Longevity Options for Reforming Social Security: A Microsimulation Approach to Retirement Age and Mortality Adjustments

New Approaches to Social Security Adequacy and Solvency in the 21<sup>st</sup> Century

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The views expressed are those of the authors and do not represent the views of the Social Security Administration.

# Social Security Policy and Demographic Change

- In addition to system-financing challenges, a changing demographic and socioeconomic context raises a number of challenges for Social Security policy.
- Increased and differential longevity represents a key demographic change challenging the program's ability to balance equity and adequacy.

# Increasing Differential Mortality by Socioeconomic Status (SES)

- Declining old-age mortality in the U.S. has not been uniform.
  - Higher SES groups have experienced greater increases in longevity than lower SES groups.
- Increasing differentials in old-age mortality by earnings or education is making the Social Security system relatively less generous to low-income individuals on a lifetime basis.
  - Under the current system, aged beneficiaries receive benefits until they die, so increasing differential life expectancy increases differential lifetime benefits.
  - Waldron (2007) provides information on differential life expectancy
  - Goldman and Orszag (2014) examine widening gap in lifetime benefits
  - NYTimes (April 22, 2016) "Rich People are Living Longer: That's Tilting Social Security in Their Favor"



# Increasing Differential Mortality by Socioeconomic Status (SES)

- This issue can be exacerbated by proposed changes to the program.
  - Many proposals (such as Simpson Bowles, Bi-Partisan Commission and Social Security Reform Act of 2016) include increases to Social Security Retirement Ages
    - Full Retirement Age (FRA): age 67
    - Early Eligibility Age (EEA): age 62
- Today,
  - We use a microsimulation model to first analyze a policy that addresses longevity but reduces benefits, raising the FRA.
  - We then make an adjustment for the increasing differential mortality by lifetime earnings and hence lifetime benefits (from Couch, Reznik, Tamborini and Iams (2017, ROA).
  - Analyze the distributional results in terms of benefits and poverty.  $_{5}$

# Adjustment for Differential Mortality

- Conceptually adjust the proportional gains for all Americans in lifetime benefits based on increased longevity to be equal.
- We multiply the basic benefit (PIA) by an adjustment factor to account for the increased life expectancy between the 1928 cohort who retired in the 1990s and the 1960 cohort who will be fully retired (age 70) in 2030 using changes in gender-specific life expectancy by the quartile of adjusted lifetime earnings (AIME). For Low AIMEs: Increase the PIA. For High AIMEs: Decrease the PIA.
- This will then affect computation of all related benefits (Spousal, Dually Entitled, etc.)

# **Differential Mortality Adjustment Factors**

AIME Quartile	Life Expectar	ncy at Age 65	Percentage Change in	
	1928 Birth Cohort	1960 Birth Cohort	Life Expectancy	Adjustment Factor
Male				
Lowest	13.6	15.2	11.8%	1.69
Second Lowest	14.3	17.0	18.9%	1.05
Second Highest	15.8	19.5	23.4%	0.85
Highest	16.7	20.7	24.0%	0.83
Male Average	15.1	18.1	19.9%	
Female				
Lowest	18.1	19.9	9.9%	1.43
Second Lowest	19.0	21.3	12.1%	1.18
Second Highest	19.6	22.8	16.3%	0.87
Highest	19.9	23.5	18.1%	0.79
Female Average	19.2	21.9	14.2%	

SOURCE: Authors' calculations based on Table 1 in Goldman and Orszag (2014).

## Adjustment For Early Election of Retirement Benefits

#### Table 1.

Current-law benefit decreases for each year of claiming benefits before the full retirement age (FRA)

		Annual percentage decrease from age—					Total percentage decrease from
Year of birth	FRA	63 to 62	64 to 63	65 to 64	66 to 65	FRA to 66	FRA to 62
1943–1954	66	5.0	6.7	6.7	6.7		25.0
1955	66 and 2 months	5.0	6.4	6.7	6.7	1.1	25.8
1956	66 and 4 months	5.0	6.1	6.7	6.7	2.2	26.7
1957	66 and 6 months	5.0	5.8	6.7	6.7	3.3	27.5
1958	66 and 8 months	5.0	5.5	6.7	6.7	4.4	28.3
1959	66 and 10 months	5.0	5.3	6.7	6.7	5.6	29.2
1960 or later	67	5.0	5.0	6.7	6.7	6.7	30.0

SOURCE: Social Security Administration, Office of the Chief Actuary, Benefit Reduction for Early Retirement (SSA 2008), http://www.socialsecurity.gov/OACT/quickcalc/earlyretire.html.

NOTES: The percentages are based on calculating the reductions to the full monthly benefit amount at the FRA and expressing those amounts based on claiming age. All percentages are rounded.

Source: Knoll and Olsen (2014, SSB)

#### **Current Law**

	Median Monthly	Median Lifetime	Median Monthly	Poverty Rate	150% Poverty	Supp Poverty	150% Supp Poverty
	Benefit	Benefits	Household Income		Rate	Rate	Rate
Total	\$1,523	\$349,133	\$10,015	4.50%	11.40%	13.20%	24.10%
Sex							-
Female	\$1,364	\$326,607	\$9,034	5.00%	12.70%	14.60%	26.80%
Male	\$1,738	\$378,320	\$11,279	3.80%	9.70%	11.50%	20.70%
Ethnicity/Race							
Hispanic	\$1,154	\$276,045	\$7,193	8.80%	20.00%	22.50%	37.20%
White	\$1,616	\$365,024	\$11,017	3.10%	8.90%	10.80%	20.80%
Black	\$1,312	\$304,922	\$6,767	8.50%	19.50%	19.70%	33.30%
Other	\$1,375	\$315,888	\$9,812	7.30%	15.00%	18.60%	29.20%
Age							
60-61	\$796	\$399,824	\$6,309	21.60%	28.30%	26.60%	42.70%
62-64	\$1,115	\$423,053	\$8,744	8.40%	18.20%	15.10%	28.50%
65-69	\$1,446	\$415,153	\$10,390	4.10%	9.90%	11.40%	19.60%
70+	\$1,586	\$329,312	\$10,055	4.20%	11.20%	13.60%	25.10%
Marital Status							
Married	\$1,446	\$368,025	\$13,622	1.80%	4.90%	8.40%	16.10%
Divorced	\$1,575	\$349,095	\$5,790	7.60%	20.30%	20.40%	35.80%
Widowed	\$1,686	\$309,696	\$6,727	5.40%	15.40%	16.20%	31.50%
Never Married	\$1,347	\$305,879	\$5,514	15.50%	30.50%	26.60%	40.10%
Education							
Bachelor or Higher	\$1,856	\$425,704	\$15,719	1.70%	4.70%	6.10%	12.10%
High School Grad	\$1,436	\$329,947	\$8,389	4.80%	12.80%	14.90%	27.80%
Less than 12 Yrs	\$1,037	\$228,313	\$4,960	14.00%	28.90%	31.20%	47.30%
Shared Earnings Quintile							
\$93,820+	\$2,261	\$499,713	\$23,392	0.00%	0.30%	0.50%	1.80%
\$67,999 - \$93,820	\$1,837	\$402,959	\$12,686	0.30%	1.10%	2.20%	7.80%
\$50,042 - \$67,999	\$1,542	\$348,088	\$8,796	0.60%	4.80%	7.20%	20.00%
\$31,373 - \$50,042	\$1,259	\$286,579	\$5,923	2.40%	14.70%	18.40%	38.20%
\$0-\$31,373	\$855	\$189,837	\$3,504	22.50%	42.90%	45.50%	63.10%
Coresident							
None	\$1,575	\$321,971	\$4,825	9.70%	24.00%	23.40%	40.60%
1 or more	\$1,488	\$364,247	\$14,135	1.70%	4.70%	7.90%	15.50%
Reliance							
Less than 50%	\$1,609	\$374,046	\$15,277	1.40%	3.40%	3.60%	7.60%
50% or more	\$1,388	\$304,789	\$3,809	10.70%	27.70%	33.10%	58.20%

### FRA to 69

	Median Monthly Benefit		Median Lifetin	ne Benefits	Median Monthly Household		
					Income		
	Option	Percent Change	Option	Percent Change	Option	Percent Change	
Total	\$1,299	-13%	\$298,393	-14%	\$9,529	-3%	
Sex							
Female	\$1,190	-12%	\$284,472	-13%	\$8,594	-3%	
Male	\$1,431	-14%	\$314,728	-15%	\$10,686	-3%	
Ethnicity/Race							
Hispanic	\$989	-13%	\$238,836	-13%	\$6,795	-3%	
White	\$1,376	-13%	\$311,193	-14%	\$10,544	-3%	
Black	\$1,113	-13%	\$260,418	-13%	\$6,358	-4%	
Other	\$1,173	-13%	\$273,217	-13%	\$9,292	-3%	
Age							
60-61	\$796	0%	\$372,202	-2%	\$6,309	0%	
62-64	\$975	-12%	\$380,300	-12%	\$8,449	-2%	
65-69	\$1,142	-13%	\$367,607	-12%	\$9,757	-4%	
70+	\$1,378	-14%	\$279,237	-16%	\$9,600	-3%	
Marital Status							
Married	\$1,209	-14%	\$310,832	-14%	\$12,939	-3%	
Divorced	\$1,357	-12%	\$300,800	-13%	\$5,455	-4%	
Widowed	\$1,527	-6%	\$272,037	-12%	\$6,490	-1%	
Never Married	\$1,111	-14%	\$257,034	-14%	\$5,190	-5%	
Education							
Bachelor or Higher	\$1,553	-13%	\$358,881	-14%	\$15,065	-2%	
High School Grad	\$1,240	-13%	\$283,770	-13%	\$7,915	-4%	
Less than 12 Yrs	\$896	-13%	\$200,987	-13%	\$4,619	-3%	
Shared Earnings Quintile							
\$93,820+	\$1,906	-13%	\$420,432	-14%	\$22,763	-2%	
\$67,999 - \$93,820	\$1,552	-13%	\$340,102	-15%	\$12,108	-3%	
\$50,042 - \$67,999	\$1,319	-13%	\$296,809	-14%	\$8,317	-4%	
\$31,373 - \$50,042	\$1,082	-13%	\$247,187	-13%	\$5,574	-4%	
\$0-\$31,373	\$741	-12%	\$164,582	-12%	\$3,253	-4%	
Coresident							
None	\$1,378	-12%	\$277,576	-13%	\$4,569	-4%	
1 or more	\$1,248	-13%	\$309,099	-14%	\$13,489	-3%	
Reliance							
Less than 50%	\$1,346	-13%	\$317,606	-14%	\$14,679	-2%	
50% or more	\$1,217	-13%	\$261,593	-13%	\$3,473	-8%	

#### FRA to 69

	Poverty Rate		150% Poverty Rate		Supp Poverty Rate		150% Supp Poverty Rate	
	Option	Change	Option	Change	Option	Change	Option	Change
Total	6.00%	1.60%	14.10%	2.70%	16.10%	2.80%	27.10%	3.00%
Sex								
Female	6.60%	1.60%	15.30%	2.50%	17.40%	2.80%	29.60%	2.80%
Male	5.30%	1.50%	12.70%	3.00%	14.50%	2.90%	23.90%	3.20%
Ethnicity/Race								
Hispanic	11.50%	2.70%	24.30%	4.30%	25.70%	3.20%	40.30%	3.10%
White	4.30%	1.20%	11.40%	2.50%	13.50%	2.70%	23.80%	3.00%
Black	11.80%	3.30%	22.60%	3.10%	22.90%	3.20%	36.10%	2.80%
Other	9.00%	1.70%	17.40%	2.30%	21.20%	2.60%	31.60%	2.40%
Age								
60-61	21.60%	0.00%	28.30%	0.00%	26.60%	0.00%	42.70%	0.00%
62-64	10.30%	1.90%	19.80%	1.60%	17.30%	2.20%	30.80%	2.30%
65-69	5.60%	1.50%	11.90%	1.90%	13.40%	1.90%	22.00%	2.40%
70+	5.70%	1.60%	14.30%	3.10%	16.80%	3.20%	28.30%	3.20%
Marital Status								
Married	2.50%	0.70%	7.00%	2.10%	10.70%	2.30%	19.40%	3.30%
Divorced	11.10%	3.50%	24.80%	4.50%	24.50%	4.10%	38.50%	2.70%
Widowed	6.50%	1.10%	18.00%	2.60%	18.90%	2.70%	33.80%	2.30%
Never Married	20.40%	5.00%	34.30%	3.80%	30.90%	4.30%	42.50%	2.40%
Education								
Bachelor or Higher	2.40%	0.80%	6.30%	1.60%	7.90%	1.80%	14.20%	2.10%
High School Grad	6.60%	1.80%	15.90%	3.20%	18.10%	3.30%	31.10%	3.40%
Less than 12 Yrs	17.20%	3.10%	33.30%	4.40%	35.10%	3.90%	50.90%	3.60%
Shared Earnings Quintile								
\$93,820+	0.10%	0.10%	0.60%	0.30%	0.90%	0.40%	2.60%	0.90%
\$67,999 - \$93,820	0.50%	0.20%	2.60%	1.40%	3.60%	1.40%	10.40%	2.50%
\$50,042 - \$67,999	1.30%	0.70%	8.20%	3.30%	10.60%	3.40%	24.80%	4.80%
\$31,373 - \$50,042	5.20%	2.80%	19.50%	4.80%	24.50%	6.00%	43.10%	4.90%
\$0-\$31,373	27.40%	4.90%	47.50%	4.60%	49.10%	3.60%	65.20%	2.00%
Coresident								
None	13.00%	3.40%	28.40%	4.40%	27.70%	4.20%	43.60%	3.00%
1 or more	2.40%	0.60%	6.60%	1.90%	10.00%	2.10%	18.50%	3.00%
Reliance								
Less than 50%	1.80%	0.30%	4.00%	0.60%	4.20%	0.60%	8.80%	1.20%
50% or more	14.80%	4.10%	34.90%	7.20%	40.50%	7.40%	64.80%	6.60%

#### FRA to 69 with Mortality Adjustment

	Median Monthly Benefit		Median Lifetin	ne Benefits	Median Monthly Household		
		-			Income		
	Option	Percent Change	Option	Percent Change	Option	Percent Change	
Total	\$1,261	-19%	\$284,040	-22%	\$9,336	-5%	
Sex							
Female	\$1,118	-19%	\$265,587	-21%	\$8,425	-5%	
Male	\$1,385	-18%	\$303,322	-24%	\$10,486	-4%	
Ethnicity/Race							
Hispanic	\$1,182	-4%	\$271,815	-6%	\$7,029	-1%	
White	\$1,284	-21%	\$288,102	-24%	\$10,210	-5%	
Black	\$1,184	-13%	\$267,787	-14%	\$6,393	-3%	
Other	\$1,210	-15%	\$277,723	-17%	\$9,293	-3%	
Age							
60-61	\$999	0%	\$486,717	5%	\$6,432	0%	
62-64	\$1,089	-8%	\$401,015	-9%	\$8,547	-1%	
65-69	\$1,182	-23%	\$364,274	-20%	\$9,623	-4%	
70+	\$1,294	-19%	\$263,418	-24%	\$9,360	-5%	
Marital Status							
Married	\$1,175	-22%	\$293,680	-24%	\$12,608	-5%	
Divorced	\$1,308	-18%	\$286,174	-21%	\$5,350	-5%	
Widowed	\$1,435	-17%	\$260,522	-18%	\$6,303	-4%	
Never Married	\$1,168	-15%	\$263,836	-20%	\$5,162	-3%	
Education							
Bachelor or Higher	\$1,373	-24%	\$316,732	-27%	\$14,611	-5%	
High School Grad	\$1,229	-17%	\$274,619	-19%	\$7,795	-5%	
Less than 12 Yrs	\$1,160	2%	\$240,458	2%	\$4,970	0%	
Shared Earnings Quintile							
\$93,820+	\$1,574	-27%	\$348,883	-29%	\$21,987	-5%	
\$67,999 - \$93,820	\$1,324	-26%	\$294,210	-27%	\$11,652	-7%	
\$50,042 - \$67,999	\$1,230	-21%	\$275,444	-22%	\$8,089	-7%	
\$31,373 - \$50,042	\$1,169	-9%	\$262,881	-10%	\$5,658	-3%	
\$0-\$31,373	\$1,031	24%	\$225,806	23%	\$3,919	5%	
Coresident							
None	\$1,342	-16%	\$268,818	-18%	\$4,449	-5%	
1 or more	\$1,212	-21%	\$292,367	-24%	\$13,138	-4%	
Reliance							
Less than 50%	\$1,264	-21%	\$293,276	-25%	\$14,326	-4%	
50% or more	\$1,256	-14%	\$267,189	-14%	\$3,535	-10%	

#### FRA to 69 with Mortality Adjustment

	Poverty Rate		150% Poverty Rate		Supp Poverty Rate		150% Supp Poverty Rate	
	Option	Change	Option	Change	Option	Change	Option	Change
Total	3.60%	-0.90%	12.50%	1.20%	14.80%	1.60%	27.40%	3.30%
Sex								
Female	4.90%	-0.10%	14.40%	1.70%	16.90%	2.30%	30.40%	3.60%
Male	2.00%	-1.80%	10.30%	0.60%	12.30%	0.80%	23.60%	2.80%
Ethnicity/Race								
Hispanic	5.20%	-3.60%	16.90%	-3.20%	20.10%	-2.40%	37.80%	0.60%
White	2.80%	-0.40%	10.90%	2.00%	13.30%	2.50%	24.60%	3.90%
Black	7.70%	-0.80%	19.10%	-0.30%	19.10%	-0.60%	35.40%	2.10%
Other	4.90%	-2.40%	15.60%	0.50%	18.60%	0.00%	31.40%	2.10%
Age								
60-61	8.80%	-12.80%	27.70%	-0.60%	16.10%	-10.50%	40.00%	-2.70%
62-64	6.10%	-2.30%	16.90%	-1.20%	12.50%	-2.70%	27.10%	-1.40%
65-69	2.90%	-1.20%	9.00%	-1.00%	10.90%	-0.60%	21.20%	1.70%
70+	3.60%	-0.60%	13.30%	2.10%	16.40%	2.70%	29.30%	4.20%
Marital Status								
Married	1.50%	-0.30%	4.30%	-0.50%	9.50%	1.10%	19.10%	3.00%
Divorced	7.80%	0.20%	25.20%	4.90%	23.80%	3.40%	39.80%	4.00%
Widowed	2.50%	-2.90%	17.90%	2.40%	18.00%	1.80%	34.90%	3.40%
Never Married	12.70%	-2.80%	33.10%	2.60%	27.20%	0.70%	43.00%	2.90%
Education								
Bachelor or Higher	1.70%	0.00%	6.20%	1.60%	7.90%	1.80%	15.00%	3.00%
High School Grad	4.00%	-0.80%	14.50%	1.70%	16.90%	2.00%	31.50%	3.70%
Less than 12 Yrs	8.70%	-5.40%	24.50%	-4.40%	28.60%	-2.60%	48.20%	0.90%
Shared Earnings Quintile				-				
\$93,820+	0.20%	0.20%	1.30%	1.00%	1.50%	1.00%	4.20%	2.40%
\$67,999 - \$93,820	0.70%	0.40%	4.60%	3.50%	5.50%	3.30%	13.60%	5.70%
\$50,042 - \$67,999	1.70%	1.10%	10.70%	5.90%	13.10%	6.00%	27.30%	7.30%
\$31,373 - \$50,042	3.60%	1.30%	17.00%	2.30%	22.10%	3.70%	41.60%	3.40%
\$0-\$31,373	13.90%	-8.60%	34.60%	-8.30%	38.20%	-7.20%	59.40%	-3.80%
Coresident								
None	7.60%	-2.00%	28.10%	4.10%	26.00%	2.60%	44.80%	4.20%
1 or more	1.50%	-0.20%	4.40%	-0.30%	9.00%	1.10%	18.30%	2.80%
Reliance								
Less than 50%	1.40%	0.00%	4.00%	0.60%	3.80%	0.20%	8.50%	0.90%
50% or more	8.10%	-2.60%	30.20%	2.50%	37.60%	4.50%	66.40%	8.10%

## Percentage Point Change in the Poverty Rate by Earnings Quintiles in 2030

	Current Law Poverty Rate	Increase FRA to 69	Increase FRA to 69 with Mortality Adjustment	Increase FRA to 69 and EEA to 64	Increase FRA to 69 and EEA to 64 with Mort. Adj.
Shared Earnings Quintile					
\$93,820+	0%	0%	0%	0%	0%
\$67,999 - \$93,820	0%	0%	0%	0%	0%
\$50,042 - \$67,999	1%	1%	1%	1%	1%
\$31,373 - \$50,042	2%	3%	1%	2%	1%
\$0-\$31,373	23%	5%	-9%	5%	-8%

#### **Behavioral Response**

### Widowed Women

## Percentage Point Change in the Poverty Rate by Earnings Quintiles in 2030

	Current Law Poverty Rate	Increase FRA to 69	Increase FRA to 69 with Mortality Adjustment	Increase FRA to 69 and EEA to 64	Increase FRA to 69 and EEA to 64 with Mort. Adj.
Shared Earnings Quintile					
\$93,820+	0%	0%	0%	0%	0%
\$67,999 - \$93,820	0%	0%	0%	0%	0%
\$50,042 - \$67,999	0%	0%	0%	0%	1%
\$31,373 - \$50,042	1%	0%	0%	1%	1%
\$0-\$31,373	20%	3%	-12%	3%	-10%

**Behavioral Response** 

## Conclusions

- Increasing the Social Security Full Retirement Age would likely reduce benefits and increase poverty across all earnings quintiles.
  - also true for Widowed Women
- However, the simulated mortality adjustment would lead to:
  - Lower benefits and higher poverty rates for higher earners
  - Higher benefits and lower poverty rates for lower earners
- Finally, the study highlights an example of how microsimulation methodology can be a useful approach to help determine the distributional implications of changes to Social Security benefits.