Implications of Differential Mortality for Analyses of Social Security Policy Options

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This presentation builds on information in *The 2014 Long-Term Budget Outlook* (July 2014), www.cbo.gov/publication/45471; and *The 2013 Long-Term Projections for Social Security: Additional Information* (December 2013), www.cbo.gov/publication/44972.

Questions

- How might growing differences in life expectancy across socioeconomic groups influence analysis of various Social Security policy options?

  – What happens to assessments of raising the eligibility age or ages?

- What tools can we use to look at implications of growing differences in life expectancy in the future?

  – CBO's long-term model (CBOLT) projects individual earnings over time and creates measures of Social Security benefits and taxes based on those individual earnings as well as household status.

  – The gap in life expectancies across socioeconomic groups going forward can be altered within the model to show the implications of increasing differences in the future.

How CBO Measures Differential Mortality

- *Differential mortality* is the difference in life expectancy across socioeconomic groups.

- CBO's long-term model captures some increase in differential mortality over time.

- CBO looks at differential mortality by quintiles of lifetime household earnings.
  - The lowest quintile has lower and less rapidly growing life expectancy than the highest quintile.

Framework for CBO's Long-Term Projections

■ Budget projections over the next 10 years are based on detailed program projections underlying CBO's baseline.

■ Beyond 10 years, CBO relies on its long-term model (CBOLT).
   – A microsimulation model set within an actuarial framework
   – Governed by an overarching macroeconomic model

■ Social Security payroll taxes and benefits are based on an individual's lifetime earnings and household status.

■ Spending on the major federal health care programs is projected separately in an actuarial framework.

How CBO Projects Population and GDP

- **The U.S. population is projected using estimates of births, deaths, and net immigration**
  - Uses a cell-based approach to estimate the population annually by single year of age (0–119) and sex
  - Projections of fertility come from the actuaries at the Social Security Administration

- **Projected mortality rates**
  - Life expectancy at birth in 2060:
    - 2011 Technical Panel on Assumptions and Methods: 85.8
    - 2014 Long-Term Budget Outlook, CBO: 85.2
    - 2014 Social Security Trustees' Report: 83.6

- **Projected net immigration**
  - Based on historical relationship
  - 3.2 immigrants per year per 1,000 people in the U.S. population

Earnings Inequality in CBOLT

- CBOLT projects earnings based on age, sex, education, marital status, number of children under age 6, Social Security benefit status, and cohort; each individual's earnings are perturbed by permanent and transitory shocks (See the June 2013 CBO working paper by Schwabish and Topoleski).

- The historical pattern of rising earnings inequality continues for the next two decades, but earnings inequality generally ceases to rise by the mid-2030s.

Differential Mortality in CBOLT

■ CBOLT models mortality based on age, sex, cohort, education, marital status, health status, and lifetime household earnings (See the 2007 CBO working paper by Cristia).

■ Some increase in differential mortality is evident in the baseline.

– For men ages 65 to 99 during the next 20 years, the average mortality rate in the highest quintile of lifetime household earners is 65 percent of the average mortality rate of the lowest quintile.

– Over the period spanning 41 to 60 years in the future, the ratio is 53 percent of the lowest quintile.

Baseline Mortality Rate for Males Ages 65 to 99 Relative to That of the Lowest Quintile of Lifetime Household Earnings

(Ratio to lowest quintile)
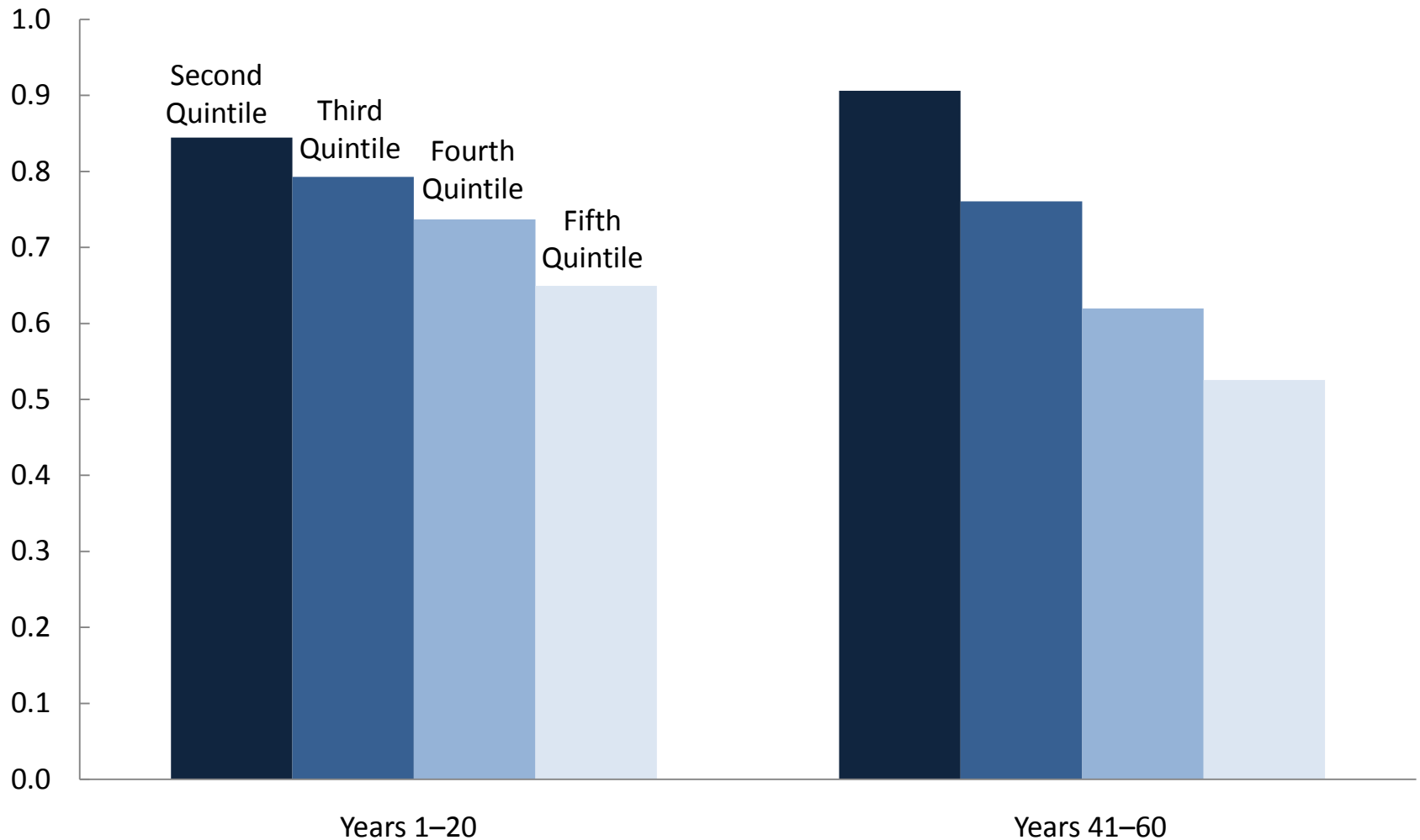
Definitions

- *Equal average mortality* is equivalent to random mortality, which means that average mortality rates are similar across different quintiles of lifetime household earnings for a given cohort.

- *Differential average mortality* imposes higher mortality rates, on average, on people in lower quintiles of lifetime household earnings and lower mortality rates, on average, on people in higher quintiles of lifetime household earnings.

- Overall mortality for a cohort is insensitive to the amount of differential mortality.

Increasing Differential Mortality in Projections

- The weights on equal average mortality and differential average mortality can be changed to increase differential mortality in the future.

- The baseline weights equal average mortality and differential mortality equally.

- Effects of weighting differential average mortality more heavily (0.67)
  - Over the next 20 years, men ages 65 to 99 in the highest quintile of lifetime household earnings would have a mortality rate, on average, that is 52 percent of the mortality rate of the lowest quintile (versus 65 percent in the baseline).
  - Over the period spanning 41 to 60 years in the future, the ratio would be 33 percent (vs. 53 percent in the baseline).

Mortality Rate with More Differential Mortality for Men Ages 65 to 99, Relative to That of the Lowest Quintile of Lifetime Household Earnings

(Ratio to lowest quintile)
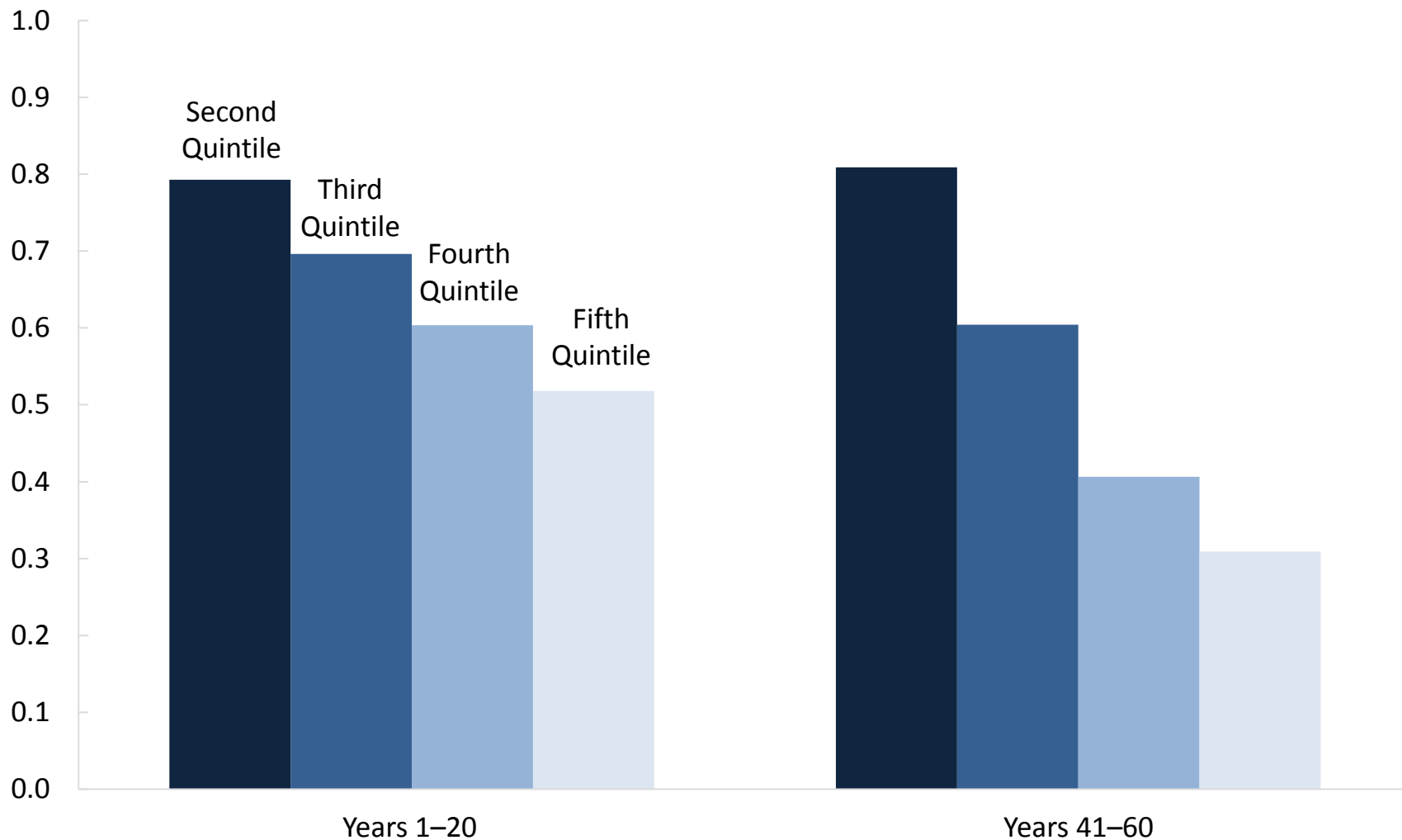
# Social Security System Finance Measures as a Percentage of Taxable Payroll

(Percent)

	75-year Cost Rate	75-year Income Rate	75-year Actuarial Balance
2013 Trustees' Report	16.8	13.9	-2.9
CBO Equal Average Mortality	17.8	14.0	-3.8
Change from CBO Baseline	**-0.2**	**-0.0**	**0.2**
CBO Baseline	18.0	14.0	-4.0
CBO More Differential Mortality	18.2	14.0	-4.1
Change from CBO Baseline	**0.2**	**0.0**	**-0.1**

How Would Increasing Differential Mortality Affect Our Analysis of Social Security Policy Options?

Options that raise eligibility ages:

- Increase the full retirement age (FRA) for those age 62 starting in 2016 by three months per year until the FRA reaches 69 in 2027.

- Increase the full retirement age (FRA) and the earliest eligibility age (EEA) for those age 62 starting in 2016 by three months per year until the EEA reaches 64 in 2023 and FRA reaches 69 in 2027.

Earliest Eligibility and Full Retirement Ages Under Policy Alternatives

(Years)

- ● = Year of birth for people turning age 62.
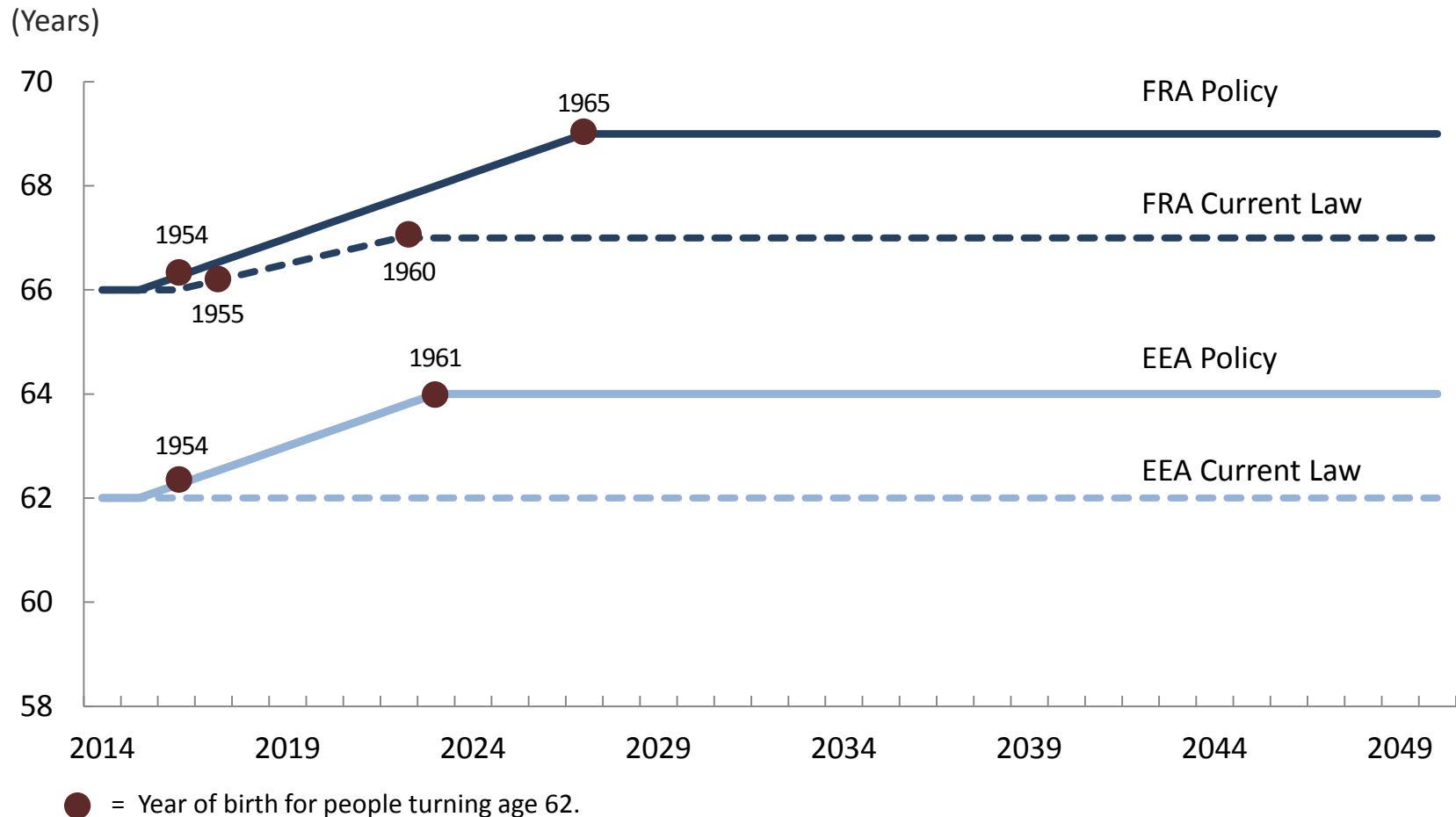
Raise the EEA and the FRA three months per year beginning in 2016 until the EEA reaches 64 in 2023 and the FRA reaches 69 in 2027.

Useful Distributional Measures for Policy Options

CBO looks at three distributional measures for the Social Security program by quintile of lifetime household earnings and by 10-year birth cohort:

- Present value of lifetime benefits, net of income taxes on benefits

- Present value of lifetime payroll taxes

- Ratio of mean lifetime benefits to mean lifetime payroll taxes within each quintile of lifetime household earnings

Baseline versus More Differential Mortality Under Three Policy Scenarios: Lowest Quintile of the 1960s Cohort

- With more differential mortality, more low earners would be projected to die sooner; the benefit-tax ratio for them would fall under all three policy scenarios.

- Raising the FRA to 69 would be a benefit cut for everyone under either mortality assumption.

- Increasing the EEA on top of raising the FRA would have offsetting effects under both mortality assumptions.
  - Annual benefits would be higher for people who would have claimed at age 62 or 63.
  - Some people would receive benefits for fewer years.

Mean Lifetime Benefits as a Percentage of Taxes: Lowest Quintile of the 1960s Cohort

(Percent)
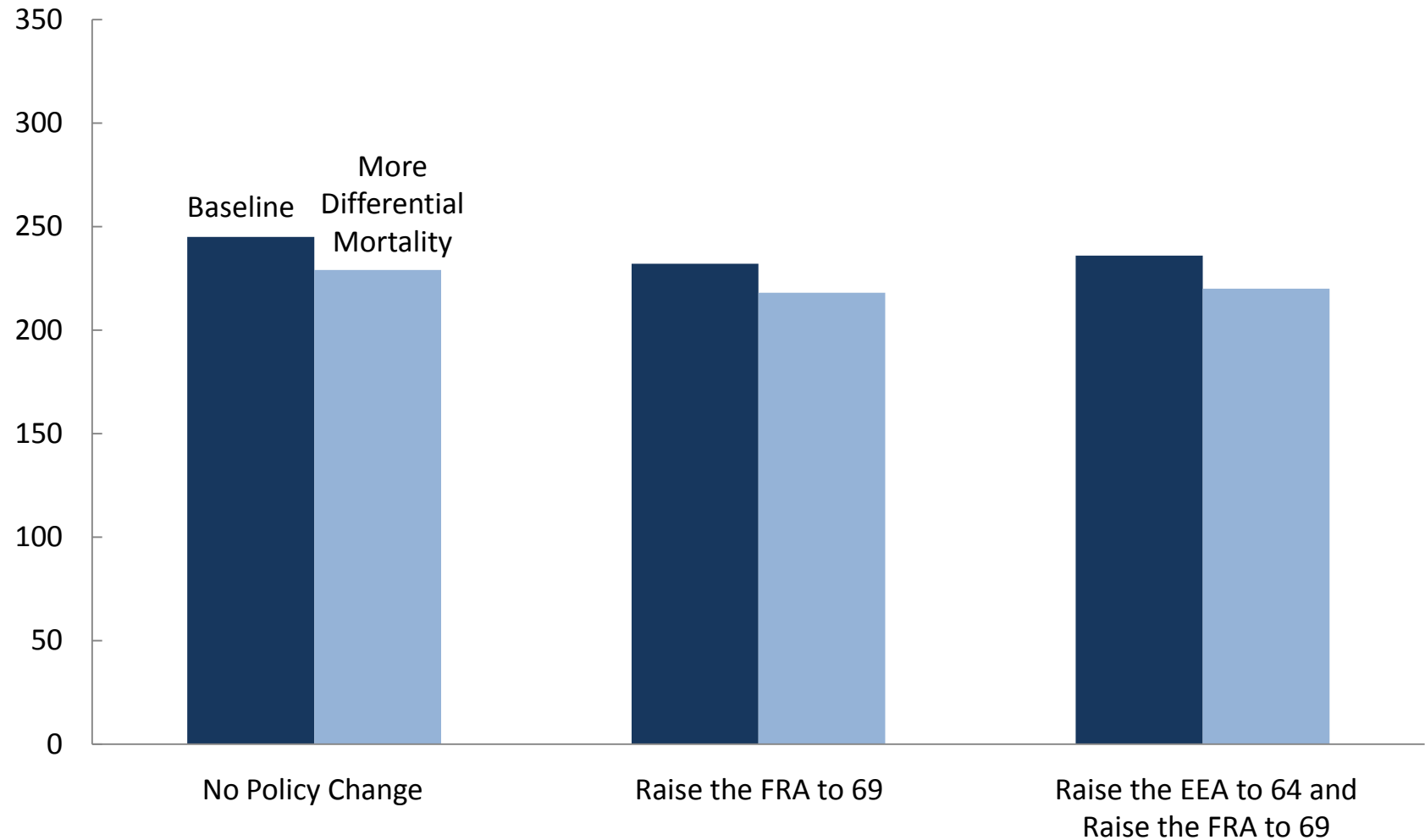
Baseline versus More Differential Mortality Under Three Policy Scenarios: Lowest Quintile of the 2000s Cohort

- When increasing the EEA on top of raising the FRA, the effect of raising annual benefits for people who would have claimed at age 62 or 63 would more than offset fewer years of benefits for some people under both mortality scenarios.

Mean Lifetime Benefits as a Percentage of Taxes: Lowest Quintile of the 2000s Cohort
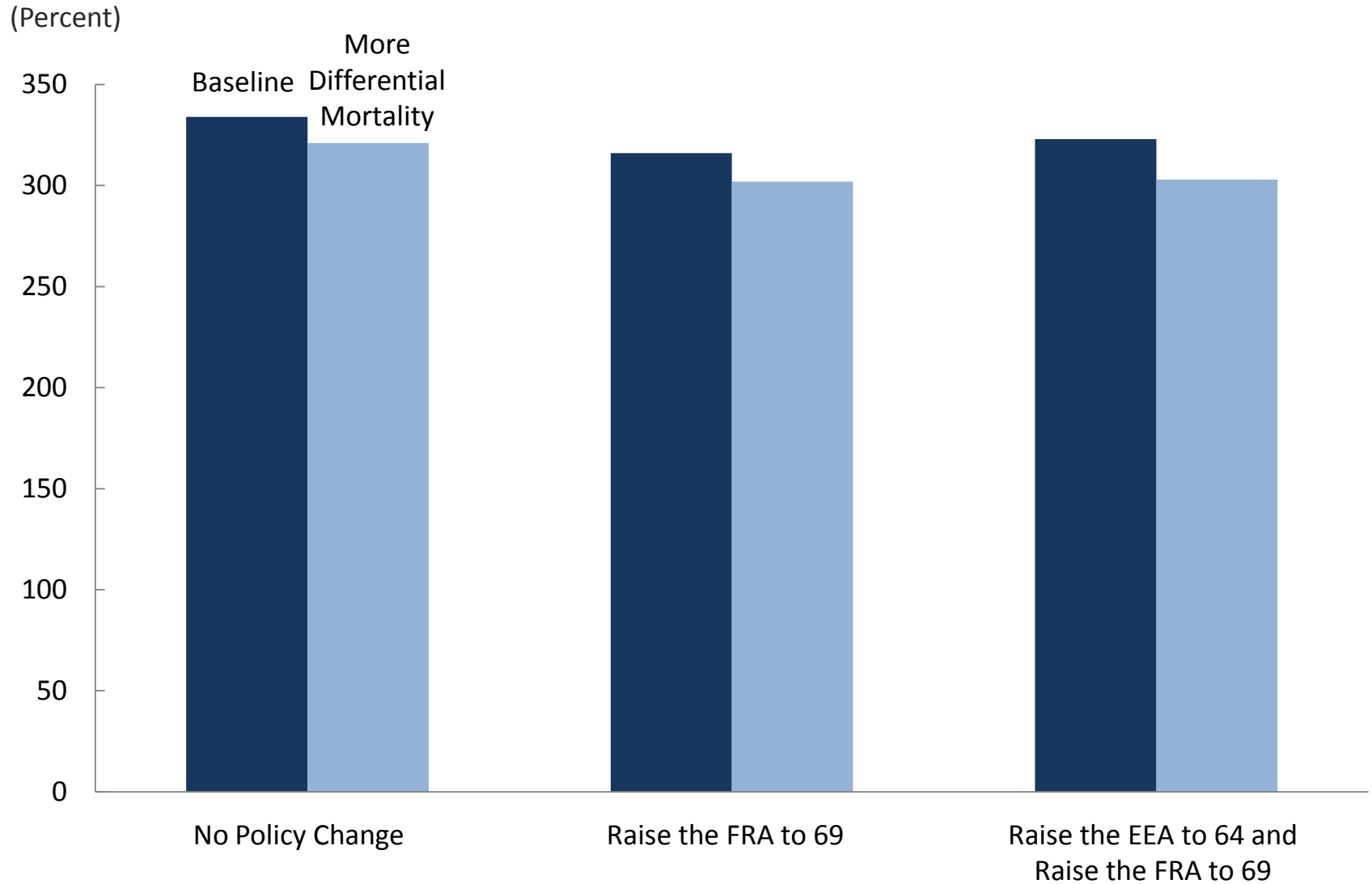
Baseline versus More Differential Mortality Under Three Policy Scenarios: Highest Quintile of the 1960s Cohort

- For high earners, moving from baseline mortality to more differential mortality would cause us to project that more of them would live longer; the benefit-tax ratio would *rise* for the highest quintile.

- Increasing the EEA on top of raising the FRA would have two roughly offsetting effects under either mortality scenario.
  - Some people would receive benefits for fewer years.
  - Some people would receive higher annual benefits because no one could claim at age 62 or 63.

Mean Lifetime Benefits as a Percentage of Taxes: Highest Quintile of the 1960s Cohort
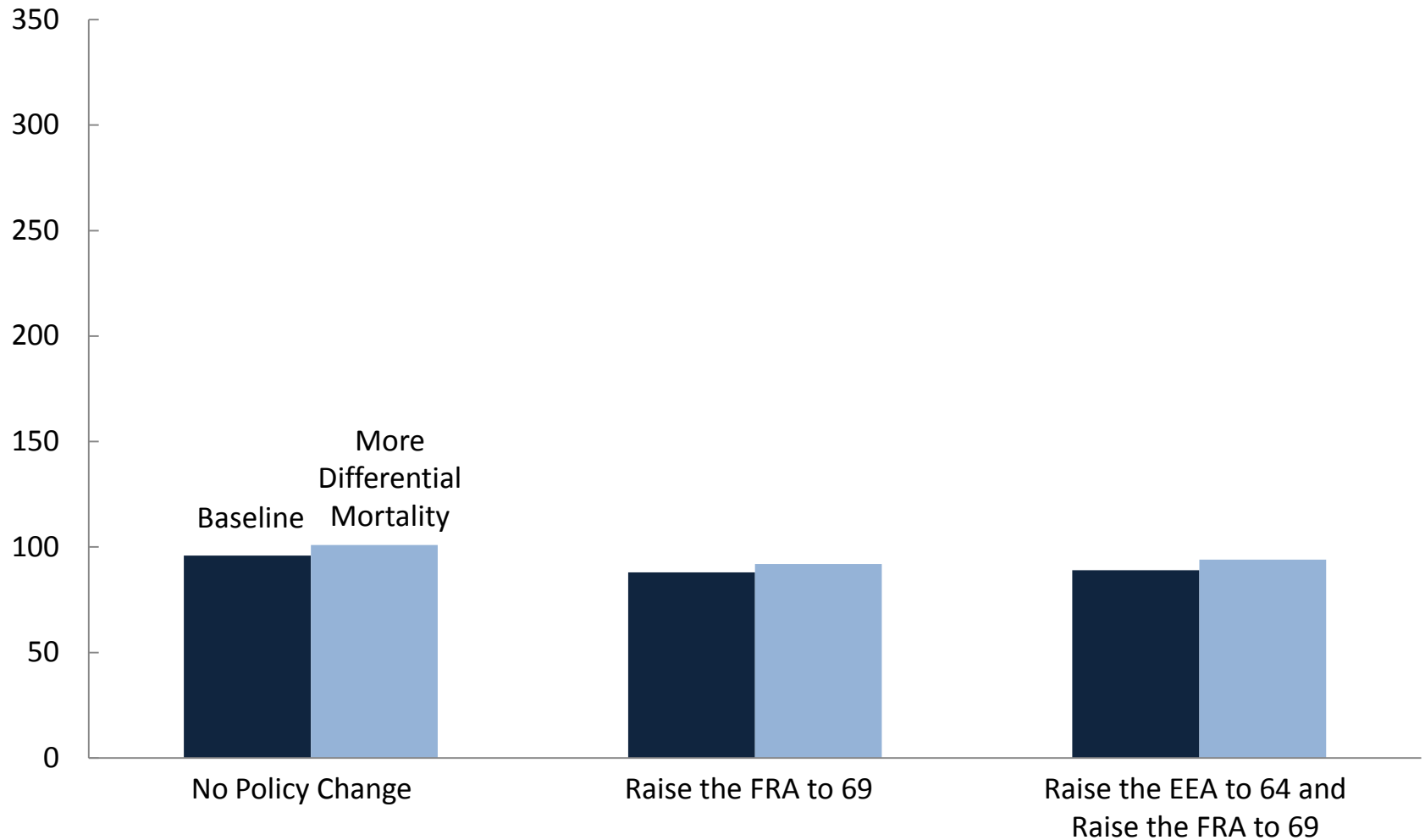
(Percent)
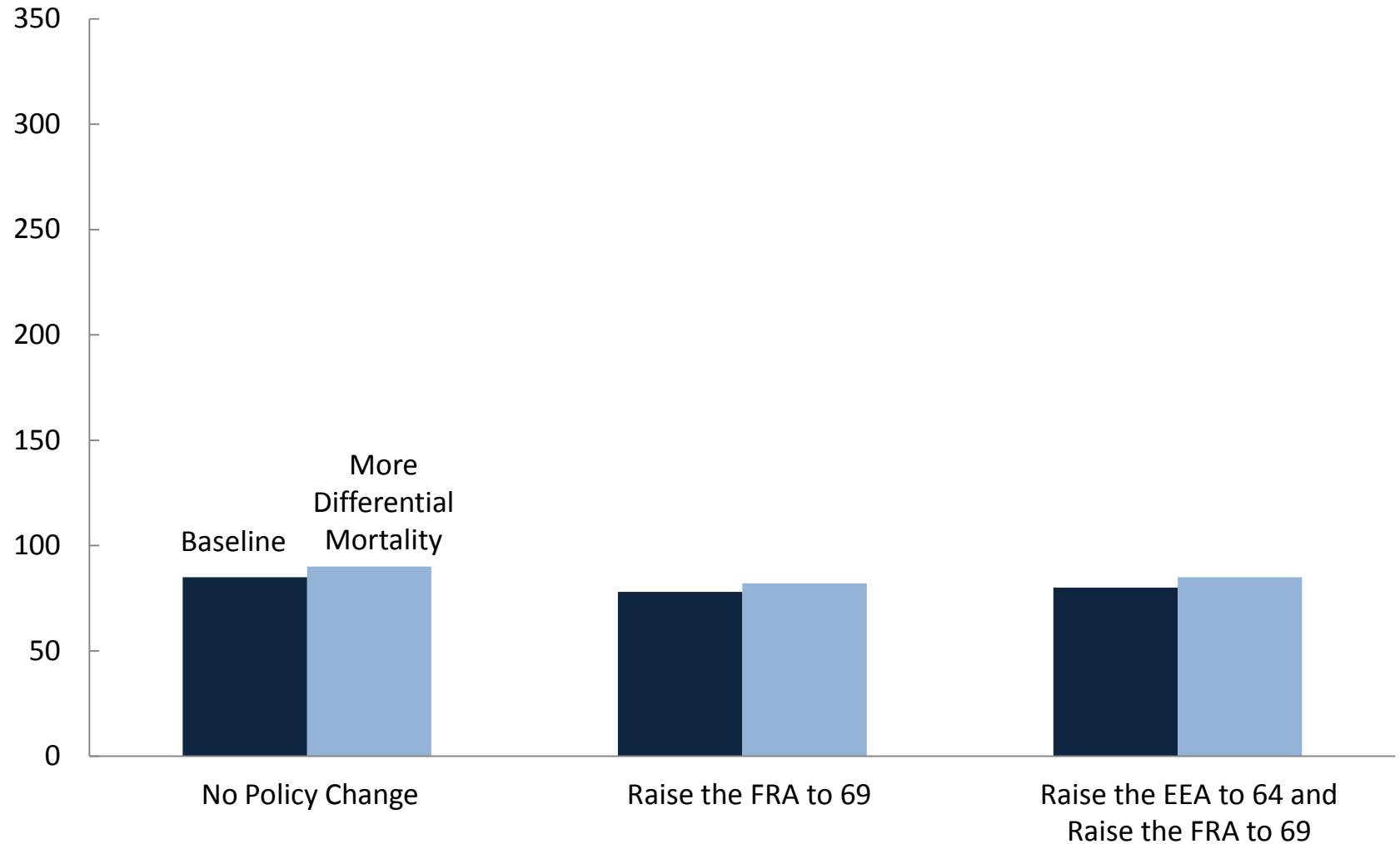
Baseline versus More Differential Mortality Under Three Policy Scenarios: Highest Quintile of the 2000s Cohort

- Increasing the EEA on top of raising the FRA would have two effects under either mortality assumption

  - Higher annual benefits from raising the EEA for people who would have claimed at age 62 or 63

  - Some people would receive benefits for fewer years

 - The effect of higher benefits would now be slightly bigger than the effect of fewer years of benefits for some people

Mean Lifetime Benefits as a Percentage of Taxes: Highest Quintile of the 2000s Cohort
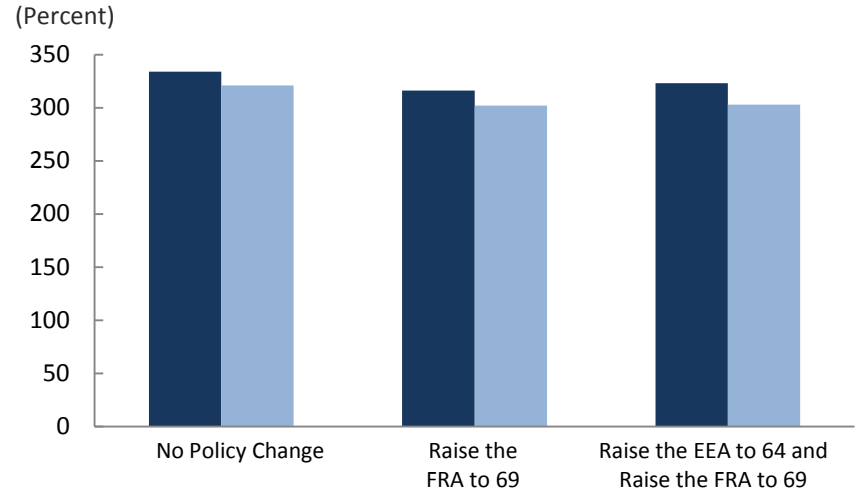
(Percent)

Baseline versus More Differential Mortality for Four Policy Scenarios: Mean Lifetime Benefits as a Percentage of Taxes
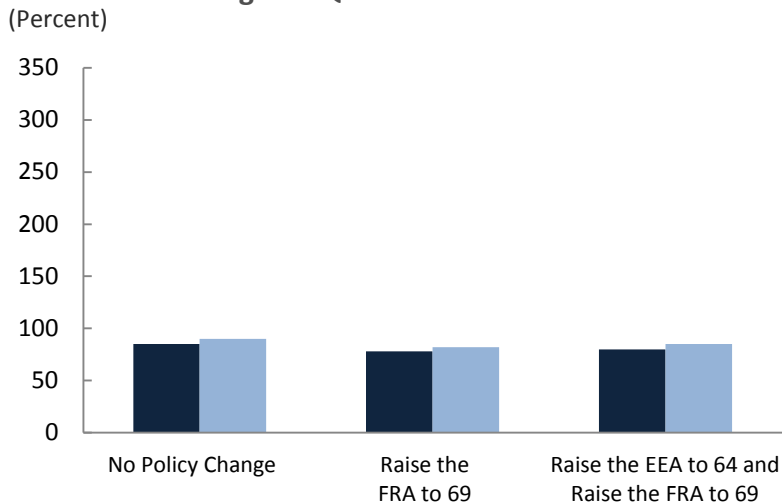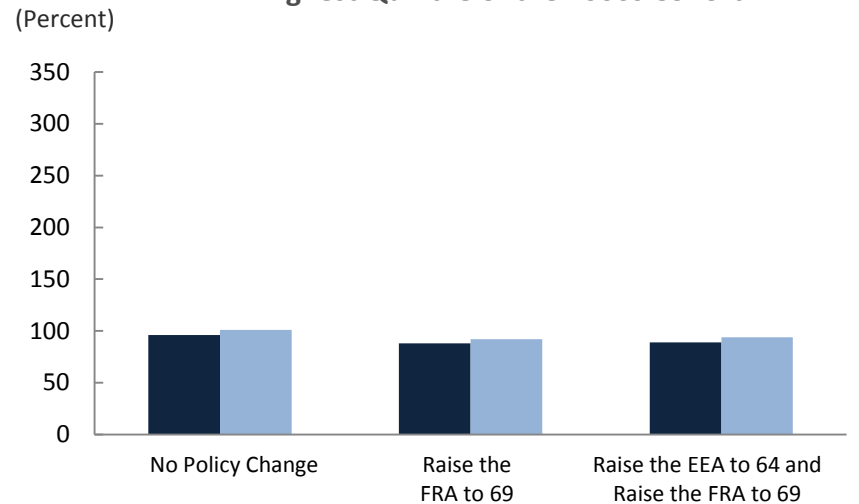

Lowest Quintile of the 1960s Cohort
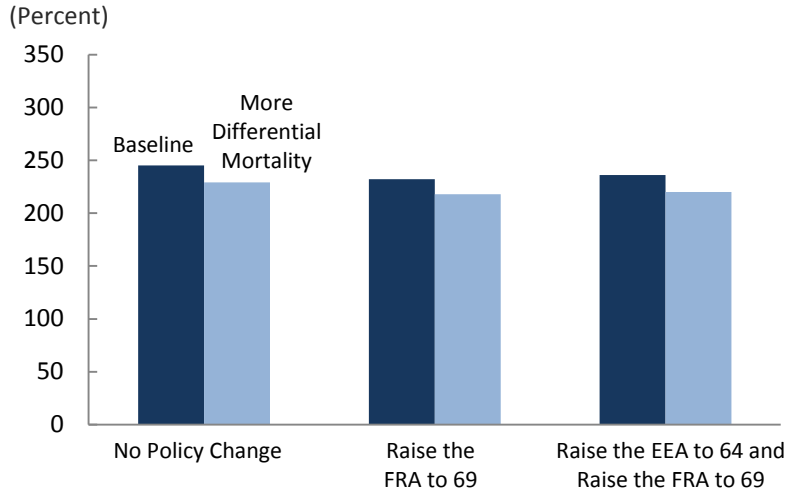
Lowest Quintile of the 2000s Cohort

Highest Quintile of the 1960s Cohort

**Highest Quintile of the 2000s Cohort**

System Finances: Baseline versus More Differential Mortality

- *The 75-year cost rate* would rise slightly relative to baseline mortality if the FRA increased to 69 or if the EEA increased to 64 and the FRA increased to 69 if differential mortality was greater.

  - Benefits as a share of taxable earnings would increase as high earners would collect benefits for more years.

- *The 75-year income rate* would be similar under FRA at 69 or under EEA at 64 and FRA at 69 if differential mortality was greater.

  - Payroll taxes as a share of taxable payroll would not change much in aggregate because mortality would not change much at all during the working years.

- *The actuarial imbalance* under FRA at 69 or under EEA at 64 and FRA at 69 would be slightly larger if differential mortality was greater.
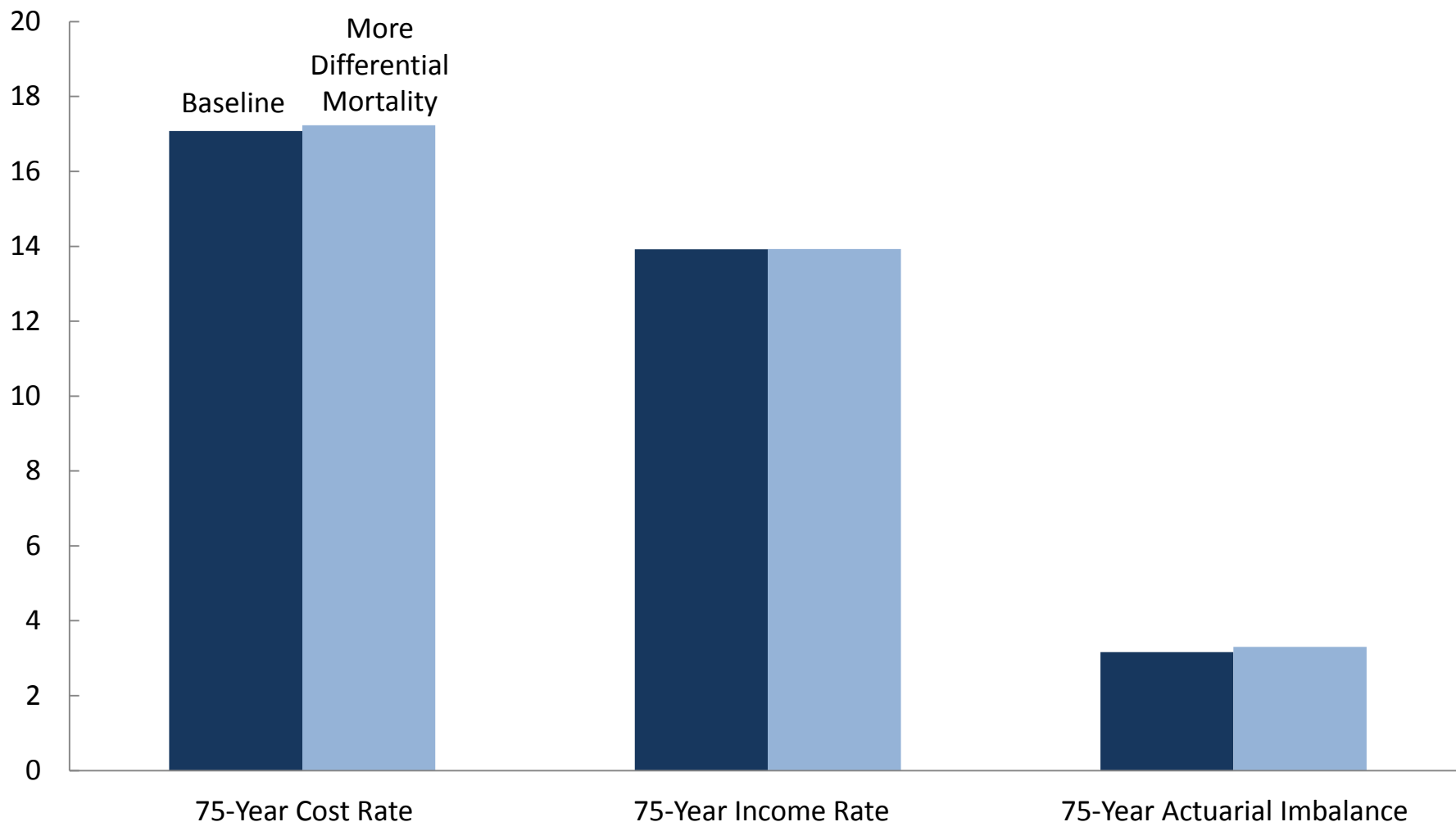
Baseline versus More Differential Mortality:
Raise the FRA to 69

(Percentage of taxable payroll)
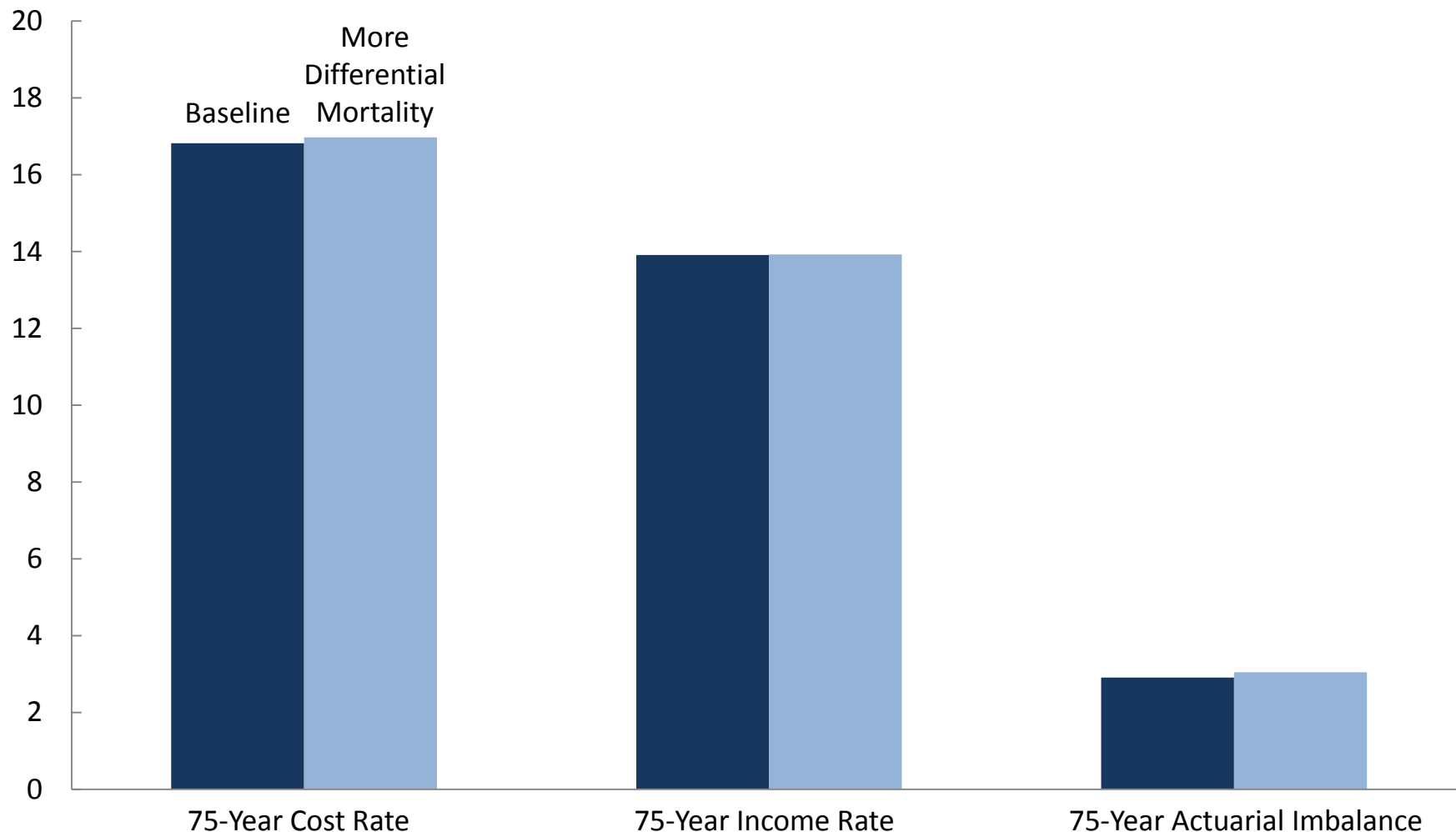
Baseline versus More Differential Mortality:
Raise the EEA to 64 and Raise the FRA to 69

(Percentage of taxable payroll)

Conclusion

Higher or lower differential mortality would have consequences for distributional outcomes and system finances:

- Moving from the current EEA and FRA schedule to EEA at 64 and FRA at 69 would have similar distributional effects across quintiles under either the baseline or with more differential mortality.

- But moving from baseline mortality to more differential mortality and raising the eligibility ages would result in larger declines in the ratio of lifetime benefits to lifetime taxes for people in the lowest quintile of lifetime household earnings.

- Raising the FRA or raising the EEA as well as the FRA would do less to shore up financial solvency if differential mortality is greater.