

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

#### Take Away Points

- Life expectancy is positively associated with income.
  - The richest 1% of people live longer than the poorest 1%.
    - 14.6 years for men and 10.1 years for women
- Overall, inequality in life expectancy increased in recent years as did income disparity.
- Nonetheless, life expectancy for low-income individuals varies substantially by location, differing by 4.5 years among those in the bottom income quartile.
- Low-income individuals tend to live longest (and have more healthful behaviors) in cities with highly educated populations, high incomes, and high levels of government expenditures. These individuals also experienced the largest gains in life expectancy during the 2000s.

#### The Issue

Addressing socioeconomic disparities in health is a major policy goal. Higher incomes are associated with longer life expectancy, but several aspects of the relationship between income and longevity remain unclear. Based on newly available data on income and mortality for the U.S. population from 1999 through 2014, this study explores the following relationships:

- 1) Characterizing association between life expectancy at 40 years of age and income in the U.S. as a whole
- 2) Estimating the change in life expectancy by income group from 2001 through 2014
- 3) Mapping geographic variation in life expectancy by income group and over time
- 4) Evaluating factors associated with differences in longevity using the variation across areas

#### Source

Chetty R, Stepner M, Abraham S, Lin S, et al. (2016). The Association Between Income and Life Expectancy in the United States, 2001-2014. *JAMA* 2016;315:1750-66.  
<http://jama.jamanetwork.com/article.aspx?articleid=2513561>

#### Study Methods and Design

This study utilized a number of databases:

Income – Obtained from federal income tax data for every individual every year from 1999-2014.

- Primary outcome measure= Pretax household earnings

Mortality – Measured using Social Security Administration (SSA) death records.

Period of Life Expectancy – Expected length of life for a hypothetical individual who experiences mortality rates at each subsequent age, matching those in the cross-section during a given year.

#### Key Findings and Limitations

- Higher income was associated with longer life throughout the income distribution.
  - **Men** in the bottom 1% of income distribution at age 40 years had an expected age of death 14.6 years earlier than the top 1% of men (72.7 years vs. 87.3 years).
  - **Women** in the bottom 1% of income distribution at age 40 had an expected age of death 10.1 years earlier than the top 1% of women (78.8 years vs. 88.9 years)

- *Life expectancy varied much less between men and women at higher income levels, with women living only 1.5 years longer than men when both were in the top 1% of income distribution.*
- *Higher income groups experienced significant increases in life expectancy during the 2000s.*
  - Individuals in the top 5% of the income distribution gained approximately 3 years of life expectancy, whereas those in the bottom 5% experienced no gains.
- *Life expectancy varied significantly across areas within the U.S., especially for low-income individuals, but minimally for high-income individuals.*
- Life expectancy also varied substantially across local areas regardless of income group.
  - Life expectancy in the South was well below the national average.
  - For individuals in the bottom income quartile, life expectancy in the South was more similar to the national mean.
  - The shortest life expectancy was found in Oklahoma and in cities in the rust belt, such as Gary, Indiana and Toledo, Ohio.
- *Differences in life expectancy were highly correlated with health behaviors (smoking, obesity, and exercise); i.e., the poor smoke more, suffer from more obesity and exercise less.*
  - Life expectancy was negatively associated with smoking and obesity, and positively correlated with exercise rates among individuals in the bottom income quartile.
  - The majority of the variation in mortality rates across areas among low-income individuals was related to medical causes, such as heart disease and cancer, rather than external causes, such as vehicle crashes, suicide, and homicide.
- Life Expectancy of low-income individuals did **not** correlate with 4 major factors:
  - Access to health care: **Not** significantly correlated with measures of quantity and quality of medical care provided. There was also a noted lack of change in mortality rates for individuals when they became eligible for Medicare.
  - Environmental Factors and Residential Segregation: Life expectancy among individuals in the lowest income quartile was higher in more segregated areas – both in absolute terms and relative to individuals in the highest income quartile.
  - Income Inequality and Social Cohesion: Inequality was more negatively correlated with life expectancy for individuals in the highest income quartile, contrary to the prediction that inequality has the most adverse effects on the health of low-income individuals.
  - Local Labor Market Conditions: Neither unemployment nor long-term population and labor force change were significantly associated with life expectancy for individuals in the lowest income quartile.
- **Limitations**: The relationships between income and life expectancy should not be interpreted as casual effects of having more money, because income is correlated with other attributes (i.e., diet and rates of smoking and exercise) that directly affect health.

### Final Thoughts

- In order to reduce gaps in life expectancy, changes in policy (i.e., interventions or targeted taxes) may be required to promote healthy behaviors among low income populations.