

# Health Disparities and the Coming Minority-Majority

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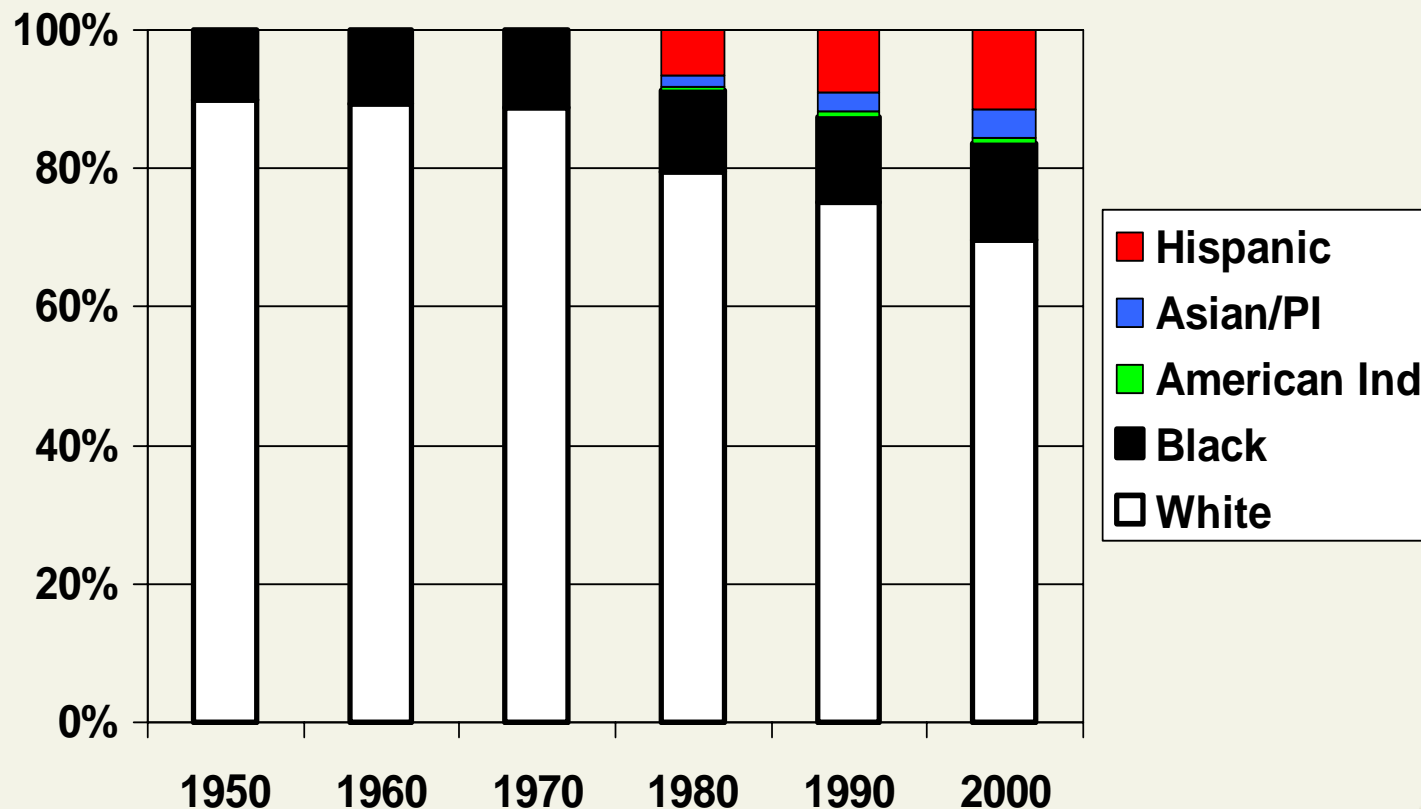
# A New American Revolution

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## Percentage Resident Population by race/ethnicity, U.S. 1950-2000



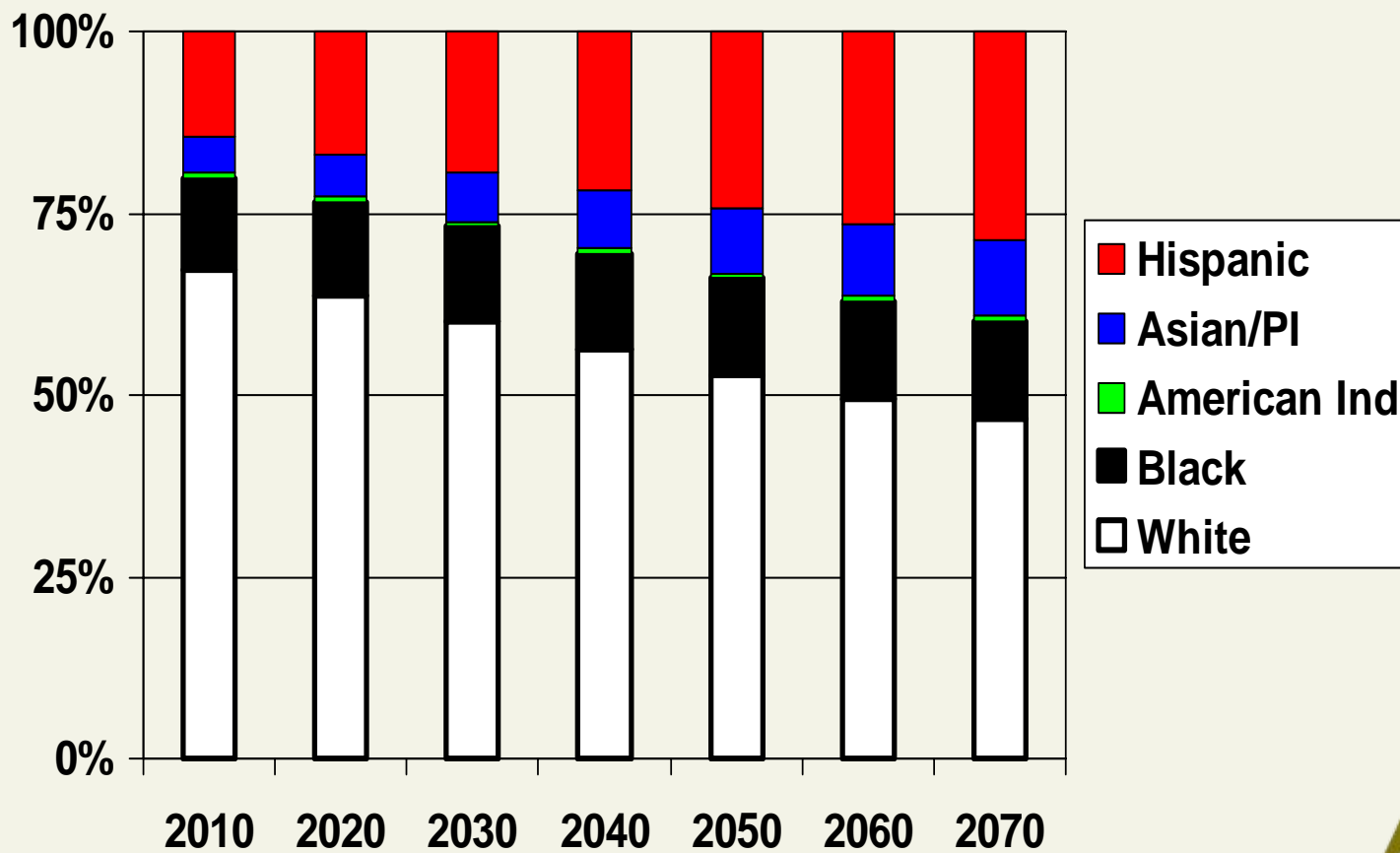
Source: National Center for Health Statistics (2002)

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# Projected Percentage Resident Population by race/ethnicity, U.S. 2010-2070



Source: U.S. Bureau of the Census:(NP-T5) Projections of the Resident Population by Race, Hispanic Origin, and Nativity: Middle Series, 1999 to 2100

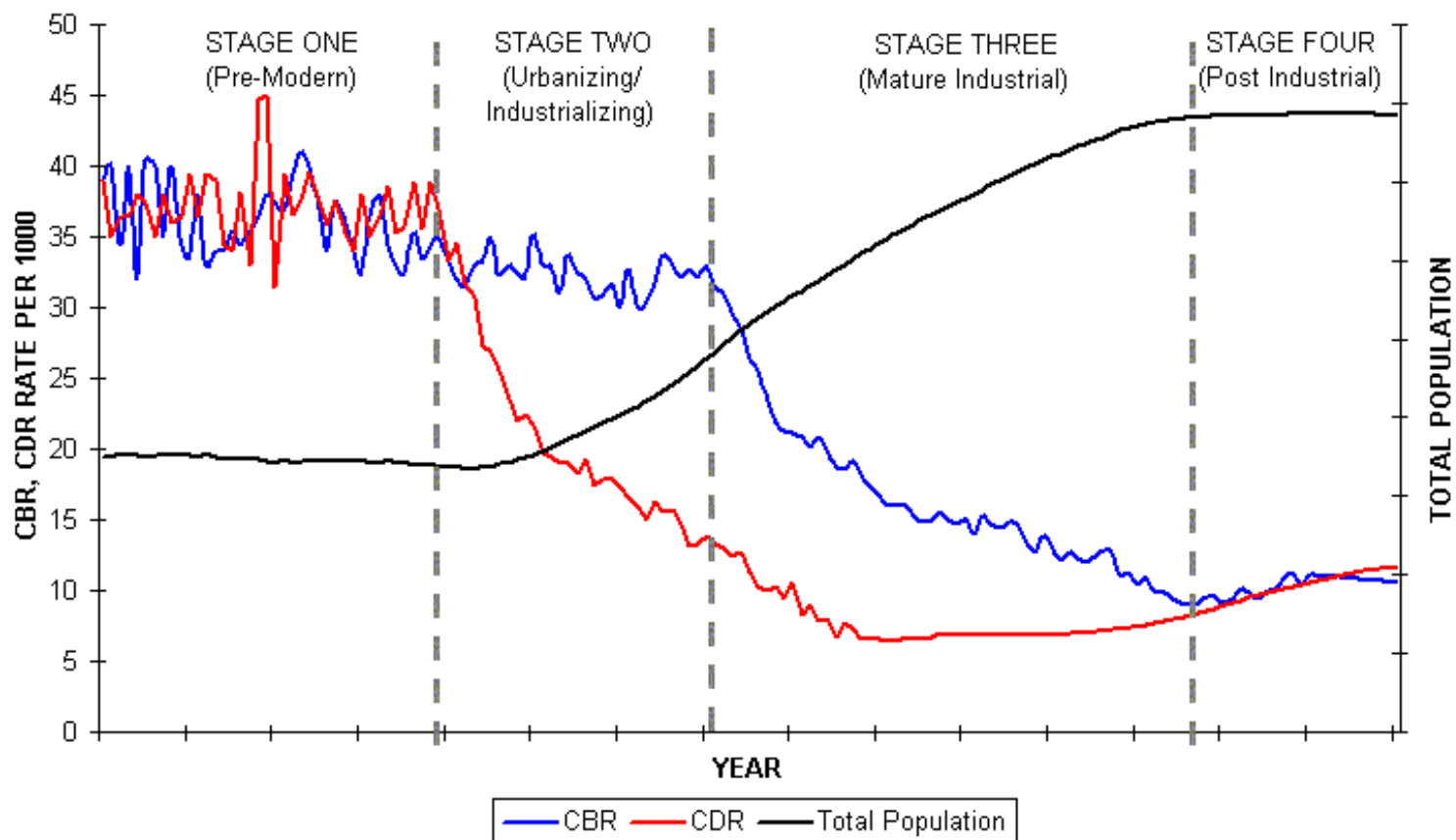


# The Demographic Transition

- Stage 1 - Pre-modern Stage
- Stage 2 – Early industrialization and urbanization
- Stage 3 – Mature industrial stage
- Stage 4 – Post-industrial stage



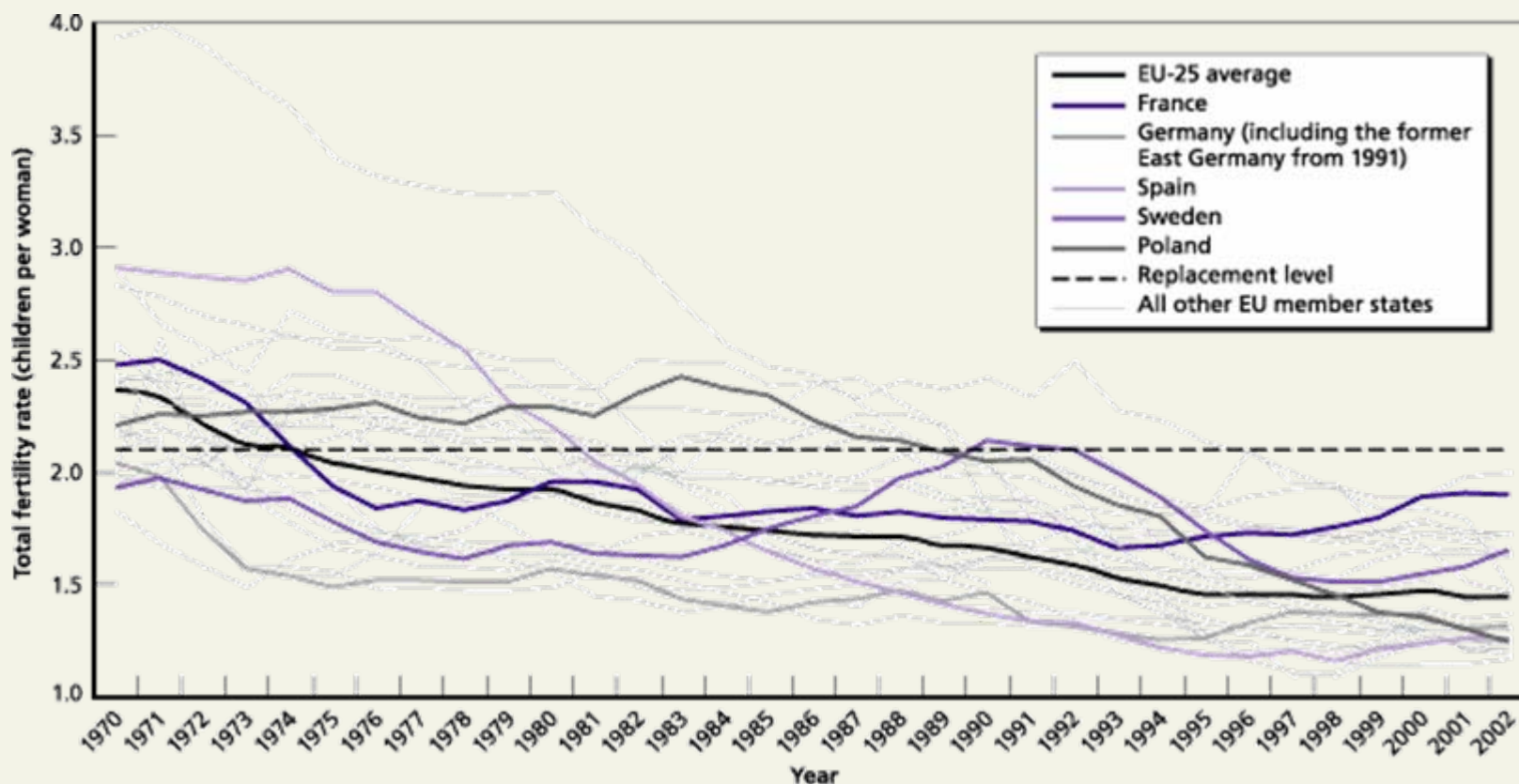
## THE DEMOGRAPHIC TRANSITION MODEL



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# Population Implosion



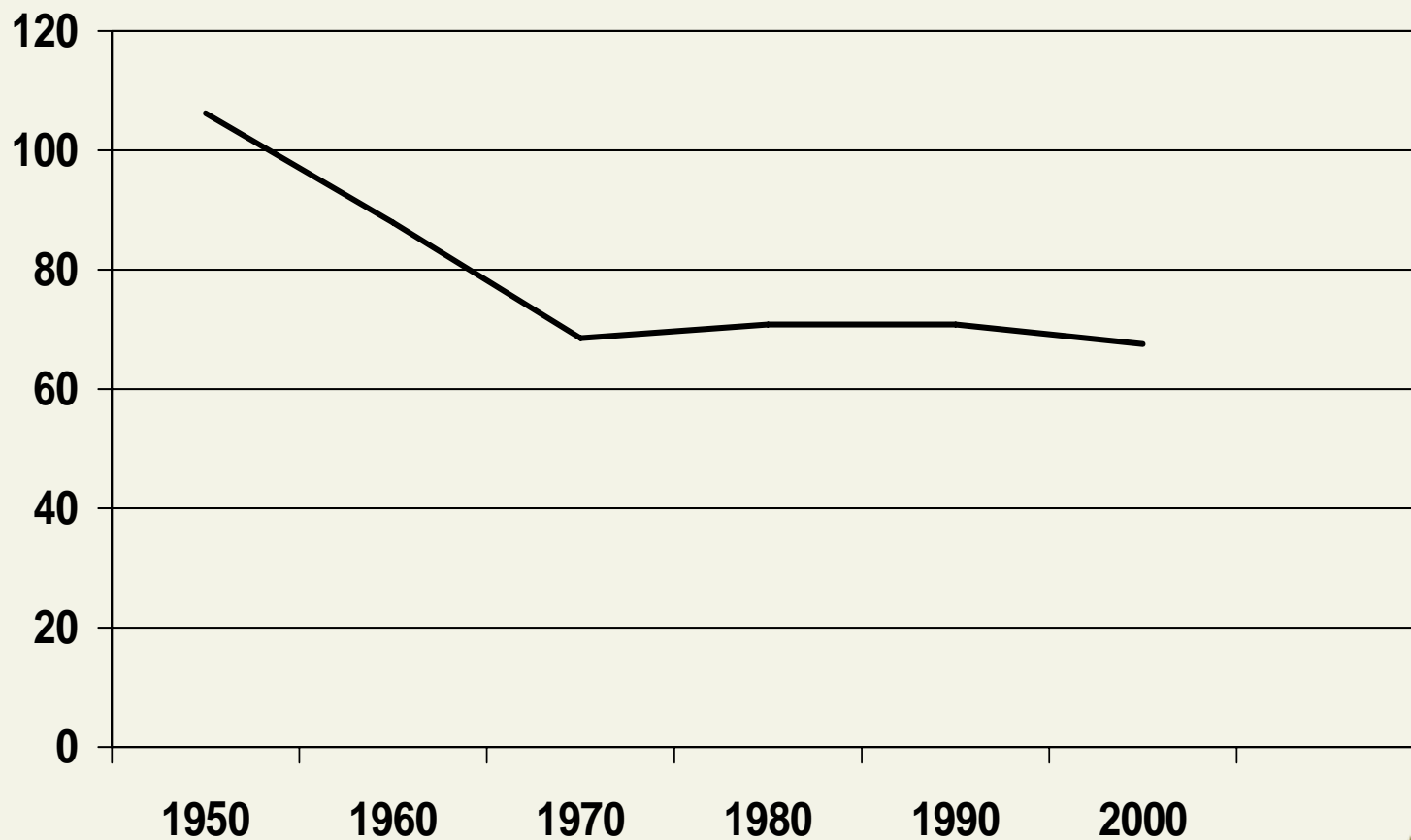
*Low Fertility and Population Ageing: Causes, Consequences, and Policy Options*, by Jonathan Grant, Stijn Hoorens, Suja Sivadasan, Mirjam van het Loo, Julie DaVanzo, Lauren Hale, Shawna Gibson, and William Butz, MG-206-EC, 2004, 172 pp. Rand Research Brief

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## US Fertility Rate, 1950-2000



Source: National Center for Health Statistics (2002)

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# The 5<sup>th</sup> demographic stage

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# The 5<sup>th</sup> Stage – Multi-Culturalism

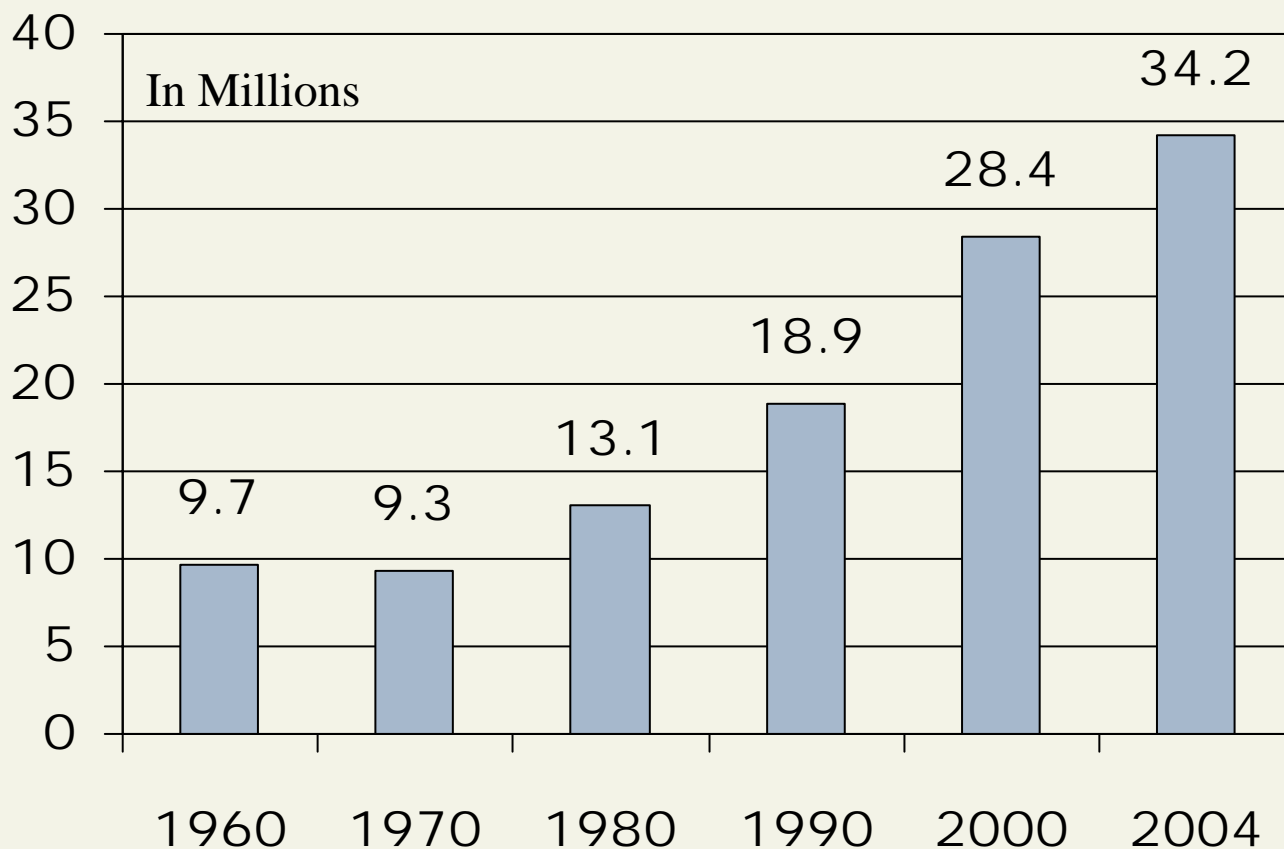
- Stage 4 countries attract immigration from pre-Stage 4 countries
- The immigrant population will have a larger percentage in the childbearing ages range
- The immigrant population will have a higher birth rate



What is happening?



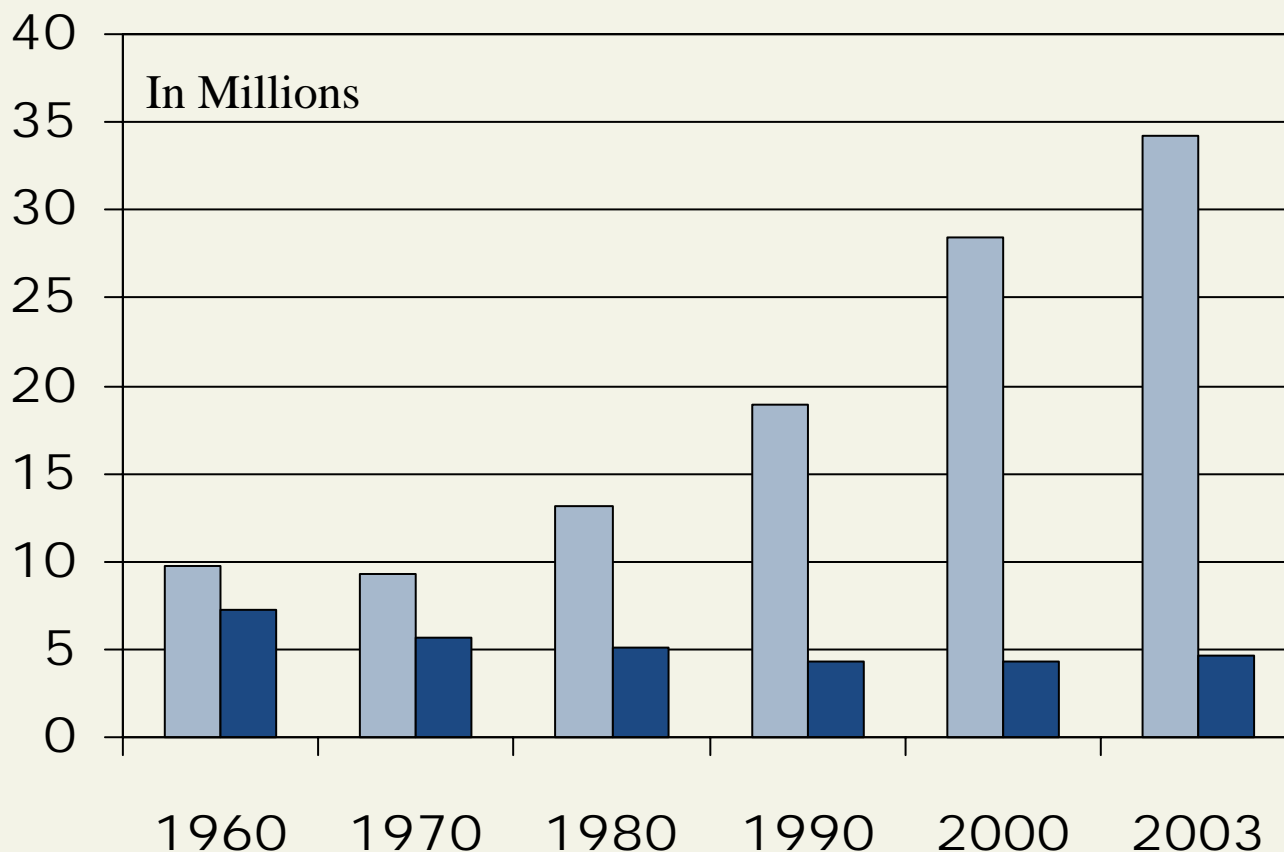
# Foreign-Born Population, 1960-2004



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# All Foreign-Born and European-Born Population by: 1960- 2004

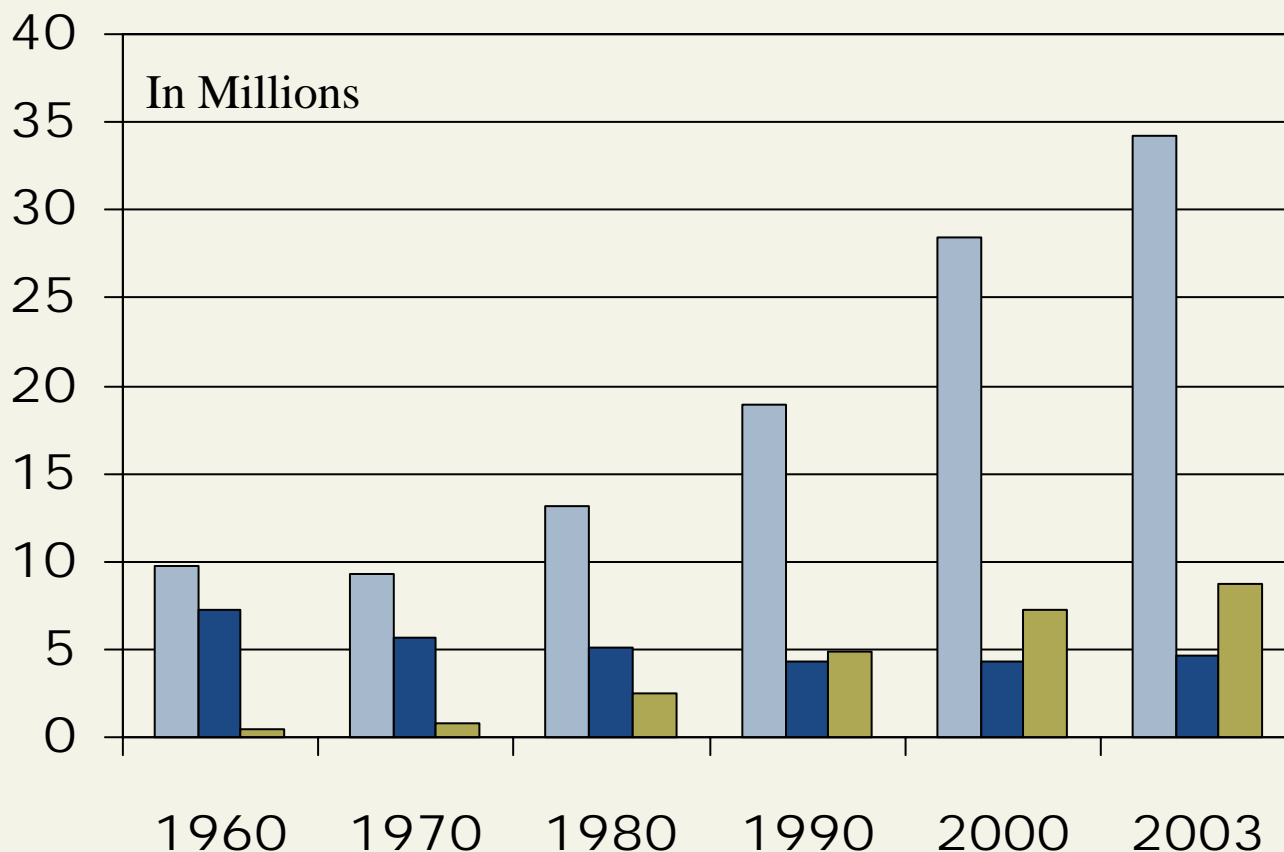


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# All Foreign-Born, European and Asian-born Population, 1960-2004

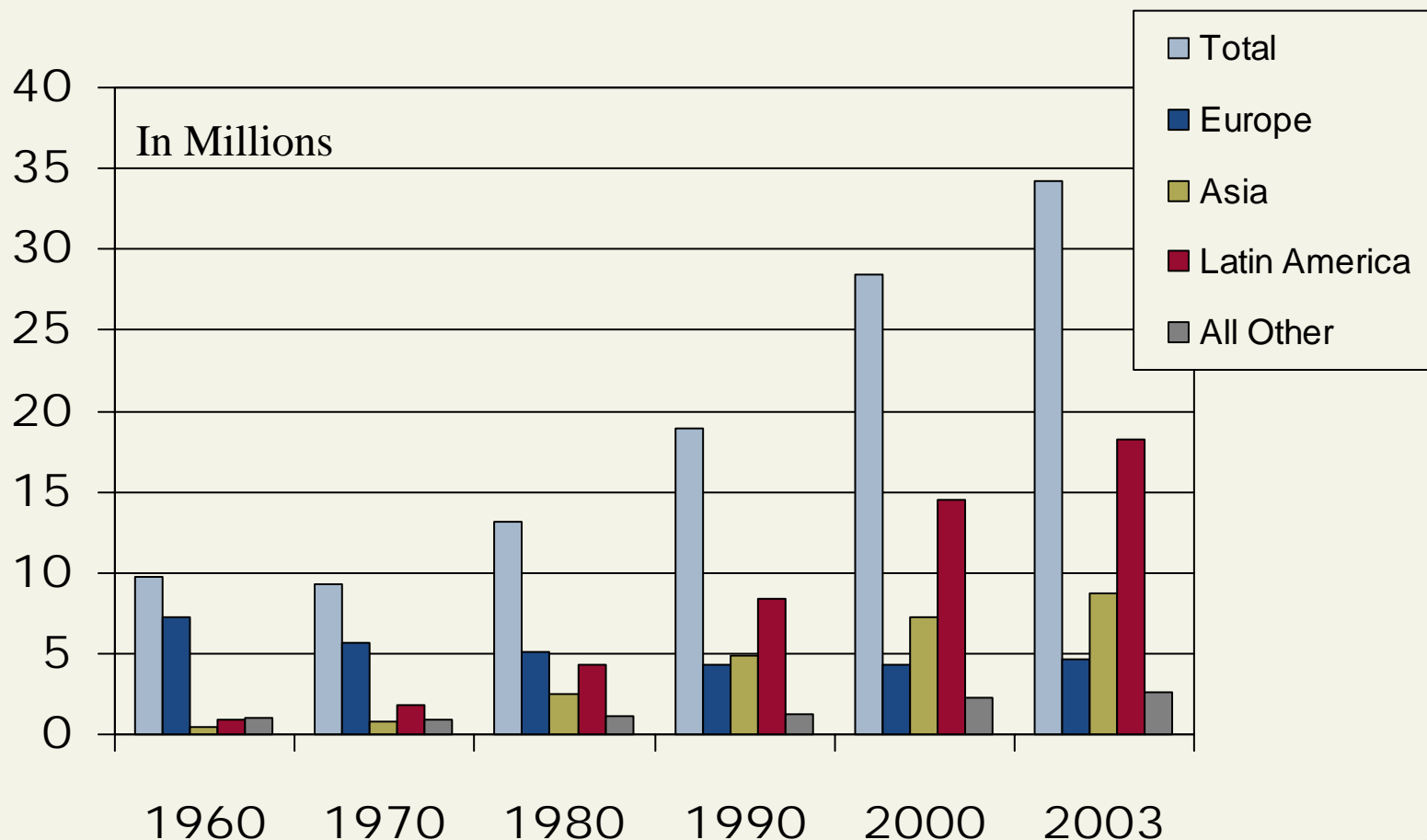


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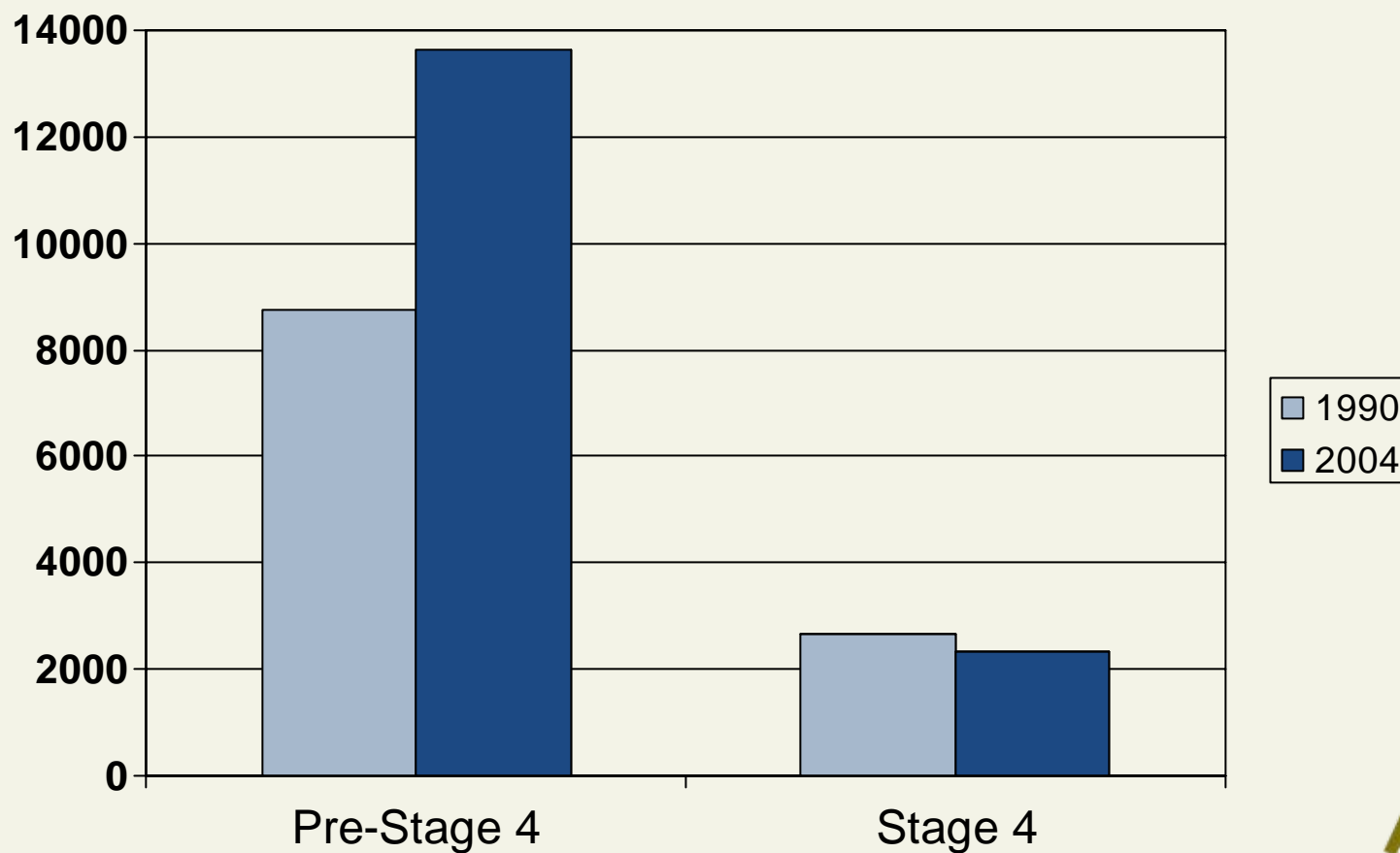


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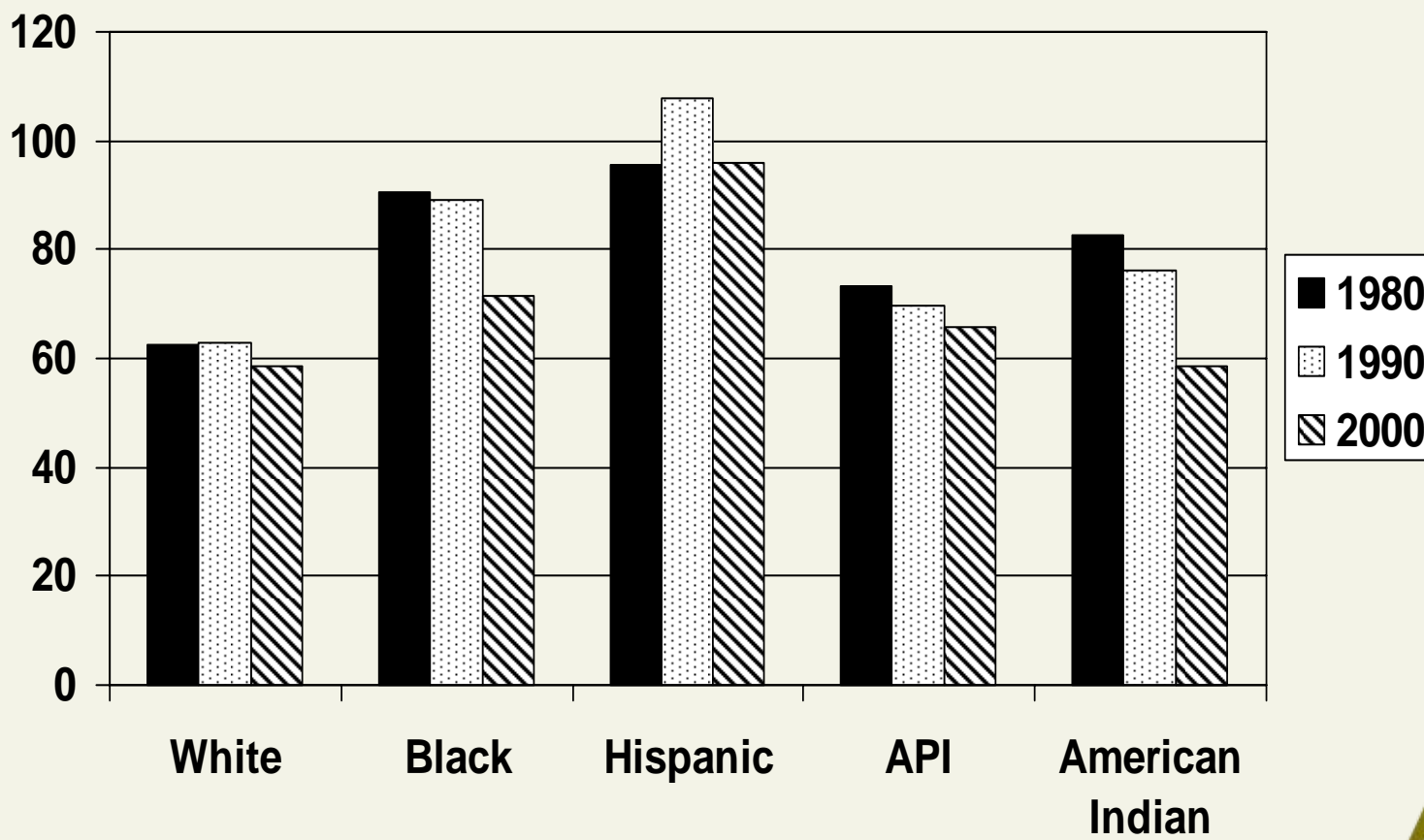
# Foreign-Born Population by World Region, 1960-2004



# Stage 4 and Pre-stage 4 status of country of birth for foreign-born U.S. population, 1990-2004



# Fertility Rates by race/ethnicity, 1980-2000



Source: National Center for Health Statistics, 2002

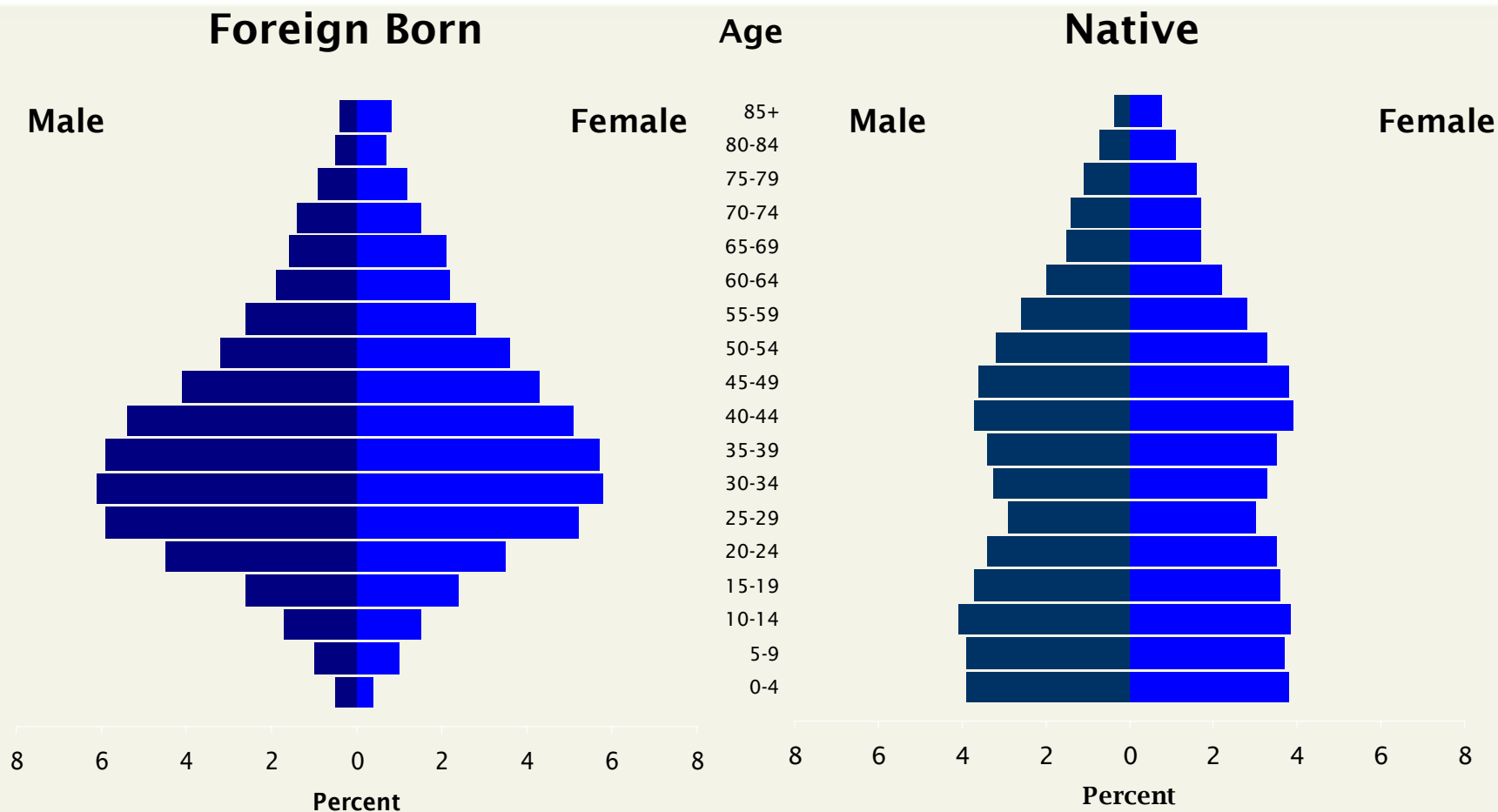
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# Age Distribution by Sex and Nativity: 2003

(In Percent)



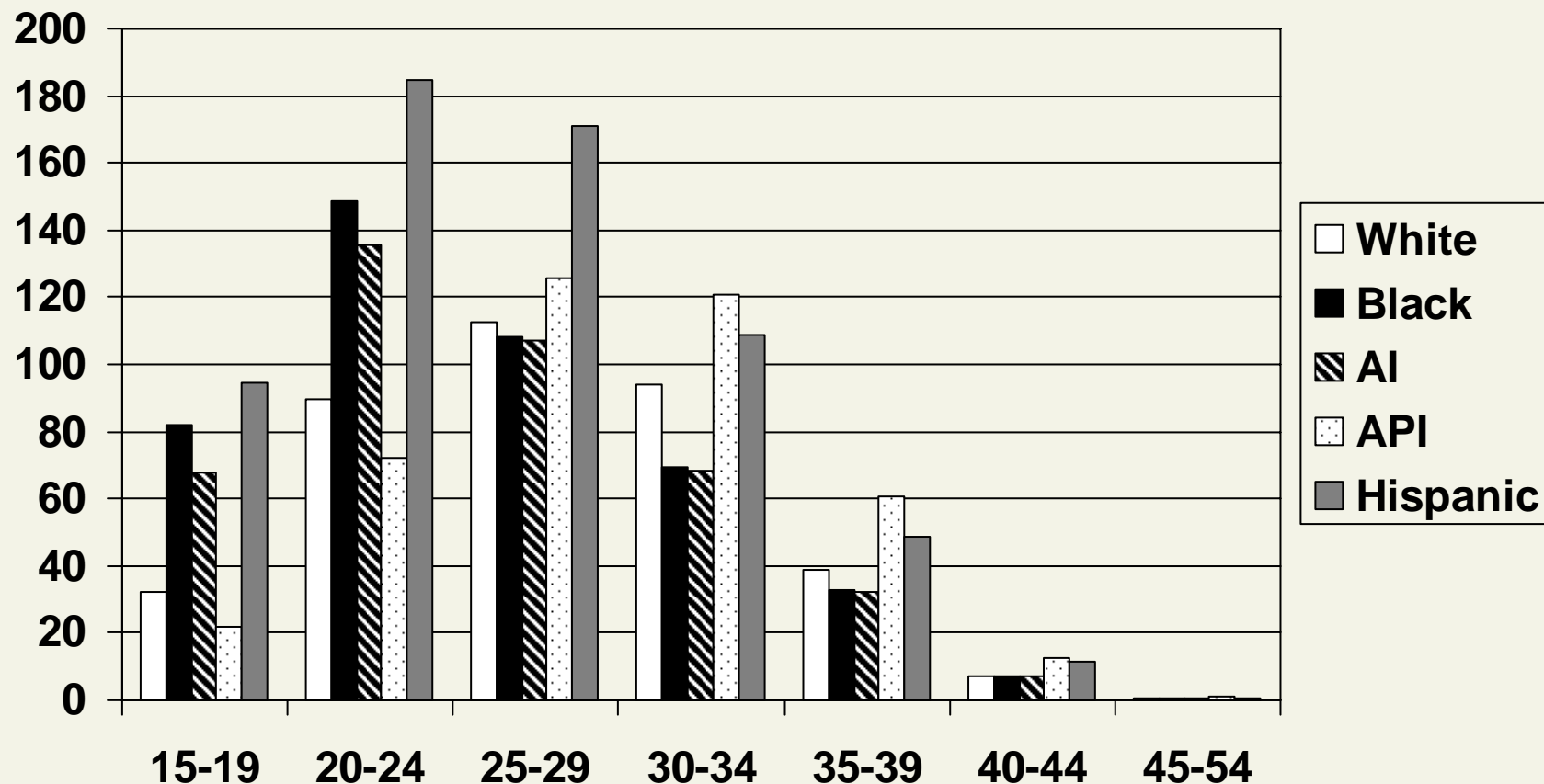
Source: Current Population Survey,  
Annual Social and Economic Supplement, 2003



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# Distribution of age of mother at birth by race/ethnicity, 2000



Source: National Center for Health Statistics 2002

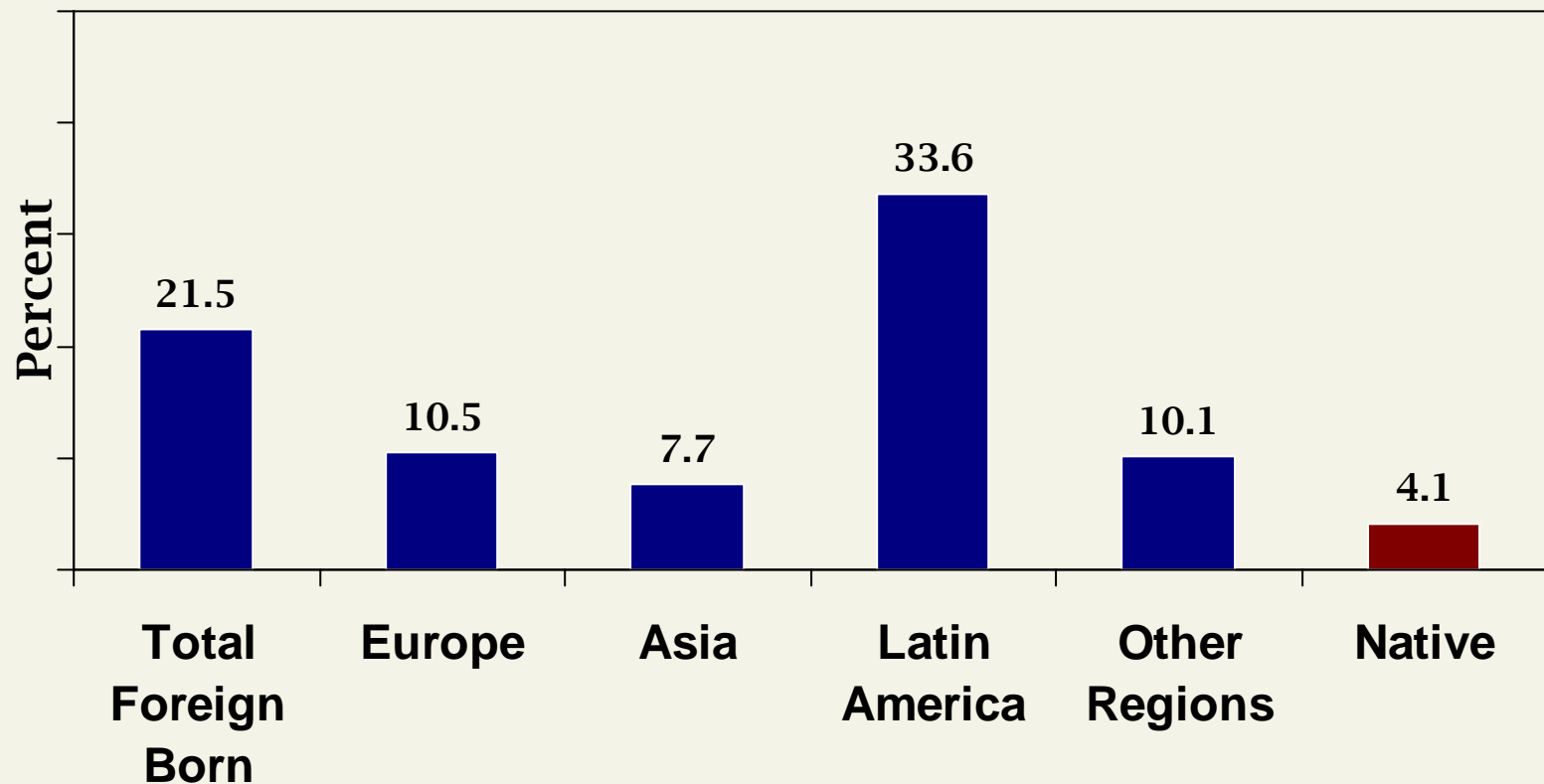


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# Percent of Population with Less Than 9th Grade Completed by World Region of Birth: 2003

(Population 25 years and over)



Source: Current Population Survey, Annual Social and Economic Supplement, 2003



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# Producing the Minority-Majority

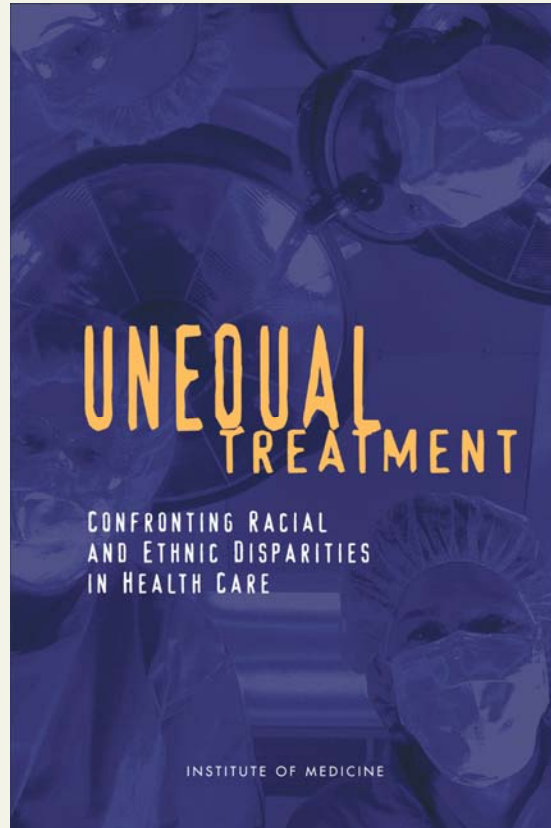
- Immigration from pre-stage 4 countries
- US Native population fertility-rate declining
- Foreign-born population greater percentage in child-bearing ages
- Foreign-born population younger age at first birth
- Foreign-born population less well educated



# The Minority-Majority

- Accelerate globalization
- Competitive advantage in the global economy
- Well adapted business will have advantage in domestic marketplace





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# **HEALTH STATUS AND HEALTHCARE DISPARITIES**



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# Health Care Disparities

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**Healthcare Hyper-Disparity** - Black Medicare patients more likely to have limb amputations, arteriovenostomy (stunts or cannulae implanted for chronic renal dialysis), excisional debridement (related to decubitus ulcers), and bilateral orchiectomy (removal of both testes cancer).

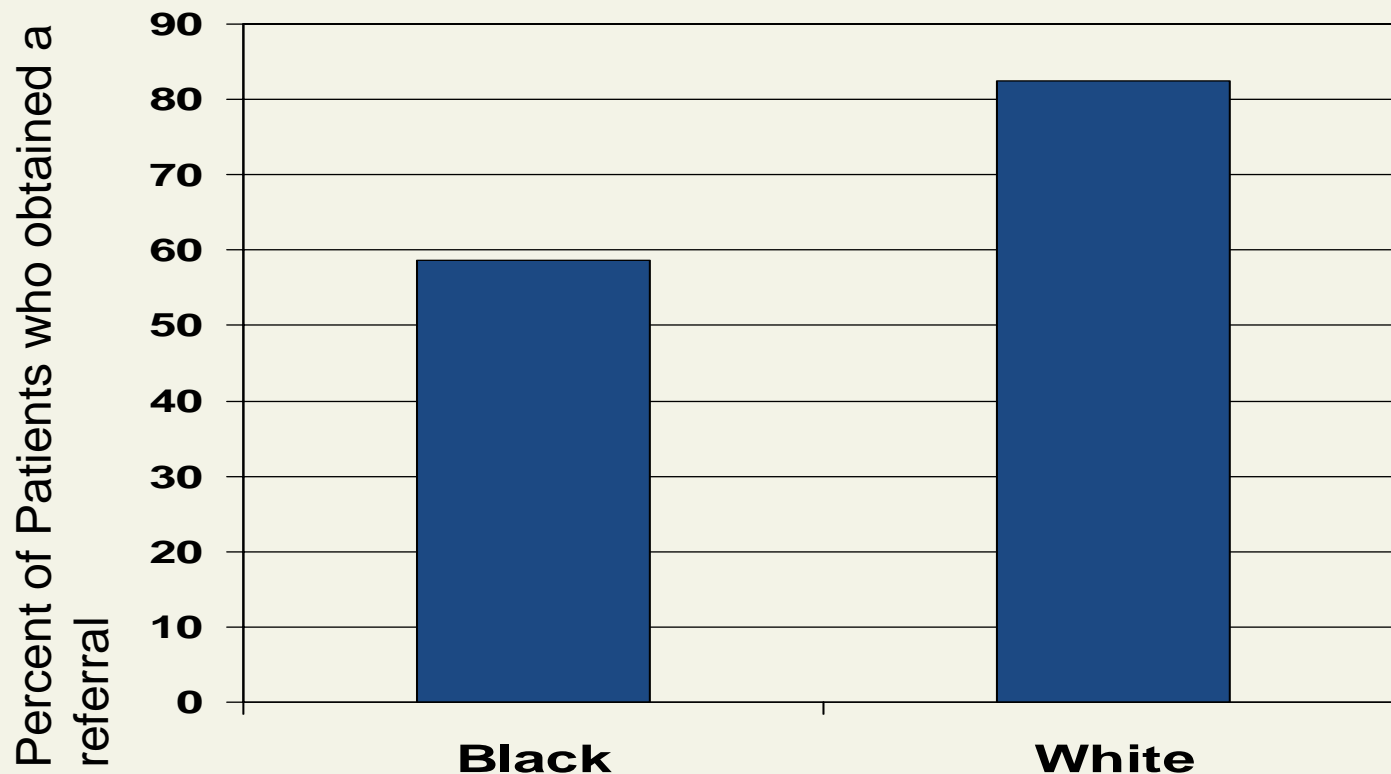
<b>PROCEDURE</b>	<b>Black/White Ratio of Rates: 1986</b>	<b>Black/White Ratio of Rates: 1994</b>	<b>Change in Hyper-disparity</b>
Ampulation of Lower Limb	3.24	3.47	.23
Arteriovenostomy	4.02	4.53	.51
Excisional Debridement	2.36	2.51	.15
Bilateral Orchiectomy	1.57	2.47	.9

Source: Gornick M (2000) "Vulnerable Populations and Medicare Services: Why do disparities exist?" New York: The Century Foundation Press

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# Healthcare Disparity

Studies of patients who were appropriate candidates for **coronary angiography** have found race differences in obtaining a referral for this diagnostic procedure.



Source: LaVeist TA, Arthur M, Morgan A, Rubinstein M, Kinder J, Kinney LM, Plantholt S. The cardiac access longitudinal study. A study of access to invasive cardiology among African American and white patients. *J Am Coll Cardiol*. 2003 Apr 2;41(7):1159-66.

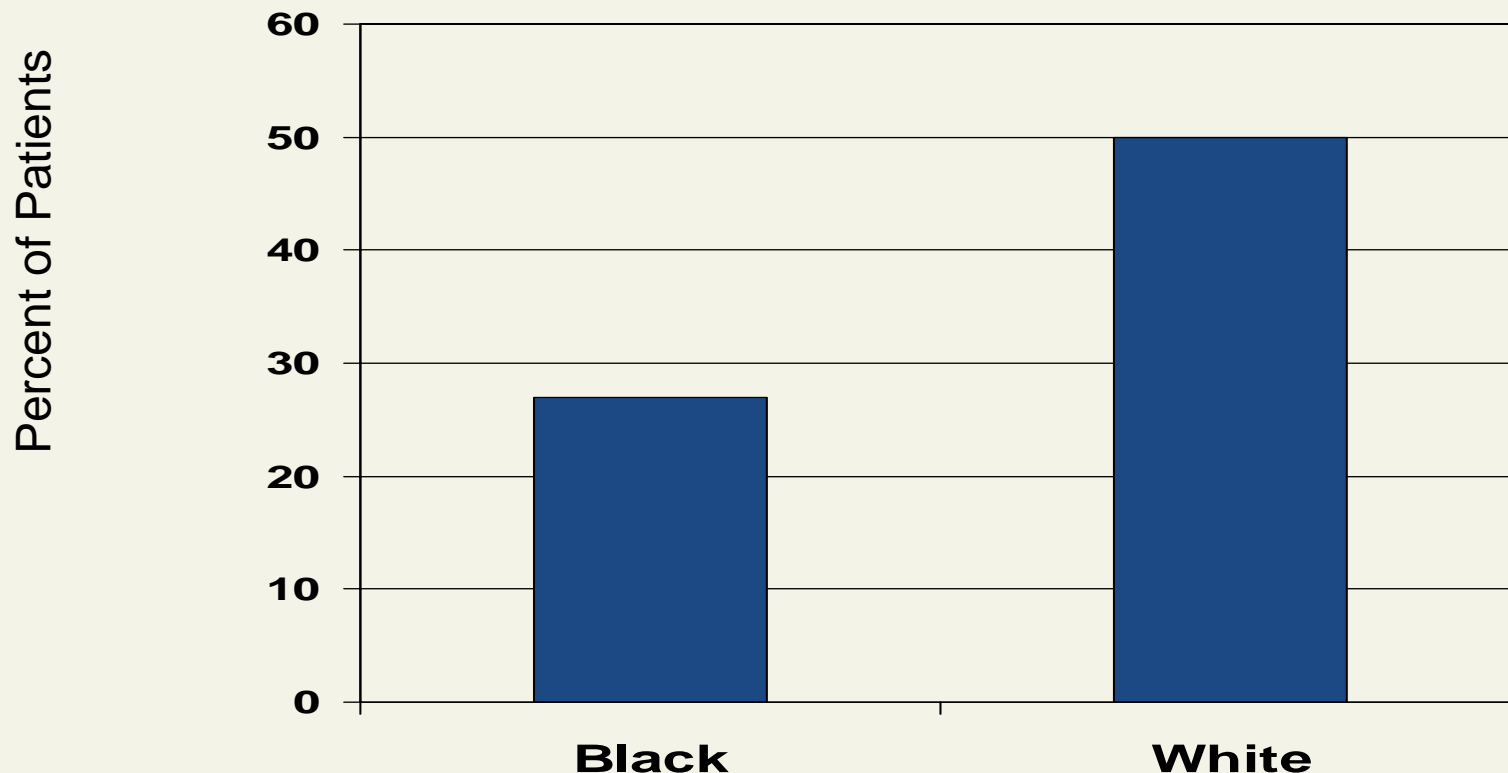


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# Healthcare Disparity

A race disparity in **coronary revascularization** was found among patients in the **Veteran Affairs** health system, where there are no race differences in ability to pay and providers are paid a salary.



Source: Ibrahim SA, Whittle J, Bean-Mayberry B, Kelley ME, Good C, Conigliaro J. Racial/ethnic variations in physician recommendations for cardiac revascularization. Am J Public Health. 2003 Oct;93(10):1689-93.



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# Physician-patient race concordance in the 1994 Commonwealth Minority Health Survey.

Physician's Race	Patient's Race			
	White (n=910)	Black (n=745)	Hispanic (n=676)	Asian American (n=389)
White	<b>779 (85.6%)</b>	436 (58.5%)	406 (60.1%)	175 (45.0%)
Black	14 (1.5%)	<b>162 (21.7%)</b>	15 (2.2%)	5 (1.3%)
Hispanic	19 (2.1%)	17 (2.3%)	<b>128 (18.9%)</b>	2 (.5%)
Asian/Pacific Islander	68 (7.5%)	75 (10.1%)	71 (10.5%)	<b>203 (52.2%)</b>
Other	30 (3.3%)	55 (7.4%)	56 (8.3%)	4 (1.0%)

Source: LaVeist TA, Nuru-Jeter A. Is doctor-patient race concordance associated with greater satisfaction with care? *J Health Soc Behav.* 2002 Sep;43(3):296-306.

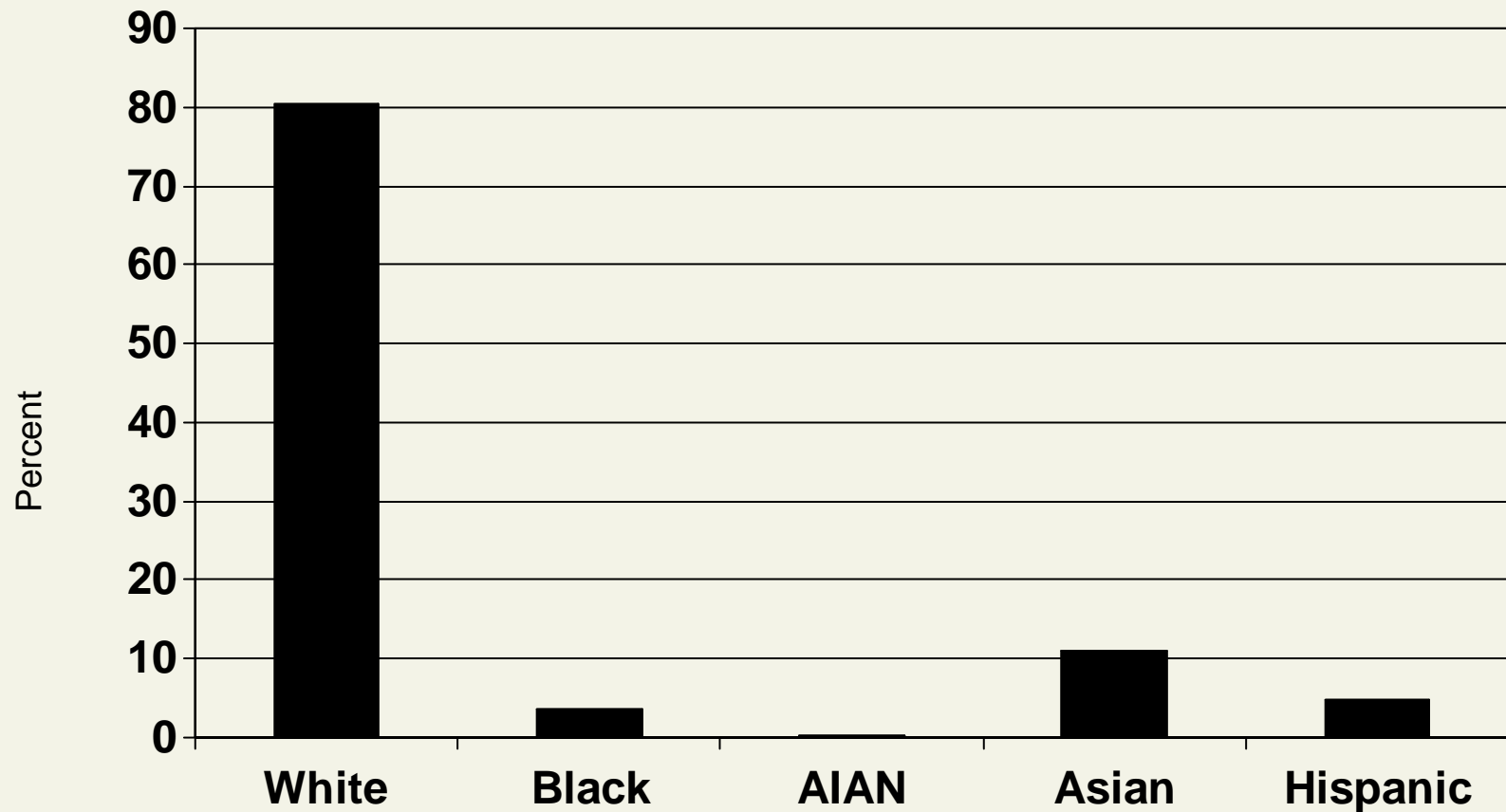
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# Findings on Race Concordance

- LaVeist TA, Carroll T. Race of physician and satisfaction with care among African-American patients. J Natl Med Assoc. 2002 Nov;94(11):937-43.
- LaVeist TA, Nuru-Jeter A. Is doctor-patient race concordance associated with greater satisfaction with care? J Health Soc Behav. 2002 Sep;43(3):296-306.
- LaVeist TA, Nuru-Jeter A, Jones KE. The association of doctor-patient race concordance with health services utilization. J Public Health Policy. 2003;24(3-4):312-23.



# Racial/Ethnic distribution of physicians, US 2000



Source: U.S. Bureau of the Census



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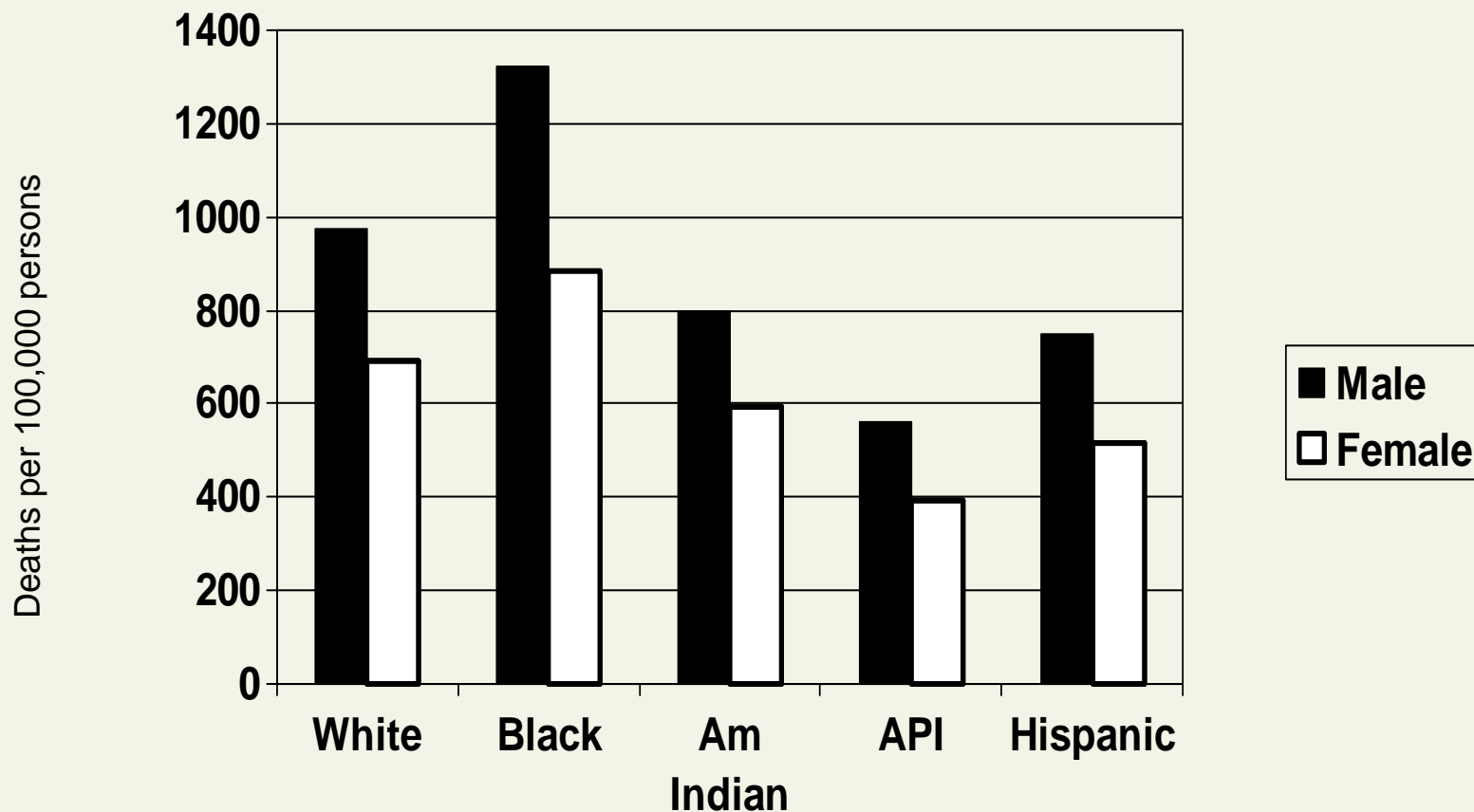
# Health Status Disparities

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# Age-adjusted mortality rates by race/ethnicity and gender, 2003



Note: API= Asian/Pacific Islander

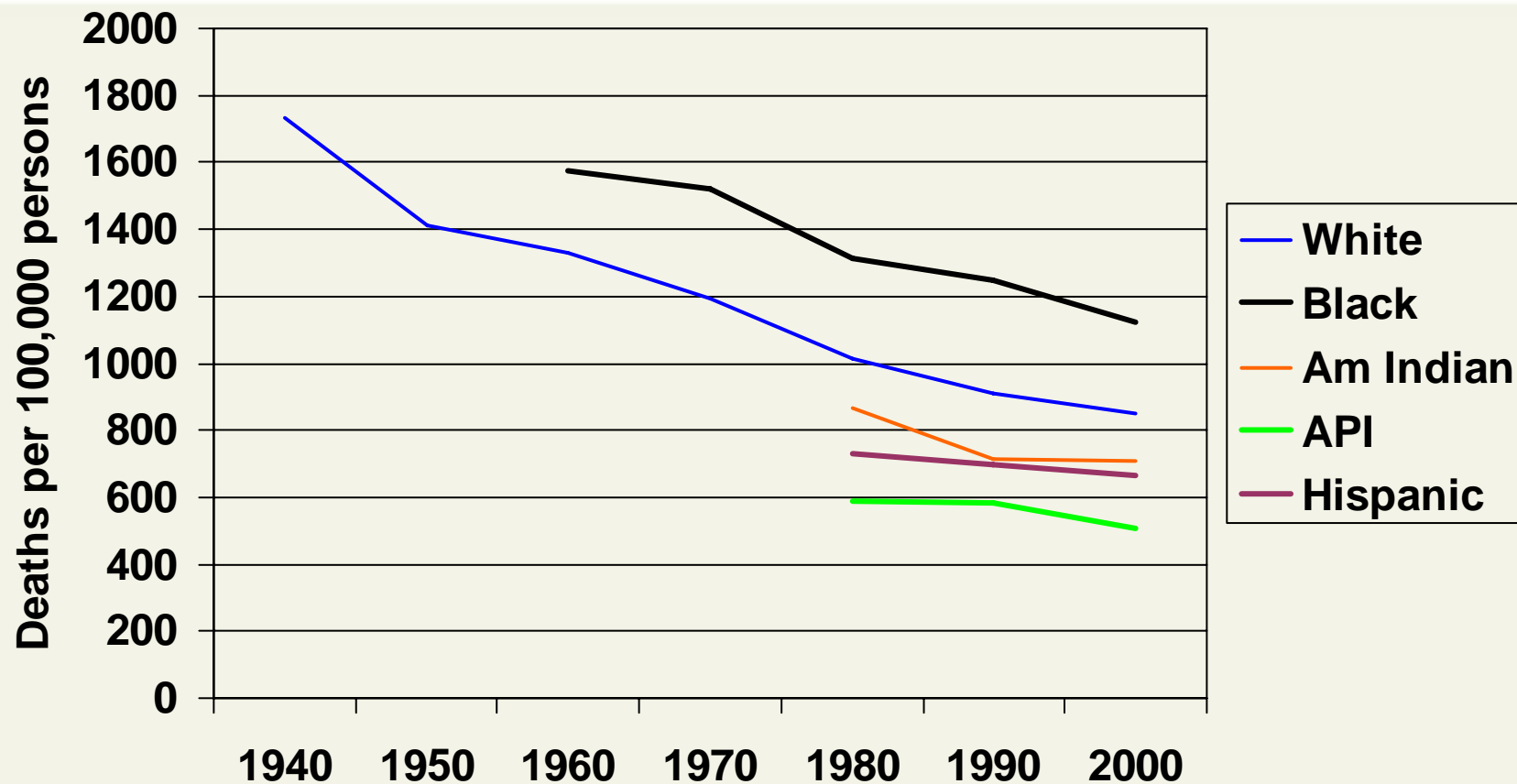
Source: CDC NCHS The Health, United States List 2006 Edition Table 35, pg. 198



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# Age-adjusted mortality rates by race/ethnicity, 1940-2000



Source: U.S. National Center for Health Statistics, "National Vital Statistics Reports, Volume 52, Number 3, September 18, 2003

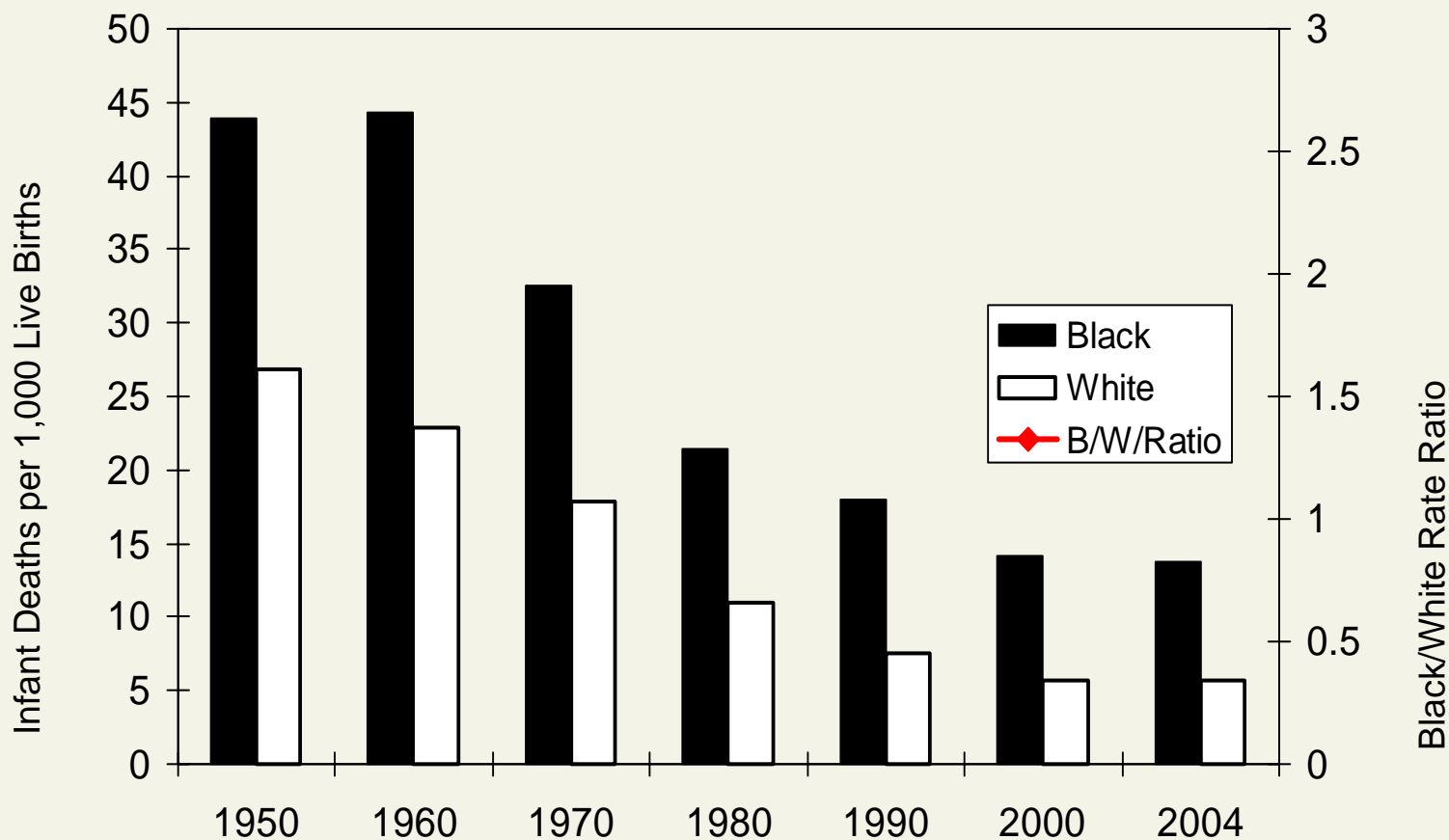
<sup>1</sup> Data for Hispanics is based on estimates

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# Infant mortality rates by race/ethnicity, 1950-2004



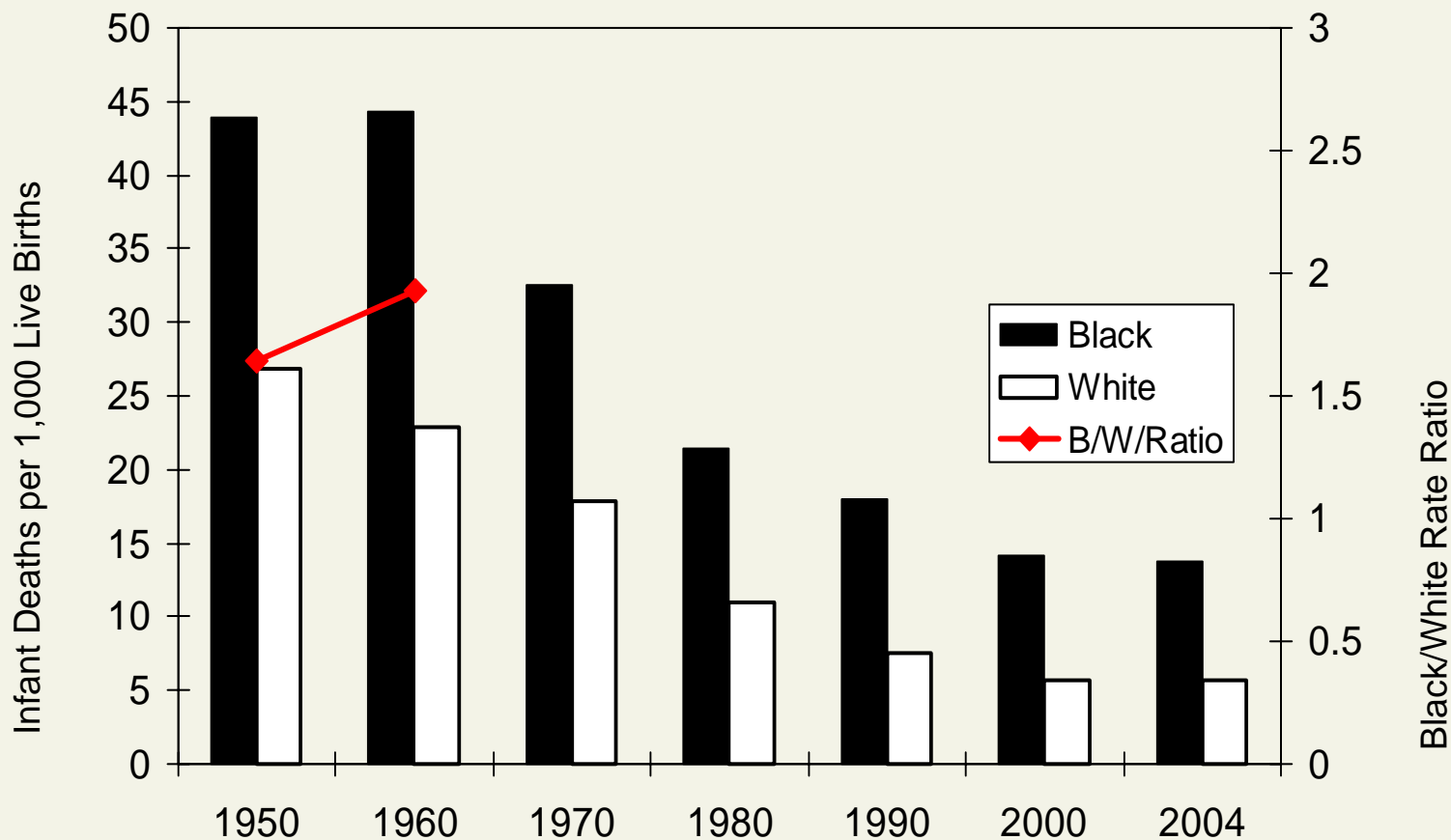
Source: U.S. National Center for Health Statistics

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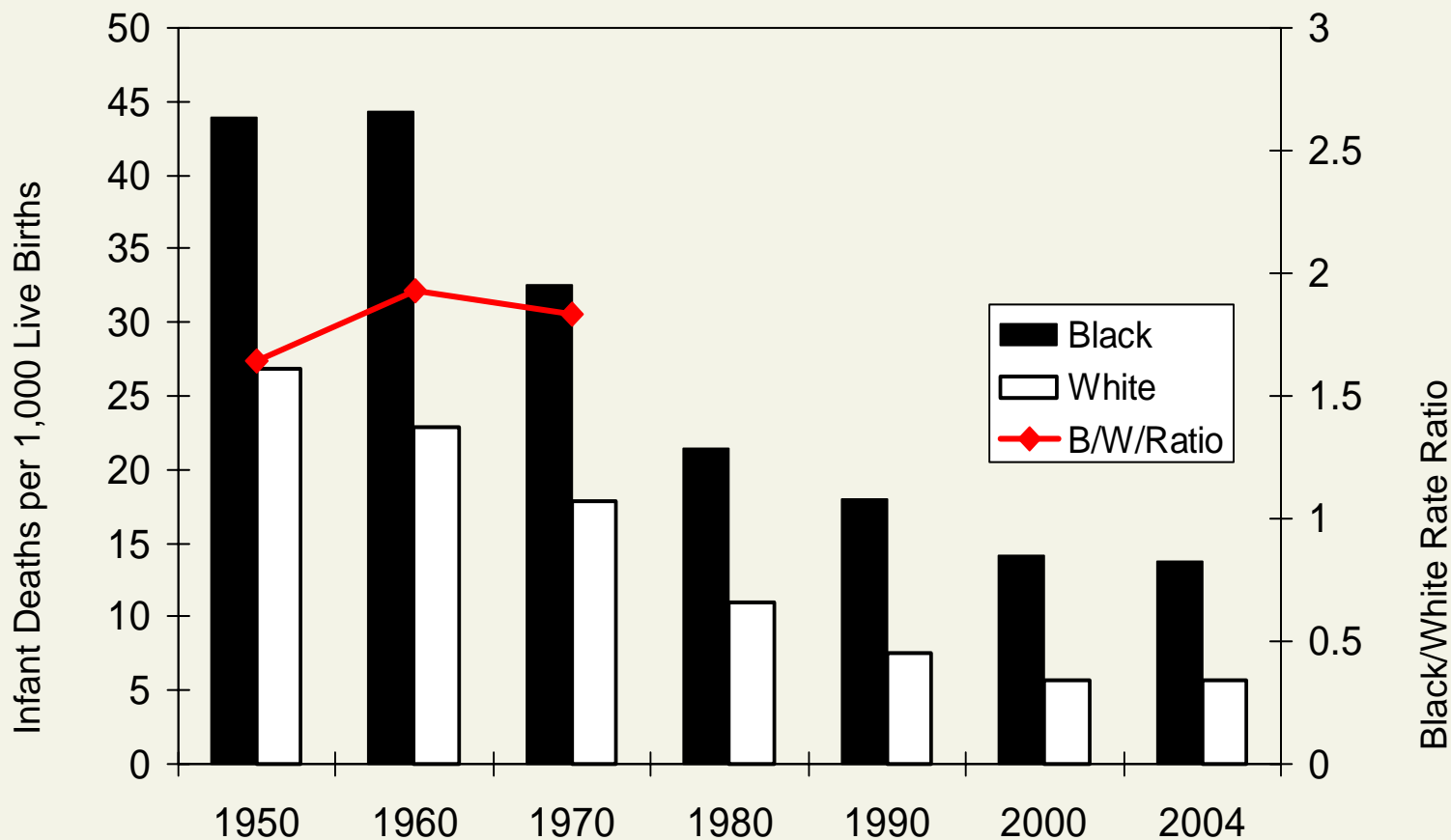
Source: U.S. National Center for Health Statistics



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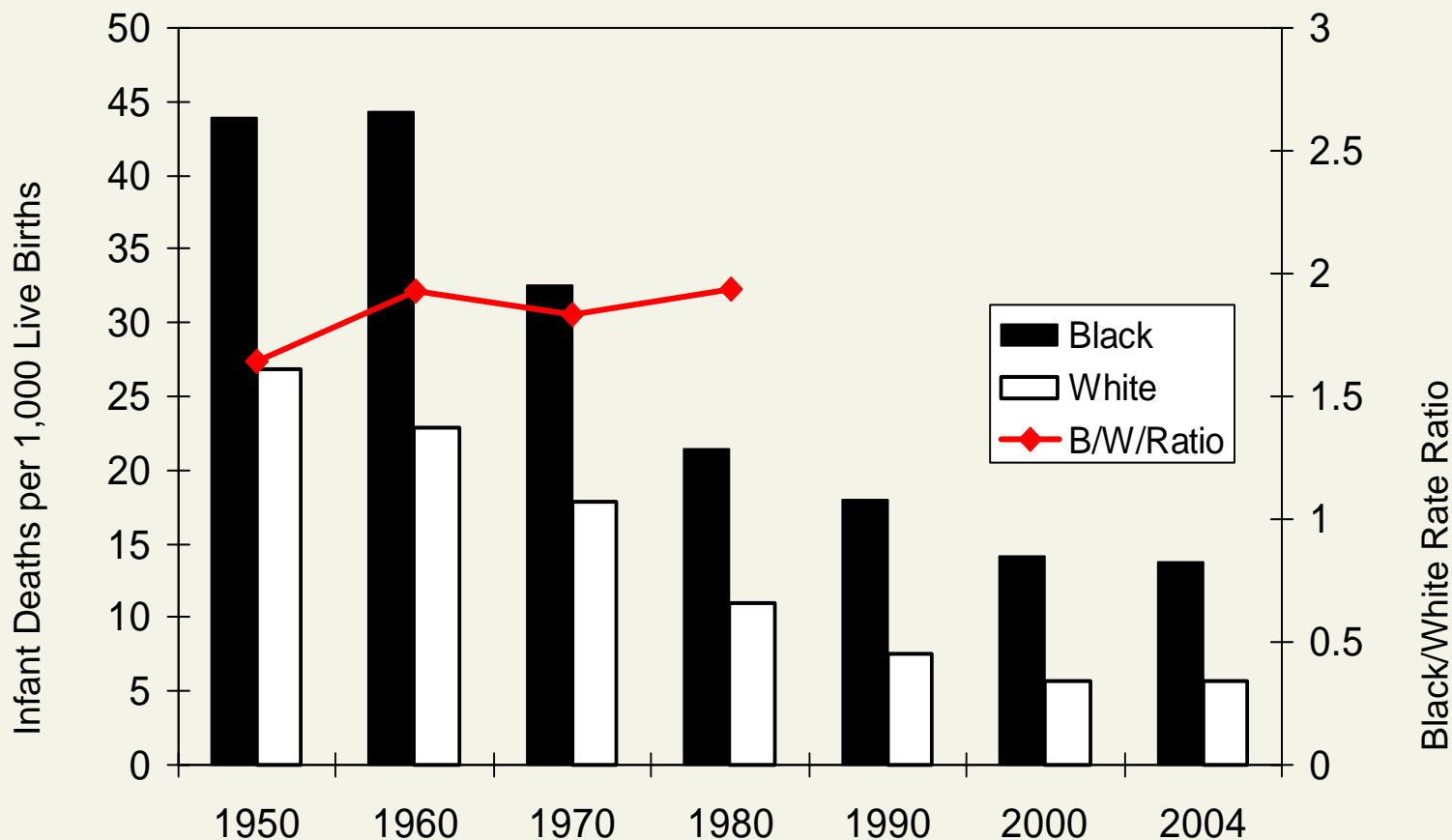
Source: U.S. National Center for Health Statistics



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# Infant mortality rates by race/ethnicity, 1950-2004



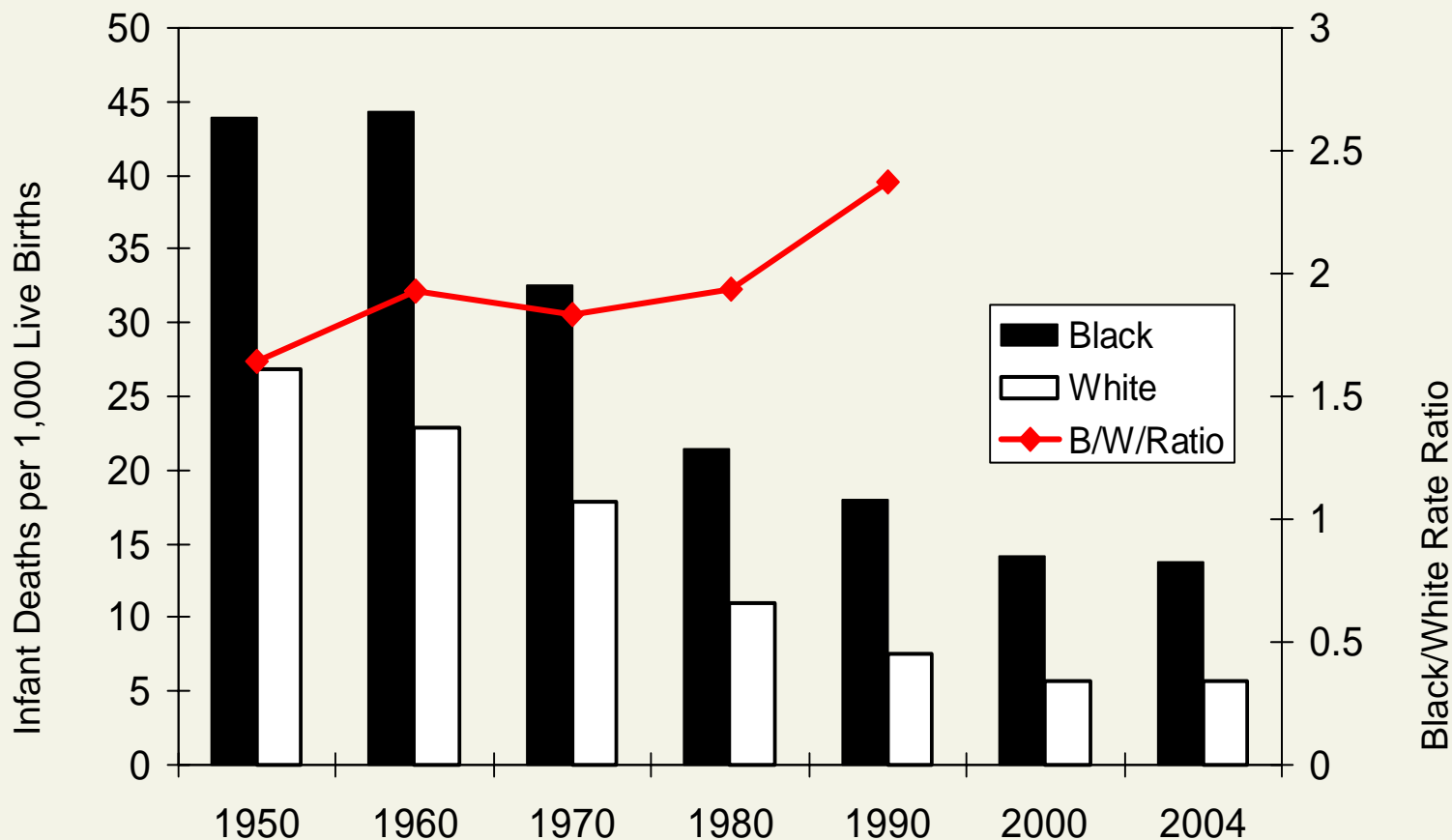
Source: U.S. National Center for Health Statistics



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# Infant mortality rates by race/ethnicity, 1950-2004



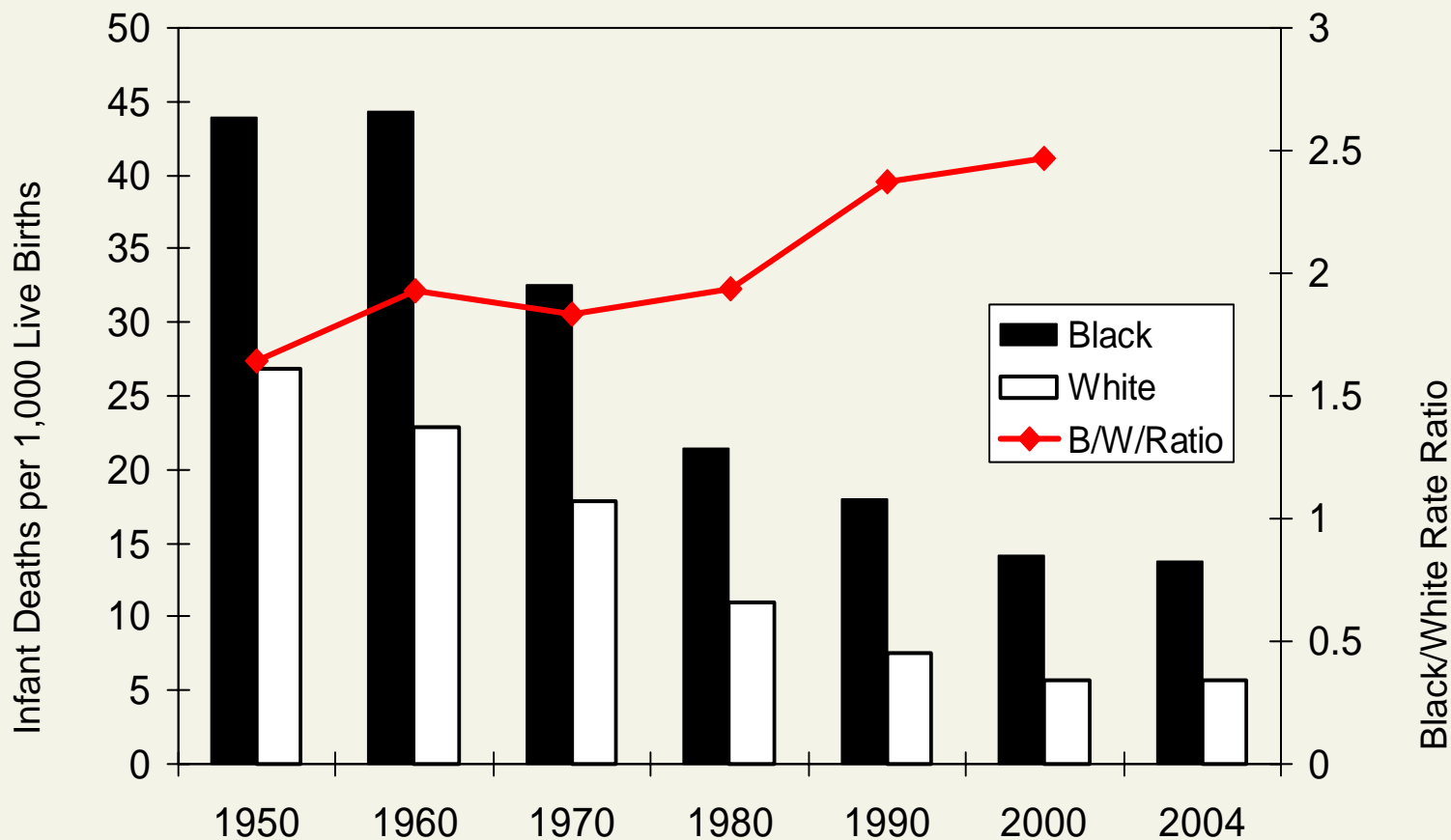
Source: U.S. National Center for Health Statistics



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# Infant mortality rates by race/ethnicity, 1950-2004



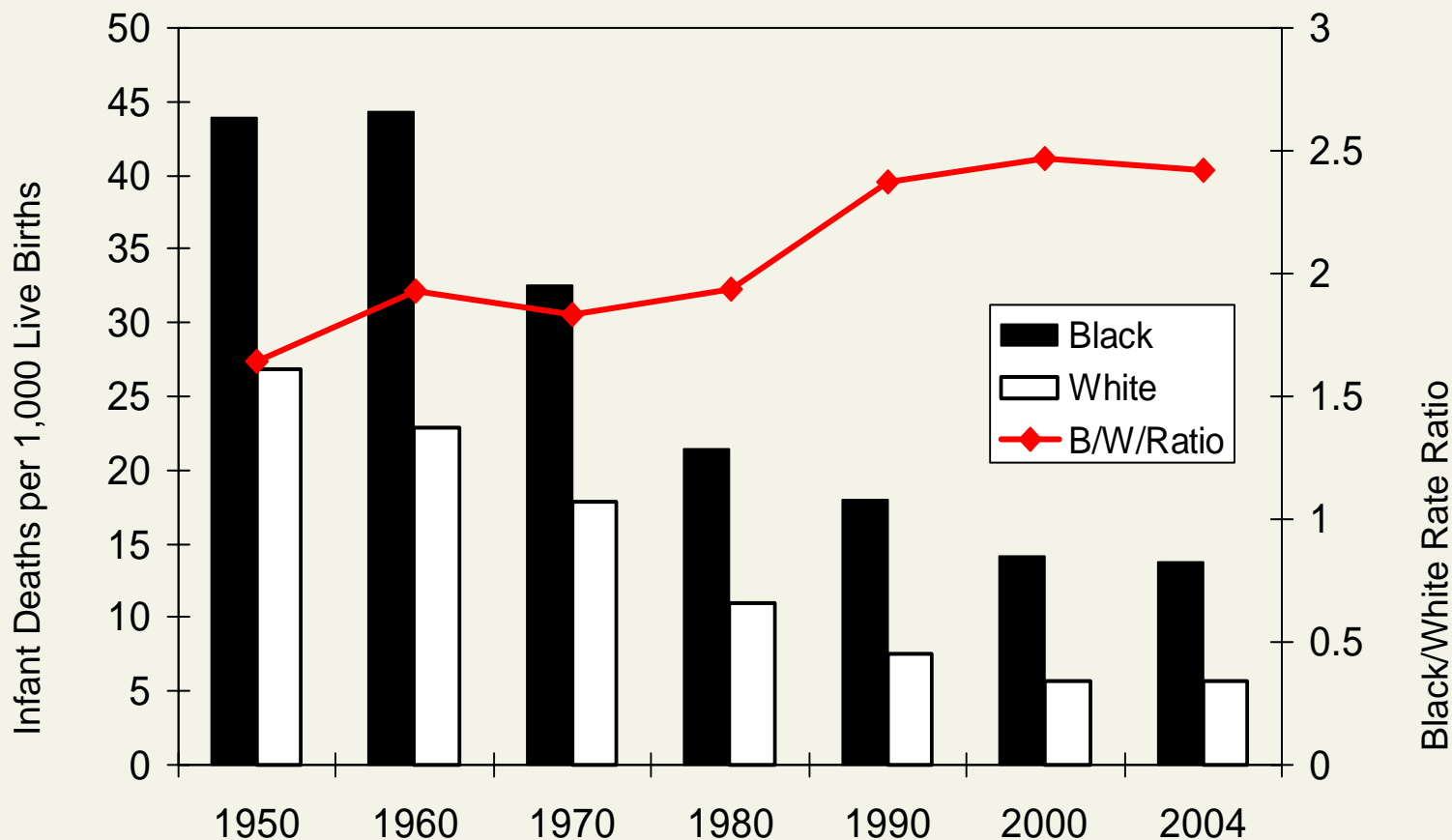
Source: U.S. National Center for Health Statistics



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# Infant mortality rates by race/ethnicity, 1950-2004



Source: U.S. National Center for Health Statistics



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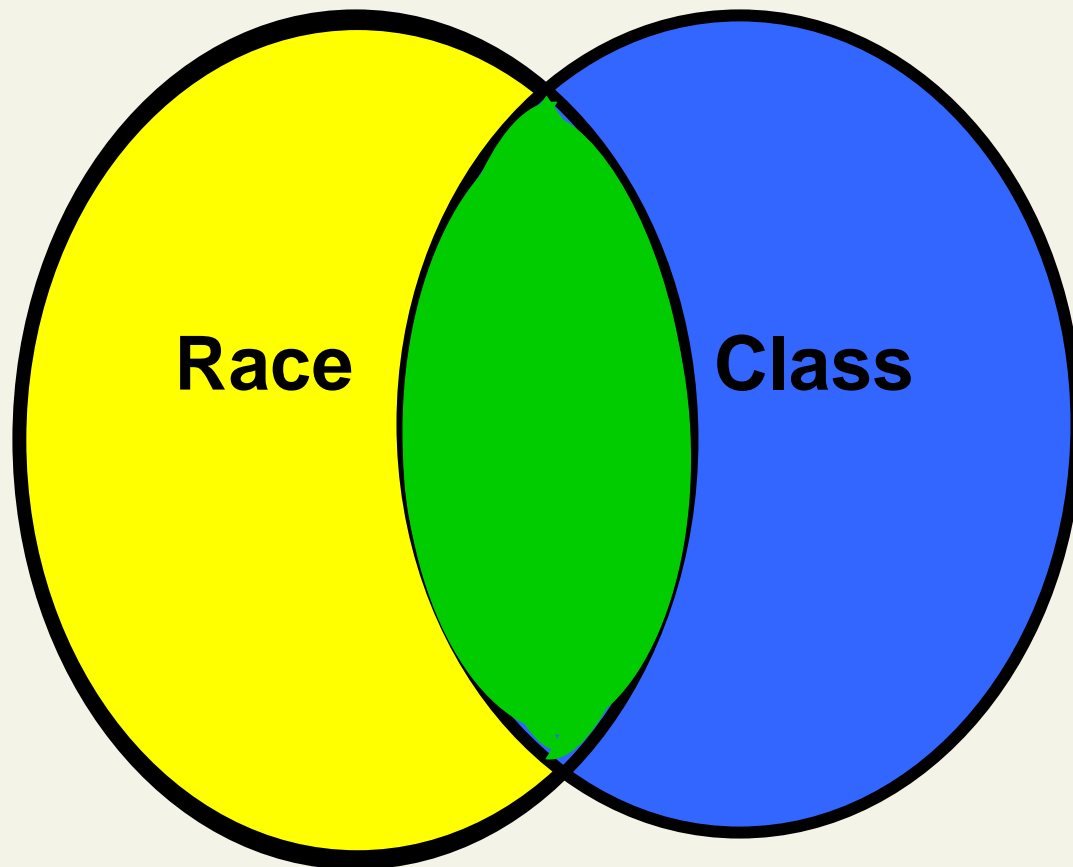
**“ARE RACE DISPARITIES REALLY JUST MASKED  
SOCIOECONOMIC STATUS DISPARITIES...”**

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# Disentangling Race and Class

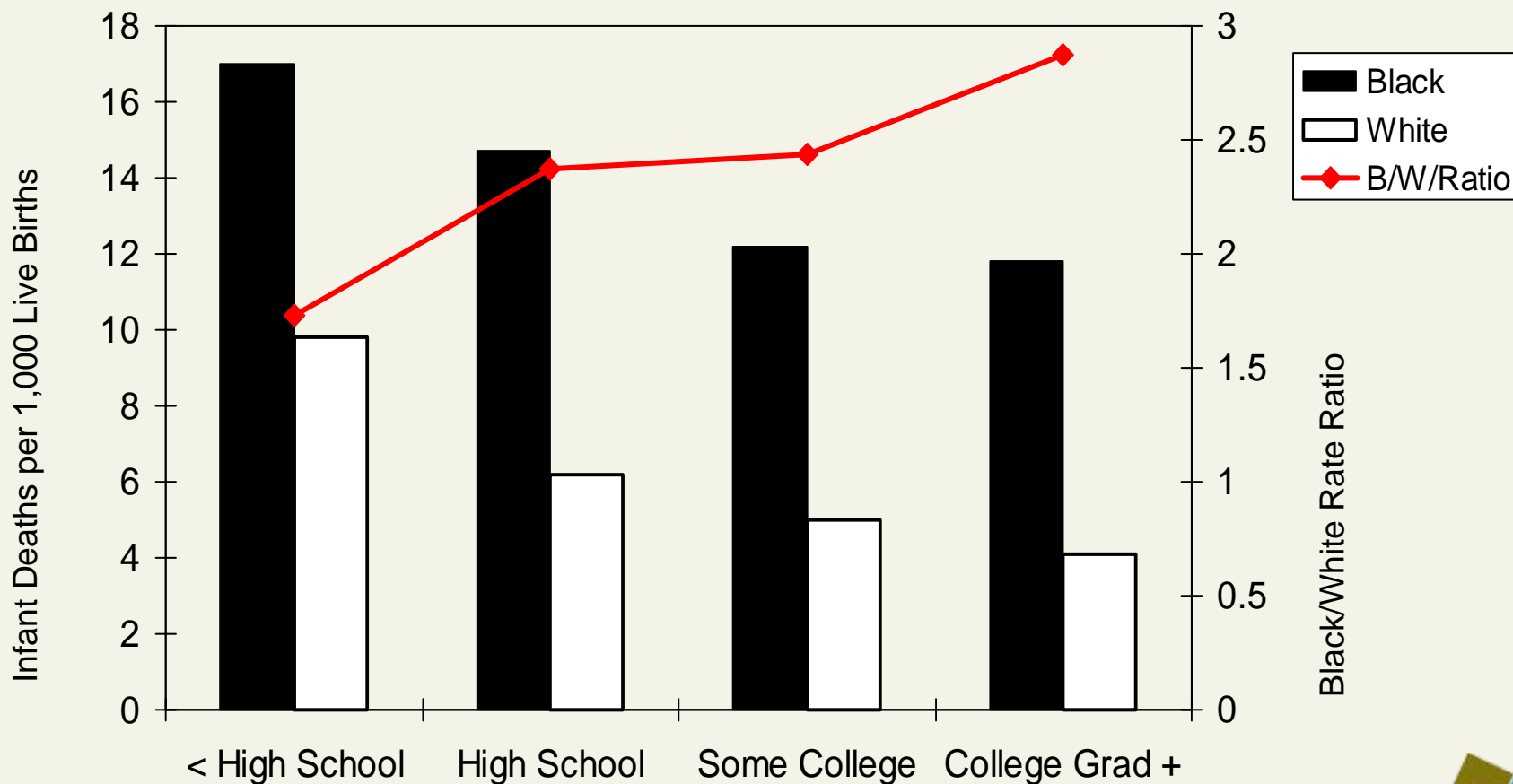


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# Infant mortality rates by Mother's education, 1995



Source: U.S. National Center for Health Statistics

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# Example

- 2002 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% <b>e=8</b>	1.0% e=64	.10

Health Disparities Research is further confounded because of racial segregation



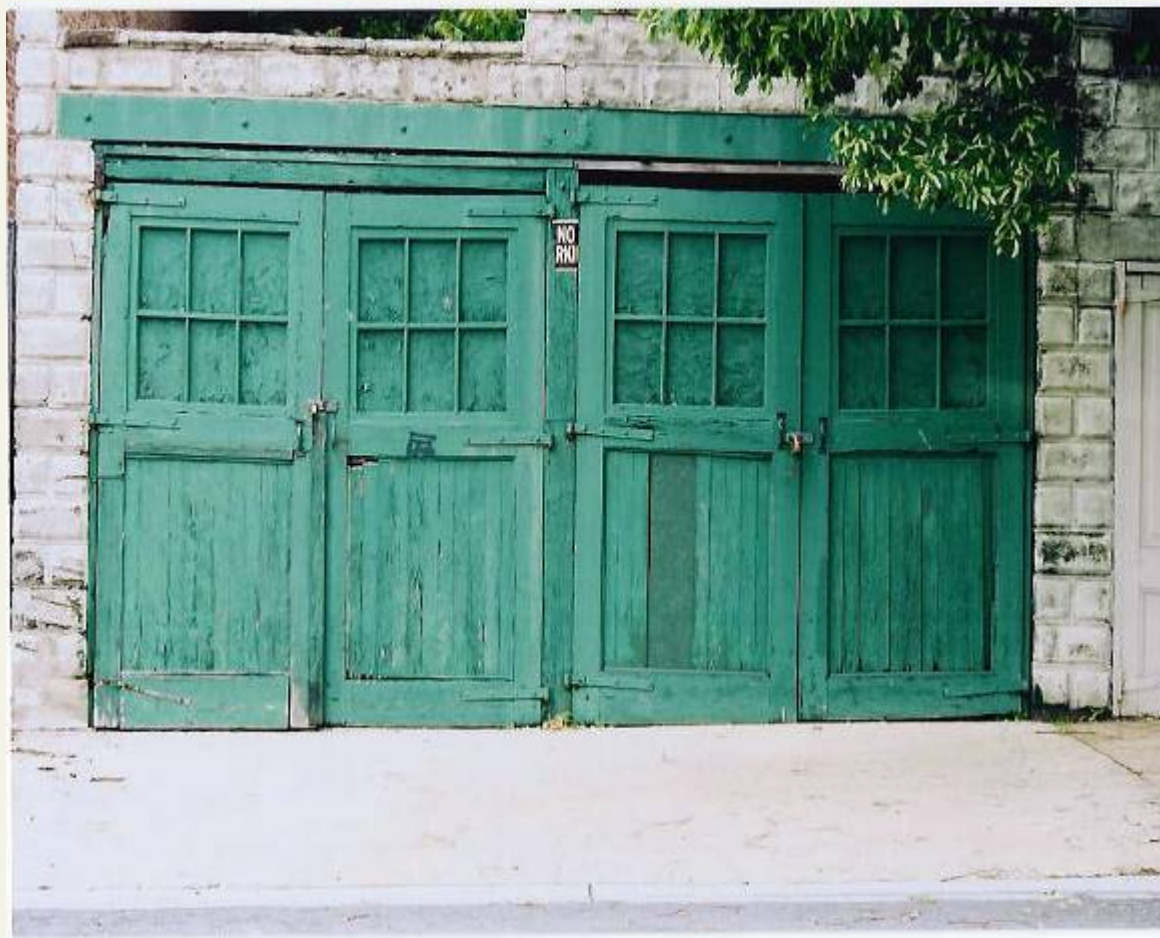
Racial Status Determines the way in which you “experience” America

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# Community Census Profile of the Community

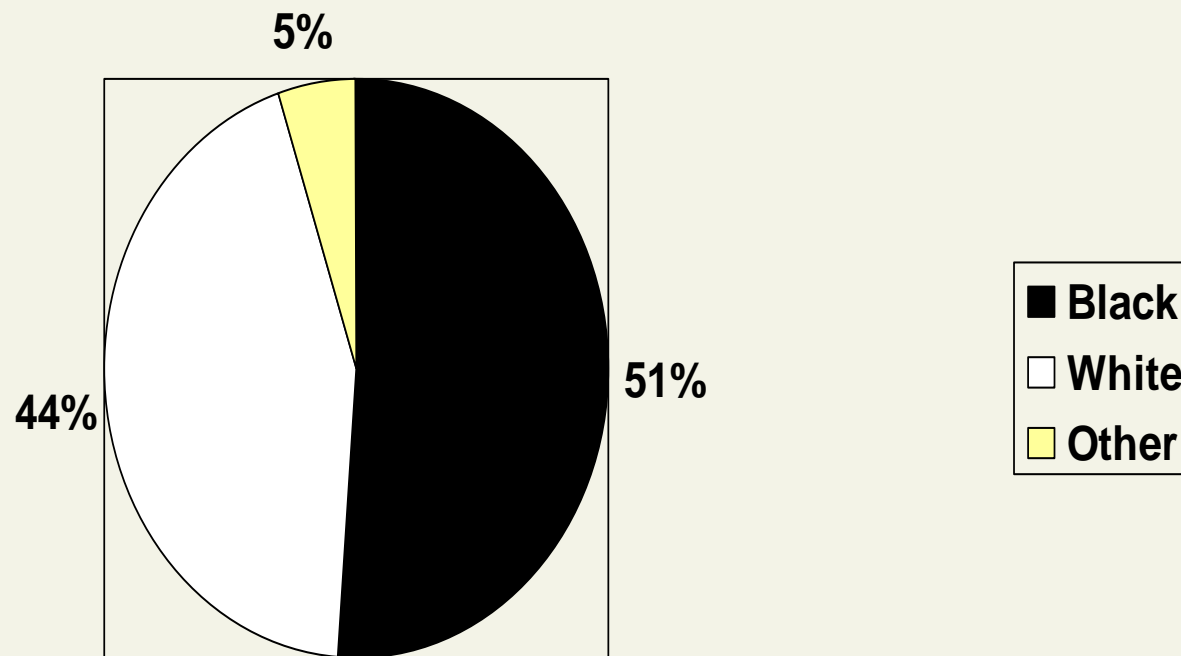


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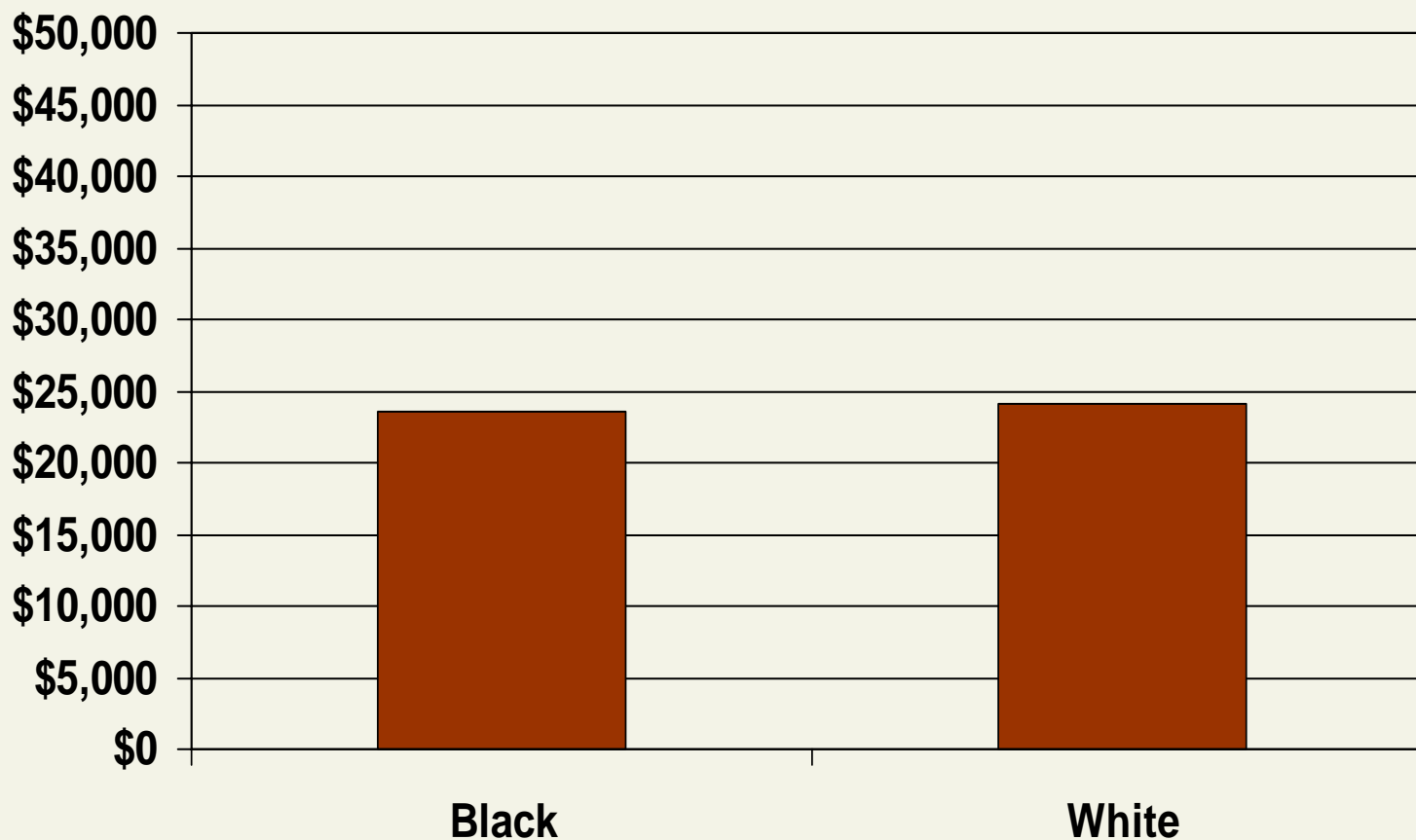


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# Racial Distribution



# Median Income



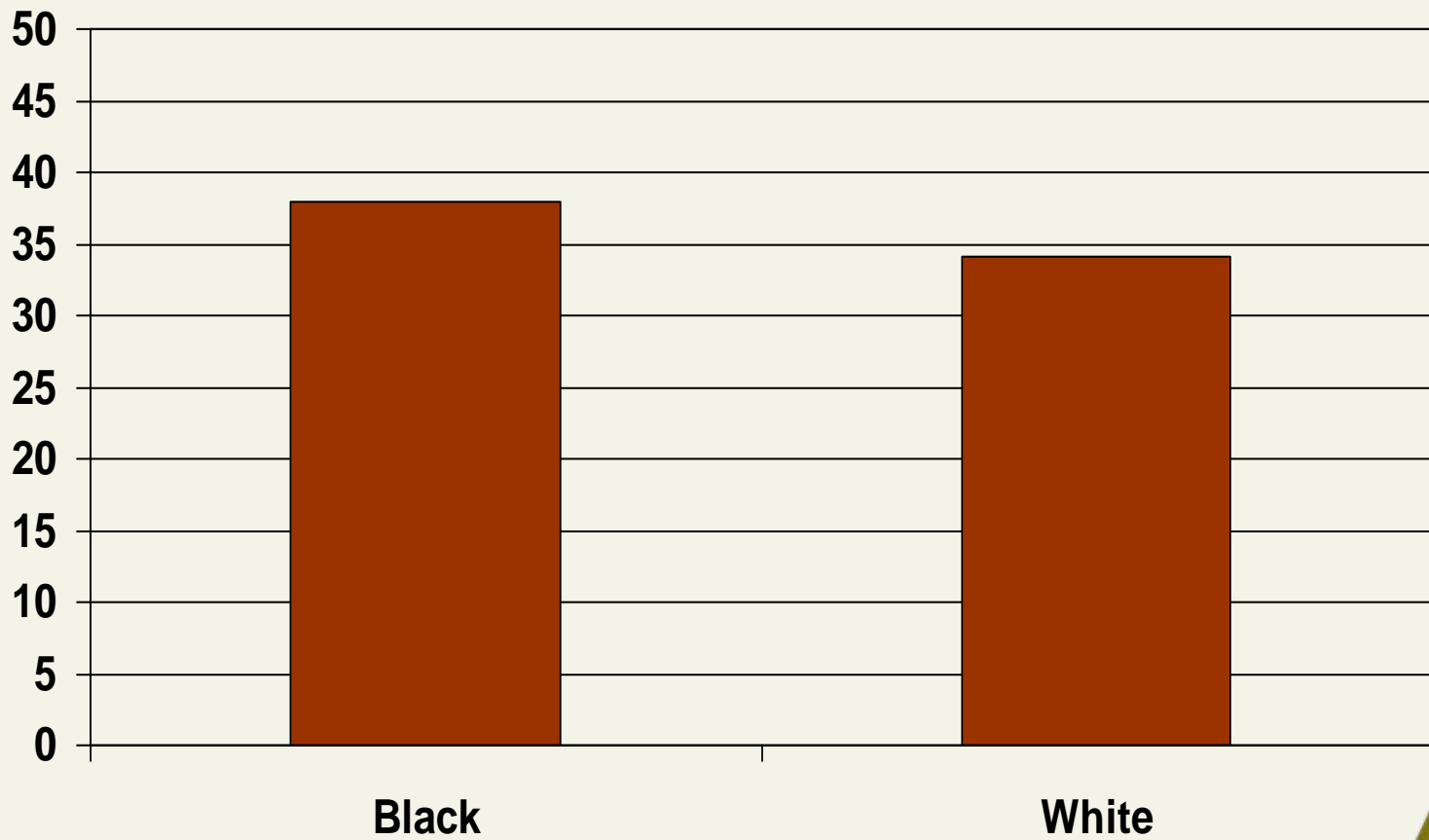
Source: US Censuses 2000

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# Percent Living Below Official Poverty Level



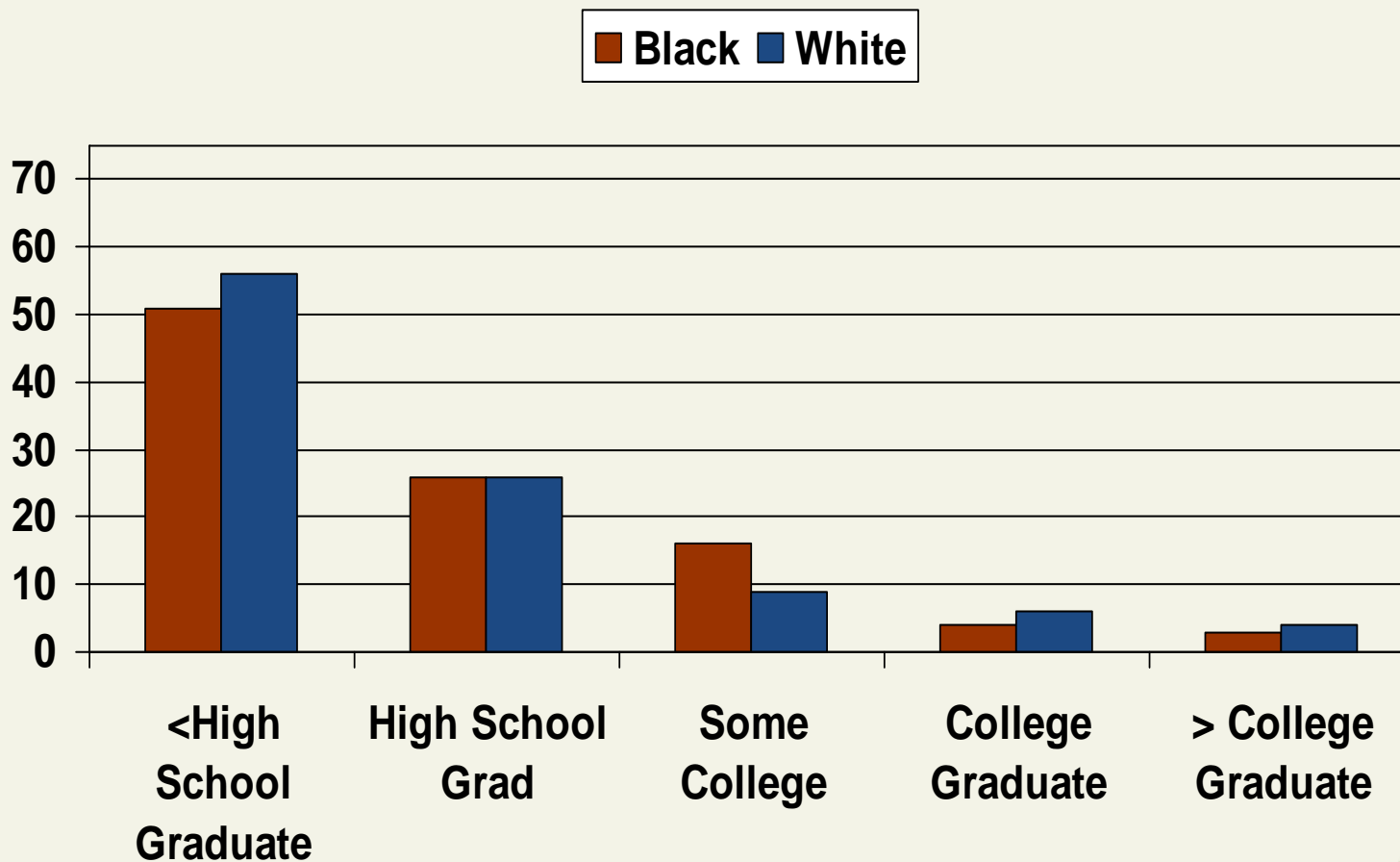
Source: US Censuses 2000

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# Educational Status



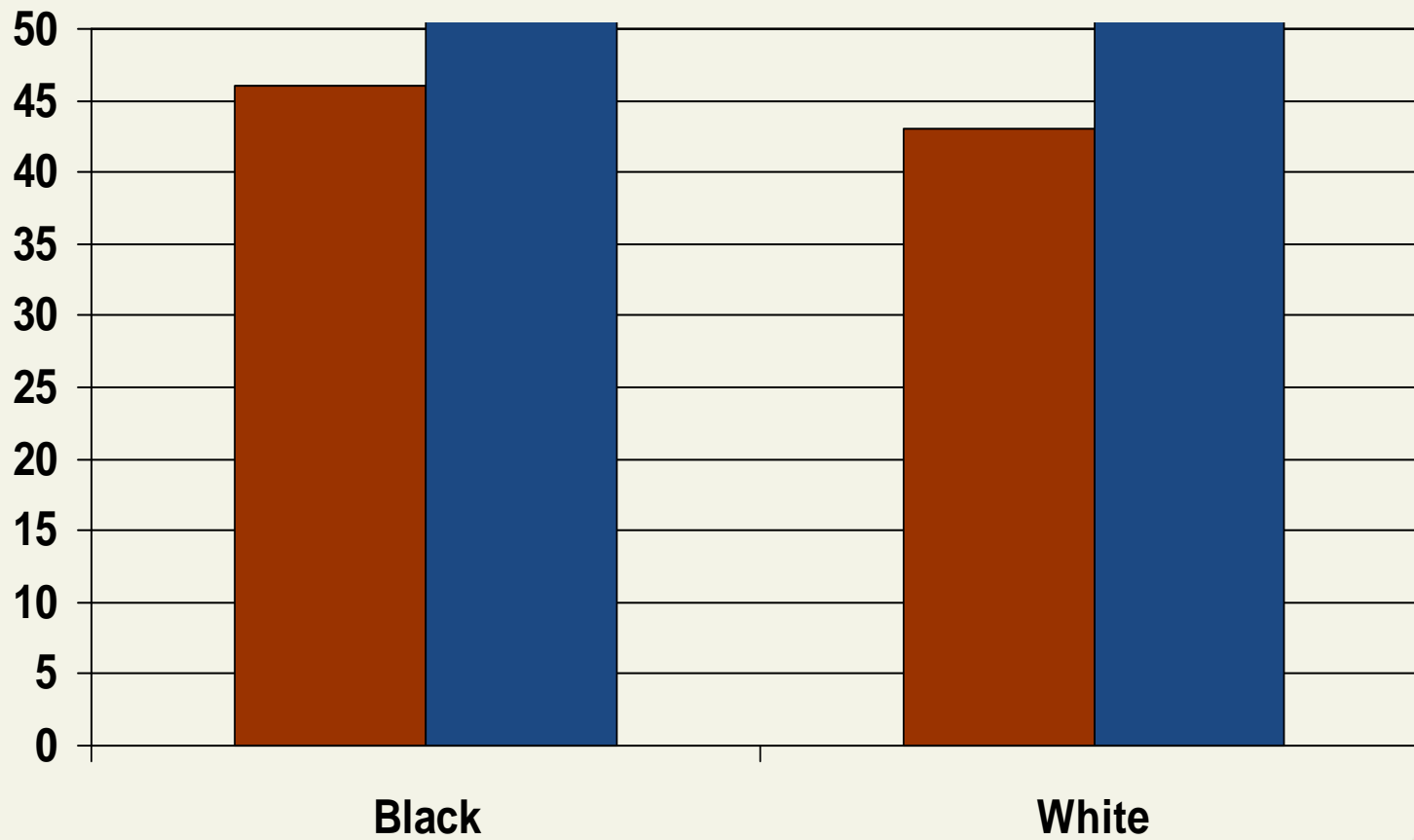
Source: US Censuses 2000

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# Sex



Source: US Censuses 2000

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# The Study

- Adult Residents of the 2 census tracts
- 40 Minute Interview
- Interviews In-person at home or at health fair
- 3 Blood pressure measurements
- Cuffs calibrated at Johns Hopkins Hospital
- 35 Interviewers
- Interviewer Incentives
- Respondent Incentives
- Successfully Interviewed N=1498 (42.14%)



# Disposition of Housing Units

Disposition	n	% of total	% of occupied residences
Total Addresses	2618	-	-
Occupied Residential Addresses	1127	43.0%	-
Refused	223	8.5%	19.8%
No Contact	85	3.2%	7.5%
Enrolled	819	31.3%	72.7%



## Representativeness of the Sample and Race Differences in the Sample

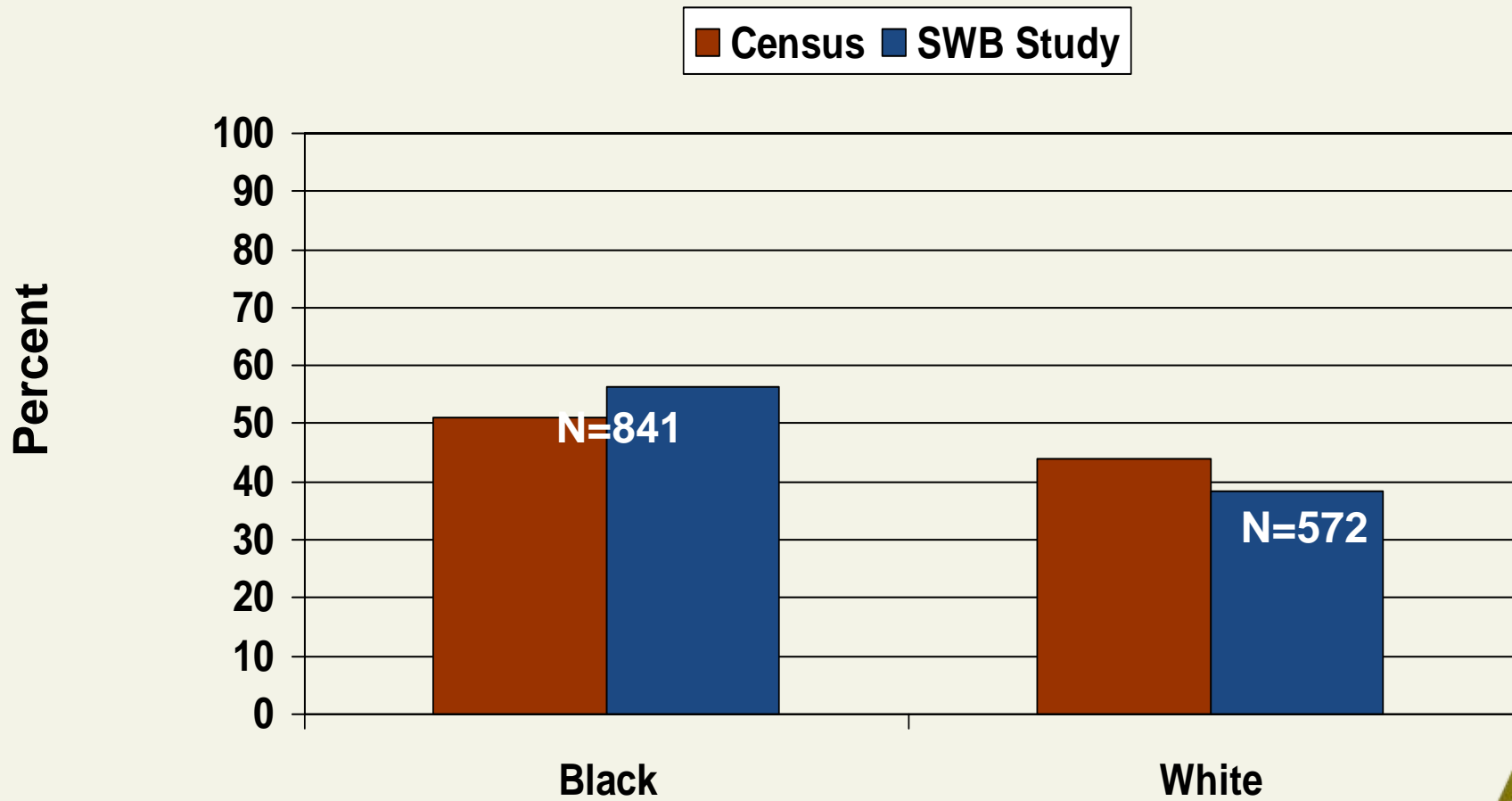


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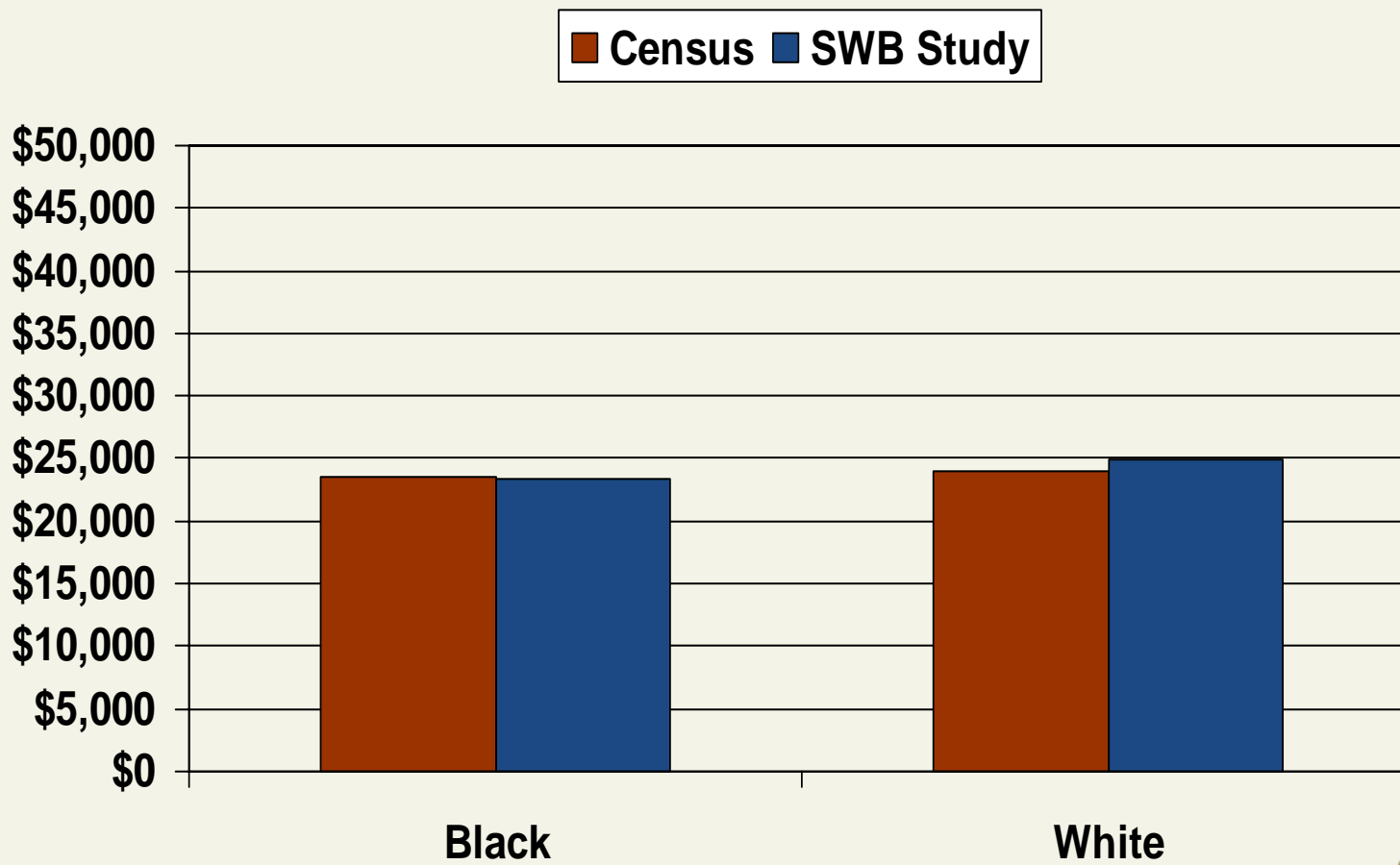


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# Racial Distribution of SWB Sample



# Median Income By Race



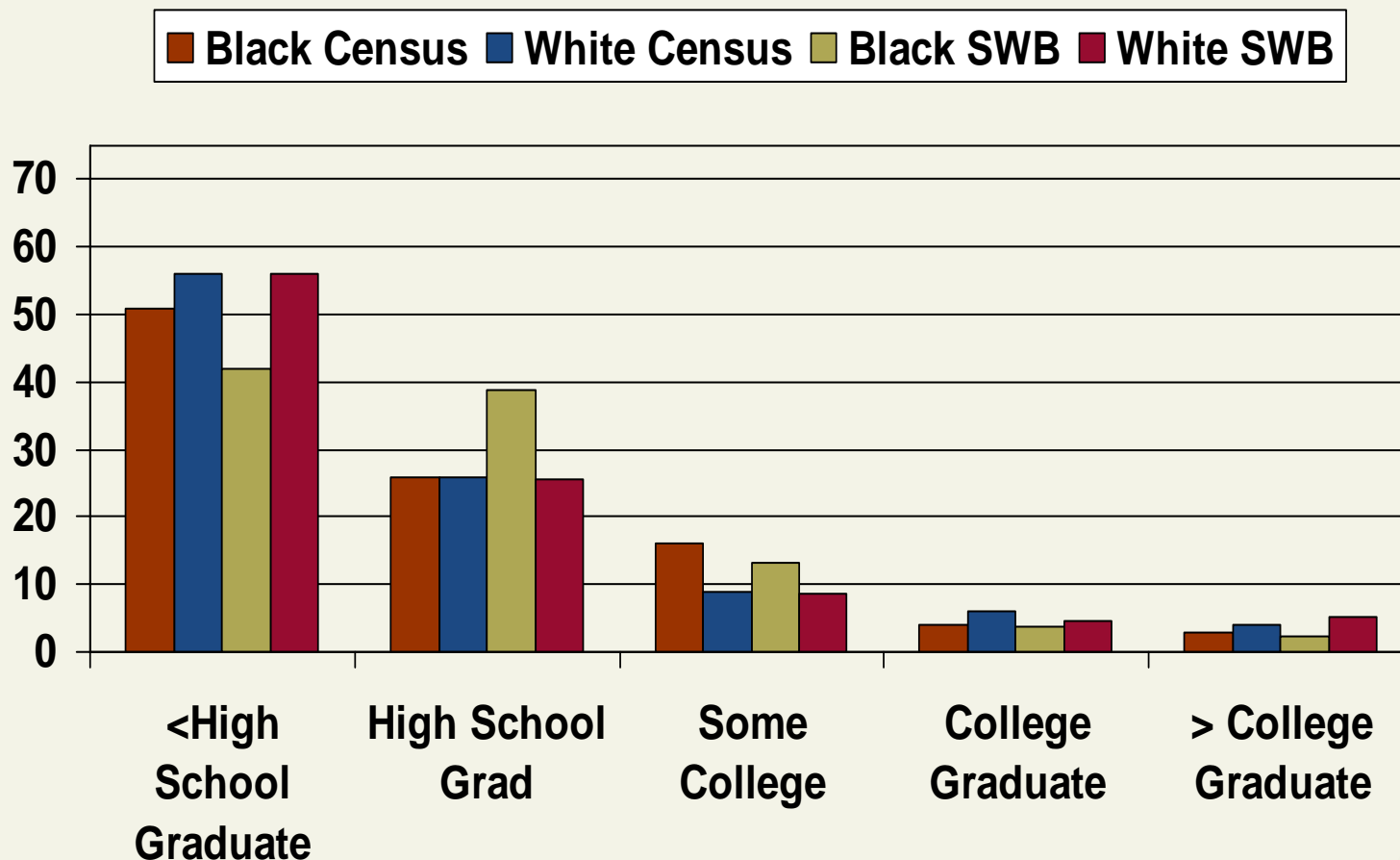
T = -1.942 df=1284 95%CI(-.464,.002)

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# Educational Status by Race

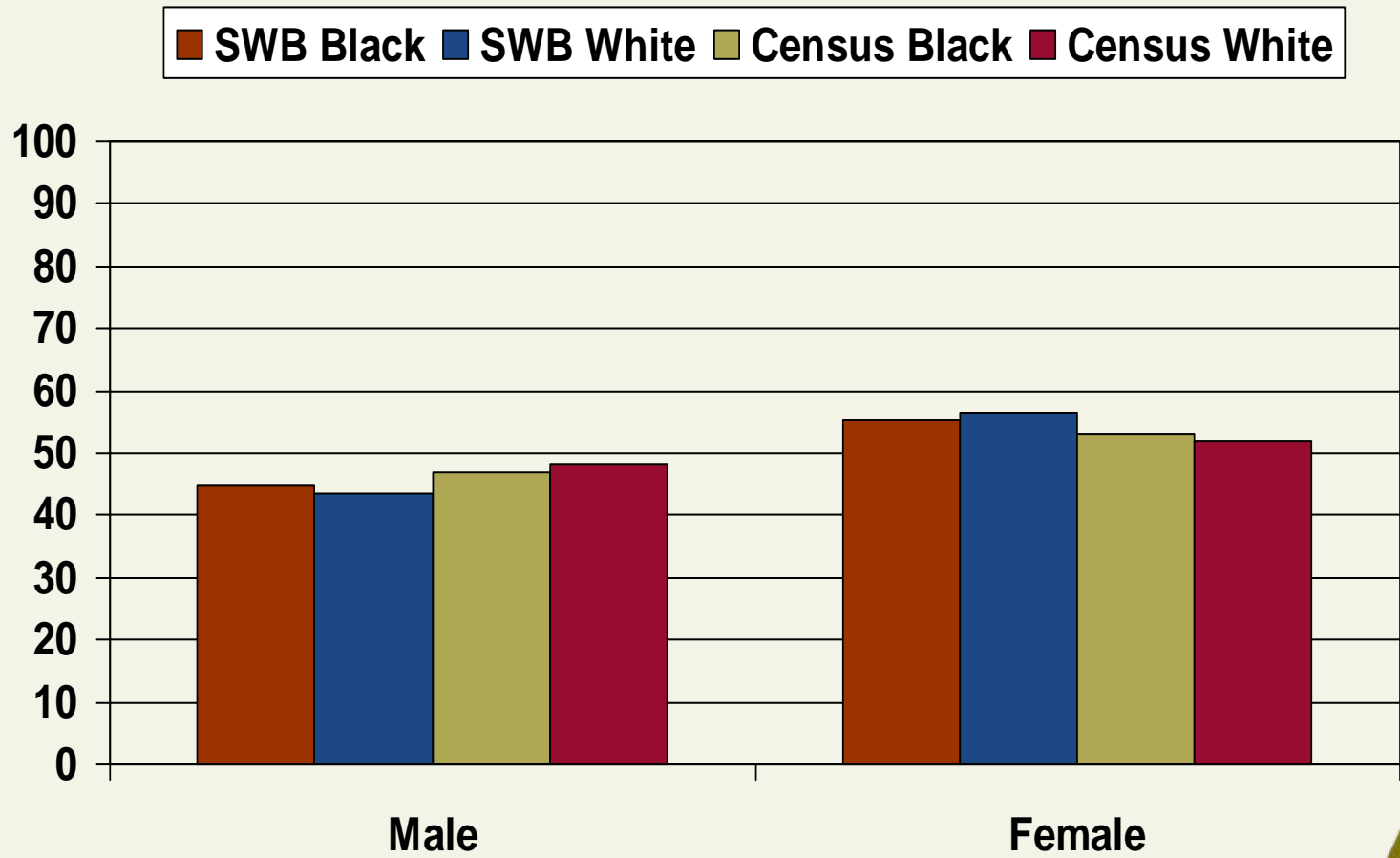


$X^2 = 45.96$   $df=4$   $p<.0001$

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# Sex



$X^2 = .22$  df 1  $p = .312$



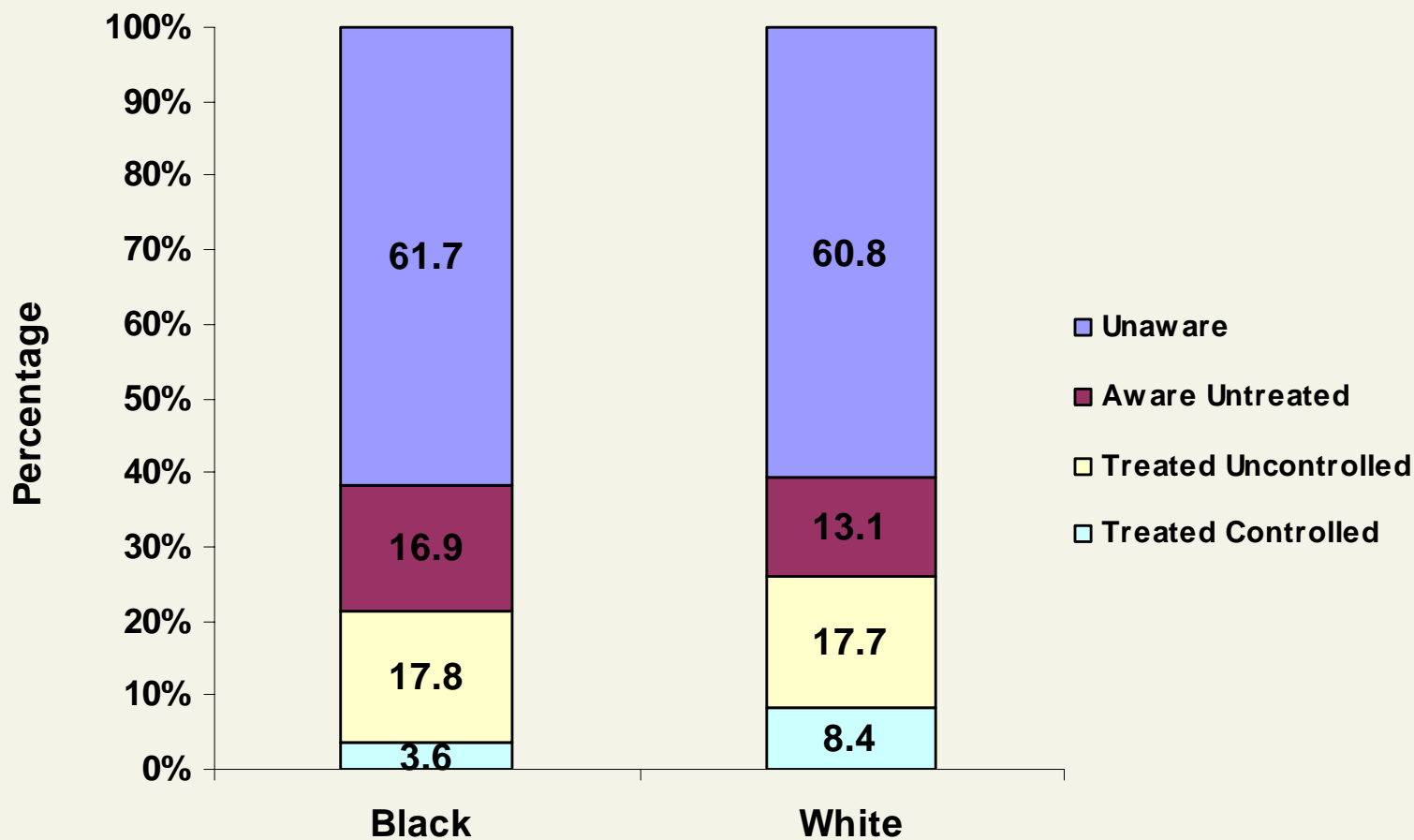
# Undiagnosed and Uncontrolled Hypertension (Systolic)

Diagnosed	Detected in the Field	
	Yes	No
Yes	<p><b>Not well Controlled</b></p> <p>Black 50.2%</p> <p>White 31.6%</p> <p><b>Rate Ratio 1.59</b></p>	<p><b>Well Controlled</b></p> <p>Black 49.8</p> <p>White 68.4%</p> <p><b>Rate Ratio .72</b></p>
No	<p><b>Undiagnosed</b></p> <p>Black 19.2%</p> <p>White 20.5%</p> <p><b>Rate Ratio .94</b></p>	<p><b>Normal</b></p> <p>Black 80.8%</p> <p>White 79.5%</p> <p><b>Rate Ratio 1.02</b></p>

Rates are NOT adjusted for age or education.



# Hypertension, awareness, treatment and control



# Hypertension, awareness, treatment and control

Models	Hypertension <sup>b</sup> (n=1408)		Aware <sup>c</sup> (n=935)		Treated <sup>d</sup> (n=375)		Controlled <sup>e</sup> (n=225)	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Model 1	1.48	1.16-1.88	1.44	1.07-1.93	0.93	0.57-1.51	0.42	0.22-0.82
Model 2	1.44	1.12-1.84	1.46	1.08-1.97	0.90	0.54-1.47	0.43	0.23-0.88
Model 3	1.36	1.05-1.75	1.44	1.06-1.95	0.88	0.53-1.47	0.44	0.22-0.87
Model 4	1.35	1.04-1.74	1.43	1.05-1.94	0.88	0.53-1.50	0.42	0.22-0.85

aWhite adults are the reference category.

bHypertension was defined as systolic blood pressure  $\geq 140$  and/or diastolic blood pressure  $\geq 90$ , or reported taking antihypertensive medications.

cAwareness was defined as those hypertensive participants who reported being told by the doctor that they had hypertension or reported taking antihypertensive medications.

d Treated hypertension was defined as those hypertensive participants who were aware but not being treated with antihypertensive medications.

e Controlled hypertension was defined as those hypertensive participants being treated whose systolic blood pressure  $\geq 140$  mmHG or diastolic blood pressure  $\geq 90$  mmHg.

Model 1 included race, age and gender.

Model 2 included race, age, gender, household income, and education level.

Model 3 included race, age, gender, household income, education level, body mass index, and current drinking and smoking status.

Model 4 included race, age, gender, household income, education level, body mass index, current drinking and smoking status, insurance status, and, whether you have a regular doctor or not.

“Exploration and Intervention for Health Equality...”



Hopkins Center for  
Health Disparities Solutions

# Odds Ratios and 95% Confidence Intervals for the Association between Race and Blood Pressure Status in the EDHIC Study

Models	Hypertension <sup>b</sup>		Elevated Systolic Blood Pressure		Elevated Diastolic Blood Pressure	
	OR	95% CI	OR	95% CI	OR	95% CI
Model 1	1.48	1.16-1.89	1.48	1.14-1.93	1.50	1.19-1.89
Model 2	1.45	1.12-1.88	1.44	1.10-1.90	1.44	1.13-1.84
Model 3	1.43	1.11-1.85	1.46	1.11-1.92	1.45	1.14-1.85
Model 4	1.42	1.09-1.86	1.47	1.11-1.96	1.40	1.09-1.81
Model 5	1.43	1.09-1.89	1.40	1.04-1.87	1.38	1.07-1.79

Notes. OR=odds ratio; CI=confidence interval.

aWhite adults are the reference category.

Model 1 included race and age.

Model 2 included race, age, gender, marital status, household income, and education level.

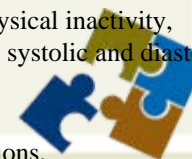
Model 3 included race, age, gender, marital status, household income, education level, and insurance status.

Model 4 included race, age, gender, marital status, household income, education level, insurance status, self-ratings of health, weight status, physical inactivity, diagnosis of diabetes, heavy drinking and current smoking status.

Model 5 included race, age, gender, marital status, household income, education level, insurance status, self-ratings of health, weight status, physical inactivity, diagnosis of diabetes, heavy drinking and current smoking status, number of assets and whether you have a regular doctor or not. For elevated systolic and diastolic blood pressure. Models 2 and 3 also included whether the individual reported taking antihypertensive medications.

<sup>b</sup>Hypertension was defined as systolic blood pressure  $\geq 140$  and/or diastolic blood pressure  $\geq 90$ , or reported taking antihypertensive medications.

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	NHANES 99-04	EHDIC	Percent difference
	O.R. (95% CI)	O.R. (95% CI)	
Model 1	2.25(1.95-2.59)	1.48 (1.16-1.89)	34
Model 2	2.07(1.79-2.40)	1.45 (1.12-1.88)	29
Model 3	2.08(1.80-2.42)	1.43 (1.11-1.85)	31
Model 4	2.01(1.63-2.48)	1.42 (1.09-1.86)	29

