Annuities, Selection, and the Drawdown of DC Balances

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IPRA Webinar

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Growing Interest in Annuitizing DC Plan Assets

- US Dept of Labor requiring plan sponsors to provide illustration of annuity income flow to participants
- 2019 SECURE Act offers sponsors safe harbor against lawsuits associated with offering in-plan annuities
- “Lifetime Income Solutions”: Example of new BlackRock partnership with Brighthouse Equitable Holdings

Today's Presentation: Two Subprojects

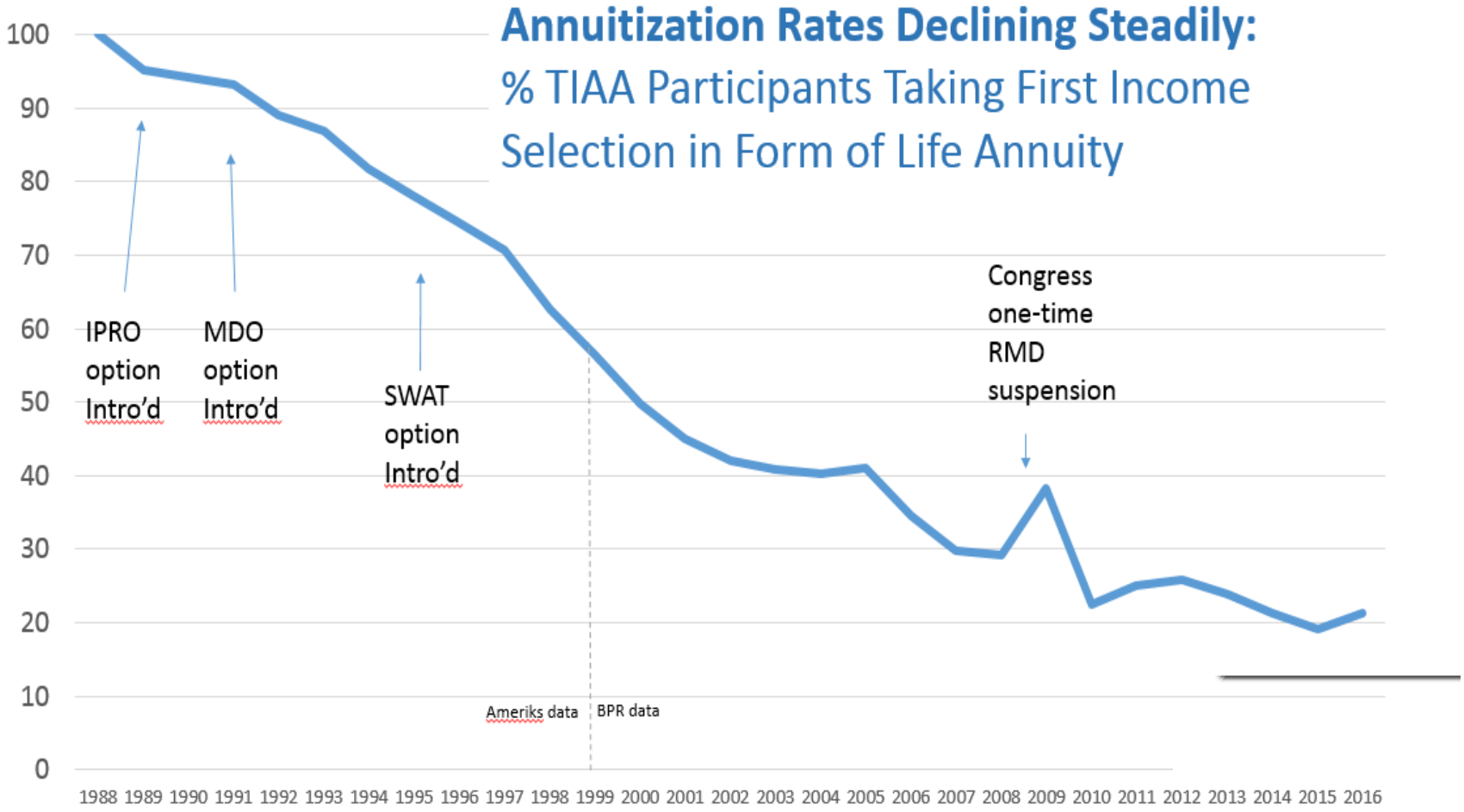
- Summarize changing patterns of income draw and annuity demand among TIAA participants (joint with Jeffrey Brown and David Richardson)
- Explore whether selection makes annuities expensive, and could explain low annuitization (joint with Adam Solomon)

TIAA Administrative Data

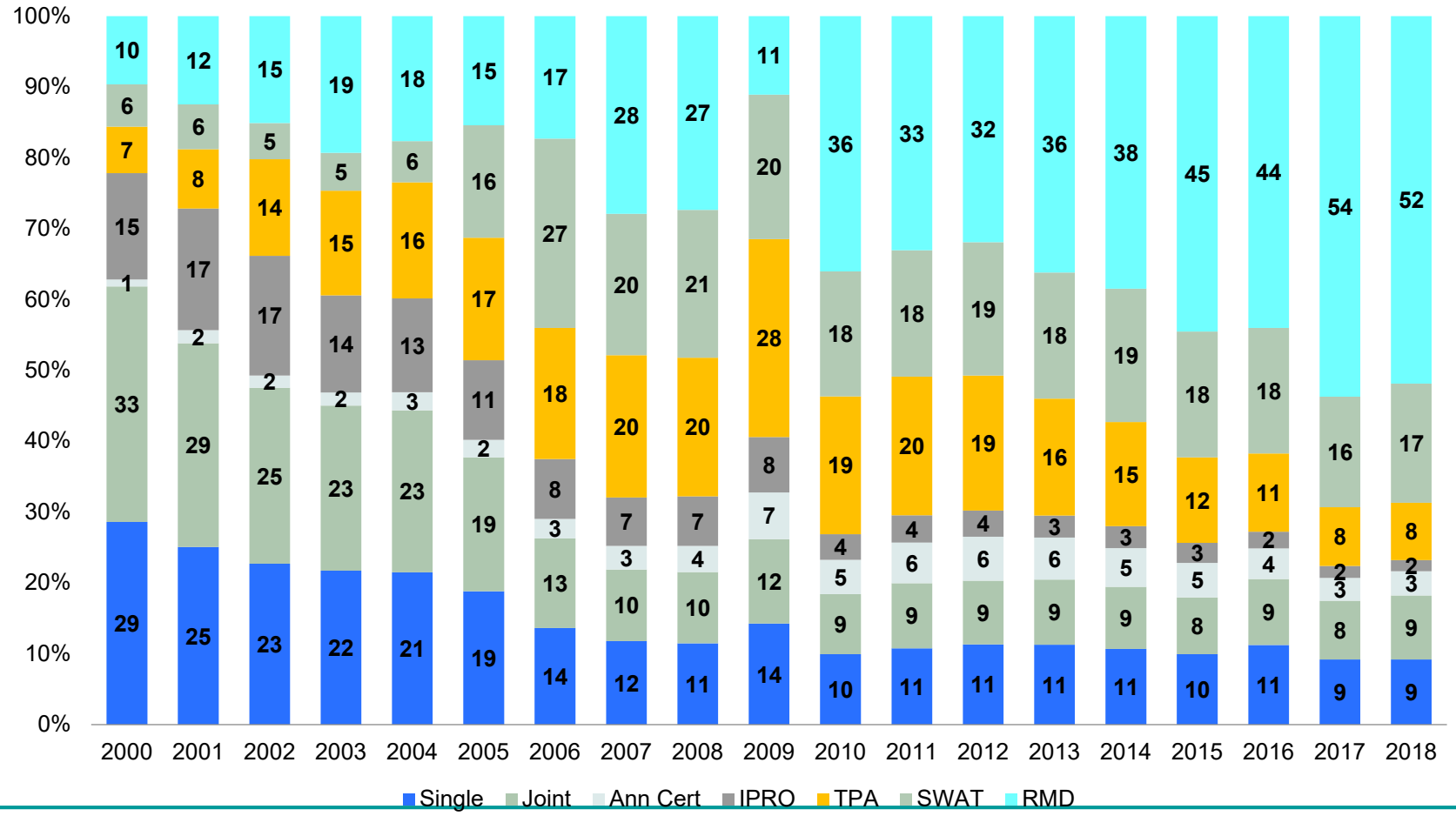
- TIAA is the second-largest annuity provider in the U.S. (after Social Security)
- 1.76 million participants over age 55 in 2016, 0.29 million receiving annuity payouts, 1.47 million “potential annuitants”
- Age distribution of sample: 58% are 55-64, 20% 65-69, 22% over 70

Accumulation: TIAA and CREF

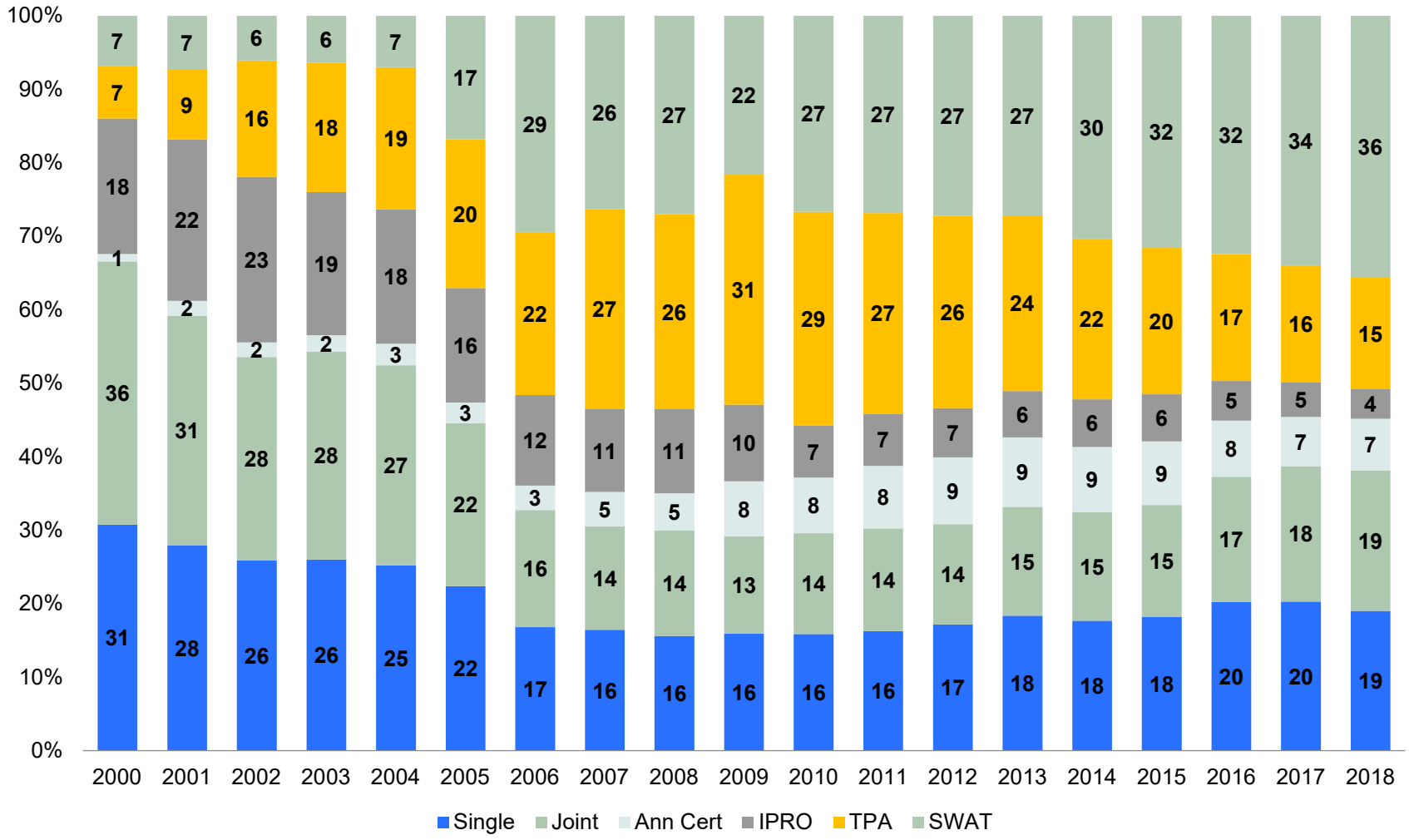
- TIAA Traditional = low risk investment option
  - 3% nominal guarantee
  - Returns >3% based on investment performance
  - Backed by TIAA general account
  - Participants can only withdraw over 10 years
  - Numerous payout options at retirement
- CREF: Suite of variable annuity products
  - Variable annuity payouts available at retirement
  - Lump sum and partial lump sum options, too


Annuitization Rates Declining Steadily:
% TIAA Participants Taking First Income Selection in Form of Life Annuity
100
90
80
70
60
50
40
30
20
10
0
IPRO option Intro'd
MDO option Intro'd
SWAT option Intro'd
Congress one-time RMD suspension
Ameriks data
BPR data
1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016

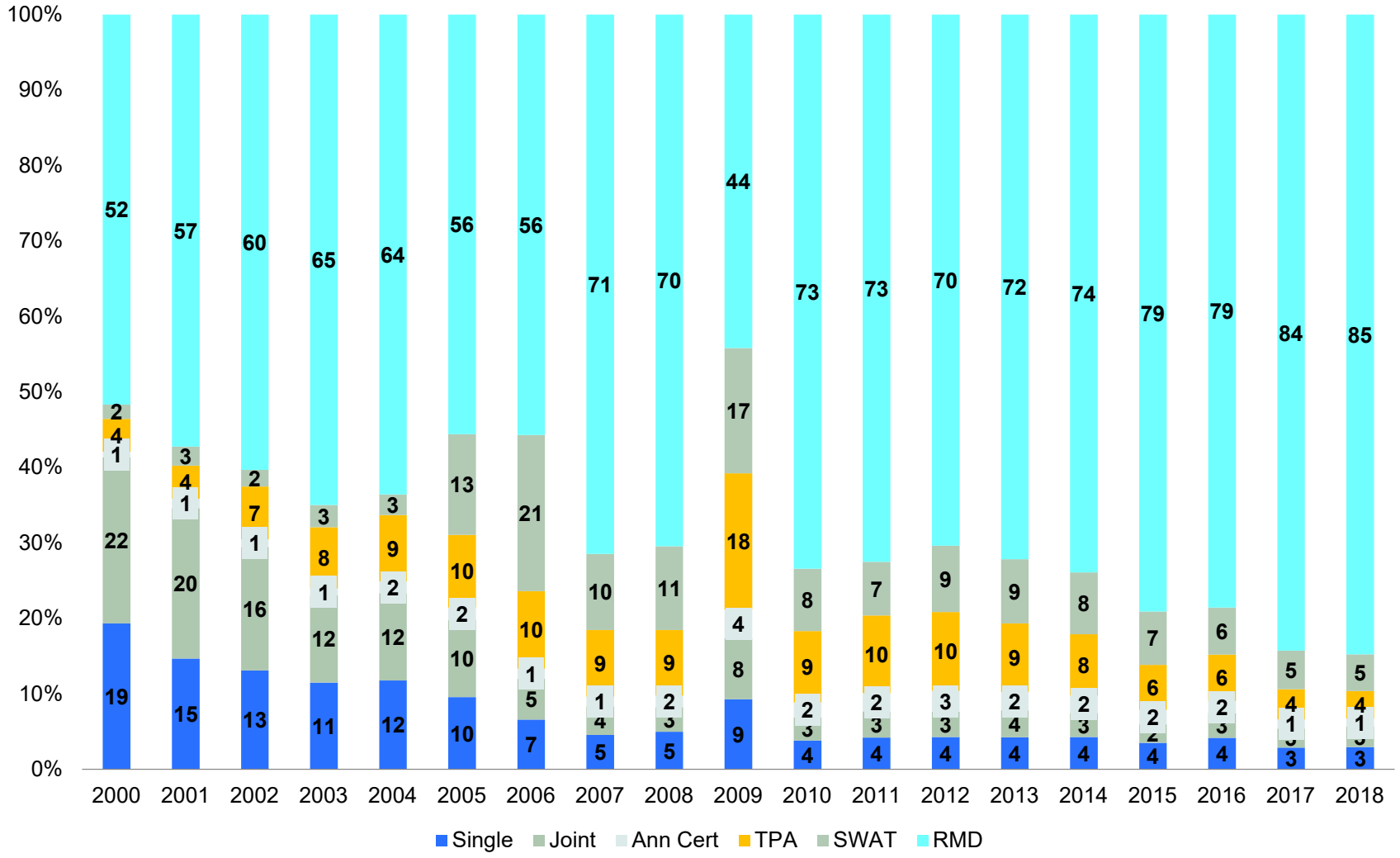
Income Choices at "First Draw," TIAA Sample



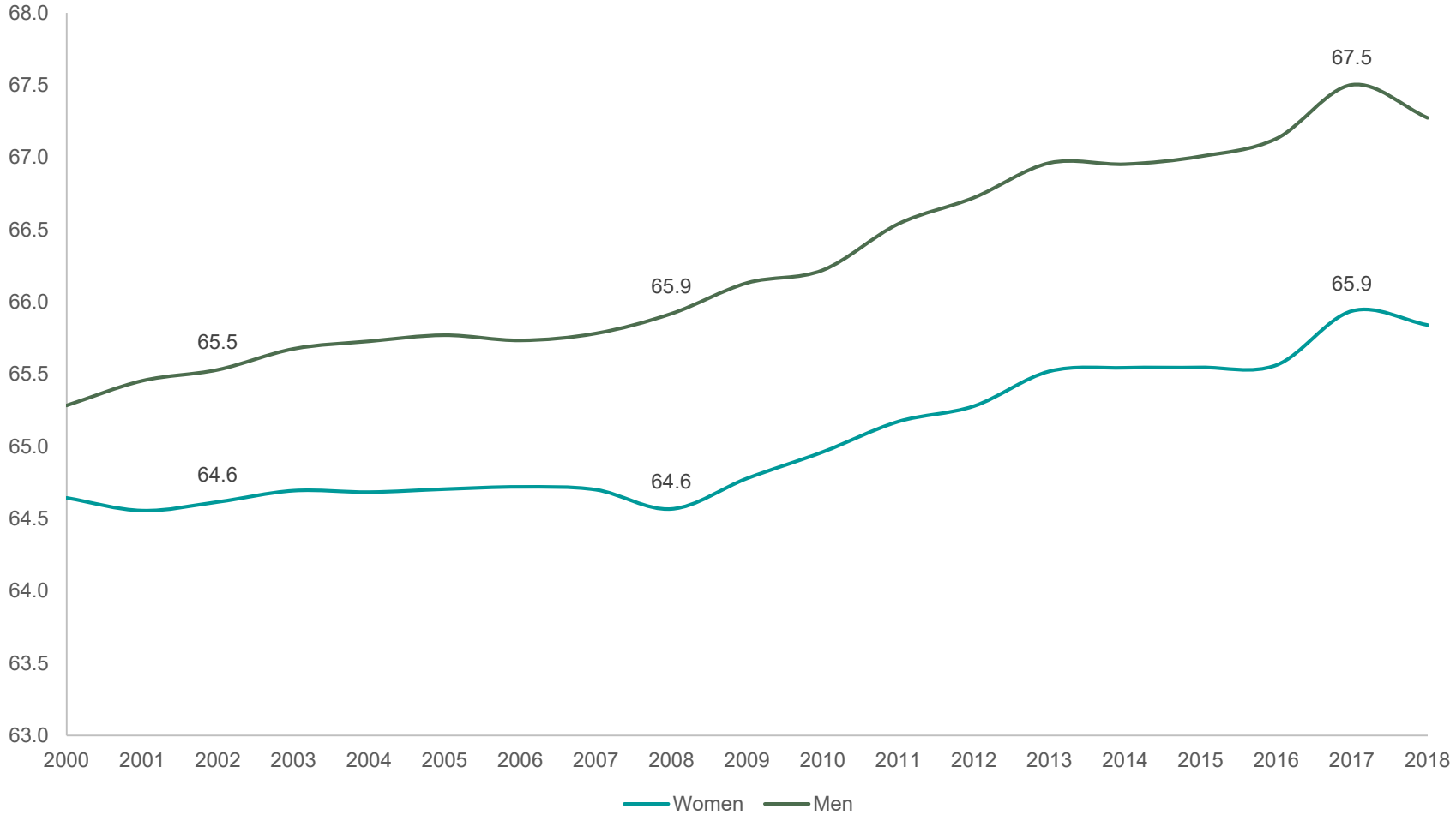
First Income Distribution Choice by TIAA Retirees Under Age 70



First Income Distribution Choice by TIAA Retirees Age 70 and Older



Retirement Age for TIAA Sample



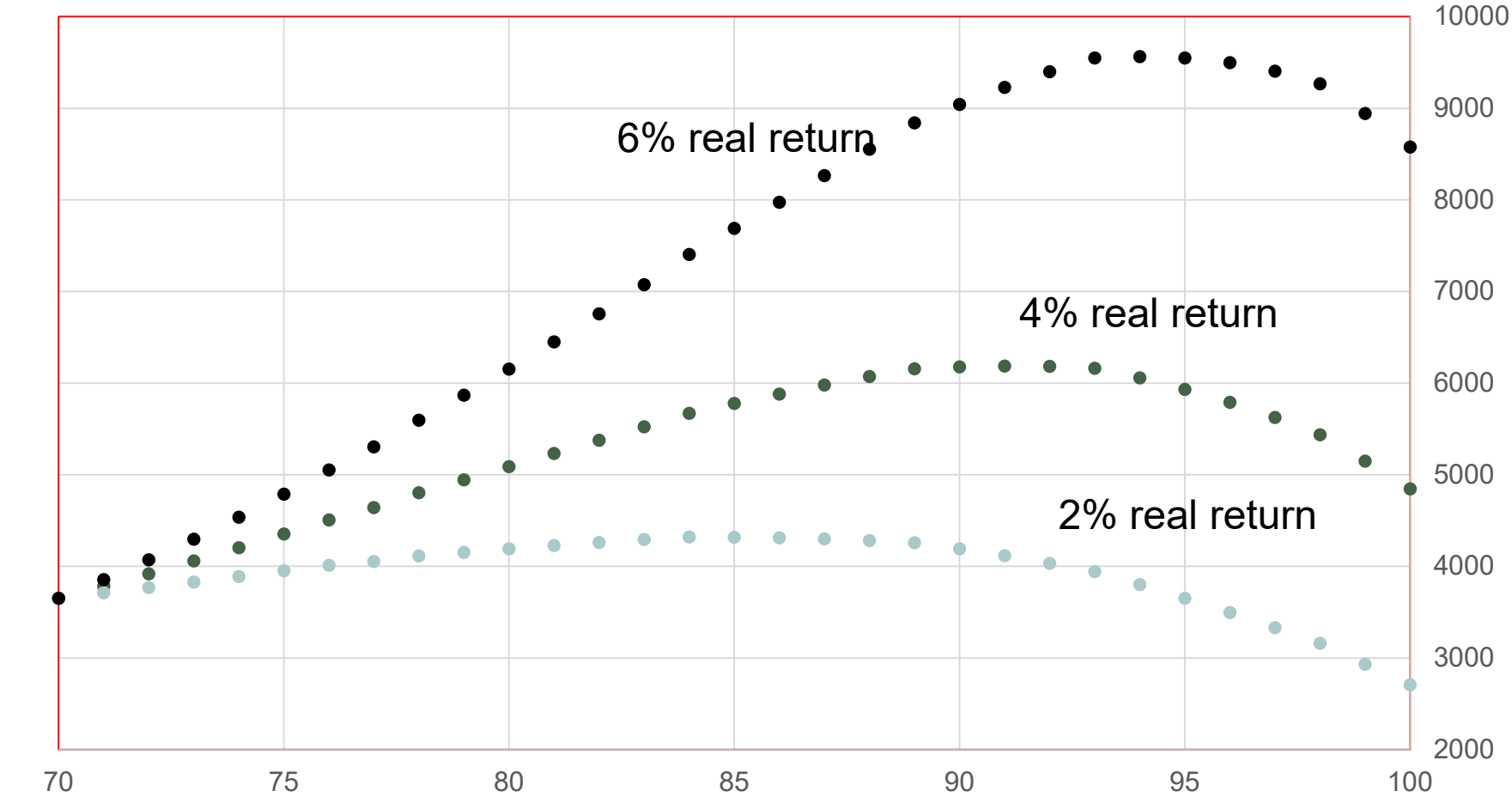
Attributes of Participants Eligible to Initiate Income Draw

	2000	2017
Age > 70	13.6%	65.7%
% Female	37.0	54.1
> 20 Years as Contributor	64.3	63.8
Interest Rate	6.0%	2.3%
% Annuitizing	54	19

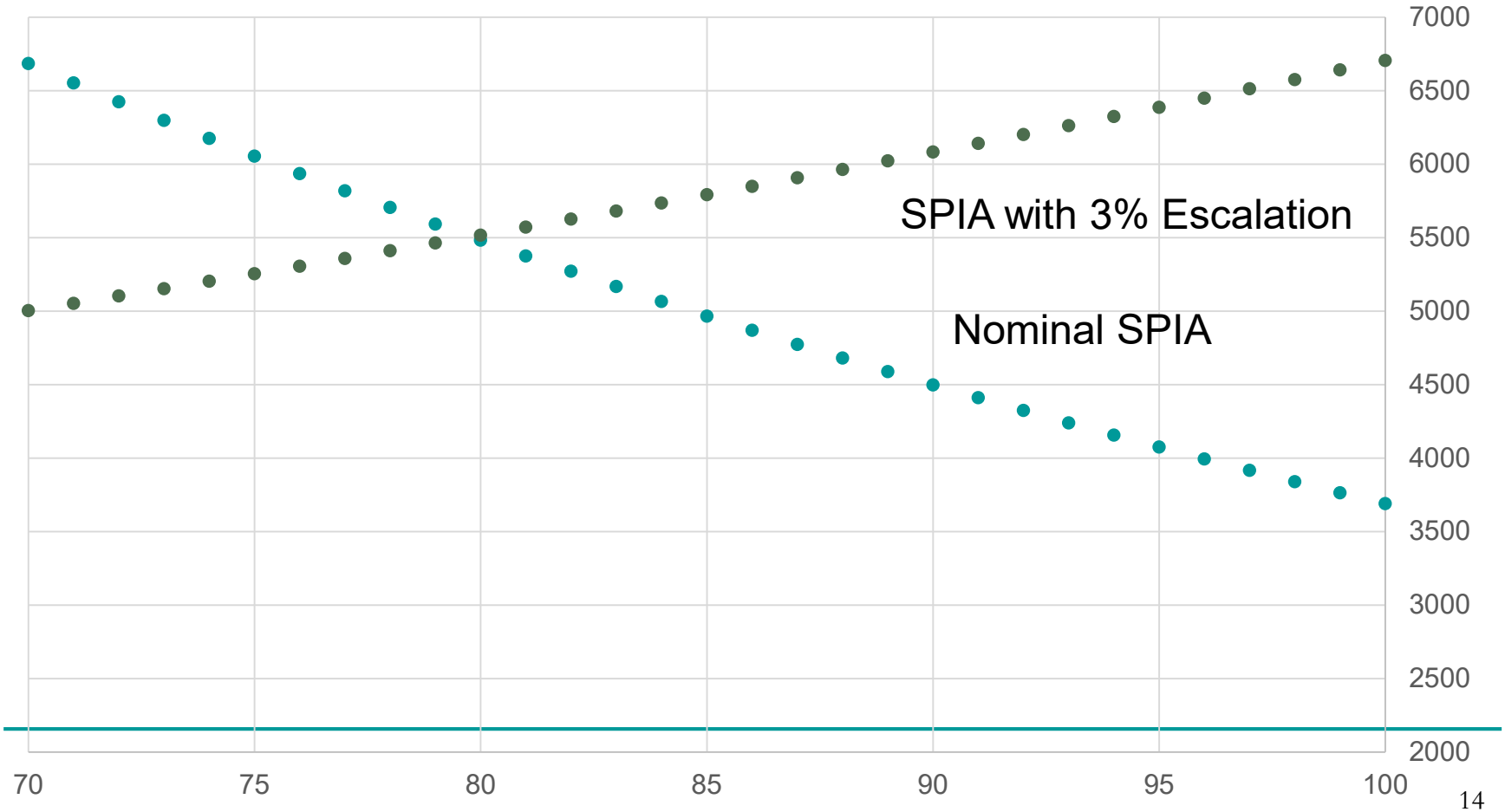
Cross-Sectional Findings

- Large disparities in likelihood of taking income as an annuity
- Probability of annuitizing is 54% higher for a $100K balance 67-year-old with 25 years of TIAA participation than for a $50K balance 71 year old with 5 years of service
- Open questions:
  - Have declining interest rates contributed to falling annuitization?
  - How close to actuarially fair are annuity prices?

Real Value of Annual RMD Payout ($100K Accumulation @ Age 70)



Real Annuity Payout: $100K Annuity @ 70, Male, 2% Inflation



Annuities Play Greater Role in Research than in the Marketplace

- Many studies find role for annuities for stochastic lifecycle consumers
- But annuity market is small. Why?
  - Pre-existing annuitization (Social Security)
  - Precautionary saving motive
  - Bequests
  - Annuities are expensive (administrative costs or adverse selection)

US Individual Annuity Market

- SCF 2019: 0.33% of 65-74 households own “non-cashable” annuities
- Fixed individual annuity sales in 2020: $6.3 billion, $9.9 billion in 2019
- Fixed deferred annuity sales: $1.7 billion in 2020, $2.5 billion in 2019

Study of Pricing in US Retail Annuity Market

- Quotes for individual annuity prices collected on June 14, 2021
- *Annuity Shopper* magazine: long historical series
- 17 firms offering annuities
- No information on underwriting rules or market volume

Annuity Payout Rates, June 2021

Age	Men		Women	
	Nominal	20 Year Certain	Nominal	20 Year Certain
55	4.61%	4.44%	4.43%	4.31%
65	5.80	5.22	5.48	5.06
75	8.05	5.87	7.40	5.77

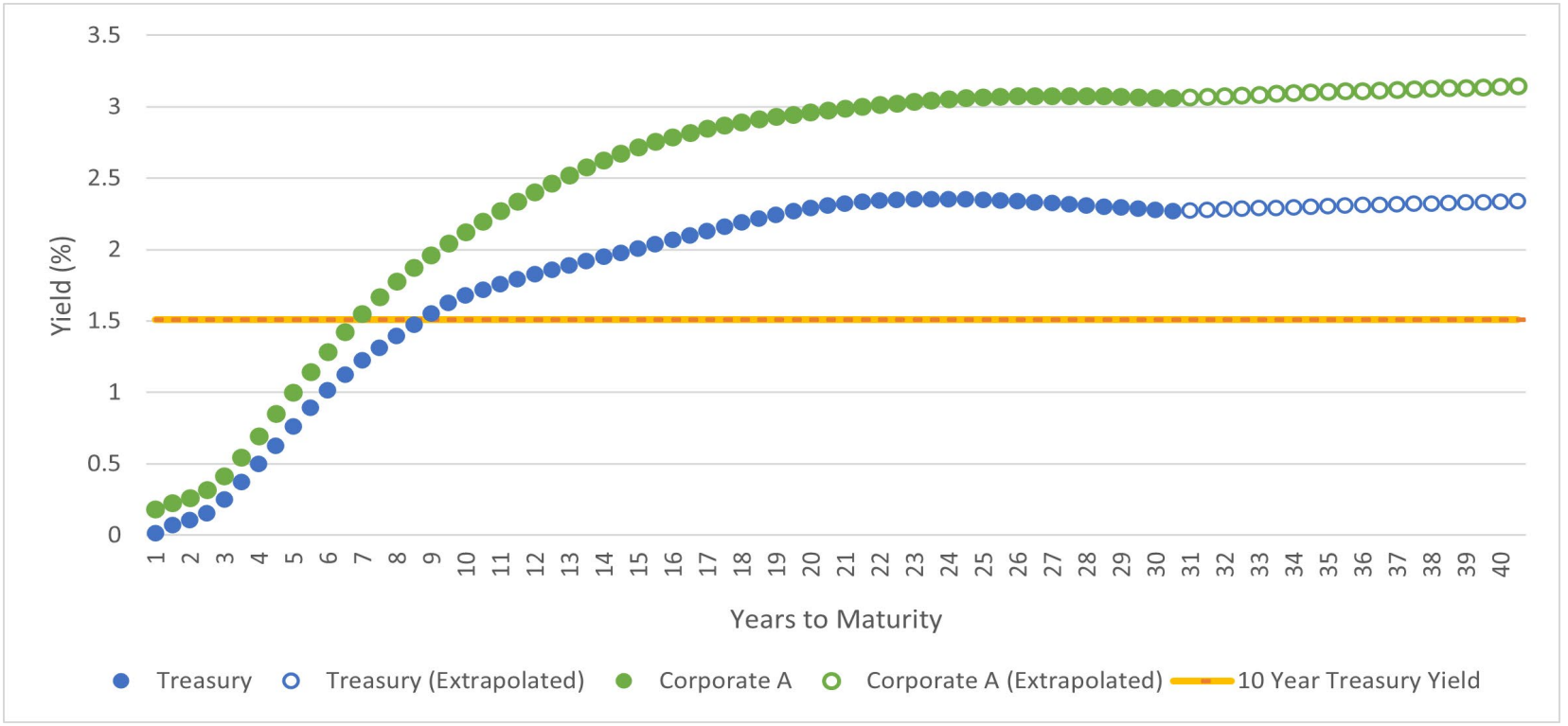
Source: *Annuity Shopper*, Summer 2021. Entries indicate annual payout as a share of annuity premium.

Expected Present Discounted Value (EPDV) for Annuity Stream

- Market data on annuity payouts (A_t)
- Interest rates determine discount rate (i_t)
- Mortality rates determine survival probability (S_t)

$$EPDV_A = \sum_{t=1}^{T} \frac{A_t * S_t}{\Pi_{j=1}^{t}(1+i_j)}$$

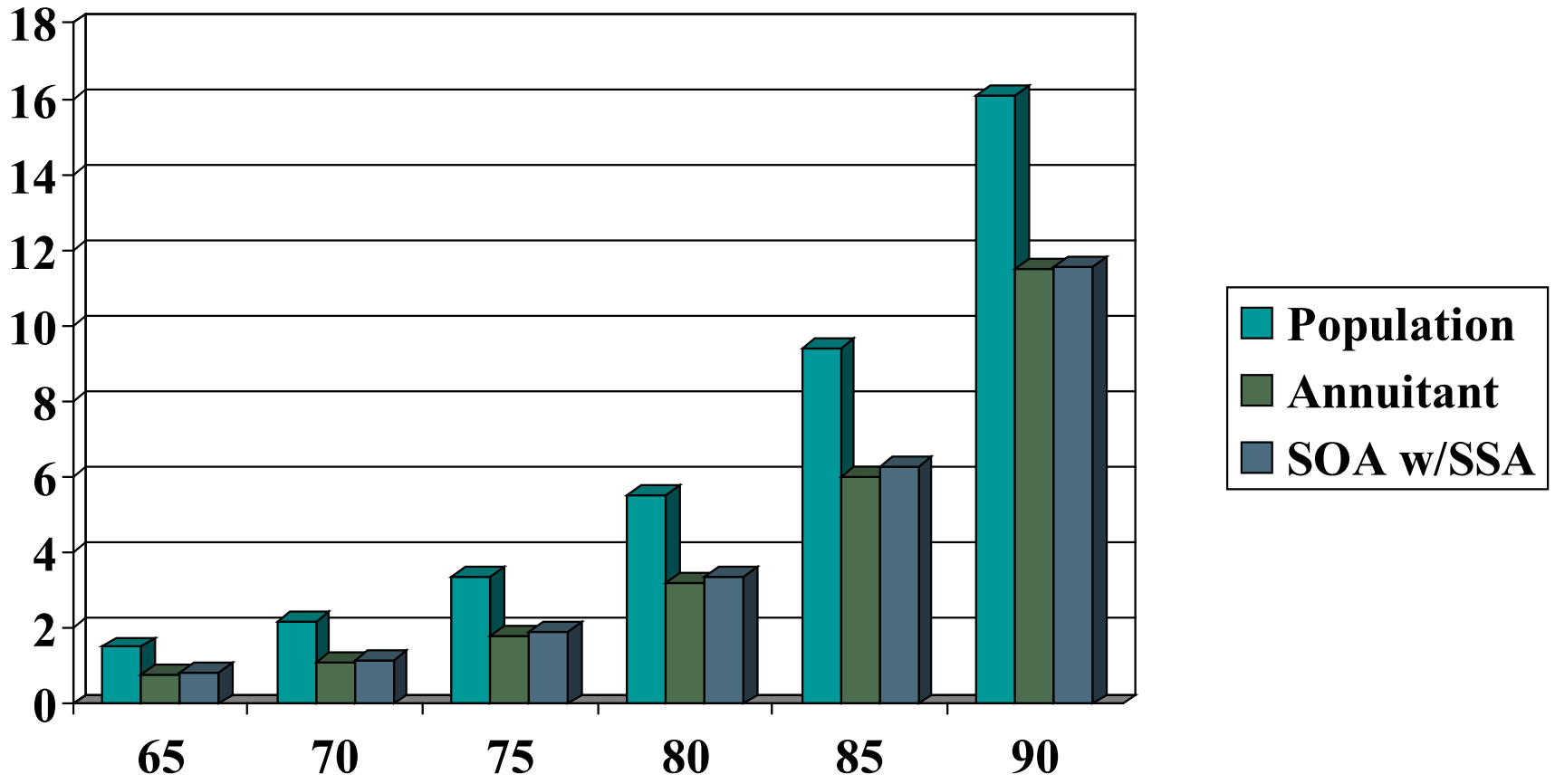
Treasury and A-Rated Corporate Term Structures: June 14, 2021



Survival Rates for Valuation

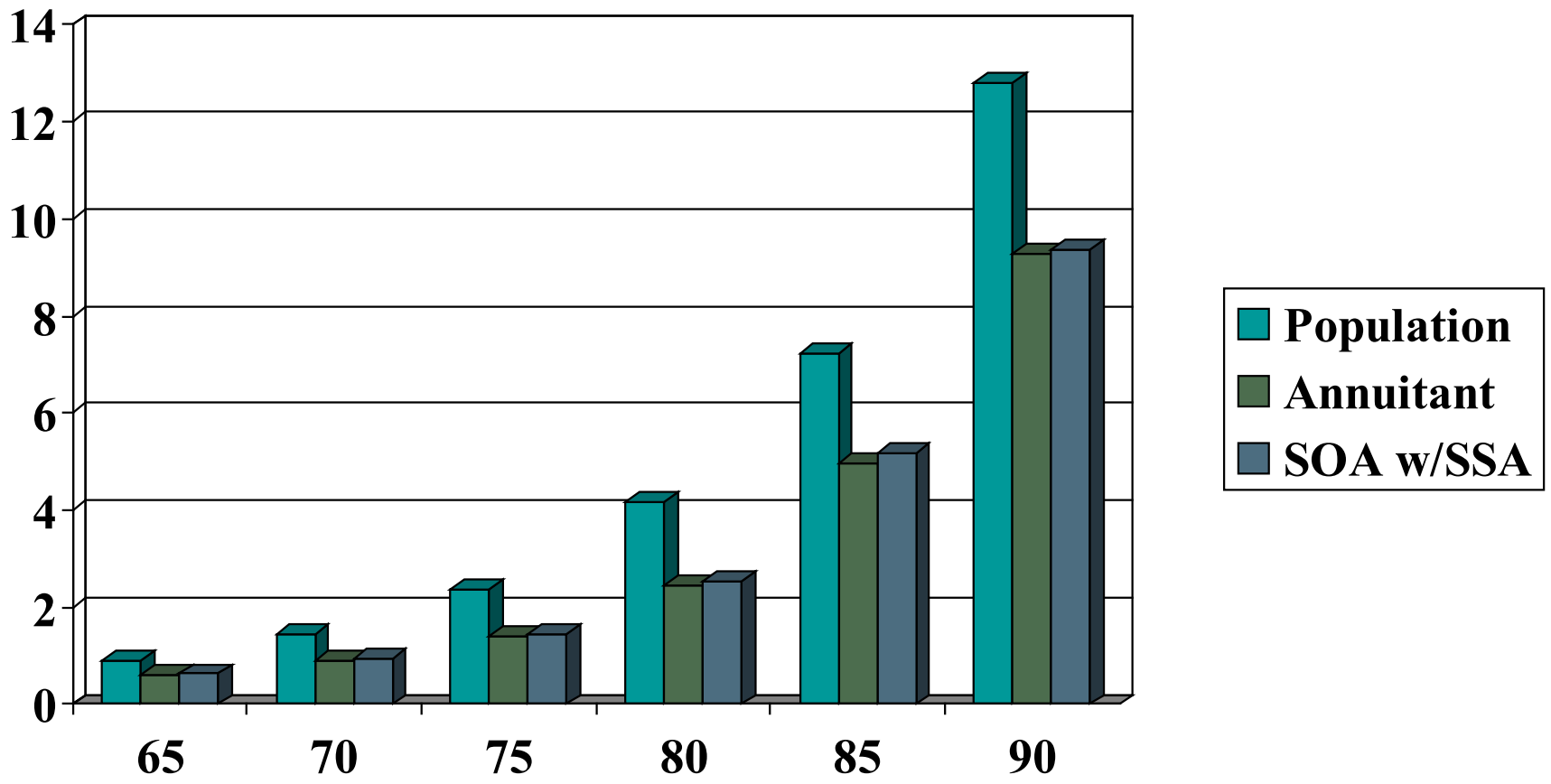
- Cohort mortality table
- Annuitants (data from Society of Actuaries (SOA)) vs. Population (data from Social Security Administration (SSA))
- Current mortality rates vs. projected rate of mortality improvement

Mortality Rates, US Men @ 65 in 2021, Annuitants and Population



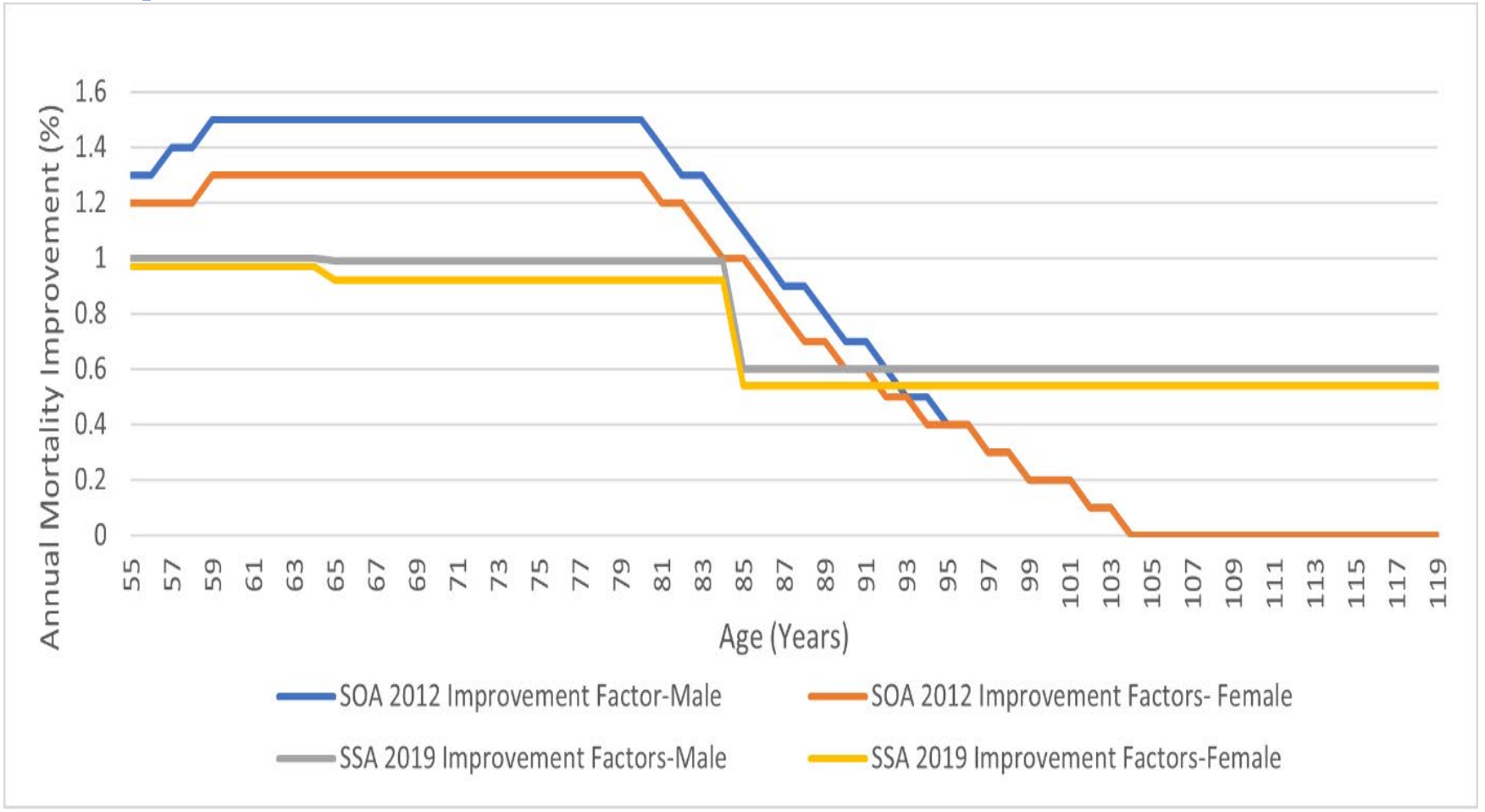
Source: US Social Security Administration and Society of Actuaries.

Mortality Rates, US Women @ 65 in 2021, Annuitants and Population



Source: US Social Security Administration and Society of Actuaries.

Projected Rates of Mortality Improvement, SOA and SSA

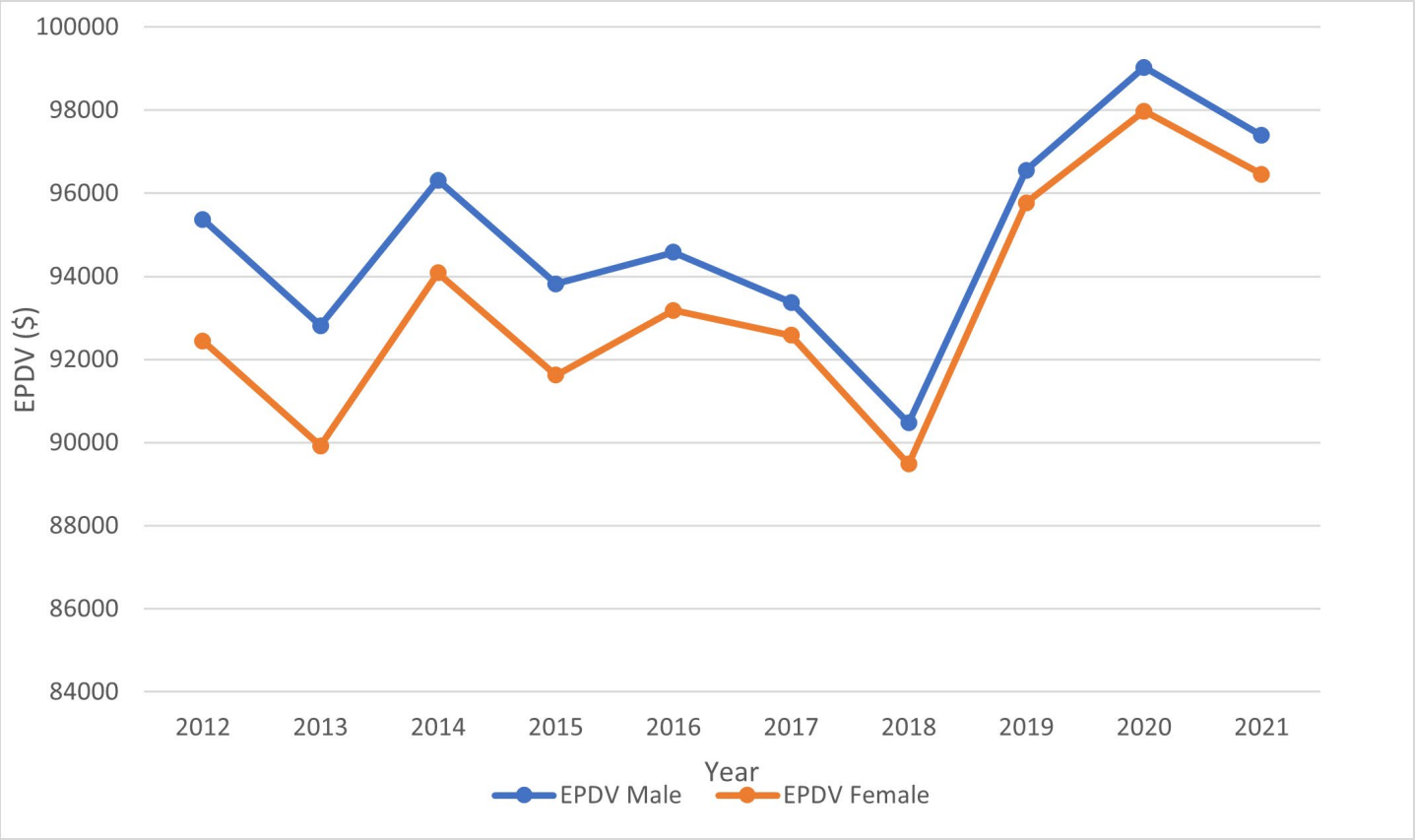


Money's Worth, June 2021, Annuities for 65-Year-Olds

Discount Rate	Men		Women	
	Population Mortality	Annuitant Mortality	Population Mortality	Annuitant Mortality
Treasury	0.883	1.044	0.924	1.039
A-Grade Corporate	0.833	**0.974**	0.866	**0.965**

Source: Authors' calculations using data from *Annuity Shopper*.

EPDV Years 2012-21, SOA Mortality and A-Rated Yields



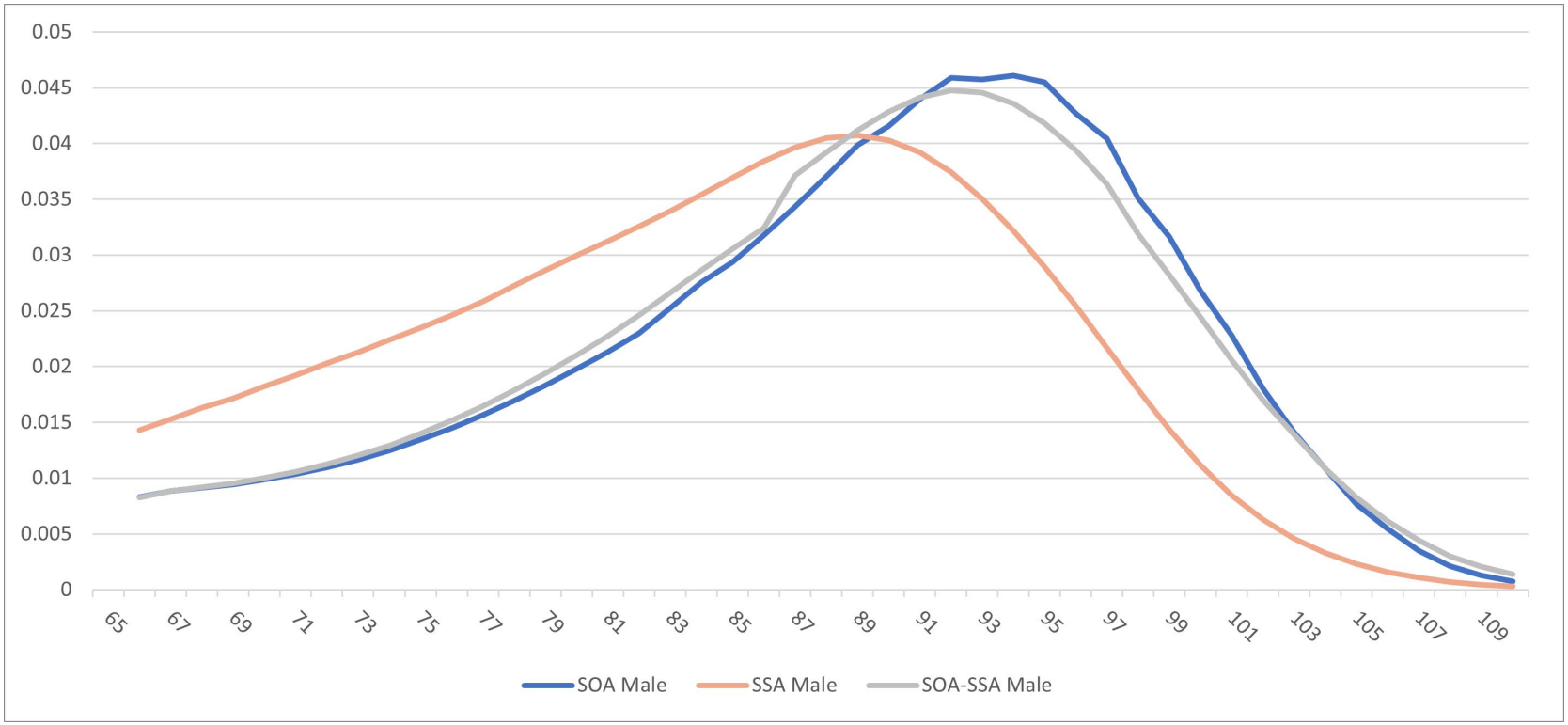
DOL Requires DC Plan Sponsors to Illustrate Annuity Payouts

- Sponsors face same issues: mortality, discount rates
- DOL: IRS Mortality table for DC plans (S_{IRS})
- Assumes no mortality improvement
- 10-year Treasury nominal yield (i_{10})
- Solve for A: $100{,}000 = \sum_{j=1}^{T} \frac{A * S_{IRS,j}}{(1+i_{10})^j}$

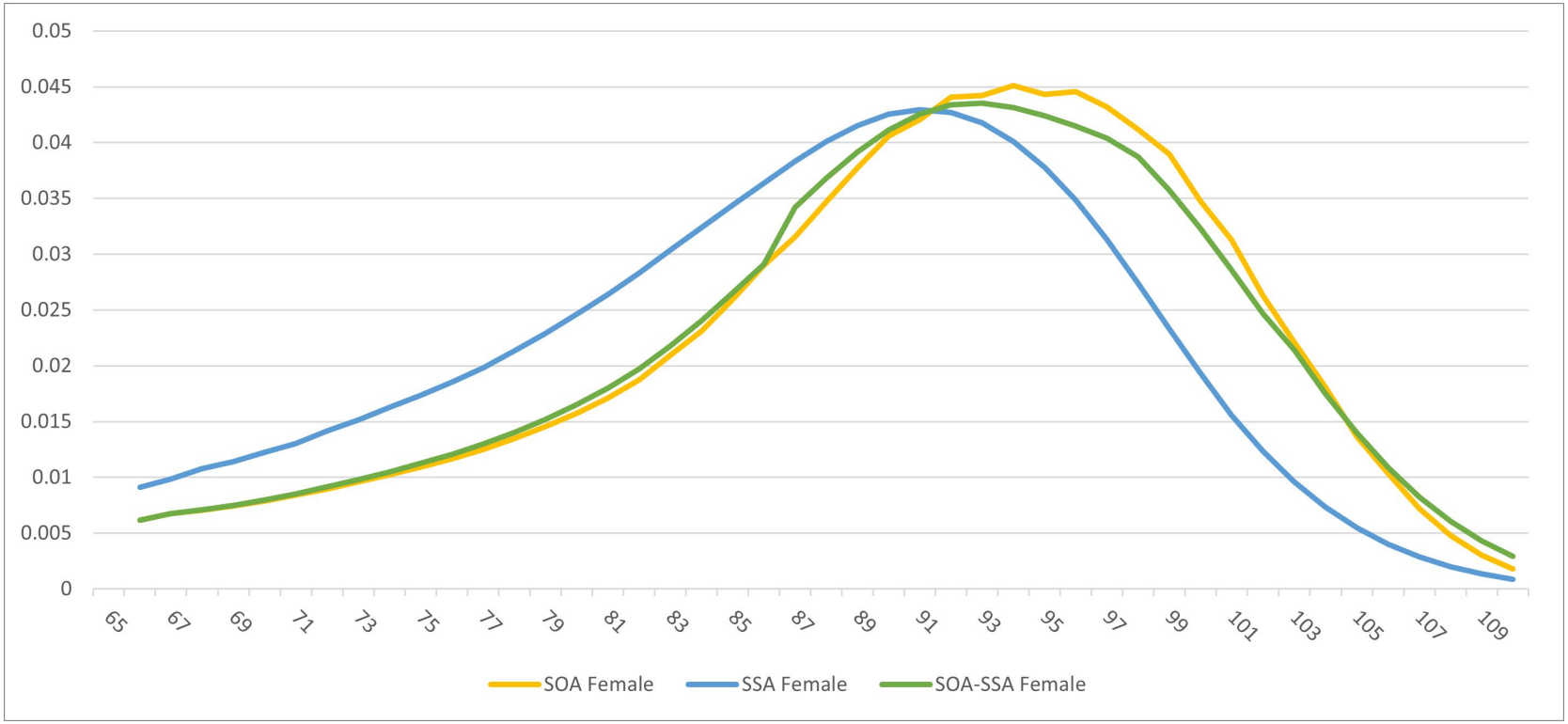
DOL Mortality Rates vs. SSA and SOA

Age	Men		DOL Unisex	Women	
	SOA	SSA		SOA	SSA
65	0.79%	1.51%	0.79%	0.61%	0.92%
75	1.82	3.38	2.17	1.41	2.37
85	6.02	9.40	6.94	4.97	7.23

Mortality Distribution Comparison



Mortality Distribution Comparison



DOL Annuity "Estimate" for $100K Balance vs. Market Prices

Age	DOL Estimate	Average SPIA Payout for Men	Average SPIA Payout for Women
65	$5,650	$5,796	$5,484
75	8,503	8,052	7,404

Source: Authors' calculations using data (columns 3 and 4) from *Annuity Shopper*.

Deferred Annuities

- Attracting recent interest as way to provide longevity insurance
- SPIA for 65-year old male, SOA and Corporate A, EPDV = $97,395
- $82,319 is due to payouts up to age 85: 84.5% of value
- Analogous calculation for women: 82.5%

Deferred Annuity Payout Rates, June 2021

Age	Men		Women	
	Pay @ 75	Pay @ 85	Pay @ 75	Pay @ 85
55	15.2%	41.9%	13.7%	32.0%
65	11.3	32.0	10.2	26.8

Source: *Annuity Shopper*, Summer 2021. Entries indicate annual payout as a share of annuity premium.

Money's Worth, 20-Year Deferred Annuities for 65-Year-Olds

Discount Rate	**Men**		**Women**	
	Population Mortality	Annuitant Mortality	Population Mortality	Annuitant Mortality
Treasury	0.571	1.000	0.669	0.992
A-Grade Corporate	0.478	**0.832**	0.558	**0.822**

Source: Authors' calculations using data from *Annuity Shopper*.

Conclusions

- For annuitants, money's worth of single premium individual annuities in the mid-90s for reasonable discount rate assumptions
- Values are lower for a buyer with population mortality risk
- Money's worth values for deferred annuities are significantly lower
- DOL employs a low discount rate and high mortality rate relative to private market; balance of effect is age-dependent

References

- J. Brown, J. Poterba, and D. Richardson, “Trends in Retirement Income Choices by TIAA Participants: 2000-2018.” TIAA Institute, October 2021.
- J. Poterba and A. Solomon, “Discount Rates, Mortality Projections, and Money’s Worth Calculations for US Individual Annuities,” NBER working paper 28557, March 2021 (updated October 2021).