

Understanding the Association Between Race and Health: Patterns, Paradoxes and Prospects

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*How should we define and
measure race?*

Racial Categories in the U.S. Census

**1800: White, Other except Indians not taxed, slaves
(3/5th person)**

**1890: White, Black, Mulatto, Quadroon, Octoroon,
Chinese, Japanese, Indian**

**1920: White, Black, Mulatto, Indian, Chinese,
Japanese, Filipino, Hindu, Korean, Other**

**1930: White, Negro, Mexican, Indian, Chinese,
Japanese, Filipino, Hindu, Korean, Other**

**1960: White, Negro, American Indian, Japanese,
Chinese, Filipino, Hawaiian, Part-Hawaiian, Aleut
Eskimo, etc.**

Race on Birth Certificates (Prior to 1989)

- 1. All newborns were assigned the race of their parents.**
- 2. If the parents were of different races and one is white, the child is assigned the other parent's race.**
- 3. If either parent is Hawaiian, the child is classified as Hawaiian.**
- 4. In all other cases, the child is assigned the father's race.**

Pre-1989 Classification of Newborn's Race

Father's Race	Mother's Race	Child's Race
White	White	White
White	Black	Black
Black	White	Black
White	Am. Indian	Am. Indian
Am. Indian	White	Am. Indian
Black	Am. Indian	Black
Am. Indian	Black	Am. Indian
Asian	White	Asian
White	Asian	Asian
Black	Asian	Black
Asian	Black	Asian
Hawaiian	<i>Any Race</i>	Hawaiian
<i>Any Race</i>	Hawaiian	Hawaiian

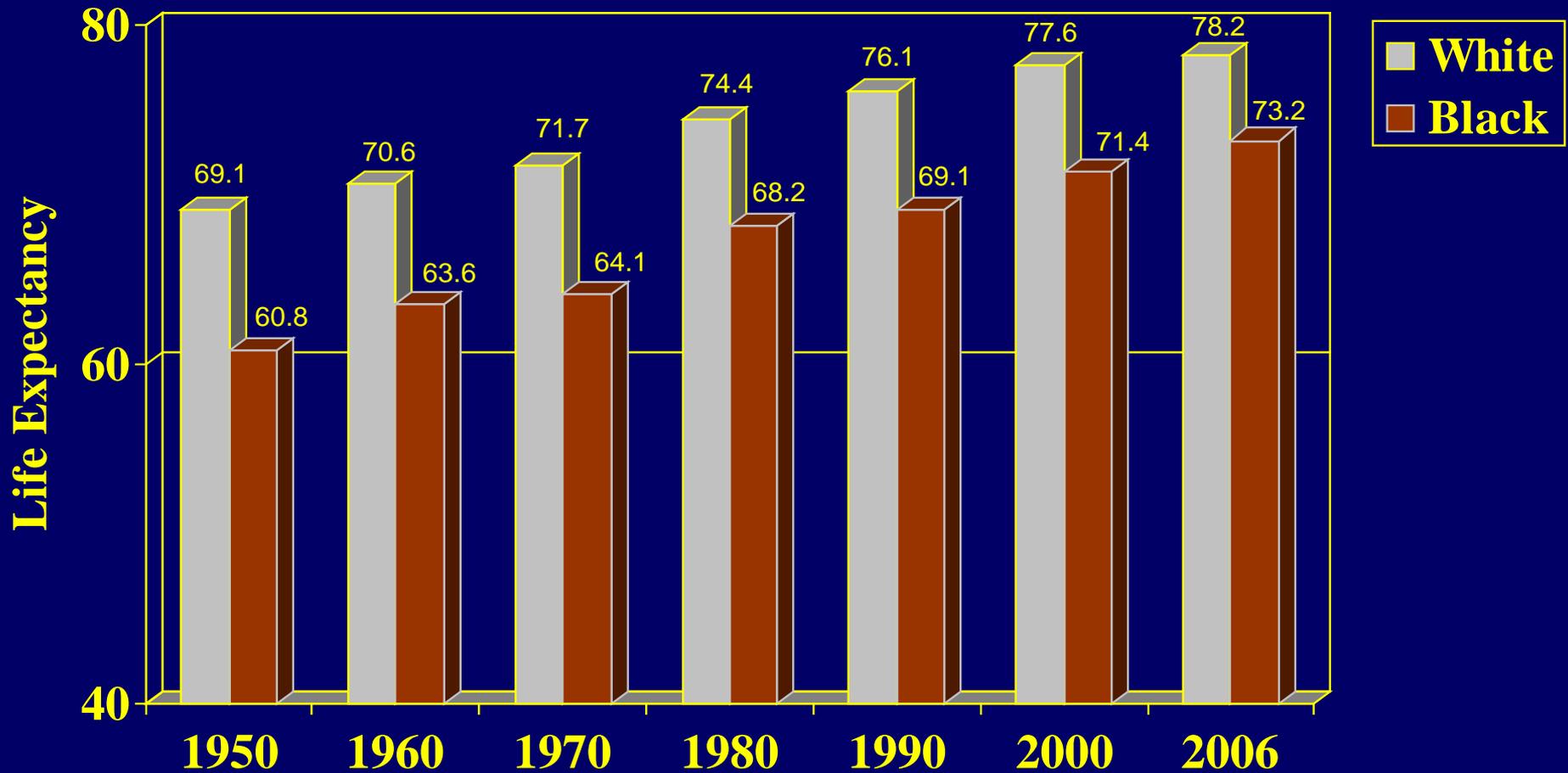
Context: Racial Disparities in Health

- African Americans have higher death rates than Whites for 12 of the 15 leading causes of death.
 - Blacks and American Indians have higher age-specific death rates than Whites from birth through the retirement years.
 - Hispanics have higher death rates than whites for diabetes, hypertension, liver cirrhosis & homicide
 - Minorities get sick younger, have more severe illness and die sooner than Whites
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Pattern

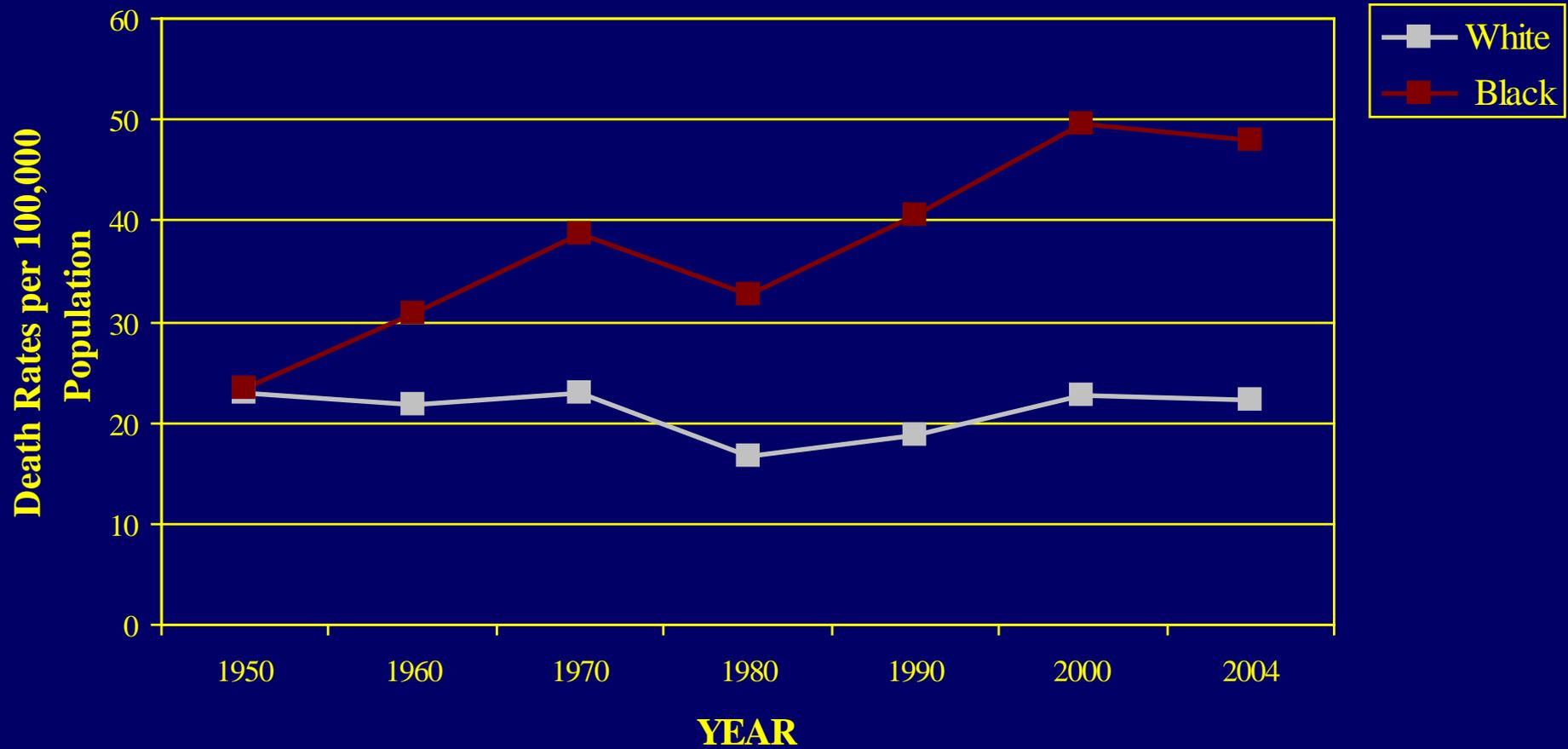
Racial Disparities In Health Are
Persistent Over Time

Life Expectancy Lags, 1950-2006

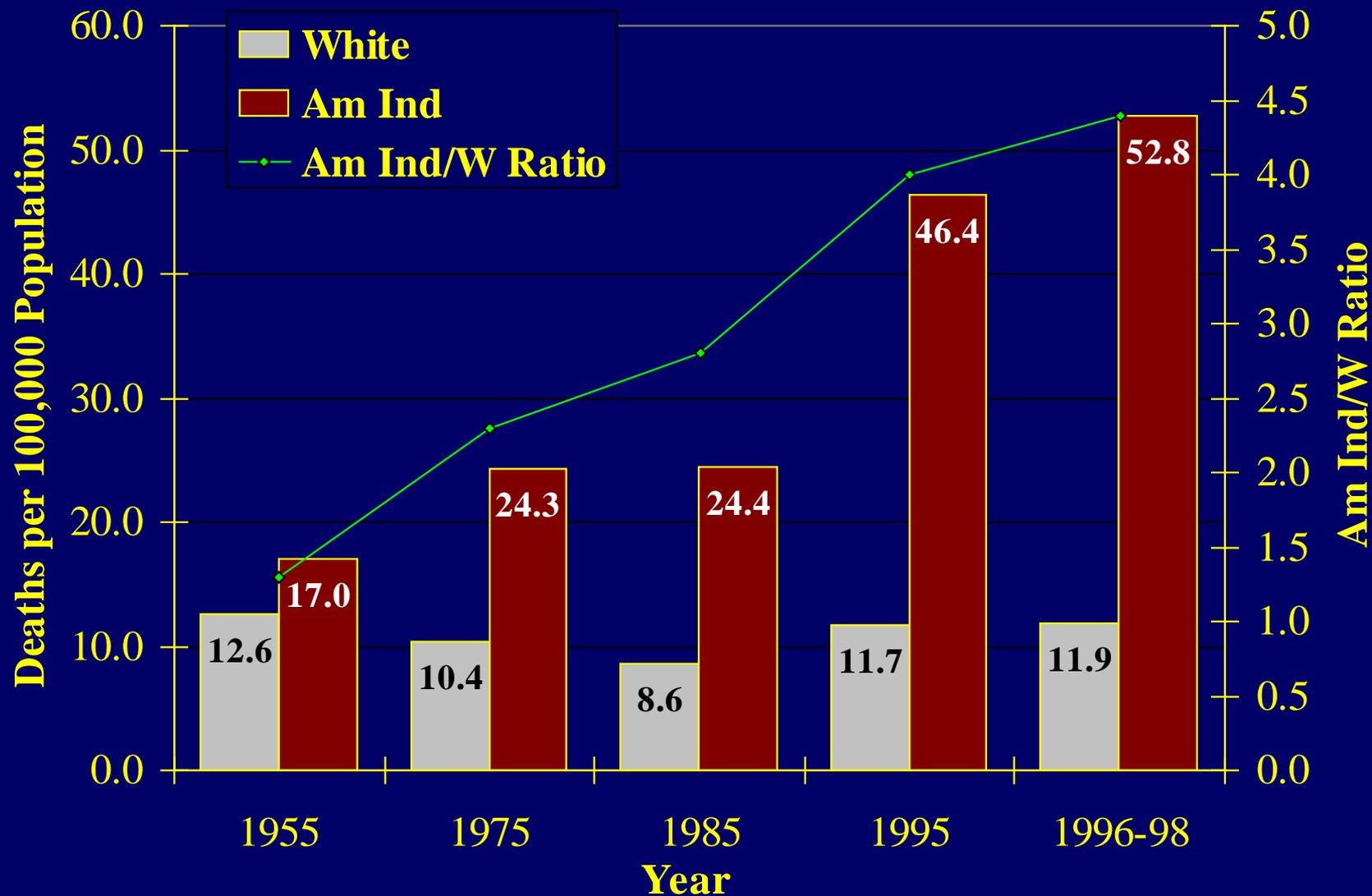


Murphy, NVSS 2000;

Age-Adjusted Diabetes Death Rates for Blacks and Whites, 1950-2004



Diabetes Death Rates 1955-1998



Why Race Matters

Race is Primarily A Social Category

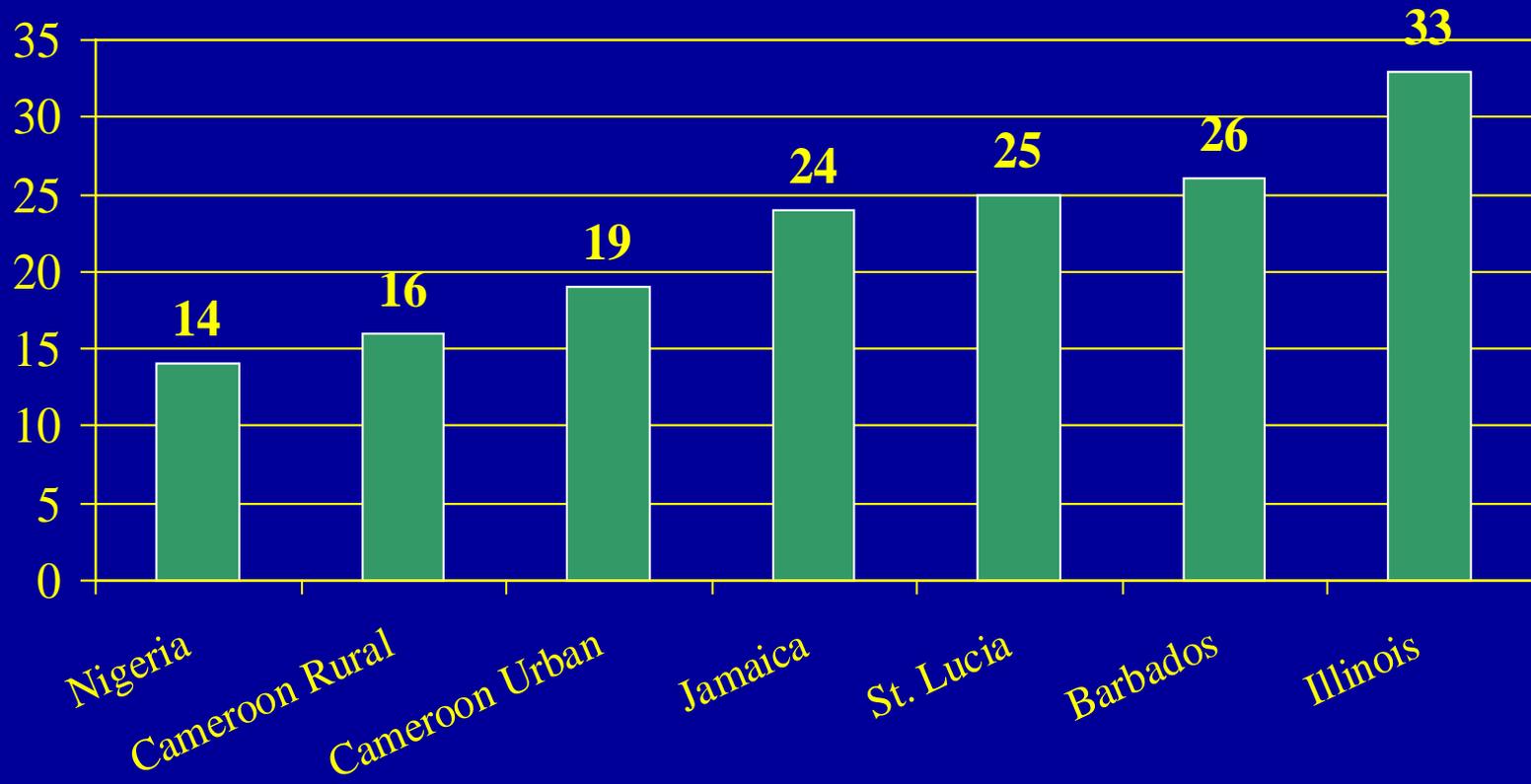
What is Race?

“Pure races in the sense of genetically homogenous populations do not exist in the human species today, nor is there any evidence that they have ever existed in the past... Biological differences between human beings reflect both hereditary factors and the influence of natural and social environments. In most cases, these differences are due to the interaction of both.”

Why Study Race?

“Race is “a social concept that changes over time. ...Research documents the role and consequences of race in primary social institutions and environments, including the criminal justice, education and health systems, job markets, and where people live...Refusing to acknowledge the fact of racial classification, feelings, and actions, and refusing to measure their consequences will not eliminate racial inequalities. At best, it will preserve the status quo.”

Hypertension, 7 West African Origin Groups (%)



Making Sense of “Racial” Differences

- Race reflects simultaneous unmeasured confounding for genetic factors (ancestral history and geographic origins) and environmental exposures
- Race reflects unmeasured confounding due to the current social environment
- Race reflects unmeasured confounding due to exposures over the life course (and generations) and biological adaptation to these environmental exposures. This includes changes in gene expression

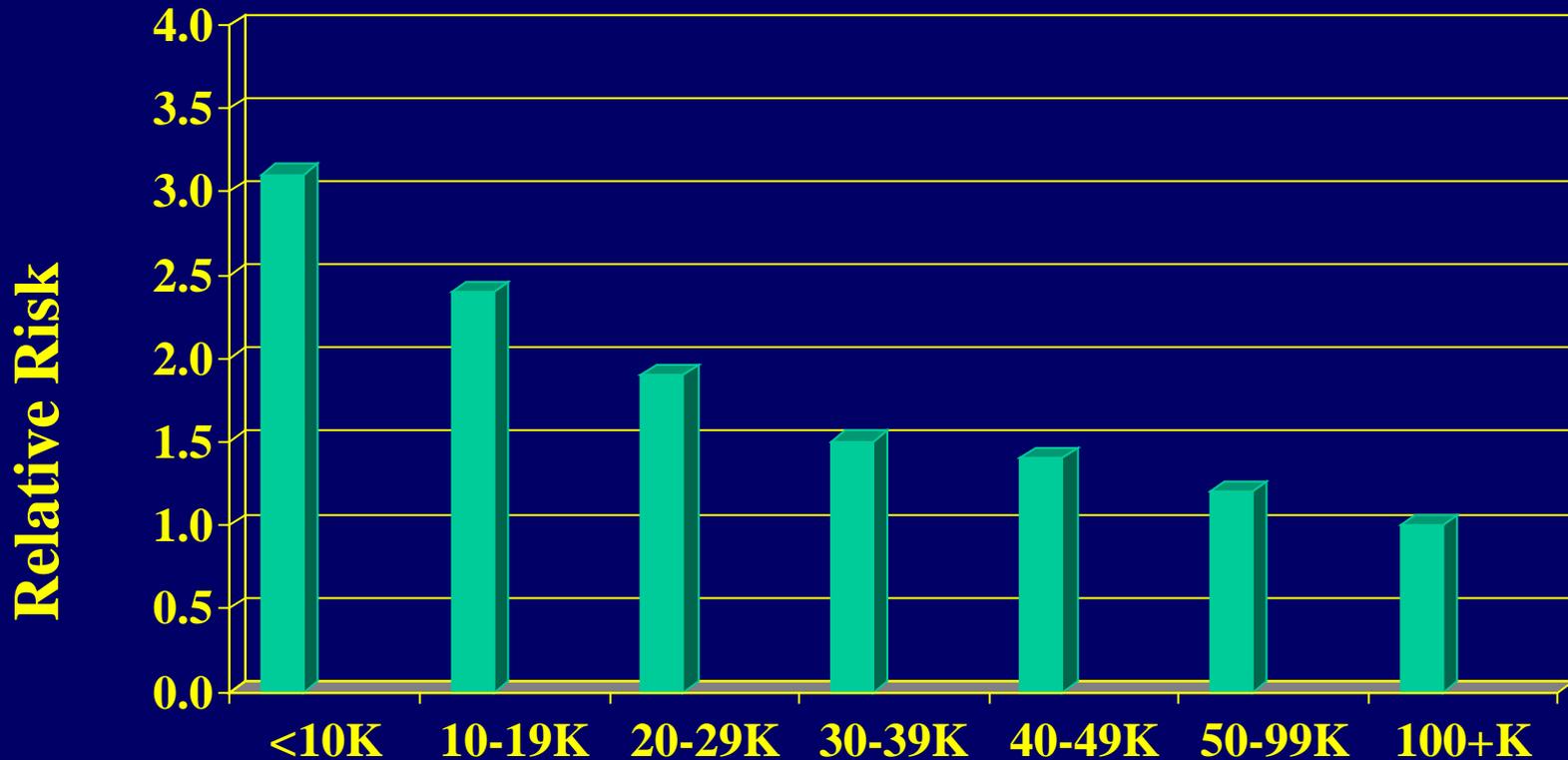
Central Role of Socioeconomic Status (SES)

**Typically measured by income, education, or
occupation, SES is one of the most robust
determinants of variations in health
in virtually every society**

SES: A Key Determinant of Health

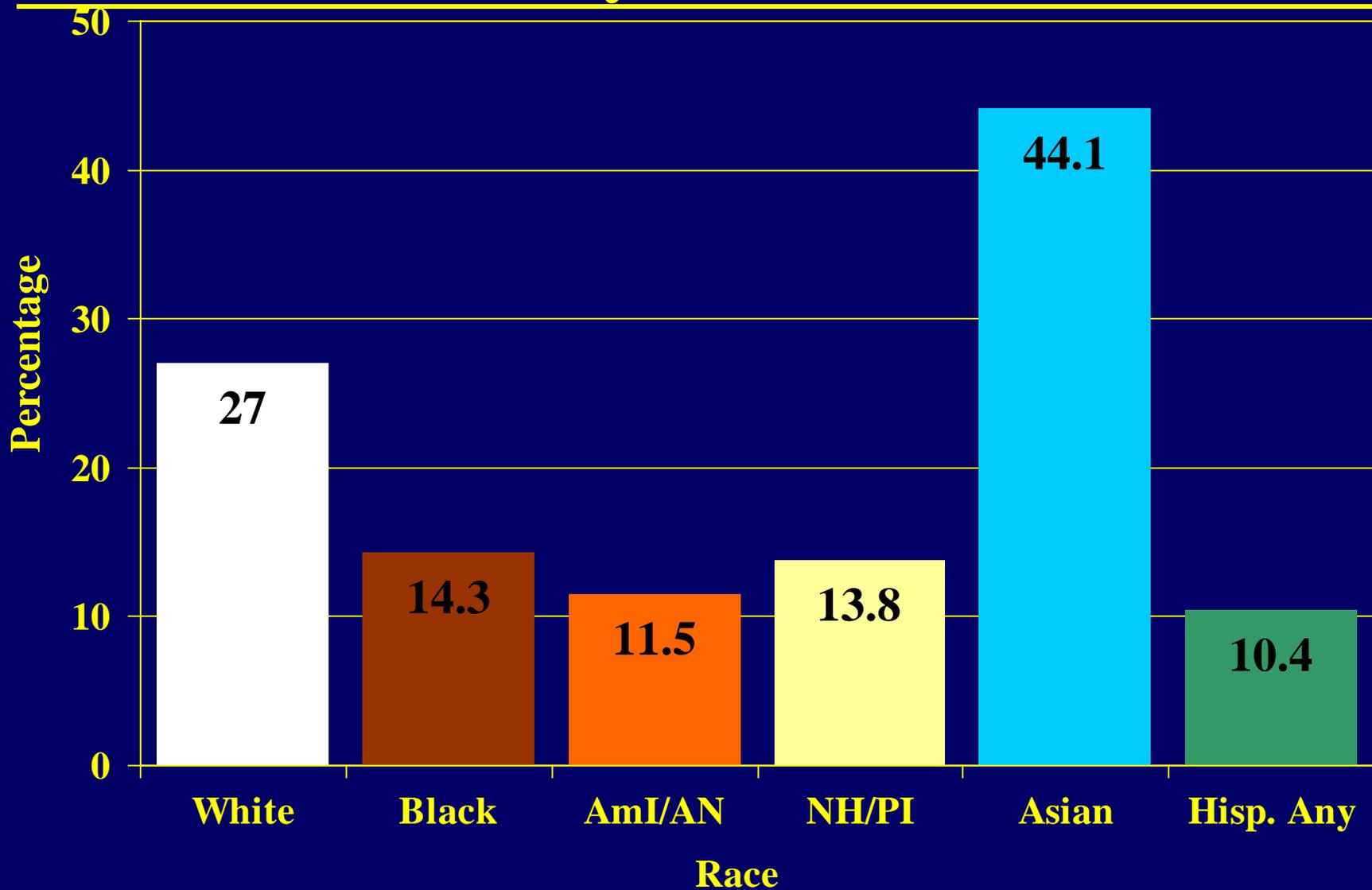
- **The gap in all-cause mortality between high and low SES persons is larger than the gap between smokers and non-smokers.**
 - **Americans who have not graduated from high school have a death rate two to three times higher than those who have graduated from college.**
 - **Low SES adults have levels of illness in their 30s and 40s that are not seen in the highest SES group until after the ages of 65-75.**
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Relative Risk of Premature Death by Family Income (U.S.)



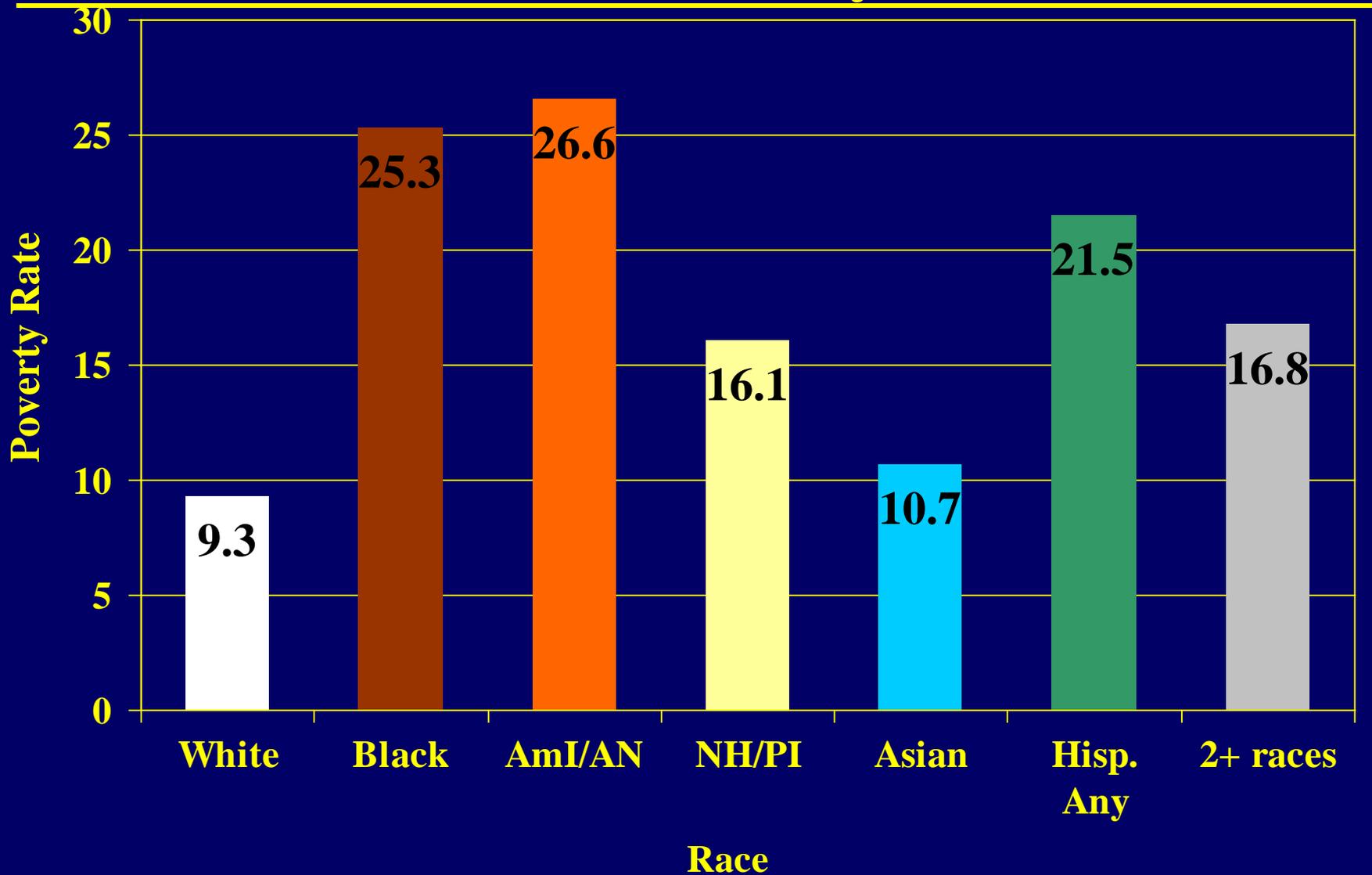
Family Income in 1980 (adjusted to 1999 dollars)

Percentage of College Grad+ by Race

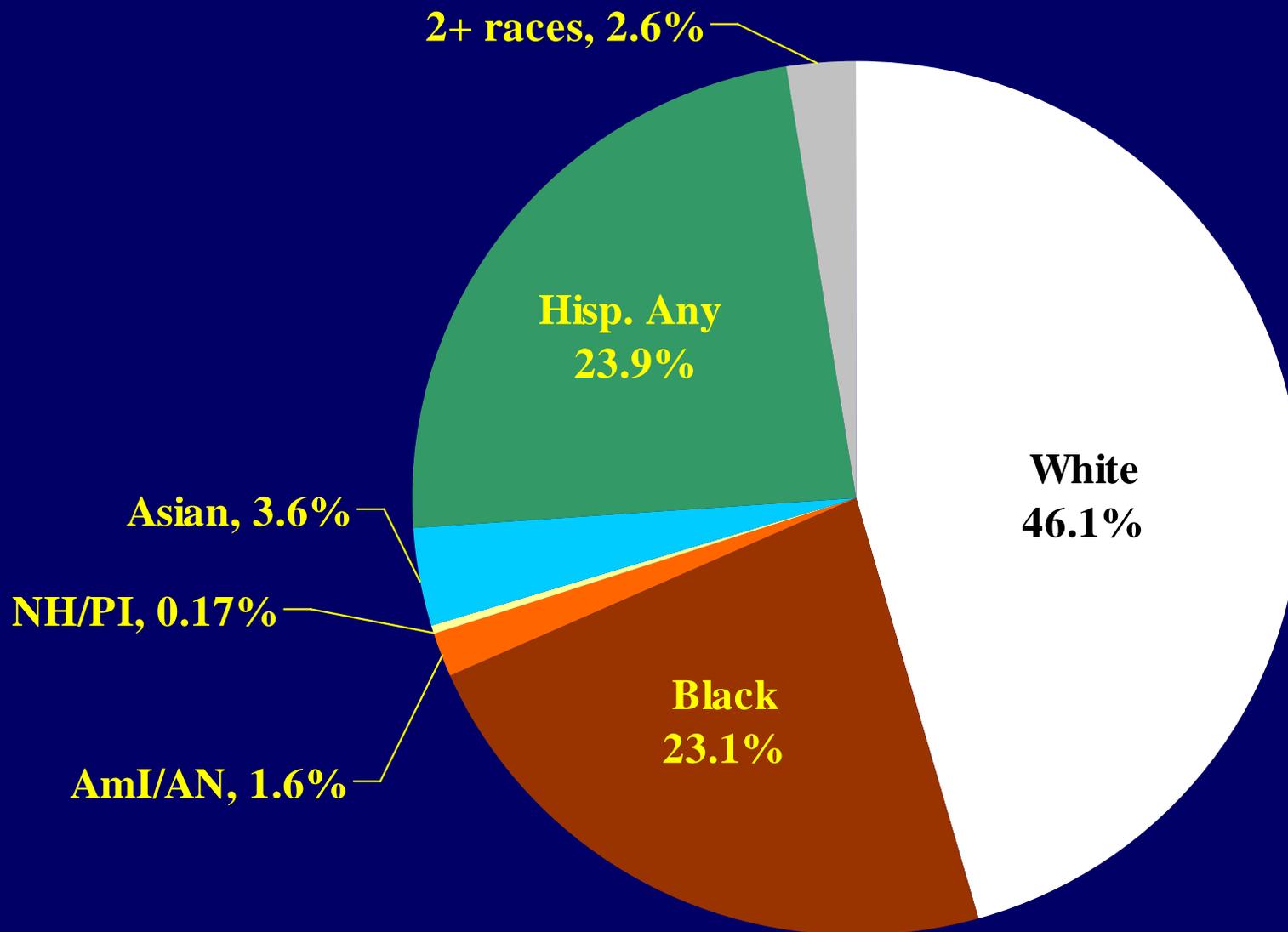


Percentage of Persons in Poverty

Race/Ethnicity



Racial/Ethnic Composition of People in Poverty in the U.S.



*Pattern: Racial/Ethnic Disparities in
Health reflect more than just SES*

**Minorities have elevated levels of illness
even at comparable levels of SES**

Life Expectancy At Age 25, 1998

Group	White	Black	Difference
All	53.4	48.4	5.0

Life Expectancy At Age 25, 1998

Group	White	Black	Difference
All	53.4	48.4	5.0
Education			
a. 0-12 Years	50.1		
b. 12 Years	54.1		
c. Some College	55.2		
d. College Grad	56.5		
Difference	6.4		

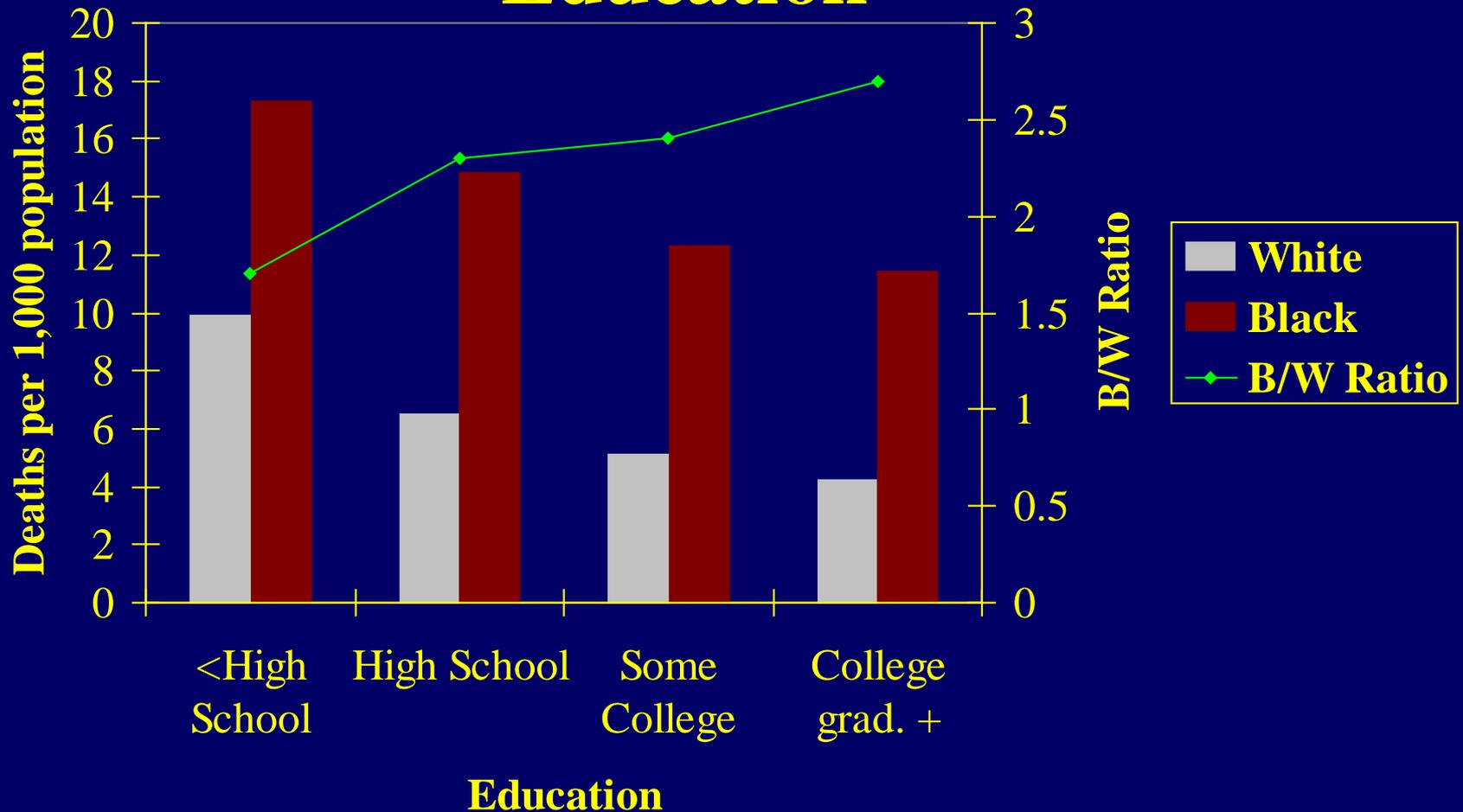
Life Expectancy At Age 25, 1998

Group	White	Black	Difference
All	53.4	48.4	5.0
Education			
a. 0-12 Years	50.1	47.0	
b. 12 Years	54.1	49.9	
c. Some College	55.2	50.9	
d. College Grad	56.5	52.3	
Difference	6.4	5.3	

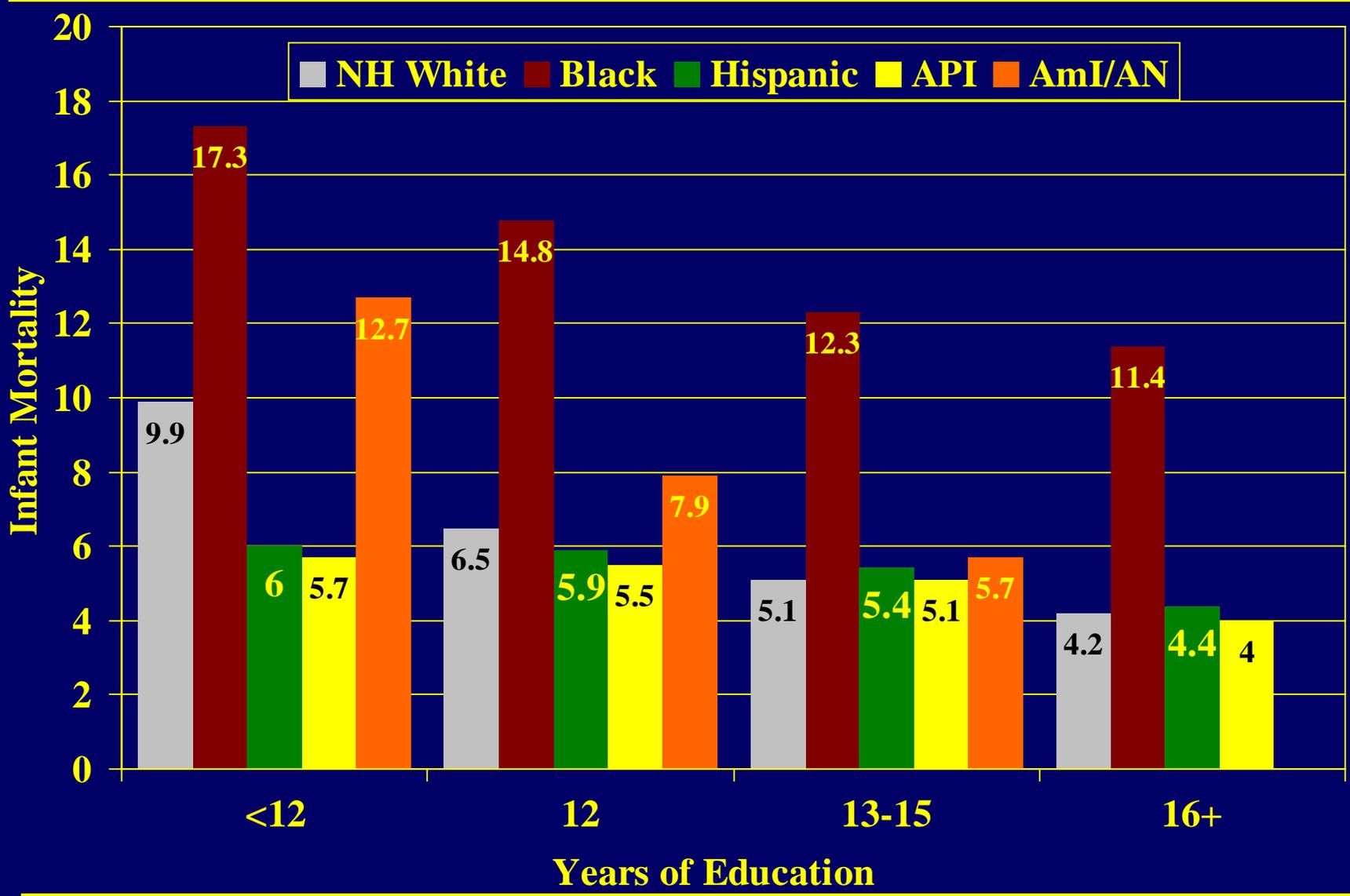
Life Expectancy At Age 25, 1998

Group	White	Black	Difference
All	53.4	48.4	5.0
Education			
a. 0-12 Years	50.1	47.0	3.1
b. 12 Years	54.1	49.9	4.2
c. Some College	55.2	50.9	4.3
d. College Grad	56.5	52.3	4.2
Difference	6.4	5.3	

Infant Death Rates by Mother's Education



Infant Mortality by Mother's Education



Meharry vs Johns Hopkins

A 1958 – 65, all Black, cohort of Meharry Medical College MDs was compared with a 1957- 64, all White, cohort of Johns Hopkins MDs. 23-25 years later, the Black MDs were more likely to have:

- **higher risk of CVD (RR=1.65)**
- **earlier onset of disease**
- **incidence rates of diabetes & hypertension that were twice as high**
- **higher incidence of coronary artery disease (1.4 times)**
- **higher case fatality (52% vs 9%)**

More Adverse Effects

- Alcohol-related mortality is more than twice as high for black than white males, and almost twice as high for females (Stinson et al, 1996).
 - In contrast to the cardio-protective observed for whites, moderate alcohol consumption was positively related to incident coronary heart disease (Fuchs et al, 2004), incident hypertension (Fuchs et al. 2001) and coronary calcification (Pletcher et al, 2005) for blacks.
 - Tobacco more negative effects for blacks than whites
 - Interactions of health practices with social, physical chemical stressors?
-

Why Race Still Matters

- 1. All indicators of SES are non-equivalent across race.**
 - 2. Health is affected not only by current SES but by exposure to social and economic adversity over the life course.**
 - 3. Personal experiences of discrimination and institutional racism are added pathogenic factors that can affect the health of minority group members in multiple ways.**
-

Non Equivalence of SES across Race

Compared to whites, blacks

- Receive less income at the same levels of education,
- have less wealth at the equivalent income levels, and
- have less purchasing power (at a given level of income) because of higher costs of goods and services.

Distinctive Social Exposures

The minority poor are poorer than the white poor

Wealth of Whites and of Minorities per \$1 of Whites, 2000

Household Income	White	B/W Ratio	Hisp/W Ratio
Total	\$ 79,400	9¢	12¢
Poorest 20%	\$ 24,000	1¢	2¢
2nd Quintile	\$ 48,500	11¢	12¢
3rd Quintile	\$ 59,500	19¢	19¢
4th Quintile	\$ 92,842	35¢	39¢
Richest 20%	\$ 208,023	31¢	35¢

Source: Orzechowski & Sepielli 2003, U.S. Census

Race and Economic Hardship

African Americans were more likely than whites to experience the following hardships ¹:

- 1. Unable to meet essential expenses**
- 2. Unable to pay full rent on mortgage**
- 3. Unable to pay full utility bill**
- 4. Had utilities shut off**
- 5. Had telephone shut off**
- 6. Evicted from apartment**

¹ After adjustment for income, education, employment status, transfer payments, home ownership, gender, marital status, children, disability, health insurance and residential mobility.

Distinctive Social Exposures

The added burden of racism

Racism: Potential Mechanisms

- Institutional discrimination can restrict economic attainment and thus differences in SES and health.
 - Segregation creates pathogenic residential conditions.
 - Discrimination can lead to reduced access to desirable goods and services.
 - Internalized racism (acceptance of society's negative beliefs) can adversely affect health.
 - Racism can lead to increased exposure to traditional stressors (e.g. unemployment).
 - Experiences of discrimination may be a neglected psychosocial stressor.
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Perceived Discrimination:

*Experiences of discrimination are a
neglected psychosocial stressor*

Discrimination Persists

- Pairs of young, well-groomed, well-spoken college men with identical resumes apply for 350 advertised entry-level jobs in Milwaukee, Wisconsin. Two teams were black and two were white. In each team, one said that he had served an 18-month prison sentence for cocaine possession.
- The study found that it was easier for a white male with a felony conviction to get a job than a black male whose record was clean.

Percent of Job Applicants Receiving a Callback

Criminal Record

White

Black

No

34%

14%

Yes

17%

5%

Recent Review

- **115 studies in PubMed between 2005 and 2007**
- **Some longitudinal data**
- **Attention to the severity and course of disease**
- **International studies:**
 - **national: New Zealand, Sweden, & South Africa**
 - **Australia, Canada, Denmark, the Netherlands, Norway, Spain, Bosnia, Croatia, Austria, Hong Kong, and the U.K.**
- **Discrimination accounts, in part, for racial/ethnic disparities in health**

Every Day Discrimination

In your day-to-day life how often do the following things happen to you?

- **You are treated with less courtesy than other people.**
 - **You are treated with less respect than other people.**
 - **You receive poorer service than other people at restaurants or stores.**
 - **People act as if they think you are not smart.**
 - **People act as if they are afraid of you.**
 - **People act as if they think you are dishonest.**
 - **People act as if they're better than you are.**
 - **You are called names or insulted.**
 - **You are threatened or harassed.**
-

Everyday Discrimination and Subclinical Disease

In the study of Women's Health Across the Nation (SWAN):

- Everyday Discrimination was positively related to subclinical carotid artery disease (IMT; intima-media thickness) for black but not white women
- chronic exposure to discrimination over 5 years was positively related to coronary artery calcification (CAC)

How Stress Affects Health

Plausible Pathways:

1. Shapes Health Behaviors
2. Can affect compliance with medical regimens
3. Creates Negative Emotional States that can affect specific physiological systems e.g. cardiovascular, immune, neuroendocrine

Discrimination and Health Care Behaviors

Recent studies indicate that experiences of discrimination are associated with:

- Delays in seeking treatment
 - Lower adherence to treatment regimes
 - Lower rates of follow-up
-

Discrimination and Disparities in Health

Perceptions of discrimination account for some of the racial differences in:

- self-reported physical and/or mental health in the U.S. (Williams et al, 1997; Ren et al, 1999; Pole et al, 2005), Australia (Larson et al, 2007), South Africa (Williams et al. 2008) & New Zealand (Harris et al. 2006)
- birth outcomes (Mustillo et al. 2004)
- health care trust (Adegmembo et al, 2006)
- sleep quality and physical fatigue (Thomas et al. 2006)

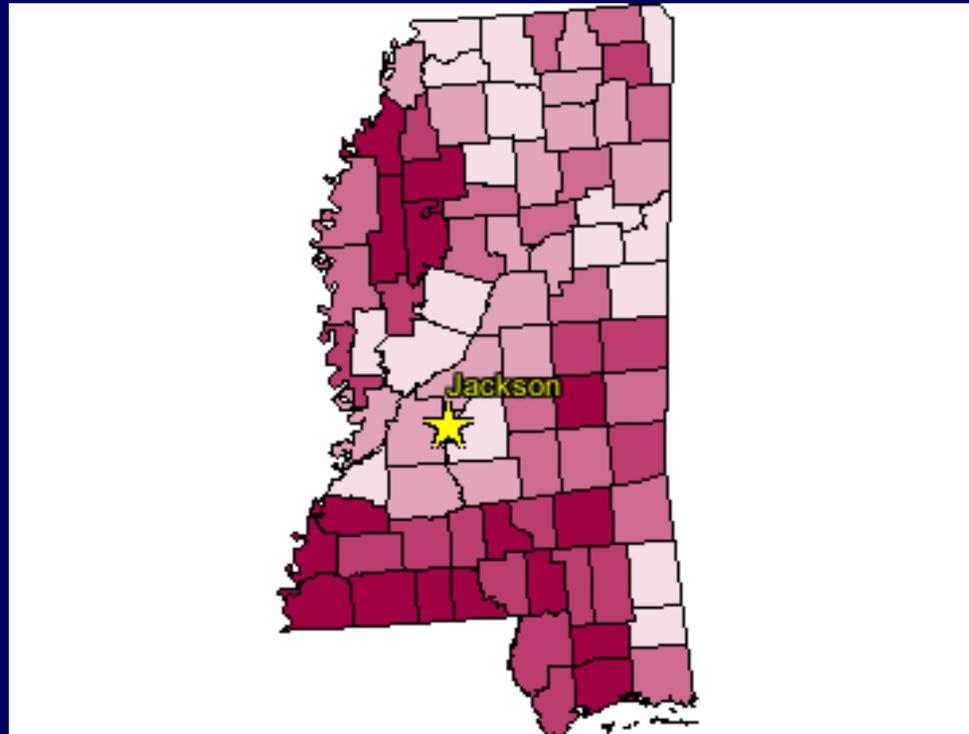
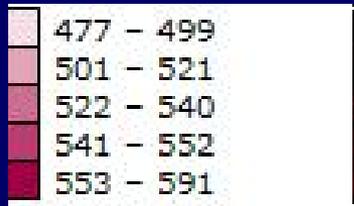
Distinctive Social Exposures

Place Matters!

Geographic location determines
exposure to risk factors and resources
that affect health

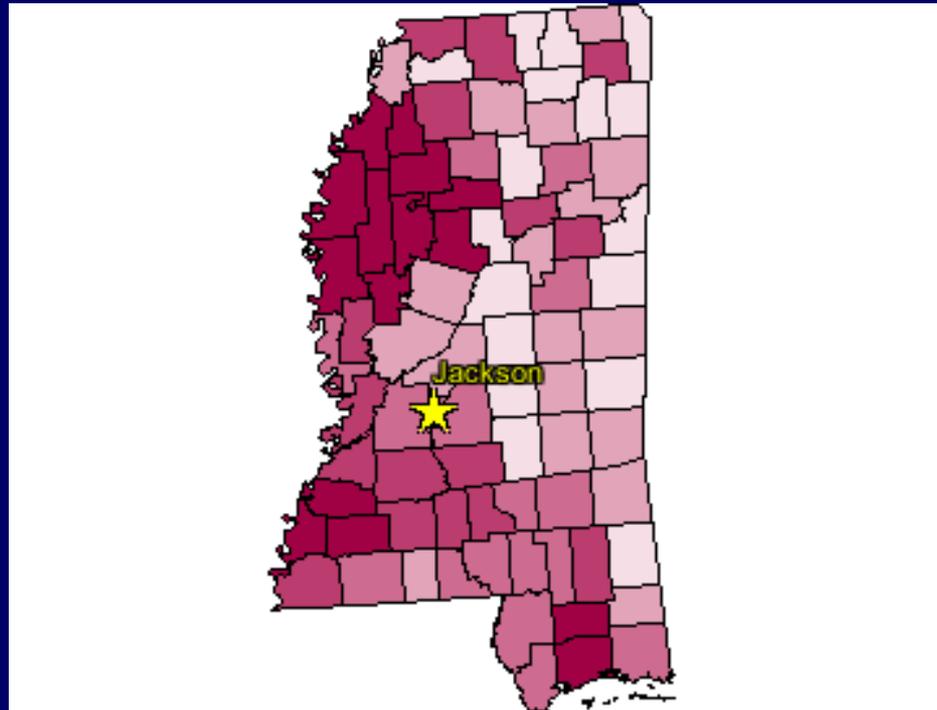
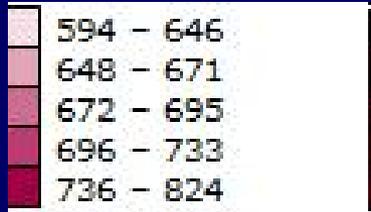
Heart Disease Rates Mississippi 1996-2000

White Women



Heart Disease Rates Mississippi 1996-2000

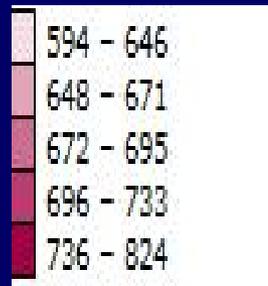
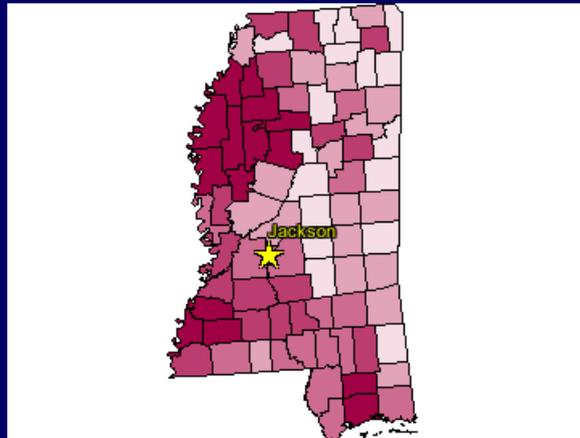
Black Women



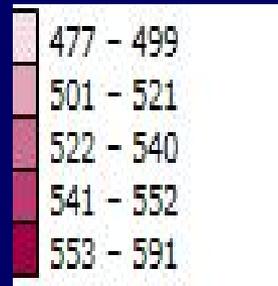
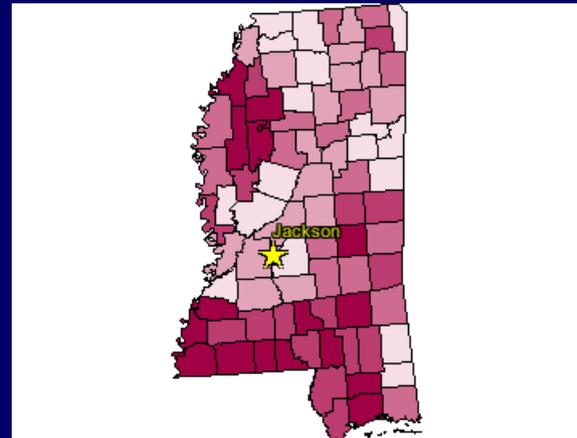
Heart Disease Rates Mississippi 1996-2000

Women

Black



White



*Residential Segregation is a
place-based example of
Institutional Discrimination that
has pervasive adverse effects on
health*

Racial Segregation Is ...

1. ... "basic" to understanding racial inequality in America (Myrdal 1944) .
 2. ...key to understanding racial inequality (Kenneth Clark, 1965) .
 3. ...the "linchpin" of U.S. race relations and the source of the large and growing racial inequality in SES (Kerner Commission, 1968) .
 4. ... "one of the most successful political ideologies" of the last century and "the dominant system of racial regulation and control" in the U.S (John Cell, 1982).
 5. ... "the key structural factor for the perpetuation of Black poverty in the U.S." and the "missing link" in efforts to understand urban poverty (Massey and Denton, 1993).
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How Segregation Can Affect Health

1. Segregation determines quality of education and employment opportunities.
2. Segregation can create pathogenic neighborhood and housing conditions.
3. Conditions linked to segregation can constrain the practice of health behaviors and encourage unhealthy ones.
4. Segregation can adversely affect access to high-quality medical care.

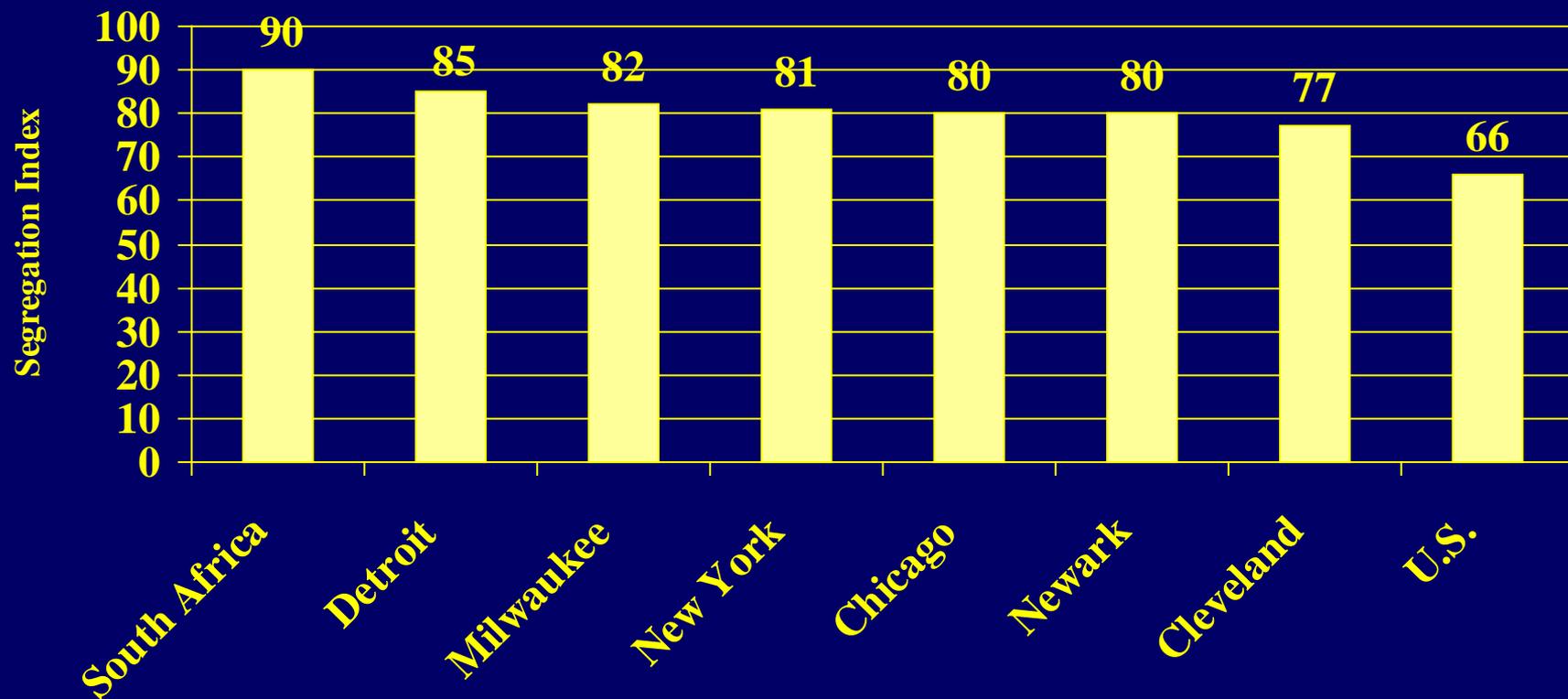
Residential Segregation and SES

A study of the effects of segregation on young African American adults found that the elimination of segregation would erase black-white differences in

- Earnings
- High School Graduation Rate
- Unemployment

And reduce racial differences in single motherhood by two-thirds

American Apartheid: South Africa (de jure) in 1991 & U.S. (de facto) in 2000



Source: Massey 2004; Iceland et al. 2002; Glaeser & Vigitor 2001

Racial Differences in Residential Environment

- In the 171 largest cities in the U.S., there is not even one city where whites live in ecological equality to blacks in terms of poverty rates or rates of single-parent households.
- “The worst urban context in which whites reside is considerably better than the average context of black communities.”
p.41

Segregation: Distinctive for Blacks

- Blacks are more segregated than any other racial/ethnic group.
- Segregation is inversely related to income for Latinos and Asians, but is high at all levels of income for blacks.
- The most affluent blacks (> \$50,000) are more segregated than the poorest Latinos and Asians (<\$15,000).
- Thus, middle class blacks live in poorer areas than whites of similar SES and poor whites live in much better neighborhoods than poor blacks.
- African Americans manifest a higher preference for residing in integrated areas than any other group.

Research Implications: Distinctive Patterns?

- What effects do these distinctive residential environments have on normal physiological processes?
 - How are normal adaptive and regulatory systems affected by the harsh residential environment of blacks?
 - To what extent does African Americans' biological adaptation to their residential environments lead to some biological profiles that are different from other groups and some distinctive patterns of interactions (between biological and psychosocial factors)?
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Research Challenge

We need a more integrated science to better elucidate:

- how multiple dimensions of the social and physical environment,
 - combine, additively and/or interactively with each other,
 - and with innate and acquired biological factors,
 - and accumulate over the life course,
 - to affect the onset of illness
 - and the progression of disease processes
-

Attend to the Continuum of Disease

- Social disparities exist across the continuum of disease
 - Risk factors for the onset of illness are sometimes different than the determinants of the severity and progression of disease
 - Disparities in the course of disease are sometimes larger than disparities in disease incidence
 - Research is needed to identify both the determinants of disease and the optimal intervention strategies at each specific point of the disease continuum
-

Reducing Inequalities

Centrality of the Social Environment

An individual's chances of getting sick are largely unrelated to the receipt of medical care

Where we live, learn, work, play and worship determine our opportunities and chances for being healthy

Social policies can make it easier or harder to make healthy choices

Redefining Health Policy

Health Policies include policies in all sectors of society that affect opportunities to choose health, including, for example,

- Housing Policy
 - Employment Policies
 - Community Development Policies
 - Income Support Policies
 - Transportation Policies
 - Environmental Policies
-

Recommendations

1. We need to identify markers better than race to identify the potential contribution of genetic factors
 2. Whenever racial/ethnic data are reported, we must give more attention to interpretation: always indicate why race/ethnicity is being used, the limitations of racial/ethnic data, and how findings should be interpreted. The presentation of data on racial differences should routinely stratify them by SES within racial groups. Failure to do so may mis-specify complex health risks and even lead to harmful social stereotypes.
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Recommendations cont'd.

3. Move from descriptive studies of race and health to studies that identify the specific factors linked to race that affect health. Whenever feasible, additional information that captures these characteristics should be collected. This will include the assessment of SES, acculturation, and economic and non-economic aspects of discrimination.
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Recommendations cont'd.

4. As research on the human genome moves forward, we also need major new efforts to provide comprehensive, detailed, and rigorous characterization of the risk factors and resources in the social/physical environment that may interact with biological predispositions to affect health risks.
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Conclusions

- 1. Racial disparities in health are large, pervasive and persistent over time.**
 - 2. Racial inequalities in health reflect larger social inequalities in society, of which SES is one component.**
 - 3. Accordingly, race still matters for health when SES is considered.**
 - 4. Research is needed that elucidates how risks and resources linked to living and working conditions combine, over time, to affect the health of socially disadvantaged populations.**
 - 5. We need to act NOW on current knowledge.**
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