

TECHNICAL PANEL MEETING

FEBRUARY 13, 2015

Jeffrey Liebman

Outline

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Incidence

1. Stability for men since early 1990s.
2. Stability for older women since 1995.
3. Analysis of previous technical panel seemed to confound late 1980s legislatively induced bounce back with longer-term factors.
4. Stability is result of large offsetting factors => not guaranteed to last.
5. Takes a long time to reach new steady state.

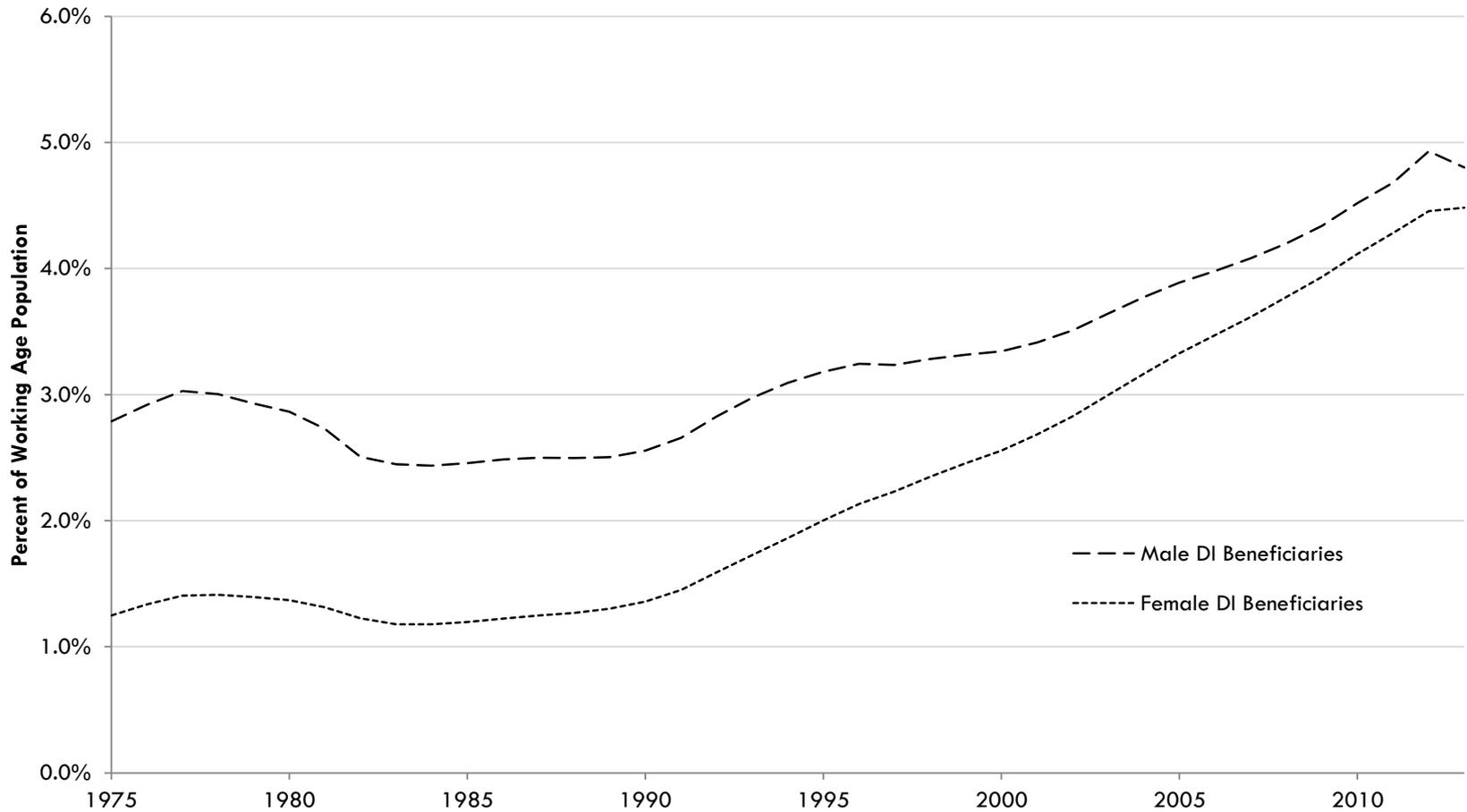
Mortality

1. Quite linear long-run trends.
2. Interpretation?

Benefit Levels Relative to GDP

Percent of Working Age (20-64) Population Receiving Disability Insurance Benefits, 1975 – 2013

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Model Equations

In Current Payment, New Awards, and Terminations

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□ For age a and year t , where a is single year of age from 15 to 64:

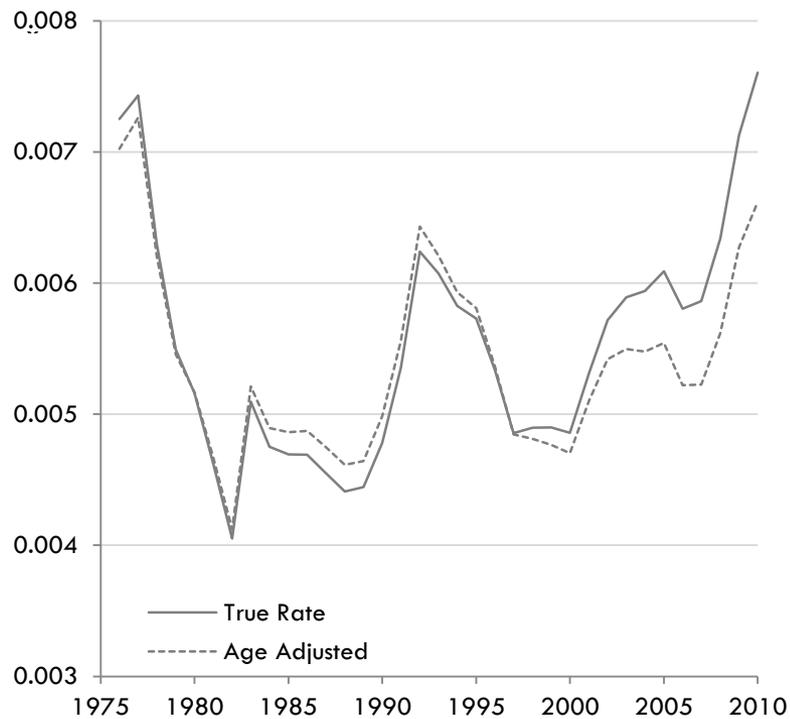
- $ICP_{at} = ICP_{(a-1)(t-1)} + \text{new awards}_{at} - \text{terminations}_{at}$
- $\text{new awards}_{at} = \text{incidence}_{at}((\text{population}_{at} \times \text{pct insured}_{at}) - ICP_{(a-1)(t-1)})$
- $\text{Terminations}_{at} = (\text{death rate}_{at} + \text{recovery rate}_{at}) \times ICP_{(a-1)(t-1)}$

Model Parameters for Men

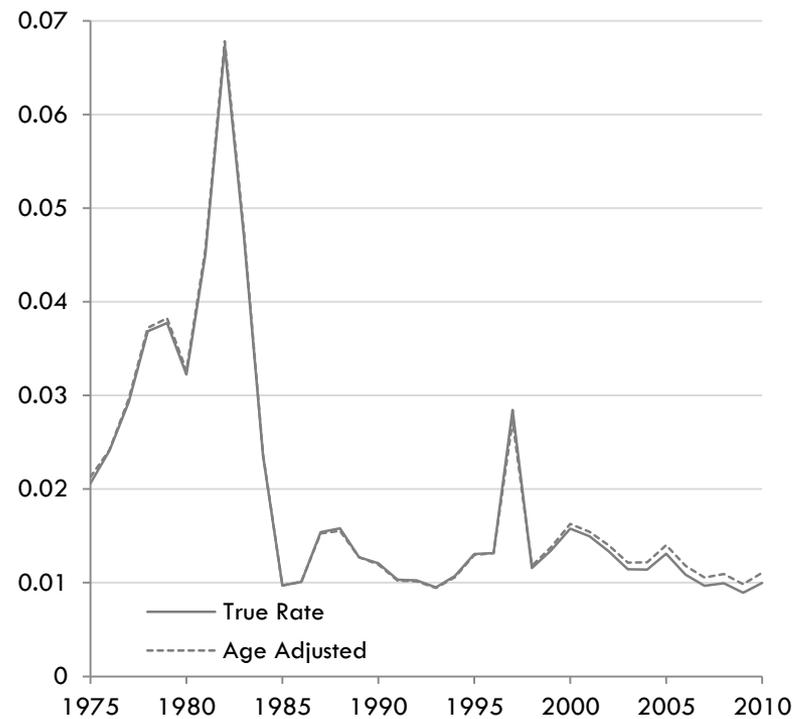
Incidence and Recovery Rates

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Incidence Rate



Recovery Rate

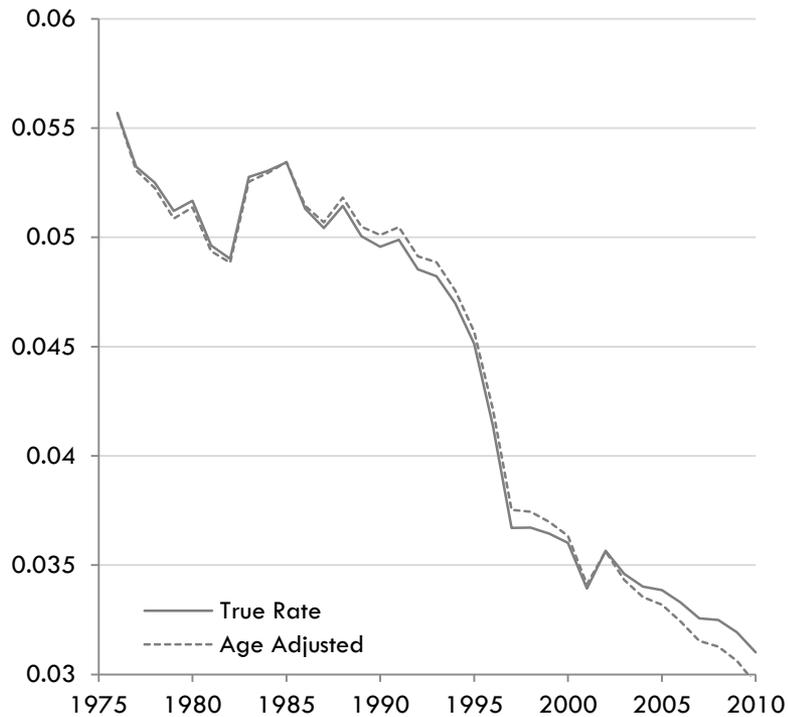


Model Parameters for Men

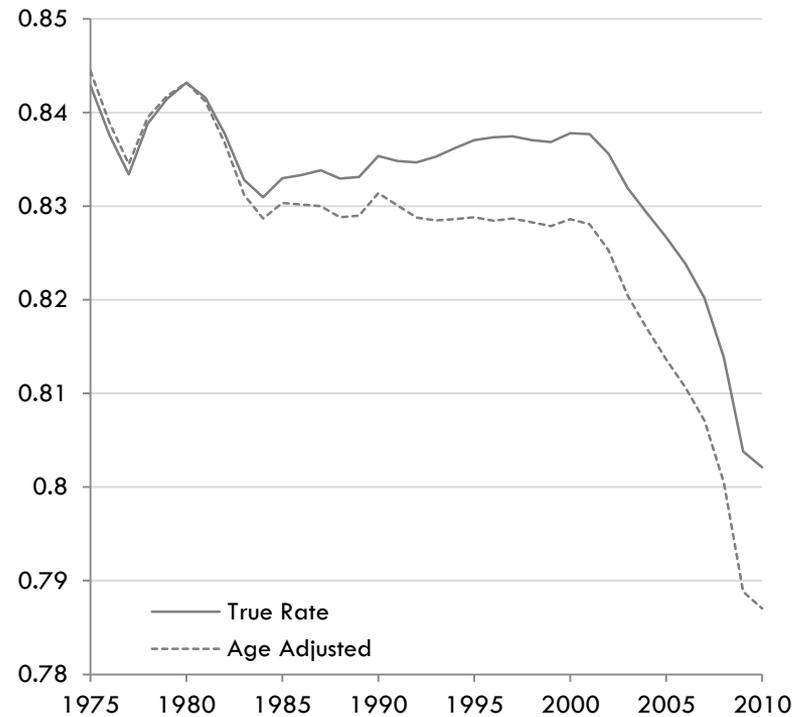
Mortality and Insured Rates

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Mortality Rate



Insured Rate

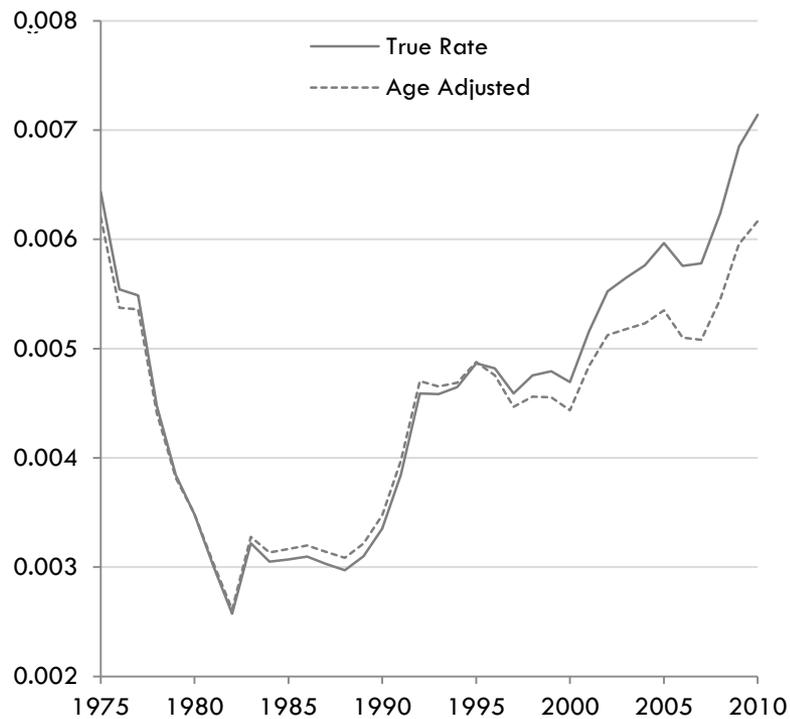


Model Parameters for Women

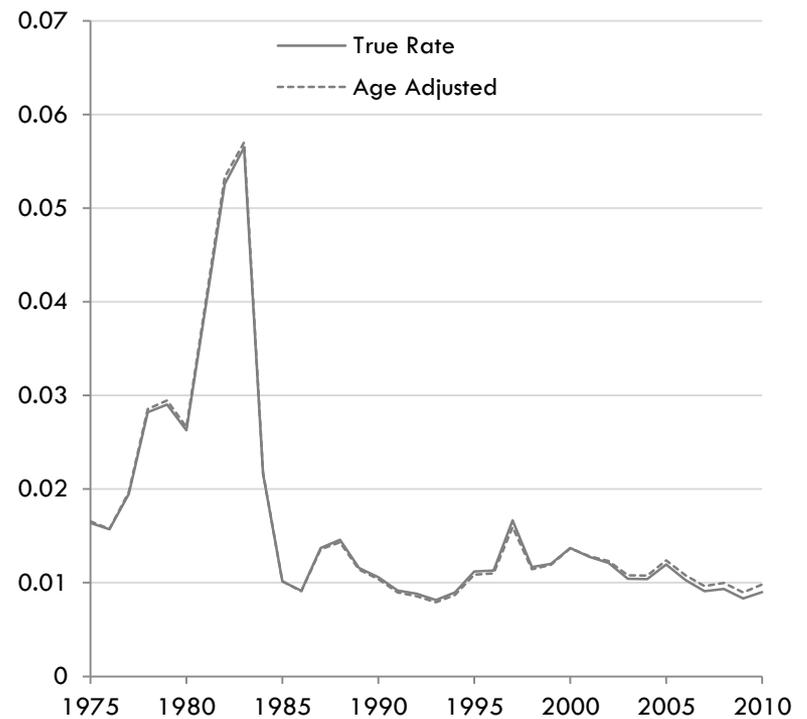
Incidence and Recovery Rates

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Incidence Rate



Recovery Rate

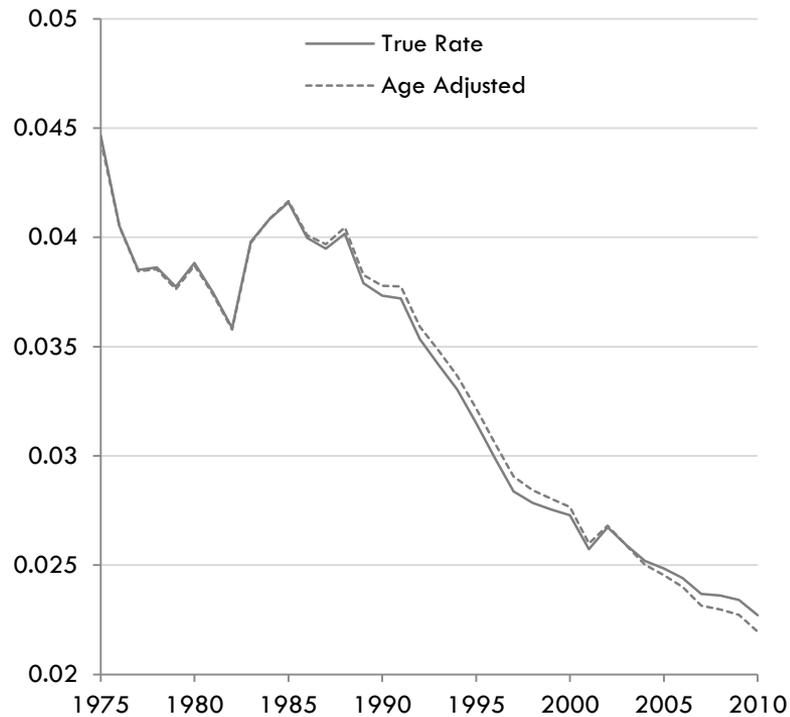


Model Parameters for Women

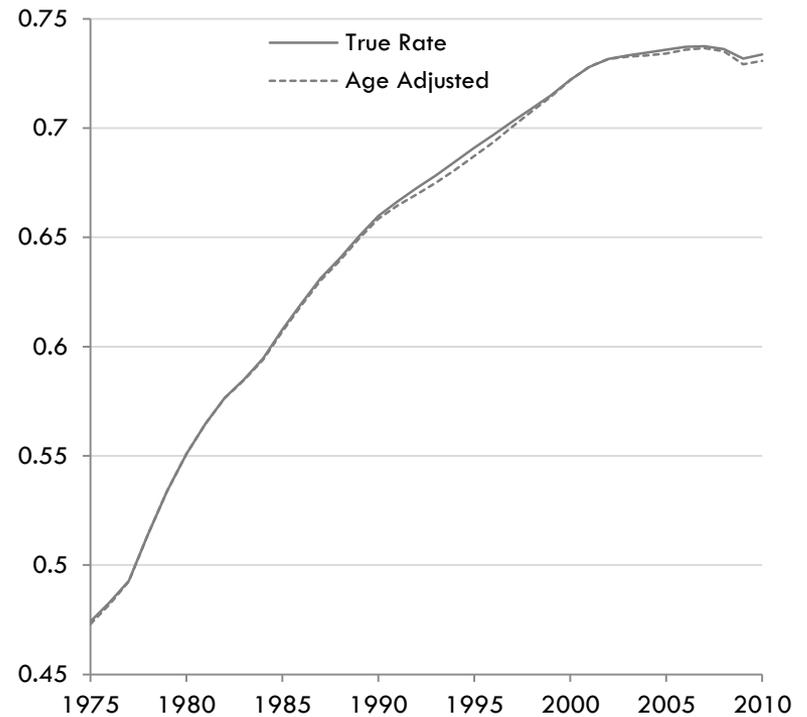
Mortality and Insured Rates

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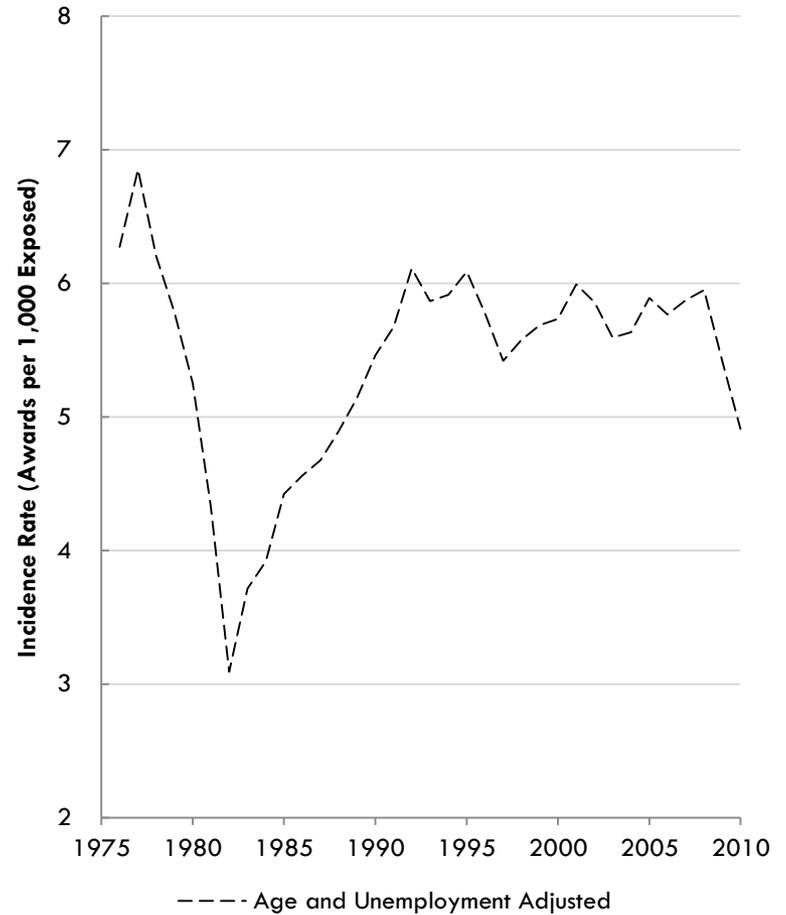
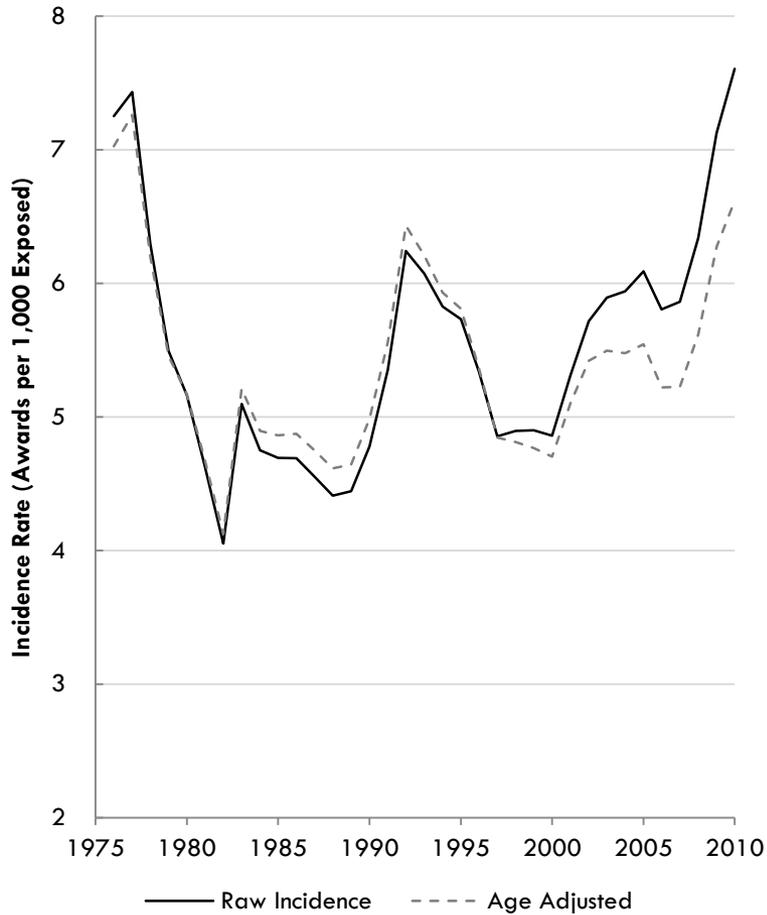
Mortality Rate



Insured Rate



Incidence Rates, Men Ages 20-64



Regression and Adjusted Incidence Equations

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□ Regression

▣ Age Adjusted Incidence =

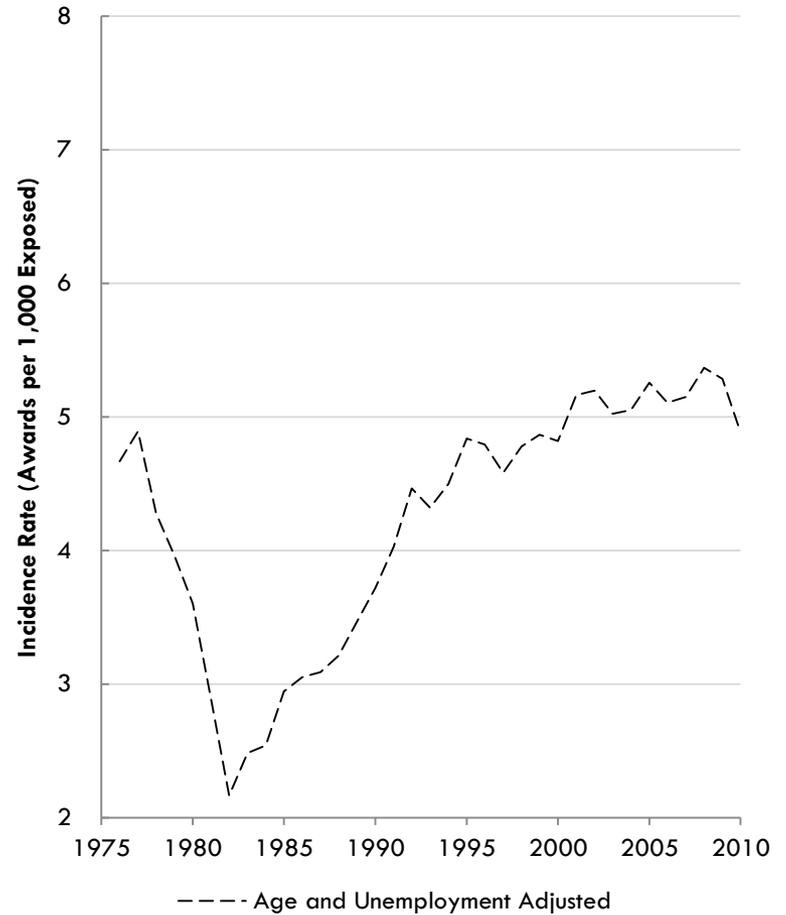
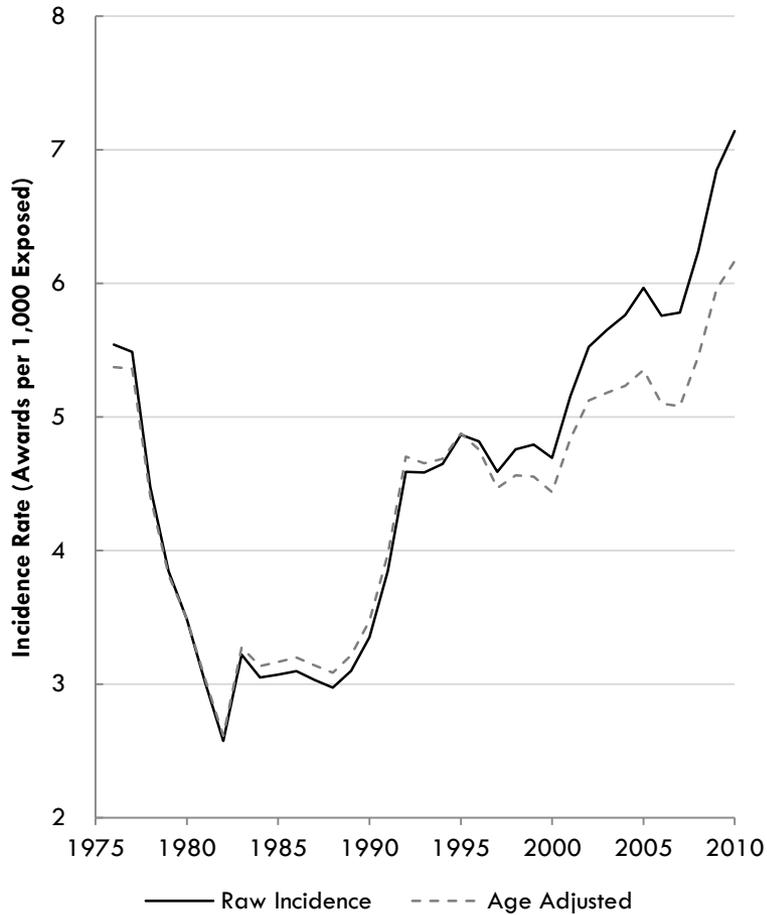
$$\beta_1 \times \text{Unemp} + \beta_2 \times (\text{Lagged Unemp}) + \beta_3 \times \text{Time} + \\ \beta_4 \times (\text{Time} - \text{Spline Year, if after Spline Knot}) + \text{constant}$$

□ Unemployment-Adjusted Incidence

▣ Unemp Adjusted Incidence =

$$\text{Age Adjusted Incidence} + \beta_1 \times (\text{Mean Unemp} - \text{Unemp}_t) + \\ \beta_2 \times (\text{Mean Lagged Unemp} - \text{Unemp}_{t-1})$$

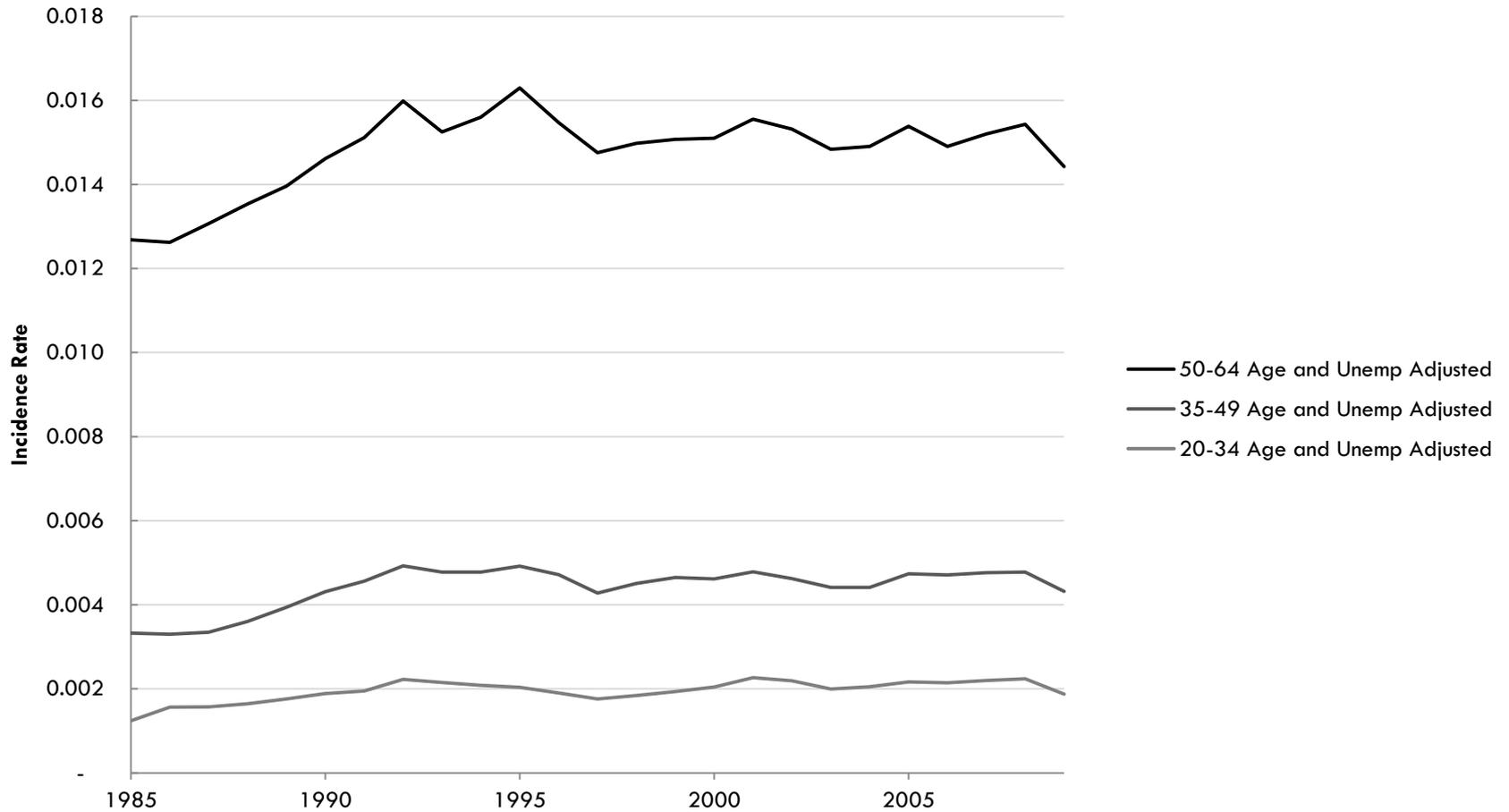
Incidence Rates, Women Ages 20-64



Male Incidence Rates by Age Groups

Age and Unemployment Adjusted

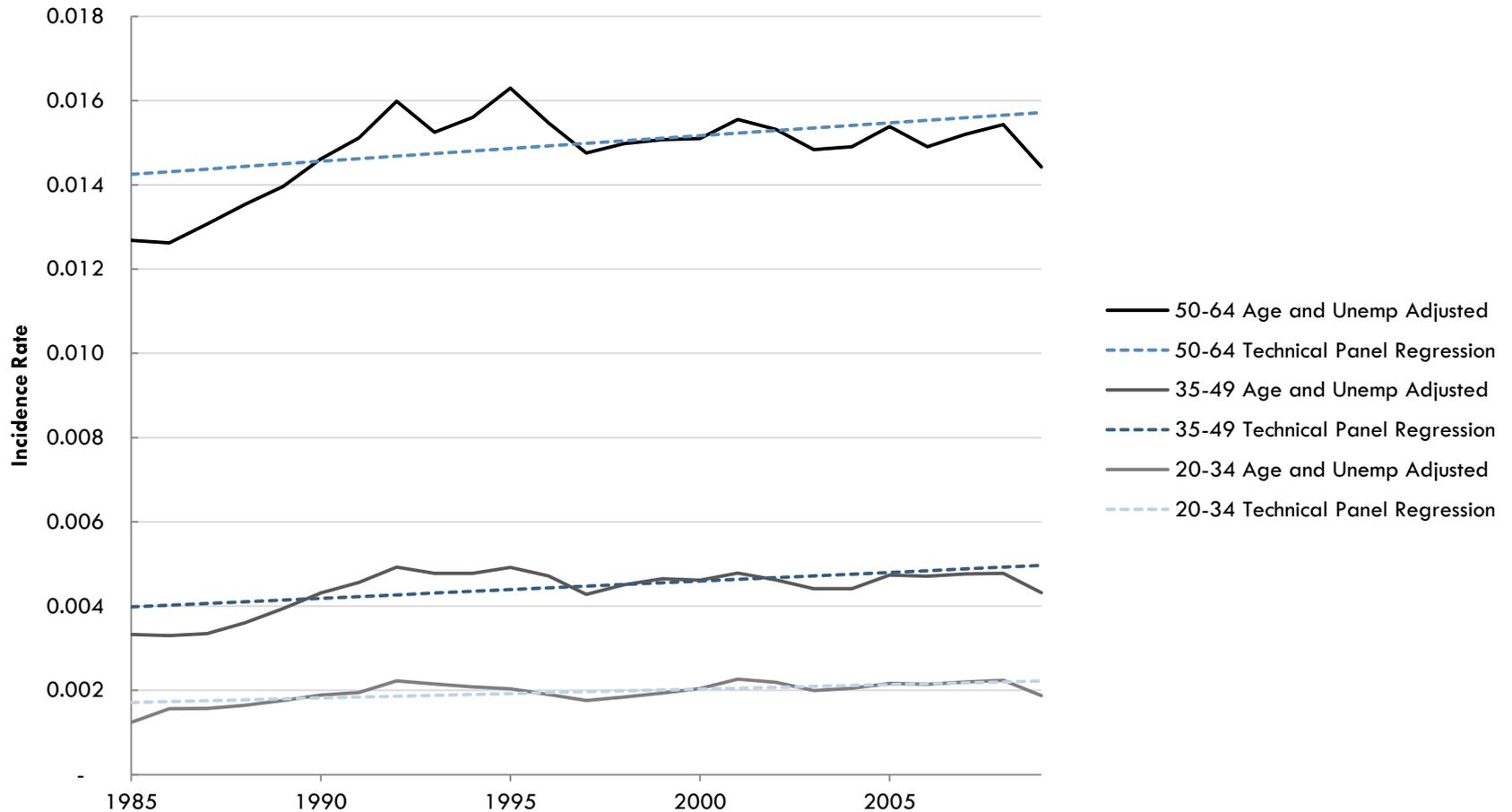
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Male Incidence Rates by Age Groups

Age and Unemployment Adjusted v. SSA Technical Panel Regression

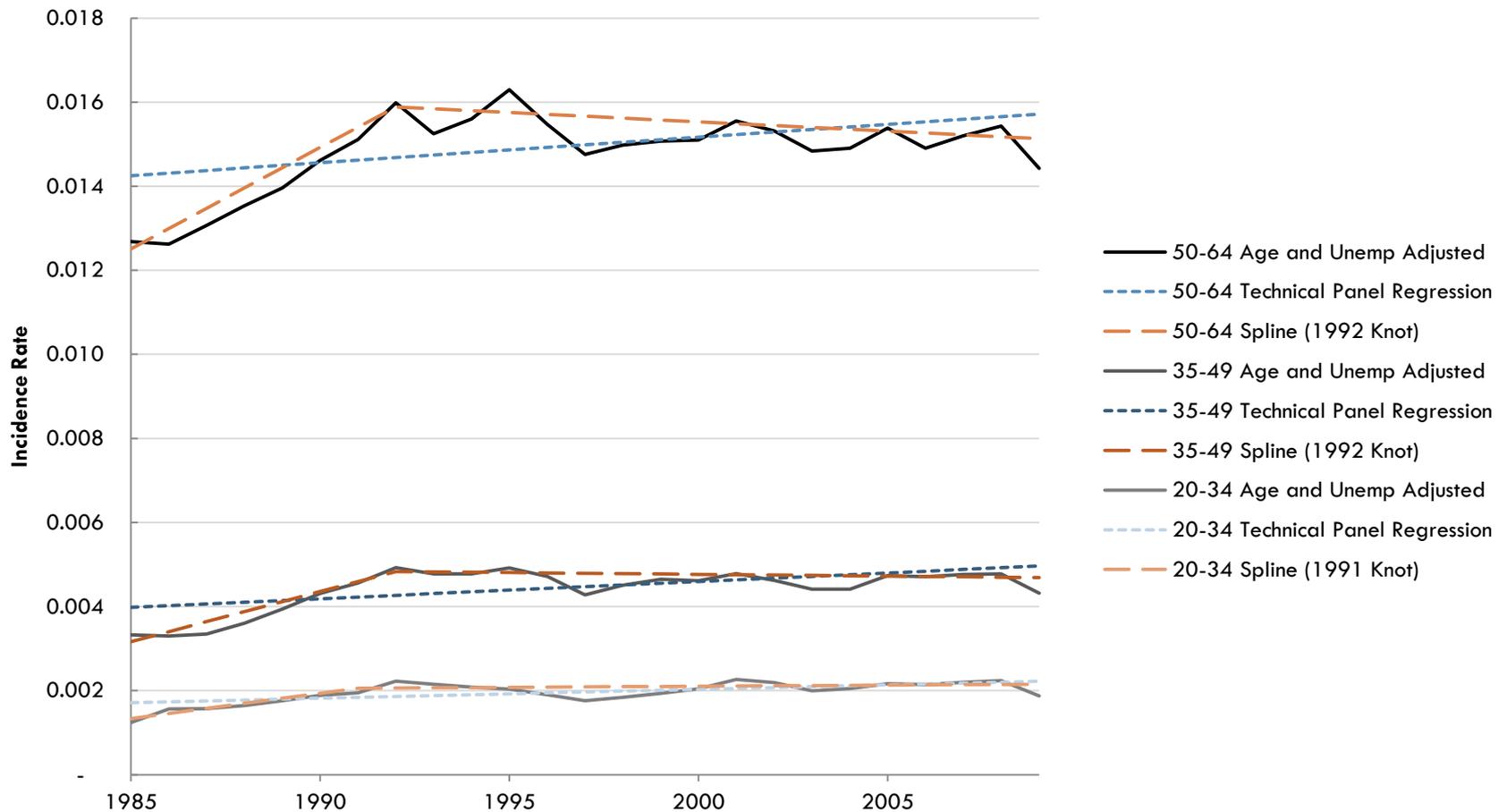
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Male Incidence Rates by Age Groups

Adjusted Values v. SSA Technical Panel Regression v. Spline Regression

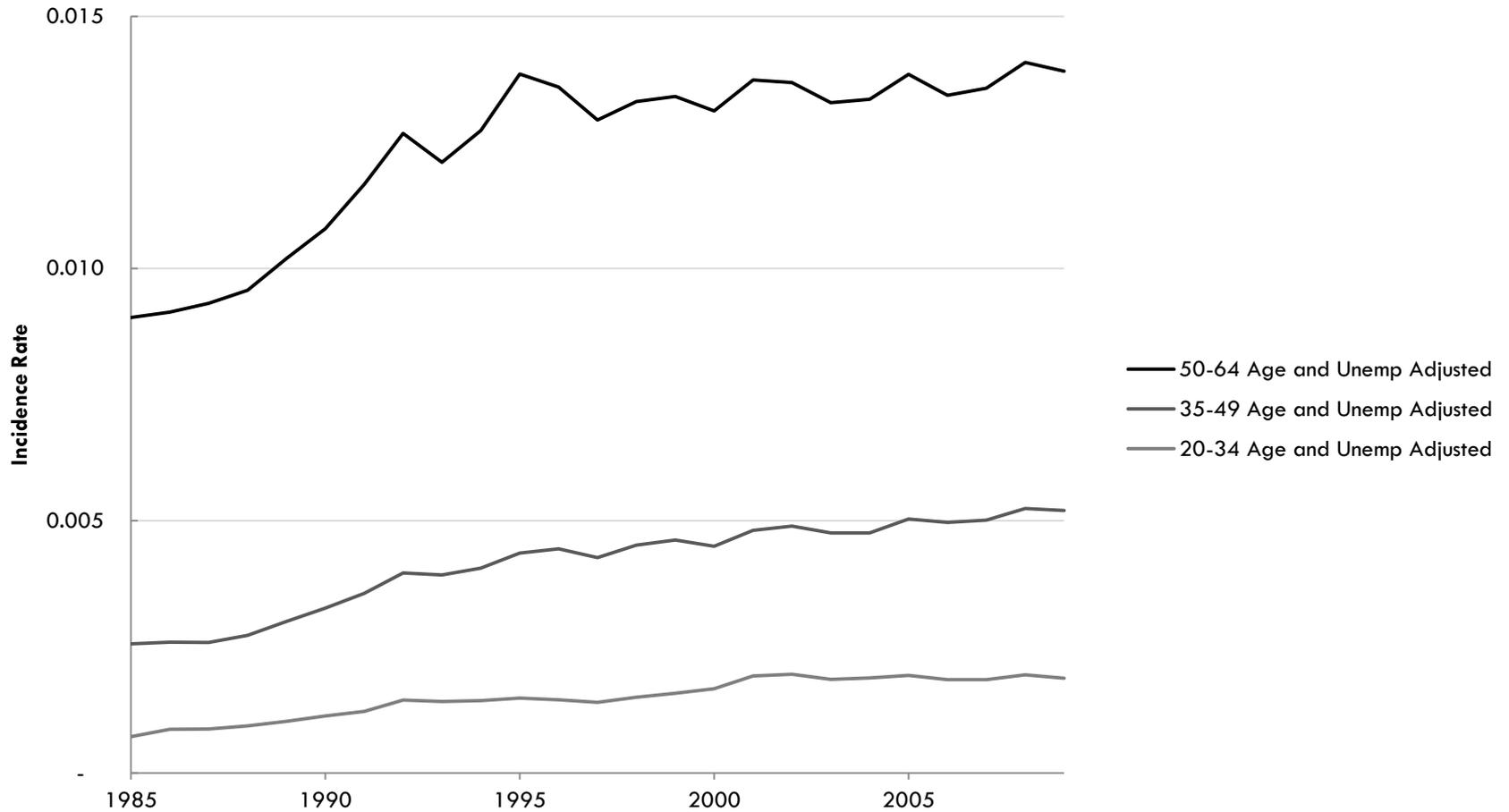
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Female Incidence Rates by Age Groups

Age and Unemployment Adjusted

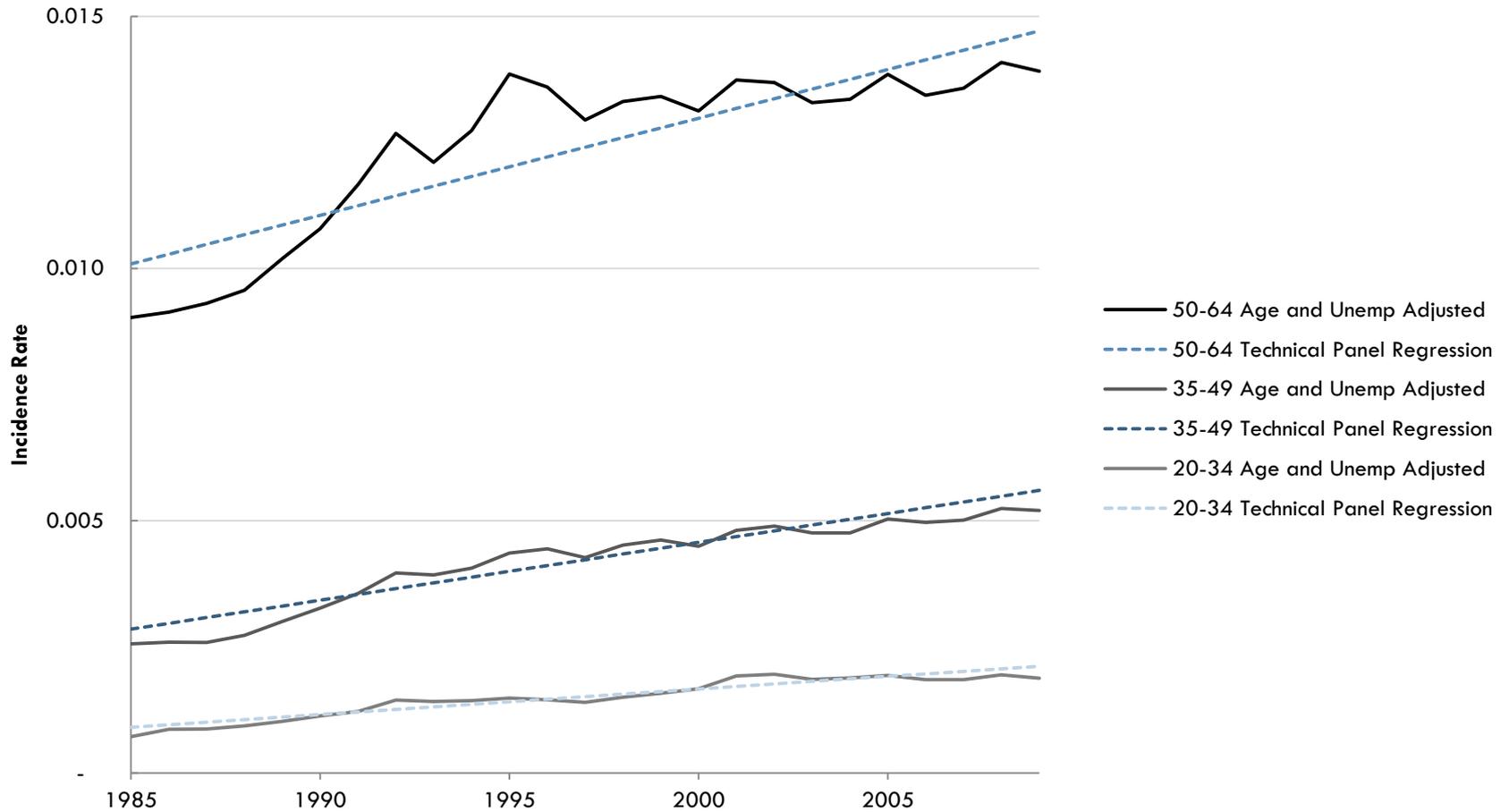
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Female Incidence Rates by Age Groups

Age and Unemployment Adjusted v. SSA Technical Panel Regression

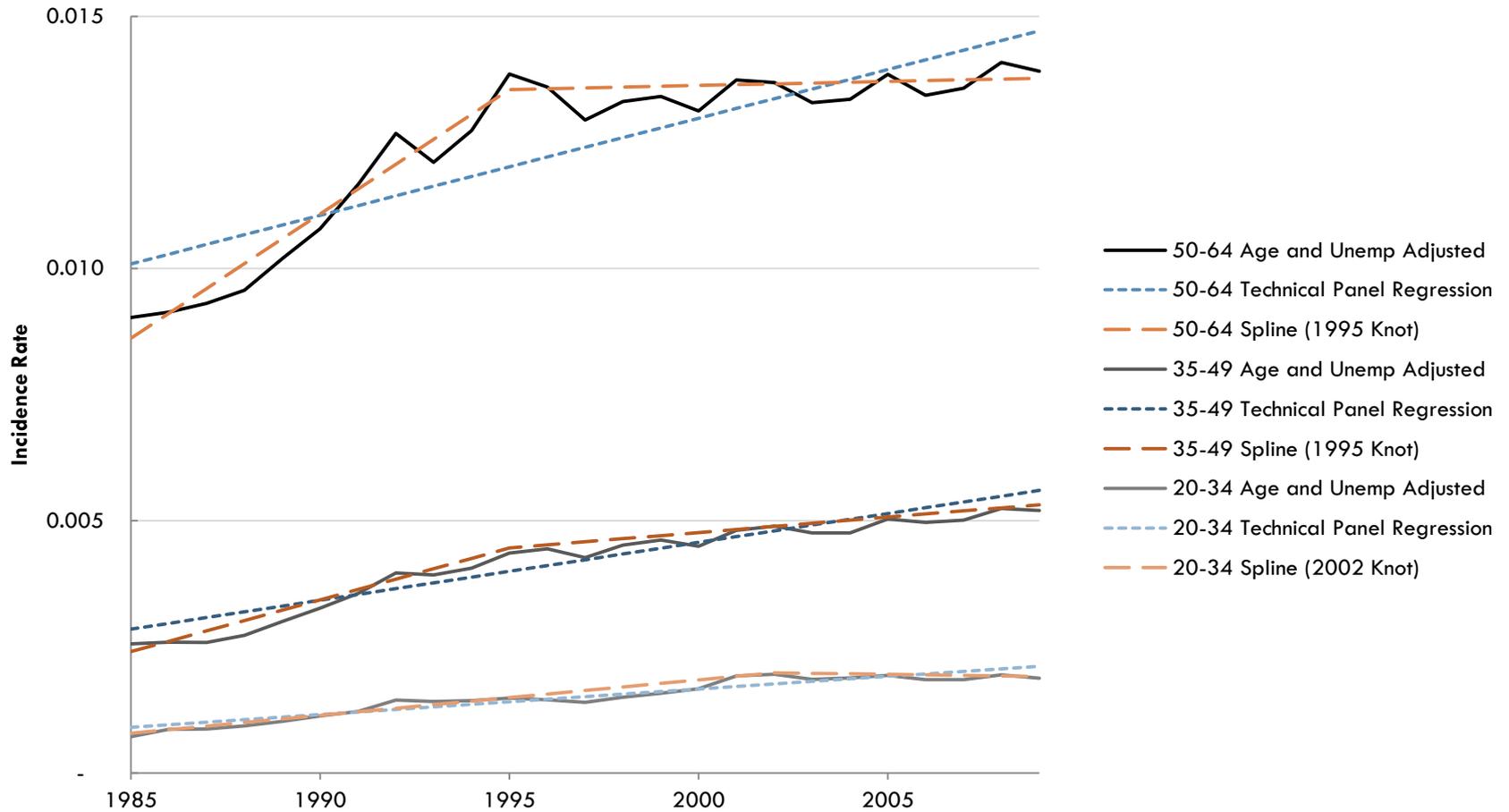
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Female Incidence Rates by Age Groups

Adjusted Values v. SSA Technical Panel Regression v. Spline Regression

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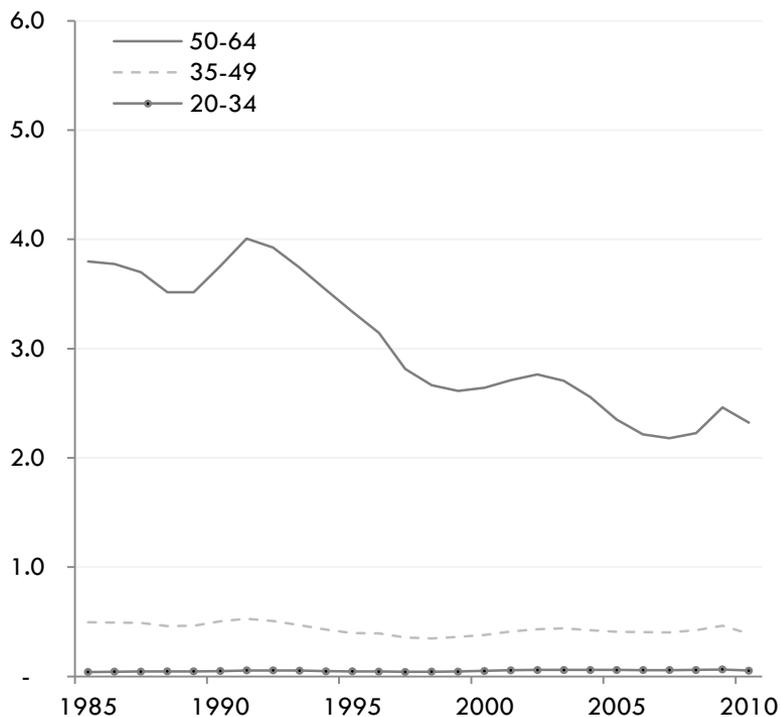


Offsetting Trends in Claims by Condition

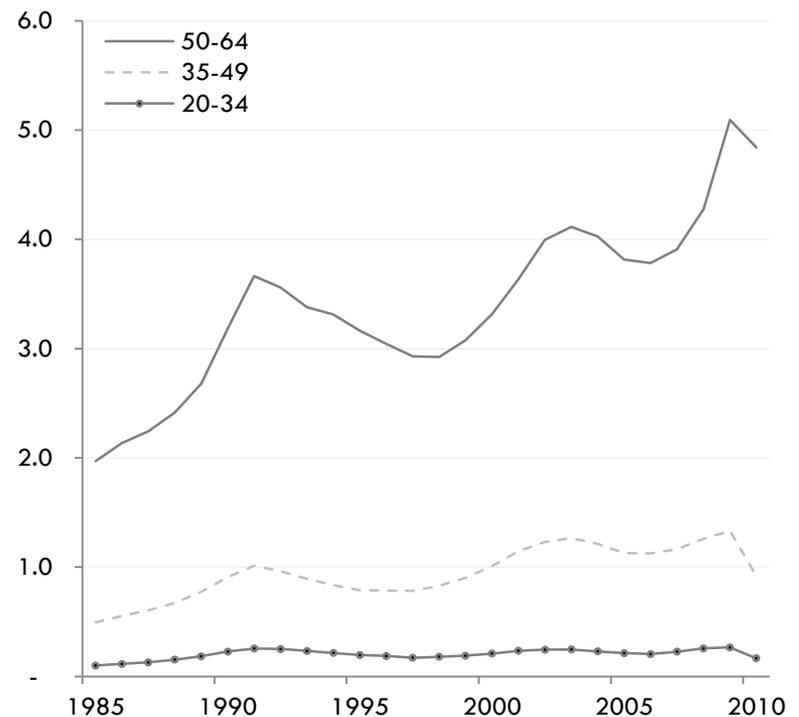
Age Adjusted Incidence Rates for Male DI Beneficiaries

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Decrease in Circulatory



Rise in Musculoskeletal

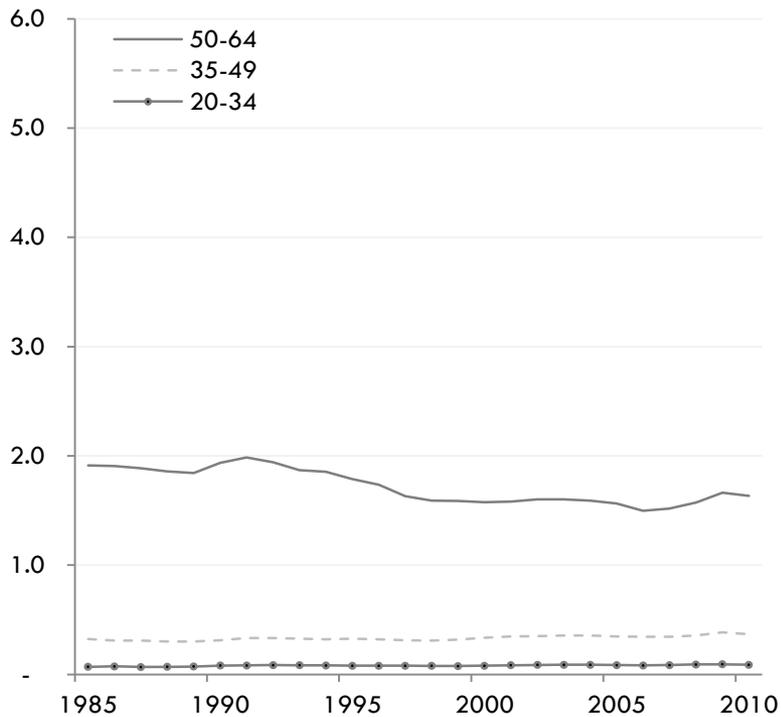


Offsetting Trends in Claims by Condition

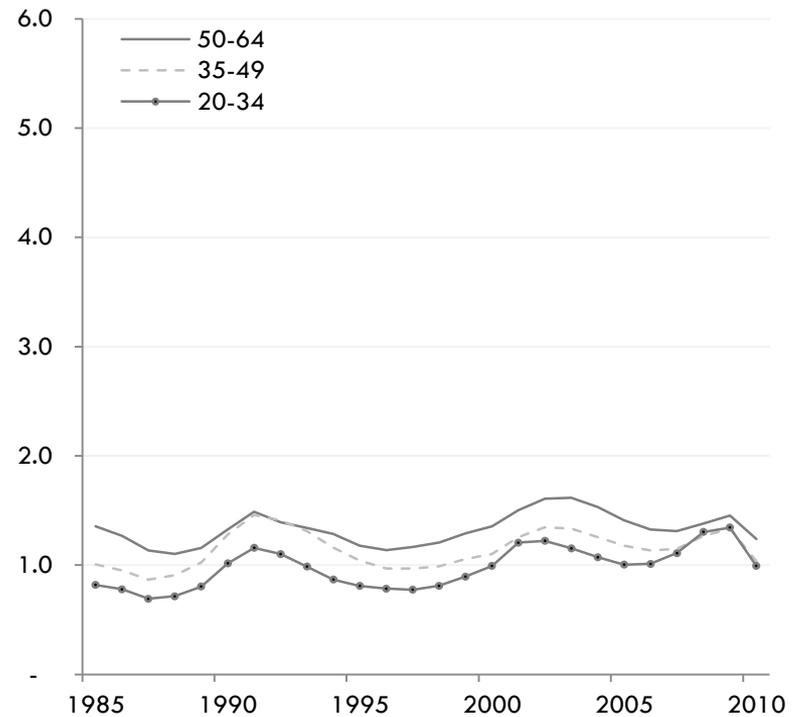
Age Adjusted Incidence Rates for Male DI Beneficiaries

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Decrease in Neoplasm



Increase in Mental



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Mortality

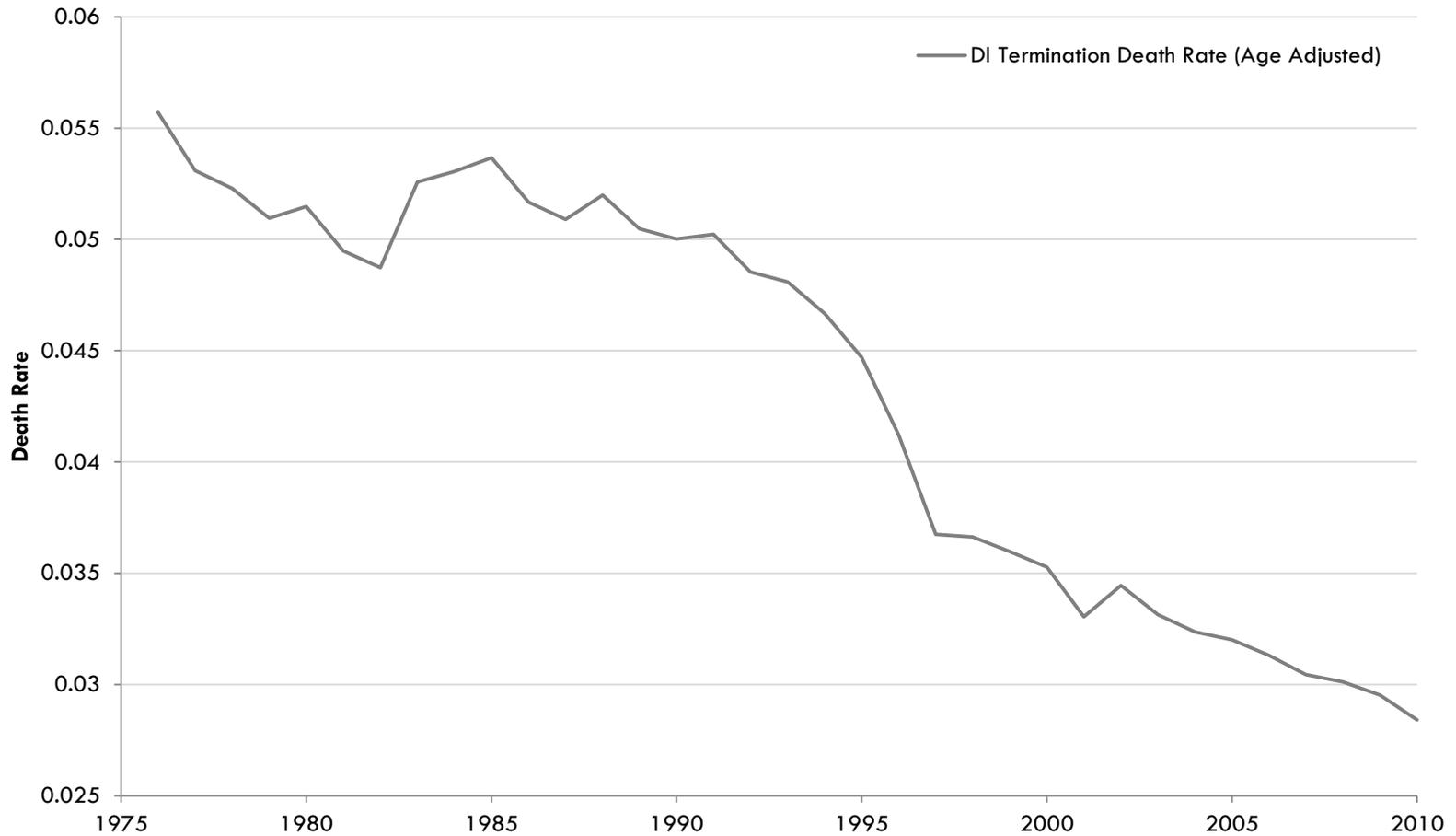
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Benefit Levels Relative to GDP

Age Adjusted Death Rate

Male DI Recipients 20-64

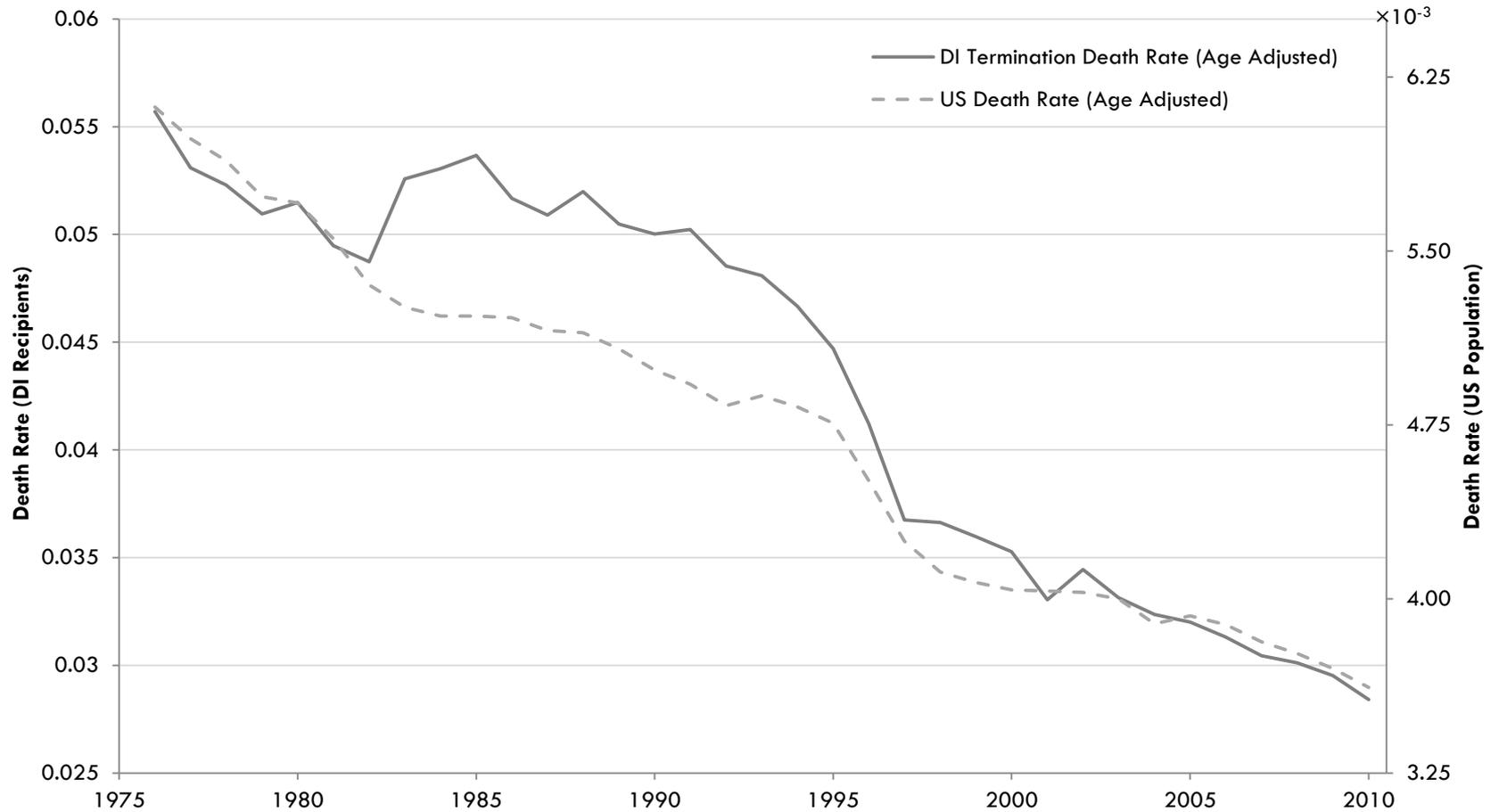
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Age Adjusted Death Rate

Males 20-64, DI Recipients v. US Population

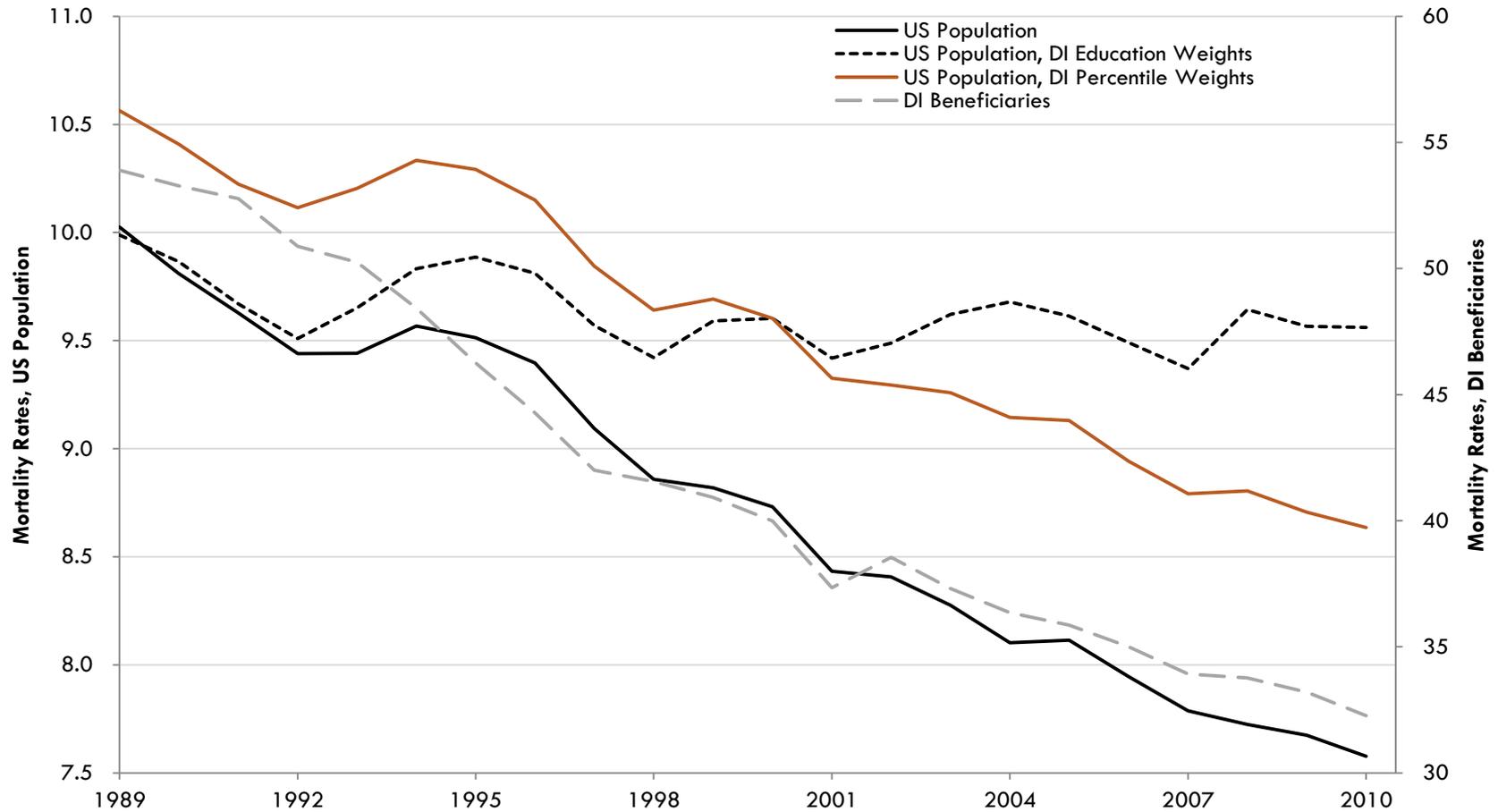
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Overall Mortality Rates, Ages 50-64

DI Beneficiaries v. US Population with Various Weights

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Educational Distribution of the US Population

Men and Women, Ages 50-64

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	0-8 Years	<HS	HS Diploma / 12 Years	Some College	Bachelor's or Higher
1990	13%	14%	40%	15%	18%
1995	9%	11%	36%	22%	22%
2000	7%	9%	34%	24%	26%
2005	5%	7%	32%	26%	29%
2010	4%	6%	32%	27%	31%

Analyses it would be helpful to see

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Trends in DI mortality rates disaggregated by condition (how much of the decline in mortality for DI recipients is within condition vs. a change in the composition of conditions?).

Trends in DI mortality rates by overall (not just DI) PIA decile.

Benefits as a percent of GDP

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	1977-1979	2005-2006
Men	0.41	0.41
Women	0.14	0.27
Total	0.55	0.68

From 1977 to 2006

- The beneficiary/population ratio increased by 68 percent.
- Benefits/GDP increased by only 24 percent.
- This is because average benefits fell by 27 percent relative to per worker GDP ($1.68 \times 0.73 = 1.24$).