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

David R. Williams, PhD, MPH
Florence & Laura Norman Professor of Public Health
Professor of African & African American Studies and of Sociology
Harvard University
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.

Nobles, 2000
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

<table>
<thead>
<tr>
<th>Father’s Race</th>
<th>Mother’s Race</th>
<th>Child’s Race</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>White</td>
<td>White</td>
</tr>
<tr>
<td>White</td>
<td>Black</td>
<td>Black</td>
</tr>
<tr>
<td>Black</td>
<td>White</td>
<td>Black</td>
</tr>
<tr>
<td>White</td>
<td>Am. Indian</td>
<td>Am. Indian</td>
</tr>
<tr>
<td>Am. Indian</td>
<td>White</td>
<td>Am. Indian</td>
</tr>
<tr>
<td>Black</td>
<td>Am. Indian</td>
<td>Black</td>
</tr>
<tr>
<td>Am. Indian</td>
<td>Black</td>
<td>Am. Indian</td>
</tr>
<tr>
<td>Asian</td>
<td>White</td>
<td>Asian</td>
</tr>
<tr>
<td>White</td>
<td>Asian</td>
<td>Asian</td>
</tr>
<tr>
<td>Black</td>
<td>Asian</td>
<td>Black</td>
</tr>
<tr>
<td>Asian</td>
<td>Black</td>
<td>Asian</td>
</tr>
<tr>
<td>Hawaiian</td>
<td>Any Race</td>
<td>Hawaiian</td>
</tr>
<tr>
<td>Any Race</td>
<td>Hawaiian</td>
<td>Hawaiian</td>
</tr>
</tbody>
</table>

U.S. National Vital Statistics System
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.
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

Source: NCHS data, Table 29, 2007
Diabetes Death Rates 1955-1998

Deaths per 100,000 Population

Source: Indian Health Service; Trends in Indian Health 2000-2001
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.”

American Association of Physical Anthropology, 1996
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.”

American Sociological Association, 2003
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

Williams et al. 2010 An NY Acad Sci; Cooper et al. 2003, N Eng J Med
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 Heath

• 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.
Relative Risk of Premature Death by Family Income (U.S.)

Family Income in 1980 (adjusted to 1999 dollars)

9-year mortality data from the National Longitudinal Mortality Survey
Percentage of College Grad+ by Race

<table>
<thead>
<tr>
<th>Race</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>27</td>
</tr>
<tr>
<td>Black</td>
<td>14.3</td>
</tr>
<tr>
<td>AmI/AN</td>
<td>11.5</td>
</tr>
<tr>
<td>NH/PI</td>
<td>13.8</td>
</tr>
<tr>
<td>Asian</td>
<td>44.1</td>
</tr>
<tr>
<td>Hisp. Any</td>
<td>10.4</td>
</tr>
</tbody>
</table>

U.S. Census 2000
Percentage of Persons in Poverty Race/Ethnicity

<table>
<thead>
<tr>
<th>Race</th>
<th>Poverty Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>9.3</td>
</tr>
<tr>
<td>Black</td>
<td>25.3</td>
</tr>
<tr>
<td>AmI/AN</td>
<td>26.6</td>
</tr>
<tr>
<td>NH/PI</td>
<td>16.1</td>
</tr>
<tr>
<td>Asian</td>
<td>10.7</td>
</tr>
<tr>
<td>Hisp. Any</td>
<td>21.5</td>
</tr>
<tr>
<td>2+ races</td>
<td>16.8</td>
</tr>
</tbody>
</table>

U.S. Census 2006
Racial/Ethnic Composition of People in Poverty in the U.S.

- White: 46.1%
- Black: 23.1%
- AmI/AN: 1.6%
- NH/PI: 0.17%
- Asian: 3.6%
- Hisp. Any: 23.9%
- 2+ races: 2.6%

U.S. Census 2006
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

<table>
<thead>
<tr>
<th>Group</th>
<th>White</th>
<th>Black</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>53.4</td>
<td>48.4</td>
<td>5.0</td>
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Murphy, NVSS 2000; Braveman et al., AJPH, 2010, NLMS 1988-1998
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</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. 0-12 Years</td>
<td>50.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. 12 Years</td>
<td>54.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Some College</td>
<td>55.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. College Grad</td>
<td>56.5</td>
<td></td>
<td></td>
</tr>
<tr>
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<td></td>
</tr>
<tr>
<td>a. 0-12 Years</td>
<td>50.1</td>
<td>47.0</td>
<td></td>
</tr>
<tr>
<td>b. 12 Years</td>
<td>54.1</td>
<td>49.9</td>
<td></td>
</tr>
<tr>
<td>c. Some College</td>
<td>55.2</td>
<td>50.9</td>
<td></td>
</tr>
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<td>52.3</td>
<td></td>
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<tr>
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<td>5.0</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. 0-12 Years</td>
<td>50.1</td>
<td>47.0</td>
<td>3.1</td>
</tr>
<tr>
<td>b. 12 Years</td>
<td>54.1</td>
<td>49.9</td>
<td>4.2</td>
</tr>
<tr>
<td>c. Some College</td>
<td>55.2</td>
<td>50.9</td>
<td>4.3</td>
</tr>
<tr>
<td>d. College Grad</td>
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<td>52.3</td>
<td>4.2</td>
</tr>
<tr>
<td><strong>Difference</strong></td>
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<td>5.3</td>
<td></td>
</tr>
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</table>

Murphy, NVSS 2000; Braveman et al., AJPH, 2010, NLMS 1988-1998
Infant Death Rates by Mother’s Education

Deaths per 1,000 population

Education

<High School | High School | Some College | College grad. +

B/W Ratio

NCHS, 1998
Infant Mortality by Mother’s Education

<table>
<thead>
<tr>
<th>Years of Education</th>
<th>NH White</th>
<th>Black</th>
<th>Hispanic</th>
<th>API</th>
<th>AmI/AN</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;12</td>
<td>9.9</td>
<td>12.7</td>
<td>5.7</td>
<td>5.9</td>
<td>6.5</td>
</tr>
<tr>
<td>12</td>
<td>14.8</td>
<td>17.3</td>
<td>5.5</td>
<td>5.9</td>
<td>6.5</td>
</tr>
<tr>
<td>13-15</td>
<td>12.3</td>
<td>14.8</td>
<td>7.9</td>
<td>5.1</td>
<td>5.4</td>
</tr>
<tr>
<td>16+</td>
<td>11.4</td>
<td>12.7</td>
<td>5.7</td>
<td>5.4</td>
<td>4.2</td>
</tr>
</tbody>
</table>

NCHS, 1998
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%)

Thomas et al., 1997 J. Health Care for Poor and Underserved
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.

Williams & Collins, 1995; Ann Rev Soc
Distinctive Social Exposures

The minority poor are poorer than the white poor
### Wealth of Whites and of Minorities per $1 of Whites, 2000

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

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.

Bauman 1998; SIPP
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.
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.

Devah Pager; Am J Sociology, 2004
<table>
<thead>
<tr>
<th>Criminal Record</th>
<th>White</th>
<th>Black</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>34%</td>
<td>14%</td>
</tr>
<tr>
<td>Yes</td>
<td>17%</td>
<td>5%</td>
</tr>
</tbody>
</table>

Devah Pager; Am J Sociology, 2004
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

Williams & Mohammed, J Behav Med 2009
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)

Troxel et al. 2003; Lewis et al. 2006
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

Cohen et al 1995
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

Williams & Mohammed, J Behav Med 2009
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 (Adegmembob 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

[Map of Mississippi with color coding indicating heart disease rates for Black women]
Heart Disease Rates Mississippi 1996-2000

**Women**

**Black**

**White**

<table>
<thead>
<tr>
<th>Black</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>594 - 646</td>
<td>477 - 499</td>
</tr>
<tr>
<td>648 - 671</td>
<td>501 - 521</td>
</tr>
<tr>
<td>672 - 695</td>
<td>522 - 540</td>
</tr>
<tr>
<td>696 - 733</td>
<td>541 - 552</td>
</tr>
<tr>
<td>736 - 824</td>
<td>553 - 591</td>
</tr>
</tbody>
</table>
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).
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.

Source: Williams & Collins, 2001
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

Cutler, Glaeser & Vigdor, 1997

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.”

Source: Sampson & Wilson 1995
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.

Source: Massey 2004
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)?
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.
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.
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.

Recommendations cont’d.
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.