

On Describing Population Health Inequalities

Thomas A. LaVeist, PhD

William C. and Nancy F. Richardson Professor in Health Policy
Director, Hopkins Center for Health Disparities Solutions
Johns Hopkins Bloomberg School of Public Health



Articles on methods for measuring inequalities

- Harper S, King NB, Meersman SC, Reichman ME, Breen N, Lynch J. Implicit value judgments in the measurement of health inequalities. *Milbank Q.* 2010 Mar;88(1):4-29. [AbstractExternal Web Site Policy]
- Harper S, Lynch J, Meersman SC, Breen N, Davis WW, Reichman MC. Trends in area-socioeconomic and race-ethnic disparities in breast cancer incidence, stage at diagnosis, screening, mortality, and survival among women ages 50 years and over (1987-2005). *Cancer Epidemiol Biomarkers Prev.* 2009 Jan;18(1):121-31. [AbstractExternal Web Site Policy]
- Harper S, Lynch J, Meersman SC, Breen N, Davis WW, Reichman ME. An overview of methods for monitoring social disparities in cancer with an example using trends in lung cancer incidence by area-socioeconomic position and race-ethnicity, 1992-2004. *Am J Epidemiol* 2008 Apr 15;167(8):889-99. [AbstractExternal Web Site Policy]



http://seer.cancer.gov/hdcalc/

Health Disparities Calculato...

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For Researchers

Health Disparities Calculator (HD*Calc)

Datasets

[+] SEER Data 1973–2012

[+] Standard Population Data

US Mortality Data

[+] US Population Data

County Attributes

[+] Expected Survival Life Tables

SEER Linked Databases

[+] Specialized SEER*Stat Datasets

Statistical Software

[+] SEER*Stat

[+] SEER*Prep

http://seer.cancer.gov/data/

*Calc

Health Disparities Calculator (HD*Calc)

Latest Release: Version 1.2.4 – October 29, 2013

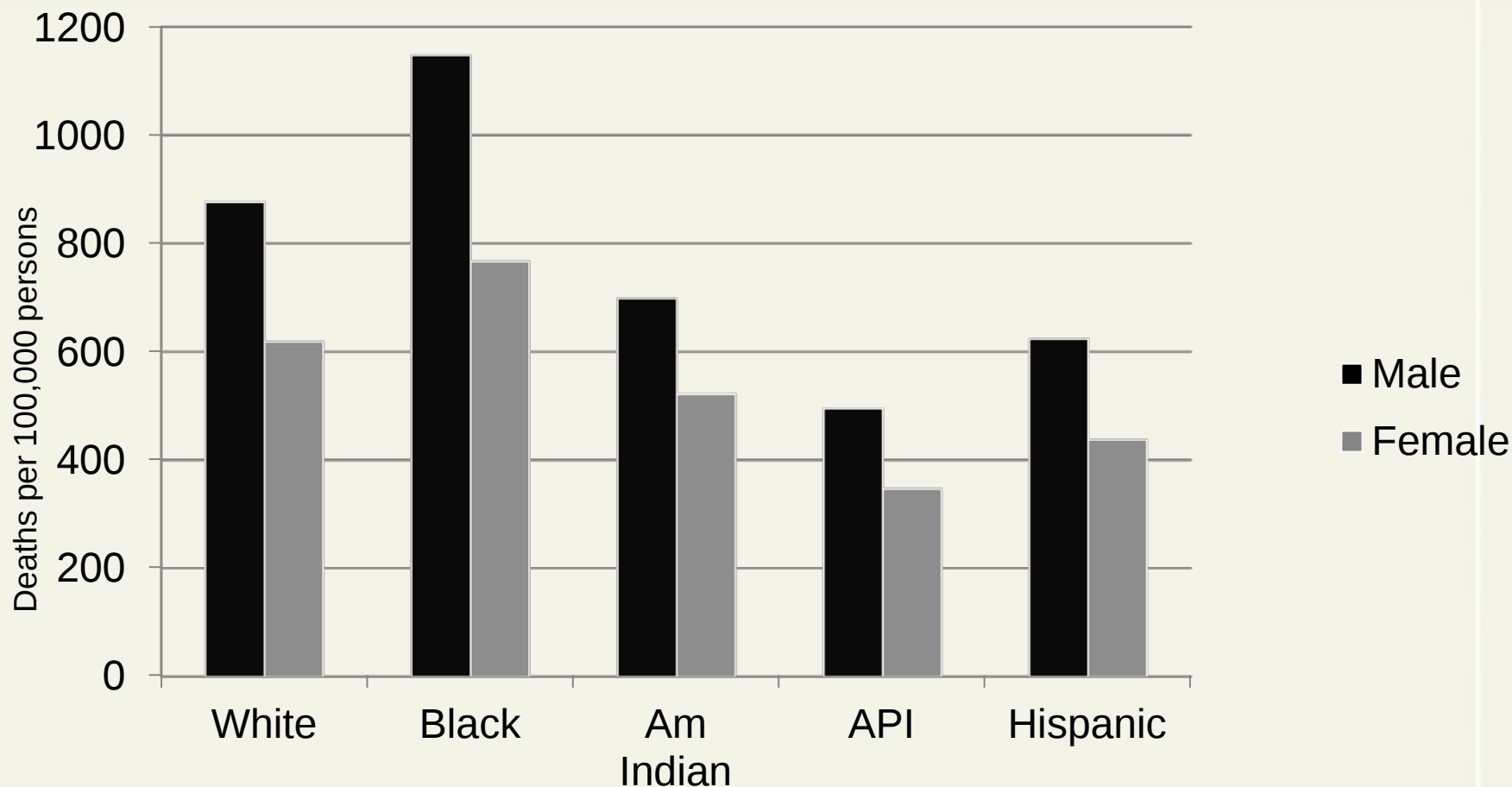
The Health Disparities Calculator (HD*Calc) is statistical software designed to generate multiple summary measures to evaluate and monitor health disparities (HD). HD*Calc was created as an extension of [SEER*Stat](#) that allows the user to import SEER data or other population-based health data and calculate any of eleven disparity measurements.

HD*Calc supports the use of a range of health disparities measures, allowing researchers to select and apply different measures to their data. HD*Calc was originally developed to expand the range of measures for evaluating health disparities related to cancer. However, since it can be used with any dataset, HD*Calc can be used in any research arena. Cross-sectional and trend data (e.g., cancer rates, survival, stage at diagnosis) categorized by disparity groups (e.g., area-socioeconomic status, race/ethnicity, geographic areas) can be imported into HD*Calc to generate four absolute and seven relative summary measures of disparity. The results are displayed as tables and charts, which may be exported for use

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Age-adjusted mortality rates by race/ethnicity and gender, 2009



Source: U.S. National Center for Health Statistics, "National Vital Statistics Reports," Volume 60, Number 3, Tables 1 & 2 December 29, 2011

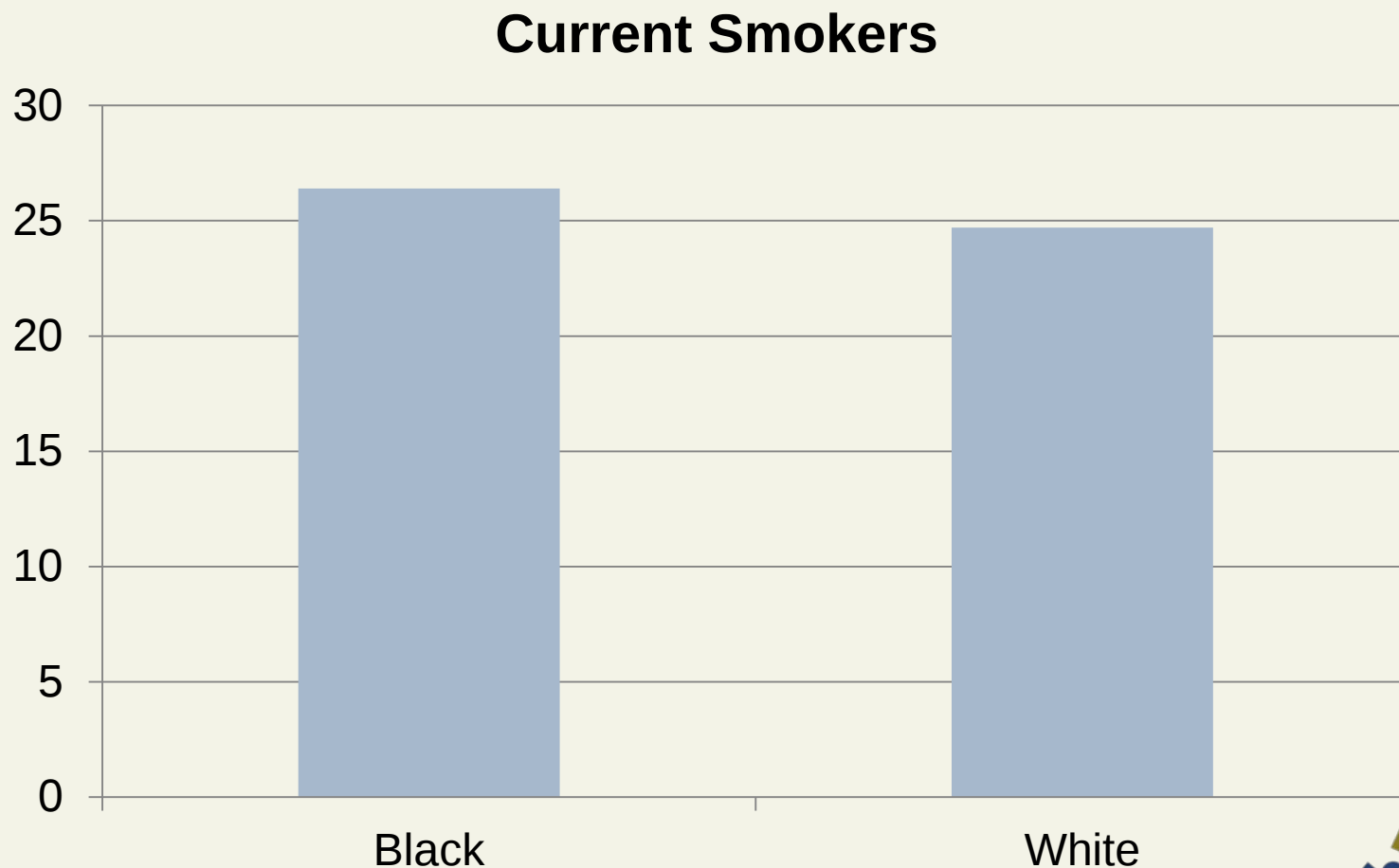


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“Exploration and Intervention for Health Equality...”

The limits of simply
comparing rates

Prevalence of male current smokers by race, 2000



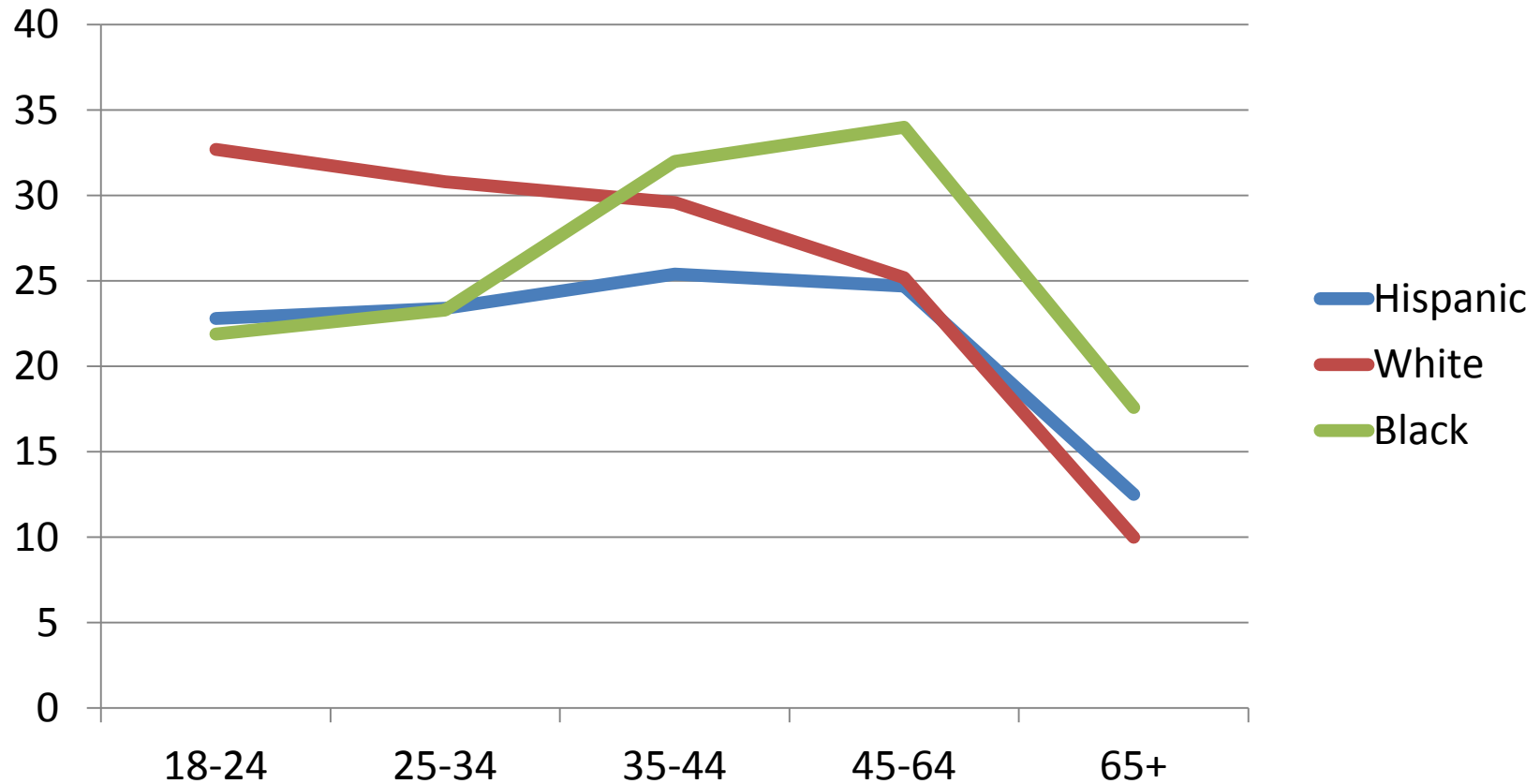
Source: Health Interview Survey 2000

“Exploration and Intervention for Health Equality...”

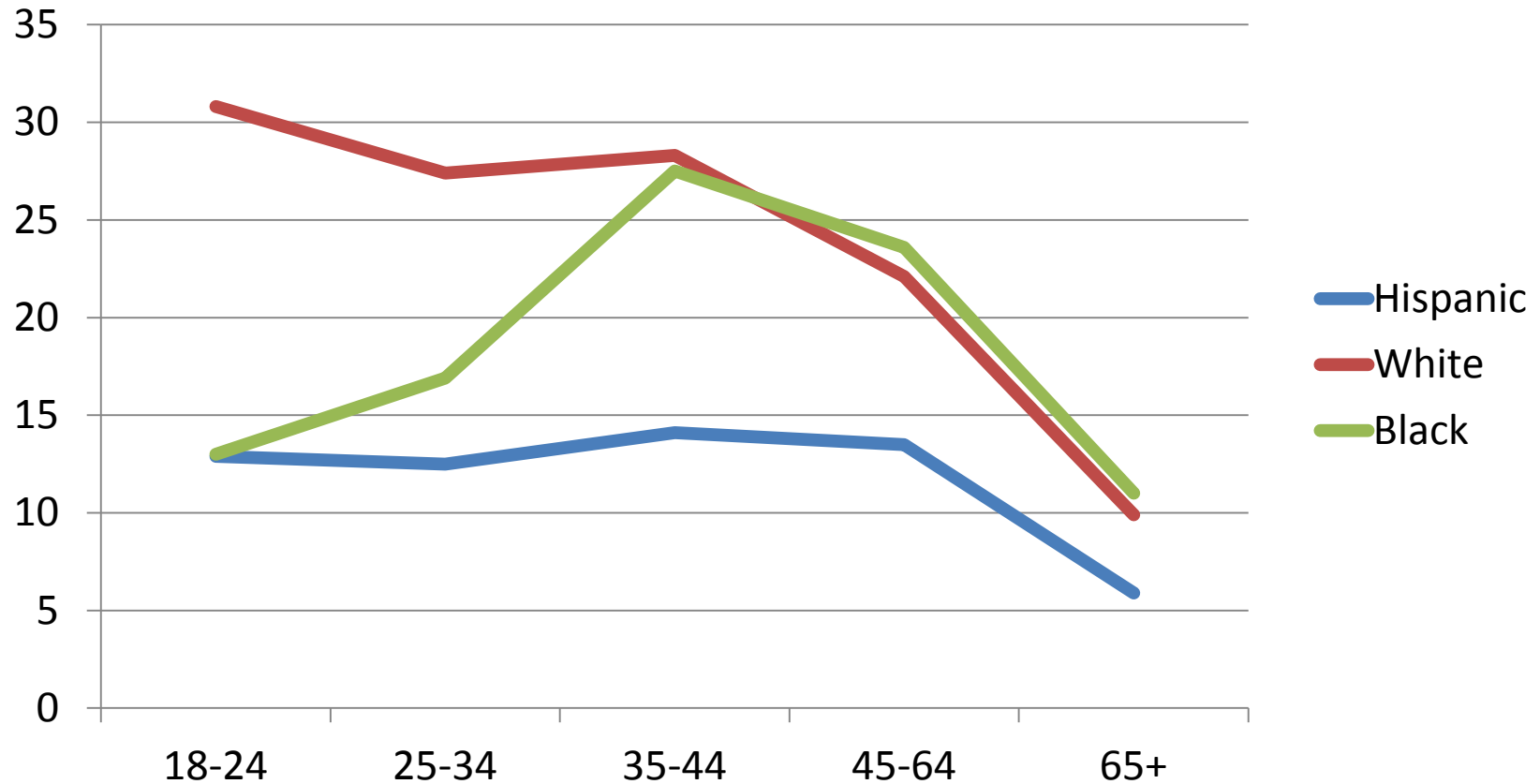


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Age and smoking prevalence by race/ethnicity among US men, 1999-2001

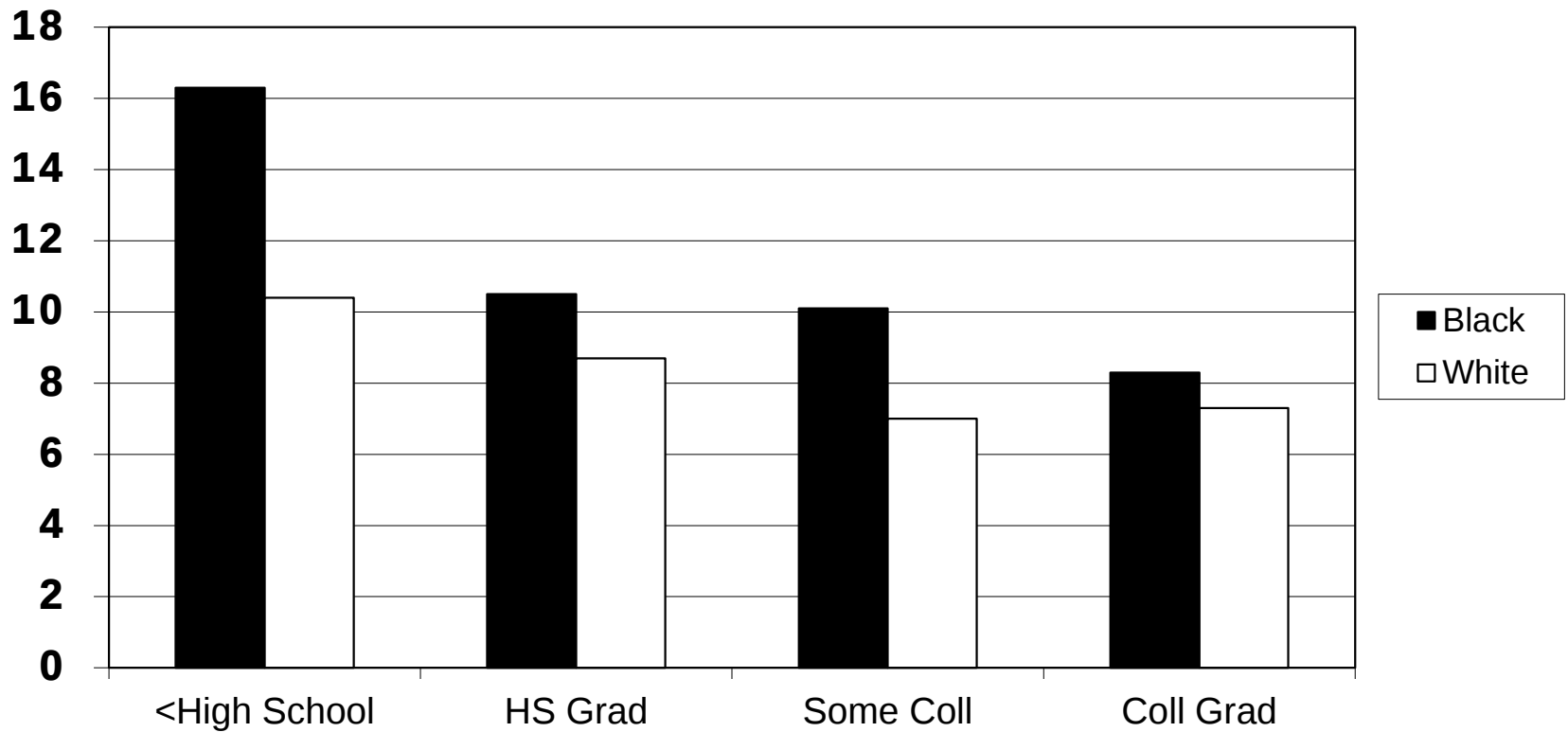


Age and smoking prevalence by race/ethnicity among US women, 1999-2001



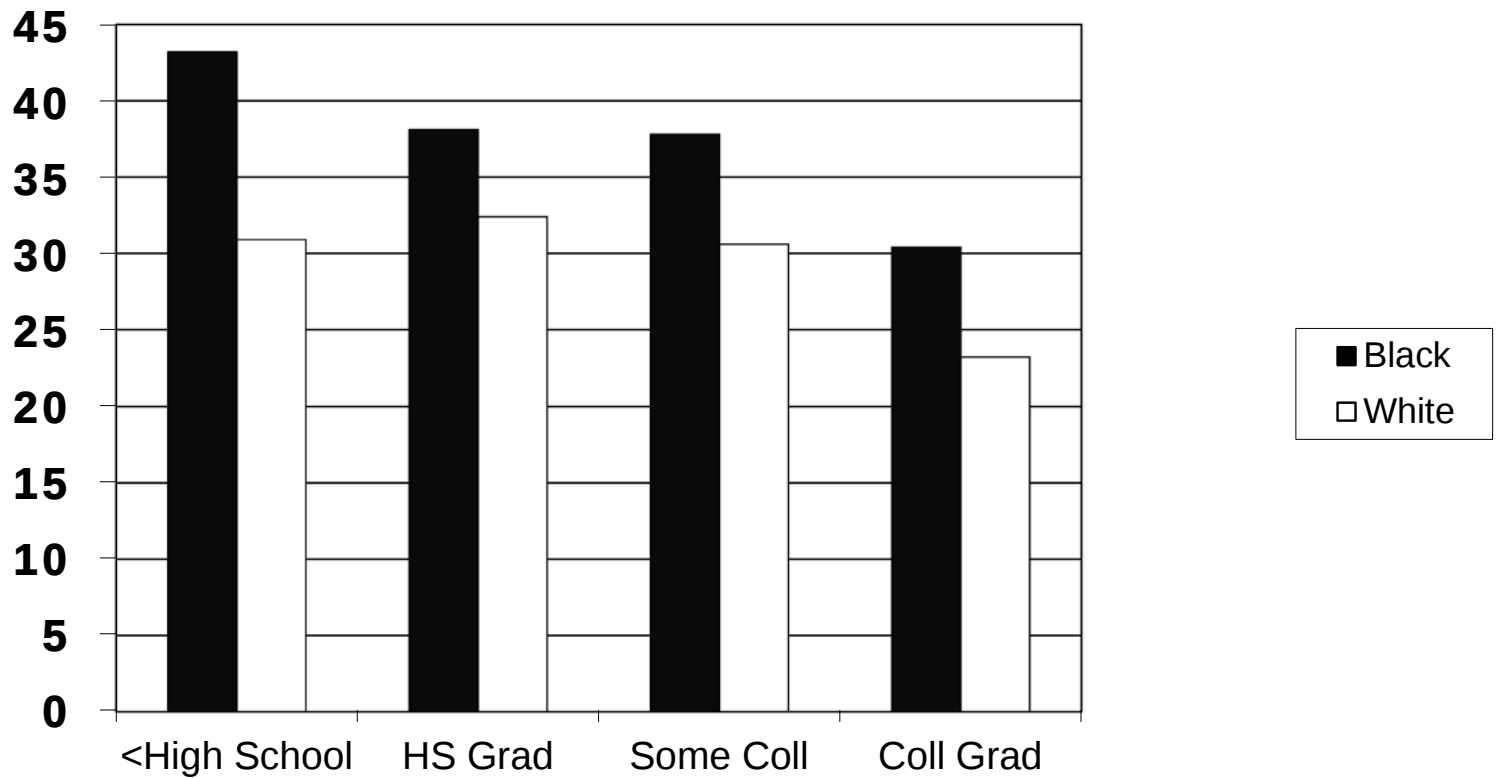
Social Position and Race

Education and Disparities in Diabetes, Age-Adjusted



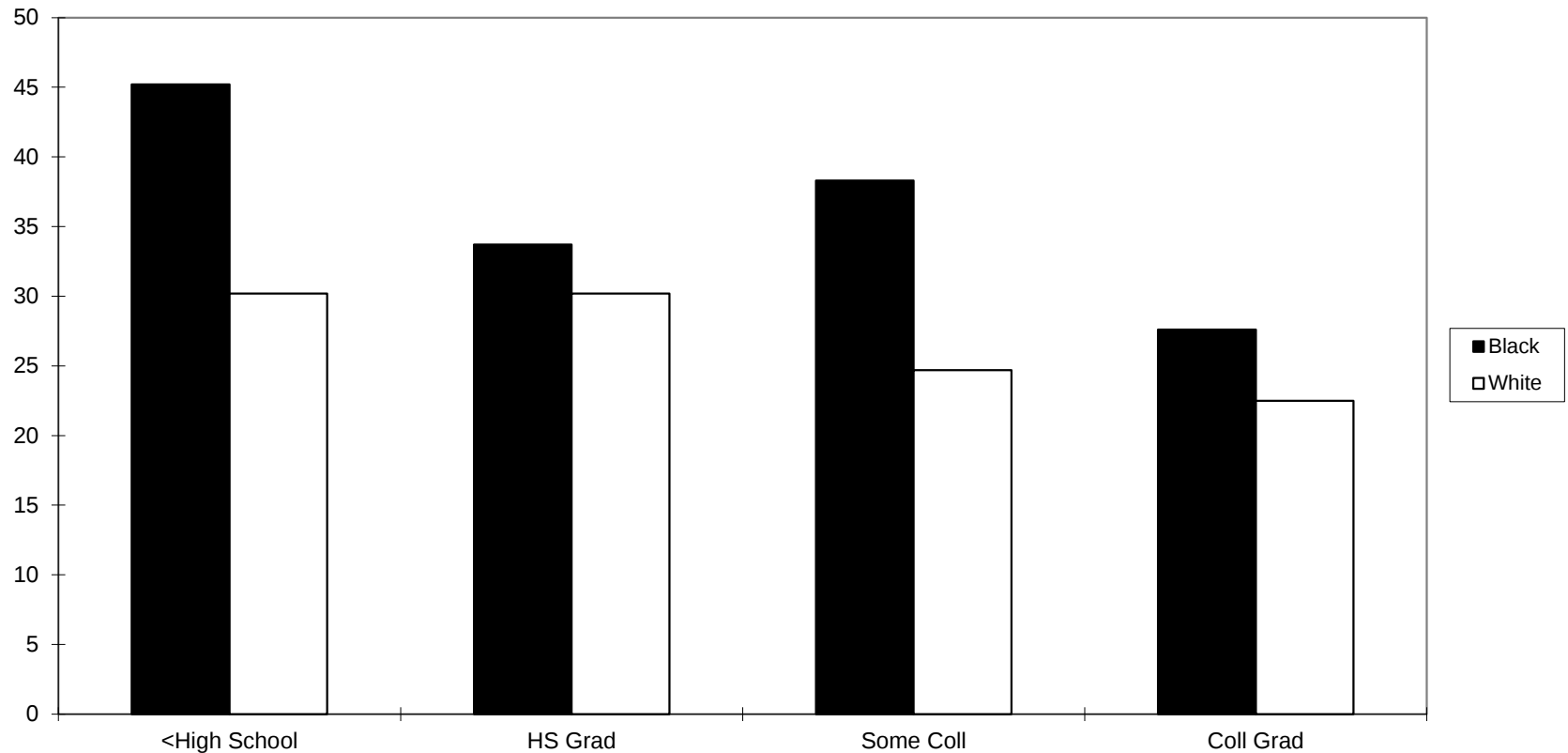
Source: Original analysis of 2005 National Health Interview Survey

Education and Disparities in Obesity, Age-Adjusted



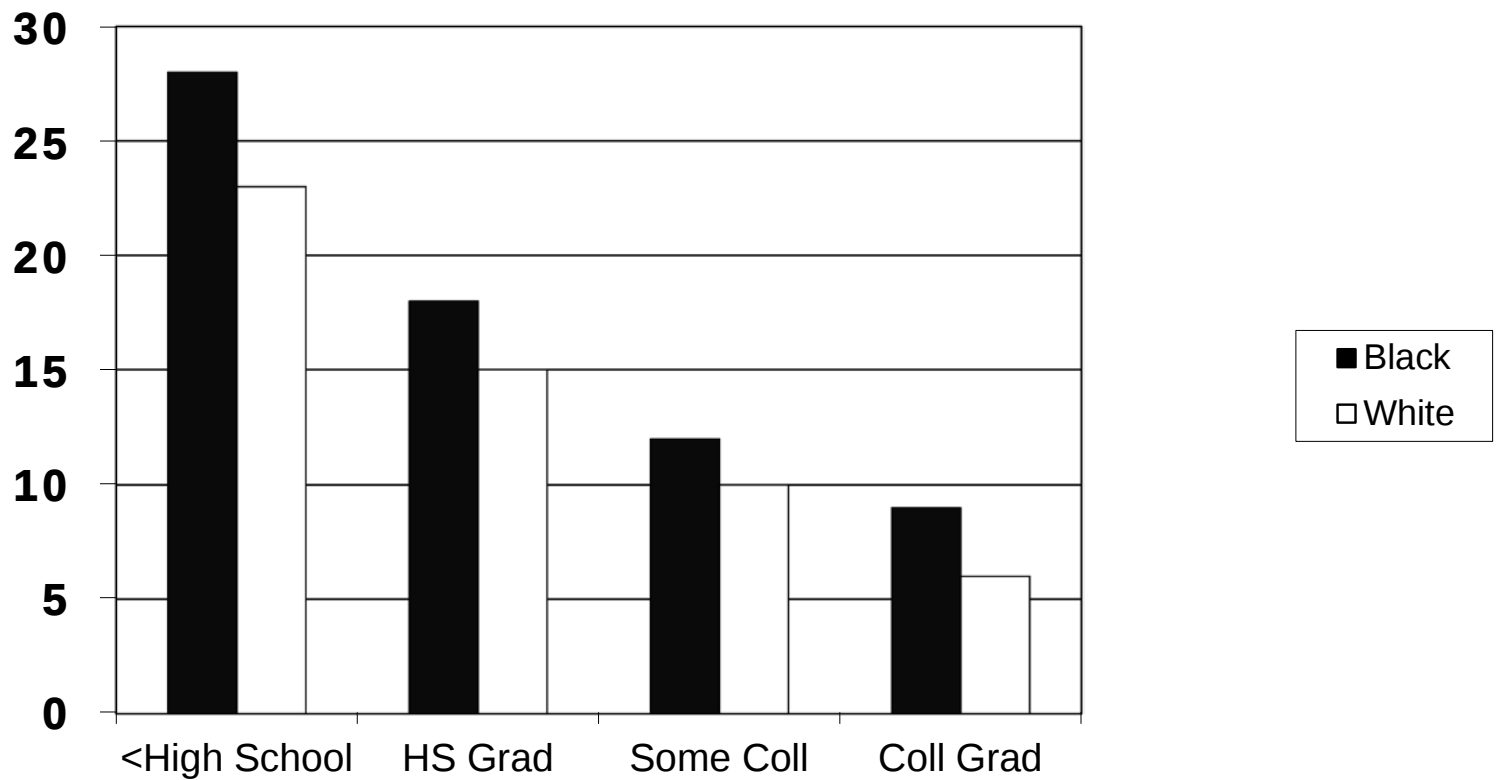
Source: Original analysis of 2005 National Health Interview Survey

Education and Disparities in Hypertension, Age-Adjusted



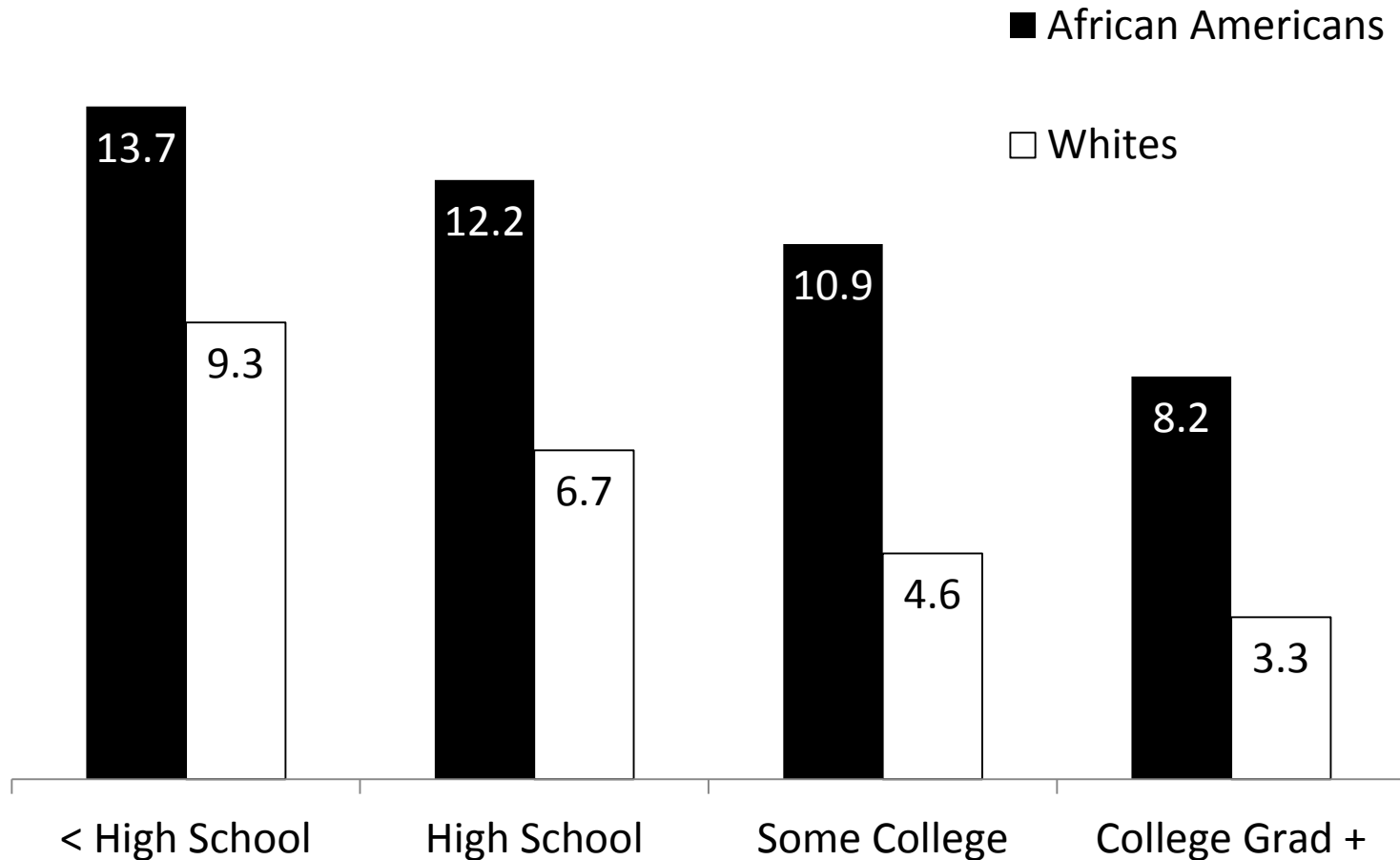
Source: Original analysis of 2005 National Health Interview Survey

Education and Disparities in Self Reported “Fair” or “Poor” Health, Age-Adjusted

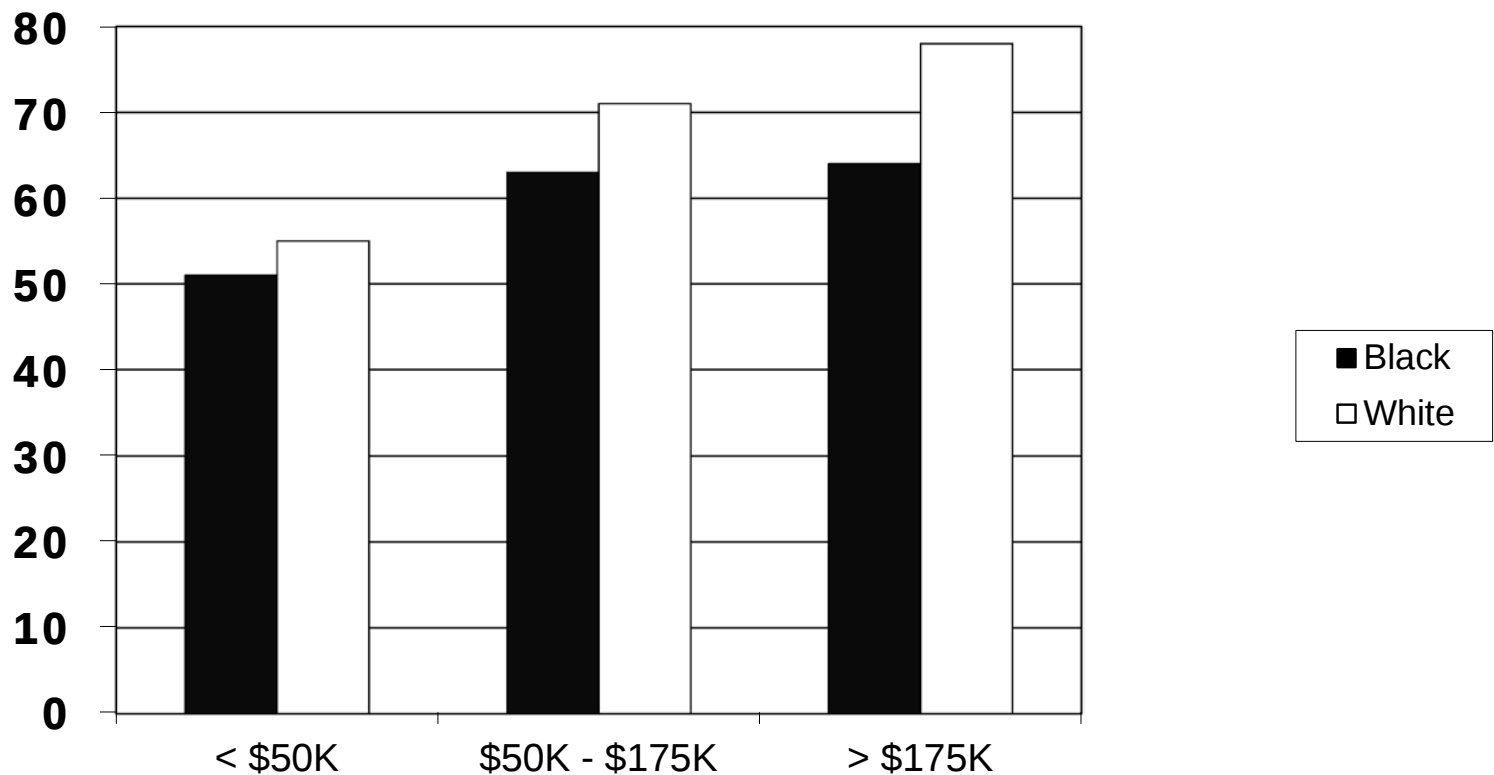


Source: Original analysis of 2005 National Health Interview Survey

Infant mortality rates by Mother's education, 2009

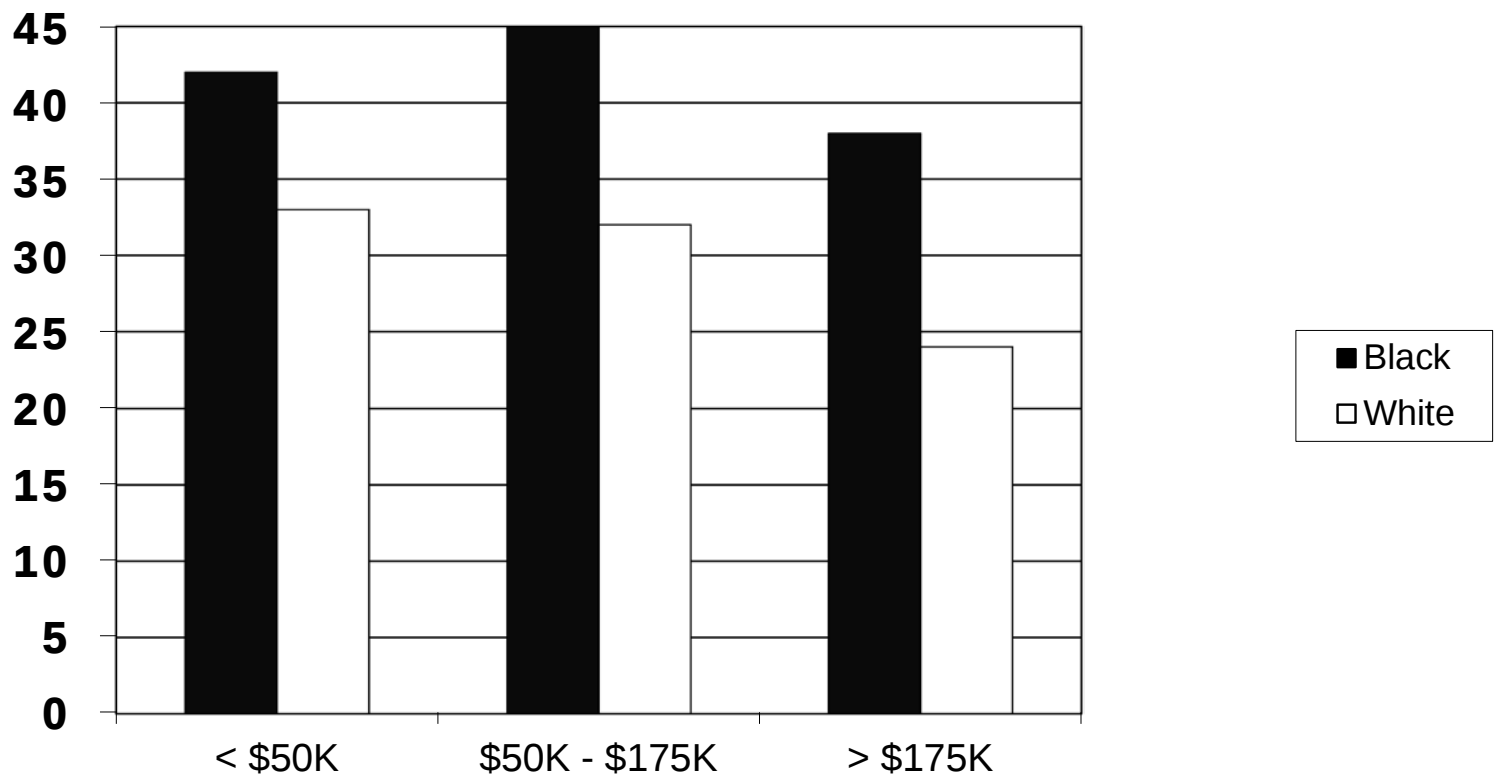


Income and Self-rating of health: “Very Good” or “Excellent” Health



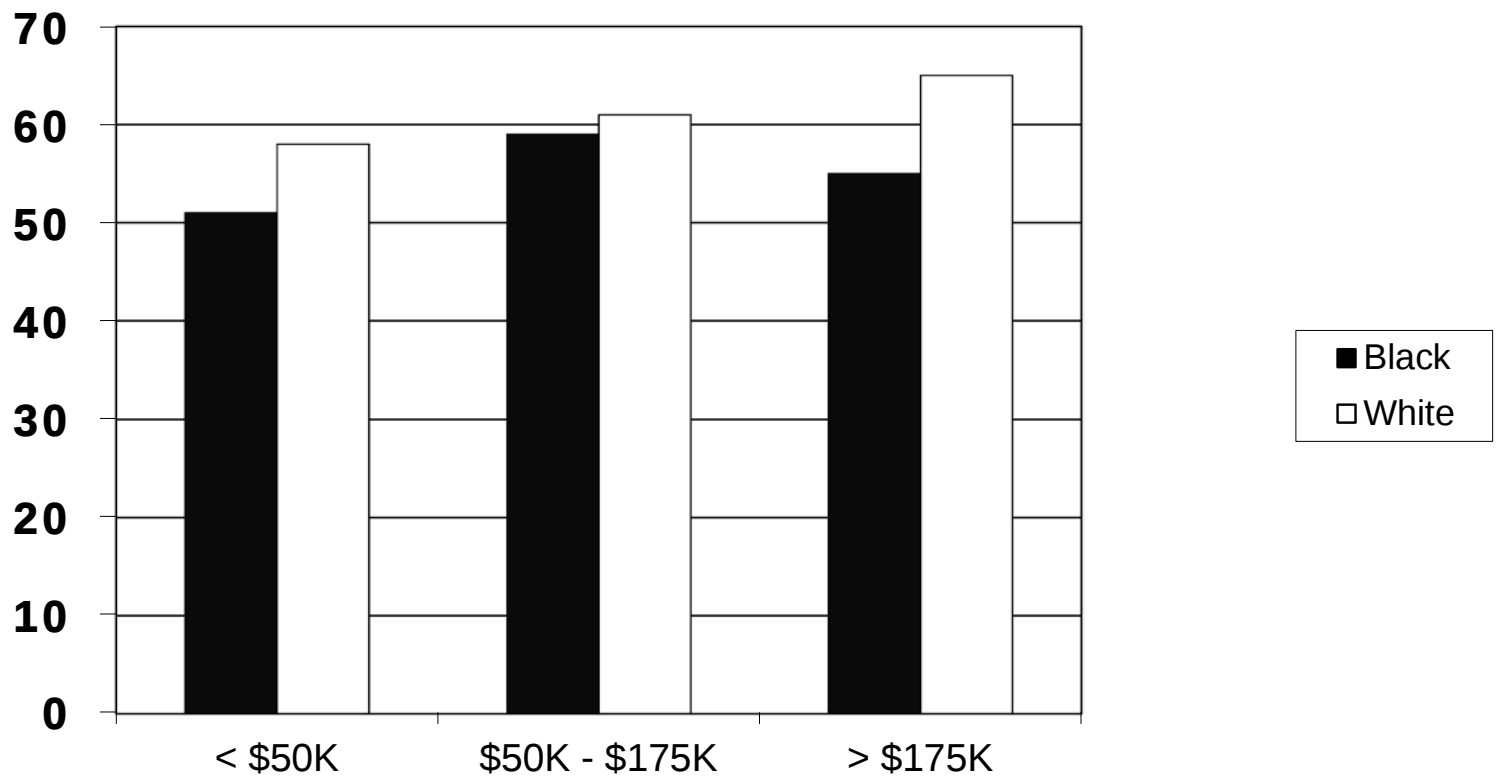
Source: Original analysis of 2003-08 Medical Expenditure Panel Survey

Income and Obesity



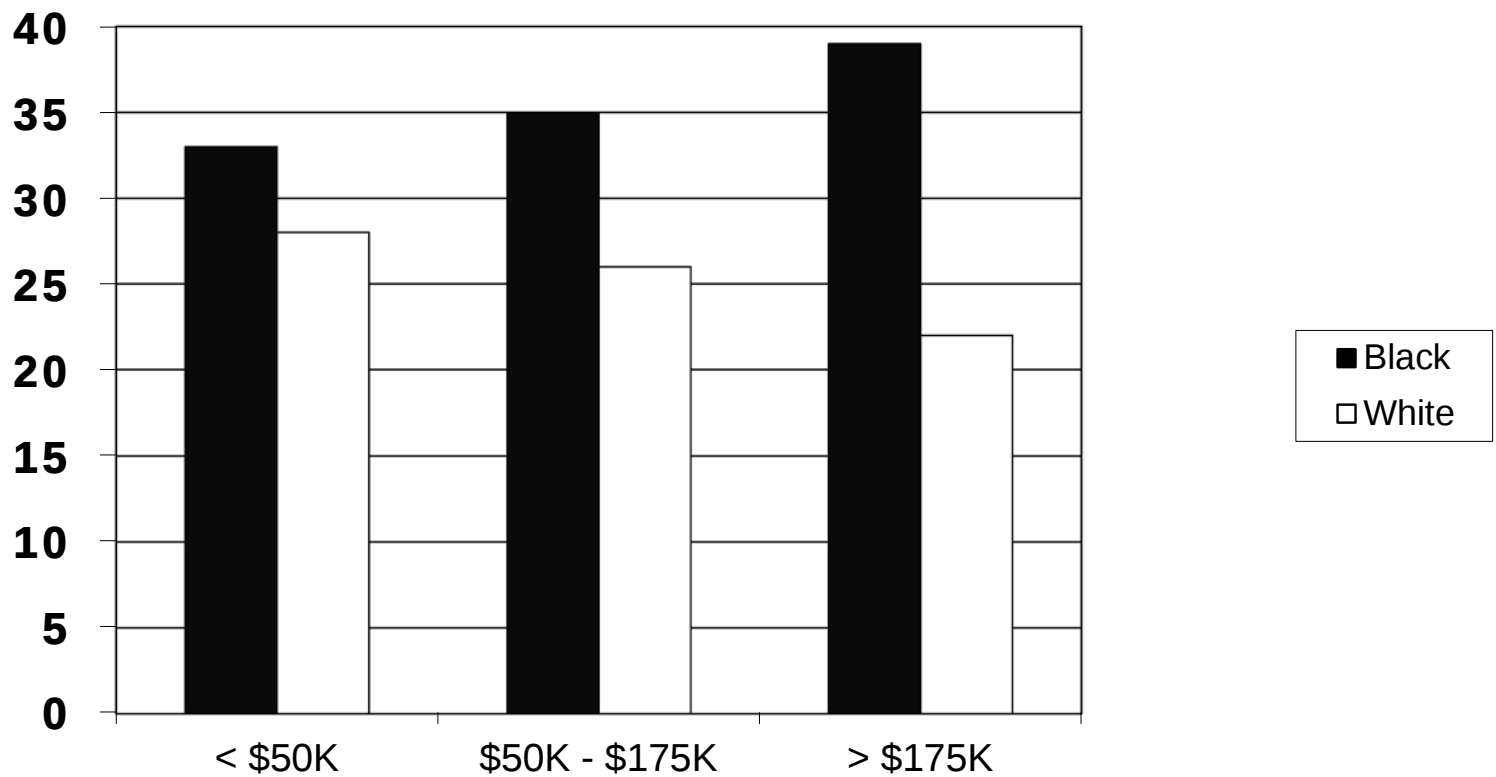
Source: Original analysis of 2003-08 Medical Expenditure Panel Survey

Income and Exercise: 30 minutes three times per week



Source: Original analysis of 2003-08 Medical Expenditure Panel Survey

Income and Hypertension Diagnosis



Source: Original analysis of 2003-08 Medical Expenditure Panel Survey

The limits of regression

Example

- 2005 National Health Interview Survey (NHIS), n=93,386
- N=33,148 adults age 40+ with complete data on income, race and ADL
- African Americans, n=4473 (12%)
- Income, <\$20K=6813; \$20K-\$75K=19,504; >\$75K=6831
- At least 1 ADL = 1043 (2.8%)

ADL regressed on race

	Odds Ratio	95% Confidence Interval
African American (Binary variable)	1.46	1.23 – 1.72

ADL regressed on Income

	Odds Ratio	95% Confidence Interval
\$20K - \$75K	.35	.31 - .39
>\$75K	.18	.15 - .23

ADL regressed on race

	Odds Ratio	95% Confidence Interval
African American (Binary variable)	1.18	.98 – 1.41
\$20K - \$75K	.32	.28 - .37
>\$75K	.15	.12 - .20

Cross tabulation of race and ADL within income groupings

	White	Black	Total	P- Value
<\$20K	6.1% e=304	7.6% e=97	6.4% e=401	.031
\$20K- \$75K	2.1% e=343	2.1% e=45	2.1% e=388	.50
>\$75	1.0% e=56	1.7% e=8	1.0% e=64	.10

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DRINKING FOUNTAIN


WHITE


COLORED

MONTGOMERY, ALA

14 JULY 30T

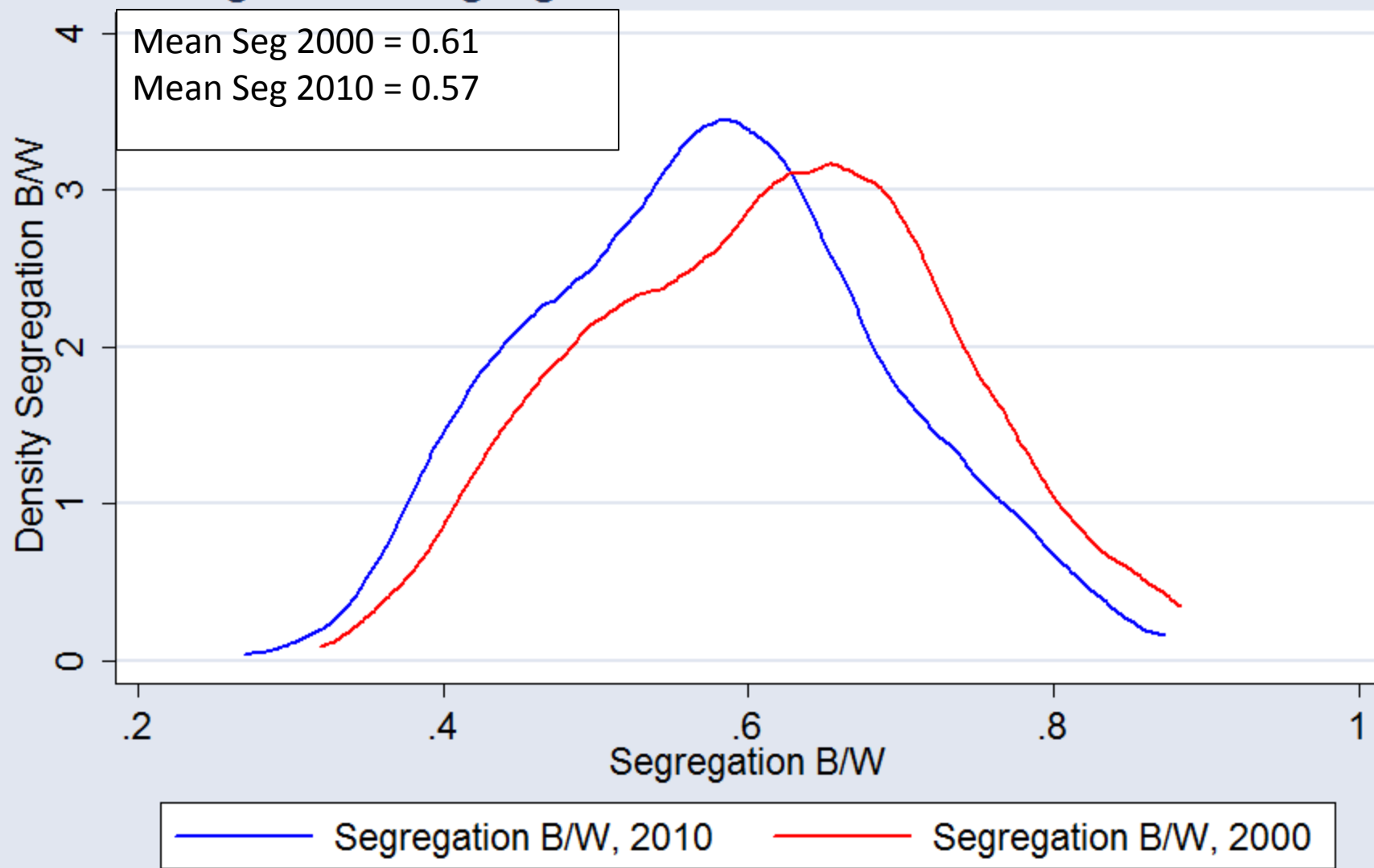
Measuring Segregation

- **Index of Dissimilarity**

- Ranges from 0-100
- Can compare only two groups
- Percent of one group need to move for full integration

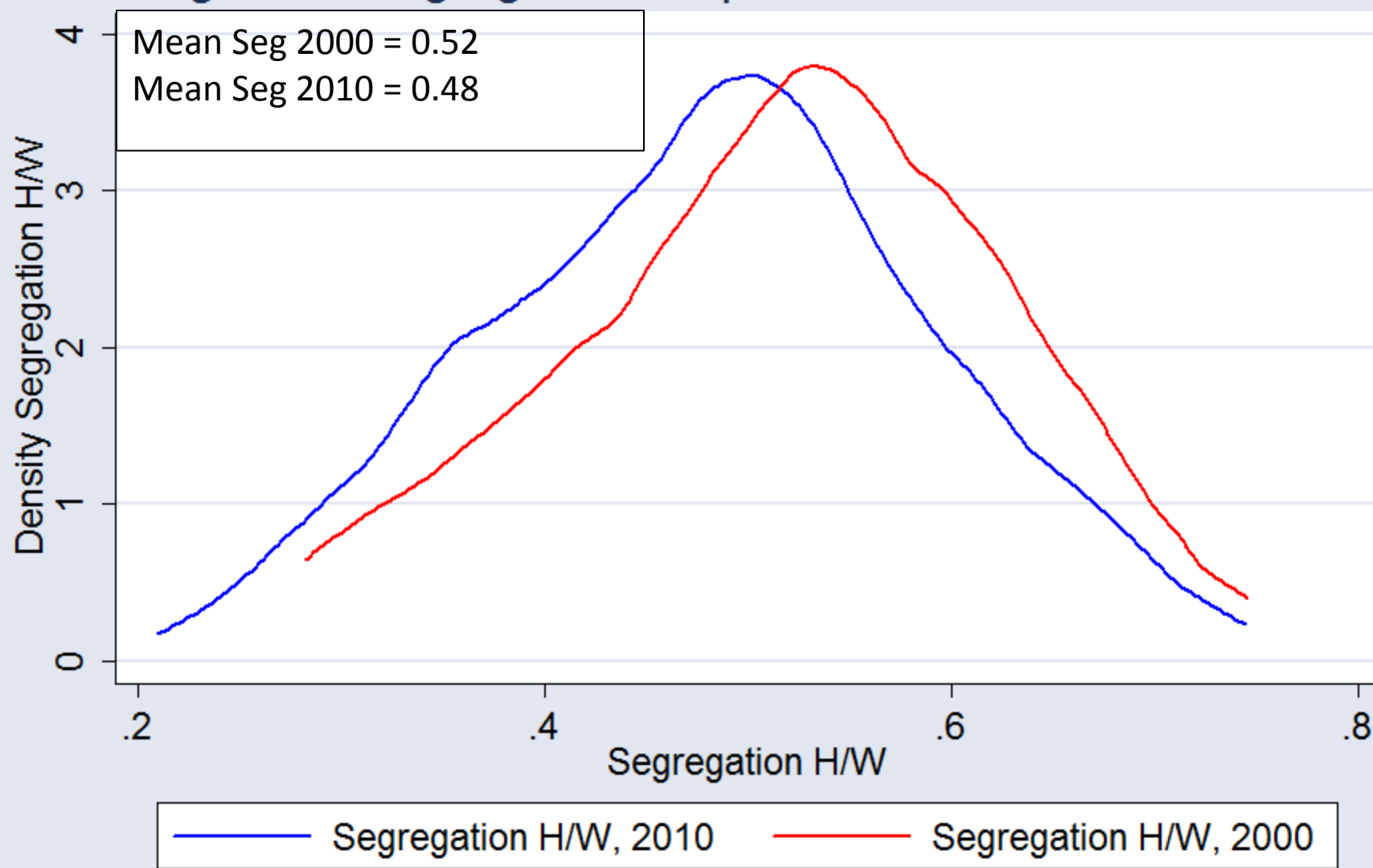


Figure 1. Segregation Black/White 2000 and 2010



Source: Census data 2000 and 2010

Figure 2. Segregation Hispanic/White 2000 and 2010

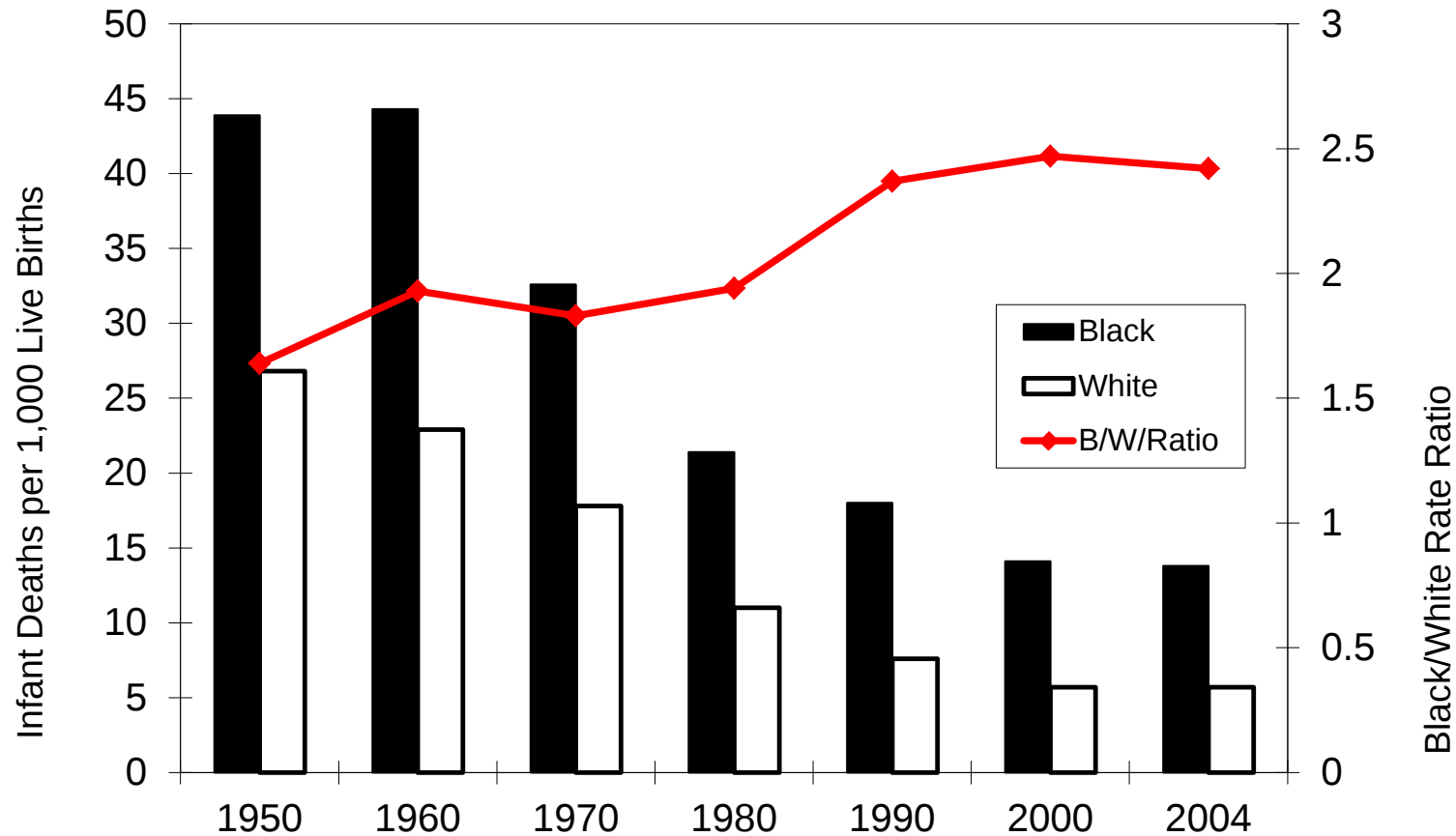


Source: Census data 2000 and 2010

The limits of relative risk (ratio of rates)



Infant mortality rates by race/ethnicity, 1950-2004



Source: U.S. National Center for Health Statistics

Fun with numbers

[illegible]

Fun with numbers

[illegible]

Fun with numbers

[illegible]

Fun with numbers

[illegible]

Fun with numbers

Year	1960	1965	1970	1975	1980	1985	1990	1995	2000	2005
Black	150	140	130	120	110	100	90	80	70	60
White	100	90	80	70	60	50	40	30	20	10
Diff	50	50	50	50	50	50	50	50	50	50
Ratio	1.5	1.55	1.65	1.71	1.83	2.0	2.25	2.67	3.5	6.0

On Describing Health Inequalities

Indices for expressing inequality

- Relative risk – not ideal for trend analysis
- Between group variance – deviation from population average
- Theil Index – variance relative to population average
- Index of disparity – mean deviation from a non-dynamic reference

Excess deaths relative to Asian Americans, 2006

Ethnic Group	Number
Non-Hispanic White	853,841
African American	170,831
American Indian or Alaska Native	6,050
Hispanic/Latino	37,648

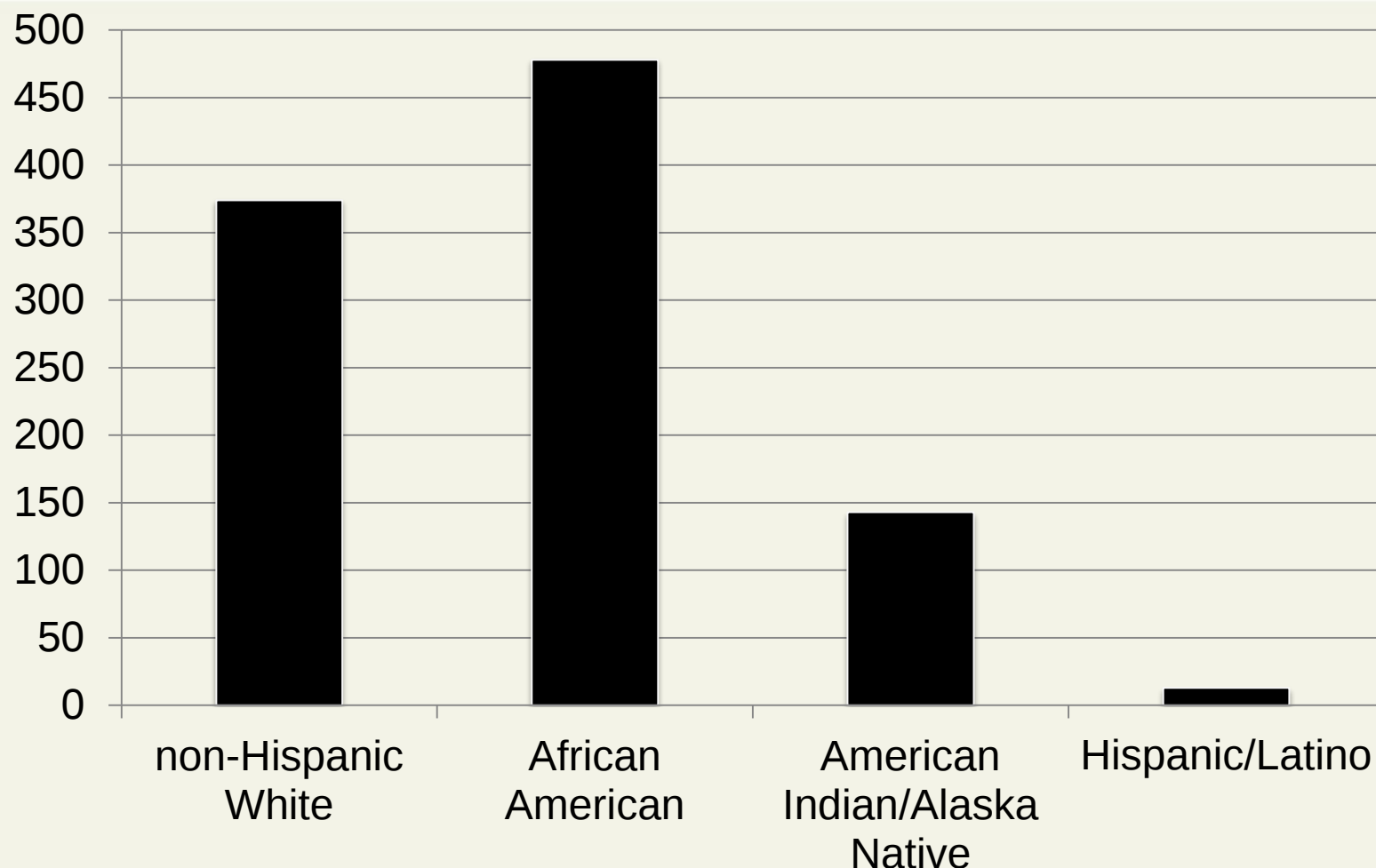
Source: U.S. National Center for Health Statistics, "National Vital Statistics Reports," Volume 60, Number 3, Tables 1 & 2 December 29, 2011



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“Exploration and Intervention for Health Equality...”

Excess death per 100,000 persons relative to Asian Americans, 2006



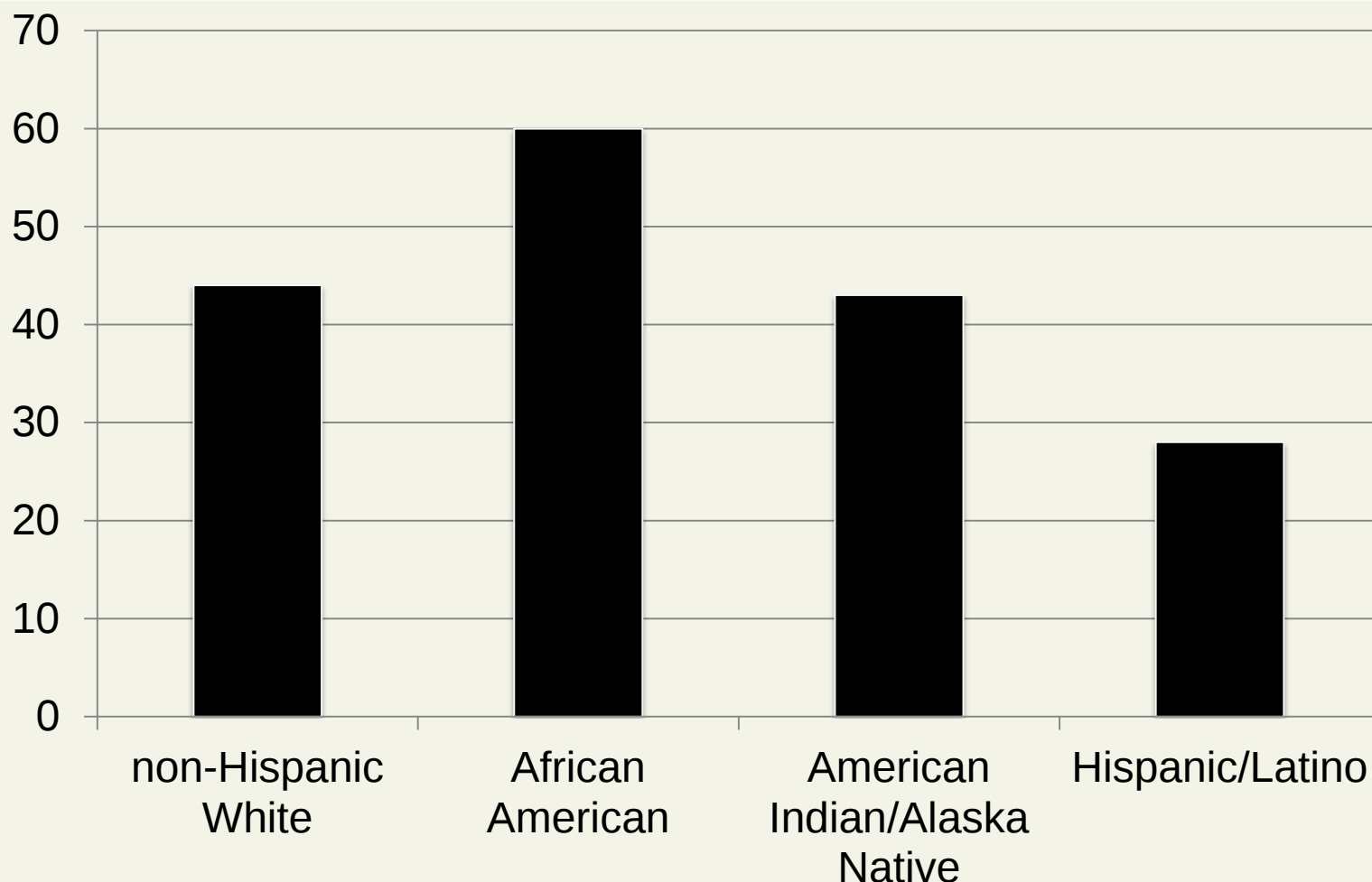
Source: U.S. National Center for Health Statistics, "National Vital Statistics Reports," Volume 60, Number 3, Tables 1 & 2 December 29, 2011



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Percent of deaths that can be considered excess relative to Asian Americans, 2006



Source: U.S. National Center for Health Statistics, "National Vital Statistics Reports," Volume 60, Number 3, Tables 1 & 2 December 29, 2011

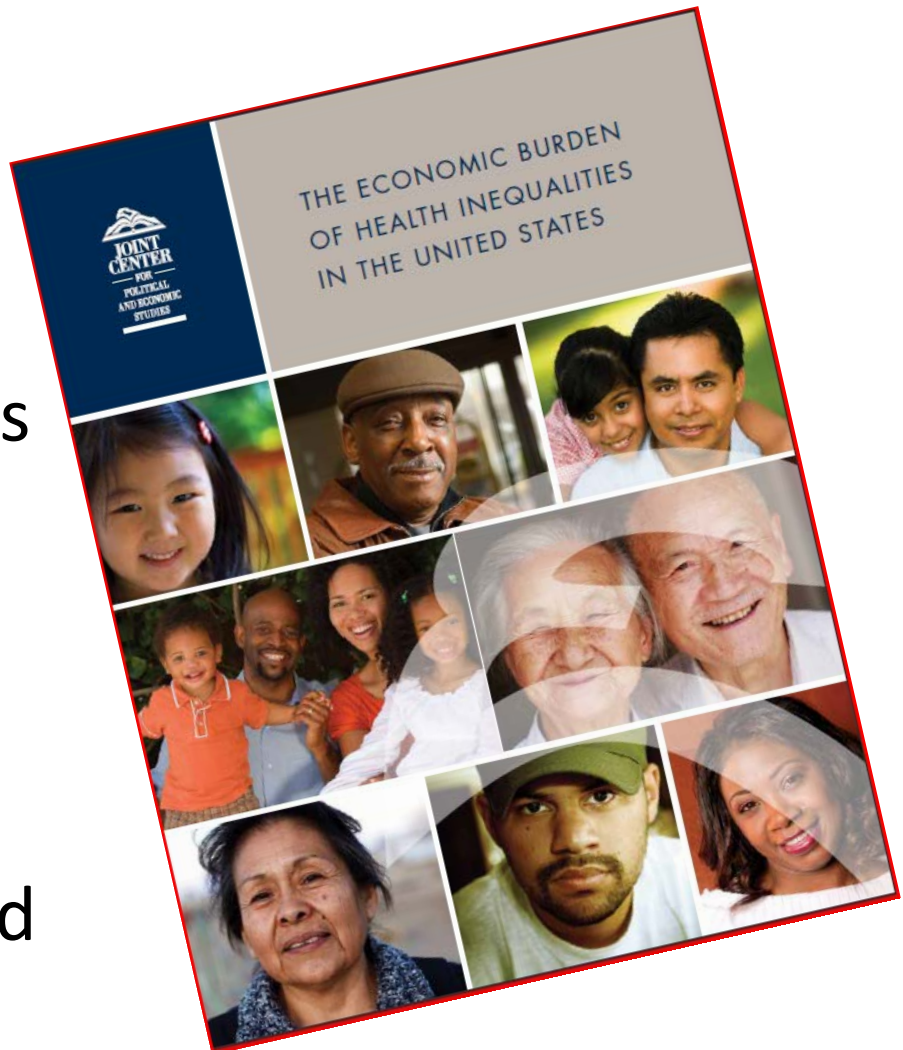


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The Economic Burden of Health Inequalities in the U.S.

- Between 2003-2006 eliminating disparities could reduce direct medical care expenditures by \$229.4 billion.
- The cost of health disparities in the United States was \$1.24 trillion (in 2008 inflation-adjusted dollars).



Source: LaVeist, Gaskin & Richard (2009)

6 Years



**“In 6 years
there could be a cure.”**