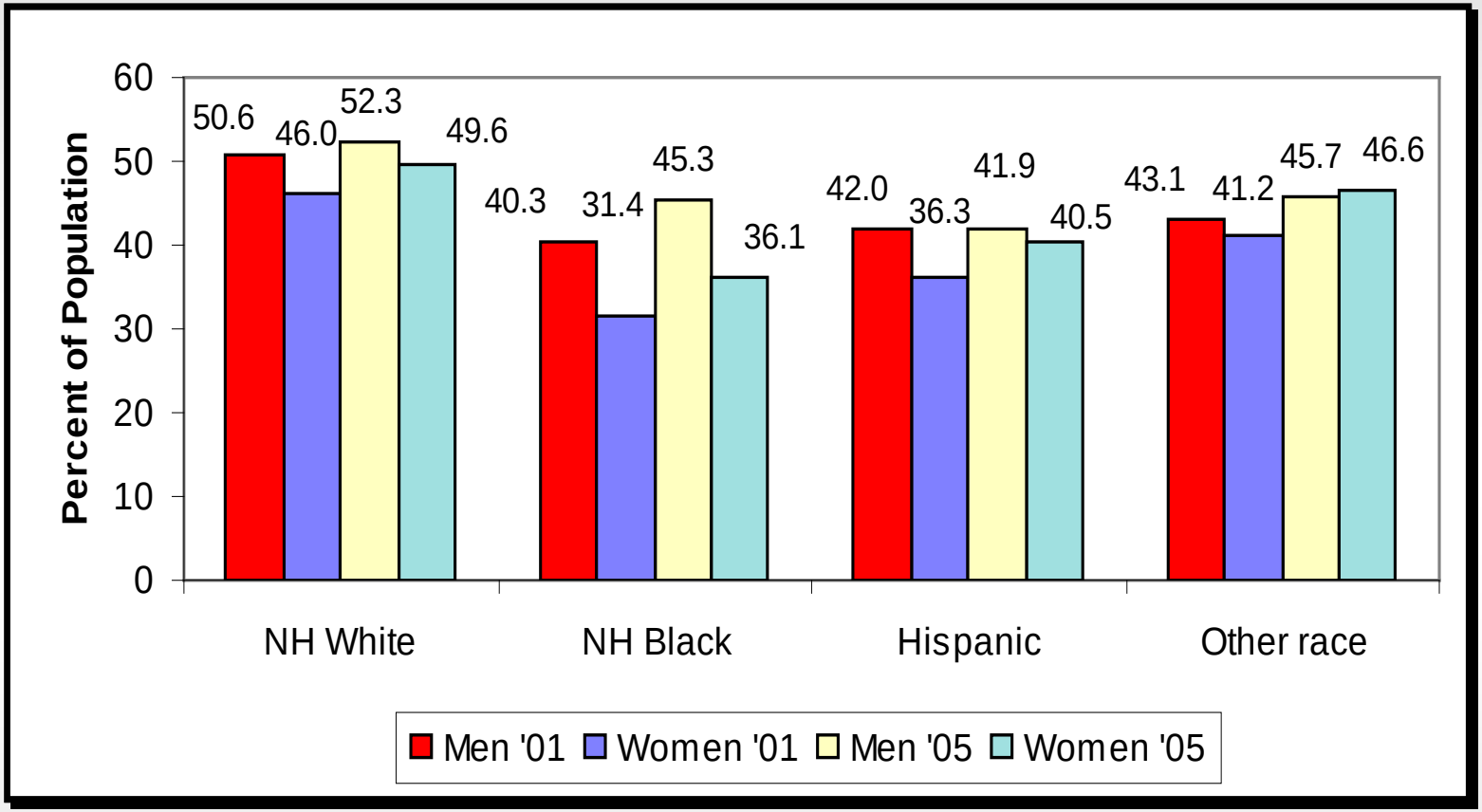
Trends in mean total serum cholesterol among adolescents ages 12-17 by race, sex, and survey (NHANES: 1976-80, 1988-94, 1999-02, 2003-04, and 2005-06).

Source: NCHS and NHLBI.



Age-adjusted prevalence of obesity in Adults ages 20-74 by sex and survey. (NHES, 1960-62; NHANES, 1971-74, 1976-80, 1988-94 and 2003-2006). Source: Health, United States, 2008. NCHS.

Note: Obesity is defined as a BMI of 30.0 or higher.



Prevalence of regular leisure-time physical activity among adults age 18 and older by race/ethnicity, and sex. (BRFSS: 2001 and 2005). Source: MMWR, 2007;56:No. 46.
NH – non-Hispanic.

Figure 1

FIGURE 1. Prevalence of leisure-time physical inactivity among men, by age group and survey year — Behavioral Risk Factor Surveillance System, United States,* 1994–2004

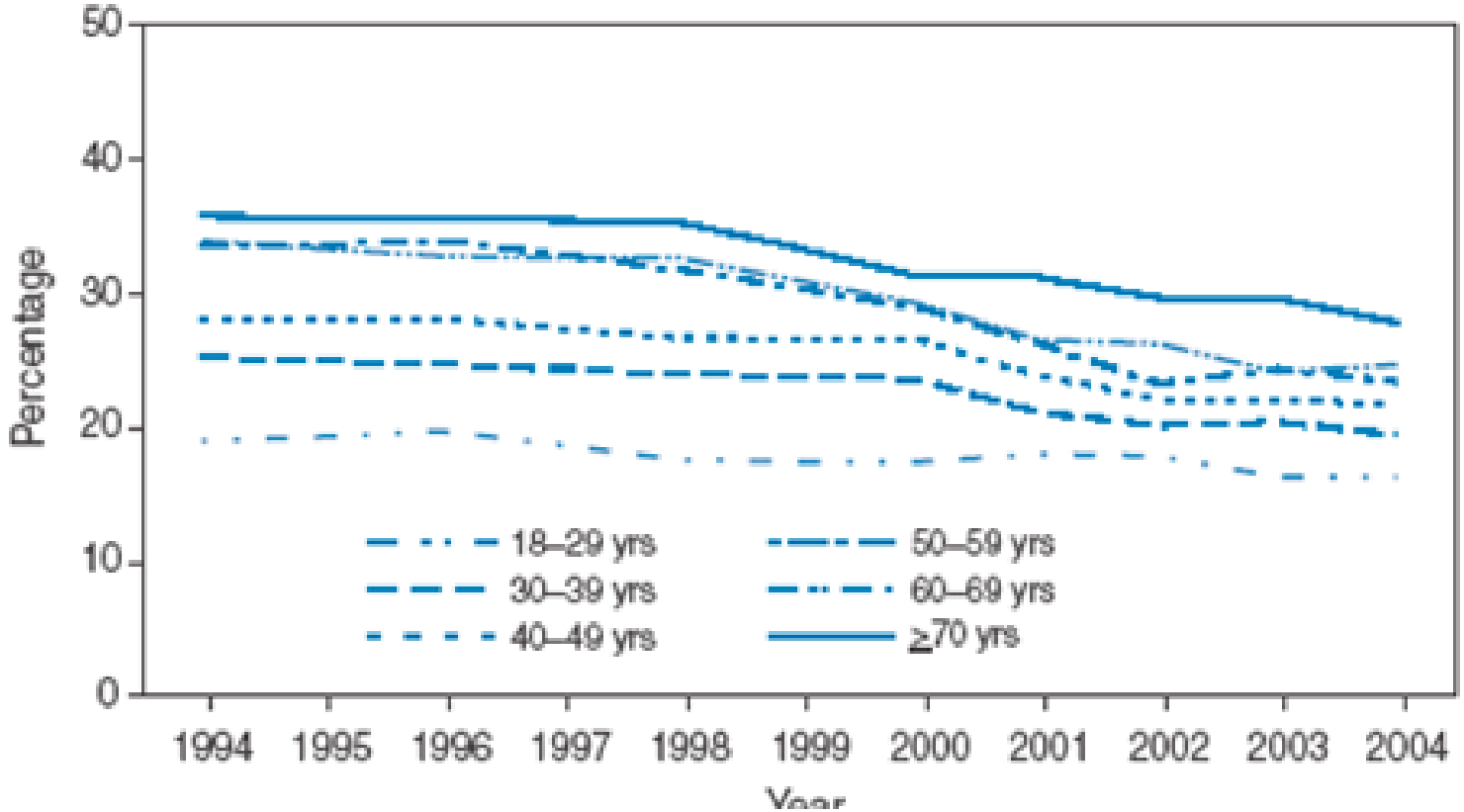
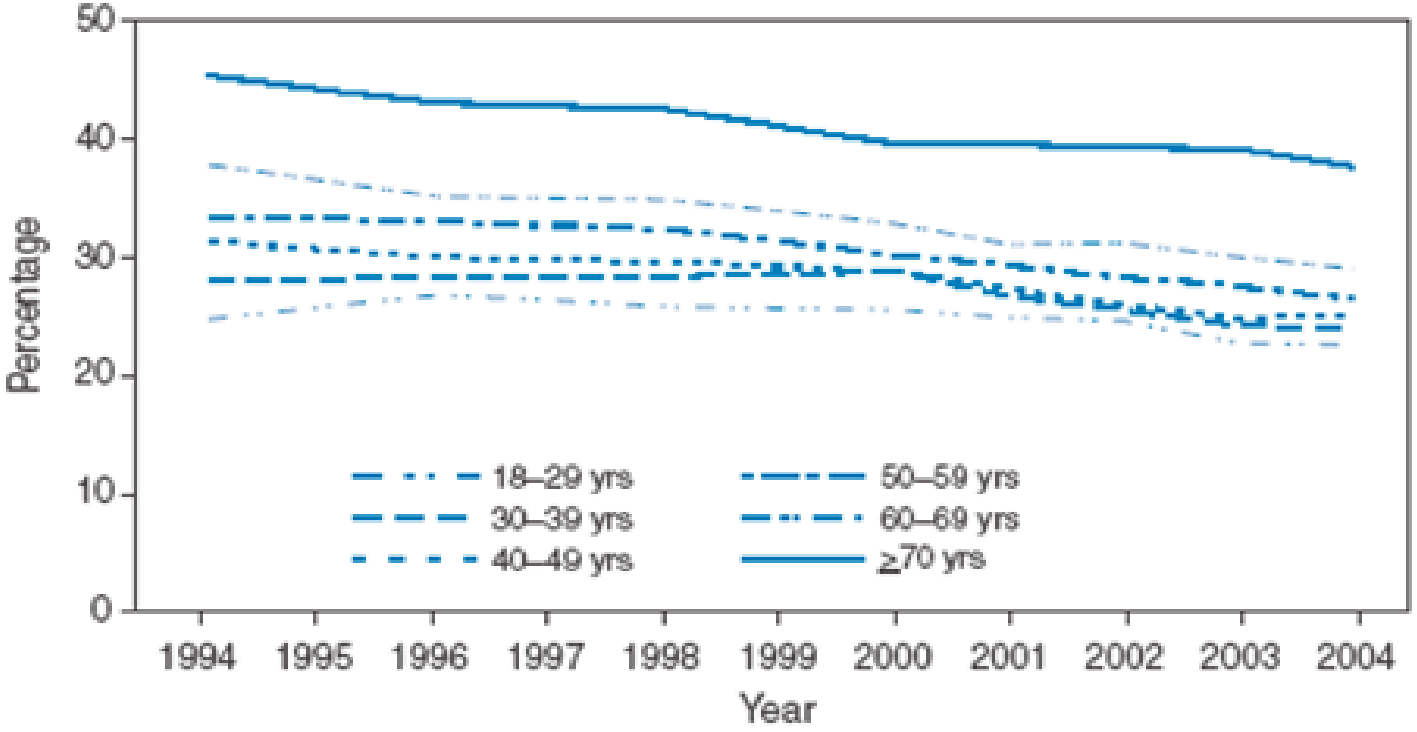


Figure 2

FIGURE 2. Prevalence of leisure-time physical inactivity among women, by age group and survey year — Behavioral Risk Factor Surveillance System, United States,* 1994–2004



*The survey question regarding leisure-time physical activity was not asked in Rhode Island in 1994.

Issues In Cardiovascular Health

- Race/ethnic admixture
- Acculturation
- Birthplace,
- Built environment
- Diet (salt, DASH diet)
- Insurance coverage
- Language
- Geography: urban-rural, neighborhood, city, state
- Legal and regulatory policies
- Education
- Income
- Religion
- Health beliefs and attitudes
- Medication non-adherence
- Pharmacogenomics

Socioeconomic Issues

- Lower socioeconomic ranks
- Lower quality schools
- Poorer paying jobs
- Mortgage lending denials
- Employment and housing discrimination
- Prior beliefs (clinical uncertainty relating to age, gender, socioeconomic status, and race or ethnicity)
- Bias against certain groups (e.g. immigrants)
- Beliefs (Stereotypes) held by the provider and patients
- Patient mistrust and resistance

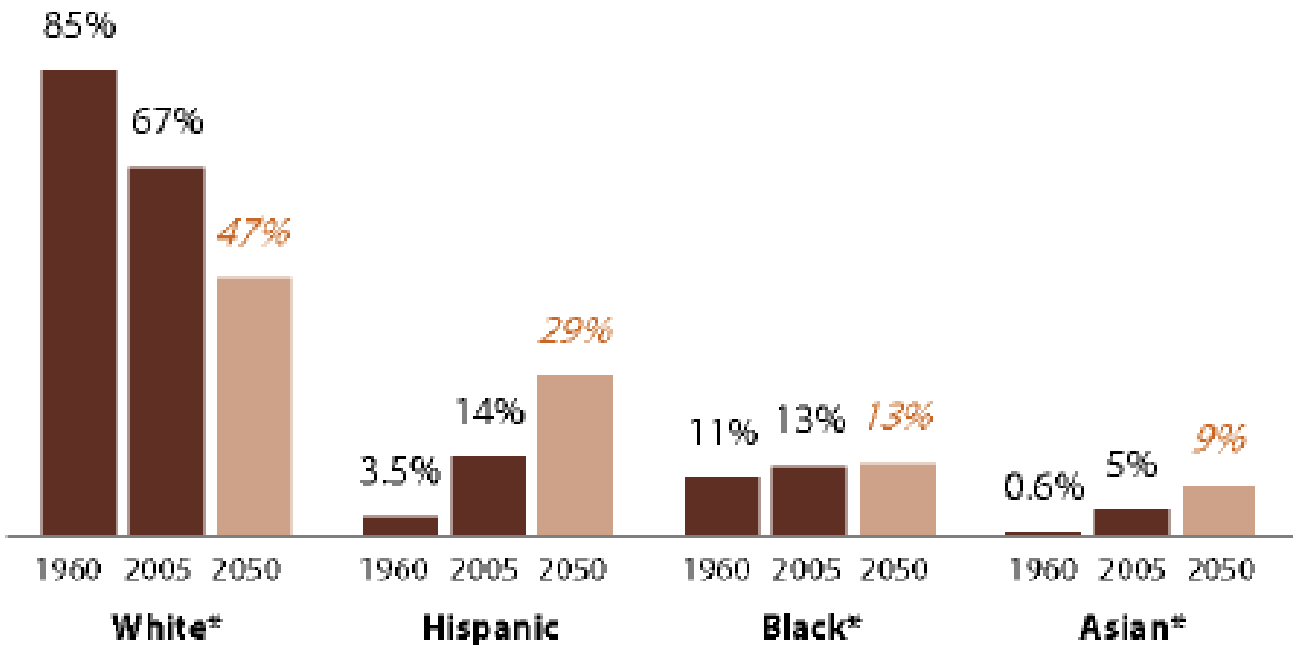
Cardiovascular Surveillance

- Longitudinal data:
  - Impact of educational programs
  - Attainment of risk factor targets
  - Assessment of diagnostic technology
  - Performance indicators of quality
  - Clinical outcomes of therapeutic interventions
  - Adoption of electronic health record (EHR)
  - Changes in prevalence and incidence of CVD
- Standard definitions of data
- Linkage of national, state and local data
- Feed back to clinicians
- Feedback to patients

Figure 6

Population by Race and Ethnicity, Actual and Projected: 1960, 2005 and 2050

(% of total)



Note: All races modified and not Hispanic (*); American Indian/Alaska Native not shown. See "Methodology." Projections for 2050 indicated by light brown bars.

Source: Pew Research Center, 2008

Racial and Ethnic Groups

In the Center's projections, each person is included in only one race or Hispanic category. These projections assume that definitions of race and ethnic categories will remain fixed and that self-identification does not change over time. In reality, the growing numbers of births to parents of different racial and ethnic groups, as well as changing social norms about racial and ethnic self-identification, are serving to blur the boundaries of racial/ethnic categories. Consequently, the future sizes of race/ethnic groups could be higher or lower than the projection values even if the underlying demographic assumptions about the future prove to be correct.

US Population Projections: 2005-2050. Jeffrey S. Passel, D'Vera Cohn
Pew Research Center. Social and Demographic Trends. February 2008

The Association Between Birthplace and Mortality From Cardio-vascular Disease Among Black and White Residents of NYC* (1)

- Methods: Mortality data for blacks born in the U.S. South, the Northeast and the Caribbean were compared with those for whites born in the Northeast.
- Results: (1) Overall rates of mortality from CVD: blacks>white; (2) Persons born in the Northeast: CVD death rates similar for white men versus black men and white women versus black women. (3) Southern-born black men and women had higher mortality rates than their black counterparts born in the Northeast. (4) Caribbean-born blacks had mortality rates lower than their black counterparts born in the Northeast.

*Fang J, Madhavan S, Alderman MH. N Engl J Med, 1996 Nov 21;335(21):1545-51

The Association Between Birthplace and Mortality From Cardio-vascular Disease Among Black and White Residents of NYC*(2)

Results (continued)

- Black men born in the South had death rates 30 percent higher than Northeastern-born blacks and four times that of Caribbean-born blacks of the same sex and age.
- Higher rates of CVD mortality among blacks compared to whites masks substantial variation among blacks based on birthplace.

*Fang J, Madhavan S, Alderman MH. N Engl J Med, 1996 Nov 21;335(21):1545-51

2010 Census Questionnaire

- Hispanic Identity:
- Is this person of Hispanic, Latino or Spanish origin?
  - No, not of Hispanic, Latino or Spanish origin
  - Yes, Mexican, Mexican Am. Chicano
  - Yes, Puerto Rican
  - Yes, Cuban
  - Yes, another Hispanic, Latino, or Spanish origin

*Population Reference Bureau:
http/www.prb.org/Articles/2009/2009/questionnaire.aspx

2010 Census Questionnaire

-What is the person's race?: White, Black, African Am or Negro, American Indian or Alaska Native

-Asian Indian, Chinese, Filipino, Japanese, Korean, Vietnamese, Native Hawaiian, Guamanian or Chamorro, Samoan, Other Pacific Islander

-Other Asian: (print race: e.g. Hmong, Laotian, Thai, Pakistani, Cambodian and so on.

-Some Other Race (print race)

*Population Reference Bureau: http/www.prb.org/Articles/2009/2009/questionnaire.aspx

Heterogeneity Within Racial and Ethnic Groups

The Asthma Example:

- Prevalence and mortality of asthma is highest in Puerto Ricans, African Americans, Filipinos and Hawaiians.
- Prevalence is lowest in Mexicans and Koreans
- Albuterol response lower in Puerto Ricans vs. Af Am.

Genetic Admixture and Ancestry

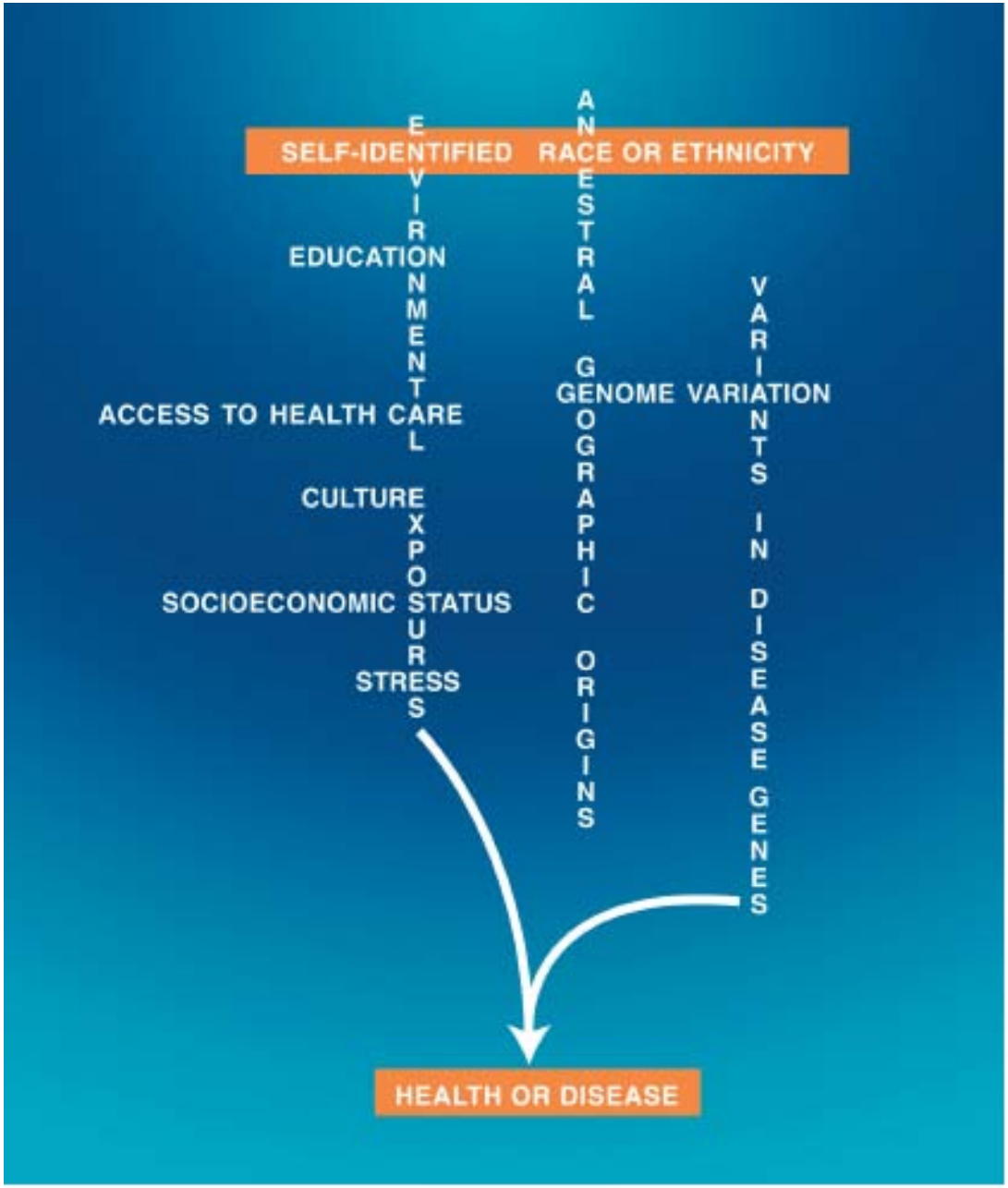
- African American ancestry is on the average 20% European and 80% African.
- Latino populations are descendents of European, Native American and African ancestors. The average proportion of these ancestral populations varies between Latino subgroups and among individuals within the same group

*Drake KA, Galanter JM, Burchard EG. Race, ethnicity and social class and the complex etiologies of asthma. Pharmacogenomics 2008. 9(4);453-462

Berkman LF. Social epidemiology: social determinants of health in the United States: are we losing ground?

Annu Rev Public Health. 2009 Apr 29;30:27-41.

- ***Clinical Adaptation:*** We conclude that more attention needs to be devoted to (a) identifying the correct etiologic period within a life-course perspective and (b) understanding the dynamic interplay between ***preventive, diagnostic and therapeutic*** interventions ***and outcomes*** and the ***genetic, clinical,*** social, economic, and environmental contexts in which interventions are delivered


SELF-IDENTIFIED RACE OR ETHNICITY
ENVIRONMENTAL EXPOSURES
EDUCATION
ACCESS TO HEALTH CARE
CULTURE
SOCIOECONOMIC STATUS
STRESS
ANCESTRAL GEOGRAPHIC ORIGINS
GENOME VARIATION
VARIANTS IN DISEASE GENES
HEALTH OR DISEASE

Thank you for your attention