



The Effect of US COVID-19 Excess Mortality on Social Security Outlays

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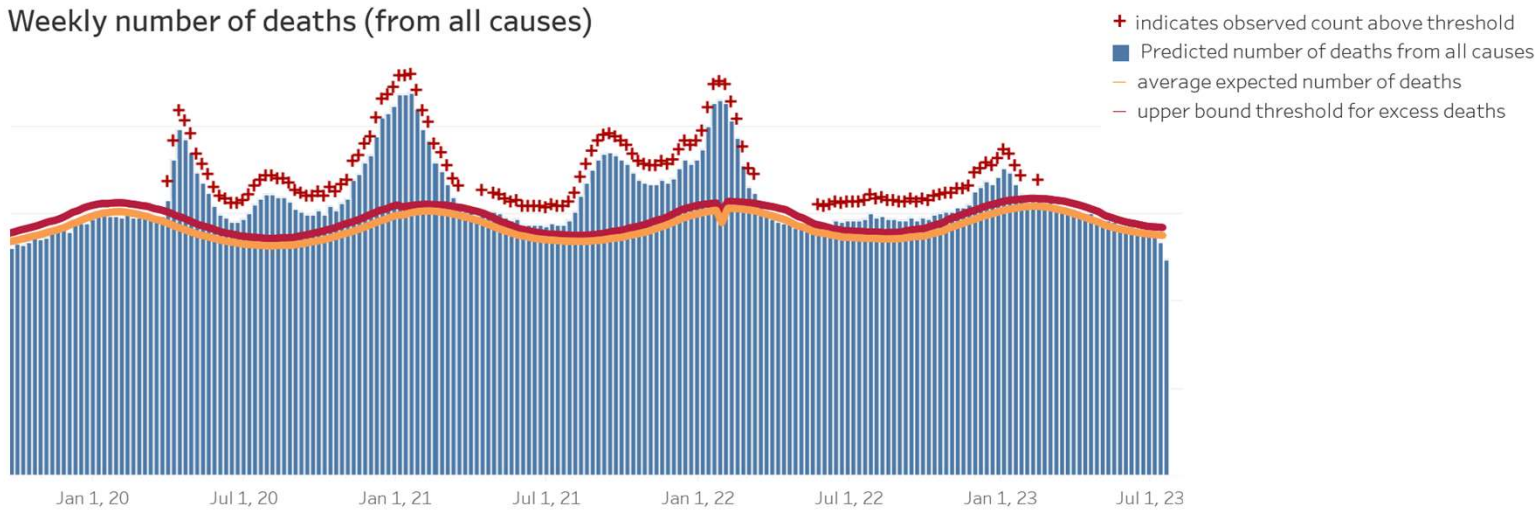
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Excess deaths during COVID pandemic in the US



https://www.cdc.gov/nchs/nvss/vsrr/covid19/excess_deaths.htm

Remaining life years of decedents - how to quantify?

Annals of Internal Medicine ORIGINAL RESEARCH

Measuring the COVID-19 Mortality Burden in the United States

A Microsimulation Study

Julian Reif, PhD; Hanke Heun-Johnson, PhD; Bryan Tysinger, PhD; and Darius Lakdawalla, PhD

Background: Fully assessing the mortality burden of the COVID-19 pandemic requires measuring years of life lost (YLLs) and accounting for quality-of-life differences.

Objective: To measure YLLs and quality-adjusted life-years (QALYs) lost from the COVID-19 pandemic, by age, sex, race/ethnicity, and comorbidity.

Design: State-transition microsimulation model.

Data Sources: Health and Retirement Study, Panel Study of Income Dynamics, data on excess deaths from the Centers

Results of Base-Case Analysis: The COVID-19 pandemic resulted in 6.62 million QALYs lost (9.08 million YLLs) through 13 March 2021, with 3.6 million (54%) lost by those aged 25 to 64 years. The greatest toll was on Black and Hispanic communities, especially among men aged 65 years or older, who lost 1138 and 1371 QALYs, respectively, per 10 000 persons. Absent the pandemic, 38% of decedents would have had average or above-average life expectancies for their subgroup defined by age, sex, and race/ethnicity.

Results of Sensitivity Analysis: Accounting for uncertainty in risk factors for death from COVID-19 yielded similar

- Improvement over life table approach, taking into account chronic conditions & nursing home status
- Deaths under age 65 accounted for ~50% of total LYs and QALYs lost
- Current estimate: 24 million LYL for 1.8 million excess deaths

First paper included excess deaths March '20 – March '21

FAM & FEM Microsimulation

- Future Adult Model (25+) & Future Elderly Model (55+)
- First order Markov models
- Source data:
 - FAM: Panel Study of Income Dynamics (PSID)
 - FEM: Health and Retirement Study (HRS)
 - MCBS, NHIS, and MEPS.
- Incorporates demographic & health trends
- Monte Carlo simulation at individual level
- 23,600 simulants represent 223 million US adults
- Projects mortality, quality-of-life, health behaviors, disease incidence, functional limitations, SSI, DI,OASI, earnings, taxes, nursing home entry, marriage status, childbirth, etc.
- Health policy interventions
- Public version available



Microsimulation Global Collaborator Network



FEM-based microsimulation models

Complete

Austria	Korea
Belgium	Mexico
Canada	Netherlands
Denmark	Singapore
France	Spain
Germany	Sweden
Italy	Switzerland
Japan	

In Progress

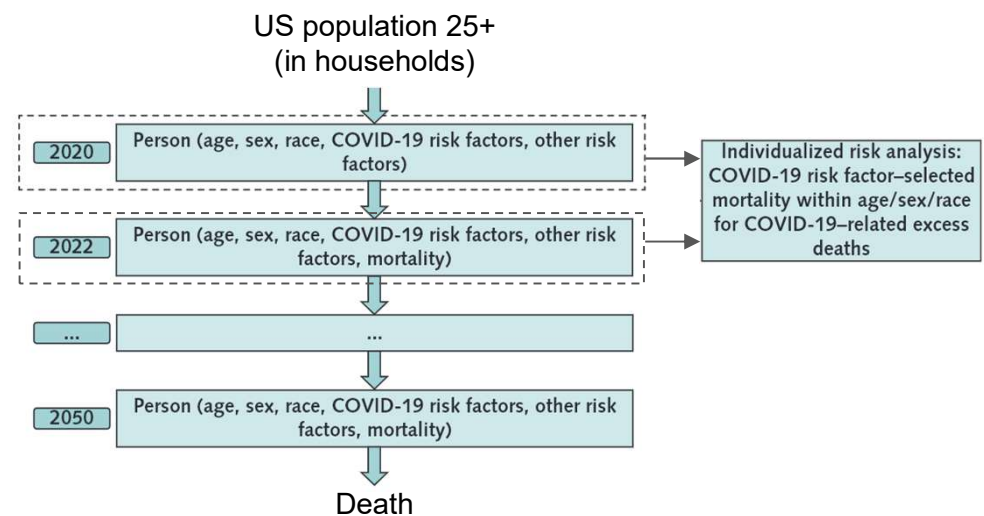
Kenya
Taiwan



<https://healthpolicy.usc.edu/modeling-the-future/>

COVID deaths in the microsimulation

- Excess deaths during COVID pandemic based on CDC data, by race/ethnicity, sex & age
- Assign deaths based on COVID mortality risk factors within race/ethnicity-sex-age group in simulation
- Counterfactual, COVID-free world in simulation





OASDI measures in simulation

Project OASDI spending with and without the excess mortality induced by the COVID-19 pandemic, including effects by race-ethnicity

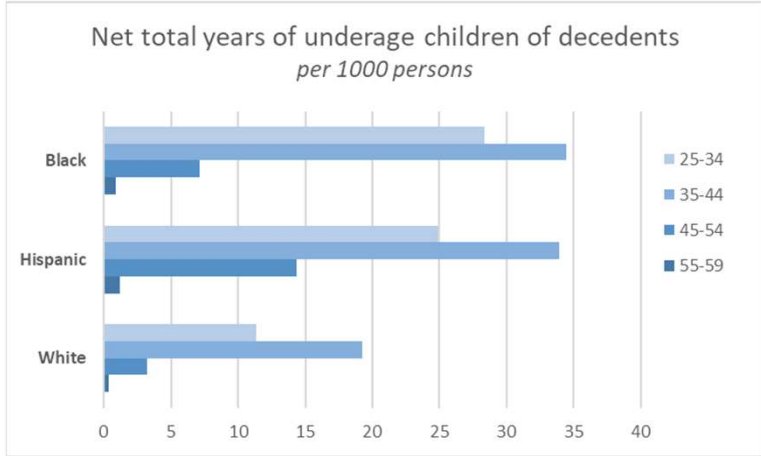
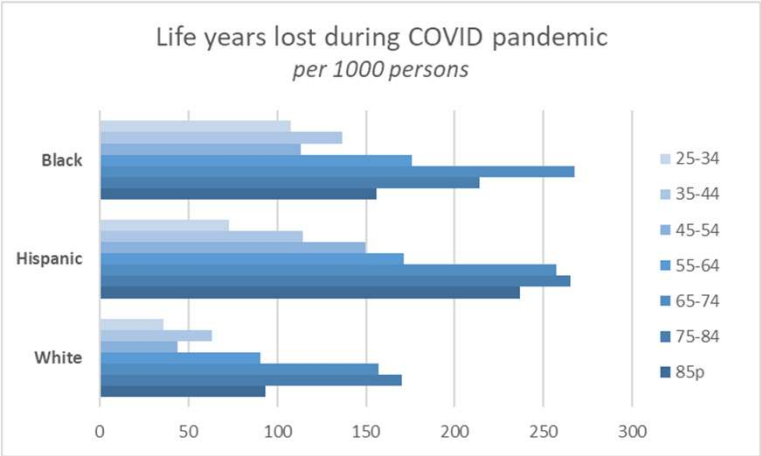
Given **marriage status** and **number and age of children** for each simulant, determine changes in:

- Survivors' benefits for children and/or spouse (generally increased spending)

Given **employment** characteristics and **benefit** status, determine changes in:


- Survivors', retirement, and/or disability benefits for decedents
- Payroll taxes


Racial disparities in life years lost





Preliminary OASDI estimates – using avg monthly \$

- 
- Surviving **children** of decedents: 2.2 million years
 - At \$1,100/month: \$28B
 - Missed **payroll/SE taxes** of decedents: ~5.5 million years: \$35B

- 
- Unpaid **disability** benefits of decedents: 660,000 years
 - At \$1,500/month: \$12B
 - Unpaid **retirement** benefits of decedents: 20 million years
 - At \$1,800/month: \$450B



Ongoing analyses

- **Other beneficiaries:** spouse/child of retired/disabled worker, surviving spouse (with children), child student status, disabled child, disabled spouse, death of two parents, family size, etc.
- Refining estimated AIME/**specific benefit amounts** based on characteristics of decedents
 - Extending to younger ages in simulation, and link to family members
- Use simulated earnings/work status/taxes of decedents for **payroll/SE taxes**
- Racial-ethnic **disparities** in receiving survivorship benefits




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How Eliminating Structural Disadvantages for Black Workers Could Affect Retirement Security and Trust Fund Balances

Disclaimer

- This research was supported in part by a grant from the U.S. Social Security Administration (SSA) as part of the Retirement and Disability Research Consortium (RDRC). The findings and conclusions are solely those of the authors and do not represent the views of SSA, any agency of the federal government, or the Center for Retirement Research at Boston College.

Black people face many systematic disadvantages that limit their Social Security benefits

- Compared with white people, Black people
 - Have lower educational attainment
 - Less likely to ever marry and have fewer years married
 - Have worse health, higher disability rates, and lower life expectancy
 - Work fewer years
 - Have lower annual and lifetime earnings

How much does systematic racism reduce annual and lifetime Social Security benefits for Black beneficiaries?

- We show how eliminating many of the systemic disadvantages that Black workers face could
 - Narrow the racial gap in benefits
 - Improve retirement incomes
 - Improve Social Security finances

Data and Methods

Dynamic Simulation of Income (DYNASIM) version 4

- Model starts with a nationally representative sample of the US population in 2006. It makes annual projections of demographic and economic outcomes to 2100.
- Behavioral equations are estimated using best available data.
- Racial differences are projected using either
 - racial dummy variables or
 - separate equations for Black and non-Black workers.

Baseline and Alternate Simulations

- Baseline simulation retains all the racial differences included in the model's behavioral equations.
- Alternate simulations remove the “Black” disadvantage in selected behavioral equations.
- Compare the baseline and alternate simulations to calculate the change in
 - Annual Social Security benefits at age 70
 - Lifetime Social Security benefits and FICA tax
 - Social Security 75-year finances.

Alternate Simulations

- Remove Black disadvantage in:
 - Health, disability, and death
 - Marriage
 - Education
 - Labor force participation
 - Hourly wage
 - All disadvantages combined.
- Focus on people born between 1996 and 2005
 - Age 1-10 in 2006 (DYNASIM starting sample)
 - Age 70 in 2066 to 2075
 - Project to death for all members of these cohorts
 - 2021 inflation-adjusted dollars

Results

Differences in Education, Marriage, Life Expectancy, Employment, and Earnings between Black and White Men and Women

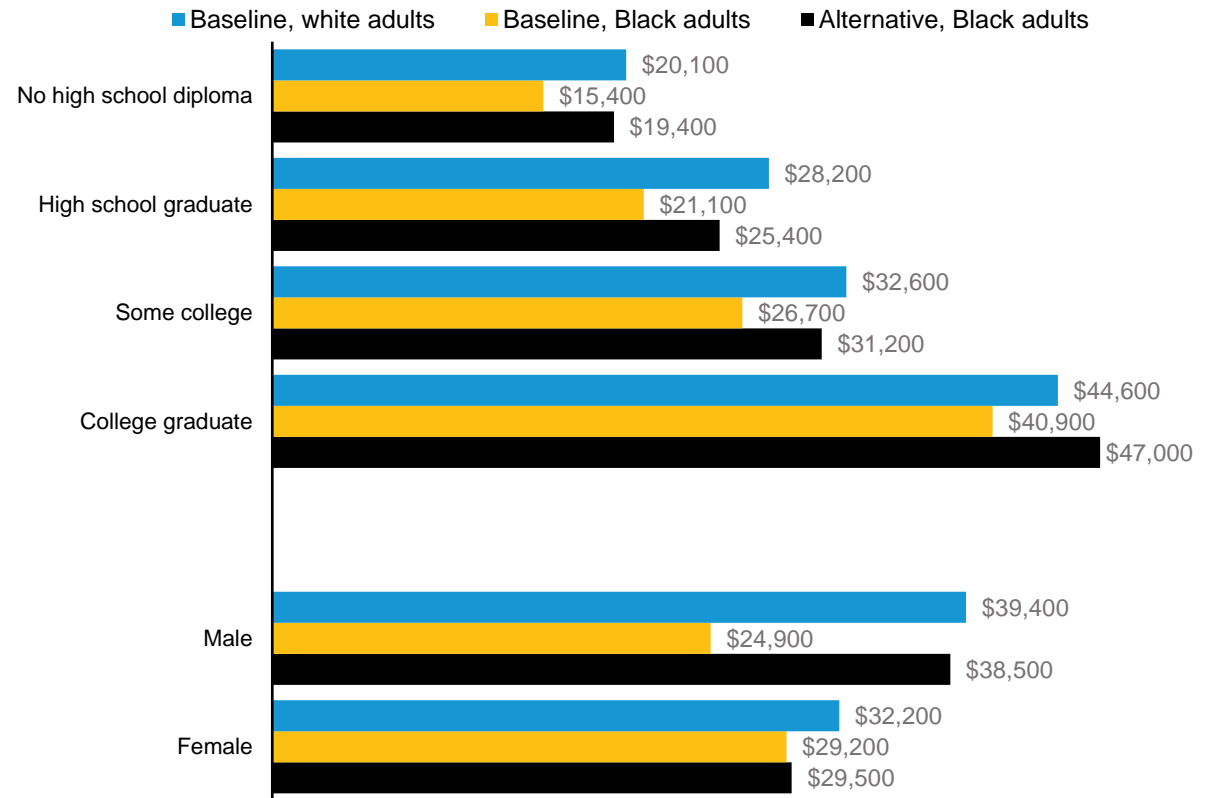
	Men				Women			
	White baseline	Black baseline	Difference	Percent difference	White baseline	Black baseline	Difference	Percent difference
College graduate	37	25	-13	-34%	49	35	-14	-28%
Ever married at least 10 years (%)	66	54	-12	-18%	70	65	-5	-7%
Mean number of years married	28	20	-8	-28%	29	23	-6	-22%
Life expectancy	82	78	-4	-5%	85	84	-1	-1%
Labor force participation, ages 45 to 49 (%)	87	68	-19	-22%	84	88	4	5%
Median number of work years	45	32	-13	-29%	42	42	0	0%
Median annual earnings at ages 45 to 49	91,300	53,900	-37,400	-41%	63,900	59,100	-4,800	-8%
Median annual lifetime earnings	83,500	37,700	-45,800	-55%	59,000	52,200	-6,800	-12%

Eliminating our set of racial differences eliminates the racial gap in median Social Security benefits at age 70

- Increase median Social Security benefits at age 70 \$6,200 (23%).
- The male benefit racial gap is bigger than the female racial gap.
- Black women’s lifetime earnings are more like white women’s lifetime earnings, so eliminating the Black disadvantages has a smaller impact on Black women’s benefits than Black men’s benefits.
- +1% Black women, + 54% Black men

Black-White Differences in Median Social Security Benefits at Age 70 by Education and Sex

Under the baseline scenario and the alternative scenario that eliminates underlying racial disadvantages

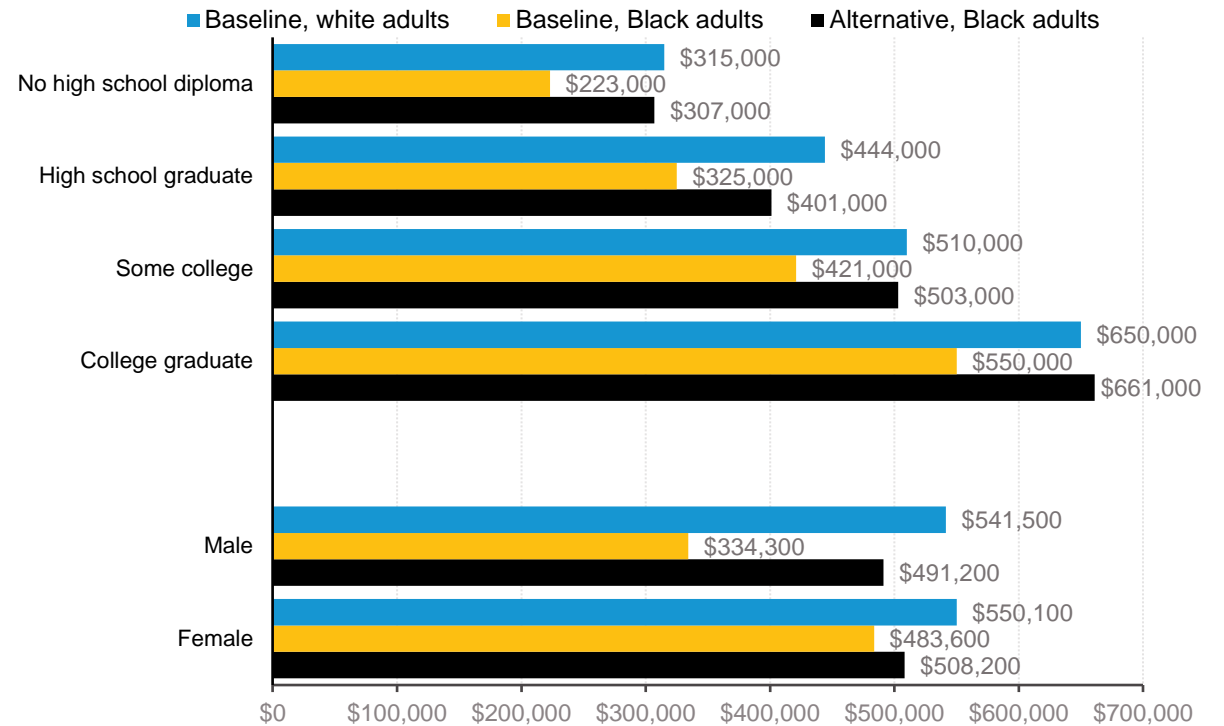


Similar pattern for lifetime Social Security benefits

- Overall, eliminating the Black racial disadvantage boosts Black retirees' lifetime Social Security benefits \$93,000 (23%).
- Lifetime benefits increase \$24,600 (5%) for Black women, \$156,900 (47%) for Black men.

Black-White Differences in Median Lifetime Social Security Benefits by Education and Sex

Under the baseline scenario and the alternative scenario that eliminates underlying racial disadvantages



Present value of lifetime Social Security benefits discounted to age 65. Universe is all Black and white adults who survive to age 26.

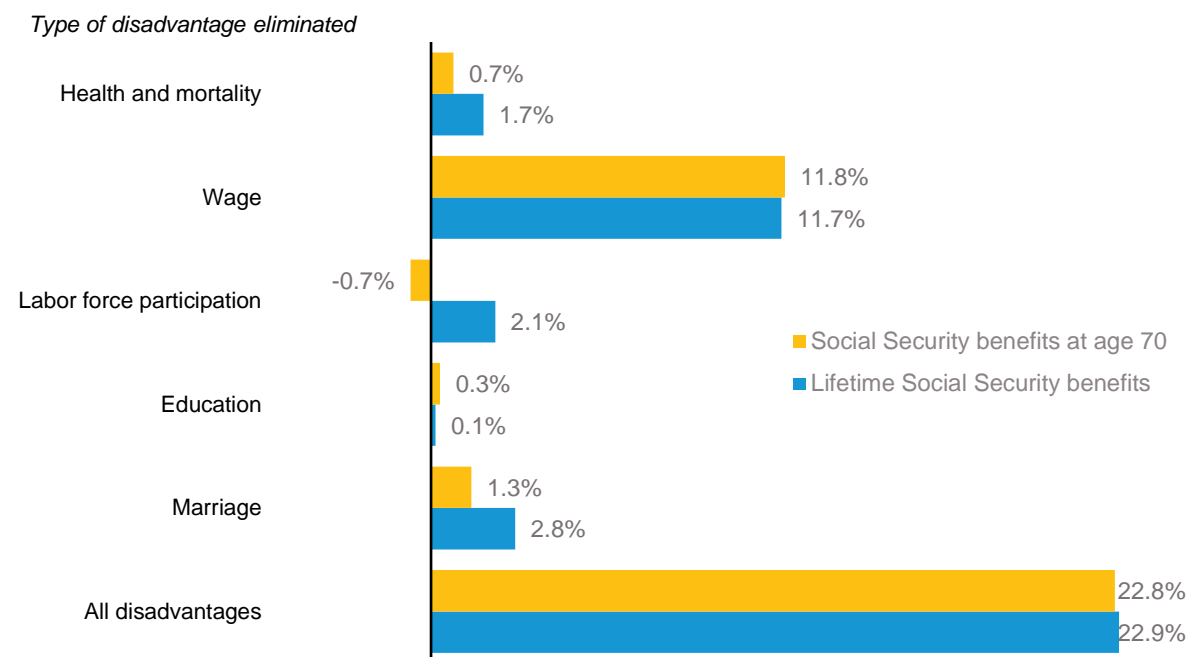
What disadvantage matters most?

Eliminating the wage disadvantage has the greatest impact on reducing the Black racial disadvantage

- Participation: Age 70 benefits decline because some workers delay benefit claiming when they increase participation. Also, Black women reduce employment when they work like white women. But lifetime benefits increase in the participation simulation.
- Eliminating the health and marriage disadvantages have bigger effects on lifetime benefits than on benefits at age 70.
- Overall impact is greater than the sum of the separate disadvantages.

Simulated Impact on Black Beneficiaries' Median Lifetime Social Security Benefits and Benefits at Age 70

Under the baseline scenario and the alternative scenario that eliminates underlying racial disadvantages



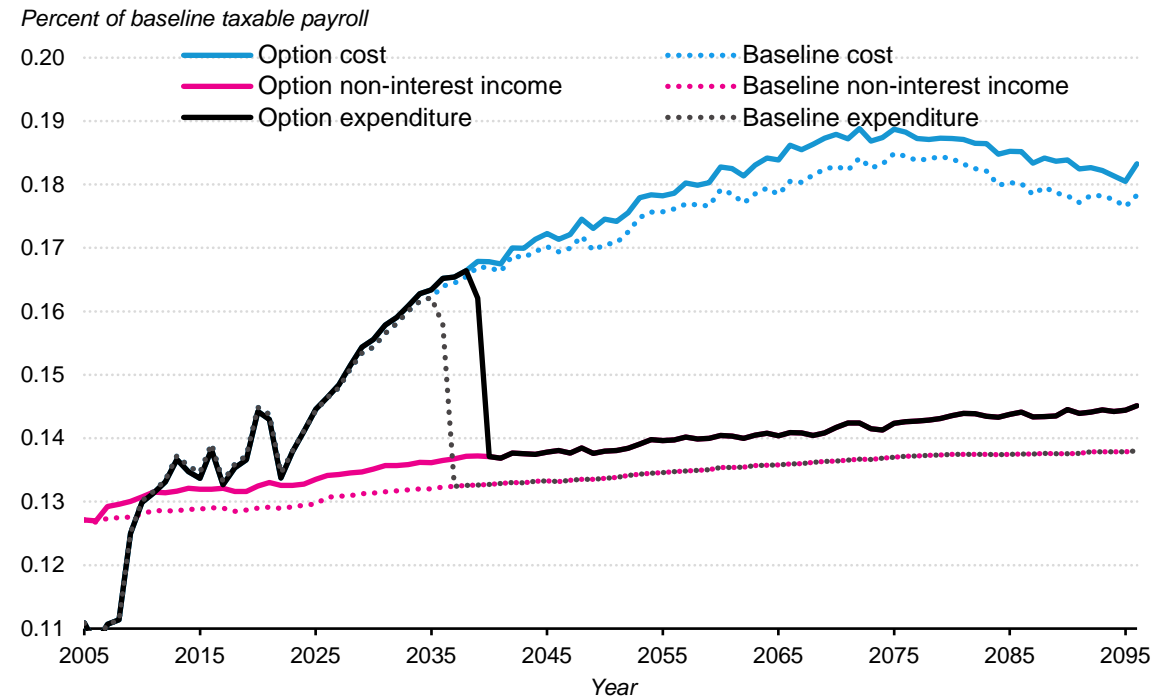
What is the impact on Social Security finances?

Eliminating Black disadvantages

- Extend the ability to pay full scheduled benefits by 3 years (2035 to 2038).
- Additional revenue from higher taxable payroll would reduce the required benefit reduction when the trust funds are depleted.
- OASDI trust funds benefit from revenue gains from increased earnings sooner than the increased cost from higher benefits.

Cost, Expenditure, and Non-Interest Income as a Percent of Baseline Taxable Payroll

Under the baseline scenario and the alternative scenario that eliminates underlying racial disadvantages

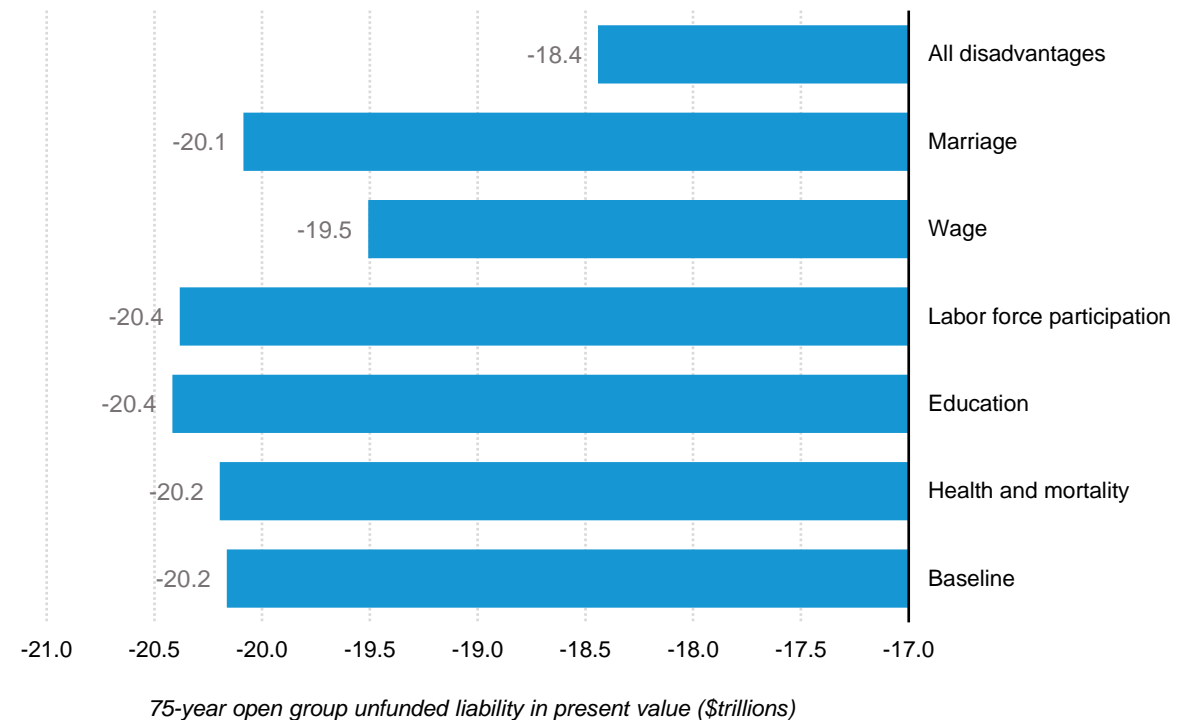


Eliminating Black disadvantages reduce OASDI unfunded liabilities \$1.7 trillion over 75 years

- 3.6% increase in present value of taxable payroll
- 3.9% increase in present value of non-interest income.
- 1.6% increase in present value of cost.

75-Year Open-Group Unfunded Liability

Under the baseline scenario and the alternative scenario that eliminates underlying racial disadvantages

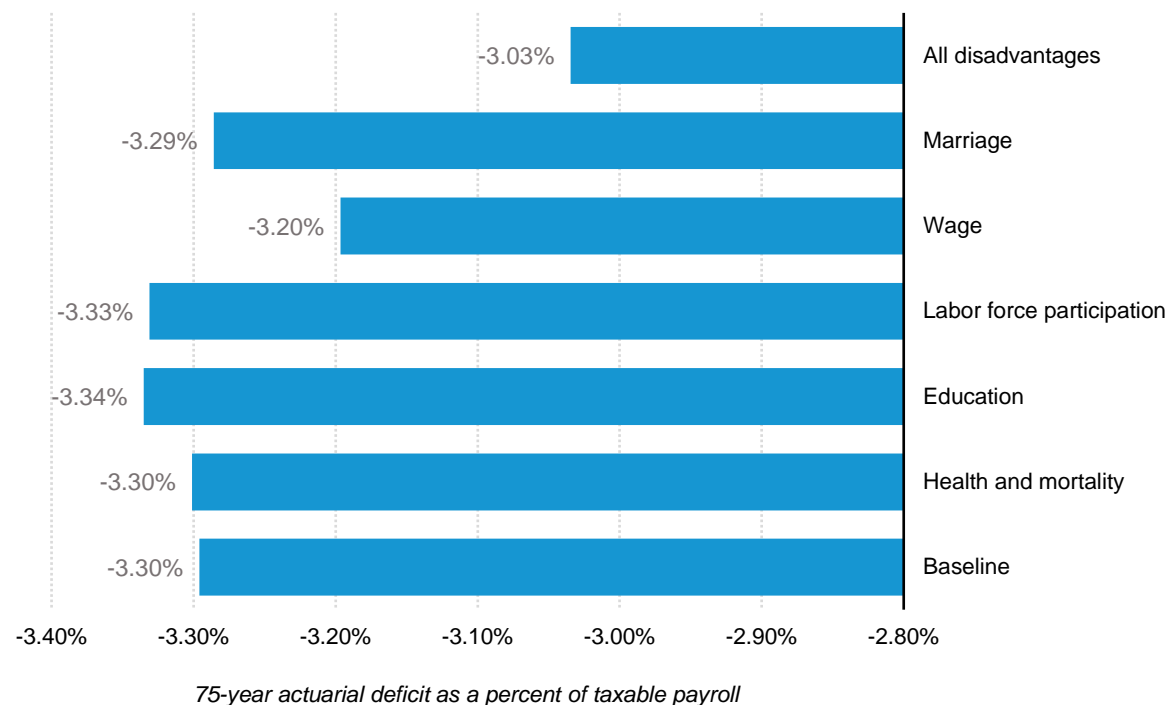


Eliminating Black disadvantages reduce the 75-year actuarial deficit by 0.27 percent of taxable payroll

- Black people are only 12 percent of US population, limiting the impact of the reforms on trust fund finances.
- Actuarial deficit remains high. The changes do not close the long-term gap in cost over revenue.

75-Year Actuarial Deficit as a Percent of Baseline Taxable Payroll

Under the baseline scenario and the alternative scenario that eliminates underlying racial disadvantages



Summary and Conclusions

- Structural racism significantly reduces Social Security benefits for Black beneficiaries, decreasing median baseline lifetime benefits relative to white beneficiaries by 26 percent.
- Eliminating the systematic disadvantages in health and disability, marriage, education, employment, and wages could increase lifetime benefits of Black beneficiaries by 23 percent (\$93,300), significantly reducing the racial benefit gap.
- The wage disadvantage has the biggest impact on lifetime benefits.
- The gains from eliminating the racial disadvantages are bigger for Black men than for Black women.
- Present value of additional OASDI payroll tax > present value of additional benefits.

Summary and Conclusions

- Eliminating the systematic disadvantages
 - Increases benefits for Black beneficiaries.
 - Improves Social Security finances.
 - Extends solvency date 3 years.
 - Reduces the size of the benefit reduction or tax increase needed to maintain solvency.



Thank you