

# Connections between Education and Health

Health Policy Institute of Ohio Forum  
State policymaking at the intersection of education and health  
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## Why focus on the connections between education and health?

- Opportunities to lead a long and healthy life can vary dramatically.
- Disparities in education are directly related to disparities in health.
- Neighborhood is one way to visualize those disparities.
  - If you travel less than ten miles from Cleveland's northeastern neighborhoods to more affluent eastern outer-ring suburbs, life expectancy can differ by as much as 12 years.

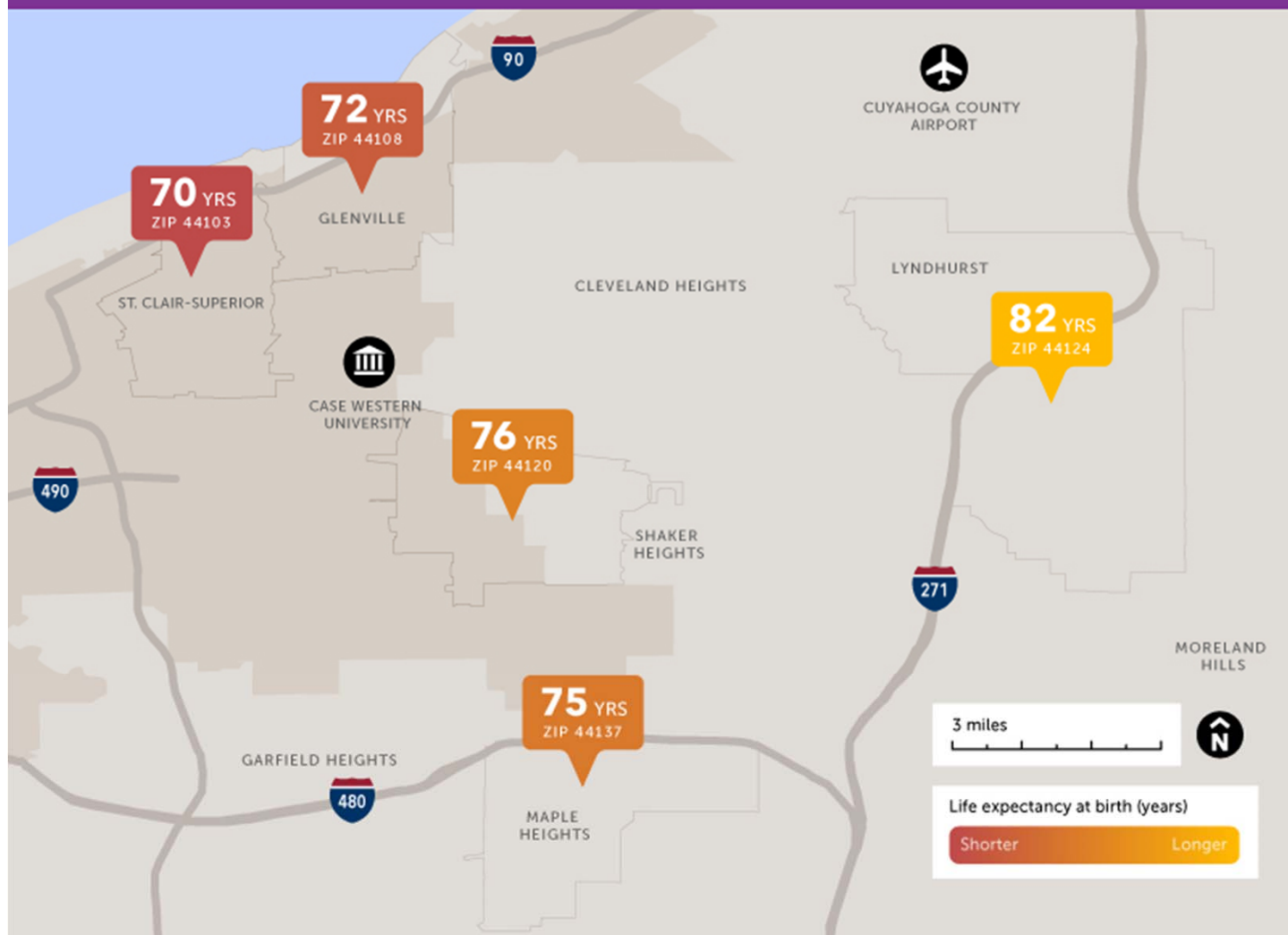


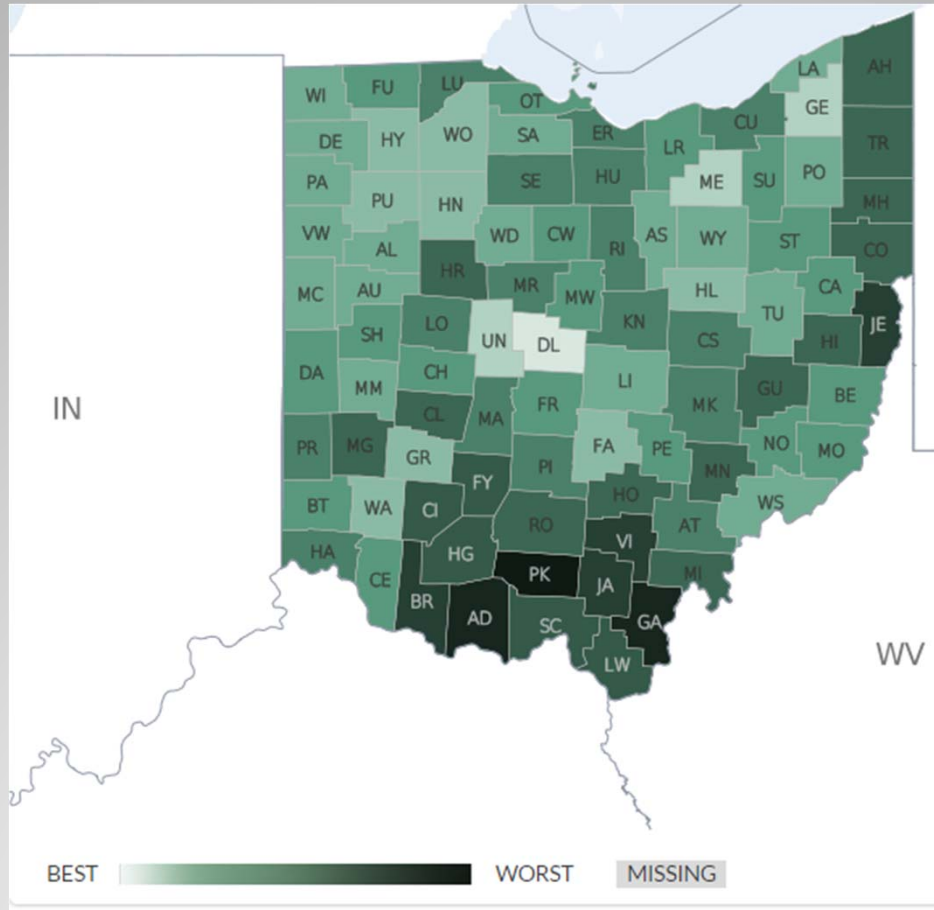
CLEVELAND, OHIO

## Short Distances to Large Gaps in Health

Follow the discussion

#CloseHealthGaps





Years of potential life lost before age 75 per 100,000 population  
(age-adjusted), 2011-2013

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### Education: It Matters More to Health than Ever Before

Americans with fewer years of education have poorer health and shorter

lives, and that has never been more true. In the 1990s, life expectancy has decreased for education, especially white women.

Education is important not only for productivity, but also for saving lives.



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### Health Care: Necessary But Not Sufficient

Health care alone cannot counter the effects of an inadequate education

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### Why Education Matters to Health: Exploring the Causes

Americans with more education live longer, healthier lives than those with fewer years of schooling (see [ISSUE BRIEF #1](#)). But why does education matter so much to health? The links are complex—and tied closely to income and to the skills and opportunities people have to lead healthy lives in their communities.



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This issue brief, created with support from the Robert Wood Johnson Foundation, is aimed at helping those working in education and those working in health understand the connections between the two. More detailed information, including references, is available on our website at [www.societyhealth.vcu.edu](http://www.societyhealth.vcu.edu).

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### Investments in Education Are Investments in Health: The State Perspective

ANDREW J. BARNES, PHD • ROSE S. BONO • APRIL D. KIMMEL, PHD • STEVEN H. WOOLF, MD, MPH

#### Can we spend less on health care by investing in education?

Across the country, health care accounts for an overwhelming proportion of state budgets. In particular, Medicaid expenditures currently account for 24.5 percent of state spending<sup>1</sup> and these state expenditures are expected to increase by 68 percent to \$342.5 billion by 2022.<sup>2</sup> Medicaid spending is projected to continue to outpace overall growth in state general fund budgets due to Medicaid expansion and increased enrollment among individuals who were already eligible prior to expansion but had not enrolled.<sup>3</sup>



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### Understanding the Relationship Between Education and Health

Emily Zimmerman and Steven H. Woolf\*  
June 05, 2014

\*The authors are participants in the activities of the ICM Roundtable on Population Health Improvement.

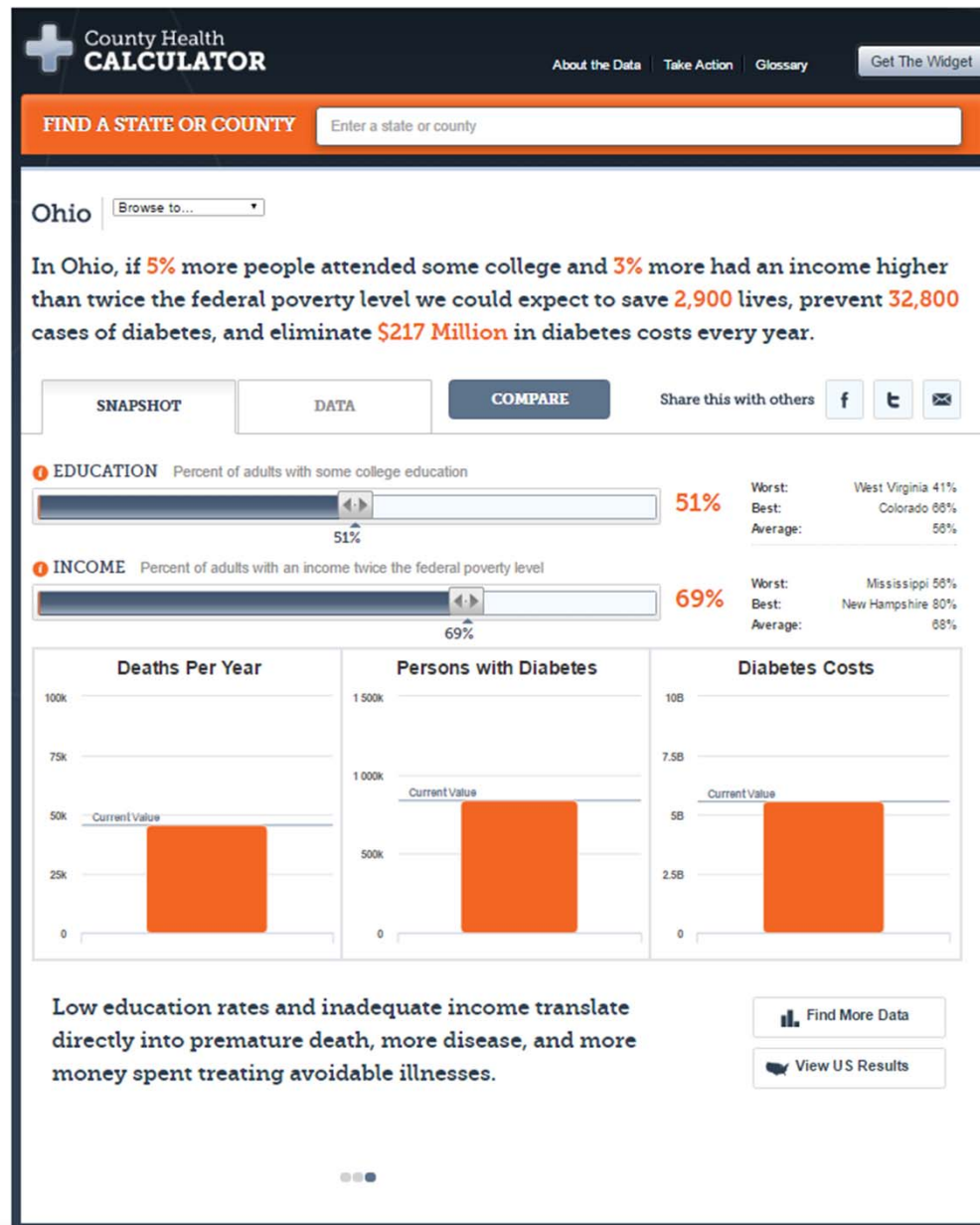
The views expressed in this discussion paper are those of the authors and not the organization or of the Institute of Medicine. The paper is intended to stimulate discussion. It has not been subjected to the review of the Institute of Medicine and is not a report of the Institute of Medicine.

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<https://countyhealthcalculator.org/>



<http://www.societyhealth.vcu.edu/work/the-projects/educationhealth.html>

### We all know that a good education is important.

In today's knowledge economy, education paves a path to competitive jobs and productive careers. American businesses need an educated workforce to compete with other countries in technology, science, and cutting-edge advances.



Less recognized is the impact of education on health outcomes. Along with the other benefits of education, Americans with a good education generally enjoy better health throughout their lives, generate fewer health care costs, and live longer. They are more successful students, more productive employees, and healthier senior citizens.

With funding from the Robert Wood Johnson Foundation, the Education and Health Initiative aims to raise awareness about the important connections between education and health. Short videos and issue briefs explore four specific themes:

- **It matters now more than ever:** the divergence in health status between Americans with and without an education is growing larger year by year.
- **Unpacking the relationship:** the association between education and health has deeper roots, such as the economic and social conditions young children experience before reaching school age, the skills and networks they build as they mature, and the jobs and resources they can access later in life.
- **The role of health care:** Improved access to health care (and health insurance) is necessary but not sufficient to counter the effects of an inadequate education. Even in places where health care is guaranteed, people with limited education tend to be sicker.
- **The return on investment:** Spending more to educate our youth could save more on health care costs, and the reverse is true: cuts in education to "save" money ultimately drive up health care costs.

# Impediments to linking education and health

- Lack of awareness of the magnitude of the relationship between education and health.
- Discourse focused on health care and individual health behaviors.
- Health disparities are often framed as related primarily to individual level causes.
- Education and health are separated into policy and budget silos.



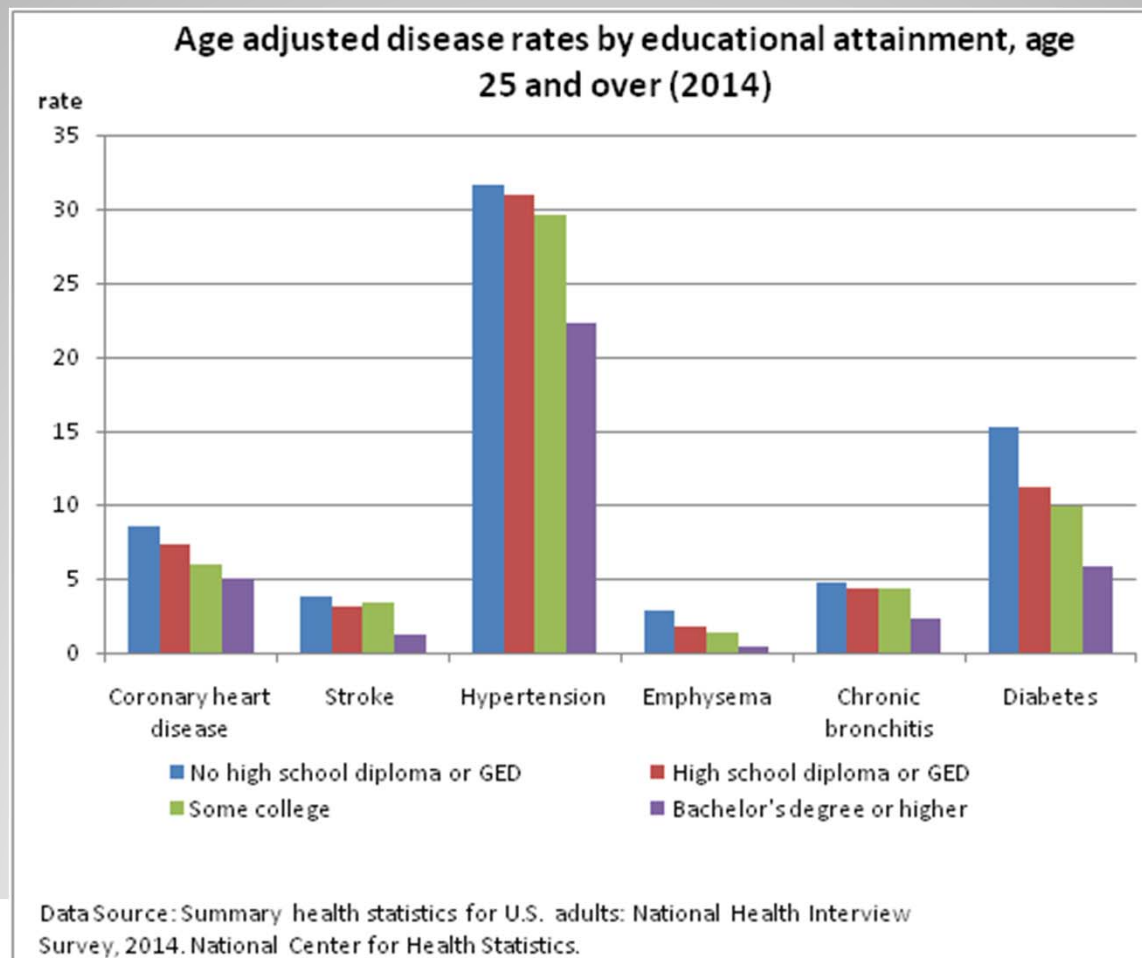
## How much does education matter to health?

- By one estimate, for every life saved by biomedical advances, seven would be saved if all U.S. adults had the mortality rate of adults with some college education (Woolf, Johnson, Phillips, & Philipsen, 2007).

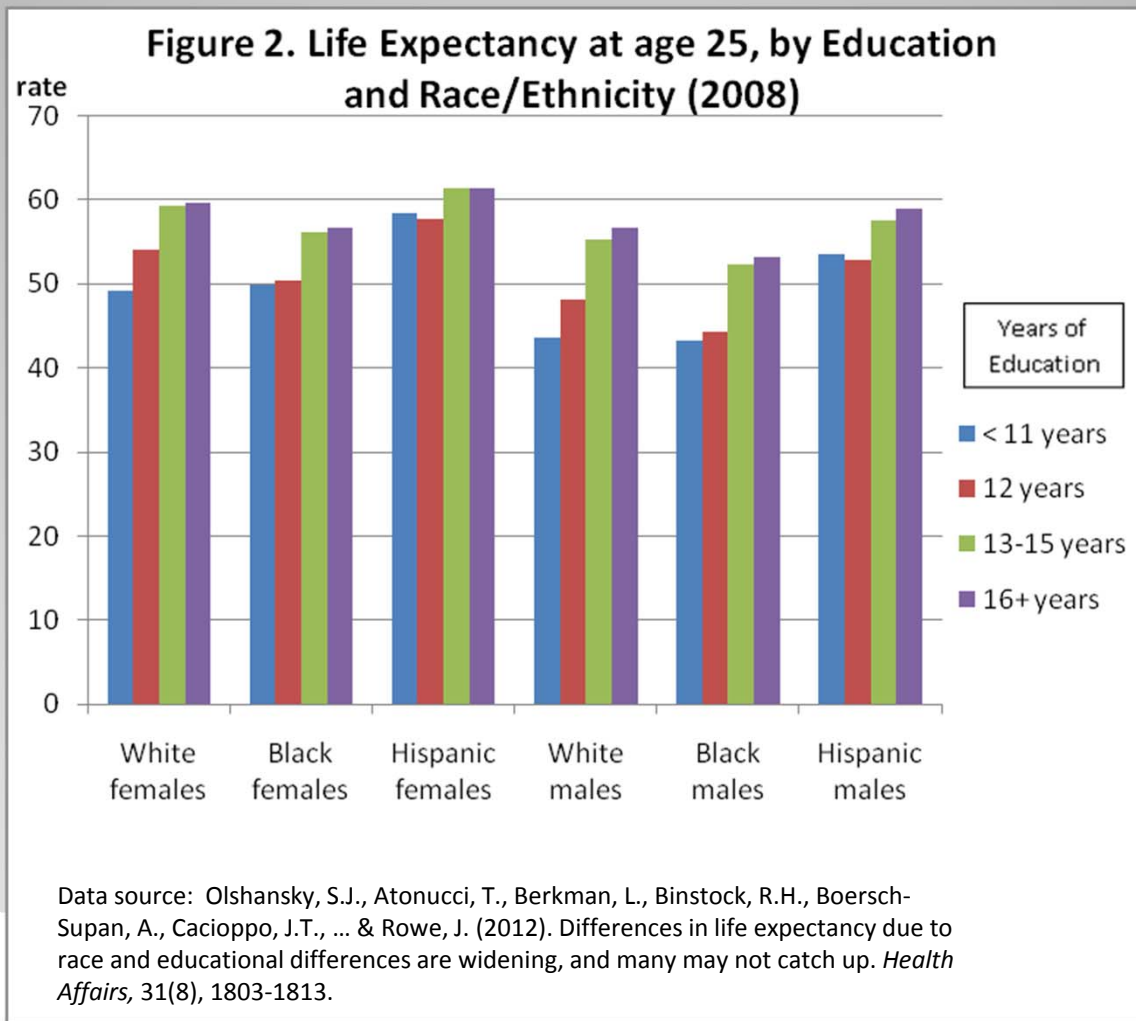




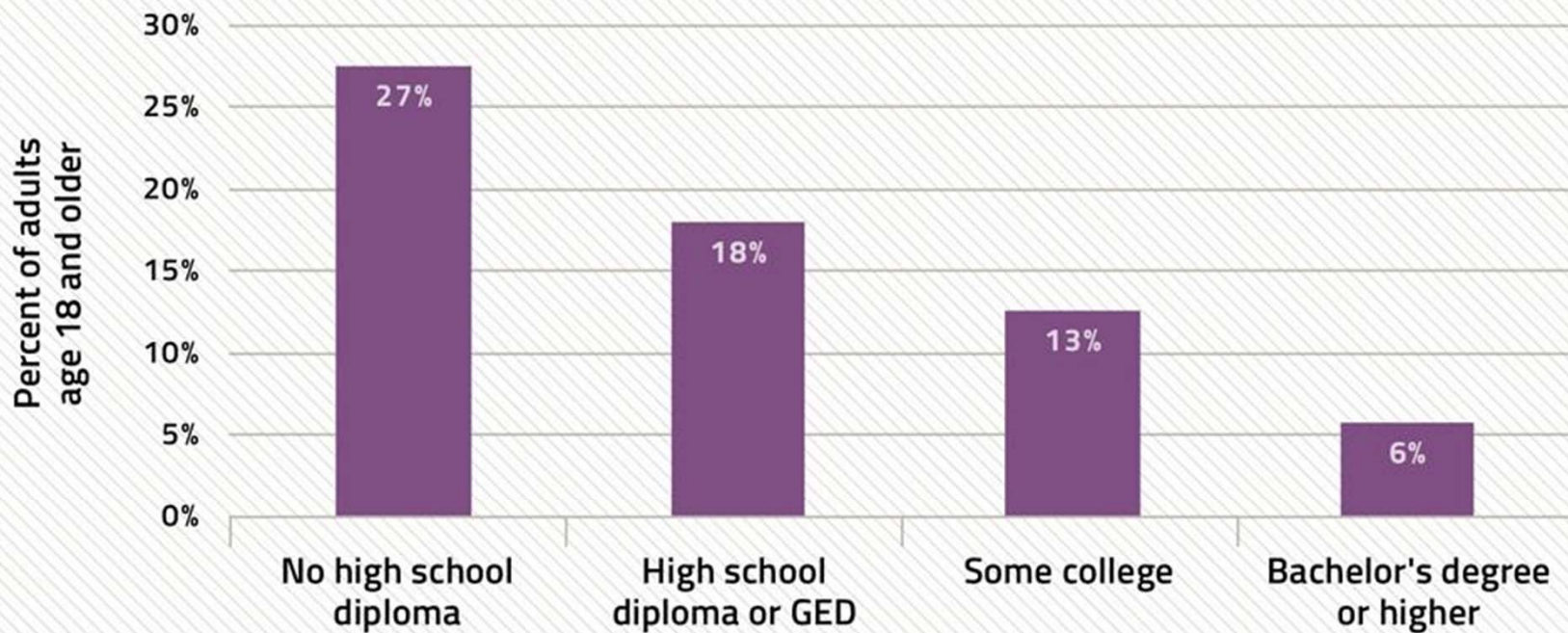
Americans with lower educational attainment are at higher risk for coronary heart disease, hypertension, stroke, emphysema, chronic bronchitis, and diabetes



## Educational disparities in health occur within all racial and ethnic groups but may be greatest among whites



## Self-report of fair or poor health

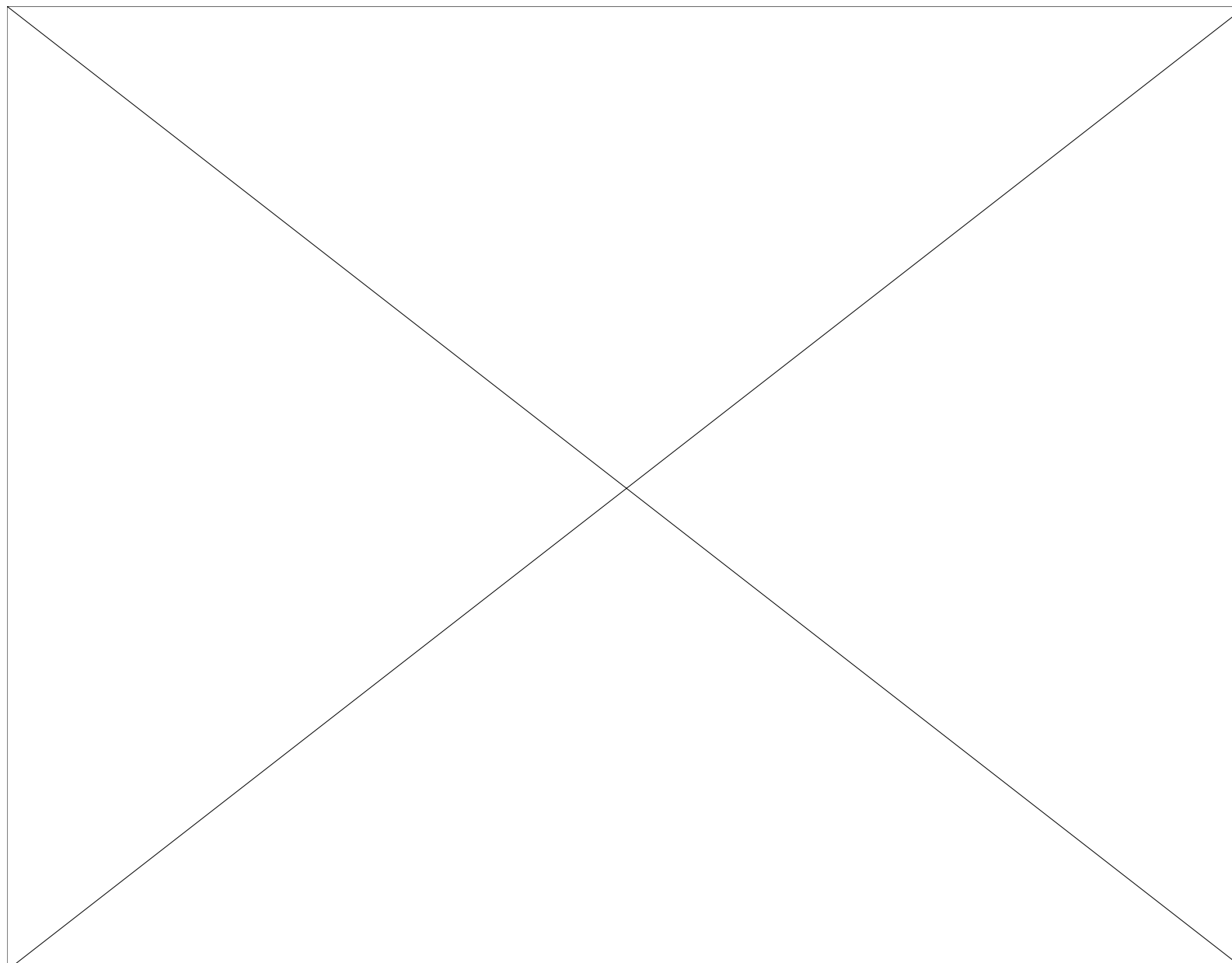


Data from Schiller et al. Summary health statistics for U.S. adults: National Health Interview Survey, 2011. Table 21. National Center for Health Statistics. Vital Health Stat 10(256). 2012.

# Trends: the growing gradient

- Life expectancy fell among white Americans with less than 12 years of education by more than 3 years for men and by more than 5 years for women between 1990 and 2008, a period when it life expectancy had *increased* for adults with more education (Olshansky et al., 2012).
- Among non-Hispanic whites (age 40-64 years), those with 0-11 years of education reported fair or poor health more often than the college educated: a gap that grew from 23 percentage points in 1972 to 36 percentage points by 2004; and
- Chronic diseases rates fell among non-Hispanic whites with advanced education while those with less education saw no decline and even experienced an increased prevalence of some conditions (Goldman & Smith, 2011).



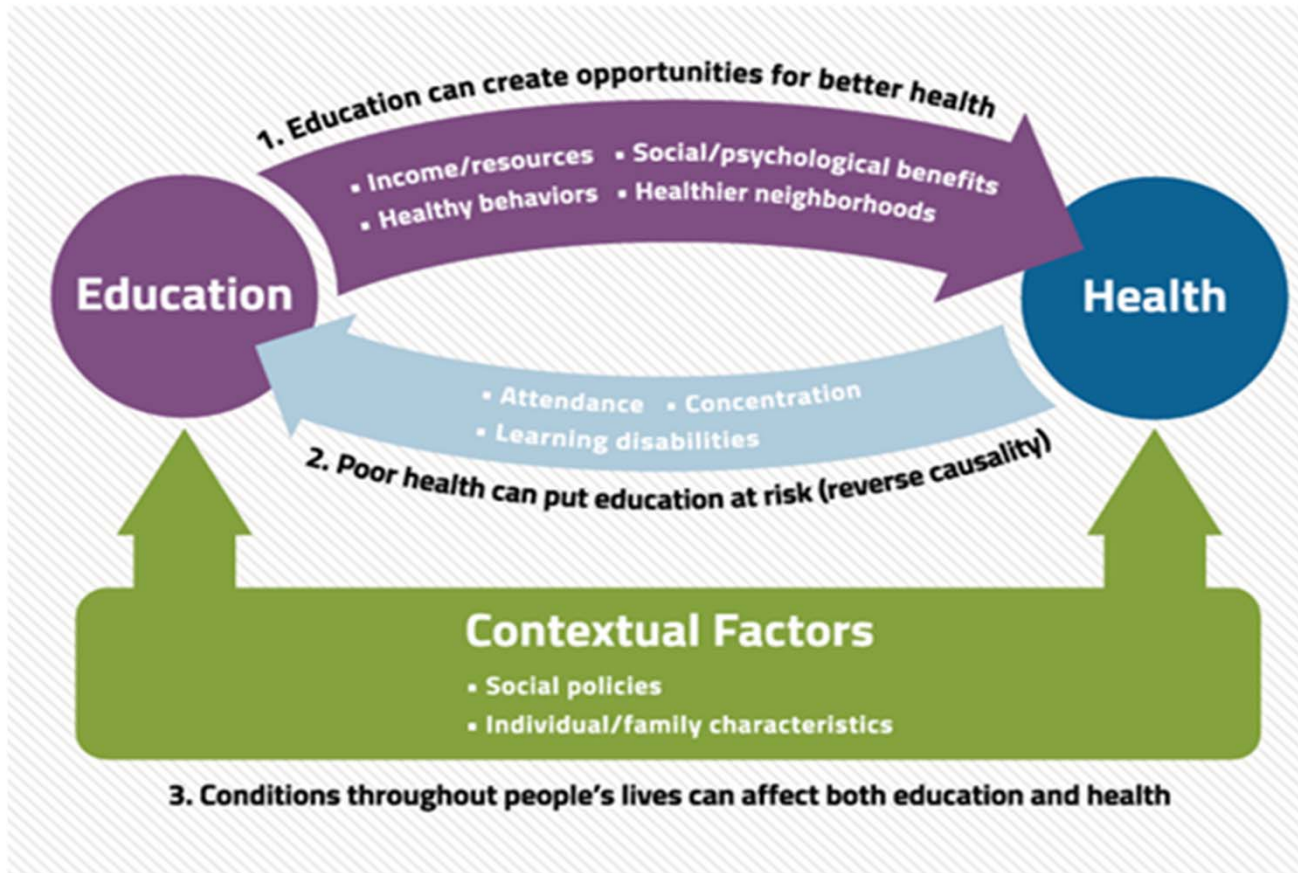


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# Pathways

## I Connections between Education and Health



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*Why Education Matters to Health: Exploring the Causes*

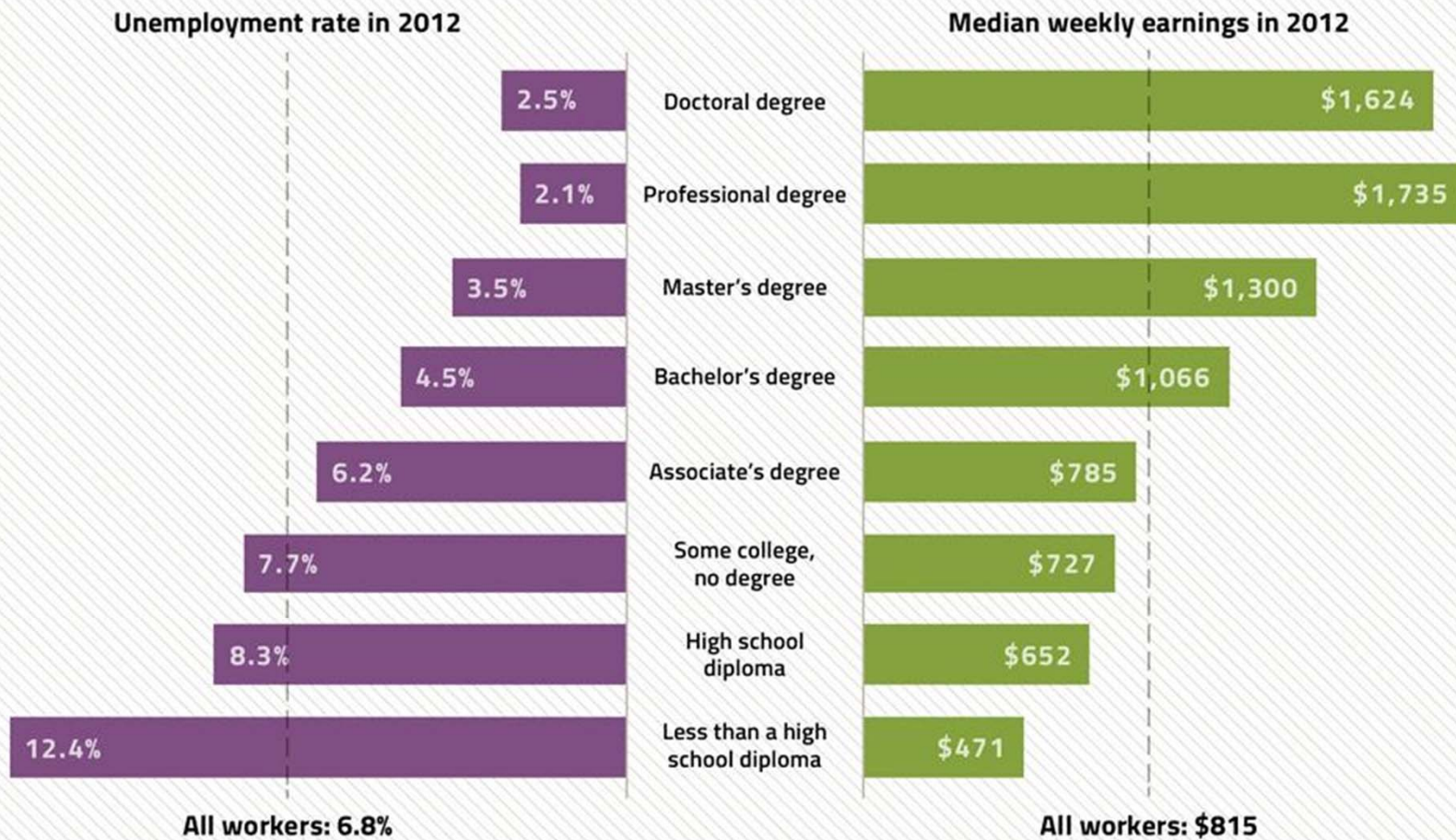




# Economic security

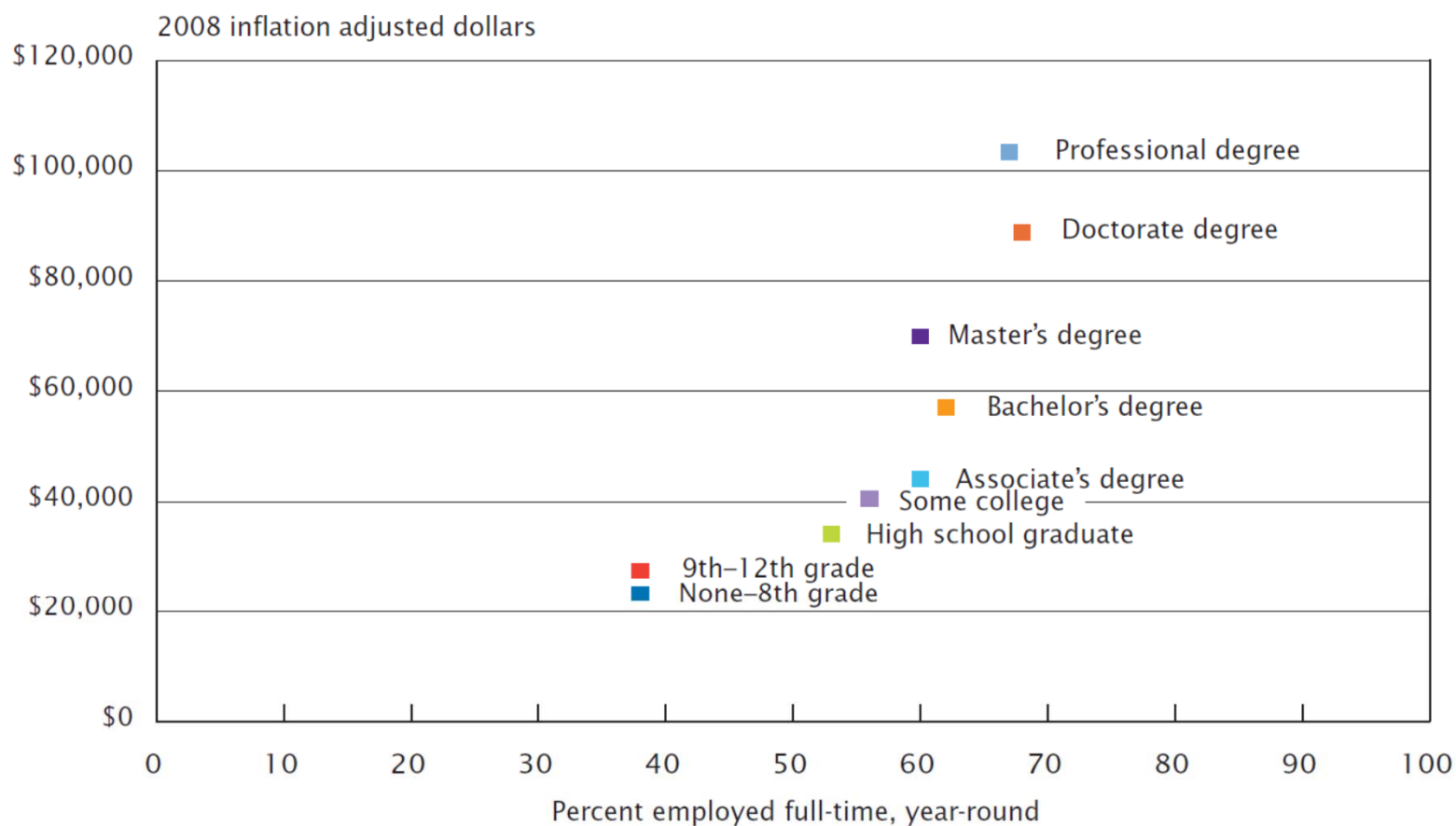
- Better jobs, higher income, greater access to resources, and financial stability
  - Median wage for college graduates was more than twice that of high school dropouts and more than one and a half times higher than that of high school graduates --2012 (U.S. Bureau of Labor Statistics).
  - Educated adults are more likely to be employed and have jobs with benefits, such as insurance, paid leave, and retirement (Baum, Ma, & Payea, 2013).

## Earnings and unemployment rates by educational attainment



Data from: Bureau of Labor Statistics, Current Population Survey. [http://www.bls.gov/emp/ep\\_chart\\_001.htm](http://www.bls.gov/emp/ep_chart_001.htm)

Figure 2.  
**Education, Work Status, and Median Annual Earnings**



Source: U.S. Census Bureau, American Community Survey, 2006-2008.

# Health care access

- Adults with higher levels of educational attainment are more likely to access health care when needed and to use preventive services.
  - 1 in 5 (18%) high school graduates and more than 1 in 4 (27%) adults who did not finish high school reported being unable to see a doctor due to cost, compared to less than 1 in 10 (8%) college graduates (Centers for Disease Control).
  - Among adults age 50-75, 72% of college graduates were up-to-date with colorectal cancer screening, compared to 59% of high school graduates and about 49% of adults who did not finish high school (Steele, Rim, Joseph, King, & Seeff, 2013).



## Social and psychological benefits

- Education can improve skills such as literacy, cognitive ability, problem solving, social skills, and 'soft skills' such as conscientiousness, perseverance, and self-control (Ross & Wu, 1995; Heckman, & Kautz, 2012).
- The "Big Five" personality factors include conscientiousness, openness to experience, extraversion, agreeableness, and neuroticism/emotional stability (Heckman and Kautz, 2012).
- Personal control (locus of control, personal efficacy, personal autonomy, self-directedness, mastery, and instrumentalism) (Ross and Wu, 1995), is another soft skill associated with educational attainment.



## Cognitive skills

- Skills taught in school: reading, mathematics, and science/health literacy.
- Also, cognitive ability, reaction time, and problem solving.





“Because education develops one's ability to gather and interpret information and to solve problems on many levels, it increases one's potential to control events and outcomes in life. Moreover, through education one encounters and solves problems that are progressively more difficult, complex, and subtle, which builds problem-solving skills and confidence in the ability to solve problems” (Ross and Wu, 1995)



# Impacts of soft skills

- Learning about healthy behaviors
- Understanding health needs
- Ability to navigate the health care system
- Coping skills and impact of stress
- Following instructions and communicating
- Social networks and social capital
- Social support and social integration

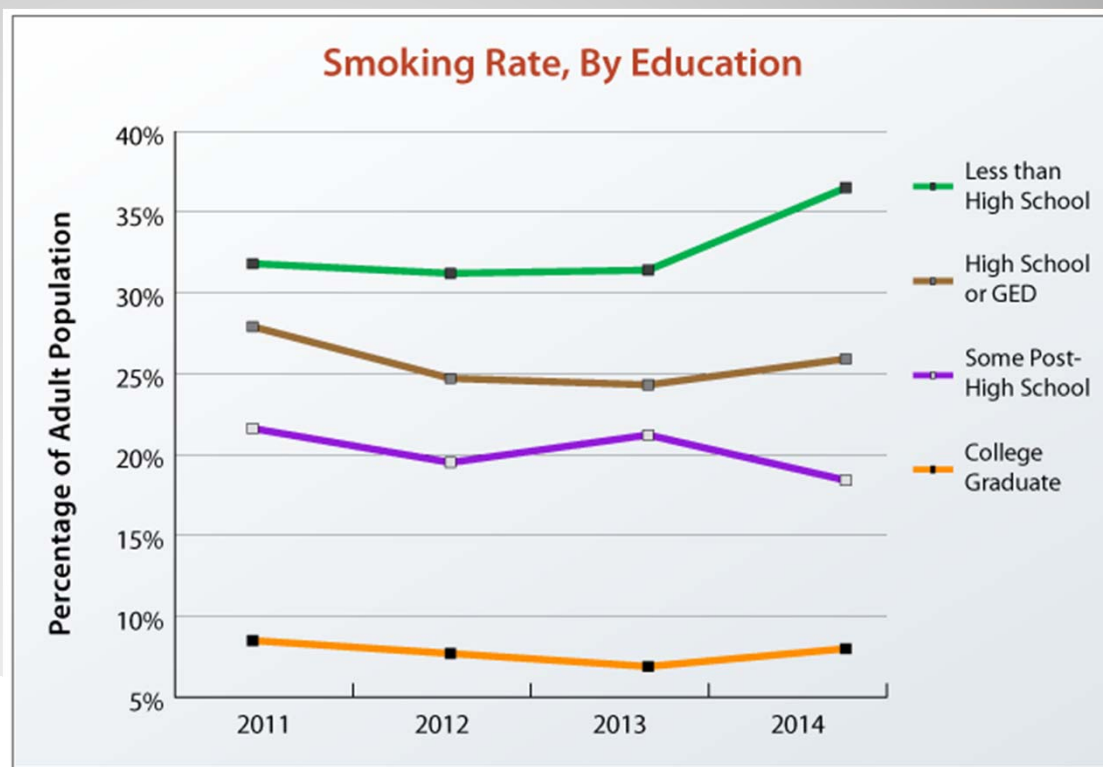


# Impact on health behaviors

- Adults with higher levels of education are less likely to engage in risky behaviors, such as smoking and are more likely to have healthy behaviors related to diet and exercise.

This graph is for Virginia

<http://vaperforms.virginia.gov/indicators/healthfamily/smoking.php>

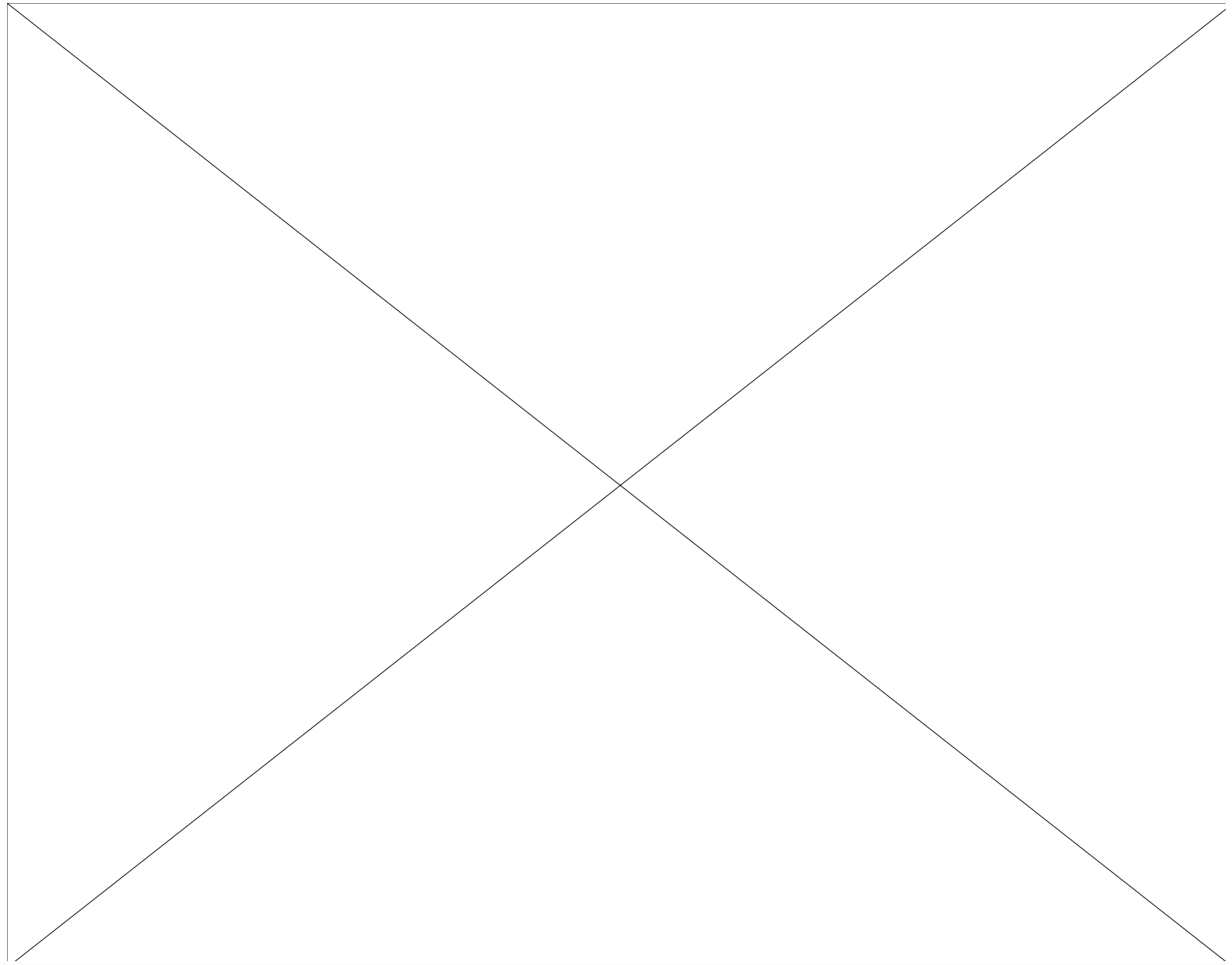


## Chronic stress

- Resources gained through more education can protect against social and economic hardship and can help buffer the effects of stress.
- Stressful experiences can have a cumulative negative effect on health.
- “Allostatic load,” the effects of chronic exposure to physiological stress responses, may over time heighten the risk for chronic diseases and infections (McEwen & Stellar, 1993) and has been associated with higher death rates among older adults (Karlamanla, Singer, & Seeman, 2006).

# Exposure to opportunities and risk factors in the community

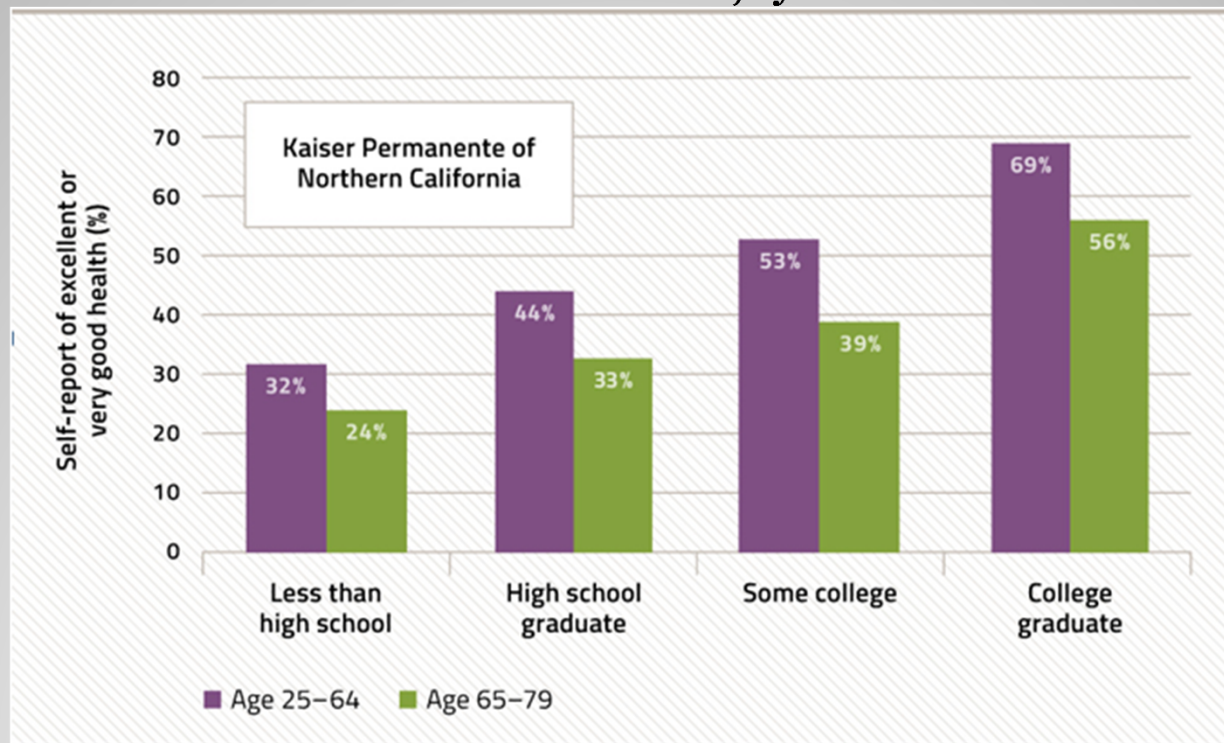
- People with less education are more likely to live in low-income neighborhoods that lack the social, economic and environmental resources that facilitate healthy living.
  - Safe and attractive outdoor environments (Lovasi, Hutson, Guerra, & Neckerman, 2009).
  - Nearby exercise facilities (Moore, Diez Roux, Evenson, McGinn, & Brines, 2008; Gordon-Larsen, Nelson, Page, & Popkin, 2006).
  - Access to health care services.
  - Community economic resources (jobs)
  - Access to healthy foods (Ver Ploeg et al., 2009; Grimm, Moore, & Scanlon, 2013).
  - Higher crime rates (Krivo & Peterson, 1996).
  - Exposure to toxins (Brulle & Pellow, 2006).





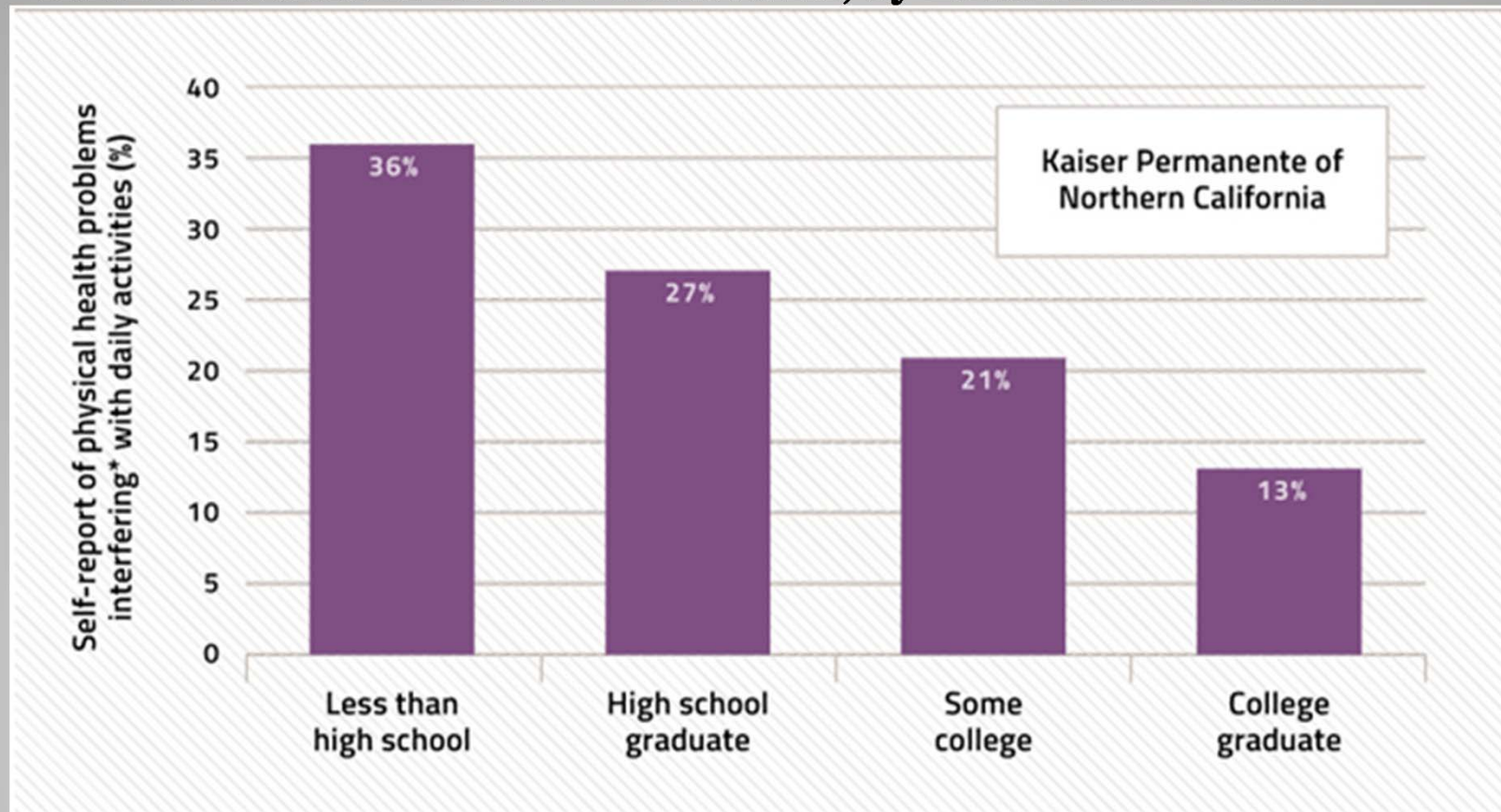
# Health care: Necessary but not sufficient

**“Excellent” or “Very Good” Self-Reported Health Among Adult Members of Kaiser Permanente of Northern California, by Educational Status**



Unpublished data from Nancy Gordon (Member Health Survey, 2011), Kaiser Permanente Division of Research.

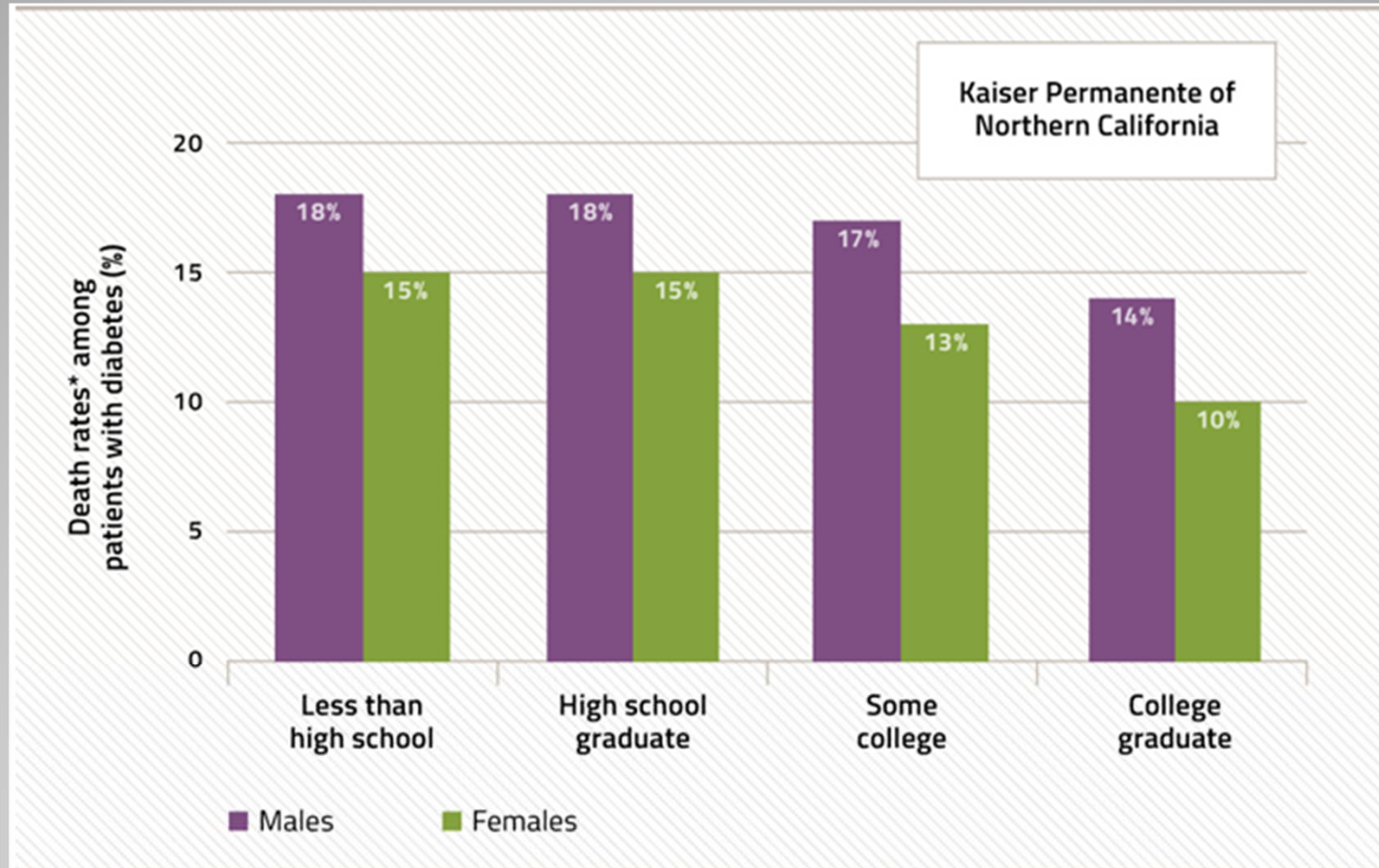
## Physical Health Problems That Interfere With Daily Activities Among Adult Members of Kaiser Permanente, by Educational Status



\* Interfering at least moderately.

Unpublished data from Nancy Gordon (Member Health Survey, 2011), Kaiser Permanente Division of Research.

## Diabetes Mortality Among Adult Members of Kaiser Permanente, by Educational Status



\* Deaths from all causes (per 1000 person-years) among adults aged 30-75 years, standardized to the age and sex distribution of the 2000 U.S. Census. Unpublished data from Andy Karter (Diabetes Registry, 1996-2005), Kaiser Permanente Division of Research.



## The return on investment

- Equating the health status of college-educated Americans with their less-educated peers could save almost 1 trillion dollars every year in health-related costs (Schoeni, Dow, Miller, & Pamuk, 2011).
- Lifetime savings in publicly funded health expenditures for every additional high school graduate could exceed \$40,000 (Levin, Belfield, Muennig, & Rouse, 2007).



# Chronic disease

- Chronic conditions account for more than half of all adult health care spending and the majority of prescription drug spending (Agency for Healthcare Research and Quality, 2011), and
- These diseases are more common in people with a high school education or less (Manrique-Garcia, Sidorchuk, Hallqvist, & Moradi, 2011; Borrell, Dallo, & White, 2006; Liu et al., 2013).
  - Only 3.4% of college-educated adults have diabetes, compared to 12.2% of adults who have not completed high school (Geiss et al., 2014).
  - With annual Medicare and Medicaid costs for diabetes at nearly \$110 billion (American Diabetes Association, 2013), the economic implications of education-related health disparities are profound.

# Health care costs and education

- State outlays for health care go disproportionately to the care of people with limited education, who tend to be sicker and require more intensive care.
- About 80% of Medicaid costs go to chronic diseases, such as diabetes and heart disease. Among adult Medicaid enrollees, at least 3 in 10 have a preventable chronic condition (Kaiser Family Foundation 2014).
  - The treatment of diabetes costs approximately \$85,000 over the lifetime of a diabetic patient and \$1.77 trillion to the U.S. economy (Zhuo, Zhang, & Hoerger 2013; CDC 2014).
  - The U.S. spends nearly 17% of health dollars on cardiovascular diseases, representing \$149 billion per year (Trogdon et al, 2007).
  - Overweight and obesity cost more than \$110 billion annually, accounting for 5–10% of national health care costs (Tsai, Williamson, & Glick 2011).



## Other return on investment

- More productive workforce, lower unemployment rates, improved earnings and tax revenue, and a stronger economy.
- Criminal justice and welfare sectors could collectively save \$45 billion if the number of 20-year-olds who do not complete high school were decreased by half (Levin et al., 2007).
- Reduced cost of safety net programs.
- Higher local and national tax revenues.



## Beyond Improving Health, Education Brings Broader Economic Returns



# Reverse causality

- Health conditions can affect children's development, learning, and performance.
- Increased risk of absenteeism and dropping out.
- Findings of the overall effects of health problems on educational attainment range from about 1.4 years (Gan and Gong 2007) to about half a year (Goldman and Smith 2011).
- Particular risks, such as low birth weight, disease, malnutrition and exposure to toxins. (Currie, 2009; Eide and Showalter, 2011; Pridmore, 2007).

# Conditions that affect both health and education

## Importance of early childhood experiences

- Low birth weight (Avchen et al., 2001).
- Nurturing relationships, home environment, and access to stimulation (Heckman, 2006).
- Unstable home and community life -- family transitions, housing instability and school settings (Sandstrom and Huerta, 2013).
- Family and neighborhood socioeconomic status, including duration and timing of childhood poverty (Case et al., 2002; Duncan et al., 1994; Brooks-Gunn and Duncan 1997; Guo 1998).
- Chronic exposure of infants and toddlers to stressors—"adverse childhood experiences" (ACES)—can affect brain development and disturb the child's endocrine and immune systems (Felitti VJ, et al, 1998).

## Connecting the dots

- **Saving lives** Policies that set kids up for success—in education and in life generally—are smart strategies for reducing the prevalence of chronic diseases, such as diabetes and heart disease.
- **Saving dollars** Medical care is important, but actions outside of health care—education, jobs, and economic growth—may be the best way to stem spiraling health care costs (“bend the cost curve”).