The Impact of Education on Mortality

APA Committee on Socioeconomic Status (CSES)

October 13, 2015



Understanding the Relationship Between Years of Education and Longevity

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NIH: Steward of Medical and Behavioral Research for the Nation

"Science in pursuit of fundamental knowledge about the nature and behavior of living systems and the application of that knowledge to enhance health, lengthen life and reduce illness and disability."

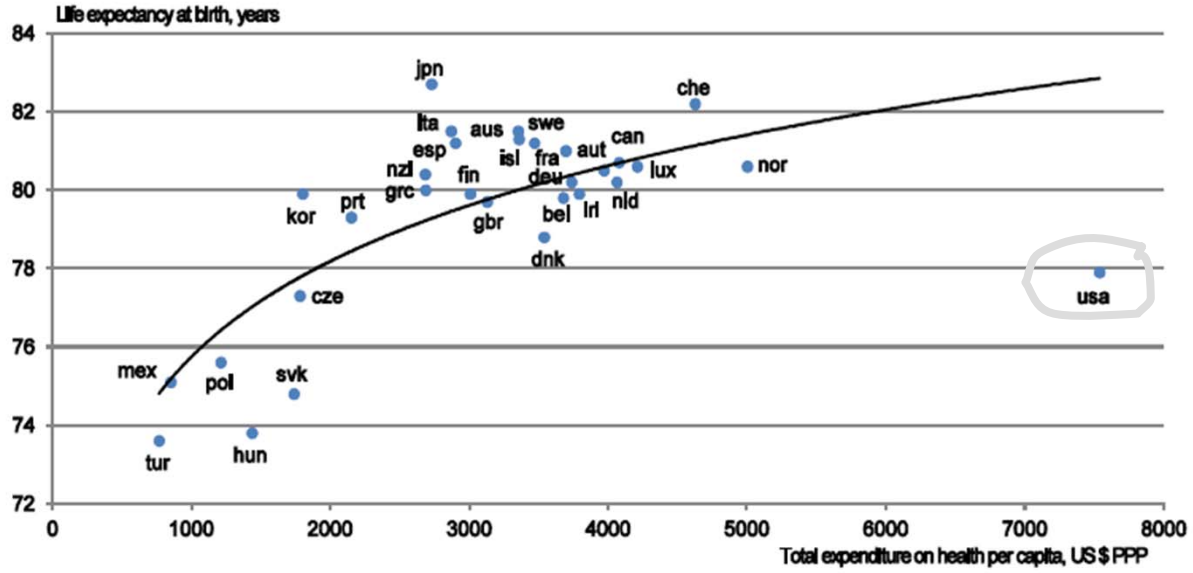






The health of the nation: poor value for money

Figure 1. **There are large differences in life expectancy and health care spending across OECD countries** 2008[1]

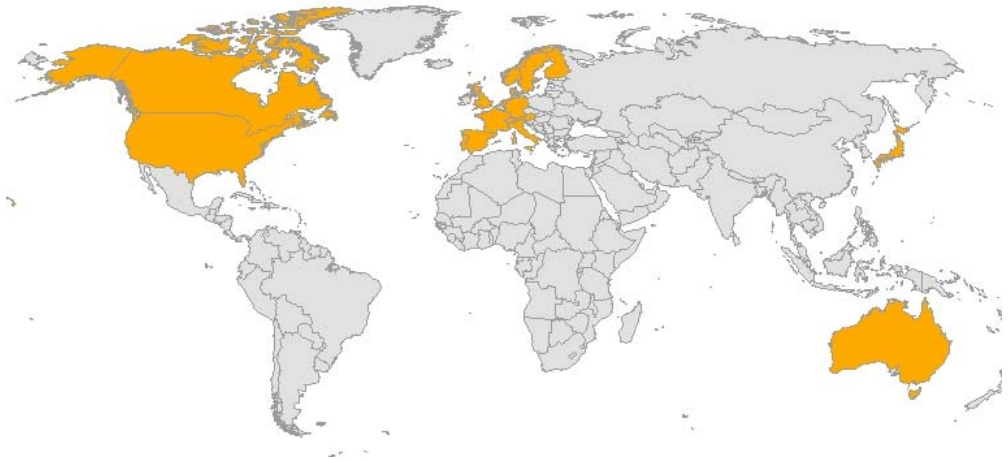


1. Or latest year available.

Source: OECD Health Data 2010.

17 Peer Comparison Countries

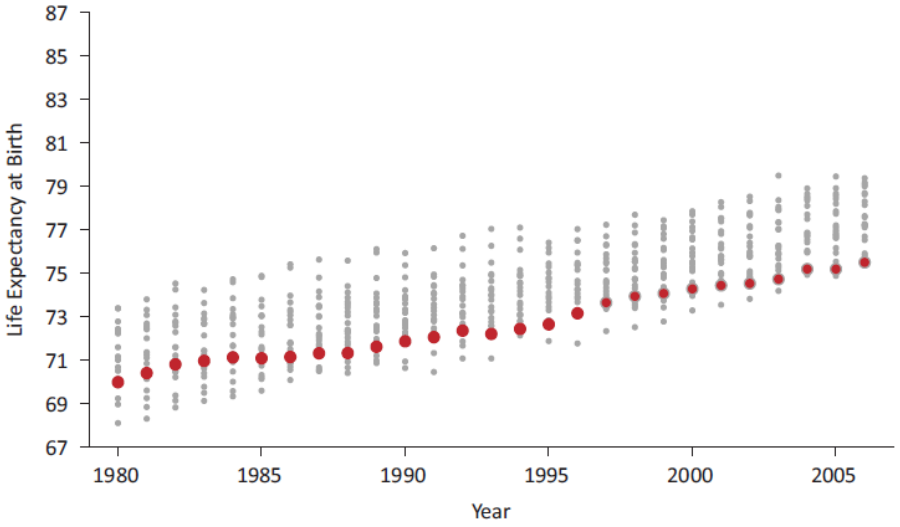
- Australia
- Austria
- Canada
- Denmark
- Finland
- France
- Germany
- Italy
- Japan
- Norway
- Portugal
- Spain
- Sweden
- Switzerland
- The Netherlands
- United Kingdom
- United States



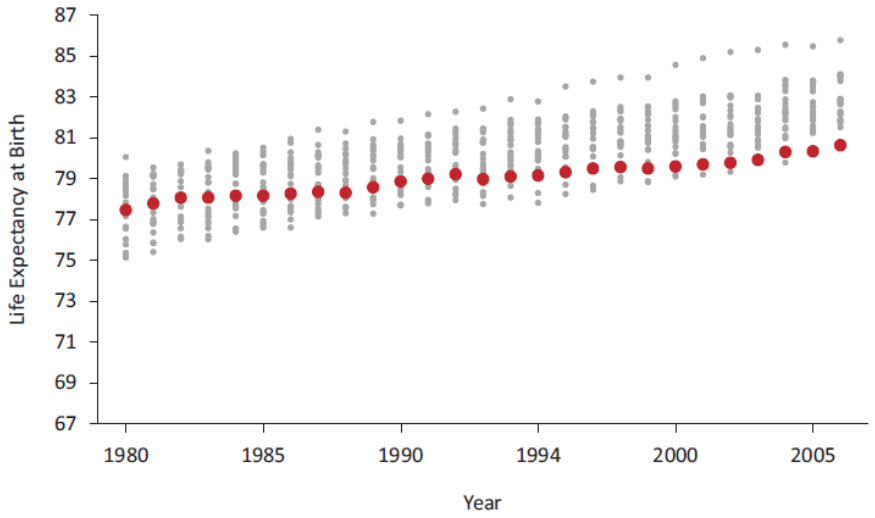
Life Expectancy at Birth in 21 High-Income Countries, 1980-2006

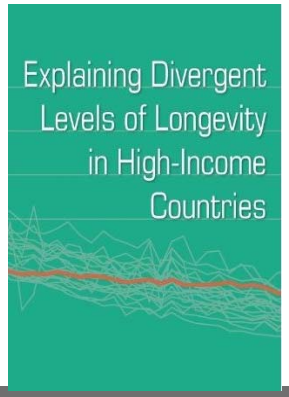
From IOM/NAS Report US Health in International Perspective: Shorter Lives, Poorer Health

Males



Females



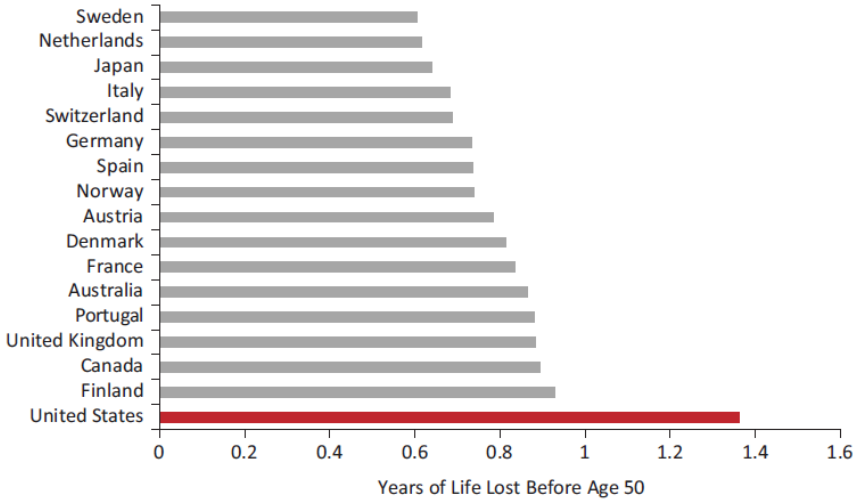


The problem is longstanding and worsening.
In 1980, US life expectancy among females was about average, and was near the bottom for males, but by 2006 US life expectancy for both sexes had fallen to the bottom ranks.

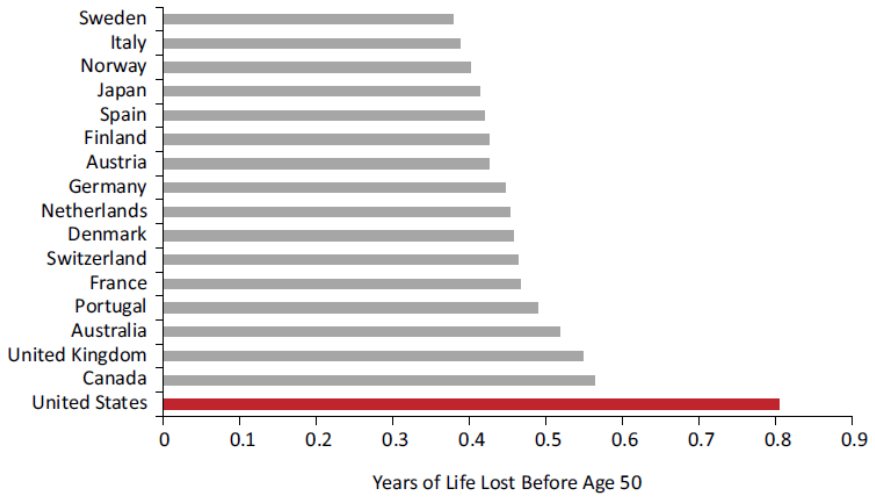
Years of Life Lost Before Age 50, 2006-2008

From IOM/NAS Report US Health in International Perspective: Shorter Lives, Poorer Health

Males



Females

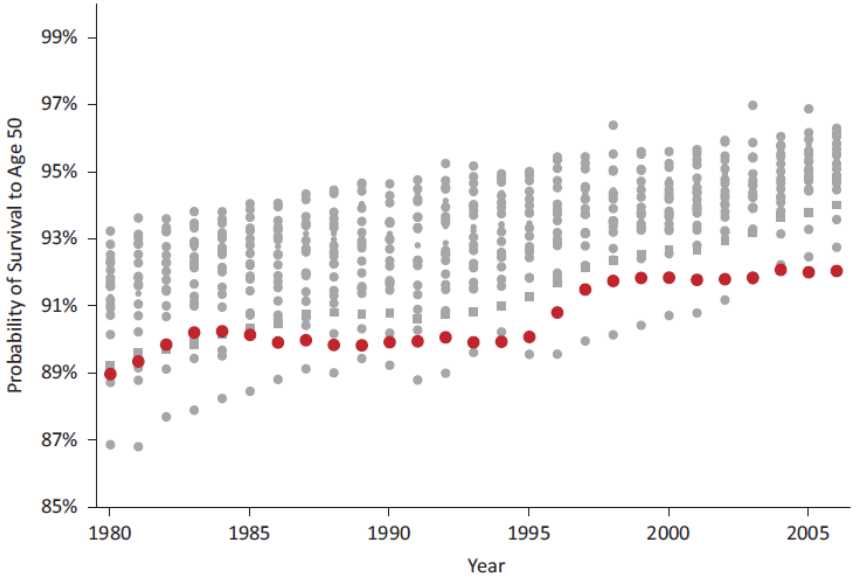


- US male and female newborns can expect to lose about 1.4 years and 0.8 years of life, respectively, before age 50.
- The US losses before age 50 are double those of Sweden, the best performing country.

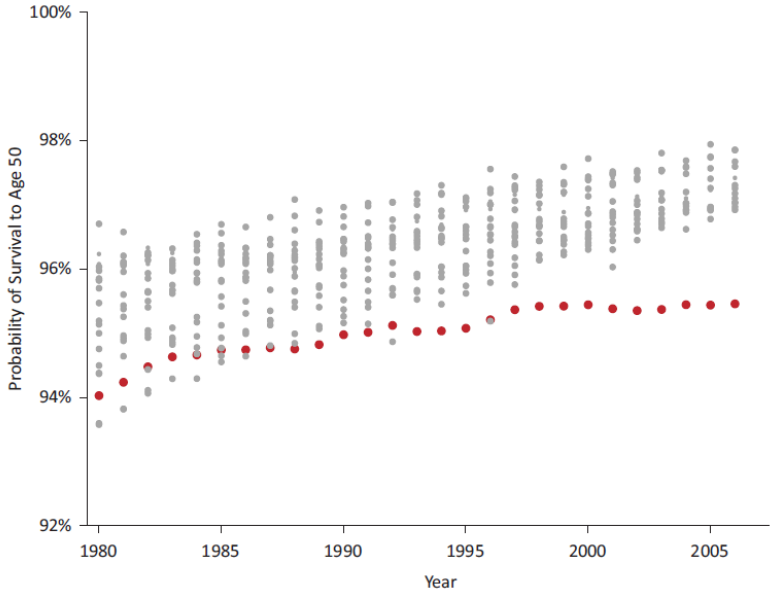
Probability of Survival to Age 50 in 21 High-Income Countries, 1980-2006

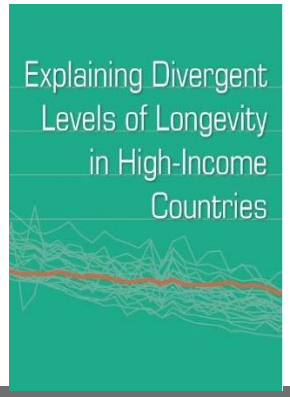
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Males



Females

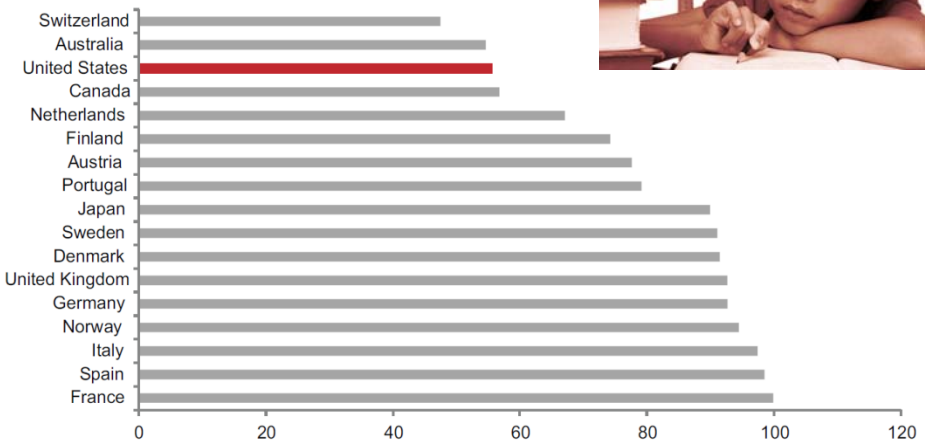




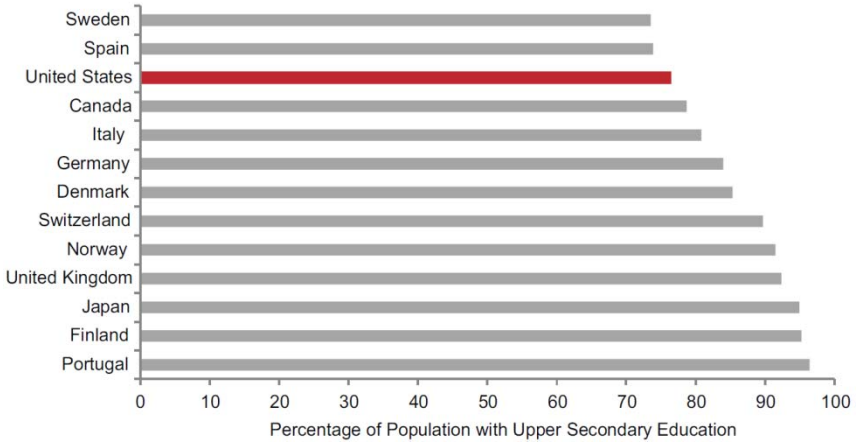
For decades, American youth have been less likely to survive to age 50 than people in other rich nations.

Educational Attainment in the US is Slipping





Percent of children aged 3-5 enrolled in preschool, 2008



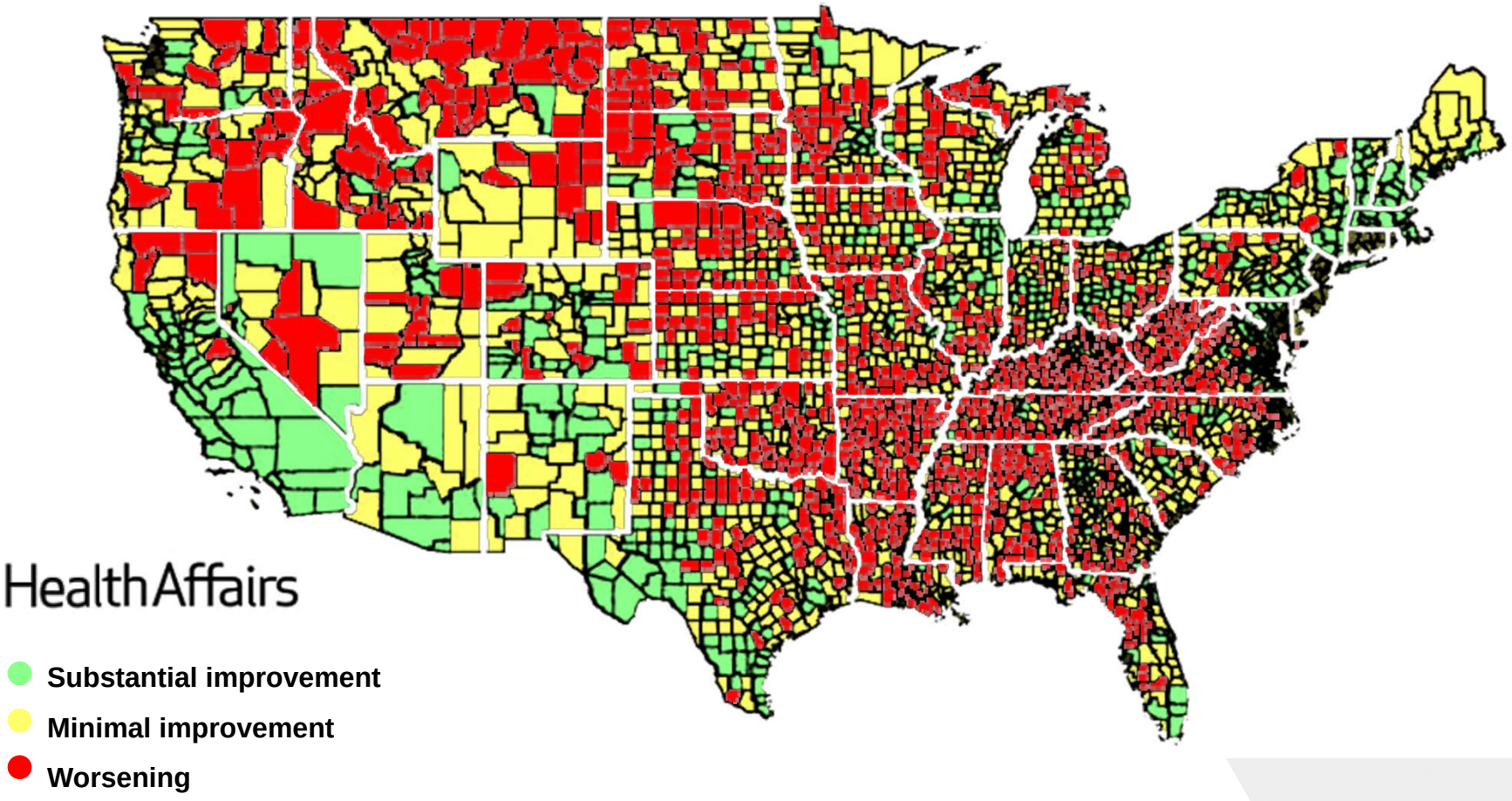
Percent of population with secondary education, 2008

- US preschool enrollment is lower than in most high-income countries.
- Among adults of all ages, the US ranks well in educational attainment, but other countries (including emerging economies) are outpacing the US in the educational attainment of young people (e.g., graduation rates).
- US grade school students score above average, but by age 15 US students have average or below-average scores on math, science, and reading.

Change In Female Mortality Rates From 1992–96 To 2002–06 In US Counties.

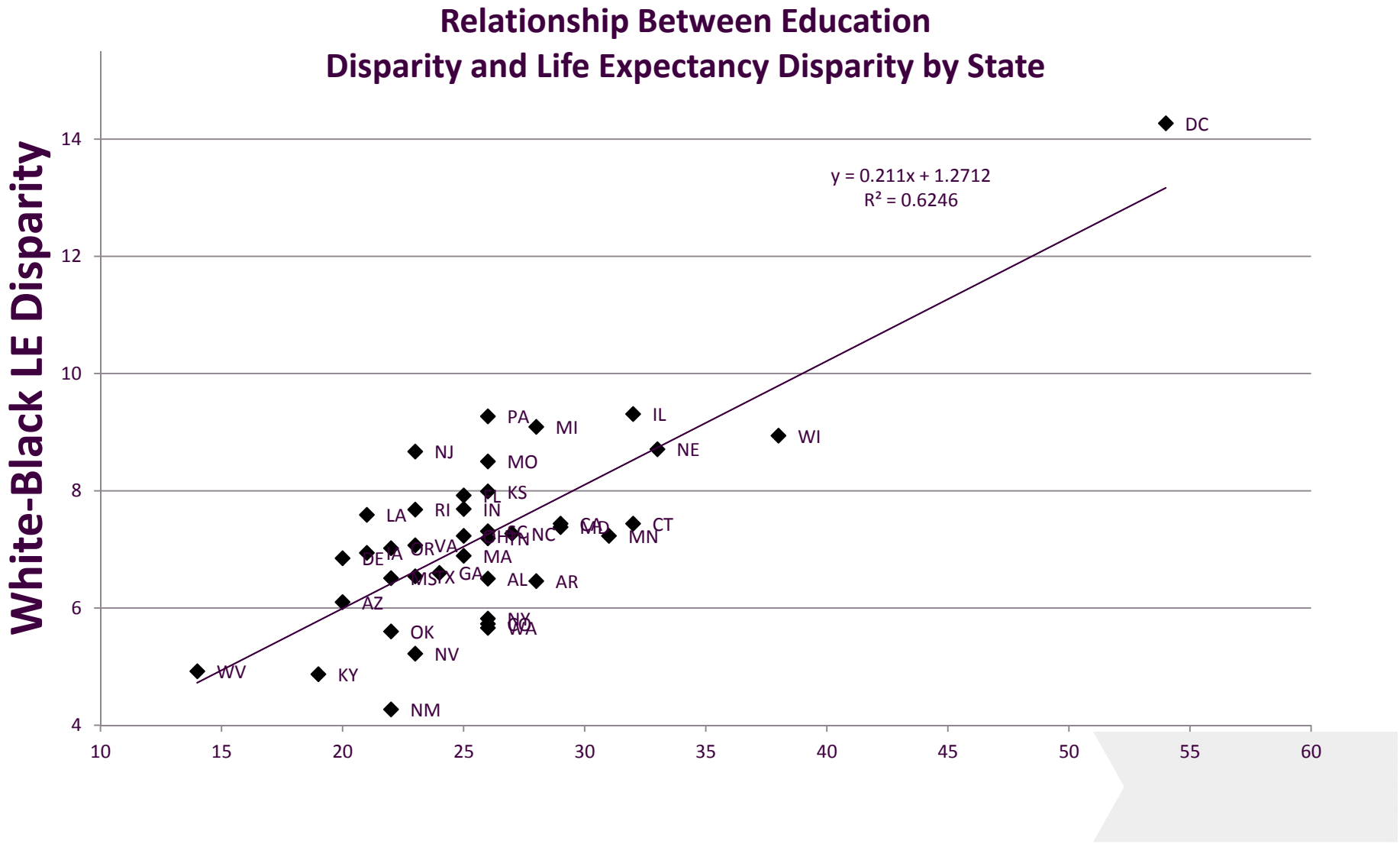
Educational attainment strongest correlate

Kindig D A , and Cheng E R Health Aff 2013;32:451-458

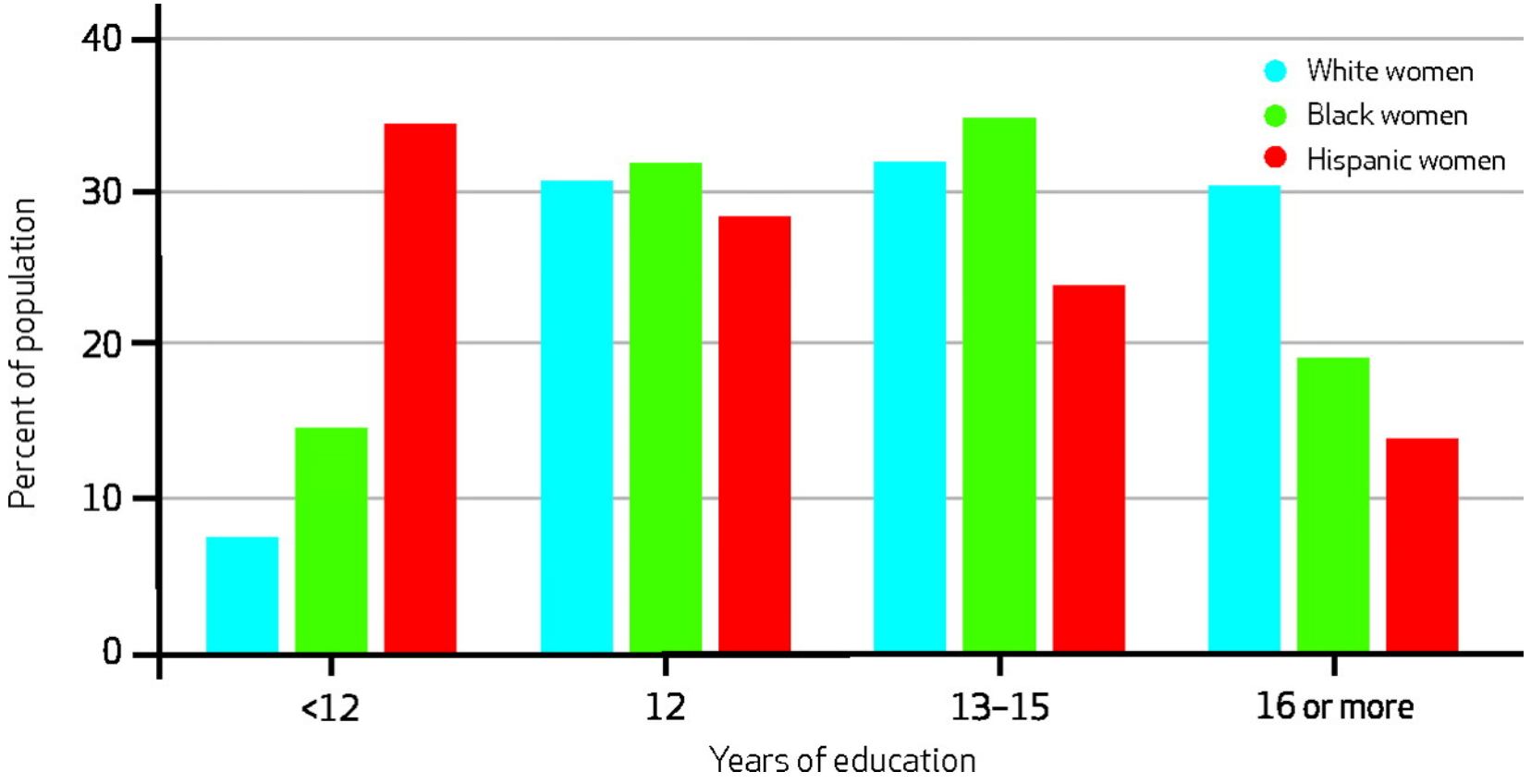


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With State as Unit of Analysis, Life Expectancy Health Disparities Are Highly Correlated with 4th Grade Math Performance Disparities (from Kaplan 2013)



US Female Population, By Race And Years Of Education At Age 25, 2008.

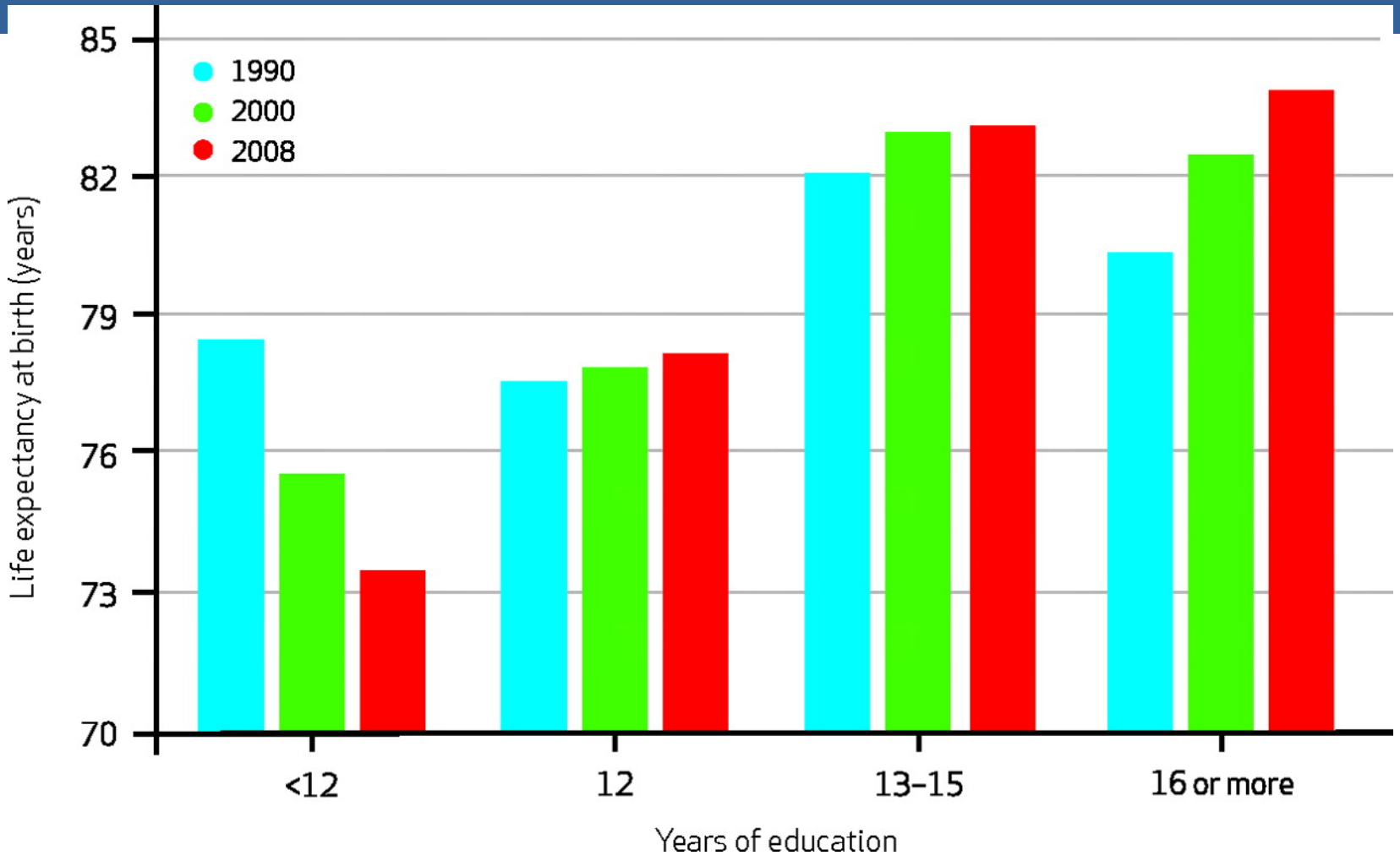


Olshansky S J et al. Health Aff 2012;31:1803-1813

HealthAffairs

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Life Expectancy At Birth, By Years Of Education At Age 25 For White Females,

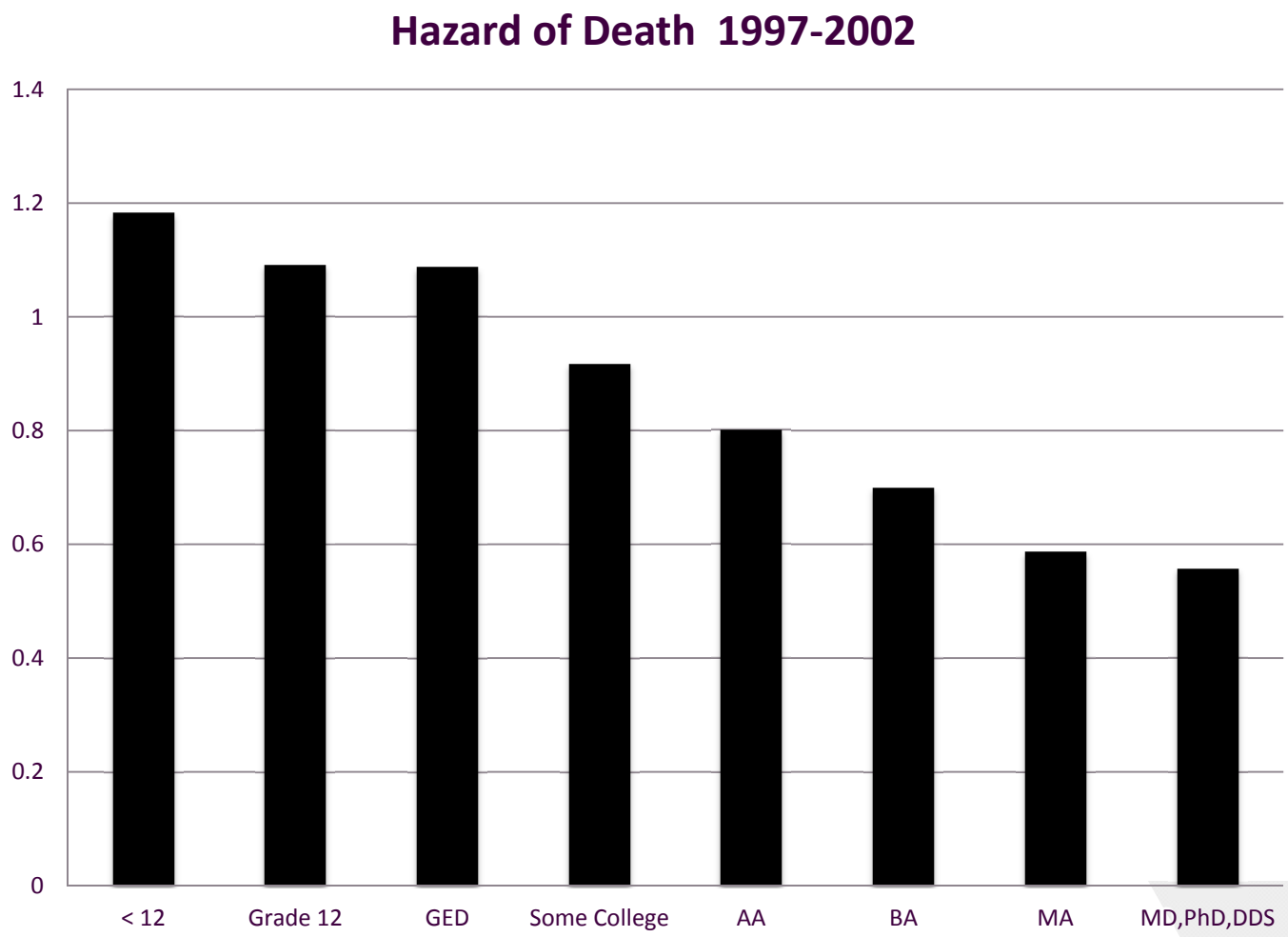


Olshansky S J et al. Health Aff 2012;31:1803-1813

HealthAffairs

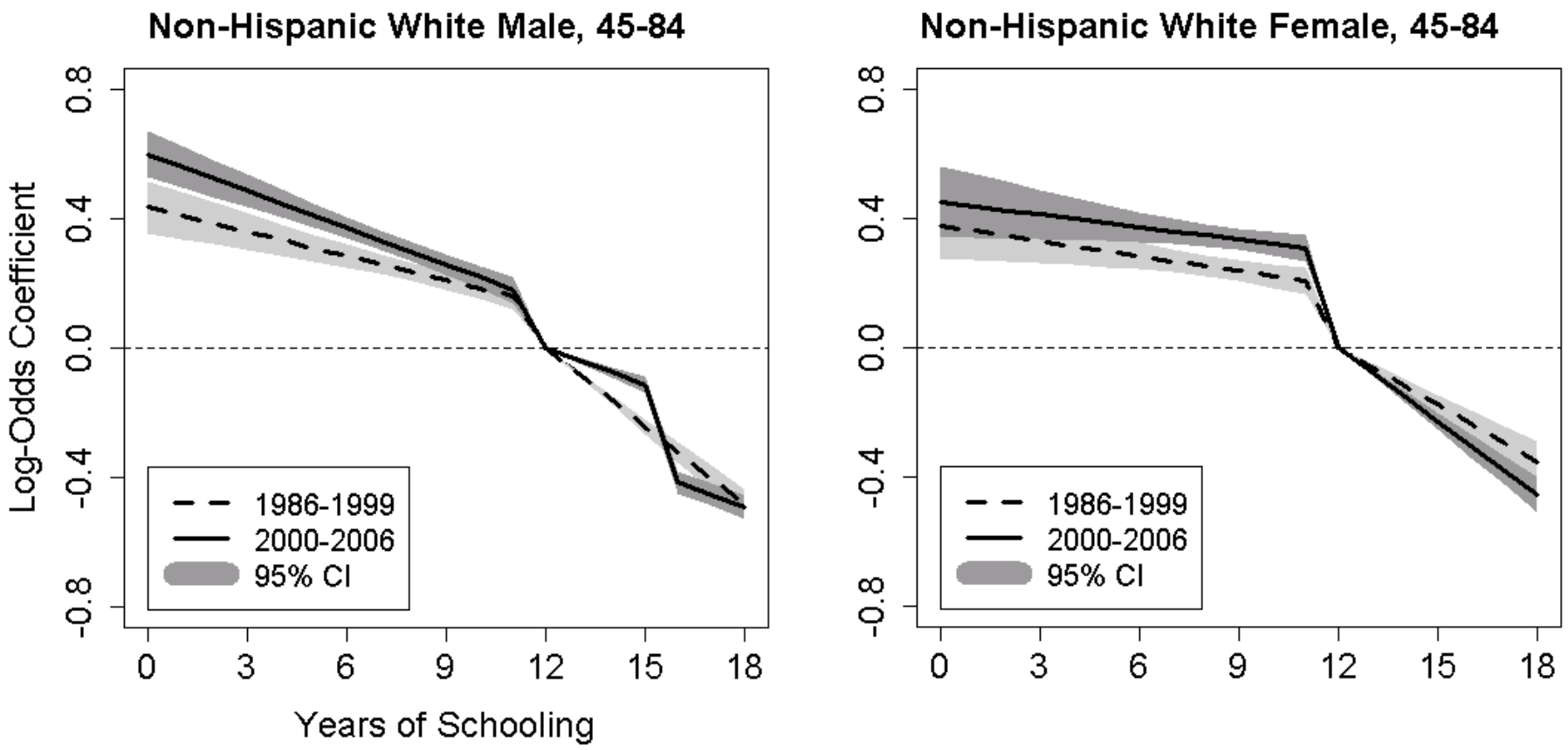
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Hazard of premature death by years of education



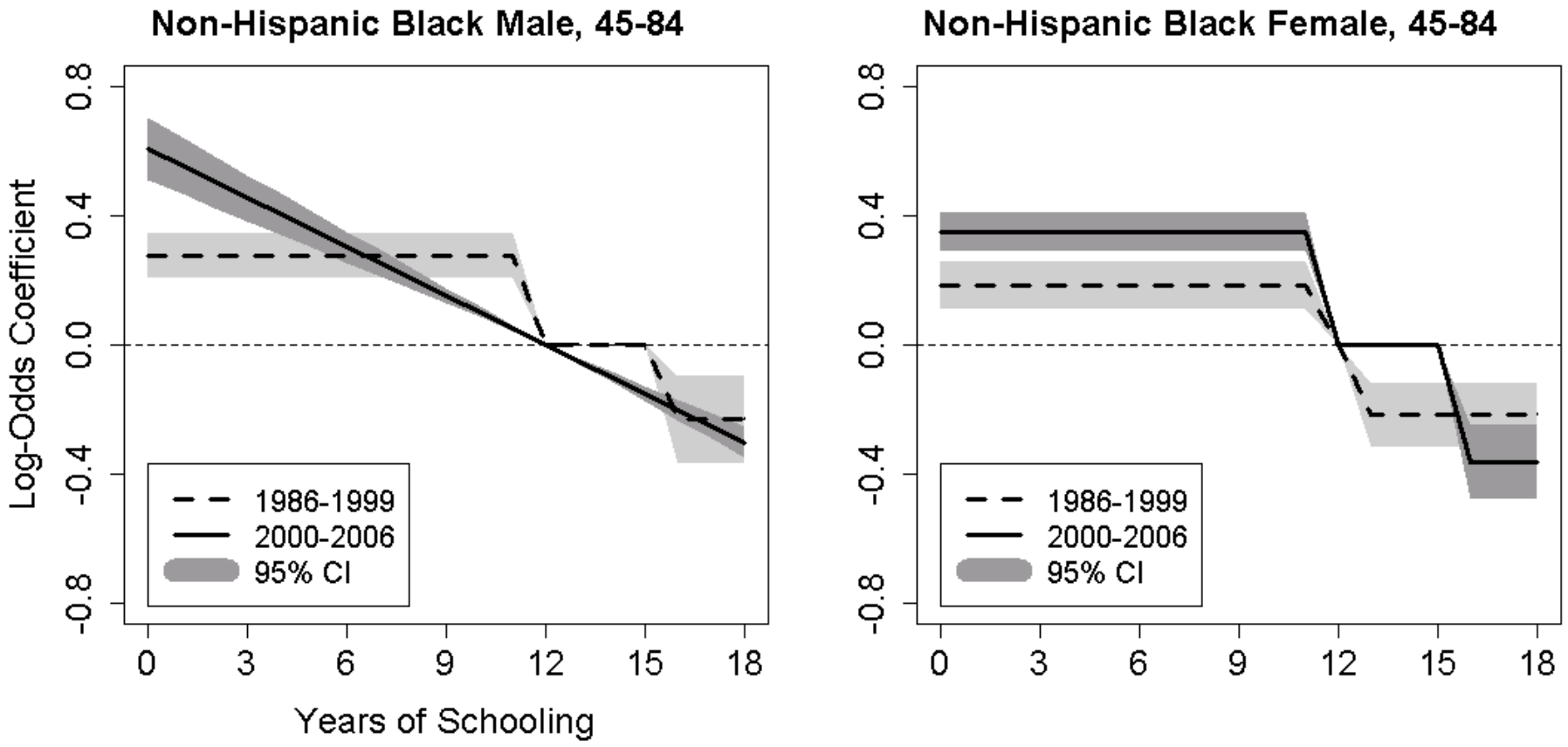
Adapted from Rogers et al Biodemography and Social Biology, 56:80–99, 2010

Figure 1. Log-odds coefficients of the risk of adult mortality by educational attainment, Non-Hispanic Whites 1986-2006 (optimal functional form)

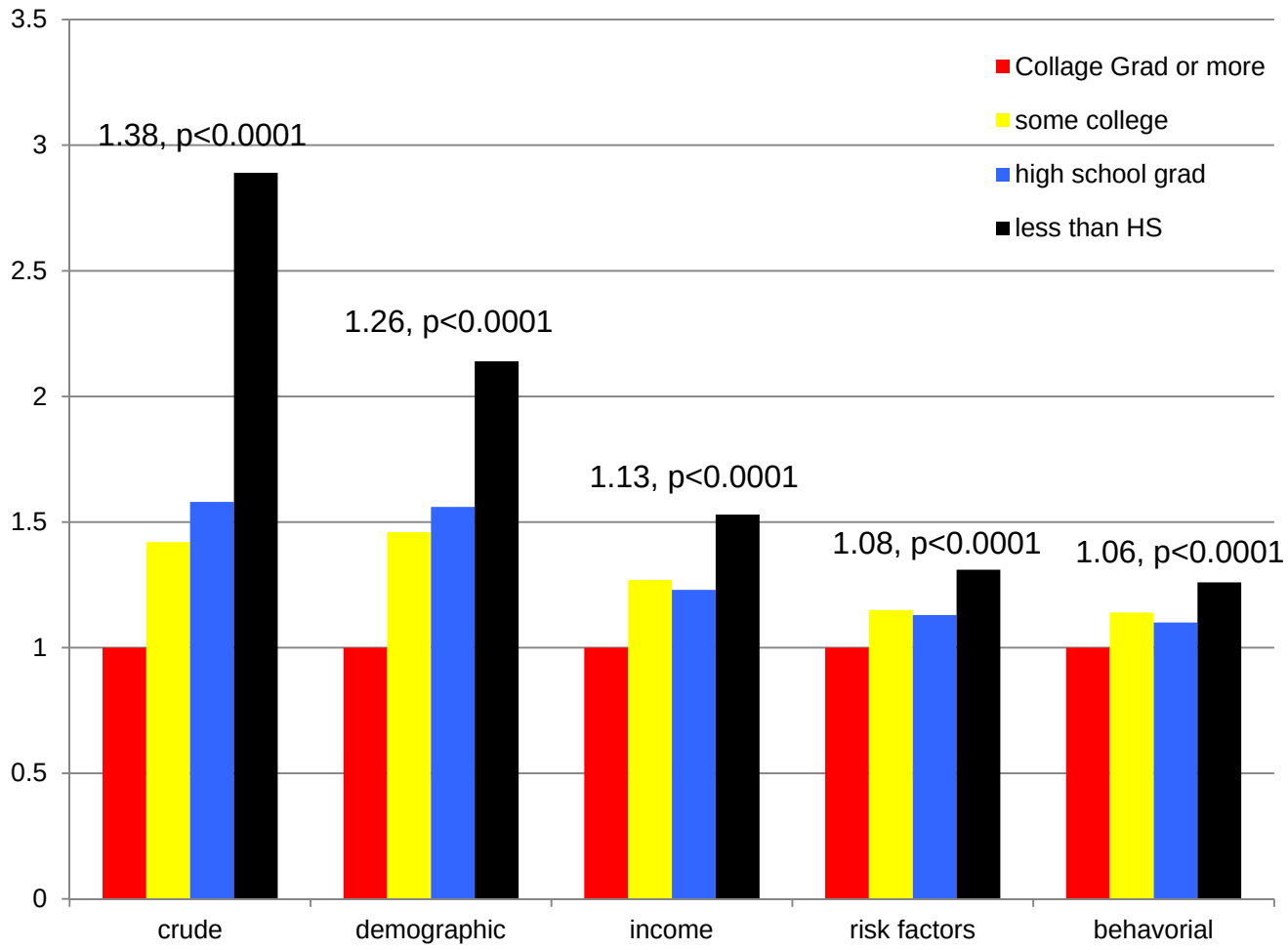


From Mark Hayward, University of Texas

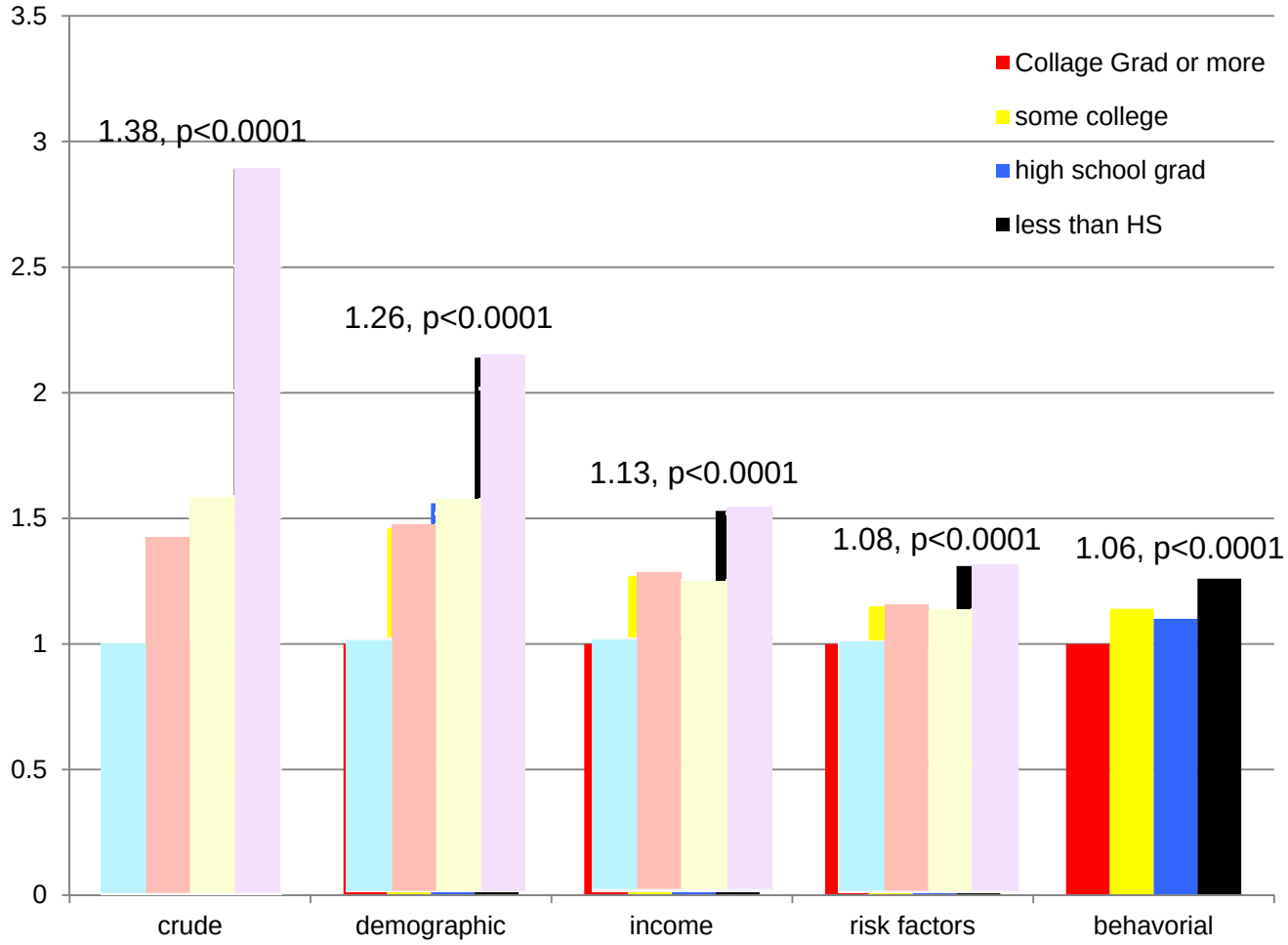
Figure 2: Log-odds coefficients of the risk of adult mortality by educational attainment, Non-Hispanic Blacks 1986-2006 (optimal functional form) (from Mark Hayward)



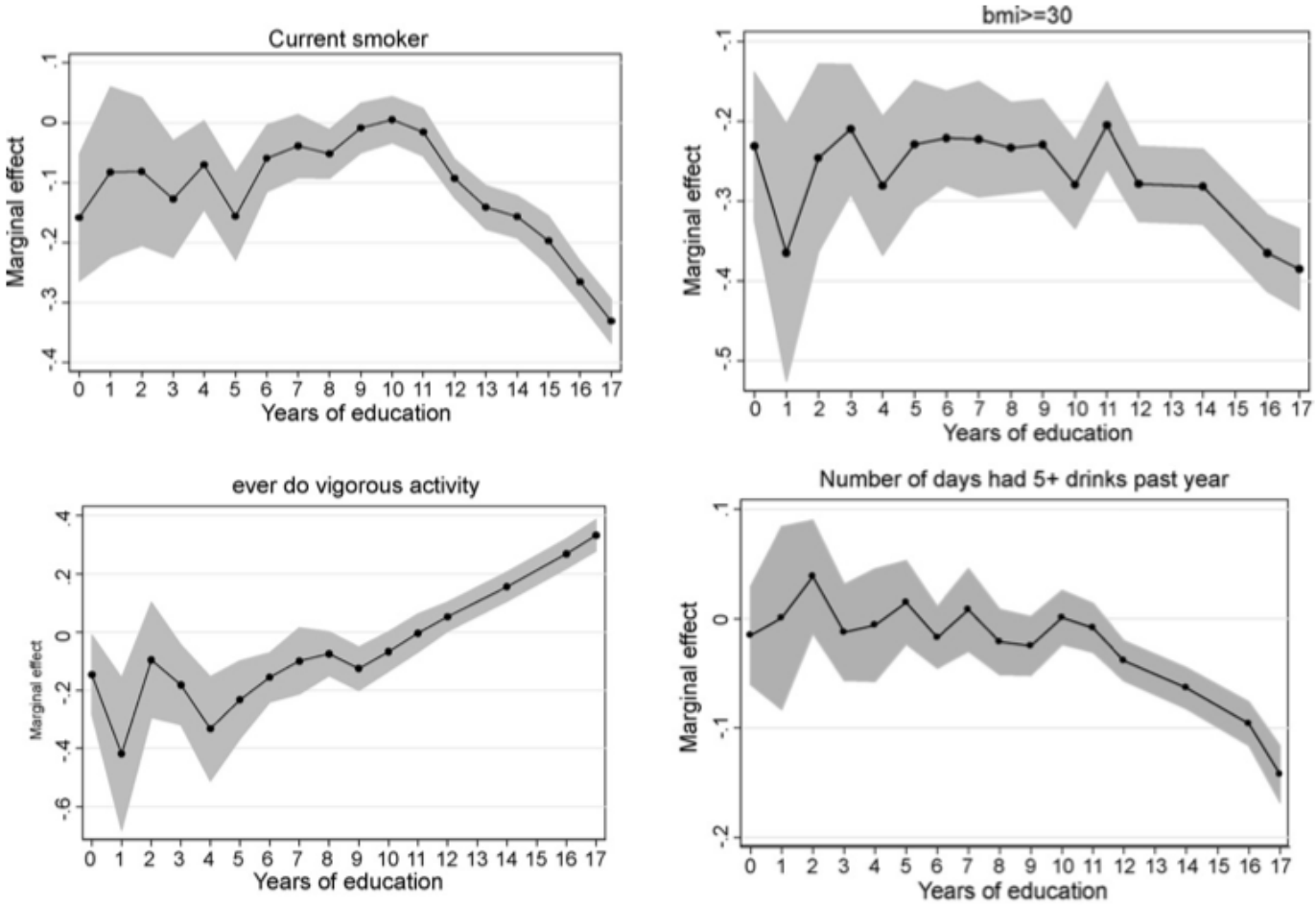
Education and Longevity in the REGARDS Study With Adjustments (Kaplan & Howard, et al 2015)



Education and Longevity in the REGARDS Study (Kaplan & Howard et al Annals of Epidemiology, 2015)



Education and health: It may be related to behaviors



Cutler, D. M., & Lleras-Muney, A. (2010). Understanding differences in health behaviors by education. Journal of Health Economics, 29(1), 1–28.

Education and Health: Is it Access to Care? (Kaplan et al 2015: MEPS 2013 data)

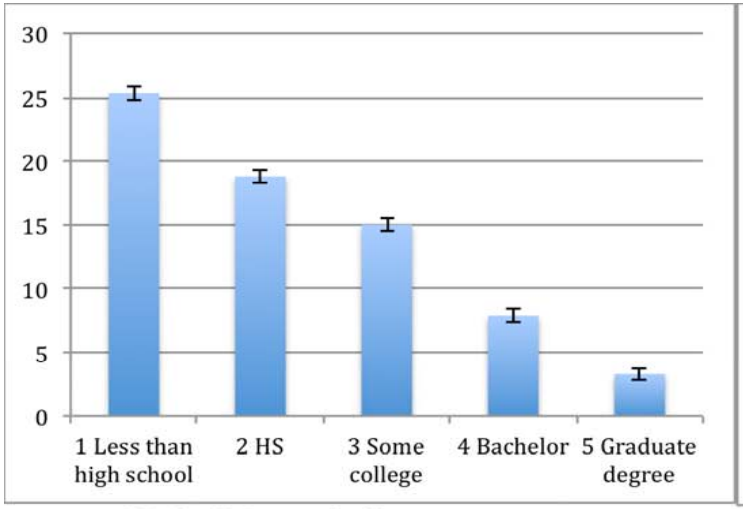


Fig 3a Uninsured all year

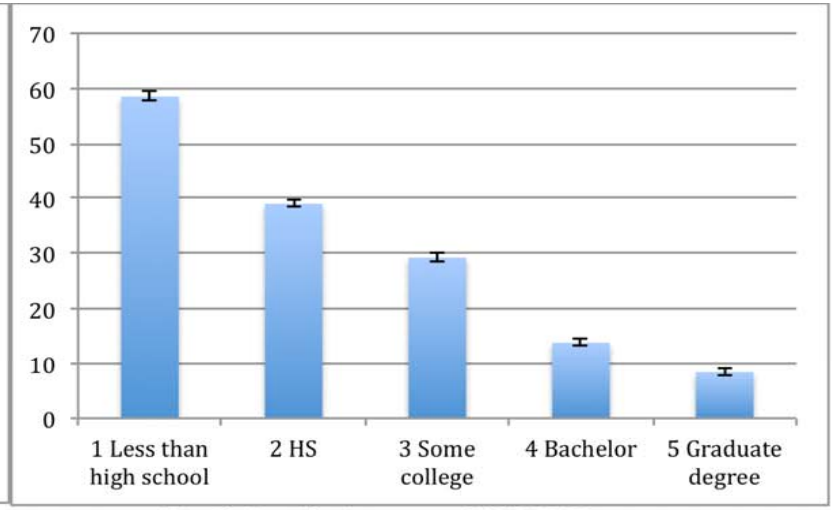


Fig 3b Family income < 200% FPL

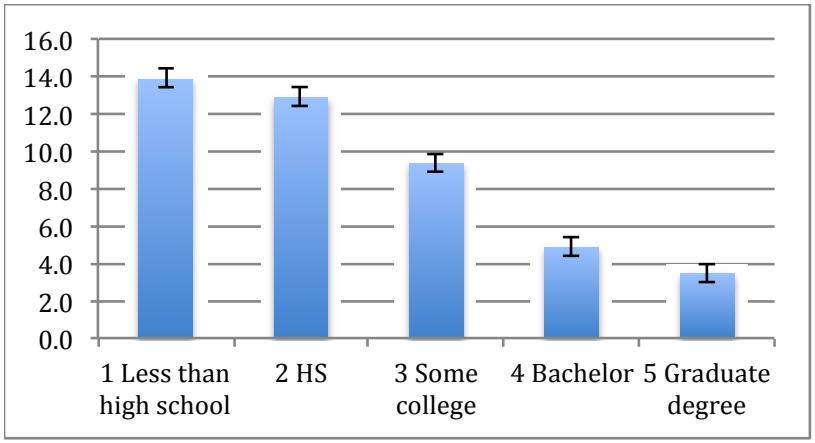


Fig 1 c Percent with activity limitations

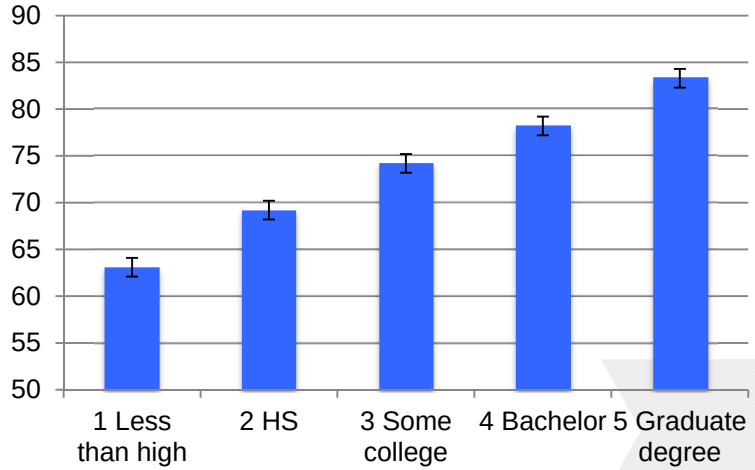
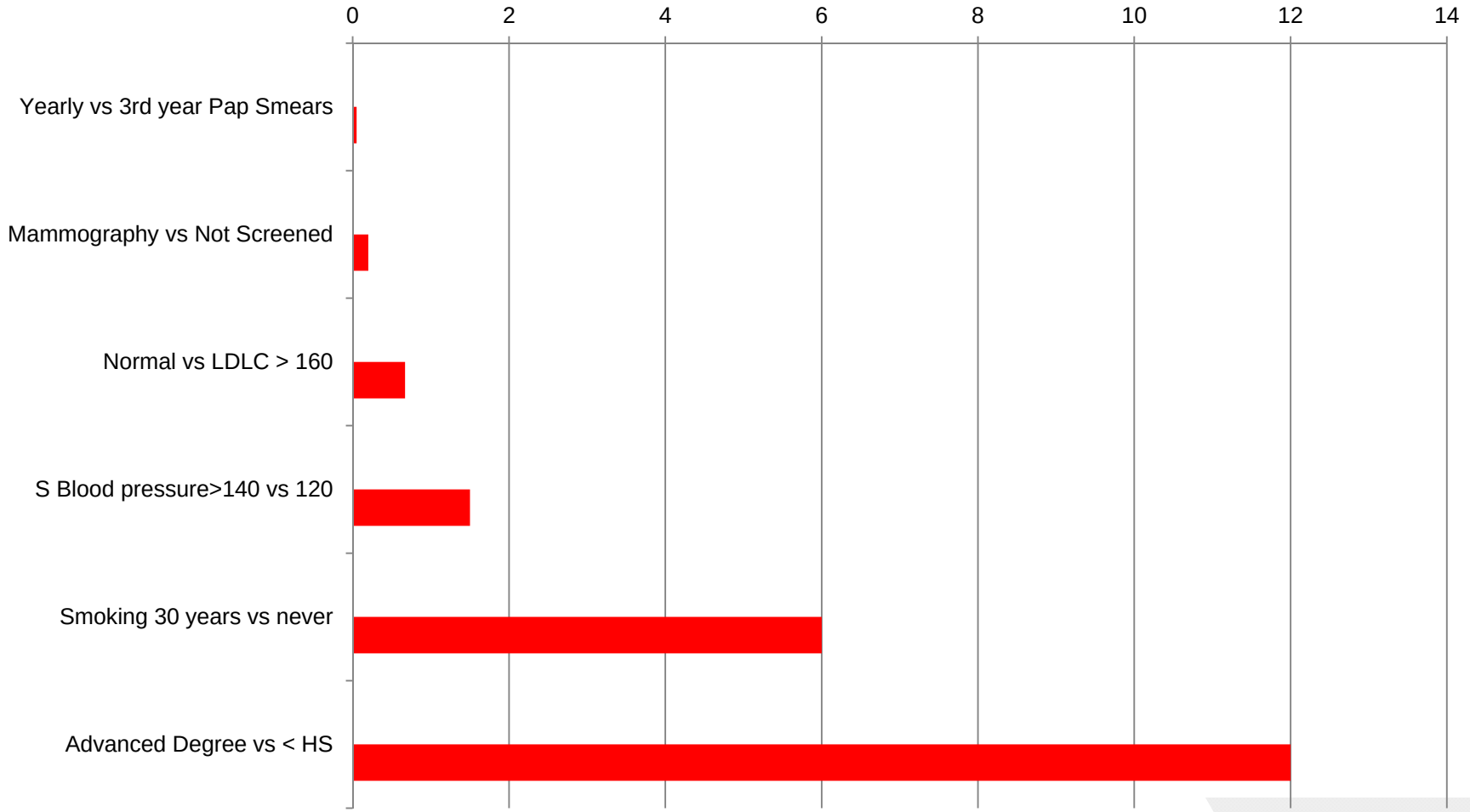


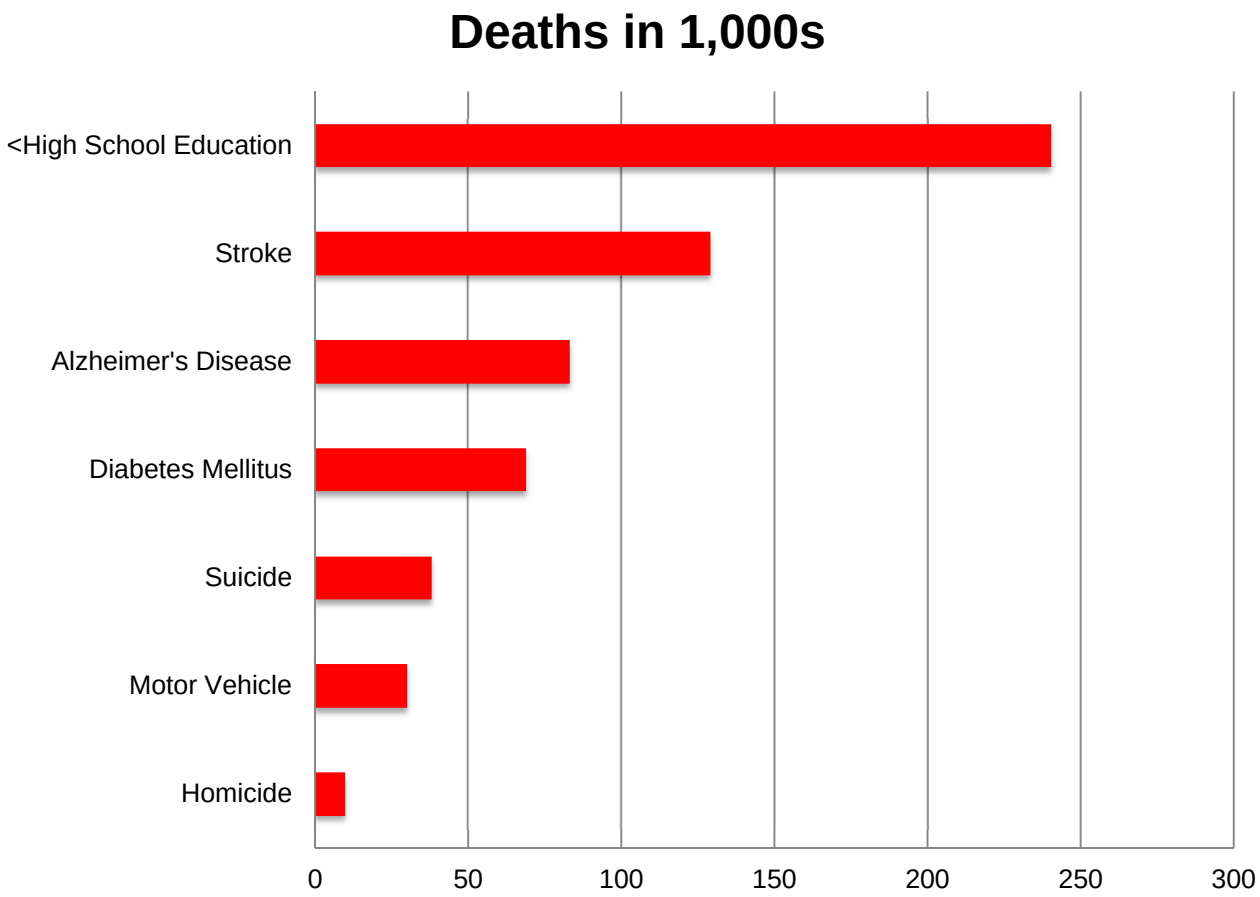
Fig 1D Office Visits

Quality-Adjusted Life Years By Risk Group



Data estimated from Whitehall 39 year follow-up: Clarke BMJ 2009;339:b3513

Deaths Associated With Low Education In Perspective



Death data from National Vital Statistics Report, 61 (4), May 8, 2013.
Education estimate from Galea et al AJPH, 2011

Adapted from Rick Brush, Collective Health

What is the return on $2.9 trillion?

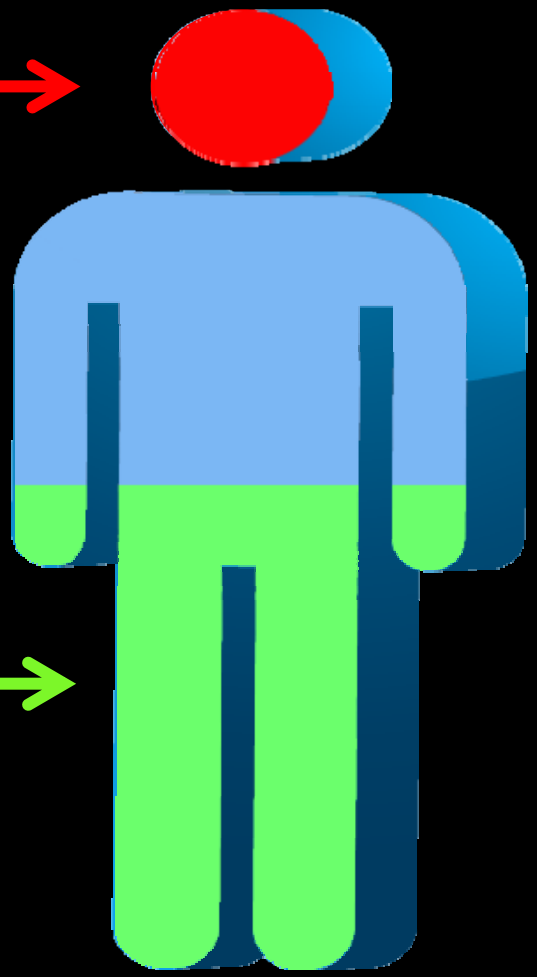


Adapted from Rick Brush, Collective Health

Health Care **10%**

Health Behaviors **50%**

Other Factors **40%**



What Makes us Healthy?

Health Determinants

Adapted from Rick Brush, Collective Health

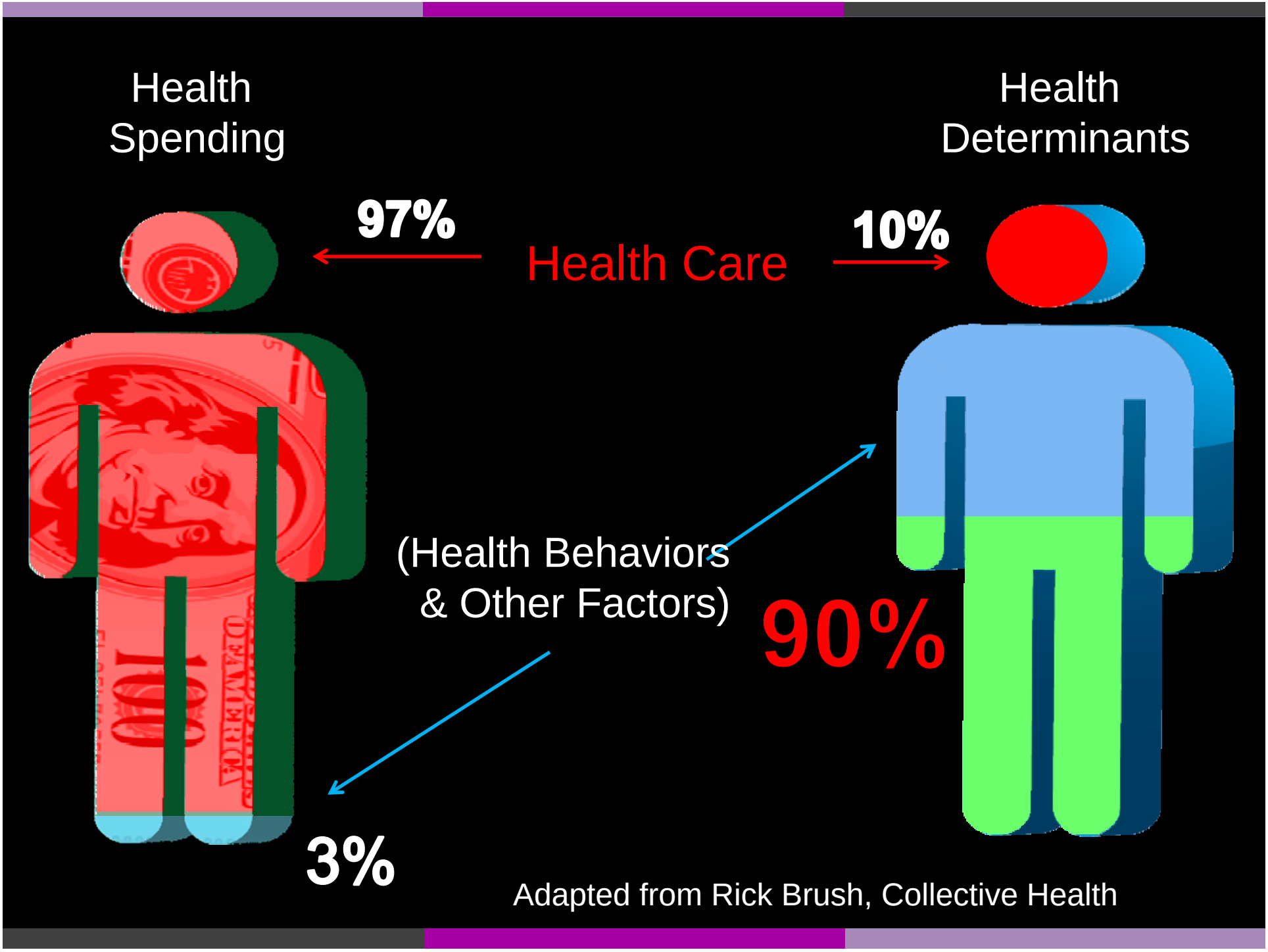


97% Health Care

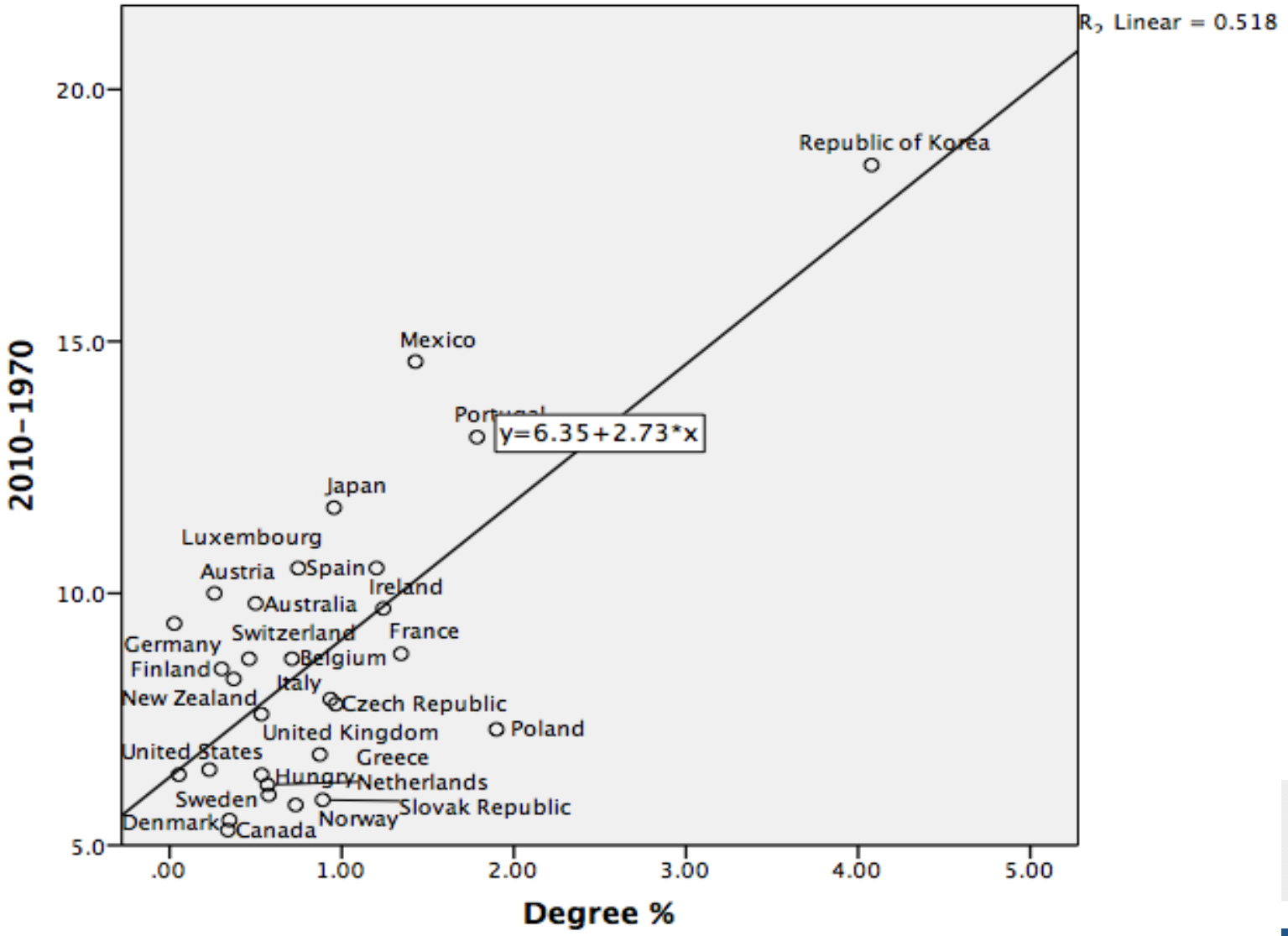
3% Factors outside of the health care system

What We Spend on Being Healthy

Health Spending


Health Spending
Health Determinants
97%
Health Care
10%
(Health Behaviors & Other Factors)
90%
3%
Adapted from Rick Brush, Collective Health

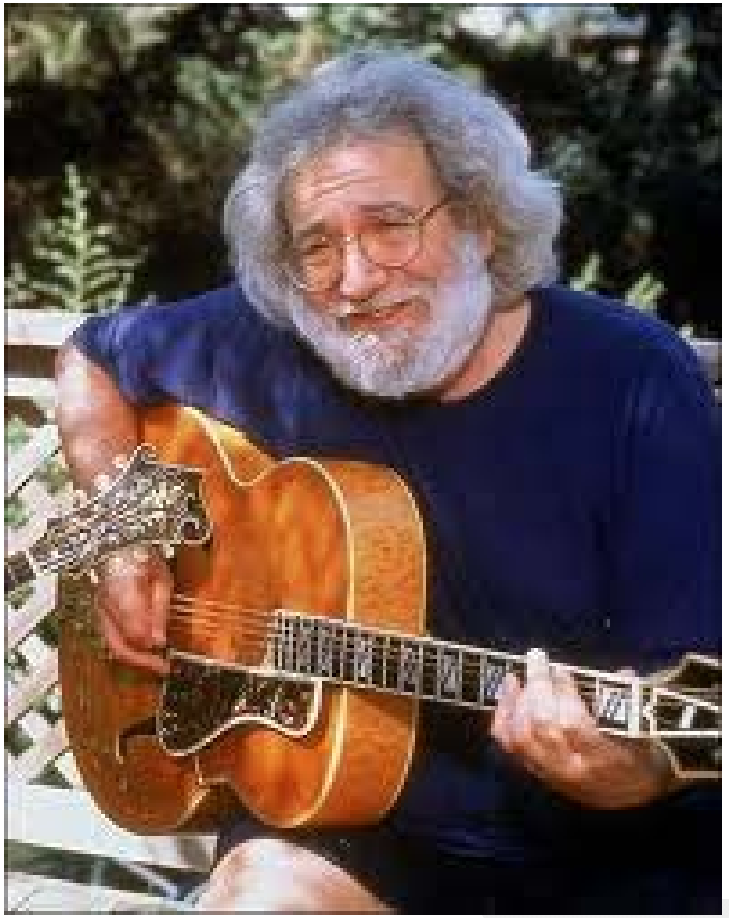
Scatterplot of relationship between increases in % with college degree and increase in life expectancy 1970-2010: OECD data



Jerry Garcia
the Grateful Dead

"Somebody has to do something,

and it's just incredibly pathetic that it has to be us.”



Thanks for Participating
Let's Start the Discussion

