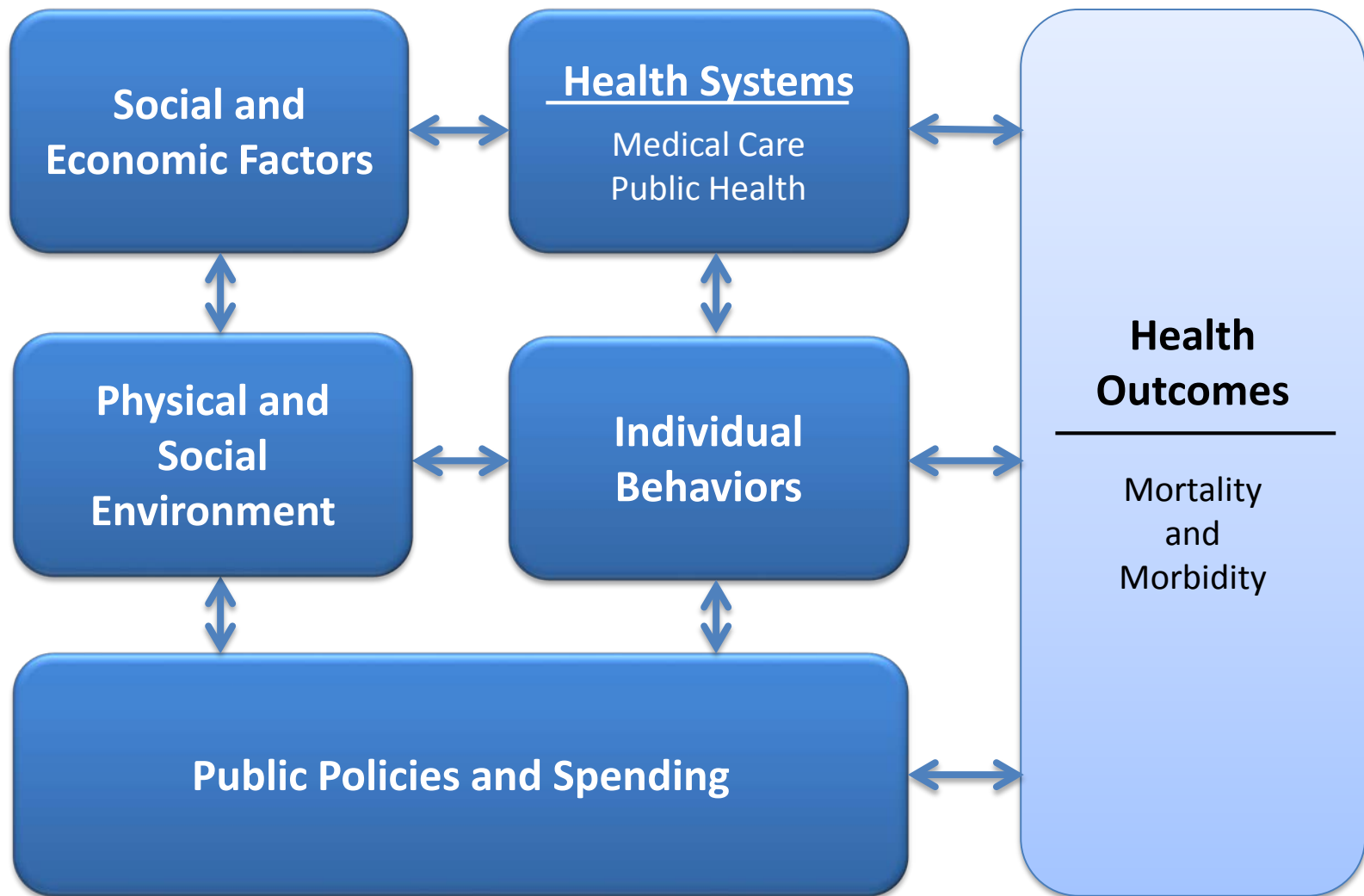


THE RELATIONSHIP BETWEEN EDUCATION AND HEALTH

Roundtable on Population Health Improvement
School Success: An Opportunity for Population Health Action
Oakland, California
June 14, 2018

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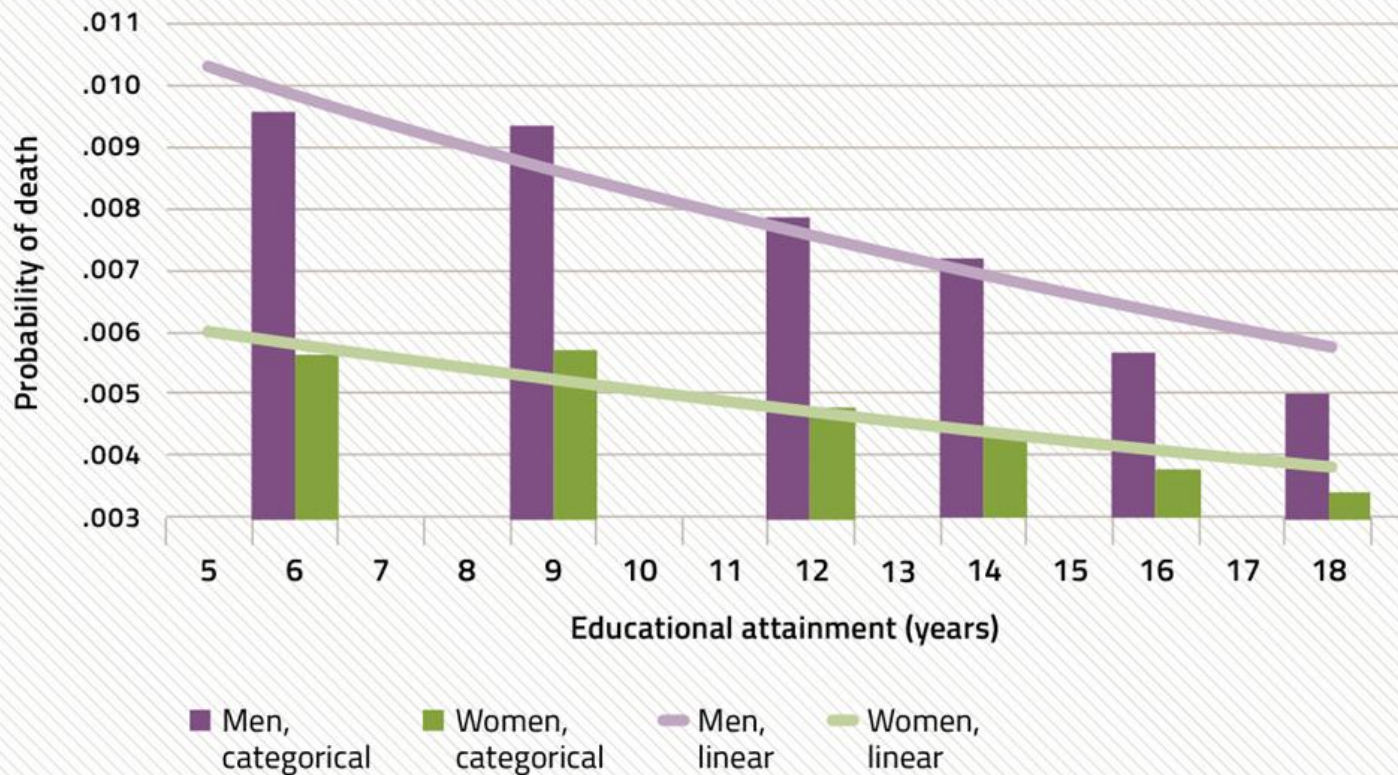


Source: Adapted from Woolf SH, Aron L, eds. *U.S. Health in International Perspective: Shorter Lives, Poorer Health*. Panel on Understanding Cross-National Health Differences Among High-Income Countries. National Research Council, Committee on Population, Division of Behavioral and Social Sciences and Education, and Board on Population Health and Public Health Practice, Institute of Medicine. Washington, DC: The National Academies Press, 2013.

Why the differences?

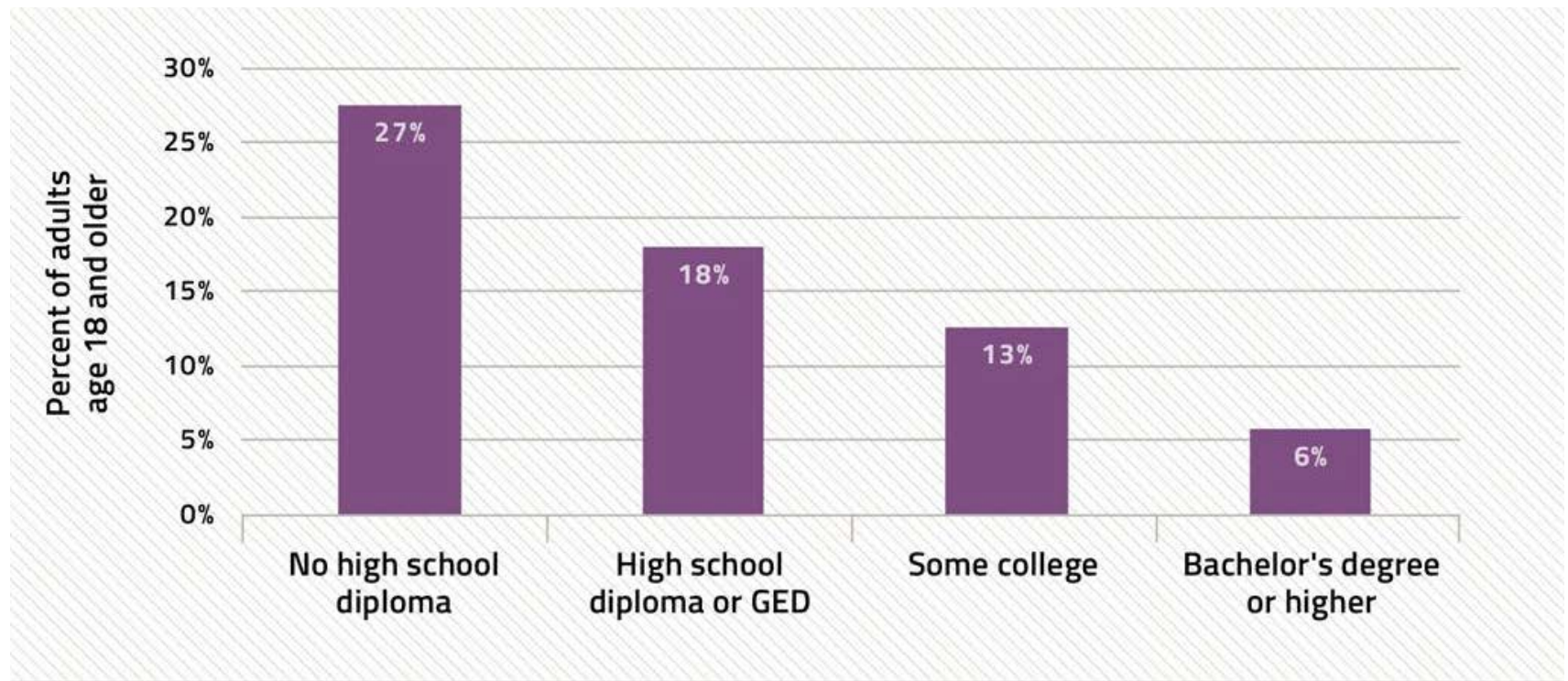
- **Education and income** are directly linked to health: Communities with weak tax bases cannot support high-quality schools and jobs are often scarce in neighborhoods with struggling economies.
- **Unsafe or unhealthy housing** exposes residents to allergens and other hazards like overcrowding.
- **Stores and restaurants selling unhealthy food** may outnumber markets with fresh produce or restaurants with nutritious food.
- **Opportunities for residents to exercise, walk, or cycle** may be limited and some neighborhoods are unsafe for children to play outside.
- **Proximity to highways, factories, or other sources of toxic agents** expose residents to pollutants.
- **Access to primary care doctors and good hospitals** may be limited.
- **Unreliable or expensive public transit** can isolate residents from good jobs, health and child care, and social services.
- **Residential segregation and features that isolate communities** (e.g., highways) can limit social cohesion, stifle economic growth, and perpetuate cycles of poverty.

All-cause mortality risk for men and women by years of education



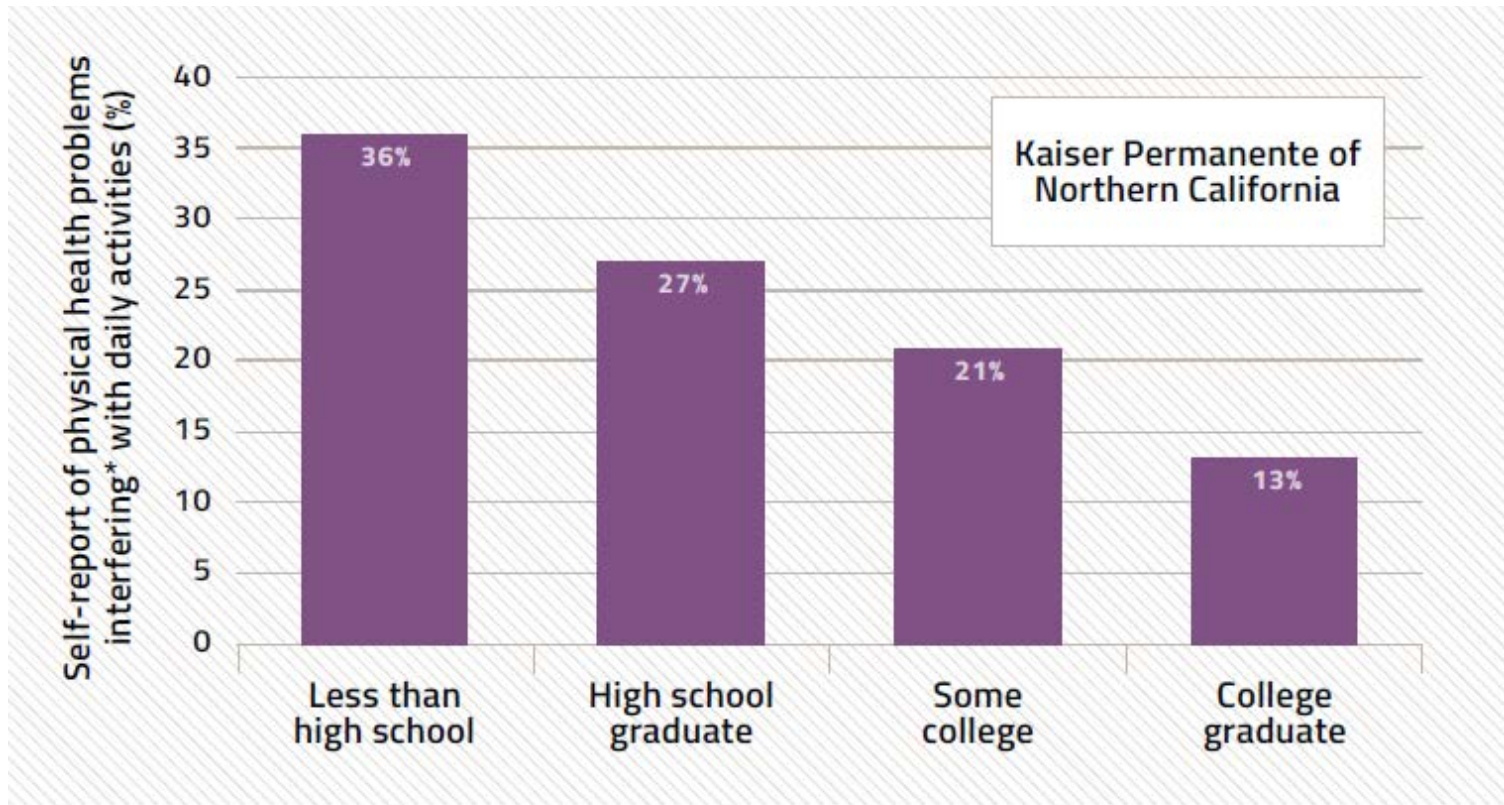
Data derived from regression modeling. Reprinted from Ross et al. *Demography*. 2012;49:1157-83.

Self-report of fair or poor health, by education



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.

The same health care doesn't mean the same health



* Interfering at least moderately.

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

Prevalence of diseases among US adults, by education

	Less than a high school diploma	High school diploma or GED	Some college	Bachelor's degree or higher
Coronary heart disease	10.2%	7.5%	7.4%	5.4%
Stroke	4.7%	3.4%	2.7%	1.7%
Emphysema	3.3%	2.5%	1.9%	0.7%
Asthma (current)	8.1%	8.3%	8.6%	7.1%
Chronic bronchitis	5.1%	5.2%	5.0%	2.3%
Diabetes	15.1%	10.5%	9.6%	6.5%
Ulcers	9.8%	7.4%	8.0%	5.0%
Kidney disease	3.8%	2.2%	2.1%	0.7%
Liver disease	2.4%	1.4%	1.5%	0.8%
Chronic joint symptoms	35.0%	33.3%	34.6%	25.2%
Hearing trouble	18.8%	19.3%	18.1%	13.5%
Vision trouble	14.0%	10.4%	9.5%	6.3%
No teeth	16.2%	9.6%	7.1%	3.6%

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

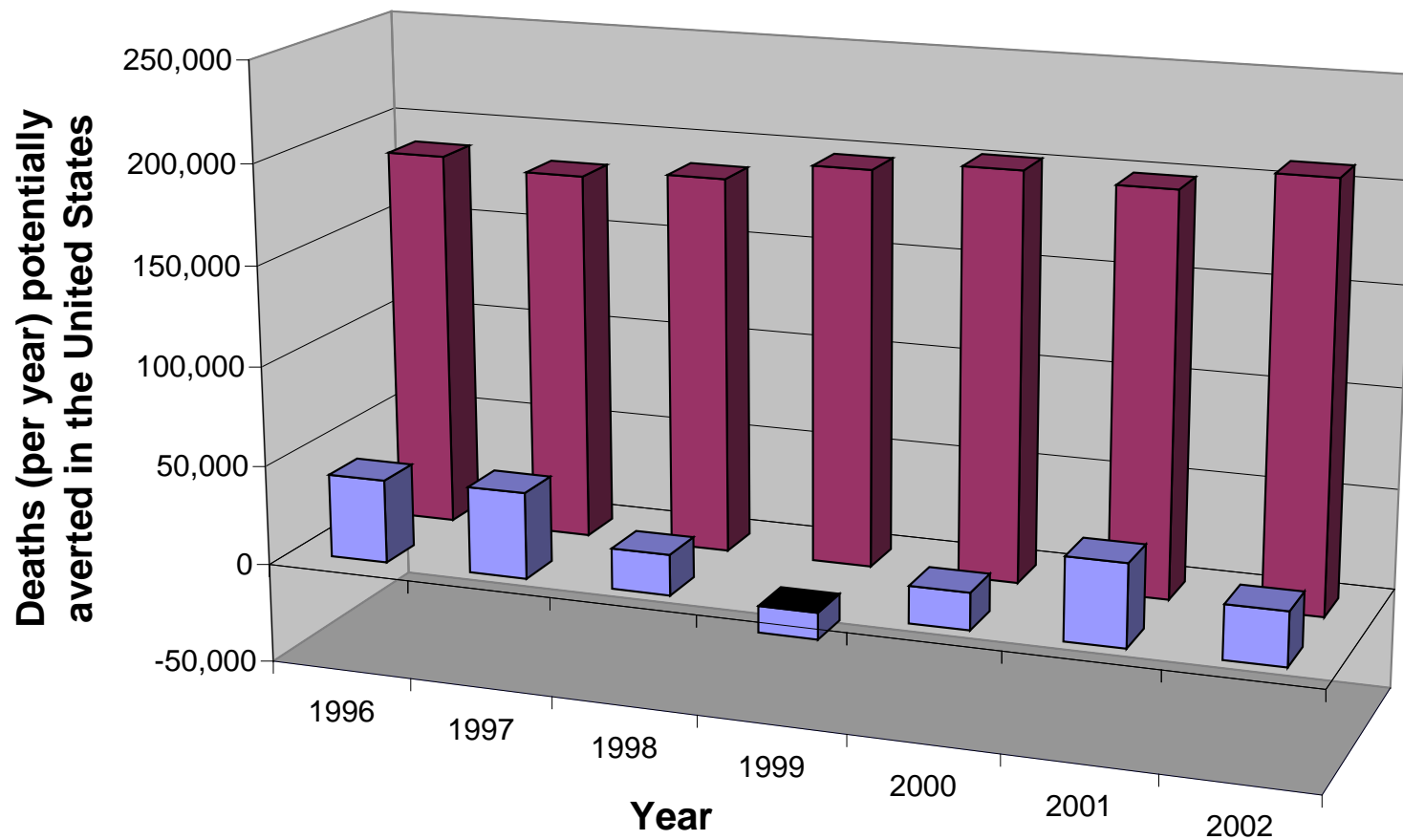
An employer perspective

- Educated and skilled workforce
- Health care costs
- Absenteeism
- Presenteeism
- Decreased workforce productivity

Table 2. Percentage of U.S. adults aged 18 and older with difficulties in physical functioning, 2011

Activities that are very difficult or cannot be done at all	Less than a high school diploma	High school diploma or GED	Some college	Bachelor's degree or higher
Any physical difficulty	28.0%	20.5%	17.7%	9.0%
Difficulty walking quarter of a mile	15.4%	9.9%	7.5%	3.6%
Difficulty climbing 10 steps	12.0%	6.8%	5.5%	2.3%
Difficulty standing for 2 hours	18.1%	12.4%	9.9%	5.5%
Difficulty sitting for 2 hours	7.0%	4.4%	3.5%	1.1%
Difficulty stooping, bending, or kneeling	16.8%	12.1%	10.1%	4.8%
Difficulty grasping or handling small objects	3.3%	2.4%	1.9%	0.9%
Difficulty lifting or carrying 10 pounds	10.2%	5.9%	4.3%	1.9%
Difficulty pushing or pulling large objects	14.1%	8.9%	6.9%	2.9%

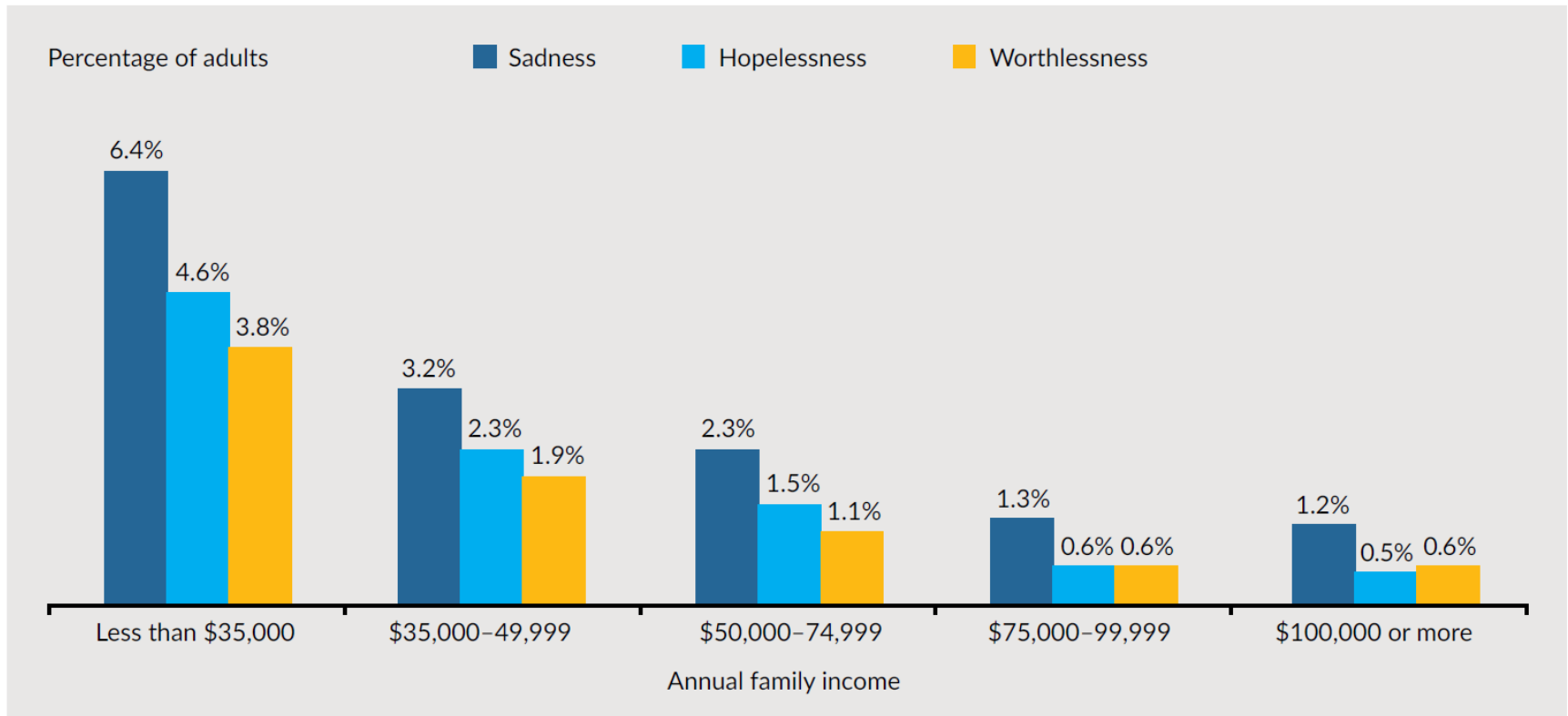
Data from Schiller et al. Summary health statistics for U.S. adults: National Health Interview Survey, 2011. Table 19. National Center for Health Statistics. Vital Health Stat 10(256). 2012.



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

Am J Public Health. 2007;97:679–683

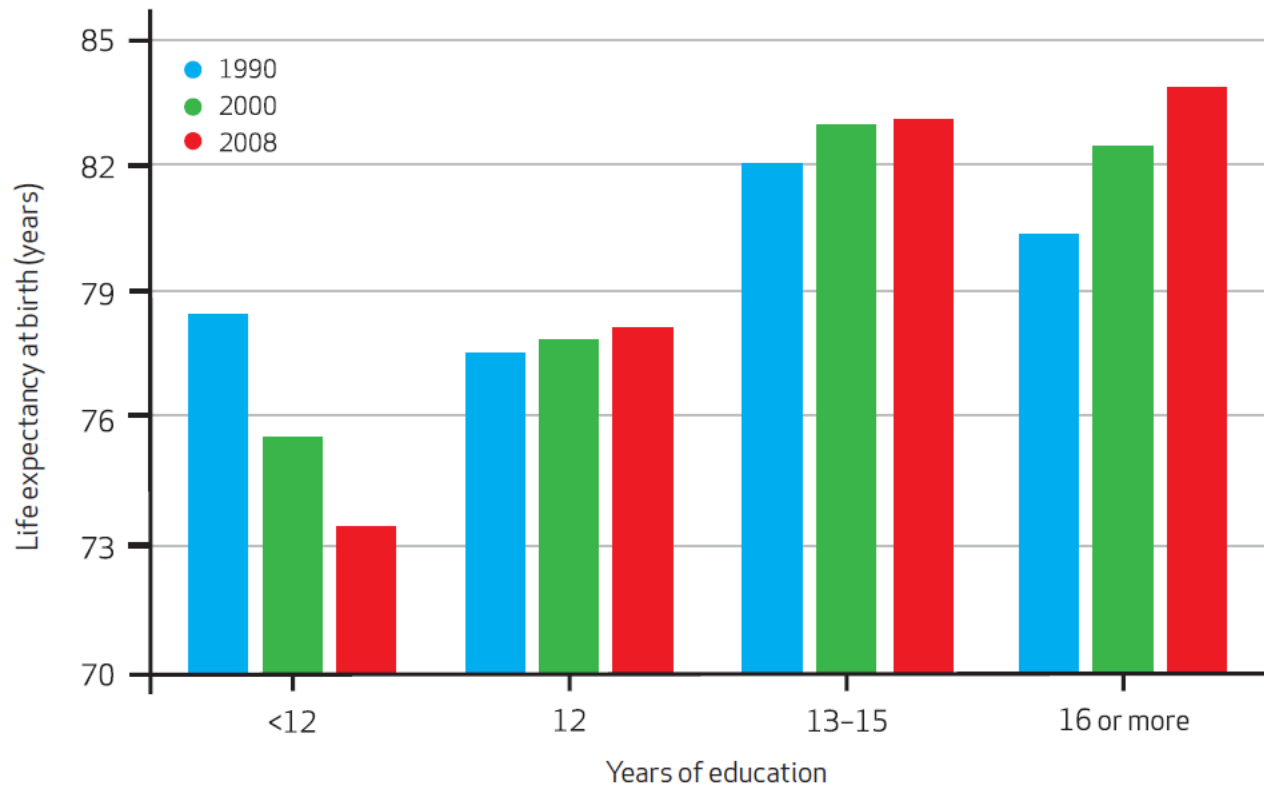
Income and psychological wellbeing



Source: J. S., Schiller, J. W. Lucas, and J. A. Peregoy, "Summary Health Statistics for U.S. Adults: National Health Interview Survey, 2011." Vital and Health Statistics 10, no. 256 (2012): 1–207, table 14. http://www.cdc.gov/nchs/data/series/sr_10/sr10_256.pdf.

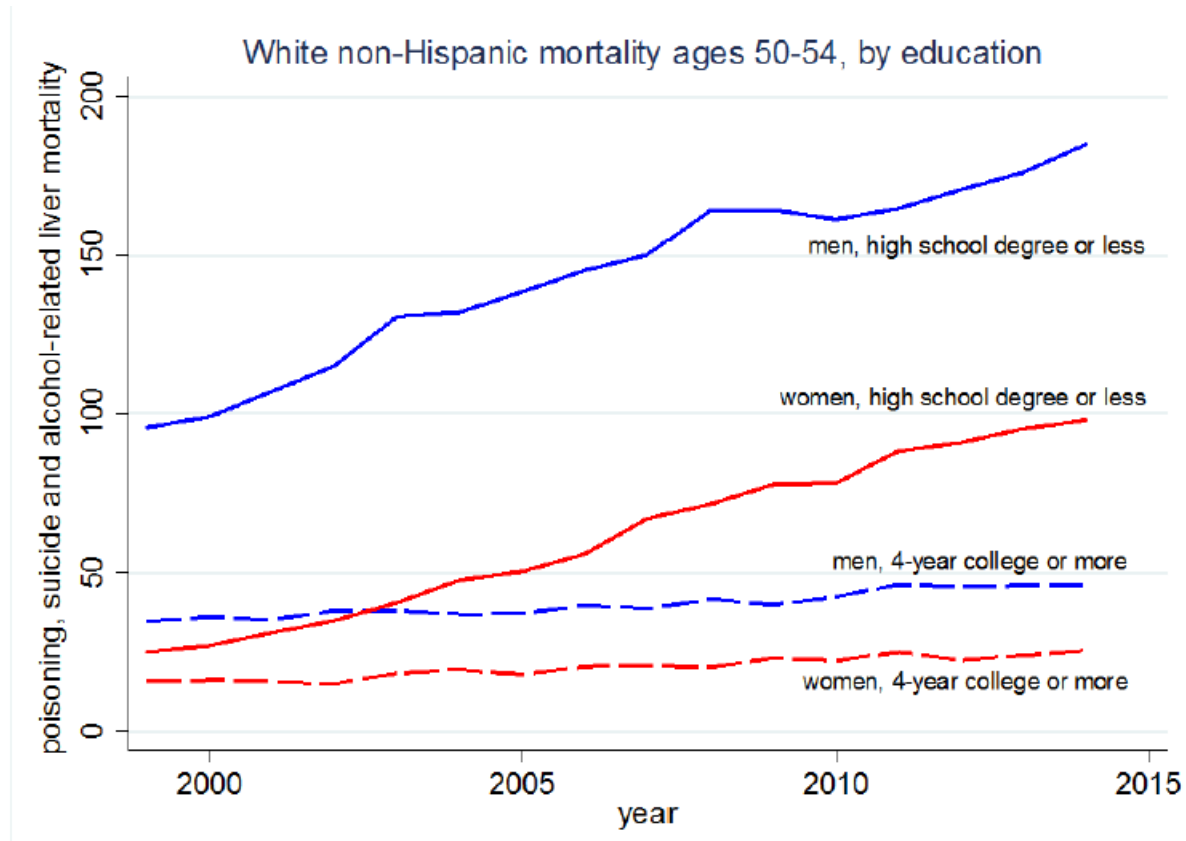
Decreasing life expectancy among US females without a high school education

Life Expectancy At Birth, By Years Of Education At Age 25 For White Females, 1990–2008



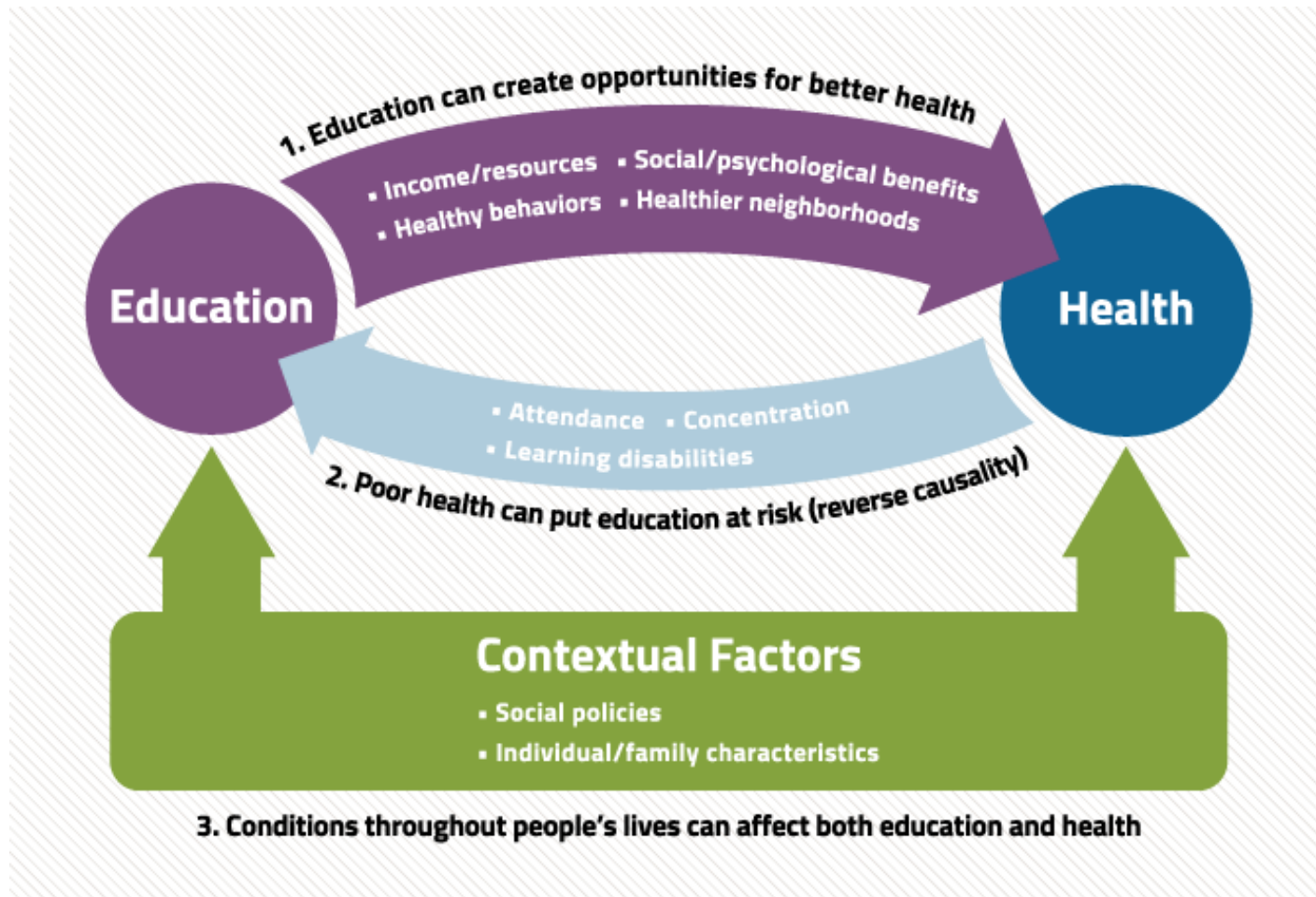
Olshansky et al. Health Aff 2012;31:1803-13.

“Deaths of despair” and education

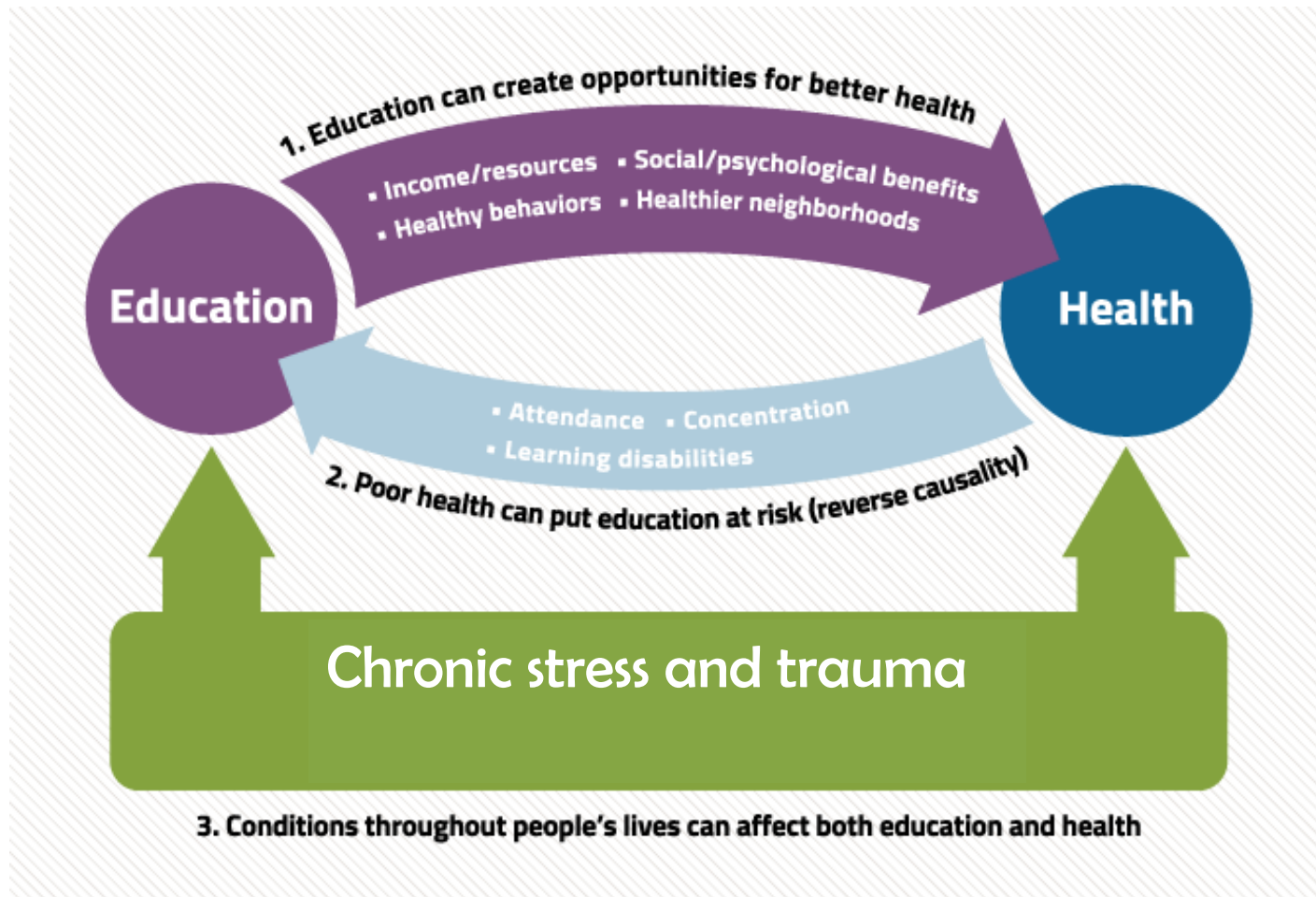


Case A, Deaton A. Brookings Institution, 2017

Why education matters to health: exploring the causes



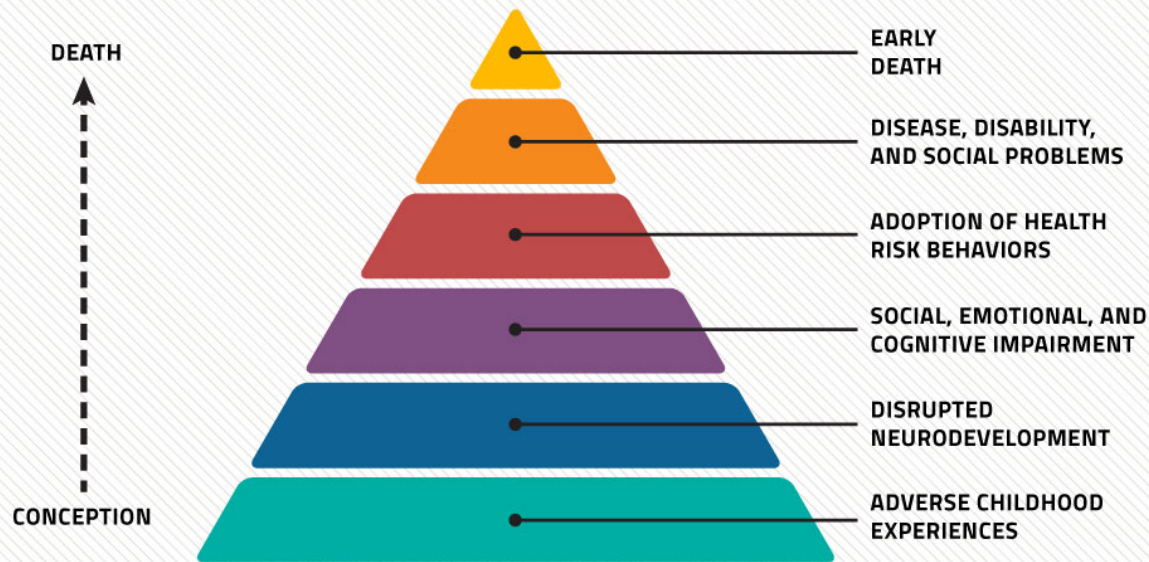
Why education matters to health: exploring the causes





Adverse childhood experiences

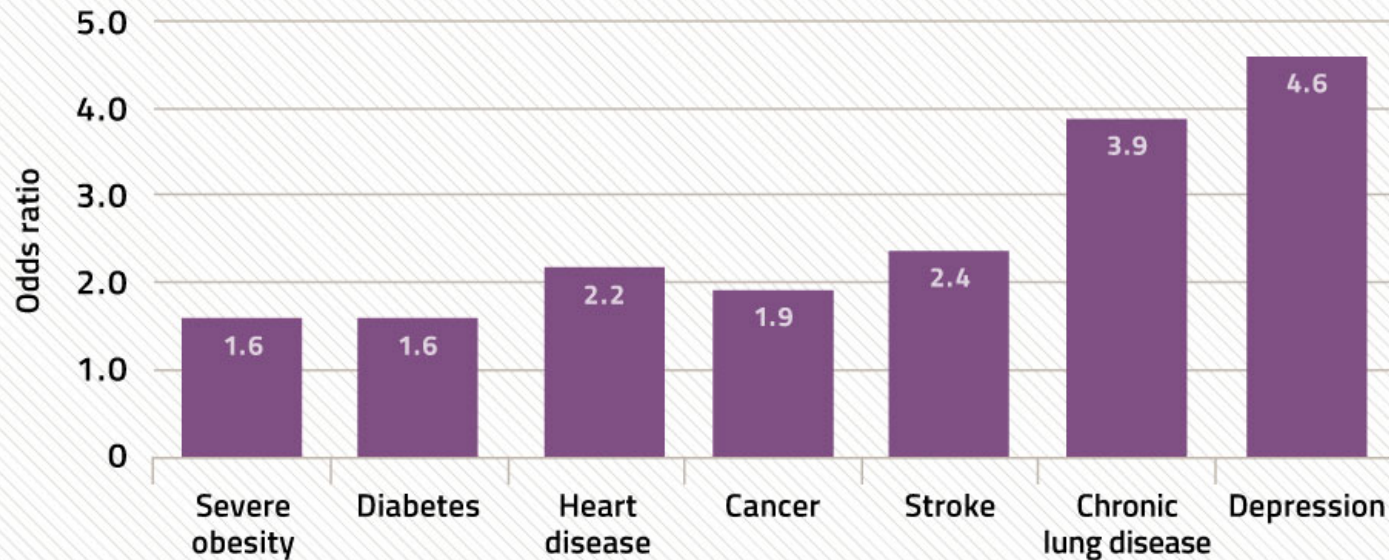
How Adverse Childhood Experiences Can Influence Health Throughout Life



Adapted from Felitti et al., 1998 and Whitfield CL at <http://www.cbwhit.com/ACEstudy.htm>.

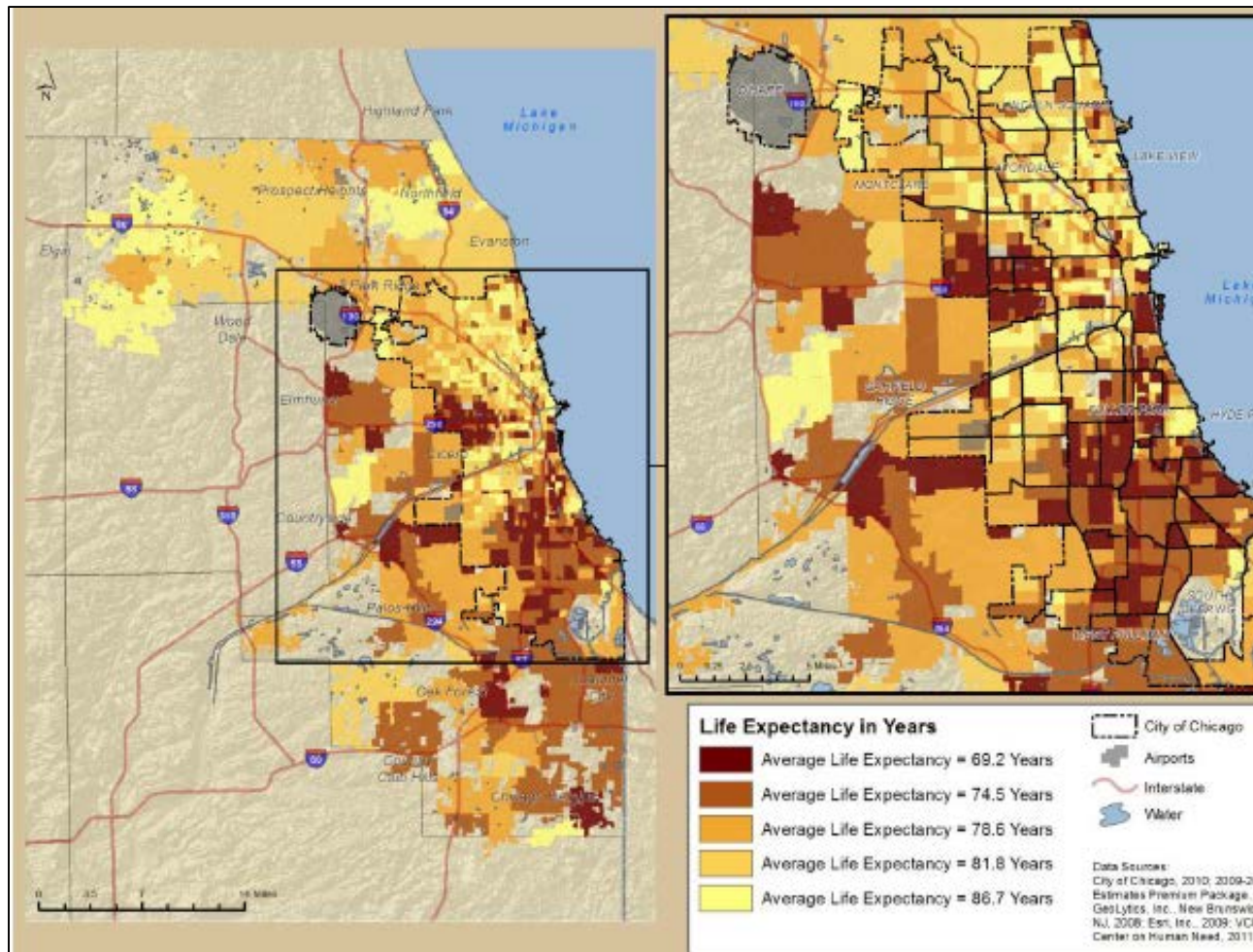
“The body doesn’t forget” (Hayward)

Increased Odds of Adult Diseases After Experiencing Adverse Events* in Childhood

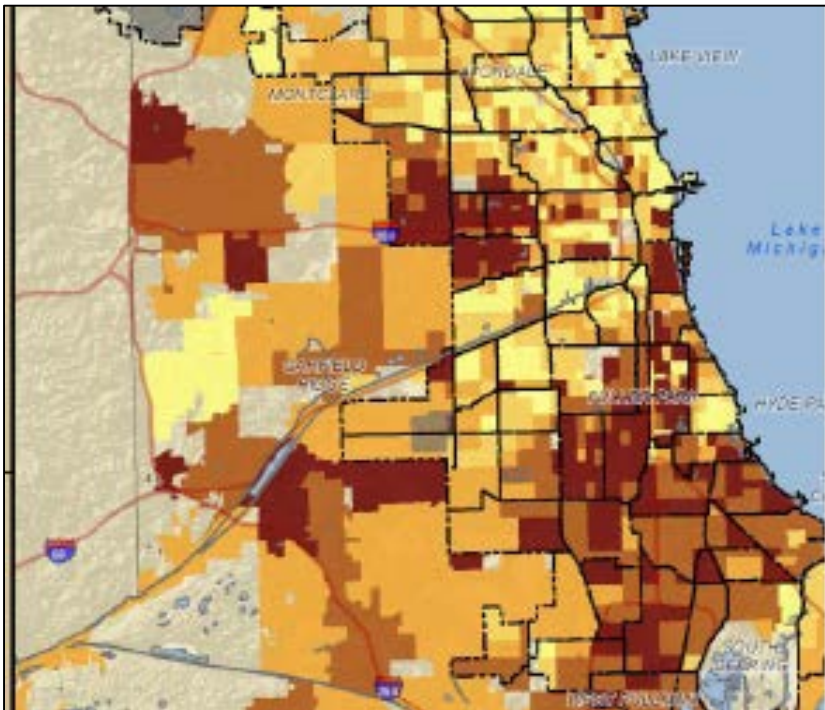


* Odds ratios after exposure to four or more adverse childhood events (see text for description). All odds ratios were statically significant. Data from Adverse Childhood Experiences (ACE) Study, Felitti et al. *Am J Prev Med* 1998;14:245-58.

Life expectancy by census tract, Chicago

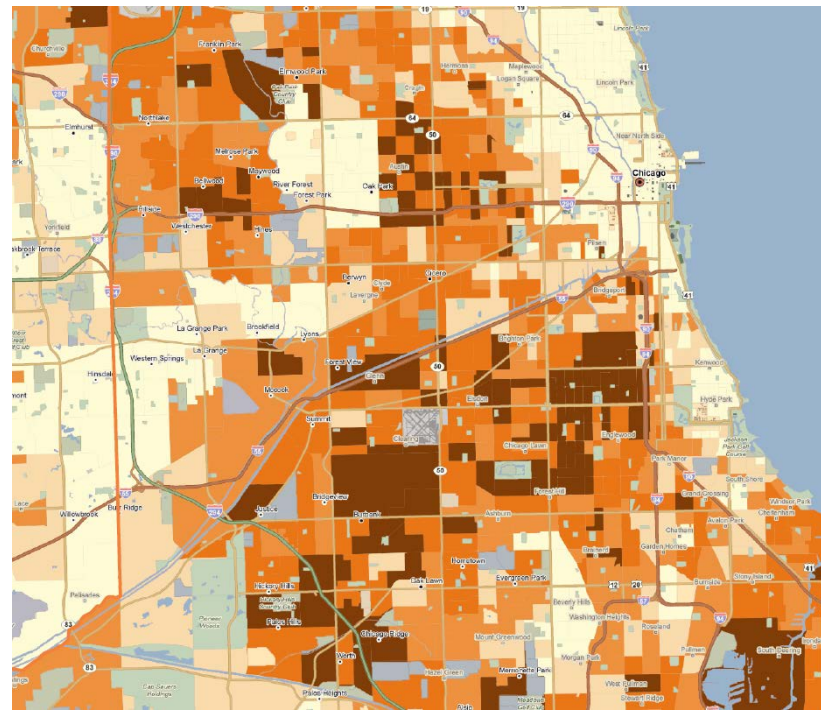


Life expectancy and educational attainment by census tract, Chicago



Life expectancy

Source: VCU Center on Society and Health



High school diploma and no college

Source: VCU Center on Society and Health

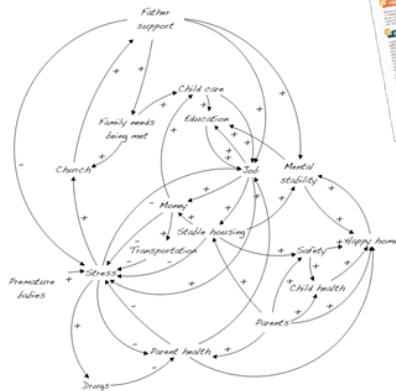


Whole School, Whole Community, Whole Child (WSCC)



- Comprehensive health and education framework
- Developed by CDC and ASCD
- Combines Coordinated School Health and Whole Child
- Requires integration and coordination among and between school and community partners

Together for Healthy and Successful Schools Initiative (RWJF)



- Grantees along with America's Promise and Child Trends
- Applied Research and Translation
 - Using social network analysis, communication science, system dynamics, and dissemination and implementation science to advance WSCC implementation
 - Will produce implementation toolkit focused on key human and systems level factors

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