

# Health Inequity in the United States

## *A Primer*

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*By*  
José J. Escarce, MD, PhD  
University of California at Los Angeles

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By any measure, the United States has a level of health inequity rarely seen among developed nations. The roots of this inequity are deep and complex, and are a function of differences in income, education, race and segregation, and place. In this primer, we provide an overview of these distinctly American problems, and discuss programs and policies that might promote greater health equity in the population.

—José Escarce, MD, PhD

## What is Health Equity?

According to the [World Health Organization \(WHO\)](#),<sup>1</sup>

- *Equity* is the absence of avoidable, unfair, or remediable differences among groups of people, whether those groups are defined socially, economically, demographically or geographically or by other means of stratification.

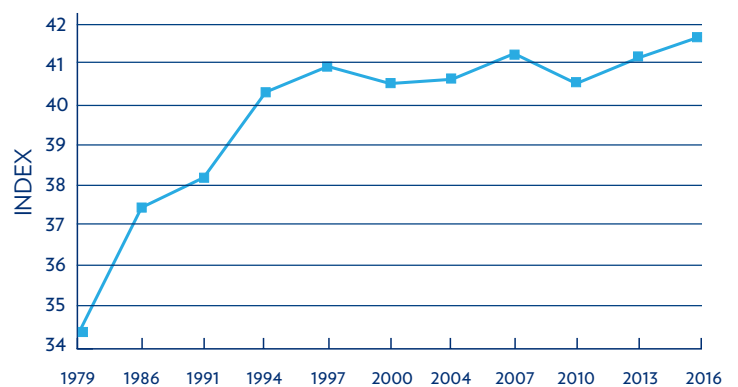
*Health equity* then implies that everyone should have a fair opportunity to obtain their full health potential and that no one should be disadvantaged from achieving this potential.

## Where the U.S. Stands Among Nations

Despite spending more on health care than all other countries in the [Organization for Economic Cooperation and Development \(OECD\)](#), the U.S. has some of the poorest health outcomes.<sup>2</sup> Among 34 other OECD countries, the U.S. ranks 28th in life expectancy and 33rd in infant mortality. A sizable portion of the poor outcomes in the U.S. is attributable to social determinants of health. Notably, while the U.S. has the 11th highest per capita GDP (\$59,532), it also has the

highest poverty rate at 18%, using the OECD measure. The U.S. also ranks last among OECD countries in a measure of income inequality (the [Gini index](#), where higher indicates more inequality), which has grown considerably over the past 40 years (Figure 1).<sup>3</sup>

**Figure 1. Gini Index 1979-2016: Income Inequality has Grown**

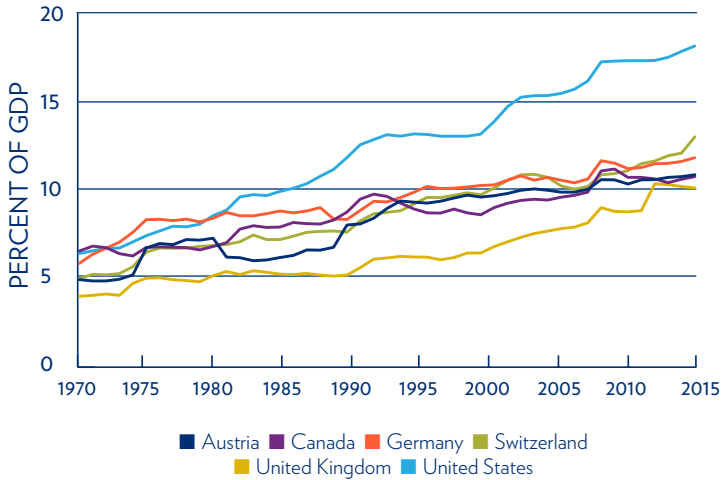


Source: CEIC Data. [United States US: Gini Coefficient \(GINI Index\): World Bank Estimate](#).

At the same time, the U.S. has what appears to be a spectacularly inefficient health care system, spending far more than the next closest country, which is Switzerland (Figure 2). But it wasn't always this way. The U.S. had always been near the top of health care spending, but in the same range as peer nations, until about 1980. And then something happened. While we always talk about the levels of spending, we tend

not to talk about what's happened over the last 40 years that has made the U.S. separate so much from other countries. Economists have proposed various explanations, but debate on the issue remains.

**Figure 2. The Inefficient U.S. Health Care System: Health Care Cost (1970-2016)**



Source: Based on [OECD.Stat data](#)

However, while the health care system is important, health (and health equity) is in large part a function of social and political context, and structural determinants such as social class, education, occupation and income (Figure 3). Our

health is shaped by these factors and how they affect our opportunities to adopt health life styles and behaviors, including diet, and the material circumstances in which we live.

Health equity provides a lens through which to view the factors that influence health in the U.S. and an opportunity to develop solutions. In the next sections, we describe the observed relationships between health equity and income, education, and race and segregation.

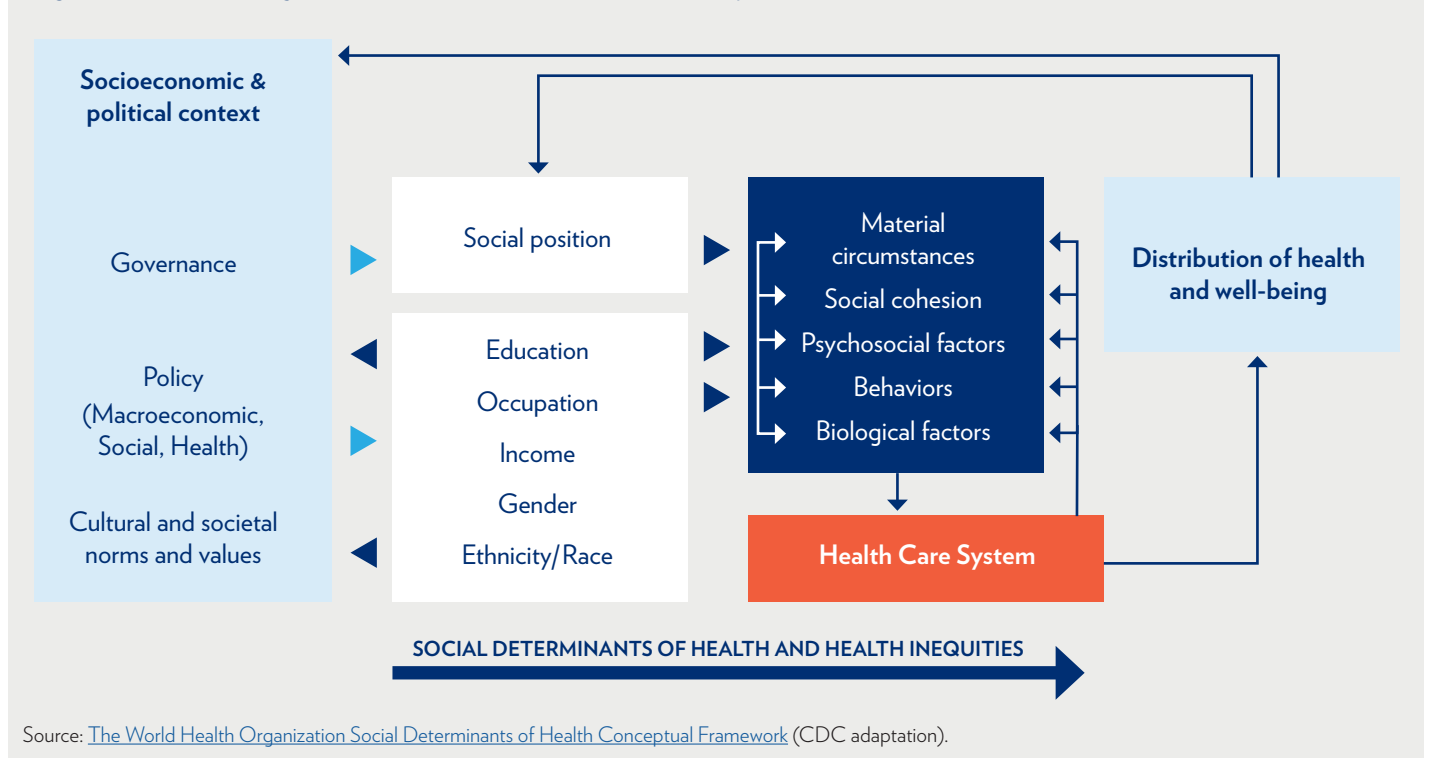
## INCOME

There are [significant differences](#) when we compare the health outcomes of Americans with incomes below 100% of the poverty line and Americans with incomes above 200% of the poverty line. As examples, among many others, Americans below 100% of the poverty line are:<sup>4</sup>

- Less likely to be in excellent or very good health
- More susceptible to develop coronary heart disease, hypertension, diabetes and stroke
- More likely to have a physical limitation

Life expectancy also varies by [income level](#).<sup>5</sup> The expected age at death among 40-year-olds is lowest for individuals with the lowest household income and increases as household income increases (Figure 4). Notably, this is a continuous gradient; it's not the case that the expected age at death plateaus after one reaches a certain income threshold.

**Figure 3. World Health Organization's Social Determinants of Health Conceptual Framework**



Source: [The World Health Organization Social Determinants of Health Conceptual Framework](#) (CDC adaptation).

**Figure 4. Expected Age at Death Among 40-Year-Old Men and Women, by Household Income Percentile**

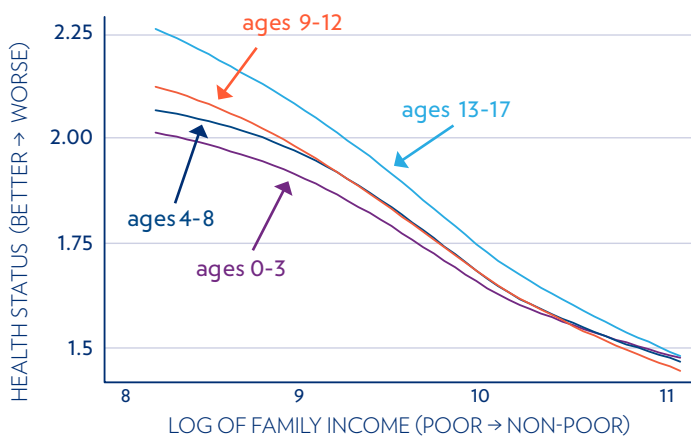


Source: Chetty, R., Stepner, M., Abraham, S., Lin, S., Scuderi, B., Turner, N., Bergeron, A., & Cutler, D. (2016). [The Association Between Income and Life Expectancy in the United States, 2001-2014](#). *JAMA*, 315(16), 1750-1766.

There is a 10-year difference in life expectancy between women in the top 1% of income and women in the bottom 1%, and the disparity is even greater among men, who have a 15-year gap between the highest and lowest incomes. Women at every income group live longer than men do, but the difference narrows among the highest income people.

Unfortunately, these trends are worsening over time. While all income groups gained in life expectancy since 2000, the gains have been greater for the highest earners. Consequently, the gap in life expectancy between the highest earners in society and the lowest earners is increasing. Rather than the lowest earners slowly catching up, they're falling further behind.

**Figure 5. The Origins of the Gradient Between Income and Health: It's There from Birth**



Source: Case, A., Lubotsky, D., & Paxson, C. (2002). [Economic Status and Health in Childhood: The Origins of the Gradient](#). *American Economic Review*, 92(5), 1308-1334.

These data examine life expectancy at age 40, but the relationship between health and income begins at a very young age.<sup>4</sup> Figure 5 shows parents' rating of their children's health (1 is best, 5 is worst), at different levels of parental income. There is a line for kids age 0 to 3, 4 through 8, 9 through 12, and 13 to 17. The first noteworthy point is that even at age 0 to 3, income matters; the higher the child's family income, the better the child's health.

The second point is that income matters more as children get older. The relationship between income and health begins when kids are little, continues, and grows over time. It's not surprising that we see pronounced differences at the end of the lifespan.

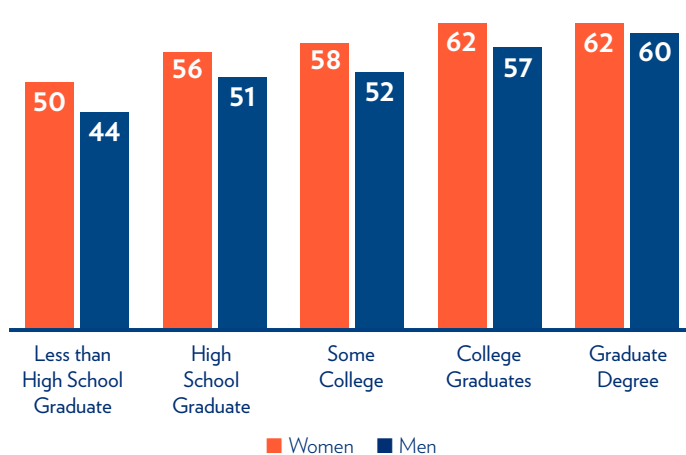
## EDUCATION

When compared with individuals who have [bachelor's degrees](#), individuals with only high school degrees:<sup>6</sup>

- Are less likely to be in excellent or very good health
- Are at a higher risk for hypertension, diabetes, or stroke
- Are more likely to have a physical limitation
- Have a shorter life expectancy

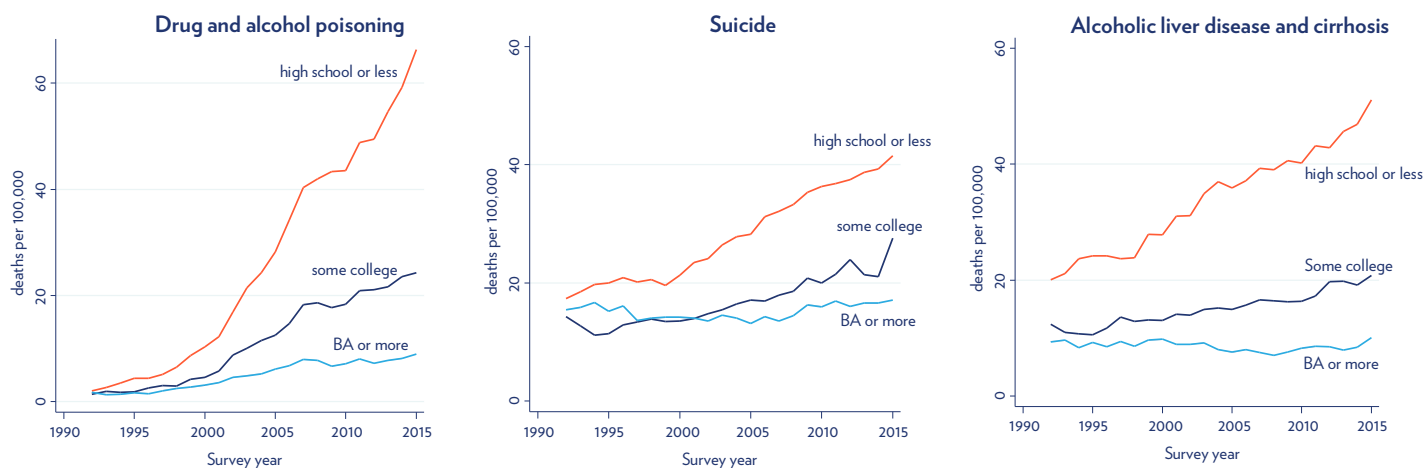
Figure 6 shows [life expectancy](#), this time at age 25 rather than 40, by educational level.<sup>7</sup> Women who have less than high school education can expect to live 50 more years from the age of 25, whereas similar men live an additional 44 years, to age 69, on average. As with income, this is a continuous gradient: the more education you get, the better off you are. Also, as with income, educational gaps in life expectancy are increasing over time.

**Figure 6. Remaining Years of Life for U.S. Adults at Age 25 by Educational Attainment, 2005**



Source: Hummer, R.A. & Hernandez, E.M. (2013). [The Effect of Educational Attainment on Adult Mortality in the United States](#). *Population Bulletin*, 68 (1).

**Figure 7. Expected Age at Death Among 40-Year-Old Men and Women, by Household Income Percentile**



Source: Case, A. & Deaton, A. (2017). *Mortality and Morbidity in the 21st Century*. *Brookings Papers on Economic Activity*, 397–476.

The effect of education on health is particularly topical, given the recent increase in the United States in [death rates among middle-aged whites](#).<sup>8</sup> The increase can partly be attributed to so-called “deaths of despair,” that is, deaths due to suicide, alcohol consumption, and drug use. As shown in Figure 7, deaths of despair have been concentrated among whites who never attended college.<sup>8</sup>

Unfortunately, most recently deaths of despair have begun to spread to younger whites and to people of other racial groups and ethnicities in the U.S., and other countries are beginning to see them as well. Educationally and economically, there are a number of people in these societies that have been “left behind” and that’s having repercussions on their health.

## RACE

Health, inequity, and race are inextricably linked. Some of this can be explained by disadvantages in education and income. For example, in 2017, the median household income for whites was about \$64,000, more than 50% higher than for African Americans. The poverty rate was twice as high for African Americans. The chances of a high school degree were lower

by an appreciable percentage, and much lower with regard to the probability of having a bachelor’s degree. Wealth disparities—the value of your assets, your home, the things you own—are the biggest of all.

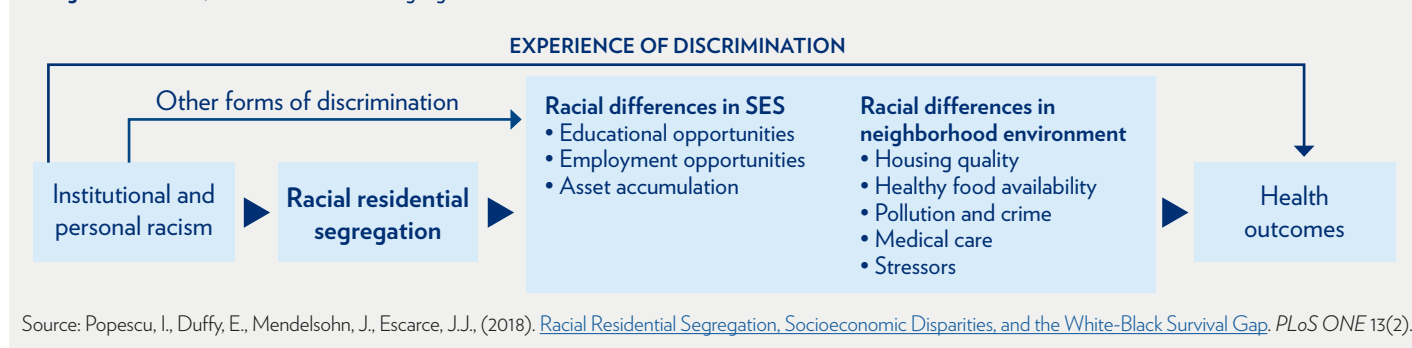
These disparities have health repercussions. Among many other outcomes, compared to whites, African Americans:<sup>6</sup>

- Have a lower life expectancy
- Have higher rates of infant mortality
- Are less likely to be in excellent or very good health
- Are more vulnerable to obesity, coronary heart disease, hypertension, diabetes and stroke

Life expectancy for African American men is about five years less for men and three years less for women than their white counterparts. Infant mortality is almost three times as high.

David Williams, a leading scholar in the country on issues of health status and health disparities, points to residential segregation as a fundamental cause of racial disparities in health. The conceptual model in Figure 8, adapted from his work, explains how racism and residential segregation

**Figure 8. Racism, Racial Residential Segregation and Health**

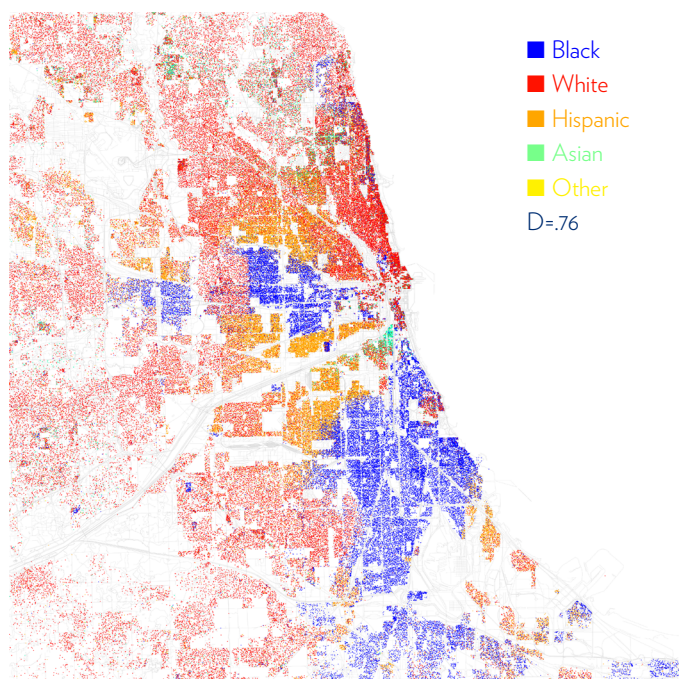


Source: Popescu, I., Duffy, E., Mendelsohn, J., Escarce, J.J., (2018). *Racial Residential Segregation, Socioeconomic Disparities, and the White-Black Survival Gap*. *PLoS ONE* 13(2).

affect health outcomes through differences in educational opportunities, employment opportunities, asset accumulation, and, of course, the neighborhood environment.

What does segregation actually look like? Figure 9 is a map of Chicago, one of the most segregated cities in the U.S. The measure of segregation is the black-white dissimilarity index, which ranges from 0 to 1 and corresponds to the proportion of African Americans who would have to move to fully integrate the city, that is, to make every neighborhood have the same proportion of African Americans and whites.

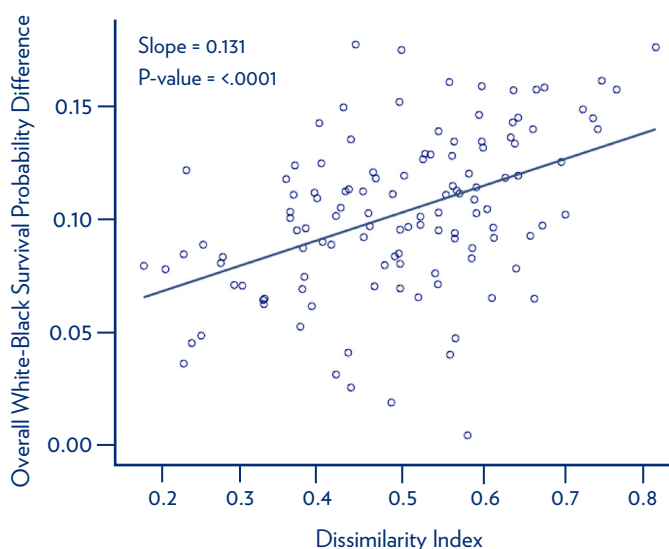
**Figure 9.** Segregation Map of Chicago, 2010



Source: Fisher, E. (2011 March 26). [Race and Ethnicity 2010: Chicago](#).

A [recent study](#) examined the effects of segregation on one measure of life expectancy: the chances that a 35-year old will live to 75.<sup>9</sup> For whites, the chances are 69%; for African Americans they are 59%. Most notably, survival for whites is unaffected by the level of integration. By contrast, the probability that a 35-year old African American survives to age 75 decreases for African Americans as the degree of segregation increases. Figure 10 depicts the relationship between segregation and survival from age 35 to age 75 in 122 big metropolitan areas in the United States. The graph shows that the gap increases from about 7 percentage points in the least segregated cities to nearly 15 percentage points in the most segregated.

**Figure 10.** Racial Gap in Survival vs. Segregation



Escarce, J.J. (2016, January). [Residential Segregation, the White-Black Income Gap, and White-Black Disparities in Premature Mortality](#). Presented at the National Academy of Social Insurance 28th Annual Policy Research Conference

## Programs and Policies

A number of program and policies have shown promise in reducing the health equity gap in the U.S., even if they are not primarily focused on health.

**The Earned Income Tax Credit (EITC)** is money that low-income working families get from the Federal government, similar to a negative income tax. If you work but make less than a certain amount, you actually receive money from the Federal government, and how much money you get depends on how much you make and how many children you have. The amount you receive increases for a while, then flattens out for a while, and then decreases to zero at higher incomes. If you don't have children, you get very little, about \$500 a year, but if you have three children, you get up to \$6,500 or so. For a family making, say \$40,000, \$6,500 is a lot of money.

The EITC, which is a transfer of money to working people, has [profound health effects](#) on the people who receive it, as shown in Figure 11.<sup>10</sup>

The **Food Stamps Program**, which provides a voucher for food for all families who qualify by income, also functions as a cash transfer.<sup>11</sup> People were spending money on food anyway and the food stamps allow them to use their money for something else. It is similar in this way to the EITC, although more people receive it and the amounts are lower.



**Figure 11. Effects of Income Transfer on Maternal and Neonatal Health: Earned Income Tax Credit**

**Maternal health:**

- ↑ Self-rated health
- ↓ Days in poor mental health
- ↓ Risky biomarkers

**Infant health:**

- ↓ Low birth weight

	Effect of treatment
<b>All births</b>	
2nd child	↓ 0.2% *
3rd child	↓ 0.5% **
<b>African-American births</b>	
2nd child	↓ 0.3% *
3rd child	↓ 1.0% **

\*p<.05, \*\*p<.01

Source: Evans, W. N. & Garthwaite, C. L. (2014). [Giving Mom a Break: The Impact of Higher EITC Payments on Maternal Health](#). *American Economic Journal: Economic Policy*, 6(2), 258-90.

Remarkably, the [health effects](#) are substantial for adults who received food stamps as children, or whose mothers received food stamps while pregnant.<sup>12</sup> These adults have garnered the following health benefits:

- Lower rates of obesity (men and women)
- Lower rates of stunted growth (men and women)
- Lower rates of metabolic syndrome (men and women)
- Higher rates of self-rated health (women)

**Minimum Wage Laws**, another form of money transfer, have also been shown to provide health benefits to low-income workers. Although this [research](#) is in its early stages, documented benefits include:<sup>13</sup>

- Reduction in smoking
- Improvement in mental health
- Decrease in non-drug suicides
- Overall increase in general health
- Fewer missed work days due to illness

The data on the EITC and the Food Stamps Program demonstrate the long reach of a policy, many years later, a

phenomenon also seen with early childhood interventions. Two preschool interventions have been evaluated in randomized trials, and have shown impressive long-term results.

From 1962-1967, [The Perry Preschool Project](#) offered high-quality preschool program for African American children from low-income families in East Lansing, Michigan. As shown in Figure 12, at age 40, participants reported [significant health benefits](#) compared to those who were not in the program.<sup>14</sup> Men were less likely to be a daily smoker, less likely to be a heavy smoker, and smoked less cigarettes per day. Women reported significantly higher rates of physical activity.

**Figure 12. Long-term Effects of Preschool Education and Parenting Guidance on Health Behaviors: Perry Preschool Project**

	Control Group	Treatment Group	
<b>Men (age 40)</b>			
Daily smoke	53%	33%	*
Heavy smoker	26%	7.1%	**
No. cigarettes per day	6.5	3.7	**
<b>Women (age 40)</b>			
Physical activity	4.5%	38%	***

\*p<.10, \*\*p<.05, \*\*\*p<.01

Source: Heckman, J.J., Pinto, R., & Savelyev, P. (2013). [Understanding the Mechanisms Through Which an Influential Early Childhood Program Boosted Adult Outcomes](#). *American Economic Review*, 103(6), 2052-2086.

Later in the 1970s, the Cadillac of preschool programs, [the Abecedarian Project](#) began in Raleigh, North Carolina. It was a powerful wraparound intervention that also provided families with medical care, well child visits, nutritional assistance, and preschool. Kids were in preschool for nine hours a day, five days a week, 50 weeks a year. They were given healthy meals, and their parents were coached on how to raise their children in healthier ways.

Researchers [compared](#) the long-term health outcomes between children who were in the program and children who were not (Figure 13).<sup>15</sup> When followed into their 30s, men who participated in the preschool and nutritional program reported taller heights and higher HDL cholesterol, as well as lower:

- Body mass index (BMI)
- Rates of metabolic syndrome

- Framingham risk score (predictor of cardiac events in the next 10 years)
- Incidence of vitamin D deficiency
- Rates of hypertension

Women who participated in the program reported the following health benefits in their 30s:

- Lower Framingham risk score
- Higher physical activity levels
- More fruit servings per day

**Figure 13. Long-term Effects of Intensive Preschool, Nutritional Support and Healthcare Access on Health and Health Behaviors: Abecedarian Project**

	Control Group	Treatment Group	
<b>Men (age 30s)</b>			
Height (m)	1.74	1.79	**
BMI	33.3	29.2	*
Hypertension	56%	21%	**
HDL cholesterol (mg/dL)	42.0	53.2	*
Metabolic syndrome	25%	0%	***
Framingham risk score	7.0	4.9	**
Vitamin D deficiency	75%	37%	**
<b>Women (age 30s)</b>			
Framingham risk score	1.5	1.1	*
Physical activity	7.1%	32%	**
Fruit servings per day	0.3	0.8	***

\*p<.10, \*\*p<.05, \*\*\*p<.01

Source: Campbell, F., Conti, G., Heckman, J.J., Moon, S.H., Pinto, R., Pungello, E., & Pan, Y. (2014). *Early Childhood Investments Substantially Boost Adult Health*. *Science*, 343(6178), 1478-1485.

It's worth underscoring that these are just the health outcomes, because the outcomes with regard to personality traits, resilience, self-management are all remarkable, as are the educational and economic outcomes. Nonetheless, the health outcomes themselves are pretty amazing.

We've reviewed programs that have had a substantial impact on health, although they were not designed specifically as health programs. Naturally, describing the health effects of insurance expansions is also important, keeping health equity in mind.

**Medicaid Expansions** in the late 80s and early 90s broadened Medicaid coverage to pregnant women with incomes up to 185% of poverty, and slowly expanded coverage to children with similar incomes as well. The expansions have had substantial positive health effects for various groups.

- Medicaid expansions for [pregnant women](#) resulted in reduced incidence of low birth weight babies and reduced infant mortality.<sup>16</sup> Further, the beneficial effects on children of extending insurance coverage to low-income pregnant women continued at least until the children reached age 19, most significantly among African Americans. These effects included:
  - Lower rates of chronic conditions, including diabetes and hypertension
  - Fewer reports of psychological distress
  - Reduced hospitalizations for chronic conditions
- Medicaid expansions for children aged 8 to 14 lead to a [reduction in hospitalizations](#) for chronic conditions among African Americans at age 25.<sup>17</sup>

Finally, there is the **Affordable Care Act (ACA)**, passed in 2010, for which the long-term effects cannot yet be measured. This research on the ACA is very new, but already there is evidence of health benefits from the Medicaid expansion under the ACA. For adults ages 19-64, studies<sup>18,19</sup> have demonstrated that Medicaid expansion was associated with:

- Better self-rated health
- Reductions in days in poor mental health
- Overall reduction in mortality

The consistent improvements in mental health from cash transfers or insurance expansions are especially noteworthy, and suggest that anxiety and worry are constant companions of not having enough money. Anxiety and worry, of course, can also affect physical health.

## Summary

The U.S. ranks poorly among OECD countries in life expectancy and infant mortality. There's a high, and growing, income inequality and we outspend our peer nations on health care. Not surprisingly, there are inequities in health, based on income, educational attainment, race, and place.




These inequities, or at least the ones based on income and education, appear to be growing over time. Policies to improve material resources for the poor, support parents and especially children, early in life, and extend health insurance coverage have shown promise in reducing health inequities. In the big picture, however, fundamental structural issues in our society that shape people's opportunities are by far the most important. It's likely that the only way to achieve health equity, rather than simply reduce inequities, is to tackle and solve these structural issues.

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**Penn LDI**  
LEONARD DAVIS INSTITUTE  
*of HEALTH ECONOMICS*

COLONIAL PENN CENTER  
3641 LOCUST WALK  
PHILADELPHIA, PA 19104  
LDI.UPENN.EDU  
 @PENNLDI