Income and Longevity: Implications for Retirement and Disability Programs

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Clinical Review & Education

Special Communication

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

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The opinions expressed in this paper are those of the authors alone and do not necessarily reflect the views of the Internal Revenue Service, the U.S. Treasury Department, the Social Security Administration, or any other agency of the Federal Government.

Introduction

- Relationship between income and longevity is well known

  [e.g., Kitagawa and Hauser 1973, Pappas et al. 1993, Williams and Collins 1995, Cutler, Deaton, Lleras-Muney 2006, Olshansky et al. 2012, Waldron 2007, 2013]

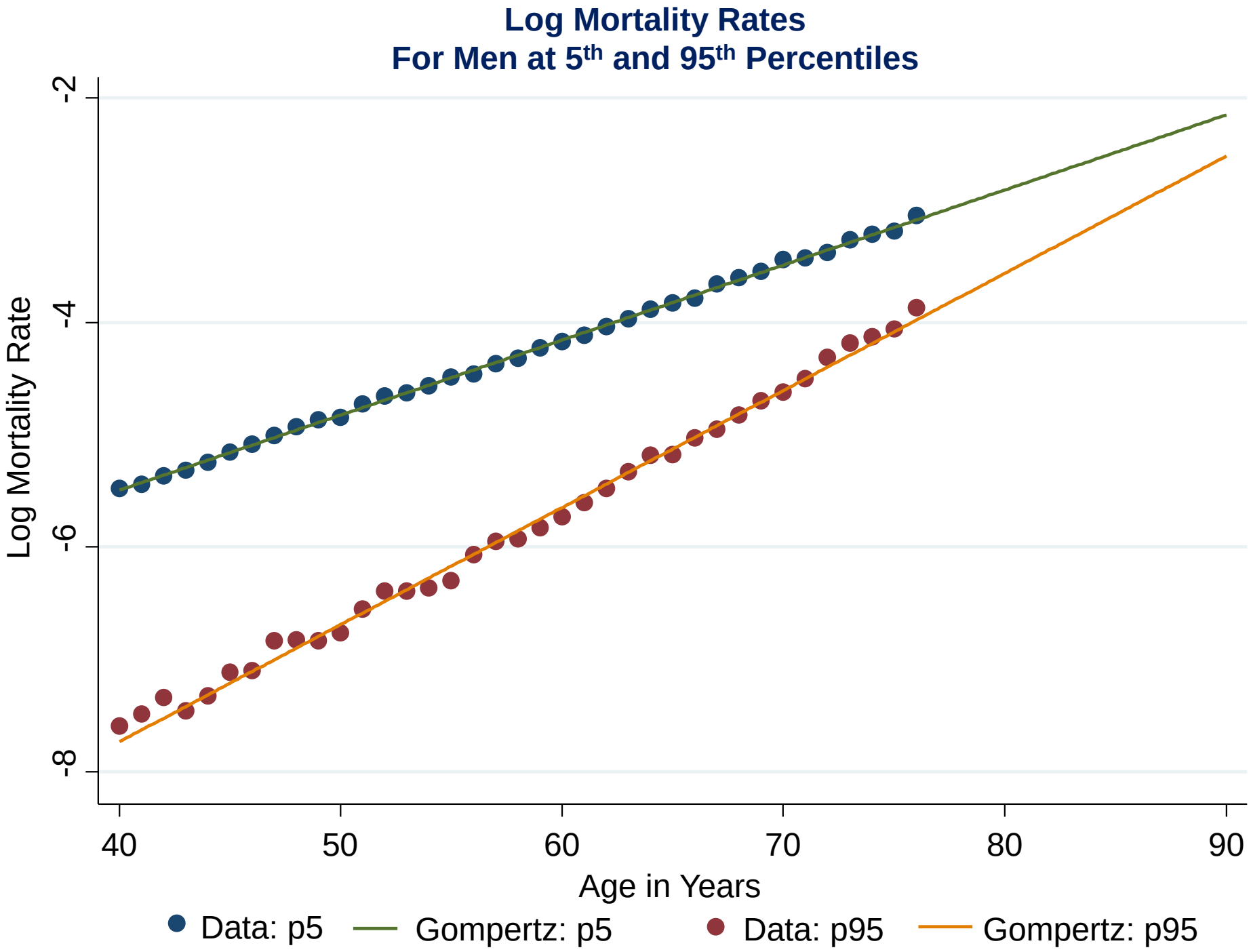
- But several questions remain:

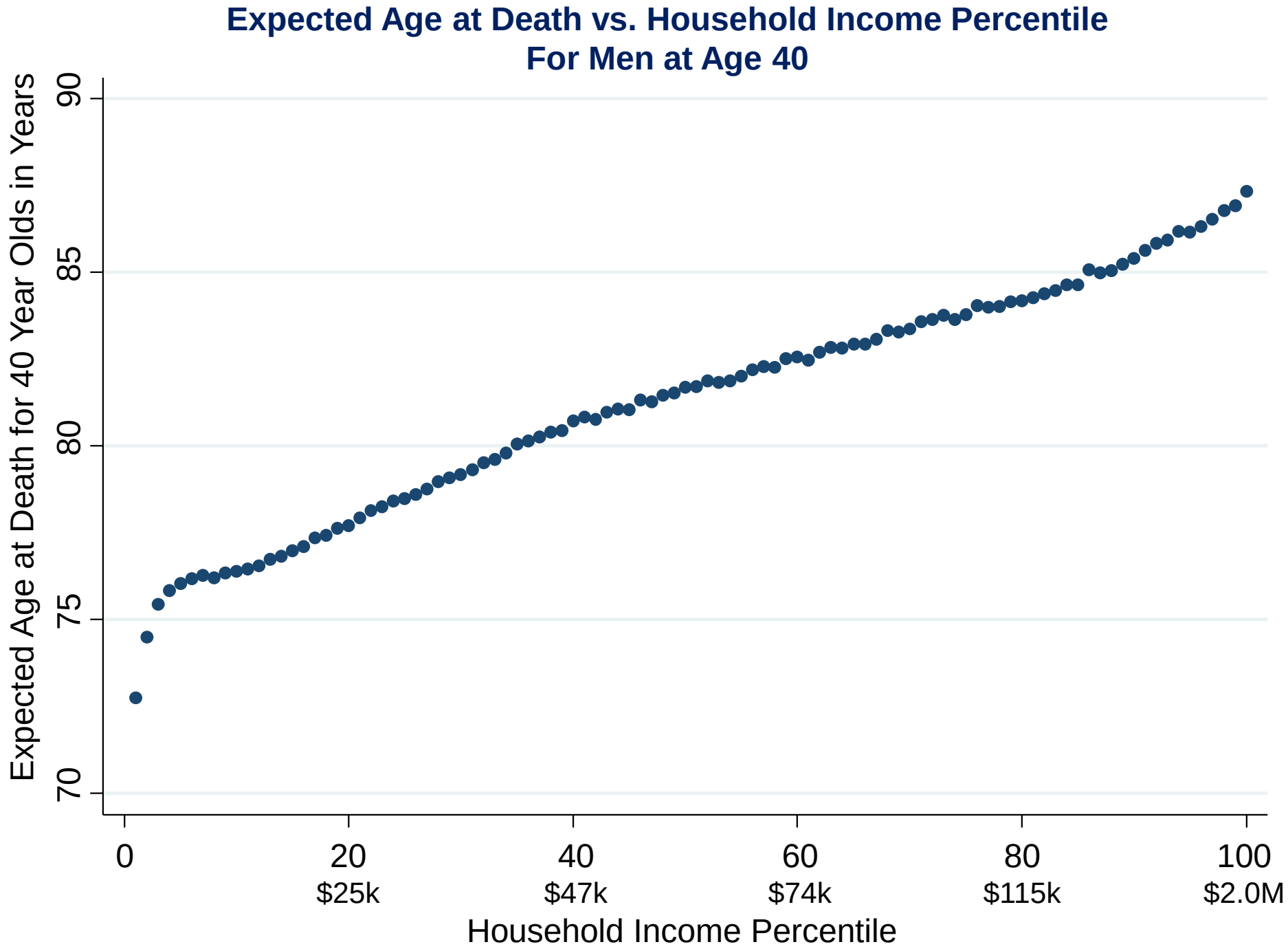
  1. What is the shape? How is it changing?
  2. What are the implications for policy?

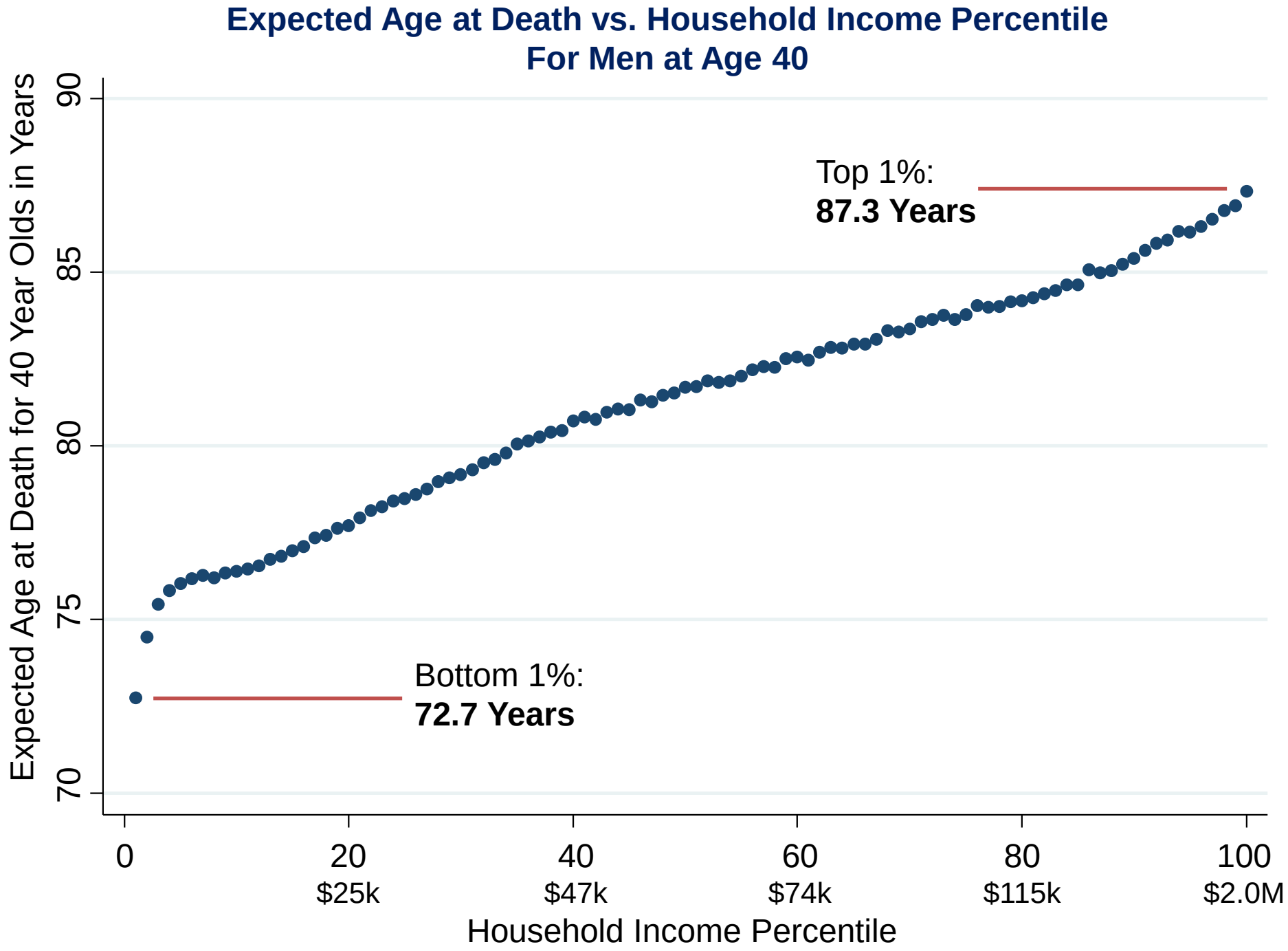
Data and Methods

- We use data covering U.S. population from 1999-2014 (1.4 billion obs.) to characterize income-mortality gradient
    - Measure income at household level using de-identified tax returns
    - In each year, rank individuals in national income distribution relative to others of same age and gender
    - Measure mortality using Social Security death records
- Construct mortality rates by age and gender and estimate life expectancy based on income percentile at age 40
- Report estimates that are adjusted for differences in life expectancy across racial and ethnic groups
- Leave out people with zero income (hard to know if they are in the country).

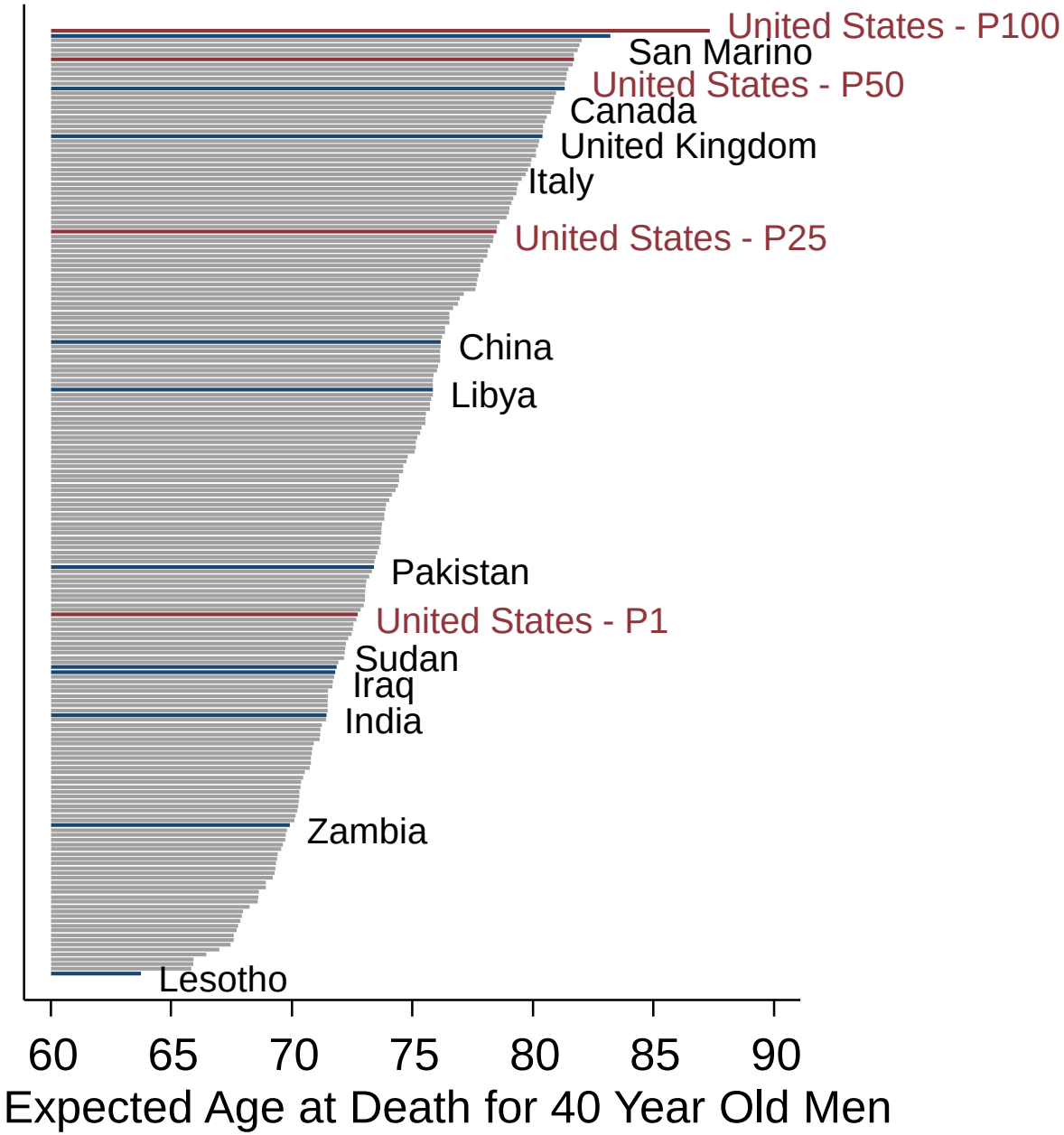
Mortality Rates and Trends in Life Expectancy

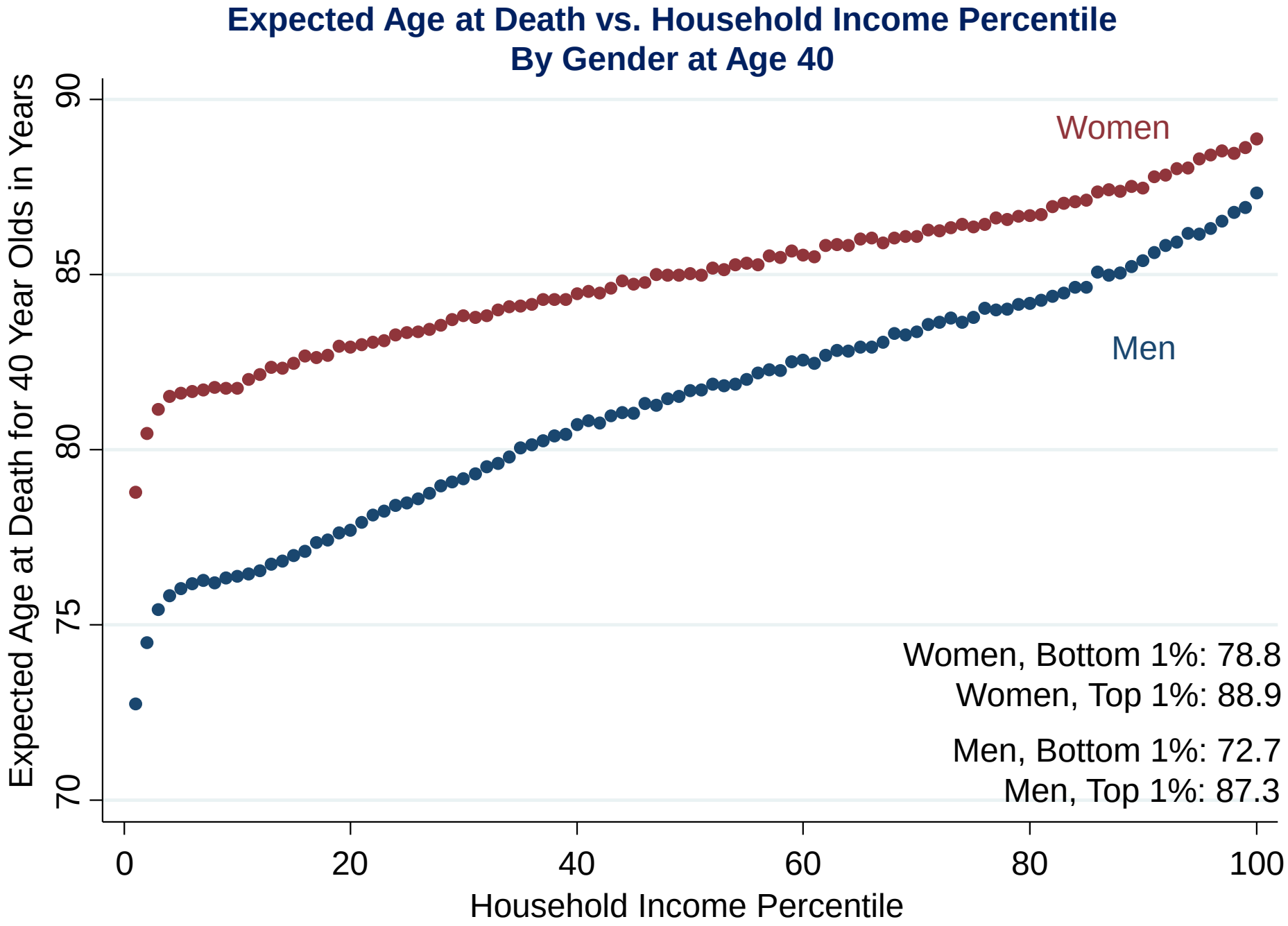

Log Mortality Rates
For Men at 5th and 95th Percentiles
Log Mortality Rate
-2
-4
-6
-8
40
50
60
70
80
90
Age in Years
Data: p5
Gompertz: p5
Data: p95
Gompertz: p95

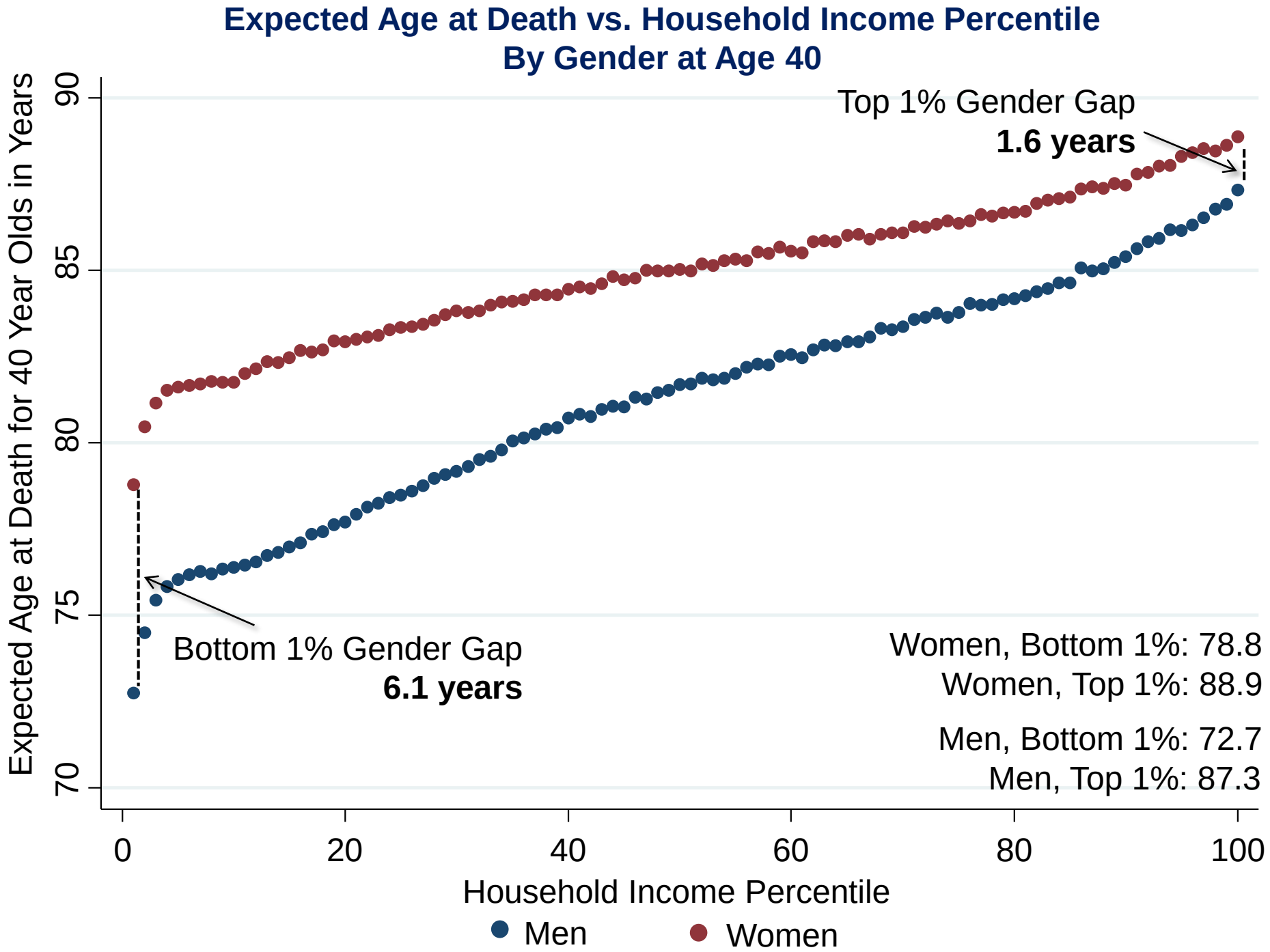

Expected Age at Death vs. Household Income Percentile
For Men at Age 40
Expected Age at Death for 40 Year Olds in Years
70
75
80
85
90
0
20
$25k
40
$47k
60
$74k
80
$115k
100
$2.0M
Household Income Percentile

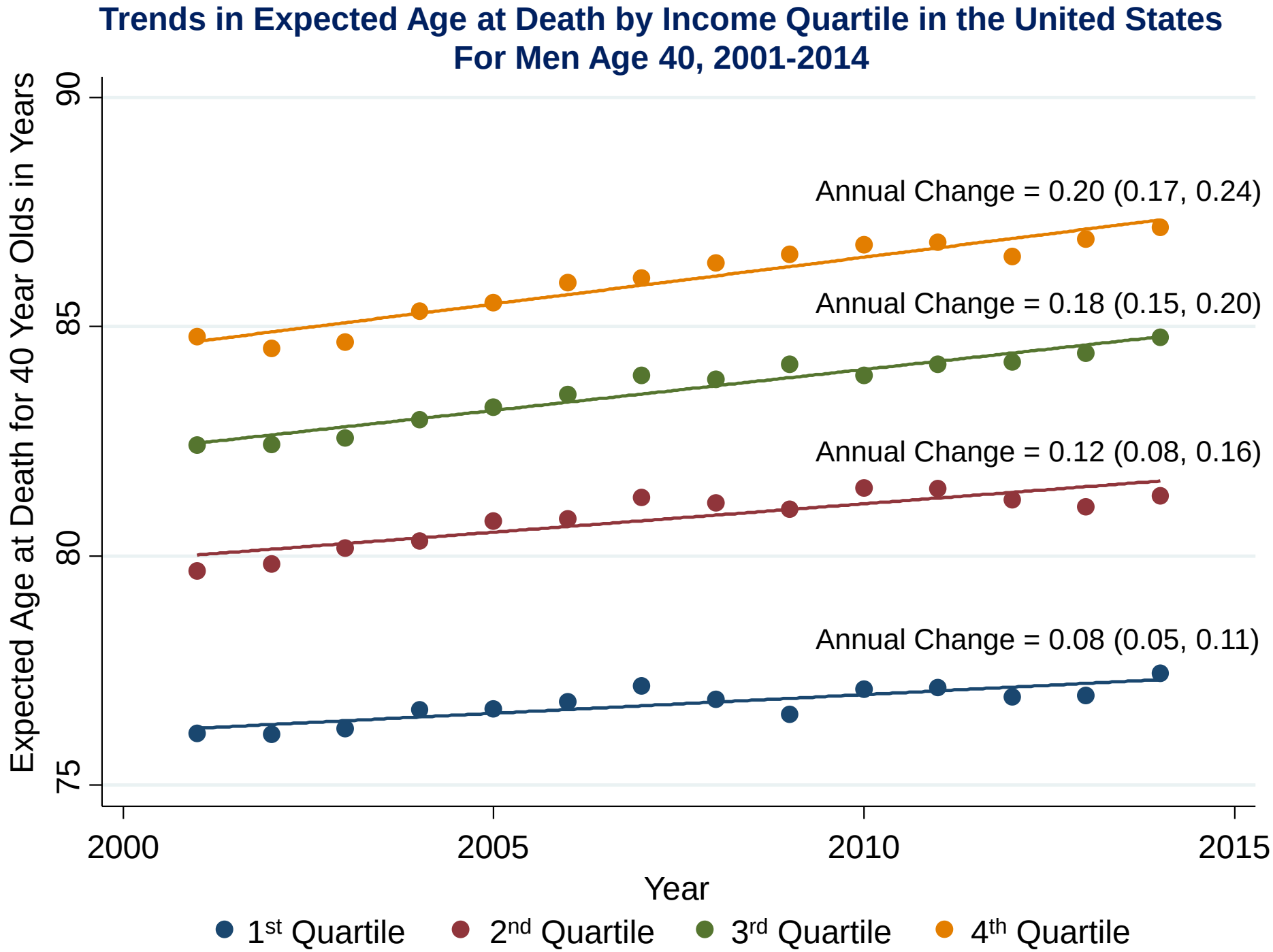

Expected Age at Death vs. Household Income Percentile
For Men at Age 40
Expected Age at Death for 40 Year Olds in Years
90
85
80
75
70
Top 1%:
87.3 Years
Bottom 1%:
72.7 Years
0
20
$25k
40
$47k
60
$74k
80
$115k
100
$2.0M
Household Income Percentile

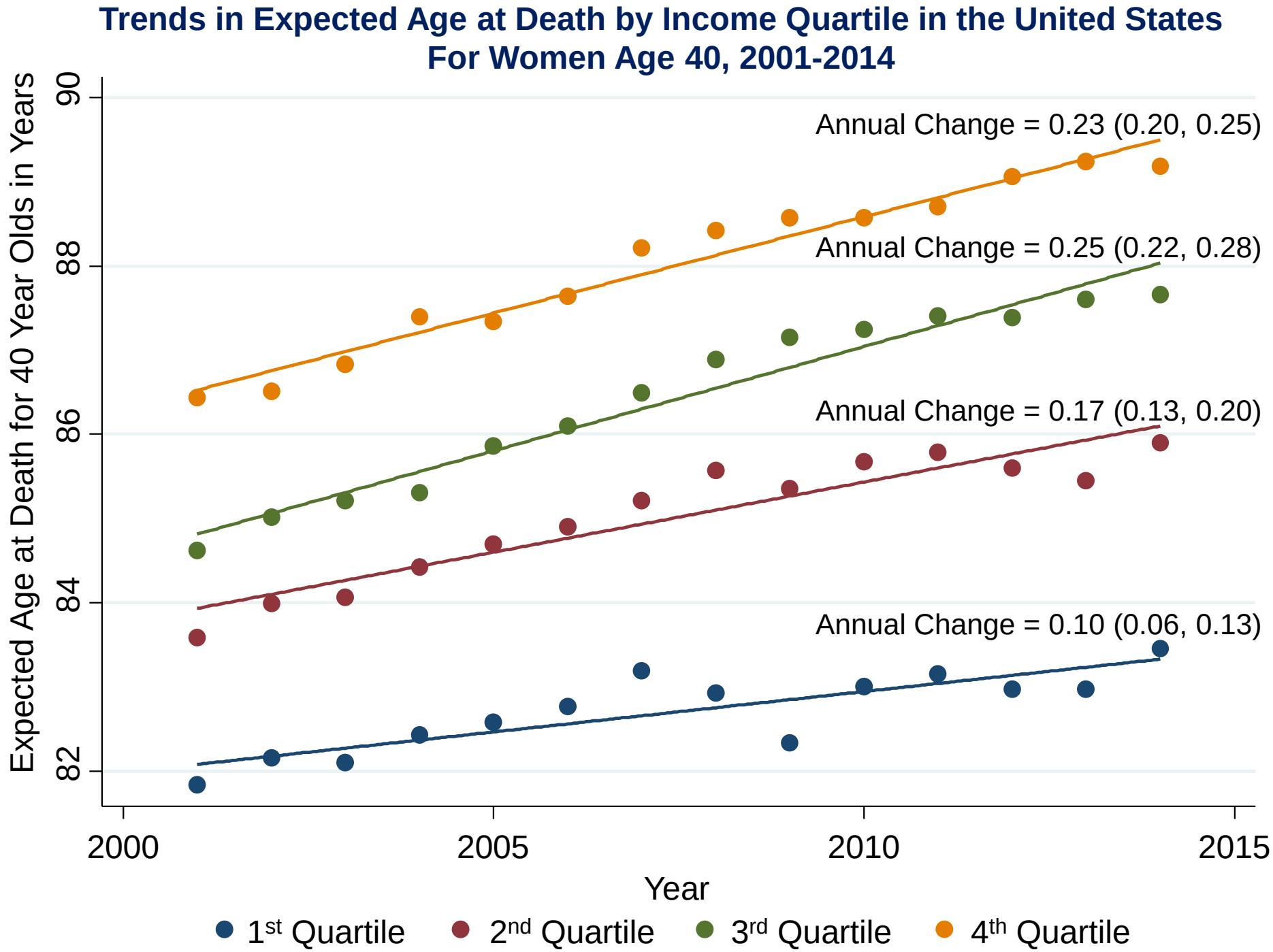
U.S. Life Expectancies by Percentile in Comparison to Mean Life Expectancies Across Countries




Expected Age at Death vs. Household Income Percentile
By Gender at Age 40
Expected Age at Death for 40 Year Olds in Years
90
85
80
75
70
Women
Men
Women, Bottom 1%: 78.8
Women, Top 1%: 88.9
Men, Bottom 1%: 72.7
Men, Top 1%: 87.3
0
20
40
60
80
100
Household Income Percentile


Expected Age at Death vs. Household Income Percentile
By Gender at Age 40
Expected Age at Death for 40 Year Olds in Years
70
75
80
85
90
0
20
40
60
80
100
Household Income Percentile
Top 1% Gender Gap
1.6 years
Bottom 1% Gender Gap
6.1 years
Women, Bottom 1%: 78.8
Women, Top 1%: 88.9
Men, Bottom 1%: 72.7
Men, Top 1%: 87.3
Men
Women


Trends in Expected Age at Death by Income Quartile in the United States
For Men Age 40, 2001-2014
Expected Age at Death for 40 Year Olds in Years
75
80
85
90
2000
2005
2010
2015
Year
Annual Change = 0.20 (0.17, 0.24)
Annual Change = 0.18 (0.15, 0.20)
Annual Change = 0.12 (0.08, 0.16)
Annual Change = 0.08 (0.05, 0.11)
1st Quartile
2nd Quartile
3rd Quartile
4th Quartile

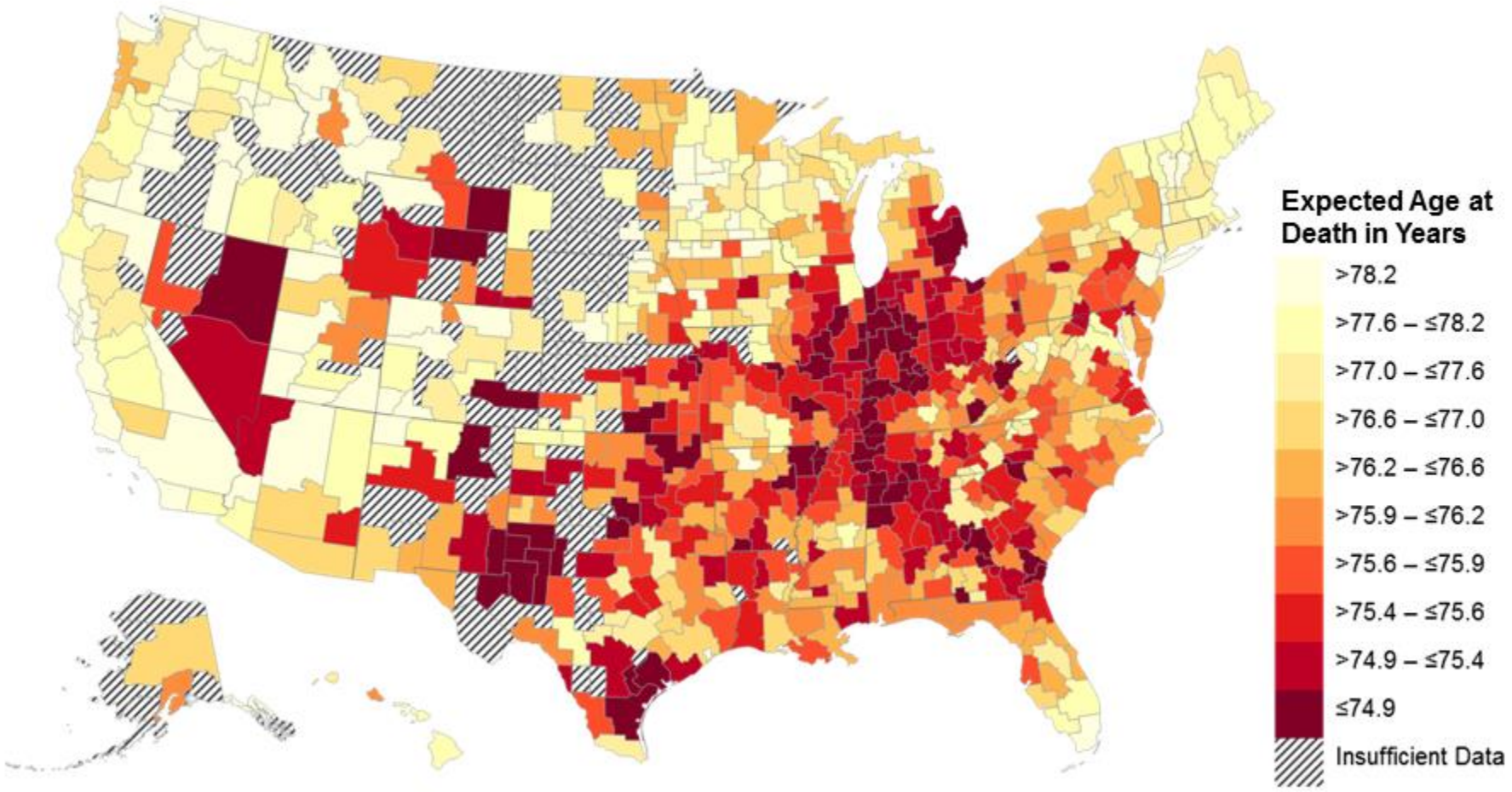

Trends in Expected Age at Death by Income Quartile in the United States
For Women Age 40, 2001-2014
Expected Age at Death for 40 Year Olds in Years
82
84
86
88
90
2000
2005
2010
2015
Year
Annual Change = 0.23 (0.20, 0.25)
Annual Change = 0.25 (0.22, 0.28)
Annual Change = 0.17 (0.13, 0.20)
Annual Change = 0.10 (0.06, 0.13)
1st Quartile
2nd Quartile
3rd Quartile
4th Quartile

Why is this? Correlates of Spatial Variation in Mortality

Calculate LE40 for each Commuting Zone

Relate to area characteristics

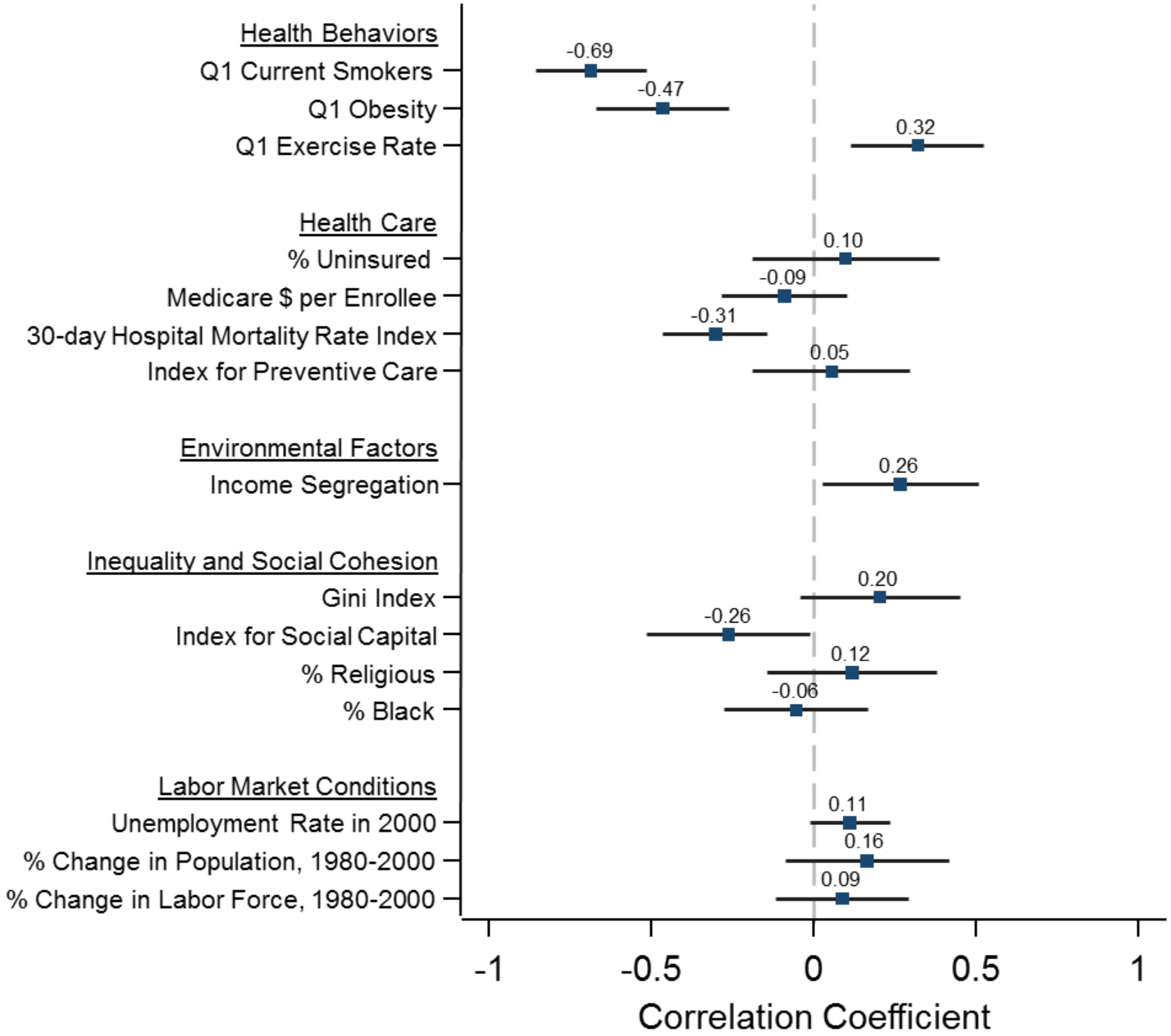
Race-Adjusted Expected Age at Death for 40 Year Old Men
Bottom Quartile of U.S. Income Distribution



Note: Lighter Colors Represent Areas with Higher Life Expectancy

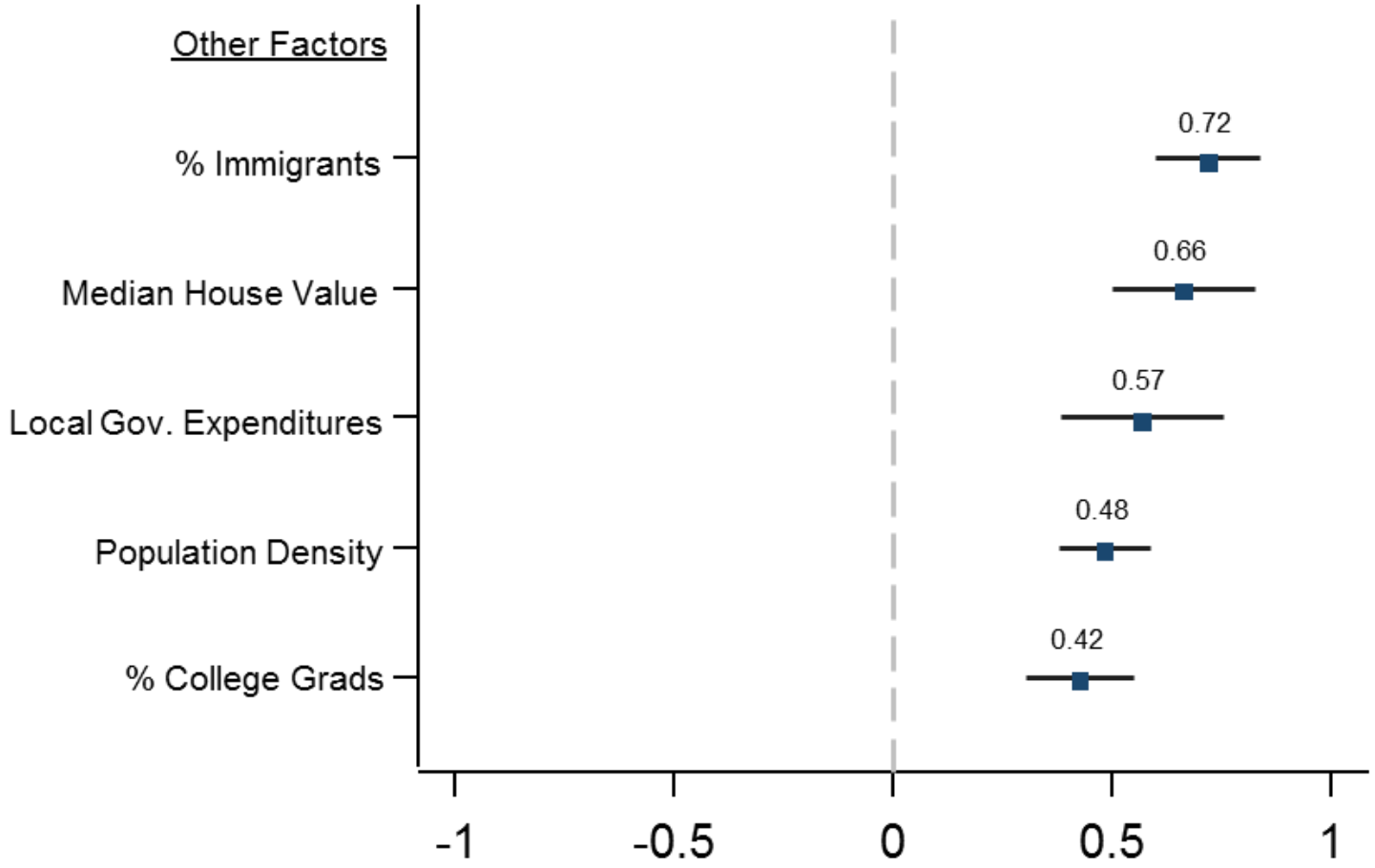
Correlations of Expected Age at Death with Health and Social Factors

For Individuals in Bottom Quartile of Income Distribution



Correlations of Expected Age at Death with Other Factors

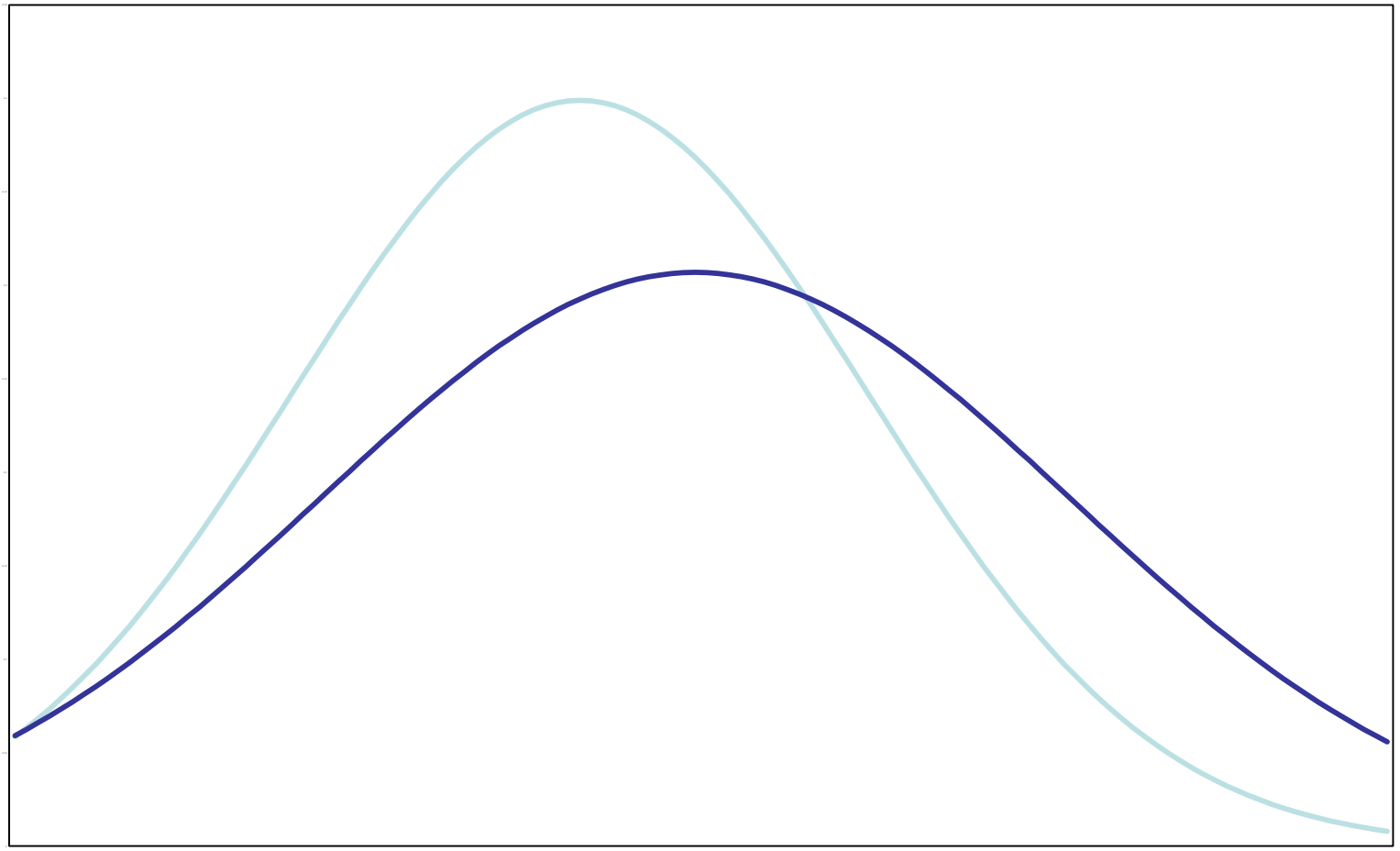
For Individuals in Bottom Quartile of Income Distribution



Implications for Policy, and Unknowns

Implications and questions

- This is not “two Americas”. This is a more heterogeneous population.



Implications and questions

- Why the nexus between affluent, educated cities, and healthy behaviors?
- Want to see same for DI enrollment
- Policy
  - Average is increasingly less relevant
  - Indexing age of eligibility for programs to lifetime earnings
  - Survival is malleable, and we ought to understand how