

Actuaries at the Social Security Administration

Anna Kirjusina
anna.kirjusina@ssa.gov



Office of the Chief Actuary



Actuaries in the Federal Government

- Social Security Administration (SSA)
- Centers for Medicare & Medicaid Services
- Pension Benefit Guaranty Corporation
- The Treasury Department (Internal Revenue Service)
- Department of Housing and Urban Development
- Government Accountability Office
- Office of Personnel Management
- Department of Veterans' Affairs
- Labor Department
- Public Health Service
- Department of Energy
- Railroad Retirement Board
- Department of Defense





Actuaries at SSA

- The single largest employee benefit plan in the country
 - *Largest in the world?*
- Overall review of the cash flow balance
 - *between benefits paid and taxes collected*
- Short-Term and Long-Term analysis
 - *demographic and economic trends*
 - *experience in mortality rates*
 - *preparation of regular reports*
- Evaluate and estimate operations of the Federal Trust Fund
- Special studies on the financial aspects of the SS system
 - *address concerns of the Congress and the general public*
 - *address national and international meetings of actuarial organizations*
 - *testify before Congressional committees on the financial effect of various suggested amendments to the law*
 - *write articles for various publications on the actuarial status of the program*





Actuaries were there at the beginning

President Roosevelt's planning for Social Security

1934 Economic Security Committee hired 3 actuaries

- *Robert J. Myers - young Actuarial Assistant*
- *Masters in Actuarial Science, University of Iowa, 1934*

1935 Social Security program enacted into legislation

- *Bob Myers prepared actuarial estimates reassuring Congress: SS program is practical*

1947 Mr. Myers became the Chief Actuary of SSA

2001 Stephen C. Goss 2001– Current Chief Actuary of SSA



Robert J. Myers
SSA History Archives.

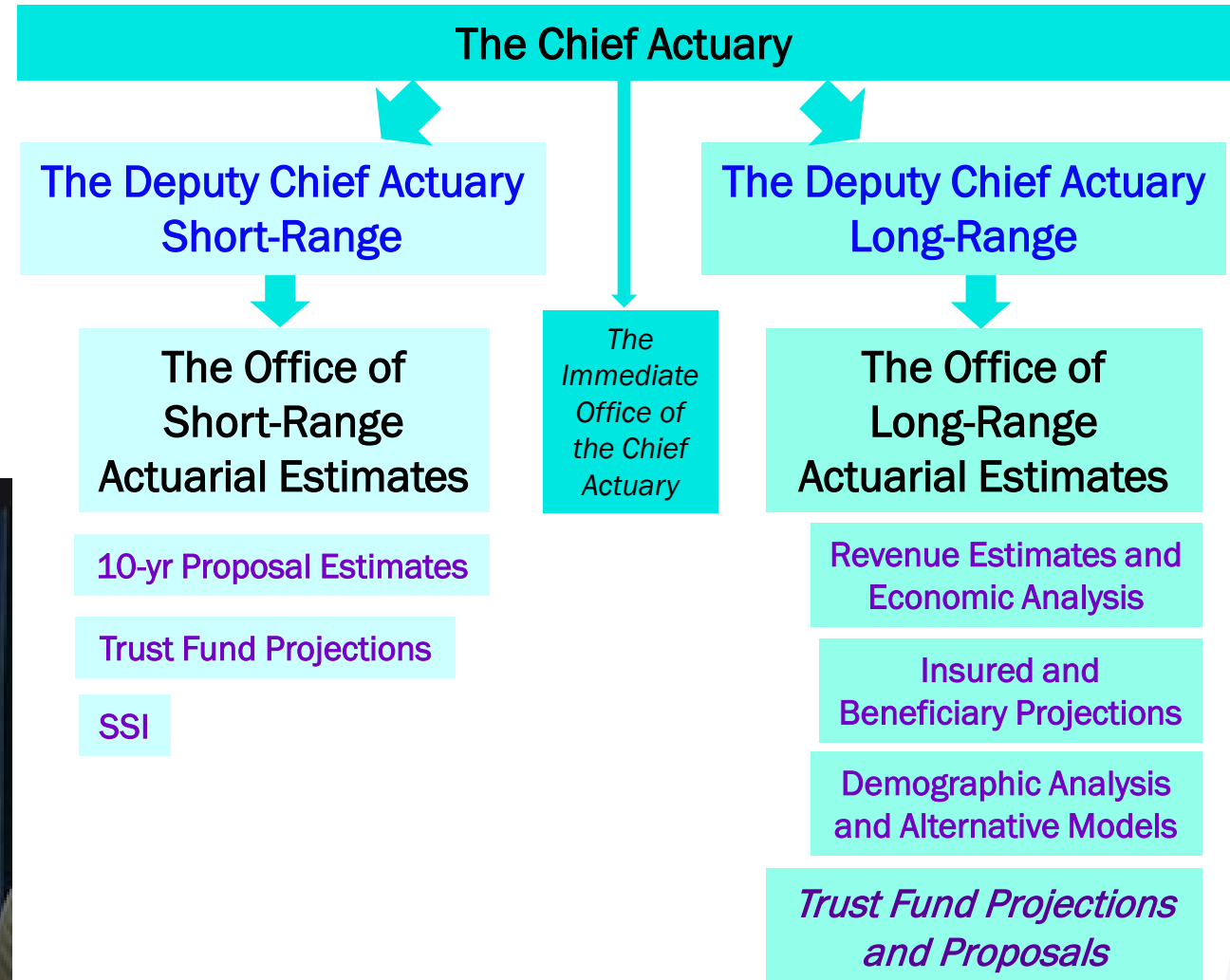


Office of The Chief Actuary (OCACT)

- Plan and direct actuarial estimates
- Perform actuarial and demographic research on social insurance
- Conduct studies of program financing
 - *Old-Age Survivors and Disability Insurance (OASDI)*
 - *Supplemental security income program (SSI)*
- Evaluate and estimate operations of the Trust Funds in Annual Trustees Report
- Provide technical and consultative services to
 - *the Commissioner*
 - *the Board of Trustees of the two Trust Funds*
 - *congressional committees*
- Appear before congressional committees to provide expert testimony on the actuarial aspects of Social Security issues.



OCACT - Structure







Social Security Income and Cost

INCOME

Payroll taxes

- Employees and employers each pay **6.2%** of covered earnings
- The self-employed pay **12.4%** of covered earnings
- On earnings up to **\$132,900** in **2019**

Taxes on Social Security benefits

- High-income beneficiaries pay federal income tax on their benefits

Interest on trust fund reserves

- Invested in interest-bearing securities of the US government

COST

Benefit payments

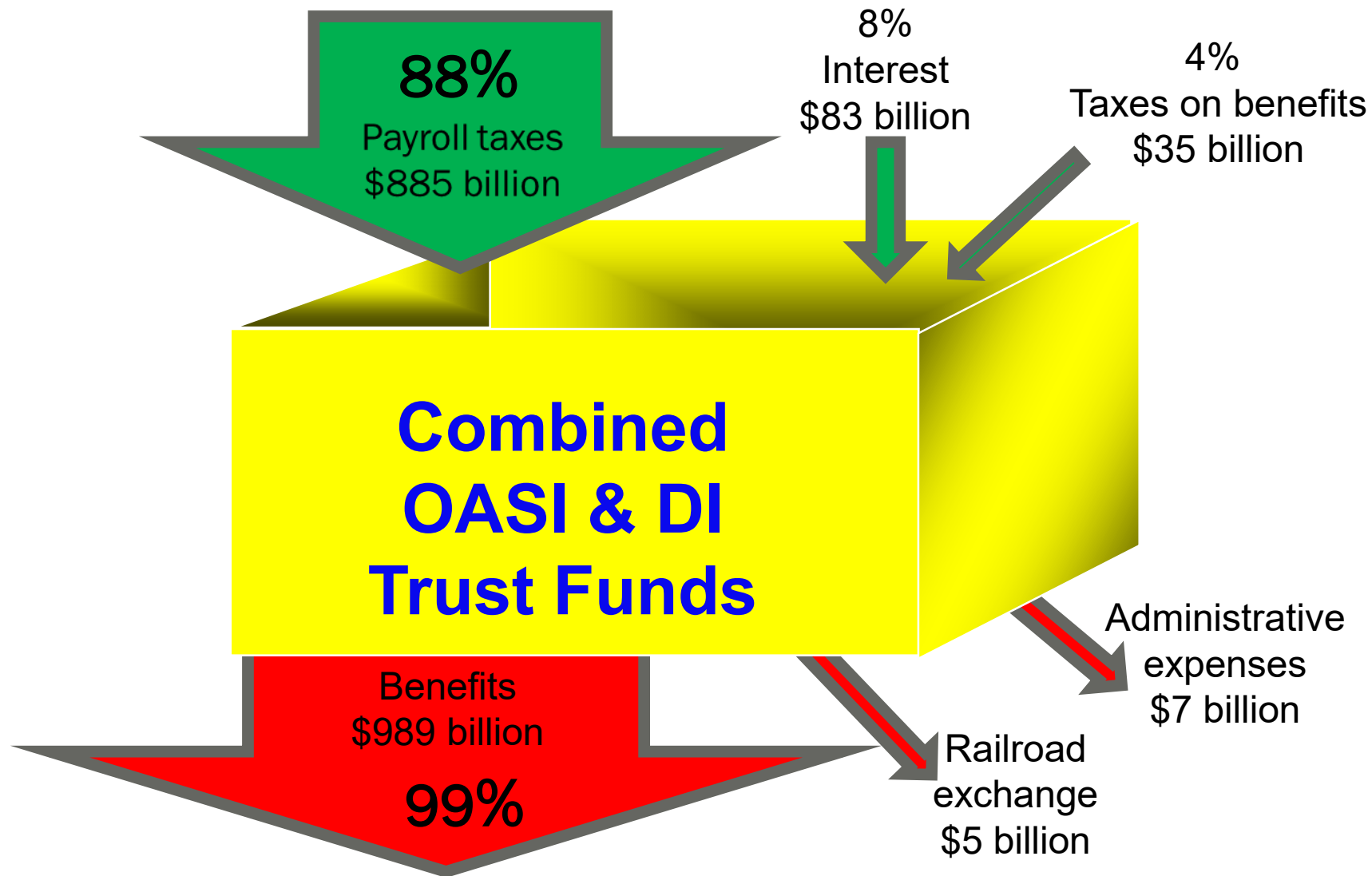
- About **63 million** people getting benefits as of **December 2018**:
 - **47 million** retired workers and dependents of retired workers
 - **6 million** survivors of deceased workers
 - **10 million** disabled workers and dependents of disabled workers
- Railroad Interchange

Administrative expenses

- Only about 0.7 percent of total expenditures in 2018



Social Security Income and Cost





Social Security Demographic Challenge



- The number of retired workers is projected to double in about 50 years
- People are living longer
- Birth rate is low



Social Security Demographic Challenge

The Trustees project

- the ratio of workers paying SS taxes to each person collecting benefits in 2018 will fall from 2.8 to 2.2 in 2036.
- redemption of trust fund assets will be sufficient to allow for full payment of scheduled benefits until 2035.

In 2010

- tax and other noninterest income did not fully cover program cost

The 2019 Trustees Report projects

- the pattern will continue for at least 75 years
- unless changes are made to the program



Actuarial Reporting

- Annual Wage Reporting
 - *W-2 data*

- Automatic Increases
 - *Cost-Of-Living Adjustment (COLA)*
 - *Average Wage Increase (AWI)*

- Life Tables & Annuity Values
- Population in the Social Security Area
- Trust fund data





Cost-of-Living Adjustments (COLA)

- Benefit increases to keep pace with inflation
- Since 1975, general increases based on the CPI
- COLAs are based on the CPI-W
 - *Consumer Price Index for Urban Wage Earners and Clerical Workers*

Year	COLA	Year	COLA	Year	COLA	Year	COLA
1975	8.0	1986	1.3	1997	2.1	2008	5.8
1976	6.4	1987	4.2	1998	1.3	2009	0.0
1977	5.9	1988	4.0	1999	2.5	2010	0.0
1978	6.5	1989	4.7	2000	3.5	2011	3.6
1979	9.9	1990	5.4	2001	2.6	2012	1.7
1980	14.3	1991	3.7	2002	1.4	2013	1.5
1981	11.2	1992	3.0	2003	2.1	2014	1.7
1982	7.4	1993	2.6	2004	2.7	2015	0.0
1983	3.5	1994	2.8	2005	4.1	2016	0.3
1984	3.5	1995	2.6	2006	3.3	2017	2.0
1985	3.1	1996	2.9	2007	2.3	2018	2.8
						2019	1.6



CPI-W

(for Urban Wage Earners and Clerical Workers)

- Based on experience of the relevant average household
- spending habits survey of 7k families
- Used for COLA determination

Proposed CPI concepts – not currently used

CPI-U (for Urban Wage Earners)

C-CPI-U (Chained CPI)

- Based on idea that in an inflationary environment, consumers choose less-expensive substitutes
- By age 85, benefits would be about 6.5% lower
- OCACT estimates C-CPI-U would reduce the annual COLA by 0.3 percentage point, on average

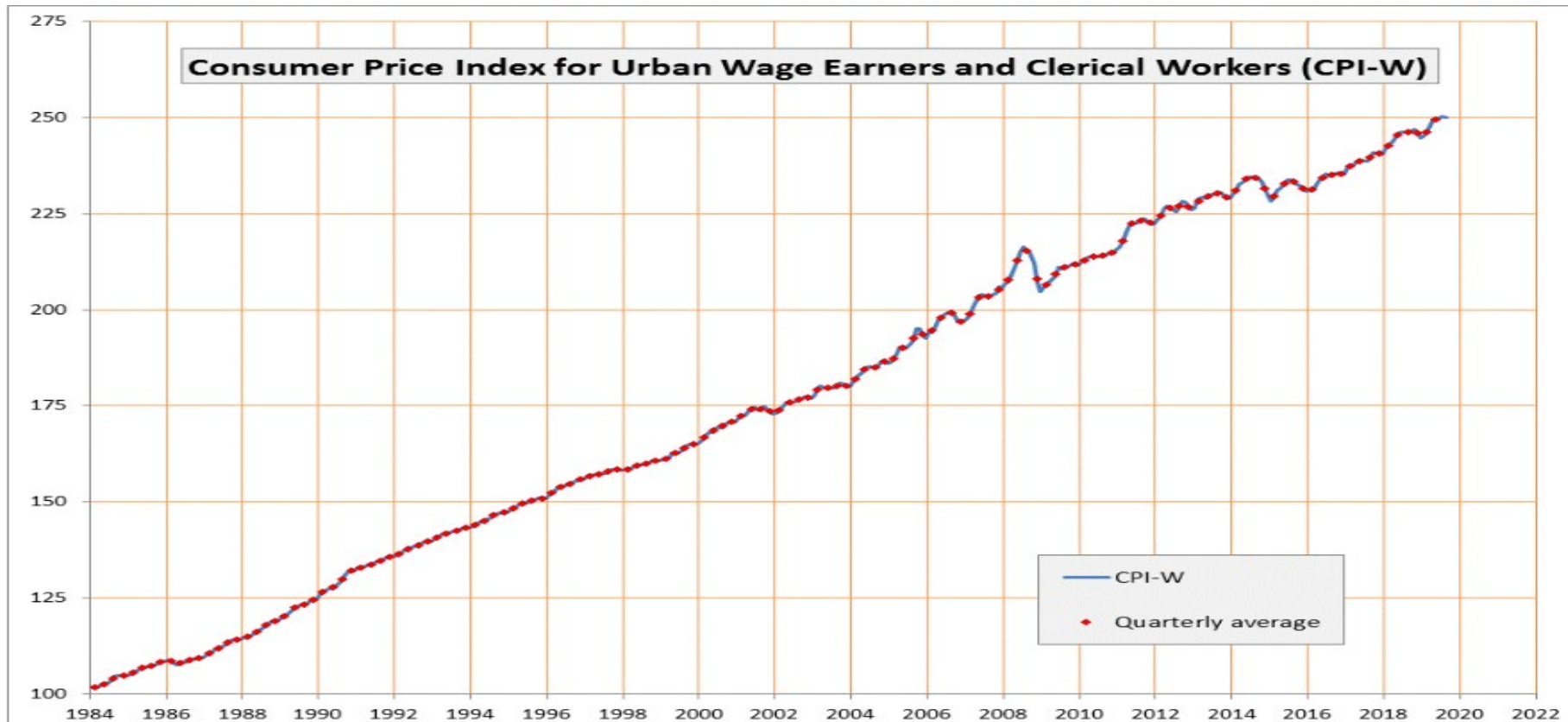
CPI-E (CPI for the Elderly)

- OCACT estimates CPI-E would increase the annual COLA by 0.2 percentage point, on average
- Basket of goods and services for those age 62+
- Certain expenditure groups are given greater weight (medical care/housing)
- By age 85, benefits would be about 4.6% higher



Historical CPI-W

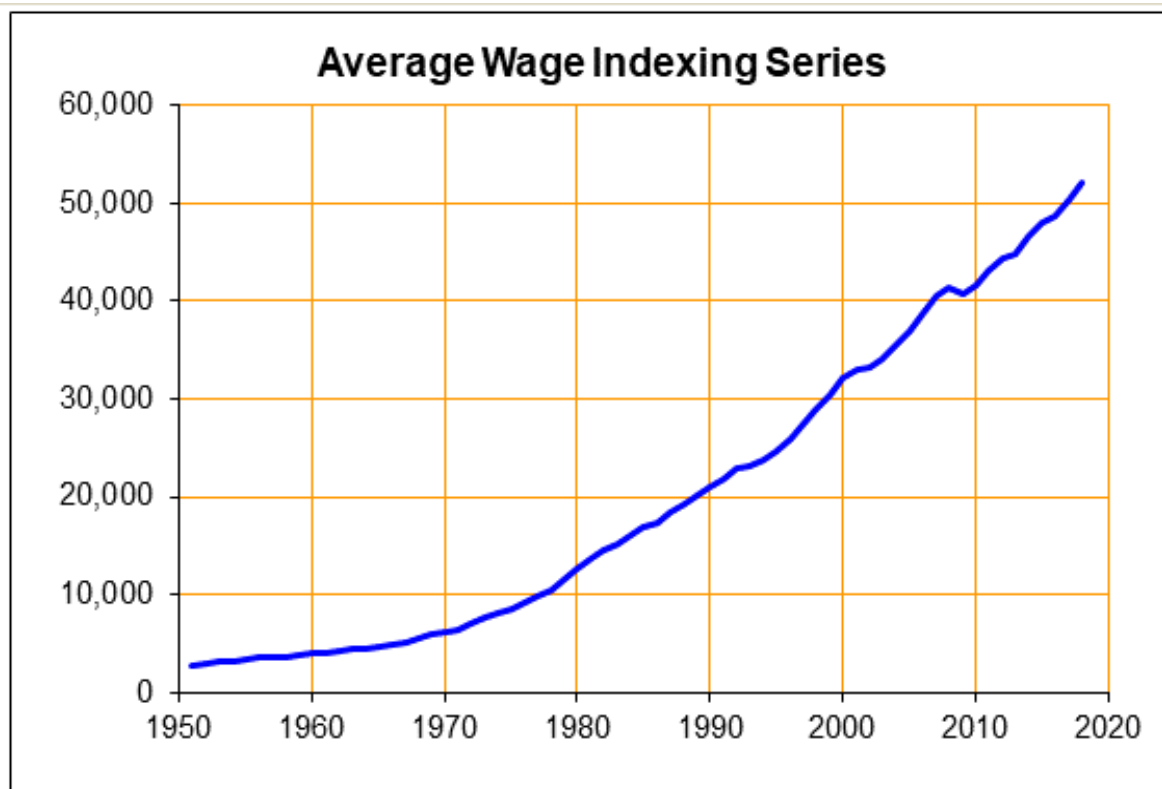
Bureau of Labor Statistics produces monthly data on changes in prices paid for a representative basket of goods and services





Average Wage Index (AWI)

AWI - used to index earnings and other amounts that are important to the operation of Social Security's Old-Age, Survivors, and Disability program



Year	AWI	Annual change
1951	2,799.16	—
1952	2,973.32	6.22%
1953	3,139.44	5.59%
1954	3,155.64	0.52%
1955	3,301.44	4.62%
1956-2014	skipped	skipped
2015	48,098.63	3.48%
2016	48,642.15	1.13%
2017	50,321.89	3.45%
2018	52,145.80	3.62%



Items updated by the AWI levels

I. Taxable Maximum

- *Limit on earnings that are subject to taxation*
- *changes each year with changes in AWI*
- *Also called*
 - contribution and benefit base

II. Quarters of Coverage

III. Bend Points

IV. AIME

Contribution & benefit bases 2010-2020

<u>Year</u>	<u>Amount</u>
2010	106,800
2011	106,800
2012	110,100
2013	113,700
2014	117,000
2015	118,500
2016	118,500
2017	127,200
2018	128,400
2019	132,900
2020	137,700



Quarters of Coverage (QC)

- A QC - basic unit to determine if a worker is insured
 - *No matter how high your earnings may be, you can not earn more than 4 QC's in one year.*
- The amount of earnings for 1 QC in 2019 is \$1,360.

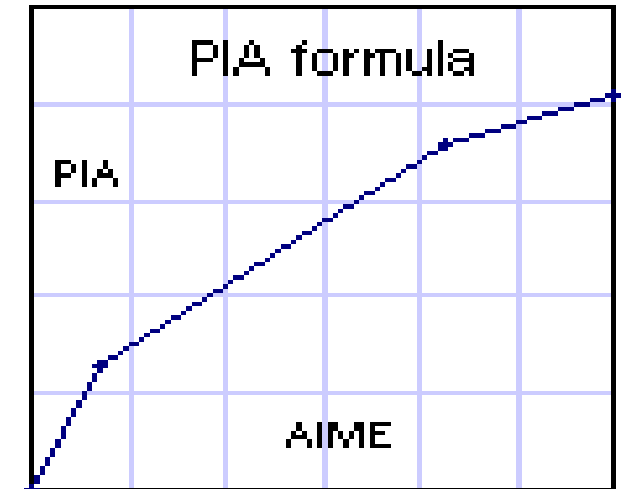
Amounts in formula	1978 earnings for one QC	\$250.00
	1976 average wage index	9,226.48
	2017 average wage index	50,321.89
Computation	\$250 times 50,321.89 divided by 9,226.48 equals \$1,363.52 $\\$250 * 50,321.89 / 9,226.48 = \\$1,363.52$, which rounds to \$1,360	
Higher amount	\$1,360 exceeds the amount for 2018, which is \$1,320 - the amount needed to earn one QC in 2019 is \$1,360	



Bend Points

The dollar amounts in the basic benefit formula

- when graphed, appears as a series of line segments joined at these amounts



Determination of the PIA bend points for 2020				
Amounts in formula	Average wage indices		Bend points for 1979	
	For 1977:	9,779.44	First:	\$180
	For 2018:	52,145.80	Second:	\$1,085
Computation of bend points for 2020	<u>First bend point</u> \$180 times 52,145.80 divided by 9,779.44 equals \$959.79, which rounds to \$960		<u>Second bend point</u> \$1,085 times 52,145.80 divided by 9,779.44 equals \$5,785.42, which rounds to \$5,785	



Average Indexed Monthly Earnings (AIME)

- Adjust or "index" earnings to reflect the change in general wage levels occurred during employment.
- The highest 35 years of indexed earnings are used for computation of AIME for retired workers.
- The national AWI series are used to index earnings.

Earnings before and after indexing						
Year	Case A, born in 1957			Case B, born in 1953		
	Nominal Earnings	Indexing factor	Indexed Earnings	Nominal Earnings	Indexing factor	Indexed Earnings
1979	\$10,733	4.3836	\$47,050	\$22,900	3.9103	\$89,546
1980-2009	skipped	skipped	skipped	skipped	skipped	skipped
2010	42,774	1.2075	51,650	106,800	1.0771	115,038
2011	44,241	1.1708	51,799	106,800	1.0444	111,543
2012	45,754	1.1354	51,948	110,100	1.0128	111,507
2013	46,471	1.1211	52,096	113,700	1	113,700
2014	48,257	1.0826	52,244	117,000	1	117,000
2015	50,078	1.0462	52,393	118,500	1	118,500
2016	50,787	1.0345	52,541	118,500	1	118,500
2017	52,690	1	52,690	127,200	1	127,200
2018	54,753	1	54,753	128,400	1	128,400
Highest-35 total			1,762,951	Highest-35 total		3,906,108
AIME			4,197	AIME		9,300



Primary Insurance Amount (PIA)

- The basic Social Security benefit for retired workers
- A function of AIME
 - *Determined by applying PIA formula to AIME*
 - *The formula depends on the year of first eligibility*
 - (attained age 62)
- The amount paid depends on age when benefits start.
- Benefits are
 - reduced if first taken before a person's normal (or full) retirement age and
 - increased if first taken after normal retirement age



PIA Formula

- For an individual who
 - *first becomes eligible for OASDI benefits in 2019,*
 - *dies in 2019 before becoming eligible for benefits*

$$\text{PIA} = 90\% \text{ of the first } \$926 \text{ of AIME} + 32\% \text{ of AIME over } \$926 \text{ and through } \$5,583, + 15\% \text{ of AIME over } \$5,583.$$

We round this amount to the next lower multiple of \$.10.



PIA calculation example

Benefit Calculation Examples for Workers Retiring in 2019

Case	AIME	Formula bend points		Formula applied to AIME
		First	Second	
A	\$4,196	\$926	\$5,583	$.9(926) + .32(4196 - 926) = \mathbf{\$1,879.80}$
B	9,300	826	4,980	$.9(826) + .32(4980 - 826) + .15(9300 - 4980) = \mathbf{\$2,720.68}$

Worker A: first eligible for benefits and retires in the same year 2019.
No applicable COLA.

PIA: \$1,879.80

Worker B: first eligible in 2015 (the year case B reached age 62).
COLAs apply for 2015 through 2018.
➤ These COLAs are 0.0%, 0.3%, 2.0%, 2.8%, respectively.

PIA: \$2,720.68 adjusted for COLA is \$2,861.10



Actuarial Work – The Trustees Report

*The annual trustees report
on the financial and actuarial status
of the Social Security system*

The screenshot shows the top navigation bar of the Social Security website. On the left is the Social Security Administration logo and the text "Social Security". On the right are links for "SEARCH", "MENU", "LANGUAGES", and "SIGN IN/UP". Below the navigation bar is a breadcrumb trail: "Status of the Social Security and Medicare Programs". A dropdown menu is open, showing "Office of the Chief Actuary", "2019 Trustees Report" (highlighted with a yellow circle), and "Actuarial Publications". To the right of the dropdown, the text "A SUMMARY OF THE 2019 ANNUAL REPORTS" and "Social Security and Medicare Boards of Trustees" is visible.



Social Security Trust Funds

Two legally distinct trust funds:

OASI = Old-Age and Survivors Insurance

DI = Disability Insurance

Financial operations are overseen by
the Social Security Board of Trustees

- *the Secretary of the Treasury*
- *the Secretary of Labor*
- *the Secretary of Health and Human Services*
- *the Commissioner of Social Security*
- *two public trustees*





Social Security Trust Funds

- The two funds are often looked at on a theoretical combined basis
 - *As of December 31, 2018:*
 - the trust funds hold about **\$2.89 trillion** in asset reserves

- Why do we have trust funds?
 - *To provide an essential reserve so benefits can be paid even when current income alone is not enough*
 - *Social Security (OASI and DI) cannot borrow;*
 - *can only spend tax revenues and interest earnings on the reserves*

- Trust Funds' performance
 - *Surpluses since the early 1980s and through 2018*
 - *For the past 8 years show reserves' depletion between 2033 and 2035*



Social Security Trust Funds (cont.)

Are the trust funds “real”?

- *If reserves deplete, full benefits cannot be paid*
- *The trust funds force Congress to act*
 - *to maintain continuous benefit payments*
- *Trust Fund reserves are backed by the full faith and credit of the U.S. government*

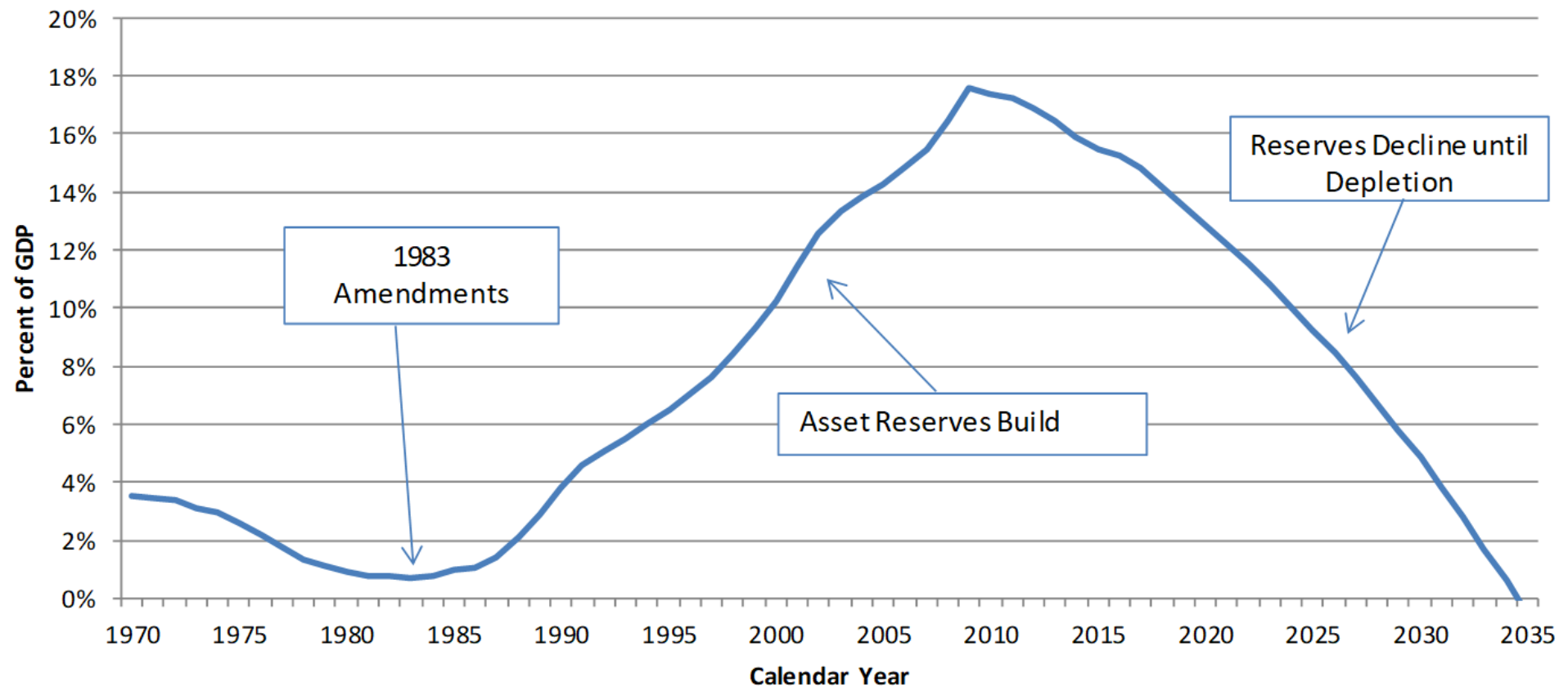
If no legislative change is enacted

Scheduled tax revenues will be sufficient to pay about 3/4 of the scheduled benefits



Trust Fund Reserves

**Social Security Trust Fund Asset Reserves (end of year)
as a Percent of GDP, 1970-2035**





TF Financing

- How is the future shortfall expressed?
 - To make shortfalls comparable over years, they are often scaled as a **percent of taxable payroll**
 - The amount of earnings taxable by the program for a time period
- For example, in **2045**:
 - Taxable payroll is expected to be about **\$23.3 trillion** in nominal \$\$
 - Income to the program is expected to be about **\$3.1 trillion**
 - or **13.27%** of taxable payroll
 - The cost of the program is expected to be about **\$3.8 trillion**
 - or **16.49%** of taxable payroll
 - So the shortfall is **3.22%** (16.49 – 13.27)



Actuarial Balance

Key measure of the actuarial status of the trust funds under the intermediate assumptions

Actuarial Deficit – Negative Actuarial Balance

- expressed as a percentage of taxable payroll
- currently 2.78%
- increase payroll tax by just over 2.78% to be solvent for 75 years

Comparison: Key Measures of Actuarial Status in the Social Security Trustees Reports

	2018 report	2019 report
75-year actuarial deficit		
As a percentage of taxable payroll	2.84%	2.78%
As a percentage of GDP	1.0%	1.0%



Actuarial Work - Proposals

Policymakers develop proposals and options

- Financial effects on the OASDI Trust Funds
- Intent of addressing the long-range solvency problem
- Proposal with direct effects on the SS Trust Funds
 - *The Social Security 2100 Act*
 - introduced on January 30, 2019
 - Committee on Ways and Means
 - *Congressman Larson*
 - *Senator Blumenthal*
 - *Senator Van Hollen*



The Social Security 2100 Act





The *Social Security 2100 Act*

- Increase benefits (PIA Formula) and the special minimum PIA
- Use CPI-E increase rather than CPI-W increase to calculate COLA
 - CPI-E (Consumer Price Index for the Elderly)
 - CPI-W (Consumer Price Index for Urban Wage Earners and Clerical Workers)
 - COLA (Cost-Of-Living Adjustment)
 - estimated to increase the COLA by an average of 0.2 percentage point per year.
- Replace current-law thresholds for federal income taxation of OASDI benefits with a single set of thresholds
 - at \$50k/\$100k for single/joint filers
 - up to 85 percent of OASDI benefits, effective for tax year 2020
- Payroll tax on earnings above \$400,000
 - While no tax on earnings between \$132,900 and \$400,000 (donut)
- 2.4% gradual increase in payroll tax rate to 14.8% (phased in 2020-2043)
- New Social Security Trust Fund
 - combines the reserves of OASI and DI Trust Funds





The Social Security 2100 Act - LINGO

The special minimum benefit

A special minimum primary insurance amount (PIA) enacted in 1972 to provide adequate benefits to long-term low earners.

- *The first full special minimum PIA in 1973 was \$170 per month.*
- *Beginning in 1979, its value has increased with price growth and is about \$875 per month in 2018.*

- ❖ **This is the current law**
- ❖ **By 2018, very few affected by this type of benefit**

Minimum PIA for 2020:

- for workers with 30 or more years of coverage
 - *125% of the annual poverty guideline*, divided by 12*
- for workers becoming newly eligible or dying after 2020,
 - *the minimum PIA for their initial year of eligibility is increased by the growth in the AWI*
- for all affected workers
 - *the minimum PIA is increased after their year of initial eligibility by the COLA*

**for a single individual published by the Department of Health and Human Services for 2019*



Current Law versus 2100 Act

CURRENT LAW

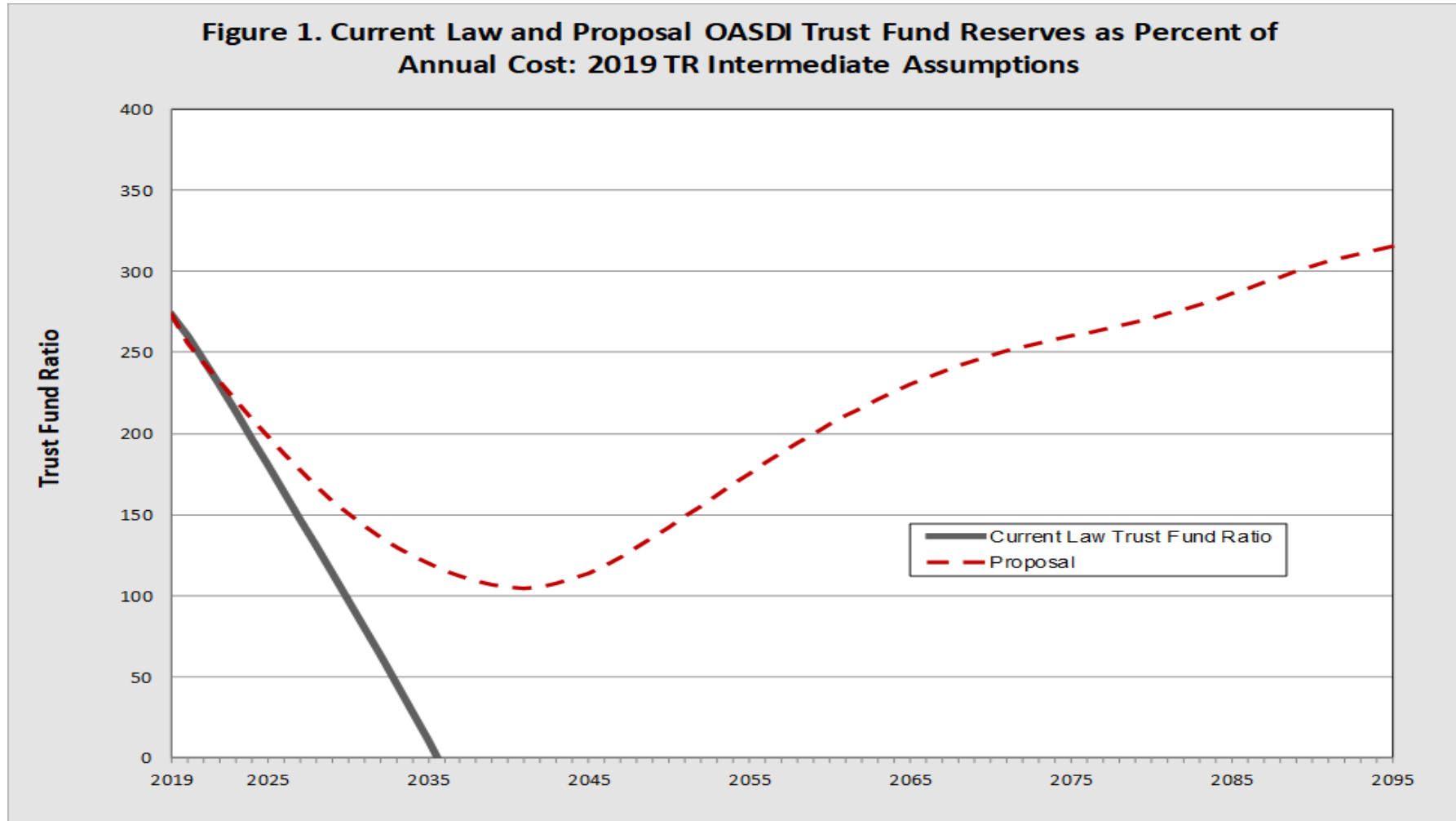
- 80% of scheduled benefits are projected to be payable on a timely basis in 2035 after depletion of the combined trust fund reserves
- Declining to 75% for 2093.
- 2.78% long-range OASDI actuarial deficit

PROPOSAL

- 75-year solvency projected for OASDI program
- 100% of scheduled benefits paid for the foreseeable future
- 0.39% positive OASDI actuarial balance



Trust Fund Ratio (CL vs 2100 Act)





Social Security Reform Act of 2016

5 Points On House GOP Bill To Impose Major Cuts On Social Security



By Tierney Sneed | December 13, 2016 6:00 am

- 75-year solvency
- Benefit cuts
 - rather than revenue increases



Social Security Reform Act of 2016

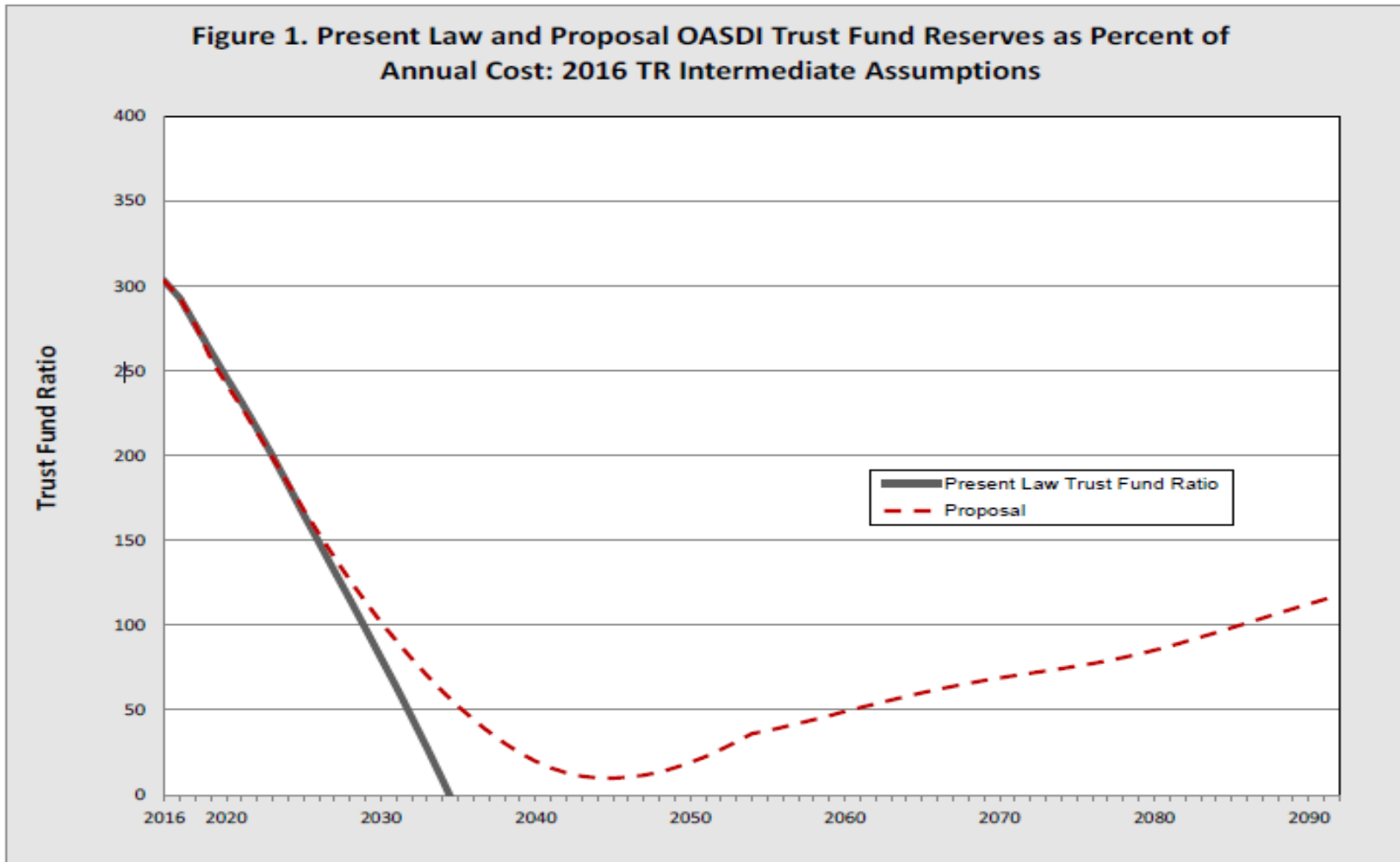
- Representative Sam Johnson
- Introduced on December 8, 2016

- Committee on Ways and Means
 - *Changes in the benefit formula*
 - *Expand benefits for long term low-wage earners*
 - *Reduction or elimination of COLA for all beneficiaries*
 - *Eventually eliminate income taxation of Social Security benefits*





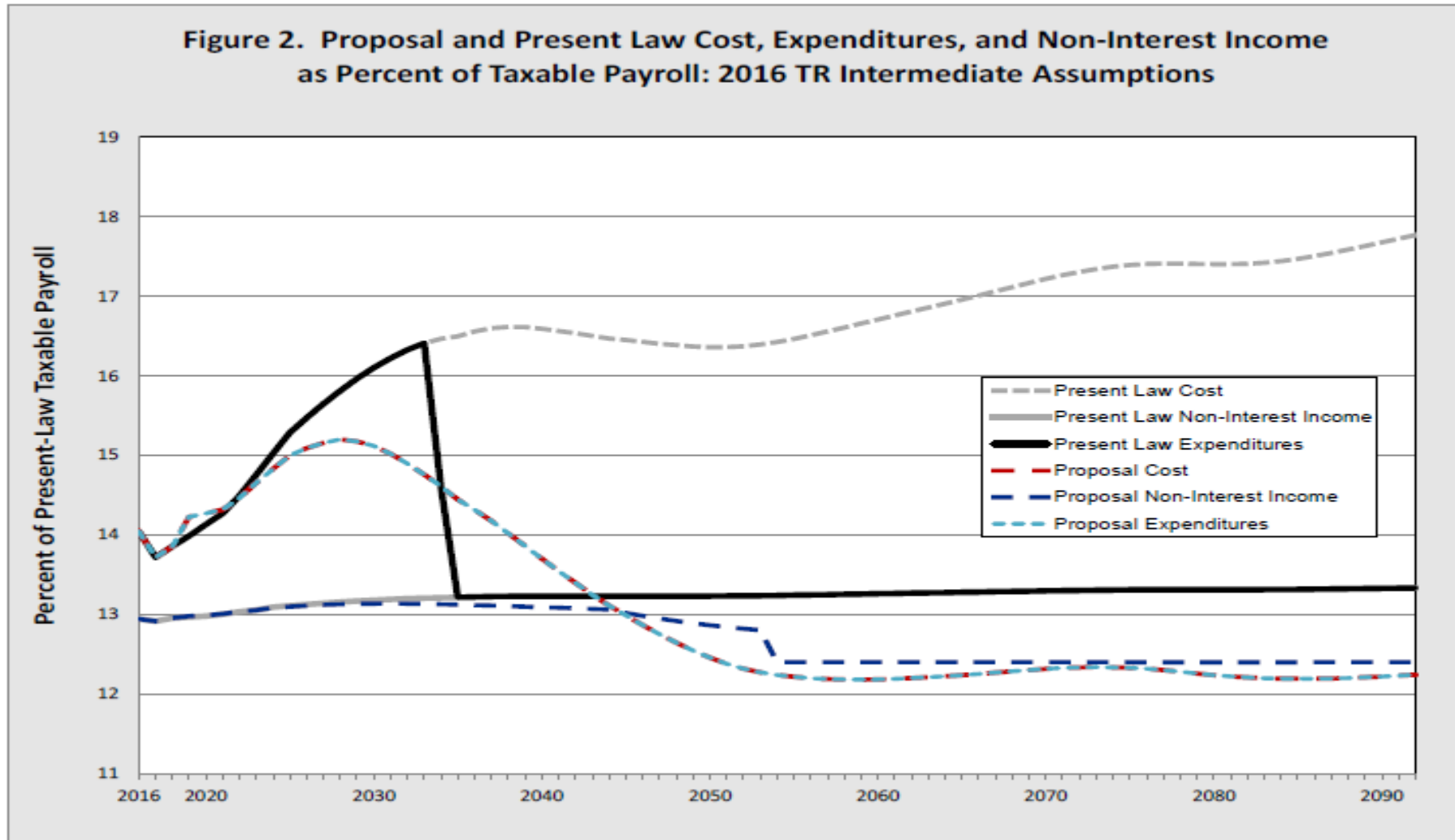
Sam Johnson Bill



Note: *Trust Fund Ratio* for a given year is the ratio of reserves in the combined OASI and DI Trust Funds at the beginning of the year to the cost of the program for the year.



Sam Johnson Bill





For More Information, Go To:

<http://www.ssa.gov/OACT>

There you will find:

- The 2019 Trustees Report and all prior reports
- Detailed single-year tables for recent reports
- Our estimates for comprehensive proposals
- Our estimates for individual policy provisions
- Actuarial notes, including replacement rates
- Actuarial studies
- Extensive databases
- Congressional testimonies
- Presentations by OCACT employees