The Magnitude and Consequences of Health Disparities

Ten Years Later: How Far Have We Come in Reducing Health Disparities?
Roundtable on the Promotion of Health Equity and the Elimination of Health Disparities
Washington, DC
April 8, 2010

Steven H. Woolf, MD, MPH
VCU Center on Human Needs
Department of Family Medicine, Epidemiology, and Community Health
Virginia Commonwealth University
“...The Negro baby born in America today, regardless of the section of the Nation in which he is born, has about one-half as much chance of completing a high school as a white baby born in the same place on the same day, one-third as much chance of completing college, one-third as much chance of becoming a professional man, twice as much chance of becoming unemployed, about one-seventh as much chance of earning $10,000 a year, a life expectancy which is 7 years shorter, and the prospects of earning only half as much...”
Life Expectancy, 1960-2000

- Whites
- African Americans
- Difference

HealthUS, National Center for Health Statistics
EXHIBIT 1
Standardized Mortality Ratios For Blacks And Whites, By Sex, For Each Decade 1960–2000

<table>
<thead>
<tr>
<th></th>
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<tr>
<td>Male</td>
<td>1.300</td>
<td>1.400</td>
<td>1.500</td>
<td>1.600</td>
<td>1.300</td>
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<tr>
<td>Female</td>
<td>1.300</td>
<td>1.400</td>
<td>1.500</td>
<td>1.600</td>
<td>1.300</td>
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</tbody>
</table>

Notes: Standardized mortality ratio (SMR) is calculated by the direct method of rate standardization, in which the age-specific death rate among African Americans is divided by the corresponding age-specific rate for whites.

County Life Expectancies by Race

doi:10.1371/journal.pmed.0030260
ROBERT WOOD JOHNSON FOUNDATION
Commission to Build a Healthier America

- 81.3 YEARS
  - 30 miles = 9-year life span disparity

- 80.1 YEARS
  - 10 miles = 8-year life span disparity

- 80.9 YEARS
  - 12 miles = 9-year life span disparity

- 75 YEARS
  - 17 miles = 3-year life span disparity
## Eight Americas

**New Perspectives on U.S. Health Disparities**

Christopher J.L. Murray, MD, PhD, Sandeep Kulkarni, AB, Majid Ezzati, PhD

<table>
<thead>
<tr>
<th>America</th>
<th>General description</th>
<th>Male life expectancy at birth</th>
<th>Female life expectancy at birth</th>
<th>Female–male difference in life expectancy</th>
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<td>1</td>
<td>Asians</td>
<td>82.8</td>
<td>87.7</td>
<td>4.9</td>
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<tr>
<td>2</td>
<td>White low-income rural Northland</td>
<td>76.2</td>
<td>81.8</td>
<td>5.6</td>
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<tr>
<td>3</td>
<td>Middle America</td>
<td>75.2</td>
<td>80.2</td>
<td>5.0</td>
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<tr>
<td>4</td>
<td>White poor Appalachia/ Mississippi Valley</td>
<td>71.8</td>
<td>77.8</td>
<td>6.1</td>
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<tr>
<td>5</td>
<td>Western Native Americans</td>
<td>69.4</td>
<td>75.9</td>
<td>6.6</td>
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<tr>
<td>6</td>
<td>Black middle America</td>
<td>69.6</td>
<td>75.9</td>
<td>6.4</td>
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<tr>
<td>7</td>
<td>Black poor rural South</td>
<td>67.7</td>
<td>74.6</td>
<td>6.9</td>
</tr>
<tr>
<td>8</td>
<td>Black high-risk urban</td>
<td>66.7</td>
<td>74.9</td>
<td>8.2</td>
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There is new ammunition in the war against cancer. These are the bullets.

Revolutionary new pills like Gleevec combat cancer by targeting only the diseased cells. Is this the breakthrough we’ve been waiting for?
A Tale of Two Choices

- Effectiveness
- Equity
The Health Impact of Resolving Racial Disparities: An Analysis of US Mortality Data

Steven H. Woolf, MD, MPH, Robert E. Johnson, PhD, George E. Fryer Jr, PhD, MSW, George Rust, MD, MPH, and David Satcher, MD, PhD

The US health system spends far more on the “technology” of care (e.g., drugs, devices) than on achieving equity in its delivery. For 1991 to 2000, we contrasted the number of lives saved by medical advances with the number of deaths attributable to excess mortality among African Americans. Medical advances averted 176,633 deaths, but equalizing the mortality rates of Whites and African Americans would have averted 898,202 deaths. Achieving equity may do more for health than perfecting the technology of care. (Am J Public Health. 2004;94:2078–2081)
Age-Adjusted Mortality (1991-2000) Disparity of 24-29%
Figure 1. Potential Lives Saved by Improvements in Age-Adjusted Mortality Rates in the United States, 1991-2000

Legend: Age-adjusted death rates taken from: Table 35. Death rates for all causes, according to sex, race, Hispanic origin, and age: United States, selected years 1950-2001, accessed at ftp.cdc.gov/pub/Health_Statistics/NCHS/Publications/Health_US/hus03/Table035.xls. Potentially avertable deaths calculated as described in text and Table 1.

From: Woolf SH, Johnson RE. Am J Public Health 2004;94:2078-81
Figure 2. Difference in Age-Adjusted Mortality Rates of Whites and African Americans in 1991-2000 and Potential Lives Saved if the Rates Had Been Comparable

Legend: Age-adjusted death rates taken from: Table 35. Death rates for all causes, according to sex, race, Hispanic origin, and age: United States, selected years 1950-2001, accessed at ftp.cdc.gov/pub/Health_Statistics/NCHS/Publications/Health_US/hus03/Table035.xls. Potentially avertable deaths calculated as described in text and Table 2.

From: Woolf SH, Johnson RE. Am J Public Health 2004;94:2078-81
Less Education, Worse Health

Less education is linked with worse health. Compared with college graduates, adults who have not finished high school are more than four times as likely to be in poor or fair health.

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Prepared for the Robert Wood Johnson Foundation by the Center on Social Disparities in Health at the University of California, San Francisco.


*Age-adjusted

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Giving Everyone the Health of the Educated: An Examination of Whether Social Change Would Save More Lives Than Medical Advances

Steven H. Woolf, MD, MPH, Robert E. Johnson, PhD, Robert L. Phillips, Jr, MD, MSPH, and Malke Phillipe, PhD

The past century’s progress in medicine and public health has reduced morbidity and lengthened life expectancy, but the pace of progress has been modest. For more than 100 years, the national death rate has declined at a rate that has remained remarkably constant (1% per year), with the exception of the conspicuous spike during the 1917–1918 influenza pandemic (Figure 1). Neither the public health advances of the early 20th century nor the medical technological advances in more recent times have done much to change the modest downward slope.

In the past few decades there have been heavy investments in technological advances. Both industry and government have spent billions of dollars per year on the development of new drugs and devices. The failure of

Objectives. Social determinants of health, such as inadequate education, contribute greatly to mortality rates. We examined whether correcting the social conditions that account for excess deaths among individuals with inadequate education might save more lives than medical advances (e.g., new drugs and devices).

Methods. Using US vital statistics data for 1996 through 2002, we applied indirect standardization techniques to estimate the maximum number of averted deaths attributable to medical advances and the number of deaths that would have been averted if mortality rates among adults with lesser education had been the same as those among college-educated adults.

Results. Medical advances averted a maximum of 178,193 deaths during the study period. Correcting disparities in education-associated mortality rates would have saved 1,369,335 lives during the same period, a ratio of 8:1.

Conclusions. Higher mortality rates among individuals with inadequate education reflect a complex causal pathway and the influence of confounding variables. Formidable efforts at social change would be necessary to eliminate disparities, but the changes would save more lives than would society’s current heavy investment in medical advances. Spending large sums of money on such advances at the expense of social change may be jeopardizing public health. (Am J Public Health. 2007;97:679–683. doi:10.2105/AJPH.2005.084848)
Mortality rates, by educational attainment
Educational attainment, by race and ethnicity
Deaths (per year) potentially averted in the United States

Year

Deaths potentially averted by medical advances (see footnotes)
Deaths potentially averted by eliminating education-associated excess mortality (see footnotes)

Results

- Lives saved by generic medical advances
  - 24,456 lives per year
  - 178,193 lives in 1996-2002

- Lives saved by eliminating education-associated excess mortality
  - 195,619 lives per year
  - 1,369,335 lives in 1996-2002

Ratio of 8:1
Select State
Choose the state and click "GO".

State --- Select ---

Education Matters

In every American community, social factors like education, income and neighborhood resources can affect how long and how well a person lives. For example, people with more education tend to have better health, while those who have fewer years of education, lower incomes or fewer neighborhood resources experience poorer health. All Americans do not have the same opportunity to grow up and stay healthy.

In your community, what might happen if social conditions were better? How many people would live longer lives in your state or county if more adults experienced the same level of health as those who have attended college?

To explore how education is linked to mortality, select a state using the map or the drop-down menu and click "Go".
The association between education and health: A look at

New York

Compared to the rest of the United States

State: New York
County: Select

EDUCATION SLIDER
Percent of adults with some college education

58% US Average
58% State Average
67% "Best Off" State
New York
Washington

SLIDE THIS

MORTALITY COUNTER

New York
33721
At Selected Education Level

Deaths in state per year
332

Death Rate
Deaths each year per 100,000
State Rank
Out of 51
Averted
Deaths Each year

What is the takeaway here?
Why do the numbers change?

Better education is related to better health.
The association between education and health: A look at

Bronx County
Compared to the rest of New York

State: New York
County: Bronx County

EDUCATION SLIDER:
Percent of adults with some college education

43%
Bronx County
58%
US Average
58%
State Average
New York
67%
"Best Off" State
Washington

MORTALITY COUNTER:

Deaths in county per year: 3142
Death Rate per 100,000: 473
Averted Deaths Each year: None

What is the takeaway here? Why do the numbers change?
Better education is related to better health.
The association between education and health: A look at

Bronx County

Compared to the rest of New York

State: New York
County: Bronx County

What about other counties?
Not sure of the county name?

EDUCATION SLIDER
Percent of adults with some college education

50%

43% Bronx County
58% US Average

58% State Average
New York
67% "Best Off" State
Washington

MORTALITY COUNTER

Deaths in county per year

Bronx County: 3142
At Selected Education Level: 2931

Death Rate: Deaths each year per 100,000

Bronx County: 473
At Selected Education Level: 441

Averted Deaths: Each year

Bronx County: 211

What is the takeaway here?
Why do the numbers change?

Better education is related to better health.
The association between education and health: A look at

**Bronx County**

Compared to the rest of New York

- **State**: New York
- **County**: Bronx County

**Education Slider**

Percent of adults with some college education: 53%

- 43% Bronx County
- 58% US Average
- 58% State Average
- 67% “Best Off” State

**Mortality Counter**

- **Deaths in county per year**: 3142
- **Death Rate**: 473
- **Averted Deaths Each year**: 298

**At Selected Education Level**

- **Bronx County**: 2844
- **New York**: 428

**What is the takeaway here? Why do the numbers change?**

Better education is related to better health.
Increasing Income Inequality

The incomes of the wealthiest 20 percent of Americans have increased dramatically, while the rest of the population has experienced little improvement in income.
Avertable Deaths Associated With Household Income in Virginia

Steven H. Woolf, MD, MPH, Resa M. Jones, PhD, MPH, Robert E. Johnson, PhD, Robert L. Phillips Jr, MD, MSPH, M. Norman Oliver, MD, Andrew Bazemore, MD, MPH, and Anushree Vichare, MPH

An extensive literature documents the profound influence of socioeconomic status on life expectancy.\textsuperscript{1-4} The notion that social conditions affect health is intuitive to policymakers and the public, but the magnitude of this effect may not be fully appreciated, and our previous work has sought to put it in perspective. For example, we have previously demonstrated on the basis of vital statistics that correcting mortality disparities by race and educational status would save 5 and 8 lives, respectively, for every 1 life saved by biomedical advances.\textsuperscript{5,6}

Social determinants exert influences on health through individual and household circumstances as well as through concurrent environmental conditions that exist in areas where people reside.\textsuperscript{7-11} People with good jobs, higher incomes, an advanced education, or historically favored racial or ethnic backgrounds experience better health not only because of these personal characteristics but also because of their surroundings. Access to safe neighbor

\textbf{Objectives.} We estimated how many deaths would be averted if the entire population of Virginia experienced the mortality rates of the 5 most affluent counties or cities.

\textbf{Methods.} Using census data and vital statistics for the years 1990 through 2006, we applied the mortality rates of the 5 counties/cities with the highest median household income to the populations of all counties and cities in the state.

\textbf{Results.} If the mortality rates of the reference population had applied to the entire state, 24.3\% of deaths in Virginia from 1990 through 2006 (range = 21.8\%-28.1\%) would not have occurred. An annual mean of 12,954 deaths would have been averted (range = 10,548-14,569), totaling 220,211 deaths from 1990 through 2006. In some of the most disadvantaged areas of the state, nearly half of deaths would have been averted.

\textbf{Conclusions.} Favorable conditions that exist in areas with high household incomes exert a major influence on mortality rates. The corollary—that health suffers when society is exposed to economic stresses—is especially timely amid the current recession. Further research must clarify the extent to which individual-level factors (e.g., earnings, education, race, health insurance) and community characteristics can improve health outcomes. (\textit{Am J Public Health.} Published online ahead of print February 18, 2010: e1-e6. doi:10.2105/AJPH.2007.165142)

\textit{Am J Public Health.} 2010;100:750-5
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<th>Area</th>
<th>Ten of the highest median income (dollars)</th>
<th>Margin of error* (£)</th>
<th>Area</th>
<th>Ten of the lowest median income (dollars)</th>
<th>Margin of error* (£)</th>
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</table>
Proportion of Deaths in Virginia Associated With Reduced Household Income

Proportion (%) of averted deaths among adults age 20 and older

- Less than high school: 41.7
- High school: 34.0
- Some college*: 12.5
- College*: 9.7
- Unknown: 2.2
Finding solutions:
Understanding the importance of social factors

- Policies to promote child and youth development and education, infancy through college
- Policies to promote economic development and reduce poverty
- Policies to promote healthier homes, neighborhoods, schools and workplaces

Robert Wood Johnson Foundation Commission to Build a Healthier America
www.commissiononhealth.org
“Health in All” Policies

- Transportation
- Land use
- Built environment
- Taxes
- Housing
- Agriculture
- Environmental justice
- Etc.

Health and illness
Our Shrinking Economy
The 'worst's keep on coming
January's warmest regards
How many people are experiencing hardships in the United States? The Project on Societal Distress is a research effort to monitor the prevalence of societal distress in the United States and in specific states. We provide current data on five domains—food, housing, health, education, and income—and social welfare information. More...
Net Worth and Debt

- Between 1989 and 2007, the median net worth of families (adjusted to 2007 dollars) increased from $75,500 to $120,600, but most of that increase occurred among high-income families. Among low-income families, median net worth declined after 2001, from $9,200 to $8,100 for those in the lowest quintile. View source table.

Footnote: Net worth is the difference between a family’s gross assets and liabilities, as defined in the glossary. Median family net worth divides the distribution in half, one with families with net worth below the median, and the other with families with net worth above median. See glossary for details. The percentiles of income show quintiles of income among U.S. families. The bottom line represents the lowest quintile (the 20% of families with the lowest income). The top two lines represent families in the top two deciles of income.