Social Determinants of Health

Nonclinical Factors of Population Health

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Institute of Medicine Report

Fulfilling this vision [of improving population health] begins with the recognition that outcomes such as improved life expectancy, quality of life, and health for all are shaped by interdependent social, economic, environmental, genetic, behavioral, and health care factors and that achieving these outcomes will ***require robust national and community-based policies and dependable resources****.*

Source: IOM (Institute of Medicine). 2015. Financing population health improvement: Workshop summary. Washington, DC: The National Academies Press.

A PUBLIC HEALTH FRAMEWORK FOR REDUCING HEALTH INEQUITIES
BAY AREA REGIONAL HEALTH INEQUITIES INITIATIVE

Estimated Deaths Attributable to Social Factors in the U.S.

Low education:	245,000
Racial segregation:	176,000
Low social support:	162,000
Individual level poverty:	133,000
Income inequality:	119,000
Area level poverty:	39,000

In comparison:

Acute MI:	192,898
Cerebrovascular disease:	167,661
Lung cancer:	155,521

Estimated Deaths Attributable to Social Factors in the US. Galea S et.al. AJPH: June 16, 2011;eprint.

Clinical Review & Education

Special Communication

The Association Between Income and Life Expectancy in the United States, 2001-2014

Raj Chetty, PhD; Michael Stepner, BA; Sarah Abraham, BA; Shelby Lin, MPhil; Benjamin Scuderi, BA; Nicholas Turner, PhD; Augustin Bergeron, MA; David Cutler, PhD

IMPORTANCE The relationship between income and life expectancy is well established but remains poorly understood.

OBJECTIVES To measure the level, time trend, and geographic variability in the association between income and life expectancy and to identify factors related to small area variation.

DESIGN AND SETTING Income data for the US population were obtained from 1.4 billion deidentified tax records between 1999 and 2014. Mortality data were obtained from Social Security Administration death records. These data were used to estimate race- and ethnicity-adjusted life expectancy at 40 years of age by household income percentile, sex, and geographic area, and to evaluate factors associated with differences in life expectancy.

EXPOSURE Pretax household earnings as a measure of income.

MAIN OUTCOMES AND MEASURES Relationship between income and life expectancy; trends in life expectancy by income group; geographic variation in life expectancy levels and trends by income group; and factors associated with differences in life expectancy across areas.

RESULTS The sample consisted of 1 408 287 218 person-year observations for individuals aged 40 to 76 years (mean age, 53.0 years; median household earnings among working individuals, $61 175 per year). There were 4 114 380 deaths among men (mortality rate, 596.3 per 100 000) and 2 694 808 deaths among women (mortality rate, 375.1 per 100 000). The analysis yielded 4 results. First, higher income was associated with greater longevity throughout the income distribution. The gap in life expectancy between the richest 1% and poorest 1% of individuals was 14.6 years (95% CI, 14.4 to 14.8 years) for men and 10.1 years (95% CI, 9.9 to 10.3 years) for women. Second, inequality in life expectancy increased over time. Between 2001 and 2014, life expectancy increased by 2.34 years for men and 2.91 years for women in the top 5% of the income distribution, but by only 0.32 years for men and 0.04 years for women in the bottom 5% ($P < .001$ for the differences for both sexes). Third, life expectancy for low-income individuals varied substantially across local areas. In the bottom income quartile, life expectancy differed by approximately 4.5 years between areas with the highest and lowest longevity. Changes in life expectancy between 2001 and 2014 ranged from gains of more than 4 years to losses of more than 2 years across areas. Fourth, geographic differences in life expectancy for individuals in the lowest income quartile were significantly correlated with health behaviors such as smoking ($r = -0.69$, $P < .001$), but were not significantly correlated with access to medical care, physical environmental factors, income inequality, or labor market conditions. Life expectancy for low-income individuals was positively correlated with the local area fraction of immigrants ($r = 0.72$, $P < .001$), fraction of college graduates ($r = 0.42$, $P < .001$), and government expenditures ($r = 0.57$, $P < .001$).

CONCLUSIONS AND RELEVANCE In the United States between 2001 and 2014, higher income was associated with greater longevity, and differences in life expectancy across income groups increased over time. However, the association between life expectancy and income varied substantially across areas; differences in longevity across income groups decreased in some areas and increased in others. The differences in life expectancy were correlated with health behaviors and local area characteristics.

Editorials pages 1703, 1706 and 1709

Author Audio Interview at jama.com

Video at jama.com

Supplemental content at jama.com

CME Quiz at jamanetworkcme.com

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- Higher income → greater longevity throughout the income distribution.
- The gap between the richest 1% and poorest 1% was 14.6 years for men and 10.1 for women.
- Life expectancy for low-income individuals associated with **more immigrants, college graduates, and government expenditures**.

The Effect of an Increased Minimum Wage on Infant Mortality and Birth Weight

Kelli A. Komro, PhD, MPH, Melvin D. Livingston, PhD, Sara Markowitz, PhD, and Alexander C. Wagenaar, PhD

Objectives. To investigate the effects of state minimum wage laws on low birth weight and infant mortality in the United States.

Methods. We estimated the effects of state-level minimum wage laws using a difference-in-differences approach on rates of low birth weight (< 2500 g) and postneonatal mortality (28–364 days) by state and month from 1980 through 2011. All models included state and year fixed effects as well as state-specific covariates.

Results. Across all models, a dollar increase in the minimum wage above the federal level was associated with a 1% to 2% decrease in low birth weight births and a 4% decrease in postneonatal mortality.

Conclusions. If all states in 2014 had increased their minimum wages by 1 dollar, there would likely have been 2790 fewer low birth weight births and 518 fewer postneonatal deaths for the year. (*Am J Public Health.* 2016;106:1514–1516. doi: 10.2105/AJPH.2016.303268)

Previous research has consistently linked low income with increased risk of premature mortality throughout the life span.[1,2] As a stark example, the US excess infant mortality rate (defined in comparison with 4 peer countries) during the postneonatal

the most studied topics and have long examined potential deleterious market effects related to legislated increases in minimum wage. A recent review found no significant employment loss from modest increases in minimum wage,[7] although scientific debate

wages are associated with reduced rates of low birth weight infants and infant mortality.[10]

METHODS

The main independent variable is the state-level minimum wage for each of the 50 states by month from 1980 through 2011 on the basis of the effective date (not passage date) of legislative bills passed by legislatures and signed into law by state governors and then codified into statutory records. In cases in which 1 law includes multiple changes in minimum wage (e.g., a phase-in period), we coded each change separately. We completed data collection and coding with extensive quality control procedures, including blinded independent coding of a random sample of items by 2 trained legal researchers, who demonstrated a first-pass agreement score of 86%. A

"…a dollar increase in the minimum wage above the federal level was associated with a 1% to 2% decrease in low birth weight births and a 4% decrease in postneonatal mortality."

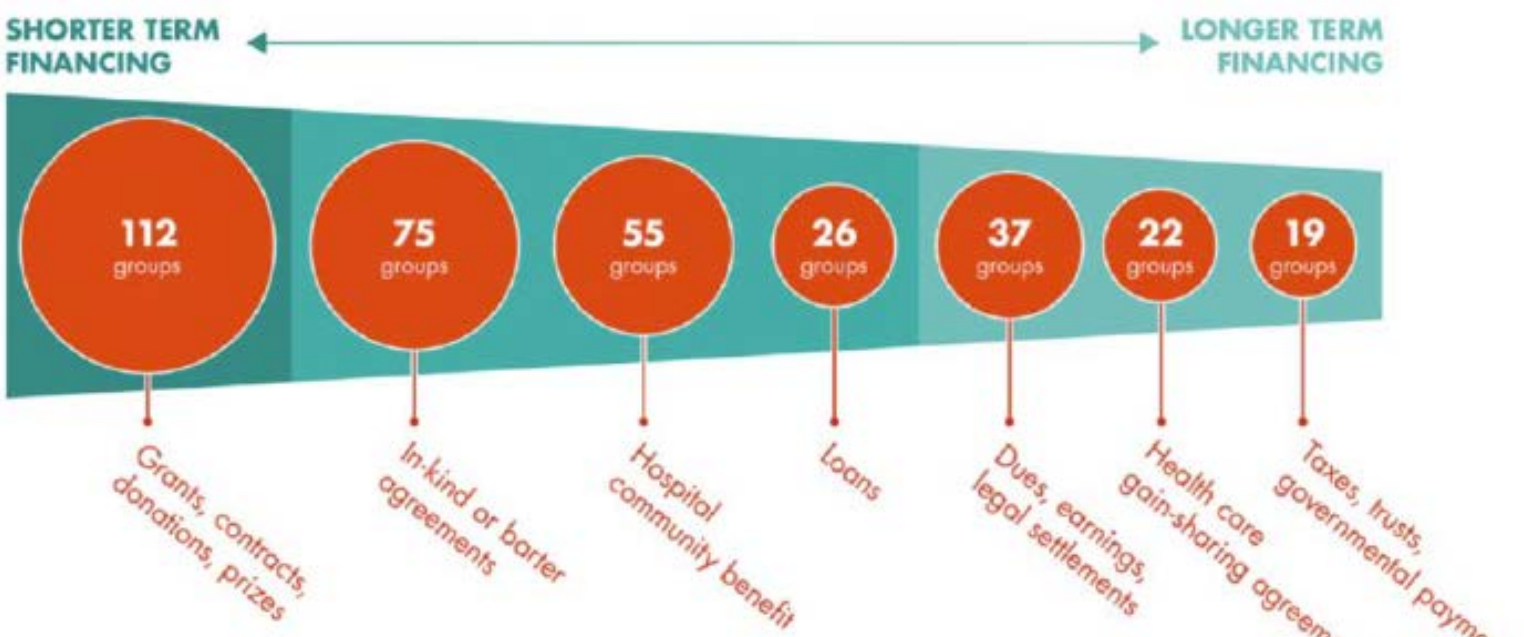
"If all states in 2014 had increased their minimum wages by 1 dollar there would have been 2790 fewer low weight births and 518 fewer postneonatal deaths for the year."

What Nonclinical Factors Should We Be Financing?

- Livable wages
- Affordable housing
- K-12 public education
- Higher education
- Community-based, culturally grounded prevention strategies
- Community/neighborhood infrastructure; built environment

Current Financing Mechanisms

Figure 9. **Use of long-term versus short-term financing mechanisms across groups** (n=115; median=3)



Erickson, J., Branscomb, J., Milstein, B. *Multi-sector partnerships for health: 2014 pulse check findings.* Cambridge, MA. ReThink Health, 2015.

Table B-6. Financing Mechanisms by Category

Grants, contracts, donations, prizes

- Academic centers
- Banks
- Businesses
- Government agencies
- Healthcare providers
- Individuals
- Insurers
- Philanthropy/United Way
- Other
- Donations, fundraisers, crowdsourcing
- Competitions, prizes

In-kind or barter arrangements

- In-kind contributions, barter agreements
- Shared services/shared cost agreement

Hospital community benefit

Dues, earnings, legal settlements

- Dues or membership fees
- Earned income, service, or management fees
- Investment income or equity investments
- Legal settlements

Community development financing

Health care gain sharing agreements

- Accountable care organizations (under Medicare)
- Accountable care organizations (with private payers)
- Accountable care community (accountable health community, etc.)

Other payment reforms

- Medicaid waiver
- Patient centered medical home (or related primary care reforms)
- Payment reform (condition-based, capitated, global, etc.)
- Other

Taxes, trusts, governmental payments

- Tax assessments, levies, credits, and exemptions
- Bond issue
- Health and wellness trust

Loans

- Social impact investment or venture capital investment (e.g., pay for success, capital for scaling, etc.)
- Line of credit
- Debt financing (loan guarantees)

Institute of Medicine Report

A fundamental but often overlooked driver of the imbalance between spending and outcomes is ***the nation's inadequate investment in nonclinical strategies that promote health and prevent disease and injury population-wide****, strategies that fall under the rubric of "population health."*

Source: IOM (Institute of Medicine). 2015. Financing population health improvement: Workshop summary. Washington, DC: The National Academies Press.