How Much Lifetime Social Security Benefits Are Americans Leaving on the Table?

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Motivation

Americans are retiring sub-optimally:

- A majority of American households appear to be retiring with inadequate economic resources to sustain their pre-retirement standard of living (Munnell et al. 2015).
- According to SSA estimates:
    - 2 in 5 retirees are more than 50 percent financially dependent on Social Security.
    - Roughly 13 percent are entirely dependent.

In spite of widespread academic (Bronshtein et al. 2016) and media coverage of the arbitrage opportunities associated with delayed collection, Americans are taking Social Security too early.

- SSA data suggests that roughly half of Americans take before full retirement age (FRA).
    - Only about 5 percent of men and 7 percent of women wait until 70.
- Claiming decisions do not appear to be strongly correlated with financial literacy or knowledge of Social Security rules (Shoven, Slavov, and Wise 2017).

We assess the costs to actual American workers – respondents to the 2019 Survey of Consumer Finances (SCF) – of failing to maximize lifetime benefits.

- We estimate the suboptimality of collection decisions, in terms of forgone lifetime discretionary spending (LDS), as well as how they interact with cash-flow constraints.
- Our tool of choice is the Fiscal Analyzer (TFA), a detailed life-cycle consumption-smoothing program that incorporates all major federal and state tax and transfer programs.

- Ignoring cash-flow considerations, more than seven in ten American workers younger than 70 should delay collection until age 70.
    - Among 45-62 year old workers, 92 percent should.
- Delaying retirement to maximize LDS would raise median LDS of households headed by workers age 45-62 by $182,370, or 10.2 percent.
    - There is significant dispersion in available gains, with the 90th percentile experiencing an LDS improvement of $492,525.

- Absent SS optimization, 40.9 percent of households headed by workers age 45-62 are cash-flow constrained.
    - With Social security optimization, 68.4 percent are constrained.
- However, the reduction in current-year discretionary spending (CDS) associated with optimization is small, amounting to **7.0 percent**, or $2,714, for the median household.
    - These findings are predicated on workers starting retirement account withdrawal at 60 or their imputed retirement age, whichever is older.

The Fiscal Analyzer

The Fiscal Analyzer (Auerbach et al. 2017, Auerbach et al. 2022, Altig et al. 2019) is a life-cycle, consumption-smoothing tool that incorporates cash-flow constraints and all major federal and state fiscal policies.

- TFA assumes that households smooth their standard of living, defined as discretionary spending per household member, adjusted for economies in shared living and the relative cost of children, to the maximum extent without additional borrowing.

- The relationship between a household's discretionary spending in year t, C_t, and its underlying standard of living (SOL) per effective adult, c_t, is given by

$$C_t = c_t(N + .7K)^{.642}, \tag{1}$$

where N stands for the number of adults in the household and K for the number of children.

Table 1: List of Tax and Transfer Programs Included in TFA

Taxes	Personal Income Tax (federal and state)
	Corporate Income Tax (federal and state)
	FICA Tax (federal)
	Sales Taxes (state)
	Medicare Part B Premiums (federal)
	Estate and Gift Tax (federal)
Transfer Programs	Earned Income Tax Credit (federal and state)
	Child Tax Credit (federal)
	Social Security Benefits (federal)
	Supplemental Security Income (SSI) (federal)
	Supplemental Nutritional Assistance Program (SNAP) (federal and state)
	Temporary Assistance for Needy Families (TANF) (federal and state)
	Medicaid (federal and state)
	Medicare (federal)
	The Affordable Care Act (ACA) (federal and state)
	Section 8 Housing Vouchers (state and county)
	Childcare Assistance (state and county)

TFA Assumptions

We assume:

- A cost of co-living coefficient of 1.6.
- A lifespan of 100 for both head of households and spouse/partners.
    - Our decision to assume the "catastrophic scenario" of living as long as possible reflects Yarri (1965)'s insight that rational households base spending decisions on a non-actuarially discounted lifetime budget, with a planning horizon of the maximum age of life.
    - We conduct sensitivity analyses using alternate, lower maximum ages of life of 80 through 95.
- A 0.5 percent real return rate.
    - This is set to roughly equal the average real return on long-dated Treasury Inflation Protected Securities (TIPS) in recent years.
    - An alternate, 2 percent real rate reduces LDS gains by roughly half.
- Constant inflation at 3 percent.
- All results are inflation-indexed to Q2 2022.

Optimizing Social Security

- TFA's Social Security benefit optimizer considers all legal benefit collection strategies of respondents and their spouse/partners, optimizing on a monthly basis.
- Excluding parent benefits, the optimizer incorporates all social security benefits and benefit provisions.
  - Parent benefits cannot be included regardless, as the SCF provides no information about parents.
- The SCF also provides no information on the earnings histories or projected earnings of former/deceased spouses.
  - Hence, as a baseline we assume all single respondents as not eligible for such benefits.
- If delaying collection results in lower LDS, we assume that households collect at their imputed baseline retirement age.

Table 2: Social Security Benefits Included in TFA

Retirement benefits
Spousal benefits
Divorced spousal benefits
Disability benefits
Child-in-care spousal benefits
Widow(er)s benefits
Divorced widow(er)s benefits
Child benefits
Disabled child benefits
Surviving child benefits
Father and mother benefits

Table 3: Social Security Benefit Provisions Included in TFA

Early benefit reductions for all benefit types
Delayed retirement credits
Earnings test (monthly and annual)
Adjustment of the reduction factor
Re-computation of benefits
Family benefit maximum
Combined family benefit maximum
Disabled family benefit maximum
Widow(er) benefit formulas for spouses who do/don't die before 62
RIB-LIM special widow(er) benefit formula
Windfall Elimination Provision
Government Pension Offset
All deeming rules
Retirement benefit suspension and restart provisions

Benchmarking

- SCF household-weighted economic and fiscal aggregates differ from their direct counterparts in the National Income and Product Account (NIPA) and Federal Reserve Financial Accounts
  - Following the approach outlined in Dettling et al. (2015), we adjust SCF reported values upward (downward) to accord with Q4 2018 national aggregates.

Table 4: SCF Benchmarking Adjustments and Targets (Billion 2018 Dollars)

	SCF Unadjusted	Benchmarking Coefficient	SCF Adjusted	Target	% Diff
Wages	7,382	1.22	9,027	9,027	0.00
Self Employment Income	2,237	0.72	1,601	1,601	0.00
Market Val. of Homes	28,048	0.93	25,992	25,877	0.44
Non Corp. Business Equity	9,795	1.33	13,055	13,055	0.00
Regular Assets	50,904	0.69	35,373	35,374	0.00
Retirement Accounts	14,307	1.11	15,923	15,824	0.62

Data Imputation

- The SCF does not report state-specific weights
  - Hence, we allocate SCF households to different states based on a statistical match to the Current Population Survey (CPS) based on marital status, age of household head, race, and education.
- The SCF is a cross-sectional survey, and also does not report earnings histories.
  - Following Moffitt and Gottschalk (1995) and Meghir and Pistaferri (2011), we assume that future earnings grow at an age, gender, and education-cohort average rate, as estimated using CPS data.
  - Past earnings are assumed to be at the cohort mean at the age of initial labor force entry, and diverge smoothly from this group mean over time.

Determining Retirement Hazards

- Not all SCF respondents report a desired age of retirement, and those that do appear to be overly optimistic.
    - Among 45 to 62 year-old 2019 SCF male and female respondents, the respective weighted average ages of expected full retirement are 70.3 and 68.9 years old.
- Therefore, we use the American Community Survey (ACS) to impute retirement age.
    - We define "retired" as a person working more than 26 weeks in the previous year and working less than 21 hours a week this year.
    - ACS working respondents are grouped by year of birth, age, gender, marital status, and education, and we calculate conditional retirement probabilities using data from ACS 2000 through 2020.
    - These rates are smoothed and projected forward through 2040, after which they are assumed to be constant.

Determining Retirement Hazards

Marital Stat.	Education	Male	Female
Single	High School or Less	63.0	59.4
	Some College	62.9	61.0
	4 yr. College or More	63.2	61.5
Married	High School or Less	64.9	58.1
	Some College	64.9	58.5
	4 yr. College or More	65.3	58.3

Table 5: Projected Average Retirement Age, Age 50 Workers in 2020

Marital Stat.	Education	Male	Female
Single	High School or Less	63.1	59.0
	Some College	62.7	60.8
	4 yr. College or More	63.3	61.7
Married	High School or Less	65.4	58.4
	Some College	65.1	58.9
	4 yr. College or More	65.9	58.5

Table 6: Projected Average Retirement Age, Age 50 Workers in 2040

Determining Retirement Hazards

These cohort- and characteristics-specific retirement hazards are used to randomly determine retirement ages for each SCF respondent under age 80.

- We assume that no respondents retire before age 50, and all retire on or before 80.
- We also assume, in the baseline, that:
  - Workers who retire prior to age 62 start their benefits at age 62.
  - Workers who retire at or after age 62, but before age 70, start their retirement benefit in the year they retire.
  - Workers retiring at or after age 70 start their benefits at 70.

Findings

	Head of Household		Spouse/Partner		Total	
	Baseline	Optimized	Baseline	Optimized	Baseline	Optimized
Wtd. Avg. Collection Age	66.1	69.9	63.6	68.7	65.1	69.4
Pct. Collecting at 62	20.5	0.0	43.5	0.1	29.5	0.0
Pct. Collecting at 70	14.8	98.0	3.0	81.5	10.2	91.5
Pct. Collecting after 65	64.7	99.9	37.3	98.6	54.0	99.4

Table 7: Collection Age Distribution By Role, SCF Respondents Age 45-62

LDS Benefit from Optimizing Social Security

	No. obs.	Pct. Benefiting From Soc. Sec. Optimization	Median Inc. in PV Disc. Spending	Median Pct. Inc. in PV Disc. Spending	Median Inc. in PV Social Security	Median Pct. Inc. in PV Social Security
All Households	5,234	75.0	116,379	6.3	158,069	13.1
Age 21 to 44*	1,562	87.0	193,925	8.5	259,997	21.4
Age 45 to 62	1,916	90.1	182,370	10.2	225,944	16.7
Age 45 to 54	988	91.1	213,844	10.4	271,790	20.3
Age 55 to 62	928	89.0	151,962	9.5	181,623	14.7
Age 63 to 69	788	84.4	92,218	6.3	117,090	11.2

Table 8: Benefit from Optimizing Social Security By Household Type

*Age refers to age of head of household as defined in the SCF.

	25th	50th	75th	90th	95th	99th
Age 21 to 44	65,931	193,925	327,715	455,460	523,113	704,072
Age 45 to 62	69,493	182,370	289,893	410,261	470,968	603,569
Age 45 to 54	88,285	213,844	334,339	447,689	516,103	651,497
Age 55 to 62	51,678	151,962	256,091	369,833	423,604	557,852
Age 63 to 69	20,697	92,218	172,879	249,633	303,863	398,213

Table 9: LDS Increase from Optimizing Social Security By Age Cohort and Percentile Outcome

	25th	50th	75th	90th	95th	99th
Age 21 to 44	3.4	8.5	13.6	18.8	22.4	29.3
Age 45 to 62	3.2	10.2	17.2	26.2	33.8	43.8
Age 45 to 54	4.5	10.4	18.2	27.2	34.6	43.6
Age 55 to 62	2.6	9.5	17.2	26.5	33.8	48.0
Age 63 to 69	1.6	6.3	13.2	22.2	30.3	39.7

Table 10: Percent LDS Increase from Optimizing By Age Cohort and Percentile Outcome
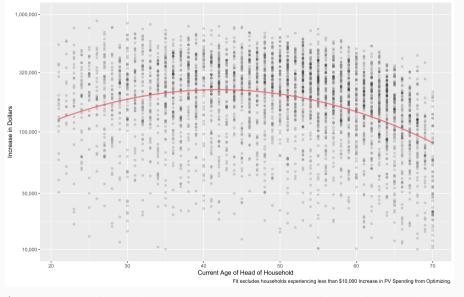
Figure 1: Increase in PV Disc. Spending From Optimizing Social Security By Age in 2021

	All SCF Households			Households Benefiting from Optimization		
	Baseline	Optimized	Diff	Baseline	Optimized	Diff
All Households	46.8	65.3	18.5	46.3	72.1	25.8
Age 21 to 44	60.5	80.6	20.1	57.4	80.3	22.9
Age 45 to 62	40.9	68.4	27.5	37.1	68.6	31.5
Age 45 to 54	38.0	67.7	29.7	34.3	67.5	33.1
Age 55 to 62	44.1	69.1	25.0	40.3	70.0	29.7
Age 63 to 69	44.4	62.9	18.5	41.1	63.5	22.4

Table 11: Percent of Borrowing-Constrained Households by Age Cohort and Optimization Outcome

	All SCF Households				Households Benefiting from Optimization*			
	Baseline	Optimized	Diff	% Diff	Baseline	Optimized	Diff	% Diff
All Households	32,772	31,854	-917	-2.8	35,814	34,625	-1,188	-3.3
Age 21 to 44	31,197	30,871	-326	-1.0	34,492	33,949	-543	-1.6
Age 45 to 62	34,335	33,439	-896	-2.6	38,696	35,982	-2,714	-7.0
Age 45 to 54	38,077	36,299	-1,777	-4.7	41,041	38,080	-2,960	-7.2
Age 55 to 62	31,177	29,418	-1,760	-5.6	34,042	33,062	-980	-2.9
Age 63 to 69	31,206	29,478	-1,728	-5.5	33,490	30,597	-2,893	-8.6

Table 12: Weighted Median Current Year Discretionary Spending by Age Cohort and Optimization Outcome

*Sample contains households who see at least $100 improvement in PV discretionary spending from optimization.

Case Study 1: Large LDS Improvement From Optimizing

	Base Case	Optimized	Difference
Role 1 Age	55	-	-
Role 2 Age	50	-	-
Role 1 Retirement Age	63	63	0
Role 2 Retirement Age	58	58	0
Role 1 collection age	63	70	7
Role 2 collection age	62	70	8
Role 1 CY Employment Income	148,588	148,588	0
Role 2 CY Employment Income	428,621	428,621	0
CY Disc. Spending	107,510	124,315	16,804
PV Disc. Spending	4,795,150	5,544,661	749,511
Role 1 PV Social Security	1,048,245	1,359,841	311,596
Role 2 PV Social Security	1,104,881	1,508,963	404,082
R1 Social Security Benefit at Age 65	30,501	0	-30,501
R2 Social Security Benefit at Age 65	33,457	0	-33,457
R1 Social Security Benefit at Age 75	32,564	51,821	19,256
R2 Social Security Benefit at Age 75	33,457	58,914	25,457

Table 13: Income and Social Security Statistics, Case 1

Case Study 2: Delay Collection Results in Lower LDS

	Base Case	Optimized	Difference
Role 1 Age	51	-	-
Role 2 Age	-	-	-
Role 1 Retirement Age	67	67	0
Role 2 Retirement Age	-	-	-
Role 1 collection age	67	70	3
Role 2 collection age	-	-	-
Role 1 CY Employment Income	3,319	3,319	0
Role 2 CY Employment Income	-	-	-
CY Disc. Spending	11,134	10,332	-801
PV Disc. Spending	623,631	612,144	-11,487
Role 1 PV Social Security	642,116	726,383	84,267
Role 2 PV Social Security	-	-	-
R1 Social Security Benefit at Age 65	11,611	11,611	0
R2 Social Security Benefit at Age 65	-	-	-
R1 Social Security Benefit at Age 75	15,755	19,537	3,782
R2 Social Security Benefit at Age 75	-	-	-
PV SNAP	102,258	64,854	-37,404
PV SSI	262,478	230,574	-31,903
PV Section 8	479,680	454,382	-25,298

Table 14: Income and Social Security Statistics, Case 2

Sensitivity Analysis 1: 2 Percent Real Discount Rate

	No. obs.	Pct. Benefiting From Soc. Sec. Optimization	Median Inc. in PV Disc. Spending	Median Pct. Inc. in PV Disc. Spending	Median Inc. in PV Social Security	Median Pct. Inc. in PV Social Security
All Households	5,250	74.3	56,814	3.9	73,648	10.0
Age 21 to 44	1,567	86.0	77,888	5.2	99,692	16.5
Age 45 to 62	1,926	89.5	99,797	7.0	116,488	13.6
Age 45 to 54	996	90.6	107,735	7.0	130,664	15.9
Age 55 to 62	930	88.4	90,669	7.0	100,315	12.0
Age 63 to 69	789	83.5	58,005	4.9	69,610	8.5

Table 15: Benefit from Optimizing Social Security By Household Type, 2 Percent Real Interest Rate

Sensitivity Analysis 2: Lower Maximum Age of Life

	Male		Female	
Age in 2022	Additional Life Expectancy	Estimated Total Years	Additional Life Expectancy	Estimated Total Years
45	36.7	81.7	40.4	85.4
62	21.5	83.5	24.4	86.4
70	15.4	85.4	17.6	87.6

Table 16: Conditional Life Expectancy in 2022 By Age and Gender.

	Baseline	Maximum Age of Life				
		80	85	90	95	100
Weighted Average Collection Age	65.1	66.1	68.8	69.3	69.4	69.4
Percent Collecting at 62	29.5	7.9	2.3	0.5	0.1	0.0
Percent Collecting at 70	10.2	12.5	74.4	86.1	90.4	91.6
Percent Collecting after 65	54.0	78.7	94.2	98.5	99.3	99.4

Table 17: Collection Age Distribution By Maximum Age of Life, All SCF Respondents Age 45-62

	Median Increase in PV Disc. Spending					Median Pct. Increase in PV Disc. Spending				
Max. Age of Life	80	85	90	95	100	80	85	90	95	100
All Households	4,535	25,332	57,148	85,055	116,379	0.3	1.5	3.4	4.9	6.3
Age 21 to 44	10,031	44,369	97,803	147,977	193,925	0.4	2.2	4.8	6.9	8.5
Age 45 to 62	9,607	46,186	94,352	138,434	182,370	0.7	3.1	5.8	8.2	10.2
Age 45 to 54	11,339	54,130	108,538	161,075	213,844	0.7	3.1	5.8	8.3	10.4
Age 55 to 62	8,029	38,494	79,447	116,397	151,962	0.7	3.0	5.9	7.7	9.5
Age 63 to 69	1,229	18,571	43,225	65,692	92,218	0.1	1.6	3.6	5.0	6.3

Table 18: Benefit from Optimizing Social Security By Maximum Age of Life

Budgetary Costs of Optimization

We perform an alternate TFA run with the following configuration:

- SS Trustees' Report (2022) assumptions:
    - 1 pct real wage growth over and above age/experience-based growth
    - 2.4 percent inflation,
    - 2.3 percent real rate of return.
- We consider all potential survivor paths. i.e., following Social Security's Trustees in doing an actuarial as opposed to an individual valuation.
- We include all SCF households from age 21 through age 99 without any filters for minimum discretionary spending or resource level.

Budgetary Costs of Optimization

	Current Year OASI Benefits	PV Baseline Benefits	PV Optimized Benefits	Diff	Pct. Diff
All Households	1.03	56.4	59.8	3.4	6.0
Age 45 to 62	-	37.8	40.7	2.9	4.9

Table 19: Total PV Benefits By Age Group in Trillion Dollars

- Assuming that only those currently in the labor force optimizes, we estimate a minimum increase in the long-term SS fiscal gap of $3.4 trillion.
- Assuming that workers who enter the labor force after 2022 gain a similar proportional LB through optimization, the system's unfunded liability would rise by roughly $6 trillion.

Conclusion

- Among 45-62 year old American workers, 92 percent maximize LDS by taking their retirement benefits at 70.
- Optimizing social security to maximize LDS results in a substantial median improvement of $182,370 among households headed by workers age 45-62.
  - There is, however, remarkable dispersion in the absolute and relative size of LDS increases.
- Such delays do come at a cost:
  - 22.4 to 33.1 percent of households become borrowing-constrained if they optimize social security.
  - The median reduction in current-year discretionary spending amounts to 7.0 percent or $2,714.
- We estimate that social security optimization would increase the SSA's infinite horizon liability by $3.4 - $6 trillion, depending on whether future workers also optimize.